

Cassette Fan Coil Units

Operation and Installation Manual



CF2 – 2-pipe system | CF4 – 4-pipe system | AC and EC motor versions

- All installation work must be carried out by qualified technicians.
- Please read this manual carefully and follow the steps exactly as described.
- Keep this manual in a safe place for future reference.
- Our products are continuously developed and improved. The information in this document is subject to change without prior notice.
- Only qualified personnel may install and service the equipment covered by this document.

Contents

1 Safety and User Information	7
1.1 Symbols used in this manual	7
1.2 Safety instructions	7
1.3 Important notes	7
1.4 Proper use	7
1.5 Improper use	8
1.6 Operating limits	
2 Product Introduction	9
2.1 Model designation	9
2.2 Available versions	9
2.3 Technical data	10
2.4 Unit components	16
2.5 Decorative panel	16
3 Control	17
3.1 Infrared remote controller	17
3.2 Wall controller TC86 (optional)	20
3.3 Speed control of the EC versions	20
3.4 Modbus RTU (optional)	20
4 Dimensions and Wiring Diagrams	21
4.1 Dimensions	21
4.2 Wiring diagrams	23
5 Installation	27
5.1 Delivery check	27
5.2 Transport	27
5.3 Temporary storage	28
5.4 Preparing for installation	28
5.5 Unit installation	29
5.6 Pipe connection	32
5.7 Electrical installation	34
6 Commissioning	34
6.1 Requirements for commissioning	35
6.2 Start-up	35
7 Maintenance and Troubleshooting	35
7.1 Maintenance	36
7.2 Maintenance schedule	36
7.3 Quarterly maintenance	36
7.4 Annual maintenance	36
7.5 Troubleshooting	37
8 Decommissioning and Disposal	37
9 Supplier and Warranty	38
9.1 Supplier	38
9.2 Rating plate	38
9.3 Warranty	38
9.4 Conformity	39
10 Accessories	39
10.1 Valve selection	41
Annex A Commissioning and Handover Protocol	41
Annex B Component Identification	42

1 Safety and User Information

1.2 Safety instructions

The 4-way cassette fan coil units are developed and manufactured in accordance with state-of-the-art technological standards and established technical safety norms and regulations, and comply with the Machinery Safety Directive.

Nevertheless, all fan coil units involve residual risks of injury to the user or to third parties, and of material damage to the unit or to other objects. For this reason all safety instructions must be observed. Ignoring them creates risks to health and safety and can lead to environmental damage and/or extensive material damage.

The safety instructions in this chapter apply to the whole manual. They are repeated in short form at the beginning of the commissioning and maintenance chapters.

ELECTRICAL HAZARD

Before carrying out any work on the unit, power the unit down to avoid injury from electric current. Check that the unit is isolated and ensure that the on-site power supply point is secured against being switched back on.

DANGER OF SCALDING

Before performing work on the valves or on the inlet or outlet pipes, shut off the heating or cooling water inlet to prevent scalding. Do not start work before the heating water has cooled down.

DANGER FROM ROTATING PARTS

Rotating fan wheels can cause injury. Before performing any work on the unit, ensure that it is powered down and that the on-site power supply point is secured against being switched back on.

DANGER FROM OVERHEAD LOADS

Wear a helmet and safety boots to prevent injury from falling components, especially when fitting the unit to the ceiling. Ceiling installation must always be performed by two people.

RISK OF PERSONAL INJURY

Always wear protective gloves when moving or fitting the unit, to avoid injury from sharp edges.

1.3 Important notes

Fan coil units are terminal units of a chilled/hot water air conditioning system. They are technically demanding products and may be installed, operated and maintained only by qualified, specially trained and authorised staff.

1 Safety and User Information (continued)

1.4 Proper use

4-way cassette fan coil units are designed exclusively for heating, filtering and cooling of room air. Chilled water/hot water may be used as the medium. The following limit values apply to the chilled/hot water when operating Cu/Al heat exchangers:

Table 1 Water quality limit values for Cu/Al heat exchangers

Parameter	Symbol	Unit	Value
pH value (at 20 °C)			7,5 – 9
Conductivity (at 20 °C)		µS/cm	< 700
Oxygen content	O ₂	mg/l	< 0,1
Total hardness		°dH	1 – 15
Dissolved sulphur	S		not detectable
Sodium	Na ⁺	mg/l	< 100
Iron	Fe ²⁺ , Fe ³⁺	mg/l	< 0,1
Manganese	Mn ²⁺	mg/l	< 0,05
Ammonium content	NH ₄ ⁺	mg/l	< 0,1
Chloride	Cl ⁻	mg/l	< 100
Sulphate	SO ₄ ²⁻	mg/l	< 50
Nitrite	NO ₂ ⁻	mg/l	< 50
Nitrate	NO ₃ ⁻	mg/l	< 50

NOTE

In open systems (for example when well water is used) the limit values in the table above must be observed and the water must additionally be cleaned of suspended matter by a filter installed at the inlet. Otherwise there is a risk of erosion by suspended matter.

The unit must be protected from dust and other substances that cause an acidic or alkaline reaction in combination with water (aluminium corrosion).

- The units may be used indoors only.
- The units may also be fitted into an intermediate (false) ceiling.

Proper use also includes observance of this manual and of the prescribed inspection and maintenance conditions. The user is responsible for proper use.

1.5 Improper use

The unit is considered to be used in an improper manner if it is applied for a purpose that is not covered by the scope of this manual. In such a case the manufacturer or supplier is not liable for any resulting damage; the user alone bears the full risk.

The 4-way cassette fan coil may not be operated:

- for the treatment of outside air;
- in locations where there is a risk of explosion;
- in wet areas;
- in locations with high dust levels or aggressive air.

1 Safety and User Information (continued)

RISK OF PERSONAL INJURY AND MATERIAL DAMAGE

Improper use can cause personal injury and material damage.

1.6 Operating limits

Table 2 Operating limits

Unit and heat exchanger	Value
Max. operating pressure	1,4 MPa (14 bar)
Max./min. water temperature	75 °C / 2 °C
Operating voltage	220–230 V AC, 1 Ph, 50 or 60 Hz
Insulation class	B – see drawing
Power consumption and current	See the technical data in section 2.3 and the rating plate
Ambient conditions	Indoor installation only; installation height ≤ 3,5 m (see 5.4.2)

2 Product Introduction

2.1 Model designation

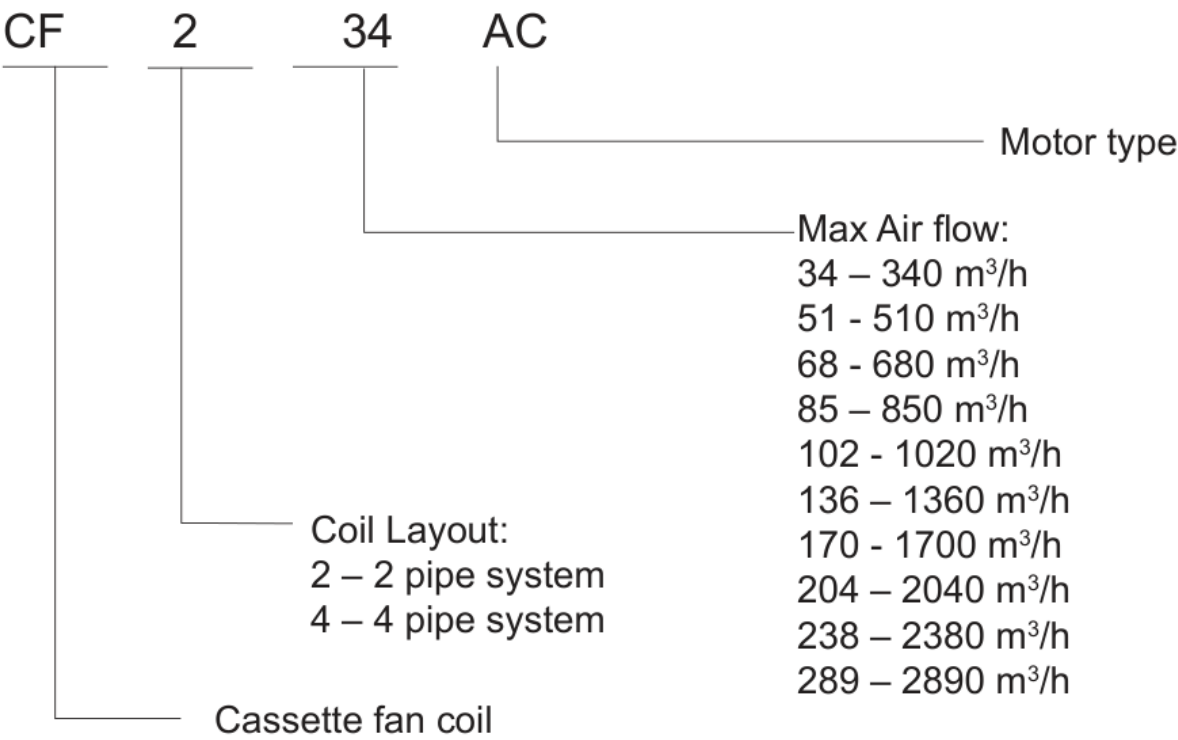


Fig. 1 Model designation key

Example: CF2-136-AC = cassette fan coil, 2-pipe system, maximum air flow 1360 m³/h, AC motor.

2.2 Available versions

Table 3 Available sizes

Series	Motor	Sizes
CF2 – 2-pipe	AC	34, 51, 68, 85, 102, 136, 170, 204, 238, 289
CF2 – 2-pipe	EC	34, 51, 68, 85, 102, 136, 170, 204, 238
CF4 – 4-pipe	AC	68, 85, 102, 136, 170, 204, 238, 289
CF4 – 4-pipe	EC	68, 85, 102, 136, 170, 204, 238

- AC version: asynchronous 4-speed motor, three fan speeds selected by the infrared remote controller or a wall controller.
- EC version: variable-speed EC motor, lower power input, speed set from the wall controller, five-step or stepless (see chapter 3).

2 Product Introduction (continued)

2.3 Technical data

Table 4 CF2 – 2-pipe system, AC motor (full designation CF2-...-AC)

Model			CF2-34- AC	CF2-51- AC	CF2-68- AC	CF2-85- AC	CF2-10- AC2	CF2-136- AC	CF2-170- AC	CF2-204- AC	CF2-238- AC	CF2-289- AC
Air flow	m³/h	High	340	510	680	850	1020	1360	1700	2040	2380	2890
		Med.	255	383	510	638	765	1020	1275	1530	1785	2100
		Low	170	255	340	425	510	680	850	1020	1190	1600
Total cooling capacity 7/12/27 °C	W	High	1800	2700	3600	4500	5400	7200	9000	10800	12600	15300
		Med.	1440	2160	2880	3600	4320	5760	7200	8640	10080	11700
		Low	1080	1620	2160	2700	3240	4320	5400	6480	7560	9300
Sensible cooling capacity 7/12/27 °C	W	High	1360	2100	2790	3370	4090	5700	6780	8240	9320	11320
		Med.	1090	1680	2190	2600	3130	4300	5300	6490	7300	8860
		Low	880	1320	1740	2120	2530	3490	4310	5310	5860	7110
Heating capacity 60/21 °C	W	High	2700	4050	5400	6750	8100	10800	13500	16200	18900	23700
		Med.	2160	3240	4320	5400	6480	8640	10800	12960	15120	17500
		Low	1620	2430	3240	4050	4860	6480	8100	9720	11340	13800
Power supply voltage			220–230 V / 1 Ph / 50 or 60 Hz									
Power input	W		36	50	60	74	93	130	147	183	221	330
Power consumption	W		24	38	48	62	81	118	135	171	209	318
Running current	A		0,16	0,23	0,27	0,34	0,42	0,59	0,67	0,83	1,00	1,43
Sound pressure level	dB(A)	High	37	39	41	43	45	46	48	50	52	57
		Med.	30	33	36	34	36	41	41	43	47	53
		Low	26	29	32	30	32	34	35	37	43	48
Water flow	l/h		320	500	610	780	940	1200	1650	1850	2150	2640
Water resistance	kPa		30	30	30	30	40	40	40	40	50	50
Max. operating pressure			1,4 MPa (14 bar) – see Annex C, item 7									
Insulation class			B									
Fan type			Centrifugal									
Motor type			Single-phase permanent split capacitor (PSC) motor, 4-speed									
Heat exchanger			2-pipe, copper – aluminium, hydrophobic coating									
Pipe connections			G 3/4" internal thread									
Condensate connection			Ø 26 mm									
Controller			Infrared remote control (supplied); TC86 / Modbus RTU optional									
Unit dimensions (L/W/H)	mm	Unit	580 × 580 × 250			705 × 705 × 290			832 × 832 × 290			960 × 960 × 290
		Panel	680 × 680 × 30			830 × 830 × 30			980 × 980 × 30			1140 × 1140 × 30
Packaging dimensions (L/W/H)	mm	Unit	675 × 675 × 270			800 × 800 × 310			925 × 925 × 310			1054 × 1054 × 305
		Panel	720 × 710 × 75			860 × 860 × 75			1010 × 1010 × 75			1170 × 1170 × 75
Net weight	kg	Unit	16,4			21,5			26,7			37,6
		Panel	2,3			3,3			5,2			7,8
Gross weight	kg	Unit	19,0			24,3			30,5			42,2
		Panel	3,3			4,9			7,1			10,5

2 Product Introduction (continued)

Table 5 CF2 – 2-pipe system, EC motor (full designation CF2-...-EC)

