Operating and installation instructions

REMKO MXV series

Compact wall chest for MVV outdoor units

MXV 221, MXV 361, MXV 451

0207-2019-01 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!

Translation of the original

Table of contents

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		MXV 221	MXV 361	MXV 451
Operating mode		Wall chest for MVV outdoor units for cooling and heating		
Nominal cooling output [1]	kW	2.2	3.6	4.5
Nominal heat capacity [2]	kW	2.6	4.0	5.0
Application area (room volume), approx.	m^3	80	110	160
Adjustment range, room temperature	°C	+17 to +30		
Operating range	°C/r.H.%	+17 to +32		
Refrigerant [4]		R410A		
Operating pressure, max.	kPa	4200		
Air flow volume per stage	m³/h	229/345/430	229/430/510	400/512/660
Sound pressure level per stage [3]	dB (A)	26/32/38	27/33/39	36/39/42
Sound power level max.	dB (A)	57	57	59
Power supply	V/Ph/Hz	230/1~/50		
Enclosure class	IP	X0		
Electrical rated power consumption, cooling [1]	W	20	25	35
Electrical rated power consumption, heating [2]	W	20	25	35
Refrigerant connection Injection pipe	Inches (mm)	1/4 (6.35)	1/4 (6.35)	1/4 (6.35)
Refrigerant connection Suction pipe	Inches (mm)	1/2 (12.70)	1/2 (12.70)	1/2 (12.70)
Condensate drainage connection	mm	16		
Dimensions H/W/D		600/700/210		
Weight	kg	14.0	15.0	15.5
EDP no.		1623640	1623650	1623660

[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] Distance 1 m free field

[4] Contains greenhouse gas according to Kyoto protocol, GWP=2088

2.2 Unit dimensions

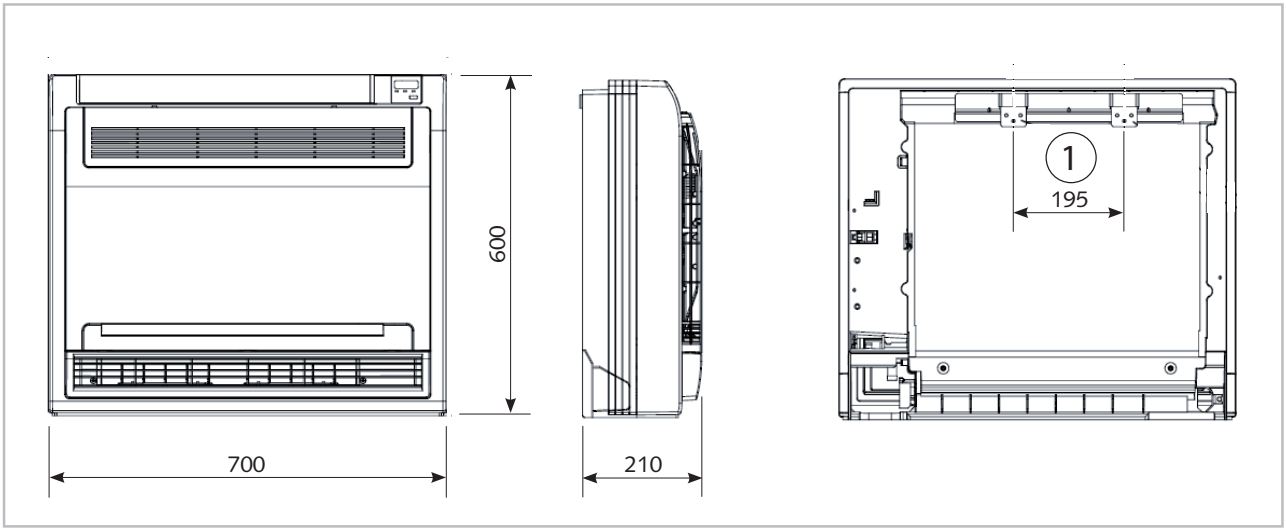


Fig. 1: Unit dimensions MXV 221-451 (All measurements in mm)

1: Mounting plate

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 indoor unit on the compact wall chests serves to extract heat from the indoor room being cooled. The outdoor unit then expels this heat to the outside.

If combined heating/cooling units are operated as heaters, the heat absorbed by the outdoor unit can be discharged by the indoor unit into the room being heated.

The unit is designed to be mounted low down on the wall, in an indoor area. It is operated by an infrared remote control.

The indoor unit consists of a fin evaporator, evaporator fan, controller and condensate tray. The indoor unit can be combined with REMKO outdoor units from the MVV 1200 -2000 DC range that provide sufficient combination options. The outdoor unit is controlled by the regulation of the indoor unit.

Condensate pumps are available as accessories.

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

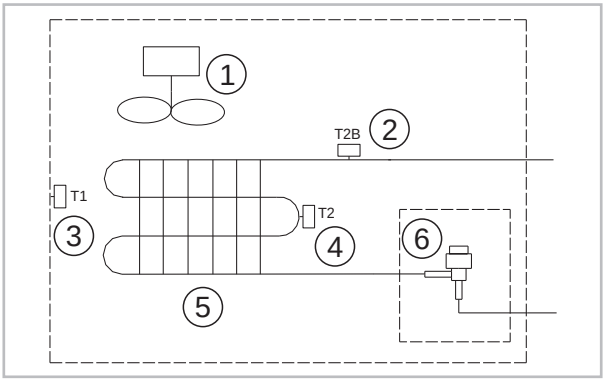


Fig. 2: Cooling cycle schematic

1: Evaporator fan motor
2: Temperature probe, suction pipe
3: Temperature sensor, recirculation
4: Evaporator centre temperature probe
5: Evaporator

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 started manually. Press the key next to the LEDs to activate automatic mode.

The following settings apply for manual operation:

Pressing once: Automatic mode,

Pressing twice: Cooling test mode, active for 30 minutes

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. 3: 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!

Connection of the optional wired remote control KFB-3

The wired remote control, type KFB-3, can be connected to the devices of the series MXV 221-451.

You need the connection cable that is part of the delivery scope of the wired remote control for this. The indoor units are ready to be plugged in for connection.

The mating connector on the indoor unit can be found below the electrical connection (Fig. 4). The plug is colour-coded with the letters A to D.

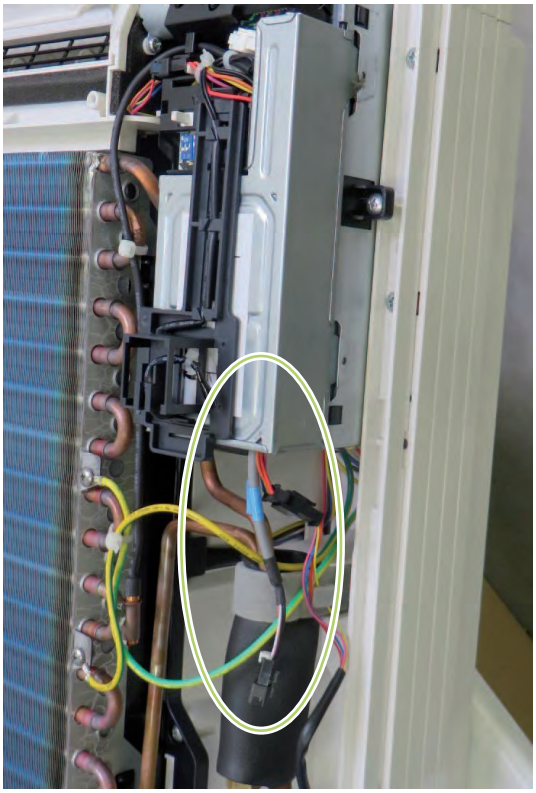


Fig. 4: Connection KFB-3

4.2 Display on indoor unit

Display

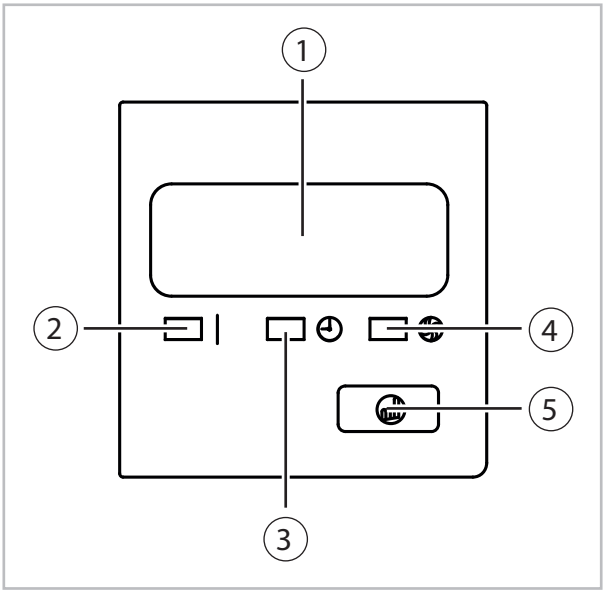


Fig. 5: Display

1: Receiver infrared signal
2: Operating lamp (green)
3: Timer (yellow)
4: (Pre) heater function/defrosting (green)
5: Manual mode

4.3 Manual air distribution

Setting the air distribution

The vertical air control blades can be manually moved to the left and right (s. Fig. 6). An automatic swing function is also available for horizontal air distribution (s. Chapter “Buttons on the remote control”).

