



## LEO INDUSTRY

Hydronic Fan Heater

Technical Documentation

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# 1. Important information

In this manual you will find important safety information and tips marked as below:

## WARNING

Dangerous practices which may result in serious injury or death. Read all warnings before starting work.

## CAUTION

Unsafe practices which, if not avoided, may result in damage to property or minor injuries. Before starting work, read all cautions.

## ADVICE

Useful tips for the user and installer.

### IMPORTANT SAFETY INFORMATION:

## ADVICE

- Before installing, connecting, starting up, using and maintaining the device, please read this manual completely.
- After receiving the product, check that it has not been damaged during transport. If the product appears to be damaged, DO NOT START TO MOUNT THE DEVICE; instead, you must immediately report the damage to the delivery man.
- The device must be mounted in a stable way and in accordance with the instructions, in a place that can be easily accessed, thus ensuring the possibility of carrying out repairs and routine maintenance, as well as allowing easy and safe disassembly of the device.
- The stability and durability of installation of the device depends on the structure of the building (in particular walls and ceilings). The person performing the assembly should take these conditions into account when mounting the device.
- The technical documentation should be kept in a safe place, easily accessible to the user and service technician.
- Always test the operation of the device after installation.

## CAUTION

- The power connection shall be performed only by an authorized person.
- The device is not equipped with a thermostat that controls the room temperature. Do not use the device in small rooms where there are people who are not able to leave the premises alone. Above mentioned does not apply to rooms with constant supervision.
- The device requires periodic inspections in accordance with the instructions in this manual.
- Do not hang/put pressure on the device.
- Do not place any objects on the device or hang anything on the connection stubs.
- The product should be stored and assembled out of the reach of small children.
- This equipment may be used by children that are at least 8 years old, by persons with reduced physical and mental abilities and persons with no experience and knowledge of the equipment, on condition that the supervision or instruction regarding correct use of the equipment in a safe manner is provided and the possible threats are understood. The device cannot be used by children to play. Unattended children should not clean or maintain the equipment.

## WARNING

- The device is powered by dangerous voltage. Always disconnect the device from the power supply before servicing or accessing its internal components.
- Do not insert your fingers or any objects inside the device.
- Do not cover the device.

## 2. General information and purpose

The Leo Industry hydronic fan heater is an executive element of a decentralized heating system for agricultural and industrial buildings. Using the principle of forced convection, powered by a heating medium, it heats the ambient air through recirculation. Designed for heating facilities of various sizes. Leo Industry is intended for construction facilities requiring devices with increased resistance to environmental conditions. Units can operate in buildings with increased air dustiness, high humidity.

The device has a solution that allows to open the housing to effectively clean the device from the inside. Metal components and the water heat exchanger meet the requirements of corrosion protection class **C5-h (ISO 12944-6:2018)**, ensuring high durability in aggressive environments. The heat exchanger is coated with **Aqua Aero**, an advanced anti-corrosion coating designed to withstand exposure to harsh chemicals. The resistance to specific chemicals is presented in the table. For chemicals not listed, please consult the manufacturer for further information. Appropriately thick and stiff lamellas of the heat exchanger and a **fan with IP66** protection makes it possible to wash the device with water under pressure.