Model			CF2-34-EC	CF2-51-EC	CF2-68-EC	CF2-85-EC	CF2-102-EC	CF2-136-EC	CF2-170-EC	CF2-204-EC	CF2-238-EC
Air flow	m³/h	High	340	510	680	850	1020	1360	1700	2040	2380
		Med.	255	383	510	638	765	1020	1275	1530	1785
		Low	170	255	340	425	510	680	850	1020	1190
Total cooling capacity 7/12/27 °C	W	High	1800	2700	3600	4500	5400	7200	9000	10800	12600
		Med.	1440	2160	2880	3600	4320	5760	7200	8640	10080
		Low	1080	1620	2160	2700	3240	4320	5400	6480	7560
Sensible cooling capacity 7/12/27 °C	W	High	1360	2100	2790	3370	4090	5700	6780	8240	9320
		Med.	1090	1680	2190	2600	3130	4300	5300	6490	7300
		Low	880	1320	1740	2120	2530	3490	4310	5310	5860
Heating capacity 60/21 °C	W	High	2700	4050	5400	6750	8100	10800	13500	16200	18900
		Med.	2160	3240	4320	5400	6480	8640	10800	12960	15120
		Low	1620	2430	3240	4050	4860	6480	8100	9720	11340
Power supply voltage			220–230 V / 1 Ph / 50 or 60 Hz								
Power input	W		22	30	36	44	56	78	88	114	139
Power consumption	W		10	18	24	32	44	66	76	102	127
Running current	A		0,10	0,14	0,16	0,20	0,25	0,35	0,40	0,52	0,63
Sound pressure level	dB(A)	High	37	39	41	43	45	46	48	50	52
		Med.	30	33	36	34	36	41	41	43	47
		Low	26	29	32	30	32	34	35	37	43
Water flow	l/h		320	500	610	780	940	1200	1650	1850	2150
Water resistance	kPa		30	30	30	30	40	40	40	40	50
Max. operating pressure			1,4 MPa (14 bar) – see Annex C, item 7								
Insulation class			B								
Fan type			Centrifugal								
Motor type			EC motor, variable speed								
Heat exchanger			2-pipe, copper – aluminium, hydrophobic coating								
Pipe connections			G 3/4" internal thread								
Condensate connection			Ø 26 mm								
Controller			Infrared remote control (supplied); TC86 / Modbus RTU optional								
Unit dimensions (L/W/H)	mm	Unit	580 × 580 × 250			705 × 705 × 290			832 × 832 × 290		
		Panel	680 × 680 × 30			830 × 830 × 30			980 × 980 × 30		
Packaging dimensions (L/W/H)	mm	Unit	675 × 675 × 270			800 × 800 × 310			925 × 925 × 310		
		Panel	720 × 710 × 75			860 × 860 × 75			1010 × 1010 × 75		
Net weight	kg	Unit	16,4			21,5			26,7		
		Panel	2,3			3,3			5,2		
Gross weight	kg	Unit	19,0			24,3			30,5		
		Panel	3,3			4,9			7,1		

2 Product Introduction (continued)

Table 6 CF4 – 4-pipe system, AC motor (full designation CF4...-AC)

Model			CF4-68- AC	CF4-85- AC	CF4-102- AC	CF4-136- AC	CF4-170- AC	CF4-204- AC	CF4-238- AC	CF4-289- AC
Air flow	m³/h	High	680	850	1020	1360	1700	2040	2380	2890
		Med.	510	638	765	1020	1275	1530	1785	2100
		Low	340	425	510	680	850	1020	1190	1600
Total cooling capacity 7/12/27 °C	W	High	2600	3100	3600	4800	6000	7000	8400	10300
		Med.	2000	2400	2800	3700	4700	6000	6500	7500
		Low	1400	1800	2100	3000	3600	4600	5000	5700
Sensible cooling capacity 7/12/27 °C	W	High	1950	2330	2700	3600	4500	5250	6300	7730
		Med.	1560	1860	2160	2880	3600	4200	5040	6180
		Low	1170	1400	1620	2160	2700	3150	3780	4640
Heating capacity 60/21 °C	W	High	2600	3500	4300	4900	6500	7200	8700	11900
		Med.	2000	2700	3200	4300	5400	5600	7600	8700
		Low	1400	2100	2500	3500	4200	4300	5800	6600
Power supply voltage			220–230 V / 1 Ph / 50 or 60 Hz							
Power input	W		60	74	93	130	147	183	221	330
Power consumption	W		48	62	81	118	135	171	209	318
Running current	A		0,28	0,35	0,44	0,61	0,69	0,86	1,04	1,43
Sound pressure level	dB(A)	High	41	43	45	46	48	50	52	57
		Med.	36	34	36	41	41	43	47	53
		Low	32	30	32	34	35	37	43	48
Water flow	l/h		450	540	625	830	1050	1400	1500	1800
			260	355	440	550	700	725	980	1185
Water resistance	kPa		11	17	22	24	27	30	35	40
			1	1,5	2	3	6	8	9	10
Max. operating pressure			1,4 MPa (14 bar) – see Annex C, item 7							
Insulation class			B							
Fan type			Centrifugal							
Motor type			Single-phase permanent split capacitor (PSC) motor, 4-speed							
Heat exchanger			4-pipe, copper – aluminium, hydrophobic coating							
Pipe connections			G 3/4" internal thread							
Condensate connection			Ø 26 mm							
Controller			Infrared remote control (supplied); TC86 / Modbus RTU optional							
Unit dimensions (L/W/H)	mm	Unit	580 × 580 × 250	705 × 705 × 290			832 × 832 × 290			960 × 960 × 290
		Panel	680 × 680 × 30	830 × 830 × 30			980 × 980 × 30			1140 × 1140 × 30
Packaging dimensions (L/W/H)	mm	Unit	675 × 675 × 270	800 × 800 × 310			925 × 925 × 310			1054 × 1054 × 305
		Panel	720 × 710 × 75	860 × 860 × 75			1010 × 1010 × 75			1170 × 1170 × 75
Net weight	kg	Unit	17,0	22,2			27,4			
		Panel	2,3	3,4			5,2			
Gross weight	kg	Unit	19,6	25			31,2			
		Panel	3,4	4,9			7,2			

2 Product Introduction (continued)

Table 6 CF4 – 4-pipe system, EC motor (full designation CF4-...-EC)

Model			CF4-68-EC	CF4-85-EC	CF4-102-EC	CF4-136-EC	CF4-170-EC	CF4-204-EC	CF4-238-EC
Air flow	m³/h	High	680	850	1020	1360	1700	2040	2380
		Med.	510	638	765	1020	1275	1530	1785
		Low	340	425	510	680	850	1020	1190
Total cooling capacity 7/12/27 °C	W	High	2600	3100	3600	4800	6000	7000	8400
		Med.	2000	2400	2800	3700	4700	6000	6500
		Low	1400	1800	2100	3000	3600	4600	5000
Sensible cooling capacity 7/12/27 °C	W	High	1950	2330	2700	3600	4500	5250	6300
		Med.	1560	1860	2160	2880	3600	4200	5040
		Low	1170	1400	1620	2160	2700	3150	3780
Heating capacity 60/21 °C	W	High	2600	3500	4300	4900	6500	7200	8700
		Med.	2000	2700	3200	4300	5400	5600	7600
		Low	1400	2100	2500	3500	4200	4300	5800
Power supply voltage			220-230 V / 1 Ph / 50 or 60 Hz						
Power input	W		36	44	56	78	88	114	139
Power consumption	W		24	32	44	66	76	102	127
Running current	A		0,16	0,20	0,25	0,35	0,40	0,52	0,63
Sound pressure level	dB(A)	High	41	43	45	46	48	50	52
		Med.	36	34	36	41	41	43	47
		Low	32	30	32	34	35	37	43
Water flow	l/h		450	540	625	830	1050	1400	1500
			260	355	440	550	700	725	980
Water resistance	kPa		11	17	22	24	27	30	35
			1	1,5	2	3	6	8	9
Max. operating pressure			1,4 MPa (14 bar) – see Annex C, item 7						
Insulation class			B						
Fan type			Centrifugal						
Motor type			EC motor, variable speed						
Heat exchanger			4-pipe, copper – aluminium, hydrophobic coating						
Pipe connections			G 3/4" internal thread						
Condensate connection			Ø 26 mm						
Controller			Infrared remote control (supplied); TC86 / Modbus RTU optional						
Unit dimensions (L/W/H)	mm	Unit	580 × 580 × 250	705 × 705 × 290			832 × 832 × 290		
		Panel	680 × 680 × 30	830 × 830 × 30			980 × 980 × 30		
Packaging dimensions (L/W/H)	mm	Unit	675 × 675 × 270	800 × 800 × 310			925 × 925 × 310		
		Panel	720 × 710 × 75	860 × 860 × 75			1010 × 1010 × 75		
Net weight	kg	Unit	17,0	22,2			27,4		
		Panel	2,3	3,4			5,2		
Gross weight	kg	Unit	19,6	25,0			31,2		
		Panel	3,4	4,9			7,2		

2 Product Introduction (continued)

2.3.1 Heating capacity at other water temperatures

The heating capacities in tables 4 to 7 are the manufacturer rating at entering water 60 °C and entering air 21 °C. Heat pump systems normally operate at considerably lower flow temperatures, at which the output of the same unit is much smaller. Multiply the tabulated heating capacity by the factor below.

Table 4a Heating capacity correction factors (room air 20 °C)

Water flow / return °C	Correction factor	Example: CF2-136, high speed (kW)
70/60	1,28	13,8
65/55	1,14	12,3
60/50	1,00	10,8
55/45	0,86	9,3
50/40	0,72	7,8
45/40	0,64	6,9
45/35	0,58	6,3
40/35	0,50	5,4
35/30	0,36	3,9

The water flow must be recalculated for the new temperature difference: $Q [l/h] = P [W] \times 0,86 / \Delta t [K]$. For CF2-136 at 45/40 °C this gives $6912 \times 0,86 / 5 = 1189 l/h$.

2.4 Unit components

Exploded views of the four unit variants, together with a combined component list covering all variants, are given in Annex D. They are intended for service purposes and for the identification of parts when ordering.

2.5 Decorative panel

DANGER FROM ROTATING PARTS

Do not put fingers or any other objects into the air inlet, the air outlet or the swing louver while the unit is in operation. The high-speed fan can cause serious injury.

NOTE

- The unit must not be cleaned with water; this may cause a short circuit or destroy the unit.
- Close the air inlet grille properly after cleaning the air filter.
- Operate the unit strictly according to these instructions; otherwise leakage or abnormal operation may occur.
- Adjust the room temperature appropriately, especially where elderly people, children or sick persons are present.
- Lightning and electromagnetic radiation may affect the unit. If this happens, switch the power off and on again.
- Blocking or covering the air outlet and inlet is forbidden.

2 Product Introduction (continued)

2.5.1 Panel overview

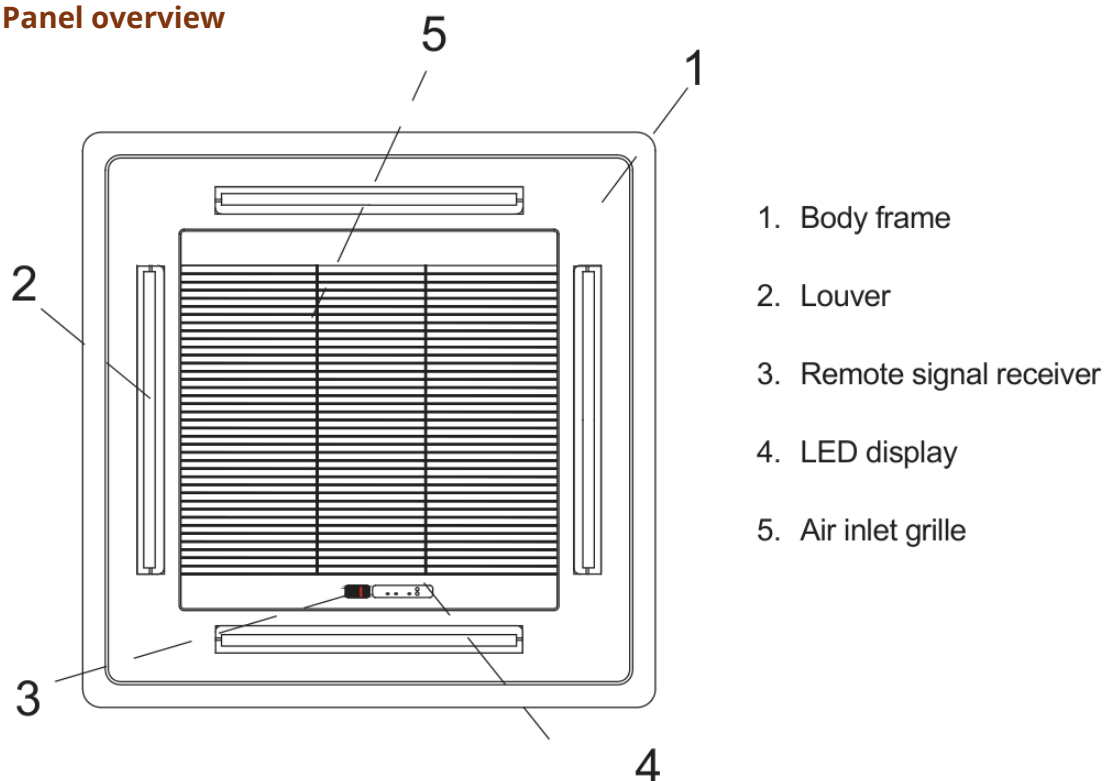


Fig. 2 Decorative panel: 1 body frame, 2 louver, 3 remote signal receiver, 4 LED display, 5 air inlet grille

2.5.2 Remote receiver, buzzer and LED display

Remote receiver: receives the commands sent by the infrared remote controller. Point the controller at the receiver on the panel.

Buzzer: sounds when the unit is switched on and each time an infrared command is correctly received.

LED display: if the unit malfunctions, the self-diagnostic system identifies the fault automatically and indicates it by the green LED. Fault codes are listed in section 7.5.

