

■ Assembly and operating instructions

REMKO KWD EC series

Chilled water ceiling cassettes with EC fans dual conductor version

KWD 25 EC, KWD 35 EC, KWD 45 EC, KWD 55 EC, KWD 70 EC, KWD 85 EC, KWD 100 EC



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

This operating manual is a translation of the German original.

These original instructions are an integral part of the unit and must always be kept in the vicinity of the installation location or on the unit itself.

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Safety notes

Carefully read the operating manual before placing the unit in service for the first time. It contains useful tips  and notes, as well as hazard warnings to prevent injury or material damage . Failure to follow the directions in this manual can endanger persons, the environment and the equipment itself and will void any claims for liability.

- Keep this manual close to the units.
- The units and components should not be exposed to any mechanical load, and extreme levels of humidity or sunlight.
- Only qualified personnel may set up and install the units and components.
- The set-up, connection, and operation of the unit and its components must take place in accordance with the operating conditions stipulated in this manual and comply with all applicable local regulations.
- Mobile units must be set up securely on suitable surfaces and in an upright position. Stationary units must be permanently installed for operation.
- Modification of the units and components supplied by REMKO is not permitted and can cause malfunctions.
- Units and components may not be operated in areas where there is an increased risk of damage. Observe the minimum clearances.
- The electrical power supply is to be adapted to the requirements of the units.
- The operational safety of the units and components is only assured if they are fully assembled and used as intended. Safety devices may not be modified or bypassed.
- Do not operate units or components if there are obvious defects or signs of damage.
- All housing parts and openings in the unit, e.g. air inlets and outlets, must be free of foreign objects, liquids, or gases.
- The units and components must be kept at an adequate distance from flammable, explosive, combustible, abrasive and dirty areas or atmospheres.
- Contact with some parts of the unit or components can result in burns or other injuries.
- Installation, repair and maintenance work may only be carried out by authorised specialists. Visual inspections and cleaning can be performed by the operator as long as the unit is disconnected from the power.
- Take appropriate precautions when performing installation, repair or maintenance work or cleaning the unit to make sure the unit does not pose a danger to persons.
- The units and components should not be exposed to any mechanical load, extreme levels of humidity or direct exposure to sunlight.



Environmental protection and recycling

Disposing 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.



Disposing of the units and their components

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

Transport and packaging

The units are shipped in sturdy transport packaging. Immediately check the units on delivery and make a note of any damage or missing parts on the delivery note. Inform the forwarding agent and contractual partner.

Claims under guarantee made at a later date will not be accepted.

Guarantee

As a prerequisite for any guarantee 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 guarantee conditions are listed in the "General terms and 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.

Unit description

In cooling mode the unit (chilled water outlet) extracts the heat from the interior room to be cooled into the fin register and passes it on to the cold operating medium - water or a mix of water and glycol - within a closed medium cycle. As a result of the heat exchange, the medium heats up and the emergent air cools the room down.

In heating mode, a warm operating medium warms the room to be heated.

The medium cools down as a result of the heat exchange.

To control the cooling or heating capacity, a valve assembly that is available as an accessory is used, which routes the operating medium through the register

(energy is given up) or past the resistor (energy is not given up). The unit is designed for installation in suspended ceilings (horizontal installation), in an indoor area.

Thanks to the new and very robust brushless EC fans (electronically commutated), the energy consumption, particularly in the low speed range, can be reduced significantly and the fan speed can be adjusted infinitely to the requirements. This also enables an infinitely variable output of the cooling or heating capacity in order to obtain an even more constant temperature in the room.

The unit can be operated via numerous controller options or via an external control signal. The applications can be adjusted easily using jumpers. The following controls are possible:

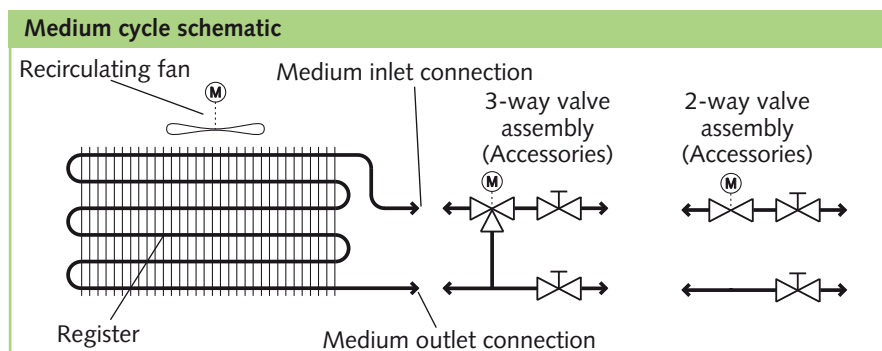
- **Single control** using the IR remote control provided by the factory, alternative cabled remote control (accessory) with five-stage fan operation
- **Network control** for up to 32 units, **all units within** a group via a REMKO bus provided by the factory with five-stage fan operation
- **Network control** for up to 32 units, **specific units within** a group via a REMKO bus provided by the factory with five-stage fan operation

- **Single control** using the wired room temperature **controller (provided)** by the customer or available as an accessory) with three-stage fan operation
- **Group control** using the wired room temperature **controller and switching relay (provided)** by the customer or available as an accessory) with three-stage fan operation
- **Single control** via external **0 - 5V or 0 - 10V signal** (e.g. CBCS) with infinitely variable fan operation
- **Modbus network control** via external hardware **or CBCS** with infinitely variable fan operation

The unit comprises a fin register, an EC recirculating fan, a condensate tray with a condensate pump, an additional condensate tray for the valve assembly, swing fins, controller with IR remote control and shape improver, a discrete cover for horizontal installation within suspended ceilings.

The controller enables the air quantity to be reduced or increased by adjusting the jumpers. This can also be done retroactively and is used to be able to react to changes to the room's use. A potential-free input for the "Enabling contact" and an output for "Operating modes" and "Cooling/heating request" are available.

The accessories available include room temperature controllers for installation in the unit or on the wall, a cooling valve assembly and condensate pumps.



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Intended use

Depending on the model and the equipment, the units are only intended to be used as a cold water drain to cool or warm the operating medium water or a water-glycol mixture within a closed medium cycle. Any other use or use in a way that exceeds the definition above is considered non-intended use. The manufacturer/supplier assumes no liability for damages arising from non-intended use. The user bears the sole risk in such cases. Using the equipment as intended also includes working in accordance with the operating manual and installation instructions and complying with the maintenance requirements.

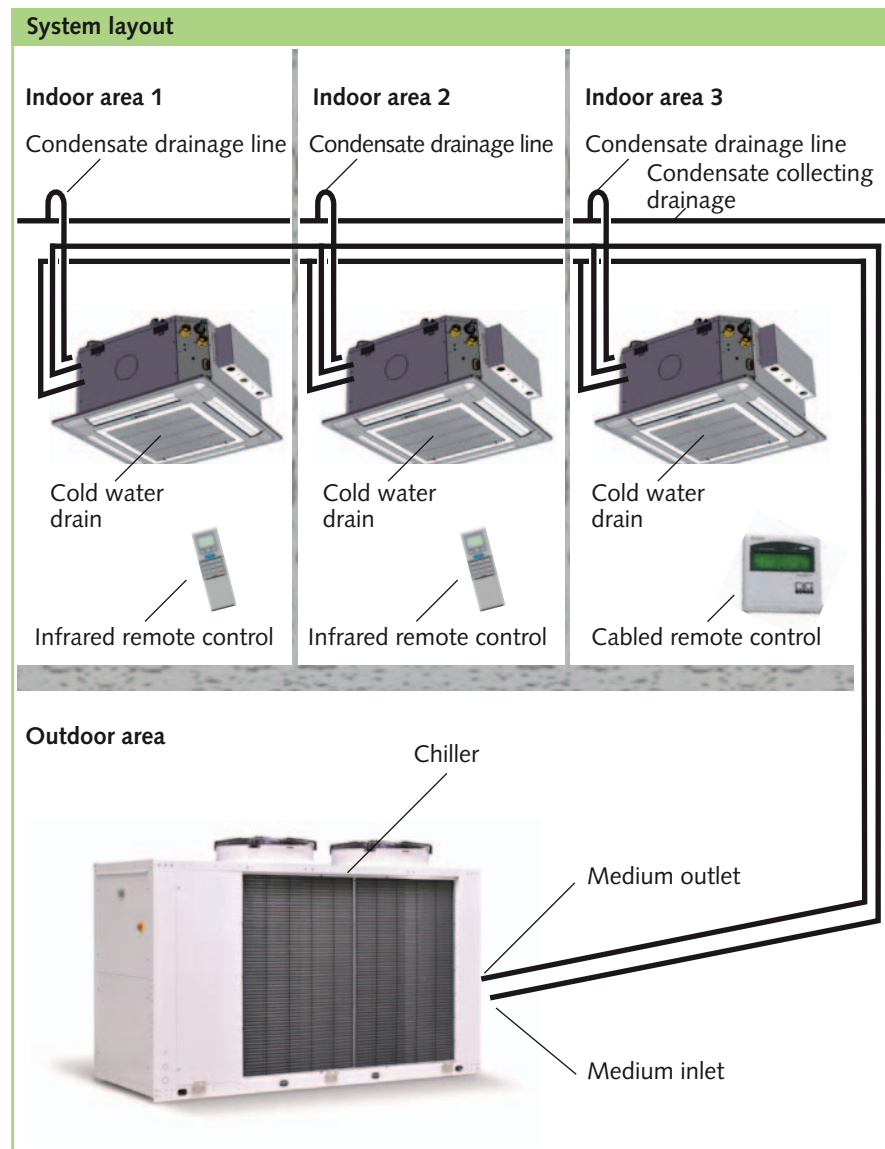
System layout

The unit is designed for a 2-conductor system. The system has 2 medium pipes (conductors: Supply and return flow) for cooling using a cold medium or heating using a warm medium.

In cooling mode the combined cooling register / heating register in the indoor unit extracts the heat from the room air by absorbing it into the operating medium. A circulation pump transports the heated medium to a chiller which extracts the heat from the medium in an evaporator and then passes it on to the outside air via a cooling cycle in a condenser. The cooled

operating medium is then fed in once again to the unit medium circuit.

With 2-conductor systems, which are used for cooling or heating, the heating capacity can be generated through a chiller with heat pump function or through a boiler and fed into the circuit. In heating operation, the indoor unit can deliver the heat from the operating medium to the room air.



Operation

The unit has a variety of operating modes.

The infrared remote control provided by the factory or the cabled remote control that is available as an accessory can be used to operate up to 32 units within a REMKO bus or individually.

At the same time, operation can be carried out via an external controller with a three-stage fan speed, via a room temperature controller that is available as an accessory or via a controller that is provided by the customer (e.g. CBCS).

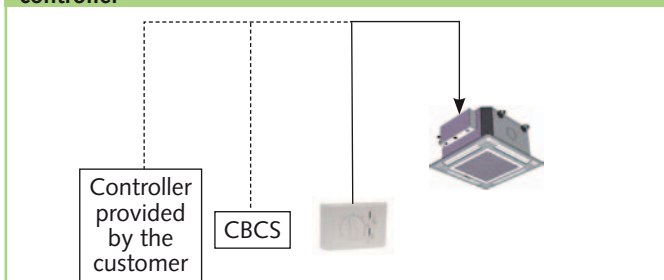
Furthermore, the fan motor can be controlled virtually infinitely via an external 0 - 5V or 0 - 10V signal.

Use the separate operating manuals for this purpose.

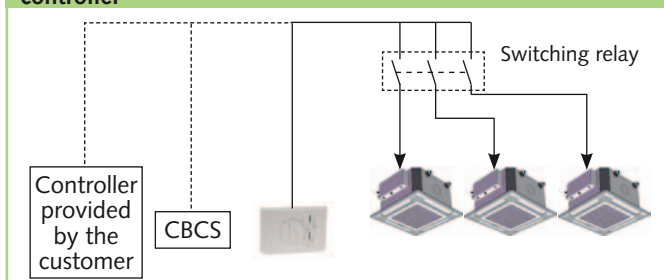
TIP

Help by reducing energy usage in stand-by mode! If the unit, the system or the components are not being used, we recommend disconnecting the power supply. Our recommendation does not apply to safety relevant components.

Single control with three-stage fan operation via an external controller



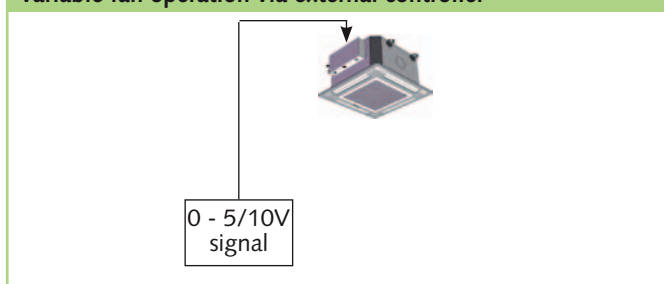
Group control with three-stage fan operation via an external controller



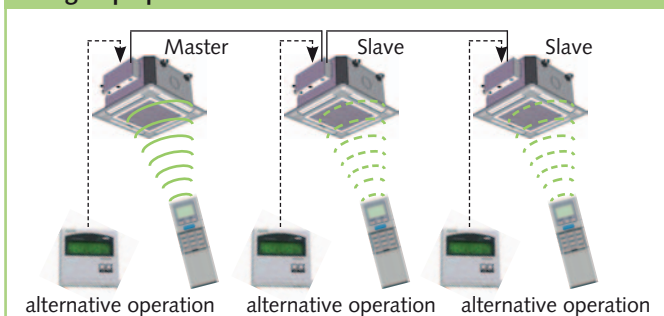
Single operation with five-stage fan operation via IR or alternative cabled remote control



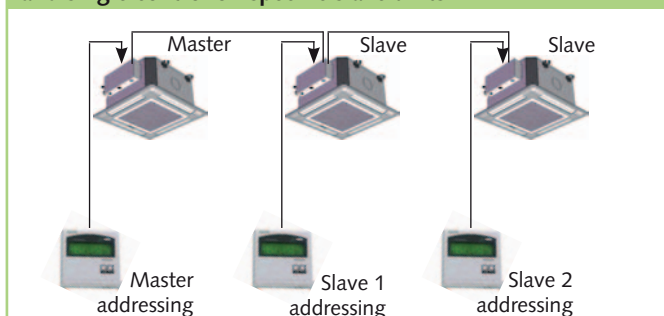
Operation with an external 0 - 5/10V signal and infinitely variable fan operation via external controller



Control in REMKO networks with five-stage fan control and group operation on all slave units



Control in REMKO networks with five-stage fan control and single control on specific slave units



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Manual mode

The unit can also be started manually.

