


CTT

Room air conditioning module




OPERATING CONDITIONS

- Medium: water
- Max. water inlet temperature: 50 °C
- Max. air outlet temperature: 45 °C
- Max. operating pressure in the battery: 16 bar
- Power supply: 230 V AC
- Actuator signal: 0...10 V
- Max. HR: 60 %
- Protection class: IP22
- Class IEC 60417-5180: Class III

ADVANTAGES

- Compact dimensions (depth 100 mm)
- High thermal performance in a small space
- Simple and time-saving installation
- Access to device components without tools
- Low maintenance expenditure
- Low power consumption
- Variants of supply and secondary air grille
- Adjustable volumetric flow
- Low-noise operation
- Different models available

PERFORMANCE DATA

	CTT-6	CTT-8
 $V_L =$	272 m ³ /h	369 m ³ /h
$L_{WA} =$	46 dB(A)	48 dB(A)
$W =$	63 W	77 W
 $Q =$	2.10 kW	2.88 kW
 $Q =$	2.33 kW	3.17 kW
$Q_S =$	1.62 kW	2.18 kW

Heating: $t_{w1} = 45$ °C, $t_{w2} = 40$ °C, $t_R = 20$ °C

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

The technical data are the same as those of the standard model according to (EU) 2016/2281

INTENDED USE

- Conditioning of rooms as a fan coil unit according to Commission Regulation (EU) 2016/2281 of 30 November 2016

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GENERAL DESCRIPTION

The SCHAKO room air-conditioning module CTT has been designed for decentralised air-conditioning and ventilation of interiors both for heating and cooling with water-based heat exchanger. It can be operated with circulating air, processed fresh air or in combination.

A very low depth of only 100 mm and the variably adjustable height from 2200 to 3000 mm and various supply air and secondary air grille variants allow integrated installation in partition elements, such as partition walls, ceilings, etc. without taking up any space in the room. Even in already existing rooms or in case of sanitation or conversion of existing rooms, it can be easily installed in front of the wall, in the wall or in the ceiling. If the use of the room is subsequently changed, the device can be easily dismantled and installed elsewhere.

The room air-conditioning module CTT is preferably suitable for installations in think tanks, office rooms, hotel rooms, apartments, laboratories, conference rooms, museums, restaurants, etc. whenever it is crucial not to impair the room visually or acoustically and simultaneously to minimise the space required for the installation.

Even at full capacity, the CTT always operates at a low noise level, since the fan noise can be reduced by insulating material and flow-optimised silencers. The device design also prevents vibrations from being transmitted.

	Motor (%)	V _L (m ³ /h)	Q (kW)	Q _T (kW)	Q _S (kW)	L _{WA} [dB(A)]	W (W)
CTT-6	25%	68	0.57	0.68	0.45	30	14
	50%	136	1.12	1.29	0.87	35	21
	75%	204	1.62	1.83	1.26	41	36
	100%	272	2.10	2.33	1.62	46	63
CTT-8	25%	92	0.77	0.85	0.58	27	16
	50%	185	1.53	1.70	1.15	34	23
	75%	277	2.23	2.46	1.68	43	41
	100%	369	2.88	3.17	2.18	48	77

Heating: t_{w1} = 45 °C, t_{w2} = 40 °C, t_R = 20 °C

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

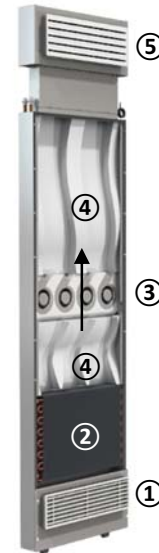
The technical data are the same as those of the standard model

Thanks to various grille variants and air throw patterns, the throw direction of the air can be adjusted to the architectural or aerodynamic requirements.

Mounting type	Heating	Cooling
Wall		
Ceiling		

OPERATION

The mode of operation of the room air-conditioning module CTT is based on the principle of the forced convection to generate the flow of the conditioned air and to balance the thermal loads.



① The secondary air enters via the lower front side and flows through the secondary air grille and the filter. ② The filtered air flows through the heat exchanger in which the air is conditioned. Then it moves through the fans ③ and flows through the sound absorption component ④. Finally, the conditioned air enters the room via the supply air diffuser ⑤.

DEVICE DESCRIPTION

STANDARD MODEL

1 – Housing

- Galvanised sheet steel with a thickness of 1 mm
- Natural colour
- Fireproof melamine foam acoustic insulation

2 – Secondary air grille type PA

- Frame and fixed horizontal blades made of anodised aluminium profile
- White colour, RAL 9010

3 – Filter

- Efficiency ISO coarse 40% according to ISO 16890
- Synthetic filter medium in galvanised steel frame

4 – Heat exchanger

- Galvanised sheet steel frame with aluminium blades and copper pipes
- Manual ventilation/draining system
- Connection via ½" quick-action plugs, male thread

5 – Silencer

- Fireproof melamine foam
- Optimised geometry

6 – Fans

- EC centrifugal fans, in series
- Specific silencers and fastenings

7.1 – Inspection cover of fans

7.2 – Inspection cover of the register

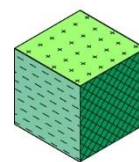
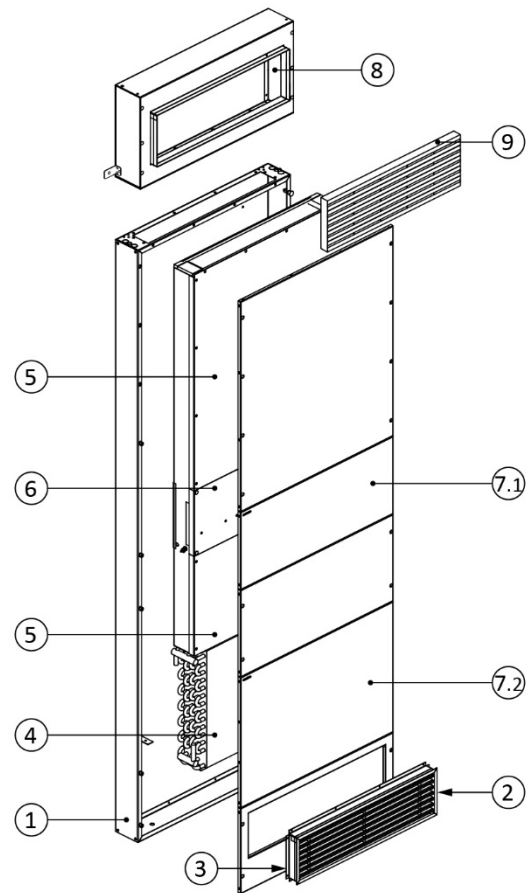
- Galvanised sheet steel with a thickness of 1 mm




8 – Box

- Galvanised sheet steel with a thickness of 1 mm

9 – Supply air diffuser type DSX-XXL-W-5

- Frame profile made of extruded aluminium profile painted to RAL 9010
- 5 slots with plastic blades. Blade colour black, RAL 9005



-  Front side of the device
-  Left side of the device
-  Upper side of the device

MODELS

CTT-...	Efficient room air-conditioning module
CTT-6...	Width 600 mm
CTT-8...	Width 800 mm
CTT-...-2200...	Minimum height 2200 mm
CTT-...-3000...	Maximum height 3000 mm
CTT-...-R...	Secondary air and inspection inside
CTT-...-A...	Secondary air and inspection outside
CTT-...-B...	Secondary air inside and inspection outside
CTT-...-C...	Secondary air outside and inspection inside
CTT-...-V...	Mounting type vertical in the wall
CTT-...-H...	Mounting type horizontal in the ceiling
CTT-...-1...	Connections top left
CTT-...-2...	Connections top right
CTT-...-3...	Connections bottom left
CTT-...-4...	Connections bottom right

Construction subject to change.
 No return possible.

OPTIONS

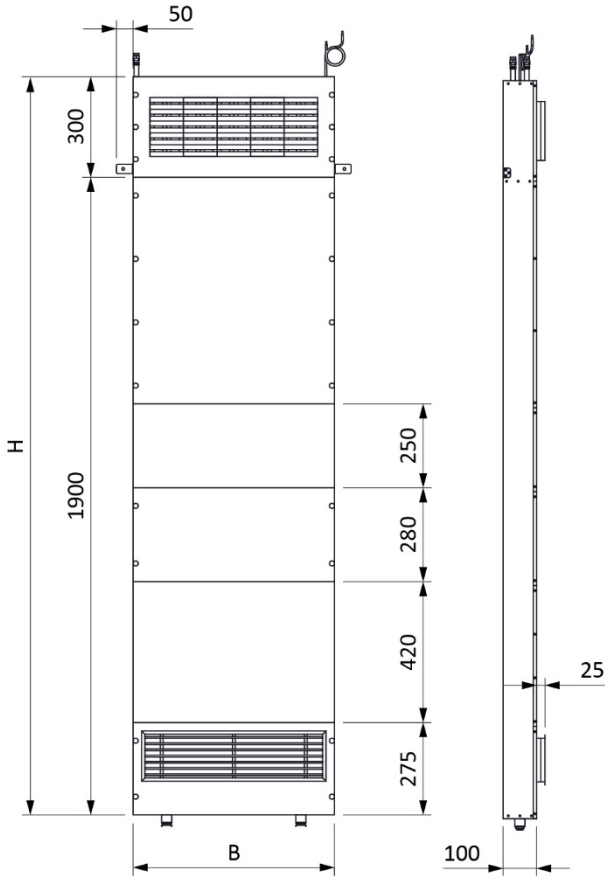
- Extension for height adjustment at the installation site
- Exchangeable diffusers, colour design in all colours of the RAL palette
- Primary air connecting piece
- Hydraulic connections
- plenum box
- Condensate pan
- Electrostatic precipitator