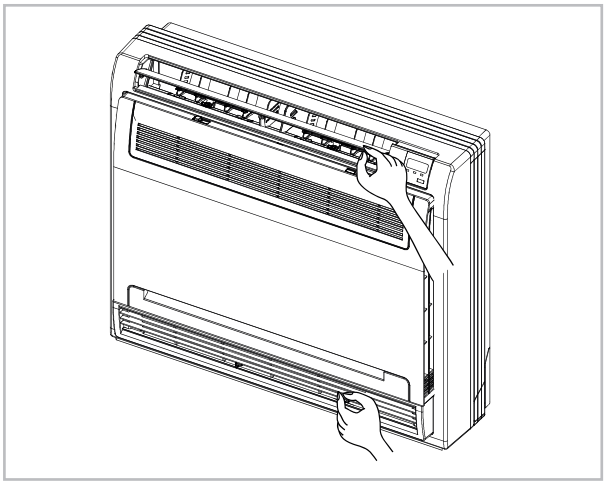


Fig. 6: Setting the air distribution

Setting of the air outlet

The air outlet on the device can be set for improved comfort. The units can blow out air on the top and bottom sides. Proceed as follows to change the settings:

1. Switch the unit off and open panel (s. Fig. 7)
2. The switch to select the blow-out direction can be found below the LED's (s. Fig. 8)
3. If the switch is set to the symbol [A] (s. Fig. 8) the indoor unit automatically determines the blow-out side depending on the mode/situation (s. Table *on page 12*).
4. The unit only blows out the top side in the operating mode “Dehumidify”.
5. Switch the selector switch to position [B] to stop the unit blowing out from the bottom side (s. Fig. 8). The unit only now blows out the top side, depending on which operating mode is set. Be aware that the unit must be switched off before the change can take effect.

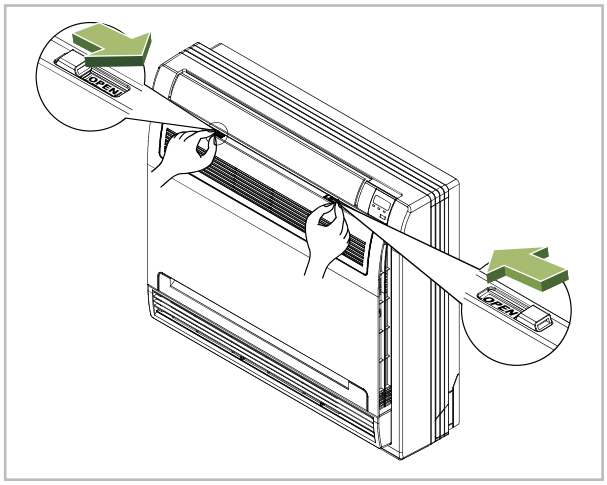


Fig. 7: Opening front panel

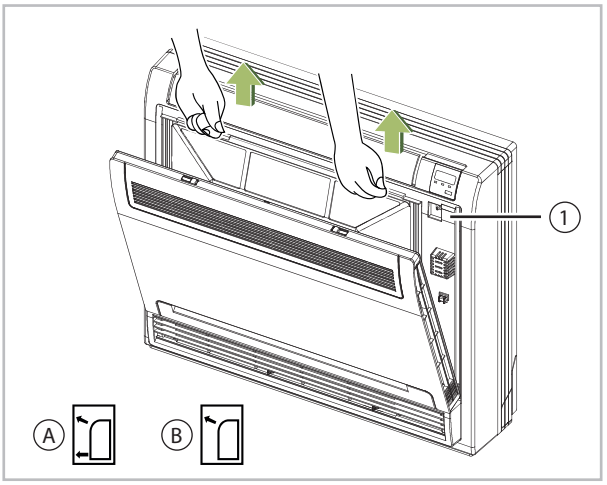
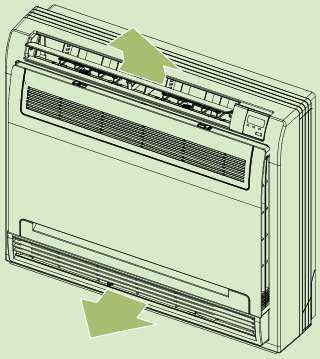


Fig. 8: Blow-off direction switch

1: Blow-off direction switch
A: Switch setting [A]
B: Switch setting [B]

Automatic selection of the blow-out side

Operating mode	Cooling mode		Heating mode	
Situation	When the setpoint is reached or after 1 operating hour.	When the unit is started or when the setpoint is not reached.	The unit blows out from the top and bottom side when the setpoint is nearly reached to optimally distribute the warm air.	When the unit is started or when the room temperature is low.
Blow-out direction	The unit only blows out from the top to avoid direct contact between persons and air flow.	The unit blows out from the top and bottom to reach the corresponding set-point as quickly as possible. 		The unit only blows out from the top to avoid direct contact between persons and air flow.

4.4 Keys on the remote control

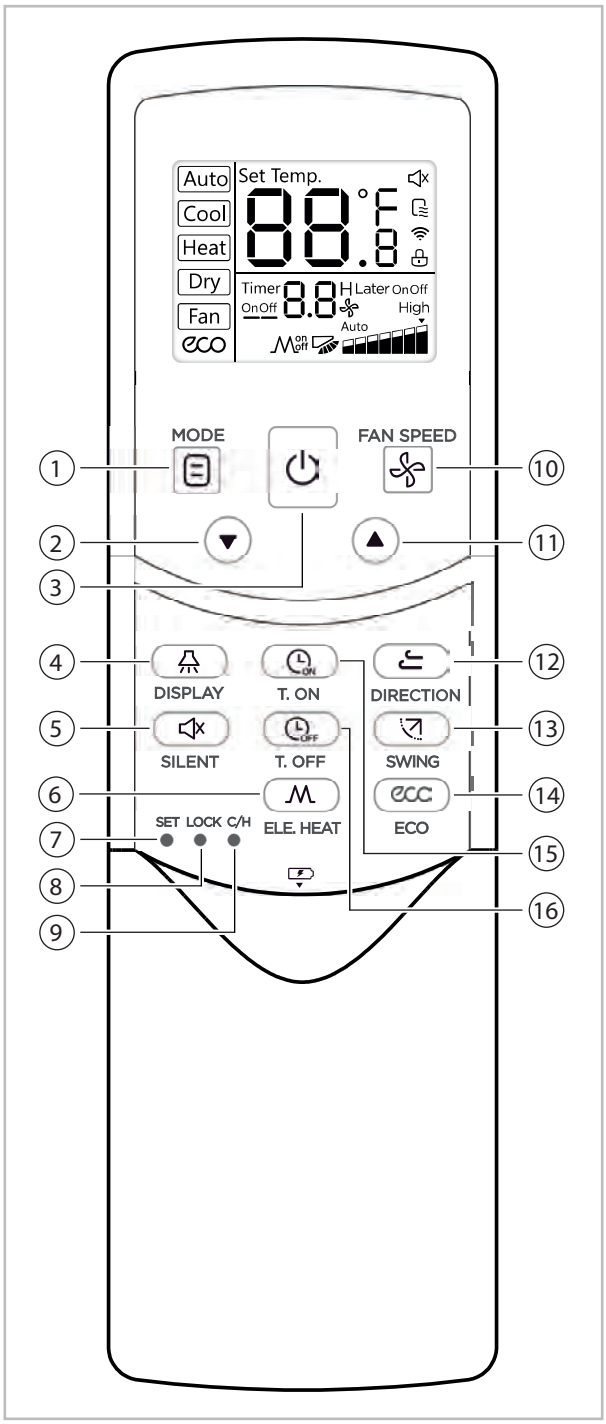


Fig. 9: Keys on the remote control

① **“Mode” key**

Operating mode selection (Auto ⇒ Cooling ⇒ Heating ⇒ Dehumidification ⇒Recirculation)

② **“Arrow down” key**

Decreases the selected temperature or timer settings.

