FLOWAIR
intelligent air flow

FAN HEATERS
LEO

TABLE OF CONTENTS

GENERAL CHARACTERISTICS

Fan heater **LEO**	
Heating capacity [kW]	0,7 - 121,0
Air flow [m^3/h]	1000 - 5800
Weight [kg]	9,5 - 26,2
Casing	EPP[1]
Colour	grey[2]

[1] EPP is an expanded polypropylene, which is good thermal insulator, is resistant to dirt and has high ability of vibration damping. This features allowed to use it as a material for casing of the unit and lowered its total weight.
[2] similar to RAL 9007

APPLICATION

LEO fan heaters are designed to operate indoors. They are used to heating rooms with a big cubic measure like industrial buildings, warehouses, departments stores, production halls, sports halls (gyms), sacral buildings etc. They can also be used in smaller rooms like workshops, garages, stores, car show rooms, gas stations etc.

AVAILABLE TYPES OF UNITS

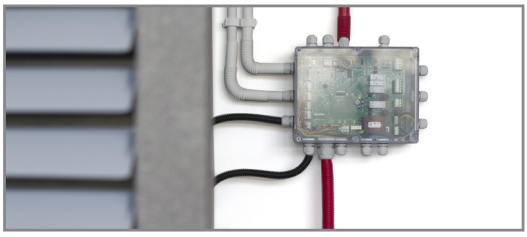
- **LEO BMS**
  LEO BMS fan heater is equipped with 3 speed fan controlled by the DRV module. The DRV module manages the operation of units according to control signals from T-Box or directly from BMS.
- **LEO**
  LEO fan heater with AC fan offers possibility to switch between 3 steps of airflow.

S1 | S2 | S3

L1 | L2 | L3

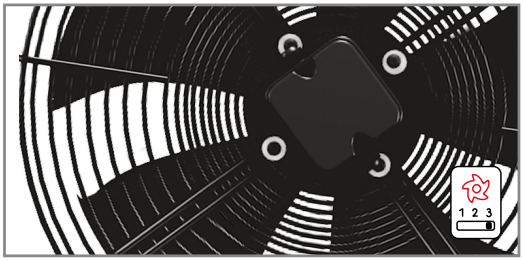
XL2 | XL3

CONSTRUCTION



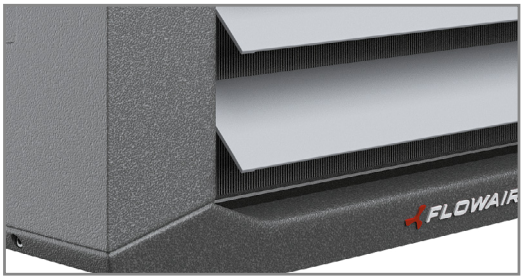
BMS/SYSTEM FLOWAIR

Connection of units to the BMS system (Building Management System) is possible via a T-box or HMI controller or via the DRV control module. LEO is also a unit adapted for integration with the SYSTEM FLOWAIR.



3-SPEED FAN

LEO fan heaters are equipped with 3 speed fans. It's the simplest and most effective way to control the fan heater's operation.



EPP CASING

Mechanical strength, resistance to dirt, low weight and aesthetic look. By applying expanded polypropylene for casing construction, LEO fan heaters create a new quality in heating and ventilation.

MIXING CHAMBER

LEO fan heaters with LEO KM mixing chamber form heating and ventilation unit. It is the easiest way to create the efficient mechanical ventilation without additional systems.

THREE VERSIONS OF CASING

It is possible to choose a housing appropriate to the conditions prevailing in the facility. You can choose from:
EPP - casing made of expanded polypropylene (standard)
INOX - stainless steel casing (special request)
RAL - powder painted metal casing (special request)

COMPARE LEO SOLUTIONS

When you need
a simple solution!

LEO

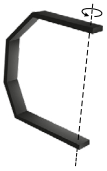
Basic line

BENEFITS

- the cheapest offer on the market (as a kit)
- easy connection
- 3-speed manual efficiency control

SET

Fan heater LEO
- 3 speed fan
- light and durable EPP casing
- wide range of heating power 0,7-121 kW

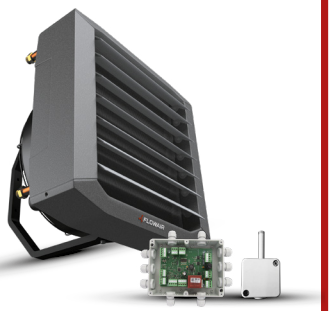


Rotating console
- 170° rotation of the unit
- mounting- wall and ceiling
- possibility of mounting at different angles to the surface

TS - 3 -step regulator with termostate
- 3 speed efifciency control
- continuous and thermostatic mode
- heating and ventilation function

Intelligent solutions compatible
with **SYSTEM FLOWAIR**

LEO BMS

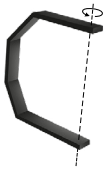


BENEFITS

- intelligent solutions and energy savings
- control up to 31 units compatible with the SYSTEM FLOWAIR
- BMS control
- local regulation
- 3-speed automatic efficiency control
- easy connection

SET

Fan heater LEO
- 3 speed fan
- light and durable EPP casing
- wide range of heating power 0,7-121 kW



Rotating console
- 170° rotation of the unit
- mounting- wall and ceiling
- possibility of mounting at different angles to the surface

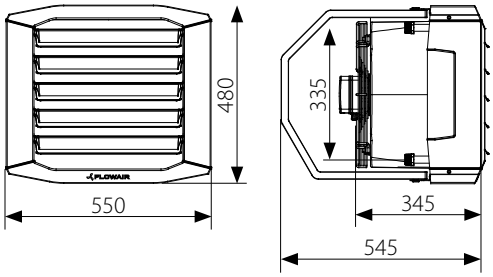
DRV V - control module
- power 230 V
- IP54 protection
- wall mounted

PT-1000 IP65 - wall mounted temperature sensor
- IP65 protection
- wall mounted

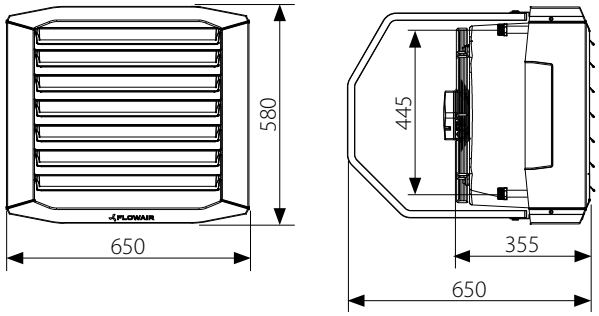
Add to the set

T-box
Intelligent touch screen controler controls up to 31 units or zones

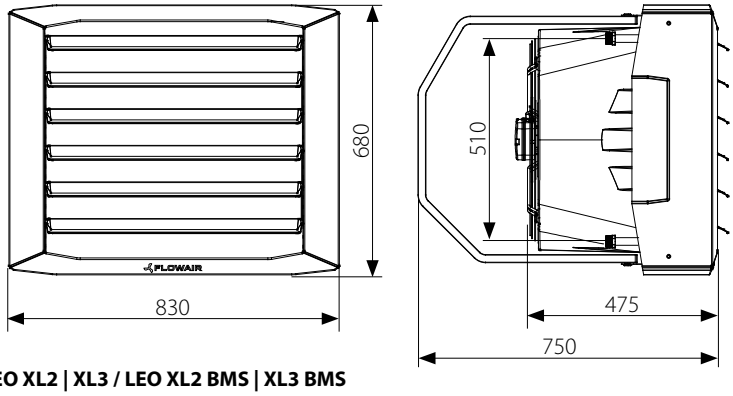
DIMENSIONS



LEO S1 | S2 | S3 / LEO S1 BMS | S2 BMS | S3 BMS



LEO L1 | L2 | L3 / LEO L1 BMS | L2 BMS | L3 BMS



LEO XL2 | XL3 / LEO XL2 BMS | XL3 BMS

For CAD drawings, Revit files and documentation for all available versions of LEO visit www.flowair.com

TECHNICAL DATA

Fan heater **LEO S**	LEO S1 / S1 BMS			LEO S2 / S2 BMS			LEO S3 / S3 BMS		
Step	III	II	I	III	II	I	III	II	I
Max. air flow stream [m³/h]	2300	1900	1500	2000	1600	1250	1800	1400	1000
Heating capacity [kW](1)	0,7 – 12,8			2,1 – 26,5			1,7 – 32,7		
Nominal heat power (70/50/16°C, III-step) [kW]	4,5			10,2			12,3		
Power supply [V/Hz]	230/50			230/50			230/50		
Max. current consumption [A]	0,5	0,4	0,3	0,6	0,4	0,3	0,6	0,4	0,3
Max. power consumption [W]	120	90	70	130	90	70	130	90	70
IP/Insulation class	54/F			54/F			54/F		
Sound pressure level 5m [dB(A)](2)	56,3	50,7	43,9	56,3	50,7	43,9	56,3	50,7	43,9
Sound power level [dB(A)](3)	71,4	65,8	59,0	71,4	65,8	59,0	71,4	65,8	59,0
Horizontal range [m](4)	16,0	13,0	10,0	14,0	11,0	8,5	12,5	9,5	7,0
Vertical range [m](5)	6,0	5,1	4,1	5,3	4,4	3,5	4,9	3,9	2,9
Max. heating water temperature [°C]	120			120			120		
Max. operating pressure [MPa]	1,6			1,6			1,6		
Connection	½"			½"			½"		
Max. operating temperature [°C]	60			60			60		
Weight of unit [kg]	9,5			10,4			10,8		
Weight of unit filled with water [kg]	10,2			11,6			12,2		

(1) range of heating power at given parameters – I step of fan, temperature of heating medium 40/30°C, air temperature at the supply to the unit 20°C; max. – III step of fan, temperature of heating medium 120/90 °C, air temperature at the supply to the unit 0°C;
(2) in accordance with PN-EN ISO3744
(3) acoustic pressure level at the distance of 5 m from the unit, in the room of medium capability of sound absorption and 1500 m³ of cubature
(4) range of horizontal isothermal air stream, at 0,5 m/s velocity limit
(5) range of vertical nonisothermal air stream at ΔT = 5°C, at 0,5 m/s velocity limit