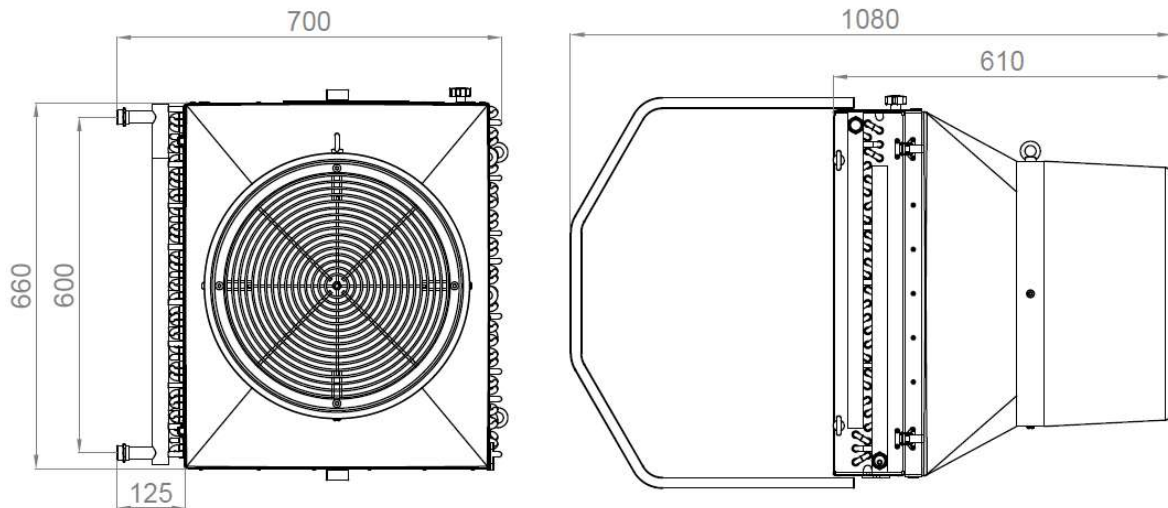


### 3. Aqua Aero coating resistance chart

Inorganic acids	Max. concentration [ppm]	Organic acids	Max. concentration [ppm]	
Arsenic acid	<10	Acetic acid	<100	
Boric acid	<100	Benzoic acid	All	
Hydrogen carbonate	All	Lactic acid		
Chromic acid	<100	Phenols		
Bromic acid	<10	Citric acid	<100	
Hydrochloric acid		Fatty acids	All	
Hydrogen fluoride	<100	Stearic acid		
Hydrogen sulphide	All	Hydrocyanic acid		
Nitric acid	<10	Malic acid		
Sulphuric acid	All	Margaric acid		
Phosphoric acid	<100	Picric acid		
Perchloric acid	<10	Oleic acid		
Selenic acid	All	Oxalic acid		
Arsenic acid	<10	Sulphamic acid		
<b>Alkaline</b>	<b>Max. concentration [ppm]</b>	Palmitic acid		<10
Ammonia	<100	Tannin		
Sodium hydroxide		Phthalic acid		
Potassium hydroxide	All	Valeric acid		All
Lithium hydroxide	<10	Salicylic acid	<10	
Calcium hydroxide	All	Formic acid		
Magnesium hydroxide		Salicylic acid		
<b>Salts and watersolutions</b>	<b>Max. concentration [ppm]</b>	<b>Ketones and Aldehydes</b>	<b>Max. concentration [ppm]</b>	
Sodium salts	All	Acetone	<100	
Potassium salts		Aceetaldehyde	<10	
Calcium salts		Benzaldehyde	<100	
Aluminum salts		Formaldehyde	<10	
Ammonium salts		Salicylaldehyde		
Barium salts		Diisobutylketone		
Copper salts		Methylisobutylketone		
Lead salts		Methylethylketone		
Lithium salts		Butanal		
Magnesium salts		<b>Alcohols</b>	<b>Max. concentration [ppm]</b>	
Mercury salts		Methanol	<10	
Lithopone		Ethanol	<100	
Hydroquinone		Isopropanol	All	
Iron salts		n-Butanol		
<b>Aromatic hydrocarbons</b>		<b>Max. concentration [ppm]</b>		Amyl alcohol
Xylene	All	Benzyl alcohol		
Toluene		Diacetone alcohol		
Asphalt		Glycerine		
Anthracene		n-Propanol		
Benzapherene		Pentanol		
Benzene		<10 = Resistant to concentrations less than 10 ppm <100 = Resistant to concentrations less than 100 ppm All = Resistant to all concentrations		
Naphtha				
Naftalene				
Terpenes				
<b>Others</b>			<b>Max. concentration [ppm]</b>	
Carbon disulphide	<100			
Hydrogen peroxide	All			
Hydrogen sulphide	All			
Chlorine	<10			

## 4. Technical data and general dimensions

### 4.1. General dimensions



### 4.2. Technical data

Device	LEO Industry
Airflow [m <sup>3</sup> /h] <sup>1)</sup>	5000
Heating power (80/60/20°C)	33.6
Outlet temperature [°C]	40,5
Supply [V/Hz]	230 V / 50
Current consumption [A]	2,35
Power consumption [W]	480
IP	66
Acoustic pressure level [dB(A)] <sup>2)</sup>	63,0
Acoustic power level [dB(A)] <sup>3)</sup>	84.4
Horizontal range [m] <sup>4)</sup>	40,0
Max. water temperature [°C]	120
Max. water pressure [MPa]	1.6
Connection stub ["]	3/4
Temperature working range [°C] <sup>5)</sup>	from -30 to 60
Casing type	ABS
Device mass [kg]	27.3
Water filled device mass [kg]	31.0