③ **"On/Off" key**

Switches the unit on or off.

④ **"Display" key**

Switches the display of the indoor unit on or off (if fitted).

⑤ **"Silent" key**

Switches the particularly low-noise operating mode on or off (if fitted).

⑥ **“Ele. Heat” key (not fitted)**

Switches the electric auxiliary heater on or off.

⑦ **“Set” key**

Allows the remote control parameters to be changed.

⑧ **“Lock” key**

Switches the child lock of the IR remote control on or off.

⑨ **“C/H” key**

Enables the pre-selection of the operating mode Settings (Cooling, Cooling and Heating only).

⑩ **“Fan speed” key**

Sets the fan speed.

⑪ **“Arrow up” key**

Increases the selected temperature or timer settings.

⑫ **“Direction” key**

Allows the air discharge fin to be adjusted.

⑬ **“Swing” key**

Switches the automatic upward and downward movement of the air discharge fin on and off.

⑭ **“Eco” key**

Turns the power save mode on (if fitted).

⑮ **“Timer on” key**

Sets the time after which the unit is to switch on.

⑯ **“Timer off” key**

Sets the time after which the unit is to switch off.

Remote control display

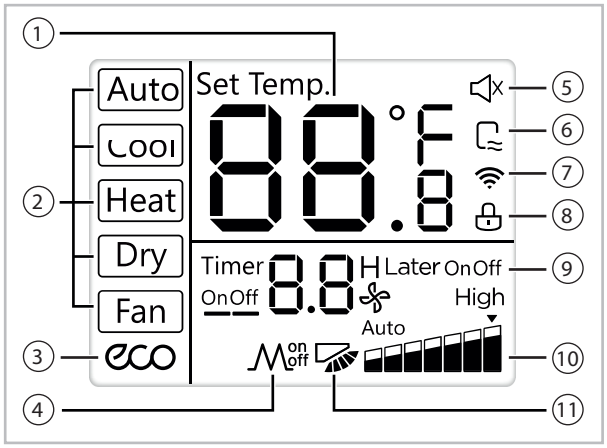


Fig. 10: Indicators on the LCD

① **Temperature**

Shows the currently set setpoint.

② **Operating mode**

Shows the currently active operating mode.

③ **ECO**

Appears when the power save function is active.

④ **Electric auxiliary heater**

Appears when the electric auxiliary heater is active (not fitted).

⑤ **Low-noise operating mode**

Appears when the Low-noise operating mode is active.

⑥ **Unit status**

Appears when the unit is switched on.

⑦ **Signal transmission indicator**

Appears briefly during signal transmission to the indoor unit.

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.

Set or change operating modes

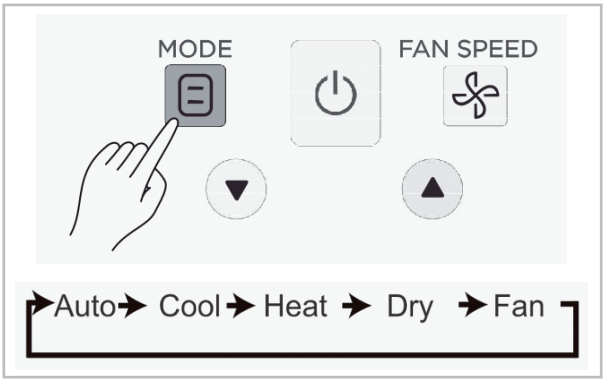
Switch unit on or off

1. Press the ⏻ key. The symbol for the active unit status appears on the display of the IR remote control. The unit switches itself on.

2. Press the ⏻ key again. The symbol disappears and the unit switches off.

Select the operating mode and temperature

1. Press the key several times to select the desired operating mode. The selection appears on the display of the IR remote control.



2. In the “Automatic”, “Cooling”, “Dehumidifying” or “Heating” operating modes, the desired temperature can be set in 1 °C steps using the and arrow keys.

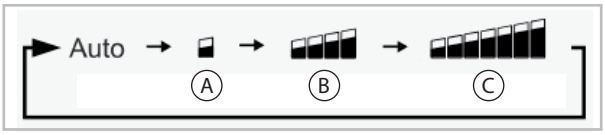
The temperature cannot be set in the “Recirculation” operating mode!

Setting the fan speed

1. In the standard setting, the fan speed can be set in 7 stages via the IR remote control.

A: Low
B: Medium
C: Up

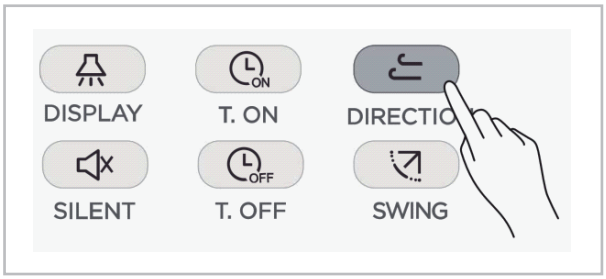
2. Optionally, the IR remote control can be programmed (see section ...) so that only 3 fan stages can be set:



A: Low
B: Medium
C: Up

Individually adjusting the air discharge fin

1. Use the key to move the air discharge fin to 5 different positions.

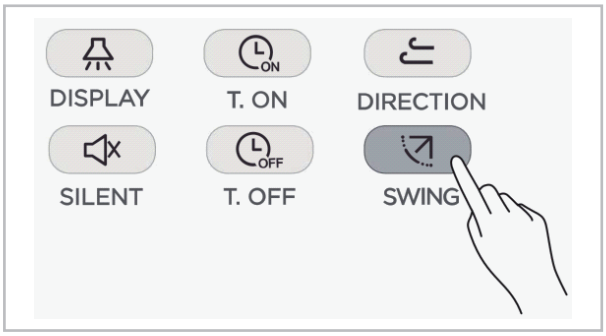


2. The fin setting changes by approx. 6° each time the key is pressed. If the unit is switched off, the key has no function. When the unit is switched on, the air discharge fin returns to the fixed position.

This function is only available for units with vertical air discharge fins!

Using the air discharge fin with the swing function

1. As soon as the unit is switched on, the key can be used to activate the swing function. The symbol appears on the remote control display for 15 seconds

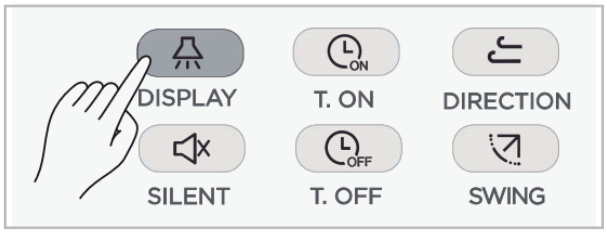


2. If the swing function is active, it can be deactivated again by pressing the key again.

Switching the indoor unit display off

This function enables the display illumination of the indoor unit to be switched off.

1. When the remote control is on or off, the key can be used to switch the unit display on or off.



Activating the low-noise operating mode

The "Silent" function is used to activate the quietest operating mode of the unit.

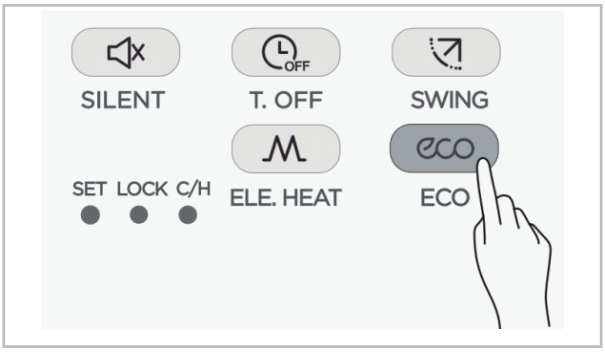
1. If the indoor unit is working in cooling or heating mode, the "Silent" function of the unit can be activated with the key. The following symbol appears on the remote control display .
2. If the “Silent” function is active, it can be deactivated by pressing the key again. The symbol on the remote control goes out.

