



CULTRA STUDIOLINE

Room air conditioning module




OPERATING CONDITIONS

- Operating liquid: water / water-glycol mixture
- Max. operating pressure in the battery: 8 bar
- Max. air outlet temperature: 40 °C
- Maximum relative humidity in the environment: 60%
- Power supply: 230 V AC 50/60 Hz
- Control voltage: 0...10 V DC signal

ADVANTAGES

- Flexible mounting and installation possibilities
- High cooling and heating capacities
- Control technology adapted to any demand
- Low noise generation
- Energy-efficient, decentralised air-conditioning
- Low power consumption
- Easy installation (connection prepared)
- Convenient and fast maintenance through removable inspection cover and filter with clip system.
- Concealed mounting is possible, without losing useable surface area
- Efficient EC motors with continuous control 0...10 V

PERFORMANCE DATA

Size =	CSL-1-L4	CSL-2-L4	CSL-3-L4	
 $V_L =$	587	777	904	m ³ /h
$L_{WA} =$	40	39	40	dB(A)
$W =$	48	47	51	W
 $Q =$	2,93	4,06	5,17	kW
 $Q_T =$	3,45	4,59	5,82	kW
$Q_S =$	2,59	3,45	4,28	kW

Heating: $t_{w1} = 65$ °C, $t_{w2} = 55$ °C, $t_r = 20$ °C

Cooling: $t_{w1} = 7$ °C, $t_{w2} = 12$ °C, $t_r = 27$ °C, HR = 47 %

Technical data according to (EU) 2016/2281 for 4-pipe design with clean filter at maximum speed.

INTENDED USE

Intended use as fan coil unit according to Commission Regulation (EU) 2016/2281 of 30 November 2016.

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GENERAL DESCRIPTION

The room air-conditioning module Cultra Studioline can be positioned either in front of the wall or integrated in the wall, thus preventing costly waste of office space. The dimensions of the room air-conditioning module permit installation into walls, ceilings or floors. Later in-front-of-the-wall installation is also possible.

For integration of the room air-conditioning module in the wall, sliding connection spigots are required in order to connect the air intake and outflow grilles to the module (at an extra charge). This architectural flexibility allows an absolutely free use of space.

The room air-conditioning module Cultra Studioline is a decentralised recirculating air cooling device for offices and medical practices. It's also particularly suitable for sound studios, as it satisfies the requirements of GK 15 in combination with room-side sound measures according to DIN 15 996.

The plug-in room air-conditioning module allows for a cost-efficient and quick installation. In case of changes of room utilization or rebuilding of wall tiles, a quick moving of the room air conditioning module is possible. The user can take the room air-conditioning module with him when he is moving, just like normal office furniture.

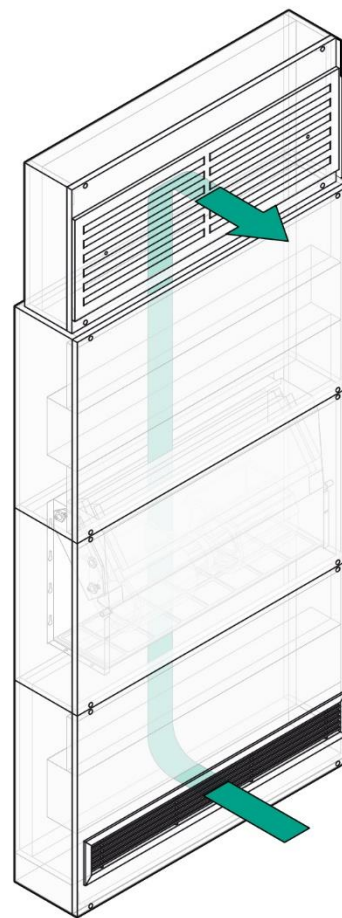
Its sensible cooling power is up to 4000 W and the air volume is up to 900 m³/h. For larger rooms, several modules can be used. The device is available in 2-pipe or 4-pipe design. The operating point of the device can be controlled continuously with a 0...10 V signal.

For maintenance purposes, the central cover can be removed. The register and the fan are easy accessible without special tools. The built-in filter is directly attached to the integrated fan convector and can be easily exchanged thanks to the clip fastening.

As a standard feature, the room air-conditioning module CULTRA-Studioline is equipped with an air intake grille type PA-01 and an air outflow grille type DBB. The wide range of SCHAKO supply air and return air diffusers offers a wide scope for the design of the device.

OPERATION

Room air is drawn in through the air intake grille and cleaned by the built-in filter. The integrated reverse silencer reduces the flow generated noise. The air is then taken through the cooling or heating register and is temperature-controlled. A further deflection sound absorber is connected downstream for noise reduction. The temperature-controlled air is then blown out into the room again through the air intake grille. The room air-conditioning module can be operated with circulating and/or fresh air (at an extra charge).



DEVICE DESCRIPTION

1 Housing

--- Galvanised sheet steel without paint.

2 Secondary air grille type PA-01

--- Extruded anodised aluminium profiles painted to RAL 9010 (white).

3 Supply air diffuser type DBB

--- Faceplate made of sheet steel painted to RAL 9010 (white) with plastic blades, similar to RAL colour 9010 (white).

4 Aquaris Silent

--- 4.1 Heat exchanger

- The heat exchanger unit can consist of a single register with 3 rows for cooling and heating operation (for connection to a 2-pipe system) or of two registers with 3+1 rows of pipes (for connection to a 4-pipe system).
- The registers consist of copper pipes, aluminium ribs, a manual ventilation and drainage system as well as a frame made of galvanised sheet steel.
- The register length depends on the size of the device.

--- 4.2 Motorised fan

- The motorised fan consists of double-sided, intake-operated, dynamically balanced, centrifugal blowers with forward directed blades and direct actuator.
- Highly efficient EC motors equipped with a maintenance-free ball bearing for a long service life.
- The EC fan can be activated by 0...10 V and is almost infinitely variable.

--- 4.3 Filter

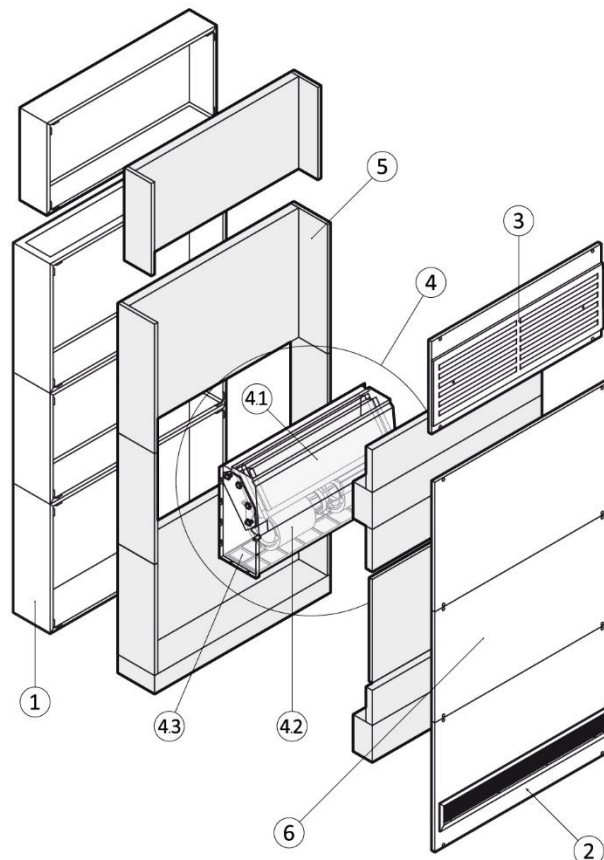
- Efficiency ISO coarse < 40% according to ISO 16890.
- Filter with synthetic filter medium in a plastic frame.
- Thanks to the holding clips, the filters can be dismantled without using tools.

5 Inner insulation

--- Insulation material, building material class B1: not easily flammable.

6 Inspection cover

--- Galvanised sheet steel.



MODELS

CS-...	Room air conditioning module
{-1, -2, -3}	Size
{-R1, -R3, -L4}	System and rows of pipes
{2500... 3000}	Total height
{-VR, -H0}	Mounting position
{-Wx}	Water connection position
{-Sx}	Electric connection position
{-Kx}	Condensate connection position

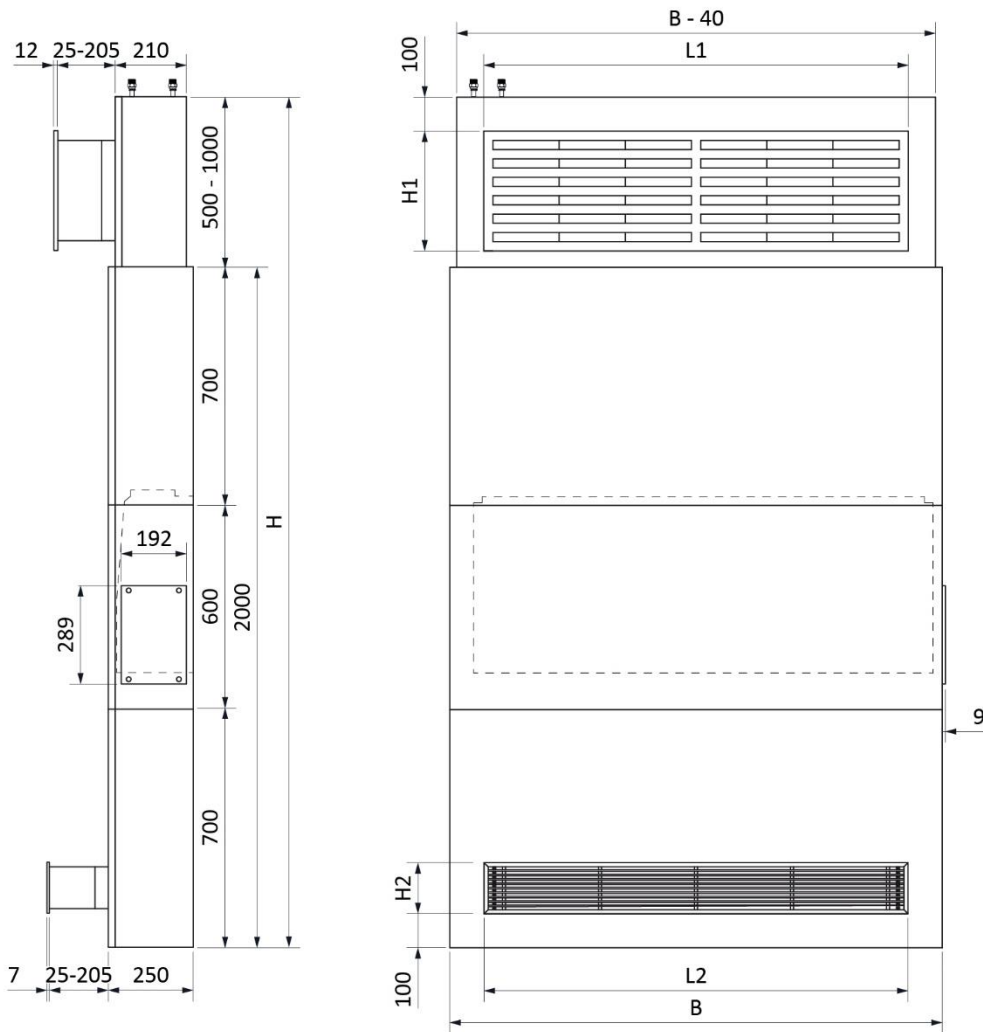
OPTIONS

- Housing painted to different RAL colours.
- Adjusting legs.
- Diffusers, colour design in different RAL colours.
- Diffusers with frame for flush-mounted installation.
- Primary air connection spigot.
- Valves and actuators for hydraulic regulation.
- Additional control and regulation elements.
- Condensate pump.

ACCESSORIES

- Hydraulic regulation.
- 6-way ball valve and rotary drives.
- Room thermostat.