TECHNICAL DATA

Fan heater **LEO L**

	LEO L1 / LEO L1 BMS			LEO L2 / LEO L2 BMS			LEO L3 / LEO L3 BMS		
Step	III	II	I	III	II	I	III	II	I
Max. air flow stream [m³/h]	4250	2800	1700	3800	2400	1400	3400	2100	1200
Heating capacity [kW][1]	1,3 – 32,3			2,2 – 50,4			3,2 – 65,2		
Nominal heat power (70/50/16°C, III-step) [kW]	11,7			19,1			25,6		
Power supply [V/Hz]	230 /50			230/50			230/50		
Max. current consumption [A]	1,4	1,2	0,6	1,5	1,2	0,6	1,5	1,2	0,6
Max. power consumption [W]	330	240	120	340	240	120	340	240	120
IP/Insulation class	54/F			54/F			54/F		
Sound pressure level 5m [dB(A)][2]	64,1	54,5	42,1	64,1	54,5	42,1	64,1	54,5	42,1
Sound power level [dB(A)][3]	79,2	69,6	57,2	79,2	69,6	57,2	79,2	69,6	57,2
Horizontal range [m][4]	24,0	15,0	9,5	21,5	13,0	8,0	19,0	11,5	6,5
Vertical range [m][5]	8,3	5,6	3,7	7,5	4,9	3,1	6,8	4,4	2,8
Max. heating water temperature [°C]	120			120			120		
Max. operating pressure [MPa]	1,6			1,6			1,6		
Connection	¾"			¾"			¾"		
Max. operating temperature [°C]	60			60			60		
Weight of unit [kg]	14,9			16,2			17,8		
Weight of unit filled with water [kg]	15,9			18,2			20,5		

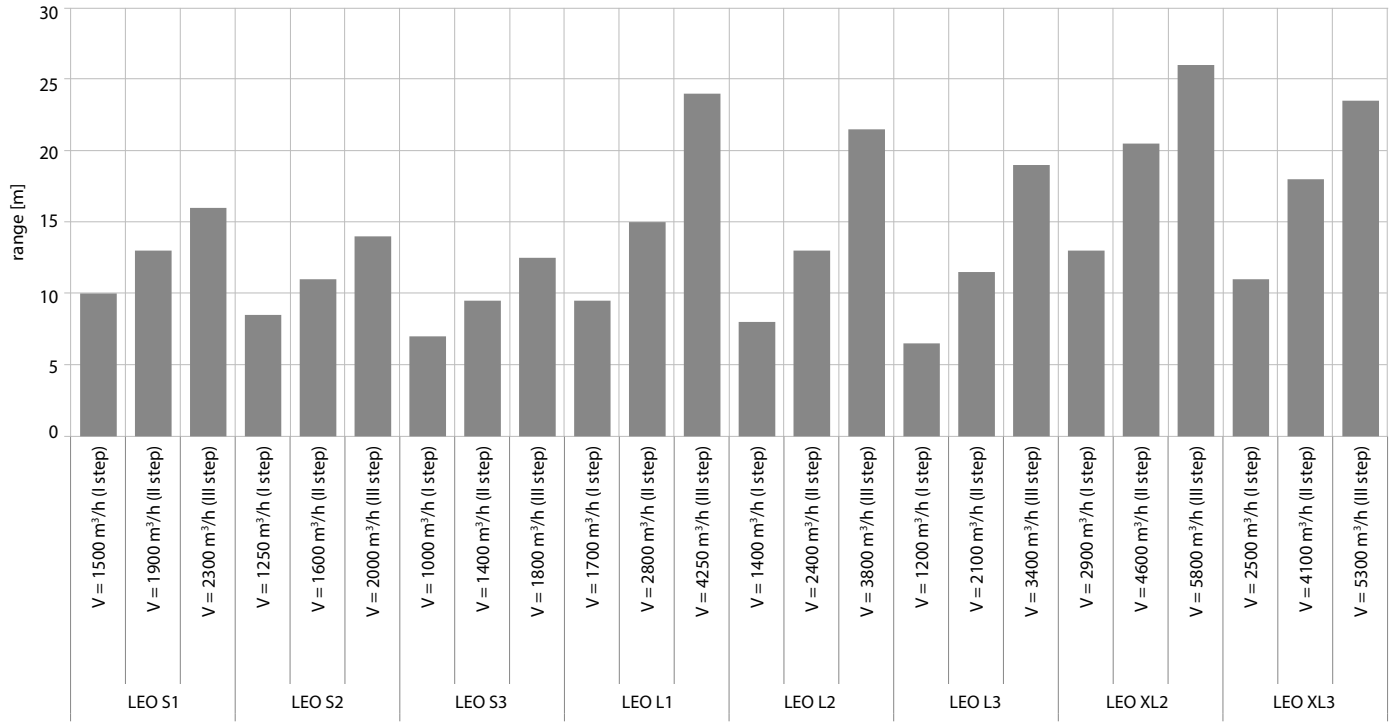
Fan heater **LEO XL**

	LEO XL2 / LEO XL2 BMS			LEO XL3 / LEO XL3 BMS		
Step	III	II	I	III	II	I
Max. air flow stream [m³/h]	5800	4600	2900	5300	4100	2500
Heating capacity [kW][1]	6,6 – 94,0			8,3 – 121,0		
Nominal heat power (70/50/16°C, III-step) [kW]	36,5			48,1		
Power supply [V/Hz]	230/50			230/50		
Max. current consumption [A]	2,3	1,8	1,4	2,4	1,8	1,4
Max. power consumption [W]	520	370	270	550	370	270
IP/Insulation class	54/F			54/F		
Sound pressure level 5m [dB(A)][2]	67,5	61,1	52,3	67,5	61,1	52,3
Sound power level [dB(A)][3]	82,6	76,2	67,8	82,6	76,2	67,8
Horizontal range [m][4]	26,0	20,5	13,0	23,5	18,0	11,0
Vertical range [m][5]	8,5	7,0	4,7	7,7	6,2	4,1
Max. heating water temperature [°C]	120			120		
Max. operating pressure [MPa]	1,6			1,6		
Connection	¾"			¾"		
Max. operating temperature [°C]	60			60		
Weight of unit [kg]	23,2			26,2		
Weight of unit filled with water [kg]	25,9			30,3		

[1] range of heating power at given parameters – I step of fan, temperature of heating medium 40/30°C, air temperature at the supply to the unit 20°C; max. – III step of fan, temperature of heating medium 120/90 °C, air temperature at the supply to the unit 0°C;
[2] in accordance with PN-EN ISO3744
[3] acoustic pressure level at the distance of 5 m from the unit, in the room of medium capability of sound absorption and 1500 m³ of cubature
[4] range of horizontal isothermal air stream, at 0,5 m/s velocity limit
[5] range of vertical nonisothermal air stream at ΔT = 5°C, at 0,5 m/s velocity limit

RANGES

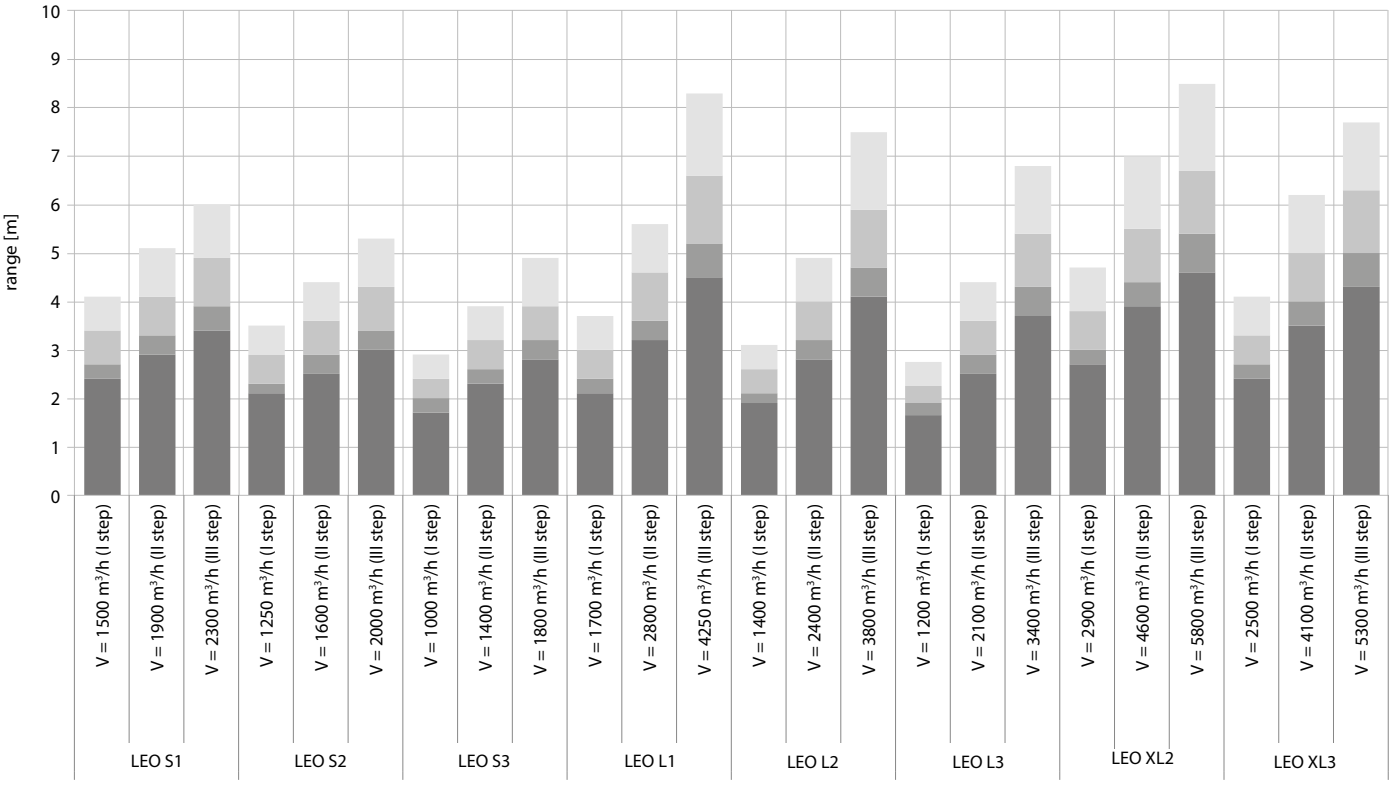
HORIZONTAL RANGE OF AIR STREAM – isothermal



Horizontal range of isothermal stream at velocity boundary equal to 0,5 m/s.

