tt coil as

Technical Documentation

S1 / S2 / S3 / S4

EN TECHNICAL DOCUMENTATION

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1. INTRODUCTION

Thank you very much for purchasing our device. We would like to congratulate you on good choice.

1.1 PRECAUTIONS

The buyer and the user of the device should read carefully the following instructions and proceed to the content recommendations. Proceeding due to the following instruction guarantees the correct usage and safety. In case of any doubts please contact the producer.

The producer reserves the rights to make changes to the technical documentation without previous notice.

The producer is not responsible for the damages which occur due to improper installation, not keeping the device in repair or using the device out of line.

The installation should be carried out by the professional installers, who possess the qualifications to install these types of devices. The installers are responsible for making the installation as instructed in the technical data. Regulations and safety rules must be followed.

During the installation, use, service and periodical inspections all regulations and safety rules must be followed.

In case of unserviceable please plug out the device and contact with the authorized person or the producer.

1.2 TRANSPORT

During the acceptance of goods it is needed to check the device in order to exclude any damages. During the transport it is needed to use the proper equipment, it is necessary to carry the device by two people. In case of any damages please fill in the damage report in presence of the supplier.

1.3 PACKAGE CONTENT

- Heater
- Instruction and warranty card

1.4 USE AND PRINCIPLE OF OPERATION

Devices ttc S1, S2, S3 and S4 are used to heat rooms such as: production halls, accommodation, commercial, services, garages, workshops, greenhouses, tents, shops, malls, shopping malls.

Air water heaters have to be connected to central heating system.

Application of new technologies in Blowair devices guarantees high effectiveness and comfort of the consumption. Original colors of the devices match to every interior. The device is made very precisely and will work smoothly for many years. The product has got the two years of warranty.

2. SCHEMATIC DIAGRAM
2.1. CONSTRUCTION

- Casing
- Air stators
- Heating coil
- Axial fan
- Holders
- Rotational holder

Casing- is made of galvanizing steel, powder painting in RAL color 9005.

Air stators- are made of galvanizing steel, powder painting in RAL color 7048. It is possible to set the air stators up manually to achieve the needed direction of the air flow.

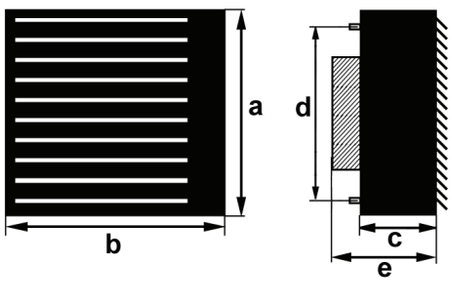
Heating coil- is made of aluminum and copper. The maximum temperature of the heating factor is 110°C; maximum pressure 1,6 MPa; headers diameter ¾". Depending of the size of the device we offer 1, 2 and 3 rows heating coils.

Axial fan- fan casing – metal, powder painting, steel wire galvanized. The motor has got the safety degree IP 54.

Holders are additional elements to assemble the device. They are solid and durable, it is possible to assemble the device on the wall or ceiling. It is also possible to regulate the angle of slope in three versions.

Rotational holder- is an additional element to assemble the device . It is solid and durable, it is possible to assemble the device on the wall or ceiling. It is possible to assemble the device in parallel on the angle 60° and 45°.

2.2 DIMENSIONS



Drawing 1. Dimensions

Type	S1	S2	S3	S4
a [mm]	452	552	552	660
b [mm]	494	545	545	696
c [mm]	202	252	252	252
d [mm]	350	450	450	560
e [mm]	305	368	368	384