ACCESSORIES

- Room thermostat (must be ordered separately)
- Condensate pump
- Hydraulic regulation

MODELS AND DIMENSIONS

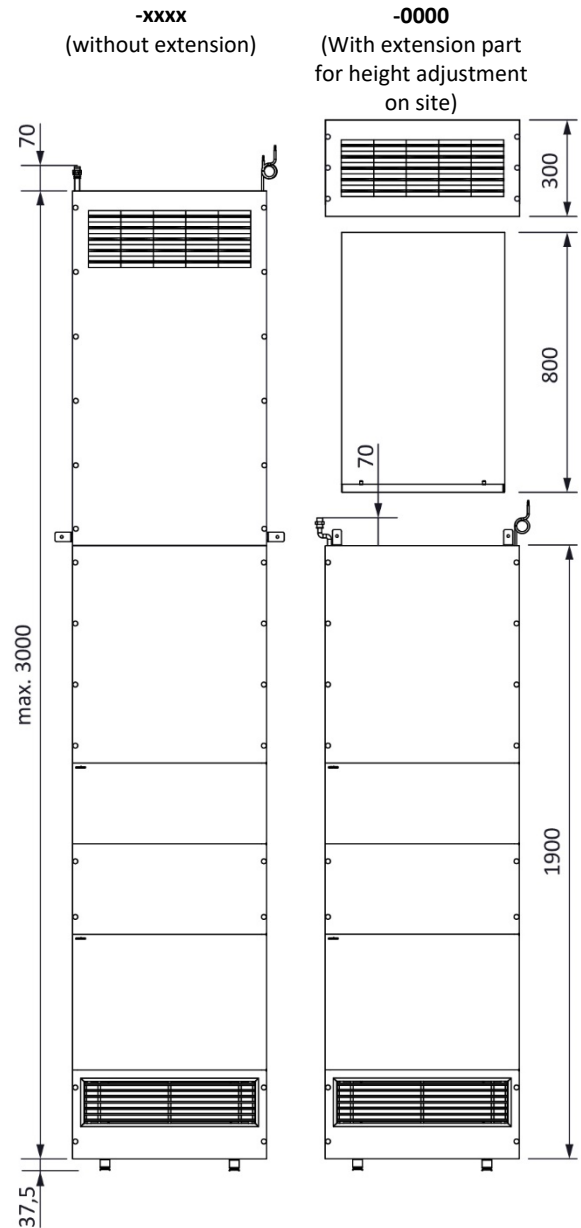
DIMENSIONS



Type	B (mm)	H (mm)	Weight (kg)
6	600	2200 ≤ H ≤ 3000	68
8	800	2200 ≤ H ≤ 3000	88

Dry weight of the standard model

TOTAL HEIGHT



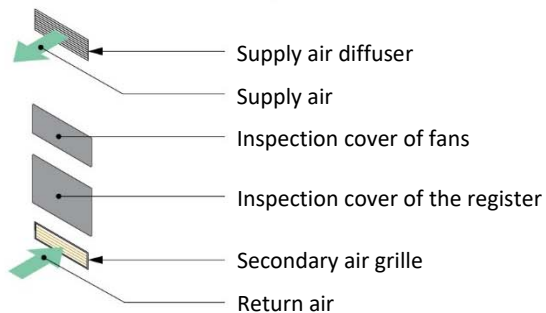
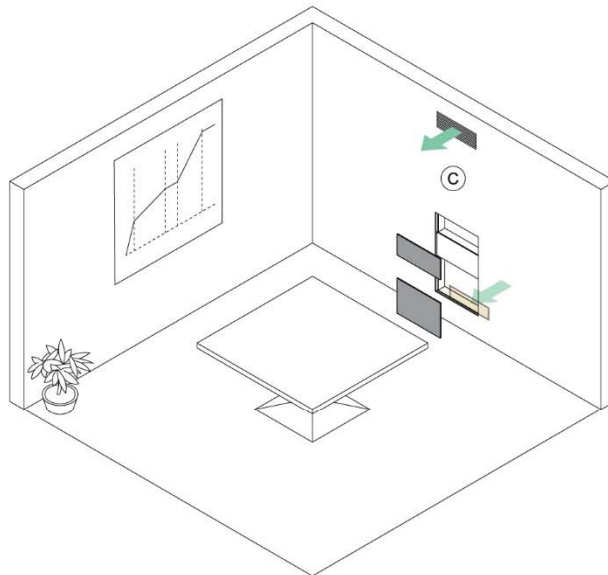
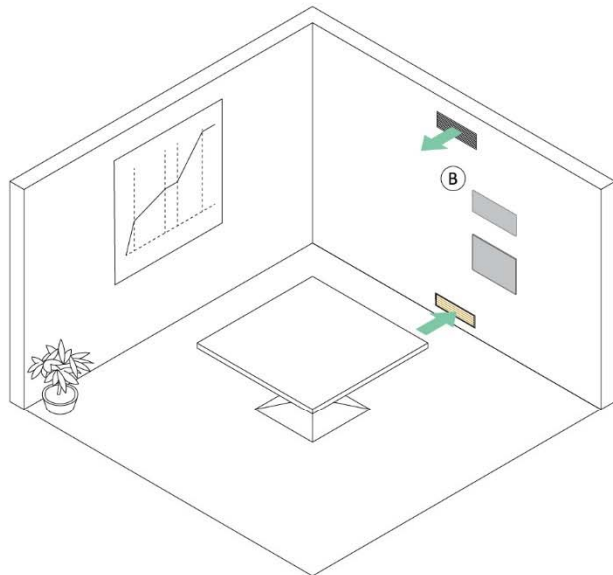
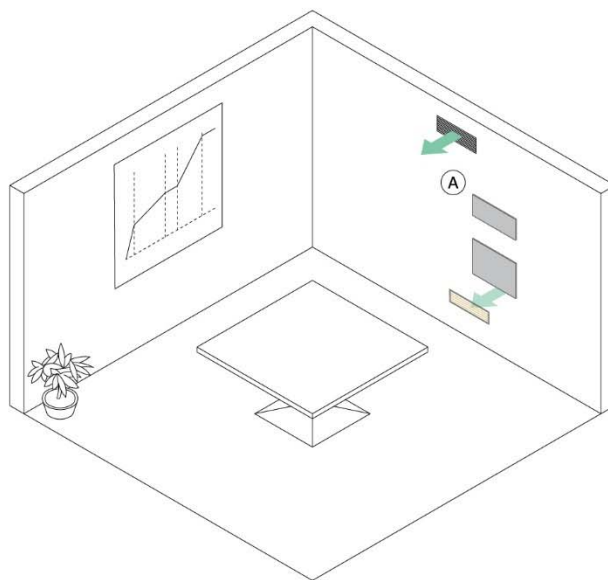
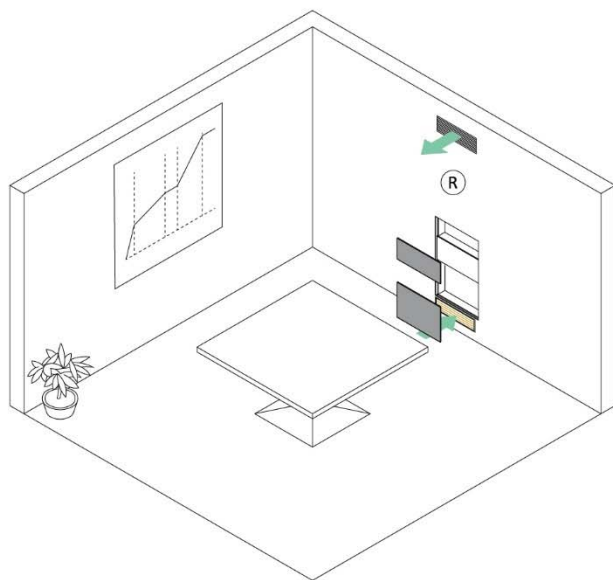
2200 = 2200 mm (standard)
xxxx = xxxx mm (from 2200 to 3000; always with 4 digits in mm)
0000 = device, extension part and box. Supplied loose for mounting on site (with total height 3000 mm)
 --- The dimensions do not include legs and connections.

