

# Operating and installation instructions

**REMKO WLT EC series**

**Wall units in 2-conductor version  
with multifunctional control technology**

WLT 30-2 EC, WLT 40-2 EC, WLT 50-2 EC, WLT 60-2 EC, WLT 80-2 EC, WLT 90-2 EC  
WLT 30-3 EC, WLT 40-3 EC, WLT 50-3 EC, WLT 60-3 EC, WLT 80-3 EC, WLT 90-3 EC





**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**

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# REMKO WLT EC series

## 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 manufacturer ensure safety. The use of other parts may invalidate liability for resulting consequences.

## 1.9 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 different or additional use is a 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. 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.

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## 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		WLT 30 EC	WLT 40 EC	WLT 50 EC
Operating mode		Chilled water wall units with 2 or 3-way valve in 2-conductor version		
Nominal cooling output <sup>1)</sup> (min-max)	kW	2.81 (0.82-2.81)	3.73 (0.82-3.73)	4.85 (0.84-4.85)
Nominal heating capacity <sup>2)</sup> (min-max)	kW	4.17 (1.22-4.17)	4.85 (1.22-4.85)	6.42 (1.23-6.42)
Application area (room volume), approx.	m <sup>3</sup>	80	110	140
Adjustment range, room temperature	°C	+16 to +30		
Operating range - indoor unit	°C	+16 to +35		
Air flow volume per stage	m <sup>3</sup> /h	150/360/450/ 510/560	150/405/480/ 590/625	150/570/740/ 910/950
Sound pressure level per stage <sup>3)</sup>	dB (A)	18/33/39/43/45	19/34/38/43/45	18/32/40/46/47
Power supply	V/Hz	230/1~/50		
Enclosure class	IP	X0		
Electr. rated power consumption <sup>1)</sup>	W	27	31	46
Electr. rated current consumption <sup>1)</sup>	A	0.27	0.29	0.36
Operating medium		Water; max. 35% ethylene glycol/propylene glycol		
Operating limits, medium - cooling	°C	+4 to +20		
Operating limits, medium - heating	°C	+36 to +70		
Minimum supply temperature, heating	°C	+28 / +36 (adjustable on circuit board)		
Nominal flow rate medium	m <sup>3</sup> /h	0.48	0.64	0.83
Rated pressure drop, internal	kPa	23.1	31.3	31.0
Medium connection, inlet	mm	12		
Medium connection, outlet	mm	12		
Medium volume	l	2		
Condensate drainage connection	mm	16		

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Series		WLT 30 EC	WLT 40 EC	WLT 50 EC
Dimensions				
Height	mm	315		
Width	mm	824		1147
Depth	mm	245		
Weight	kg	11	12	16
Operating weight, approx.	kg	13	14	18
Serial number with 2-way valve		1866...	1867...	1868...
EDP no. with 2-way valve		1614831	1614841	1614851
Serial number with 3-way valve		1860...	1861...	1862...
EDP no. with 3-way valve		1614830	1614840	1614850

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

<sup>2)</sup> Air inlet temperature TK 20 °C, medium inlet 50 °C, nominal flow rate as in cooling mode, 0% glycol concentration, max. air flow volume

<sup>3)</sup> Distance 1m free field



Series		WLT 60 EC	WLT 80 EC	WLT 90 EC
Operating mode		Chilled water wall units with 2 or 3-way valve in 2-conductor version		
Nominal cooling output <sup>1)</sup> (min-max)	kW	6.10 (0.91-6.10)	7.44 (1.90-7.44)	9.31 (2.00-9.31)
Nominal heating capacity <sup>2)</sup> (min-max)	kW	7.81 (1.25-7.81)	9.44 (2.27-9.44)	11.27 (2.36-11.27)
Application area (room volume), approx.	m³	190	240	310
Adjustment range, room temperature	°C	+16 to +30		
Operating range - indoor unit	°C	+16 to +35		
Air flow volume per stage	m³/h	150/705/895/ 1050/1120	320/1090/1300/ 1490/1650	320/1300/1460/ 1640/1790
Sound pressure level per stage <sup>3)</sup>	dB (A)	18/35/41/46/47	19/40/44/48/50	20/44/47/49/51
Power supply	V/Hz	230/1~/50		
Enclosure class	IP	X0		
Electr. rated power consumption <sup>1)</sup>	W	60	105	115
Electr. rated current consumption <sup>1)</sup>	A	0.49	0.81	0.94
Operating medium		Water; max. 35% ethylene glycol/propylene glycol		
Operating limits, medium - cooling	°C	+4 to +20		
Operating limits, medium - heating	°C	+36 to +70		
Minimum supply temperature, heating	°C	+28 / +36 (adjustable on circuit board)		
Nominal flow rate medium	m³/h	1.05	1.28	1.60
Rated pressure drop, internal	kPa	38.4	27.4	30.0
Medium connection, inlet	mm	12	15	
Medium connection, outlet	mm	12	15	
Medium volume	l	2	3	
Condensate drainage connection	mm	16		

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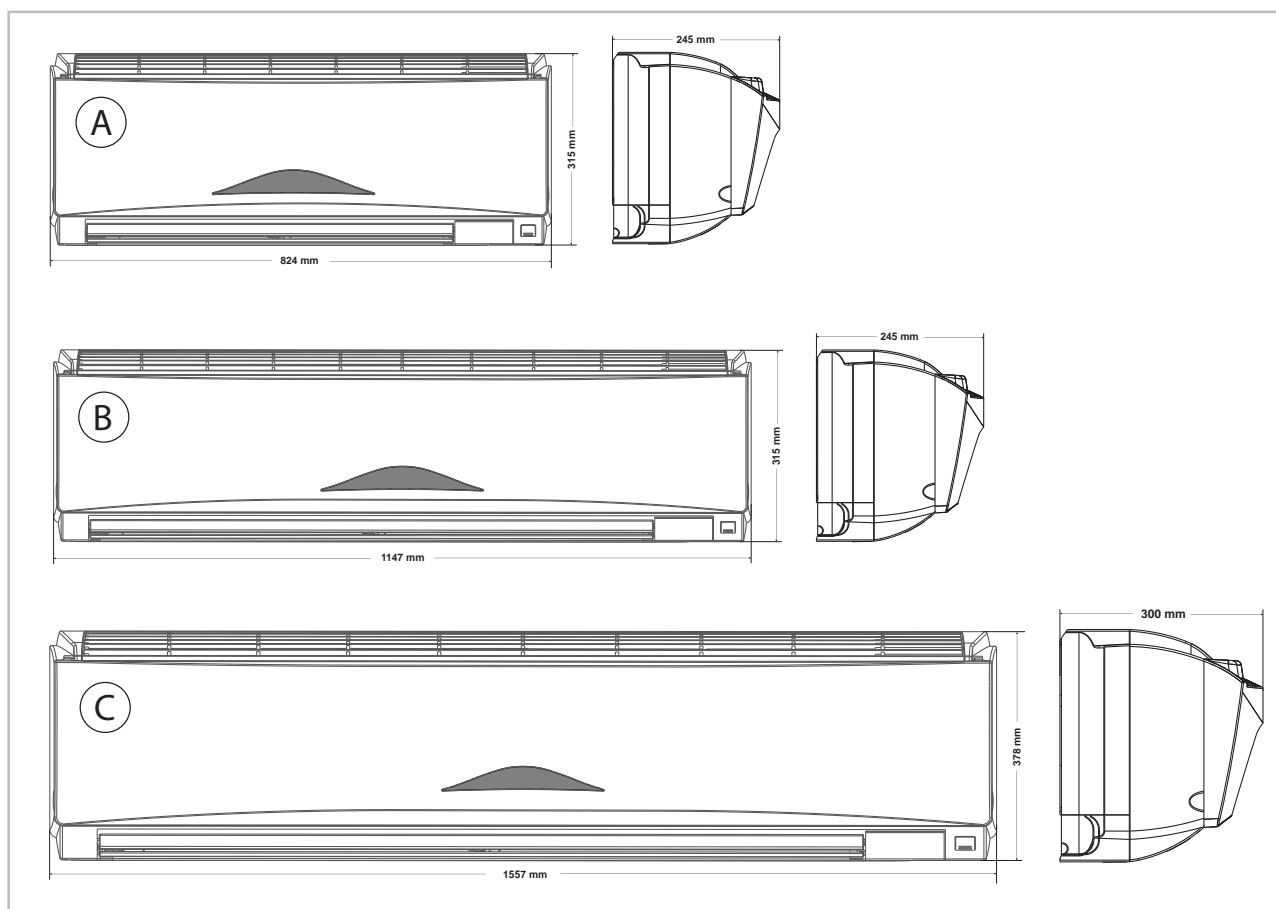
Series		WLT 60 EC	WLT 80 EC	WLT 90 EC
Dimensions				
Height	mm	315	378	
Width	mm	1147	1557	
Depth	mm	245	300	
Weight	kg	17	26	27
Operating weight, approx.	kg	19	29	30
Serial number with 2-way valve		1869...	1870...	1871...
EDP no. with 2-way valve		1614861	1614880	1614891
Serial number with 3-way valve		1863...	1864...	1865...
EDP no. with 3-way valve		1614860	1614881	1614890

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

<sup>2)</sup> Air inlet temperature TK 20 °C, medium inlet 50 °C, nominal flow rate as in cooling mode, 0% glycol concentration, max. air flow volume

<sup>3)</sup> Distance 1m free field

## 2.2 Unit dimensions



*Fig. 1: Unit dimensions*

A: WLT 30 EC - WLT 40 EC  
B: WLT 50 EC - WLT 60 EC

C: WLT 80 EC - WLT 90 EC

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

# REMKO WLT EC series

## 2.3 Cooling and heating capacity

Cooling capacity WLT 30 EC - WLT 50 EC																
	VS	LV	SD	Medium nominal		Medium inlet										
						5 °C		7 °C		9 °C		11 °C		13 °C		
						Cooling capacity										
				Medi um flow rate	Pres- sure loss	Q <sub>K</sub>	Q <sub>S</sub>	Q <sub>K</sub>	Q <sub>S</sub>	Q <sub>K</sub>	Q <sub>S</sub>	Q <sub>K</sub>	Q <sub>S</sub>	Q <sub>K</sub>	Q <sub>S</sub>	Q <sub>K</sub>
[m³/h]	[kPa]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]
WLT 30 EC	1	150	18	0.230	13.0	0.95	0.55	0.82	0.50	0.64	0.47	0.49	0.41	0.40	0.35	
	2	360	33	0.323	13.0	2.17	1.63	1.88	1.27	1.46	1.20	1.12	1.04	0.91	0.88	
	3	450	39	0.370	15.6	2.49	1.78	2.15	1.46	1.67	1.38	1.28	1.20	1.04	1.01	
	4	510	43	0.397	17.0	2.67	2.26	2.31	1.60	1.79	1.51	1.37	1.31	1.12	1.11	
	5	560	45	0.48	23.1	3.25	2.77	<b>2.81</b>	1.95	2.18	1.84	1.67	1.60	1.36	1.35	
WLT 40 EC	1	150	19	0.240	13.0	0.95	0.55	0.82	0.50	0.64	0.47	0.50	0.41	0.42	0.36	
	2	405	34	0.379	13.7	2.54	1.63	2.21	1.48	1.68	1.32	1.36	1.22	1.13	1.06	
	3	480	38	0.411	15.2	2.75	1.78	2.39	1.61	1.82	1.44	1.47	1.33	1.22	1.15	
	4	590	42	0.472	19.0	3.69	2.26	3.21	2.05	2.44	1.83	1.97	1.69	1.64	1.47	
	5	625	45	0.640	31.3	4.17	2.77	<b>3.63</b>	2.51	2.76	2.24	2.23	2.07	1.86	1.80	
WLT 50 EC	1	150	18	0.250	19.5	0.98	0.58	0.84	0.51	0.67	0.49	0.55	0.45	0.45	0.38	
	2	570	32	0.611	19.5	4.15	2.73	3.56	2.42	2.82	2.31	2.34	2.15	1.89	1.80	
	3	470	40	0.689	23.5	4.68	3.13	4.02	2.78	3.18	2.65	2.65	2.47	2.14	2.07	
	4	910	46	0.763	27.3	5.17	3.47	4.44	3.08	3.52	2.93	2.92	2.73	2.36	2.29	
	5	950	47	0.830	31.0	5.59	3.80	<b>4.80</b>	3.37	3.80	3.21	3.16	2.99	2.55	2.51	

Air inlet temperature TK 27 °C / FK 19 °C, 0% Glycol concentration, max. air flow

Q<sub>K</sub> = Cooling capacity, total

Q<sub>S</sub> = Cooling capacity, sensitive

LV = Air flow [m³/h]

SD = Sound pressure level [dB(A)]

VS = Fan stage

### Cooling capacity WLT 60 EC - WLT 90 EC

	VS	LV	SD	Medium nominal		Medium inlet									
						5 °C		7 °C		9 °C		11 °C		13 °C	
						Cooling capacity									
				Medi um flow rate	Pres- sure loss	Q <sub>K</sub>	Q <sub>S</sub>	Q <sub>K</sub>	Q <sub>S</sub>	Q <sub>K</sub>	Q <sub>S</sub>	Q <sub>K</sub>	Q <sub>S</sub>	Q <sub>K</sub>	Q <sub>S</sub>
				[m³/h]	[kPa]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]
WLT 60 EC	1	150	18	0.250	19.0	1.11	0.65	0.91	0.53	0.75	0.54	0.61	0.49	0.50	0.42
	2	705	35	0.676	19.0	4.81	3.25	3.94	2.65	3.24	2.71	2.63	2.45	2.16	2.08
	3	895	41	0.804	25.2	5.71	3.87	4.68	3.16	3.85	3.23	3.12	2.93	2.56	2.49
	4	1050	46	0.924	31.0	6.56	4.45	5.38	3.63	4.43	3.71	3.59	3.36	2.95	2.86
	5	1120	47	1.047	38.4	7.44	5.11	<b>6.10</b>	4.17	5.02	4.26	4.07	3.86	3.34	3.28
WLT 80 EC	1	320	19	0.490	14.3	2.23	1.48	1.90	1.20	1.50	1.25	1.24	1.11	1.01	0.92
	2	1090	40	0.832	14.3	5.68	4.05	4.85	3.26	3.83	3.39	3.16	3.02	2.59	2.51
	3	1300	44	1.041	19.0	7.10	5.05	6.06	4.09	4.78	4.25	3.95	3.78	3.23	3.15
	4	1490	47	1.179	23.7	8.05	5.73	6.87	4.64	5.42	4.82	4.48	4.29	3.67	3.57
	5	1650	50	1.278	27.4	8.72	6.27	<b>7.44</b>	5.08	5.87	5.28	4.85	4.70	3.97	3.91
WLT 90 EC	1	320	20	0.370	13.9	2.50	1.91	2.00	1.43	1.77	1.61	1.39	1.23	1.13	1.05
	2	1300	44	1.023	13.9	8.69	6.13	6.96	4.58	6.15	5.16	4.82	4.57	3.93	3.81
	3	1460	46	1.353	22.9	9.84	7.06	7.88	5.28	6.97	5.95	5.46	5.27	4.45	4.39
	4	1640	49	1.491	26.9	10.84	7.78	8.68	5.82	7.67	6.56	6.01	5.81	4.90	4.84
	5	1790	51	1.599	30.0	11.63	8.36	<b>9.31</b>	6.25	8.23	7.04	6.45	6.24	5.26	5.20