2.3. TECHNICAL DATA

Technical data	Unit of measure	S1	S2	S3	S4
Nominal heating capacity water 90/70°C and inlet air temperature 0°C.	kW	16,7	29,4	52,1	59,3
Heating power range.	kW	7-17	13-29	23-52	26-59
Maximum airflow.	m^3/h	1743	2973	2973	4400
Maximum range of air stream.	m	10-12	10-18	10-18	10-25
Number of rows in heater.	number	1	2	3	2
Weight including water/ without water.	kg	15,5/15	22,3/21	24,9/23	29/27
Capacity of water.	dm^3	0,5	1,3	1,9	2
Air temperature rise. *	°C	26,7	27,5	48,7	37,5
Maximum temperature of heating agent.	°C	110	110	110	110
Maximum operating pressure.	MPa	1,6	1,6	1,6	1,6
Rated current.	A	0,42	0,66	0,66	0,82
Power supply voltage.	V/Hz	230/50	230/50	230/50	230/50
Motor power	W	80	150	150	180
Motor speed.	rev/min	1380	1400	1400	1380
Motor IP.	-	54	54	54	54
Ferrules diameter	„	3/4	3/4	3/4	3/4

Temperature rise according to parameters: water 90/70°C and inlet air temperature 0°C.

Technical data of S1

Inlet and outlet water temperature[°C]			**90/70**		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	22,2	19,4	16,7	14,2	11,7
Outlet air temperature [°C]	12,8	19,8	26,7	33,4	40
Water flow[m^3/h]	0,98	0,85	0,74	0,62	0,52
Pressure drop in the heat exchanger [kP]	33	26	22	16	11

Inlet and outlet water temperature[°C]			**80/60**		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	19,6	16,9	14,3	11,8	9,4
Outlet air temperature [°C]	9,1	16	22,8	29,5	36,1
Water flow[m^3/h]	0,86	0,74	0,63	0,52	0,41
Pressure drop in the heat exchanger [kP]	27	23	17	12	9

Inlet and outlet water temperature[°C]			**70/50**		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	17,1	14,4	11,9	9,44	7,09
Outlet air temperature [°C]	5,3	12,2	19	25,6	32,2
Water flow[m^3/h]	0,75	0,63	0,52	0,41	0,31
Pressure drop in the heat exchanger [kP]	23	17	12	10	6

Inlet and outlet water temperature[°C]			50/30		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	12	9,45	7,03	4,69	2,44
Outlet air temperature [°C]	-2,3	4,5	11,2	17,8	24,2
Water flow[m^3/h]	0,52	0,41	0,31	0,2	0,11
Pressure drop in the heat exchanger [kP]	13	10	6	5	2

Technical data of S2

Inlet and outlet water temperature[°C]			90/70		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	38,8	34	29,4	24,9	20,7
Outlet air temperature [°C]	13,7	20,6	27,5	34,2	40,8
Water flow[m^3/h]	1,71	1,5	1,29	1,1	0,91
Pressure drop in the heat exchanger [kP]	24	19	14	11	7

Inlet and outlet water temperature[°C]			80/60		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	34,5	29,8	25,3	20,9	16,8
Outlet air temperature [°C]	9,9	16,8	23,6	30,3	36,8
Water flow[m^3/h]	1,52	1,31	1,11	0,92	0,74
Pressure drop in the heat exchanger [kP]	20	15	11	8	5

Inlet and outlet water temperature[°C]			70/50		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	30,2	25,6	21,1	16,9	12,8
Outlet air temperature [°C]	6,2	13	19,7	26,4	32,8
Water flow[m^3/h]	1,32	1,12	0,92	0,74	0,56
Pressure drop in the heat exchanger [kP]	16	11	8	5	3

Inlet and outlet water temperature[°C]			50/30		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	21,4	17	12,8	8,7	4,71
Outlet air temperature [°C]	-1,4	5,3	12	18,4	24,7
Water flow[m^3/h]	0,93	0,74	0,55	0,38	0,2
Pressure drop in the heat exchanger [kP]	9	6	3	2	1

Technical data of S3

Inlet and outlet water temperature[°C]			90/70		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	68,9	60,3	52,1	44,3	36,8
Outlet air temperature [°C]	39,8	44,3	48,7	52,9	56,9
Water flow[m^3/h]	3,04	2,66	2,29	1,95	1,62
Pressure drop in the heat exchanger [kP]	52	41	31	23	16

Inlet and outlet water temperature[°C]			80/60		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	61,5	53	45	37,4	30,1
Outlet air temperature [°C]	33,3	37,8	42,1	46,3	50,2
Water flow[m^3/h]	2,7	2,33	1,98	1,64	1,32
Pressure drop in the heat exchanger [kP]	43	33	24	17	12