MOUNTING POSITION

- R** = with secondary air grille and inspection cover within the room (standard)
- A** = with secondary air grille and inspection cover outside the room
- B** = with secondary air grille inside and inspection cover outside the room
- C** = with secondary air grille outside and inspection cover inside the room

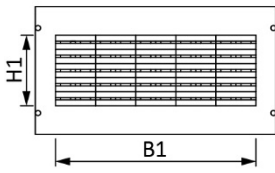
MOUNTING TYPE

- V** = vertical in the wall (standard)
- H** = horizontal in the ceiling (only for mounting position R; not possible for condensate pan; ceiling mounting with screwed supply/secondary air grille and inspection cover)

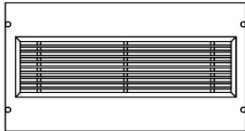


SUPPLY AIR DIFFUSER

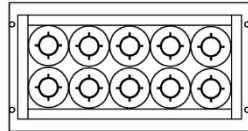
DSX = DSX-XXL-W-5 (standard)



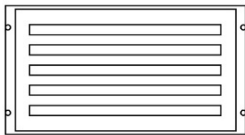
PAZ = PAZ-10-13



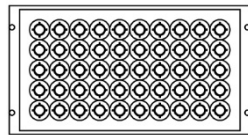
WGA = WGA-Q-F0



DBB = DBB-A



DSA = DSA-F0

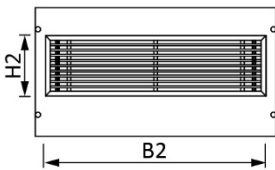


--- The -DBB and -DSA diffusers are not compatible with heights less than 2300 mm

Model	B1 x H1 (mm)	
	CTT-6	CTT-8
DSX-XXL-W-5	500 x 176	700 x 176
WGA-Q-F0	558 x 258	758 x 258
PAZ-10-13	550 x 150	750 x 150
DBB-A	550 x 302	750 x 302
DSA-F0	550 x 300	750 x 300

SECONDARY AIR GRILLE

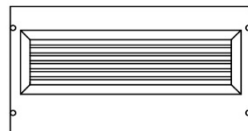
PAZ = PAZ-10-13* (standard)



IB1 = IB-Q-01



AL1 = AL1



Model	B2 x H2 (mm)	
	CTT-6	CTT-8
PAZ-10-13*	550 x 150	750 x 150
IB-Q-01	550 x 160	750 x 160
AL1	548 x 152	748 x 152

* (PAZ-10-8 with electrostatic filter)

COLOUR OF AIR DIFFUSERS

22 = RAL 9010 (white) (standard)

xy = colour of the faceplate/frame x, colour of the blade/nozzle y
 (for x, y, see table)

--- Further colours are available upon request.

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

POSITION OF THE CONNECTIONS

WATER CONNECTION

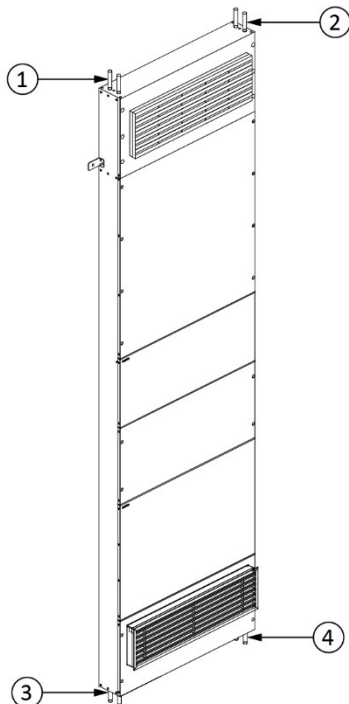
- W1** = Top left (not compatible with electrical connection S1) (standard)
- W2** = Top right (not compatible with electrical connection S2) (standard)
- W3** = Bottom left (not compatible with electrical connection S3)
- W4** = Bottom right (not compatible with electrical connection S4)

POSITION OF ELECTRICAL CONNECTION

- S1** = Top left (not compatible with water connection W1)
- S2** = Top right (not compatible with electrical connection W2) (standard)
- S3** = Bottom left (not compatible with electrical connection W3)
- S4** = Bottom right (not compatible with water connection W4)

CONDENSATE PAN

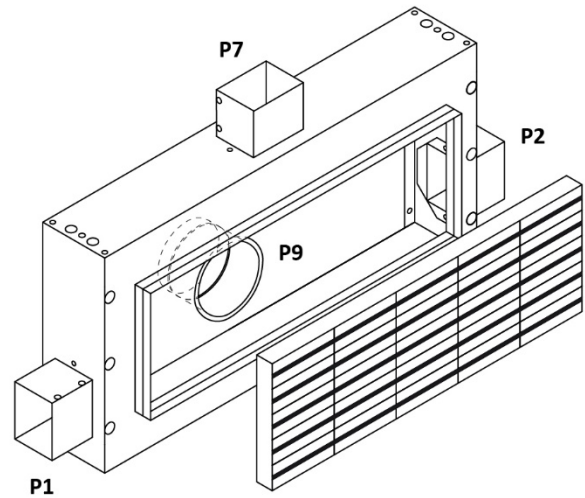
- K0** = without condensate pan (standard)
- K3** = with condensate pan, drain bottom left (only possible for vertical mounting, with G2 filter, hydraulic and electrical connection at the top)
- K4** = with condensate pan, drain bottom right (only possible for vertical mounting, with G2 filter, hydraulic and electrical connection at the top)
 - In the model with condensate pan, the inspection plate is screwed in front of the heat exchanger.
 - The device is supplied with cold insulation made of 3 mm thick polyethylene at the rear and on the sides. (Extension is insulated on site).



AIR CONNECTIONS

PRIMARY AIR CONNECTION SPIGOT POSITION

- P0** = without primary air connection spigot (standard)
- P1** = on the left side of the box
- P2** = on the right side of the box
- P7** = on top in the centre of the box
- P9** = at the rear in the centre of the box



SPIGOT DIAMETER

- 0** = without primary air connection spigot (standard)
- 1** = with DN78 (only for position P9) / 60x80 mm
- 2** = with DN98 (only for position P9) / 60x125 mm
- 3** = with DN123 (only for position P9) / 60x200 mm
 - Maximum primary air flow 50 m³/h for option -1 und 70 m³/h for options -2 and -3.

NOTE

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

HYDRAULIC CONNECTIONS000 = SMOOTH COPPER PIPE 12 MM





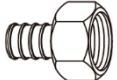





K0A = AG-RV ½" x 12 (standard)
K0B = AG-RV ¾" x 12
xyz = with device connection (x), flexible connection (y) and free connection to the hydraulic network (z)
 (For x, y, z, see table. All components are supplied loose for mounting on site)


--- BSPP thread according to ISO 228-1

--- Flexible connections according to DIN 4726

NOTE

Further information on the flexible hoses can be found in the technical documentation of the air-water accessories SCHAKO.

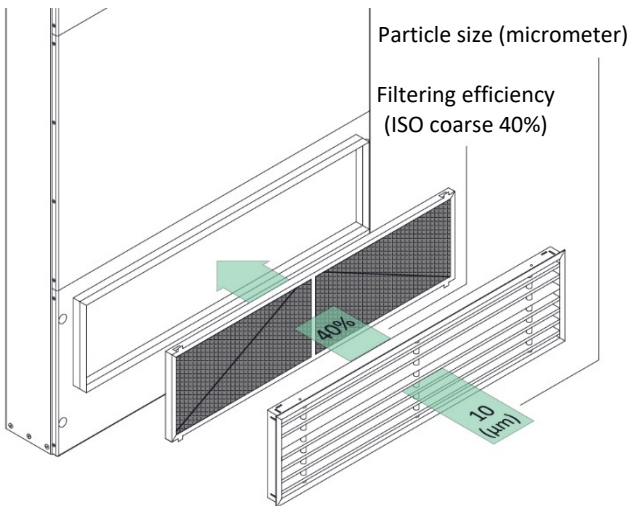
x (device connection)	y (flexible connection)	z (free connection)
G C-RV 12  Bend plug-in fitting	1 EDE-13-500 (L = 500 mm) 2 EDE-13-800 (L = 800 mm) 3 EDE-13-1200 (L = 1200 mm)  Armoured hose with stainless steel braid DN13	A AG ½" B AG ¾"  External thread
I CE-RV 12  Bend plug-in fitting with ventilation		C ÜMF ½" D ÜMF ¾"  Spigot nut flat sealing
K RV 12  Straight connector / plug-in fitting		E R-AG-D ½" F R-AG-D ¾"  Male thread rotatable
		G C-RV 12  Bend plug-in fitting
		I CE-RV 12  Bend plug-in fitting with ventilation
		K RV 12  Straight connector / plug-in fitting

xyz		
K0A AG-RV ½" x 12 K0B AG-RV ¾" x 12  Plug-in fitting with male thread		without flexible connection

AIR FILTER

G2 = filter ISO coarse 40% according to ISO 16890 integrated into the secondary air grille (standard)

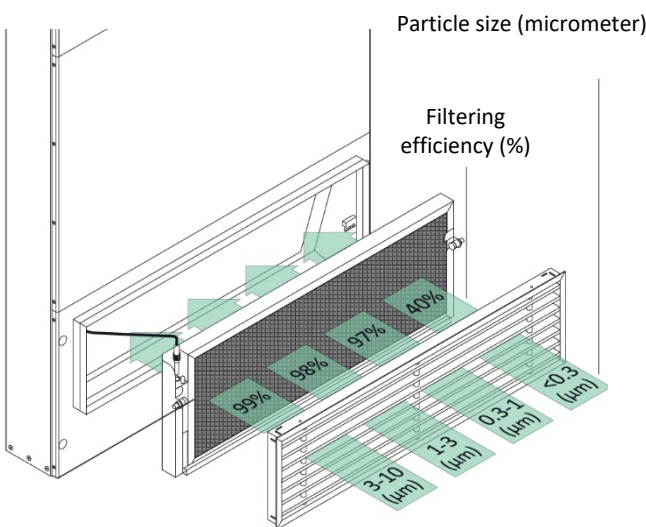
- Suitable for filtering coarse particles. Manufactured with steel frame and foam net made of a special netlike polyurethane to filter atmospheric dust, polyester basis from open baffles and controlled pore size.