Air inlet temperature TK 27 °C / FK 19 °C, 0% Glycol concentration, max. air flow

Q<sub>K</sub> = Cooling capacity, total

Q<sub>S</sub> = Cooling capacity, sensitive

LV = Air flow [m³/h]

SD = Sound pressure level [dB(A)]

VS = Fan stage

# REMKO WLT EC series

Heating capacity WLT 30 EC - WLT 50 EC												
	VS	LV	SD	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 <sub>H</sub> [kW]	Q <sub>H</sub> [kW]	Q <sub>H</sub> [kW]	Q <sub>H</sub> [kW]	Q <sub>H</sub> [kW]	Q <sub>H</sub> [kW]	Q <sub>H</sub> [kW]
WLT 30 EC	1	150	18	0.230	13.0	0.57	0.76	0.95	1.22	1.40	1.50	1.66
	2	360	33	0.323	13.0	1.24	1.67	2.08	2.67	3.06	3.27	3.64
	3	450	39	0.370	15.6	1.43	1.91	2.39	3.07	3.51	3.76	4.18
	4	510	43	0.397	17.0	1.61	2.16	2.70	3.46	3.96	4.24	4.72
	5	560	45	0.480	23.1	1.77	2.37	2.96	<b>3.80</b>	4.35	4.66	5.18
WLT 40 EC	1	150	19	0.240	13.0	0.61	0.80	0.99	1.22	1.36	1.53	1.54
	2	405	34	0.379	13.7	1.59	2.07	2.58	3.17	3.53	3.99	4.00
	3	480	38	0.411	15.2	1.78	2.33	2.89	3.56	3.97	4.48	4.49
	4	590	42	0.472	19.0	2.11	2.75	3.42	4.21	4.69	5.30	5.31
	5	625	45	0.640	31.3	2.33	3.04	3.78	<b>4.65</b>	5.18	5.85	5.87
WLT 50 EC	1	150	18	0.250	19.5	0.60	0.80	0.99	1.23	1.38	1.56	1.74
	2	570	32	0.611	19.5	2.20	2.93	3.65	4.51	5.05	5.72	6.36
	3	470	40	0.689	23.5	2.58	3.44	4.28	5.29	5.92	6.71	7.47
	4	910	46	0.763	27.3	2.86	3.81	4.75	5.87	6.57	7.44	8.28
	5	950	47	0.830	31.0	3.13	4.17	5.19	<b>6.42</b>	7.19	8.14	9.06

Air inlet temperature TK 20 °C, 0% Glycol concentration, max. air flow

Q<sub>H</sub> = Heating capacity, total

LV = Air flow [m³/h]

SD = Sound pressure level [dB(A)]

VS = Fan stage

### Heating capacity WLT 60 EC - WLT 90 EC

	VS	LV	SD	Medium nominal		Medium inlet						
						35 °C	40 °C	45 °C	50 °C	55 °C	60 °C	65 °C
						Heating capacity						
				Medium flow rate [m³/h]	Pressure loss [kPa]	Q <sub>H</sub> [kW]	Q <sub>H</sub> [kW]	Q <sub>H</sub> [kW]	Q <sub>H</sub> [kW]	Q <sub>H</sub> [kW]	Q <sub>H</sub> [kW]	Q <sub>H</sub> [kW]
WLT 60 EC	1	150	18	0.250	19.0	0.64	0.85	1.06	1.25	1.45	1.64	1.83
	2	705	35	0.676	19.0	2.52	3.35	4.19	4.95	5.75	6.50	7.23
	3	895	41	0.804	25.2	3.09	4.11	5.14	6.07	7.06	7.97	8.87
	4	1050	46	0.924	31.0	3.37	4.49	5.61	6.63	7.71	8.71	9.69
	5	1120	47	1.047	38.4	3.97	5.29	6.61	<b>7.81</b>	9.08	10.3	11.4
WLT 80 EC	1	320	19	0.490	14.3	1.19	1.60	1.98	2.27	2.73	3.09	3.44
	2	1090	40	0.832	14.3	3.11	4.19	5.19	5.94	7.15	8.08	9.00
	3	1300	44	1.041	19.0	3.90	5.24	6.49	7.43	8.94	10.1	11.3
	4	1490	47	1.179	23.7	4.44	5.98	7.40	8.47	10.2	11.5	12.8
	5	1650	50	1.278	27.4	4.95	6.66	8.25	<b>9.44</b>	11.4	12.8	14.3
WLT 90 EC	1	320	20	0.370	13.9	1.34	1.77	2.18	2.36	2.97	3.34	3.68
	2	1300	44	1.023	13.9	4.81	6.38	7.84	8.5	10.7	12.0	13.3
	3	1460	46	1.353	22.9	5.38	7.14	8.78	9.51	12.0	13.5	14.8
	4	1640	49	1.491	26.9	5.94	7.88	9.69	10.5	13.2	14.9	16.4
	5	1790	51	1.599	30.0	6.38	8.46	10.4	<b>11.3</b>	14.2	16.0	17.6

Air inlet temperature TK 20 °C, 0% Glycol concentration, max. air flow

Q<sub>H</sub> = Heating capacity, total

LV = Air flow [m³/h]

SD = Sound pressure level [dB(A)]

VS = Fan stage

# REMKO WLT EC series

## 3 Design and function

### 3.1 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.

The unit contains a 2-way or 3-way valve assembly as standard for regulation of the cooling or heating output. If the circulation pump used in the medium cycle is not regulated, it is advisable to use a unit with 3-way valve. In the case of a circulation pump regulated via proportional pressure, it is advisable to use a unit with 2-way valve.

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, **certain units** within a group via a REMKO bus provided by the factory with five-stage fan operation
- **Single control** using the wired **room temperature** regulation (provided by the customer or available as an accessory) with three-stage fan operation or steplessly via 0-10V signal
- **Modbus network control** via **external hardware** or CBCS with infinitely variable fan operation

The units are equipped with a modern EC fan motor, plastic housing similar to RAL 9016, integrated 2 or 3-way valve, condensate collection tray and control board with a large number of switch contacts.

Cabled remote control, a number of 230V or 0-10V regulation variants and condensate pumps are available as accessories.

### Scope of delivery

The standard scope of delivery of the units comprises:

- Infrared remote control [1]
- Wall bracket for remote control [2]
- 2 screws and wall plugs for wall bracket [3]
- 2 batteries for remote control [4]
- Jumper [5]

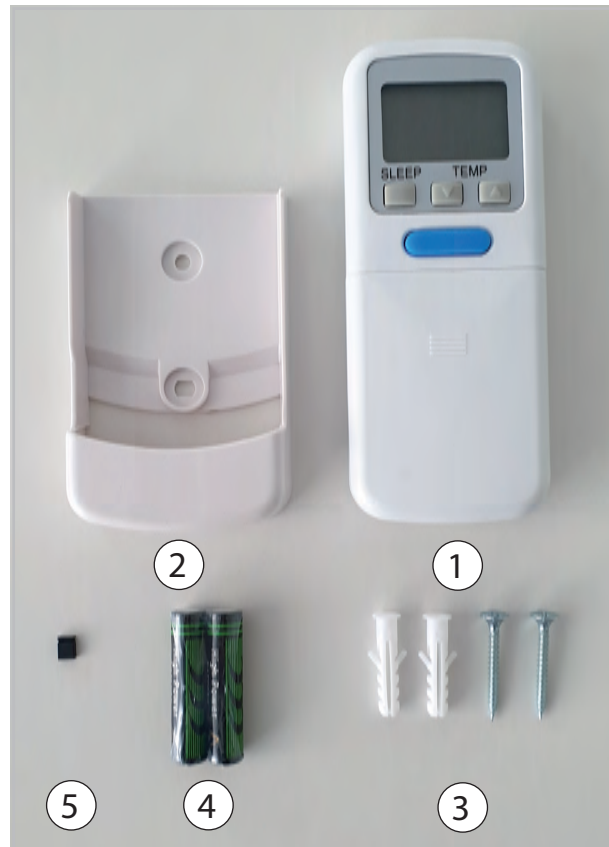


Fig. 2: Scope of delivery



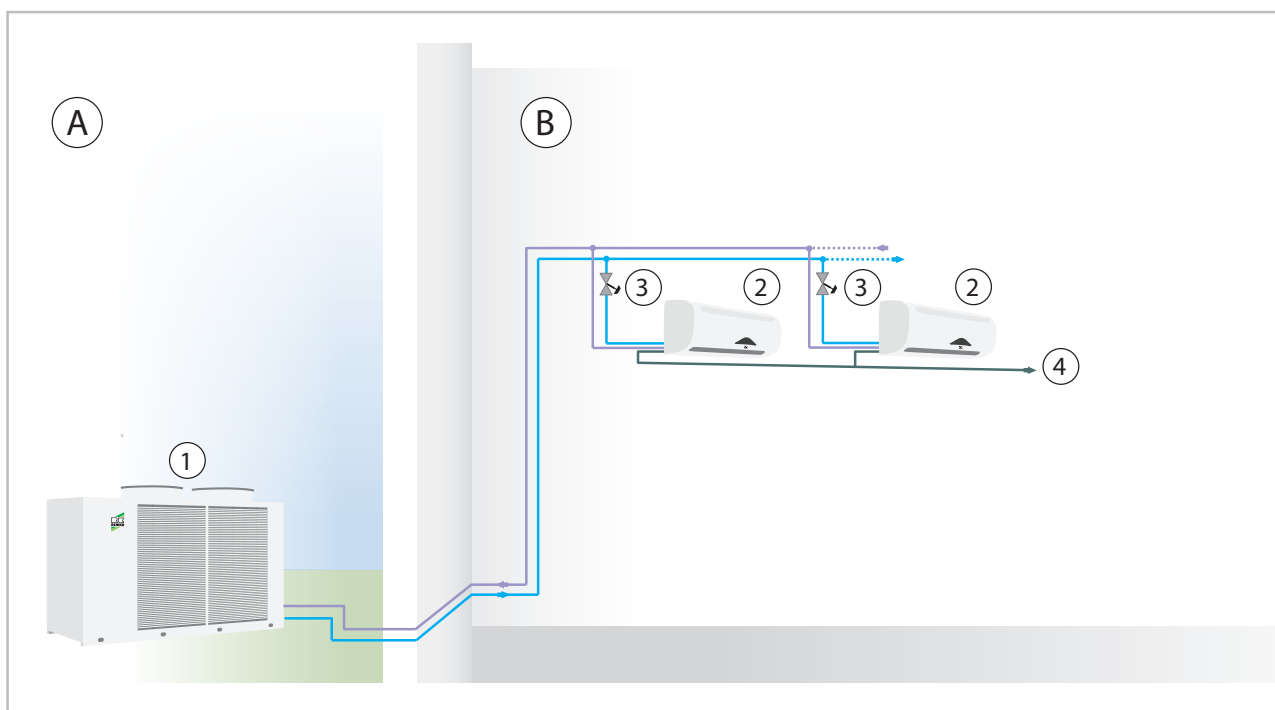
### 3.2 System layout

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.

In order to avoid cold air blowing out in heating mode, it is necessary to consider a minimum temperature of the medium in heating operation.



*Fig. 3: Schematic figure without basic hydraulic components*

A: Outdoor area  
B: Indoor area  
1: Chiller

2: Cold water drain  
3: Valve for hydronic balancing  
4: Condensate drainage line

# REMKO WLT EC series

## 4 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.

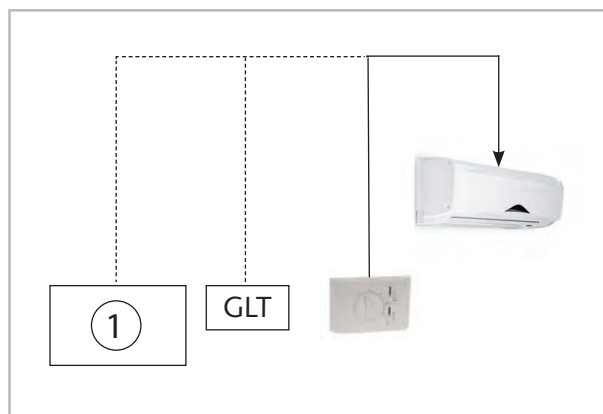
The corresponding wiring diagrams can be found in the separate operating manuals for the remote control/regulation.



