FLAT S

Fan coil units technical manual

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Galletti
AIR CONDITIONING

TABLE OF CONTENTS

OPERATING LIMITS

> Thermal carrier fluid: water
> Water temperature: from 5°C to 85°C
> Maximum operating pressure: 10 bar
> Air temperature: from 5°C to 43 °C
> Supply voltage: 230 V +/- 10%

1 GENERALITIES

FLAT S by Galletti represents a new generation of fan coil units and has been engineered to offer performance and design features placing it at the top of its category.

FLAT S means innovation also in terms of engineering: it combines a guarantee of excellent low-noise performance with the advantage of an exclusive design that fits well with both residential and commercial settings.

FLAT S Suspended wall installation, with cabinet, with vertical air flow.

The uniqueness of **FLAT S** lies both in the use of extremely high quality materials - which contribute to making this product exceptionally robust - and the assurance of constant performance over time.

2 MODELS AND CONSTRUCTIVE COMPONENTS

> **CABINET WITH A REFINED DESIGN**
Colour **RAL9010**
Front panel made of sheet steel.
Side panels and an upper grille with covers on either side manufactured from UV-stabilised ABS to maintain the colour intact over time.
The upper grille consists of a flap and adjustable louvers to direct the outlet air flow to the room, to the right or to the left.
The flap features a microswitch that automatically shuts down the unit (fan motor and valves where present) when the flap itself is closed.
Moreover the flap closure prevents dust from getting inside the unit when it is not being used.
The side doors provide access to the control panel and compartment housing the plumbing connections.
The doors may be secured by screws to prevent opening.

> **BASIC UNIT**
Built from galvanised steel sheet of adequate thickness, insulated by means of Class 1 self-extinguishing panels.
The bearing structure is configured for the installation of all the accessories available for the **FLAT S** series.

> **FAN ASSEMBLY**
Thanks to the new fan-drive assembly, **FLAT S** ranks at the top of the category of indoor air-conditioning units in terms of low-noise operation.
FLAT Suses 1 or 2 double suction centrifugal fans, statically and dynamically balanced, with staggered airfoil-shaped blades manufactured from anti-static **ABS** (to avoid dust accumulation and resulting unbalancing).
The fans are housed in a low-noise **ABS** volute with a compact, high-efficiency profile.
Three-speed electrical motor, directly connected to the fans, with permanently activated capacitor and winding thermal protection, mounted on vibration damping couplings.
6 speed motors available on request

> **HEAT EXCHANGERS**
High efficiency heat exchangers made with copper piping and aluminium fins with hydrophilic surface treatment blocked to pipings by mechanical expansion, provided with brass manifolds and vent valve.
The heat exchanger usually comes with water connections mounted on the left, but it can be turned by 180°.
On request it is possible to install an additional heat exchanger to be connected to the heating circuit, for installing FLAT in 4-pipe systems.

> **AIR FILTER**
Honey-comb polypropylene washable air filter, mounted on a galvanised sheet frame protected by a net, easily removable for maintenance operations.
The filter may be secured to the unit by means of screw.

> **CONTROL PANELS**
Available as accessory for temperature control and adjustment through a microprocessor system that automatically regulates the fan coil unit operation according to the ambient conditions.
FLAT S can be integrated into **ERGO** control networks for air conditioning systems.

The technical and dimensional data provided herein may undergo changes in connection with product improvements.

- For any further information, contact the manufacturer: info@galletti.it
-To get the weight of the unit, refer to the User Manual, Rated technical data table.

3 AVAILABLE ACCESSORIES

CONTROL PANELS

- **CB**Speed switch, on the unit
- **TIB** Electromechanical control, complete with speed selector, thermostat and summer/winter selecting switch
- **MYCOMFORT BASE** Wall-mounted microprocessor control - GALLETTI model MYCOMFORT BASE.
- **MYCOMFORT MEDIUM** Wall-mounted microprocessor control - GALLETTI model MYCOMFORT MEDIUM.
- **MYCOMFORT LARGE** Wall-mounted microprocessor control - GALLETTI model MYCOMFORT LARGE
- **LED503** Recess wall-mounted microprocessor control
- **MCSWE** Water temperature sensor for MICRO, MICROPRO-D and MICRO-D microprocessor controls
- **MCSUE** Humidity sensor for on-board microprocessor controls model MYCOMFORT MEDIUM and MYCOMFORT LARGE
- **EVO** Electronic control for hydronic indoor units
  TCElectromechanical thermostat for minimum water temperature in heating mode, mounted on the heat exchanger
  KPPower interface for connecting in parallel up to 4 fan coil units to one control.
  CD Recess wall-mounted speed switch
  CDEWall-mounted speed selector
  TDWall-mounted electromechanical control, complete with speed selector, thermostat and summer/winter selecting switch.
  TDC Wall-mounted electromechanical control, complete with speed selector and thermostat.
  TD4T Wall-mounted electromechanical control, complete with speed selector, thermostat and summer/winter selecting switch for control of the fan coil and ON/OFF valves.

MOTOR-DRIVEN VALVES

- **KVKS** 2 or 3-way valve with ON/OFF electrothermal motor and hydraulic kit for standard heat exchanger
- **VKDFS** V2 or 3-way valve with ON/OFF electrothermal motor and hydraulic kit for DF heat exchanger
- **BV**Auxiliary water drip tray for vertical installation fan coil units