Press the RESET key on the receiver unit of the cover to activate automatic mode. In manual mode, the following settings apply:

Cooling mode: 24 °C,
Fan speed AUTO
Heating mode: 26 °C,
Fan speed AUTO

Press a key on the infrared remote control to interrupt manual mode.

Display

The illuminated display LEDs indicate the set fan speed.

LED H (red) = high fan speed
LED M (yellow) = medium fan speed
LED L (green) = low fan speed

Operation with IR remote control that is fitted as standard

The 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.

The infrared remote control sends the programmed settings a distance of up to 6 m to the receiver of the unit (**fig. 1, page 7**). Data will only be received correctly if the remote control is pointed at the receiver and no objects are obstructing the transmission path.

First insert the supplied batteries (2 each, type AAA) into the remote control. To do so, remove the flap from the battery compartment and insert the batteries the correct way around (see markings)



TIP

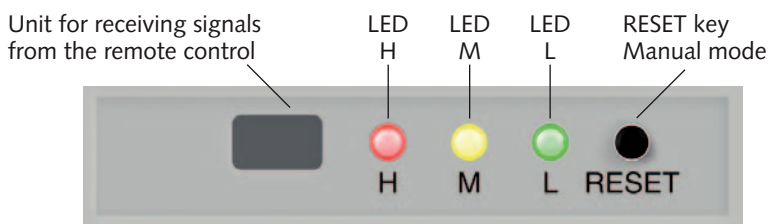
Help by reducing energy usage in stand-by mode! If the unit, the system or the components are not being used, we recommend disconnecting the power supply. Our recommendation does not apply to safety relevant components.



NOTE

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.

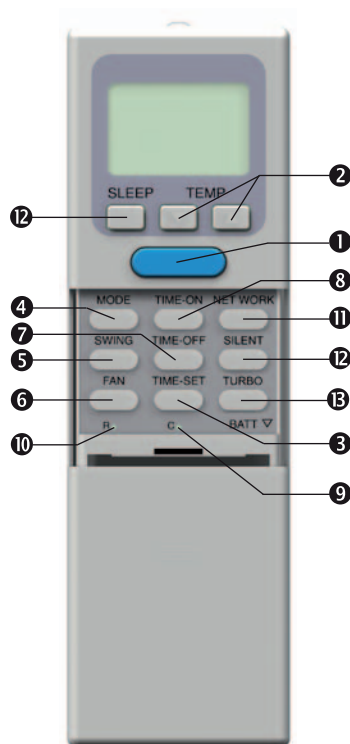
Receiver on indoor unit



CAUTION

If the LEDs, flash, a malfunction has occurred on the indoor unit. (See chapter on troubleshooting and customer service)

Keys on the remote control



Keys on the remote control

❶ "POWER" key

Press this key to start the unit.

❷ "TEMP" key

Press this key to set the desired temperature in 1 °C steps within the range of 16 °C to 30 °C.

❸ "TIME-SET" key

Press this key to set the time.

❹ "MODE" key

Press this key to select the operating mode. The indoor unit has 5 modes:

1. Automatic mode (COOL/HEAT):

In automatic mode, the temperature is maintained at the constant target temperature.

2. Cooling mode (COOL):

In cooling mode, the warm room air is cooled to the lower pre-set target temperature.

3. Dehumidification mode (DRY):

In this mode, the room is mainly dehumidified.

4. Recirculation mode (FAN)

In circulation mode, the air is only circulated. The room temperature is not controlled.

5. Heating mode (HEAT):

In heating mode, the cold room air is heated to the pre-set higher temperature.

❺ "SWING" key

This key switches on the oscillating fins to provide improved air distribution in the room. It can also be used to lock the fins.

❻ "FAN" key

Press this key to set the desired fan speed. 4 stages are available here: Automatic, high, medium and low fan stage.

❼ "TIME-OFF" key

This key is used to program the automatic switch-off function for the indoor unit.

❽ "TIME-ON" key

This key is used to program the automatic switch-on function for the indoor unit.

❾ "C" key

This key is used to activate the time setting.

❿ "R" key

Press this key to reset the remote control to its factory settings.

⓫ "NETWORK" key

Use this key to transfer the data that was set to all other units within a network.

⓬ "SLEEP" key

Pressing this key will automatically increase or decrease the target temperature by 1 °C within an hour in cooling mode and heating mode respectively.

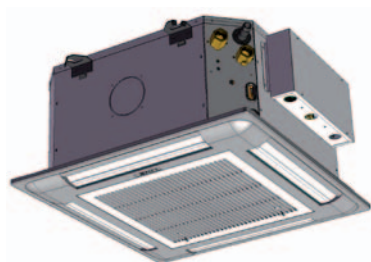
⓭ "SILENT" key

Press this key to set a particularly low fan speed.

⓮ "TURBO" key

Press this key to set a particularly high fan speed.

1 Max. distance 6 m



max. 6 m

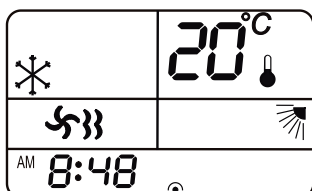


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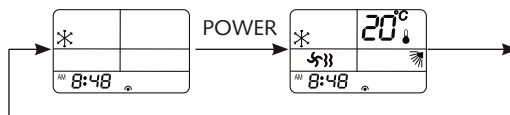
Key functions

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

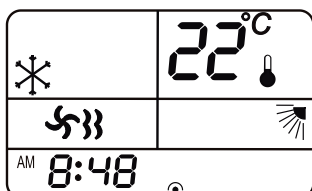
POWER Key



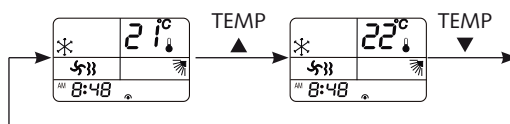
Press the POWER key to activate/deactivate the indoor unit. The programmed settings and parameters are shown on the display before the unit switches off.



TEMP Key



The TEMP key is used to set the desired target temperature in 1 °C steps. This setting is not possible in FAN recirculation mode.



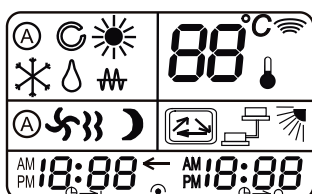
TIME Key



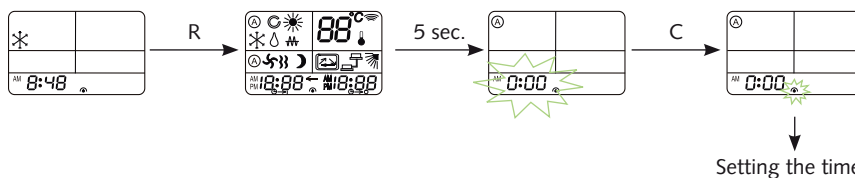
Use a small pen or similar to press recessed key C, the time will flash on the display. Press and hold the TIME-SET key to, at first slowly, and then quickly adjust the clock time. Once it has been set, press the C key again to save the time. The display will stop flashing.



RESET Key

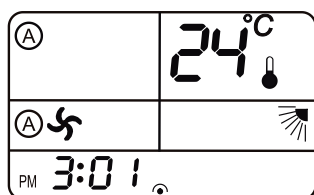


Use a small pen or similar to press recessed key R. All the symbols will appear on the display. After approx. 5 seconds, only the time will flash on the display. After pressing recessed key C, press and hold the TIME-SET key to set the time. Once it has been set, press the C key again to save the time. The display will stop flashing.



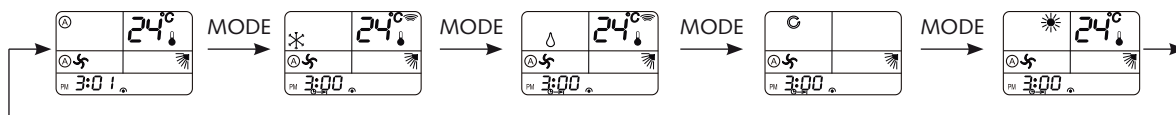
Setting the time

MODE Key

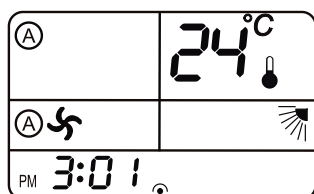


Press the MODE key to change to another mode. A total of 5 modes are available:

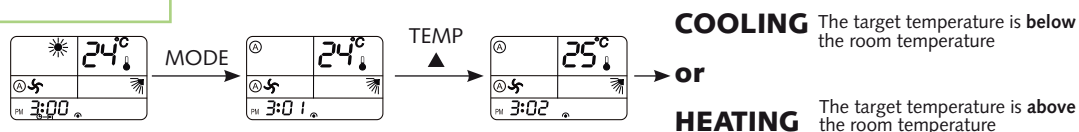
1. **COOL/HEAT** Automatic mode, automatic selection of cooling or heating mode
2. **COOL** Cooling mode, mainly used in summer
3. **DRY** Dehumidification mode, summer or winter mode
4. **FAN** Recirculation mode, no cooling or heating output
5. **HEAT** Heating mode, mainly used in winter



Auto MODE



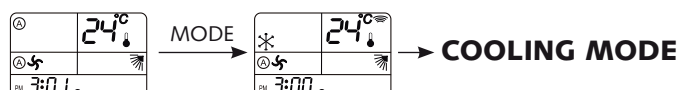
Press the MODE key once or repeatedly to switch to automatic mode. In this mode, the controller automatically selects COOL or HEAT mode depending on the temperature. The temperature is then maintained at the set value. The prerequisite is that sufficient cooling or heating medium at an appropriate temperature is available. The FAN should be set to AUTO.



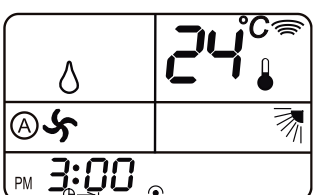
Cool MODE



Press the MODE key once or repeatedly to switch to cooling mode. Use this mode to cool the room air to the desired target temperature. Press the TEMP ▲ / ▼ keys to set the desired room temperature in 1 °C steps. If the room temperature is 1 °C above the desired temperature and sufficient coolant is available, the indoor unit will start to cool the room air. If the actual temperature falls approx. 0.5 °C below the set room temperature, the controller switches cooling off.



Dry MODE

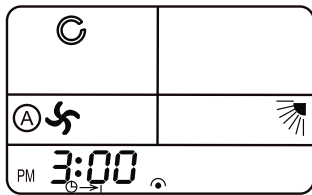


Press the MODE key once or repeatedly to switch to dehumidification mode. Use this mode to dehumidify the room in an unregulated fashion. After pressing the DRY key, select the desired temperature and fan position. It is not possible to set the fan speed. The fan is switched off at certain intervals to lower the temperature at the cooling battery. The low temperature causes the air temperature at the fins to fall below the dew point. Excess humidity in the air condenses on the cooling battery and the room is dehumidified.



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Fan MODE

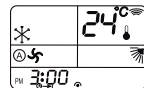


Press the MODE key once or repeatedly to switch to recirculation mode. In this mode, the unit is used as an air circulation unit. The room is neither heated nor cooled.



TIP

This mode allows the heat trapped under the ceiling to be circulated to the lower regions of the room in winter.



MODE



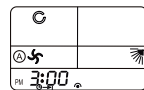
CIRCULATION MODE

Heat MODE



Press the MODE key once or repeatedly to switch to heating mode. Use this mode to heat the room air to the desired target temperature. The prerequisite for this is that sufficient heat is present in the cold water system.

Press the TEMP ▲ / ▼ key to set the desired room temperature in 1 °C steps. If the room temperature is below the set target temperature, the three-way valve provided by the customer opens. If there is sufficient heating medium available, the indoor unit starts to warm up the air in the room. If the actual temperature rises approx. 1 °C above the set room temperature, the controller switches the valve off.



MODE



HEATING MODE



NOTE

Cooling mode:
We recommend setting the target temperature to max. 6 °C below the outdoor temperature. The automatic fan speed and swing functions should also be used.



NOTE

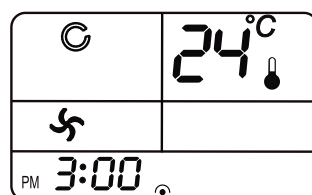
Heating mode:
The fan will only start when the fin temperature reaches 38°C.



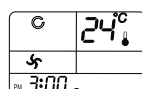
TIP

Heating mode:
We recommend setting the target temperature to max. 28°C. Maximum fan speed and the lowest fin setting should also be used.

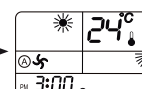
SWING Key



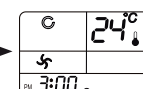
The SWING key is used to provide continual and automatic vertical adjustment of the fins. When switched on, the cooled air inside the room is distributed better. If the SWING key is pressed during the swing motion, the fins stop in their current position. Pressing the key again resumes the swing motion.



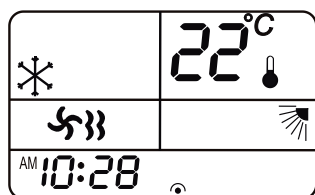
SWING



SWING

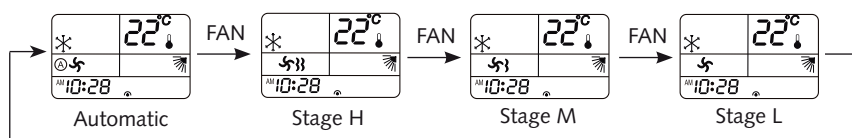


FAN Key



After pressing the "FAN" key, "AUTO" is shown on the fan speed display. Each press of the key cycles through a high (H), medium (M) and low (L) speed setting.

In AUTO mode, the controller selects the fan speed automatically. The greater the difference between the target and actual temperature, the higher the speed. A fixed speed is set in all stages.

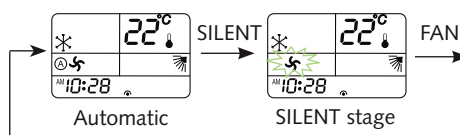


SILENT Key



Pressing the "SILENT" key sets the fan to a particularly low speed and the fan symbol starts to flash. This stage is used to reduce the noise emissions again for example.

After pressing the "FAN" key, SILENT mode is exited.