V – air flow

VERTICAL RANGE OF AIR STREAM – non-isothermal



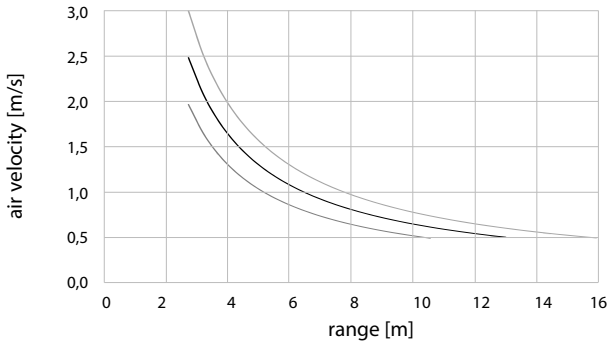
Vertical range of non-isothermal stream at velocity boundary equal to 0,5 m/s.

V – air flow

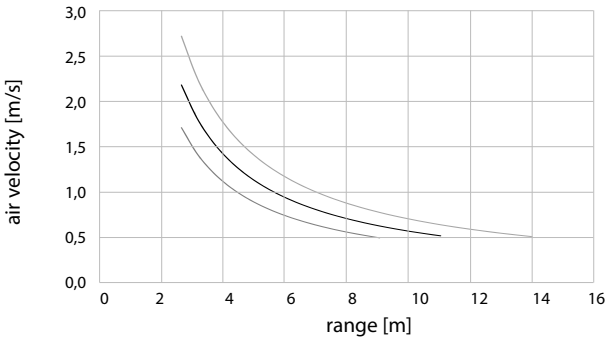
Δ5°C Δ10°C Δ20°C Δ30°C

VELOCITY OF AIR FLOW

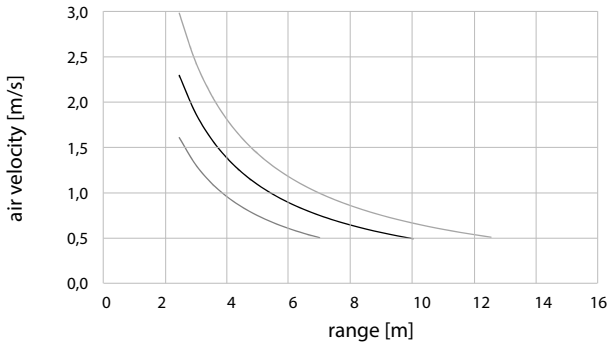
LEO S1



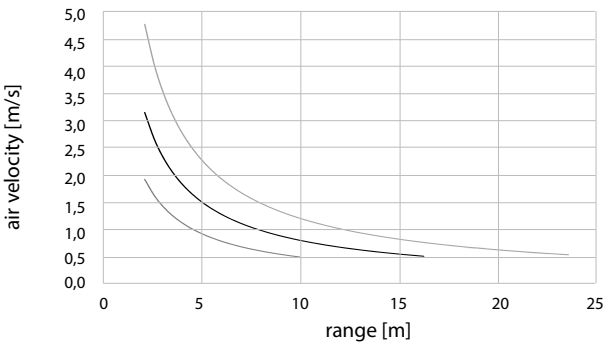
LEO S2



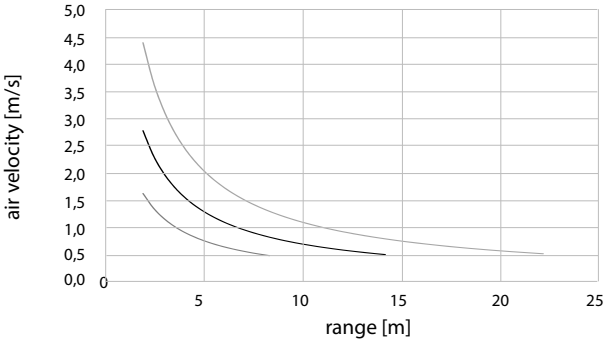
LEO S3



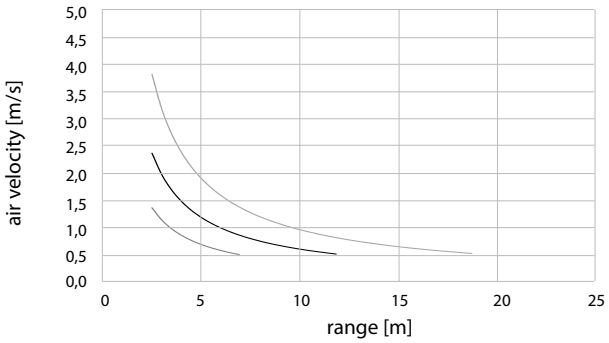
LEO L1



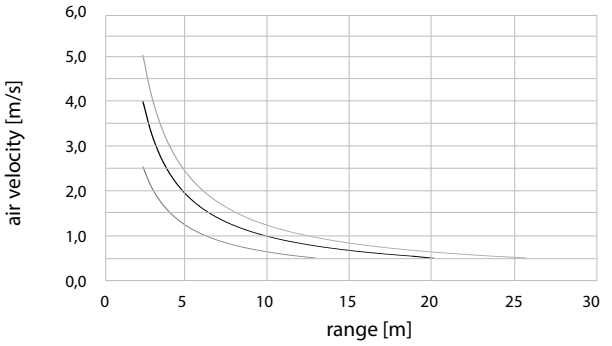
LEO L2



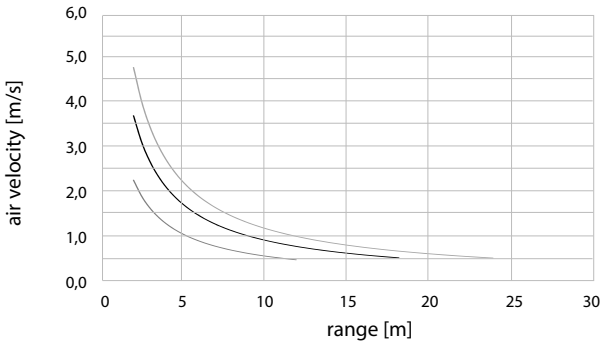
LEO L3



LEO XL2



LEO XL3

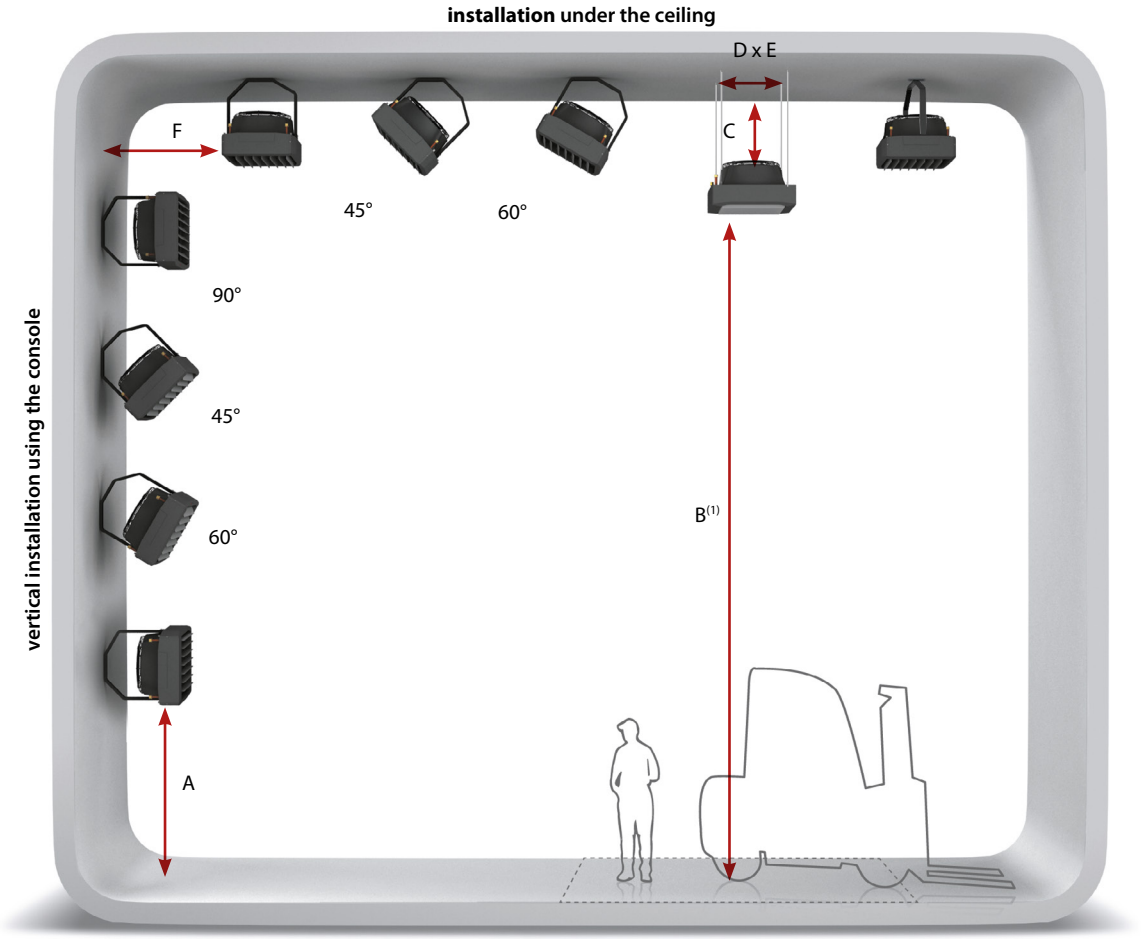


— I step — II step — III step

the above air flow velocity charts refer to the isothermal stream

INSTALLATION AND VARIOUS MOUNTING POSSIBILITIES

Possibility of setting the direction of air stream



(1) When unit is mounted under the ceiling please note the proper non-isothermal air stream range.