MODELS, DIMENSIONS AND WEIGHTS

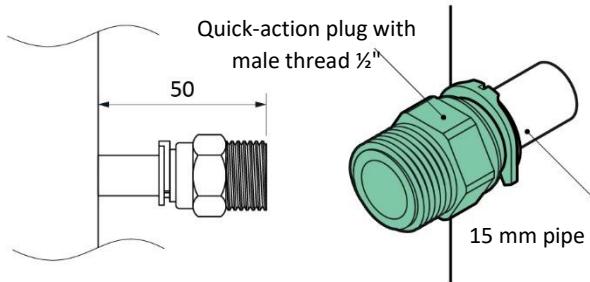
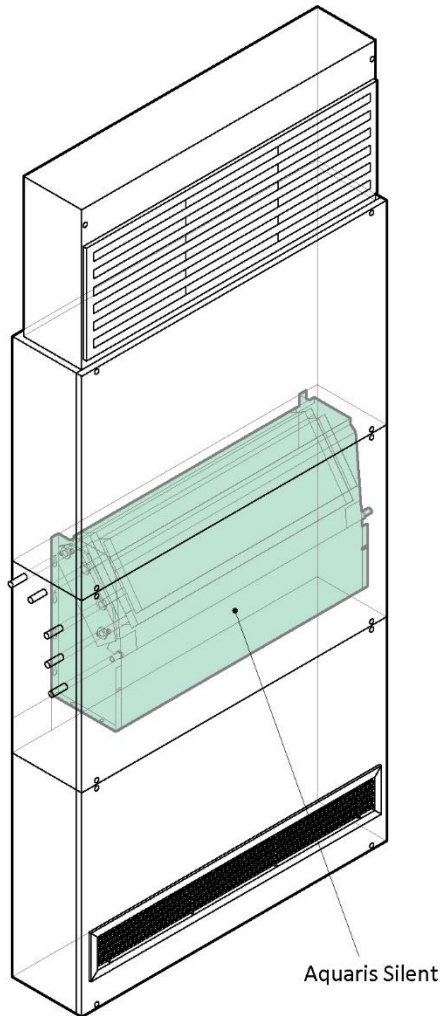


Size	Dimensions (mm)						Weight (kg)
	Cultra Studioline		Supply air diffuser		Secondary air grille		
	B	H	L1	H1	L2	H2	
1	900	2500 <H< 3000	650	352	648	252	74
2	1100		1050	352	1048	152	91
3	1450		1250	352	1248	152	110

HOUSING COLOUR

- 0 = housing unpainted (standard)
- 1 = black housing, painted to RAL 9005
- 2 = white housing, painted to RAL 9010
- 3 = white housing, painted to RAL 9016
- 4 = grey housing, painted to RAL 9006
- Further colours are available upon request

HEAT EXCHANGER

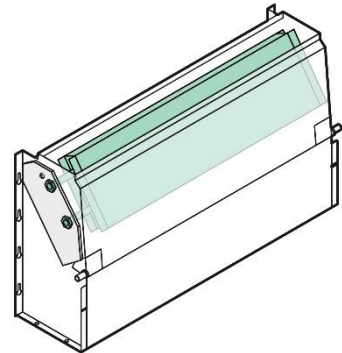
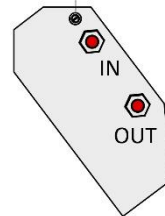


NOTE

To prevent deposits and corrosion, the quality of the water for filling the registers must comply with the regulations of VDI 2035 and DIN 50930.

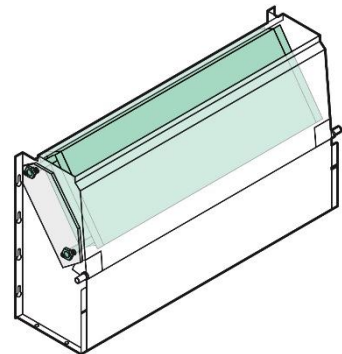
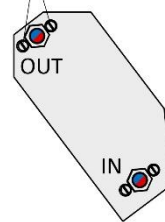
R1 = 2-pipe register 1 row of pipes (heating)

Ventilation valve



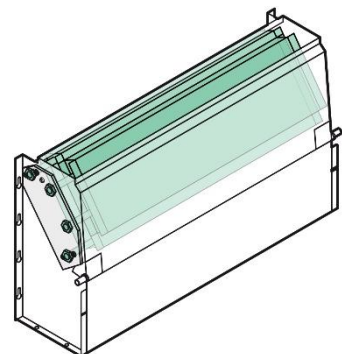
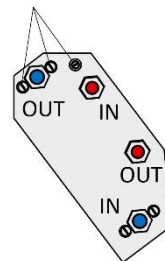
R3 = 2-pipe register 3 rows of pipes (cooling or heating) (standard)

Ventilation valve



L4 = 4-pipe register 1 and 3 pipe rows (cooling and heating)

Ventilation valve

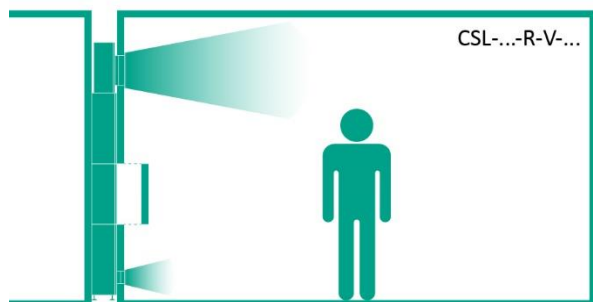


NOTE

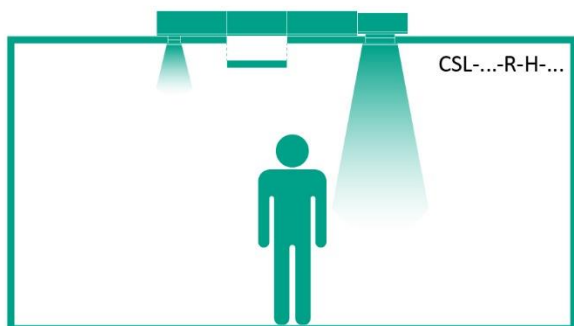
The registers are equipped ex works with a manual bleed valve. Use the air vents always in top position

INSTALLATION POSITION

VR = mounting type vertical, secondary air grille and inspection in the room (standard)



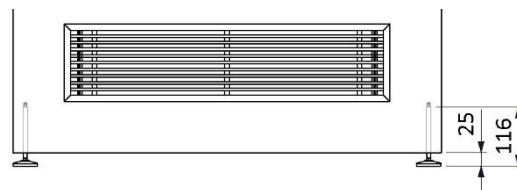
H0 = mounting type horizontal in the ceiling (not compatible with adjusting legs)



ADJUSTING LEGS

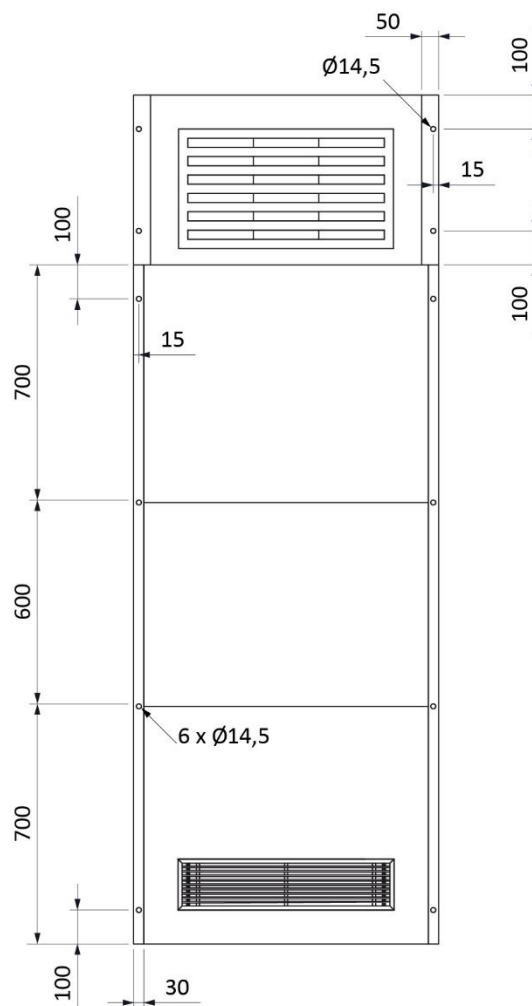
0 = without adjusting legs (standard)

1 = with adjusting legs (not compatible with horizontal mounting)



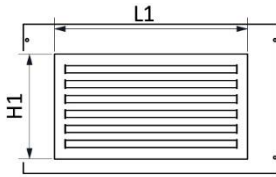
NOTE

Installation position -H0 with mounting bracket:



SUPPLY AIR DIFFUSER

D1 = DBB-A

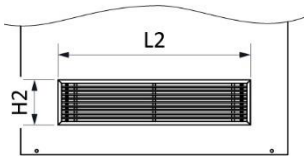


Size	L1 x H1 (mm)		
	CSL-1	CSL-2	CSL-3
DBB-A	650 x 352	1050 x 352	1250 x 352

--- Further air diffusers are available upon request

SECONDARY AIR GRILLE

R1 = PAZ



Size	L2 x H2 (mm)		
	CSL-1	CSL-2	CSL-3
PAZ	648 x 252	1048 x 152	1248 x 152

--- Further air diffusers are available upon request

COLOUR OF THE AIR DIFFUSERS

- 22 =** RAL 9010 (white)(standard)
- xy =** faceplate/frame colour x, blade/nozzle colour y (for x, y, see table)
- Further colours are available upon request

Faceplate | Frame | Blade PAZ:

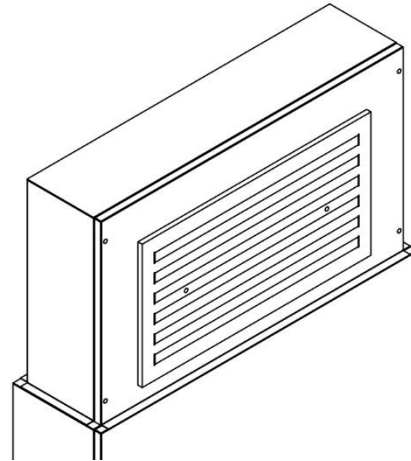
x	Colour
0	unpainted
1	Black RAL 9005
2	White RAL 9010
3	White RAL 9016
4	Grey RAL 9006

DBB blade:

y	Colour
1	Colour similar to RAL 9005 (black)
2	Colour similar to RAL 9010 (white)

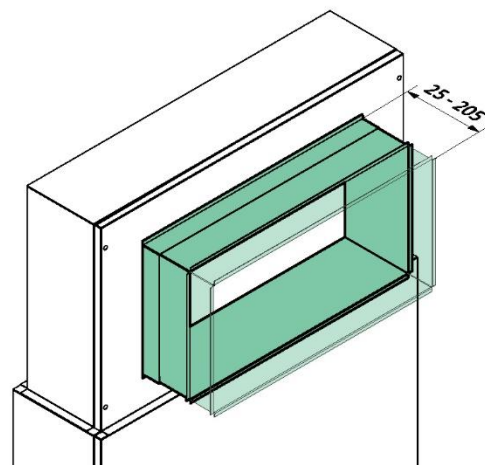
SLIDING CONNECTION SPIGOT FOR AIR DIFFUSERS

M0 = without sliding connection spigot (air diffusers in the device) (standard)



M1 = with sliding connection spigot, adjusting range: 25 to 105 mm

M2 = with sliding connection spigot, adjusting range: 75 to 205 mm



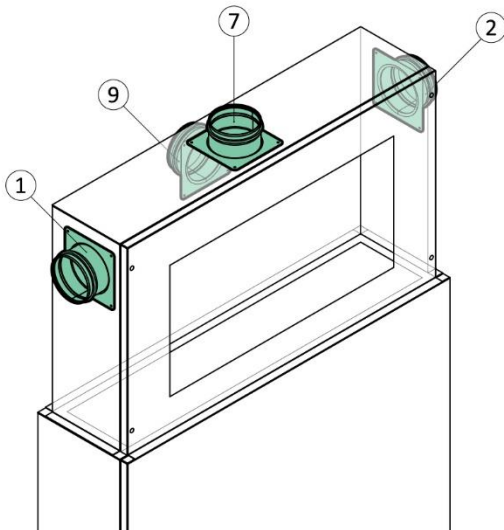
AIR CONNECTIONS

PRIMARY AIR CONNECTION SPIGOT

- P0** = without primary air connection spigot (standard)
- P1** = primary air connection spigot on the left side of the box (not compatible with water connection position -W1)
- P2** = primary air connection spigot on the right side of the box (not compatible with water connection position -W2)
- P7** = primary air connection spigot on the top centre of the box
- P9** = primary air connection spigot in the centre rear of the box

NOTE

The primary air connection spigot positions are defined based on the inspection cover.



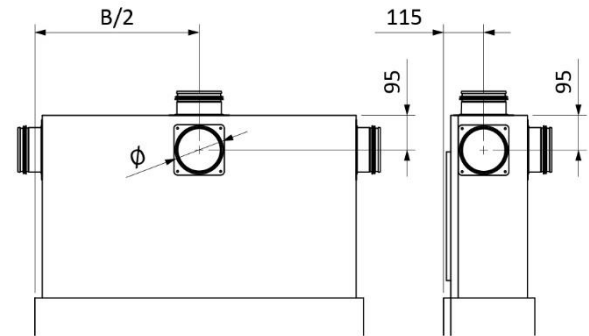
PRIMARY AIR SPIGOT DIAMETER

- 0** = without primary air connection spigot (standard)
- 1** = primary air connection spigot DN78
- 2** = primary air connection spigot DN98
- 3** = primary air connection spigot DN123

NOTE

Feeding of primary air (V_p) in the box of the device reduces the air flow of the fans (V_L).

Dimensions



POSITION OF THE CONNECTIONS

NOTE

Connections are defined based on the inspection cover.