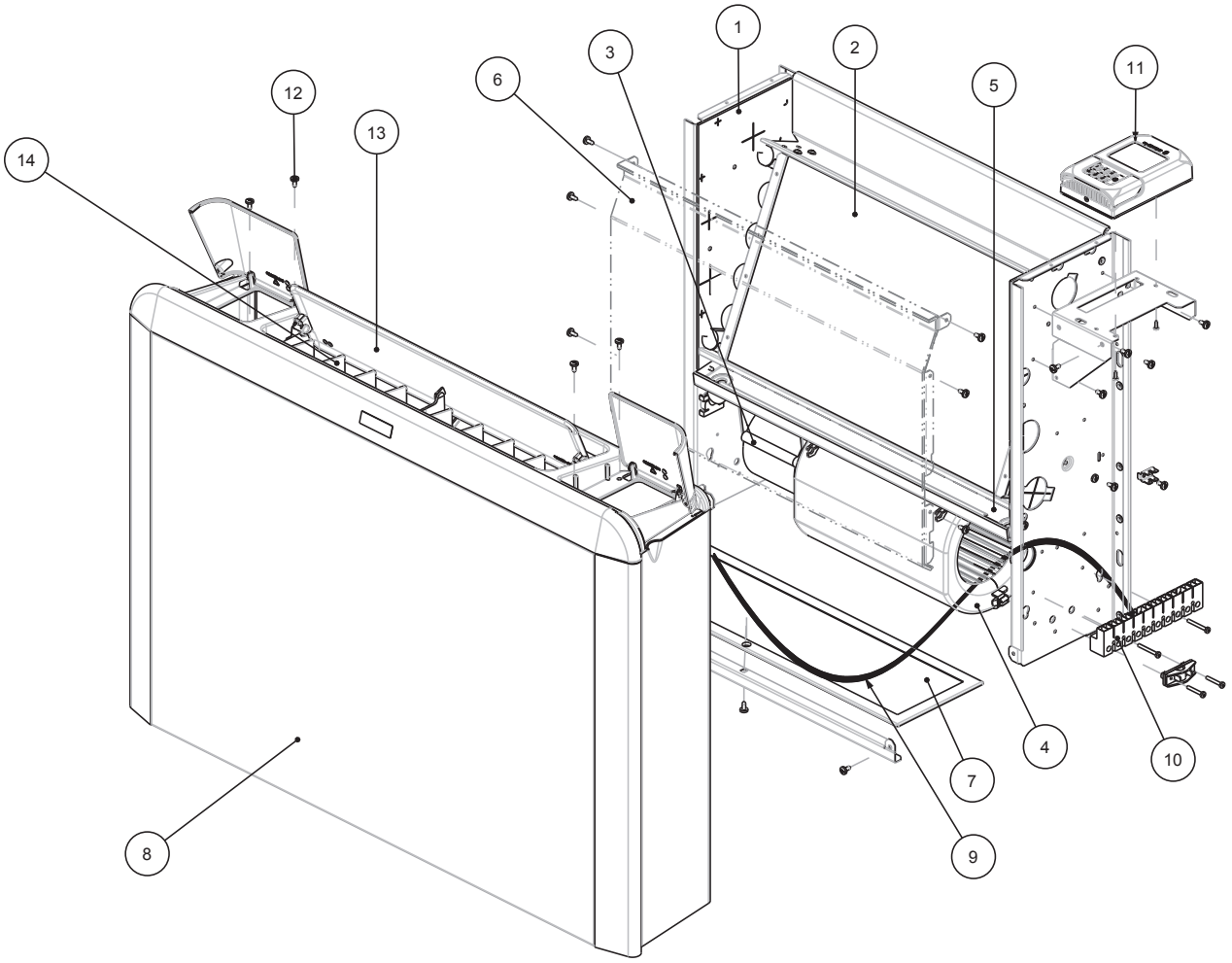
ADDITIONAL HEAT EXCHANGERS

- **DFS** 1 row additional heat exchanger for 4-pipe systems (hot water circuit)

BASE AND ENCLOSURE ELEMENTS

- **ZLS** Pair of base and enclosure elements
- **PVS** Rear pre-painted panel for vertical installation fan coils with cabinet

FLAT S



1.	Basic unit
2.	Heat exchanger
3.	Electric motor
4.	Centrifugal fan (ABS volute and fan)
5.	Water drip tray for vertical installation
6.	Conveyor
7.	Filter
8.	Cabinet
9.	Cable connecting to the microswitch
10.	Connection terminal board and cable holder
11.	Control panel (accessory)
12.	Cabinet fastening screws
13.	Upper flap
14.	Adjustable fins

4 RATED TECHNICAL DATA

FLAT S (preliminary data)			FLS 10			FLS 20			FLS 30			FLS 40		
Speeds	3x		min	med	max	min	med	max	min	med	max	min	med	max
	6x	n°	1	2	3	1	2	3	1	2	3	1	2	3
Air flow rate		m3/h	115	135	170	135	170	225	200	250	340	250	310	420
Power supply			230-1-50			230-1-50			230-1-50			230-1-50		
Power input (E)		W	12	17	23	14	20	27	23	28	37	25	31	42
Maximum absorbed current		A	0,064	0,090	0,122	0,074	0,106	0,143	0,122	0,149	0,197	0,133	0,165	0,223
Total cooling capacity (1)		kW	0,860	0,980	1,24	1,09	1,34	1,75	1,41	1,76	2,32	1,76	2,14	2,78
Sensible cooling capacity (1)		kW	0,610	0,700	0,890	0,750	0,930	1,22	1,02	1,27	1,69	1,27	1,55	2,03
Total cooling capacity (5) (E)		kW	0,848	0,963	1,22	1,08	1,32	1,72	1,39	1,73	2,28	1,74	2,11	2,74
Sensible cooling capacity (5) (E)		kW	0,598	0,683	0,867	0,736	0,910	1,19	1,00	1,24	1,65	1,25	1,52	1,99
Water flow rate in cooling mode (1)		l/h	148	168	213	186	230	300	243	303	399	303	368	477
Pressure drop in cooling mode (1) (E)		kPa	3	3	5	5	7	11	3	5	7	5	6	10
FCEER (E)			D			D			D			D		
Heating capacity (2) (E)		kW	1,07	1,21	1,52	1,21	1,47	1,93	1,81	2,21	2,88	2,21	2,66	3,42
Pressure drop (2) (E)		kPa	2	3	4	4	6	9	3	4	6	4	5	8
Heating capacity (3)		kW	1,80	2,05	2,57	2,02	2,45	3,21	3,07	3,73	4,84	3,73	4,48	5,76
Water flow (3)		l/h	158	180	225	177	215	282	269	327	425	327	394	505
Pressure drop (3)		kPa	2	3	4	3	5	7	3	4	6	4	6	9
FCCOP (E)			C			C			C			C		
Sound power level (4) (E)		dB/A	30	35	40	35	40	46	32	38	46	37	42	49
Sound pressure level (6)		dB/A	8	13	18	13	18	24	10	16	24	15	20	27
Number of fans		nr.	1			1			2			2		
Water connections	std	"	1 / 2			1 / 2			1 / 2			1 / 2		
Water content	std	dm3	0,81			1,11			1,41			1,41		

1 Water temperature 7-12°C, air temperature 27°C dry bulb, 19°C wet bulb (47% relative humidity)
2 Water inlet temperature 50°C, water flow rate same as in cooling mode, air inlet temperature 20°C
3 Water temperature 70 - 60°C; air temperature 20°C
4 Sound power measured according to standards ISO3741 and ISO3742
5 According to EN1397
6 Measured as Q=2 and at a distance of 5 m from the source and in an open field
E EUROVENT certified data