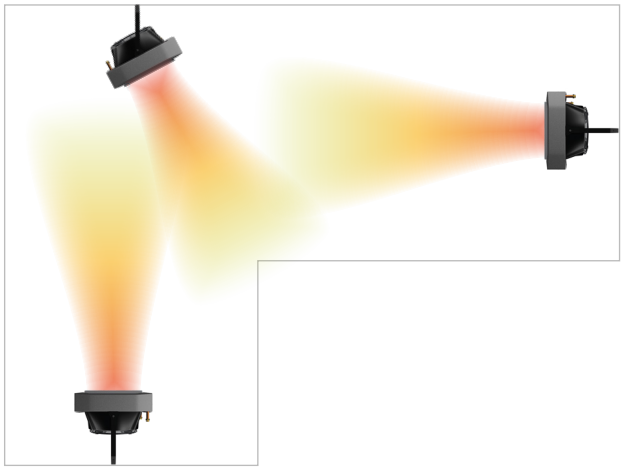
Optional corner holders
There are corner brackets available which make installation and levelling of the heater easier.

Rotary console
It enables installation of the heater perpendicularly or horizontally at various angles to the partition.

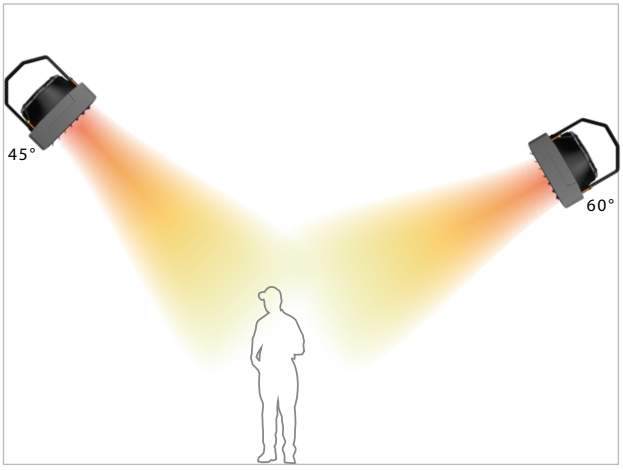
RECOMMENDED INSTALLATION DISTANCE [m]

	S1	S2	S3	L1	L2	L3	XL2	XL3
A	max. 3,0	max. 3,0	max. 3,0	2,5–8,0	2,5–8,0	2,5–8,0	2,5–8,0	2,5–8,0
B	2,5–7,0	2,5–6,0	2,5–6,0	2,5–9,5	2,5–8,5	2,5–8,0	2,5–9,5	2,5–9,0
C	min. 0,3							
D	0,415	0,415	0,415	0,515	0,515	0,515	0,66	0,66
E	0,415	0,415	0,415	0,515	0,515	0,515	0,58	0,58
F	min. 0,5							

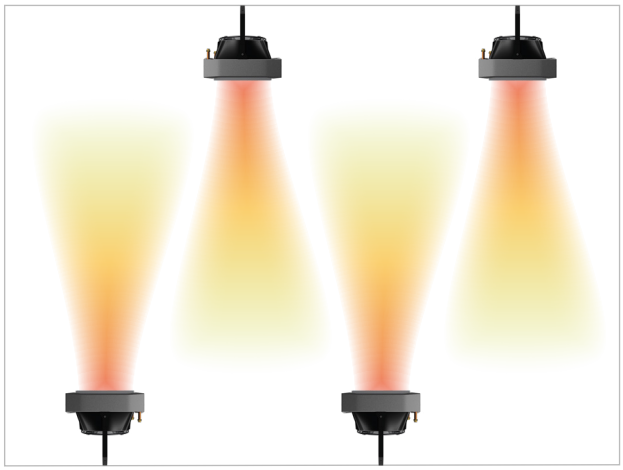
INSTALLATION TIPS



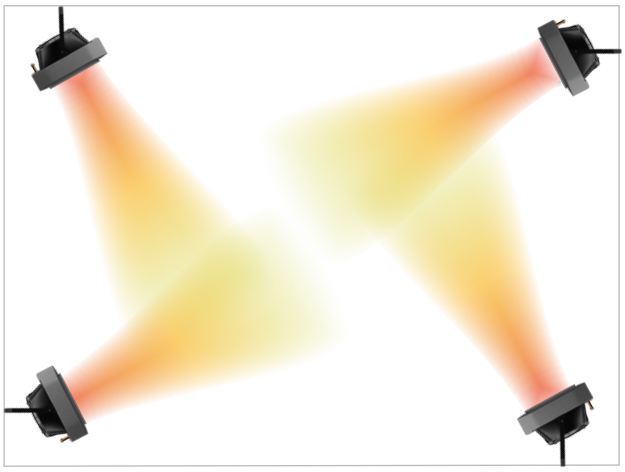
Steady air circulation should be provided in the entire room.



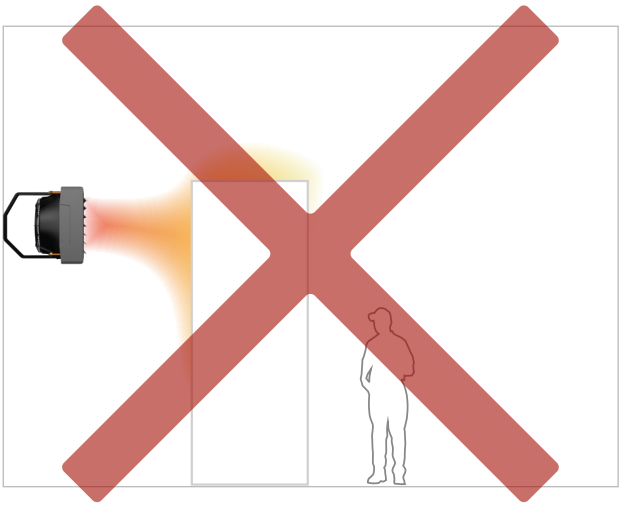
Correctly installed heaters should direct the air to the occupied zone.



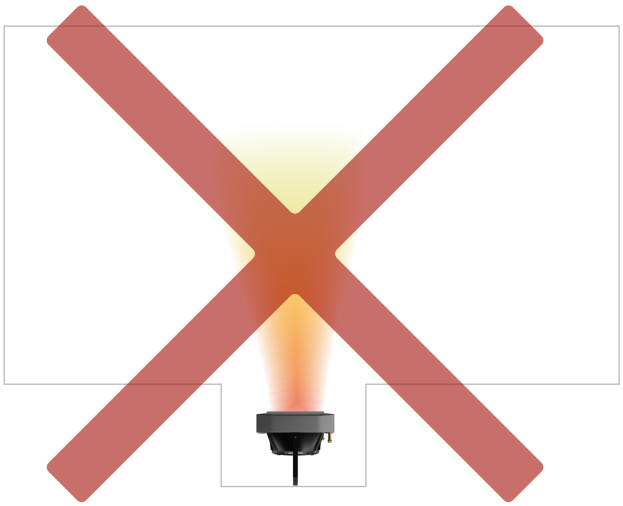
Heaters installed on the opposite walls should be overlapped.



Heaters installed in the corners should direct the air to the center of the room.



Air outlet should not be limited.



Air inlet should not be limited.

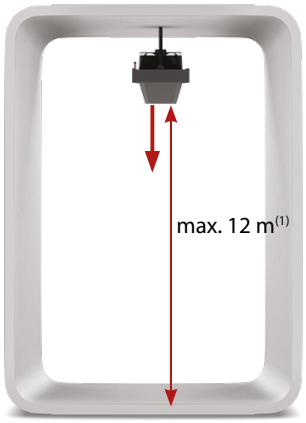
ACCESSORIES - CONFUSOR LEO

Dedicated for LEO L and XL

Confusor increases air flow speed. It results in faster air distribution to the lower zones of the room.

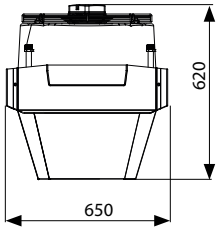
The use of a confusor causes a 10 % reduction of unit's parameters as compared to nominal data given in the tables on pages 23–25

Material: powder painted metal RAL 9007
Weight: 3,8 kg - confusor LEO L
6,2 kg - confusor LEO XL

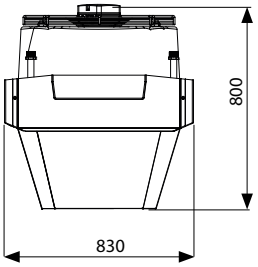


(1) When unit is mounted under the ceiling please note the proper nonisothermal air stream range.

DIMENSIONS



LEO L1 | L2 | L3 + L confusor



LEO XL2 | XL3 + XL confusor

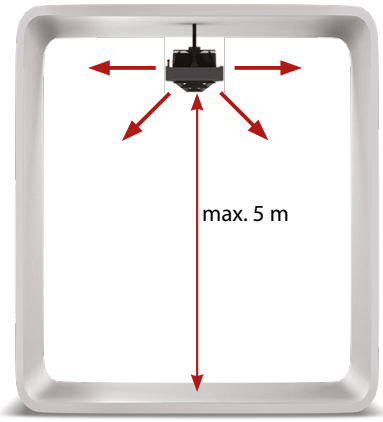
ACCESSORIES - 4-SIDE OUTLET GRILLE LEO

Dedicated for LEO L and XL

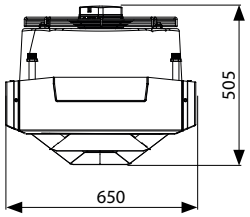
4-side outlet grille improves air distribution. It is a perfect solution for low level ceiling rooms, where heaters are installed under the ceiling.