After 8 hours of unit operation, the “Silent” function is automatically deactivated. The energy saving function and the “Silent” function cannot be activated at the same time.

Energy saving function

If the unit is in the cooling or heating mode, the energy saving function can be activated with the IR remote control (if the unit model is equipped with this function).

1. The energy saving function can be activated by pressing the key. The following symbol appears on the remote control display .
2. The energy saving function can be deactivated again by pressing the or keys. The symbol on the IR remote control display goes out.



If the energy saving function is active in cooling mode, the fan speed is set to automatic and the temperature setpoint to 26 °C. In heating mode, the fan also works in automatic mode, the setpoint does not change.

After 8 hours of unit operation, the energy saving function is automatically deactivated.

The “Energy saving function” and “Low noise operating mode” cannot be operated simultaneously!

Activate/deactivate delayed switching on and off

1. The unit switch-on delay can be activated with the key. After pressing this key, “Timer on” and “0.0h Later On” appear on the IR remote control display.

   The time can be set by pressing the or keys.

2. The unit switch-off delay can be activated with the key. After pressing this key, “Timer off” and “0.0h Later Off” appear on the IR remote control display.

   The time can be set by pressing the or keys.

The time is set in 0.5 hour increments by pressing the key for a longer period of time. If the setting is greater than 10 hours, the settings are made in 1 hour increments. The maximum switch-on or switch-off delay is 24 hours.

To exit the setting mode, the time must be reset to 0.0h.

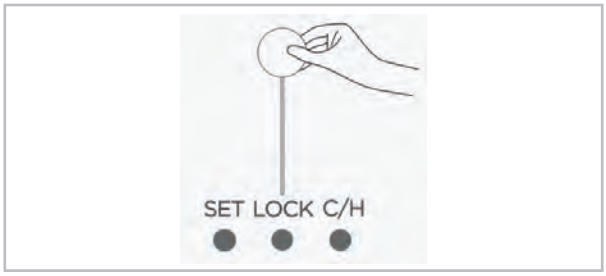
The “Switch-on delay” and “Switch-off delay” functions can also be combined.

Locking the IR remote control

By pressing the LOCK key (pin required), all functions of the IR remote control can be disabled (except Lock, Cooling or Heating only, and the Addressing function).

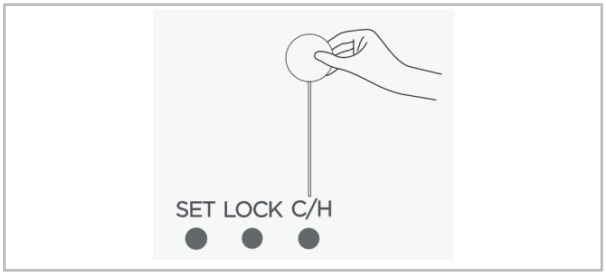
1. After pressing the LOCK key, the lock symbol appears on the IR remote control display. The IR remote control can no longer be operated.

2. The key lock can be deactivated by pressing the LOCK key again. The symbol goes out.



Activating the “Cooling only” function

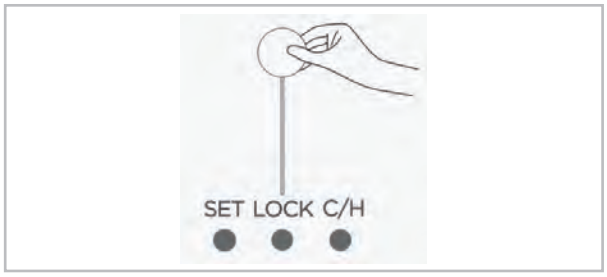
The IR remote control is factory programmed for the cooling and heating functions. The “Cooling only” function can be activated or deactivated by pressing the C/H key. Selecting the heating mode is then no longer possible when the function is activated.



Manual unit addressing

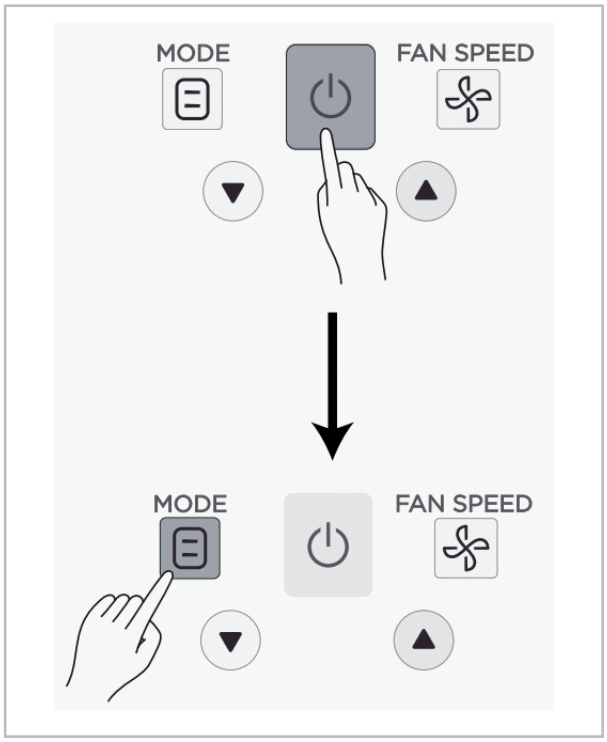
The MVV series outdoor units automatically assign addresses to the indoor units during commissioning. However, these can also be assigned manually (for example, for arrangement on the Multi-Central-Controller).

By pressing the LOCK key for longer than 5 seconds the addressing mode of the IR remote control is activated. The addressing mode can be exited by pressing the LOCK key again for longer than 5 seconds.



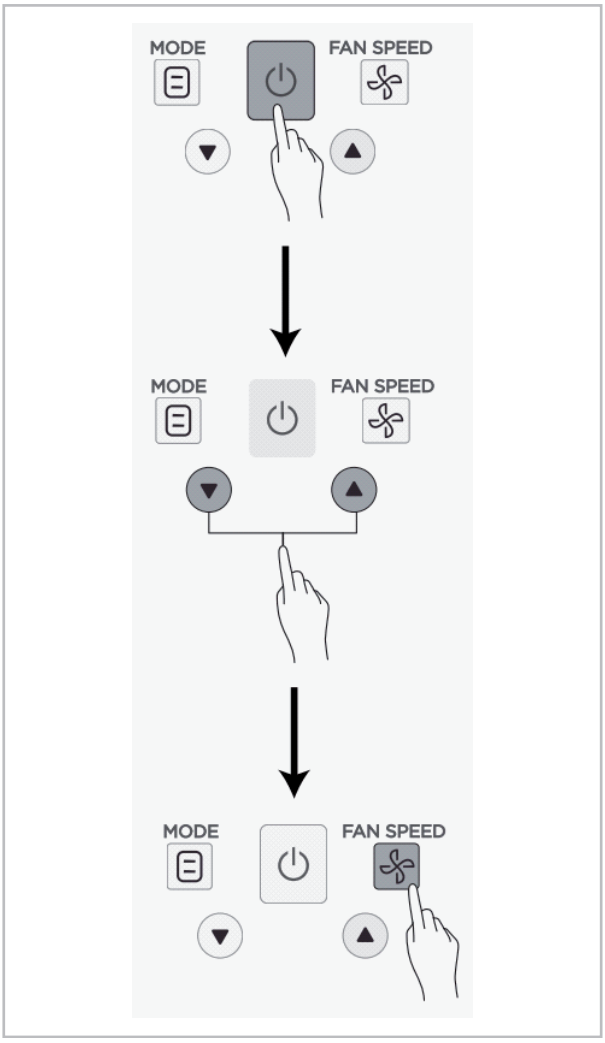
1. Querying the unit address

If the addressing mode (see above) is active, the signal transmission must be activated by pressing the ⏻ key. The ⊟ key can then be used to query the unit address. The address appears directly on the display or is coded as an LED flashing code (for ceiling cassettes).