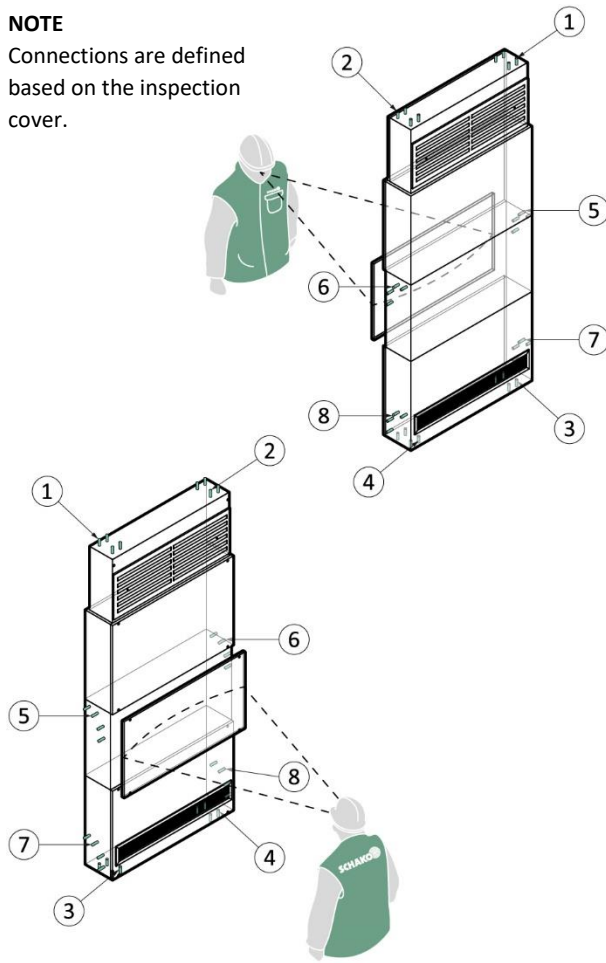


Diagram of 4-pipe design (-L4)

- 1: Top left
- 2: Top right
- 3: Bottom left
- 4: Bottom right
- 5: Centre left side
- 6: Centre right side
- 7: Bottom left side
- 8: Bottom right side

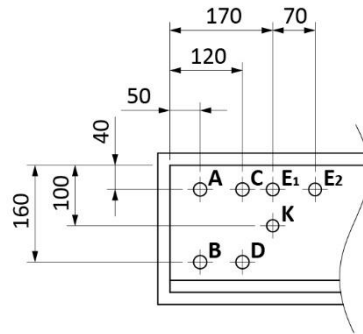
Connection

- A: Cold water outlet
- B: Cold water intake
- C: Hot water intake
- D: Hot water outlet
- K: Condensate connection
- E1: Electric connection for fan
- E2: Electric connection for actuators and condensate pump

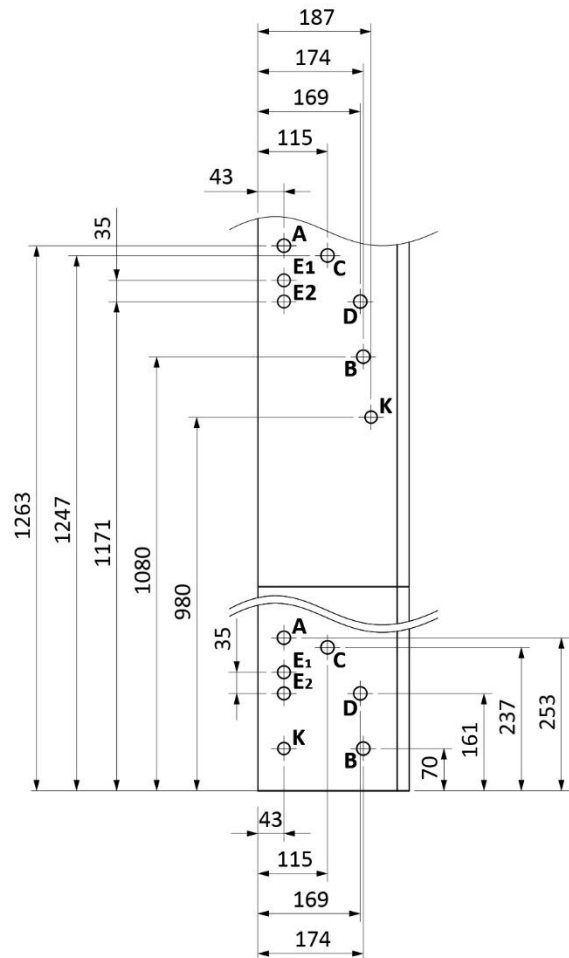
NOTE

Dimensions for left-side connection. The connections on the right side are symmetric.

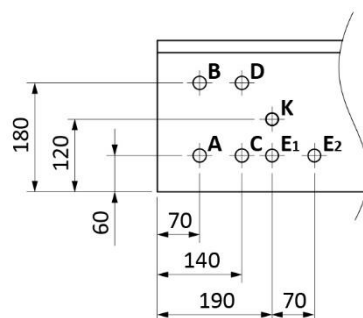
Dimensions of position 1



Dimensions of position 5 and position 7



Dimensions of position 3



WATER CONNECTION

WATER CONNECTION POSITION

- W1** = water connection top left (not compatible with primary air connection spigot position -P1)
- W2** = water connection top right (not compatible with primary air connection spigot position -P2)
- W3** = water connection bottom left
- W4** = water connection bottom right
- W5** = water connection centre left side
- W6** = water connection centre right side
- W7** = water connection bottom left side
- W8** = water connection bottom right side

HYDRAULIC REGULATION

- 000** = on-site mounting (pieces are supplied loose for on-site mounting outside the room air-conditioning module)
- xyz** = cooling valve x, heating valve y, actuators z are mounted ex works (not compatible with valves $NW \geq 1"$) (for x, y and z, see table)

Pressure independent control valves

x, y	Model	DN	H ₁₀₀ (mm)	Connection (Zool)	V _{w min-max} (l/h)
1	VPP46.10L0.2	10	2,5	G ½	30 - 200
2	VPP46.10L0.4	10	4,5 5,0	G ½	65 - 333 65 - 370
3	VPP46.15L0.2	15	2,5	G ¾	30 - 200
4	VPP46.15L0.6	15	2,5	G ¾	100 - 575
5	VPP46.20F1.4	20	4,5 5,0	G 1	200 - 1190 220 - 1330

Maximum allowed differential pressure = 600 kPa

Rp = female thread | G = male thread

DN = nominal width | H100 = nominal stroke | VW = water volumetric flow

NOTE

The device is preset ex works to the maximum flow unless otherwise specified.

Actuators

z	Model	Type	Actuator signal	Operating voltage
1	SAST127474	T	ON/OFF - NC	230 V AC 50/60 Hz
2	SAST127475	T	ON/OFF - NC	24 V AC/DC 50/60 Hz
3	SAPV127957	T	DC 0...10 V - NC	24 V AC 50/60 Hz
4	SAPV128561	T	DC 0...10 V - NC	24 V DC
5	SMPV132351	M	DC 0...10 V	24 V AC/DC 50/60 Hz
6	SMPO132353	M	DC 0...10 V	24 V AC/DC 50/60 Hz

T = thermal | M = motorised

ELECTRIC CONNECTION

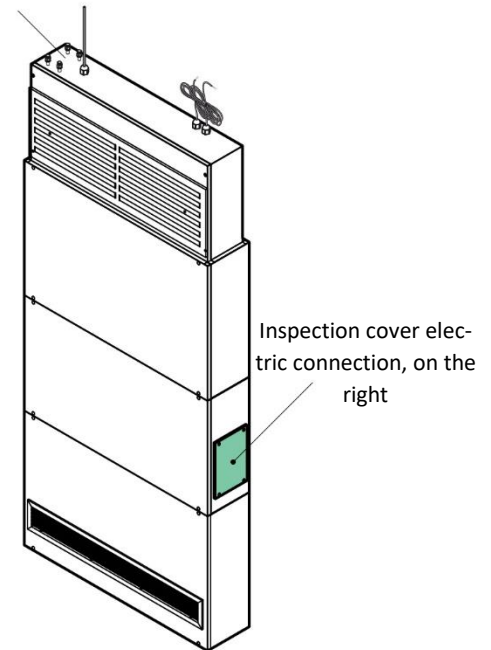
ELECTRIC CONNECTION POSITION

- S1** = electric connection top left
- S2** = electric connection top right
- S3** = electric connection bottom left
- S4** = electric connection bottom right
- S5** = electric connection centre left side
- S6** = electric connection centre right side
- S7** = electric connection bottom left side
- S8** = electric connection bottom right side

NOTE

To facilitate installation and maintenance of the electrical connections, the device is equipped with a tool-free removable inspection cover on the opposite side of the hydraulic connections.

Water connection on the left



ADDITIONAL CONTROL AND REGULATION ELEMENTS

- 0** = without additional control and regulation elements (standard)
- 1** = with fault message output

CONDENSATE DRAIN

CONDENSATE CONNECTION

- K1** = condensate connection top left (with condensate pump only)
- K2** = condensate connection top right (with condensate pump only)
- K3** = condensate connection bottom left (not compatible with a condensate pump)
- K4** = condensate connection bottom right (not compatible with a condensate pump)
- K5** = condensate connection centre left side
- K6** = condensate connection centre right side
- K7** = condensate connection bottom left side (not compatible with a condensate pump)
- K8** = condensate connection bottom right side (not compatible with a condensate pump)

CONDENSATE PUMP

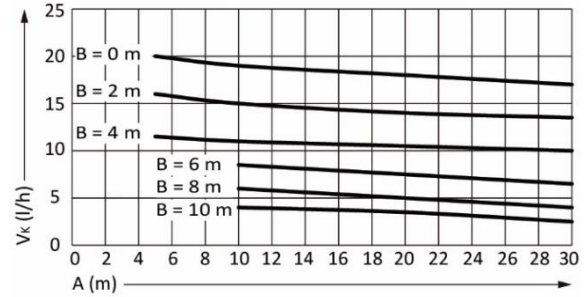
- 0** = without condensate pump (standard)
- 1** = with condensate pump Si-10, mounted ex works

Model	Si-10
Maximum volumetric flow	20 l/h
Maximum delivery height	10 m
Maximum pressure	14 m
Sound level at 1 m	≤ 28 dB(A)
Power supply	230 V AC - 50/60 Hz - 14 W
Float switch	ON: 18 mm OFF: 12 mm ALARM: 21 mm
Safety contact	NC 8 A resistive load-250 V
Thermal protection	115 °C (automatic restart)
Operating cycle	100 % continuous
Protection	IP54
Dimensions	43,5 x 66 x 77 mm

NOTE

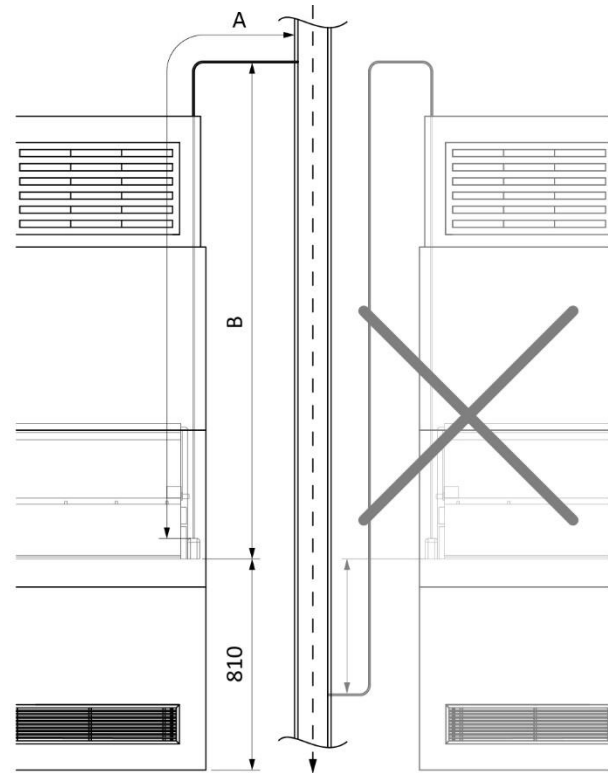
If the condensate pump is not used for a longer period of time, it is recommended to close the drain of the pan to prevent the penetration of dirt.

Functional diagrams



NOTE

The condensate drain must be located above the level of the condensate outlet.



NOTE

The condensate pump is equipped with a potential-free fault message contact NC with a max. switching power of 8 A/250 V resistive load. The contact must be connected in such a way that the cooling system is closed in the event of a fault (open contact).