Inlet and outlet water temperature[°C]			70/50		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	54	45,8	37,9	30,5	23,3
Outlet air temperature [°C]	26,8	31,3	35,5	39,5	43,4
Water flow[m^3/h]	2,36	2	1,66	1,33	1,02
Pressure drop in the heat exchanger [kP]	35	26	18	12	7

Inlet and outlet water temperature[°C]			50/30		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	38,9	31,1	23,6	16,3	9,23
Outlet air temperature [°C]	13,8	18	22	25,9	29,3
Water flow[m^3/h]	1,69	1,35	1,02	0,71	0,4
Pressure drop in the heat exchanger [kP]	20	13	8	4	1

Technical data of S4

Inlet and outlet water temperature[°C]			90/70		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	78,6	68,7	59,3	50,3	41,7
Outlet air temperature [°C]	26	31,9	37,5	43	48,3
Water flow[m^3/h]	3,46	3,03	2,61	2,22	1,84
Pressure drop in the heat exchanger [kP]	38	29	22	16	12

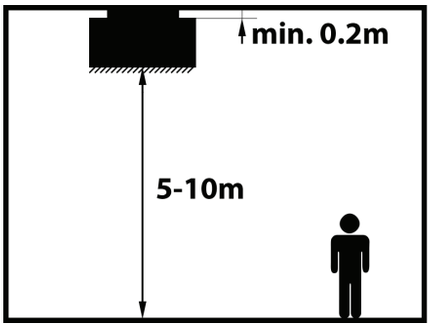
Inlet and outlet water temperature[°C]			80/60		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	69,9	60,2	51	42,2	33,8
Outlet air temperature [°C]	21	26,7	32,3	37,7	42,9
Water flow[m^3/h]	3,07	2,64	2,24	1,85	1,48
Pressure drop in the heat exchanger [kP]	31	23	17	12	8

Inlet and outlet water temperature[°C]			70/50		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	61,1	51,7	42,7	34,1	25,8
Outlet air temperature [°C]	15,8	21,5	27	32,3	37,5
Water flow[m^3/h]	2,67	2,26	1,87	1,49	1,13
Pressure drop in the heat exchanger [kP]	24	18	13	8	5

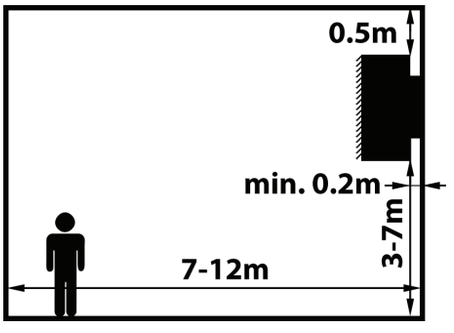
Inlet and outlet water temperature[°C]			50/30		
Outlet water temperature [°C]	-20	-10	0	10	20
Heating capacity [kW]	43,4	31,1	25,8	17,6	9,5
Outlet air temperature [°C]	5,4	18	16,3	21,5	26,4
Water flow[m^3/h]	1,88	1,35	1,12	0,76	0,41
Pressure drop in the heat exchanger [kP]	13	13	5	3	1

3. ASSEMBLY

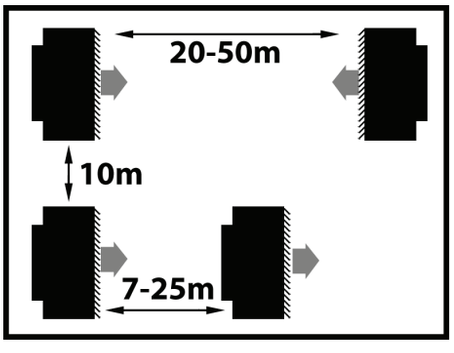
All devices S1, S2, S3 and S4 can be assembled on the wall or ceiling via holders or rotational holder , which are additional elements. The drawings below show the ways of assembly. In the bigger accommodation it is recommended to assemble more than one device. Follow the parameters which are provided on the drawings.