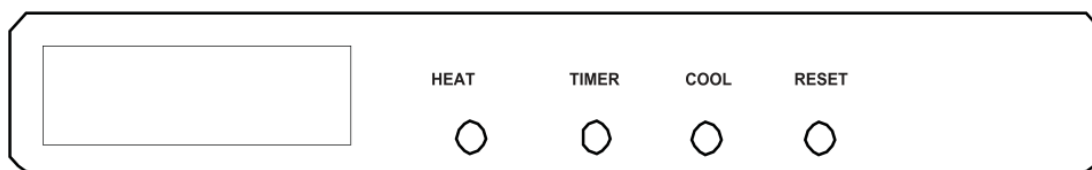


Fig. 3 LED display

- COOL (green): cooling mode
- TIMER (yellow): timer function
- HEAT (red): heating mode
- RESET: with the unit switched off, pressing RESET starts cooling mode; pressing again starts heating mode; pressing a third time switches the system off.

3 Control

CF cassette fan coils can be controlled by the supplied infrared remote controller, by a wall controller or through a Modbus RTU building management system.

3.1 Infrared remote controller

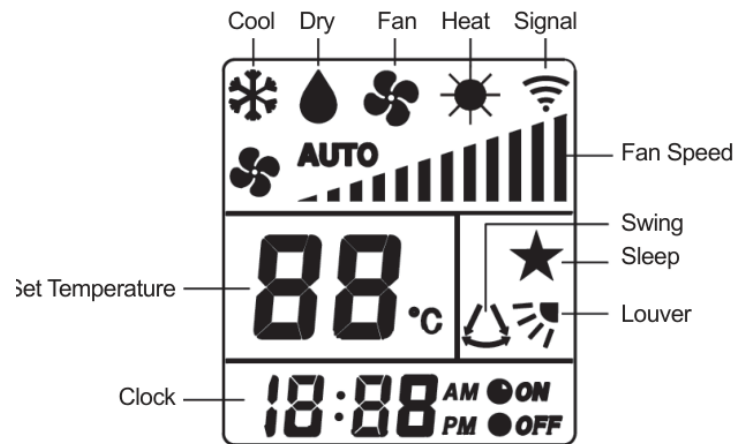


Fig. 4 Display of the infrared remote controller

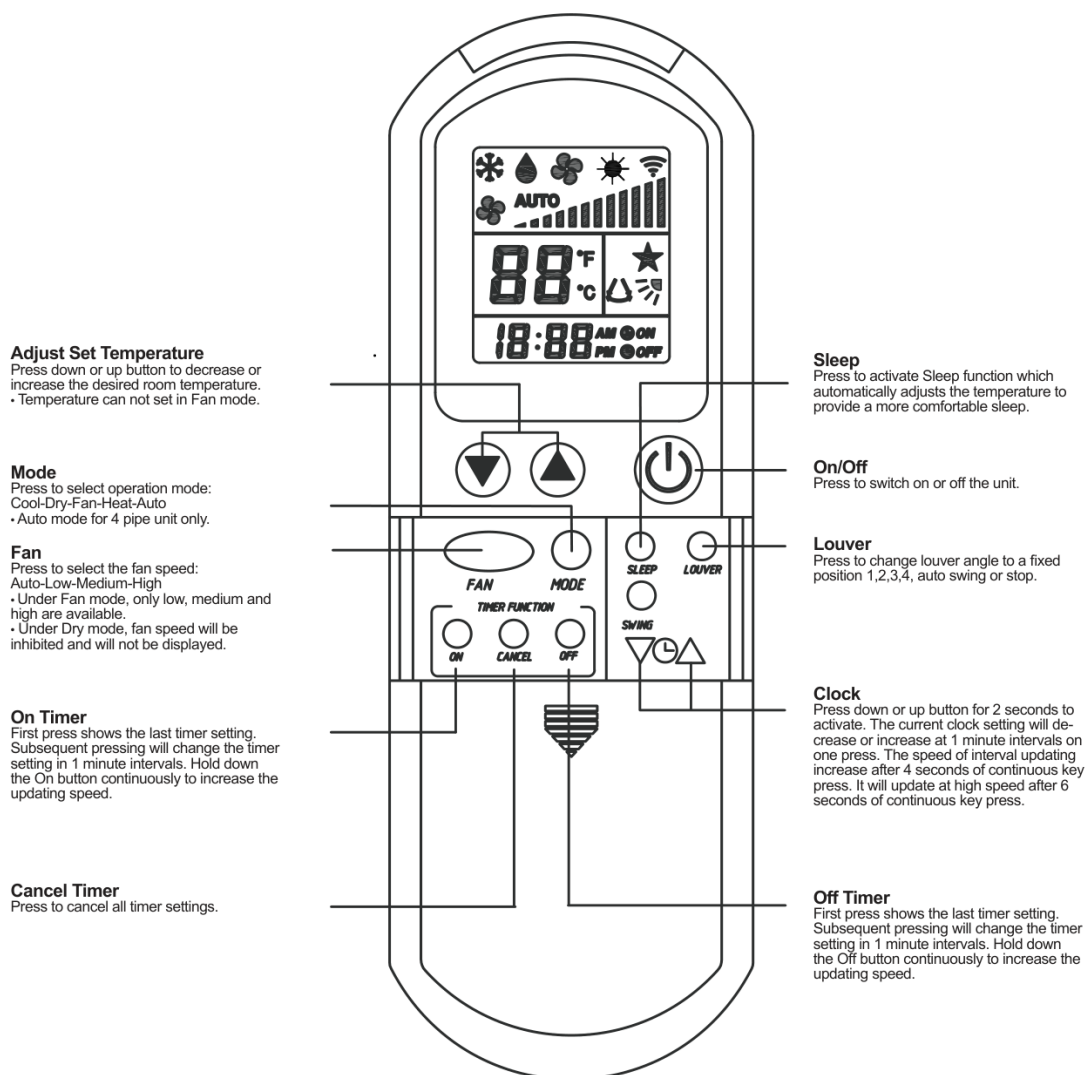


Fig. 5 Infrared remote controller – buttons and functions

3 Control (continued)

NOTE

The remote controller is supplied with the unit and is powered by two AAA 1,5 V cells. Slide the cover on the back downwards to insert or replace them. A wall holder is included.

Table 8 Remote controller functions

Parameter	Symbol
On/Off	Switches the unit on and off.
Temp ▲ / ▼	Increases or decreases the set room temperature. The temperature cannot be set in Fan mode.
Mode	Selects the operating mode: Cool → Dry → Fan → Heat → Auto. In Auto mode both the cool and the heat symbol are lit. Auto mode is available on 4-pipe units only.
Fan	Selects the fan speed: Auto → Low → Medium → High. In Fan mode only low, medium and high are available. In Dry mode the fan speed is fixed and is not displayed.
Timer On	The first press shows the last timer setting; each further press changes the setting in steps of 1 minute. Hold the button down to speed up the adjustment.
Timer Off	The first press shows the last timer setting; each further press changes the setting in steps of 1 minute. Hold the button down to speed up the adjustment.
Timer Cancel	Cancels all timer settings.
Swing	Switches the swing function on and off.
Louver	Sets the louver to fixed position 1, 2, 3 or 4, to automatic swing, or stops it.
Sleep	Activates the energy-saving sleep function, which adjusts the temperature automatically to provide comfortable sleeping conditions.
Clock ▲ / ▼	Press for 2 seconds to activate. Each press changes the clock by 1 minute; the adjustment accelerates after 4 seconds and again after 6 seconds of continuous pressing.

3.2 Wall controller TC86 (optional)

The TC86 room thermostat is a wall-mounted controller for everyday operation. It is connected to connector CN11 on the main board of the unit.

Table 9 TC86 room thermostat

Dimensions	88 × 88 × 43 mm
Supply voltage	24 V DC, max. 3 A
Power consumption	1,5 W
Operating temperature range	5–35 °C
Functions	Weekly temperature schedule programming, mode and fan speed selection

3 Control (continued)

3.3 Speed control of the EC versions

The speed of the EC units is set from the wall controller. The manufacturer documentation describes a five-step mode and a stepless mode, selected by code switch S3 on the wall controller, and configuration DIP switch S2 on the main board (cooling and heating or cooling only; 2-pipe or 4-pipe; with or without valve; pre-heat 36 °C or 28 °C).

3.4 Modbus RTU (optional)

Units can be supplied with a communication board (PCB2). The board is connected to connector CN3 of the main board and provides two RS-485 terminal pairs (A/B) so that the communication line can be looped from unit to unit. The DIP switch block S1 on PCB2 is used for addressing.

4 Dimensions and Wiring Diagrams

4.1 Dimensions

4.1.1 2-pipe system

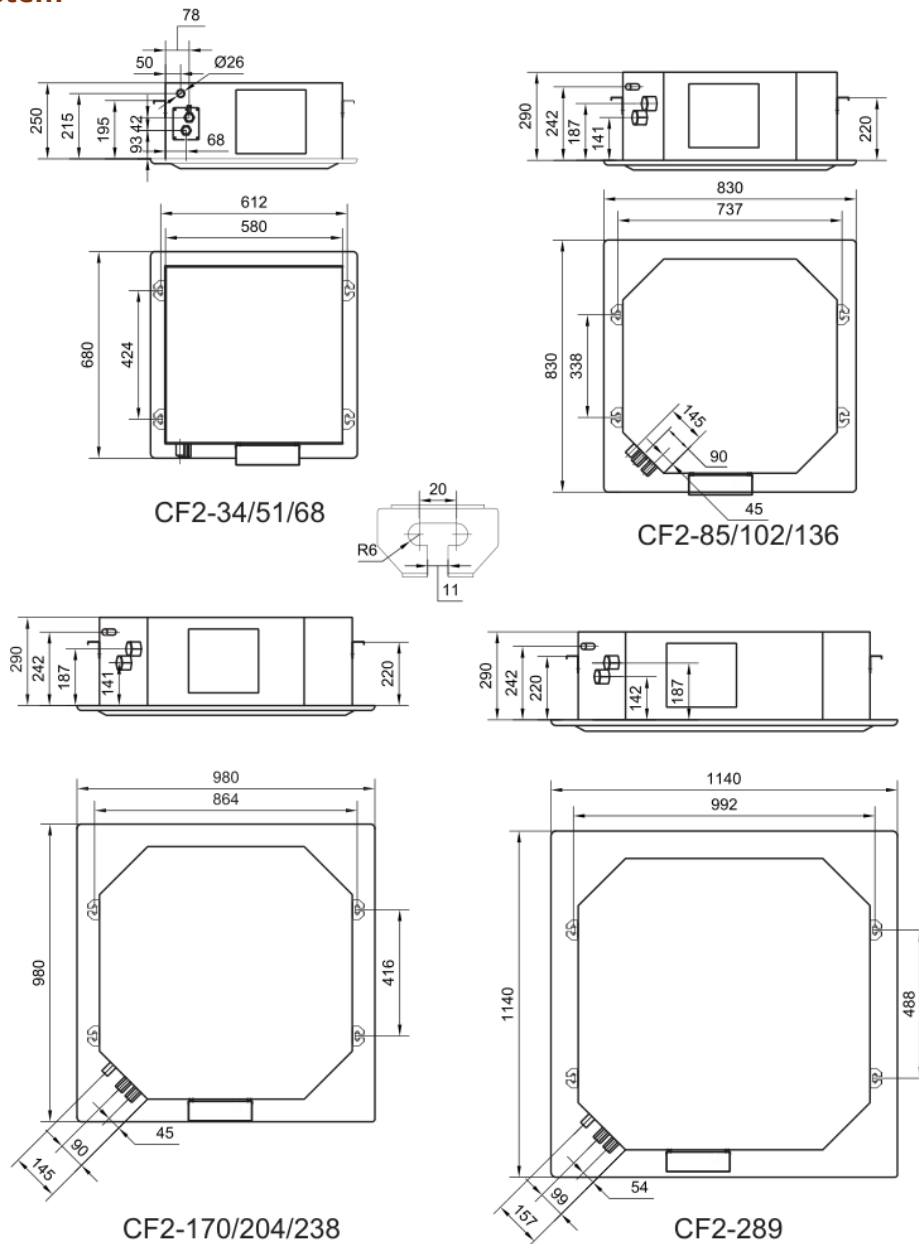


Fig. 6 Dimensions, CF2 (all dimensions in mm)

Table 10 Dimensions CF2 (mm)

Dimension	CF2-34/51/68	CF2-85/102/136	CF2-170/204/238	CF2-289
A – panel	680	830	980	1140
B – see drawing	424	338	416	488
C – body + 32 mm	612	737	864	992
D – unit body	580	705	832	960
H	see drawing	45	45	54
I	see drawing	90	90	99
J	see drawing	145	145	157

