Assembly and operating instructions

REMKO BL...DC

BL 263 DC, BL 353 DC

Inverter wall-mounted room air conditioner with split design with quick-coupling system



0125-2016-02 Edition 1, en_GB

Read the instructions prior to performing any task!



Read these operating instructions carefully before commissioning / using this device!

These instructions are an integral part of the system and must always be kept near or on the device.

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

Installation and operating instructions (translation of the original)

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1 Safety and usage instructions

1.1 General safety notes

Carefully read the operating manual before commissioning the units for the first time. It contains useful tips and notes such as hazard warnings to prevent personal injury and material damage. Failure to follow the directions in this manual not only presents a danger to people, the environment and the system itself, but will void any claims for liability.

Keep this operating manual and the refrigerant data sheet near to the units.

1.2 Identification of notes

This section provides an overview of all important safety aspects for proper protection of people and safe and fault-free operation.The instructions and safety notes contained within this manual must be observed in order to prevent accidents, personal injury and material damage.

Notes attached directly to the units must be observed in their entirety and be kept in a fully legible condition.

Safety notes in this manual are indicated by symbols. Safety notes are introduced with signal words which help to highlight the magnitude of the danger in question.

DANGER!

Contact with live parts poses an immediate danger of death due to electric shock. Damage to the insulation or individual components may pose a danger of death.

DANGER!

This combination of symbol and signal word warns of a situation in which there is immediate danger, which if not avoided may be fatal or cause serious injury.

WARNING!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may be fatal or cause serious injury.

CAUTION!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may cause injury or material and environmental damage.

NOTICE!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may cause material and environmental damage.

This symbol highlights useful tips and recommendations as well as information for efficient and fault-free operation.

1.3 Personnel qualifications

Personnel responsible for commissioning, operation, maintenance, inspection and installation must be able to demonstrate that they hold a qualification which proves their ability to undertake the work.

1.4 Dangers of failure to observe the safety notes

Failure to observe the safety notes may pose a risk to people, the environment and the units. Failure to observe the safety notes may void any claims for damages.

In particular, failure to observe the safety notes may pose the following risks:

- The failure of important unit functions.
- The failure of prescribed methods of maintenance and repair.
- Danger to people on account of electrical and mechanical effects.

1.5 Safety-conscious working

The safety notes contained in this manual, the existing national regulations concerning accident prevention as well as any internal company working, operating and safety regulations must be observed.

1.6 Safety notes for the operator

The operational safety of the units and components is only assured providing they are used as intended and in a fully assembled state.

- The units and components may only be set up, installed and maintained by qualified personnel.
- Protective covers (grille) over moving parts must not be removed from units that are in operation.
- Do not operate units or components with obvious defects or signs of damage.
- Contact with certain unit parts or components may lead to burns or injury.
- The units and components must not be exposed to any mechanical load, extreme levels of humidity or extreme temperature.
- Spaces in which refrigerant can leak sufficient to load and vent. Otherwise there is danger of suffocation.
- All housing parts and device openings, e.g. air inlets and outlets, must be free from foreign objects, fluids or gases.
- The units must be inspected by a service technician at least once annually. Visual inspections and cleaning may be performed by the operator when the units are disconnected from the mains.

1.7 Safety notes for installation, maintenance and inspection

- Appropriate hazard prevention measures must be taken to prevent risks to people when performing installation, repair, maintenance or cleaning work on the units.
- The setup, connection and operation of the units and its components must be undertaken in accordance with the usage and operating conditions stipulated in this manual and comply with all applicable regional regulations.
- Local regulations and laws such as Water Ecology Act must be observed.
- The power supply should be adapted to the requirements of the units.
- Units may only be mounted at the points provided for this purpose at the factory. The units may only be secured or mounted on stable structures, walls or floors.
- Mobile units must be set up securely on suitable surfaces and in an upright position. Stationary units must be permanently installed for operation.
- The units and components should not be operated in areas where there is a heightened risk of damage. Observe the minimum clearances.
- The units and components must be kept at an adequate distance from flammable, explosive, combustible, abrasive and dirty areas or atmospheres.
- Safety devices must not be altered or bypassed.

1.8 Unauthorised modification and changes

Modifications or changes to units and components are not permitted and may cause malfunctions. Safety devices may not be modified or bypassed. Original replacement parts and accessories authorised by the manufactured ensure safety. The use of other parts may invalidate liability for resulting consequences.

1.9 Intended use

Depending on the model, the units and the additional fittings with which they are equipped are only intended to be used as an air-conditioner for the purpose of cooling or heating the air in an enclosed space.

Any different or additional use is a non-intended use. The manufacturer/supplier assumes no liability for damages arising from a non-intended use. The user bears the sole risk in such cases. Intended use also includes working in accordance with the operating and installation instructions and complying with the maintenance requirements.

The threshold values specified in the technical data must not be exceeded.

1.10 Warranty

For warranty claims to be considered, it is essential that the ordering party or its representative complete and return the "certificate of warranty" to REMKO GmbH & Co. KG at the time when the units are purchased and commissioned.

The warranty conditions are detailed in the "General business and delivery conditions". Furthermore, only the parties to a contract can conclude special agreements beyond these conditions. In this case, contact your contractual partner in the first instance.

1.11 Transport and packaging

The devices are supplied in a sturdy shipping container. Please check the equipment immediately upon delivery and note any damage or missing parts on the delivery and inform the shipper and your contractual partner. For later complaints can not be guaranteed.

⚠ WARNING!

Plastic films and bags etc. are dangerous toys for children!

Why:

- Leave packaging material are not around.

- Packaging material may not be accessible to children!

1.12 Environmental protection and recycling

Disposal of packaging

All products are packed for transport in environmentally friendly materials. Make a valuable contribution to reducing waste and sustaining raw materials. Only dispose of packaging at approved collection points.



Disposal of equipment and components

Only recyclable materials are used in the manufacture of the devices and components. Help protect the environment by ensuring that the devices or components (for example batteries) are not disposed in household waste, but only in accordance with local regulations and in an environmentally safe manner, e.g. using certified firms and recycling specialists or at collection points.



2 Technical data

2.1 Unit data

Series		BL 263 DC	BL 353 DC
Operating mode		Inverter wall-mounted room air conditioner combination for cooling and heating	
Nominal cooling output [1]	kW	2.60 (0,70-3.22)	3.50 (1.06-4.10)
Energy efficiency ratio SEER [1]		5.2	6.2
El. power consumption, cooling	kW	0.08-1.24	0.09-1.58
El. current consumption, cooling	A	0.3-5.4	0.4-6.9
Power consumption, annual, Q_{CE} [3]	kWh	175	198
Energy efficiency ratio, cooling [1]		A	A++
Nominal heat capacity [2]	kW	2.30 (0,82-3.37)	2.40 (0.85-4.28)
Energy efficiency ratio SCOP [4]		4.0	4.0
El. power consumption, heating	kW	0.14-1.20	0.14-1.53
El. current consumption, heating	A	0.6-5.2	0.6-6.7
Power consumption, annual, Q_{HE} [3]	kWh	805	840
Energy efficiency ratio, heating [2]		A+	A+
Max. power consumption	kW	2.1	2.2
Max. current consumption	A	9.5	10.0
EDP no.		1629265	1629355

[1] Air inlet temp. TK 27°C / FK 19°C, outside temperature TK 35°C, FK 24°C, max. air flow volume, 5 m pipe length

[2] Air inlet temp. TK 20°C, outside temperature TK 7°C, FK 6°C, max. air flow volume, 5 m pipe length

[3] The specified value is based on results from standard testing.
The actual consumption depends on the use and location of the unit

[4] The specified value is based on the average heating period

Data specific to indoor unit		BL 263 DC IT	BL 353 DC IT
Application area (room volume), approx.	m^3	80	110
Adjustment range, room temperature	°C	+17 to +30, +8 with "FP" function	
Air flow volume per level	m³/h	270/320/420	370/470/570
Sound pressure level per speed setting [5)]	dB (A)	30/36/41	28/35/42
Sound pressure level, Silent/Turbo mode [5)]	dB (A)	24/42	23/43
Sound power level max. [5)]	dB(A)	54	
Enclosure class	IP	X 0	
Condensate drainage connection	mm	18	
Dimensions: H/W/D	mm	285/715/194	285/805/194
Weight	kg	6.7	7.1
EDP no.		1629267	1629357

[5)] At distance of 1m in the open air; specified values are maximum values

Data specific to outdoor unit		BL 263 DC AT	BL 353 DC AT
Power supply	V/Ph/Hz	230/1~/50	
Operating range, cooling	°C	+5 to +50	
Operating range, heating [7)]	°C	+5 to +30	
Air flow rate, max.	m³/h	1800	
Enclosure class	IP	24	
Sound power level max. [5)]	dB (A)	58	60
Sound pressure level [5)]	dB (A)	56	
Refrigerant [6)]		R 410A	
Refrigerant, basic capacity	kg	0.74	
CO_2 equivalent	t	1.54	
Max. operating pressure	kPa	4200 / 1500	
Refrigerant piping, max. length	m	3, 5, 8	3, 5, 8
Refrigerant piping, max. height	m	5	5
Dimensions: H/W/D	mm	555/770/300	
Weight	kg	26.3	25.7
EDP no.		1629266	1629356

[5)] At distance of 1m in the open air; specified values are maximum values

[6)] Contains greenhouse gas according to Kyoto protocol, GWP 2088

[7)] This can be extended to -20 °C with the appropriate accessory kit

2.2 Unit dimensions

Outdoor units

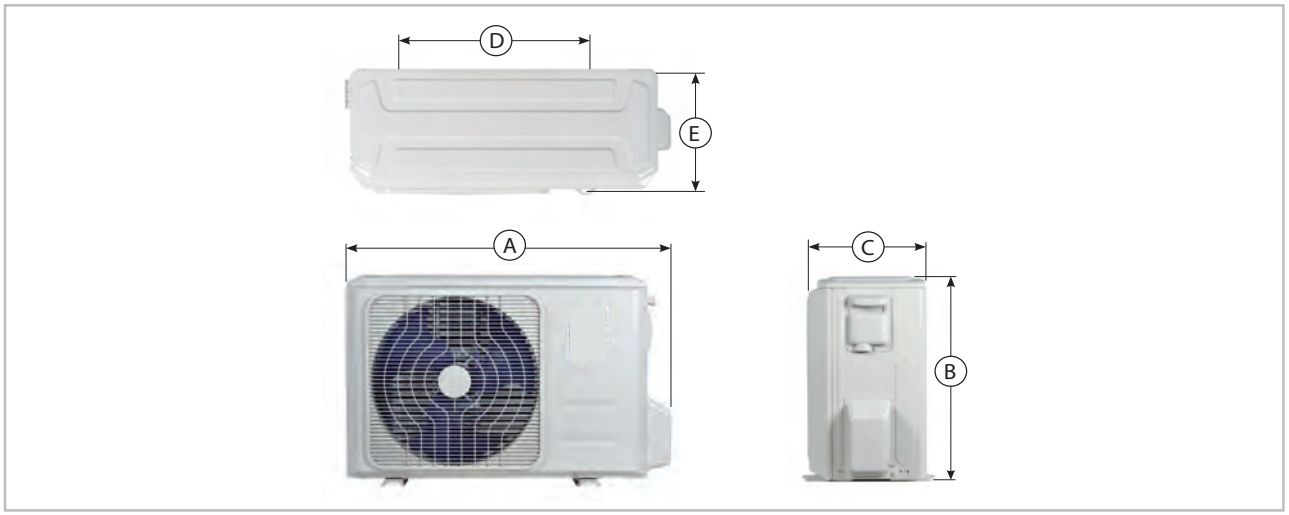


Fig. 1: Outdoor unit dimensions BL 263-353 DC AT

Dimensions (mm)	A	B	C	D	E
BL 263-353 DC AT	770	555	300	487	298

Indoor units

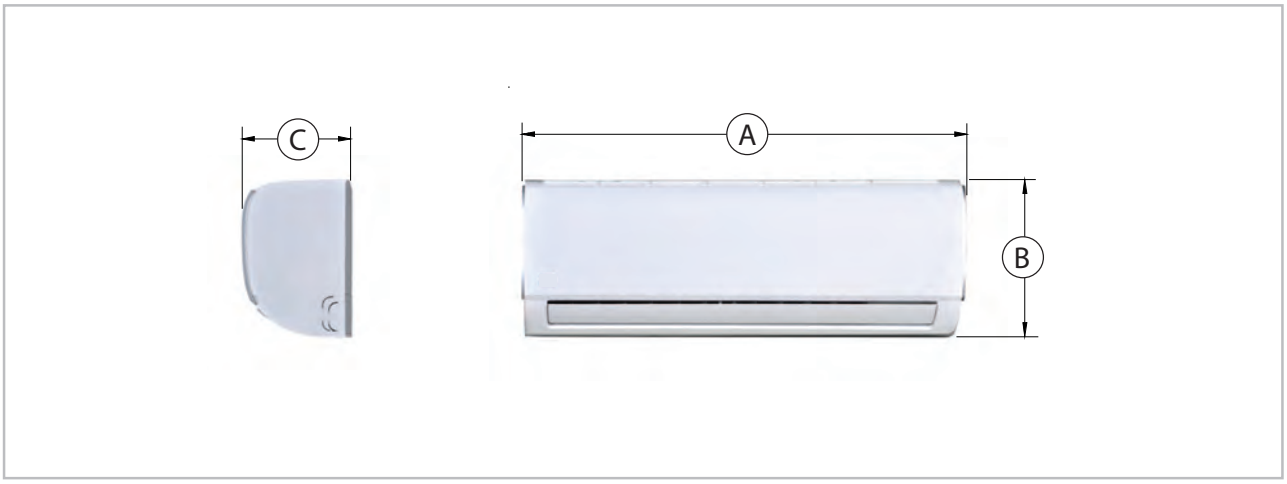


Fig. 2: Indoor unit dimensions BL 263-353 DC IT

Dimensions (mm)	A	B	C
BL 263 DC	715	285	194
BL 353 DC	805	285	194

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

3 Design and function

3.1 Unit description

The BL 263-353 DC room air conditioners have a REMKO BL...AT outdoor unit as well as a BL...IT indoor unit.

In cooling mode, the outdoor unit serves to output the heat extracted by the indoor unit from the room being cooled. In heating mode, the heat taken up by the outdoor unit can be discharged by the indoor unit into the room to be heated. In both operating modes, the output produced by the compressor precisely matches requirements, and thereby regulates the nominal temperature with minimal temperature deviations. This "inverter technology" results in energy savings over conventional split systems and also reduces noise emissions to a particularly low level. The outdoor unit can be installed in an outdoor area or, providing that certain requirements are met, an indoor area. The indoor unit is designed to be mounted high up on the wall, in indoor areas. It is operated by an infrared remote control.

The outdoor unit consists of a cooling cycle with compressor, fin condenser, condenser fan, reversing valve and throttle element. The outdoor unit is controlled by the controller in the indoor unit.

The indoor unit consists of a fin evaporator, evaporator fan, controller and condensate tray.

Floor brackets, wall brackets, refrigerant piping and condensate pumps are available as accessories.