5 PERFORMANCES

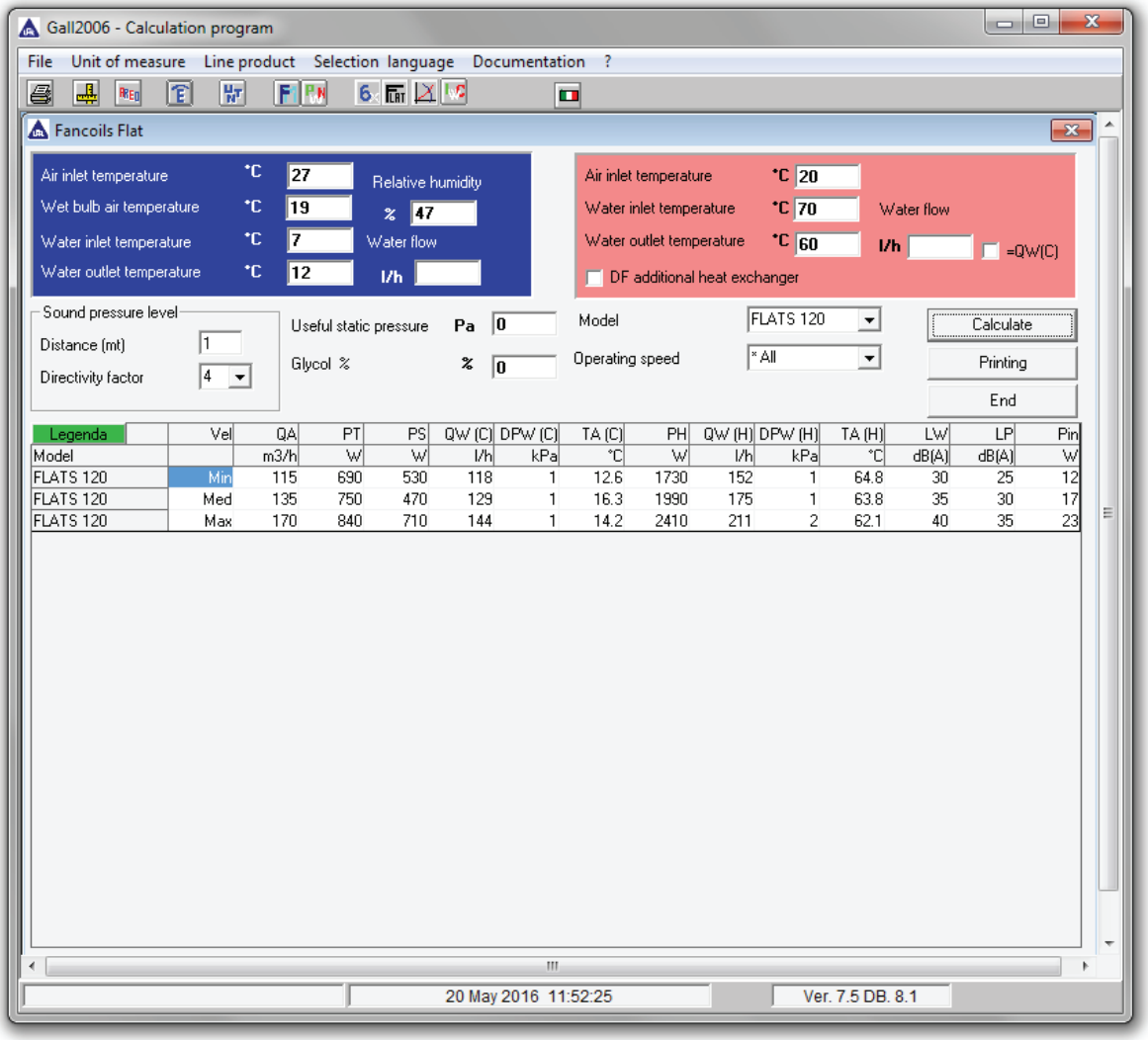
In order to define the performances of FLAT S subject to conditions different from rated conditions, a computer program for the correct choice of the units is provided by Galletti SpA

With a few input data it will be possible to get information on the behaviour of a FLAT S referring to the desired operating conditions.

It will be sufficient to enter the following data:
- Dry bulb inlet air temperature
- Wet bulb inlet air temperature or alternatively the relative humidity
- Inlet water temperature
- Outlet water temperature or alternatively the water flow
- Ethylene glycol percentage (default 0)
- Fan speed
- Available static head (default 0)
- Directivity factor and distance

Output data
- Air flow rate
- Total cooling / heating capacity
- Sensible cooling capacity
- Water flow
- Pressure drop, water side
- Outlet air temperature
- Sound power level
- Sound pressure level under the specified conditions
- Power input

The selection report generated by the software includes the drawing with overall dimensions and description of the unit



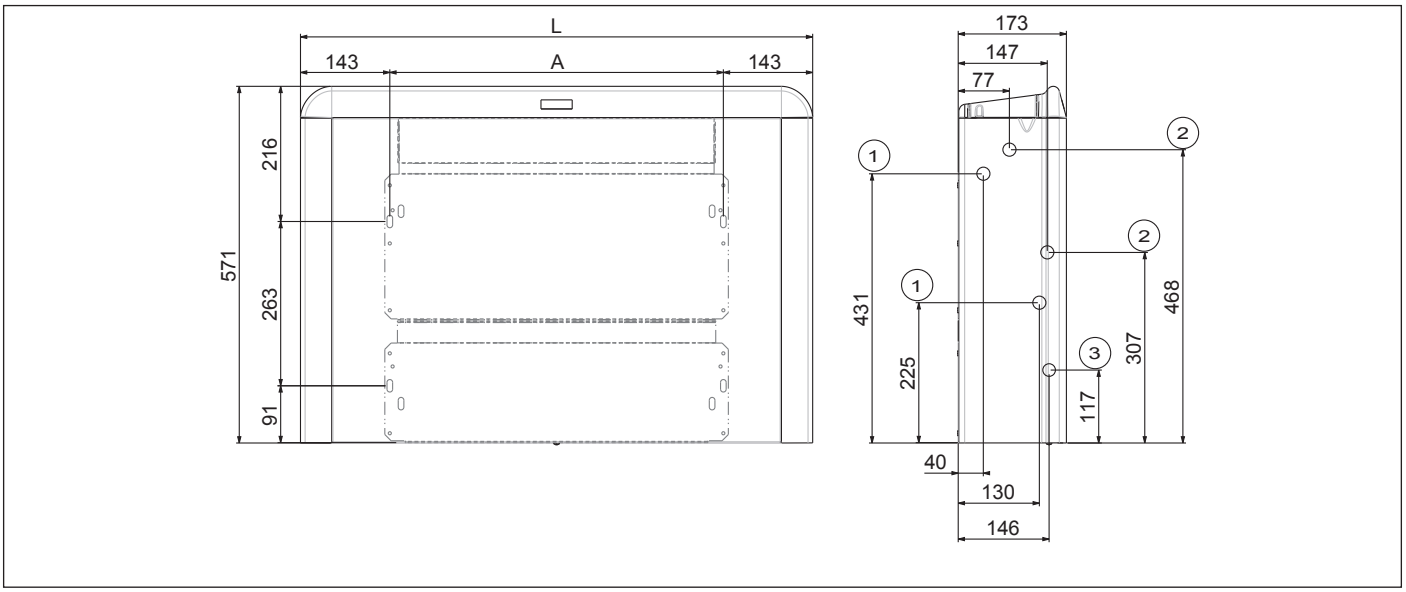
5 PERFORMANCES

5.1 SOUND LEVELS

Vr Fan speed:
3=maximum
2=medium
1=minimum
Lw Sound power level by octave band, not weighted
Lw_A Total sound power level, weighted A
Lp_A Total sound pressure level, weighted A, measured at a distance of 1 m, with a directivity factor of 4.