1) Airflow measured according to **EN ISO 5801**;

2) Acoustic pressure level for 8000m<sup>3</sup> space with a medium absorption coefficient, at a distance of 5m from the device;

3) Acoustic power level according to **PN-EN ISO 3744:2011**;

4) Isothermal horizontal range at 0.5m/s terminal speed;

**CAUTION**

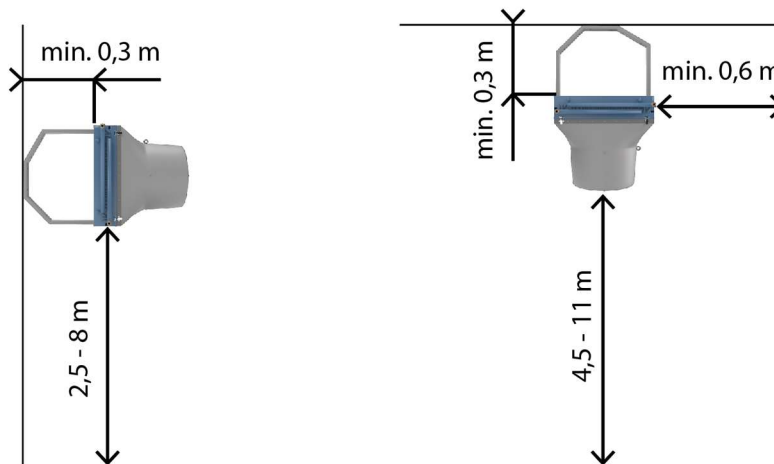


**5) WARNING! When operating at temperature below 0°C, glycol solutions (up to 60%) must be used as a heating medium to protect the heat exchanger against freezing.**