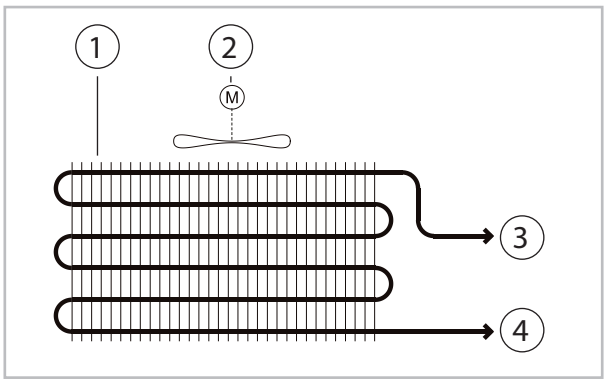


Fig. 3: Cooling cycle diagram for indoor unit

1: Evaporator
2: Evaporator fan
3: Suction pipe connection
4: Liquid line connection

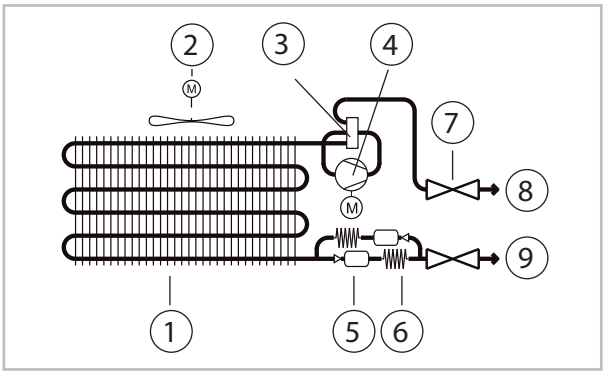


Fig. 4: Cooling cycle diagram for outdoor unit

1: Condenser
2: Condenser fan
3: Reversing valve
4: Compressor
5: Filter dryer
6: Capillary tube throttle element
7: Pressure gauge connection
8: Suction pipe connection valve
9: Liquid line connection valve

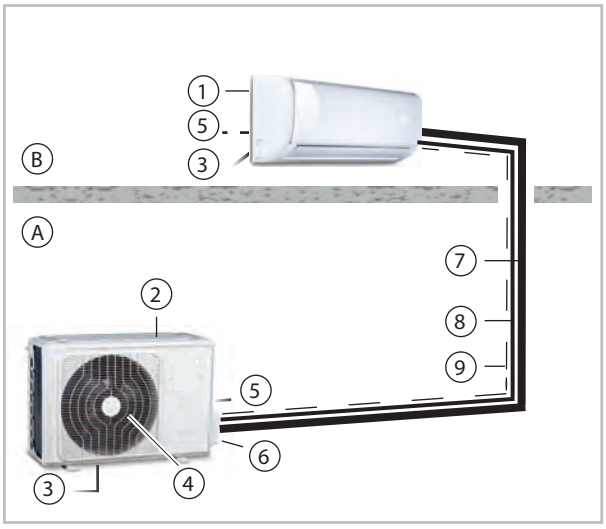


Fig. 5: System layout

A: Outdoor area
B: Indoor area
1: Indoor unit
2: Outdoor unit
3: Condensate drainage line
4: Condenser fan
5: Power supply
6: Shut-off valve
7: Suction pipe
8: Injection pipe
9: Control line

Refrigerant piping is used to connect the indoor unit to the outdoor unit.

4 Operation

4.1 General notes

The indoor unit is easily operated using the standard infrared remote control. The indoor unit beeps to acknowledge the correct transmission of data. If it is not possible to program the indoor unit with the remote control, then it can also be manually operated.

Manual mode

The indoor unit can also be switched on manually if the infrared remote control is lost/defective. Manual operation is intended for emergency operation and is not suitable for basic unit operation. Please replace the remote control. The key for manual activation is located below the housing cover on the right side.

The following settings apply for manual operation:

Pressing once: Automatic mode,

Pressing twice: Cooling mode,

Pressing three times: Unit OFF

Infrared remote control

The infrared remote control sends the programmed settings a distance of up to 6 m to the receiver of the indoor unit. Data will only be received correctly if the remote control is pointed at the receiver and no objects are obstructing the transmission path.

Two AAA batteries must be inserted into the remote control in preparation. To do so, remove the flap from the battery compartment and insert the batteries the correct way around (see markings). Removing the batteries causes all stored data to be lost. The remote control will then access the default settings, which you are free to customise at any time.

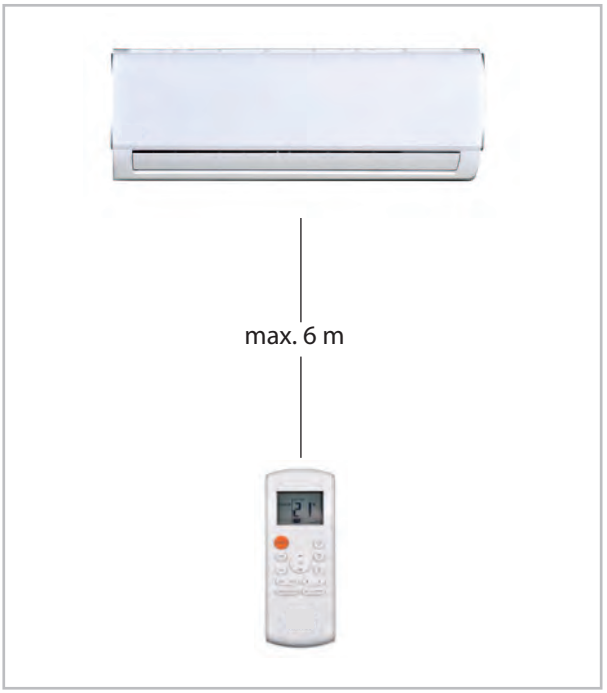


Fig. 6: Maximum distance

Alarms are indicated by a code (see chapter Troubleshooting and customer service).

! NOTICE!

Immediately replace flat batteries with a new set, otherwise there is a risk of leakage. It is recommended that the batteries are removed if the equipment is shut down for longer periods.

Help save on energy consumption in stand-by mode! If the device, system or component is not in use, we recommend disconnecting the power supply. Components with a safety function is excluded from our recommendation!

4.2 Display on indoor unit

The display illuminates according to the settings.

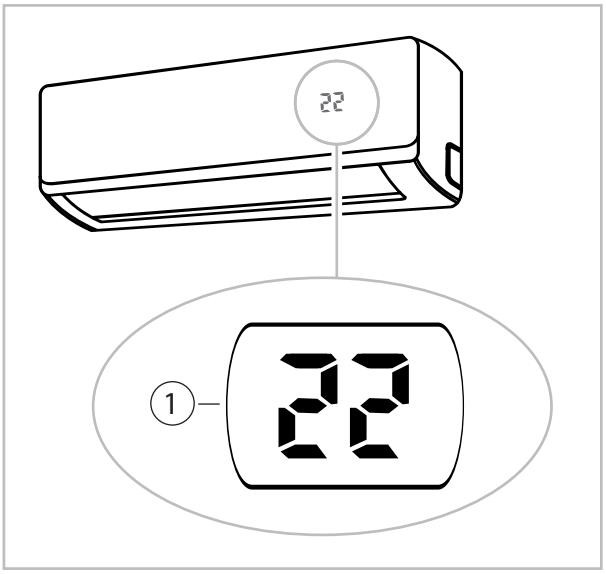


Fig. 7: Display on indoor unit

1: Display

4.3 Keys on the remote control



Fig. 8: Keys on the remote control

① **"ON/OFF" key**

Press this key to switch the air conditioning unit on and off.

② **"MODE" key**

Operating mode selection. This key is used to set the desired operating mode. The automatic, cooling, dehumidification, heating and recirculation modes are available.

③ **"FAN" key**

Fan speed Use this key to select the desired fan speed. The automatic, low, medium and high functions are available. Note: In the dehumidification operating mode, the fan speed cannot be set manually.

④ **"SLEEP" key**

Activates/deactivates the "SLEEP" function.

Pressing this key will automatically increase or decrease the target temperature by 1 °C within an hour in cooling and heating mode respectively. Press this key to maintain the most convenient temperature and save energy. This function is only available in "Cooling", "Heating" and "Auto" modes. If the unit is working in "SLEEP" mode, this activity is interrupted by pressing the "MODE", "FAN", "Speed" or "ON/OFF" keys.

⑤ **"FRESH" key**

Press this key to activate/deactivate the ion generator (air freshener).

⑥ **"TURBO" key**

Activation of the turbo function makes it possible to reach the setpoint in cooling or heating mode as fast as possible.

⑦ **"SELF CLEAN" key** (optional)

This activates the self-clean function on the unit.

⑧ **"UP ARROW" and "DOWN ARROW" keys**

Press this key to increase the setpoint in steps of 1 °C up to a maximum of 30°C.

Press this key to decrease the setpoint in steps of 1°C to a minimum of 17°C.

⑨ **„SILENCE/FP“ key**

Activates/deactivates the silent mode. Pressing the key for longer than 2 seconds activates the unit's frost protection function.

In silent unit mode, the compressor runs at a lower frequency, and the indoor unit fan rotates at a slower speed. This obtains particularly silent unit operation.

The frost protection function can only be activated in heating mode. The unit operates with a fixed setpoint of 8°C. The indoor unit displays "FP". Pressing the ON/OFF, SLEEP, FP, Mode, FAN or up or down arrow key, the frost protection function is deactivated. Press the this key to activate the unit start delay time.

⑩ **"TIMER ON" key**

This key initiates the automatic switch-on time for the unit. Each press of this key increases the delay time by 30 minutes. When the set time on the display exceeds 10.0, each press of the button increases the set time by 60 minutes. To deactivate the delay time, set the time to 0.0.

⑪ **"TIMER OFF" key**

This key can be used to program the delayed switch-off time. Each press of this key increases the switch-off time by 30 minutes. When the set time on the display exceeds 10.0, each press of the button increases the set time by 60 minutes. To deactivate the switch-off time, set the time to 0.0

⑫ **3-D swing mode**

Press this key to start or stop the swing mode. With the 2-point key, you can adjust the horizontal fin on the left side and the vertical fin on the right side. Press this key once to change the angle by 6 degrees. Pressing the key for 2 seconds stops the swing function. When the swing function is stopped, LC appears on the display for three seconds.

⑬ **"FOLLOW ME" key**

This key can be used to activate/deactivate the FOLLOW ME function. In this mode, the room temperature is measured on the remote control. This sends a signal to the indoor unit every 3 minutes. If the remote control does not send a signal to the indoor unit for 7 minutes, this mode is automatically deactivated.

⑭ **"LED" key**

This activates/deactivates the display on the indoor unit.

Indicators on the LCD

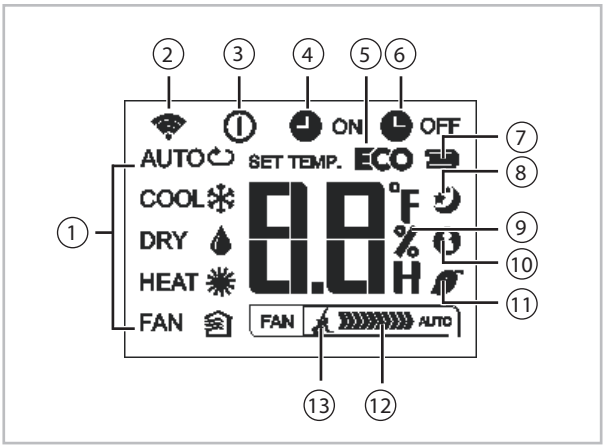


Fig. 9: Indicators on the LCD

1: Mode display - shows the current operating modes including Auto (), Cooling(), Dehumidifying (), Heating (), Fan () and back to Auto () mode.
2: Signal transmission symbol. This symbol appears when signals are being transmitted from the remote control to the indoor unit.
3: ON/OFF symbol. This symbol appears when the "ON/OFF" key is pressed. Pressing this key again causes the indicator to go out.
4: TIMER ON symbol. This symbol appears when TIMER ON is switched on.
5: ECO function (not available)
6: TIMER OFF symbol. This symbol appears when TIMER OFF is switched on.
7: Battery status (weak)
8: Sleep symbol. This symbol appears when the "Sleep" function is activated. Pressing this key again causes the indicator to go out.
9: Temperature/Timer symbol. Shows the temperature setting (-17°C~30°C). If "FAN" mode is selected, the temperature setting is not displayed. In Timer mode, the ON and OFF settings appear for the TIMER.
10: FOLLOW ME symbol. This symbol appears when the "Follow me" function is activated.
11: Ion generator display active (optional)
12: Fan speed symbol. This is where the selected fan speeds are displayed: AUTO (no indicator) and the three fan speed settings: (slow), (medium) and (fast). The fan speed is set to "Automatic" when either "Auto" or "Dehumidification" mode is activated.
13: Silent mode active (optional)

The illustration of the LCD with all of the symbols present is only intended to provide a clearer overview. During operation, only those symbols relevant to the respective functions appear on the display.

Key functions

A symbol is shown on the display to indicate that the settings are being transferred.

"Auto" mode

Make sure that the indoor unit is connected to the power supply, and is switched on.

The operating mode indicator on the display of the indoor unit begins to flash.

1. Press the **"MODE"**key to select "Auto" mode.
2. Press the **"UP/DOWN"**key to set the desired temperature. The temperature can be set between 17 and 30°C, in increments of 1°C.
3. Press the **"ON/OFF"**key to switch the air conditioning unit on.



Fig. 10: "Auto" mode

In "automatic" mode, the cooling unit automatically selects among cooling, recirculation and heating operation and tries to reach the set-point set on the remote control

"Cooling", "Heating" and "Recirculation" mode

Make sure that the indoor unit is connected to the power supply, and is switched on.

1. Press the **"MODE"**key to select from operating modes "Cooling", "Heating" or "Recirculation".
2. Press the **"UP/DOWN"**key to set the desired temperature. The temperature can be set between 17 and 30°C, in increments of 1°C.
3. Press the **"FAN"**key to select from the four fan speeds (Auto, slow, medium and fast).
4. Press the **"ON/OFF"**key to switch the air conditioning unit on.



Fig. 11: "Cooling", "Heating" and "Recirculation" mode

"Dehumidification" mode

Make sure that the indoor unit is connected to the power supply, and is switched on.

The operating mode indicator on the display of the indoor unit begins to flash.

1. Press the **"MODE"**key to select "Dehumidifying" mode.
2. The temperature setting on the remote control has no effect on unit operation.
3. Press the **"ON/OFF"**key to switch the air conditioning unit on.



Fig. 12: "Dehumidification" mode

In "Dehumidification" mode, it is not possible to set the fan speed. This is already controlled automatically.

"Timer" mode

Press the "TIMER ON" key to set the "Auto on" time and the "TIMER OFF" key to set the "Auto off" time for the unit.

Setting the "Auto on" time

1. Press the "TIMER ON" key. The remote control shows "TIMER ON", the last "Auto on" time setting and the symbol "H" appears on the display. The unit is now ready to reset the "Auto on" time and to start "TIMER ON" mode.
2. Press the "TIMER ON" key again to set the desired "Auto on" time. Each time the key is pressed, the time is increased by half an hour between 0 and 10 hours, and by an hour between 10 and 24 hours.
3. Once these settings have been made, there is a one second delay before the remote control transmits the signal to the indoor unit. Then, after approx. two seconds, the "H" symbol disappears from the LCD display, and the set temperature appears again on the display.