Particle size (µm)	10
Filtering efficiency (ISO 16890)	ISO coarse 40%

EF = electrostatic precipitator (not compatible with a condensate pan)

- Made of aluminium profiles and synthetic insulating shield, high-voltage electrode, dielectric and disposable filter medium, circumferential edge to the seal and an LED operating indicator.



Particle size (µm)	3-10	1-3	0.3-1	<0.3
Filtering efficiency (%)	99	98	97	40

NOTE (EF)

The electrostatic filter has a protective device activated by opening the grille to prevent unintentional electrical contacts during maintenance activities.

The filter generates an electrostatic field which polarises a dielectric medium. During this process, no ozone is produced and air particles are not ionised.

input voltage	24 V AC/DC
Output voltage of the transformer	7200 V DC
Current consumption	2 W
Transformer capacity	0.7 VA
Maximum flow velocity	2.5 m/s

ELECTRICAL PLENUM BOX

0 = Without electrical plenum box (standard)

1 = Electrical plenum box

2 = Pre-wired electrical plenum box for control

- External element

- With source and line filter

- Ensure contact protection according to DIN EN 60335-1

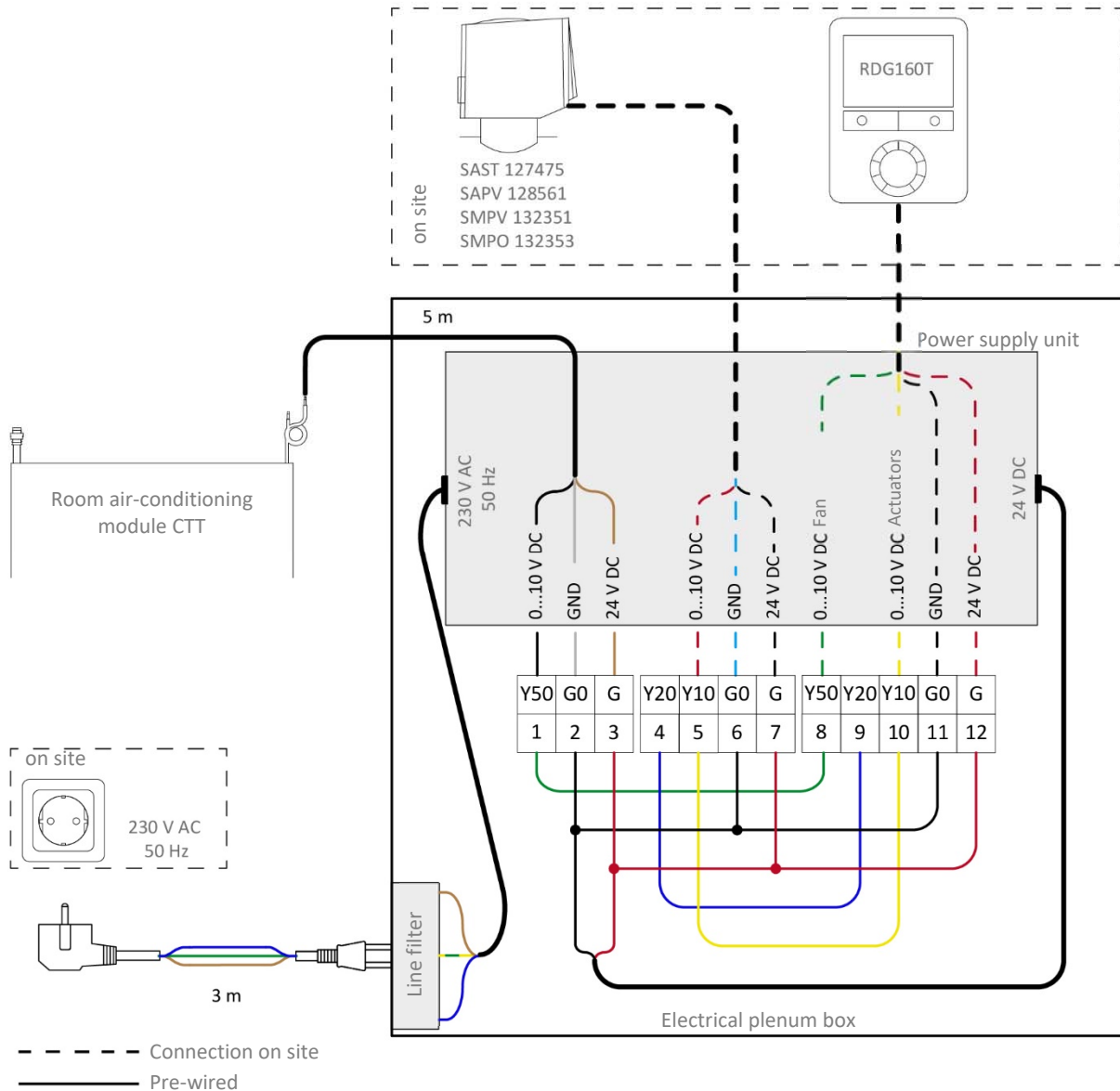
- Protection against short-circuit, overvoltage and temperature

NOTE

Circuit diagrams on pages 11 and 12.

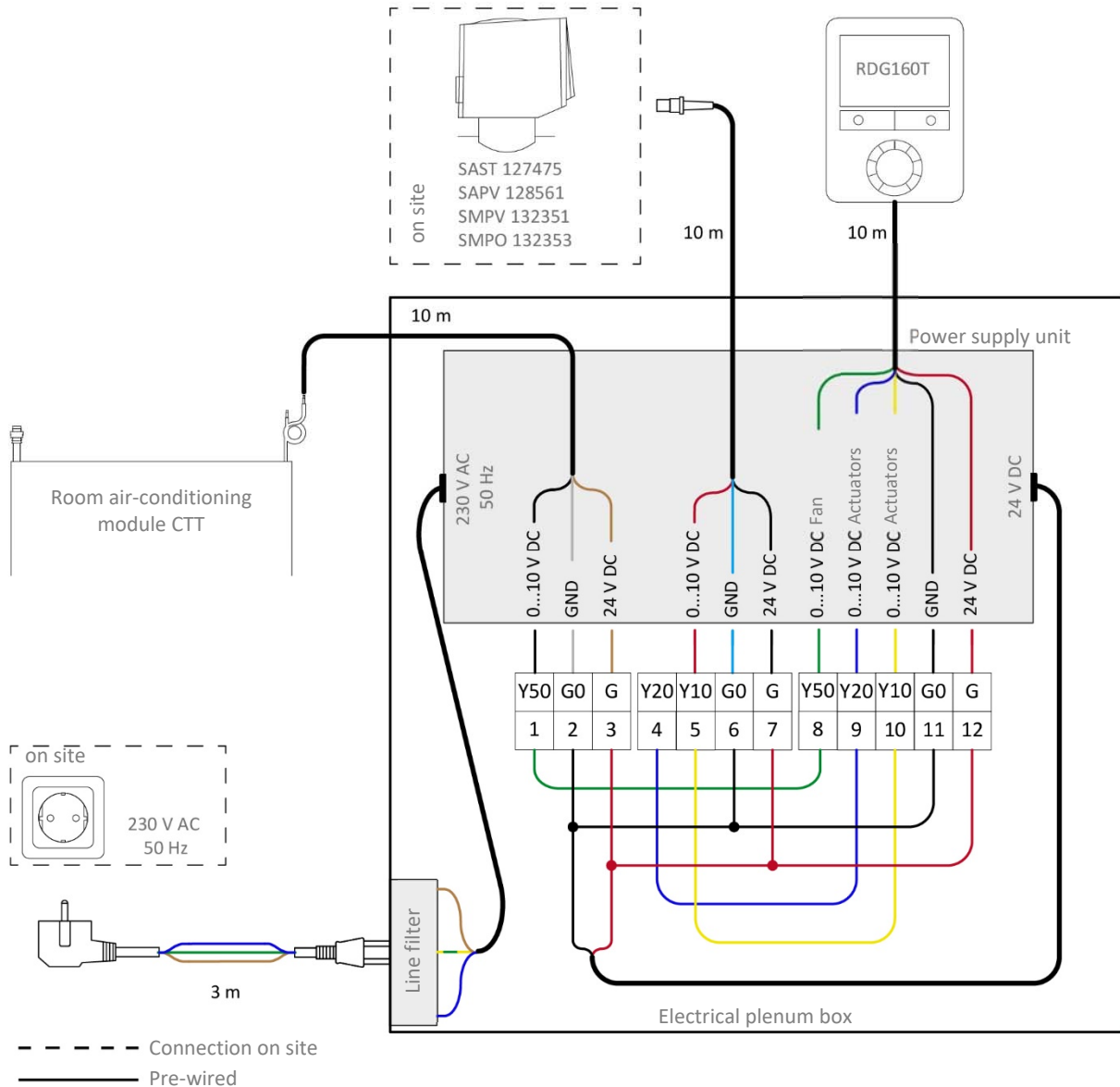
Input	0.8 A 230 V AC 47~63 Hz
Output	24 V DC 0~6.3 A
Weight	1.55 kg
Dimensions	241 x 180 x 95 mm
Protection class	IP65