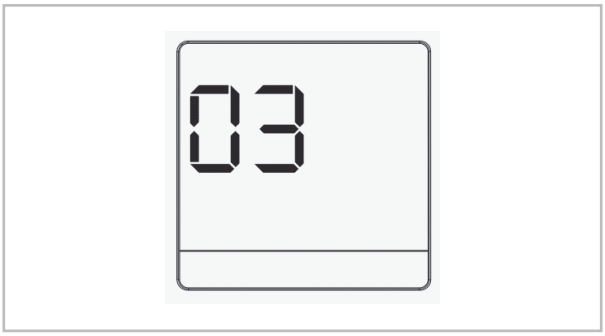
2. Assigning the unit address

If the addressing mode (see above) is active, the signal transmission must be activated by pressing the ⏻ key. Use the arrow keys ▲ ▼ to preselect the desired address, then press the key to transfer it to the unit.

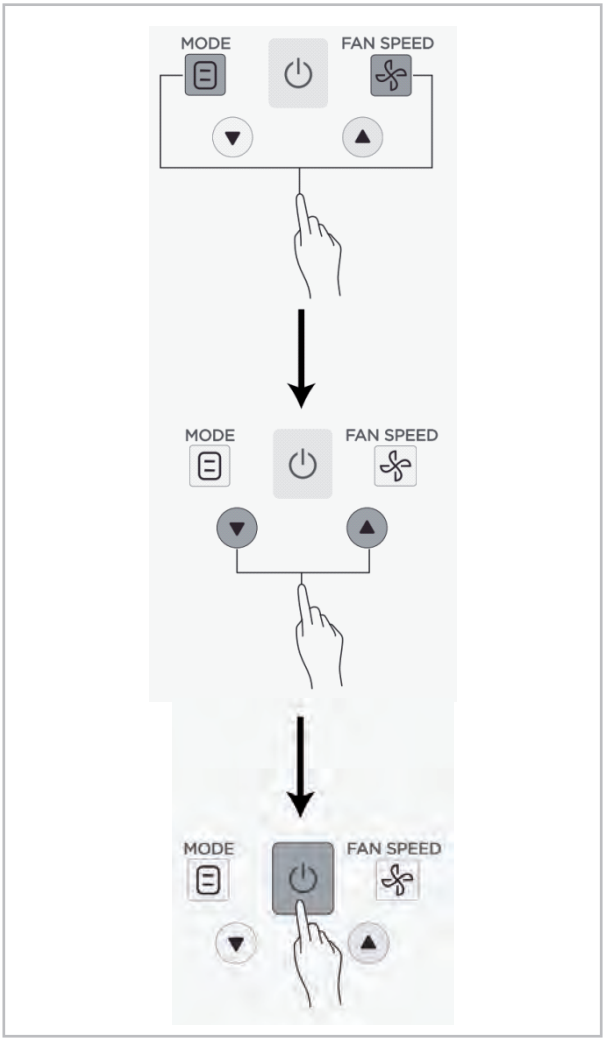


Changing the parameters for fan functions

1. Pressing the ⊟ and ✣ keys simultaneously for 5 seconds displays the parameter level on the IR remote control.



2. Using the arrow keys ▲ ▼ the desired parameter can now be selected.
3. By pressing the ⏻ key or waiting for 5 seconds, the selected parameter becomes active.



Selectable parameters

Parameter	Definition
00	7 fan stages, temperature increments of 0.5 °C
01	3 fan stages, temperature increments of 1.0 °C
02	7 fan stages, temperature increments of 1.0 °C (factory setting)
03	3 fan stages, temperature increments of 0.5 °C

5 Installation instructions for qualified personnel

Important notes prior to installation

Observe the operating manuals for the indoor unit and the outdoor unit when installing the entire system.

- 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 (injection and suction pipe), valves and connections must be insulated against vapour density. 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.
- Install the refrigerant piping from the indoor unit to the outdoor unit.
- 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.
- Only use the union nuts supplied with the refrigerant piping. These should only be removed shortly before connecting the refrigerant piping.
- Carry out 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.

Installation materials

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

Selection of installation location

The indoor unit is designed for horizontal wall installation at floor level.

Minimum clearances

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

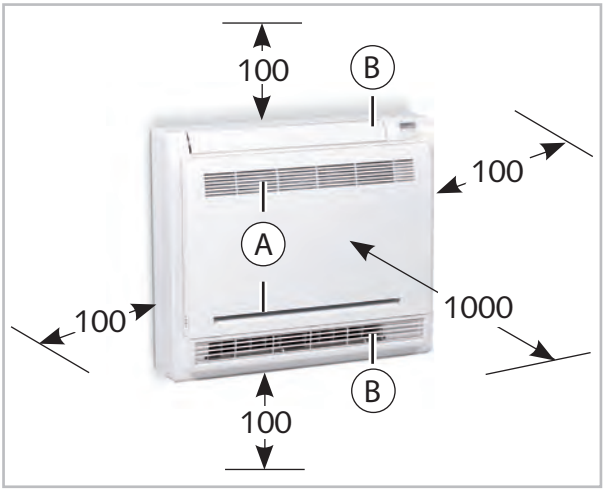


Fig. 11: Minimum clearances (All measurements in mm)

A: Air inlet
B: Air outlet

Connection variants

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

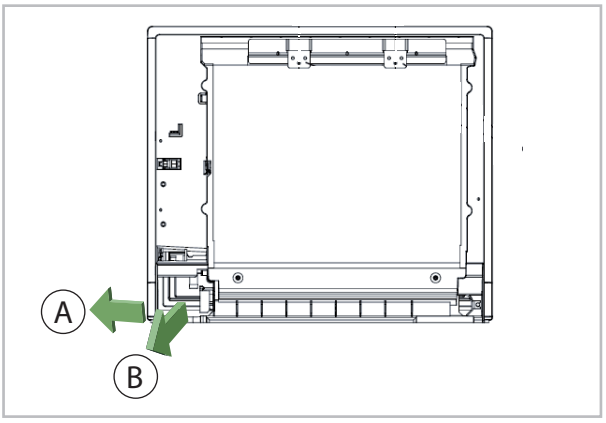


Fig. 12: Connection variants

A: Outlet on the wall, right
B: Outlet through the wall, right

6 Installation

NOTICE!

Installation should only be performed by authorised specialists.

Unit installation

The unit is fixed using two retaining frames observing the air discharge sides.

1. Mark the mounting points on the structurally permissible building sections according to the dimensions of the 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.
5. Check again that the unit is level. Fig. 13

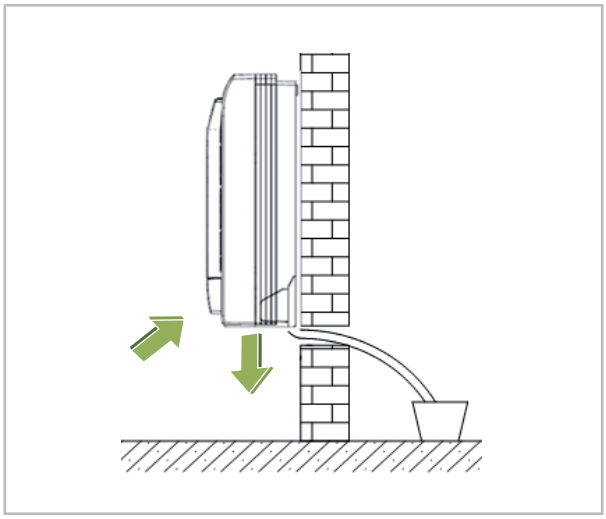


Fig. 13: Horizontal positioning

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

Connection of refrigerant piping

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

It may be necessary to fit a reducer or flared adapter to the indoor unit. These fittings are included with the indoor unit as an accessory kit.

Once installed, the connections should be insulated to make them vapour diffusion proof.

NOTICE!

The unit is factory filled with dry nitrogen for leak testing purposes. The pressurised nitrogen is released when the union nuts are undone.

7 Condensate drainage connection and safe drainage

Condensate drainage connection

If the temperature falls below the dew point on the evaporator, condensation will form on the indoor unit during cooling.

Below the evaporator is a collection tray, which must be connected to a drain.

- 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.
- Route the unit's condensate drainage line freely into the drain line. If the condensate runs directly into a sewer pipe, fit a trap to prevent any unpleasant odours.
- When operating the unit at outside temperatures below 0 °C, ensure the condensate drainage line is laid to protect it against frost. 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.