Fig. 13: "Timer" mode

Setting the "Auto off" time

1. Press the "TIMER OFF" key. The remote control shows "TIMER OFF", the last "Auto off" time setting and the symbol "H" appears on the display. The unit is now ready to reset the "Auto off" time and to stop "TIMER OFF" mode.
2. Press the "TIMER OFF" key again to set the desired "Auto off" time. Each time the key is pressed, the time is increased by half an hour between 0 and 10 hours, and by an hour between 10 and 24 hours.
3. Once these settings have been made, there is a one second delay before the remote control transmits the signal to the indoor unit. Then, after approx. two seconds, the "H" symbol disappears from the LCD display, and the set temperature appears again on the display.

- *When Timer mode is selected, the remote control automatically transfers the timer signal to the indoor unit for the specified period of time. Therefore, you should hold the remote control in a location where it can transfer the signal to the indoor unit without interference.*
- *The effective operation for the time settings by the remote control for the timer function is restricted to the following settings:*
  0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 9.5, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24.

Example TIMER function settings

"TIMER ON" (Auto on mode)

Example:

You want the air conditioning unit to switch on six hours from the time it was programmed.

1. Press the "TIMER ON" key. The last operating time setting for the timer, and the "H" symbols, appear on the display.
2. Press the "TIMER ON" key until the desired start time is shown in the "TIMER ON" area on the remote control.
3. Wait for 3 seconds and the temperature appears again in this area of the digital display. The "TIMER ON" indicator stays lit, and this function is activated.

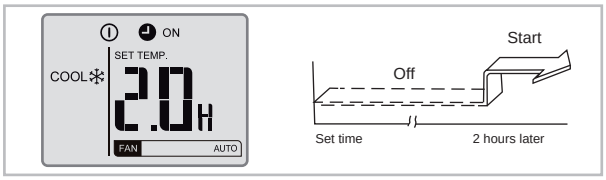


Fig. 14: "TIMER ON" example

"TIMER OFF" (Auto off mode)

Example:

You want the air conditioning unit to switch off 4 hours from the time it was programmed.

1. Press the "TIMER OFF" key. The last operating time setting for the timer, and the "H" symbols, appear on the display.
2. Press the "TIMER OFF" key until "10H" is shown in the "TIMER OFF" area on the remote control.
3. Wait for 3 seconds and the temperature appears again in this area of the digital display. The "TIMER OFF" indicator stays lit, and this function is activated.

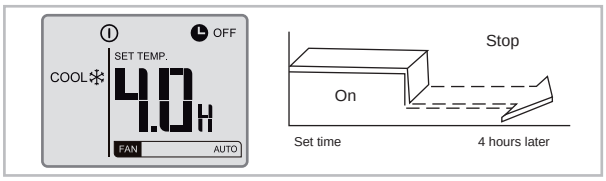


Fig. 15: "TIMER OFF" example

Combined TIMER (setting "TIMER ON" and "TIMER OFF" at the same time)

"TIMER OFF ⇨ "TIMER ON"

(On ⇨ Stop ⇨ Start)

Example:

You want the air conditioning unit to switch off in two hours from the time it was programmed, and switch back on ten hours later.

1. Press the "TIMER OFF" key.
2. Press the "TIMER OFF" key again until the desired stop time is shown in the "TIMER OFF" area on the remote control.
3. Press the "TIMER ON" key.
4. Press the "TIMER ON" key again until "10H" is shown in the "TIMER ON" area on the remote control.
5. Wait for 3 seconds and the temperature appears again in this area of the digital display. The "TIMER ON" and "TIMER OFF" indicators stay lit, and this function is activated.

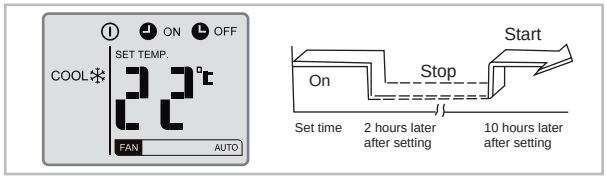


Fig. 16: "TIMER OFF" / "TIMER ON" example

"TIMER ON ⇨ "TIMER OFF"

(Off ⇨ Start ⇨ Stop)

Example:

You want the air conditioning unit to switch on in two hours from the time it was programmed, and switch back off five hours later.

1. Press the "TIMER ON" key.
2. Press the "TIMER ON" key again until "2.0H" is shown in the "TIMER ON" area on the remote control.
3. Press the "TIMER OFF" key.
4. Press the "TIMER OFF" key again until "5.0H" is shown in the "TIMER OFF" area on the remote control.
5. Wait for 3 seconds and the temperature appears again in this area of the digital display. The "TIMER ON" and "TIMER OFF" indicators stay lit, and this function is activated.

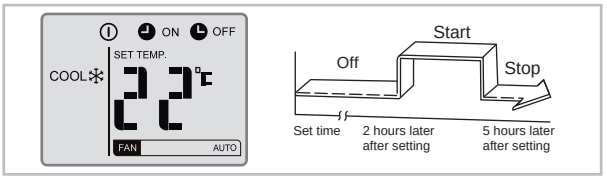


Fig. 17: "TIMER ON" / "TIMER OFF" example

SLEEP function

The sleep function saves energy while you sleep. This function is activated by pressing the key on the remote control. Press the key before going to sleep. In cooling mode, the unit automatically increases the set room temperature by 1 °C after 1 hour. After one more hour, the room temperature is increased by an additional 1 °C. In heating mode, the room temperature is decreased within the first two hours of operation by 2°C. After 7 hours of unit operation, the unit switches automatically off in cooling and heating mode.

This function is not available in the recirculation and dehumidification operating modes!



Fig. 18: "Sleep" function

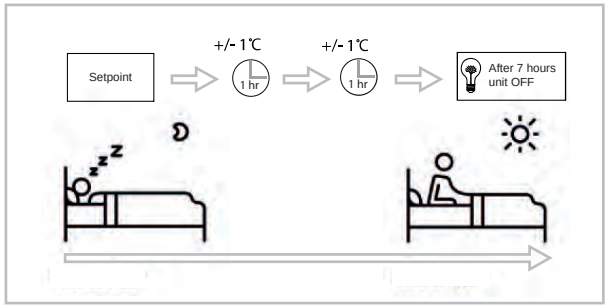


Fig. 19: Sleep function

5 Installation instructions for qualified personnel

5.1 Important notes prior to installation

- Transport the unit in its original packaging as close as possible to the installation location. You avoid transport damage by doing so.
- Check the contents of the packaging for completeness and check the unit for visible transport damage. Report any damage immediately to your contractual partner and the shipping company.
- Lift the unit on the corners and not on the refrigerant or condensate drainage connections.
- The refrigerant piping (liquid and suction pipe), valves and connections must be insulated to make them vapour diffusion proof. If necessary also insulate the condensate drainage line.
- Select an installation location which allows air to freely flow through the air inlet and outlet (see section "Minimum clearances").
- Do not install the unit in the immediate vicinity of devices which generate intensive thermal radiation. Installation in the vicinity of thermal radiation reduces the unit output.
- Only open the shut-off valves on the refrigerant piping after installation is complete.
- Seal off open refrigerant piping with suitable caps or adhesive strips to prevent the infiltration of moisture and never kink or compress the refrigerant piping.
- Avoid unnecessary bends. This minimises the pressure loss in the refrigerant piping and ensures that the compressor oil can flow back without obstruction.
- Perform all electrical wiring in accordance with applicable DIN and VDE standards.
- Ensure the electrical cables are properly connected to the terminals, otherwise there is a risk of fire.
- Only use the fasteners contained in the scope of delivery with the units.
- Use four supports and the associated hooks to attach the ceiling cassette (only applies to ceiling cassettes).
- Use the insulated condensate hose in the scope of delivery as a junction piece to the continuing condensate drain. Secure the condensate drain with the supplied clamps.

5.2 Wall openings

- A wall opening of at least 65 mm diameter and 10mm incline from the inside to the outside must be created.
- To prevent damage to the lines, the interior of the wall opening should be padded or, for example, lined with PVC pipe (see figure).
- After installation has been completed, use a suitable sealing compound to close off the wall opening, taking account of fire protection regulations (provided by the customer). Do not use cement or lime containing substances!

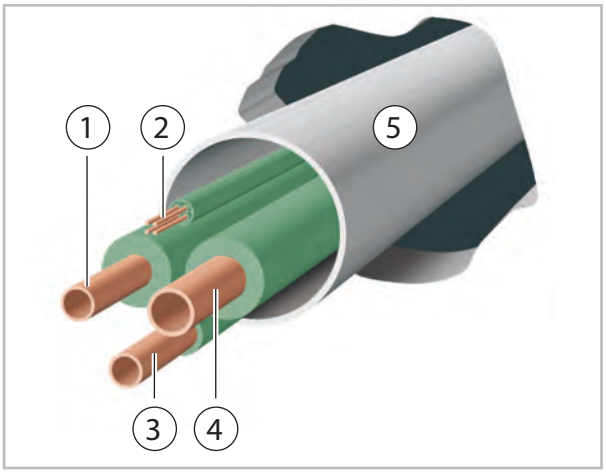


Fig. 20: Wall opening

1: Liquid line
2: Control line
3: Condensate drainage line
4: Suction pipe
5: PVC pipe

5.3 Installation materials

The indoor unit is attached to the wall by a wall bracket and 4 screws (to be provided by the customer).

The outdoor unit is attached by 4 screws and a wall bracket to the wall or fixed by a floor bracket to the ground.

5.4 Selection of installation location

Indoor unit

The indoor unit is designed for horizontal wall installation above doors. However, it can also be used in the upper wall area (min. 1.75m above the floor).

Outdoor unit

The outdoor unit is designed for horizontal installation on a base in outdoor areas. The installation site must be level, flat and firm. The unit should also be secured to prevent it from tipping over. The outdoor unit can be set up outside as well as inside a building. For external installation, please observe the following notes to protect the unit from the influence of the weather.

Rain

For floor or roof set-up, the unit should be installed with at least 10cm ground clearance. A floor bracket is available as an optional accessory.

Sun

The condenser on the outdoor unit emits heat. Exposure to sunlight further increases the temperature of the fins and reduces the heat released by the finned heat exchanger. The outdoor unit should be installed on to the north side of the building whenever possible. If necessary, take measures to provide sufficient shade (responsibility of customer). One possible solution is to build a small roofed area over the unit. These measures should not affect the flow of warm outlet air.

Wind

If the unit is being installed in windy areas, ensure that the warm outlet air is discharged in the prevailing wind direction. If this is not the possible, it may be necessary to install a windbreak (to be provided by the customer). Ensure that the windbreak does not adversely affect the air intake to the unit. An additional stabilization is recommended. This can, for example, be realized with ropes or other structures.

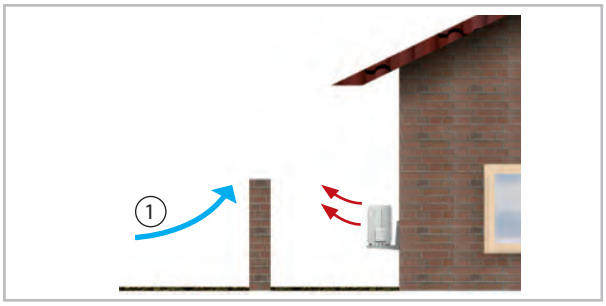


Fig. 21: Windbreak

1: Wind

Snow

The unit should be wall-mounted in areas of heavy snowfall. Installation should be at least 20cm above the expected level of snow to prevent snow from entering the outdoor unit. An optional wall bracket is available as an accessory.

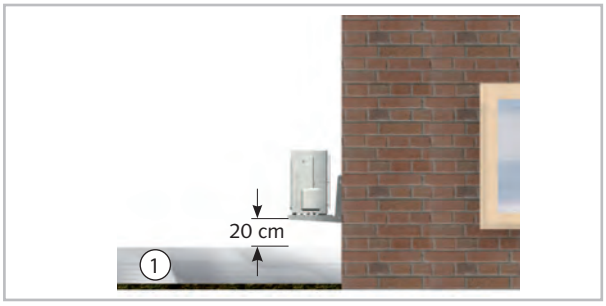


Fig. 22: Minimum clearance to snow

1: Snow

Installation inside buildings

- Ensure that heat can dissipate adequately when placing the outdoor unit in cellars, lofts, adjoining rooms or halls (Fig. 23).
- Install an additional fan with a rated flow comparative to that of the outdoor unit being installed in the room and which can compensate any additional pressure loss in ventilation ducts (Fig. 23).
- Comply with any regulations and conditions affecting the statics of the building. If necessary, fit acoustic installation.

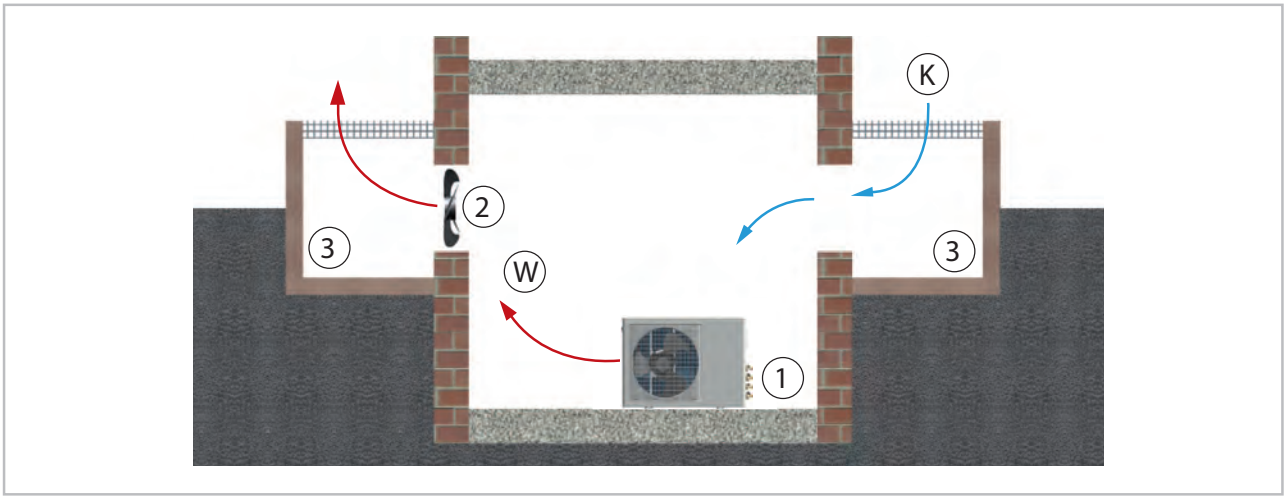


Fig. 23: Installation inside buildings

K: Cold fresh air
W: Warm air
1: Outdoor unit
2: Additional fan
3: Air shaft

5.5 Minimum clearances

Observe the minimum clearances to allow access for maintenance and repair work and facilitate optimum air distribution.