*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!*

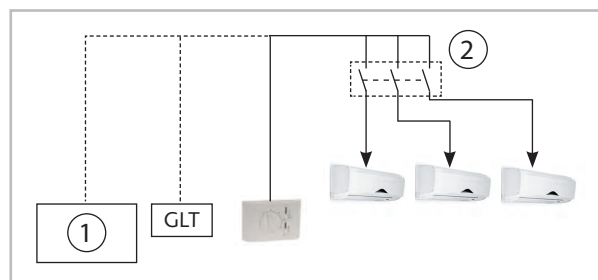
### Example controls

- Single control with three-stage fan operation via external regulation



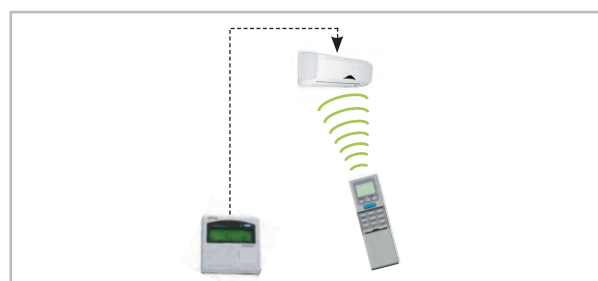
1: Regulation provided by the customer

- Group control with three-stage fan operation via external regulation

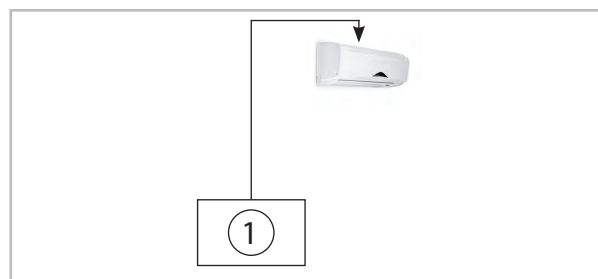


1: Regulation provided by the customer  
2: Switching relay

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

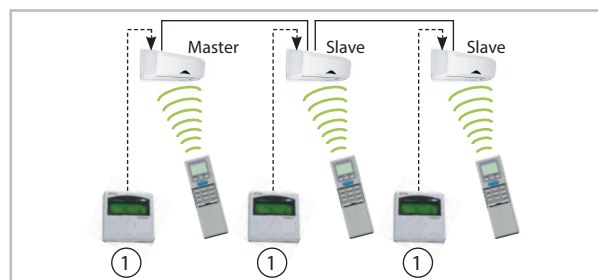


- Operation with an external 0 - 5/10V signal and infinitely variable fan operation via external regulation



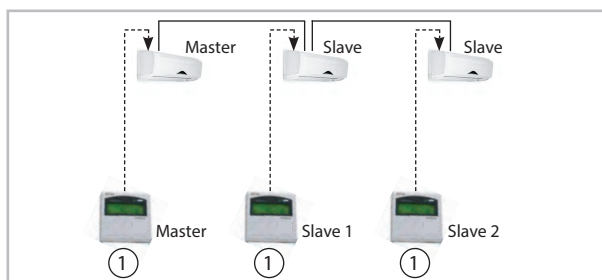
1: Regulation provided by the customer

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



1: Alternative operation

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



1: Addressing

### 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

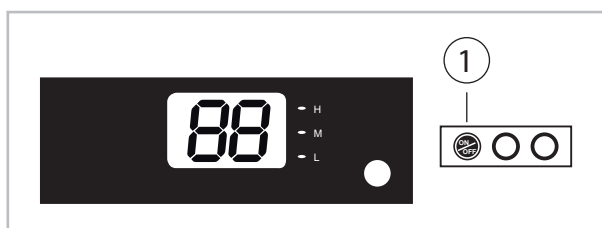


Fig. 4: Display on the unit

1: "RESET" key/Manual operation



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

### 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.

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, pull off the flap of the battery compartment and insert the batteries correctly by polarisation (see marks).

### ! 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.



Fig. 5: Maximum distance

# REMKO WLT EC series

## Keys on the remote control

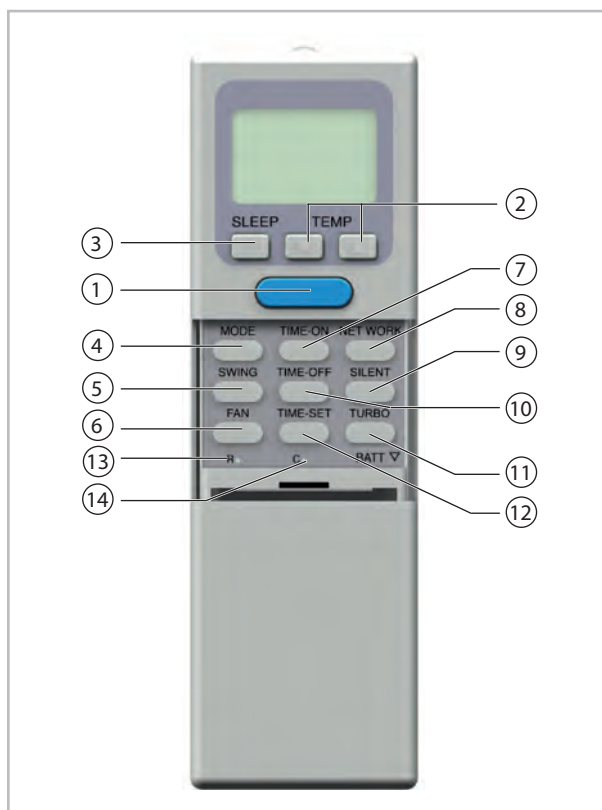


Fig. 6: Keys on the remote control

### ① "POWER" key

Press this key to operate the unit.

### ② "TEMP" key

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

### ③ "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.

### ④ "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 setpoint.

#### 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 recirculation mode only the air is 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.

### ⑤ "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.

### ⑥ "FAN" key

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

### ⑦ "TIME-ON" key

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

### ⑧ "NETWORK" key

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

### ⑨ "SILENT" key

Press this key to set a particularly low fan speed.

### ⑩ "TIME-OFF" key

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

⑪ **"TURBO" key**

Press this key to set a particularly high fan speed.

⑫ **"TIME-SET" key**

Press this key to set the time.

⑬ **"R" key**

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

⑭ **"C" key**

Press this key to activate the time setting.

**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.

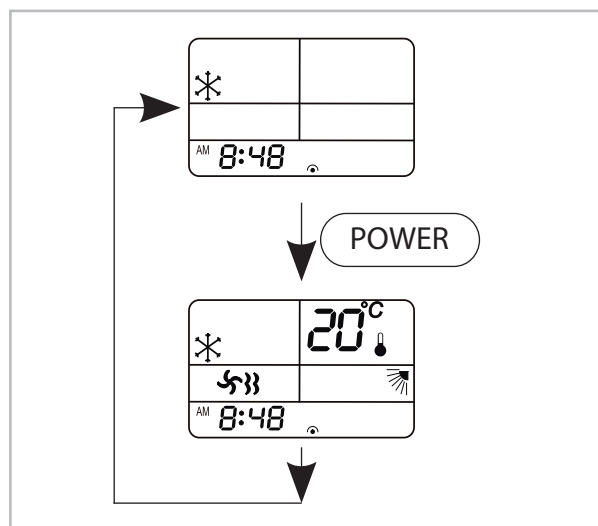


Fig. 7: Remote control On/Off

**"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.

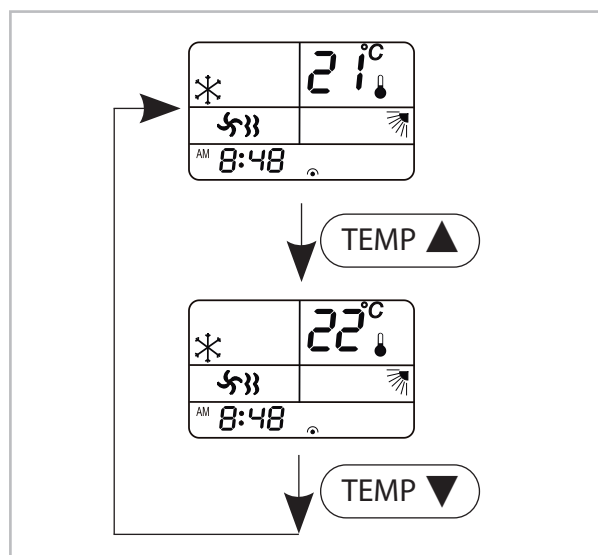


Fig. 8: "TEMP" key

# REMKO WLT EC series

## "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.

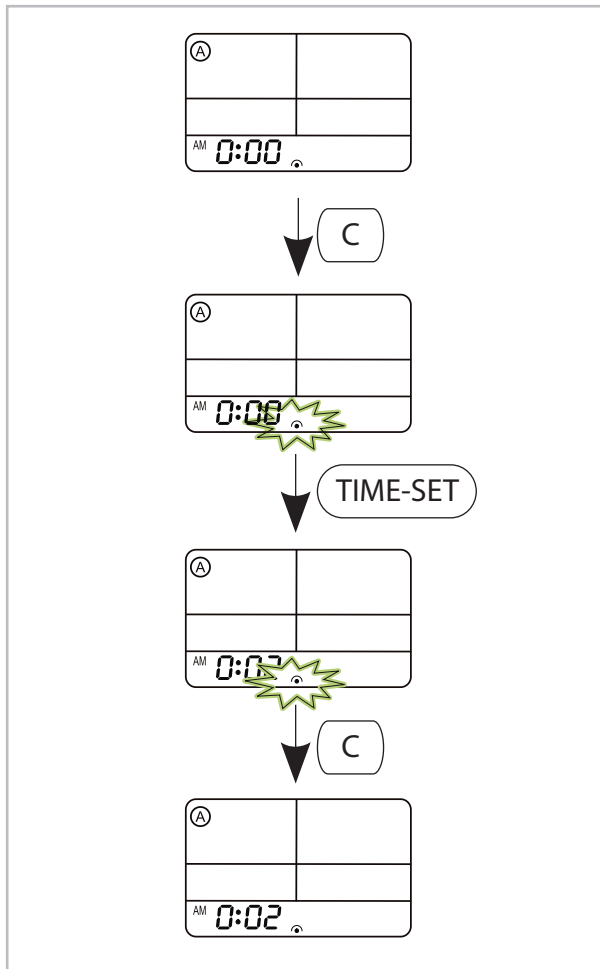


Fig. 9: "TIME" key

## "RESET" key

Use a small pen or similar to press the recessed "R" key. 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.

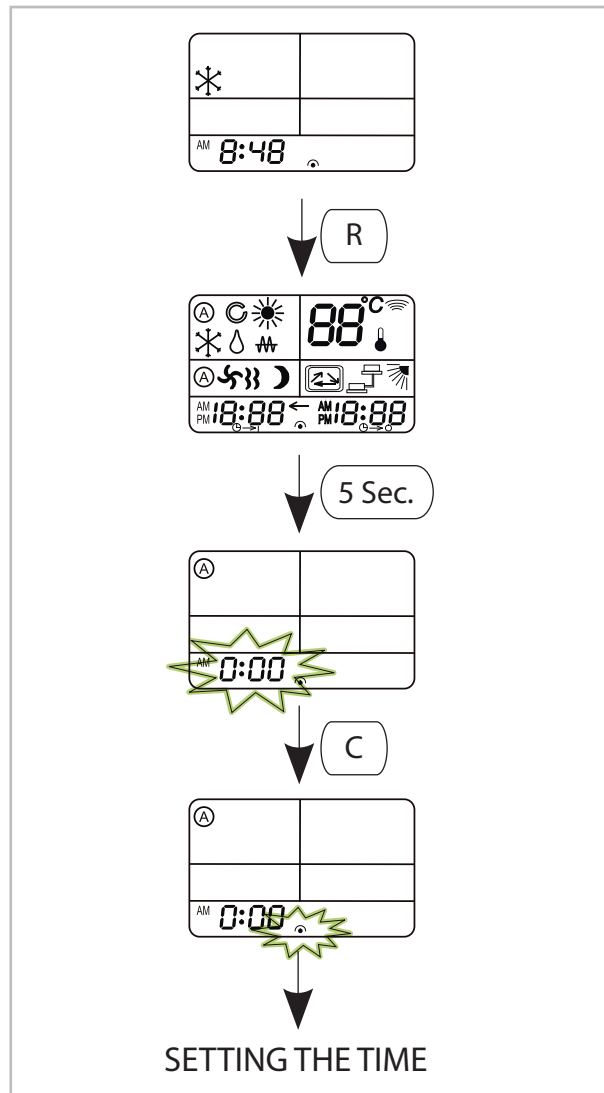


Fig. 10: "RESET" key

## "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
5. HEAT - Heating mode, preselect. Winter mode

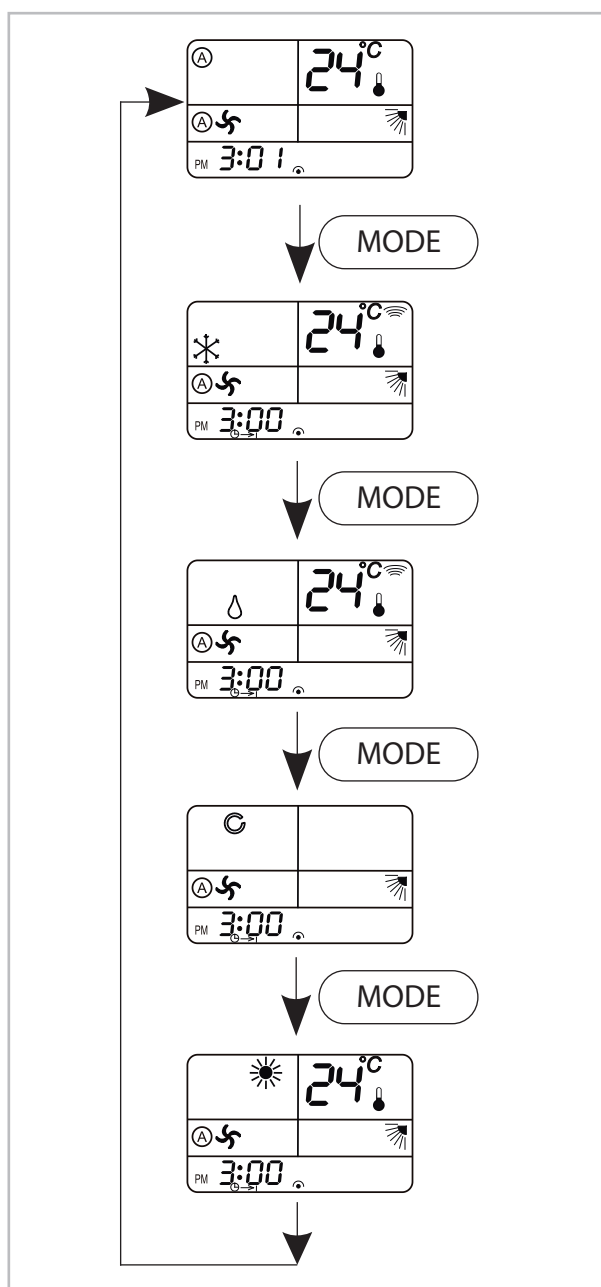


Fig. 11: Mode key

## "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".

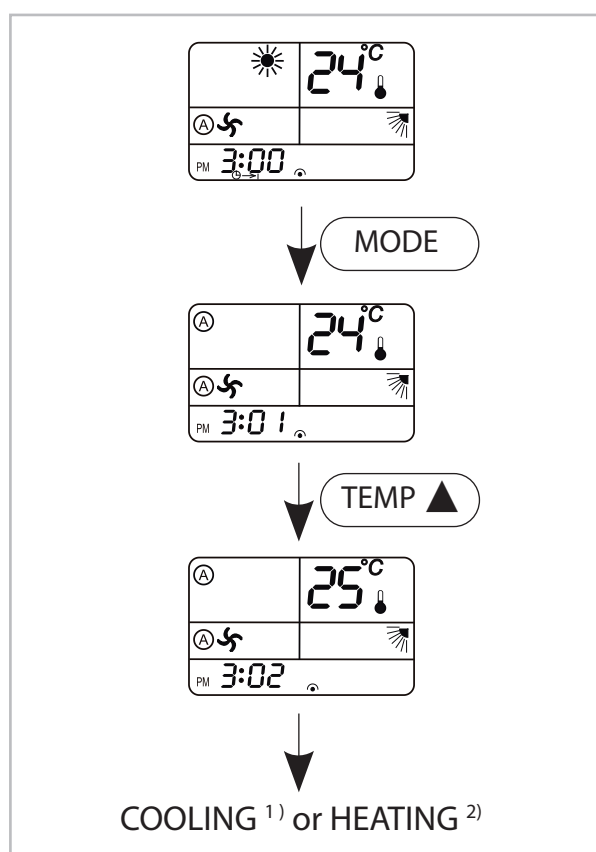


Fig. 12: "AUTO" mode

- 1): The target temperature is below the room temperature
- 2): The target temperature is above the room temperature

# REMKO WLT EC series

## "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  $\oplus$  /  $\ominus$ " 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 temperature falls to approx. 0.5 °C below the set room temperature, the regulation will switch off cooling mode.