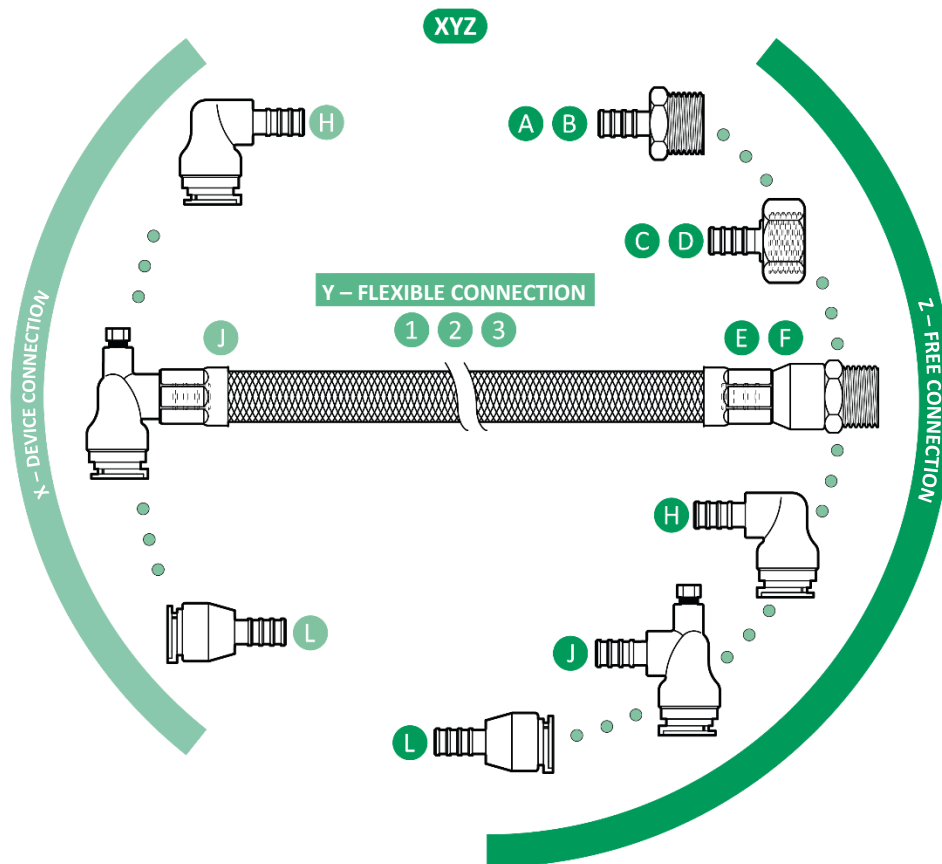
ACCESSORIES

NOTE

All accessories are supplied loose for on-site mounting outside the room air-conditioning module.

HYDRAULIC CONNECTIONS

Hxyz = with device connection (x), flexible connection (y) and free connection to the hydraulic network (z) (for x, y, z, see diagram)



x, z	Connection	Type	Connection	
			(mm)	(")
A	AG	External thread	-	AG ½"
B	AG	External thread	-	AG ¾"
C	ÜMF	Flat seal spigot nut	-	IG ½"
D	ÜMF	Flat seal spigot nut	-	IG ¾"
E	R-AG-D	Rotating male thread	-	AG ½"
F	R-AG-D	Rotating male thread	-	AG ¾"
H	C-RV	Bend plug-in fitting	15	-
J	CE-RV	Bend plug-in fitting with ventilation	15	-
L	RV	Straight connector / plug-in fitting	15	-

Flexible connection according to DIN 4726.

y	Flexible connection	Length (mm)	DN (mm)
1	EDE-13	500	13
2	EDE-13	800	13
3	EDE-13	1200	13

6-WAY BALL VALVE

- 1°- The water volumetric flow [m³/h] can be found in the technical data or design program for heating and cooling.
- 2°- Determination of the differential pressure Δp_{v100} above the completely opened valve. Experience shows that a differential pressure of 0.05 to 0.2 bar is sufficient in most systems.
- 3°- Calculation of the volumetric flow k_v [m³/h]

$$k_v = \frac{V_w}{\sqrt{\Delta p_{v100}}}$$

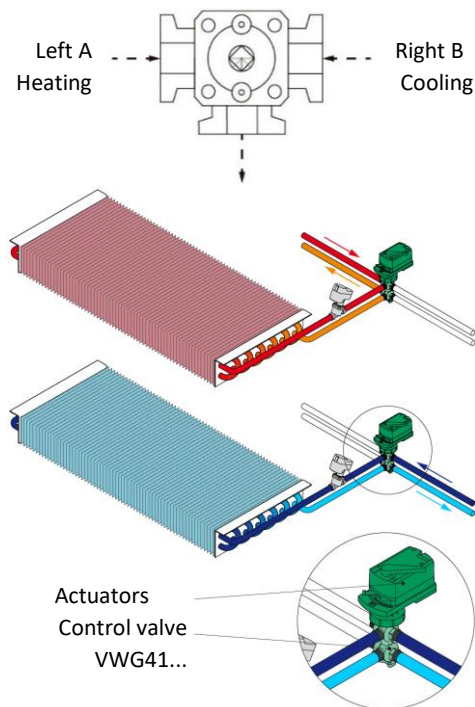
- 4°- Valve selection based on the table

Legend of the table:

- ✓ = nominal value of volumetric flow possible
- = nominal value of volumetric flow not possible
- * = volumetric flow is limited. For DN15 = 1.6 m³/h, for DN20 = 3.45 m³/h, for DN25 = 4.0 m³/h
- DN = nominal width
- k_{vs} = Nominal value of volumetric flow of cold water (5...30 °C) through the fully open ball valve at a differential pressure of 100 kPa 1 bar

ROTARY DRIVE FOR 6-WAY BALL VALVE

Code	Model	Type	Signal
AR01	GDB341.9E	AC 100...240 V ~	2 pos.; switchover
AR02	GDB161.9E	AC 24 V ~ DC 24...48 V ==	2...10 V, regulation
AR03	GDB111.9E	AC 24 V	KNX-TP; regulation



Code	Model	DN	k_{vs} A (m ³ /h)	k_{vs} B (m ³ /h)	Adapter DN		
					15	20	25
V601	VWG41.10-0.25-0.40	10	0,25	0,40	✓	-	-
V602	VWG41.10-0.25-0.65	10	0,25	0,65	✓	-	-
V603	VWG41.10-0.25-1.00	10	0,25	1,00	✓	-	-
V604	VWG41.10-0.40-0.65	10	0,40	0,65	✓	-	-
V605	VWG41.10-0.40-1.00	10	0,40	1,00	✓	-	-
V606	VWG41.10-0.40-1.30	10	0,40	1,30	✓	-	-
V607	VWG41.10-0.40-1.60	10	0,40	1,60	✓	-	-
V608	VWG41.10-0.65-1.00	10	0,65	1,00	✓	-	-
V609	VWG41.10-0.65-1.30	10	0,65	1,30	✓	-	-
V610	VWG41.10-0.65-1.60	10	0,65	1,60	✓	-	-
V611	VWG41.10-1.00-1.30	10	1,00	1,30	✓	-	-
V612	VWG41.10-1.00-1.60	10	1,00	1,60	✓	-	-
V613	VWG41.10-1.00-1.90	10	1,00	1,90	✓	-	-
V614	VWG41.10-1.30-1.60	10	1,30	1,60	✓	-	-
V615	VWG41.10-1.30-1.90	10	1,30	1,90	✓	-	-
V616	VWG41.10-1.60-1.90	10	1,60	1,90	✓	-	-
V617	VWG41.10-1.90-1.90	10	1,90	1,90	✓	-	-
V618	VWG41.10-0.25-1.30	10	0,25	1,30	✓	-	-
V619	VWG41.10-0.25-1.60	10	0,25	1,60	✓	-	-
V620	VWG41.10-0.25-1.90	10	0,25	1,90	✓	-	-
V621	VWG41.10-0.40-0.40	10	0,40	0,40	✓	-	-
V622	VWG41.10-0.40-1.90	10	0,40	1,90	✓	-	-
V623	VWG41.10-0.65-0.65	10	0,65	0,65	✓	-	-
V624	VWG41.10-0.65-1.90	10	0,65	1,90	✓	-	-
V625	VWG41.10-1.00-1.00	10	1,00	1,00	✓	-	-
V626	VWG41.10-1.30-1.30	10	1,30	1,30	✓	-	-
V627	VWG41.10-1.60-1.60	10	1,60	1,60	✓	-	-
V628	VWG41.20-0.65-2.50	20	0,65	2,50	*	✓	✓
V629	VWG41.20-1.00-2.50	20	1,00	2,50	*	✓	✓
V630	VWG41.20-1.60-2.50	20	1,60	2,50	*	✓	✓
V631	VWG41.20-1.60-3.45	20	1,60	3,45	*	✓	✓
V632	VWG41.20-2.50-3.45	20	2,50	3,45	*	✓	✓
V633	VWG41.20-2.50-4.25	20	2,50	4,25	*	*	*
V634	VWG41.20-4.25-4.25	20	4,25	4,25	*	*	*
V635	VWG41.20-0.25-2.50	20	0,25	2,50	*	✓	✓
V636	VWG41.20-0.25-3.45	20	0,25	3,45	*	✓	✓
V637	VWG41.20-0.25-4.25	20	0,25	4,25	*	*	*
V638	VWG41.20-0.40-2.50	20	0,40	2,50	*	✓	✓
V639	VWG41.20-0.40-3.45	20	0,40	3,45	*	✓	✓
V640	VWG41.20-0.40-4.25	20	0,40	4,25	*	*	*
V641	VWG41.20-0.65-3.45	20	0,65	3,45	*	✓	✓
V642	VWG41.20-0.65-4.25	20	0,65	4,25	*	*	*
V643	VWG41.20-1.00-3.45	20	1,00	3,45	*	✓	✓
V644	VWG41.20-1.00-4.25	20	1,00	4,25	*	*	*
V645	VWG41.20-1.30-2.50	20	1,30	2,50	*	✓	✓
V646	VWG41.20-1.30-3.45	20	1,30	3,45	*	✓	✓
V647	VWG41.20-1.30-4.25	20	1,30	4,25	*	*	*
V648	VWG41.20-1.60-4.25	20	1,60	4,25	*	*	*
V649	VWG41.20-2.50-2.50	20	2,50	2,50	*	✓	✓
V650	VWG41.20-3.45-3.45	20	3,45	3,45	*	✓	✓

LWZ-V601

Construction subject to change.
 No return possible.

ROOM THERMOSTAT

A room thermostat can be used both to actuate the actuators and to control the fans.

Code	Model	Operating voltage	Control outputs				Fan DC 0...10 V
			ON/OFF	PWM	3-pos	DC 0...10 V	
TR05	RDG160T	AC/DC 24 V	2	-	-	2	✓
TK02	RDG160KN	AC 24 V	2	-	-	2	✓

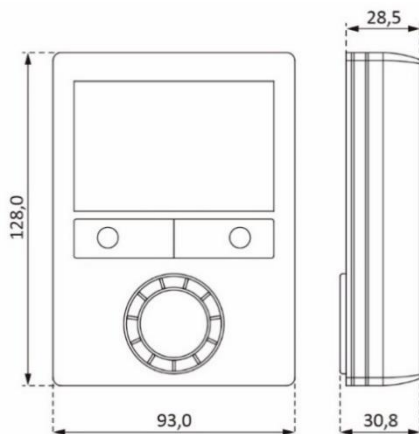
2 control outputs in total, On/Off (relay output) or DC

NOTE

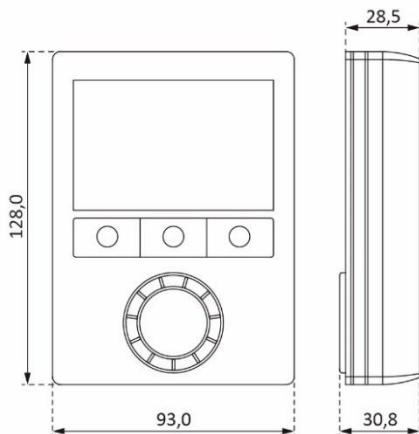
When operating the fan convectors in parallel, the load limits of the control and power consumption of the room air-conditioning modules must be taken into account.

Dimensions

RDG160KN



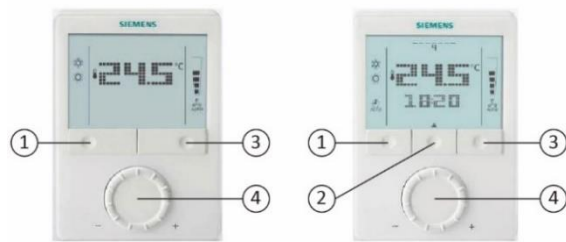
RDG160T



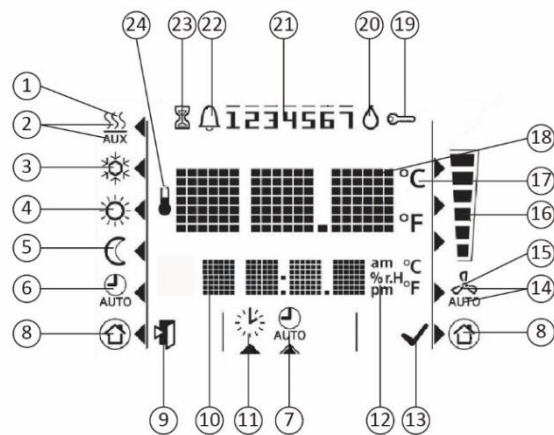
Operation

RDG160KN

RDG160T



- 1 = Operating mode selection button/back to normal operation
- 2 = Button to set time and switching times of the timer (RDG...T only)
- 3 = Fan operation selection button/OK
- 4 = Rotary knob to set nominal values and parameters