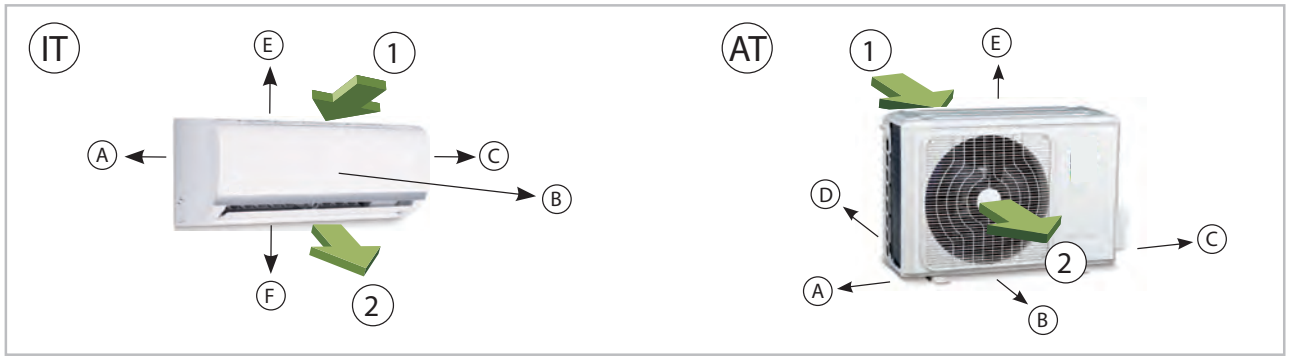


Fig. 24: Minimum clearances of the indoor unit and outdoor unit

AT: Outdoor unit
IT: Indoor unit
1: Air inlet
2: Air outlet

Dimensions (mm)	Indoor units	Outdoor units
	BL 263-353 DC IT	BL 263-353 DC AT
A	120	300
B	1500	2000
C	120	600
D	-	300
E	120	600
F	200	-

5.6 Connection variants for the indoor unit

The following connection variants can be used for the refrigerant, condensate and control lines.

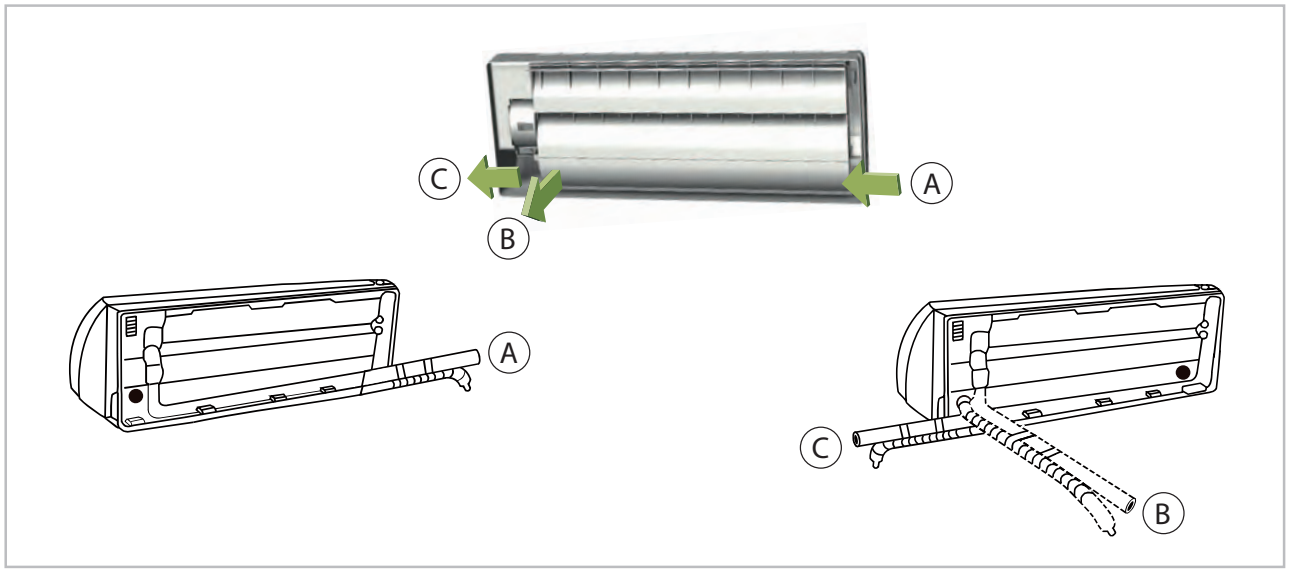


Fig. 25: Connection variant (view from the rear)

A: Infeed of the refrigerant piping at the wall, left
B: Outlet through the wall, right
C: Outlet on the wall, right

5.7 Wall bracket for the indoor unit

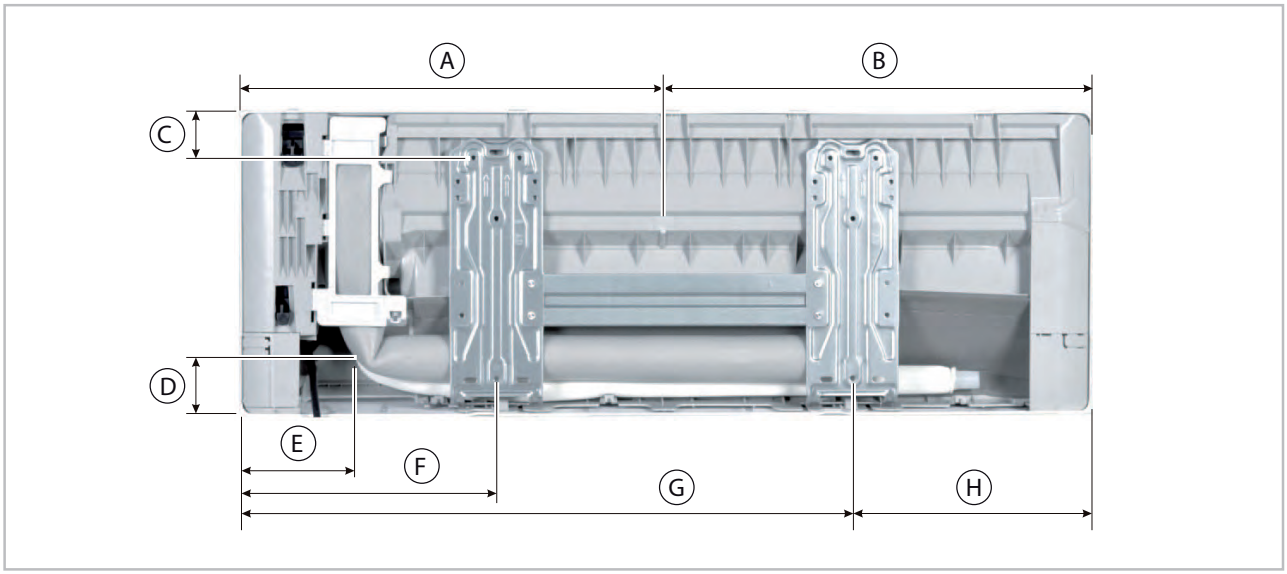


Fig. 26: Mounting points for the wall bracket BL 263-353 DC IT (rear view, all dimensions in mm)

Unit type / dimensions	A	B	C	D	E	F	G	H
BL 263 DC IT	350	365	45	47	115	213	548	167
BL 353 DC IT	395	410	44	47	115	245	580	225

(All dimensions in mm)

The diameter of the pipe break-through is 65 mm for all units types.

The wall bracket for the units must be attached with suitable screws and anchors.

6 Installation

6.1 Installation of the indoor unit

The indoor unit is attached by means of a wall bracket, taking into consideration the air outlet side located in the lower part.

1. Mark the mounting points on the structurally permissible building sections according to the dimensions of the wall bracket.
2. If necessary, remove the break out opening of the housing.
3. Connect the refrigerant piping, electrical cables and condensate drainage line to the indoor unit as described below.
4. Hang the indoor unit onto the wall bracket by tilting it back slightly and by pressing the bottom part of the unit against the bracket.
5. Check again that the unit is level. (Fig. 27)

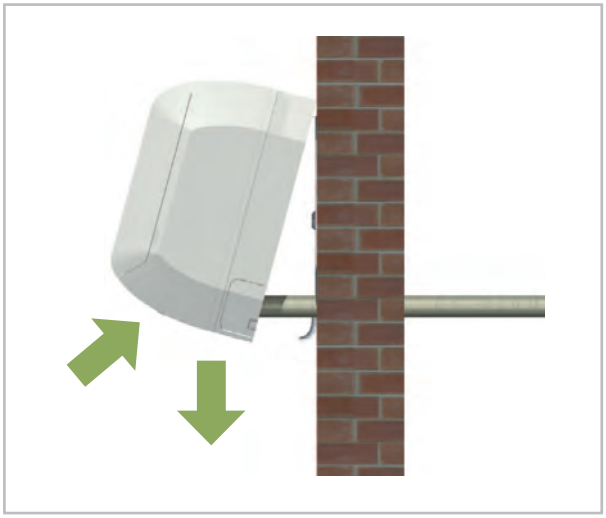


Fig. 27: Horizontal positioning

The wall bracket for the units must be attached with suitable screws and anchors.

6.2 Connecting the refrigerant piping

The refrigerant pipes should be connected by the customer on the right-hand side of the outdoor component.

1. Use the wall or floor brackets to fit the outdoor unit against structural parts approved to support the static load (refer to the installation instructions for the brackets).
2. Ensure that structure-borne sound is not transferred to parts of the building. Use vibration dampers to reduce the effects of structure-borne sound!

NOTICE!

Installation should only be performed by authorised specialists.

CAUTION!

Both units are pre-filled with refrigerant at the factory. Suitable protective clothing must be worn during installation.

NOTICE!

Use only tools which are approved for use in an HVAC environment.

6.3 Connection of quick-release couplings

The refrigerant pipes should be connected by the customer on the right-hand side of the outdoor component. The pre-filled refrigerant piping are connected to the outdoor unit by means of the quick-connector system. Once installed, the connections should be insulated to make them vapour diffusion proof. The following instructions describe the installation of the refrigerant piping for the indoor unit on the outdoor unit.

Please note that the following figures are only schematic representations. The actual appearance of the units may vary from those shown.

1. Remove the pre-installed plastic cover from the outdoor unit(Fig. 28).



Fig. 28: Remove the plastic cover

2. Remove the green/black protective caps from the quick-connectors on the outdoor component, as well as the flexible refrigerant pipes on the indoor unit (Fig. 29 and Fig. 30).



Fig. 29: Remove protective caps



Fig. 30: Remove protective caps

3. Before connecting the refrigerant pipes, ensure that the quick-release couplings are situated in front of one another (Fig. 31).



Fig. 31: Position of the quick-release couplings

4. First connect and hand-tighten the refrigerant piping to ensure it is correctly seated.

5. Then install the suction pipe with the largest diameter.



Fig. 32: Installation on the indoor unit

6. Then tighten the fittings with 2 appropriately-sized open-ended spanners. Use one spanner to counter the force when tightening the fitting (Fig. 33).

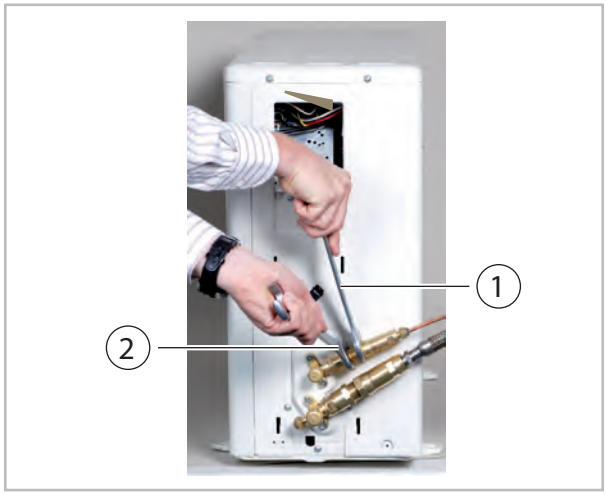


Fig. 33: Tightening the fitting

1: Tighten with the first open-ended spanner
2: Counter with the second open-ended spanner

7. Open the stop cocks with an Allen key before switch the system on!

Pipe dimension in inches	Tightening torque in Nm
1/4"	15-20
3/8"	33-40

⚠ CAUTION!

Only open the stop cocks following complete installation of the quick-release couplings and **before switching the system on!**

6.4 Leak testing

Once all the connections have been made, the pressure gauge station is attached to the Schrader valve as follows (if fitted):

red = small valve = high pressure

blue = large valve = suction pressure

Leak testing involves spraying a leak detection spray onto the connections. If bubbles are visible, the connections have not been made properly. Then tighten the screw connection.

NOTICE!

The escape of refrigerant contributes to climatic change. In the event of escape, refrigerant with a low greenhouse potential has a lesser impact on global warming than those with a high greenhouse potential. This device contains refrigerant with a greenhouse potential of 2088. That means the escape of 1 kg of this refrigerant has an effect on global warming that is 2088 times greater than 1 kg CO^2, based on 100 years. Do not conduct any work on the refrigerant circuit or dismantle the device - always enlist the help of qualified experts.

7 Condensate drainage connection and safe drainage

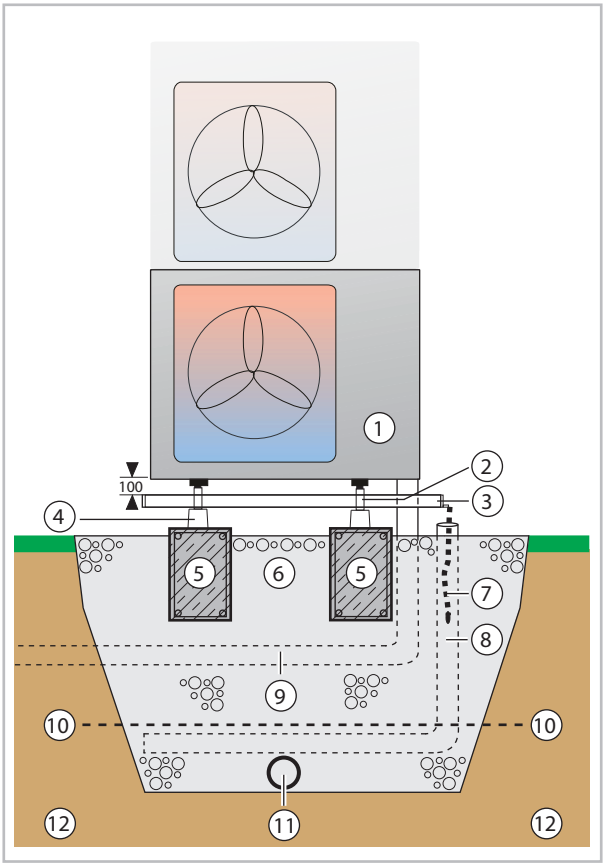


Fig. 34: Condensate drainage, seepage of condensate and strip foundation (cross-section)

1: Outdoor unit
2: Leg
3: Condensate collection tray
4: Floor bracket
5: Reinforced strip foundation HxWxD = 300x200x800mm
6: Gravel layer for seepage
7: Condensate drainage heating
8: Drainage channel
9: Conduit for refrigerant piping and electrical connecting line (temperature-resistant up to at least 60°C)
10: Frost line
11: Drainage pipe
12: Soil

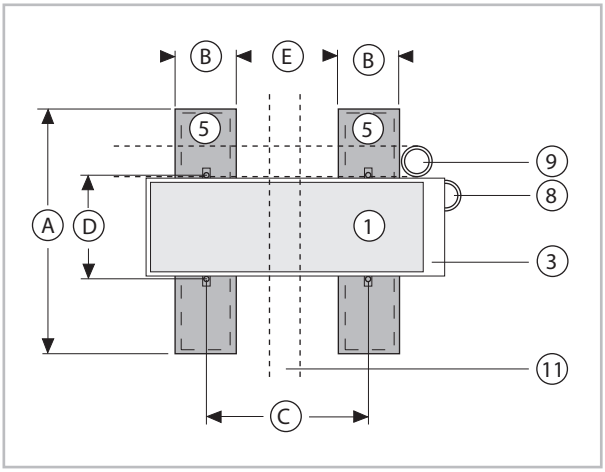


Fig. 35: Dimensions for the strip foundation (bird's eye view)

For the designations of 1,3,5,8,9 and 11, please refer to the legend for the Fig. 34

dimensioning of the strip foundation

Dimension	Value in mm
A	800
B	200
C	487
D	300
E	287

Condensate drainage connection

If the temperature falls below the dew point, condensation will form on the finned condenser during **heating mode.**

A condensate tray should be installed on the underside of the unit to drain any condensate.