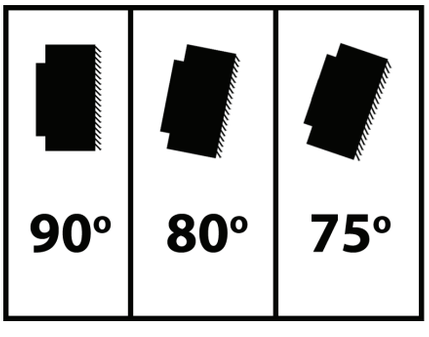
Drawing 2. Assembly on the ceiling.



Drawing 3. Assembly on the wall.

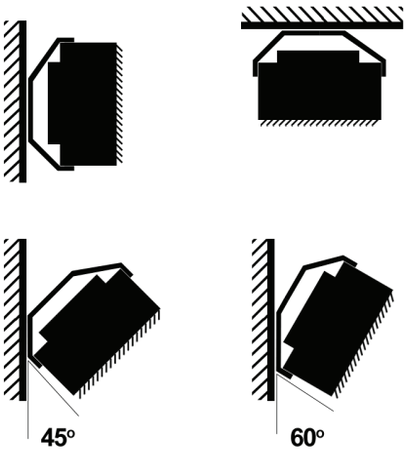


Drawing 4. Example arrangement for few devices in the room while using the holders.



Drawing 5. Three versions of the assembly position.

tt coil devices can be assembled on the wall or ceiling via holder or rotational holder , which are additional elements . It is possible to assemble the device in parallel on the angle 60° and 45°.



4. INSTALLATION INSTRUCTIONS

The installation should be made by the qualified stuff, who possess the needed rights to install electrical devices, as instructed in the following documentation. To install the air waiter heater tt coil S1, S2, S3, S4 use the duct size 2 x 2,5mm².

5. PRECAUTIONS & WARNINGS

All works concerning electrical installation should be made by the qualified stuff, who possess the qualifications due to the domestic and local norms. These recommendations include service and disassembly as well. Not following to the recommendations may cause electrocution, device damages or its incorrect work.

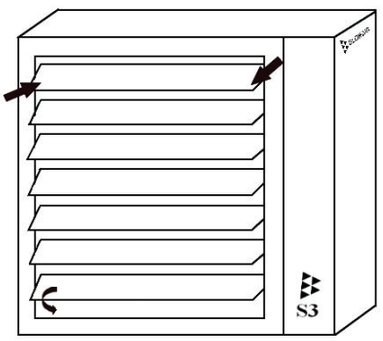
- Before service or exchange of the device it is obligatory to cut off the current supply.
- Do not cover the inlet and outlet of the device.
- Do not use the device in room with high moisture or close to the water basin.
- Do not install, service the device with wet hands or barefoot.
- Do not use the device in room with inflammable fumes, gas and high concentration of dust.
- The device should be kept out of reach of children and animals.
- During the assembly use the filter on the hydraulic supply.
- Please use the following valves:
  - vent valve in the highest place on the hydraulic installation,
  - cut off valve on the supply and return of the device.
- The device should be secured against pressure increase in the water installation.
- Before plugging the electric supply check the leak tightness.
- The device does not consist of the anti-frost protection.
- The temperature in the room should not go below 0°C. In such case please empty the device out of water.
- It is recommended to check the electric installation before the first start.
- It is recommended to use the external current differential protection.
- After the turn off, the elements of device may be warm.
- After operating time of the device, please utilize it concerning the local norms and regulations.

- It is recommended to clean the device periodically:
  - heating coil blow through by compressed air,
  - fan casing and blades clean form the dirt.

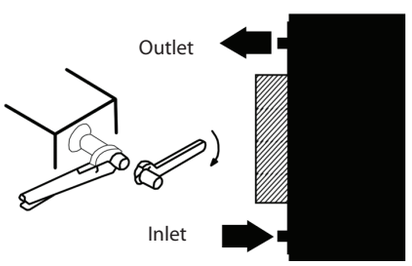
- If the device is not used for a longer time disconnect the voltage supply.

- The device is transported with the closed air stators. It is essential to open them in 30 % before first start. Not keeping to the following recommendation may cause the damages of the fan.