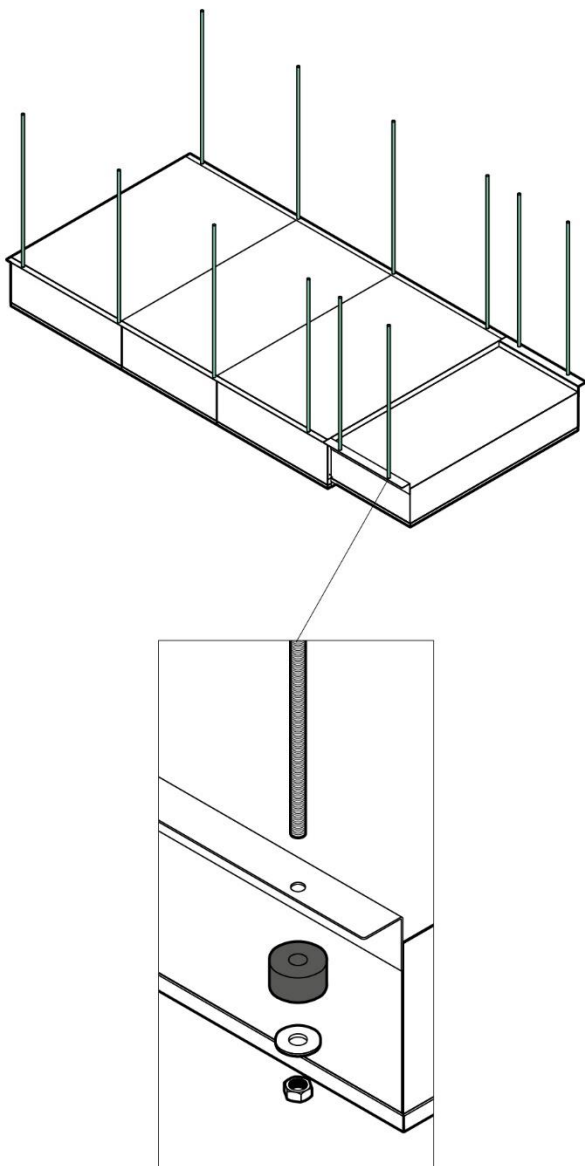
- 1 = Heating mode
- 2 = Heating mode additional heating on (level 2)
- 3 = Cooling mode
- 4 = Comfort mode
- 5 = Economy mode
- 6 = Automatic timer mode
- 7 = Display and setting the automatic timer program
- 8 = Protection mode
- 9 = Back to normal operation
- 10 = Display of time, room temperature, setpoint value, etc.
- 11 = Setting the time and the day of the week
- 12 = Morning/afternoon 12-hour format
- 13 = Applying parameters
- 14 = Fan automatic
- 15 = Fan manual
- 16 = Fan speed
- 17 = Degrees Celsius/degrees Fahrenheit
- 18 = Display of room temperature and setpoint value
- 19 = Keyboard lock
- 20 = Condensation in room (dew point sensor active)
- 21 = Day of the week 1...7: 1 = Monday/7 = Sunday
- 22 = Fault
- 23 = Temporary switch function
- 24 = room temperature is displayed

INSTALLATION

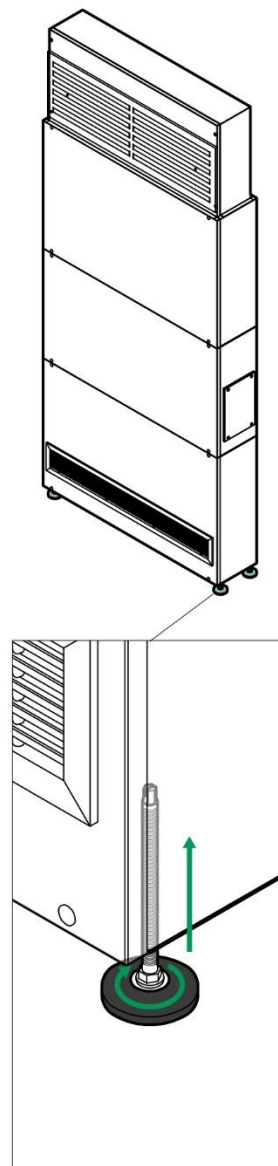
NOTE

To ensure subsequent maintenance work, please ensure that no structural elements block the inspection openings.

Mounting type horizontal with mounting bracket



Mounting type vertical with adjusting legs



NOTE

The legs are M8 for version -1 and M10 for version -2 and -3.

CIRCUIT DIAGRAMS

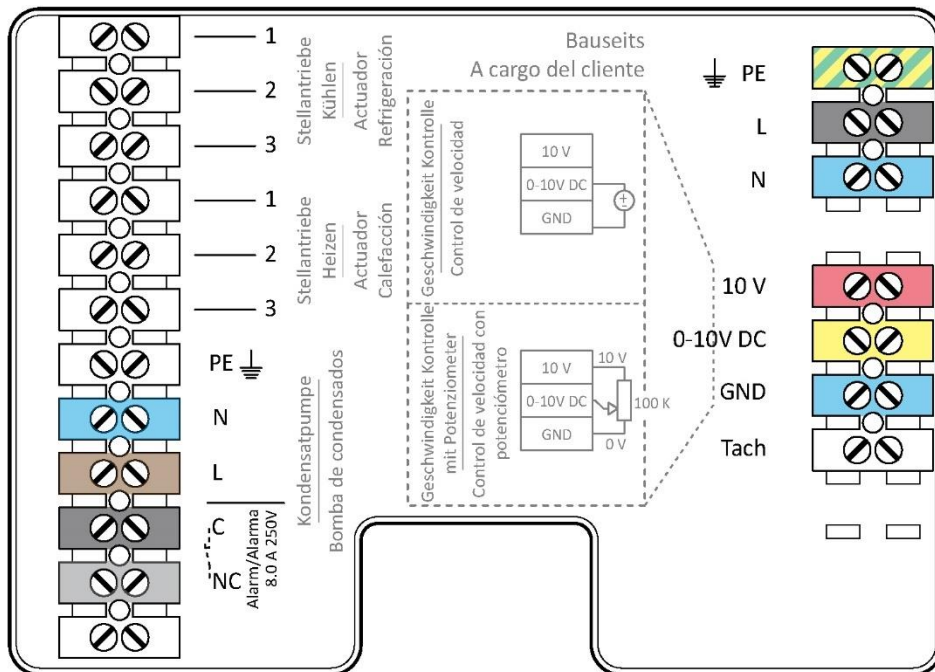
Prior to the electrical installation, you have to make sure that the rated mains voltage is 230 V, 50/60 Hz and single-phase.

The electric connections must be made by qualified electricians only, observing the current regulations and low-voltage regulations.

SCHAKO recommends the exclusive use of copper cables, since the device connections have not been designed for accommodating other types of cables. If they are used nevertheless, galvanic corrosion or generation of heat could take place at the connection point.

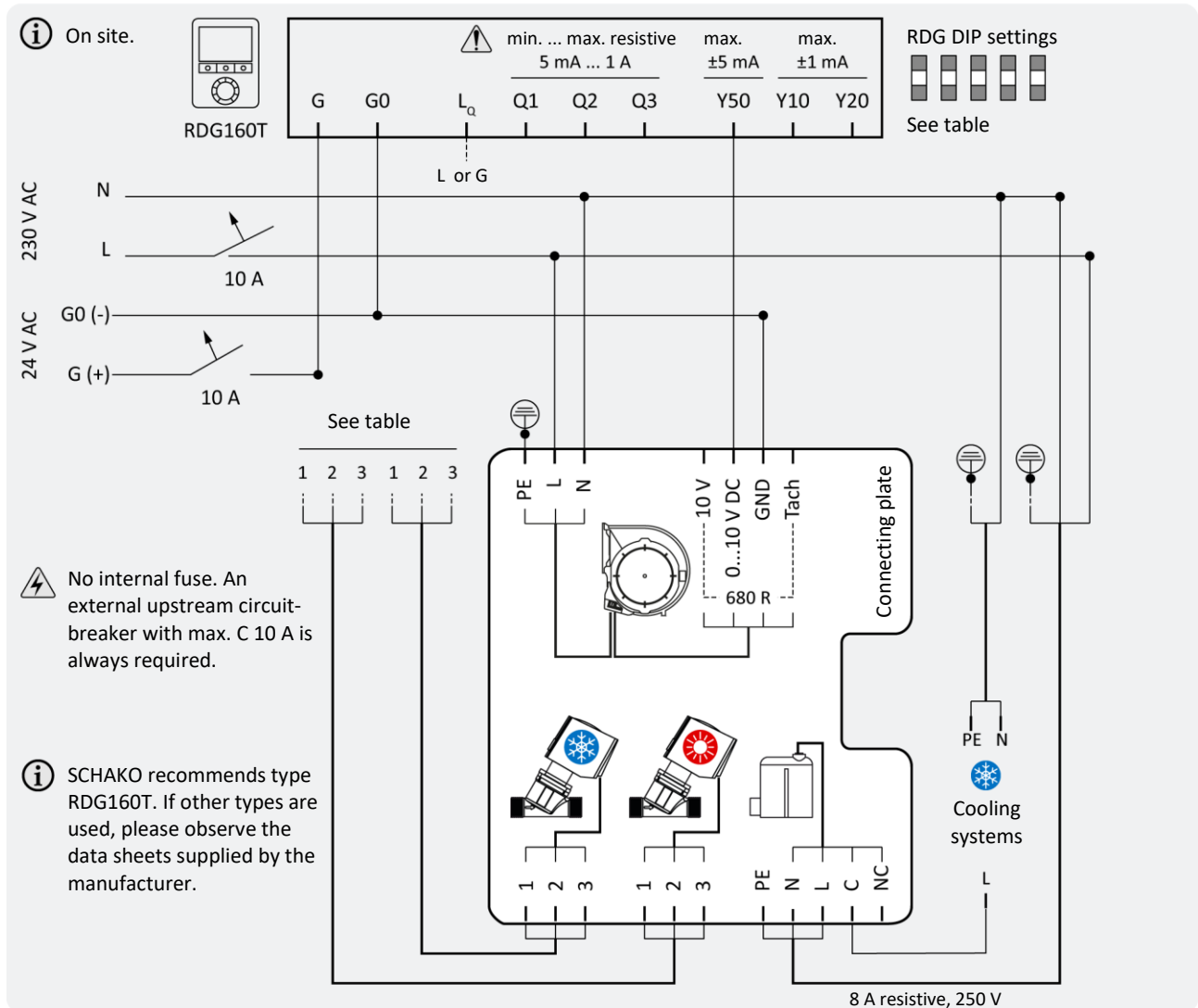
NOTE

Connect the fan convector via an earthing cable. Interrupt the power supply, before carrying out any electrical connection work. SCHAKO cannot be held liable for faulty electric connections or the use of unsuitable cables.



	Ref.	Function / assignment	Cable colour
Fan	PE	Protective conductor	Green/yellow
	L	Power supply 230V AC, 50 to 60 Hz, for the voltage range, see type plate	Black
	N	Neutral conductor	Blue
	10 V	Voltage output 10 V DC 1.1 mA, galvanically separated, short-circuit-proof	Red
	0...10 V DC	Control input 0- 10 V or PWM, galvanically separated	Yellow
	GND	GND connection of control interface	Blue
	Tach	Speed output: Open Collector, 1 impulse per revolution, galv. separated $I_{\text{sink, max.}} = 10 \text{ mA}$	White
Actuator	1	Power supply	Depends on actuator
	2	Neutral conductor	Depends on actuator
	3	Regulation	Depends on actuator
Pump	N	Neutral conductor	Blue
	L	Power supply	Brown
	C	Safety contact NC 8 A resistive load – 250V	Black
	NC	Safety contact NC 8 A resistive load – 250V	Grey