Outlet grille decreases nominal parameters of the unit by 10% in relation to technical data presented in the tables on pages 23–25.

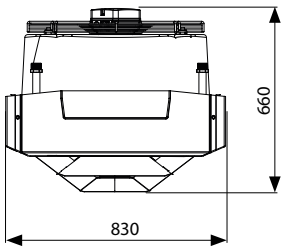
Material: powder painted metal RAL 9007
Weight: 2,8 kg - LEO L outlet grille
4,8 kg - LEO XL outlet grille



DIMENSIONS



LEO L1 | L2 | L3 + L outlet grille



LEO XL2 | XL3 + XL outlet grille

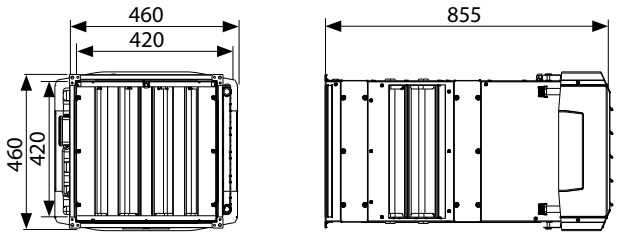
ACCESSORIES - MIXING CHAMBER KM

Available to all models LEO

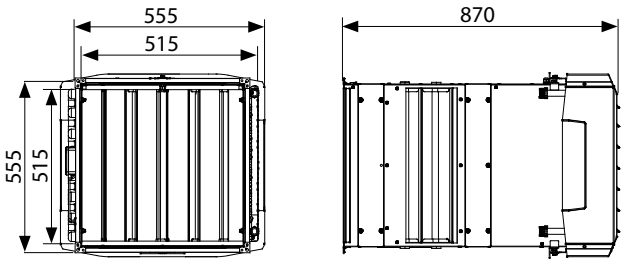
LEO fan heaters with LEO KM mixing chamber form heating and ventilation unit. It is the easiest way to create the efficient mechanical ventilation without additional systems.

LEO + KM

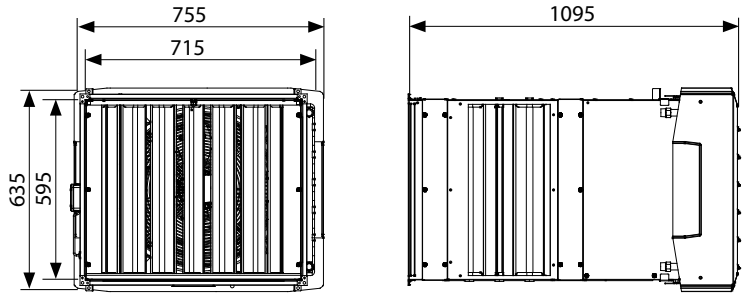
DIMENSIONS



LEO S1 | S2 | S3 + KM S



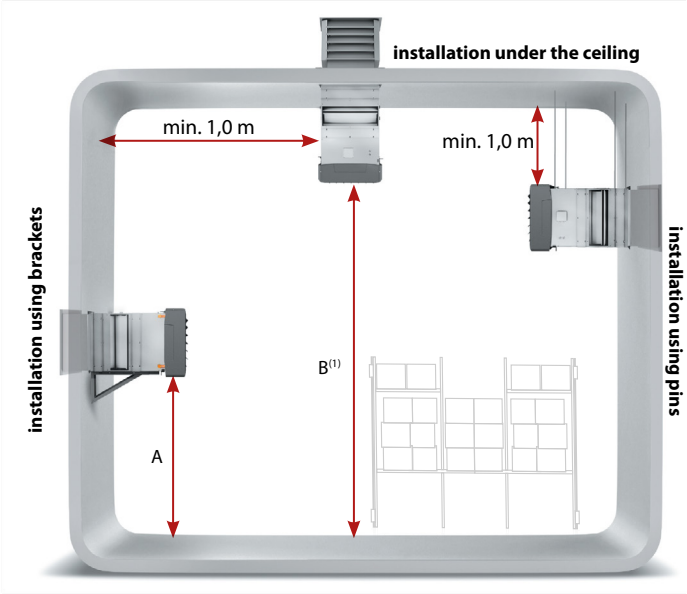
LEO L1 | L2 | L3 + KM L



LEO XL2 | XL3 + KM XL

For CAD drawings, Revit files and documentation for all available versions of LEO visit www.flowair.com

INSTALLATION



LEO + KM + UVO

Installation brackets
Enable easy and aesthetic installation on the walls.

(1) For units installed vertically. When mounting under a ceiling, the mounting height should be selected depending on the non-isothermal vertical range.

RECOMMENDED INSTALLATION DISTANCE [m]

	LEO S1 + KM S	LEO S2 + KM S	LEO S3 + KM S	LEO L1 + KM L	LEO L2 + KM L	LEO L3 + KM L	LEO XL2 + KM XL	LEO XL3 + KM XL
A	max. 3,0	max. 3,0	max. 3,0	2,5 – 5,0	2,5 – 5,0	2,5 – 5,0	2,5 – 5,0	2,5 – 5,0
B	2,5 – 4,5	2,5 – 4,0	2,5 – 4,0	2,5 – 6,5	2,5 – 6,0	2,5 – 5,5	2,5 – 7,0	2,5 – 6,0

TECHNICAL DATA

Fan heater with mixing chamber **LEO KM**	LEO S1 + KM S	LEO S2 + KM S	LEO S3 + KM S	LEO L1 + KM L	LEO L2 + KM L	LEO L3 + KM L	LEO XL2 + KM XL	LEO XL3 + KM XL
Max. air flow stream [m³/h](1)	1200	1100	1000	2600	2400	2250	3700	3100
Nominal heat power (70/50/16°C, III step) [kW]	3,1	7,2	8,3	9,1	14,4	19,5	27,4	33,0
Power supply [V/Hz]	230/50			230/50			230/50	
Max. current consumption [A]	0,5	0,6	0,6	1,4	1,5	1,5	2,3	2,4
Max. power consumption [W]	110	130	130	320	340	340	520	550
IP/Insulation class	54/F			54/F			54/F	
Sound pressure level 5m [dB(A)](2)	56,3			64,1			67,5	
Sound power level [dB(A)](3)	71,4			79,2			82,6	
Horizontal range [m](4)	8,0	7,5	7,0	14,5	13,5	12,5	16,5	14,0
Vertical range [m](5)	3,4	3,2	2,9	5,3	5,0	4,7	5,8	4,9
Max. heating water temperature [°C]	120			120			120	
Max. operating pressure [MPa]	1,6			1,6			1,6	
Connection	½"			¾"			¾"	
Weight of unit [kg]	25,9	26,8	27,9	34,3	35,5	37,8	53,6	57,9
Weight of unit filled with water [kg]	26,6	28,0	29,3	35,3	37,5	40,5	56,3	62,0

(1) efficiency with air intake/inlet and 100% fresh air
(2) in accordance with PN-EN ISO3744
(3) acoustic pressure level at the distance of 5 m from the unit, in the room of medium capability of sound absorption and 1500 m³ of cubature
(4) range of horizontal isothermal air stream, at 0,5 m/s velocity limit
(5) range of vertical non-isothermal air stream at T = 5°C, at 0,5 m/s velocity limit

REGULATION

T-box REGULATION FOR LEO BMS

LEO BMS fan heaters are equipped with an external DRV V control module, which together with the T-box controller enables:

- 3-step automatic or manual fan speed regulation,
- operating modes: heating, ventilation,
- fan operation in continuous mode (after reaching set temperature, heating medium is cut off while fan is operating at selected step), or thermostatic mode (after reaching set temperature, heating medium is cut off and fan is turned off),
- antifreeze – automatic protection against too low temperature in the room,
  weekly programmer,
  integration with FLOWAIR SYSTEM.

T-box

CONNECTING UNITS:

The system is adapted to connect fan heaters and control up to 31 units or zones compatible with the SYSTEM FLOWAIR via single T-box controller.

BMS:

The T-box controller or the DRV V control module can be connected to the intelligent building management system BMS. This solution enables control of all units communicating with the T-box controller and the DRV V control module.

ZONES:

- T-box Zone – controls up to 31 individual units or provides local control of up to 31 independent temperature zones.
- T-box – the controller is adapted to local management of units operating in one zone.

HMI REGULATION FOR LEO

It is an advanced 3-speed fan regulation system using the HMI programmable controller, which enables:

- 3-step automatic or manual fan speed regulation,
- operating modes: heating, ventilation,
- fan operation in continuous mode (after reaching set temperature, heating medium is cut off while fan is operating at selected step), or thermostatic mode (after reaching set temperature, heating medium is cut off and fan is turned off),
- antifreeze – automatic protection against too low temperature in the room,
- weekly programmer.

HMI

CONNECTING UNITS:

One HMI controller allows you to control: max. 5 units LEO S1 | S2 | S3,
max. 2 units LEO L1 | L2 | L3 and max. 1 unit LEO XL2 | XL3.

BMS:

The HMI controller can be connected to the intelligent building management system BMS. This solution enables control of all units communicating with the HMI controller.

TS REGULATION FOR LEO

This is the simplest 3-speed fan control system. The work of the fan heater is controlled by a 3-step thermostat-controlled regulator that allows:

- 3-step manual fan speed regulation,
- operating modes: heating, ventilation,
- an operation in continuous mode (after reaching set temperature, heating medium is cutted off while fan is operating at selected step), or thermostatic mode (after reaching set temperature, heating medium is cut off and fan is turned off).

TS

CONNECTING UNITS:

One TS controller allows you to control: max. 7 units LEO S1 | S2 | S3,
max. 3 units LEO L1 | L2 | L3 or max. 2 units LEO XL2 | XL3.

CONTROL SYSTEMS

TS CONTROLLER
basic version

The simplest regulation of 3-step fans. Fan heater operation is controlled by 3-step fan speed controller with thermostat.

HMI CONTROLLER
basic version

Regulation of 3-step fans via HMI programmable controlle with calendar function.