- The condensate drainage line should have an incline of min. 2%. This is the responsibility of the customer. If necessary, fit vapour-diffusion-proof insulation.
- When operating the unit at outside temperatures below 4 °C, ensure the condensate drainage line is laid to protect it against frost. The lower part of the housing and condensate tray is also to be kept frost free in order to ensure permanent draining of the condensate. If necessary, fit a pipe heater.
- Following installation, check that the condensate run off is unobstructed and ensure that the line is durably leak tight.

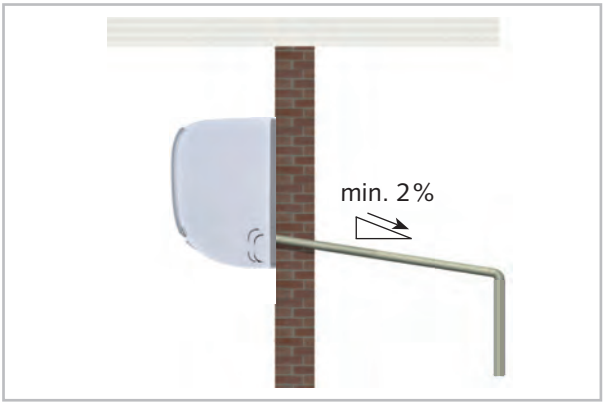


Fig. 36: Condensate drainage connection - Indoor unit

Safe drainage in the event of leakages

The REMKO oil separator OA 2.2 fulfils the following list of requirements from regional regulations and laws.

! NOTICE!

Local regulations or environmental laws, for example the German Water Resource Law (WHG), can require suitable precautions to protect against uncontrolled draining in case of leakage to provide for safe disposal of escaping refrigerator oil or hazardous media.

! NOTICE!

If condensate is removed via a duct in accordance with DIN EN 1717, ensure that any microbiological contamination present on the wastewater side (bacteria, fungi, viruses) cannot enter the unit connected to it.

8 Electrical wiring

8.1 General Information

A protected power supply cable is to be connected to the outdoor unit and a five-core control line to the indoor unit respectively.

DANGER!

All electrical installation work is to be performed by specialist companies. Disconnect the power supply when connecting the electrical terminals.

WARNING!

All electric lines are in accordance VDE regulations to dimension and to lay.

NOTICE!

The electrical connection for the units must be made at a separate feedpoint with a residual current device in accordance with local regulations and should be laid out by an electrician.

We recommend using shielded wires for the control lines.

Check all plugged and clamped terminals to verify that they are seated correctly and make permanent contact. Tighten as required.

8.2 Connecting the indoor unit

- We recommend that a mains/repair switch be installed near the outdoor unit.
- The terminal blocks for making the connections are located at the rear of the unit. When the unit is installed, measurements can be made from the front by removing the cover.
- If an optional condensate pump is used as an accessory in conjunction with the unit, it may be necessary to install an additional relay with a higher contact rating after the switch-off contact on the pump to switch off the compressor.

The units' scope of delivery includes a ten metre long, four-core control line for connecting the indoor unit to the outdoor unit. The control line to the outdoor unit contains a data cable which is used to establish communication between the indoor unit and the outdoor unit. This is used for controlling the cooling and heating performance and for forwarding malfunction messages to the indoor unit. If the length is insufficient, you can extend the control lines on the indoor unit.

Make the connection as follows:

1. Open the air inlet grill.
2. Remove the covers on the right-hand side (Fig. 37).
3. Disconnect the control line from the terminal block and remove the control line.
4. Connect the customer-laid control line to the terminals (Fig. 37).
5. Join the customer-laid control line to the supplied control line in a professional manner.
6. Insert the control line plug into the corresponding socket on the outdoor unit.
7. Re-assemble the unit.

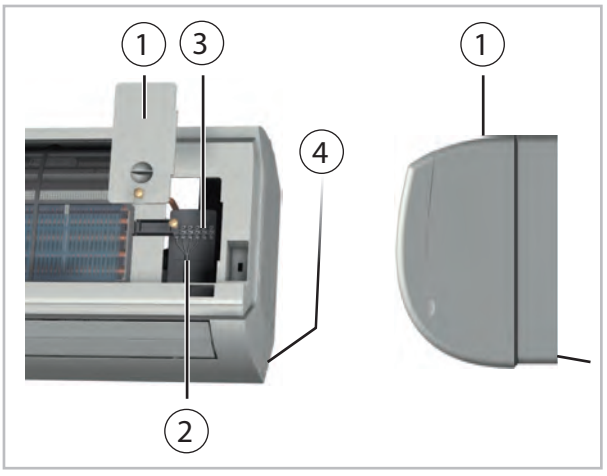


Fig. 37: Connecting the indoor unit

1: Cover
2: Strain relief
3: Terminal block for control line
4: Control line from outdoor unit

8.3 Outdoor unit connection

Proceed as follows to connect the line:

1. Remove the side-panel cover.
2. Choose the cable cross-section in accordance with the relevant specifications.
3. Connect the lines as shown on the electrical connection diagram.
4. Fix the line in the strain relief and re-assemble the unit.



Fig. 38: Outdoor unit connection

8.4 Electrical wiring diagram

Connection BL 263-353 DC

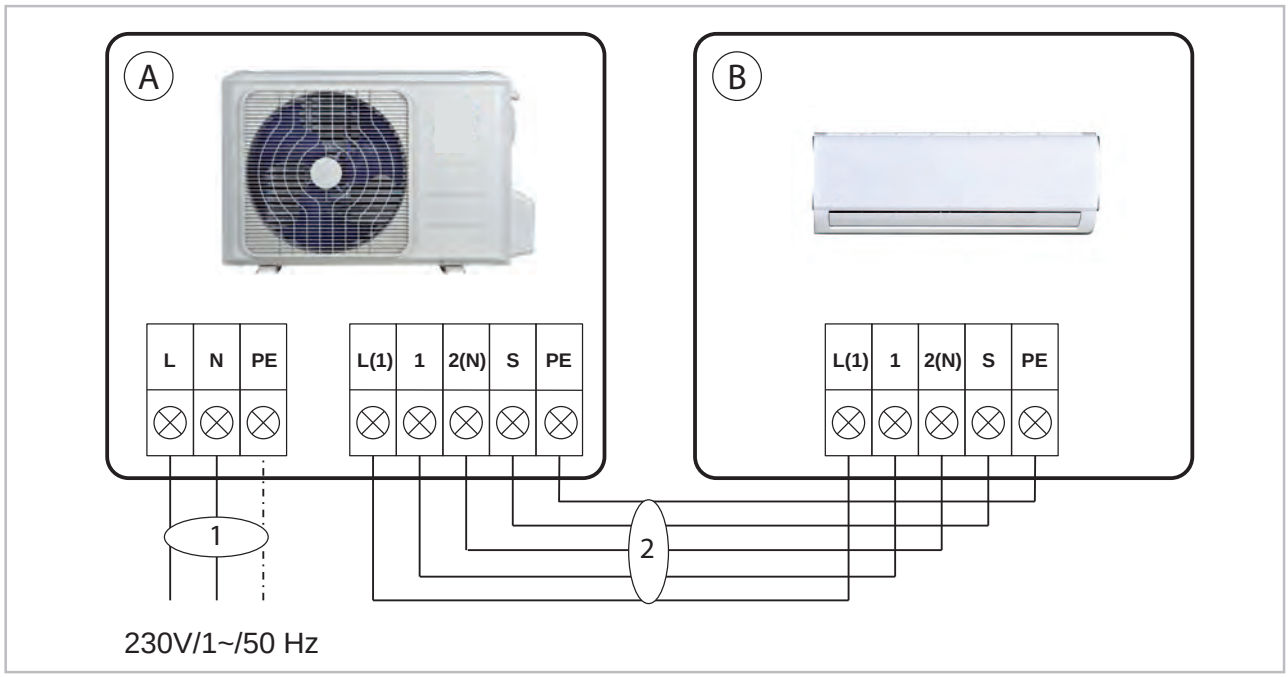


Fig. 39: Electrical wiring diagram

A: Outdoor unit BL 263-353 DC AT
B: Indoor unit BL 263-353 DC IT

1: Power supply
2: Communication line

Connection of optional condensate pump KP 6 / KP 8

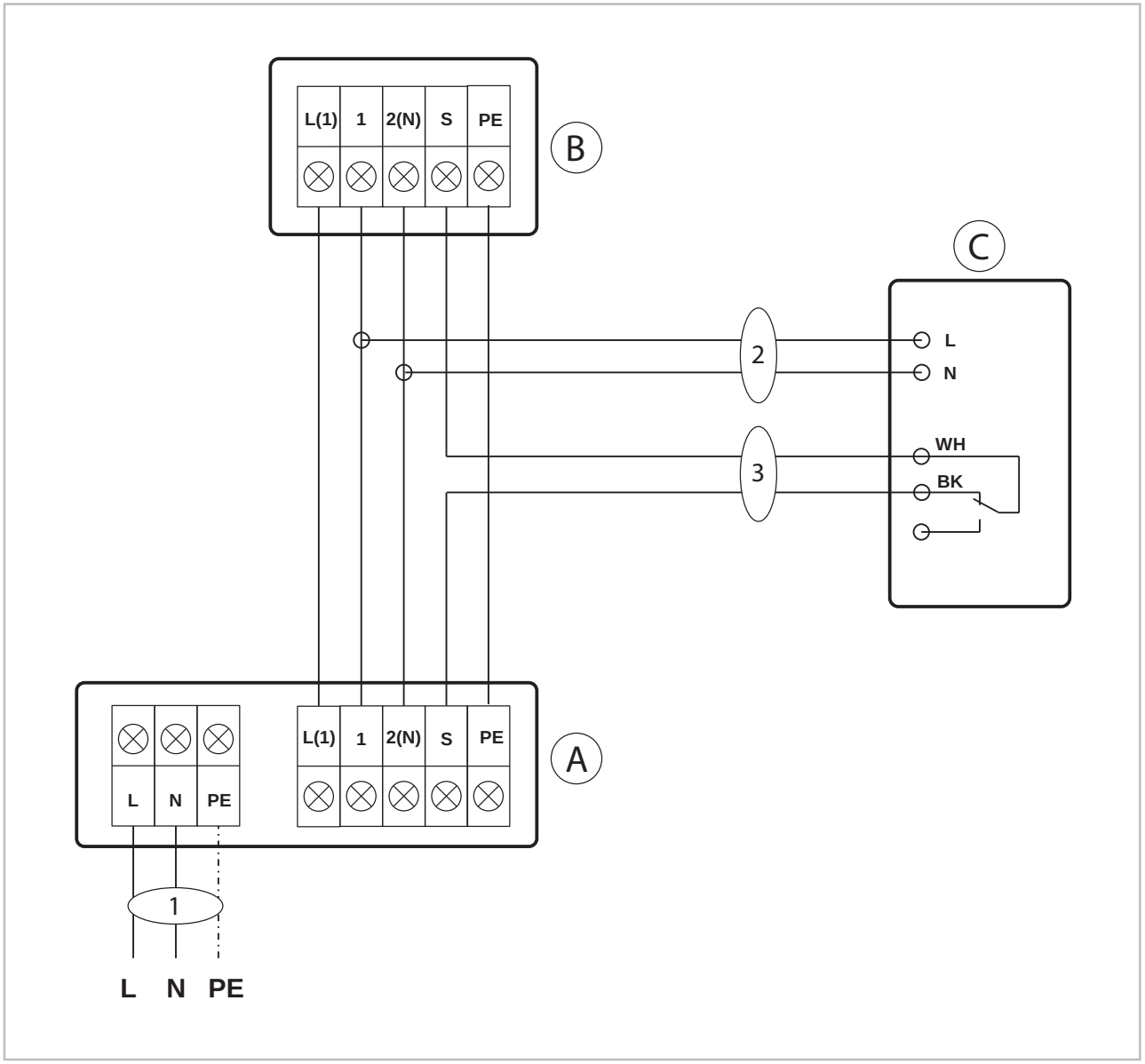


Fig. 40: Electrical wiring diagram

A: Outdoor unit
B: Indoor unit
C: Condensate pump KP 6 / KP 8
1: Power supply
2: Condensate pump supply
3: Condensate pump fault contact
BK: Black
WH: white

8.5 Electrical drawings

Indoor units BL 263-353 DC IT

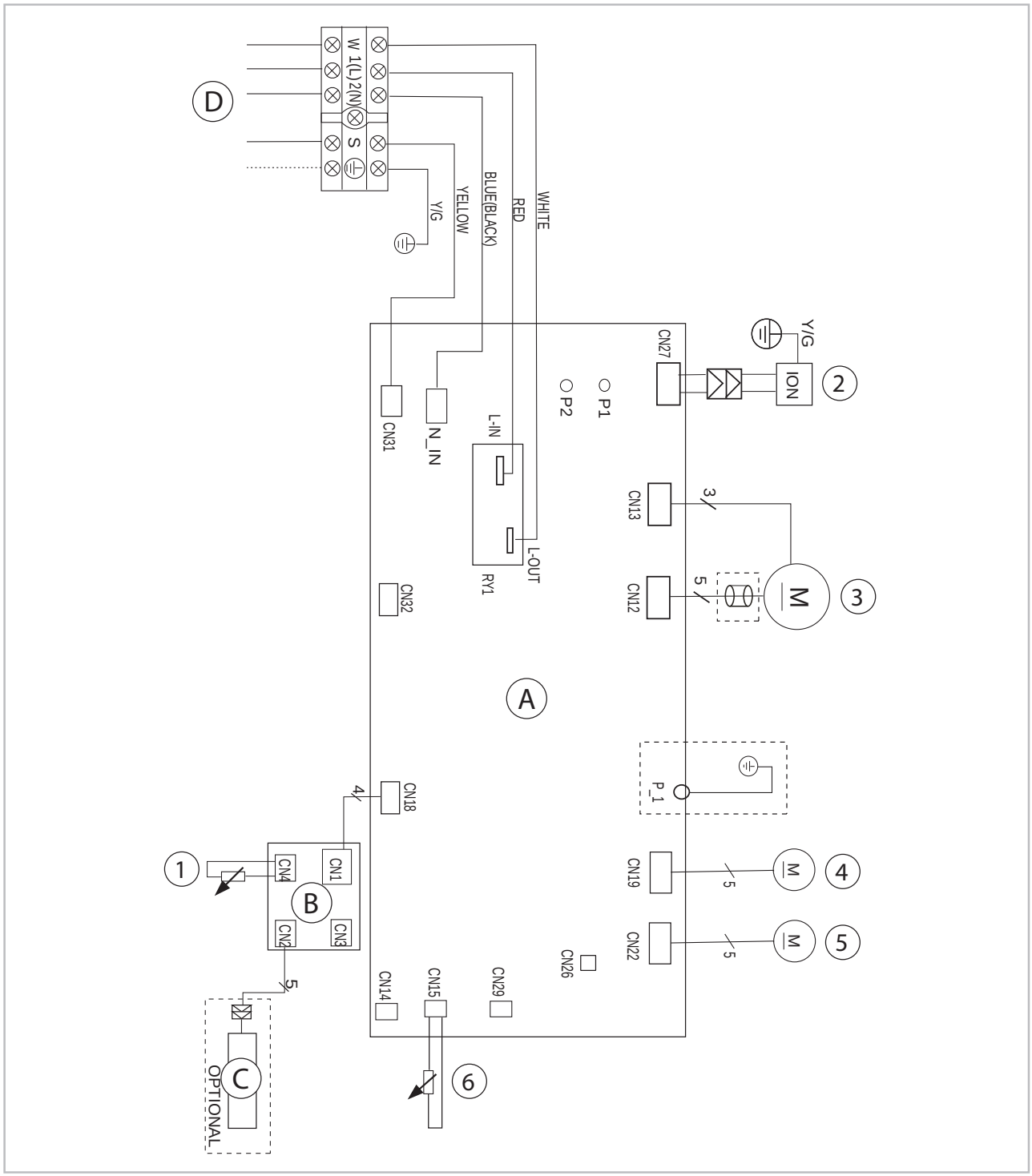


Fig. 41: Electrical drawings

A: Control board
B: Display board
C: Remote control (optional)
D: Outdoor unit connection
1: Temperature probe, recirculation T1
2: Ion generator
3: Evaporator fan motor
4: Swing motor, horizontal
5: Swing motor, vertical
6: Temperature probe, evaporator T2