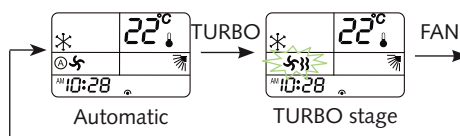


TURBO Key



Pressing the "TURBO" key sets the fan to a particularly high speed and the fan symbol for stage H starts to flash. This stage is used to cool or heat the room faster for example.

After pressing the "FAN" key, TURBO mode is exited.



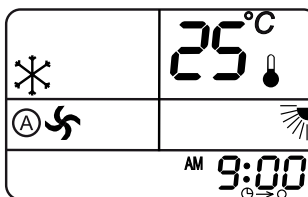
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TIME Keys

Switch-on time



Switch-off time



The TIME-ON/-OFF keys are used to program the switch-on/off time, the TIME-SET key to set the time.

Press the TIME-ON or TIME-OFF key to activate the timer. The clock display then disappears. The timer symbol for the switch-on/off time will flash. Press the TIME-SET key to set the desired switch-on/off time in 10 minute steps.

After programming has been completed, the settings are transmitted to the indoor unit. For delayed switch-on, press the TIME-ON key, for delayed switch-off, press the TIME-OFF key. The timer symbol will stop flashing and the indoor unit beeps to acknowledge the programmed parameters.

The unit automatically switches on or off once the programmed time is reached. If the indoor unit is switched on automatically, the previously set mode, temperature and fan speed are activated. .

The switch-on/off time can be prematurely cancelled by pressing the appropriate TIME key or POWER key.

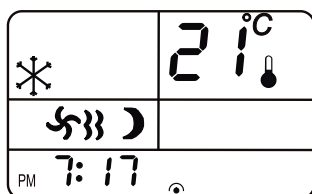
Switch-on time



Switch-off time

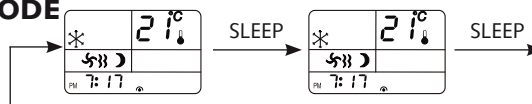


SLEEP Key

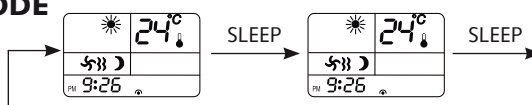


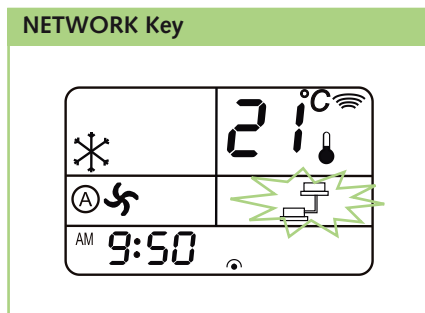
After the SLEEP key is pressed, the symbol is shown on the display and the room temperature is raised or lowered by 0.5 °C in cooling and heating mode respectively 30 minutes after the function starts up. After a further 30 minutes, the room temperature is raised or lowered by 1 °C in cooling and heating mode respectively. After a further hour, the room temperature is held at a constant 2°C above or below the original target temperature in cooling and heating modes respectively. This temperature is then maintained at a constant level. This function is disabled by pressing the POWER or SLEEP key. The symbol on the display extinguishes.

COOLING MODE

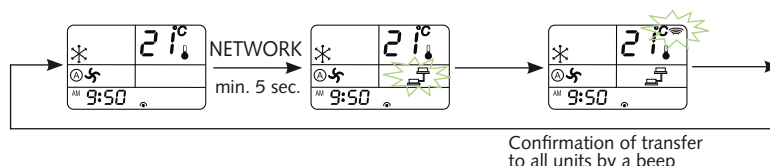


HEATING MODE



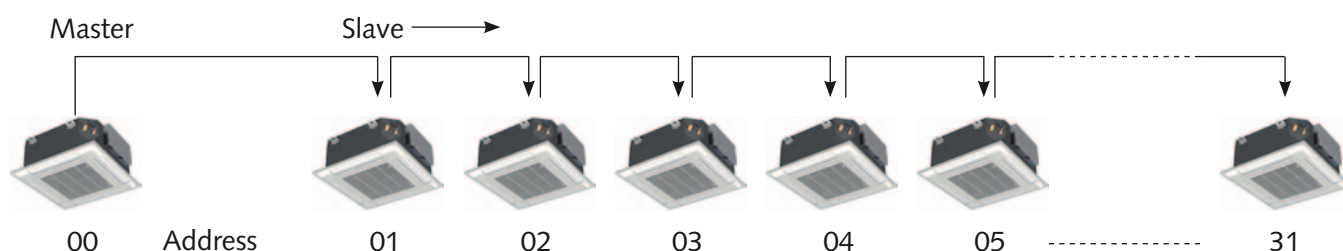


The NETWORK key enables the settings on the master unit (leading unit) to be transferred to all slave units (subsequent units) on the network. All units confirm that they have received the settings correctly by beeping. The infrared remote controls do not copy the changed settings. Press and hold the key for 5 seconds to transfer. However, each individual unit can still be operated individually after this.



Master / slave behaviour

If multiple units are installed, for example within a room, a higher-level unit (leading unit = master) can transfer the remote control's settings to all lower-level units (subsequent unit = slave). To transfer the data, the leading unit is connected to the subsequent units via a bus connection line (accessory). The master unit can be operated via a standard infrared remote control or via a fixed cabled remote control (accessory). The data that is sent is then transferred to all other slave units via the internal bus line. The number of slave units is limited to 31.



Two different network variants are available:

1. Operating a group:

Leading unit (master) function:

A standard IR or an alternative cabled remote control for the master unit can control the master and all slave units.

Subsequent unit (slave) function:

A standard IR or an alternative cabled remote control for the slave unit can control the only the corresponding slave unit.

2. Operating a group or specific units within a group:

Leading unit (master) function:

A cabled remote control that is available as an accessory for the master unit can control the master unit, all slave units as a group or individual slave unit separately.

Subsequent unit (slave) function:

A cabled remote control that is available as an accessory for the slave unit can control the only the slave unit to which it is connected.

REMKO KWD EC series

The following table is used to assign the relevant selected addresses to the corresponding room designation. The procedure for assigning addresses to units is described in the "Configuration" chapter. The master unit must be allocated address 00. Also note that the same address can also be assigned to multiple units in order to operate a corresponding unit group.

Address	Room designation
00 --> Master	
01	
02	
03	
04	
05	
06	
07	
08	
09	
10	
11	
12	
13	
14	
15	
16	
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27	
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29	
30	
31	

Shutdown

Temporary shutdown

1. Let the unit run for 2 to 3 hours in circulation mode, or in cooling mode at maximum temperature, to extract any residual humidity from the unit.
2. Shut down the system using the controller.
3. Switch off the 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.

Care and maintenance

Regular care and maintenance ensure the trouble-free operation and long service life of the unit.



CAUTION

Care and maintenance work may only be carried out if the unit is disconnected.

Care

- Ensure the unit is protected against dirt, mould and other deposits.
- 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 shutdown periods.

Maintenance

- We recommend that you take out a maintenance contract with an annual service from an appropriate specialist firm.

Cleaning the cover

1. Disconnect the power supply to the unit.
2. Open and fold down the air inlet guard on the cover.
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.



TIP

A maintenance contract will guarantee that your system always operates reliably!

Type of task Checks / Maintenance / Inspection	Commissioning	Monthly	Half-yearly	Yearly
General	•			•
Medium cycle bleeding	•		•	
Check medium filling	•		•	
Contamination of fin register	•	•		
Filter contamination	•	•		
Check voltage and current	•			•
Check function of fan	•			•
Check condensate drainage	•		•	
Check insulation	•			•

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Cleaning the filter

1. Disconnect the power supply to the unit.
2. Open and fold down the air inlet guard on the cover. The filter is held in place by the flaps screwed in at the side of the intake grill (**Fig. 2**).
3. Tilt the filter and lift it out (**Fig. 3**).
4. Clean the filter with a commercially available vacuum cleaner. Turn the dirty side upwards to do this (**Fig. 4**).
5. Dirt can also be removed by carefully cleaning with lukewarm water and mild cleaning agents. Turn the dirty side downwards to do this (**Fig. 5**).
6. If water is used, let the filter dry out properly in air before replacing it in the unit.
7. Carefully insert the filter. Ensure that it locates correctly.
8. Close the cover as described above but in reverse order.
9. Switch the power supply back on.
10. Switch the unit back on.

Cleaning the condensate pump

The unit includes a built-in condensate pump for pumping the condensate to a drain at a higher level.

The pump is more or less maintenance-free. The condensate drainage lines should be checked for dirt at regular intervals. Clean them as required.

If an external pump is also used, observe the care and maintenance instructions in the separate operating manual.

2 Air inlet grill on the cover



3 Pull out the filter



4 Cleaning using a vacuum cleaner



5 Cleaning with lukewarm water



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 should occur, please check the functions as detailed in the list below. With systems for cooling or heating with indoor units, chillers or heating systems the chapter "Troubleshooting and customer service" in all operating manuals must also be observed. Please inform your dealer if the unit is still not working correctly after all function checks have been performed!

Operational malfunctions

Malfunction	Possible cause	Check	Remedial measures
The unit does not start or switches itself off.	Power failure, under-voltage.	Does all other electrical equipment function correctly?	Check the power and wait for it to come back on if necessary.
	Mains fuse faulty. Master switch off.	Are all lighting circuits functioning correctly?	Replace the mains fuse. Switch on the master switch.
	Power supply damaged.	Does all other electrical equipment function correctly?	Repair by specialist firm.
	Waiting time after switching on too short.	Does a restart occur after around 5 minutes?	Plan for longer wait period.
	Operational temperature range too low or exceeded.	Are the fans in the indoor unit and outdoor unit working correctly?	Observe temperature ranges of indoor unit and outdoor unit.
	Power surge due to thunderstorm.	Have there been any lighting strikes in the area recently?	Turn the main fuse off and turn it on again. Inspection by certified service centre.
	External condensate pump alarm.	Has the pump shut down due to a malfunction?	Check the pump and clean it if necessary.
The unit does not respond to the remote control.	Heating mode: Minimum heat exchanger temperature not reached	Is the unit in the warm-up or cool-down phase (see "Malfunction indicated by flashing code")?	Check or increase the inlet temperature.
	Transmission distance too large / receiving problem.	Does the indoor unit beep when pressing a key?	Reduce the distance to less than 6 m and change location.
	Remote control is faulty	Is the unit running in manual mode?	Replace remote control.
	Receiver and transmitter are exposed to too much sunlight.	Does it function correctly in the shade?	Shade the transmitter and receiver.
	Electromagnetic fields disrupt the transmission.	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 / press only one key.
	Batteries of remote control are flat.	Have new batteries been inserted? Is the display incomplete?	Insert new batteries.

Please note that this "Troubleshooting table" continues on the next page!

REMKO KWD EC series

Malfunction	Possible cause	Check	Remedial measures
The unit works at reduced or no cooling/heating capacity.	Valve assembly jammed, not working, not yet fully activated.	Is electrical power present at the valve head or has the time period of 3 minutes after activation passed?	Have the valve head replaced or wait for time period to pass.
	Filter is dirty / air inlet / outlet opening is blocked by debris.	Have the filters been cleaned?	Clean filters.
	Windows and doors open / heat or cold load was increased.	Have structural / usage modifications been made?	Close windows and doors / install additional systems.
	Cooling mode is not set.	Does the "cooling" symbol appear on the display?	Correct the unit's settings.
	Inlet temperature in cooling mode too high.	Is the inlet temperature approx. + 5 - + 10 °C and is the circulation pump working?	Reduce inlet temperature.
	Inlet temperature in heating mode too low.	Is the inlet temperature approx. + 24 - + 45 °C and is the circulation pump working?	Increase inlet temperature.
Condensate is leaking out of the unit.	Collector reservoir drain pipe blocked / damaged.	Can the condensate drain off without any obstruction?	Clean the drainage pipe and collection container.
	External condensation pump or floater defective.	Is the collection tray full of water and the pump not running?	Have pump replaced by certified service centre.
	Condensation 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 cannot be discharged.	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. Replace the faulty liquid level switch or condensate pump.
	Float is stuck or jammed due to excessive dirt.	Are the LEDs on the receiver unit of the indoor unit flashing?	Have it cleaned by specialist firm.

Malfunction indicated by flashing code

H (red)	M (yellow)	L (green)	Cause	Required action
On			Fan at max. speed	Normal operating condition
	On		Fan at medium speed	Normal operating condition
		On	Fan at low speed	Normal operating condition
	Flashes		Heating mode: Warm-up phase, fan not active, heat exchanger temperature <28/36°C (corresponds to DIP3, SW5)	Wait approx. 1 minute
		Flashes	Heating mode: Cool-down phase, fan active (only for DIP3 configuration, SW7 = ON)	Wait approx. 1 minute
On	Flashes	Flashes	Register probe faulty / tripped	Contact specialist dealer
Flashes			Cooling mode: Indoor unit anti-freeze protection <2°C for 10 minutes	Increase the medium temperature
Flashes	On		Heat exchanger/anti-freeze protection probe >75°C	Reduce the medium temperature
	Flashes	Flashes	Heating mode: Overheating protection for indoor unit	Reduce the medium temperature
Flashes		Flashes	Indoor unit ambient air probe faulty/tripped	Contact specialist dealer
Flashes	Flashes	Flashes	Condensation pump liquid level switch faulty/tripped	Contact specialist dealer
On	Flashes		Window contact tripped / system in standby	Open the enabling contact (terminals 3 + 4)

Installation instructions for qualified personnel

Important notes prior to installation

- Observe the operating manuals for the indoor unit and the chiller or heating system when installing the entire system.
- The indoor units and chillers work independently. A connecting line between the two is not necessary.
- 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.
- Select an installation location which allows air to flow freely through the 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.
- Lift the unit at the corners and not by the medium or condensate connections.
- The medium connection lines, valves and connections must have vapour density insulation. If necessary, also insulate the condensate drainage line. In dual systems with cooling and heating modes, the requirements of the current Energy Savings Ordinance (EnEV) are to be complied with.
- Seal off open lines to prevent dirt getting in and never kink or crimp the lines.

- Avoid unnecessary bends. This minimises the pressure loss in the lines.
- Make all electrical connections in accordance with applicable DIN and VDE standards.
- Always attach electrical lines properly in electrical clamps (otherwise a fire could result).
- Service openings should be provided in the suspended ceiling to allow maintenance access to the control box or the valve assembly.
- Any ventilation ducts or pipes and connection fittings, which are used to connect a second room or supply fresh air, should be insulated with diffusion-tight material.
- Only install the valve assembly or other attachments once the indoor unit has been installed.