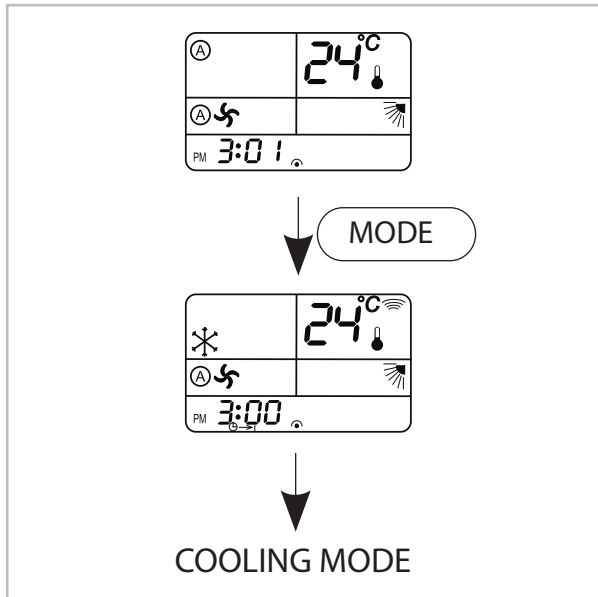


Fig. 13: "COOL" mode

## "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 fin 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.

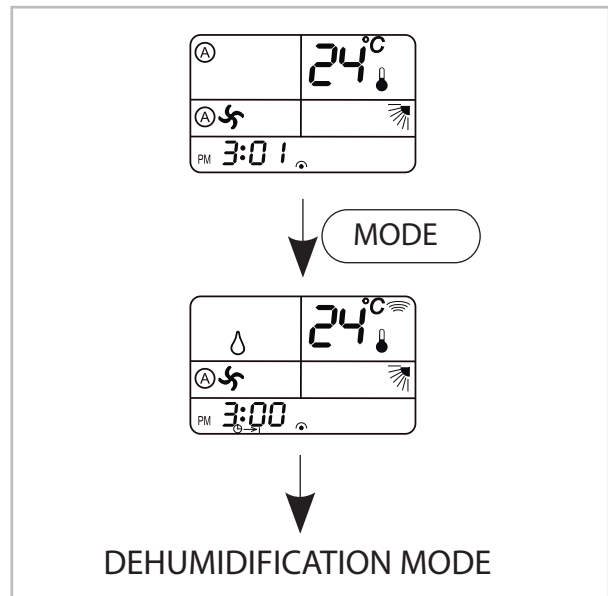


Fig. 14: "DRY" mode



## "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.



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

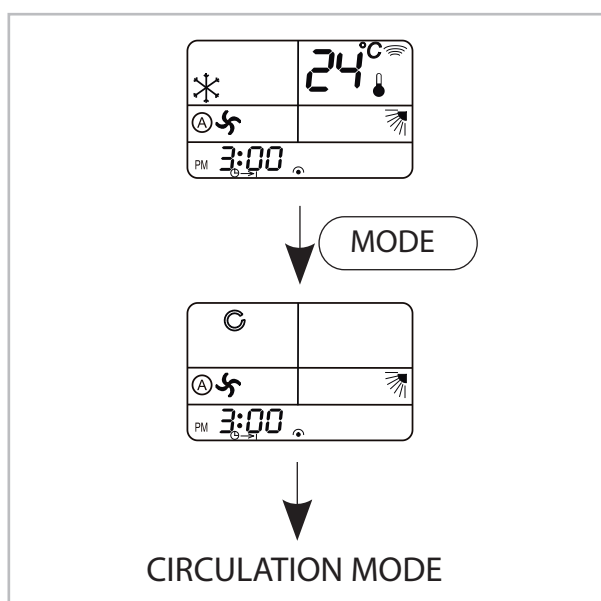


Fig. 15: "FAN" mode

## "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"  $\ominus$  /  $\oplus$  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.



### Cooling mode:

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



### Heating mode:

*The fan will only start when the fin temperature reaches 38°C.*



### Heating mode:

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

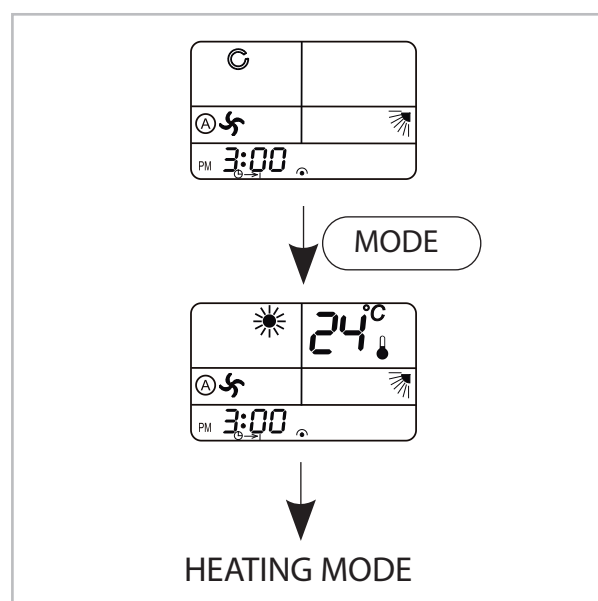


Fig. 16: "HEAT" mode

# REMKO WLT EC series

## "SILENT" key

Pressing the "SILENT" key sets the fan to a particularly low speed and the fan symbol starts to flash. This level is used to reduce the noise emissions again for example. After pressing the "FAN" key, SILENT mode is exited.

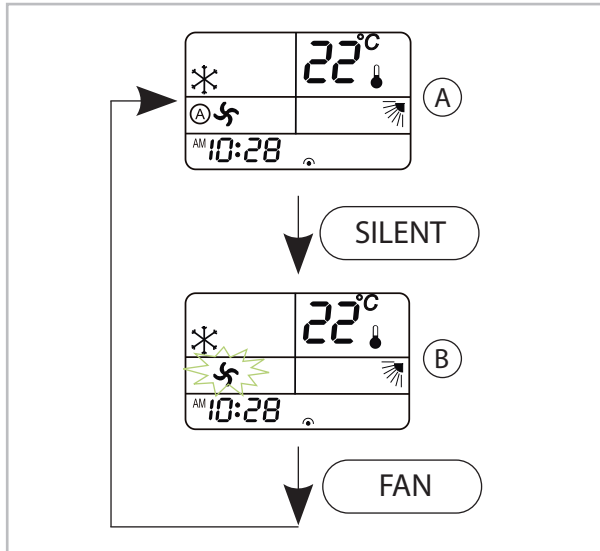


Fig. 17: "Silent" key

A: Automatic  
B: Silent level

## "TURBO" key

Pressing the "TURBO" key sets the fan to a particularly high speed and the fan symbol for level 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.

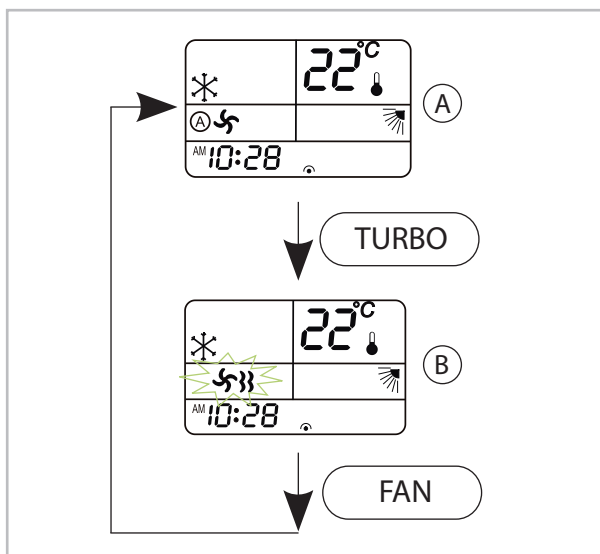


Fig. 18: "Turbo" key

A: Automatic  
B: Turbo level

## "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.

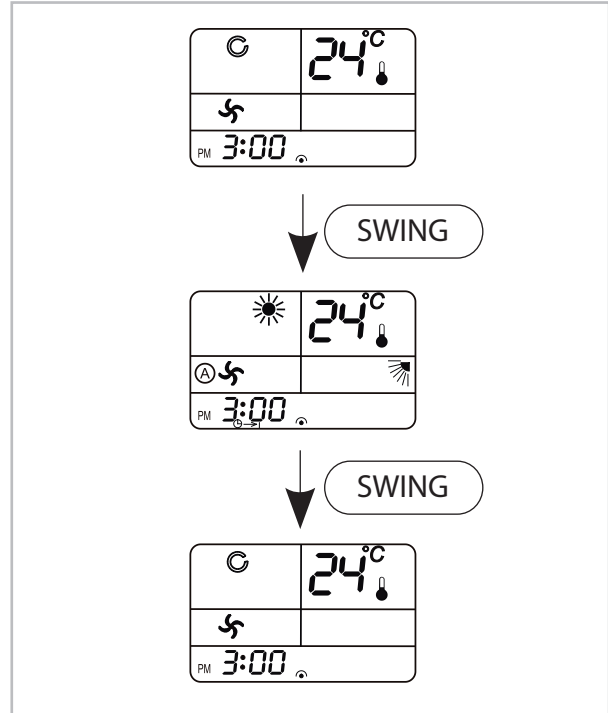


Fig. 19: "SWING" key

## "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.

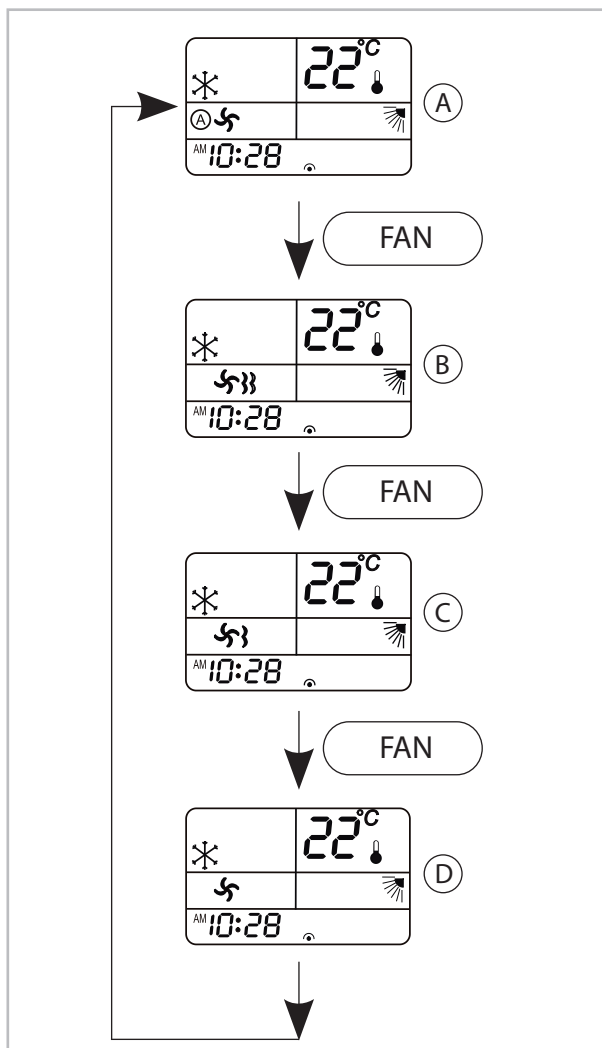


Fig. 20: "Fan" key

- A: Automatic
- B: Stage H
- C: Stage M
- D: Stage L

## "TIME" keys

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.