Wiring diagram RDG160T



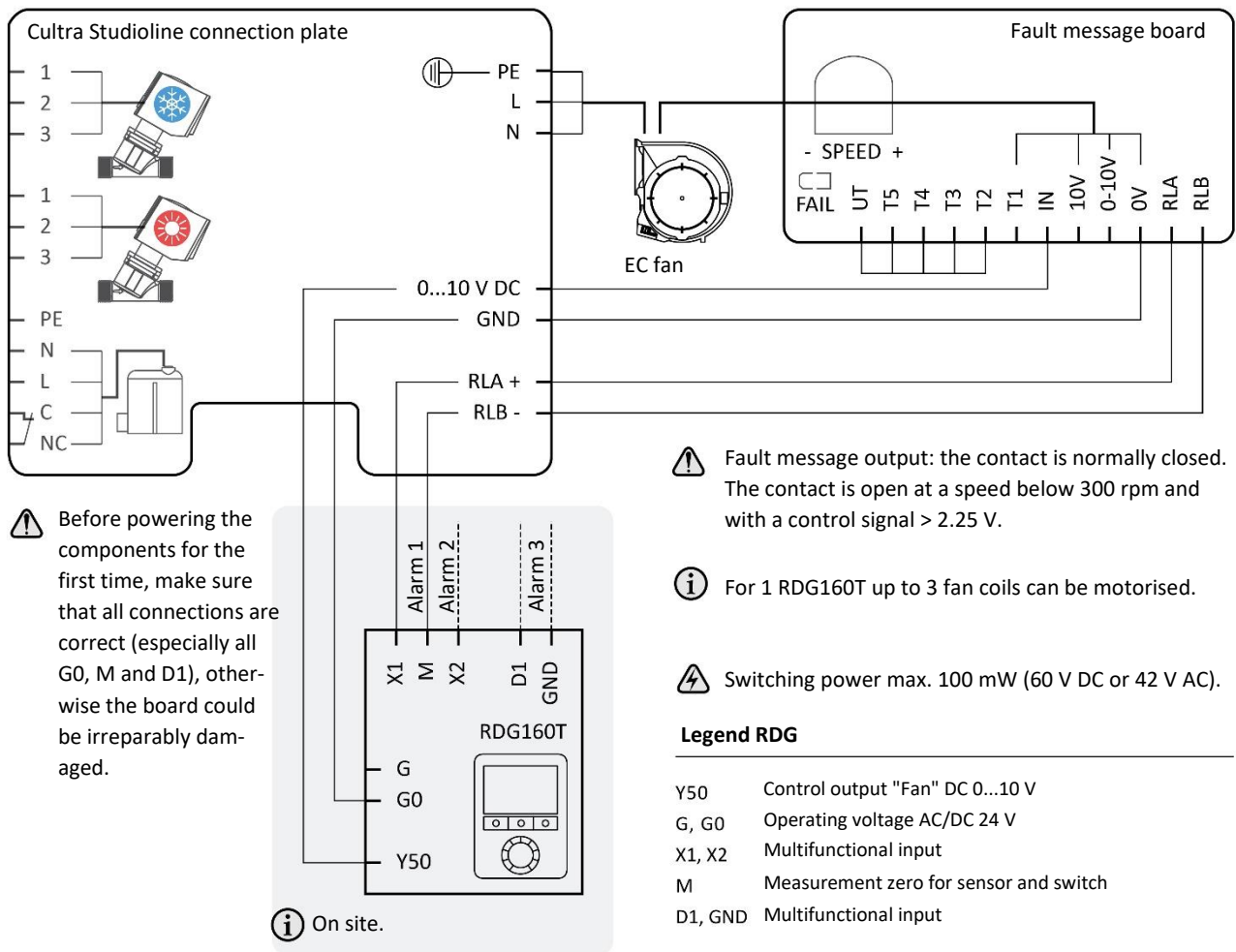
		1	2	3	1	2	3
2-pipe system		Actuators 230 V AC ON/OFF	Q1	N			
		Actuators 24 V AC ON/OFF	Q1	G0			
		Actuators 24 V DC 0...10 V	G	G0	Y10		
4-pipe system		Actuators 230 V AC ON/OFF	Q1	N	Q2	N	
		Actuators 24 V AC ON/OFF	Q1	G0	Q2	G0	
		Actuators 24 V DC 0...10 V	G	G0	Y10	G	G0

Legend

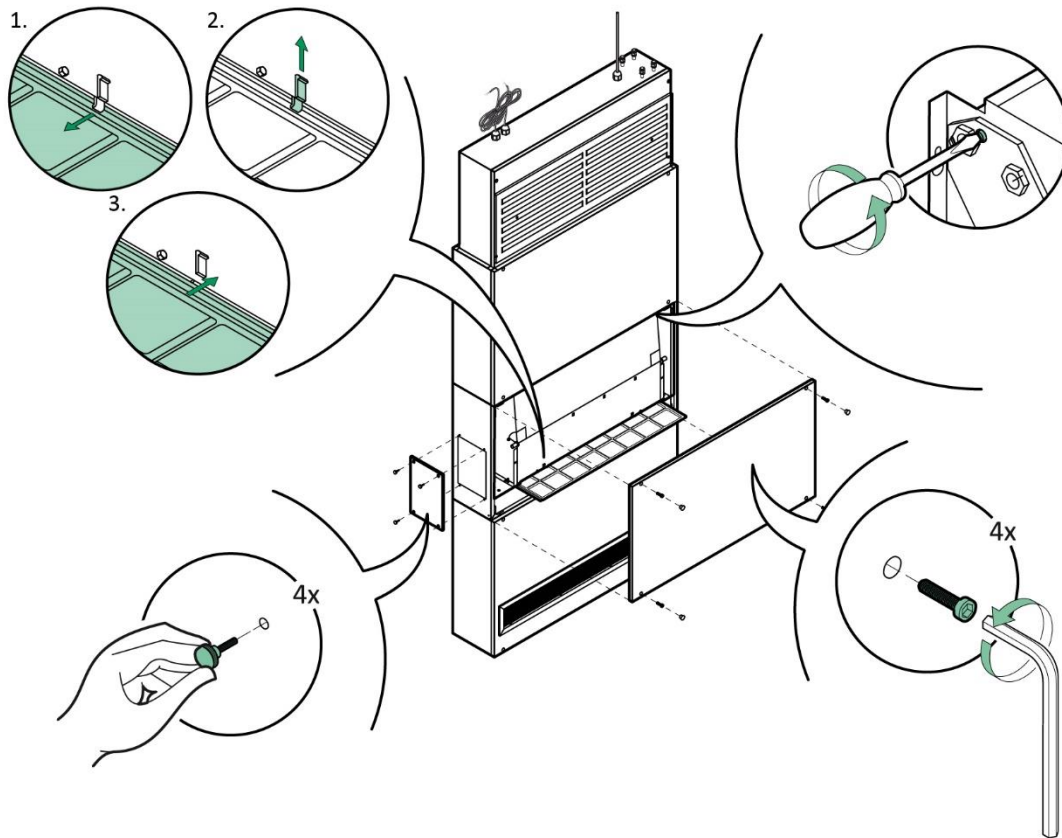
- Tach Speed output: Open Collector
 $I_{sink\ max.} = 10\ mA$
- C/NC Safety function NC contact
- L, N Operating voltage AC 230 V
- L_Q Power supply relay
 Q1...3 AC 24...230 V
- G, G0 Operating voltage AC/DC 24 V
- Y10, Y20 Control output for DC 0...10 V actuator
- Y50 Control output "Fan" DC 0...10 V
- Q1...3 Relay control output ON/OFF actuators
- Switch 5 ON = automatic timer mode

Fault message output

Ref.	Function / assignment	Cable colour
RLB	Fault message output, contact B	Grey
RLA	Fault message output, contact A	Yellow
0V	Neutral conductor	Blue
0-10V	Speed output 0...10 V	Yellow
10V	Power supply 10 V PCB	Red
IN	External control input 0...10 V	Green
T1	Speed output Open Collector, fan 1	Grey
Tn	Speed output Open Collector, fan n	-
UT	Speed output unused	-



MAINTENANCE



Air filter

Filters should be cleaned or replaced regularly. SCHAKO recommends a bimonthly check at high-medium air quality and a monthly check at low air qualities. The filter should be replaced when it is full (dark filter mat).

SCHAKO recommends purchasing replacement filters to avoid prolonged downtimes during maintenance activities.

Heat exchanger

Twice a year, the registers should be checked and, if necessary, cleaned and ventilated. The ribs should also be checked to ensure that there are no leaks.

NOTE

Use the air vents always in top position

Condensate discharge

Twice a year you should check to ensure that there are neither corrosion nor leaks, and the condensate drains should be cleaned.

Motorised fan

Twice a year the fan operation should be checked in the different speeds to ensure that no exceptional noise is generated and that the motor intensity does not exceed the maximum allowed value.

TECHNICAL DATA

CSL-1-R3

Signal (V)	V _L (m ³ /h)	W (W)	Q _T (kW)	Q _S (kW)	V _w (l/h)	Δp _w (kPa)	t _{l2} (°C)	V _K (l/h)	Q (kW)	V _w (l/h)	Δp _w (kPa)	t _{l2} (°C)
10	609	48	3,54	2,66	606	42,6	13,6	1,3	3,56	626	35,9	37,5
9	582	44	3,43	2,57	587	40,2	13,5	1,2	3,44	606	33,8	37,6
8	547	37	3,28	2,45	560	37,1	13,3	1,2	3,28	577	31,0	37,9
7	504	29	3,08	2,30	527	33,2	13,0	1,1	3,08	542	27,7	38,2
6	454	23	2,85	2,12	487	28,8	12,7	1,0	2,84	499	23,9	38,6
5	399	17	2,57	1,91	440	24,0	12,4	1,0	2,56	450	19,9	39,1
4	340	13	2,26	1,67	387	19,0	12,0	0,8	2,24	394	15,7	39,7
3	278	9	1,91	1,41	326	14,0	11,5	0,7	1,89	332	11,5	40,3
2	214	4	1,51	1,11	259	9,3	11,1	0,6	1,50	264	7,6	40,9

Cooling (3 pipe rows): t_{w1} = 7 °C, t_{w2} = 12 °C, t_r = 27 °C, HR = 47 %

Heating (3 pipe rows): t_{w1} = 45 °C, t_{w2} = 40 °C, t_r = 20 °C

Thermal efficiency according to EN 1397. Available static pressure values with clean filter.

CSL-1-L4

Signal (V)	V _L (m ³ /h)	W (W)	Q _T (kW)	Q _S (kW)	V _w (l/h)	Δp _w (kPa)	t _{l2} (°C)	V _K (l/h)	Q (kW)	V _w (l/h)	Δp _w (kPa)	t _{l2} (°C)
10	587	48	3,45	2,59	590	40,7	13,5	1,2	2,93	257	11,5	34,9
9	562	44	3,34	2,51	572	38,4	13,4	1,2	2,87	252	11,1	35,2
8	528	37	3,19	2,39	546	35,4	13,2	1,2	2,79	244	10,5	35,7
7	486	30	3,00	2,24	513	31,7	12,9	1,1	2,68	235	9,8	36,4
6	438	23	2,77	2,06	473	27,4	12,6	1,0	2,54	223	9,0	37,3
5	384	17	2,50	1,85	427	22,7	12,3	0,9	2,38	209	8,0	38,5
4	326	13	2,18	1,61	373	17,9	11,9	0,8	2,18	191	6,8	39,9
3	265	9	1,83	1,35	313	13,1	11,4	0,7	1,95	171	5,6	41,9
2	203	4	1,44	1,06	247	8,5	11,0	0,6	1,66	146	4,2	44,4

Cooling (3 pipe rows): t_{w1} = 7 °C, t_{w2} = 12 °C, t_r = 27 °C, HR = 47 %

Heating (1 row of pipes): t_{w1} = 65 °C, t_{w2} = 55 °C, t_r = 20 °C

Thermal efficiency according to EN 1397. Available static pressure values with clean filter.

Sound power level

Signal (V)	L _w (dB)							L _{WA} * (dB(A))
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
10	55	41	35	29	21	15	14	40
9	54	40	34	27	20	14	14	40
8	52	39	33	24	18	14	14	38
7	50	37	30	22	17	13	14	36
6	48	34	27	19	15	13	14	33
5	46	31	24	16	13	13	14	31
4	45	28	20	15	12	13	14	30
3	46	23	17	13	12	13	14	30
2	49	18	13	13	12	13	14	33

Sound power level according to ISO 3744. Reference sound power P₀ = 1 pW.

Average values for type -L4.

* L_{WA} is calculated with average values from 125 Hz to 8000 Hz.

CSL-2-R3

Signal (V)	V _L (m ³ /h)	W (W)	Q _T (kW)	Q _S (kW)	V _w (l/h)	Δp _w (kPa)	t _{l2} (°C)	V _K (l/h)	Q (kW)	V _w (l/h)	Δp _w (kPa)	t _{l2} (°C)
10	788	47	4,63	3,49	792	26,5	13,5	1,7	4,68	823	25,4	37,7
9	750	43	4,47	3,36	764	24,9	13,3	1,6	4,51	793	23,8	37,9
8	700	36	4,24	3,18	726	22,7	13,1	1,5	4,27	752	21,5	38,2
7	640	29	3,96	2,96	677	20,0	12,8	1,4	3,98	700	18,9	38,6
6	571	22	3,63	2,70	620	17,1	12,5	1,3	3,64	640	16,1	39,0
5	498	17	3,25	2,41	555	14,0	12,2	1,2	3,25	571	13,1	39,5
4	420	12	2,82	2,09	482	10,9	11,8	1,1	2,82	496	10,1	40,0
3	342	9	2,36	1,74	404	7,9	11,4	0,9	2,36	414	7,3	40,6
2	265	4	1,87	1,38	320	5,2	11,1	0,7	1,87	329	4,8	41,1

Cooling (3 pipe rows): t_{w1} = 7 °C, t_{w2} = 12 °C, t_r = 27 °C, HR = 47 %

Heating (3 pipe rows): t_{w1} = 45 °C, t_{w2} = 40 °C, t_r = 20 °C

Thermal efficiency according to EN 1397. Available static pressure values with clean filter.

CSL-2-L4

Signal (V)	V _L (m ³ /h)	W (W)	Q _T (kW)	Q _S (kW)	V _w (l/h)	Δp _w (kPa)	t _{l2} (°C)	V _K (l/h)	Q (kW)	V _w (l/h)	Δp _w (kPa)	t _{l2} (°C)
10	777	47	4,59	3,45	784	26,1	13,4	1,6	4,06	356	24,8	35,6
9	736	43	4,41	3,31	754	24,3	13,2	1,6	3,96	347	23,7	36,0
8	687	36	4,18	3,13	715	22,1	13,0	1,5	3,83	336	22,3	36,6
7	629	29	3,91	2,92	669	19,6	12,8	1,4	3,66	321	20,7	37,4
6	565	22	3,59	2,68	614	16,8	12,5	1,3	3,47	304	18,8	38,3
5	495	17	3,23	2,40	552	13,9	12,2	1,2	3,24	284	16,6	39,5
4	420	12	2,82	2,09	482	10,9	11,8	1,1	2,96	260	14,2	41,1
3	341	9	2,35	1,74	402	7,9	11,4	0,9	2,63	231	11,5	43,0
2	260	4	1,84	1,35	314	5,1	11,0	0,7	2,24	196	8,6	45,7

Cooling (3 pipe rows): t_{w1} = 7 °C, t_{w2} = 12 °C, t_r = 27 °C, HR = 47 %

Heating (1 row of pipes): t_{w1} = 65 °C, t_{w2} = 55 °C, t_r = 20 °C

Thermal efficiency according to EN 1397. Available static pressure values with clean filter.