Installation material

The unit is attached using 4 threaded rods provided by the customer.

In order to be able to complete installation, wall plugs, trapezoidal sheet metal supports, steel profiles, fixing clamps for medium and condensate drainage lines (as well as laying ducts), and connection fittings for condensate drainage lines are required.

Selecting the installation location

The unit is specifically designed for horizontal mounting in suspended ceilings with Euroraster dimensions. However, it can also be installed in suspended ceilings with different dimensions.

Take into account the installation height of the units.

Minimum clearances

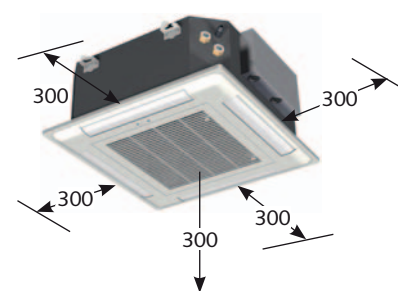
Observe the minimum clearances to allow access for maintenance and repair work in the suspended ceiling and to facilitate optimum air distribution for the cover.

NOTE

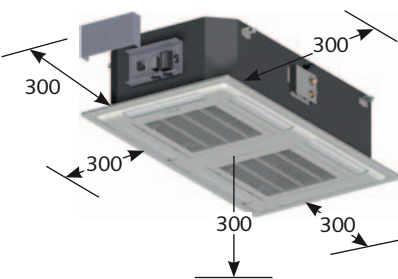
If the unit is operated in heating mode, the maximum installation height of 2.7m must not be exceeded and a cabled remote control must be used if necessary.

Minimum clearances

KWD 25 EC to KWD 55 EC



KWD 70 EC to KWD 100 EC



Dimensions in mm

REMKO KWD EC series

Installation

Unit installation

The unit is mounted with the cover face down on four threaded rods. Take into account the ceiling grid and any other installations.

1. Use the dimensions of the ceiling cassette to mark the fixing points for the threaded rods on structural parts approved to support the static load above the suspended ceiling.
2. Fit any connection nozzles before installing the unit if connections to a second room or a fresh air intake are required. See the "Connections to a second room or a fresh air intake" section.
3. Fit the unit onto the threaded rods and use the lower nuts to level the unit (**Fig. 6**). This ensures that the condensate drains into the collection tray.
4. Make sure that clearance A, as specified in the table below, is maintained between the underside of the suspended unit and the underside of the fastening (**Fig. 7**).
5. Connect the refrigerant piping, electrical cables and condensate drainage line to the indoor unit as described below.
6. Check again that the unit is level.
7. The final task is to tighten the counter nuts and attach the cover.



CAUTION

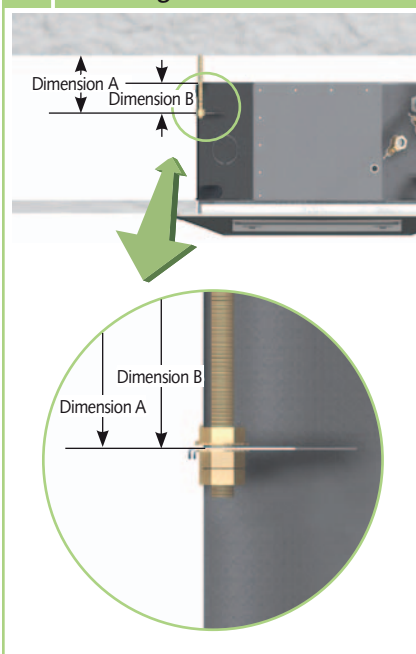
Installation should only be performed by authorised specialists.

6 Hooking in the unit



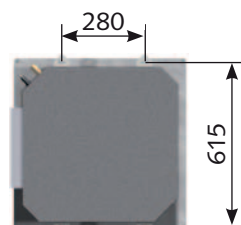
Dimensions in mm	KWD 25 EC-55 EC	KWD 70 EC-100 EC
Distance A	35	35
Distance B	25	25
Unit mount	615 x 280	615 x 810

7 Fastening the unit

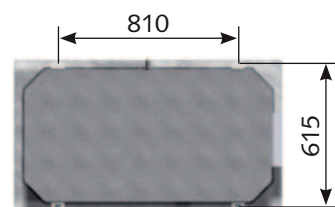


Unit mount

KWD 25 EC-55 EC



KWD 70 EC-100 EC



Dimensions in mm

Connection for medium piping

- The piping connection provided by the customer is carried out on an angled side of the unit on the KWD 25 EC-55 EC and in the middle of the longer side on the KWD 70 EC-100 EC.
- For servicing purposes, connections must be equipped with shut-off valves and flow volumes adjusted using valves for hydronic balancing.
- Additional automatic bleed valves are to be provided in the supply and return at the installation's highest point.
- The medium piping may not exert any structural load on the unit.
- The line connections may not generate any thermal or mechanical stresses on the unit. If necessary cool the piping or support with the second tool.

Required system components

Valve assembly (accessory)

In 2-conductor systems, cold or warm medium is fed through the register in the unit and cold or warm air can then be released. Control is provided by the 3-way valve assembly. It comprises the electrically actuated valve head and the valve body. If the head is electrically activated, it actuates the body, which routes the medium into the register. If the temperature is reached then the head is switched off and the medium is fed through the bypass past the register. The bypass serves to ensure the minimum medium flow rate for the chiller.



NOTE

The time between being fully open and fully closed can be approx. three minutes.

Valves for hydronic balancing

The calculated individual pressure losses in the pipeline network layout for each individual unit are adjusted to the entire system with pipe leg regulating valves to be provided on-site. The nominal flow rates for the medium adjust to the necessary values as a consequence of the pressure loss.

Anti-freeze protection (accessories)

A water glycol mix is generally used as medium for a cold water system. Depending on the use to which the glycol type and quantity is put, the viscosity changes, the loss in pressure

increases and the unit's cooling or heating capacity reduces.

All system components must be approved for use with glycol.



CAUTION

When disposing, the product requirements of the glycol type which is used must be observed.

Diaphragm expansion vessel (DEV)

To avoid pressure fluctuations during standstill because of temperature changes, diaphragm expansion vessels filled with nitrogen (moisture neutral) must be integrated in the system.



NOTE

No moisture can condense in the nitrogen filler.

Safety valve

Safety valves limit excess operating pressure due to excess warming or overfilling of the operating medium. The valve outlet requires unobstructed draining into a drain line. Applicable local disposal ordinances must be observed if glycol is used.

Automatic bleed valves

The unit has one or two manual bleed valves on the collector pipe of the register. The unit can be bled separately after the system has been filled.

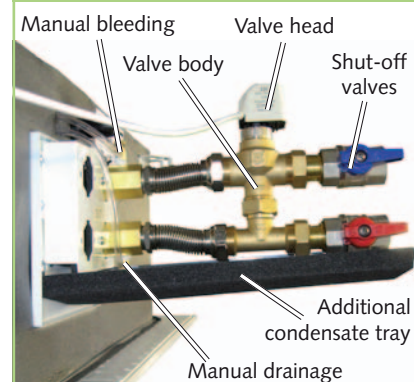
Automatic air vent valves must also be installed at the highest point in the collective lines.



CAUTION

Glycol tolerant air vent valves are necessary when using media that contain glycol.

Manual bleeding



Condensate tray (standard equipment)

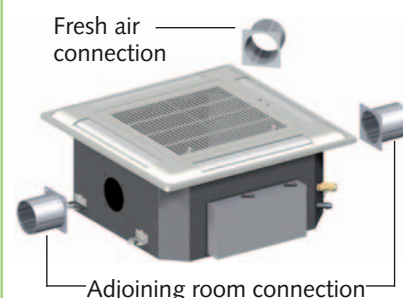
The delivery includes an additional condensate tray for installation on the side of the unit in the suspended ceiling. This is required to catch the condensate that arises on a valve assembly or on the valves provided by the customer. Subsequently check the incline and that it is functioning correctly.

Connections to adjoining room and fresh air intake

The unit has been designed to enable cooling a second room and taking in fresh air independently of this.

Connections to adjoining room and fresh air intake

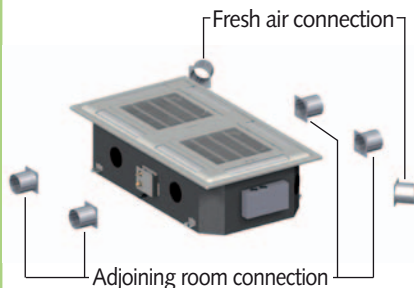
KWD 25 EC-55 EC



REMKO KWD EC series

Connections to adjoining room and fresh air intake

KWD 70 EC-100 EC



CAUTION

Only one fresh air and one adjoining room connection are permitted to be used!

8 Remove the cut-out



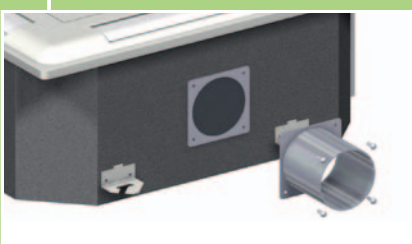
9 Remove the insulation



10 Break through the opening



11 Install the nozzles



Installation instructions

Proceed as follows to make the connections to a second room and the fresh air intake:

1. Note that the exchanger fins are located directly behind the opening being removed. These should not be damaged under any circumstances (**Fig. 8**).
2. Carefully remove the insulation behind the opening (**Fig. 9**).
3. Break through the appropriate opening (**Fig. 10**).
4. Keep the ventilation pipes as short as possible and lay them in such a way as to minimise the number of bends.
5. The collars, screws, flexible / folded spiral seam pipes and insulation materials must be provided by the customer. These items can be obtained from specialist suppliers (**Fig 11**).

Adjoining room connection

The unit can also be used to cool an adjoining room through a duct system, e.g. hidden behind a suspended ceiling. The following prerequisites must be met for this:

- Observe the regional regulations concerning air treatment.
- Fit a collar with a nominal diameter of 100 mm to the adjoining room connection.
- The cooling capacity of the indoor unit must be sufficient for both rooms.
- An opening must be made between both rooms to allow the air to circulate.

- The maximum pipe length of 7 m must not be exceeded (**page 22, Fig. 12**).

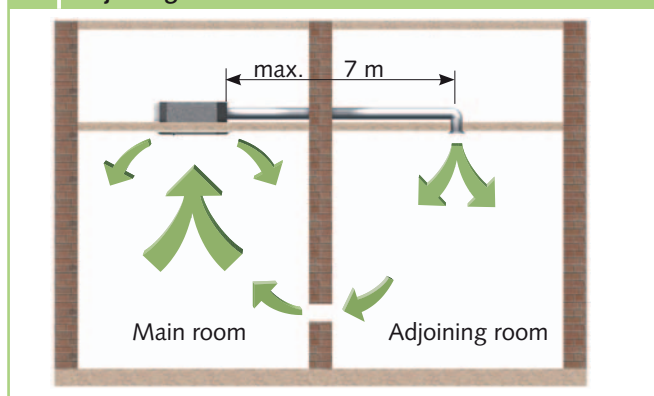
- In order to ensure that the air is transported to the adjoining room, close off 1 or 2 of the 4 outlets on the cover. Stick a black single-sided adhesive fabric strip over the outlet openings being covered. This strip must be able to withstand the effects of a continual air flow.

Fresh air connection

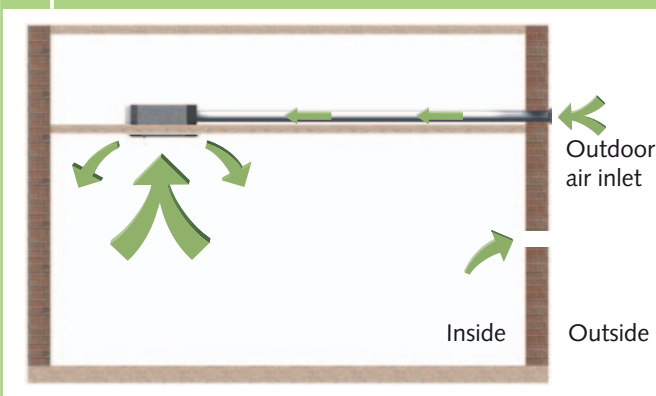
The unit can also be employed to suck in and regulate the temperature of fresh air (outdoor air), in addition to room air. This is the preferred option for rooms with a high rate of air consumption.

- Observe the regional regulations concerning air treatment.
- Fit a collar with a nominal diameter of 100 mm to the fresh air connection (**page 22, Fig. 13**).
- The fresh air content should not exceed 10% of the nominal air flow rate for the unit. The fresh air supply should be controlled by an additional speed-regulated fan.
- The air at the outdoor air intake should be sucked in through a dust filter at a maximum rate of 2.5 m/s to prevent the ingress of rain water.
- The fan should be connected to a separately protected electrical supply that is to be provided by the customer.

12 Adjoining room connection



13 Fresh air connection



Condensate drainage connection

If the temperature falls below the dew point, condensate will form on the cooling fins during cooling mode.

A collection tray together with a condensate pump and liquid level switch are fitted as standard below the cooling fins. If the liquid level switch trips a protective shutdown due to inadequate removal of the condensate, the pump will switch on immediately and run on for approx. three minutes.

- The condensate drainage line provided by the customer should have an incline of at least 2 %. If necessary, fit vapour-diffusion-proof insulation.

- If the level of the condensate drainage line on the unit is above that of the outlet, route the pipe vertically upwards and then with an incline to the drain.

- Route the condensate drainage line of the unit freely into the drain line. If the condensate runs directly into a sewer pipe, fit a trap to prevent any unpleasant odours.

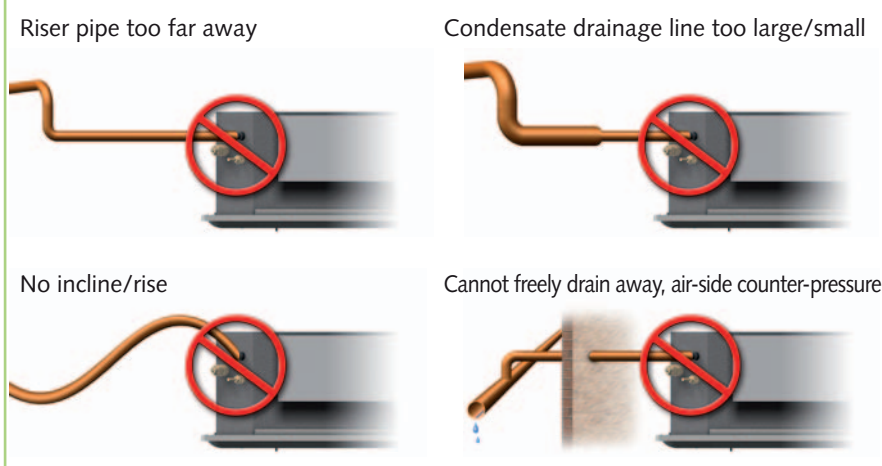
- When operating the unit at outdoor temperatures below 0°C, ensure the condensate drainage line is laid to protect it against frost. If necessary, fit a pipe heater.