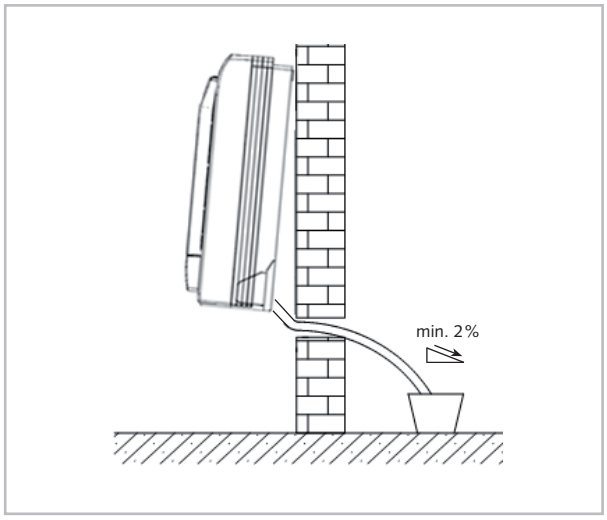


Fig. 14: Condensate drainage connection

The condensate hose is designed to be connected on the right-hand side (as viewed from the front).

Safe drainage in the event of leakages

Local regulations or environmental laws, for example the German Water Resource Act (WHG), can require suitable precautions to protect against uncontrolled drainage in case of leakage to provide for safe disposal of escaping air conditioning fluid 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 notes

A protected power supply cable is to be connected to the outdoor unit and a four-core control line with a minimum cross-section of 1.5mm^2. To avoid EMC interference, only use shielded cable for this purpose and connect the shielding on both sides.

DANGER!

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

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 installing a main / repair switch on the building close to the unit. This is the responsibility of the customer.
- 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.

Make the connection as follows:

1. Open the air inlet grill.
2. Remove the covers on the right-hand side (Fig. 15).
3. Disconnect the control line from the terminal block and remove the control line.
4. Connect the customer-laid control line to the terminals.
5. Re-assemble the unit.