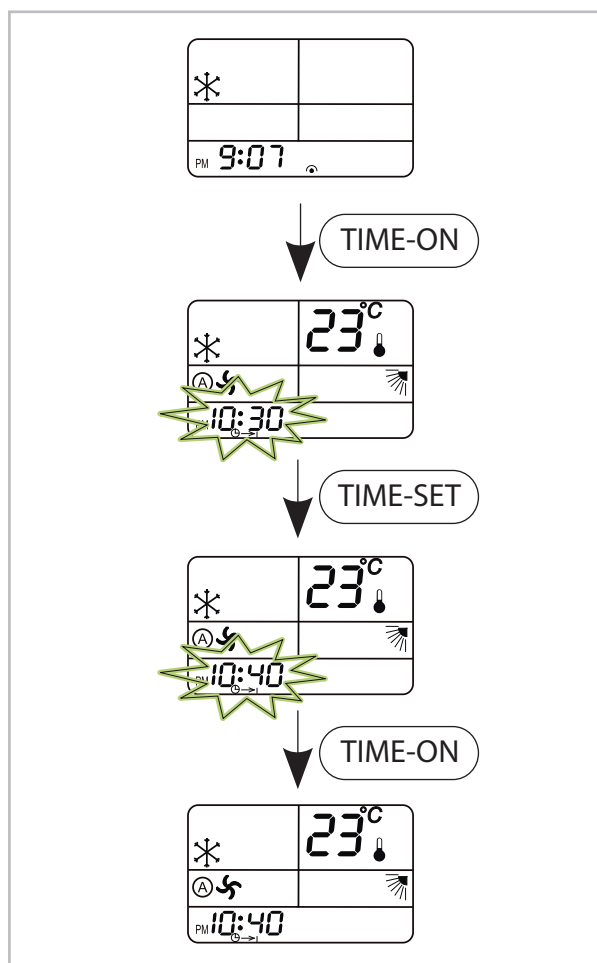


Fig. 21: "TIME" key - Switch-on time

# REMKO WLT EC series

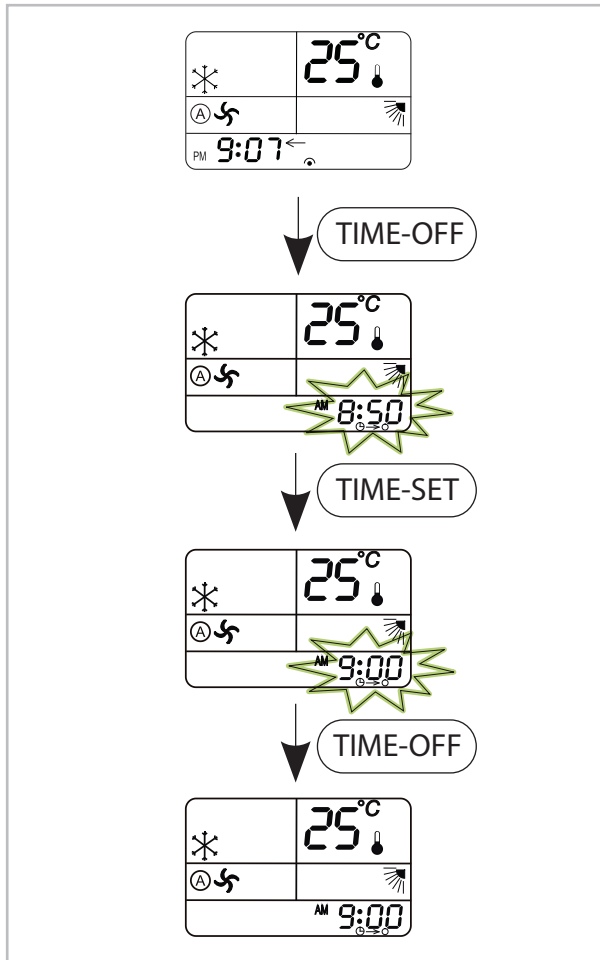


Fig. 22: "TIME" key - Switch-off time

## "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.

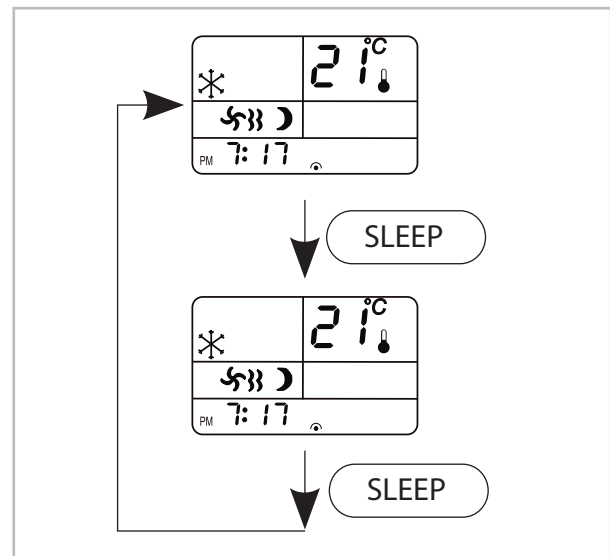


Fig. 23: "SLEEP" key - Cooling mode

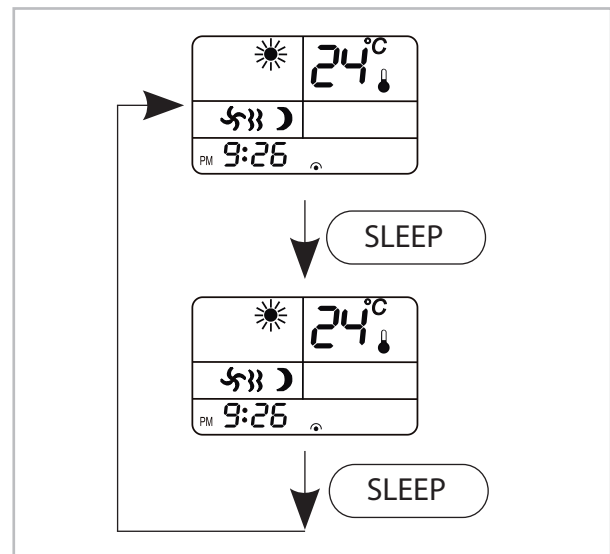


Fig. 24: "SLEEP" key - Heating mode

## "NETWORK" key

The "NETWORK" key enables the settings on the master unit (leading unit) to be transferred to all slave units (following 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 3 seconds to transfer. However, each individual unit can still be operated individually.

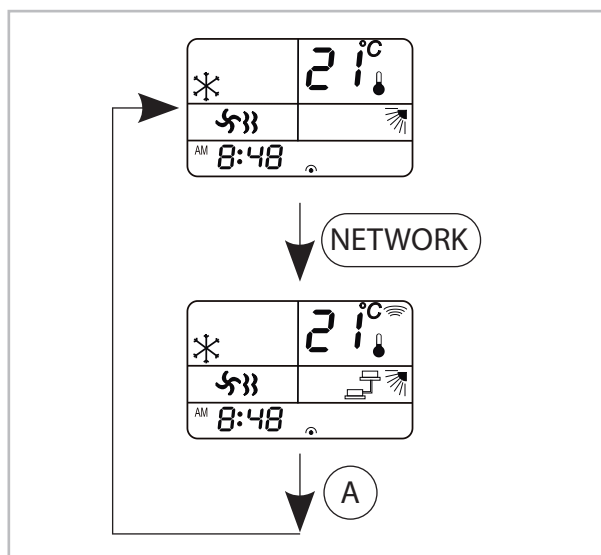


Fig. 25: "NETWORK" key

A: Transfer to all units. Confirmation by means of a signal tone

## 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 (following unit = slave). To transfer the data, the leading unit (master) is connected to the following units (slave). 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.

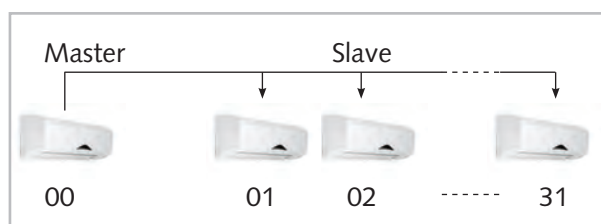


Fig. 26: "NETWORK" key - Master/slave behaviour

Two different network variants are available:

### 1. Operating a group:

Leading unit (master) function:

Standard IR or alternative cabled remote control of the master unit can address the master and all slave units.

Subsequent unit (slave) function:

Standard IR or alternative cabled remote control of the slave unit can operate the addressed slave unit only.

### Operating a group or specific units within a group:

Leading unit (master) function:

Cabled remote control available as an accessory for the master unit can address the master unit, all slave units as a group or individual slave units separately. Subsequent unit (slave) function:

Cabled remote control available as an accessory for the slave unit can operate the connected slave unit only.

# REMKO WLT EC series

Please enter the configuration of the installed networks in the table. Identify the master or slave units in the corresponding rows.

Address	Room designation	Infrared remote control Master	Infrared remote control Slave	Cabled remote control Master	Cabled remote control Slave
00					
01					
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## 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.

- 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 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.
- Lift the unit at the corners and not by the medium or condensate drainage 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 refrigerant piping with suitable caps or adhesive strips to prevent the infiltration of moisture and never kink or compress the refrigerant piping.
- Avoid unnecessary bends. This minimises the pressure loss in the lines.
- Install 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.
- Service openings should be provided in the suspended ceiling to allow maintenance access to the control box or the valve assembly.

### Installation materials

The unit is attached to the wall bracket by 4 screws to be provided by the customer.

### Selecting the installation location

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

### Minimum clearances

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

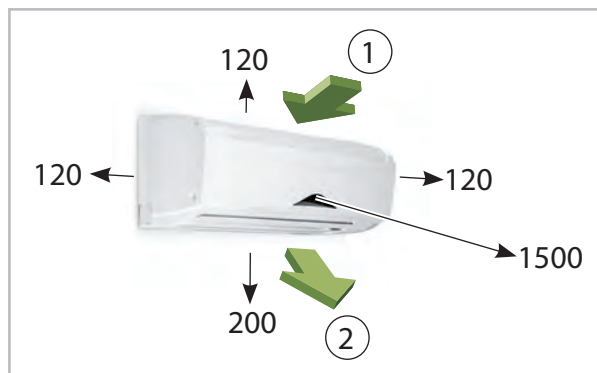


Fig. 27: Minimum clearances (all measurements in mm)

- 1: Air inlet
- 2: Air outlet

### Connection variants

The following connection variants can be used for the medium and condensate pipes and the control lines.

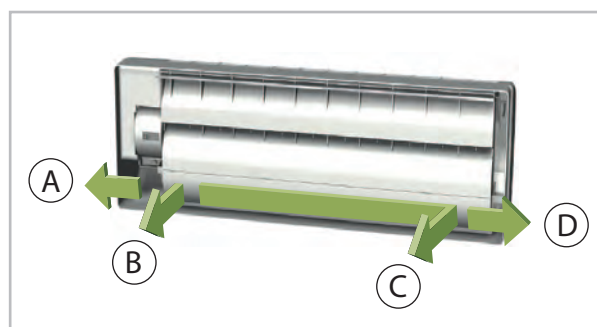


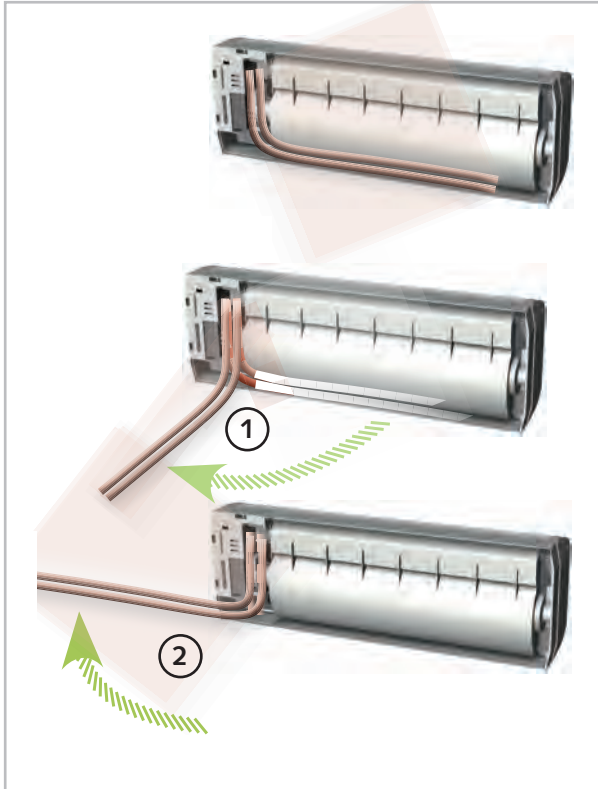
Fig. 28: Connection variants

- A: Outlet on the wall, right
- B: Outlet through the wall, right
- C: Outlet through the wall, left
- D: Outlet on the wall, left

# REMKO WLT EC series

## Bending of the medium piping

Medium piping must only be bent as shown below.



1. ➤ 90° Outlet through the wall

2. ➤ 180° Outlet right

- Bend pipes into the desired position
- **CAUTION!** Pipes must never be twisted!



## Mounting plates

The following figures show the mounting plates when installed, as well as the route of the medium piping installed on the unit (shaded in blue). The centre point marked on the mounting plate is also the centre point of the unit. The hole for the medium piping can be arbitrarily located on the left or right and should have a minimum diameter of 65 mm.