- After installation is complete, check for unobstructed condensation run off and ensure that a permanent seal is provided.

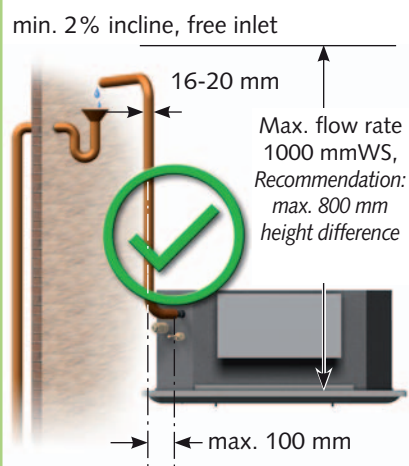
CAUTION

The max. pump pressure of the condensate pump is 1000 mmWS. Capacity reductions can result from external influences such as air-side counter-pressure, soiling or wear. In order to guarantee safe functional operation, we recommend observing a maximum delivery height of 800 mm!

Condensate drainage connection - Incorrect!



Condensate drainage connection - Correct!



REMKO KWD EC series

Electrical wiring

⚠ CAUTION

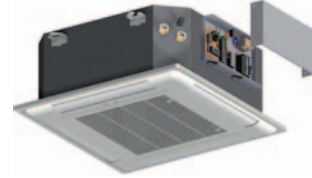
All electrical installation work is to be performed by specialist companies. Disconnect the power supply when connecting the electrical terminals.

⚠ CAUTION

Check all plug and terminal connections to verify that they are tight and make a permanent contact. Tighten as required.

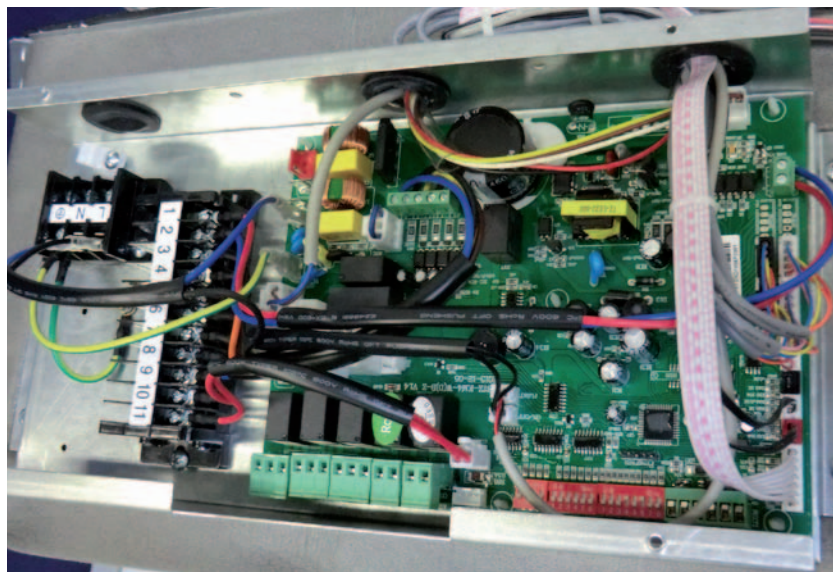
Control box cover

KWD 25 EC to 100 EC



- We recommend installing a master / repair switch provided by the customer close to the indoor unit.
- The power supply is made at the indoor unit, a control line to the chiller is not necessary.
- If a condensate pump, which is available as an accessory, is used in conjunction with the unit, the pump switching-off contact switches off the power supply or the valve if necessary.
- The terminal block is located inside the unit. It can be accessed after opening the cover.

KWD 25 EC to 100 EC control box

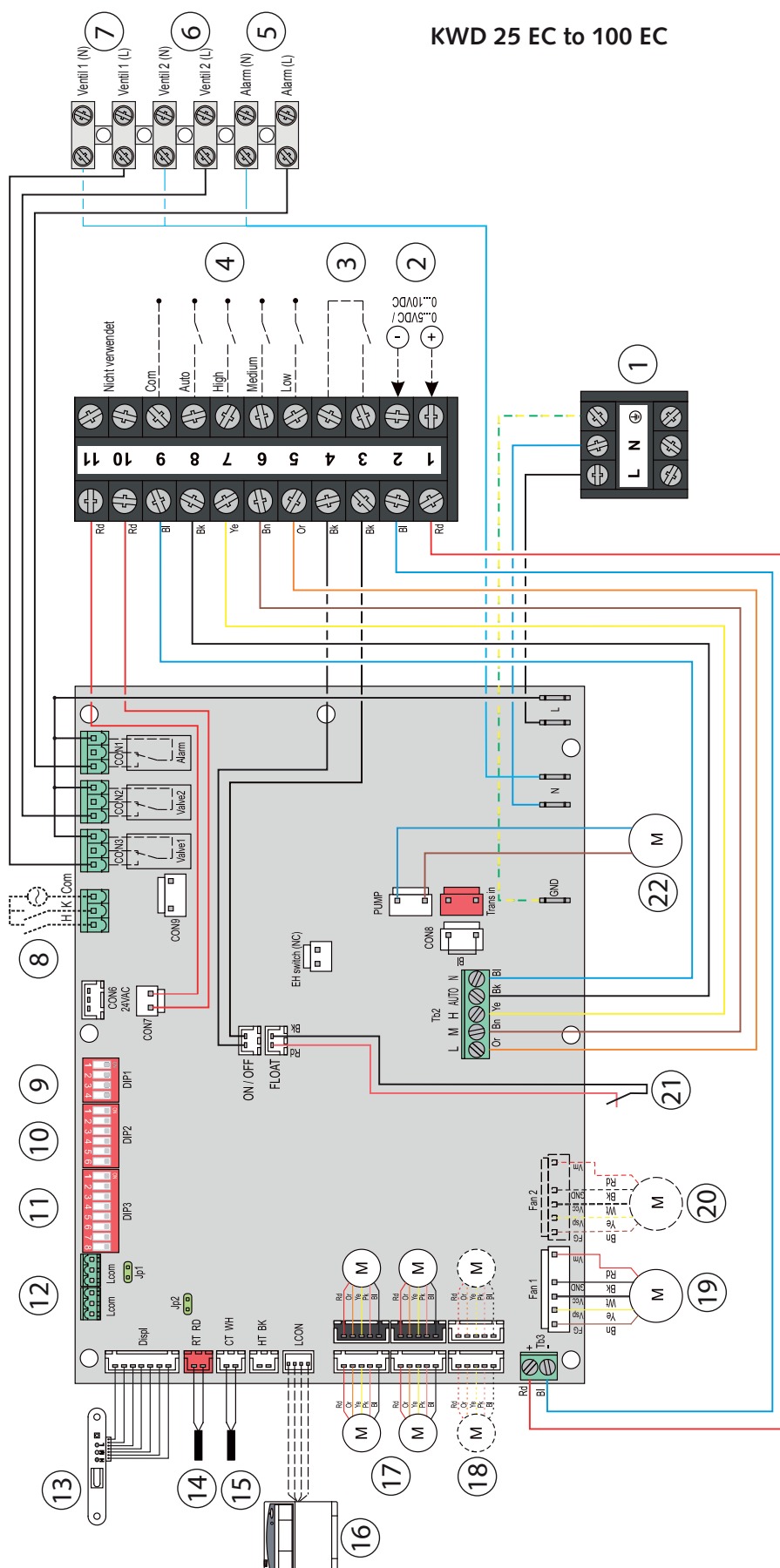


Proceed as follows to establish the connection:

1. Open the control box cover by removing the fixing screws and lifting off the cover.
2. Feed the de-energised cable through the edge protection rings on the control box and clamp the cable in the strain relief.
3. Then connect the cable in accordance with the connection diagram.
4. Connect the electrical plugs on the cover to the mating connectors on the cassette. It is not possible to incorrectly connect these.
5. Configure the unit according to its use via the switch blocks and the terminal connections.
6. Mount all removed parts.

Measurement temperature C°	Probe resistance value
-20	37.4 kΩ
-15	29.0 kΩ
-10	22.7 kΩ
-5	17.9 kΩ
0	14.2 kΩ
+5	11.4 Ω
+10	9.1 kΩ
+15	7.4 kΩ
+20	6.1 kΩ
+25	5.0 kΩ
+30	4.1 kΩ
+35	3.4 kΩ
+40	2.9 kΩ
+45	2.4 kΩ
+50	2.0 kΩ
+55	1.7 kΩ
+60	1.5 kΩ
+65	1.3 kΩ
+70	1.1 kΩ
+75	0.9 kΩ

Electrical drawings



Legend

- 1: Power supply
- 2: External control voltage 0-5V/0-10V
- 3: External enabling contact
- 4: External speed stage control
- 5: General alarm signal 230V (NO)
- 6: 230V valve connection (heating 4-L)
- 7: 230V cooling/heating valve connection (cooling 4-L)
- 8: External cooling/heating contact
- 9: Factory configuration
- 10: Network configuration
- 11: Function configuration

Colour codes

Wt	=	white
Gn	=	green
Ye	=	yellow
Pk	=	pink
Gn/Ye	=	green/yellow
Bl	=	blue
Bn	=	brown
Bk	=	black
Gr	=	grey
Vi	=	violet
Or	=	orange
Rd	=	red

- 12: Internal Lcom network
- 13: IR receiver panel
- 14: Probe, ambient air
- 15: Anti-freeze protection probe
- 16: Cabled remote control (accessory)
- 17: Swing motor 1-4
- 18: Swing motor 5-6 (KWD 70-100 EC only)
- 19: Fan motor
- 20: Fan motor (KWD 70-100 EC only)
- 21: internal liquid level switch
- 22: internal condensate pump

REMKO KWD EC series

Configuration

The units can also be adjusted to the local conditions by adjusting DIP switch blocks 2 and 3 accordingly. DIP switch block 2 is used to configure the network addresses within a bus system. Settings for adjusting the unit to the system layout can be made on DIP switch block 3.

Configuration is carried out using white slide switch SW1- 6 for DIP2 and SW 1-8 for DIP3. The following settings must be made according to usage before starting up for the first time.

Network configuration (DIP2)

The addresses for the leading (master) and subsequent (slave) units are defined using switch block DIP2.

Function logic (DIP3)

The units can be used for numerous applications and requirements. The following settings are possible using switch block DIP3:

SW 1-3: 2- or 4- conductor function

SW 4: Use of a valve

SW 5: Fan function in the warm-up phase

SW 6: Fan communication

SW 7: Fan function in re-heat mode

SW 8: internal/external controller

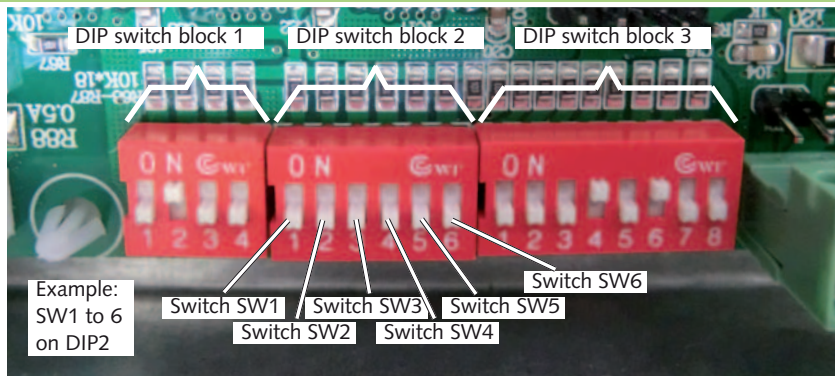
DIP1: Unit type	SW 1	SW 2	SW 3	SW 4
KWD 25EC	ON	OFF	OFF	OFF
KWD 35EC	ON	OFF	OFF	OFF
KWD 45EC	OFF	ON	OFF	OFF
KWD 55EC	OFF	OFF	ON	OFF
KWD 70EC	ON	OFF	OFF	OFF
KWD 85EC	ON	ON	OFF	OFF
KWD 100EC	OFF	OFF	ON	OFF



CAUTION

DIP switch block 1 is required for factory configuration and is adjusted specifically to the unit by the factory. Adjusting the switch on switch block 1 can lead to errors during operation.