Outdoor units BL 263-353 DC AT

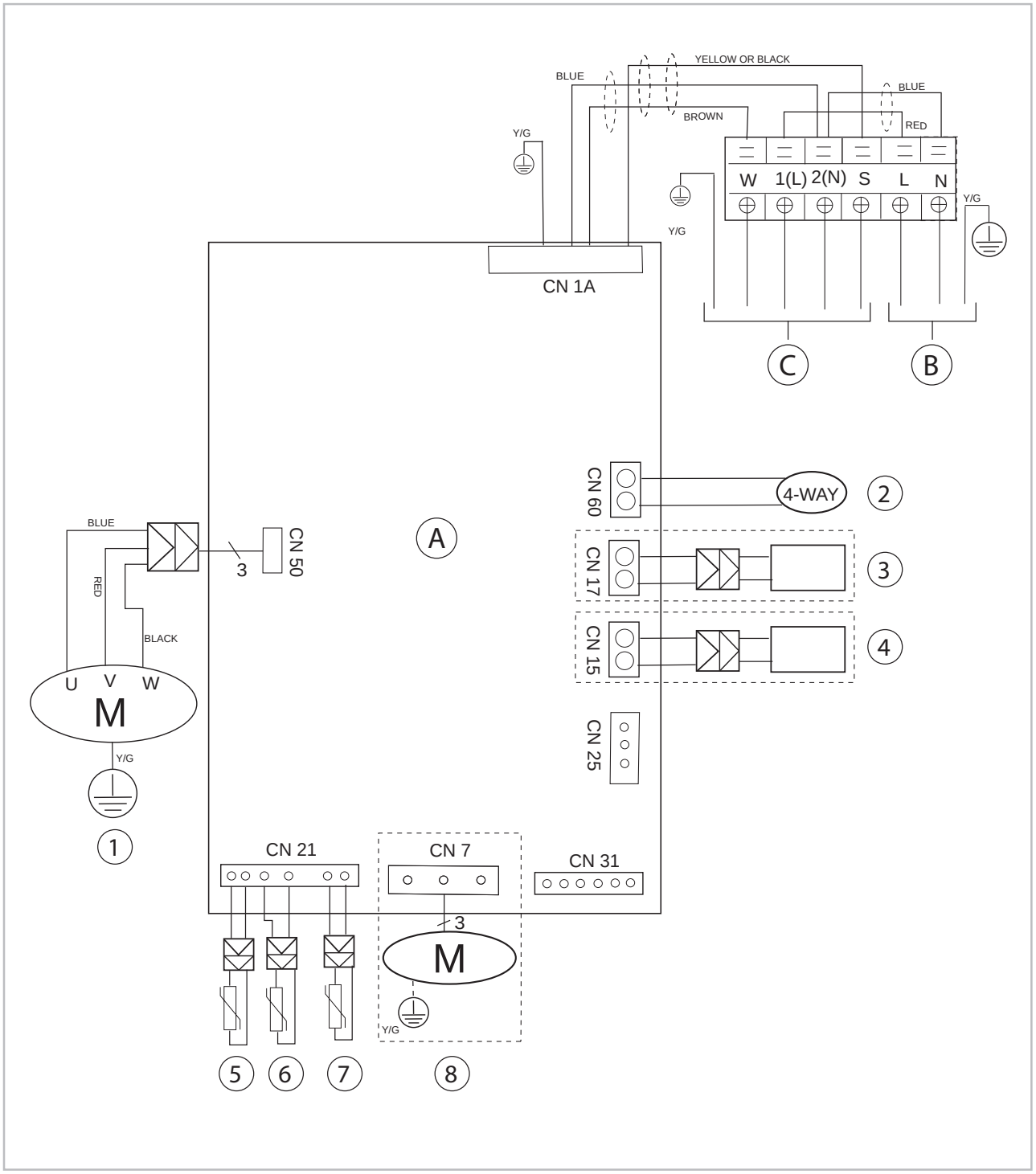


Fig. 42: Electrical drawings

A: Control board
B: Power supply
C: Indoor unit connection
1: Compressor
2: 4-way valve
3: Crankcase heating (optional)
4: Condensate tray heating (optional)
5: Temperature probe, heat gas line T5
6: Temperature probe, condenser outlet T3
7: Temperature probe, air inlet T4
8: Evaporator fan motor

9 Before commissioning

Perform the following checks prior to putting the unit into operation for the first time and after any work on the cooling cycle. Record the results in the commissioning report:

- Check all refrigerant piping and valves for leak-tightness using leak detection spray or soapy water.
- Check the refrigerant piping and insulation for damage.
- Check the electrical connection between the indoor unit and the outdoor unit for correct polarity.
- Check that all fastenings, mountings, etc. are firm and at the correct level.

10 Commissioning

! NOTICE!

Commissioning should only be performed by specially trained personnel and documented after the certificate has been issued. Observe the operating manuals for the indoor unit and outdoor unit when commissioning the entire system.

Once all the components have been connected and tested, the system can be put into operation. A functional check should be performed to verify its correct function and identify any unusual operating behaviour prior to handing it over to the operator.

! NOTICE!

Check that the shut-off valves and valve caps are tight after carrying out any work on the cooling cycle. Use appropriate sealant products as necessary.

Functional checks and test run

Check the following points:

- Leak-tightness of the refrigerant piping.
- Compressor and fan running smoothly.
- In cooling mode, cold air output by the indoor unit, and warm air output by the outdoor unit.
- Function test of the indoor unit and all program sequences.
- Check of the surface temperature of the suction pipe and that the vaporiser is not overheating. To measure the temperature, hold the thermometer to the suction pipe and subtract the boiling point temperature reading on the pressure gauge from the measured temperature.
- Record the measured temperatures in the commissioning report.

Function test of the cooling and heating modes

1. Remove the protective caps from the valves.
2. Start the commissioning procedure by briefly opening the shut-off valves on the outdoor unit until the pressure gauge indicates a pressure of approx. 2 bar.
3. Check all connections for leaks with leak detection spray and suitable leak detectors.
4. If no leaks are found, fully open the shut-off valves by turning them anti-clockwise using a spanner. If leaks are found, remedy the faulty connection. It is imperative that the vacuum creation and drying steps are repeated.
5. Activate the main circuit breaker or fuse (to be provided by the customer).
6. Use the remote control to switch on the unit and select the cooling mode, maximum fan speed and lowest target temperature.
7. Check the overheating, outside, inside, outlet and vaporisation temperatures and record the measured values in the commissioning report. Check the correct function and settings of all regulation, control and safety devices.
8. Check the unit control system using the functions described in the chapter "Operation". Timer, temperature setting, fan speeds and switching to ventilation or dehumidification mode.
9. Check the correct function of the condensate drainage line by pouring distilled water into the condensate tray. A bottle with a spout is recommended for pouring the water into the condensate tray.
10. Switch the indoor unit to heating mode.
11. During the test run, check the functionality of all of the previously described safety devices.
12. Record the measured values into the commissioning report and familiarise the operator with the system.
13. Remove the pressure gauge. Check that seals have been fitted in the sealing caps.
14. Re-install all disassembled parts.

11 Troubleshooting and customer service

11.1 Troubleshooting and customer service

The unit and components are manufactured using state-of-the-art production methods and tested several times to verify their correct function. However, if alarms should occur, please check the functions as detailed in the list below. For systems with an indoor unit and outdoor unit, refer to the chapter "Troubleshooting and customer service" in both operating manuals. Please inform your dealer if the unit is still not working correctly after all function checks have been performed!

Operational malfunctions

Malfunction	Possible causes	Checks	Remedial measures
The unit does not start or switches itself off	Power failure, under-voltage, defective mains fuse / main switch in OFF position	Does all other electrical equipment function correctly?	Check the voltage and if necessary, wait for it to come back on
	Damaged power supply	Does all other elec. equipment function correctly?	Repair by specialist firm
	Wait time after switching on is too short	Have approx. 5 minutes elapsed since the restart?	Schedule longer wait times
	Temperature outside operating range	Are the fans in the indoor unit and outdoor unit working correctly?	Observe temperature ranges of indoor unit and outdoor unit
	Electrical surges caused by thunderstorms	Have there been lightning strikes in the area recently?	Switch off the mains breaker and switch it back on. Have it inspected by a specialist
	Malfunction of the external condensate pump	Has the pump shut down due to a malfunction?	Check and if necessary clean the pump
The unit does not respond to the remote control	Transmission distance too far / receiver affected by interference	Does the indoor unit beep when pressing a key?	Reduce the distance to less than 6 m or change position
	Defective remote control	Is the unit running in manual mode?	Replace the remote control
	Receiver or transmitter unit exposed to excessive solar radiation	Does it function correctly in the shade?	Place the receiver and/or transmitter unit in the shade
	Electromagnetic fields are interfering with transmission	Does it function after removing potential sources of interference?	Signal is not transmitted when interference sources are operational
	Key in remote control jammed / two buttons pressed at same time	Does the “Transmitting” symbol appear on the display?	Release the key / only press one key
	Batteries in remote control are flat	Have new batteries been inserted? Is the display incomplete?	Insert new batteries
The unit works at reduced or no cooling capacity	Filter is dirty / air inlet / outlet opening is blocked by debris	Have the filters been cleaned?	Clean the filters

Malfunction	Possible causes	Checks	Remedial measures
	Windows and doors open. Heating / cooling load has increased	Have structural / usage modifications been made?	Close windows and doors / install additional units
	Cooling mode is not set	Does the cooling symbol appear on the display?	Correct the settings for the unit
	Fins on outdoor unit blocked by foreign objects	Does the fan of the outdoor unit work? Are the exchanger fins unobstructed?	Check the fan or winter fan speed control, reduce the air resistance
	Leaking cooling cycle	Are there signs of frost on the exchanger fins of the indoor unit?	Repair by specialist
Condensate discharge on unit	Drainage pipe on collection container clogged / damaged	Can the condensate drain off without any obstruction?	Clean the drainage pipe and collection container
	Faulty external condensate pump or float	Is the collection tray full of water and the pump not running?	Call out a specialist to replace the pump
	Condensate has not drained away and has collected in the condensate drainage line	Is there an incline on the condensate drainage line? Check there is no blockage in the pipe.	Route the condensate drainage line with an incline and clean.
	Condensate does not drain off	Are the condensate drainage lines unblocked and is there a steady incline? Are the condensate pump and liquid level switch functioning correctly?	Route the condensate drainage line with an incline and clean it. If the liquid level switch or the condensate pump is defective, have them replaced

NOTE

If the outdoor unit makes noises at low outside temperatures, even although it is switched off, this is not a malfunction. This is the winding of the compressor being run briefly in order to heat up the oil within it and also to guarantee the viscosity at low ambient temperatures. If you do not use the unit in the winter then you can switch off the breaker. Switch it back on again at least 12 hours before the next time that the unit will be required!

Fault display on the indoor unit

Display	Error description
E0	EEPROM error, indoor unit
E1	Communication error between indoor unit and outdoor unit
E3	Fan speed control indoor unit disabled
E4	Room temperature probe T1 defective
E5	Temperature probe, evaporator T2 defective
F0	Overflow protection
F1	Temperature probe air inlet outdoor unit T4 defective
F2	Temperature probe, evaporator outlet T3 defective
F3	Temperature probe, heat gas line T5 defective
F4	EEPROM error, outdoor unit
F5	Condenser fan speed control probe not working
P0	Compressor actuation error
P1	Over-voltage or under-voltage error
P2	Compressor overheating protection (heat gas temperature too high)
P4	Inverter control disabled
EC	No cooling capacity after 30 minutes

For fault elimination refer to troubleshooting on the following pages.

11.2 Indoor unit fault analysis

Error code:	E0 / F4
Reason:	The control board of the outdoor unit or indoor unit cannot read the unit memory (EEPROM)
Cause:	■ Installation error ■ Control boards of outdoor unit or indoor unit defective

Switch off voltage, switch on again 2 minutes later. Is the error still present?	
↓YES	
Replace the circuit boards of the outdoor unit and indoor unit in turn, in order to locate the defective EEPROM	

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Error code:	E1
Reason:	The indoor unit does not receive a signal from the outdoor unit within 110 seconds. The check is performed 4 times in a row, then error E1 is displayed.
Cause:	■ Electrical connection not configured correctly ■ Control boards outdoor unit or indoor unit defective

Switch off voltage, switch on again 2 minutes later. Is the error still present?

↓ YES

Measure the voltage between the “S” and “N” terminals of the outdoor unit. Does the valve fluctuate between -25 V and 25 V?

NO → Check electrical connections in the indoor unit. Are they OK?

↓ YES

Check electrical connections in the outdoor unit. Are they OK?

↓ YES

Is the transformer OK?

NO → Replace the transformer

↓ YES

Replace the control boards of the outdoor unit. Is the fault remedied?

↓ NO

Replace the control boards of the indoor unit

↓ YES

Replace the control boards of the indoor unit. Is the fault remedied?

↓ NO

Replace the control boards of the outdoor unit



Fig. 43: Transformer measurement

Check the transformer (must not be connected to a condenser) with a multimeter. The normal value is approx. 0 Ohm. If the value deviates, replace the transformer.

Error code:	E3 / F5
Reason:	If the fan speed of the indoor unit/outdoor unit falls below 300 rpm, the unit switches off and the display shows error code E3 or E5
Cause:	■ Electrical connection faulty ■ Evaporator fan wheel defective ■ Evaporator fan motor defective ■ Control board faulty

Switch off voltage, switch on again 2 minutes later. Is the error still present?	NO →	The unit operates normally.
↓YES		
De-energise the unit and attempt to turn the fan wheel by hand. Does it rotate freely?	NO →	Check the motor and the fan wheel bearing, and replace the defective parts.
↓YES		
Check the electrical connections. Are these correctly implemented?	NO →	Correctly establish the electrical connection
↓YES		
Measure the voltage at the corresponding connector plug on the control board (see section ↬ *'Procedure' on page 42*). Does the measured voltage lie within the tolerance range?	NO →	Replace the control board.
↓YES		
Replace the fan motor. Is the fault remedied?	NO →	

Procedure

DC fan motor of the indoor unit (control chip is installed in the motor):

Switch on the voltage to the unit. In standby mode, measure the unit between terminals 1-3 and 4-3 of the connector plug. Check the measured values against those listed in the table below. If these differ, there is a problem with the control board and it must be replaced.