T-box CONTROLLER
BMS version

The intelligent regulation system of 3-step fans. Speed regulation of energy-efficient fans
via T-box controller.

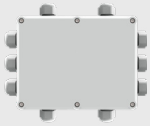
T-box Zone CONTROLLER
BMS version

Intelligent, independent regulation of multiple zones, tailored to individual needs

Fan heater **LEO**	**TS** Controller	**HMI** Controller	**T-box** Controller	**T-box Zone** Controller
Method of regulation				
Manual 3-stage efficiency control	✓	✓	✓	✓
Modes of operation				
Heating / Ventilation	✓	✓	✓	✓
Operation depending on the door sensor and temperature level	✓		✓	✓
BMS		✓	✓	✓
Curtain OFF delay			✓	✓
Idle speed			✓	✓
Unit integration to the SYSTEM FLOWAIR			✓	✓
Weekly timer for a group of units			✓	✓
Weekly timer for each zone				✓
Individual settings for each zone				✓
Individual description of the controlled zone				✓
Antifreeze for each zone				✓
Maximum number of supported units				
Directly by the controller in one zone	5*	5	31	31
Directly by the controller in several zones	0		0	31
With the help of additional splitters	n/d	36	n/d	n/d
Type of fan				
Standard 3-speed fan	✓		✓	✓

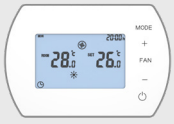
CONTROL ELEMENTS

T-box REGULATION FOR LEO BMS

Category	Name	Appearance	Technical data
Controllers	T-box Zone smart controller with a touch screen and zoning function.		Protection degree: IP 20 Power supply: 24 VDC Temperature adjustment range: +5 … +45°C Operating temperature range: 0 … +60°C Max. wire diameter: 1,0 mm²
Controllers	T-box intelligent controller with a touch screen		Protection degree: IP 20 Power supply: 24 VDC Temperature adjustment range: +5 … +45°C Operating temperature range: 0 … +60°C Max. wire diameter: 1,0 mm²
Control module[1]	DRV D control module		Protection degree: IP 54 Power supply: 230V/50Hz Dimensions: 230x180x55 mm Operating temperature range: 0 … +60°C Number of connected units: 1 Max. wire diameter: 2,5 mm²
Temperature sensor[1]	PT-1000 IP65 wall-mounted temperature sensor IP65		Protection degree: IP65 Operating temperature range: -20 … +80°C Max. wire diameter: 1,5 mm²

[1] LEO BMS units are equipped with DRV V control module and a temperature sensor as a standard.

HMI REGULATION FOR LEO

Category	Name	Appearance	Technical data
Controller	HMI programmable controller		Protection degree IP 20 Power supply: 230V/50Hz Temperature adjustment range: +5 … +40°C Operating temperature range: 0 … +50°C Contacts load: 3,0 A Max. wire diameter: 1,5 mm²
Additional equipment	NTC wall-mounted temperature sensor		Protection degree: IP65 Operating temperature range: -20 … +80°C Max. wire diameter: 1,5 mm²

TS REGULATION FOR LEO

Category	Name	Appearance	Technical data
Thermostat	TS 3-step fan speed regulator with thermostat		Protection degree: IP30 Power supply: 230V/50Hz Temperature adjustment range: +10 … +30°C Operating temperature range: 0 … +40°C Contacts load: 5 A Max. wire diameter: 1,5 mm²

CONTROL ELEMENTS

T-box | HMI | TS REGULATION FOR LEO / LEO BMS

Category	Name	Appearance	Technical data
Valves	SRQ2d-3/4 SRQ2d-1/2 two-way valve 3/4" | 1/2" with actuator		Protection degree: IP20 Power supply: 230 V 50/60 Hz Max. water temperature: +93°C Max. operating pressure: 2,1 MPa Kvs: 3/4" – 6,5 m^3/h; 1/2" – 3,0 m^3/h Installation: on water outlet pipe Opening/closing time: 18s/5s Dimensions (HxWxL): 3/4" – 122x86x66; 1/2" – 108x86x66
Valves	SRQ3d-3/4 SRQ3d-1/2 three-way valve 3/4" | 1/2" with actuator		Protection degree: IP20 Power supply: 230 V 50/60 Hz Max. water temperature: +93°C Max. operating pressure: 2,1 MPa Kvs: 3/4" – 6,5 m^3/h; 1/2" – 3,4 m^3/h Installation: on water inlet pipe Opening/closing time: 18s/5s Dimensions (HxWxL): 3/4" – 110x95x66; 1/2" – 122x93x66

ADDITIONAL ELEMENTS

Category	Name	Appearance	Technical data
Flexible wires	KP 1/2-0,7 GWGW KP 3/4-0,7 GWGW		Max. operating pressure: 1,0 MPa Max. water temperature: 95°C Cassing: stal 316L Length: 0,7m Thread: GW/GW 1/2" for LEO S 3/4" for LEO L/XL Use 2 wires for 1 unit.

BMS PROGRAMMING

FOR T-box I HMI REGULATION

Connection of units to the BMS (Building Management System) is possible in three ways: through the T-box or HMI controller (Version 1) or through the DRV control module (Version 2).

VERSION 1

T-box and HMI controllers enable connection of the system to BMS system (Building Management System). When monitoring units via the T-box controller with one address in the BMS, it is possible to independently monitor the operation of up to 31 units or zones.

Communication parameters:

Name	T-box regulation	HMI regulation
Physical layer	RS485	RS485
Protocol	MODBUS-RTU	MODBUS-RTU
Transmission speed [bps]	9600 do 230400	2400
Parity	Even	Even
Number of data bits	8	8
Number of stop bits	1	1

VERSION 2

The DRV V control modules enable connection to the BMS system. It is possible to set up to 31 addresses. Setting the address for each unit separately allows independent reading and saving of the work parameters of each unit.

Communication parameters:

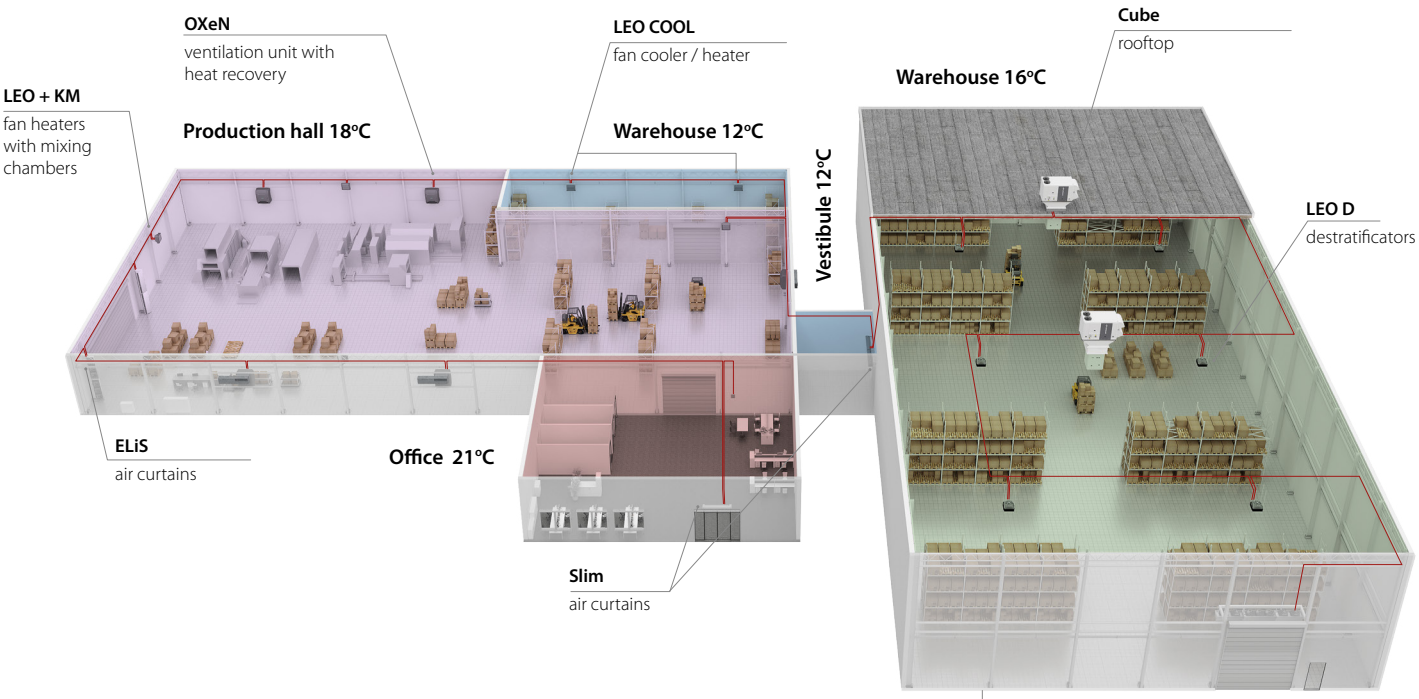
Name	DRV V
Physical layer	RS485
Protocol	MODBUS-RTU
Transmission speed [bps]	38400
Parity	Even
Number of data bits	8
Number of stop bits	1

SYSTEM FLOWAIR

SYSTEM FLOWAIR is a complete offer of heating and ventilation units integrated with one controller. The T-box controller allows you to control and regulate all units or various temperature zones from one place.