DIP switch blocks 1 to 3



DIP3: Function logic	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 7	SW 8
2-conductor cooling/heating	OFF	OFF	OFF					
2-conductor with electrical heating register (backup)	OFF	OFF	ON					
2-conductor only cooling mode	OFF	ON	OFF					
2-conductor with electrical heating register (1st stage)	OFF	ON	ON					
4-conductor without electrical heating register	ON	ON	OFF					
4-conductor with electrical heating register (backup)	ON	ON	ON					
Use of a control valve				ON				
Use without a control valve				OFF				
Heating mode fan operation >36°C					ON			
Heating mode fan operation >28°C					OFF			
Close-loop fan operation						ON		
Open-loop fan operation						OFF		
Re-heat mode fan not active							ON	
Re-heat mode fan active							OFF	
Use of the internal controller								ON
Use of external controllers								OFF

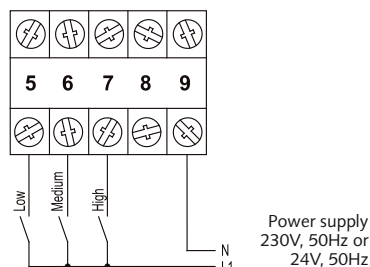
DIP2: Network	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6
Master	OFF	OFF	OFF	OFF	OFF	ON
Slave 1	OFF	OFF	OFF	OFF	OFF	OFF
Slave 2	ON	OFF	OFF	OFF	OFF	OFF
Slave 3	OFF	ON	OFF	OFF	OFF	OFF
Slave 4	ON	ON	OFF	OFF	OFF	OFF
Slave 5	OFF	OFF	ON	OFF	OFF	OFF
Slave 6	ON	OFF	ON	OFF	OFF	OFF
Slave 7	OFF	ON	ON	OFF	OFF	OFF
Slave 8	ON	ON	ON	OFF	OFF	OFF
Slave 9	OFF	OFF	OFF	ON	OFF	OFF
Slave 10	ON	OFF	OFF	ON	OFF	OFF
Slave 11	OFF	ON	OFF	ON	OFF	OFF
Slave 12	ON	ON	OFF	ON	OFF	OFF
Slave 13	OFF	OFF	ON	ON	OFF	OFF
Slave 14	ON	OFF	ON	ON	OFF	OFF
Slave 15	OFF	ON	ON	ON	OFF	OFF
Slave 16	ON	ON	ON	ON	OFF	OFF
Slave 17	OFF	OFF	OFF	OFF	ON	OFF
Slave 18	ON	OFF	OFF	OFF	ON	OFF
Slave 19	OFF	ON	OFF	OFF	ON	OFF
Slave 20	ON	ON	OFF	OFF	ON	OFF
Slave 21	OFF	OFF	ON	OFF	ON	OFF
Slave 22	ON	OFF	ON	OFF	ON	OFF
Slave 23	OFF	ON	ON	OFF	ON	OFF
Slave 24	ON	ON	ON	OFF	ON	OFF
Slave 25	OFF	OFF	OFF	ON	ON	OFF
Slave 26	ON	OFF	OFF	ON	ON	OFF
Slave 27	OFF	ON	OFF	ON	ON	OFF
Slave 28	ON	ON	OFF	ON	ON	OFF
Slave 29	OFF	OFF	ON	ON	ON	OFF
Slave 30	ON	OFF	ON	ON	ON	OFF
Slave 31	OFF	ON	ON	ON	ON	OFF
Slave 32	ON	ON	ON	ON	ON	OFF

Use of external controllers

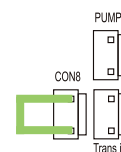
The units can be controlled using the controller provided by the factory or using an external controller. The external controller can be used to activate the three Fan stages, "High", "Medium" and "Low". The **supply voltage provided by the customer** of 24V or 230V can be selected via the open or closed CON 8 strapping plug. The external controller has a higher priority than the internal controller logic.

External controller

Circuit diagram



Strapping plug 24VAC

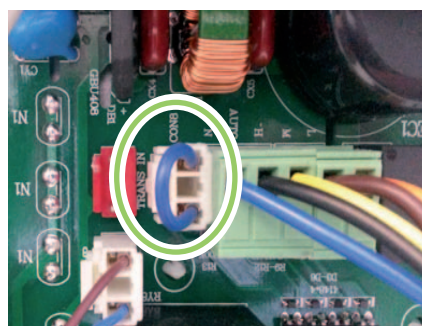


230VAC



External control voltage	CON 8
24 VAC (factory setting)	Closed
230 VAC	Open

CON 8 strapping plug

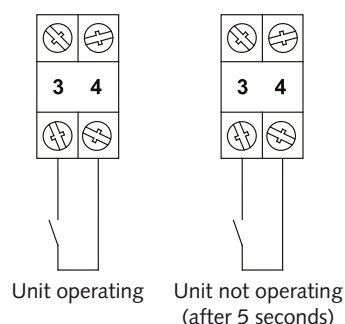


Using an enabling contact

Some applications require the units to be enabled or blocked, e.g. if cooling is to be interrupted when the window is open. A potential-free contact can be connected to terminals 3 and 4. This blocks unit operations after it has been short-circuited for 5 seconds and enables unit operation once it has been open for 2 seconds.

External enabling contact

Circuit diagram



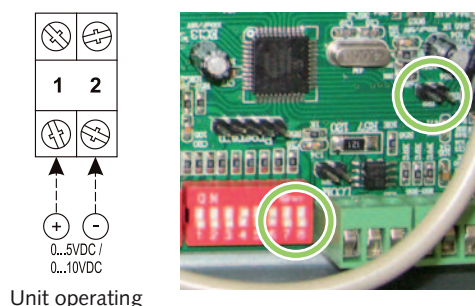
Speed control with external 0 - 5/10V DC signal control

The units with EC fans allow for virtually infinitely variable speed adjustment depending on the design. This setting can also be specified using an external control signal in the range of 0 - 5V DC or 0 - 10V DC on terminals 1 (+) and 2 (-) (observe the polarity!).

The external controller is selected via DIP3 SW8 = OFF and by setting the voltage that is specified via jumper JP2. Once it is connected, the internal controller can no longer be used for operation. A 0 - 5/10V control valve can also be controlled in parallel on the same terminals.

External 0 - 5/10V signal control

Circuit diagram JP2 and DIP3 SW8



External control voltage	JP2
0 - 10 VDC	Closed
0...5 VDC (factory setting)	Open

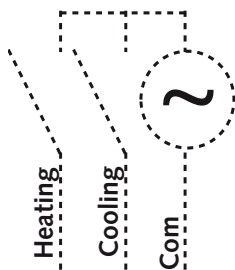
REMKO KWD EC series

External cooling/heating contact

It is possible to control the desired operating mode (heating or cooling) with an external controller. The external controller is fitted directly to the contacts provided on the control board (see electrical drawings). A power supply provided by the customer is required to use the contacts (either ~230V or ~24V). If the contacts are operated with a voltage of ~24V, it is necessary to insert the strapping plug, included in the scope of delivery, into contact CON9 and to supply the 24V voltage provided by the customer.

External controller

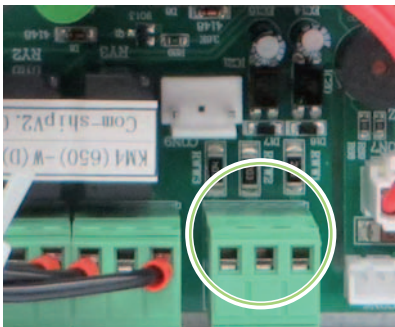
Circuit diagram



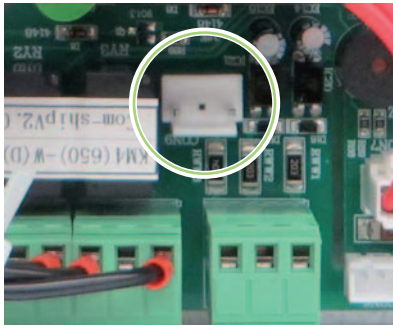
Power supply
230V, 50Hz or
24V, 50Hz

External control voltage	CON 9
24 VAC	Closed
230 VAC (factory setting)	Open

Contact connection



CON 9 strapping plug



Using the internal network

Up to 32 units can be operated at the same time thanks to the parallel connection via a bus line (accessory). The units can access this network (internal network) at the same time.

The network can have one leading unit (master) and up to 31 subsequent units (slave).

The units are connected together via a three-core, shielded bus line. The minimum cross section is 1.0 mm² with a maximum line length of 500m in the network (observe the polarity!).

The end of the network must be marked by the plugged in jumper JP1.

The addresses are assigned by adjusting switches SW1 to SW6 (see the "Configuration" chapter).

Network with infrared remote controls

■ The standard infrared remote control operates a master unit. All slave units are set according to the programming.

■ The infrared remote control or the cabled remote control (accessory) can be used for user-specific operation of an individual slave unit.

Execution

■ Address assignment for the units is carried out by changing the DIP switch settings for DIP switch block 2.

Network with cabled remote controls

■ The cabled remote control that is available as an accessory operates a master unit. All slave units with cabled remote controls can be programmed individually from the master unit directly or as a complete group.

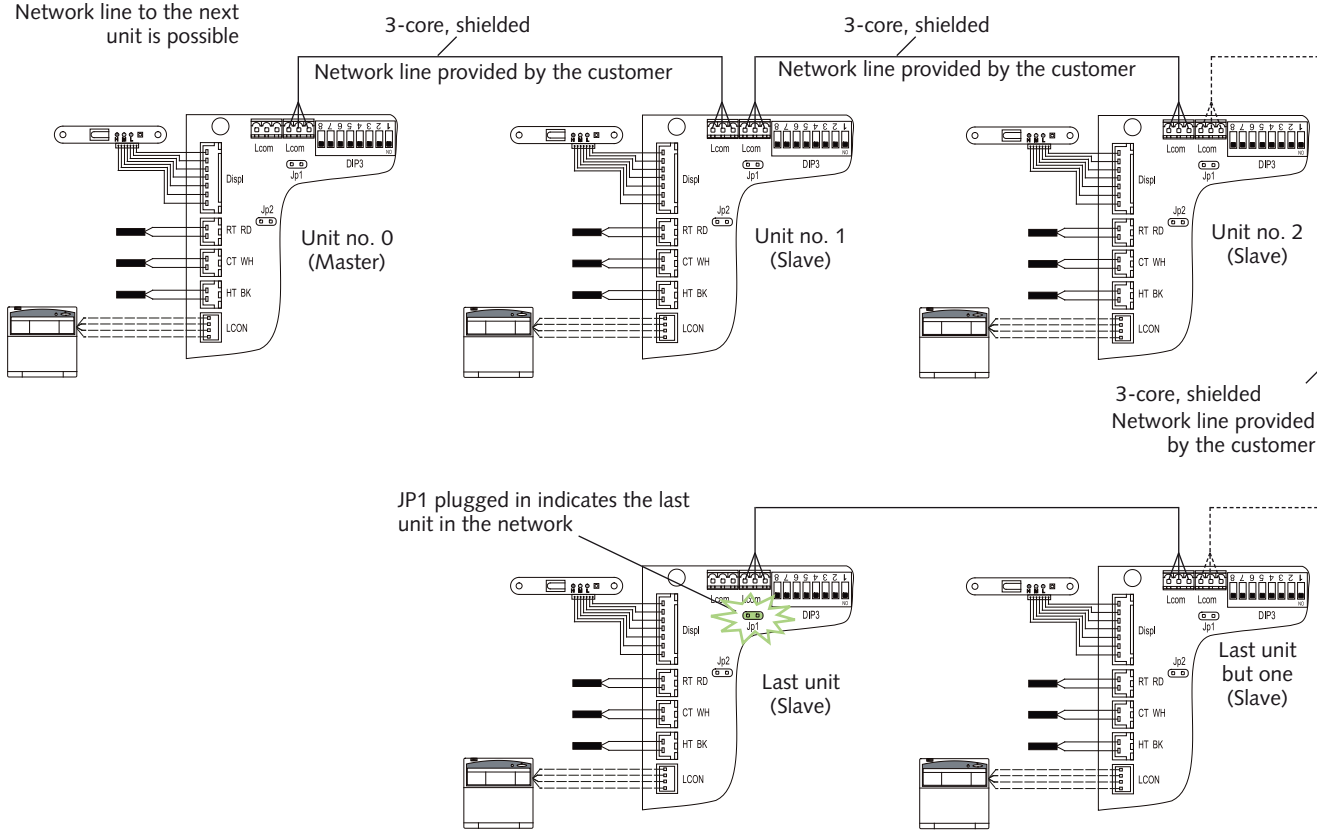
■ The cabled remote control (accessory) can be used for user-specific operation of an individual slave unit.

Execution

■ The addresses for the master and slave units are assigned by configuring the cabled remote control (see the separate installation manual).

Internal network wiring diagram

Network line to the next unit is possible



REMKO KWD EC series

Leak testing

Once the connection has been established successfully, the leak test is carried out.

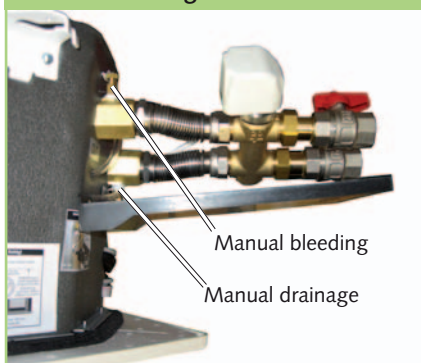
1. Flush the system twice with tap water.
2. Clean the sieve insert on the dirt trap.
3. Fill the system with water again and bleed the unit at the manual bleed valves.
4. Adjust the test pressure to at least 200 kPa (2.0 bar).
5. Check the connections after a period of at least 24 hours for leaking water. If water is visible, the connection has not been established properly. Tighten the connection or establish a new connection.
6. After a successful leak test, remove the excess pressure from the medium piping if a water-glycol mixture is used or adjust the non-circulating pressure to the required system pressure.



NOTE

During manual bleeding, escaping glycol mixtures must be disposed of separately. Do not feed them into the condensate tray!

Manual bleeding



Before commissioning

Anti-freeze protection for the medium

If a water-glycol mixture is used, it is to be pre-mixed before being put in the system. The desired concentration is then to be checked.

Bleeding the system

- Air may still be in the pipe lines after the leak test. This is carried during operation of the circulation pump to the automatic bleeding valves or to the cold water drain. It is necessary to bleed again here.
- The non-circulating pressure must then be adjusted to the required system pressure.

DEV

- The preliminary pressure for the diaphragm expansion vessel must be adjusted individually to the system layout, the volume of the medium and the installation site.

Valves for hydronic balancing

- The calculated excess pressure in the pipe network layout at the individual cold water outlets must be adjusted on the pipe leg regulating valves.

Safety valve

- The safety valves and their correct function must be checked.
- The drain line for the valves is to be checked for function and leak tightness.

Configuration setting

- Before the electrical voltage is applied to the unit for the first time, the settings described in the "Configuration" chapter must be made according to the use.

Commissioning

- Commissioning should only be performed and documented by specially trained personnel.
- Observe the manuals for the unit and all other components when commissioning the entire system.
- Commissioning should only be performed and documented by specially trained personnel.
- Observe the manuals for the unit and all other components when commissioning the entire system.

Function test for cooling operating mode

1. Switch the power supply on.
2. Open all shut-off valves if necessary.
3. Switch on the chiller and the corresponding circulation pump. The outlet temperature must be between +4 and +18 °C.
4. Use the remote control to switch on the unit and select the cooling mode, maximum fan speed and lowest target temperature.
5. Measure and record all the required values in the commissioning report and check the safety functions.
6. Check the unit control system using the functions described in the "Operation" chapter.
7. Check that the condensate drainage line is functioning correctly 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. Open all shut-off valves if necessary.
3. Switch on the heating system and the corresponding circulation pump. The outlet temperature must be between +35 and +70 °C.
4. Use the remote control to switch on the unit and select the heating mode, maximum fan speed and highest target temperature.
5. Measure and record all the required values in the commissioning report and check the safety functions.