4 Dimensions and Wiring Diagrams (continued)

4.1.2 4-pipe system

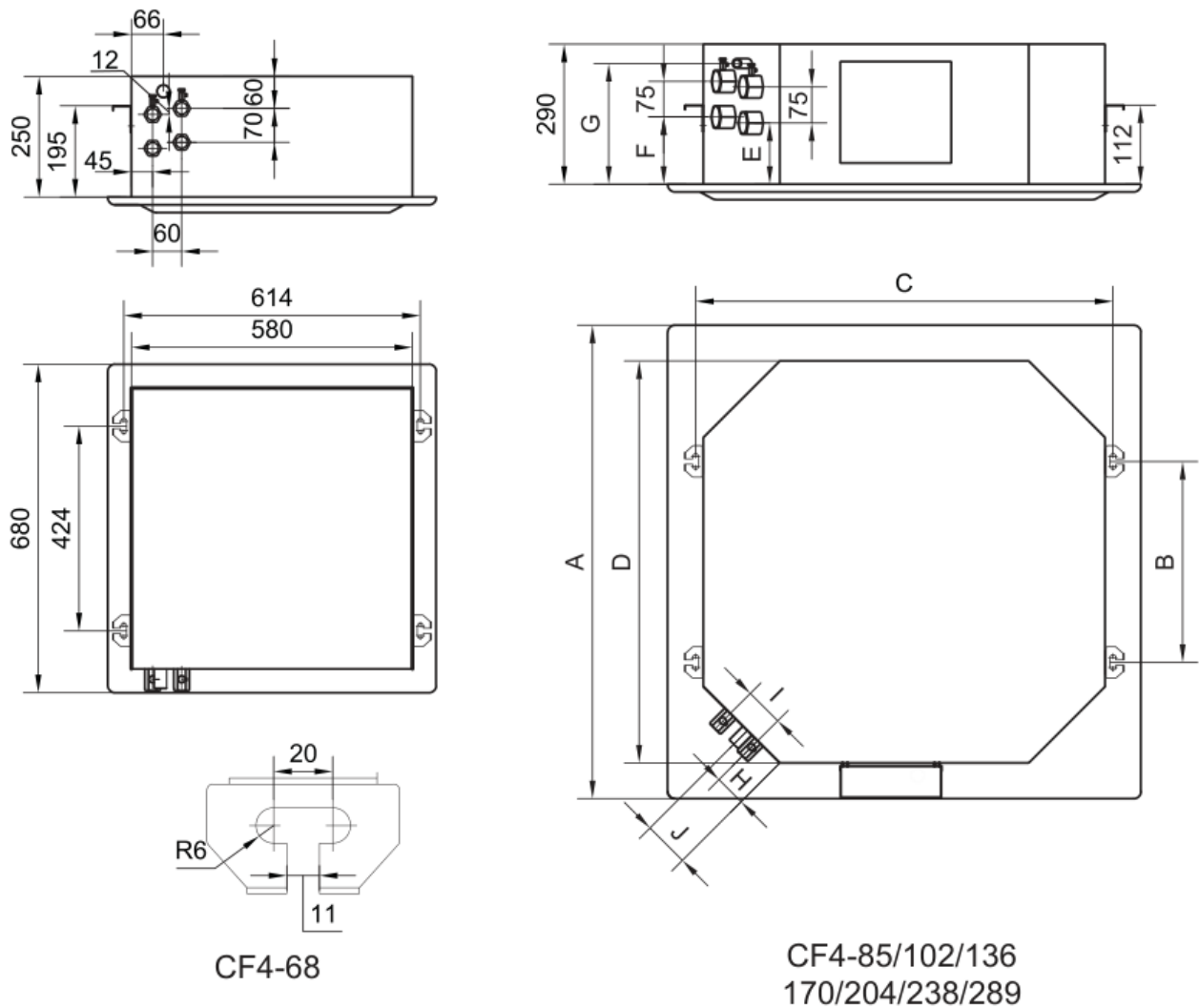


Fig. 7 Dimensions, CF4 (all dimensions in mm)

Table 11 Dimensions CF4 (mm)

Dimension	CF4-68	CF4-85/102/136	CF4-170/204/238	CF4-289
A – panel	680	830	980	1140
B – see drawing	424	338	416	488
C – body + 32 mm	614	737	864	992
D – unit body	580	705	832	960
E	–	135	139	139
F	–	148	127	127
G	–	262	250	250
H	see drawing	59	65	77
I	see drawing	80	80	67
J	see drawing	99	95	100

4 Dimensions and Wiring Diagrams (continued)

NOTE

The dimensions above are taken from the dimensional drawings of the original manual. The dimension tables in the brochure contain a column shift and must not be used. See Annex C, item 8.

4.1.3 Ceiling opening

The panel and unit dimensions per size group are given in section 2.3. Section 5.5.3 requires the installer to check the ceiling opening before the panel is fitted.

Table 12 Ceiling opening

Size group	Unit body (mm)	Ceiling opening W × D (mm)
34 / 51 / 68	580 × 580	612 × 612 (CF4-68: 614 × 614)
85 / 102 / 136	705 × 705	737 × 737
170 / 204 / 238	832 × 832	864 × 864
289	960 × 960	992 × 992

4.2 Wiring diagrams

NOTE

The binding connection diagram is the one attached to the inside of the cover of the electrical box of the delivered unit. The diagrams below are for information and apply to the AC versions.

The jumper settings and the fault codes are identical for all variants and are given once, in section 4.2.4 and section 7.5.

4.2.1 2-pipe system, without Modbus

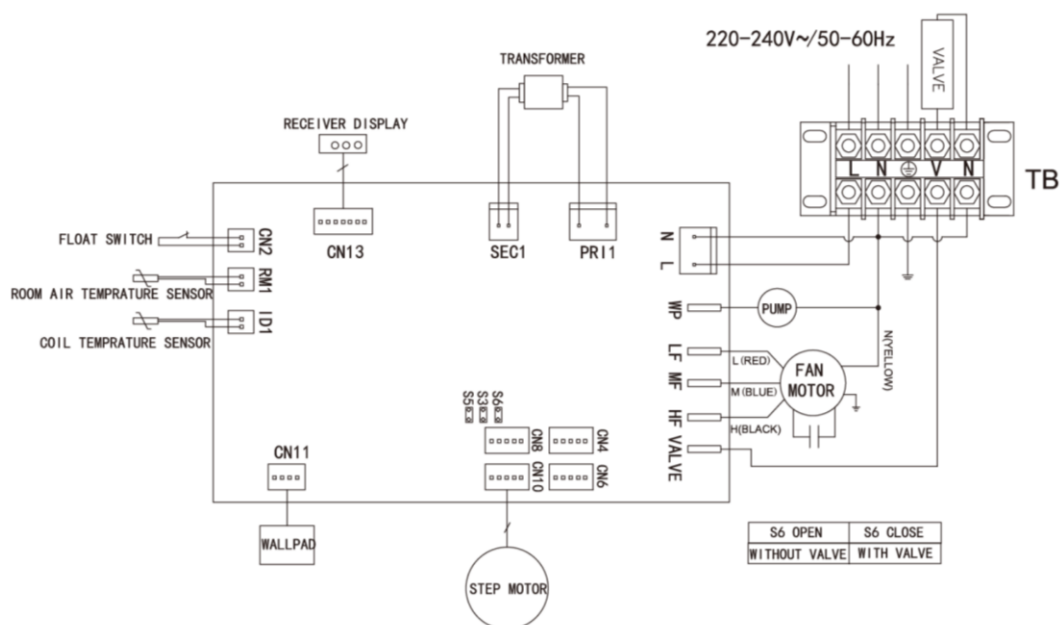


Fig. 8 Wiring diagram, 2-pipe system without communication board

4 Dimensions and Wiring Diagrams (continued)

4.2.2 2-pipe system, with Modbus

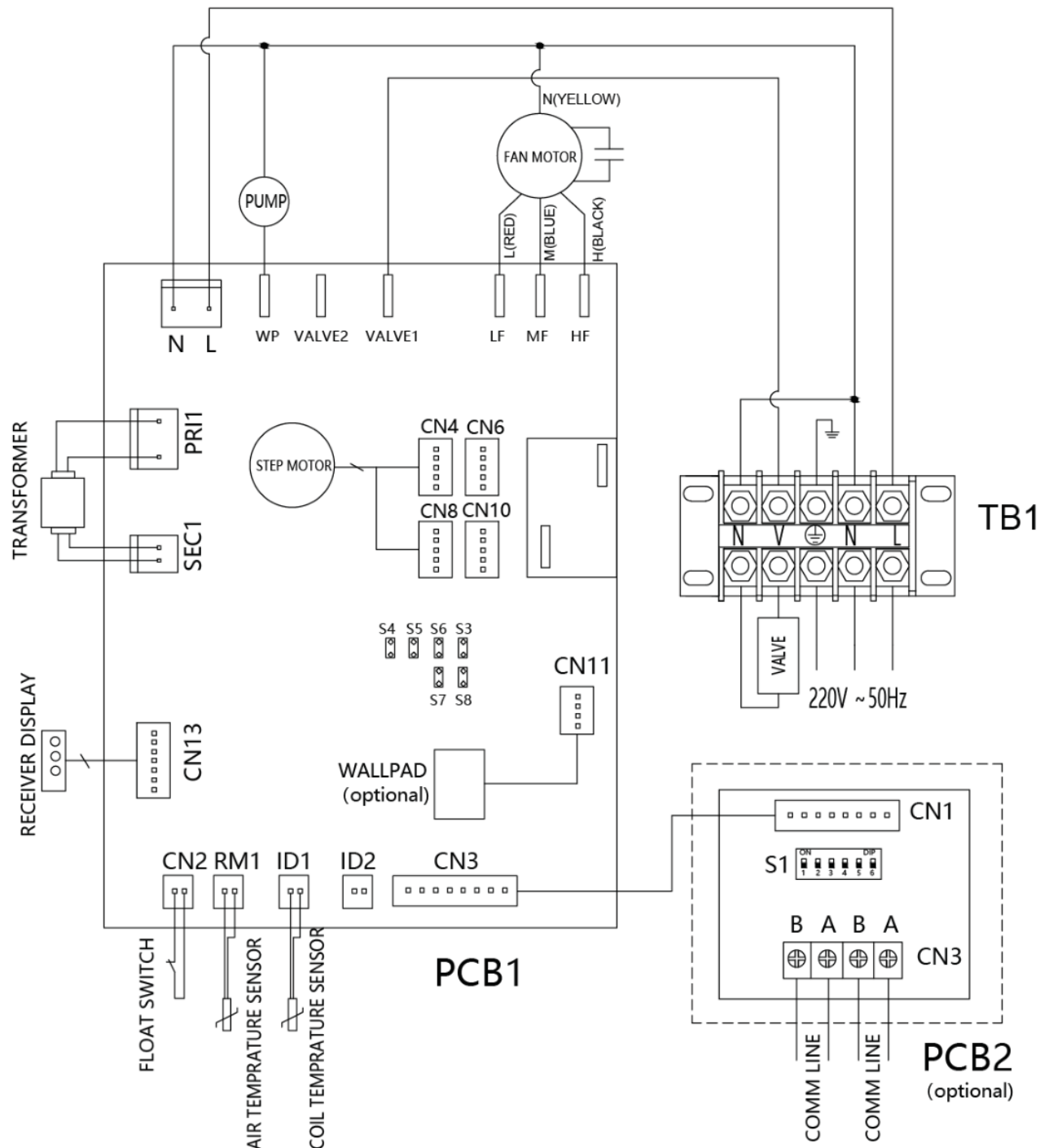


Fig. 9 Wiring diagram, 2-pipe system with communication board PCB2

4 Dimensions and Wiring Diagrams (continued)

4.2.3 4-pipe system, with Modbus

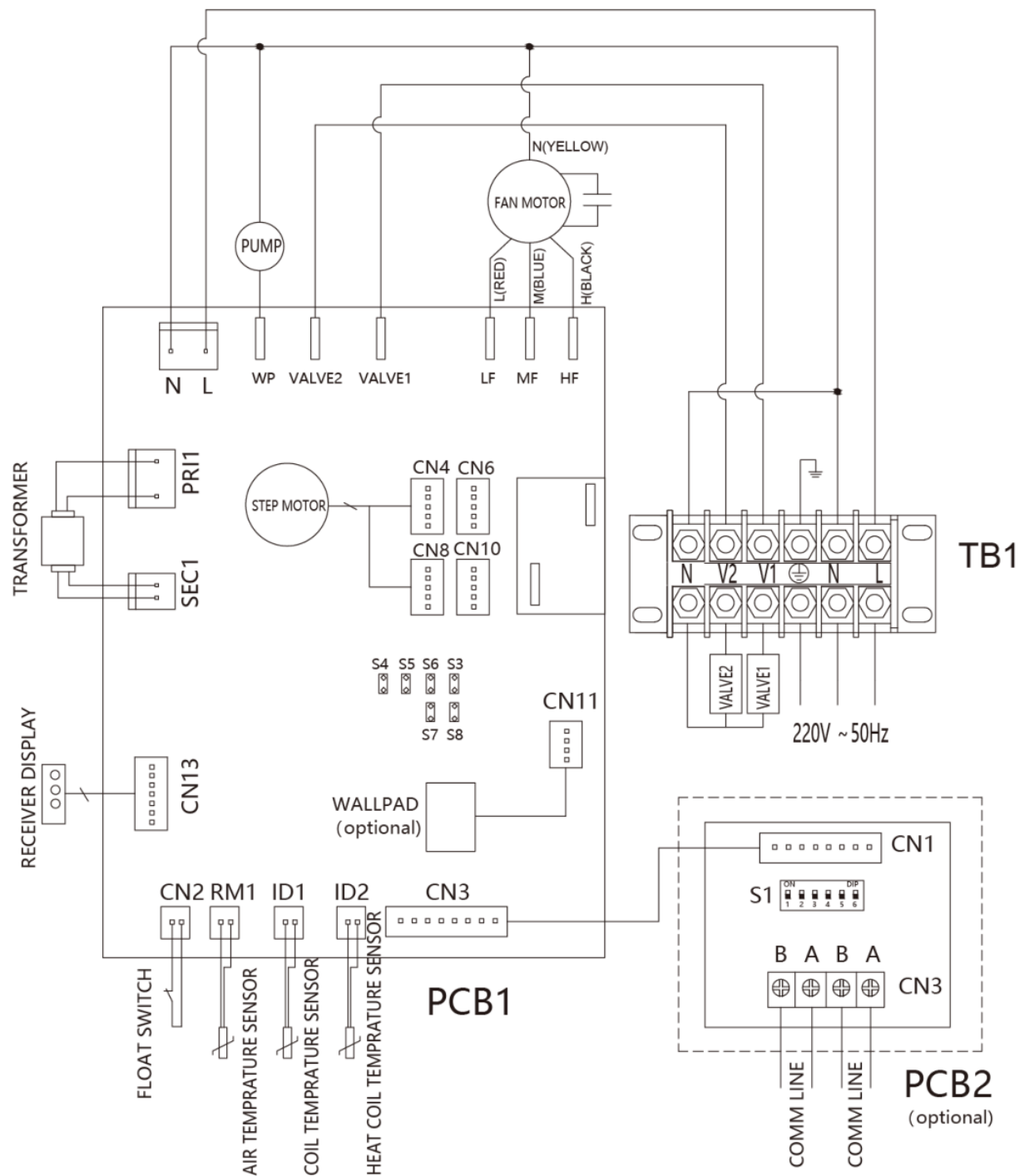


Fig. 10 Wiring diagram, 4-pipe system with communication board PCB2

4 Dimensions and Wiring Diagrams (continued)

4.2.4 Terminal designations and jumper settings

Table 13 Terminals on terminal block TB1

Terminal	Function
L	Phase, mains supply
N	Neutral, mains supply
⏏	Protective earth – must be connected to the earthing system of the building
V	Switched output for the motorised valve (2-pipe unit)
V1 / V2	Switched outputs for the motorised valves of the cold and the hot coil (4-pipe unit)