Fig. 15: Connecting the indoor unit

8.2 Electrical wiring diagram

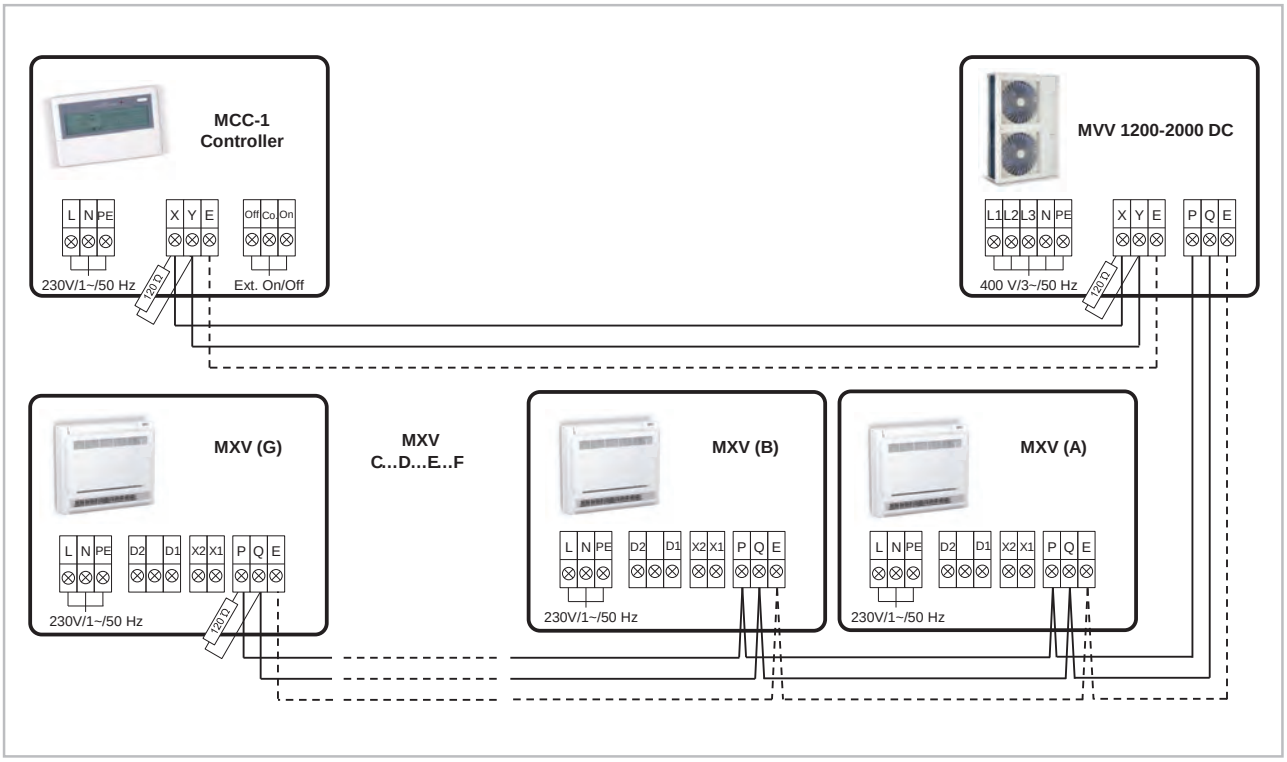


Fig. 16: Electrical wiring diagram

Connection of optional condensate pump KP 6/KP 8

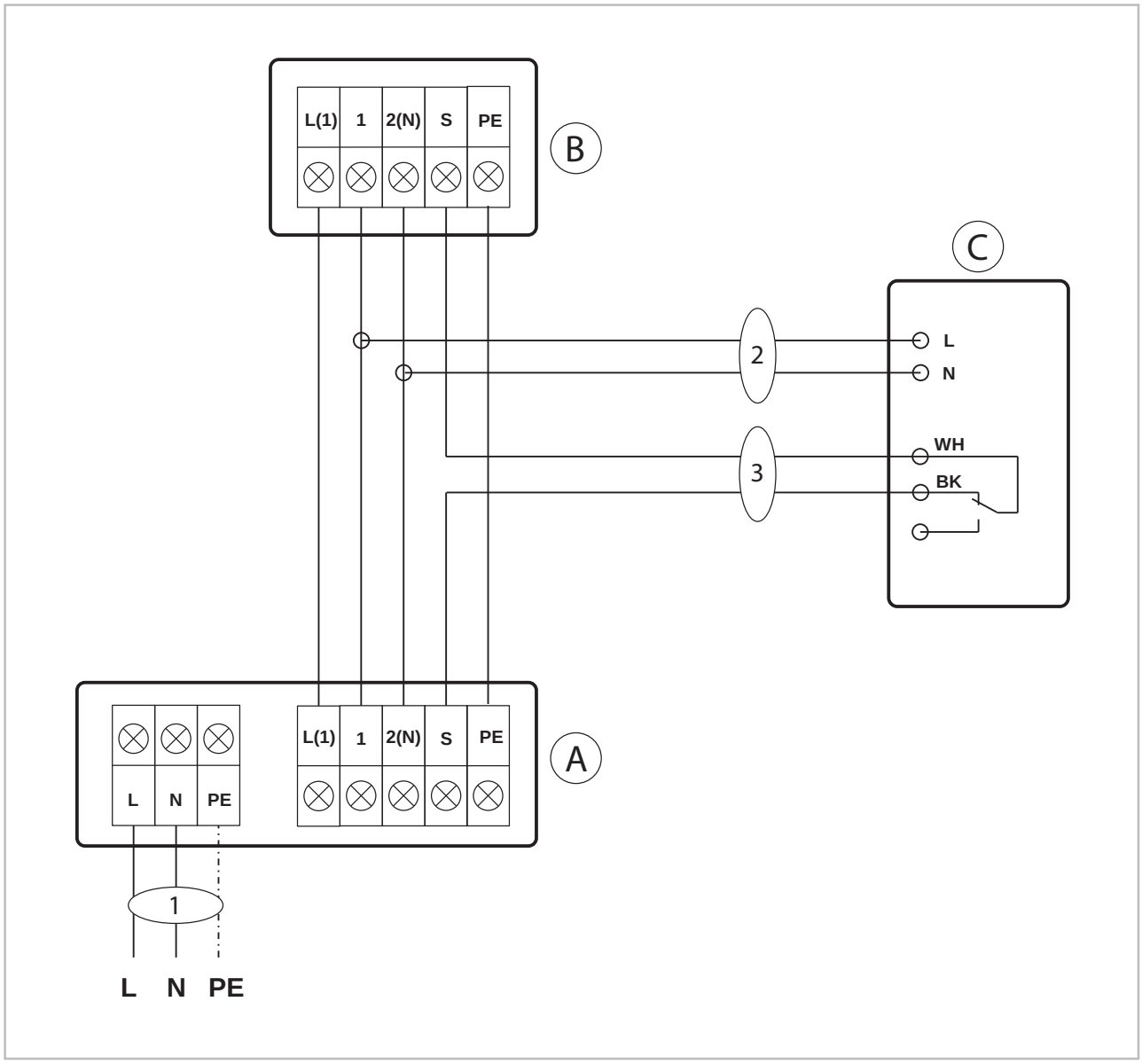


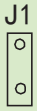
Fig. 17: Electrical wiring diagram

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

8.3 DIP switch, functions

Switch	Function	Setting [1)]	Description
SW1_1	Control behaviour in cooling mode		The cooling request is terminated when the measured temperature actual value is equal to the set temperature setpoint value (factory setting
			Cooling request is terminated when measured temperature actual value is 2 °C lower than the set temperature setpoint value
SW1_2	E-valve position in stand-by mode (heating operation)		Injection valve stops at 96 steps (factory setting, greater opening degree for oil return in larger systems)
			Injection valve stops at 72 steps (smaller opening degree for oil return with smaller systems)
SW2	Non functional		
SW3_1	Addressing mode		Save unit address (factory setting)
			Reset the unit address
SW3_2	Non functional		
SW4	Fan behaviour in heating mode		After reaching the setpoint, the fan switches off for 4 minutes and back on again for 1 minute. This procedure is repeated (factory setting)
			After reaching the setpoint, the fan switches off for 8 minutes and back on again for 1 minute. This procedure is repeated
			After reaching the setpoint, the fan switches off for 12 minutes and back on again for 1 minute. This procedure is repeated
			After reaching the setpoint, the fan switches off for 16 minutes and back on again for 1 minute. This procedure is repeated

DIP switch functions (continued)

Switch	Function	Setting [1]	Description
SW5	Cold air avoidance in heating mode		The fan does not run when the heat exchanger fluid temperature is 15 °C or colder (factory setting)
			The fan does not run when the heat exchanger fluid temperature is 20 °C or colder
			The fan does not run when the heat exchanger fluid temperature is 24 °C or colder
			The fan does not run when the heat exchanger fluid temperature is 26 °C or colder
SW6	Control behaviour in heating mode		Cooling request is terminated when measured temperature actual value is 6 °C higher than the set temperature setpoint value (factory setting)
			Cooling request is terminated when measured temperature actual value is 2 °C higher than the set temperature setpoint value
			Cooling request is terminated when measured temperature actual value is 4 °C higher than the set temperature setpoint value
			The cooling request is terminated when the measured temperature actual value is equal to the set temperature setpoint value
SW7	Non functional		
J1	Automatic restart after power failure		Unit runs independently in the last operating mode
			Unit does not restart
ENC1	Power setting (depending on unit type)		0: 1.8kW or 2.2kW; 1: 2.8kW; 2: 3.6kW; 3: 4.5kW; 4: 5.6kW; 5: 7.1kW; 6: 8.0kW; 7: 9.0kW; 8: 10.0kW/11.2kW; 9: 11.2kW; A: 12.5kW; B: 14.0kW

[1] The black mark represents the DIP switch

8.4 Electrical drawings

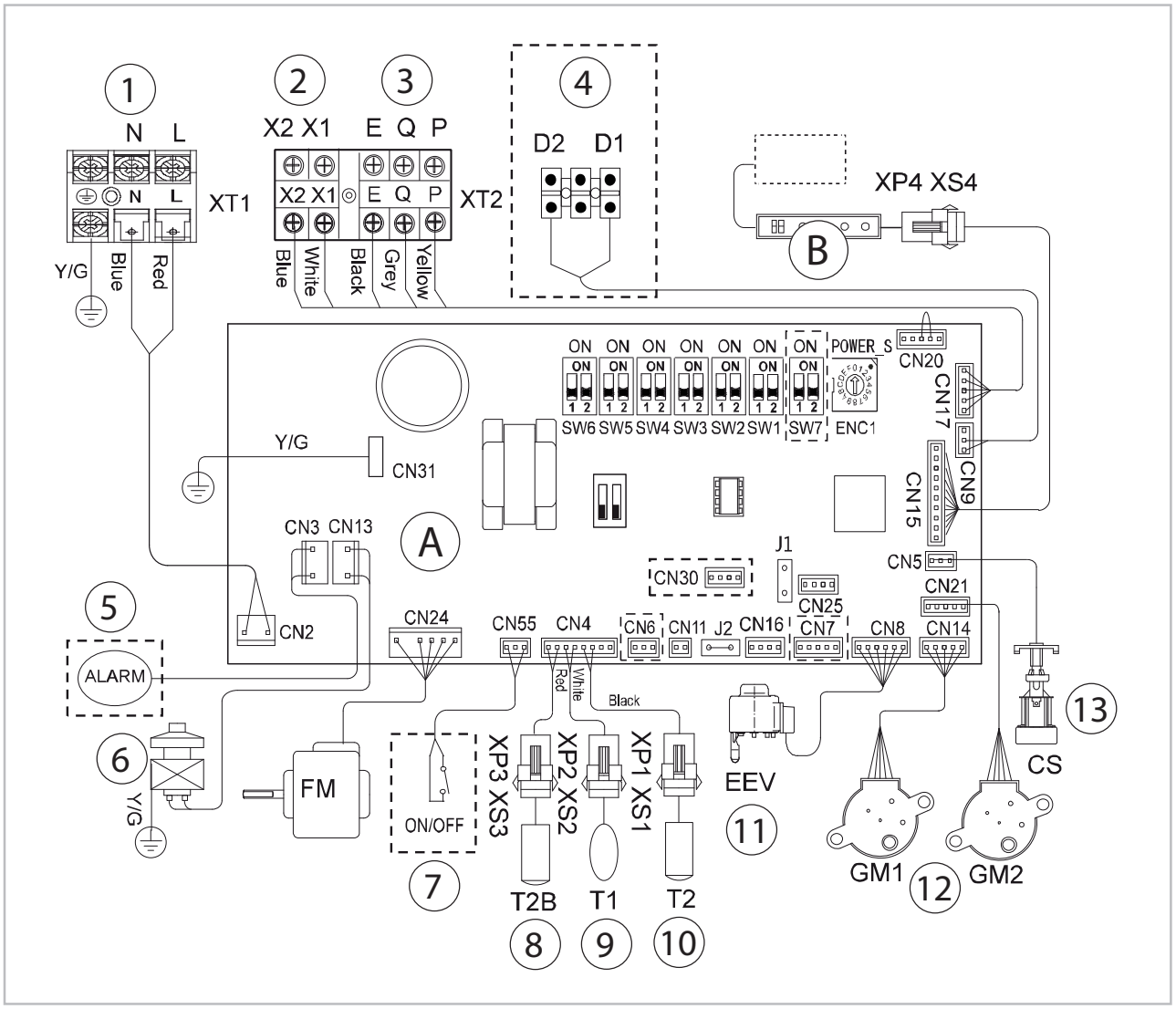


Fig. 18: Electrical drawings

A:	Control board	11:	Electronic E-valve
B:	Display board	12:	Fin motors
1:	Power supply	13:	Contact for liquid level switch
2:	Connection option accessories	Colour codes:	
3:	Communication line from outdoor unit	Black:	Black
4:	Connection option accessories	Blue:	Blue
5:	Alarm contact	Grey:	Grey
6:	Contact for condensate pump	Red:	Red
7:	Potential-free contact ON/OFF	White:	White
8:	Temperature probe, suction pipe	Yellow:	Yellow
9:	Temperature probe, indoor air	Y/G:	Yellow/Green
10:	Temperature probe, evaporator		

9 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.