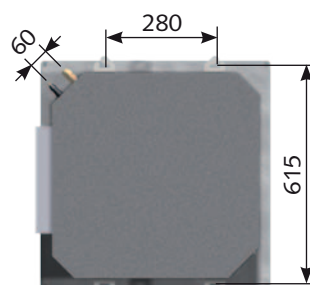
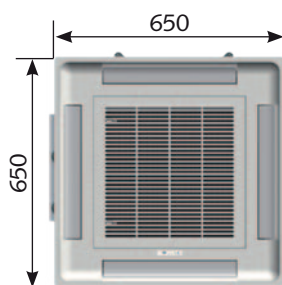
6. Check the unit control system using the functions described in the "Operation" chapter.

Final tasks

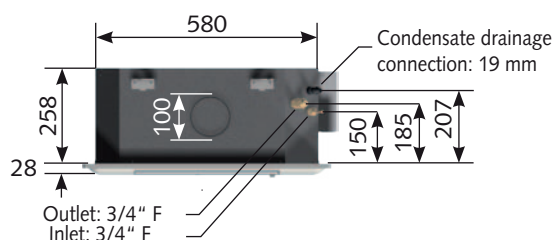
- Reassemble all disassembled parts.
- Familiarise the operator with the system.

Unit dimensions

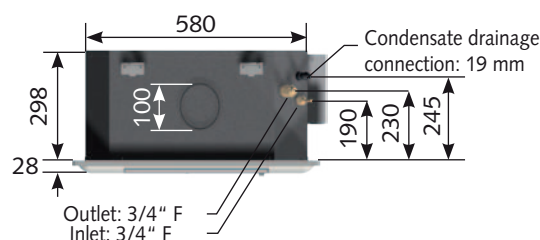
KWD 25 EC to 55 EC



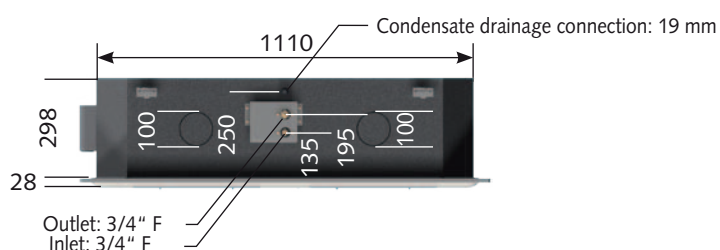
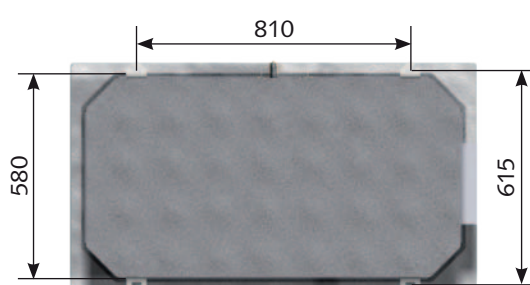
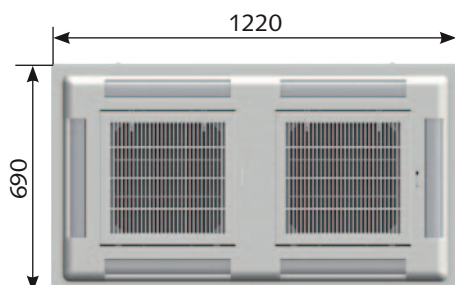
KWD 25 EC to 45 EC



KWD 55 EC



KWD 70 EC to 100 EC



All measurements in mm

REMKO KWD EC series

Services

Cooling capacity															
	Fan stage	Air flow rate	Sound pressure level	Medium nominal		Medium inlet									
						5 °C		7 °C		9 °C		11 °C		13 °C	
						Cooling capacity									
				Flow volume [m³/h]	Pressure loss [kPa]	Q _K [kW]	Q _S [kW]	Q _K [kW]	Q _S [kW]	Q _K [kW]	Q _S [kW]	Q _K [kW]	Q _S [kW]	Q _K [kW]	Q _S [kW]
KWD 25 EC	1	180	20.8	0.21	3.4	1.38	0.89	1.10	0.81	0.94	0.62	0.72	0.54	0.56	0.39
	2	220	21.9	0.29	5.1	2.05	1.73	1.63	1.05	1.39	0.92	1.06	0.84	0.82	0.69
	3	320	23.5	0.37	7.0	2.71	1.88	2.15	1.53	1.84	1.35	1.40	1.23	1.08	1.01
	4	390	25.1	0.41	9.0	2.95	2.05	2.34	1.66	2.00	1.46	1.53	1.33	1.17	1.10
	5	440	27.4	0.45	10.2	3.21	2.54	2.55	1.81	2.18	1.59	1.66	1.45	1.28	1.20
KWD 35 EC	1	220	21.9	0.29	5.1	2.05	1.19	1.63	1.05	1.39	0.92	1.06	0.84	0.82	0.69
	2	320	23.5	0.37	7.0	2.71	1.73	2.15	1.53	1.84	1.35	1.40	1.23	1.08	1.01
	3	390	25.1	0.41	9.0	2.95	1.88	2.34	1.66	2.00	1.46	1.53	1.33	1.17	1.10
	4	440	27.4	0.45	10.2	3.21	2.05	2.55	1.81	2.18	1.59	1.66	1.45	1.28	1.20
	5	520	33.0	0.55	15.0	3.98	2.54	3.16	2.24	2.70	1.97	2.06	1.80	1.58	1.48
KWD 45 EC	1	215	22.5	0.30	5.0	1.98	1.20	1.63	1.05	1.27	0.93	1.04	0.82	0.87	0.69
	2	343	26.9	0.43	9.2	3.05	1.91	2.51	1.68	1.96	1.49	1.60	1.32	1.34	1.10
	3	397	29.5	0.49	11.3	3.46	2.14	2.84	1.88	2.22	1.67	1.82	1.47	1.52	1.23
	4	566	37.7	0.65	18.2	4.59	3.06	3.77	2.69	2.94	2.39	2.41	2.11	2.01	1.76
	5	684	42.8	0.78	25.1	5.33	3.53	4.38	3.10	3.42	2.75	2.80	2.43	2.34	2.03
KWD 55 EC	1	229	21.4	0.33	6.0	2.19	1.23	1.80	1.08	1.45	0.95	1.20	0.80	0.97	0.67
	2	606	35.9	0.68	14.8	4.74	3.12	3.89	2.74	3.13	2.42	2.59	2.03	2.09	1.70
	3	665	38.0	0.72	16.2	5.02	3.40	4.12	2.98	3.32	2.63	2.74	2.21	2.21	1.85
	4	793	42.5	0.8	18.7	5.63	3.85	4.62	3.38	3.72	2.98	3.07	2.51	2.48	2.10
	5	974	47.9	0.91	23.1	6.34	4.58	5.20	4.02	4.19	3.55	3.46	2.98	2.79	2.50
KWD 70 EC	1	385	28.1	0.56	12.8	3.31	2.16	2.96	1.68	1.96	1.45	1.64	1.26	1.30	0.68
	2	610	29.7	0.67	17.4	4.50	3.15	4.02	2.71	2.67	2.11	2.22	1.83	1.76	1.00
	3	700	30.3	0.76	21.5	5.47	3.93	4.89	3.38	3.25	2.63	2.70	2.29	2.15	1.24
	4	780	34.6	0.84	24.2	6.03	3.97	5.39	3.41	3.58	2.65	2.98	2.31	2.36	1.26
	5	1030	37.9	0.98	29.7	7.75	5.69	6.93	4.89	4.60	3.80	3.83	3.31	3.04	1.80
KWD 85 EC	1	398	27.9	0.55	6.1	3.51	2.29	2.98	1.93	2.35	1.83	1.91	1.60	1.56	1.41
	2	671	34.6	0.87	19.0	5.94	4.18	5.04	3.53	3.97	3.35	3.23	2.92	2.64	2.58
	3	771	43.5	1.20	26.5	8.31	5.79	7.05	4.89	5.56	4.65	4.52	4.05	3.70	3.57
	4	1096	45.7	1.29	30.8	8.88	6.21	7.54	5.24	5.94	4.98	4.83	4.34	3.95	3.83
	5	1322	50.7	1.45	40.0	9.91	6.87	8.41	5.80	6.63	5.51	5.39	4.80	4.41	4.24
KWD 100 EC	1	393	28.2	0.55	6.1	3.28	2.22	2.98	1.93	2.25	1.85	1.86	1.49	1.52	1.28
	2	1057	45.0	1.20	26.5	7.75	5.63	7.05	4.89	5.32	4.69	4.41	3.78	3.61	3.23
	3	1157	46.2	1.29	30.8	8.29	6.03	7.54	5.24	5.69	5.02	4.71	4.05	3.86	3.46
	4	1380	48.0	1.50	41.4	9.34	6.64	8.50	5.77	6.42	5.53	5.31	4.46	4.35	3.81
	5	1678	53.2	1.66	49.5	10.64	7.70	9.68	6.69	7.31	6.41	6.05	5.17	4.95	4.42

Cooling:

Air inlet temperature TK 27 °C / FK 19 °C, 0 % Glycol concentration, spread 5K

Q_K = Cooling capacity, total

Q_S = Cooling capacity, sensitive

Heating capacity												
	Fan stage	Air flow volume	Sound pressure level	Medium nominal		Medium inlet						
						35 °C	40 °C	45 °C	50 °C	55 °C	60 °C	65 °C
				Medium flow rate [m³/h]	Pressure loss [kPa]	Heating capacity						
						Q _H [kW]	Q _H [kW]	Q _H [kW]	Q _H [kW]	Q _H [kW]	Q _H [kW]	Q _H [kW]
KWD 25 EC	1	180	20.8	0.21	3.4	0.72	0.87	1.12	1.53	1.77	1.98	2.24
	2	220	21.9	0.29	5.1	1.06	1.23	1.71	2.26	2.69	3.23	3.82
	3	320	23.5	0.37	7.0	1.40	1.63	2.26	3.04	3.55	4.26	5.04
	4	390	25.1	0.41	9.0	1.51	1.75	2.43	3.32	3.83	4.60	5.44
	5	440	27.4	0.45	10.2	1.67	1.94	2.69	3.67	4.23	5.09	6.01
KWD 35 EC	1	220	21.9	0.29	5.1	1.06	1.23	1.71	2.26	2.69	3.23	3.82
	2	320	23.5	0.37	7.0	1.40	1.63	2.26	3.04	3.55	4.26	5.04
	3	390	25.1	0.41	9.0	1.51	1.75	2.43	3.32	3.83	4.60	5.44
	4	440	27.4	0.45	10.2	1.67	1.94	2.69	3.67	4.23	5.09	6.01
	5	520	33.0	0.55	15.0	1.98	2.30	3.19	4.12	5.02	6.03	7.13
KWD 45 EC	1	215	22.5	0.30	5.0	1.06	1.27	1.77	2.26	2.77	3.32	3.90
	2	343	26.9	0.43	9.2	1.67	2.01	2.79	3.27	4.36	5.23	6.14
	3	397	29.5	0.49	11.3	1.83	2.20	3.06	3.67	4.78	5.73	6.72
	4	566	37.7	0.65	18.2	2.35	2.82	3.93	4.86	6.13	7.36	8.64
	5	684	42.8	0.78	25.1	2.49	2.99	4.16	5.37	6.50	7.80	9.15
KWD 55 EC	1	229	21.4	0.33	6.0	1.14	1.42	1.97	2.41	3.04	3.66	4.26
	2	606	35.9	0.68	14.8	2.20	2.74	3.80	4.94	5.86	7.07	8.22
	3	665	38.0	0.72	16.2	2.34	2.92	4.04	5.25	6.23	7.52	8.75
	4	793	42.5	0.8	18.7	2.64	3.29	4.56	5.96	7.03	8.48	9.87
	5	974	47.9	0.91	23.1	3.05	3.80	5.27	6.80	8.12	9.80	11.40
KWD 70 EC	1	385	28.1	0.56	12.8	1.82	2.22	3.06	4.16	4.67	5.57	6.52
	2	610	29.7	0.67	17.4	2.61	3.18	4.38	5.28	6.70	7.99	9.35
	3	700	30.3	0.76	21.5	2.92	3.56	4.90	6.02	7.50	8.93	10.46
	4	780	34.6	0.84	24.2	3.18	3.88	5.34	6.70	8.16	9.73	11.39
	5	1030	37.9	0.98	29.7	4.02	4.90	6.75	8.74	10.32	12.30	14.40
KWD 85 EC	1	398	27.9	0.55	6.1	1.84	2.13	2.96	3.97	4.52	5.41	6.34
	2	671	34.6	0.87	19.0	2.93	3.39	4.72	7.10	7.20	8.62	10.09
	3	771	43.5	1.20	26.5	4.11	4.76	6.62	8.86	10.10	12.09	14.16
	4	1096	45.7	1.29	30.8	4.42	5.12	7.12	9.41	10.86	13.00	15.23
	5	1322	50.7	1.45	40.0	5.37	6.22	8.65	11.17	13.20	15.80	18.50
KWD 100 EC	1	393	28.2	0.55	6.1	1.84	2.24	3.11	3.97	4.76	5.58	6.53
	2	1057	45.0	1.20	26.5	4.11	5.00	6.95	8.86	10.62	12.45	14.58
	3	1157	46.2	1.29	30.8	4.42	5.38	7.48	9.41	11.42	13.39	15.68
	4	1380	48.0	1.50	41.4	4.99	6.08	8.44	10.65	12.90	15.12	17.70
	5	1678	53.2	1.66	49.5	5.61	6.83	9.49	12.25	14.50	17.00	19.90

Heating:
Air inlet temperature TK 20 °C, 0 % Glycol concentration
QH = total heating capacity