Model	Vel	LwA	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
		dB(A)	dB	dB	dB	dB	dB	dB	dB
FLATS 10	Min	30	21,5	29,0	32,0	20,9	12,8	..	..
	Med	35	26,5	34,0	37,0	25,9	17,8	..	..
	Max	40	31,5	39,0	42,0	30,9	22,8	13,0	..
FLATS 20	Min	35	26,5	34,0	37,0	25,9	17,8	..	..
	Med	40	31,5	39,0	42,0	30,9	22,8	13,0	..
	Max	46	37,5	45,0	48,0	36,9	28,8	19,0	15,9
FLATS 30	Min	32	23,5	31,0	34,0	22,9	14,8	..	..
	Med	38	29,5	37,0	40,0	28,9	20,8	11,0	..
	Max	46	37,5	45,0	48,0	36,9	28,8	19,0	15,9
FLATS 40	Min	37	28,5	36,0	39,0	27,9	19,8	10,0	..
	Med	42	33,5	41,0	44,0	32,9	24,8	15,0	11,9
	Max	49	40,5	48,0	51,0	39,9	31,8	22,0	18,9

6 OVERALL DIMENSIONS



FLAT S		10	20	30	40
A	**mm**	534	704	874	874
L	**mm**	820	990	1160	1160

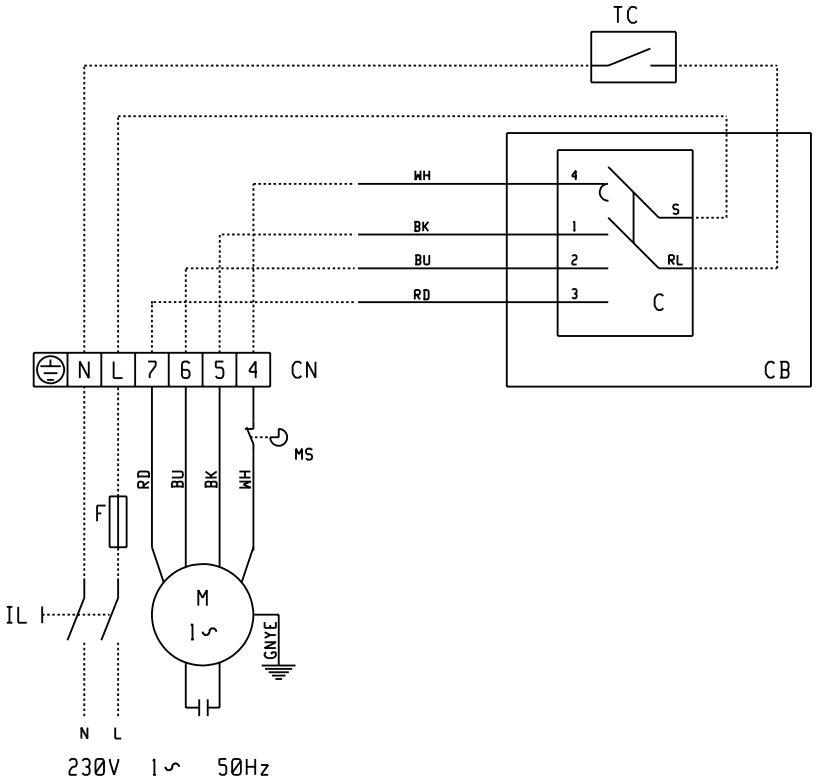
FLAT S	10	20	30	40
1 - Water connections (female gas), standard heat exchanger	1/2”	1/2”	1/2”	1/2”
2 - Water connections (female gas), DF heat exchanger	1/2”	1/2”	1/2”	1/2”
3 - Drain outlet for vertical installation	16	16	16	16
Diameter of condensate drainage	17	17	17	17

7 WIRING DIAGRAMS

The connections indicated must be made by the installer. For each unit an (IL) switch should be mounted on the power supply, with opening contacts at a distance of at least 3 mm and a suitable protection fuse (F) .

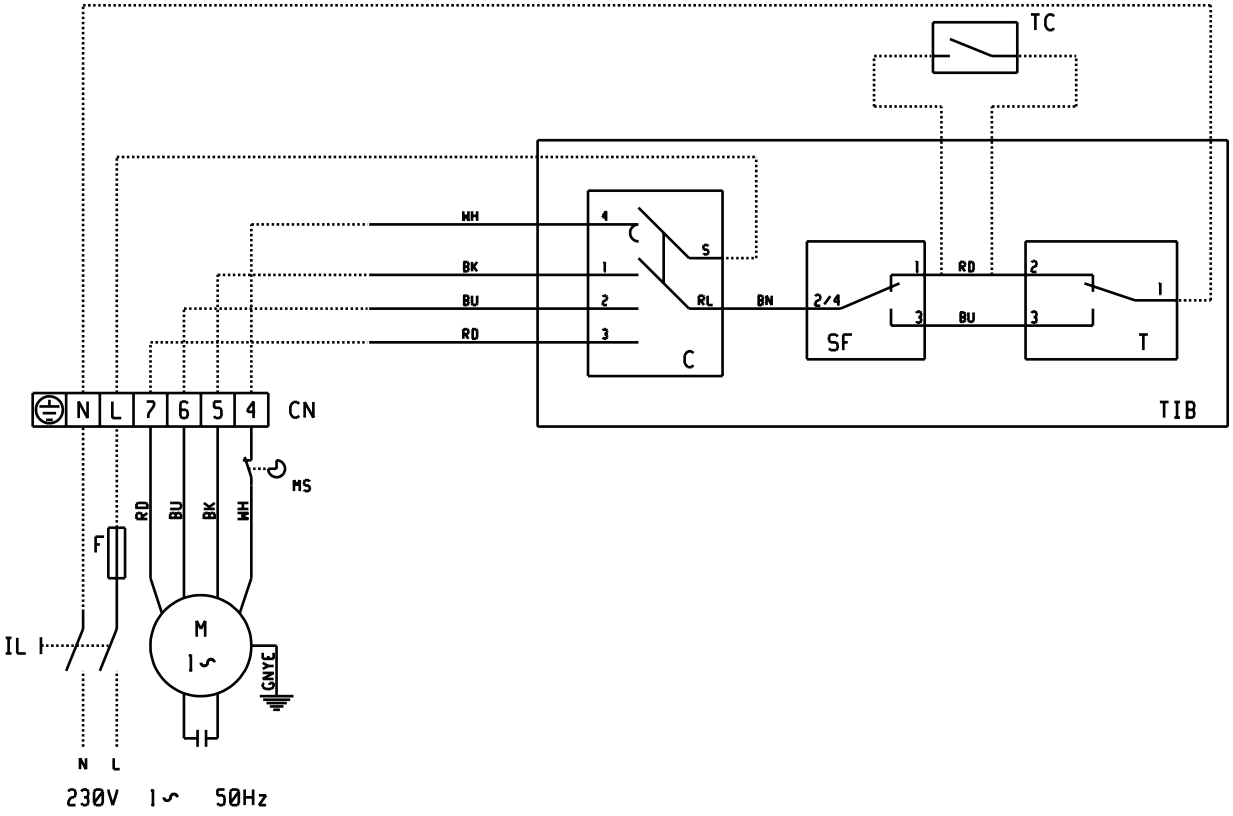
CB SPEED SELECTOR

BU Blue, medium speed
BK Black, maximum speed
C Speed switch
CN Terminal connector (male faston type)
F Safety fuse (not supplied)
IL Circuit breaker (not supplied)
MS Microswitch
RD Red, minimum speed
TC Fan stop thermostat (accessory)
WH White, common