Sound power level

Signal (V)	L _w (dB)							L _{wA} * (dB(A))
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
10	53	41	32	24	18	14	14	39
9	52	40	31	22	17	13	14	38
8	50	38	29	20	16	13	14	36
7	48	36	26	19	15	13	14	34
6	46	34	22	17	14	13	14	32
5	43	31	19	15	13	13	14	29
4	40	27	16	14	13	13	14	27
3	38	23	13	13	13	13	14	24
2	35	18	12	13	12	13	14	23

Sound power level according to ISO 3744. Reference sound power P₀ = 1 pW.

Average values for type -L4.

* L_{wA} is calculated with average values from 125 Hz to 8000 Hz.

CSL-3-R3

Signal (V)	V _L (m ³ /h)	W (W)	Q _T (kW)	Q _S (kW)	V _w (l/h)	Δp _w (kPa)	t _{l2} (°C)	V _K (l/h)	Q (kW)	V _w (l/h)	Δp _w (kPa)	t _{l2} (°C)
10	916	49	5,87	4,33	1004	50,3	12,5	2,2	5,76	1012	44,7	38,8
9	872	44	5,66	4,16	967	47,0	12,4	2,2	5,54	974	41,6	38,9
8	812	37	5,35	3,93	915	42,5	12,2	2,0	5,23	919	37,5	39,2
7	739	29	4,97	3,64	849	37,2	11,9	1,9	4,84	851	32,6	39,5
6	657	22	4,51	3,30	772	31,3	11,6	1,8	4,38	771	27,3	39,9
5	568	16	4,00	2,91	684	25,2	11,3	1,6	3,88	682	21,8	40,4
4	477	11	3,44	2,50	589	19,2	11,0	1,4	3,33	585	16,6	40,8
3	386	8	2,85	2,07	488	13,7	10,6	1,1	2,75	484	11,8	41,3
2	299	5	2,25	1,63	385	9,0	10,3	0,9	2,17	382	7,7	41,7

Cooling (3 pipe rows): t_{w1} = 7 °C, t_{w2} = 12 °C, t_R = 27 °C, HR = 47 %

Heating (3 pipe rows): t_{w1} = 45 °C, t_{w2} = 40 °C, t_R = 20 °C

Thermal efficiency according to EN 1397. Available static pressure values with clean filter.

CSL-3-L4

Signal (V)	V _L (m ³ /h)	W (W)	Q _T (kW)	Q _S (kW)	V _w (l/h)	Δp _w (kPa)	t _{l2} (°C)	V _K (l/h)	Q (kW)	V _w (l/h)	Δp _w (kPa)	t _{l2} (°C)
10	904	51	5,82	4,28	995	49,4	12,5	2,2	5,17	453	8,9	37,0
9	864	46	5,61	4,13	960	46,4	12,4	2,1	5,05	443	8,6	37,5
8	808	39	5,33	3,91	911	42,2	12,2	2,0	4,89	429	8,1	38,0
7	740	31	4,97	3,64	850	37,3	11,9	1,9	4,67	410	7,4	38,8
6	662	24	4,55	3,32	777	31,7	11,7	1,8	4,40	386	6,7	39,8
5	578	17	4,06	2,96	694	25,9	11,3	1,6	4,09	359	5,8	41,1
4	488	12	3,51	2,55	601	20,0	11,0	1,4	3,71	326	4,9	42,7
3	396	9	2,92	2,12	500	14,3	10,7	1,2	3,28	288	3,9	44,7
2	305	6	2,29	1,66	392	9,3	10,4	0,9	2,78	244	2,9	47,2

Cooling (3 pipe rows): t_{w1} = 7 °C, t_{w2} = 12 °C, t_R = 27 °C, HR = 47 %

Heating (1 row of pipes): t_{w1} = 65 °C, t_{w2} = 55 °C, t_R = 20 °C

Thermal efficiency according to EN 1397. Available static pressure values with clean filter.

Sound power level

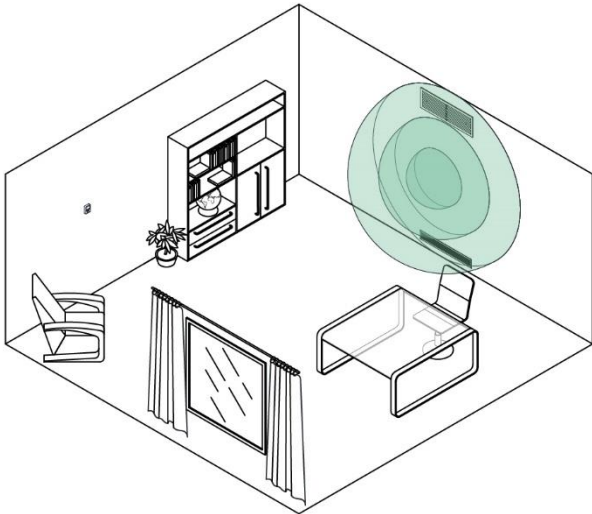
Signal (V)	L _w (dB)							L _{wA} * (dB(A))
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
10	53	45	33	26	16	13	14	40
9	52	43	33	24	15	13	14	39
8	51	40	30	21	14	13	14	37
7	49	38	27	18	13	13	14	35
6	46	35	23	16	13	13	14	32
5	43	31	19	14	12	13	14	29
4	40	28	16	13	12	13	14	26
3	37	24	13	12	12	13	14	24
2	33	19	11	12	12	13	14	22

Sound power level according to ISO 3744. Reference sound power P₀ = 1 pW.

Average values for type -L4.

* L_{wA} is calculated with average values from 125 Hz to 8000 Hz.

EXAMPLE CALCULATION OF THE SOUND PRESSURE LEVEL



Following a simplified example from *AHRI Standard 885*. Other confirmed working methods can be used. You have to select a room air-conditioning module of size 20 with 4 pipes. If a flow of 450 m³/h is required to extract the thermal loads from the project.

- The following hypotheses are taken into account:
- Room 6x6x3 m with 1.5 m distance from the noise source.
 - The structure-borne noise transmission is insignificant. It is assumed that the installation has been carried out according to best practice.
 - Influences from sources other than those indicated in the example are not considered.
 - No environmental correction is applied (*ASHRAE RP755*).
 - The insulation of the wall is not taken into account, since extraction and supply air are considered the main noise sources of the device.

The room insulation can be calculated by the following formula:

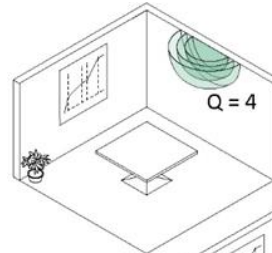
$$\Delta L_W = 10 \log \left[\frac{Q}{4\pi r^2} + \frac{4}{R} \right] + 0,5$$

- r = distance from noise source (m)
- R = direction of noise source = S·α/(1 - α)
- S = sum of the room surface areas (m²)
- α = sound absorption coefficient (-) according to sound absorption coefficient (-) according to average values in areas with an approximate reverberation time of 0.5 s *Reynolds, D. Jeffrey M. Bledsoe. 1991.*

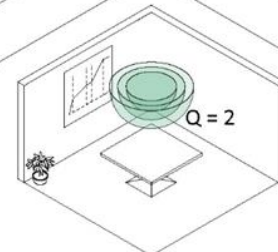
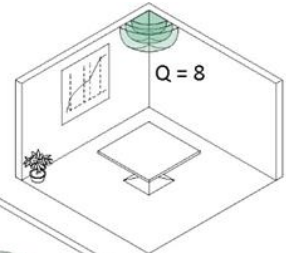
f (Hz)	63	125	250	500	1k	2k	4k	8k
α	0,24	0,22	0,18	0,25	0,30	0,36	0,42	0,42

Q = direction of noise source(-) according to:

Radiation on two levels

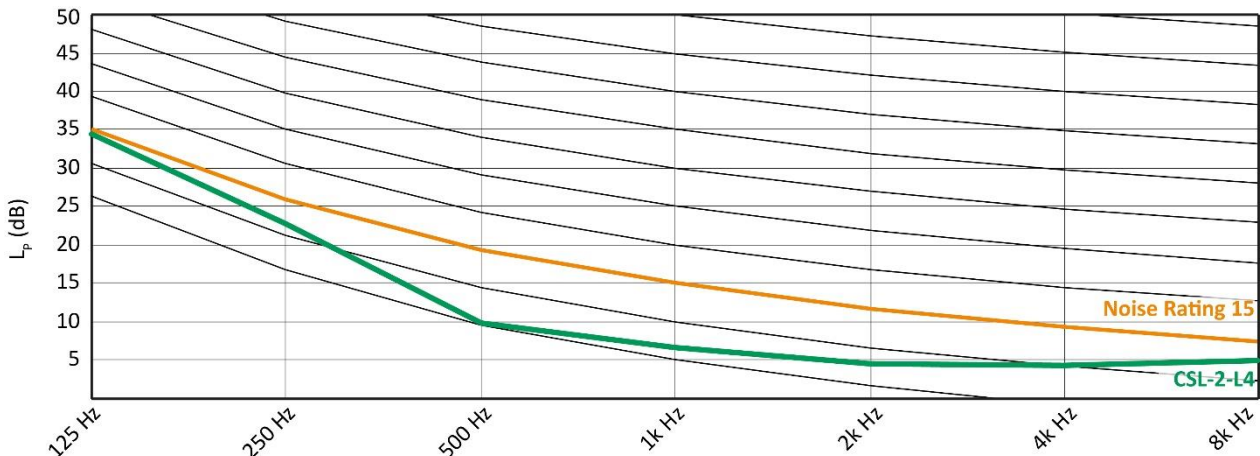


Radiation on three levels



Radiation on one level

CSL-2-L4	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dB(A)
L _w (dB)	42	29	17	15	13	13	14	28
ΔL _w (dB)	-7,2	-6,5	-7,6	-8,2	-8,7	-9,1	-9,1	-
L _p (dB)	34	23	10	7	4	4	5	20



LEGEND

HR (%)	= Relative humidity in the room
HR ₂ (%)	= Relative humidity at the air outlet
L _W (dB)	= Sound power level ($W_{ref} = 1 \text{ pW}$)
L _{WA} [dB(A)]	= Sound power level A ($W_{ref} = 1 \text{ pW}$)
Q (kW)	= Thermal capacity
Q _P (kW)	= Thermal capacity of primary air
Q _S (kW)	= Sensible capacity
Q _{SP} (kW)	= Primary sensible capacity
Q _T (kW)	= Total capacity
Q _{TP} (kW)	= Primary total capacity
t _{L2} (°C)	= Air outlet temperature
t _{P1} (°C)	= Primary input temperature
t _R (°C)	= Room air temperature
t _{W1} (°C)	= Water inlet temperature
t _{W2} (°C)	= Water outlet temperature
v (-)	= Speed
V (V)	= Fan voltage
V _K (l/h)	= Condensate volumetric flow
V _L (m ³ /h) [l/s]	= Volumetric flow
V _P (m ³ /h) [l/s]	= Primary air flow
V _W (l/h)	= Water volumetric flow
W (W)	= Operating power
Δp _W (kPa)	= Water pressure loss in the heat exchanger

CSL ORDER CODE

01	02	03	04	05	06
Type	Size	Heat exchanger	Total height	Housing colour	Mounting position
Example					
CSL	-10	-R3	-2500	-0	-VR

07	08	09	10	11	12
Adjusting legs	Supply air diffuser	Colour of the supply air diffuser	Secondary air grille	Colour of the secondary air grille	Sliding connection spigot for supply air diffuser and secondary air grille
Example					
-0	-D1	-22	-R1	-22	-M0

13	14	15	16	17	18
Primary air connection spigot	Primary air spigot diameter	Water connection position	Hydraulic regulation	Electric connection position	Additional control and regulation elements
Example					Example
-P0	-0	-W3	-000	-S4	-0

19	20
Condensate connection position	Condensate pump
Example	
-K3	-0

NOTE

Please always specify the complete order code in the order!
 If details are missing from the order, the standard model will be delivered.
 Any special model not included in the order code must be queried before ordering.
 * = if not indicated, the order cannot be processed.