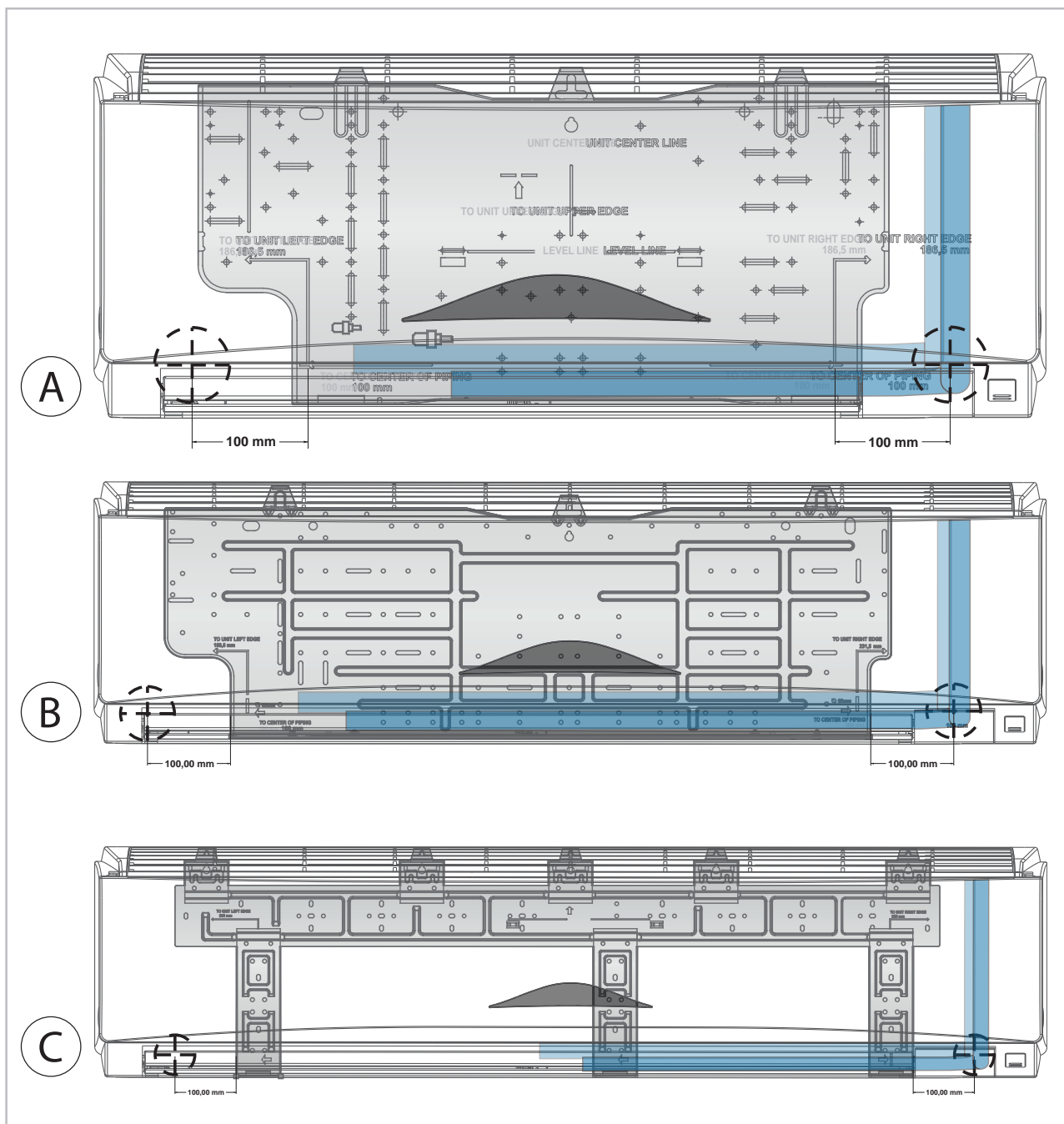


Fig. 29: Mounting plates

A: WLT 30 EC - WLT 40 EC  
B: WLT 50 EC - WLT 60 EC

C: WLT 80 EC - WLT 90 EC

# REMKO WLT EC series

## 6 Installation

### 6.1 Unit installation

#### Unit installation

#### ! NOTICE!

Installation and commissioning should only be performed by trained specialists.

The unit is attached by means of a wall bracket, with consideration to the minimum clearances required.

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

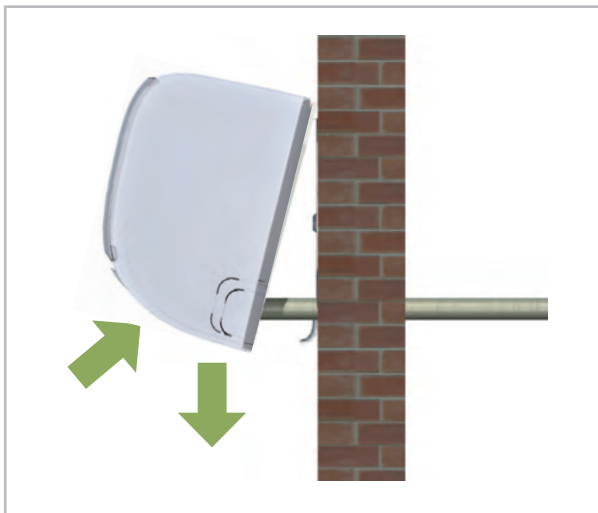


Fig. 30: Horizontal positioning

#### Connection of the medium piping

- The medium piping of the unit is designed without any transition. The respective transition (press fitting, soldering sleeve, etc.) can be selected on an individual basis.
- For the purpose of servicing, connections must be equipped with shut-off valves and the medium flow rate adjusted using valves for hydronic balancing.
- Additional automatic bleed valves are to be provided in the supply and return flow 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.

#### Necessary system components

##### Valve assembly (standard equipment)

With 2-conductor systems cold or warm medium is fed through the register in the unit and then cold or warm air is released. Regulation is realised 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, the head is switched off and the medium is fed past the heat exchanger through the bypass .

The bypass serves to ensure the minimum medium flow rate for the chiller. In the case of units with 2-way valve, no bypass is present. This version is recommended with the use of a proportional pressure-controlled circulation pump.



*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 hydronic balancing valves to be provided by the customer. The nominal flow rates for the medium adjust to the values needed as a consequence of the pressure loss.

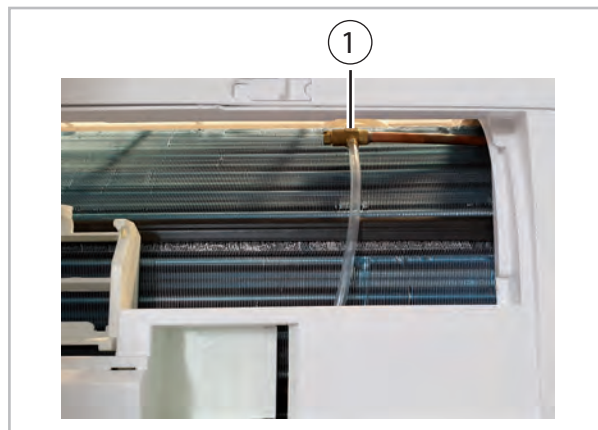
### Anti-freeze protection (accessories)

A water glycol mix is generally used as medium for a cold water system. Depending on the glycol type and quantity used, the viscosity changes, the pressure loss increases and the unit's cooling or heating output reduces. A

All system components must be approved for use with glycol.

#### ! NOTICE!

The product and safety data sheets of the glycol type used must be observed during use and disposal.



1: Manual bleeding valve

### Diaphragm expansion vessel (MAG)

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

### 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 bleed valves must also be installed at the next highest point in the collective lines.

#### ! NOTICE!

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

# REMKO WLT EC series

## 6.2 Condensate drainage connection

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

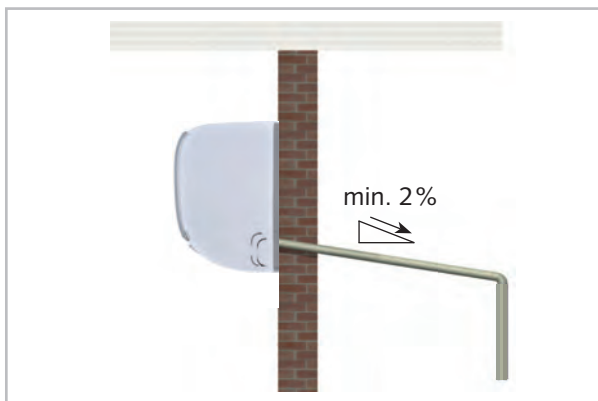


Fig. 31: Condensate drainage connection

The condensate hose is designed to be connected on the left-hand side (as viewed from the front), although it can also be changed by reconnecting the hose if necessary.

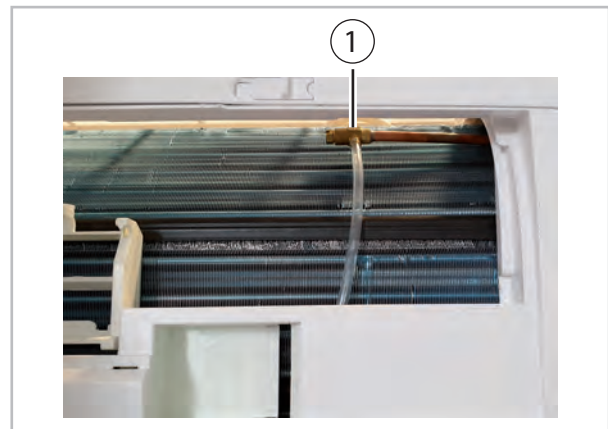
## 6.3 Leak testing

The leak test is carried out after the connection has been made.

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.

### ! NOTICE!

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



1: Manual bleeding valve

## 7 Electrical wiring

### 7.1 General connection and safety instructions

#### **DANGER!**

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

- We recommend that a main/repair switch be installed close to the unit. This must be provided by the customer.
- 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 switch-off contact switches off the power supply or the valve if necessary.
- The connection diagram for the alarm contact of the condensate pump available as an accessory can be found in the separate operating manual.
- If the unit is to be operated with infrared remote control, only connection of the unit supply cable is required.

Proceed as follows to connect:

1. ➤ The terminal block for connection of the supply line is located beneath the plastic cover on the bottom right side of the unit. This can be released by undoing the screw on the underside of the unit.



Fig. 32: Unit supply cable cover

2. ➤ If one of the unit switch contacts is to be used, remove the unit housing. To do so, undo the screws beneath the air outlet fins. It is then possible to remove the housing by first pulling the underside forwards.

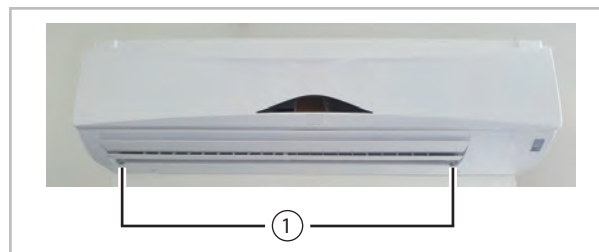


Fig. 33: Unit housing disassembly

1: Fastening screws

3. ➤ Once all corresponding contacts are connected, reinstall the unit cover in reverse order. When doing so, make sure that the cover on the top side of the unit latches into the corresponding guide.

#### **NOTICE!**

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

# REMKO WLT EC series

## 7.2 Electrical drawings

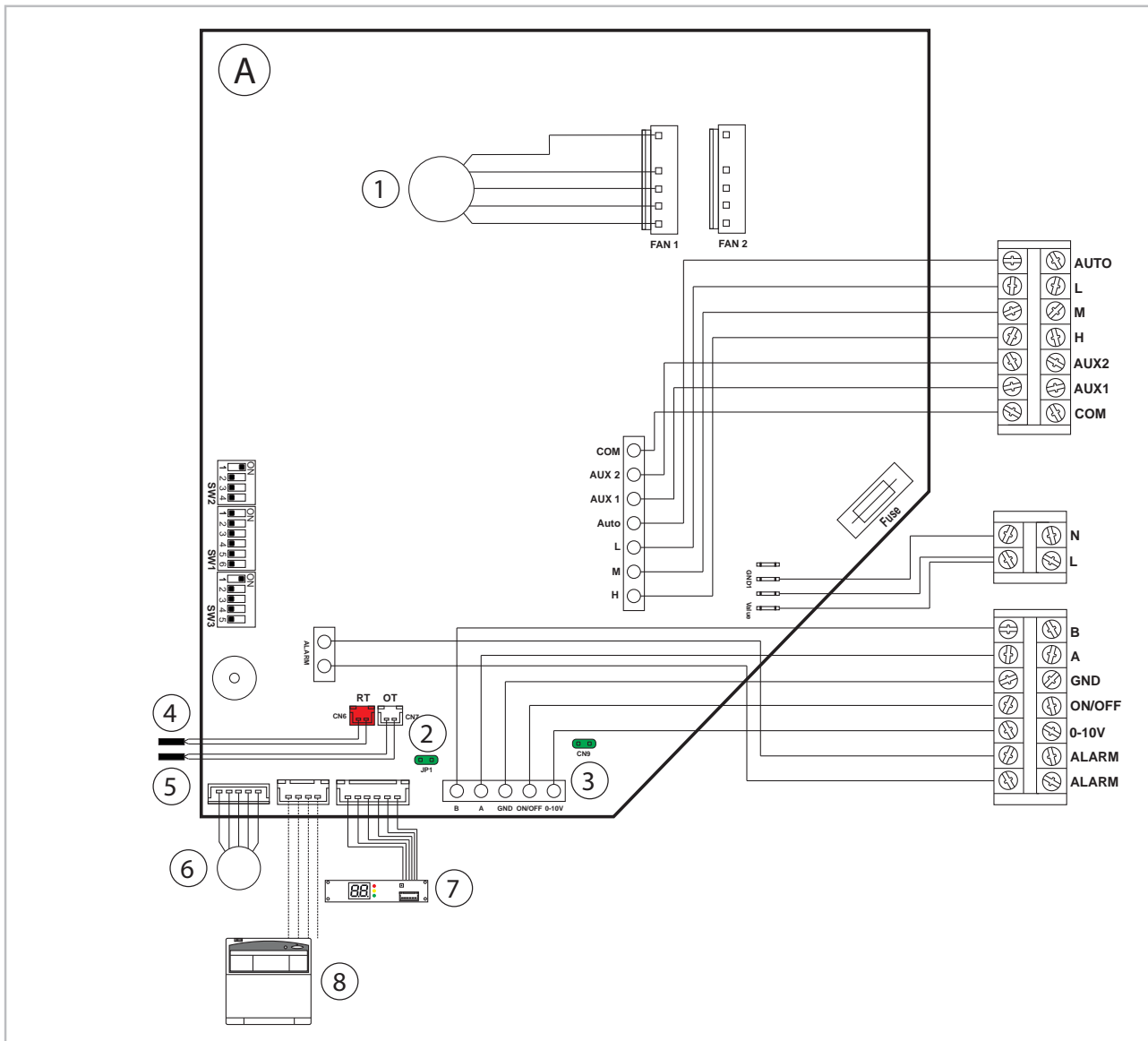


Fig. 34: Electrical drawings

A: Unit circuit board

1: Fan

2: Jumper JP1

When establishing group control, this jumper is to be set on the last unit in the control chain on the circuit board

3: Jumper CN9

open --> 0-5 V DC control

closed --> 0-10V DC control

4: Register probe

5: Room temperature probe

6: Swing motor

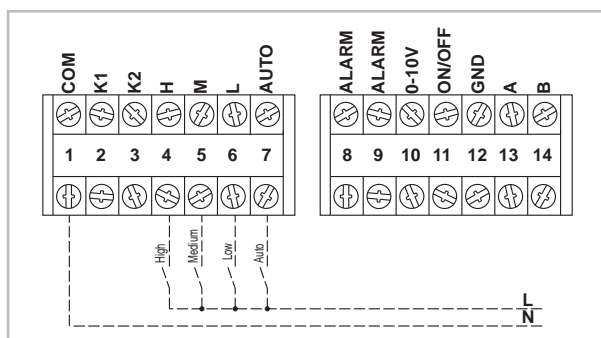
7: Display

8: Cabled remote control (optional)

## 7.3 Connection options

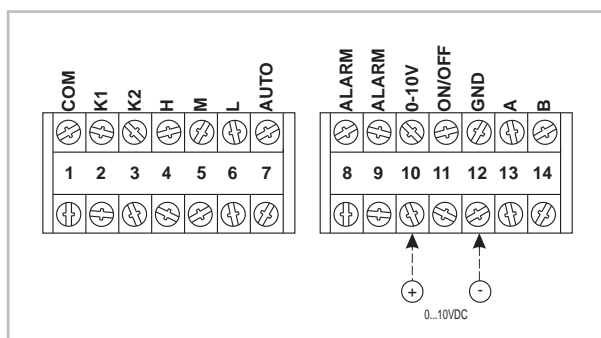
### 3-speed fan control

With 3-speed control of the fan, it is possible to control 3 fan stages (Low, Medium, High) plus automatic operation. For this purpose, 230V must be laid to the required fan speed.