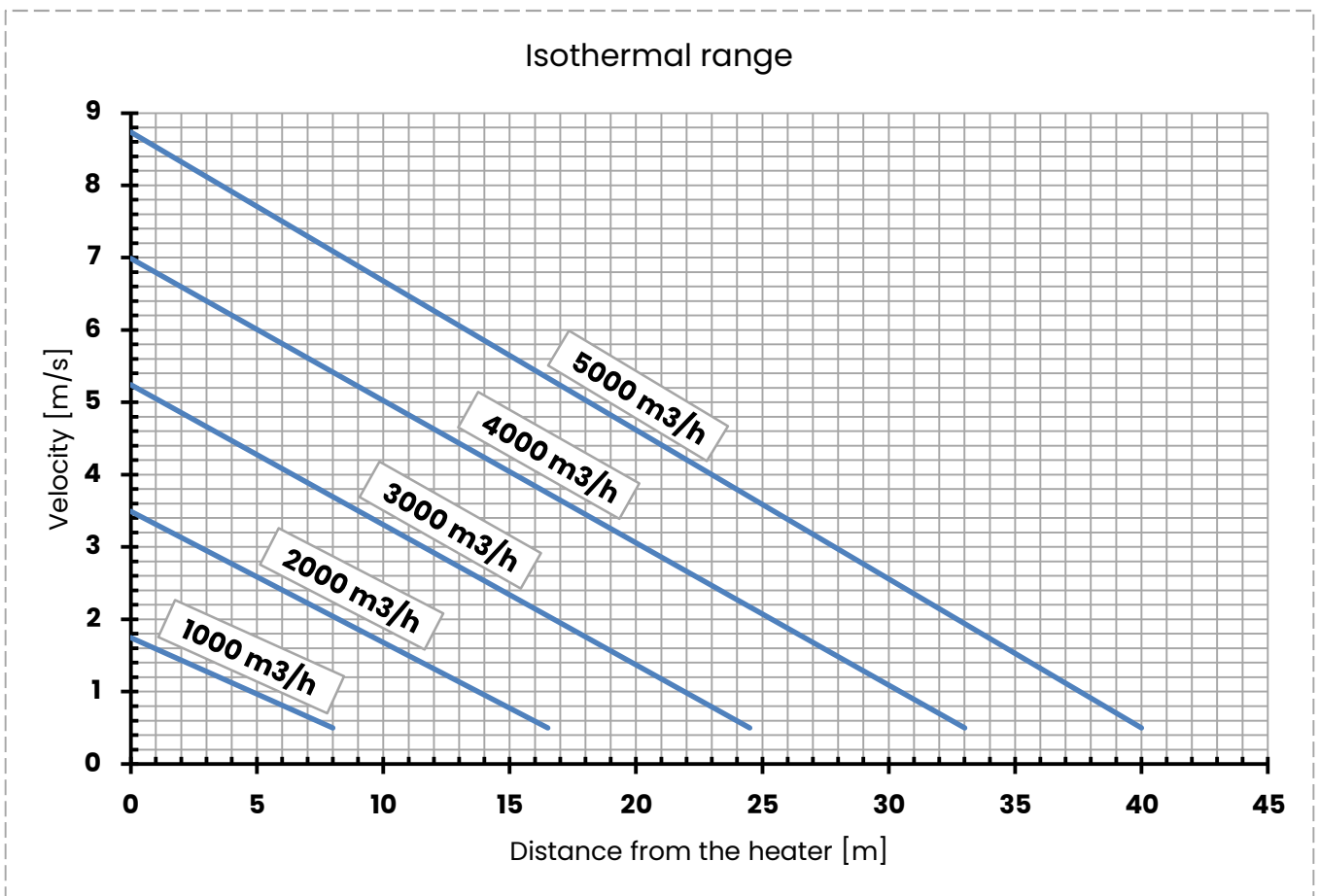
## 5. Installation and air ranges

### 5.1. Recommended distances

Heaters can be mounted to vertical and horizontal partitions. During installation, maintain the recommended distances from the partitions presented below.



### 5.2. Air stream speed and range



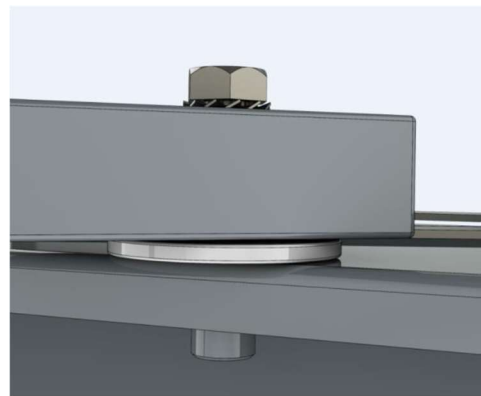
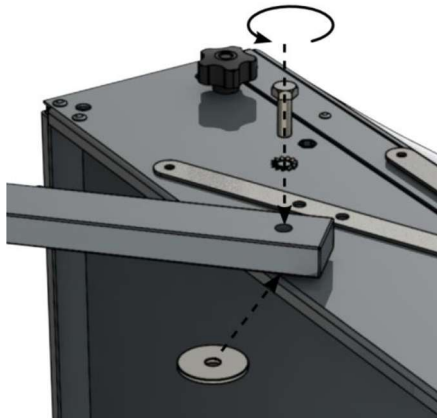
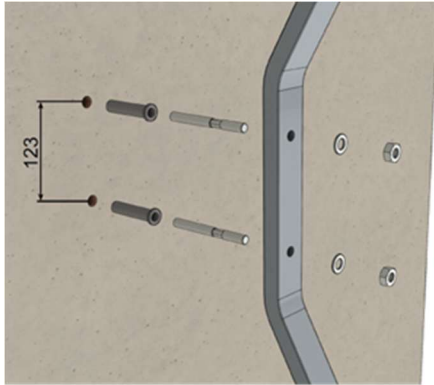
### 5.3. Rotating console installation

The bracket makes it possible to:

- Mount the device on the wall in vertical position, mount the device under the ceiling in horizontal position.
- It is possible to rotate it along the points of the bracket connection with the unit.