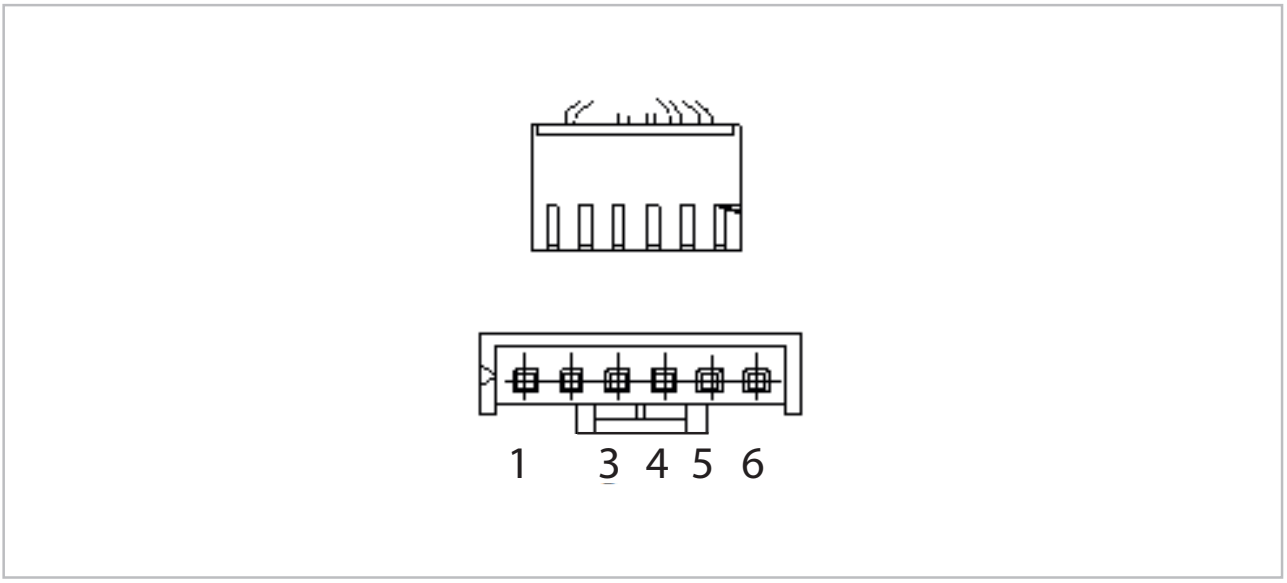


Fig. 44: Motor measurements

Terminal	Colour	Voltage
1	Red	280V~380V
2	---	---
3	Black	0V
4	White	14-17.5V
5	Yellow	0~5.6V
6	Blue	14-17.5V

DC fan motor of the outdoor unit (control chip is installed in the motor):

Measure the resistance between terminals 1-3 and 4-3. This should be roughly identical. If the resistance deviates significantly, assume that the motor is defective and must be replaced.

Error code:	EC
Reason:	The evaporator probe T2 measures the actual value with the compressor start and takes this as the reference value T_{Start}. If, 5 minutes after the compressor start, the value T_{Start} has not dropped by 2 °C for at least 4 seconds then the system assumes that the refrigerant is low. The measurement is performed a total of 3 times before the display shows the error code "EC".
Cause:	■ Refrigerant low or cooling circuit blocked ■ Evaporator probe T2 defective ■ Indoor unit control board defective

Switch off voltage, switch on again 2 minutes later. Is the error still present?		
↓YES		
Check whether the indoor unit blows out cold air.	YES →	Check the position and function of the evaporator probe T2. Is it correctly seated and with the correct resistance?
↓NO		↓YES
Check the cooling circuit for leaks. Leaks found?		Exchange the control boards of the indoor unit.
	YES →	Remedy leaks and put the unit back into operation.
↓NO		
Check the cooling circuit for any blockages. Are the shut-off valves on the outdoor unit open?		

Error code:	E4 / E5 / F1 / F2 / F3
Reason:	If the test voltage of the probes is lower than 0.06 V or higher than 4.94 V then the display shows the error code of the corresponding probe.
Cause:	■ Electrical connection faulty ■ Temperature probe defective ■ Control board defective

Check the connecting cable between the control board and the temperature probe. Is it OK and correctly connected?	NO →	Establish a proper connection.
↓YES		
Check the probe for correct resistance, depending on the temperature (see resistance table)	NO →	Replace the probe.
↓YES		
Replace the corresponding control board.		



Fig. 45: Check the probes

Error code:	F0
Reason:	Safety shutdown due to overly high current consumption of individual unit components
Cause:	■ Faulty power supply ■ Cooling circuit blocked ■ Faulty control board ■ Electrical connections faulty ■ Compressor defective

Check the supply voltage. Is this correct?	NO →	Switch the unit off and ensure correct supply voltage.
↓YES		
Check the cooling circuit for any blockages. Is the cooling circuit OK?	NO →	Remove the blockage (shut-off valve open?)
↓YES		
Check the winding resistances of the compressor. Are they OK?	NO →	Replace the compressor.
↓YES		
Check the electrical connections. Are these correctly implemented?	NO →	Replace or correct the electrical connections.
↓YES		
Does the transformer operate fault-free? (See *on page 40*)	NO →	Replace the transformer or control boards of the outdoor unit.
↓YES		
Replace the outdoor unit.		

Error code:	P0
Reason:	If the power supply to the compressor controller is faulty, the display shows the error code “P0” and the unit switches off
Cause:	■ Electrical connection faulty ■ Faulty control board ■ Condenser fan motor defective or blocked ■ Compressor defective

Check the connecting cables between the control board and compressor? Are they faulty?	YES →	Establish a correct connection between the control board and compressor.
↓NO		
Check the inverter controller (see section ↬ *‘Check the inverter controller’ on page 46*). Fault eliminated?	NO →	Replace the control board.
↓YES		
Check the condenser fan motor. Is it working correctly?	NO →	See troubleshooting fault F5
↓YES		
Check the winding resistances of the compressor. Are they OK?	NO →	Replace the compressor.
↓YES		
Exchange the control boards of the outdoor unit.		

Check the inverter controller

Switch off the power supply to the unit. Wait until the capacitors are fully discharged and disconnect the compressor from the control board.

Check the resistances at the outputs of the control board with the aid of a digital voltmeter as follows:

Voltmeter		Normal resistance
(+) Red	(-) Black	
U	N	∞ (multiple MΩ)
V		
W		
(+) Red		

Error code:	P1
Reason:	Overvoltage or undervoltage protection has tripped
Cause:	■ Faulty supply voltage ■ Refrigerant low or cooling circuit blocked ■ Faulty control board

Check the power supply. Is the supply voltage correct?	NO →	Switch the unit off and have the power supply checked/corrected.
↓YES		
Check the electrical connections. Are they OK?	NO →	Replace the electrical connections.
↓YES		
Switch the power on and put the unit into standby mode. Measure the voltage on the board, at contacts "P" and "N". This should be approx. 310V, 340V or 380V DC. Now start the unit. The voltage between "P" and "N" should now be between 220-400V. Is the correct voltage applied?	NO →	Replace the control board.
↓YES		
Check the transformer. Is a defect present?	NO →	Replace the control board.
↓YES		
Replace the transformer.		

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Error code:	P2 (with units with a thermal contact)
Reason:	If the test voltage of the thermal contact does not lie at 5V then the display shows the error message “P2”
Cause:	■ Faulty supply voltage ■ Refrigerant low or cooling circuit blocked ■ Faulty control board

Check the air flow volumes of the indoor unit and outdoor unit. Are they blocked or dirty?	YES →	Clean the filter or heat exchanger and ensure a sufficient air flow volume.		
↓NO				
Switch off the power supply to the unit and switch it on again after 10 mins. Does the unit start up?				
↓YES				
Check the temperature of the compressor. Has it heated up?	NO →	Check the thermal contact. Is it correctly connected?		
		↓YES		↓NO
		Measure the resistance of the thermal contact. Is it 0?		Connect it correctly.
↓YES		↓YES	NO →	Replace the thermal contact.
Check the cooling circuit. Is it OK?	YES →	Replace the control board of the outdoor unit.		

Error code:	P4
Reason:	Safety shutdown of inverter controller. Internal system monitoring triggered (e.g. communication problem between board and compressor, the compressor speed is not OK)
Cause:	■ Faulty electrical connections ■ Inverter regulation on board defective ■ Condenser fan motor defective ■ Compressor defective ■ Control board defective

Check the electrical connection between the control board and compressor. Are these correctly implemented?	YES →	Establish a proper connection.
↓ NO		
Check the inverter controller. Is this functional?	NO →	Replace the control board.
↓ YES		
Check the condenser fan motor. Is it OK?	NO →	Follow the instructions for troubleshooting fault F5
↓ YES		
Check the winding resistances of the compressor. Are they OK?	NO →	Replace the compressor
↓ YES		
Replace the control boards of the outdoor unit.		

Check individual components

Check the temperature probes

Disconnect the temperature probe from the control board and measure the resistance on the plug's contacts.

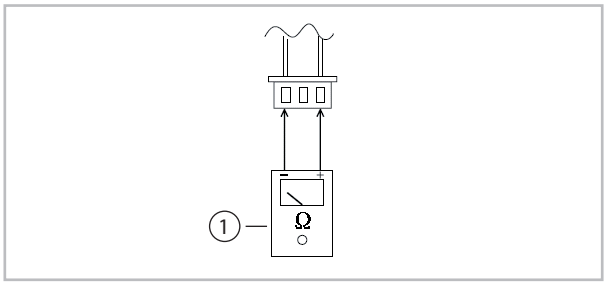


Fig. 46: Check temperature probes

1: Multimeter

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Resistance values for probes T1, T2, T3 and T4

°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm
-20	-4	115.266	20	68	12.6431	60	140	2.35774	100	212	0.62973
-19	-2	108.146	21	70	12.0561	61	142	2.27249	101	214	0.61148
-18	0	101.517	22	72	11.5	62	144	2.19073	102	216	0.59386
-17	1	96.3423	23	73	10.9731	63	145	2.11241	103	217	0.57683
-16	3	89.5865	24	75	10.4736	64	147	2.03732	104	219	0.56038
-15	5	84.219	25	77	10	65	149	1.96532	105	221	0.54448
-14	7	79.311	26	79	9.55074	66	151	1.89627	106	223	0.52912
-13	9	74.536	27	81	9.12445	67	153	1.83003	107	225	0.51426
-12	10	70.1698	28	82	8.71983	68	154	1.76647	108	226	0.49989
-11	12	66.0898	29	84	8.33566	69	156	1.70547	109	228	0.486
-10	14	62.2756	30	86	7.97078	70	158	1.64691	110	230	0.47256
-9	16	58.7079	31	88	7.62411	71	160	1.59068	111	232	0.45957
-8	18	56.3694	32	90	7.29464	72	162	1.53668	112	234	0.44699
-7	19	52.2438	33	91	6.98142	73	163	1.48481	113	235	0.43482
-6	21	49.3161	34	93	6.68355	74	165	1.43498	114	237	0.42304
-5	23	46.5725	35	95	6.40021	75	167	1.38703	115	239	0.41164
-4	25	44	36	97	6.13059	76	169	1.34105	116	241	0.4006
-3	27	41.5878	37	99	5.87359	77	171	1.29078	117	243	0.38991
-2	28	39.8239	38	100	5.62961	78	172	1.25423	118	244	0.37956
-1	30	37.1988	39	102	5.39689	79	174	1.2133	119	246	0.36954
0	32	35.2024	40	104	5.17519	80	176	1.17393	120	248	0.35982
1	34	33.3269	41	106	4.96392	81	178	1.13604	121	250	0.35042
2	36	31.5635	42	108	4.76253	82	180	1.09958	122	252	0.3413
3	37	29.9058	43	109	4.5705	83	181	1.06448	123	253	0.33246
4	39	28.3459	44	111	4.38736	84	183	1.03069	124	255	0.3239
5	41	26.8778	45	113	4.21263	85	185	0.99815	125	257	0.31559
6	43	25.4954	46	115	4.04589	86	187	0.96681	126	259	0.30754
7	45	24.1932	47	117	3.88673	87	189	0.93662	127	261	0.29974
8	46	22.5662	48	118	3.73476	88	190	0.90753	128	262	0.29216
9	48	21.8094	49	120	3.58962	89	192	0.8795	129	264	0.28482
10	50	20.7184	50	122	3.45097	90	194	0.85248	130	266	0.2777
11	52	19.6891	51	124	3.31847	91	196	0.82643	131	268	0.27078
12	54	18.7177	52	126	3.19183	92	198	0.80132	132	270	0.26408
13	55	17.8005	53	127	3.07075	93	199	0.77709	133	271	0.25757
14	57	16.9341	54	129	2.95896	94	201	0.75373	134	273	0.25125
15	59	16.1156	55	131	2.84421	95	203	0.73119	135	275	0.24512
16	61	15.3418	56	133	2.73823	96	205	0.70944	136	277	0.23916
17	63	14.6181	57	135	2.63682	97	207	0.68844	137	279	0.23338
18	64	13.918	58	136	2.53973	98	208	0.66818	138	280	0.22776
19	66	13.2631	59	138	2.44677	99	210	0.64862	139	282	0.22231

Resistance values for probe T5

°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm
-20	-4	542.7	20	68	68.66	60	140	13.59	100	212	3.702
-19	-2	511.9	21	70	65.62	61	142	13.11	101	214	3.595
-18	0	483	22	72	62.73	62	144	12.65	102	216	3.492
-17	1	455.9	23	73	59.98	63	145	12.21	103	217	3.392
-16	3	430.5	24	75	57.37	64	147	11.79	104	219	3.296
-15	5	406.7	25	77	54.89	65	149	11.38	105	221	3.203
-14	7	384.3	26	79	52.53	66	151	10.99	106	223	3.113
-13	9	363.3	27	81	50.28	67	153	10.61	107	225	3.025
-12	10	343.6	28	82	48.14	68	154	10.25	108	226	2.941
-11	12	325.1	29	84	46.11	69	156	9.902	109	228	2.86
-10	14	307.7	30	86	44.17	70	158	9.569	110	230	2.781
-9	16	291.3	31	88	42.33	71	160	9.248	111	232	2.704
-8	18	275.9	32	90	40.57	72	162	8.94	112	234	2.63
-7	19	261.4	33	91	38.89	73	163	8.643	113	235	2.559
-6	21	247.8	34	93	37.3	74	165	8.358	114	237	2.489
-5	23	234.9	35	95	35.78	75	167	8.084	115	239	2.422
-4	25	222.8	36	97	34.32	76	169	7.82	116	241	2.357
-3	27	211.4	37	99	32.94	77	171	7.566	117	243	2.294
-2	28	200.7	38	100	31.62	78	172	7.321	118	244	2.233
-1	30	190.5	39	102	30.36	79	174	7.086	119	246	2.174
0	32	180.9	40	104	29.15	80	176	6.859	120	248	2.117
1	34	171.9	41	106	28	81	178	6.641	121	250	2.061
2	36	163.3	42	108	26.9	82	180	6.43	122	252	2.007
3	37	155.2	43	109	25.86	83	181	6.228	123	253	1.955
4	39	147.6	44	111	24.85	84	183	6.033	124	255	1.905
5	41	140.4	45	113	23.89	85	185	5.844	125	257	1.856
6	43	133.5	46	115	22.89	86	187	5.663	126	259	1.808
7	45	127.1	47	117	22.1	87	189	5.488	127	261	1.762
8	46	121	48	118	21.26	88	190	5.32	128	262	1.717
9	48	115.2	49	120	20.46	89	192	5.157	129	264	1.674
10	50	109.8	50	122	19.69	90	194	5	130	266	1.632
11	52	104.6	51	124	18.96	91	196	4.849			
12	54	99.69	52	126	18.26	92	198	4.703			
13	55	95.05	53	127	17.58	93	199	4.562			
14	57	90.66	54	129	16.94	94	201	4.426			
15	59	86.49	55	131	16.32	95	203	4.294			
16	61	82.54	56	133	15.73	96	205	4.167			
17	63	78.79	57	135	15.16	97	207	4.045			
18	64	75.24	58	136	14.62	98	208	3.927			
19	66	71.86	59	138	14.09	99	210	3.812			

12 Care and maintenance

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

DANGER!