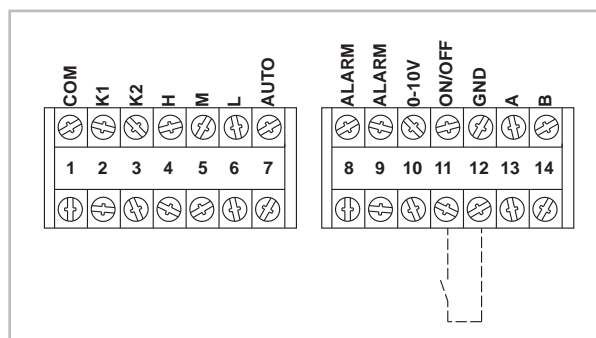
### Unit control via 0-10V signal

The EC fan installed in the unit enables stepless speed adjustment with 0-10V DC signal (optionally 0-5V if the CN9 jumper is removed). If the voltage drops below 2V DC, the unit will switch to stand-by operation automatically. If the 0-10V signal is connected, the polarity must be checked. The 0-10V signal can also be connected to multiple units in parallel, in order to realise group control.



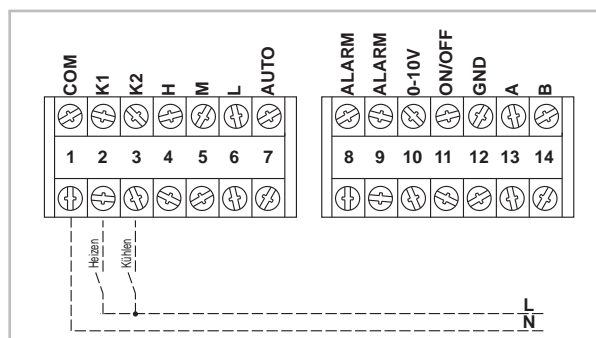
### Enable/block via external start/stop contact

Using a potential-free start/stop contact, the unit can be enabled or blocked from an external location. If this contact is closed, the unit is blocked and is placed in standby operation. An external block is indicated via a corresponding flashing code by the LEDs (see chapter "Malfunction indicated by flashing code"). It is not possible to invert this logic.



### External cooling/heating contact

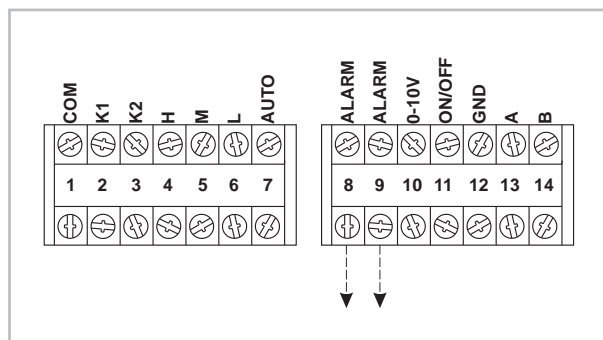
If the cooling or heating operating mode is specified via external regulation, this can take place by switching in the respective 230V contact. As long as voltage is supplied to these contacts, switching the operating mode is not possible via a further regulation instance (for example infrared remote control).



# REMKO WLT EC series

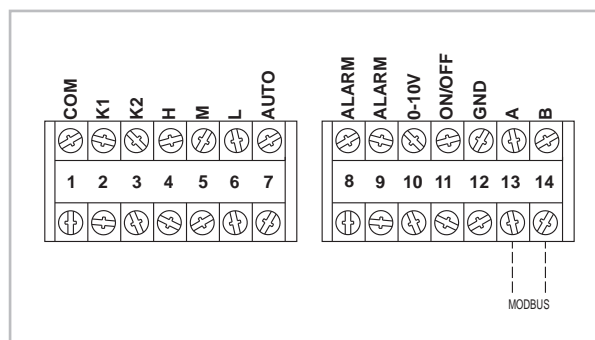
## Alarm contact for general alarm signal

The unit is equipped with a general alarm signal contact that can be used to signal a malfunction to an external location. If a unit malfunction is present on the unit, the potential-free contact is closed. This contact can be connected with 230 V.



## Group control/MODBUS control

If, for example, multiple units are to be controlled via a single cabled remote control, connect the WLT EC units with each other. For this purpose, connect contacts A and B of the individual units with each other. It is also possible to implement control via a Modbus interface with these contacts. The corresponding data protocol is available as a separate document.





## 8 Configuration

The units can also be adjusted to requirements retroactively by adjusting DIP switch blocks SW1 to SW3 accordingly.

The DIP switch block SW1 configures the network addresses within a bus.

The DIP switch block SW2 configures the configured unit-specific parameters and must be set in accordance with the table below.

The DIP switch block SW3 configures the function of the unit.

The configuration takes place by setting the white slide switch.

### Network configuration (SW1)

The addresses for the leading (master) and subsequent (slave) units are defined using switch block SW1.

SW1						
Network	S1	S2	S3	S4	S5	S6
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

# REMKO WLT EC series

## Function logic (SW2)

The units can be used for numerous applications and requirements. The settings in the table below are possible using switch block SW2. It is generally not necessary to change this switch block (exception S2)

SW2				
Function logic	S1	S2	S3	S4
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

## Unit configuration (SW3)

Adjusting this DIP switch provides the regulation with specific key variables that are required for safe control behaviour and optimised unit operation. Only the configuration specified for the relevant unit is permitted to be used here, as this is the only way to guarantee optimised control behaviour.

SW3					
Unit type	S1	S2	S3	S4	S5
WLT 30 EC	ON	OFF	OFF	OFF	OFF
WLT 40 EC	OFF	ON	OFF	OFF	OFF
WLT 50 EC	ON	ON	OFF	OFF	OFF
WLT 60 EC	OFF	OFF	ON	OFF	OFF
WLT 80 EC	ON	OFF	ON	OFF	OFF
WLT 90 EC	OFF	ON	ON	OFF	OFF

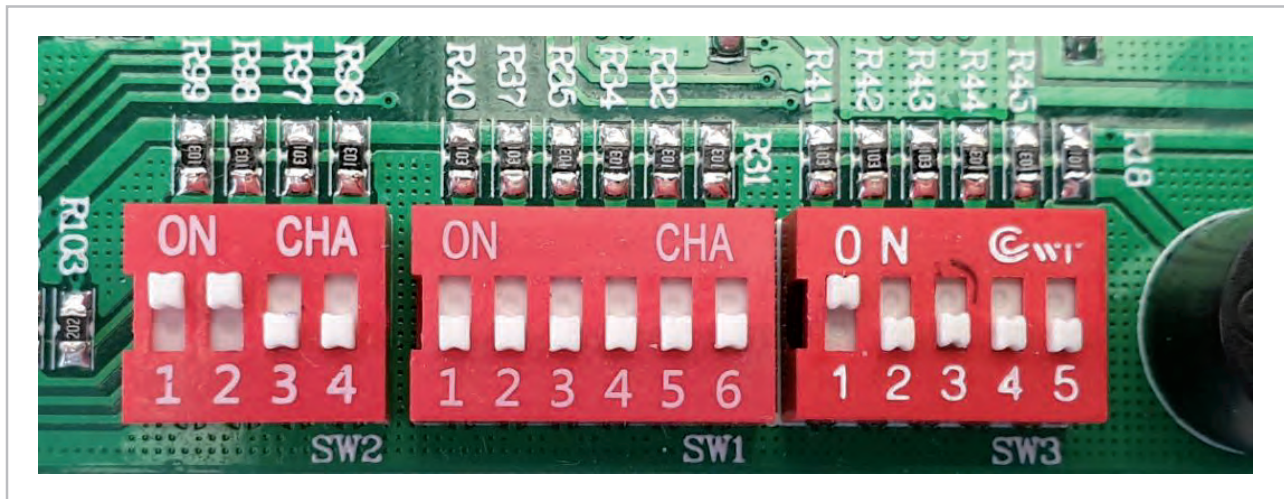


Fig. 35: DIP switch blocks SW1-SW3

## 9 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 following units (slave).

The units are connected together via a two-core, shielded bus line.

The minimum cross section is 1.0 mm<sup>2</sup> with a maximum line length of 500 m 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 the DIP switch block SW1 (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.

### Implementation

- Address assignment for the units is carried out by changing the DIP switch settings for DIP switch block SW1.

### 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 control 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.

### Implementation

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

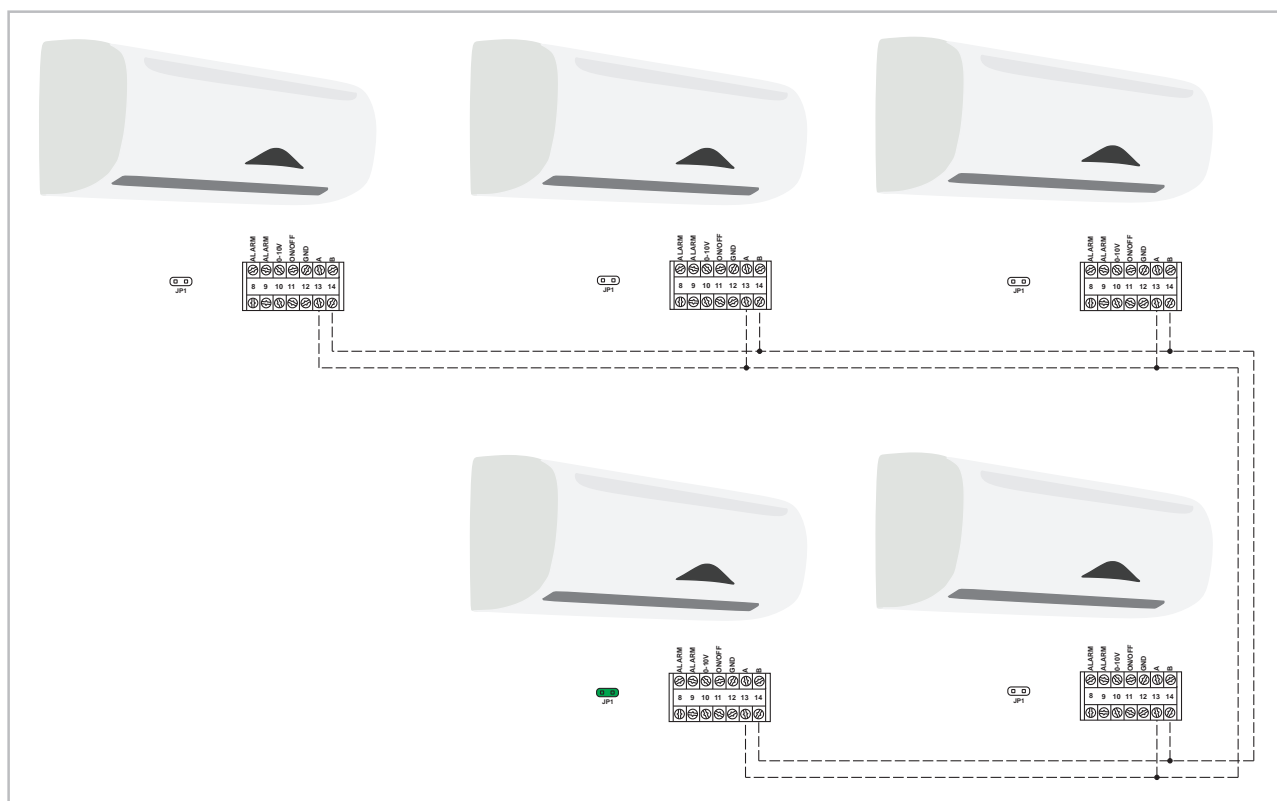


Fig. 36: Internal network wiring diagram

# REMKO WLT EC series

## 10 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 testing. 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.

### ! NOTICE!

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

### Diaphragm expansion vessel

- 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 with the valves for hydronic balancing.

### 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.

## 11 Commissioning

### ! NOTICE!

Commissioning should only be performed by specially trained personnel and documented after the certificate has been issued.

### ! NOTICE!

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 lie 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

- Mount all removed parts.
- Familiarise the operator with the system.

## 12 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 remote control.
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.

# REMKO WLT EC series

## 13 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. For systems with an indoor unit and outdoor unit, refer to the chapter "Troubleshooting and customer service" in both operating manuals. Please inform your dealer if the unit is still not working correctly after all function checks have been performed!