Table 14 Jumper settings on the main board (PCB1)

Jumper	Short	Open
S3	Louver type A	Louver type B
S4	4-pipe unit	2-pipe unit
S5	Pre-heat 32 °C	Pre-heat 38 °C
S6	With valve	Without valve

Table 15 Model selection, jumpers S7 and S8

S7	S8	Configuration
Open	Open	Cooling and heating
Open	Short	Cooling and heating + booster heater
Short	Open	Cooling only
Short	Short	Cooling + primary heater

4.2.5 Electrical installation data

Table 16 Electrical data

Item	Unit	Value
Rated voltage / frequency	V / Hz	220–230 / 50 or 60, 1 Ph
Max. running current per unit	A	0,10–1,43 depending on size and motor – see section 2.3
Insulation class	–	B – see drawing
Recommended supply cable cross-section	mm ²	3 × 1,5 mm ² Cu minimum (L, N, PE), all sizes. The installer selects the final cross-section according to the local wiring rules, the installation method, grouping and the permissible voltage drop.
Recommended circuit breaker / fuse	A / type	Single unit: 6 A, characteristic B or C. Group circuit: 10 A, characteristic C. Residual current device 30 mA where required by the local rules. See section 4.2.6.
Valve output load capacity	W	Not stated by the manufacturer. Until it is confirmed, connect not more than one thermoelectric actuator per output (V, V1, V2) and use an interposing relay for any other load.
Communication cable type	–	Shielded twisted pair for EIA-485, 120 Ω characteristic impedance, e.g. 1 × 2 × 0,5 mm ² . Shield earthed at one end only, 120 Ω termination resistor at both ends of the line.

4 Dimensions and Wiring Diagrams (continued)

4.2.6 Circuit design

Several units may be supplied from one final circuit. The following rules apply.

- The sum of the running currents of all units on the circuit must not exceed $0,8 \times$ the rating of the protective device.
- Add the current of the valve actuators supplied from the units.
- Not more than ten units per circuit is recommended, so that the simultaneous starting current stays low and a fault can be localised.
- The voltage drop in the final circuit must stay within the limit of the local wiring rules, commonly 3 % to 5 %.

Table 16a Maximum number of units per 10 A circuit

Size	Running current AC (A) 2-pipe / 4-pipe	Running current EC (A) 2-pipe / 4-pipe	Max. units per 10 A circuit
CF2-34	0,16 / –	0,10 / –	10
CF2-51	0,23 / –	0,14 / –	10
CF2-68 / CF4-68	0,27 / 0,28	0,16 / 0,16	10
CF2-85 / CF4-85	0,34 / 0,35	0,20 / 0,20	10
CF2-102 / CF4-102	0,42 / 0,44	0,25 / 0,25	10
CF2-136 / CF4-136	0,59 / 0,61	0,35 / 0,35	10
CF2-170 / CF4-170	0,67 / 0,69	0,40 / 0,40	10
CF2-204 / CF4-204	0,83 / 0,86	0,52 / 0,52	9
CF2-238 / CF4-238	1,00 / 1,04	0,63 / 0,63	7
CF2-289 / CF4-289	1,43 / 1,43	–	5

The figures are based on a continuous load of 8 A and are capped at ten units per circuit. The EC versions draw less current; the limit of ten units applies to them as well.

5 Installation

5.1 Delivery check

Each fan coil is packed in a corrugated carton. Check the goods on receipt as follows:

- Check the packaging for visible damage before accepting the delivery.
- If the carton is damaged, unpack immediately and inspect the unit and the accessories. If the unit is damaged, note this on the delivery note and refuse acceptance.
- Check for concealed damage. If concealed damage is found, do not move the unit, stop unloading and take photographs.
- Notify the carrier and arrange a joint inspection by the carrier and the consignee.
- Do not carry out any repair before the carrier's representative has inspected and confirmed the damage.
- After the damage has been confirmed, contact the supplier for replacement.

5.2 Transport

DAMAGE TO THE UNIT AND RISK OF PERSONAL INJURY

- Wear protective gloves – risk of injury from sharp edges.
- The fan coil must be carried by at least two people.
- For deliveries on pallets, use only lifting and transport equipment with sufficient carrying capacity.
- Secure the load during transit to prevent it from tipping or falling.

Grasp and carry the cassette fan coil by the outer casing only. Unit weights are given in section 2.3.

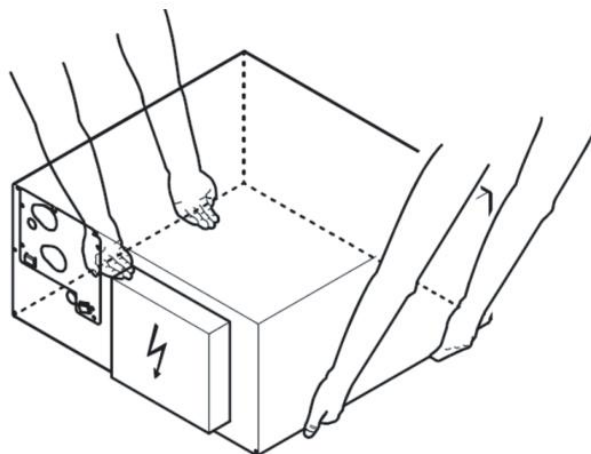


Fig. 11 Correct handling of the unit

5.3 Temporary storage

- Store the unit in its original packaging.
- The storage location must be weatherproof, dry and free of dust.
- Humidity must be between 50 and 85 % r.h.
- The storage temperature must be between -10 °C and +50 °C.

5 Installation (continued)

5.4 Preparing for installation

⚠ DANGER FROM ELECTRIC CURRENT

Ensure that the intended drilling area is free from electrical cables and pipes before drilling.

⚠ RISK OF PERSONAL INJURY

Injury may be caused by falling parts and sharp edges.

Wear a helmet, safety boots and protective gloves when installing the unit. Ceiling installation must always be carried out by two people.

NOTE

No mechanical deformation or twisting of the unit may occur during installation, for any model and in any installation position.

5.4.1 Installation location

- The ceiling or the mounting structure must be capable of carrying the weight of the unit including the panel and all accessories (see section 2.3).
- Install the unit indoors only.
- The type, condition and ambient temperature of the installation location must be suitable for the fan coil unit.

5.4.2 Installation requirements

Observe the following installation space requirements:

- minimum installation height 1,0 m above obstacles below the unit;
- maximum installation height 3,5 m above floor level;
- minimum distance from the unit to walls or other obstacles 0,5 m;
- maximum protrusion of a beam or structure above the unit 0,3 m.

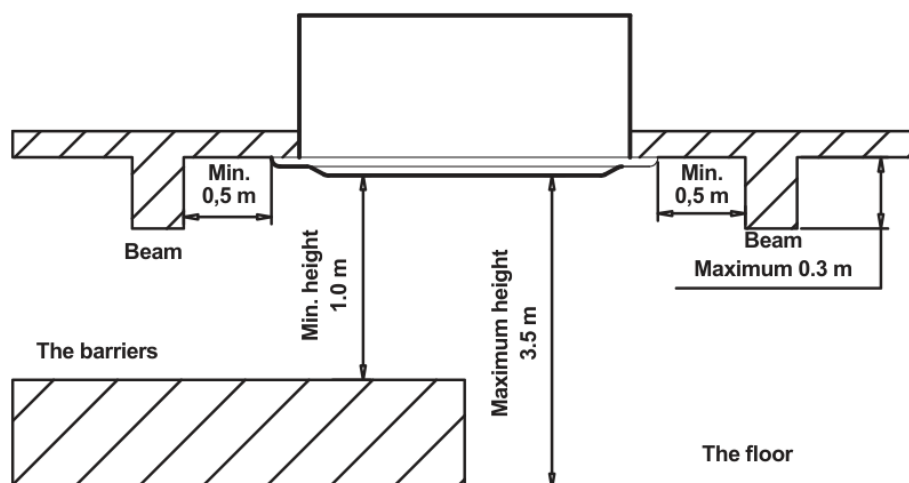


Fig. 12 Installation space requirement

5 Installation (continued)

Ceiling requirements:

- The intermediate ceiling is installed and a corresponding opening is available for the unit.
- There must be no openings to the outside in the area of the intermediate ceiling.
- The entire intermediate ceiling area must be dry and sufficiently protected against humidity and moist air.
- The electrical wiring is prepared and available for connection in the intermediate ceiling.

5.4.3 Recommended service opening

To allow all necessary service and maintenance work on the unit, a service opening of at least 400 × 400 mm should be provided in the false ceiling.

5.5 Unit installation

5.5.1 Precautions

- Provide adequate space for installation and maintenance (see section 4.1). Removable ceiling panels or access panels must be provided for routine maintenance.
- Determine the routing of pipework and electrical wiring before installation and reserve adequate space for the connections.
- Make sure that the suspension structure is adequate for the weight of the unit.
- All units must be levelled to ensure proper condensate drainage and correct operation.
- Thermal insulation of the chilled water valves and pipework is the responsibility of the installer.

5.5.2 Unit mounting

1) Suspension bolts (M10)

Use anchor bolts in an existing ceiling. For a new ceiling, use cast-in bolts or parts prepared on site. Adjust the space between the ceilings before proceeding with the installation.

- The suspension bolts must be of high-quality carbon steel (galvanised or otherwise protected against corrosion) or of stainless steel.
- The fixing of the suspension bolts depends on the type of ceiling construction (see figures below).

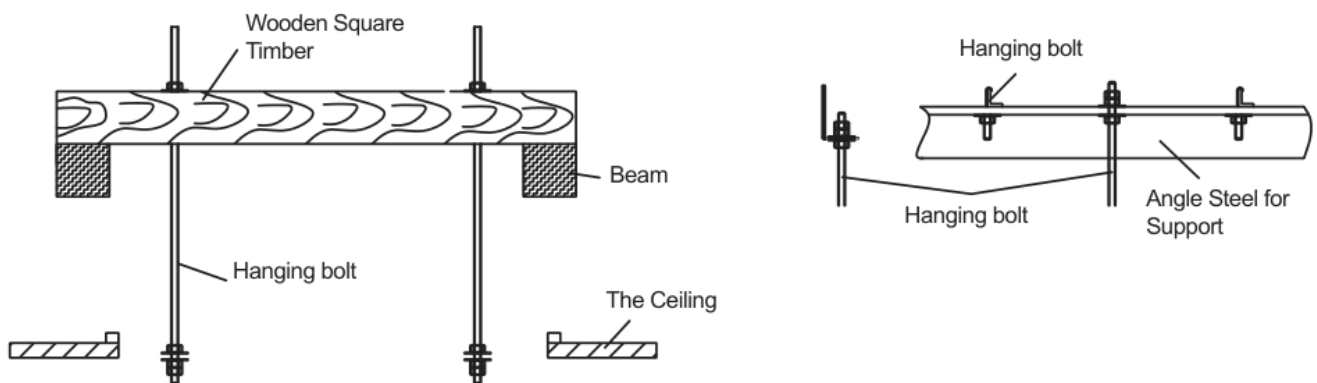


Fig. 13 Suspension on a wooden base and on a steel frame base

5 Installation (continued)

2) Mounting the unit

The unit must be installed on a level ceiling. If the ceiling is inclined, a packing block must be fitted between the ceiling and the panel so that the unit is horizontal.

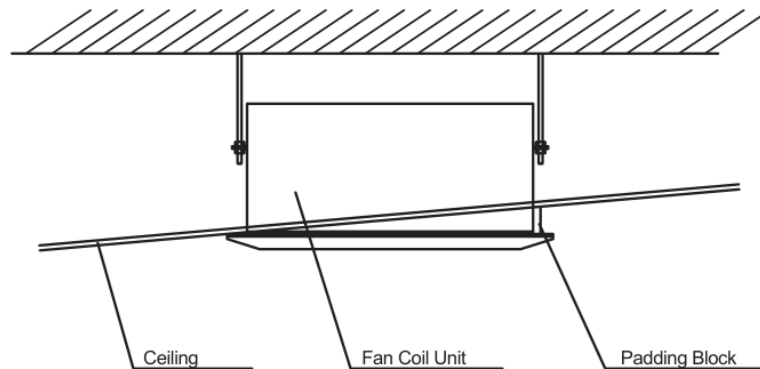


Fig. 15 Levelling with a packing block on an inclined ceiling

Suspend the unit as shown below and level it in all directions with a spirit level (adjust by turning the nuts up or down). Make sure that there is no gap either between the ceiling and the panel or between the unit body and the panel. Measure the distance between the unit and the ceiling to make sure that the unit body is centred in the ceiling opening. Then tighten the nuts above and below each suspension bracket to fix the unit.