REMKO KWD EC series

Technical data

Series		KWD 25 EC	KWD 35 EC	KWD 45 EC	KWD 55 EC
Operating mode		Chilled water ceiling cassette with EC fans, single Euroraster format, 2-conductor version			
Nominal cooling output ¹⁾	kW	2.55	3.16	4.38	5.20
Nominal cooling output, sensitive ¹⁾	kW	1.81	2.24	3.10	4.02
Nominal heat capacity ²⁾	kW	3.67	4.12	5.37	6.80
Application area (room volume), approx.	m ³	70	90	120	150
Adjustment range, room temperature	°C	+16 to +30			
Operating range - indoor unit	°C/%r.H.	+15 to +35 / 30 to 90, non-condensing			
Air flow volume per stage	m ³ /h	180/220/320/390/440	220/320/390/440/520	215/343/397/566/684	229/606/665/793/974
Sound pressure level ³⁾	dB(A)	20/21/23/25/27	21/23/25/27/33	22/26/29/37/42	21/35/38/42/47
Power supply	V/Hz	230/1~/50			
Enclosure class	IP	X0			
Electr. rated power consumption ¹⁾	kW	0.01	0.02	0.04	0.06
Electr. rated current consumption ¹⁾	A	0.09	0.13	0.22	0.33
Operating medium		Water; max. 35 % ethylene-glycol, max. propylene-glycol max. 35 %			
Operating limits, medium - cooling	°C	+4 to +18			
Operating limits, medium - heating	°C	+30 to +70			
Max. operating pressure, medium	kPa	1400			
Minimum supply temperature, heating	°C	+28			
Nominal flow rate, medium - cooling ¹⁾	m ³ /h	0.45	0.55	0.78	0.91
Nominal flow rate, medium - heating ²⁾	m ³ /h	0.45	0.55	0.78	0.91
Rated pressure drop, internal ¹⁾	kPa	10.2	15.0	25.1	23.1
Rated pressure drop, internal ²⁾	kPa	10.2	15.0	25.1	23.1
Medium connection, inlet	Inches	3/4 female			
Medium connection, outlet	Inches	3/4 female			
Medium volume	l	1.3			1.8
Condensate drainage connection	mm	19			
Condensate pump, flow rate, max.	mmWS	1000			
Dimensions: height	mm	258			298
width	mm	580			
depth	mm	580			
Dimensions: cover height	mm	28			
cover width	mm	650			
cover depth	mm	650			
Weight	kg	28.0			31.0
Operating weight, approx.	kg	29.3			32.8
Cover standard colour		similar to RAL 9003			
Serial number		1432...	1433...	1434...	1435...
EDP no.		1611880	1611882	1611884	1611886

1) Air inlet temperature TK 27°C / FK 19°C, medium inlet 7 °C, medium outlet 12 °C. 0% glycol concentration, max. air flow volume

2) Air inlet temperature TK 20°C, medium inlet 50 °C, medium outlet 45°C. 0% glycol concentration, max. air flow volume

3) Clearance of 1m, free field conditions

Technical data

Series		KWD 70 EC	KWD 85 EC	KWD 100 EC
Operating mode		Chilled water ceiling cassette with EC fans, dual Euroraster format, 2-conductor version		
Nominal cooling output ¹⁾	kW	6.93	8.41	9.68
Nominal cooling output, sensitive ¹⁾	kW	4.89	5.80	6.69
Nominal heat capacity ²⁾	kW	8.74	11.17	12.25
Application area (room volume), approx.	m³	190	240	280
Adjustment range, room temperature	°C	+16 to +30		
Operating range - indoor unit	°C/%r.H.	+15 to +35 / 30 to 90, non-condensing		
Air flow volume per stage	m³/h	385/610/700/780/1030	398/671/771/1096/1322	393/1057/1157/1380/1678
Sound pressure level ³⁾	dB(A)	28/29/30/34/37	28/33/34/44/46	28/45/46/48/53
Power supply	V/Hz	230/1~/50		
Enclosure class	IP	X0		
Electr. rated power consumption ¹⁾	kW	0.04	0.10	0.12
Electr. rated current consumption ¹⁾	A	0.22	0.48	0.62
Operating medium		Water; max. 35 % ethylene-glycol, max. propylene-glycol max. 35 %		
Operating limits, medium - cooling	°C	+4 to +18		
Operating limits, medium - heating	°C	+30 to +70		
Max. operating pressure, medium	kPa	1400		
Minimum supply temperature, heating	°C	+28		
Nominal flow rate, medium - cooling ¹⁾	m³/h	0.98	1.45	1.66
Nominal flow rate, medium - heating ²⁾	m³/h	0.98	1.45	1.66
Rated pressure drop, internal ¹⁾	kPa	29.7	40.0	49.4
Rated pressure drop, internal ²⁾	kPa	29.7	40.0	49.4
Medium connection, inlet	Inches	3/4 female		
Medium connection, outlet	Inches	3/4 female		
Medium volume	l	2.1	3.2	
Condensate drainage connection	mm	19		
Condensate pump, flow rate, max.	mmWS	1000		
Dimensions: height	mm	298		
width	mm	580		
depth	mm	1100		
Dimensions: cover height	mm	28		
cover width	mm	690		
cover depth	mm	1220		
Weight	kg	56.6	58.1	
Operating weight, approx.	kg	58.7	61.3	
Cover standard colour		similar to RAL 9003		
Serial number		1436...	1437...	1438...
EDP no.		1611888	1611890	1611892

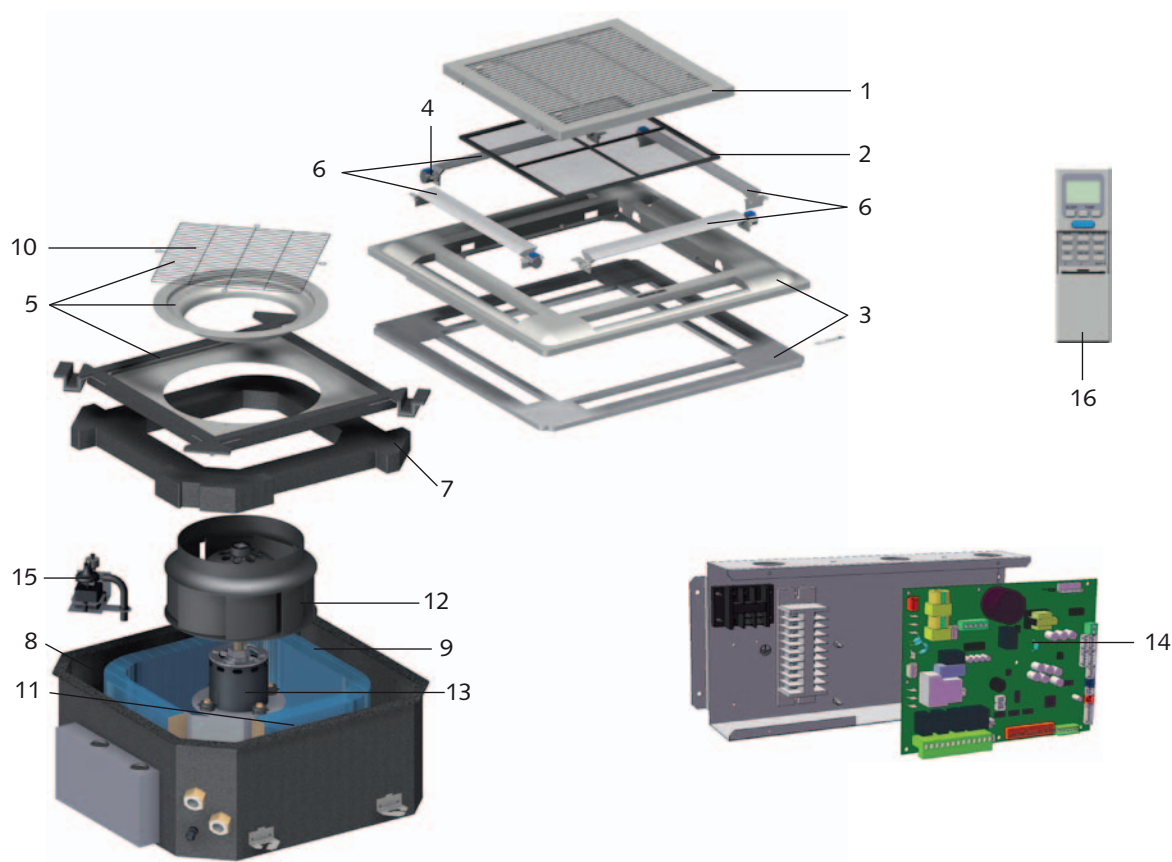
1) Air inlet temperature TK 27 °C / FK 19 °C, medium inlet 7 °C, medium outlet 12 °C, 0 % glycol concentration, max. air flow

2) Air inlet temperature TK 20 °C, medium inlet 50 °C, medium outlet 45 °C, 0% glycol concentration, max. air flow

3) Clearance of 1 m

REMKO KWD EC series

KWD 25 EC to 55 EC unit illustration



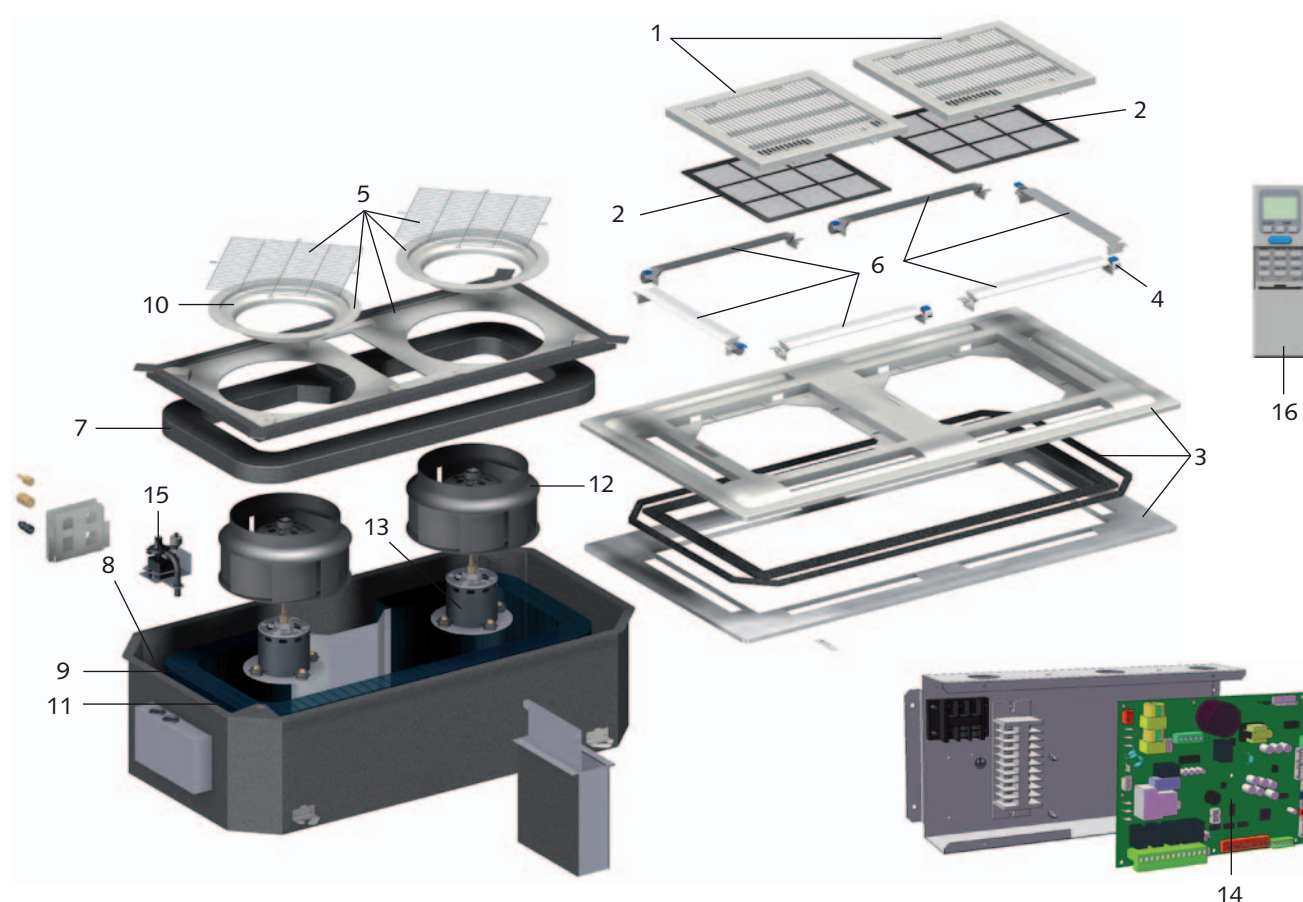
We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

KWD 25 EC to 55 EC spare parts list

No.	Designation	KWD 25 EC	KWD 35 EC	KWD 45 EC	KWD 55 EC
1	Air inlet grill	1106650	1106650	1106650	1106650
2	Air filter	1106664	1106664	1106664	1106664
3	Cover	1106653	1106653	1106653	1106653
4	Swing motor	1106671	1106671	1106671	1106671
5	Air inlet, module	1106654	1106654	1106654	1106995
6	Outlet fins, set of 4	1106668	1106668	1106668	1106668
7	Condensate tray	1106652	1106652	1106652	1106652
8	Condensate hose	1106659	1106659	1106659	1106659
9	Finned heat exchanger	1106683	1106996	1106997	1106690
10	Probe, ambient air	1106655	1106655	1106655	1106655
11	Probe, anti-freeze protection	1106656	1106656	1106656	1106656
12	Fan blade	1106666	1106666	1106666	1106666
13	Fan motor	1106786	1106786	1106786	1106786
14	Control board	1106788	1106998	1106999	1107574
15	Condensation pump cpl.	1106667	1106667	1106667	1106667
16	IR remote control.	1106789	1106789	1106789	1106789
Spare parts not illustrated					
	Condensate liquid level switch	1106669	1106669	1106669	1106669
	Display board	1106674	1106674	1106674	1106674
	Additional condensate tray for valve assembly	1106688	1106688	1106738	1106738

When ordering spare parts, please state the EDP and unit number (see name plate)!

KWD 70 EC to 100 EC unit illustration



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

KWD 70 EC to 100 EC spare parts list

No.	Designation	KWD 70 EC	KWD 85 EC	KWD 100 EC
1	Air inlet grill	1106678	1106678	1106678
2	Air filter	1106665	1106665	1106665
3	Cover	1106681	1106681	1106681
4	Swing motor	1106671	1106671	1106671
5	Air inlet, module	1106675	1106675	1106675
6	Outlet fins, set of 6	1106679	1106679	1106679
7	Condensate tray	1106680	1106680	1106680
8	Condensate hose	1106659	1106659	1106659
9	Finned heat exchanger	1106691	1107596	1107571
10	Probe, ambient air	1106655	1106655	1106655
11	Probe, anti-freeze protection	1106656	1106656	1106656
12	Fan blade	1106666	1106666	1106666
13	Fan motor	1106786	1106786	1106786
14	Control board	1106796	1107572	1107573
15	Condensation pump cpl.	1106667	1106667	1106667
16	IR remote control.	1106789	1106789	1106789
Spare parts not illustrated				
	Condensate liquid level switch	1106669	1106669	1106669
	Display board	1106682	1106682	1106682
	Additional condensate tray for valve assembly	1106739	1106739	1106739

When ordering spare parts, please state the EDP and unit number (see name plate)!

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