Circuit diagram 1: standard plenum box



Cable 1: CTT fan		
Ref.	Description	Cable colour
1	Y50 Control output fan DC 0...10 V	Black
2	G0 GND	Grey
3	G 24 V DC	Brown
Cable 2: Cooling / heating actuator		
Ref.	Description	Cable colour
4	Y20 Control output for cooling DC 0...10 V actuators	Red
5	Y10 Control output for heating DC 0...10 V actuators	Red
6	G0 GND	Blue
7	G 24 V DC max. 0.5 A	Black
Cable 3: Room thermostat		
Ref.	Description	Cable colour
8	Y50 Control input fan DC 0...10 V	Green
9	Y20 Control input for cooling DC 0...10 V actuators	Blue
10	Y10 Control input for heating DC 0...10 V actuators	Yellow
11	G0 GND	Black
12	G 24 DC max. 0.1 A	Red

Circuit diagram 2: Pre-wired plenum box for control



Cable 1: CTT fan		
Ref.	Description	Cable colour
1	Y50 Control output fan DC 0...10 V	Black
2	G0 GND	Grey
3	G 24 V DC	Brown
Cable 2: Cooling / heating actuator		
Ref.	Description	Cable colour
4	Y20 Control output for cooling DC 0...10 V actuators	Red
5	Y10 Control output for heating DC 0...10 V actuators	Red
6	G0 GND	Blue
7	G 24 V DC max. 0.5 A	Black
Cable 3: Room thermostat		
Ref.	Description	Cable colour
8	Y50 Control input fan DC 0...10 V	Green
9	Y20 Control input for cooling DC 0...10 V actuators	Blue
10	Y10 Control input for heating DC 0...10 V actuators	Yellow
11	G0 GND	Black
12	G 24 DC max. 0.1 A	Red

ACCESSORIES

NOTE

All accessories are supplied loose for mounting on site outside the CTT.

CONDENSATE PUMP SI-10

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 (autom. restart)
Operating cycle	100 % continuous
Protection	IP54
Dimensions	43.5 x 66 x 77 mm

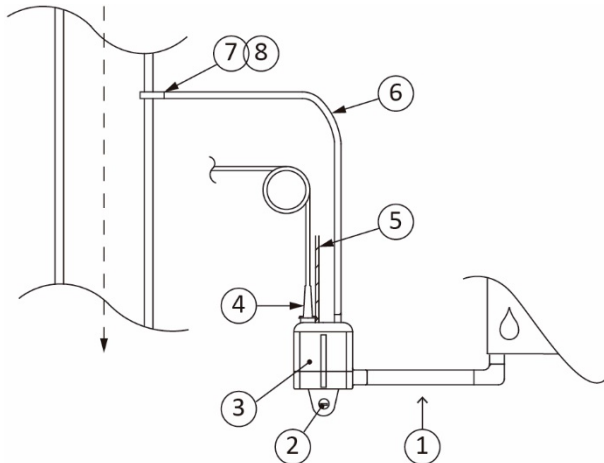
NOTE

Safety function is triggered via a NC contact with a max. switching power of 8 A/250 V resistive load. This safety contact is used to switch off the cooling system if there is a risk of condensate overflow (after checking the circuit diagram and the customer application by the installer).

ATTENTION

To avoid any risk of condensate overflow, it is mandatory to connect the contact for safety function.

Installation drawing:

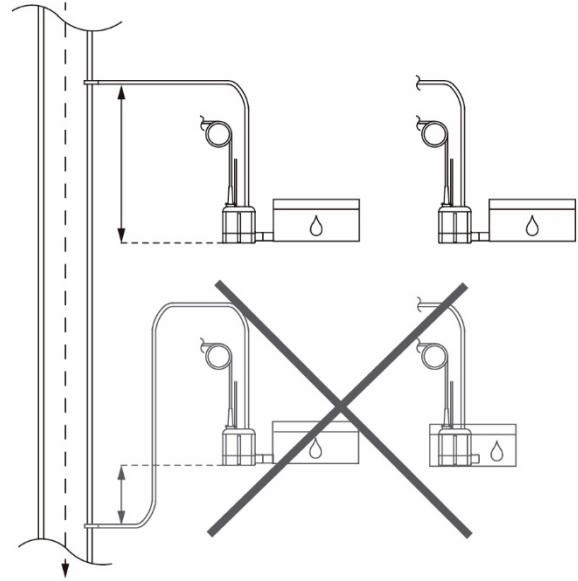


- ① Suction pipe with 15 mm internal diameter
- ② Mounting plate
- ③ Condensate pump Si-10 with integrated sensor
- ④ Connecting cable 1.5 m
- ⑤ Ventilation pipe with 4 mm internal diameter
- ⑥ Condensation pipe with 6 mm internal diameter
- ⑦ Venting valve "Drain Safe"
- ⑧ On-site connection to drain pipe with 6 mm internal diameter

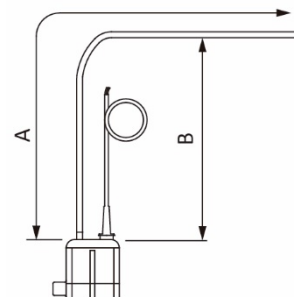
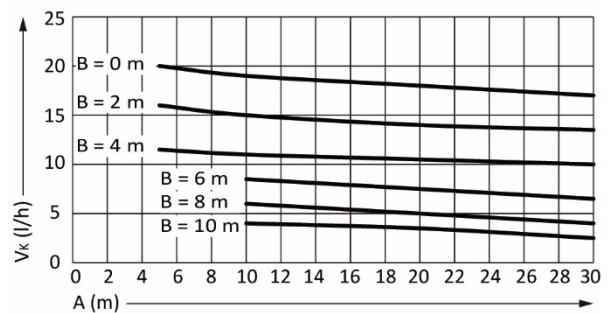
Construction subject to change.
 No return possible.

ATTENTION

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



Function:



HYDRAULIC REGULATION

Combination valves

- The volumetric flow [l/h] can be found in the technical documentation or in the SCHAKO design program.
- Selection of the optimum valve. The valve must be operated at approx. 80% of its V_{Wmax} .

Model	DN	Connection	V_W min. - max. (l/h)	$\Delta p_{min-max}$ (kPa)
VPP46.10L0.2	10	G ½"	30 - 200	16 - 600
VPP46.15L0.2	15	G ¾"	30 - 200	16 - 600
VPP46.15L0.6	15	G ¾"	100 - 575	19 - 600
VPP46.20F1.4	20	G 1"	200 - 1190	21 - 600
			220 - 1330	22 - 600
VPI46.15L0.2	15	Rp ½"	30 - 200	16 - 600
VPI46.15L0.6	15	Rp ½"	100 - 575	19 - 600
VPI46.20F1.4	20	Rp ¾"	200 - 1190	21 - 600
			220 - 1130	22 - 600
VPP46.10L0.2Q	10	G ½"	30 - 200	16 - 600
VPP46.15L0.2Q	15	G ¾"	30 - 200	16 - 600
VPP46.15L0.6Q	15	G ¾"	100 - 575	19 - 600
VPP46.20F1.4Q	20	G 1"	200 - 1190	21 - 600
			220 - 1330	22 - 600
VPI46.15L0.2Q	15	Rp ½"	30 - 200	16 - 600
VPI46.15L0.6Q	15	Rp ½"	100 - 575	19 - 600
VPI46.20F1.4Q	20	Rp ¾"	200 - 1190	21 - 600
			220 - 1330	22 - 600

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

Actuators

Model	Type	Actuator signal	Operating voltage
SAST127475	T	ON/OFF - NC	24 V AC/DC 50/60 Hz
SAPV128561	T	DC 0...10 V - NC	24 V DC
SMPV132351	M	DC 0...10 V	24 V AC/DC 50/60 Hz
SMPO132353	M	DC 0...10 V	24 V AC/DC 50/60 Hz

T = Thermal

M = Motorised

--- The valve and the actuator can be adjusted on site without tools.