Prior to performing any work, ensure the equipment is disconnected from the voltage supply and secured to prevent accidental switch-on!

Care

- Ensure the unit is protected against dirt, mould and other deposits.
- Only clean the unit using a damp cloth. Do not use any caustic, abrasive or solvent-based cleaning products. Do not use a jet of water.
- Clean the fins on the unit prior to long shut-down periods.

Maintenance

- It is recommended that you take out a maintenance contract with an annual service from an appropriate specialist firm.

This enables you to ensure the operational reliability of the plant at all times!

NOTICE!

Statutory regulations require an annual leak test for the cooling cycle dependant on the refrigerant quantity. Inspection and documentation of the work performed is to be carried out by specialist technicians.

Type of task Checks/maintenance/inspection	Commissioning	Monthly	Every 6 months	Yearly
General	●			●
Check voltage and current	●			●
Check function of compressor/fans	●			●
Dirt on condenser/evaporator	●	●		
Check refrigerant fill quantity	●		●	
Check condensate drainage	●		●	
Check insulation	●			●
Check moving parts	●			●
Sealing test for cooling cycle	●			●[1)]

[1)] See note

Cleaning the housing

1. Disconnect the power supply to the unit.
2. Open and fold the air inlet grill on the front side upwards.
3. Clean the grill and cover with a soft, damp cloth.
4. Switch the power supply back on.

Air filter for indoor unit

Clean the air filter at intervals of no more than 2 weeks. Reduce this interval if the air is especially dirty.

Cleaning the filter

1. Disconnect the power supply to the unit.
2. Open the front side of the unit by folding the grill upwards and allowing it to engage (Fig. 47).
3. Raise the filter and pull it out in a downwards direction (Fig. 47).
4. Clean the filter with a commercially available vacuum cleaner (Fig. 48). To do so, turn the dirty side so it is facing upwards.
5. Dirt can also be removed by carefully cleaning with lukewarm water and mild cleaning agents (Fig. 49). The dirty side should be face down.
6. If water is used, let the filter dry out properly in the air before fitting it back into the unit.
7. Carefully insert the filter. Ensure that it locates correctly.
8. Close the front side as described above in reverse order.
9. Switch the power supply back on.
10. Switch the unit back on.

Cleaning the condensate pump (accessories)

The indoor unit may contain an optional integrated or separate condensate pump, which pumps out any accumulated condensate into higher positioned drains.

Observe the care and maintenance instructions in the separate operating manual.

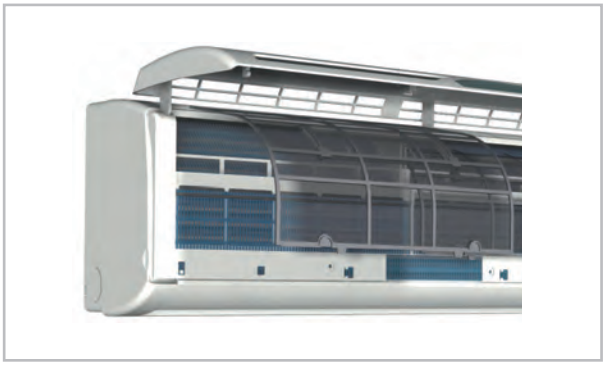


Fig. 47: Folding the grill upwards



Fig. 48: Cleaning with a vacuum cleaner



Fig. 49: Cleaning with lukewarm water

13 Shutdown

Temporary shutdown

1. Let the indoor unit run for 2 to 3 hours in recirculation mode, or in cooling mode at maximum temperature, to extract any residual humidity from the unit.
2. Shut down the system using the remote control.
3. Switch off the electrical power supply to the unit.
4. Cover the unit as far as possible with plastic foil in order to protect it from the influences of weather.

Permanent shutdown

Ensure that units and components are disposed of in accordance with local regulations, e.g. through authorised disposal and recycling specialists or at collection points.

REMKO GmbH & Co. KG or your contractual partner will be pleased to provide a list of certified firms in your area.

14 Exploded view and spare parts lists

14.1 Exploded view - Indoor unit

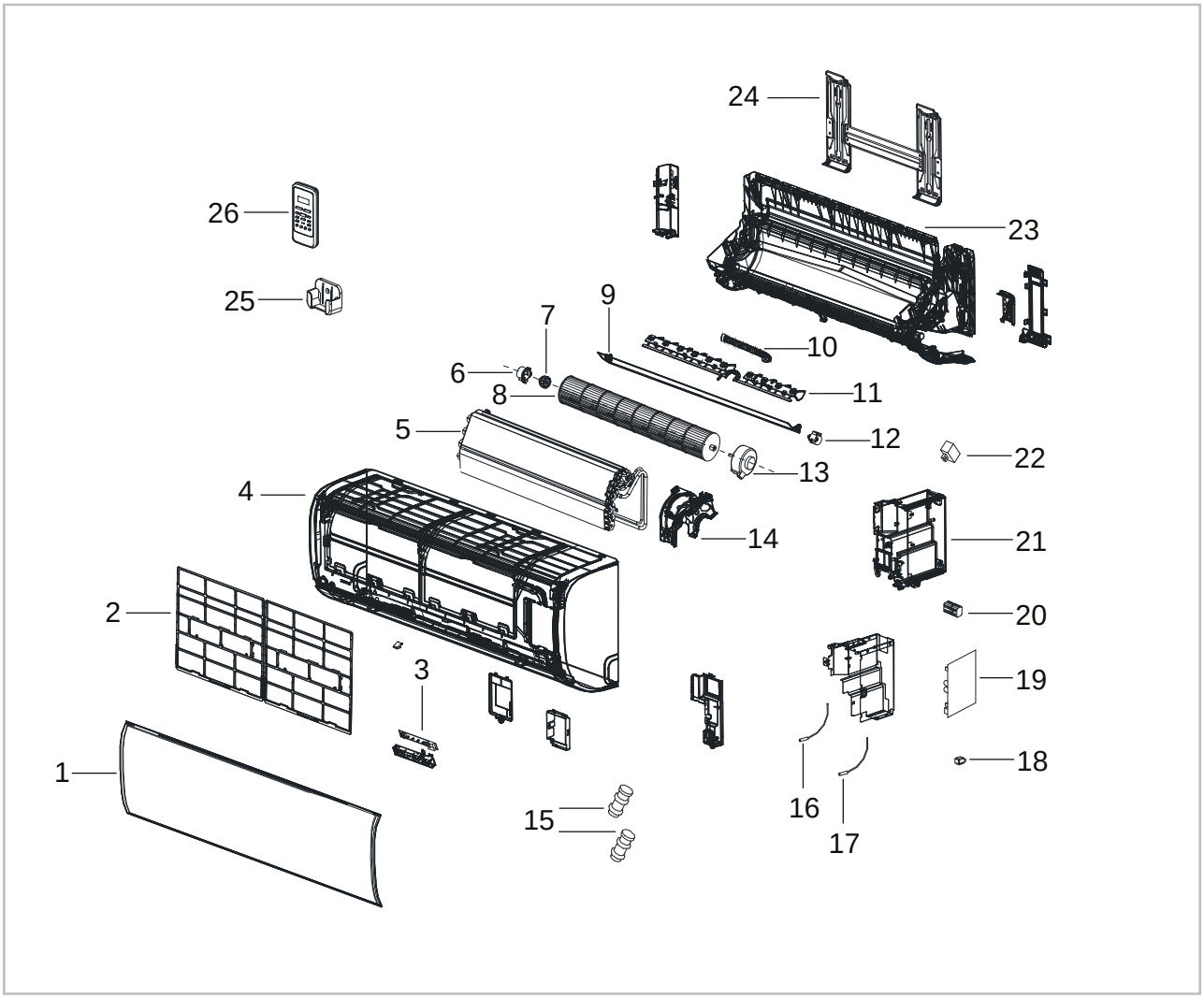


Fig. 50: Exploded view of the unit BL 263-353 DC IT

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

14.2 Spare parts list - Indoor unit

IMPORTANT!

To ensure the correct delivery of spare parts, please always the device type with the corresponding serial number (see type plate)

No.	Designation
1	Unit trim
2	Air filter, set
3	Display board
4	Housing front
5	Evaporator
6	Fan wheel mounting
7	Fan wheel bearing
8	Fan wheel
9	Air deflection blade, horizontal
10	Condensate hose
11	Air deflection blade, vertical
12	Swing motor
13	Fan motor
14	Fan motor cover
15	Quick-release coupling
16	Probe, ambient air T1
17	Probe, evaporator T2
18	Transformer (optional)
19	Control board
20	Terminal block
21	Electronics module, complete
22	Ion generator
23	Housing incl. condensate tray
24	Wall bracket
25	Holder, infrared remote control
26	Infrared remote control

14.3 Exploded view, outdoor unit

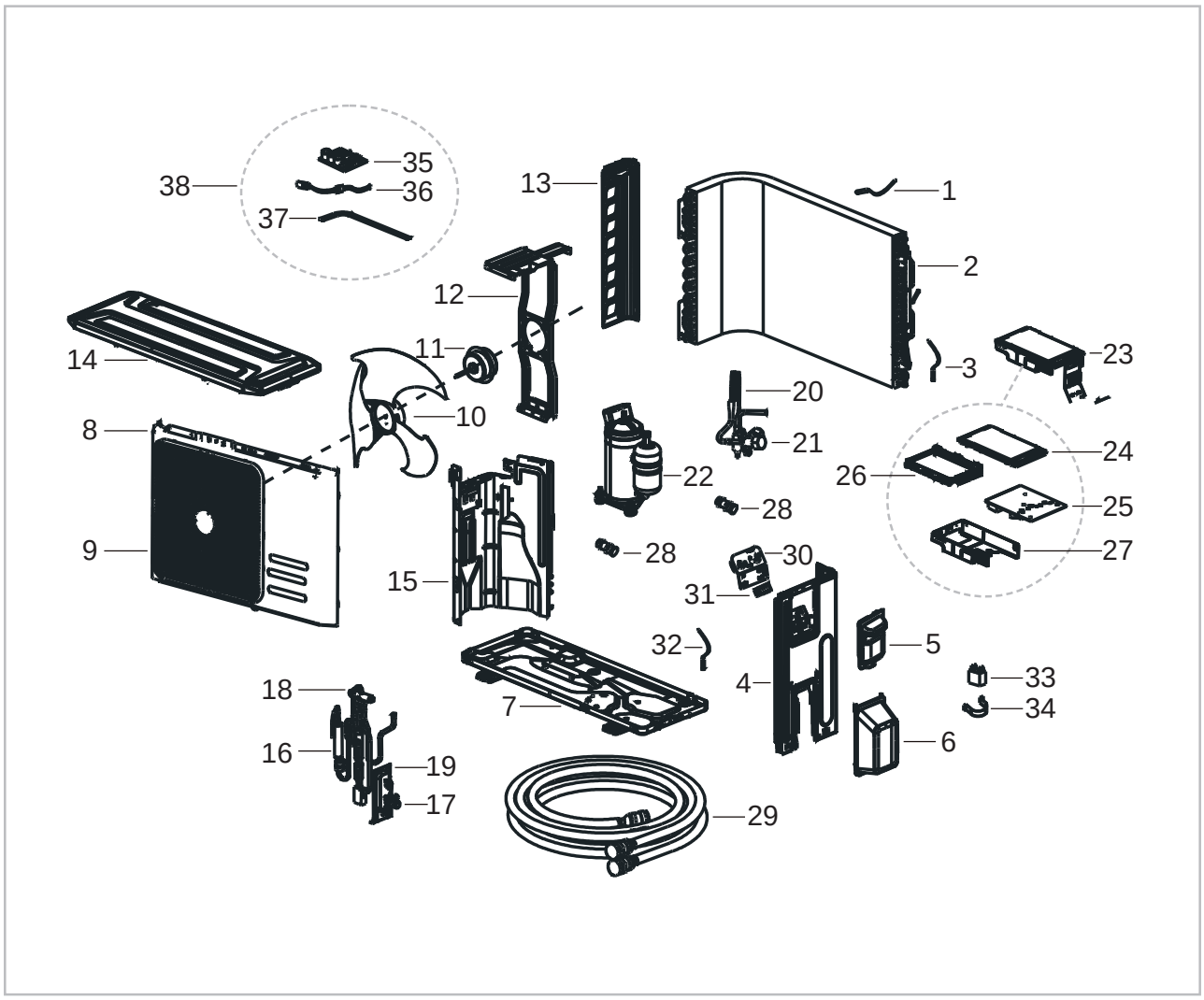


Fig. 51: Exploded view of the unit BL 263-353 DC AT

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

14.4 Spare parts list - Outdoor unit

IMPORTANT!

To ensure the correct delivery of spare parts, please always the device type with the corresponding serial number (see type plate)

No.	Designation
1	Temperature probe, air inlet T4
2	Condenser
3	Temperature probe, condenser outlet T3
4	Side section, right
5	Recessed grip
6	Refrigerant connections cover
7	Floor panel
8	Unit front
9	Condenser protection grille
10	Fan blade
11	Fan motor
12	Fan motor mounting plate
13	Side section, left
14	Cover panel
15	Housing partition plate
16	Pipe assembly, 4-way valve
17	Shut-off valve, suction pipe
18	4-way valve
19	Installation plate, shut-off valve
20	Capillary tube injection
21	Shut-off valve, injection pipe
22	Compressor
23	Electronics module, complete
24	Electronics module cover
25	Control board
26	Control board mounting plate
27	Electronics module mounting plate
28	Injection pipe quick-release coupling

No.	Designation
29	Refrigerant piping, 3 metres
	Refrigerant piping, 5 metres
	Refrigerant piping, 8 metres
30	Terminal block mounting plate
31	Terminal block
32	Temperature probe, heat gas line T5
33	Condenser
34	Condenser mounting
35	Control board, winter fan speed control
36	Crank case heating, compressor
37	Heating element base plate
38	Winter fan speed control WRH-1
39	Suction pipe quick-release coupling

Notes

Notes

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