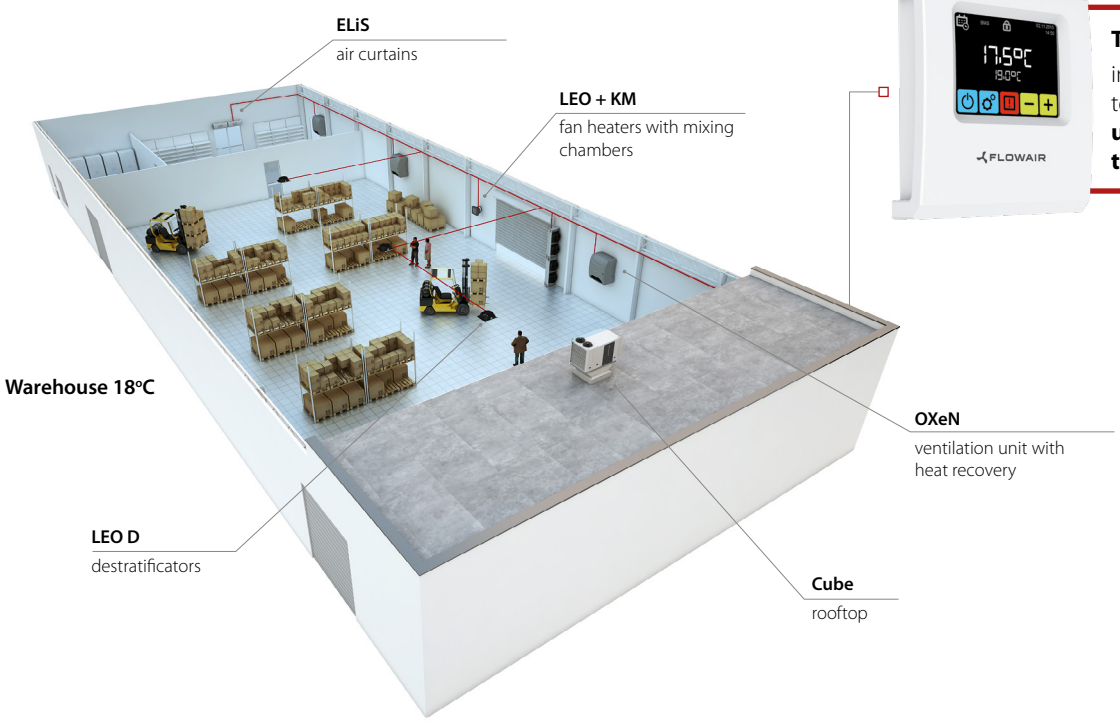
FOR FACILITIES WITH MULTIPLE HEATING ZONES

The zone temperature control is intended for facilities where at least two different temperature zones can be distinguished. For example: production halls with an additional office space, car showrooms with a workshop or shopping centers with food courts.



FOR FACILITIES WITH ONE HEATING ZONE

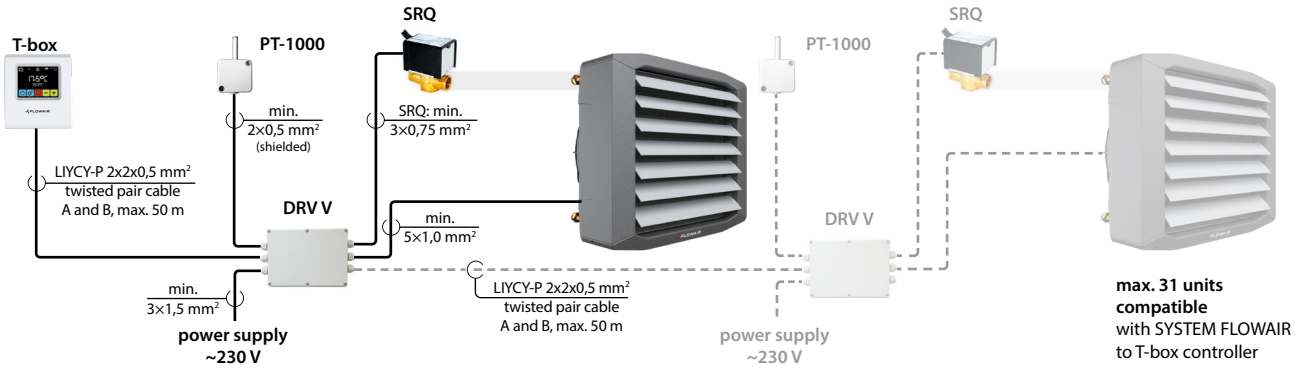
Simple, intuitive control of thermal comfort for facilities with a specific use, such as exhibition halls, logistics centers.



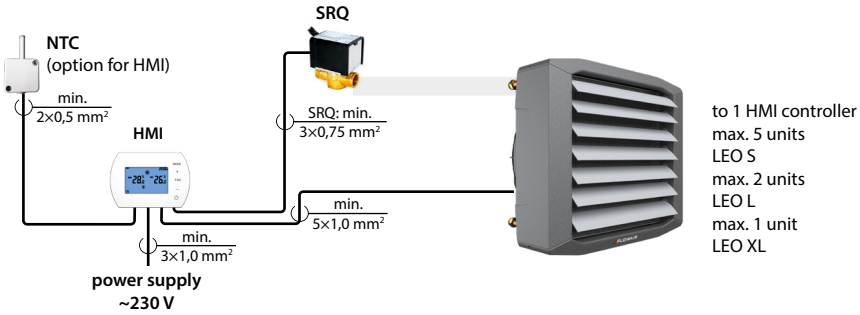
T-box
intelligent controller with touch screen. Control of **up to 31 units or temperature zones.**

CONNECTION DIAGRAMS

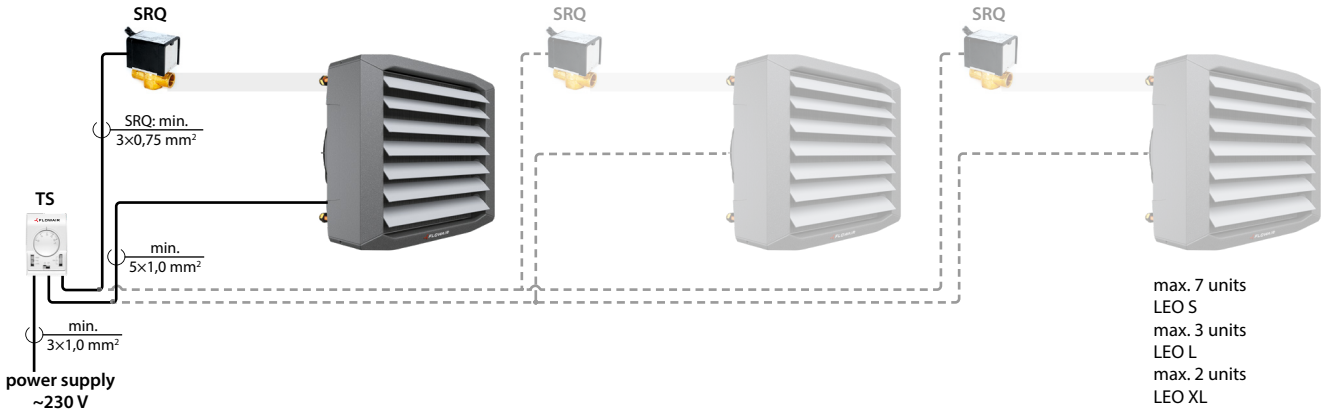
LEO BMS REGULATION WITH T-BOX CONTROLLER