TIB CONTROL PANEL WITH SPEED SWITCH, THERMOSTAT AND COOLING/HEATING SELECTOR

BK Black, maximum speed
BN Brown
BU Blue, medium speed
C Speed switch
CN Terminal connector (male faston type)
F Safety fuse (not supplied)
IL Circuit breaker (not supplied)
MS Microswitch
RD Red, minimum speed
SF Function selector
T Thermostat
TC Fan stop thermostat (accessory)
WH White, common

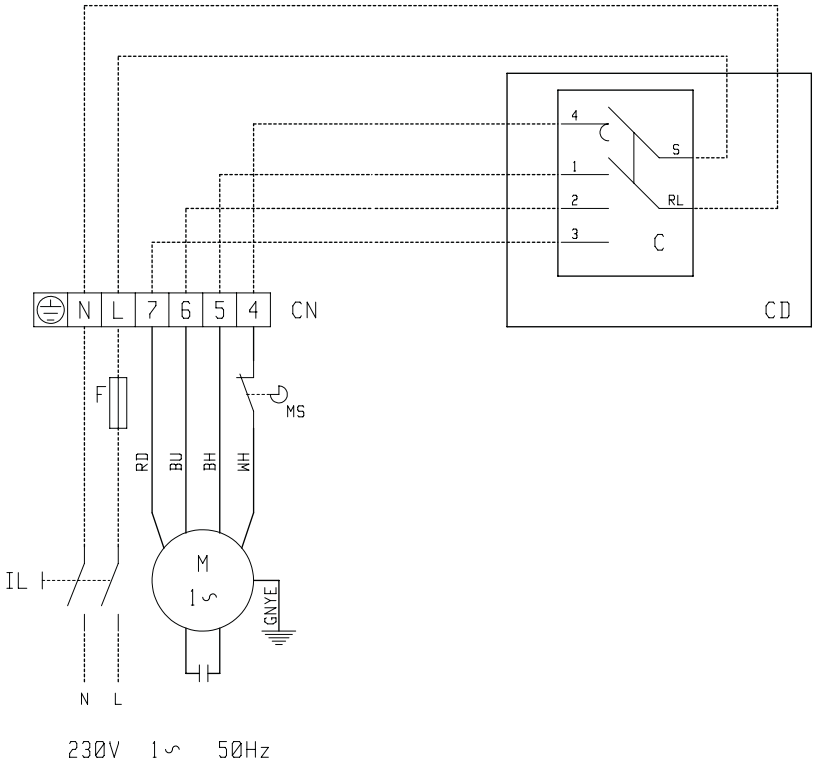


7 WIRING DIAGRAMS

The connections indicated must be made by the installer. For each unit an (IL) switch should be mounted on the power supply, with opening contacts at a distance of at least 3 mm and a suitable protection fuse (F) .

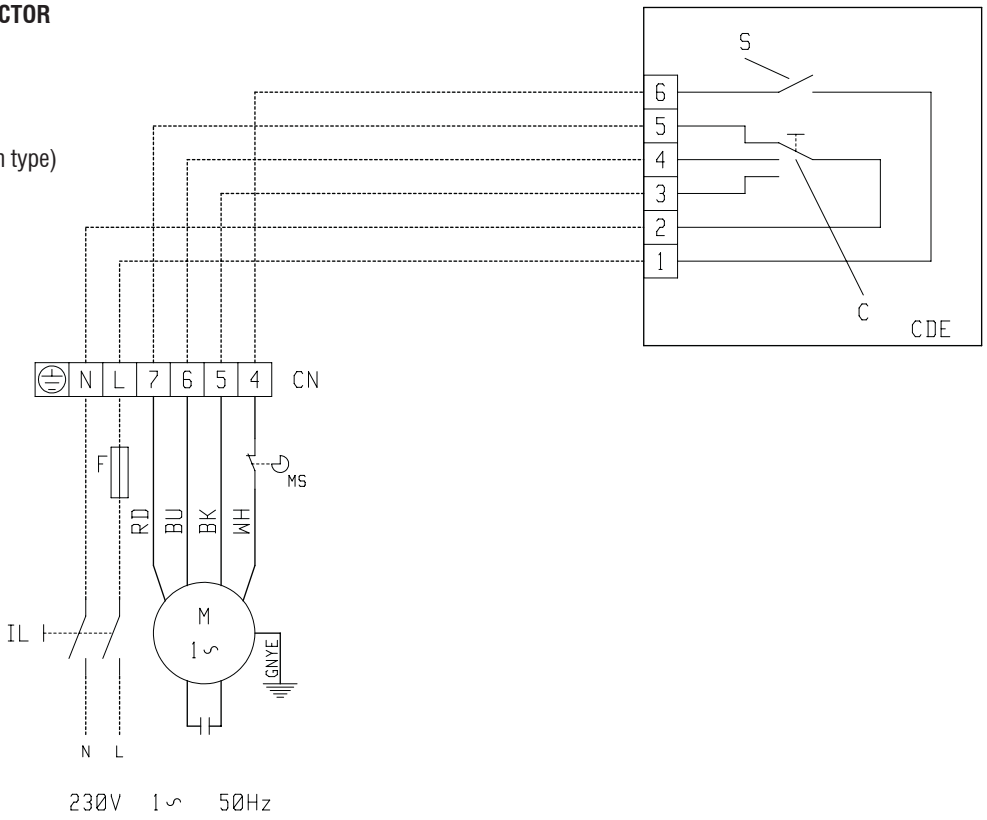
CD **RECESS WALL-MOUNTED SPEED SWITCH**

BU Blue, medium speed
BK Black, maximum speed
C Speed switch
CN Terminal connector (male faston type)
F Safety fuse (not supplied)
IL Circuit breaker (not supplied)
MS Microswitch
RD Red, minimum speed
WH White, common