### Operational malfunctions

Malfunction	Possible causes	Checks	Remedial measures
The unit does not start or switches itself off	Power failure, under-voltage	Does all other electrical equipment function correctly?	Check voltage and if necessary wait until turned on again.
	Defective mains fuse/main switch turned off	Are all lighting circuits functioning correctly?	Replace the mains fuse. Close main circuit breaker
	Damaged power supply	Does all other electrical equipment function correctly?	Repair by specialist firm
	Wait time after switching on is 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?	Take into account the temperature range for the indoor unit and outdoor unit
	Electrical surges caused by thunderstorms	Have there been lightning strikes in the area recently?	Switch off the mains breaker and switch it back on. Have it inspected by a specialist
	Malfunction of the external condensate pump	Has the pump shut down due to a malfunction?	Check and if necessary clean the pump
	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
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 control
	Receiver or transmitter unit exposed to excessive solar radiation	Does it function correctly in the shade?	Place the receiver and/or transmitter unit in the shade
	Electromagnetic fields are interfering with transmission	Does it function after removing potential sources of interference?	Signal is not transmitted when interference sources are operational
	Key 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 control are flat	Have new batteries been inserted? Is the display incomplete?	Insert new batteries

Malfunction	Possible causes	Checks	Remedial measures
The unit is running but only provides reduced or no cooling or 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 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
	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 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. 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?	Should be cleaned by specialist firm

# REMKO WLT EC series

## 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 probe, ambient air faulty/tripped	Contact specialist dealer
On	Flashes		Window contact tripped/system in standby	Open enabling contact



## 14 Care and maintenance

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



### DANGER!

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

### Care

- Ensure the unit is protected against dirt, mould and other deposits.
- Only clean the unit using a damp cloth. Do not use any caustic, abrasive or solvent-based cleaning products. Do not use a jet of water.

- Clean the fins on the unit prior to long shut-down periods.

### Maintenance

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



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

### Air filter for indoor unit

The cleaning interval for the air filter in the unit is decisively dependent on the quality of the room air. If the room air is extensively contaminated with solid particles, the air filter should be checked and cleaned at an appropriately frequent interval.

Type of task	Commissioning	Monthly	Half-yearly	Yearly
Checks/maintenance/inspection				
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	●			●

<sup>1)</sup> see note

### Cleaning the housing

1. ➤ Disconnect the power supply to the unit.
2. ➤ Open and fold the intake grill on the front side upwards.
3. ➤ Clean the grill and housing using a soft, damp cloth.
4. ➤ Switch the power supply back on.

### Cleaning the filter

1. ➤ Disconnect the power supply to the unit.
2. ➤ Open the front side of the unit by folding the grill upwards and allowing it to engage (Fig. 37).
3. ➤ Raise the filter and pull it out in a downwards direction (Fig. 37).
4. ➤ Clean the filter with a commercially available vacuum cleaner (Fig. 38). To do so, turn the dirty side so it is facing upwards.
5. ➤ Dirt can also be removed by carefully cleaning with lukewarm water and mild cleaning agents (Fig. 39). The dirty side should be face down.

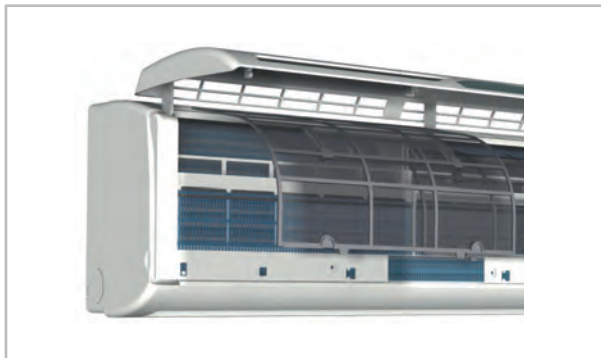
# REMKO WLT EC series

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)

An optional integrated or separate condensate pump may be in the indoor unit, which pumps out any accumulated condensate into higher positioned drains.

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



*Fig. 37: Folding the grill upwards*



*Fig. 38: Cleaning with a vacuum cleaner*



*Fig. 39: Cleaning with lukewarm water*

## 15 Exploded view and spare parts lists

### 15.1 Exploded view of the unit WLT 30 EC - WLT 60 EC

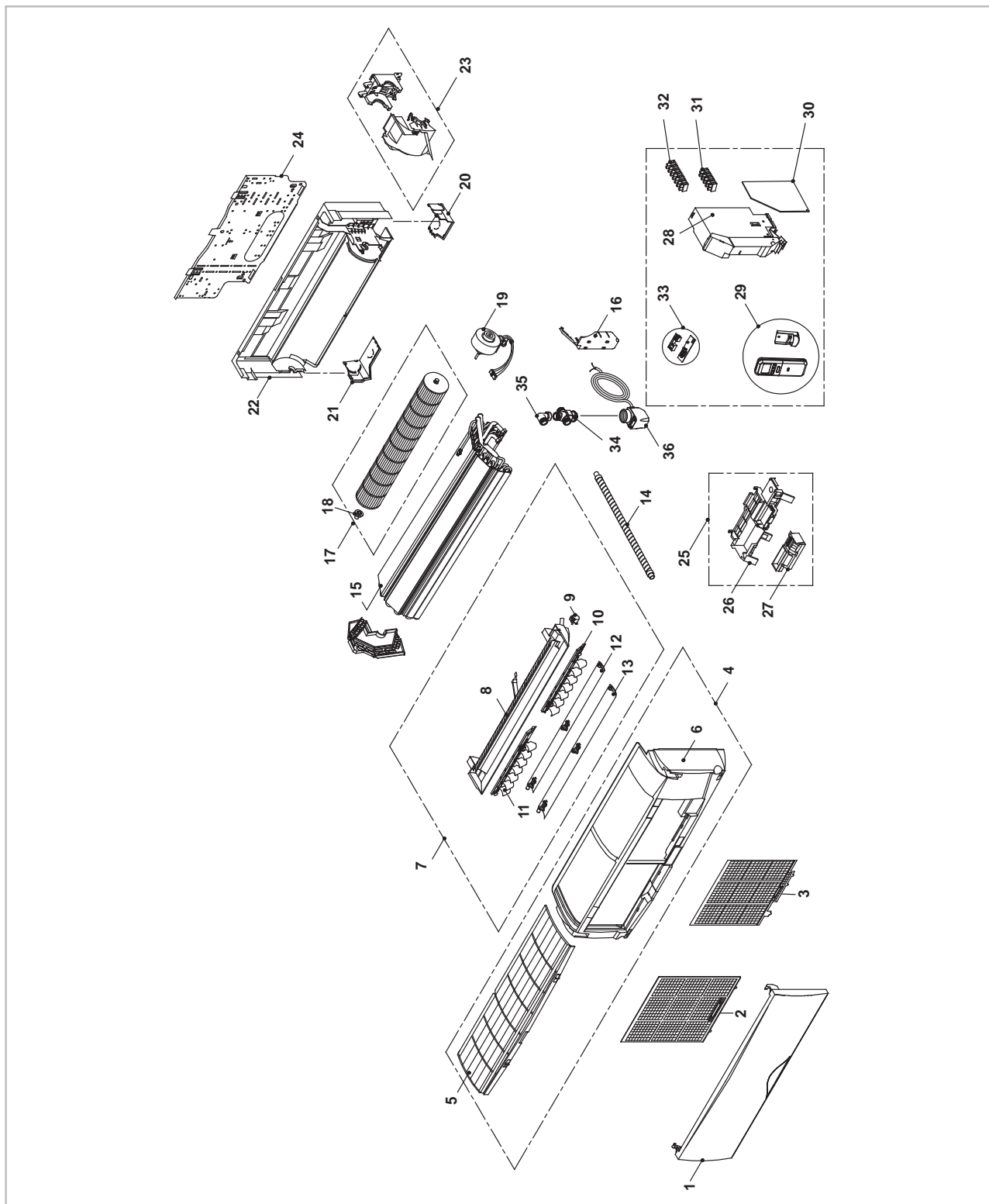


Fig. 40: Exploded view of the unit

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

# REMKO WLT EC series

## 15.2 Spare parts list WLT 30 EC - WLT 60 EC



### **IMPORTANT!**

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

No.	Designation
1	Unit trim
2	Air filter, left
3	Air filter, right
4	Housing front, complete
5	Air inlet grill
6	Unit housing, front
7	Condensate tray, complete
8	Condensate tray
9	Swing motor
10	Air outlet flap, vertical right
11	Air outlet flap, vertical left
12	Air outlet flap, horizontal narrow
13	Air outlet flap, horizontal wide
14	Condensate hose
15	Finned heat exchanger
16	Heat exchanger cover
17	Aerator roller
18	Rubber mount aerator roller
19	Fan motor
20	Housing corner, right
21	Housing corner, left
22	Unit housing, rear
23	Fan motor fastening
24	Wall bracket
25	Bracket, complete
26	Bracket, filter components
27	Bracket, receiver display
28	Bracket, board
29	Infrared remote control
30	Control board
31	Terminal block, 5-pole

No.	Designation
32	Terminal block, 7-pole
33	Receiver board
34	3-way valve 1/2"
	2-way valve 1/2"
35	Elbow union
36	Actuator
	<b>Spare parts not illustrated</b>
	Probe, ambient air
	Probe, heat exchanger
	Sealing ring for blanking plug
	Blanking plug 1/2"
	<b>Accessories</b>
	Cabled remote control

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## 15.3 Exploded view of the unit WLT 80 EC - WLT 90 EC

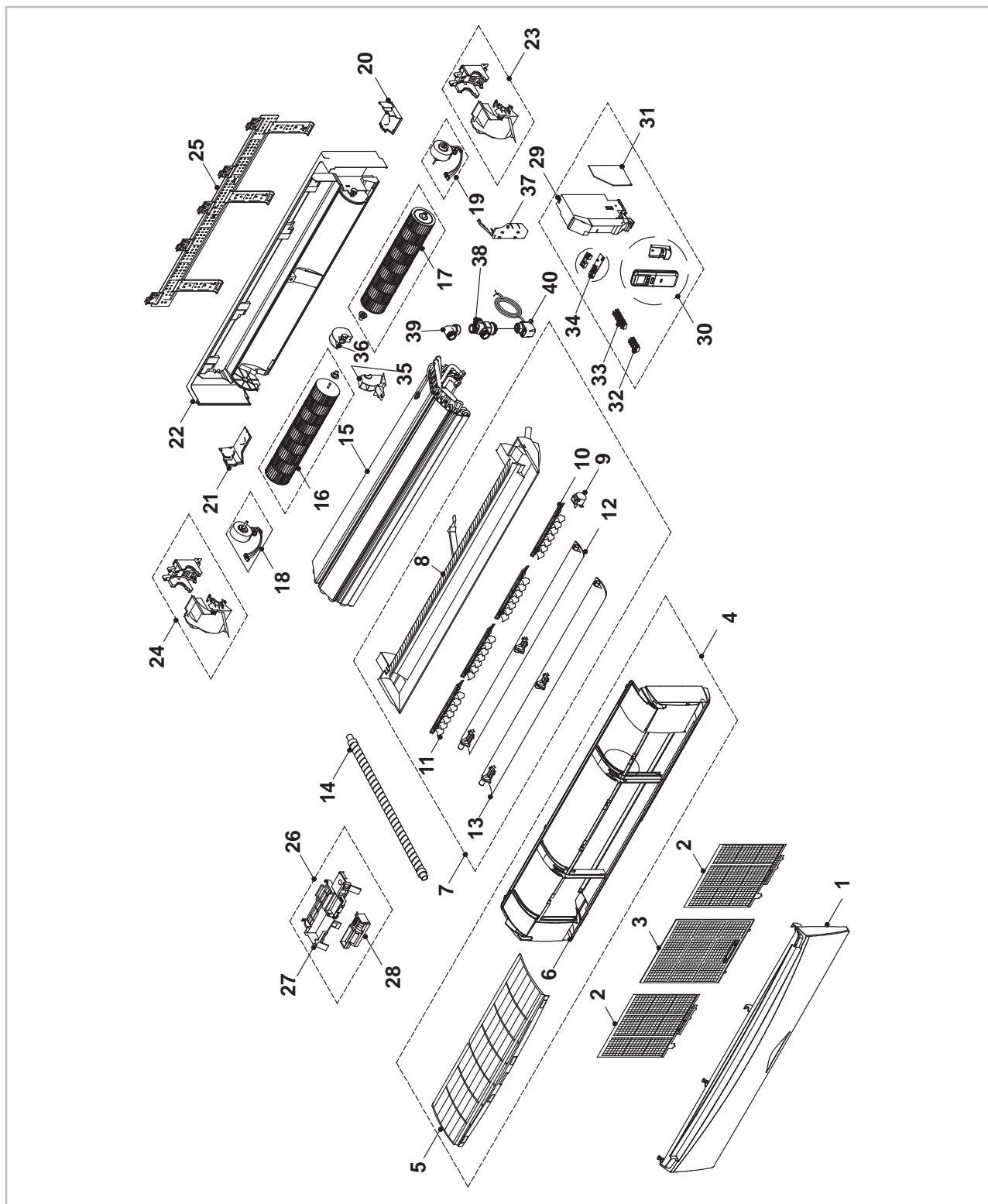


Fig. 41: Exploded view of the unit

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

## 15.4 Spare parts list WLT 80 EC - WLT 90 EC



### **IMPORTANT!**

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

No.	Designation
1	Unit trim
2	Air filter, left or right
3	Air filter, centre
4	Housing front, complete
5	Air inlet grill
6	Unit housing, front
7	Condensate tray, complete
8	Condensate tray
9	Swing motor
10	Air outlet flap, vertical right
11	Air outlet flap, vertical left
12	Air outlet flap, horizontal narrow
13	Air outlet flap, horizontal wide
14	Condensate hose
15	Finned heat exchanger
16	Aerator roller, left
17	Aerator roller, right
18	Fan motor, left
19	Fan motor, right
20	Housing corner, right
21	Housing corner, left
22	Unit housing, rear
23	Fan motor fastening, right
24	Fan motor fastening, left
25	Wall bracket
26	Bracket, complete
27	Bracket, filter components
28	Bracket, receiver display
29	Bracket, board
30	Infrared remote control
31	Control board

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No.	Designation
32	Terminal block, 5-pole
33	Terminal block, 7-pole
34	Receiver board
35	Fan cover, top
36	Fan cover, bottom
37	Cover
38	3-way valve 3/4"
	2-way valve 3/4"
39	Elbow union 3/4"
40	Actuator
	<b>Spare parts not illustrated</b>
	Probe, ambient air
	Probe, heat exchanger
	Sealing ring for blanking plug
	Blanking plug 3/4"
	<b>Accessories</b>
	Cabled remote control



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# REMKO QUALITY WITH SYSTEMS

Air-Conditioning | Heating | New Energies

**REMKO GmbH & Co. KG**  
**Klima- und Wärmetechnik**

Im Seelenkamp 12  
32791 Lage

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

E-mail [info@remko.de](mailto:info@remko.de)  
URL [www.remko.de](http://www.remko.de)

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

**Hotline International**  
+49 (0) 5232 606-130