6-way ball valve

Model	DN	k _{vs} left (m ³ /h)	k _{vs} right (m ³ /h)	Adapter DN		
				15	20	25
VWG41.10-0.25-0.4	10	0.25	0.40	✓	-	-
VWG41.10-0.25-0.65	10	0.25	0.65	✓	-	-
VWG41.10-0.25-1.0	10	0.25	1.00	✓	-	-
VWG41.10-0.4-0.65	10	0.40	0.65	✓	-	-
VWG41.10-0.4-1.0	10	0.40	1.00	✓	-	-
VWG41.10-0.4-1.3	10	0.40	1.30	✓	-	-
VWG41.10-0.4-1.6	10	0.40	1.60	✓	-	-
VWG41.10-0.65-1.0	10	0.65	1.00	✓	-	-
VWG41.10-0.65-1.3	10	0.65	1.30	✓	-	-
VWG41.10-0.65-1.6	10	0.65	1.60	✓	-	-
VWG41.10-1.0-1.3	10	1.00	1.30	✓	-	-
VWG41.10-1.0-1.6	10	1.00	1.60	✓	-	-
VWG41.10-1.0-1.9	10	1.00	1.90	✓	-	-
VWG41.10-1.3-1.6	10	1.30	1.60	✓	-	-
VWG41.10-1.3-1.9	10	1.30	1.90	✓	-	-
VWG41.10-1.6-1.9	10	1.60	1.90	✓	-	-
VWG41.10-1.9-1.9	10	1.90	1.90	✓	-	-
VWG41.10-0.25-1.3	10	0.25	1.30	✓	-	-
VWG41.10-0.25-1.6	10	0.25	1.60	✓	-	-
VWG41.10-0.25-1.9	10	0.25	1.90	✓	-	-
VWG41.10-0.4-0.4	10	0.40	0.40	✓	-	-
VWG41.10-0.4-1.9	10	0.40	1.90	✓	-	-
VWG41.10-0.65-0.65	10	0.65	0.65	✓	-	-
VWG41.10-0.65-1.9	10	0.65	1.90	✓	-	-
VWG41.10-1.0-1.0	10	1.00	1.00	✓	-	-
VWG41.10-1.3-1.3	10	1.30	1.30	✓	-	-
VWG41.10-1.6-1.6	10	1.60	1.60	✓	-	-
VWG41.20-0.65-2.5	20	0.65	2.50	*	✓	✓
VWG41.20-1.0-2.5	20	1.00	2.50	*	✓	✓
VWG41.20-1.6-2.5	20	1.60	2.50	*	✓	✓
VWG41.20-1.6-3.45	20	1.60	3.45	*	✓	✓
VWG41.20-2.5-3.45	20	2.50	3.45	*	✓	✓
VWG41.20-2.5-4.25	20	2.50	4.25	*	*	*
VWG41.20-4.25-4.25	20	4.25	4.25	*	*	*
VWG41.20-0.25-2.5	20	0.25	2.50	*	✓	✓
VWG41.20-0.25-3.45	20	0.25	3.45	*	✓	✓
VWG41.20-0.25-4.25	20	0.25	4.25	*	*	*
VWG41.20-0.4-2.5	20	0.40	2.50	*	✓	✓
VWG41.20-0.4-3.45	20	0.40	3.45	*	✓	✓
VWG41.20-0.4-4.25	20	0.40	4.25	*	*	*
VWG41.20-0.65-3.45	20	0.65	3.45	*	✓	✓
VWG41.20-0.65-4.25	20	0.65	4.25	*	*	*
VWG41.20-1.0-3.45	20	1.00	3.45	*	✓	✓
VWG41.20-1.0-4.25	20	1.00	4.25	*	*	*
VWG41.20-1.3-2.5	20	1.30	2.50	*	✓	✓
VWG41.20-1.3-3.45	20	1.30	3.45	*	✓	✓
VWG41.20-1.3-4.25	20	1.30	4.25	*	*	*
VWG41.20-1.6-4.25	20	1.60	4.25	*	*	*
VWG41.20-2.5-2.5	20	2.50	2.50	*	✓	✓
VWG41.20-3.45-3.45	20	3.45	3.45	*	✓	✓

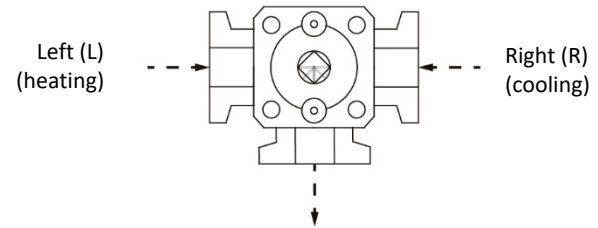
--- Flat-sealing male thread G..B according to ISO 228-1.

- ✓ = 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

EXAMPLE

VWG41.10-0,25-0,40

VWG41.10 | kvs left 0.25 m³/h | kvs right 0.40 m³/h



Rotary drive for 6-way ball valve

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

ROOM THERMOSTAT

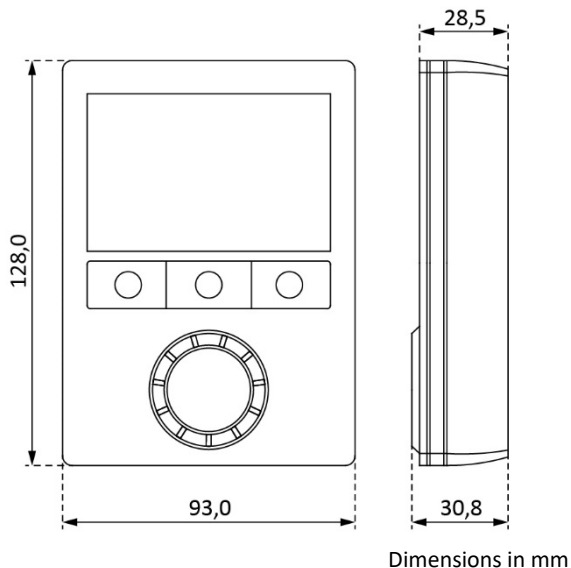
A room thermostat can be used both to actuate the actuators and to control the fans. The room air-conditioning module CTT has been especially designed for operation with RDG160T.

Model	Operating voltage (50/60 Hz)	Control outputs				Fan	
		ON/OFF	PWM	3-point	DC 0..10 V	ECM	3-stage
RDG160T	AC/DC 24V	2			2	✓	

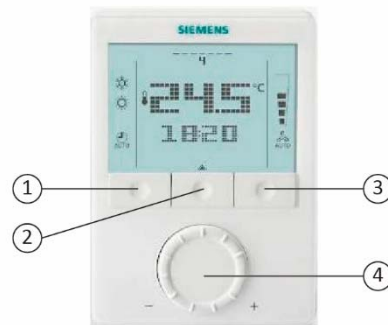
ATTENTION

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

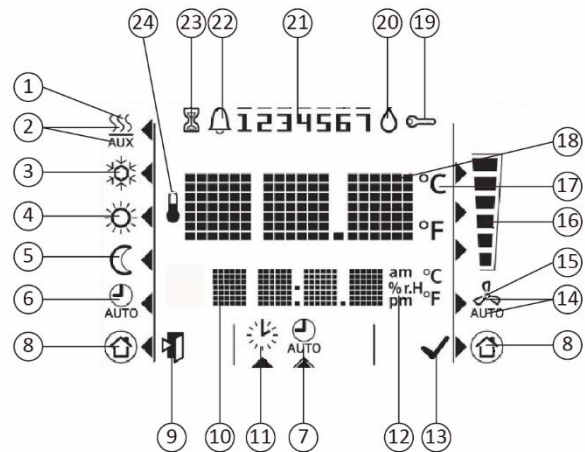
Dimensions:



Operation:



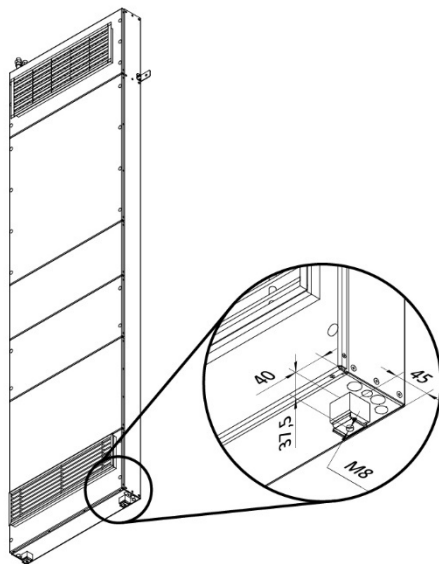
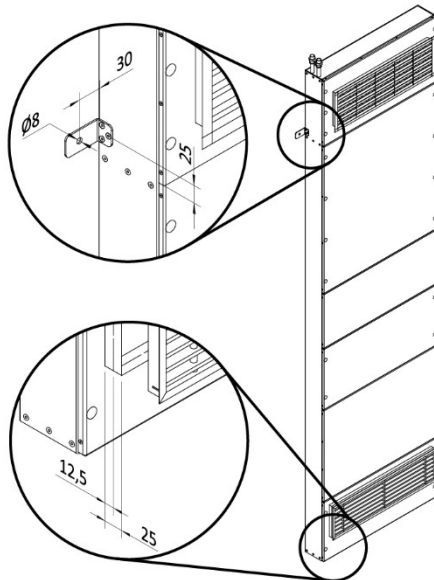
- 1 = Operating mode selection button/back to normal operation
- 2 = Button to set time and switching times of the timer (only RDG160T)
- 3 = Fan operation selection button/OK
- 4 = Rotary knob to set nominal values and parameters



- 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, nominal 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 nominal 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

The CTT series has been developed for installation in vertical and horizontal separating elements. The model has been optimised for both cases, enabling quick mounting and shifting of the device, if required.