CDE **WALL-MOUNTED SPEED SELECTOR**

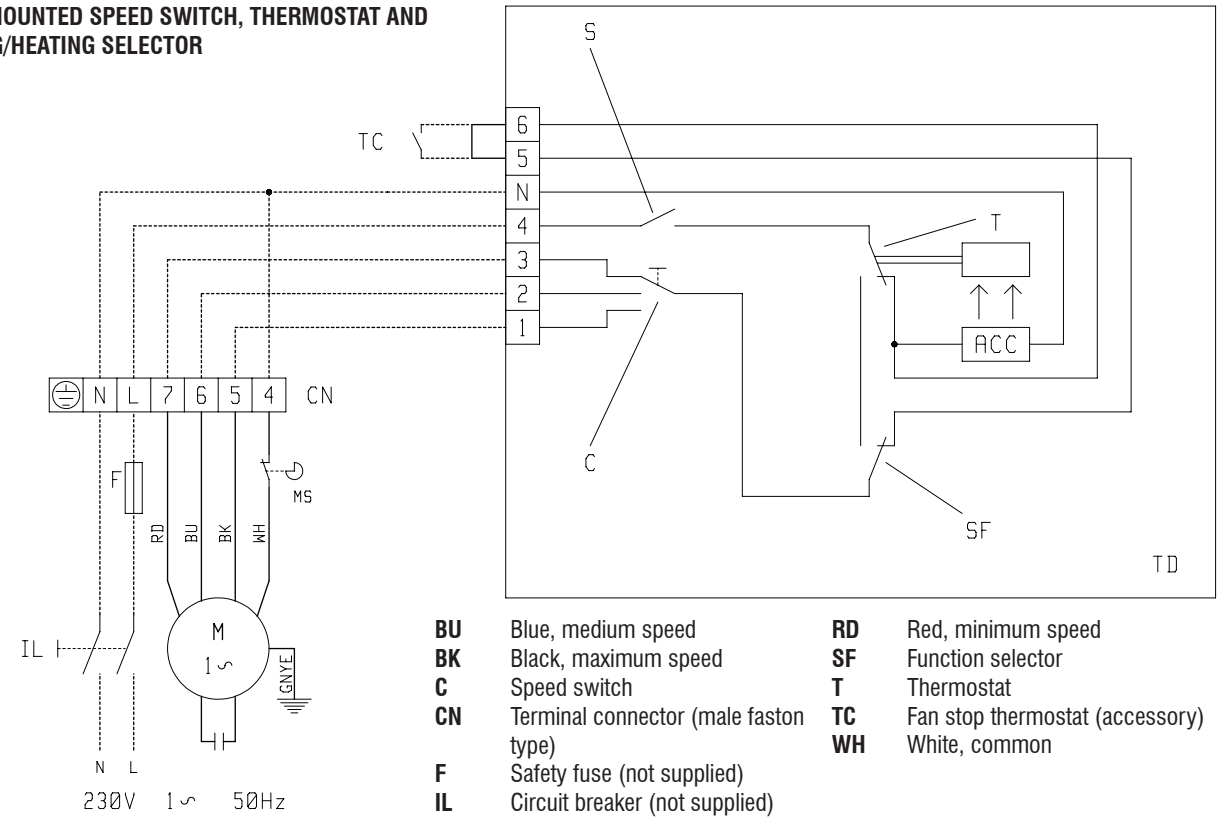
BU Blue, medium speed
BK Black, maximum speed
C Speed switch
CN Terminal connector (male faston type)
F Safety fuse (not supplied)
IL Circuit breaker (not supplied)
MS Microswitch
RD Red, minimum speed
WH White, common



7 WIRING DIAGRAMS

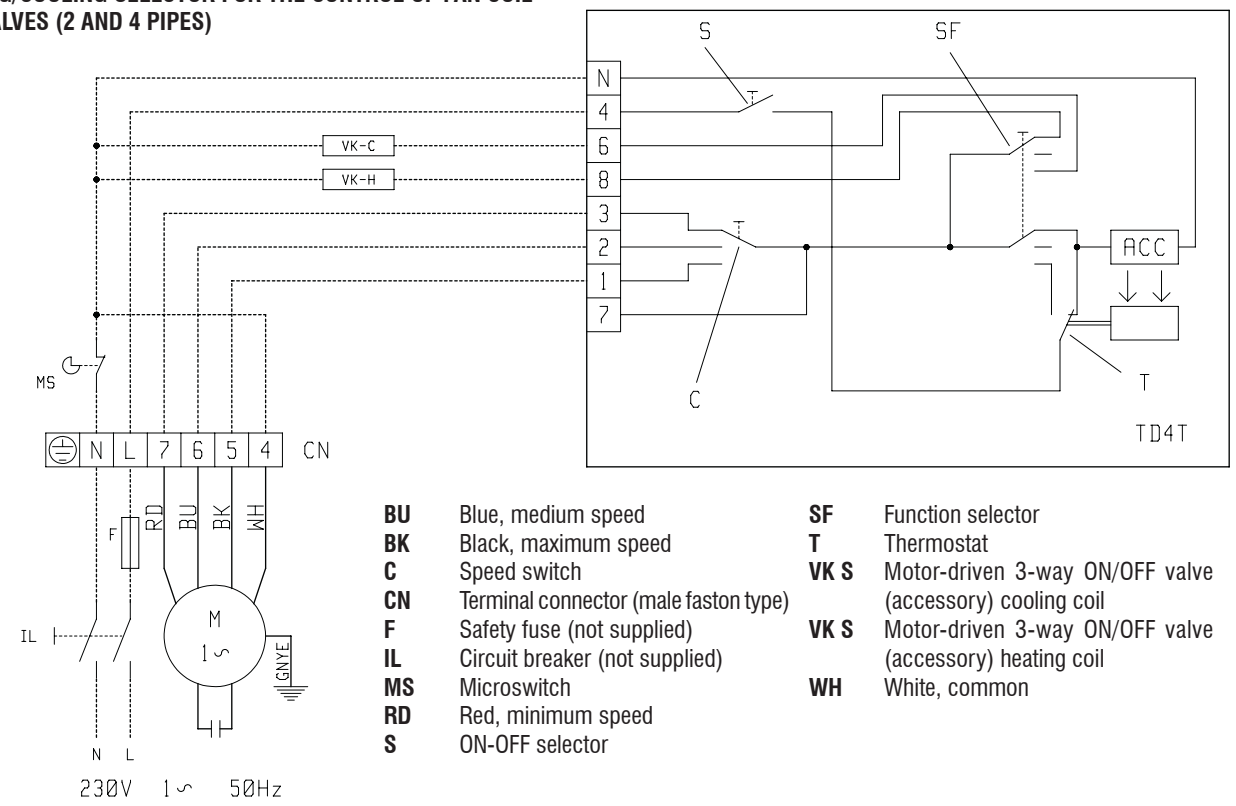
The connections indicated must be made by the installer. For each unit an (IL) switch should be mounted on the power supply, with opening contacts at a distance of at least 3 mm and a suitable protection fuse (F) .