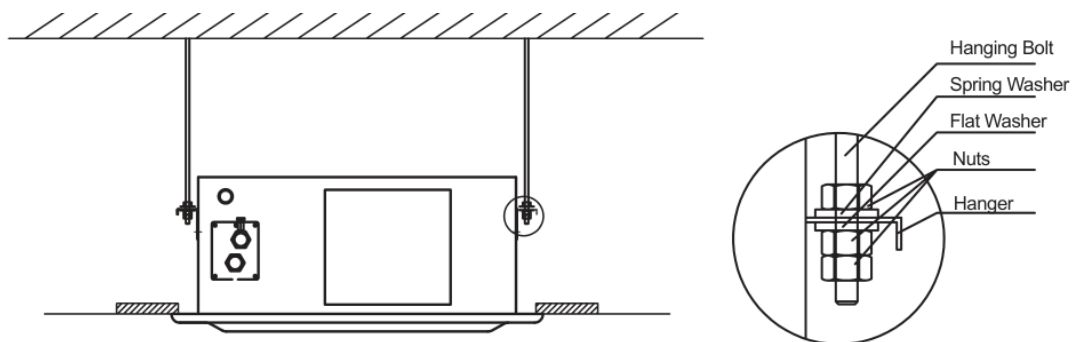


Fig. 16 Suspension bolt, spring washer, flat washer, nuts and hanger

NOTE

When the unit is installed in the ceiling, the ceiling must be horizontal in order to prevent the ceiling from vibrating.

5.5.3 Panel installation

NOTE

Before fitting the panel, check with a spirit level or a water-filled hose that the unit is horizontal, and check that the dimensions of the ceiling opening are correct. Remove the level gauge before fitting the panel.

5 Installation (continued)

The decorative panel with the air filter is not delivered pre-assembled. The required fixing material (set screws) is packed separately in a plastic bag.

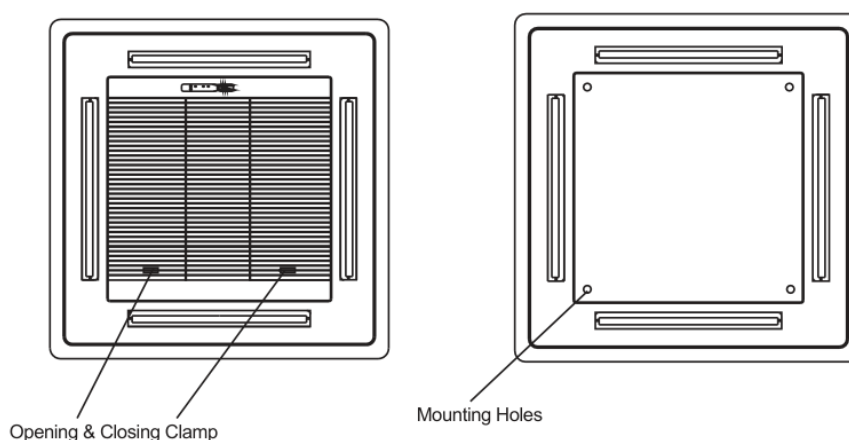


Fig. 17 Opening and closing clamp (left) and mounting holes (right)

- Place the panel on the unit body, insert two diagonally opposite panel screws (M5 × 26) into the mounting holes and fit them without tightening.
- Connect the cables of the stepping motors and of the receiver board to the corresponding connectors in the electrical box and arrange the wires.
- Insert the other two diagonally opposite panel screws (M5 × 26) into the mounting holes to fix the panel to the unit body.
- Adjust the position and direction of the panel so that the panel outlet matches the air passage and the drain pan, then tighten the panel screws so that the panel sits closely on the unit body.
- Fit and secure the air inlet grille.

5.6 Pipe connection

DANGER OF SCALDING BY ESCAPING HEATING MEDIUM

Before the on-site pipework and the hydraulic connection of the fan coil are set up, the heating/cooling water must be shut off and secured against being opened unintentionally.

NOTE

- The water connections of all sizes are G 3/4" internal thread.
- Remove the caps from the water inlet and outlet pipes at the start of the fitting procedure.
- All on-site pipework for chilled water must be insulated against condensation.
- When all connections have been completed, tighten all screwed connections and check that they are free of mechanical stress.
- Hold the coil connection with a second spanner when tightening the screwed connection, so that the coil header is not twisted.

5 Installation (continued)

5.6.1 Valve connection

The units are supplied without valves. Where valves are fitted on site, the arrangement of the water inlet and outlet depends on the position of the water connection and on the valves used. The figures below show the connection of a 2-way valve and of a 3-way valve. A 4-pipe unit has two sets of water connections and therefore requires two sets of valves.

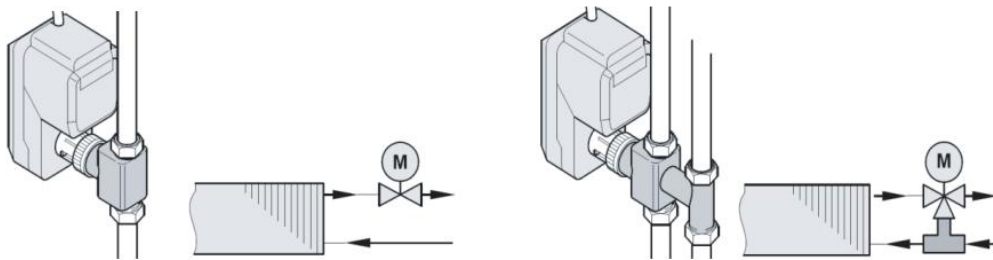


Fig. 18 2-way valve (left) and 3-way valve (right)

The standard hydraulic connection set consists of a straight thermostatic valve with a thermoelectric actuator on the supply and a lockshield valve on the return. Suitable valves and actuators are listed in chapter 10.

NOTE

To avoid condensation on the unit, a motorised valve must be installed on site. Jumper S6 on the unit PCB is therefore short-circuited on delivery. If no motorised valve is installed, S6 must be opened (see section 4.2.4).

ACTUATOR SUPPLY VOLTAGE

- Terminals V, V1 and V2 of terminal block TB1 are mains-voltage switched outputs (220–230 V). Only actuators rated for this voltage may be connected to them. The accessory actuator A230NC listed in chapter 10 is a 230 V type and connects directly.
- A 24 V actuator must never be connected to these terminals. If a 24 V actuator is required, it has to be supplied from a separate 24 V safety transformer and switched by an interposing relay driven from the V output.

5 Installation (continued)

5.6.2 Water inlet/outlet connection

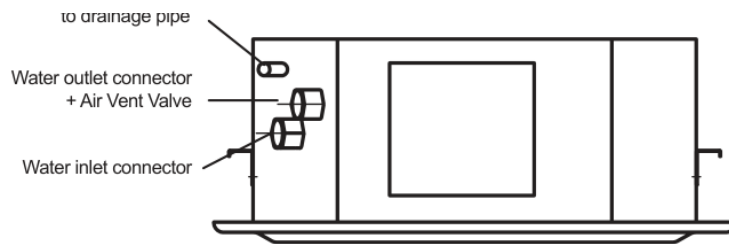


Fig. 19 Connections, unit with condensate pump

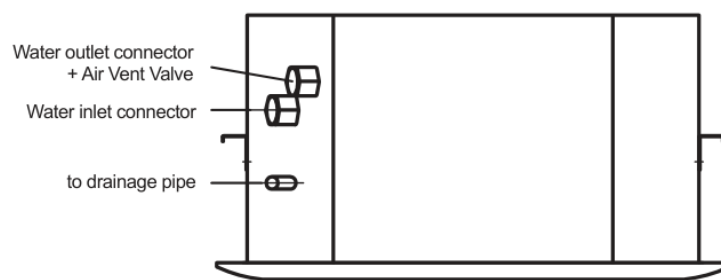


Fig. 20 Connections, unit with gravity drainage (without condensate pump)

5.6.3 Condensate drain connection

- Connect one end of the drain hose to the condensate outlet of the unit (Ø 26 mm) and the other end to a rigid PVC pipe of Ø 20 mm.
- Condensate pipes must be installed with a downward slope of 1 % or more.
- Insulate the rigid PVC pipe with a pipe sleeve to prevent condensation forming on the outside of the pipe.
- All pipe joints must be tightened to prevent leakage.
- Provide a vent (air admittance point) on the external condensate pipe.

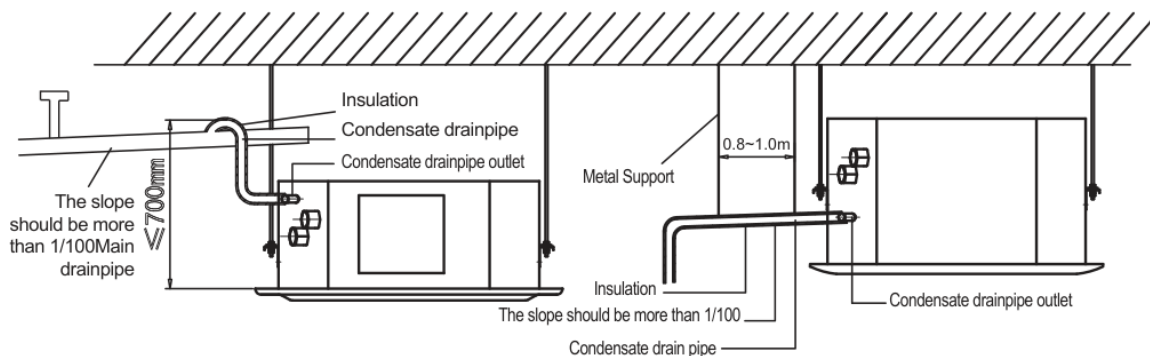


Fig. 21 Condensate pipe with pump (left) and with gravity drainage (right)

5 Installation (continued)

MAXIMUM CONDENSATE LIFT

The condensate pipe must not rise more than 550 mm above the condensate outlet of the unit. A greater lift prevents the condensate from being discharged and causes the drain pan to overflow (fault E7, see section 7.5).

5.7 Electrical installation

DANGER FROM ELECTRIC CURRENT

Disconnect the power supply before starting any installation work.

The electrical installation may be carried out only by qualified electricians, in accordance with this manual.

5.7.1 General requirements

- The electrical connection must be made in accordance with the valid connection diagram. The binding diagram is attached to the inside of the cover of the sheet-metal electrical box; the diagrams in section 4.2 are for information.
- The earth point provided on the unit must be connected to the earthing system of the building.
- All electrical connections must comply with the local electrical regulations.
- The connection diagrams do not contain any protective measures. The standards and regulations in force must be observed and agreed with the local electricity supplier.

5.7.2 Unit wiring

Connect the power supply in accordance with the diagram on the inside of the cover of the electrical box; see also the wiring diagrams in section 4.2.

5.7.3 Panel wiring

Connect the swing motor cable and the LED display cable to the PCB in accordance with the diagram on the inside of the cover of the electrical box; see also the wiring diagrams in section 4.2.

NOTE

Wire the motorised 2-way or 3-way valve and the thermostats in accordance with their own installation instructions.

If a motorised valve is installed, jumper S6 on the unit PCB must be short-circuited. If no motorised valve is installed, S6 must be open.

6 Commissioning

SAFETY

The warnings in section 1.2 apply in full: electrical hazard, danger of scalding and danger from rotating parts. Before any work on the unit, isolate it electrically, secure it against being switched on again, and shut off and allow the heating medium to cool down.

6.1 Requirements for commissioning

After installation, the installer must check and confirm the following. This manual has been read in full and the operators are familiar with the unit and able to operate it.

- The fan coil is electrically isolated.
- The complete fan coil system has been installed both mechanically and electrically.
- All water pipes have been flushed and are free from residues and foreign objects.
- The system has been pressure-tested and filled with clean water.
- The fan coil is properly fixed and mounted.
- The valves, actuators and thermostats have been checked manually in accordance with their own manuals.
- All water connections are tightened.
- All electrical connections have been checked against the current wiring diagram and the terminal screws are tight.
- The heat exchanger, the condensate tray, the condensate pump intake area and the filter medium are clean. Clean them or replace the filter medium if necessary.

NOTE

When the system is filled for the first time, air remains in the pipework and collects at the highest point of the water system. A manual air vent is normally provided at the water outlet connection. If abnormal noise is heard due to residual air, open the vent until water flows out steadily and then close it again. If the knob is too tight, turn it anticlockwise with pliers.

6.2 Start-up

- The unit is controlled by the infrared remote controller or by the selected control device: on/off, operating mode, fan speed, swing function, etc.
- Switch on the power supply and operate each unit in turn at high, medium and low speed in accordance with section 3.1.
- Adjust the louvers and the fan speed to obtain the best cooling/heating effect.

6 Commissioning (continued)

- In the event of abnormal noise or behaviour, switch the unit off and check the items listed above again. Otherwise, run the unit at high speed for 24 hours and check its behaviour again.

NOTE

Checking the condensate pump: with the unit switched on in cooling mode, carefully pour water in through the air vent opening or the inspection opening until the pump starts. The pump must switch off again after a short time, when most of the water has been pumped away.

DAMAGE TO THE UNIT

If the unit is not used during the winter, the water inside the unit must be drained after commissioning, to prevent the pipes from cracking due to ice formation.

7 Maintenance and Troubleshooting

SAFETY

The warnings in section 1.2 apply in full: electrical hazard, danger of scalding and danger from rotating parts. Before any work on the unit, isolate it electrically, secure it against being switched on again, and shut off and allow the heating medium to cool down.

7.1 Maintenance

The 4-way cassette fan coil is a high-quality, reliable unit. Regular maintenance and inspection by technical experts is nevertheless necessary in order to guarantee its permanent function and performance.

NOTE

Maintenance may be carried out only by trained technical personnel, in accordance with this manual and the applicable regulations.

The warranty is void if damage to the unit is attributable to failure to carry out the prescribed maintenance and inspections.