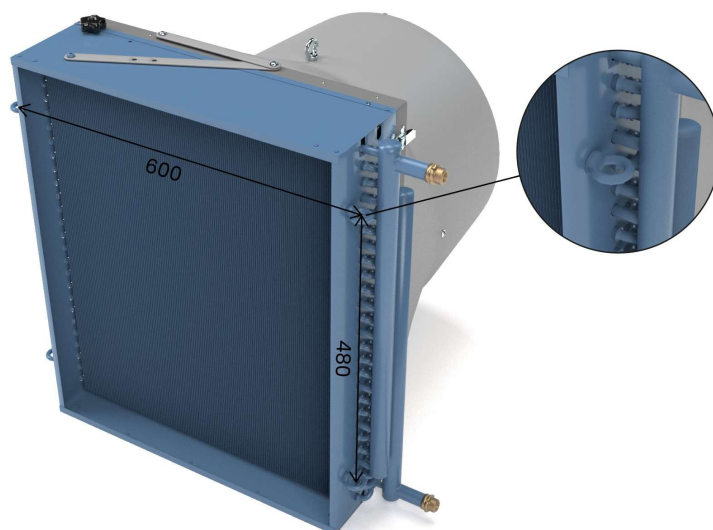
The bracket is not standard equipment of the heater. It is ordered separately and delivered together with elements necessary for its installation.

Expansion bolts are not included in the set. Type of the Bolts should be chosen appropriately to the type of the wall.



### 5.4. Vertical installation under the ceiling

Each unit is equipped with eye screw bolts that allows to install it under the ceiling via chains.



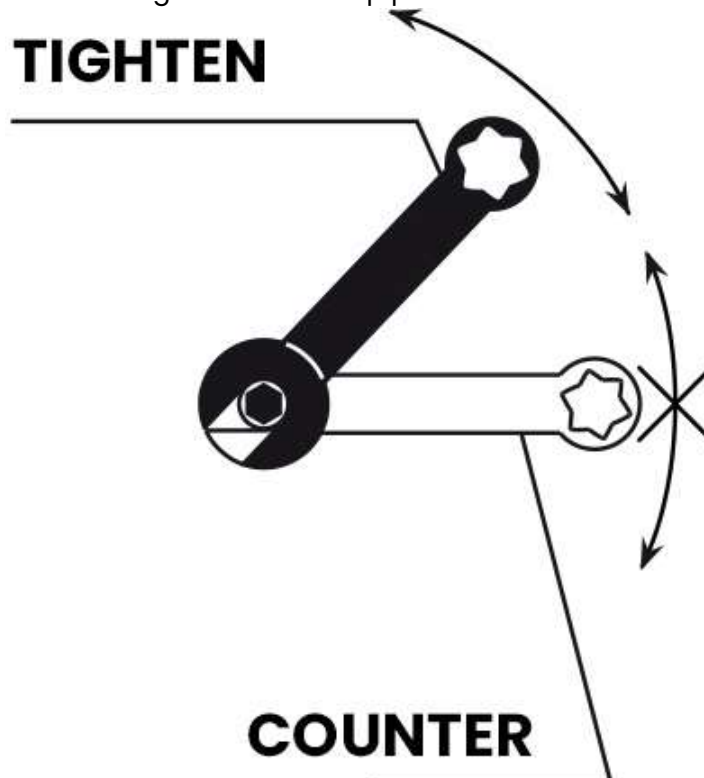


## 6. Connecting the hydraulic system

### 6.1. Notes on hydraulic connections

- Disconnect the heater power supply before connecting the water system.
- The connection should be made without stress. It is recommended to use flexible ducts supplying the heating medium.
- Water supply should be connected to the connector marked with red arrow.
- The installation with the heating medium must be protected against the increase of the heating medium pressure above the permissible value (1.6 MPa).
- Before starting the device, check the correct connection of the heating medium and the system for leaks.
- During assembly of the installation it is absolutely necessary to immobilize the exchanger's connector pipes.

**WARNING** 



- After filling the system with heating medium, check the tightness of the hydraulic connections.

**ADVICE** 

- It is recommended to use bleeding/air release valves at the highest point of the installation.
- In the event that the water from the device is drained for a longer period of time, the exchanger tubes should be blown and dried with compressed air.
- Installation should be carried out in such a way that in the event of a failure it is possible to dismantle the device (use of flexible hoses is recommended). For this purpose, use shut-off valves next to the device.