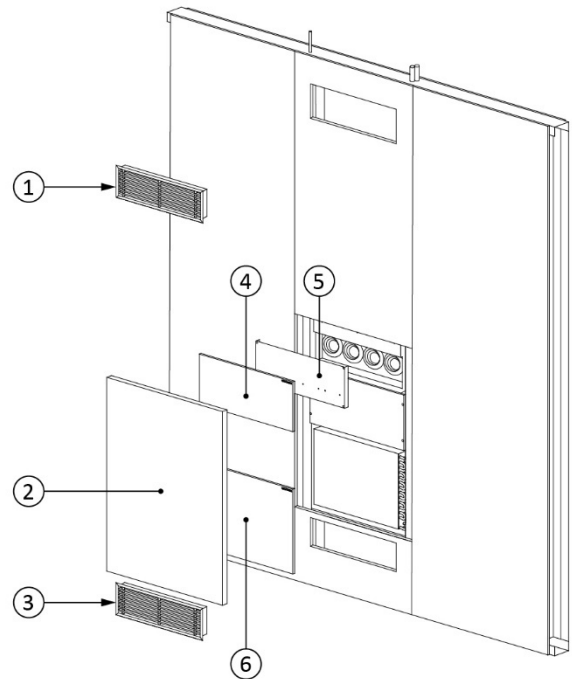


Device model for installation in lightweight walls/single-plank walls with plasterboards with a standard thickness of 12.5 and 25 mm.

Construction subject to change.
 No return possible.

MAINTENANCE

When developing the CTT, the objective has always been to make the maintenance activities easier. Thus, the inspection cover and the diffusers allow easy access to the internal components.



- ① Supply air diffuser
- ② Lightweight walls/single-plank wall with plasterboards
- ③ Secondary air grille
- ④ Inspection cover of fans 1
- ⑤ Inspection cover of fans 2
- ⑥ Inspection cover of the register

TECHNICAL DATA

Cooling power

	Motor [%]	V (V)	V _L (m ³ /h)	Q _T (kW)	Q _S (kW)	V _w (l/h)	Pa _w (kPa)	t _{L2} (°C)	Q _S (kW)	V _w (l/h)	Pa _w (kPa)	t _{L2} (°C)	W (W)
CTT-6	25%	2.0	68	0.68	0.45	116	0.7	6.6	0.25	109	0.6	15.6	14
	50%	3.9	136	1.29	0.87	220	2.0	7.3	0.50	213	1.8	15.9	21
	75%	6.8	204	1.83	1.26	314	3.7	8.1	0.72	310	3.4	16.2	36
	100%	10.0	272	2.33	1.62	399	5.6	8.7	0.93	401	5.3	16.5	63
CTT-8	25%	1.9	92	0.85	0.58	146	1.2	7.7	0.33	143	1.1	16.0	16
	50%	3.6	185	1.70	1.15	290	3.9	7.9	0.65	281	3.5	16.2	23
	75%	6.4	277	2.46	1.68	421	7.4	8.4	0.96	411	6.7	16.4	41
	100%	10.0	369	3.17	2.18	542	11.4	8.9	1.24	534	10.5	16.7	77

Cooling with condensation: t_{w1} = 7 °C, t_{w2} = 12 °C, t_r = 26 °C, HR = 47 %

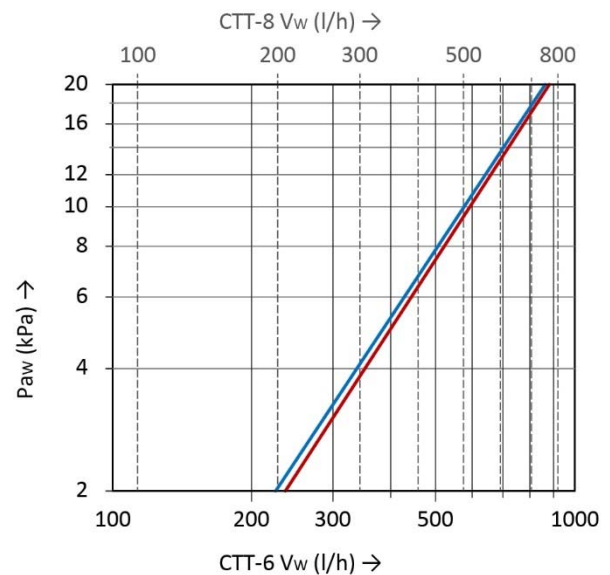
Cooling without condensation: t: t_{w1} = 16 °C, t_{w2} = 18 °C, t_r = 27 °C, HR = 47 %

Heating power

	Motor [%]	V (V)	V _L (m ³ /h)	Q (kW)	V _w (l/h)	Pa _w (kPa)	t _{L2} (°C)	W (W)
CTT-6	25%	2.0	68	0.57	99	0.4	44.8	14
	50%	3.9	136	1.12	194	1.4	44.5	21
	75%	6.8	204	1.62	283	2.7	43.7	36
	100%	10.0	272	2.10	366	4.3	43.0	63
CTT-8	25%	1.9	92	0.77	135	0.9	45.0	16
	50%	3.6	185	1.53	266	2.9	44.7	23
	75%	6.4	277	2.23	388	5.6	44.0	41
	100%	10.0	369	2.88	502	8.8	43.3	77

Heating: t_{w1} = 45 °C, t_{w2} = 40 °C, t_r = 20 °C

Pressure loss at the register



Heating: t_{w1} = 45 °C, t_{w2} = 40 °C

Cooling: t_{w1} = 16 °C, t_{w2} = 18 °C

Sound power level

	Motor (%)	63 Hz	125 Hz	250 Hz	500 Hz	L _w (dB)				L _{WA} (dB(A))
						1000 Hz	2000 Hz	4000 Hz	8000 Hz	
CTT-6	25%	48	36	22	22	17	20	22	23	30
	50%	50	45	37	29	21	20	22	23	34
	75%	50	52	45	37	29	22	22	23	41
	100%	55	56	51	41	34	25	22	23	46
CTT-8	25%	46	35	31	24	15	≤15	16	≤15	28
	50%	48	45	37	30	23	≤15	17	≤15	34
	75%	50	55	46	37	33	19	16	≤15	42
	100%	55	59	53	43	38	27	17	≤15	48

NOTE

All calculations of the CTT can be performed using the SCHAKO design program.

The technical data are the same as those of the standard model.

If conditioned primary air is introduced by the CTT, the cooling/heating power in the device is reduced by lower volumetric flow via the fan.

The A-weighted sound power level of the type with the condensate pan can be up to 3 dB(A) higher than that of the standard model

LEGEND

B	(mm)	=	Width
H	(mm)	=	Height
HR	(%)	=	Relative humidity in the room
P_{aW}	(kPa)	=	Water pressure loss in the heat exchanger
Q	(kW)	=	Thermal capacity
Q_T	(kW)	=	Total capacity
Q_S	(kW)	=	Sensible capacity
t_{L2}	(°C)	=	Air outlet temperature
t_R	(°C)	=	Room air temperature
t_{W1}	(°C)	=	Water inlet temperature
t_{W2}	(°C)	=	Water outlet temperature
V	(V)	=	Fan voltage
V_L	(m ³ /h)	=	Volumetric flow
	[l/s]		
V_K	(l/h)	=	Amount of condensate
V_W	(l/h)	=	Water volumetric flow
L_W	(dB)	=	Sound power level ($W_{ref} = 1 \text{ pW}$)
L_{WA}	[dB(A)]	=	A-weighted sound power level ($W_{ref} = 1 \text{ pW}$)
W	(W)	=	Operating power
k_{VS}	(m ³ /h)	=	Nominal flow value of the cold water through the fully open valve (H_{100}) at a dif- ferential pressure of 100 kPa (1 bar)

ORDER CODE

01	02	03	04	05	06	07
Type	Width	Total height	Mounting position	Mounting type	Supply air diffuser	Color Supply air diffuser
Example:						
CTT	-6	-2200	-R	-V	-DSX	-22

08	09	10	11	12	13	14
Secondary air grille	Colour of the secondary air grille	Position of the primary air connection spigot	Spigot diameter	Water connection position	Hydraulic connections	Position of electrical connection
-PAZ	-22	-P0	-0	-W1	-K0A	-S2

15	16	17
Plenum box	Condensate pan	Air filter
-0	-K0	-G2

NOTE

Please always specify the complete order code in the order!
 If details are missing, the standard model will be delivered.
 Each special model not included in the order code must be defined before ordering.
 * = if no details are given, processing is impossible

SAMPLE

CTT-6-2200-R-V-DSX-22-PAZ-22-P0-0-W1-K0A-S2-0-K0-G2

Room air-conditioning module CTT | width 600 mm | total height 2200 mm without extension | secondary air grille and inspection cover inside the room | mounting type vertical in the wall | supply air diffuser DSX-XXL-W-5 | colour of the supply air diffuser RAL 9010 (white) | secondary air grille PAZ-10-13 | colour of the secondary air grille RAL 9010 (white) | without primary air connection spigot | without primary air connection spigot | water connection position top left | hydraulic connections AG-RV ½" x 12 | position of electrical connection top right | without electrical plenum box | without condensate pan | filter ISO coarse 40% according to ISO 16890 integrated into the secondary air grille