A written maintenance record must be kept (see Annex B).

7.2 Maintenance schedule

Table 17 Maintenance intervals

Component / activity	Quarterly	Annually
Checking and cleaning the filter	•	
Checking the condensate drain		•
Checking the screwed connections of the water pipes *		•
Checking the electrical connections		•
Checking the earthing		•
Venting the heat exchanger *		•
Cleaning the condensate tray *		•
Checking the setting and function of all valves *		•

* depending on model and installation.

6 Commissioning (continued)

The filter mat can be cleaned or replaced. Clean it dry with a vacuum cleaner set to medium or low power.

7.3 Quarterly maintenance

- Open the locks of the intake grille and remove the grille.
- Remove the filter mat from the intake grille.
- Clean the filter mat with a vacuum cleaner, or replace it with a new one if necessary.
- Fit the filter mat into the intake grille, refit the grille and close it.

7 Maintenance and Troubleshooting (continued)

7.4 Annual maintenance

7.4.1 Condensate drain

- The pump and the float switch area must be checked for contamination at least once a year, before the start of the cooling season. The same applies to the condensate pressure line with the non-return valve downstream of the condensate pump.
- Free drainage of the condensate can be checked by pouring water into the condensate tray.

7.4.2 Screwed pipe connections

Check that all screwed pipe connections are secure. Hold the connection with a second spanner when retightening.

7.4.3 Electrical connections and earthing

- Open the electrical box.
- Check that all electrical connections are firmly seated in the terminal strips.
- Check the earthing of the unit with a suitable measuring instrument.
- Close the electrical box again.

7.4.4 Valves and heat exchanger

Check the function of the valves in accordance with their own manual. Vent the heat exchanger.

7.5 Troubleshooting

The green LED on the panel indicates the fault by a number of flashes followed by a pause of 3 seconds. If a wall controller is fitted, the corresponding code is displayed together with a flashing spanner symbol.

Table 18 Fault codes

Green LED	Code	Fault	Possible cause	Remedy
2 flashes	E2	Heating coil sensor (ID2) of the 4-pipe unit damaged	Loose connection between plug and main PCB; sensor damaged	Unplug and plug in again to obtain a firm connection; replace sensor ID2
3 flashes	E3	Return air sensor (RM1) damaged	Loose connection between plug and main PCB; sensor damaged	Unplug and plug in again; replace sensor RM1
4 flashes	E4	Coil sensor (ID1) damaged	Loose connection between plug and main PCB; sensor damaged	Unplug and plug in again; replace sensor ID1

7 Maintenance and Troubleshooting (continued)

Green LED	Code	Fault	Possible cause	Remedy
5 flashes	E5	Low-temperature protection of the coil	Coil temperature too low	The fault clears automatically when the water temperature in the coil rises
6 flashes	E6	Overheat protection of the coil	Coil temperature too high	The fault clears automatically when the water temperature falls
7 flashes	E7	Float switch protection (condensate not discharged)	1. Condensate is not drained from the drain pan: the condensate pipe rises more than 550 mm above the outlet; no vent fitted on the external condensate pipe; the external pipe has an upward slope so that water flows back into the drain pan	1. Install the external condensate pipe according to section 5.6.3: lift below 550 mm, vent fitted, continuous downward slope
			2. The condensate pump has burned out (this happens if cause 1 is left unresolved for a long time)	2. Replace the condensate pump (the unit has to be dismantled)
			3. The float switch is stuck and cannot move freely	3. Free the float switch so that it can move up and down naturally (the unit has to be dismantled)
-	E8	Communication failure of the wall controller	Broken or badly connected control cable, wiring error, connector detached, broken pin	Check all wiring and plugs; unplug and plug in again to obtain a firm connection
Yellow LED on	-	Timer on/off active (not a fault)		
Yellow LED off	-	Timer cancelled (not a fault)		

NOTE

Leakage may occur if fault E7 is not remedied within a short time. The short fault list printed next to the wiring diagrams of the original manual calls the seven-flash signal “water pump failure”. It is the same signal as E7 above: a burned-out pump is one of its three causes. That list also omits the two-flash code E2.

- Isolate the unit electrically and secure it against being switched on again.
- Shut off the water connections and drain the heat exchanger and the condensate tray completely.
- Disconnect the electrical and hydraulic connections and remove the unit; ceiling work must be carried out by two people.
- Separate the materials (steel and galvanised sheet, copper, aluminium, plastics, insulation, electronic components) and dispose of them in accordance with the applicable national regulations.

8 Decommissioning and Disposal

Electrical and electronic components must not be disposed of with household waste. They must be handed over to an authorised collection point in accordance with Directive 2012/19/EU (WEEE) and the corresponding national legislation. Batteries from the remote controller must be disposed of separately.

9 Supplier and Warranty

9.1 Supplier

Supplier	KONVEKA
Address	Vokiečių g. 185, LT-45251 Kaunas, Lithuania
Web	konveka.com/en
E-mail	sales@konveka.lt
Telephone	+370 677 06303
Product	Cassette fan coil CF2 / CF4, AC and EC versions
Year of manufacture	See rating plate

9.2 Rating plate

The rating plate is attached to the unit casing and contains the model designation, serial number, rated voltage and frequency, power input, current, protection class and year of manufacture. The data on the rating plate takes precedence over the data in this manual.

9.3 Warranty

Warranty period	12 months
Start of the warranty period	Date of sale
Conditions	Installation, commissioning and maintenance in accordance with this manual, carried out by qualified personnel; maintenance recorded in writing (Annex B); water quality within the limits of section 1.4; the unit operated within the limits of section 1.6.
Exclusions	The warranty does not cover: damage caused by transport, storage or handling after delivery; installation, commissioning or repair by unqualified personnel; use outside the operating limits or the intended purpose (sections 1.4–1.6); water quality outside the limits of section 1.4, and the resulting corrosion, scaling or blockage; frost damage and damage caused by the water not being drained (section 6.2); failure to carry out the prescribed maintenance (chapter 7), in particular cleaning of the filter and the condensate system; unauthorised modification of the unit or use of non-original spare parts; damage caused by the power supply (over-voltage, lightning) or by the building installation; normal wear parts such as the filter mat and the remote controller batteries.
Claims procedure	Report the fault to the supplier without undue delay after it is detected, stating the model designation and serial number from the rating plate, the date of sale, the place of installation and a description of the fault, and enclose photographs, the commissioning protocol (Annex A) and the maintenance record (Annex B). Do not dismantle the unit before the supplier responds. The supplier decides whether the unit is repaired, replaced or credited.

9.4 Conformity

The unit carries the CE marking. The EU declaration of conformity is supplied with the unit and is available from the supplier on request. It states, as a minimum:

- the applicable European directives;
- the harmonised standards applied;
- the manufacturer and the person authorised to compile the technical file.

10 Accessories

Accessories matched to the CF cassette fan coils; the full range is available at konveka.com.

Table 19 Accessories for CF cassette fan coils

Code	Product	Data
TVSP15	Thermostatic valve, straight	Thread 1/2"; Kvs 2,0; PN10; working temperature -10 °C to +120 °C
LS15	Shut-off valve, straight (lockshield)	Thread 1/2"; Kvs 2,0; PN10; working temperature -10 °C to +120 °C
LA15	Shut-off valve, angle (lockshield)	Thread 1/2"; Kvs 2,0; PN10; working temperature -10 °C to +120 °C
A230NC	Thermoelectric actuator for the thermostatic valve	230 V AC; IP54; connection thread M30 × 1,5 mm; housing PC/ABS; normally closed; power input and inrush current to be confirmed – see Annex C, item 5
TC86	Room thermostat / wall controller	88 × 88 × 43 mm; 24 V DC, max. 3 A; 1,5 W; working range 5–35 °C; weekly schedule programming

NOTE

The valve connection thread is 1/2" while the coil connections are G 3/4" internal thread; provide reducers or connection sets on site.

10.1 Valve selection

The valves listed in Table 19 have Kvs 2,0. The tables below give the Kvs required for a pressure drop of approximately 15 kPa across the control valve at the design water flow, calculated from $\Delta p = (Q / Kvs)^2$ with Q in m³/h and Δp in bar. The last column gives the smallest connection size at a water velocity of not more than 1,2 m/s.

Table 19a CF2 – valve selection (one valve per unit, one circuit, one design flow)

Model	Design flow (l/h)	Required Kvs	Δp with Kvs 2,0 (kPa)	Min. connection
CF2-34	320	0,8	3	DN15
CF2-51	500	1,3	6	DN15
CF2-68	610	1,6	9	DN15
CF2-85	780	2,0	15	DN15
CF2-102	940	2,4	22	DN20
CF2-136	1200	3,1	36	DN20
CF2-170	1650	4,3	68	DN25
CF2-204	1850	4,8	86	DN25
CF2-238	2150	5,6	116	DN25
CF2-289	2640	6,8	174	DN32

Table 19b CF4 – valve selection (one valve per circuit)

Model	Cold circuit (l/h)	Required Kvs	Hot circuit (l/h)	Required Kvs	Min. connection
CF4-68	450	1,2	260	0,7	DN15
CF4-85	540	1,4	355	0,9	DN15
CF4-102	625	1,6	440	1,1	DN15
CF4-136	830	2,1	550	1,4	DN15
CF4-170	1050	2,7	700	1,8	DN20
CF4-204	1400	3,6	725	1,9	DN20
CF4-238	1500	3,9	980	2,5	DN20
CF4-289	1800	4,6	1185	3,1	DN25

Annex A Commissioning and Handover Protocol

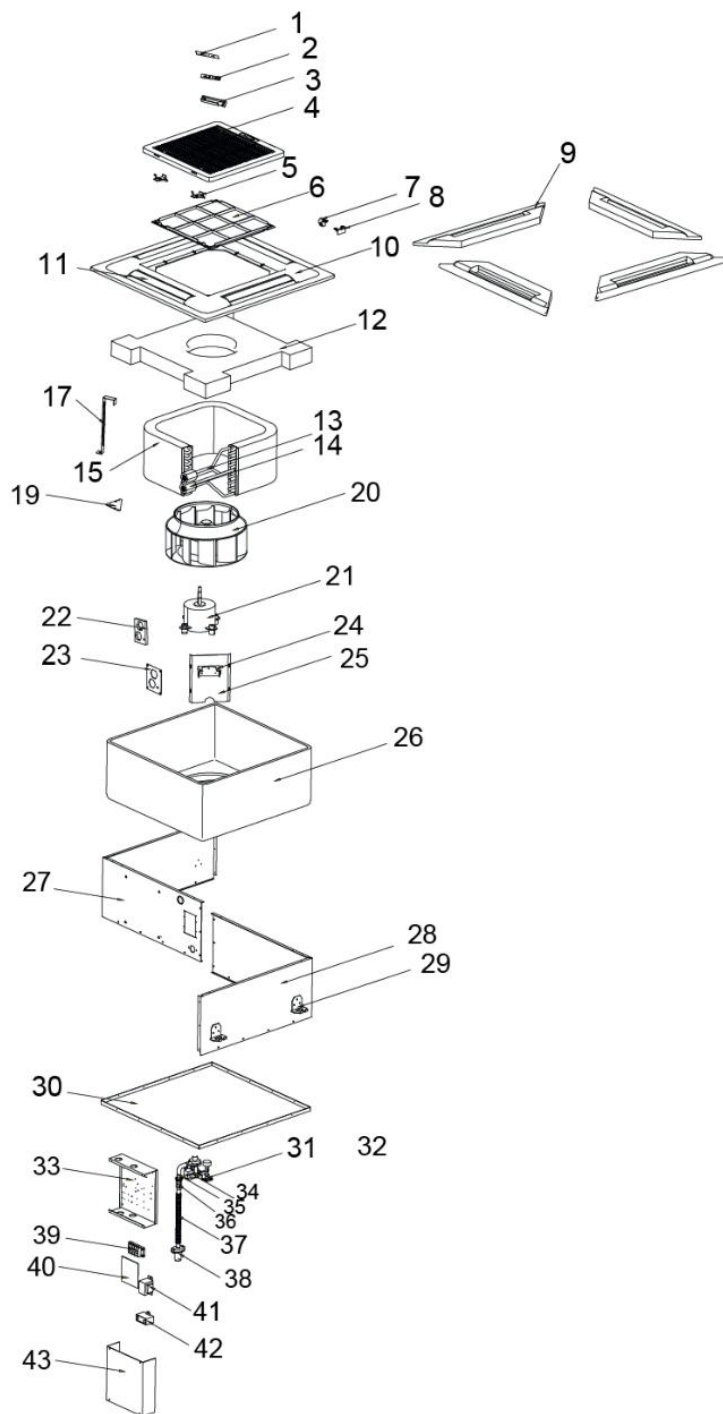
Project / site	
Unit model and serial number	
Installation location / room	
Installing company	
Commissioned by	
Date	

Table 20 Commissioning checks

Check	Result	Remark
Suspension and levelling checked	☐ yes ☐ no	
Ceiling opening and panel fit checked	☐ yes ☐ no	
Water system flushed, filled and vented	☐ yes ☐ no	
Water quality within the limits of section 1.4	☐ yes ☐ no	
Pipework insulated, connections leak-tight	☐ yes ☐ no	
Condensate pipe: slope $\geq 1\%$, lift ≤ 550 mm, vent fitted	☐ yes ☐ no	
Condensate pump function tested (water poured in)	☐ yes ☐ no	
Float switch function tested	☐ yes ☐ no	
Earthing checked and measured	☐ yes ☐ no	
Electrical connections tight, supply protection correct	☐ yes ☐ no	
Jumpers S3-S8 set to match the installation	☐ yes ☐ no	
Valve(s) and thermostat wired and function checked	☐ yes ☐ no	
All three fan speeds tested (AC) / speed range tested (EC)	☐ yes ☐ no	
Heating and cooling mode tested	☐ yes ☐ no	
Louver / swing function tested	☐ yes ☐ no	
Filter fitted and clean	☐ yes ☐ no	
Operator instructed, manual handed over	☐ yes ☐ no	