TD WALL-MOUNTED SPEED SWITCH, THERMOSTAT AND COOLING/HEATING SELECTOR



BU	Blue, medium speed	**RD**	Red, minimum speed
BK	Black, maximum speed	**SF**	Function selector
C	Speed switch	**T**	Thermostat
CN	Terminal connector (male faston type)	**TC**	Fan stop thermostat (accessory)
F	Safety fuse (not supplied)	**WH**	White, common
IL	Circuit breaker (not supplied)		
MS	Microswitch		

TD4T WALL-MOUNTED SPEED SWITCH WITH THERMOSTAT AND HEATING/COOLING SELECTOR FOR THE CONTROL OF FAN COIL AND VALVES (2 AND 4 PIPES)



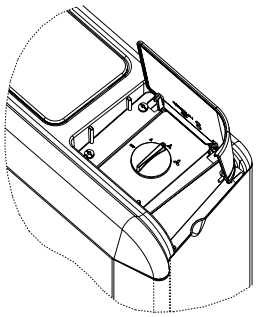
BU	Blue, medium speed	**SF**	Function selector
BK	Black, maximum speed	**T**	Thermostat
C	Speed switch	**VK S**	Motor-driven 3-way ON/OFF valve (accessory) cooling coil
CN	Terminal connector (male faston type)	**VK S**	Motor-driven 3-way ON/OFF valve (accessory) heating coil
F	Safety fuse (not supplied)	**WH**	White, common
IL	Circuit breaker (not supplied)		
MS	Microswitch		
RD	Red, minimum speed		
S	ON-OFF selector		

8 ACCESSORIES

CB

On-board speed switch

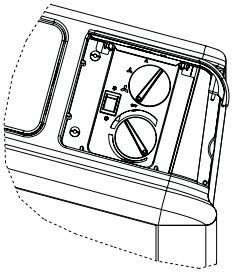
Control panel for installation directly on the unit, featuring a 4 position rotary selector (3 speeds + stop).
It makes it possible to change the fan coil unit operating speed, as well as start-up and stop.



TIB

Speed switch mounted on the unit, thermostat and summer/winter selecting switch

The control panel to be installed on the unit makes it possible fan speed control, room temperature control and selection of operating mode (cooling or heating):
complete with speed selector, electromechanical thermostat with fluid expansion sensor (regulation range +6 / +30°C) and summer/ winter selecting switch



CD

Recess wall-mounted speed selector

Recess wall-mounted control panel, featuring a 4 position rotary selector (3 speeds + stop).
It makes it possible to change the unit operating speed, as well as start-up and stop.

CDE

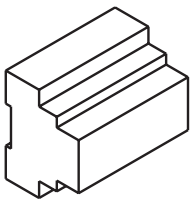
Wall-mounted speed selector

The wall-mounted control includes a 3-speed selector and an ON/OFF switch.
It makes it possible to change the unit operating speed, as well as start-up and stop.

KP

Power interface for connecting in parallel up to 4 fan coils to one controller

The KP interface is used to control up to 4 fan coils (connected in parallel) by means of a single control panel.
Suitable for mounting on DIN guides, it is usually installed in electric control panels.



8 ACCESSORIES

TD

Wall-mounted speed switch, thermostat and heating-cooling selector

Control panel for wall mounting, complete with speed switch, electromechanical thermostat and summer-winter selector.
Fan speed control, room temperature control and selection of operating mode (cooling or heating):
- manual operating speed switching;
- room temperature control in both the heating and cooling modes, achieved by switching the fan off and on, at the manually set speed.

TDC

Wall-mounted speed switch and thermostat

Control panel for wall mounting, complete with speed switch and electromechanical thermostat.
Fan speed control and room temperature control:
- manual operating speed switching;
- room temperature control in heating mode achieved by switching the fan ON and OFF, at the manually set speed.
- room temperature control in both the heating and cooling modes, through the centralised remote summer/winter selecting switch, achieved by switching the fan ON and OFF at the manually set speed.

TD4T

Wall-mounted thermostat switch and summer/winter selecting switch for 2 or 4-pipe systems with valves

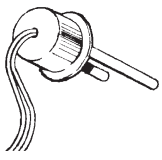
Control panel for wall mounting, complete with speed switch, electromechanical thermostat and summer-winter selector. It governs the adjustment valves, if present. Fan speed control and room temperature control:

- manual operating speed switching;
- room temperature control in both the heating and cooling modes for 2 and 4 pipe systems, achieved by switching the fan off and on, at the manually set speed and opening and closing the regulation valves.

TC

Thermostat controlling the heating mode operation for electromechanical control panels

Automatic resetting fan stop thermostat to stop the fan-drive assembly operation whenever the water temperature within the heat exchanger falls below the set value (42°C). Suitable for heating operation only, it is designed for installation on the finned block exchanger.



8 ACCESSORIES

MYCOMFORT BASE - Wall-mounted microprocessor control, GALLETTI model myComfort base having the following main features:
-room air temperature reading and adjustment
-Water temperature reading (water sensor as an optional)
-Manual and automatic adjustment of fan speed
-manual and automatic switching of heating and cooling mode depending on the water temperature within the heat exchanger or on the room temperature, with a neutral zone that can be selected in the range from 2° to 5°C
The controller is equipped with a large display (3") to show and set all the functions of the unit.
Using the installation kit available,**MYCOMFORT** can be mounted on the unit

MYCOMFORT MEDIUM - Wall-mounted microprocessor control, GALLETTI model MYCOMFORT medium having the following main features:
- Room air temperature reading and adjustment
- Room humidity reading and adjustment
- Water temperature reading (water sensor as an optional)
- Manual and automatic adjustment of fan speed
- Manual and automatic switching of heating and cooling mode depending on the water temperature within the heat exchanger or on the room temperature, with a neutral zone that can be selected in the range from 2° to 5°C
- Serial port for Bus connection
The controller is equipped with a large display (3") to show and set all the functions of the unit.
Using the installation kit available,**MYCOMFORT** can be mounted on the unit

MYCOMFORT LARGE - Wall-mounted microprocessor control, GALLETTI model MYCOMFORT LARGE having the following main features:
-Room air temperature reading and adjustment
- Room humidity reading and adjustment
-Water temperature reading (water sensor as an optional)
-Manual and automatic adjustment of fan speed
-Manual and automatic switching of heating and cooling mode depending on the water temperature within the heat exchanger or on the room temperature, with a neutral zone that can be selected in the range from 2° to 5°C
- Clock and hourly timer-programmed operation
- 2 analogue outputs for controlling modulating devices 0-10V
- 2 digital outputs for controlling (On/Off) external devices (no-voltage contacts)
- Serial port for Bus connection
The controller is equipped with a large display (3") to show and set all the functions of the unit.
Using the installation kit available,**MYCOMFORT** can be mounted on the unit

LED503
Recess wall-mounted microprocessor controller

The proposed microprocessor control panels for Galletti indoor units is completed by the LED503 command with LED display that is designed for recess wall mounting.
CONTROLLER
The control software developed by the Galletti Software Dept., features:
- manual selection of fan speed;
- automatic selection of fan speed according to the difference between the set temperature and the room air temperature;
- manual selection of heating/cooling operating mode;
- automatic selection of heating/cooling operating mode;
- control of 1 or 2 ON/OFF valves;
- control of additional heating element;
- on board timer function to detect the actual ambient temperature;
- reading of air ambient temperature, set point, fan speed and mode selection on the LED display.

MCSWE - Water temperature sensor for microprocessor controls model MYCOMFORT

Directly connected to the microprocessor control model **MYCOMFORT** to measure the water temperature through the heat exchanger.
If the temperature detected is less than 17°C, the unit will operate in the cooling mode and the controller will use the summertime temperature scale (19 - 31°C); if the temperature detected is greater than 37°C the unit will function in the heating mode and the controller will use the wintertime temperature scale (14 / 26°C). If the temperature detected by the probe is in the range of 17°C to 37°C, the controller will inhibit operation of the fan coil unit.