ORDER DETAILS

01 – Type

CTT = room air-conditioning module CTT

02 – Width *

6 = 600 mm
 8 = 800 mm

03 – Total height *

2200 = 2200 mm
 xxxx = xxxx mm (from 2200 to 3000; always with 4 digits in mm)
 0000 = device, extension and box. Supplied loose for mounting on site (with total height 3000 mm)
 --- (Legs and connections are not included)

04 – Mounting position

R = secondary air grille and inspection cover within the room (standard)
 A = secondary air grille and inspection cover outside the room
 B = secondary air grille inside and inspection cover outside the room
 C = secondary air grille outside and inspection cover inside the room

05 – Mounting type

V = vertical in the wall (standard)
 H = horizontal in the ceiling (only for mounting position R; not possible for condensate pan; ceiling mounting with screwed supply/secondary air grille and inspection cover)

06 – Supply air diffuser

DSX = DSX-XXL-W-5 (standard)
 DBB = DBB-A
 DSA = DSA-F0
 WGA = WGA-Q-F0
 PAZ = PAZ-10-13

--- The -DBB and -DSA diffusers are not compatible with heights less than 2300 mm

07 – Colour of the supply air diffuser

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

08 – Secondary air grille

PAZ = PAZ-10-13 (PAZ-10-8 with electrostatic filter) (standard)
 IB1 = IB-Q-01
 AL1 = AL1

09 – Colour of the secondary air grille

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

--- *(Further colours are available upon request)*

10 – Position of the primary air connection spigot

- P0 = without primary air connection spigot (standard)
P1 = on the left side of the box
P2 = on the right side of the box
P7 = on top in the centre of the box
P9 = at the rear of the box

11 – Spigot diameter

- 0 = without primary air connection spigot (standard)
1 = with DN78 (only for position P9) / 60x80 mm
2 = with DN98 (only for position P9) / 60x125 mm
3 = with DN123 (only for position P9) / 60x200 mm

12 – Water connection position

- W1 = Top left (not compatible with electrical connection S1) (standard)
W2 = Top right (not compatible with electrical connection S2)
W3 = Bottom left (not compatible with electrical connection S3)
W4 = Bottom right (not compatible with electrical connection S4)

13 – Hydraulic connections

- 000 = copper pipes without hydraulic connections 12 mm
K0A = AG-RV ½" x 12 (standard)
K0B = AG-RV ¾" x 12
xyz = with device connection (x), flexible connection (y) and free connection to the hydraulic network (z)
(For x, y, z, see table. All components are supplied loose for mounting on site)

14 – Position of electrical connection

- S1 = Top left (not compatible with water connection W1)
S2 = Top right (not compatible with water connection W2) (standard)
S3 = Bottom left (not compatible with water connection W3)
S4 = Bottom right (not compatible with water connection W4)

15 – Electrical plenum box

- 0 = without electrical plenum box (standard)
1 = with electrical plenum box
2 = with pre-wired electrical plenum box for control

--- *External element*

16 – Condensate pan

- K0 = without condensate pan (standard)
K3 = with condensate pan, drain bottom left (only possible for vertical mounting, with G2 filter, hydraulic and electrical connection at the top)
K4 = with condensate pan, drain bottom right (only possible for vertical mounting, with G2 filter, hydraulic and electrical connection at the top)

17 – Air filter

- G2 = filter ISO coarse 40% according to ISO 16890 integrated into the secondary air grille (standard)
EF = electrostatic precipitator (not possible for a condensate pan)

SPECIFICATION TEXT

Room air-conditioning module ready for connection, with a very slim design of 100 mm for decentralised air-conditioning of rooms in the 2-pipe system. Suitable for installation in light-weight partition walls, in front of the wall or in facing plywood, and in horizontal mounting (ceiling). The model is made of galvanised sheet steel with thermal and acoustic insulation. The module is easily accessible for mounting and maintenance purposes. In vertical version, the ventilation grilles for supply and secondary air and the ISO coarse 40% secondary air filter can be removed without tools. Heat exchanger with aluminium blades and copper pipe. Highly efficient flow-optimised silencers made of melamine foam. Constantly controllable ECM fans for minimum energy consumption.

Product: SCHAKO
Type: Room air conditioning module CTT

MODELS

Width	
600 mm	-6
800 mm	-8
Total height	
2200 mm	-2200
xxxx mm	-xxxx
Device, extension and box. Supplied loose for mounting on site	-0000
Mounting position	
Secondary air grille and inspection cover within the room	-R
Secondary air grille and inspection cover outside the room	-A
Secondary air grille inside and inspection cover outside the room	-B
Secondary air grille outside and inspection cover inside the room	-C
Mounting type	
vertical in the wall	-V
horizontal in the ceiling	-H
Supply air diffuser	
DSX-XXL-W-5	-DSX
DBB-A	-DBB
DSA-F0	-DSA
WGA-Q-F0	-WGA
PAZ-10-13	-PAZ
Colour of the supply air diffuser	
RAL 9010 (white)	-22
Colour of the faceplate/frame x, colour of the blade/nozzle y	-xy
Secondary air grille	
PAZ-10-13	-PAZ
IB1-Q-01	-IB1
AL1	-AL1

Colour of the secondary air grille	
RAL 9010 (white)	-22
Colour of the faceplate/frame x, colour of the blade/nozzle y	-xy

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

Spigot diameter	
without primary air connection spigot	-0
with DN78 / 60x80 mm	-1
with DN98 / 60x125 mm	-2
with DN98 / 60x125 mm	-3

Water connection position	
Top left	-W1
Top right	-W2
Bottom left	-W3
Bottom right	-W4

Hydraulic connections	
Copper pipes without hydraulic connections	-000
12 mm	
AG-RV ½" x 12	-K0A
AG-RV ¾" x 12	-K0B
with armoured hose (x), flexible connection (y) and free connection to the hydraulic network (z)	-xyz

Position of electrical connection	
Top left	-S1
Top right	-S2
Bottom left	-S3
Bottom right	-S4

Electrical plenum box	
without electrical plenum box	-0
with electrical plenum box	-1
with pre-wired electrical plenum box for control	-2

Condensate pan	
without condensate pan	-K0
with condensate pan, drain bottom left	-K3
with condensate pan, drain bottom right	-K4

Air filter	
Filter ISO coarse 40% according to ISO 16890 integrated into the secondary air grille	-G2
Electrostatic precipitator	-EF

Accessories

Room thermostat

RDG160T

Condensate pump

Si-10

Hydraulic regulation

Combination valves

- VPP46.10L0.2
- VPP46.15L0.2
- VPP46.15L0.6
- VPP46.20F1.4
- VPI46.15L0.2
- VPI46.15L0.6
- VPI46.20F1.4
- VPP46.10L0.2Q
- VPP46.15L0.2Q
- VPP46.15L0.6Q
- VPP46.20F1.4Q
- VPI46.15L0.2Q
- VPI46.15L0.6Q
- VPI46.20F1.4Q

Actuators

- SAST127475
- SAPV128561
- SMPV132351
- SMPO132353

6-way ball valve

- VWG41.10-0.25-0.4
- VWG41.10-0.25-0.65
- VWG41.10-0.25-1.0
- VWG41.10-0.4-0.65
- VWG41.10-0.4-1.0
- VWG41.10-0.4-1.3
- VWG41.10-0.4-1.6
- VWG41.10-0.65-1.0
- VWG41.10-0.65-1.3
- VWG41.10-0.65-1.6
- VWG41.10-1.0-1.3
- VWG41.10-1.0-1.6
- VWG41.10-1.0-1.9
- VWG41.10-1.3-1.6
- VWG41.10-1.3-1.9
- VWG41.10-1.6-1.9
- VWG41.10-1.9-1.9
- VWG41.10-0.25-1.3
- VWG41.10-0.25-1.6
- VWG41.10-0.25-1.9
- VWG41.10-0.4-0.4
- VWG41.10-0.4-1.9
- VWG41.10-0.65-0.65
- VWG41.10-0.65-1.9
- VWG41.10-1.0-1.0
- VWG41.10-1.3-1.3
- VWG41.10-1.6-1.6
- VWG41.20-0.65-2.5

- VWG41.20-1.0-2.5
- VWG41.20-1.6-2.5
- VWG41.20-1.6-3.45
- VWG41.20-2.5-3.45
- VWG41.20-2.5-4.25
- VWG41.20-4.25-4.25
- VWG41.20-0.25-2.5
- VWG41.20-0.25-3.45
- VWG41.20-0.25-4.25
- VWG41.20-0.4-2.5
- VWG41.20-0.4-3.45
- VWG41.20-0.4-4.25
- VWG41.20-0.65-3.45
- VWG41.20-0.65-4.25
- VWG41.20-1.0-3.45
- VWG41.20-1.0-4.25
- VWG41.20-1.3-2.5
- VWG41.20-1.3-3.45
- VWG41.20-1.3-4.25
- VWG41.20-1.6-4.25
- VWG41.20-2.5-2.5
- VWG41.20-3.45-3.45

Rotary drive for 6-way ball valve

- GDB341.9E
- GDB161.9E
- GDB111.9E