## 6.2. Heating medium parameters

- The water heat exchanger can be supplied with water or glycol solutions up to 60%.
- The heat exchanger tubes are made of copper, so heating medium should not cause corrosion of this material.
- In particular, the parameters as below should be provided:



Parameter	Value
pH	7.5-9.0
Pollution	Free of sediments/particles
Total hardness	$[Ca^{2+}, Mg^{2+}]/[HCO_3^-] > 0.5$
Oil and grease	<1 mg/l
Oxygen	<0.1mg/l
HCO <sub>3</sub> <sup>-</sup>	60-300 mg/l
Ammonia	< 1.0 mg/l
Sulphides	< 0.05 mg/l
Chlorides, Cl	<100 mg/l

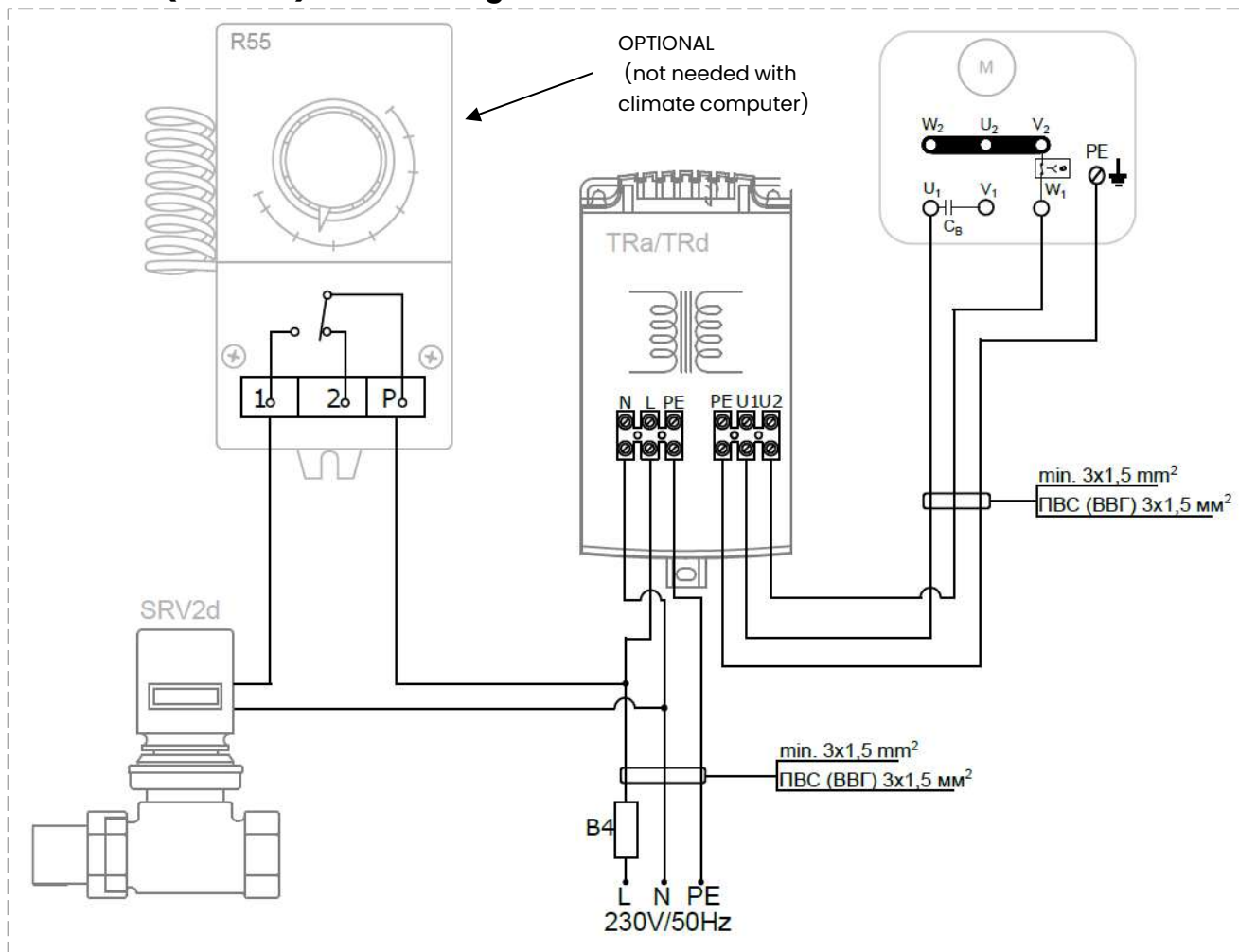
## 6.3. Heating power tables

	Tw1/Tw2 = 90/70 [°C]				Tw1/Tw2 = 80/60 [°C]				Tw1/Tw2 = 70/50 [°C]			
Tp1 [°C]	PT [kW]	Tp2 [°C]	Qw [l/h]	Δpw [kPa]	PT [kW]	Tp2 [°C]	Qw [l/h]	Δpw [kPa]	PT [kW]	Tp2 [°C]	Qw [l/h]	Δpw [kPa]
0	55.2	32.8	2437	19.4	47.6	28.3	2092	15.2	40.0	23.8	1750	11.4
5	51.7	35.7	2285	17.3	44.1	31.2	1939	13.2	36.5	26.6	1596	9.7
10	48.3	35.6	2131	15.2	40.6	34.0	1785	11.4	32.9	29.5	1441	8.0
15	44.8	41.4	1977	13.3	37.1	36.9	1630	9.7	29.4	32.3	1284	6.5
20	41.3	44.3	1822	11.5	33.6	39.7	1474	8.1	25.8	35.1	1127	5.2
25	37.8	47.0	1667	9.8	30.0	42.5	1317	6.6	22.1	37.9	967	3.9
30	34.2	50.0	1510	8.2	26.4	45.3	1159	5.3	18.4	40.7	805	2.9
	Tw1/Tw2 = 60/40 [°C]				Tw1/Tw2 = 55/45 [°C]				Tw1/Tw2 = 45/35 [°C]			
Tp1 [°C]	PT [kW]	Tp2 [°C]	Qw [l/h]	Δpw [kPa]	PT [kW]	Tp2 [°C]	Qw [l/h]	Δpw [kPa]	PT [kW]	Tp2 [°C]	Qw [l/h]	Δpw [kPa]
0	32.3	19.2	1407	8.0	34.4	20.5	3000	31.2	26.9	16.0	2334	20.6