MCSUE - Humidity sensor for on-board microprocessor controls model MYCOMFORT MEDIUM and MYCOMFORT LARGE.

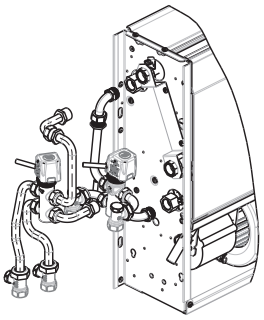
EVO wall-mounted microprocessor split controller
Main functions:

- Room air temperature reading and adjustment
- Room humidity reading and adjustment
- Water temperature reading (water sensor as an optional)
- Manual and automatic adjustment of fan speed with step and modulating ON/OFF controller
- Automatic adjustment of valve opening with ON/OFF and modulating controller
- Manual and automatic switching of heating and cooling mode depending on the water temperature within the heat exchanger or on the room temperature, with a selectable neutral zone
- Clock and hourly timer-programmed operation
- 3 analogue outputs for controlling modulating devices 0-10V
- Economy Function and minimum Temperature
- 1 digital output for controlling On/Off external devices (no-voltage contacts)
- Serial port for RS485 connection
- Serial port for OC connection
- 3 digital inputs for remote setting of ON OFF, Economy, Operating modes

The controller is equipped with a programmable display (3") to show and set all the functions of the hydronic unit through a dedicated interface with the parameter description.

8 ACCESSORIES

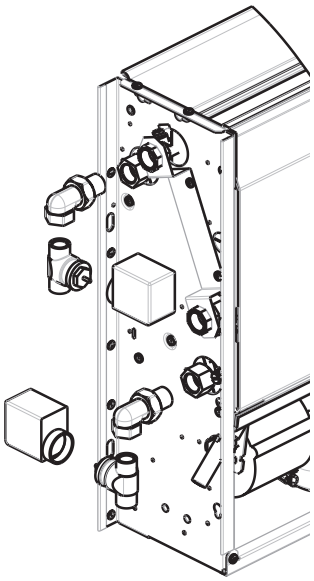
VK3
ON-OFF 3-way motor driven valve, with hydraulic kit
The kit includes:
- Brass normally closed 3-way valve / 4 connections with built-in by-pass, maximum operating pressure 16 bar.
- Electrothermal actuator with ON/OFF functions (total opening time 4 minutes), 230 V power supply;
- Hydraulic kit for installing the valve on the heat exchanger, complete with 2 holders for balancing and regulating the fan coil unit.



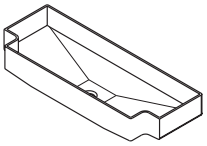
The kit is available for standard heat exchanger and 1-row DF additional heat exchanger

VK2
ON-OFF 2-way motor driven valve, with hydraulic kit
The kit includes:
- Brass normally closed 2-way valve / 2 connections with built-in by-pass, maximum operating pressure 16 bar.
- Electrothermal actuator with ON/OFF functions (total opening time 4 minutes), 230 V power supply;
- Hydraulic kit for the installation of the valve on the heat exchanger.

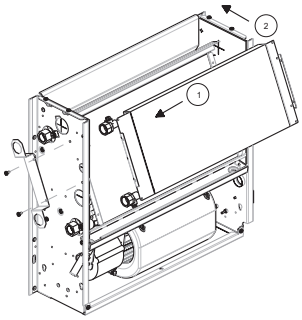
The kit is available for standard heat exchanger and 1-row DF additional heat exchanger



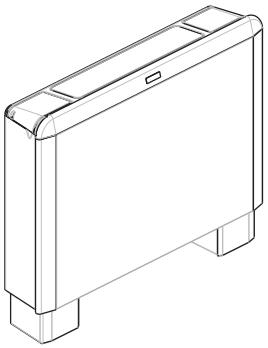
BV
Auxiliary water drip tray
The auxiliary drip tray is used to collect the condensate from the valve and the pressure regulator.



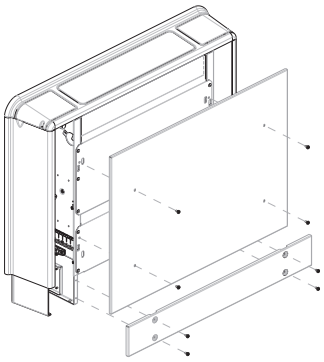
DF S
Additional heat exchanger for 4-pipe systems (hot water circuit)
Additional heat exchanger made with copper piping and aluminium fins: it is suitable for 4-pipe systems and is connected to the heating circuit.
The heat exchanger comes complete with air vent valves on the system connection openings. The kit comes compete with locking bracket to avoid the manifold rotation during plumbing connection operations.



ZLS
Pair of support covering feet for FLAT S models
The Z covering feet, designed for the installation on FLAT L models are supplied in pairs and comprise supports for fastening to the base unit and outer coverings for fastening to the cabinet.
They are used to conceal the plumbing (pipes leading up from the floor) and in cases where the fan coil unit cannot be anchored to the wall.
The height of covering feet is 100 mm.



PVS
Painted rear covering panel for FLAT S models
This panel is suitable for wall mounted FLAT S fan coils with apparent rear part. For instance: installation against glass walls. The kit includes an upper rear covering panel and a lower rear covering panel. The fan coils using a rear covering panel cannot be wall mounted. In the case of FLAT L they must be combined with support covering feet Z.



9 INSTALLATION REQUIREMENTS

The fan coils should be installed in a position where the room can be cooled or heated evenly, on walls able to withstand their weight.
It is advisable to install any accessories on the standard unit prior to positioning the latter.
For installation and use of accessories, please refer to the relative technical sheets.
To guarantee the proper functioning of the unit and access for routine and extraordinary maintenance purposes, it is necessary to comply with the minimum installation clearance requirements (see overall dimensions section).

Install any remote control panel in an easily accessible position allowing the user to set the functions while ensuring an accurate reading of the ambient temperature, if provided . You should avoid:
- positions directly exposed to sunlight;
- positions exposed to direct currents of warm or cold air;
- placing obstacles that impede an accurate temperature reading.

During wintertime periods of quiescence, drain water from the system, to prevent ice from forming. If anti-freeze solutions are used, check for their freezing point using the table below.

Glycol by weight (%)	Freezing temperature (°C)	Capacity adjustment	Pressure drop adjustment
0	0	1.00	1.00
10	-4	0.97	1.05
20	-10	0.92	1.10
30	-16	0.87	1.15
40	-24	0.82	1.20

10 MAINTENANCE

FLAT S type fan coils do not have particular maintenance requirements: it is sufficient to periodically clean the air filter.
The motor requires no maintenance since it has self-lubricating bearings.
It is recommended to replace the air filter once a year, using an original replacement filter; the fan coil unit model is specified on the identification plate on the inside of the side panel.
Always consult the "Installation, use and maintenance manual" provided with the unit when undertaking maintenance and cleaning.

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