EXAMPLE

CSL-1-R3-2500-0-VR-0-D1-22-R1-22-M0-P0-0-W3-000-S4-0-K3-0

Room air-conditioning module Cultra Studioline | Size 1 | 2-pipe register 3 rows of pipes (cooling or heating) | Total height 2500 mm | Housing unpainted | Mounting type vertical, secondary air grille and inspection in the room | Without adjusting legs | Supply air diffuser DBB-A | Colour of the supply air diffuser: RAL 9010 white, white blades | Secondary air grille PAZ | Colour of the secondary air grille: RAL 9010 white | Without sliding connection spigot (air diffusers in the device) | Without primary air connection spigot | Without primary air connection spigot | Water connection bottom left | On-site mounting (pieces are supplied loose for on-site mounting outside the room air-conditioning module) | Electric connection bottom right | Without additional control and regulation elements | Condensate connection bottom left | Without condensate pump

ORDER DETAILS

01 – Type

CSL = room air-conditioning module Cultra Studioline

02 – Size*

1 = Size 1
 2 = Size 2
 3 = Size 3

03 – System (water register version)

R1 = 2-pipe register 1 row of pipes (heating)
 R3 = 2-pipe register 3 rows of pipes (cooling or heating) (standard)
 L4 = 4-pipe register 1 and 3 pipe rows (cooling and heating)

04 – Total height

2500 = total height 2500 mm (standard)
 xxxx = total height xxxx mm (from min. 2000 to max. 3000, always with 4 digits in mm) (< 2500 mm = without adapter piece)

05 – Housing colour

0 = housing unpainted (standard)
 1 = black housing, painted to RAL 9005
 2 = white housing, painted to RAL 9010
 3 = white housing, painted to RAL 9016
 4 = grey housing, painted to RAL 9006

06 – Mounting position

- VR = mounting type vertical, sec. air grille and inspection in the room (standard)
 H0 = mounting type horizontal in the ceiling (not compatible with adjusting legs)

07 – Adjusting legs

- 0 = without adjusting legs (standard)
 1 = with adjusting legs (not compatible with horizontal mounting)

08 – Supply air diffuser

- D1 = supply air diffuser DBB-A (standard)

09 – Colour of the supply air diffuser

- 22 = colour of supply air diffuser: RAL 9010 white, white blades (standard)
 xy = faceplate/frame colour x, blade/nozzle colour y (for x, y, see table)

10 – Secondary air grille

- R1 = secondary air grille PAZ (standard)

11 – Colour of the secondary air grille

- 22 = colour of secondary air grille: RAL 9010 white (standard)
 xy = faceplate/frame colour x, blade/nozzle colour y (for x, y, see table)

12 – Sliding connection spigot for supply air diffuser and secondary air grille

- M0 = without sliding connection spigot (air diffusers in the device) (standard)
 M1 = with sliding connection spigot, adjusting range: 25 to 105 mm
 M2 = with sliding connection spigot, adjusting range: 75 to 205 mm

13 – Primary air connection spigot position

- P0 = without primary air connection spigot (standard)
 P1 = primary air connection spigot on the left side of the box (not compatible with water connection position -W1)
 P2 = primary air connection spigot on the right side of the box (not compatible with water connection position -W2)
 P7 = primary air connection spigot on the top centre of the box
 P9 = primary air connection spigot in the centre rear of the box

14 – Primary air spigot diameter

- 0 = without primary air connection spigot (standard)
 1 = primary air connection spigot DN78
 2 = primary air connection spigot DN98
 3 = primary air connection spigot DN123

15 – Water connection position*

- W1 = water connection top left (not compatible with primary air connection spigot position -P1)
 W2 = water connection top right (not compatible with primary air connection spigot position -P2)
 W3 = water connection bottom left
 W4 = water connection bottom right
 W5 = water connection centre left side
 W6 = water connection centre right side
 W7 = water connection bottom left side
 W8 = water connection bottom right side

16 – Mounting of hydraulic regulation*

- 000 = on-site mounting (pieces are supplied loose for on-site mounting outside the room air-conditioning module)
 xyz = cooling valve x, heating valve y, actuators z are mounted ex works (standard) (not compatible with valves $NW \geq 1''$) (for x, y and z, see table)

17 – Electric connection position*

- S1 = electric connection top left
 S2 = electric connection top right
 S3 = electric connection bottom left
 S4 = electric connection bottom right
 S5 = electric connection centre left side
 S6 = electric connection centre right side
 S7 = electric connection bottom left side
 S8 = electric connection bottom right side

18 – Additional control and regulation elements

- 0 = without additional control and regulation elements (standard)
 1 = with fault message output

19 – Condensate connection position*

- K1 = condensate connection top left (with condensate pump only)
 K2 = condensate connection top right (with condensate pump only)
 K3 = condensate connection bottom left (not compatible with a condensate pump)
 K4 = condensate connection bottom right (not compatible with condensate connection with condensate pump)
 K5 = condensate connection centre left side
 K6 = condensate connection centre right side
 K7 = condensate connection bottom left side (not compatible with a condensate pump)
 K8 = condensate connection bottom right side (not compatible with a condensate pump)

20 – Condensate pump

- 0 = without condensate pump (standard)
 1 = with condensate pump Si-10, mounted ex works (not possible if the condensate connection is located at the bottom)

ORDER CODE FOR LWZ ACCESSORIES

01	02
Type	Model
Example	
LWZ	-TR05

NOTE

Please always specify the complete order code in the order!
 If details are missing from the order, the standard model will be delivered.
 Any special model not included in the order code must be queried before ordering.
 * = if not indicated, the order cannot be processed

EXAMPLE

LWZ-TR05

Accessories for air-water systems | Room thermostat standalone with weekly program RDG160T

ORDER DETAILS

1 – Type

LWZ = accessories for air-water systems

2 – Model

Hxyz = With device connection (x), flexible connection (y)
 and free connection to the hydraulic network (z)

V6xy = 6-way ball valve xy

ARxy = rotary drives for 6-way ball valve xy

TRxy = room thermostat with weekly program xy

TKxy = room thermostat with KNX interface xy

SPECIFICATION TEXT

Plug-in room air-conditioning module for decentralised air-conditioning of rooms with high acoustic requirements, such as offices, medical practices, meeting rooms, sound and television studios for cooling and/or heating.

For installation in walls and ceilings or for in-front-of-the-wall installation.

The fan unit consists of double-sided, intake-operated, dynamically balanced, centrifugal blowers with forward directed blades and direct actuator.

The fan units are equipped with a highly efficient, electronically commutated EC motor with maintenance-free ball bearing for a long service life.

The EC fan can be activated by 2-10 V and is almost infinitely variable..

The housing and the fan wheel are made of plastic and are optimised for the lowest possible sound pressure.

The heat exchangers consist of a galvanised sheet steel frame with copper pipes and aluminium blades in 2-pipe and 4-pipe design.

Condensate pan in compliance with VDI 6022, made of stainless steel sheet, suitable for horizontal and vertical installation.

Filter efficiency ISO Coarse 30% (ISO 16890), regenerative synthetic fibre mat on a plastic frame.

Easy maintenance and filter exchange. The inspection plate is quick and easy to open by means of a removable lock.

The devices comply with the EMC requirement class C1 according to EN 61800.

Product: SCHAKO

Family: Room air-conditioning module Cultra Studioline

Cultra Studioline models

Type

Room air-conditioning module Cultra Studioline -CSL

Size

Size 1 -1

Size 2 -2

Size 3 -3

System (water register version)

2-pipe register 1 row of pipes (heating) -R1

2-pipe register 3 rows of pipes (cooling or heating) -R3

4-pipe register 1 and 3 rows of pipes (cooling and heating) -L4

Total height

Total height 2500 mm -2500

Total height xxxx mm -xxxx

Housing colour

Housing unpainted -0

Black housing, painted to RAL 9005 -1

White housing, painted to RAL 9010 -2

White housing, painted to RAL 9016 -3

Grey housing, painted to RAL 9006 -4

Mounting position

Mounting type vertical, sec. air grille and inspection in the room -VR

Mounting type horizontal in the ceiling -HO

Adjusting legs

without adjusting legs -0

with adjusting legs -1

Supply air diffuser

Supply air diffuser DBB-A -D1

Colour of the supply air diffuser

Colour of supply air diffuser: RAL 9010 white, white blades -22

Faceplate/frame colour x, blade/nozzle colour y -xy

Secondary air grille

Secondary air grille PAZ -R1

Colour of the secondary air grille

Colour of secondary air grille: RAL 9010 white -22

Faceplate/frame colour x, blade/nozzle colour y -xy

Sliding connection spigot for supply air diffuser and secondary air grille

Without sliding connection spigot (air diffusers in the device)	-M0
With sliding connection spigot, adjusting range: 25 to 105 mm	-M1
With sliding connection spigot, adjusting range: 75 to 205 mm	-M2

Primary air connection spigot position

Without primary air connection spigot	-P0
Primary air connection spigot on the left side of the box	-P1
Primary air connection spigot on the right side of the box	-P2
Primary air connection spigot on the top centre of the box	-P7
Primary air connection spigot in the centre rear of the box	-P9

Primary air spigot diameter

Without primary air connection spigot	-0
Spigot diameter DN78	-1
Spigot diameter DN98	-2
Spigot diameter DN123	-3

Water connection position

Water connection top left	-W1
Water connection top right	-W2
Water connection bottom left	-W3
Water connection bottom right	-W4
Water connection centre left side	-W5
Water connection centre right side	-W6
Water connection bottom left side	-W7
Water connection bottom right side	-W8

Mounting of hydraulic regulation

On-site mounting (pieces are supplied loose for on-site mounting outside the room air-conditioning module)	-000
cooling valve x, heating valve y, actuators z are mounted ex works	-xyz

Electric connection position

Electric connection top left	-S1
Electric connection top right	-S2
Electric connection bottom left	-S3
Electric connection bottom right	-S4
Electric connection centre left side	-S5
Electric connection centre right side	-S6
Electric connection bottom left side	-S7
Electric connection bottom right side	-S8

Additional control and regulation elements

Without additional control and regulation elements	-0
With fault message output	-1

Condensate connection position

Condensate connection top left	-K1
Condensate connection top right	-K2
Condensate connection bottom left	-K3
Condensate connection bottom right	-K4
Condensate connection centre left side	-K5
Condensate connection centre right side	-K6
Condensate connection bottom left side	-K7
Condensate connection bottom right side	-K8

Condensate pump

Without condensate pump	-0
With condensate pump Si-10, mounted ex works	-1

Accessories

Hydraulic connections

EDE-13 500 mm	-1
EDE-13 800 mm	-2
EDE-13 1200 mm	-3
AG male thread ½"	-A
AG male thread ¾"	-B
ÜMF flat seal spigot nut ½"	-C
ÜMF flat seal spigot nut ¾"	-D
R-AG-D rotating male thread ½"	-E
R-AG-D rotating male thread ¾"	-F
C-RV bend plug-in fitting DN15	-H
CE-RV bend plug-in fitting with ventilation DN15	-J
RV straight connector / plug-in fitting DN15	-L

Room thermostat

RDG160T	-TR05
RDG160KN	-TK02

Rotary drive for 6-way ball valve

GDB341.9E	-AR01
GDB161.9E	-AR02
GDB111.9E	-AR03

6-way ball valve

VWG41.10-0.25-0.40	-V601
VWG41.10-0.25-0.65	-V602
VWG41.10-0.25-1.00	-V603
VWG41.10-0.40-0.65	-V604
VWG41.10-0.40-1.00	-V605
VWG41.10-0.40-1.30	-V606
VWG41.10-0.40-1.60	-V607
VWG41.10-0.65-1.00	-V608
VWG41.10-0.65-1.30	-V609
VWG41.10-0.65-1.60	-V610
VWG41.10-1.00-1.30	-V611
VWG41.10-1.00-1.60	-V612
VWG41.10-1.00-1.90	-V613
VWG41.10-1.30-1.60	-V614
VWG41.10-1.30-1.90	-V615
VWG41.10-1.60-1.90	-V616
VWG41.10-1.90-1.90	-V617
VWG41.10-0.25-1.30	-V618
VWG41.10-0.25-1.60	-V619
VWG41.10-0.25-1.90	-V620
VWG41.10-0.40-0.40	-V621
VWG41.10-0.40-1.90	-V622
VWG41.10-0.65-0.65	-V623
VWG41.10-0.65-1.90	-V624
VWG41.10-1.00-1.00	-V625
VWG41.10-1.30-1.30	-V626
VWG41.10-1.60-1.60	-V627
VWG41.20-0.65-2.50	-V628
VWG41.20-1.00-2.50	-V629
VWG41.20-1.60-2.50	-V630
VWG41.20-1.60-3.45	-V631
VWG41.20-2.50-3.45	-V632
VWG41.20-2.50-4.25	-V633
VWG41.20-4.25-4.25	-V634
VWG41.20-0.25-2.50	-V635
VWG41.20-0.25-3.45	-V636
VWG41.20-0.25-4.25	-V637
VWG41.20-0.40-2.50	-V638
VWG41.20-0.40-3.45	-V639
VWG41.20-0.40-4.25	-V640
VWG41.20-0.65-3.45	-V641
VWG41.20-0.65-4.25	-V642
VWG41.20-1.00-3.45	-V643
VWG41.20-1.00-4.25	-V644
VWG41.20-1.30-2.50	-V645
VWG41.20-1.30-3.45	-V646
VWG41.20-1.30-4.25	-V647
VWG41.20-1.60-4.25	-V648
VWG41.20-2.50-2.50	-V649
VWG41.20-3.45-3.45	-V650