5	28.7	22.0	1252	6.5	30.9	23.3	2693	25.6	23.3	18.8	2026	16.0
10	25.1	24.9	1095	5.1	27.3	26.2	2384	20.6	19.7	21.7	1715	11.9
15	21.5	27.7	936	3.9	23.8	29.0	2073	16.0	16.1	24.5	1401	8.3
20	17.8	30.5	775	2.8	20.2	31.9	1759	11.9	12.5	27.3	1082	5.3
25	13.9	33.1	608	1.8	16.5	34.7	1442	8.4	8.7	30.0	754	2.8
30	9.9	35.7	429	1.0	12.9	37.5	1121	5.3	4.5	32.6	391	0.9

Tp1 – air inlet temperature  
 Tp2 – air outlet temperature  
 Tw1 – water inlet temperature  
 Tw2 – water outlet temperature  
 PT – heating capacity  
 Qw – water flow  
 Δpw – water pressure drop

## 7. Electrical diagrams

### 7.1. TRA (AC IP66) control diagram



#### WARNING

- R55 and Tra/TRd controllers **are not** supplied standard and they are not built in the heater

## 8. Start-up, operation and maintenance

### 8.1. Start-up



- Before connecting the power supply check the correctness of connection of the fan motor and the controllers. These connections should be executed in accordance with their technical documentation.
- Before connecting the power supply check whether the mains voltage is in accordance with the voltage on the device data plate.
- Before starting the device check the correctness of connection of the heating medium conduits and the tightness of the system.
- The electrical system supplying the fan motor should be additionally protected with a circuit breaker against the effects of a possible short-circuit in the system.
- Starting the device without connecting the ground conductor is forbidden.