Annex B Component Identification

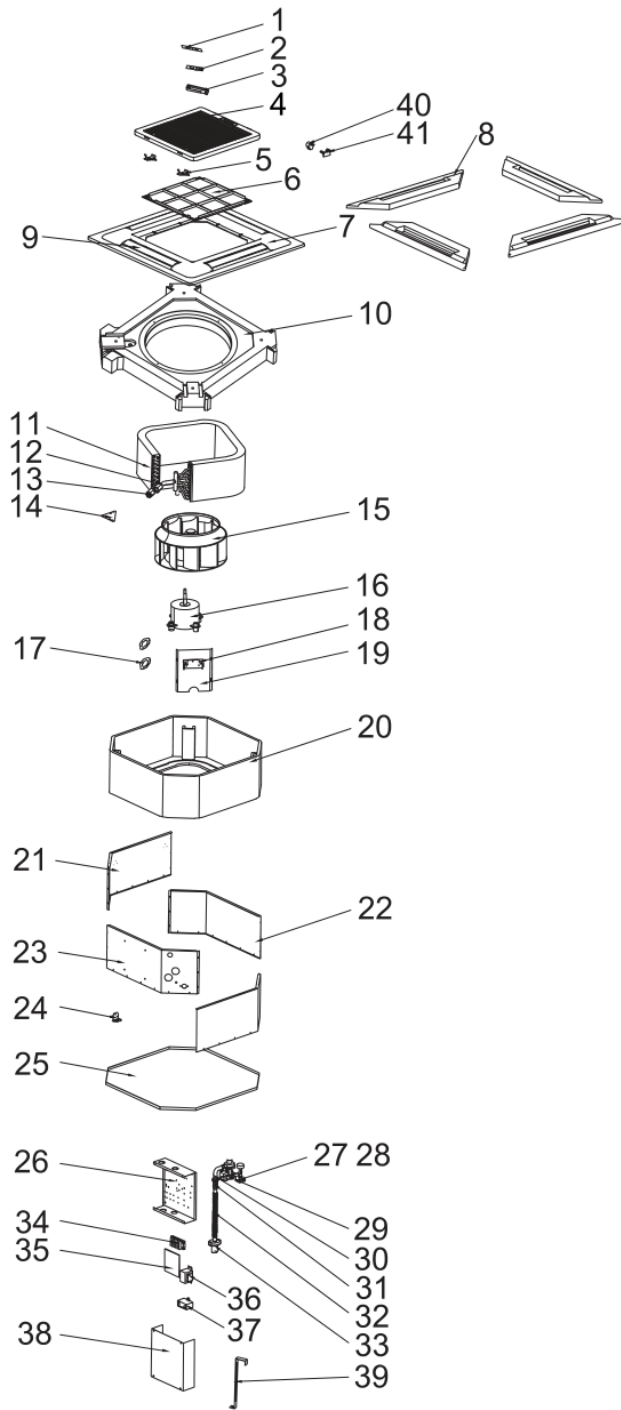
The exploded views below are intended for service purposes. The item numbers of the four unit variants differ; the combined list in Table 21 gives the item number of each component in each variant.



1	Light panel sticker
2	Light panel
3	Light panel cover
4	Air grill
5	Air grill locker
6	Filter
7	Stepping motor
8	Louver bracket
9	Panel foam
10	Plastic panel
11	Louver
12	Drain pan
13	Water inlet connector
14	Water outlet connector
15	Coil
16	Coil hanger
17	Drain pan fixer
18	Fan
19	Motor
20	Valve cover sponge
21	Valve cover
22	Pump bracket
23	Coil fixing plate
24	Air duct
25	Side panel 1
26	Side panel 2
27	Hanging bracket
28	Bottom plate
29	Float switch
30	Float switch bracket
31	Electronic box
32	Pump
33	Rubber tube
34	One way valve
35	Bellows
36	Water faucet
37	Wiring terminal
38	PCB
39	Transformer
40	Capacitor
41	Electronic box cover

Fig. 22 CF2-34 to CF2-68 (2-pipe)

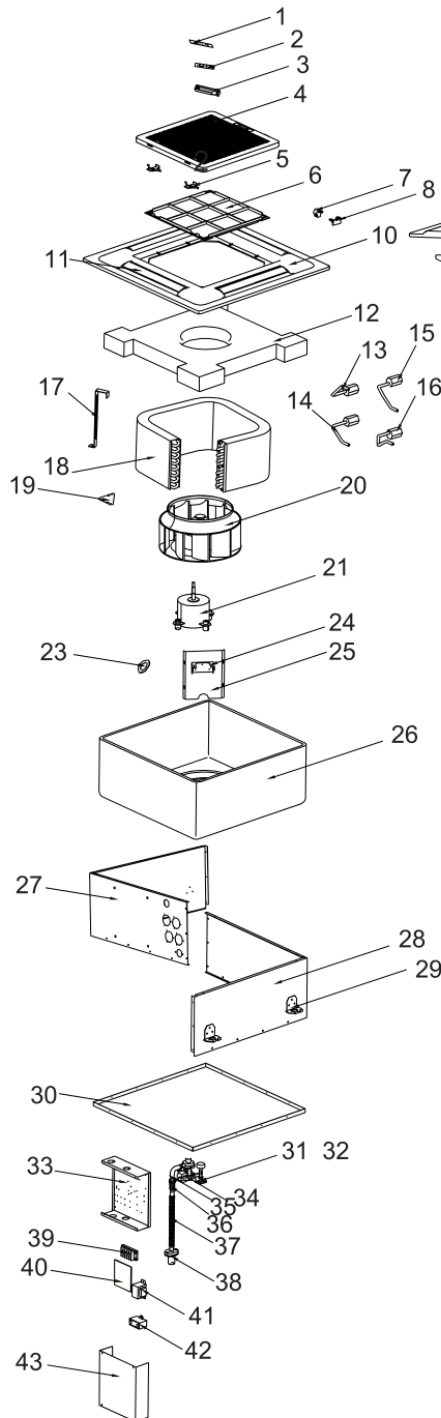
Annex B Component Identification (continued)



1	Light panel sticker
2	Light panel
3	Light panel cover
4	Air grill
5	Air grill locker
6	Filter
7	Plastic panel
8	Panel foam
9	Louver
10	Drain pan
11	Coil
12	Water inlet connector
13	Water outlet connector
14	Drain pan fixer
15	Fan
16	Motor
17	Valve fixing plate
18	Pump bracket
19	Coil fixing panel
20	Air duct
21	Side panel 3
22	Side panel 2
23	Side panel 1
24	Hanging bracket
25	Bottom plate
26	Electronic box
27	Float switch
28	Float switch bracket
29	Pump
30	Rubber tube
31	One way valve
32	Bellows
33	Water faucet
34	Wiring terminal
35	PCB
36	Transformer
37	Capacitor
38	Electronic box cover
39	Coil hanger
40	Stepping motor

Fig. 23 CF2-85 to CF2-289 (2-pipe)

Annex B Component Identification (continued)



1	Light panel sticker
2	Light panel
3	Light panel cover
4	Air grill
5	Air grill locker
6	Filter
7	Stepping motor
8	Louver bracket
9	Panel foam
10	Plastic panel
11	Louver
12	Drain pan
13	Cold water inlet connector
14	Cold water outlet connector
15	Hot water inlet connector
16	Hot water outlet connector
17	Coil hanger
18	Coil
19	Drain pan fixer
20	Fan
21	Motor
22	Valve cover
23	Pump bracket
24	Coil fixing plate
25	Air duct
26	Side panel 1
27	Side panel 2
28	Hanging bracket
29	Bottom plate
30	Float switch
31	Float switch bracket
32	Electronic box
33	Pump
34	Rubber tube
35	One way valve
36	Bellows
37	Water faucet
38	Wiring terminal
39	PCB
40	Transformer
41	Capacitor
42	Electronic box cover

Fig. 24 CF4-68 (4-pipe)

Annex B Component Identification (continued)

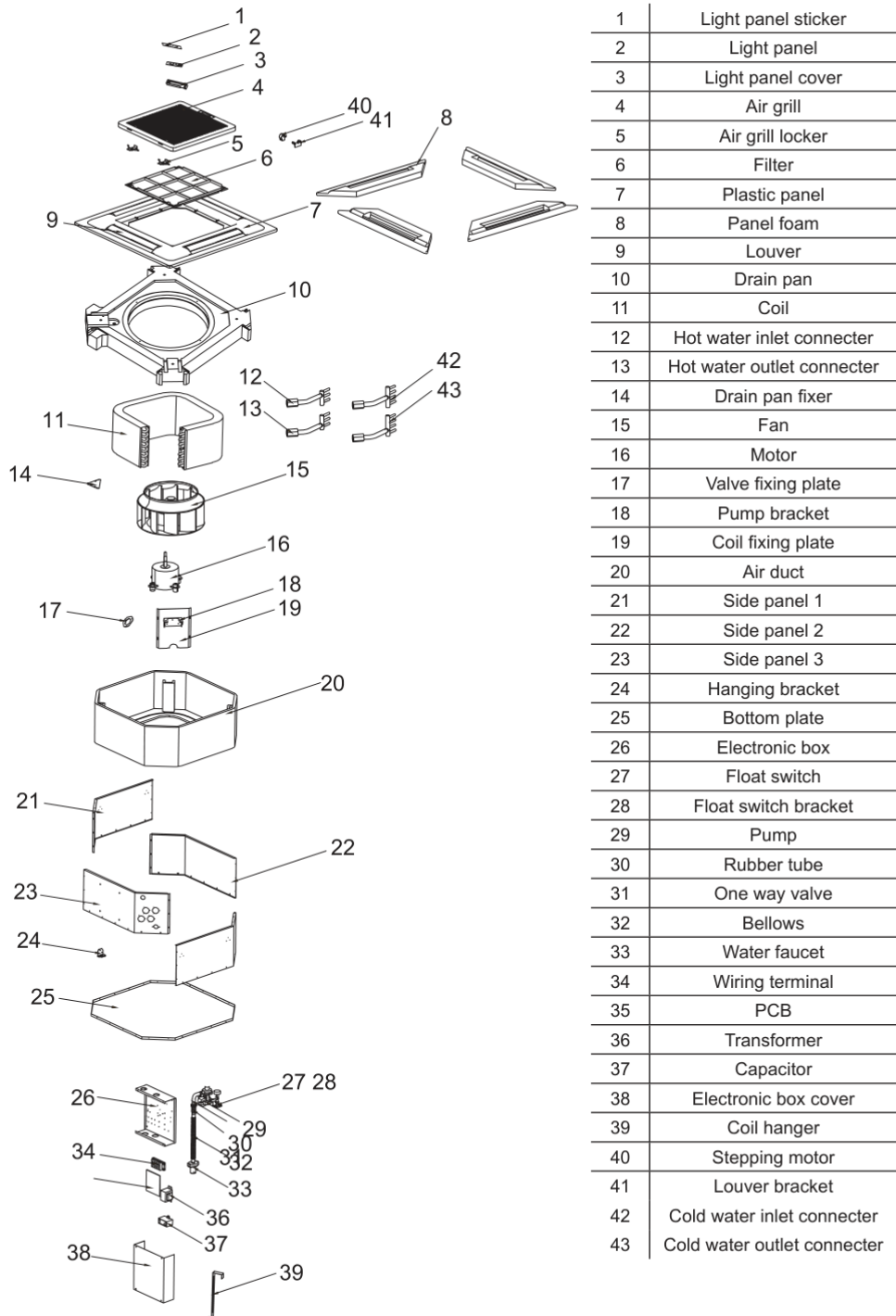


Fig. 25 CF4-85 to CF4-289 (4-pipe)

Table 21 Combined component list – item numbers per variant

Component	CF2-34-68	CF2-85-289	CF4-68	CF4-85-289
Light panel sticker	1	1	1	1
Light panel	2	2	2	2
Light panel cover	3	3	3	3
Air grille	4	4	4	4
Air grille locker	5	5	5	5

Annex B Component Identification (continued)

Component	CF2-34-68	CF2-85-289	CF4-68	CF4-85-289
Filter	6	6	6	6
Panel foam	9	8	9	8
Plastic panel	10	7	10	7
Louver	11	9	11	9
Louver bracket	8	41	8	41
Stepping motor	7	40	7	40
Drain pan	12	10	12	10
Drain pan fixer	17	14	19	14
Coil	15	11	18	11
Coil hanger	16	39	17	39
Coil fixing plate	23	19	24	19
Water inlet connector	13	12	-	-
Water outlet connector	14	13	-	-
Cold water inlet connector	-	-	13	42
Cold water outlet connector	-	-	14	43
Hot water inlet connector	-	-	15	12
Hot water outlet connector	-	-	16	13
Valve cover	21	-	22	-
Valve cover sponge	20	-	-	-
Valve fixing plate	-	17	-	17
Fan	18	15	20	15
Motor	19	16	21	16
Air duct	24	20	25	20
Side panel 1	25	23	26	21
Side panel 2	26	22	27	22
Side panel 3	-	21	-	23
Hanging bracket	27	24	28	24
Bottom plate	28	25	29	25
Pump	32	29	33	29
Pump bracket	22	18	23	18
Rubber tube	33	30	34	30
One-way valve	34	31	35	31
Bellows	35	32	36	32
Water faucet	36	33	37	33
Float switch	29	27	30	27
Float switch bracket	30	28	31	28
Electronic box	31	26	32	26
Electronic box cover	41	38	42	38
PCB	38	35	39	35
Wiring terminal	37	34	38	34
Transformer	39	36	40	36
Capacitor	40	37	41	37
[not identified in source]	42, 43	-	43	-