NOTICE!

Observe the operating manuals for the indoor unit and outdoor unit when commissioning the entire system.

Function test of cooling operating mode

1. Switch the power supply on.
2. Use the remote control to switch on the unit and select the cooling mode, maximum fan speed and lowest target temperature.
3. Measure and record all the required values in the commissioning report and check the safety functions.
4. Check the unit control system using the following functions described in the "Operation" chapter: "Timer", "Temperature setting", "Fan speeds" and switching to recirculation or dehumidification mode.
5. 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.

Function test of heating operating mode

1. Switch the power supply on.
2. Use the remote control to switch on the unit and select the heating mode, maximum fan speed and highest target temperature.
3. Measure and record all the required values in the commissioning report and check the safety functions.
4. Check the unit control system using the functions described in the "Operation" chapter (timer, temperature setting, fan speeds).

Final tasks

- Re-install all disassembled parts.
- Familiarise the operator with the system.

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.

10 Troubleshooting and customer service

The unit and components are manufactured using state-of-the-art production methods and tested several times to verify that they function correctly. However, if malfunctions do occur, please check the functions as detailed in the list below. For systems with an indoor unit and outdoor unit, refer to the chapter "Trouble-shooting 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 cor-rectly?	Check the voltage and if necessary, wait for it to come back on
	Damaged power supply	Does all other elec. equipment function cor-rectly?	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 light-ning 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
	Remote control is faulty	Is the unit running in manual mode?	Replace the remote con-trol
	Receiver or transmitter unit exposed to exces-sive solar radiation	Does it function correctly in the shade?	Place the receiver and/or transmitter unit in the shade
	Electromagnetic fields are interfering with trans-mission	Does it function after removing potential sources of interference?	Signal is not transmitted when interference sources are operational
	Key on remote control stuck/dual key operation	Does the "Transmitting" symbol appear on the display?	Release the key/only press one key
	Batteries in remote con-trol are flat	Have new batteries been inserted? Is the display incomplete?	Insert new batteries

Operational malfunctions (continued)

Malfunction	Possible causes	Checks	Remedial measures
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
	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 and is it clear?	Route the condensate drainage line with an incline and clean it
	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!

REMKO MXV series

Error codes

Code	Description
E0	Mode conflict
E1	Communication fault between outdoor unit and indoor unit
E2	Probe fault, indoor air (T1)
E3	Probe fault, evaporator (T2)
E4	Probe fault, suction pipe (T2B)
E6	Fan motor malfunction
E7	-EEPROM malfunction
Eb	Malfunction of the electronic injection valve
Ed	Outdoor unit malfunction
EE	Malfunction of the condensate pump provided by customer
FE	Unit in addressing status

11 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!

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

- For systems which operate year-round (e.g. in server rooms), the maintenance intervals must be reduced accordingly.

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.

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.

Type of task Checks/maintenance/inspection	Commissioning	Monthly	Half-yearly	Yearly
General	●			●
Check voltage and current	●			●
Check function of compressor/fans	●			●
Dirt on condenser/evaporator	●	●		
Check the refrigerant volume	●		●	
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 the air inlet grill on the front side and fold it forwards or backwards.
3. Clean the grill and cover with a soft, damp cloth.
4. Close the grill.
5. 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 down/forwards (Fig. 19).
3. Pull the filter out in an upwards direction (Fig. 19).
4. Clean the filter with a commercially available vacuum cleaner. To do so, turn the dirty side so it is facing upwards (Fig. 20).
5. Dirt can also be removed by carefully cleaning with lukewarm water and mild cleaning agents (Fig. 21). 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. 19: Fold the guard forwards

Fig. 20: Cleaning with a vacuum cleaner

Fig. 21: Cleaning with lukewarm water

12 Exploded view of the unit and spare parts list

12.1 Exploded view of the unit

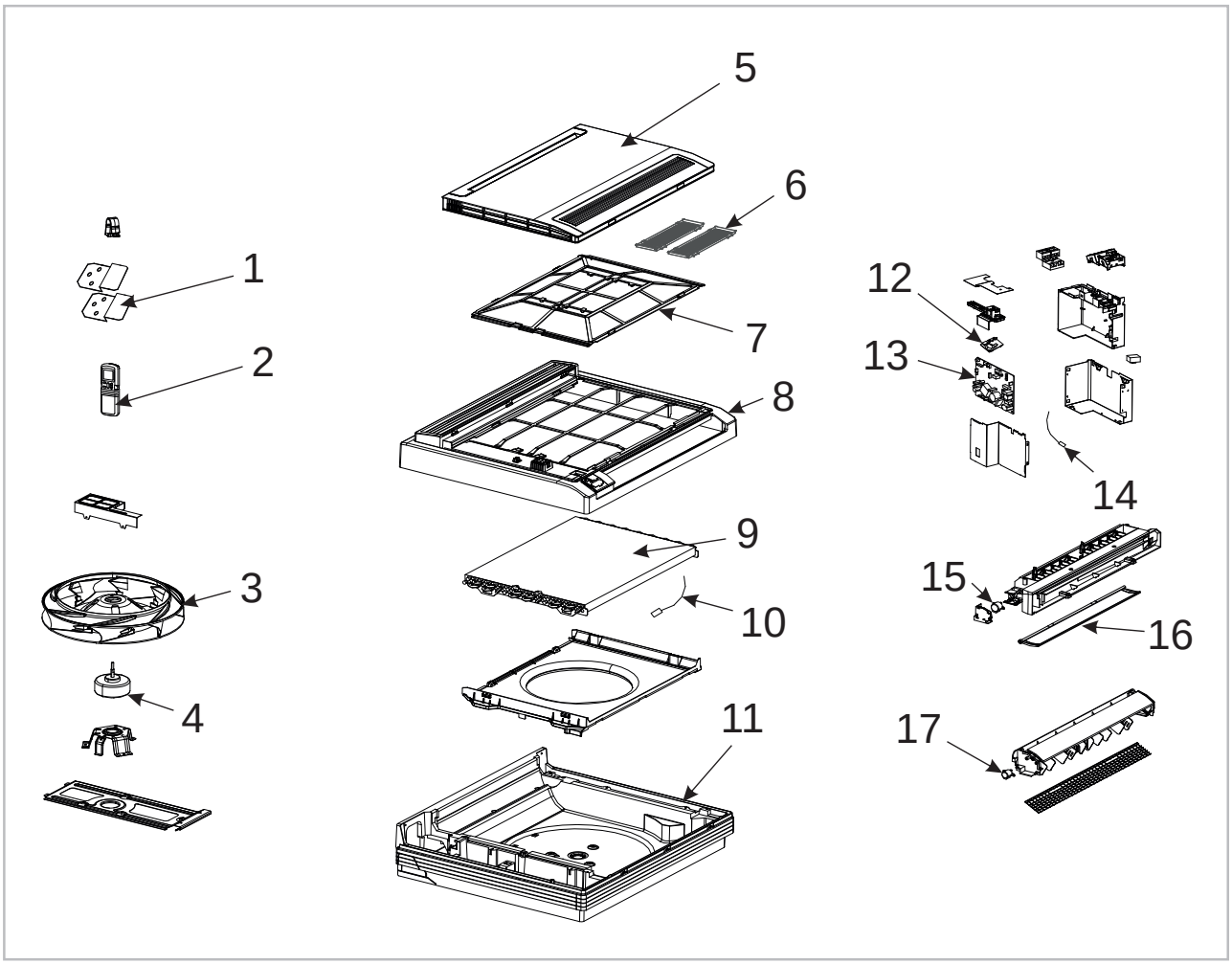


Fig. 22: Exploded view drawing

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

12.2 Spare parts list

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	Mounting plate
2	Infrared remote control
3	Fan impeller
4	Fan motor
5	Front cover
6	Pollen filter
7	Air filter
8	Housing front
9	Evaporator
10	Temperature probe, evaporator
11	Housing back
12	Display circuit board
13	Control board
14	Temperature probe, indoor air
15	Fin motor, top
16	Bottom air outlet
17	Fin motor, bottom
	Spare parts not illustrated
	Electronic injection valve

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. Check the unit for visible signs of damage and clean it as described in the "Care and maintenance" chapter.

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 Index

REMKO QUALITY WITH SYSTEMS

Air-Conditioning | Heating | New Energies

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