- Opening the air stators must be made by two hands in parallel. Not keeping to the following recommendation may cause the damages of the air stators.



While plugging the device to the water installation do remember to hold its stub pipes by pipes spanner, not keeping to the recommendation may cause the damages of the heating coil.



6. AUTOMATICS

r S1 device.

To make easier the usage of the tt coil devices we also offer the additional automatics:

3-stage speed controller RX 0,6A for S1- is used to control the speed in single-phase fans. It consists of 3 controls 0-85-130-230V, power supply voltage-230VAC / 50-60Hz, allowable current output: 0,6A; protection: thermal breaker switch; dimensions: 118mm x 78mm x 55mm; weight: 0,7 kg. It is recommended to use RX 0,6A speed controller to our S1 device.

5-stage speed controller RX 1,2A- is used to control the speed in single-phase fans. It consists of 5 controls 0 - 70 - 85 - 105 - 145 - 230V, power supply voltage-230VAC / 50-60Hz, allowable current output: 1,2A; protection: thermal breaker switch; dimensions: 126mm x 176mm x 56mm; weight: 1,3 kg. It is recommended to use one speed controller to each device.

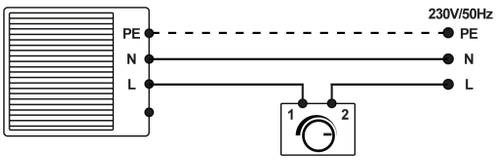
5-stage speed controller RX 3A- is used to control the speed in single-phase fans. It consists of 5 controls 0 - 70 - 85 - 105 - 145 - 230V, power supply voltage-230VAC / 50-60Hz, allowable current output: 3A; protection: thermal breaker switch; dimensions: 126mm x 176mm x 56mm; weight: 1,3 kg. It is possible to use one RX 3A speed controller for a few devices

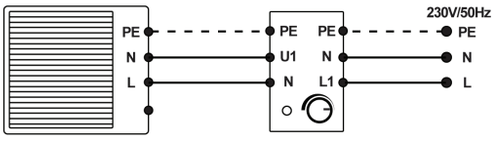
Two-way valve with actuator - connection diameter ¾". It should be installed on the return (outlet) pipe. Using it, lowers the living costs. It is essential to use it with the temperature controller. After reaching the wanted temperature the valve cuts off the water inlet. Water runs in cycle and does not cool. The valve is not noisy. It is recommended to use one two-way valve with actuator to each tt coil device.

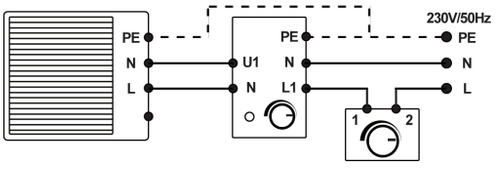
Room thermostat - work environment parameters 0°C-40°C; setting range10°C-30°C; regulation accuracy 1°C; temperature number levels 1; power supply voltage 230V. It is possible to use one room thermostat to maximum 5 tt coil devices.

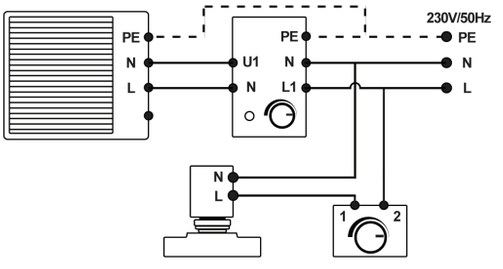
Programmable temperature controller - saving energy up to o 30%. It is possible to regulate the temperature up and down. LCD liquid crystal display. Temperature setting every 0,2°C. It consists of 9 programmers. 3 levels of temperature-day, night, anti-frozen. Work environment parameters 0°C-40°C. Setting range 5°C-30°C. Power supply 2 alkaline battery AA (1,5V). Permitted control output load 230 VAC 50Hz 5 (3) A. It is possible to use one programmable temperature controller to maximum 5 tt coil devices.

7. CONNECTION SCHEMES









PE- protective earthing, duct yellow-green colour;
N- neutral, duct black-black colour;
L- phase duct, duct brown colour;
Empty clamp, duct blue-black colour.