### 8.2. Operation



- The device is designed for operation inside buildings, at temperatures above 0°C. In low temperatures (below 0°C) there is a danger of freezing of the medium.
- **The manufacturer bears no responsibility for damage of the heat exchanger resulting from freezing of the medium in the exchanger. If operation of the device is expected at temperatures lower than 0°, then glycol solution should be used as the heating medium, or special automatic systems should be used for protecting against freezing of the medium in the exchanger.**
- It is forbidden to place any objects on the heater or to hang any objects on the connecting stubs.
- The device must be inspected periodically. In the case of incorrect operation of the device it should be switched off immediately.
- **It is forbidden to use a damaged device. The manufacturer bears no responsibility for damage resulting from the use of a damaged device.**
- If it is necessary to clean the exchanger, be careful not to damage the aluminum lamellas.
- For the time of performing inspection or cleaning the device, the electrical power supply should be disconnected.
- In case water is drained from the device for a longer period of time, the exchanger tubes should be emptied with compressed air.
- It is not allowed to make any modification in the unit. Any modification causes in warranty loss.

### 8.3. Periodic inspections

- To keep proper technical parameters it is recommended to make periodic service of fan heaters on behalf of the user,
- Check whether the heat exchanger is not clogged with dirt and dust. Coil filled with dirt has lower heating output and decreases the air flow. If necessary – use pressurized air stream or pressurized water to clean the exchanger’s lamellas,

**WARNING** 



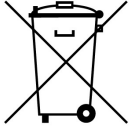
- Remember to remove the water and dry the unit after cleaning,
- Check heat exchanger, if is it filled with dirt or dust. If necessary – use pressurized air stream to clean the exchanger’s lamellas,
- Check fan blades, in case of dirt use damp cloth and remove dirt,
- Check bracket installation,
- Check heat exchanger and hydraulic connection correctness,
- Check wires insulation,
- Check power supply,
- Check heating medium’s flow,
- Check levelling of the unit.

## 9. Conformity with WEEE directive 2012/19/UE

Running a business without harming the environment and observing the rules of proper handling of waste electrical and electronic equipment is a priority for FLOWAIR.

The symbol of the crossed out wheeled bin placed on the equipment, packaging or documents attached means that the product must not be disposed of with other wastes.

It is the responsibility of the user to hand the used equipment to a designated collection point for proper processing. The symbol means that the equipment was placed on the market after August 13, 2005.



**For information regarding recycling of waste electrical and electronic equipment, please contact your local distributor.**

### REMEMBER:

Do not dispose of used equipment together with other waste! There are financial penalties for this. Proper handling of used equipment prevents potential negative consequences for the environment and human health. At the same time, we save the Earth's natural resources, reusing resources obtained from the processing of equipment.

## 10. Service and warranty terms

**Please contact your dealer in order to get familiar with the warranty terms and its limitation.**

In the case of any irregularities in the device operation, please contact the manufacturer's service department.

**The manufacturer bears no responsibility for operating the device in a manner inconsistent with its purpose, by persons not authorized for this, and for damage resulting from this!**

**Made in EU**

# 11. Declaration of Conformity

④ FLOWAIR SP. Z O.O.

ul. Chwaszczyńska 135, 81-571 Gdynia

e-mail: [info@flowair.pl](mailto:info@flowair.pl) [www.flowair.com](http://www.flowair.com)



① Water heaters

② LEO Industry

③ 05.02.2025



<b>DECLARATION OF CONFORMITY UE</b>	<b>PL</b>
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④ FLOWAIR hereby confirms that fan heaters:

- ② LEO Industry

⑤ were produced in accordance to the following Europeans Directives:

1. **2014/30/UE** Electromagnetic Compatibility (EMC)
2. **2006/42/WE** Machinery
3. **2014/35/UE** Low Voltage Electrical Equipment (LVD)

⑥ and harmonized norms, with above directives:

**PN-EN ISO 12100:2012** Safety Of Machinery - General Principles For Design - Risk Assessment And Risk Reduction

**PN-EN 60335-1:2012** Household and similar electrical appliances - Safety - Part 1: General requirements

**PN-EN 60335-2-30:2010** Household and similar electrical appliances - Safety - Part 2-30: Particular requirements for room heaters

**PN-EN 60204-1:2018-12** Safety of machinery - Electrical equipment of machines - Part 1: General requirements

**PN-EN 61000-6-2:2008** Electromagnetic compatibility (EMC). Generic standards. Immunity for industrial environments

③ 05.02.2025

⑦ Mateusz Piasecki  
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