LEO BMS REGULATION WITH HMI CONTROLLER



LEO REGULATION WITH TS CONTROLLER



HEATING CAPACITIES

Tw1 / Tw2 = 120/90°C					Tw1 / Tw2 = 90/70°C					Tw1 / Tw2 = 70/50°C					Tw1 / Tw2 = 60/40°C					Tw1 / Tw2 = 40/30°C				
Tp1	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**
[°C]	[kW]	[l/h]	[kPa]	[°C]	[°C]	[kW]	[l/h]	[kPa]	[°C]	[°C]	[kW]	[l/h]	[kPa]	[°C]	[°C]	[kW]	[l/h]	[kPa]	[°C]	[°C]	[kW]	[l/h]	[kPa]	[°C]
LEO S1 / LEO S1 BMS																								
III step: V = 2300 m³/h																								
0,0	12,8	381	1,8	16,5	0,0	9,8	430	2,4	12,5	0,0	6,7	292	1,3	8,5	0,0	5,0	219	0,8	6,5	0,0	3,8	325	1,7	5,0
5,0	12,2	362	1,6	20,5	5,0	9,1	401	2,1	16,5	5,0	6,0	262	1,0	12,5	5,0	4,3	188	0,6	10,5	5,0	3,0	263	1,2	9,0
10,0	11,5	343	1,5	24,5	10,0	8,4	372	1,8	21,0	10,0	5,3	232	0,8	17,0	10,0	3,6	155	0,4	14,5	10,0	2,3	197	0,7	13,0
15,0	10,9	324	1,3	29,0	15,0	7,8	343	1,6	25,0	15,0	4,6	202	0,7	21,0	15,0	2,7	117	0,3	18,5	15,0	1,2	104	0,2	16,5
20,0	10,2	305	1,2	33,0	20,0	7,1	314	1,3	29,0	20,0	3,9	170	0,5	25,0	20,0	1,7	74	0,1	22,0	20,0	0,8	72	0,1	21,0
II step: V = 1900 m³/h																								
0,0	11,6	346	1,5	18,0	0,0	8,9	391	2,0	14,0	0,0	6,1	265	1,1	9,5	0,0	4,6	198	0,7	7,0	0,0	3,4	294	1,4	5,5
5,0	11,1	329	1,4	22,0	5,0	8,3	365	1,8	18,0	5,0	5,4	238	0,9	13,5	5,0	3,9	170	0,5	11,0	5,0	2,7	237	1,0	9,5
10,0	10,5	312	1,2	26,0	10,0	7,7	338	1,5	22,0	10,0	4,8	211	0,7	17,5	10,0	3,2	139	0,4	15,0	10,0	2,0	176	0,6	13,0
15,0	9,9	295	1,1	30,0	15,0	7,1	312	1,3	26,0	15,0	4,2	183	0,6	21,5	15,0	2,3	99	0,2	18,5	15,0	1,1	99	0,2	17,0
20,0	9,3	277	1,0	34,0	20,0	6,5	285	1,1	30,0	20,0	3,5	154	0,4	25,5	20,0	1,6	70	0,1	22,5	20,0	0,8	69	0,1	21,0
I step: V = 1500 m³/h																								
0,0	10,3	307	1,2	20,5	0,0	7,8	346	1,6	15,5	0,0	5,4	234	0,9	10,5	0,0	4,0	174	0,5	8,0	0,0	3,0	259	1,1	6,0
5,0	9,8	292	1,1	24,5	5,0	7,3	323	1,4	19,5	5,0	4,8	210	0,7	14,5	5,0	3,4	148	0,4	11,5	5,0	2,4	208	0,8	9,5
10,0	9,3	276	1,0	28,0	10,0	6,8	299	1,2	23,5	10,0	4,3	186	0,6	18,5	10,0	2,7	119	0,3	15,5	10,0	1,7	151	0,4	13,5
15,0	8,8	261	0,9	32,0	15,0	6,3	276	1,1	27,0	15,0	3,7	161	0,4	22,0	15,0	1,8	80	0,1	18,5	15,0	1,1	93	0,2	17,0
20,0	8,3	246	0,8	36,0	20,0	5,7	253	0,9	31,0	20,0	3,1	135	0,3	26,0	20,0	1,5	66	0,1	23,0	20,0	0,7	64	0,1	21,5
LEO S2 / LEO S2 BMS																								
III step: V = 2000 m³/h																								
0,0	26,5	788	10,7	39,0	0,0	20,1	889	14,2	30,0	0,0	14,4	631	8,2	21,5	0,0	11,5	502	5,6	17,0	0,0	8,3	719	11,4	12,5
5,0	25,2	750	9,8	42,0	5,0	18,9	832	12,6	33,0	5,0	13,1	574	6,9	24,5	5,0	10,2	445	4,5	20,0	5,0	7,0	604	8,4	15,5
10,0	24,0	713	8,9	45,0	10,0	17,6	776	11,1	36,0	10,0	11,8	517	5,7	27,5	10,0	8,9	386	3,6	23,0	10,0	5,6	488	5,8	18,5
15,0	22,7	676	8,1	48,0	15,0	16,3	719	9,7	39,0	15,0	10,5	459	4,6	30,5	15,0	7,5	328	2,7	26,0	15,0	4,3	370	3,5	21,0
20,0	21,5	639	7,3	51,0	20,0	15,0	663	8,4	42,0	20,0	9,2	401	3,6	33,5	20,0	6,1	267	1,9	29,0	20,0	2,8	246	1,7	24,0
II step: V = 1600 m³/h																								
0,0	23,3	692	8,4	43,0	0,0	17,7	781	11,2	32,5	0,0	12,7	554	6,5	23,5	0,0	10,1	441	4,5	18,5	0,0	7,3	632	9,1	13,5
5,0	22,2	659	7,7	46,0	5,0	16,6	731	10,0	35,5	5,0	11,5	504	5,5	26,5	5,0	9,0	391	3,6	21,5	5,0	6,1	531	6,7	16,5
10,0	21,1	627	7,1	48,5	10,0	15,5	682	8,8	38,5	10,0	10,4	454	4,5	29,0	10,0	7,8	340	2,8	24,5	10,0	5,0	429	4,6	19,0
15,0	20,0	594	6,4	51,5	15,0	14,3	632	7,7	41,0	15,0	9,2	404	3,7	32,0	15,0	6,6	288	2,1	27,0	15,0	3,7	324	2,8	22,0
20,0	18,9	562	5,8	54,0	20,0	13,2	583	6,6	44,0	20,0	8,1	353	2,9	34,5	20,0	5,4	235	1,5	30,0	20,0	2,5	214	1,4	24,5
I step: V = 1250 m³/h																								
0,0	20,1	597	6,5	47,5	0,0	15,3	673	8,6	36,0	0,0	10,9	478	5,0	26,0	0,0	8,7	380	3,5	20,5	0,0	6,3	544	7,0	15,0
5,0	19,1	569	5,9	50,0	5,0	14,3	630	7,6	38,5	5,0	9,9	435	4,2	28,5	5,0	7,7	337	2,8	23,5	5,0	5,3	457	5,1	17,5
10,0	18,2	541	5,4	52,5	10,0	13,3	588	6,7	41,5	10,0	9,0	392	3,5	31,0	10,0	6,7	293	2,2	26,0	10,0	4,3	369	3,5	20,0
15,0	17,2	513	4,9	55,5	15,0	12,4	545	5,9	44,0	15,0	8,0	348	2,8	33,5	15,0	5,7	248	1,6	28,5	15,0	3,2	279	2,2	22,5
20,0	16,3	485	4,4	58,0	20,0	11,4	502	5,1	46,5	20,0	7,0	304	2,2	36,0	20,0	4,6	202	1,1	31,0	20,0	2,1	182	1,0	25,0
LEO S3 / LEO S3 BMS																								
III step: V = 1800 m³/h																								
0,0	32,7	973	8,4	54,0	0,0	24,9	1098	11,1	41,0	0,0	17,6	769	6,2	29,0	0,0	13,8	603	4,2	23,0	0,0	10,1	872	8,6	16,5
5,0	31,1	925	7,6	56,0	5,0	23,3	1026	9,8	43,0	5,0	15,9	697	5,2	31,0	5,0	12,2	530	3,3	25,0	5,0	8,4	726	6,2	18,5
10,0	29,5	878	6,9	58,0	10,0	21,6	954	8,6	45,5	10,0	14,3	624	4,3	33,5	10,0	10,5	457	2,5	27,0	10,0	6,7	579	4,1	21,0
15,0	27,9	831	6,3	60,5	15,0	20,0	883	7,5	47,5	15,0	12,6	551	3,4	35,5	15,0	8,8	382	1,8	29,0	15,0	4,9	428	2,4	23,0
20,0	26,3	784	5,6	62,5	20,0	18,4	811	6,4	49,5	20,0	10,9	478	2,6	37,5	20,0	7,0	304	1,2	31,5	20,0	3,1	264	1,0	25,0
II step: V = 1400 m³/h																								
0,0	27,8	828	6,2	59,0	0,0	21,2	934	8,3	44,5	0,0	15,0	655	4,6	31,5	0,0	11,8	514	3,1	25,0	0,0	8,6	742	6,4	18,0
5,0	26,5	788	5,7	61,0	5,0	19,8	873	7,3	46,5	5,0	13,6	593	3,9	33,5	5,0	10,4	452	2,5	27,0	5,0	7,1	618	4,6	20,0
10,0	25,1	747	5,2	62,5	10,0	18,4	812	6,4	48,5	10,0	12,2	532	3,2	35,5	10,0	8,9	389	1,9	28,5	10,0	5,7	492	3,1	22,0
15,0	23,8	707	4,7	64,5	15,0	17,0	751	5,6	50,5	15,0	10,7	470	2,6	37,5	15,0	7,5	325	1,4	30,5	15,0	4,2	363	1,8	24,0
20,0	22,4	668	4,2	66,5	20,0	15,7	691	4,8	52,5	20,0	9,3	407	2,0	39,5	20,0	5,9	258	0,9	32,5	20,0	2,5	217	0,7	25,0
I step: V = 1000 m³/h																								
0,0	22,2	660	4,1	65,5	0,0	16,9	744	5,5	50,0	0,0	11,9	522	3,1	35,5	0,0	9,4	410	2,1	28,0	0,0	6,8	591	4,3	20,0
5,0	21,1	628	3,8	67,0	5,0	15,8	695	4,9	51,5	5,0	10,8	473	2,6	37,0	5,0	8,3	360	1,7	29,5	5,0	5,7	492	3,1	22,0
10,0	20,0	596	3,4	69,0	10,0	14,7	647	4,3	53,0	10,0	9,7	424	2,1	38,5	10,0	7,1	310	1,3	31,0	10,0	4,5	391	2,1	23,5
15,0	19,0	564	3,1	70,5	15,0	13,6	599	3,7	54,5	15,0	8,6	375	1,7	40,0	15,0	5,9	258	0,9	32,5	15,0	3,3	286	1,2	24,5
20,0	17,9	533	2,8	72,0	20,0	12,5	551	3,2	56,0	20,0	7,4	325	1,3	41,5	20,0	4,7	203	0,6	33,5	20,0	1,7	143	0,4	25,0

V – air flow
PT – heating capacity
Tp1 – inlet air temperature
Tp2 – outlet air temperature

Tw1 – inlet water temperature
Tw2 – outlet water temperature
Qw – water flow rate in heat exchanger
Δpw – water pressure drop in heat exchanger

HEAT OUTPUT CALCULATOR

In order to select the unit with other parameters scan QR code.

HEATING CAPACITIES

Tw1 / Tw2 = 120/90°C					Tw1 / Tw2 = 90/70°C					Tw1 / Tw2 = 70/50°C					Tw1 / Tw2 = 60/40°C					Tw1 / Tw2 = 40/30°C				
Tp1	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**
[°C]	[kW]	[l/h]	[kPa]	[°C]	[°C]	[kW]	[l/h]	[kPa]	[°C]	[°C]	[kW]	[l/h]	[kPa]	[°C]	[°C]	[kW]	[l/h]	[kPa]	[°C]	[°C]	[kW]	[l/h]	[kPa]	[°C]
LEO L1 / LEO L1 BMS																								
III step: V = 4250 m³/h																								
0,0	32,3	961	7,0	22,5	0,0	24,6	1086	9,4	17,0	0,0	17,1	749	5,1	12,0	0,0	13,3	578	3,3	9,0	0,0	9,8	845	7,0	7,0
5,0	30,7	913	6,4	26,5	5,0	23,0	1014	8,3	21,0	5,0	15,4	676	4,2	15,5	5,0	11,6	504	2,6	13,0	5,0	8,0	697	4,9	10,5
10,0	29,1	865	5,8	30,0	10,0	21,3	941	7,2	25,0	10,0	13,8	602	3,4	19,5	10,0	9,8	429	1,9	17,0	10,0	6,3	547	3,2	14,5
15,0	27,5	818	5,2	34,0	15,0	19,7	869	6,3	28,5	15,0	12,1	528	2,7	23,5	15,0	8,1	352	1,4	20,5	15,0	4,5	391	1,8	18,0
20,0	25,9	770	4,7	37,5	20,0	18,0	796	5,3	32,5	20,0	10,4	453	2,1	27,0	20,0	6,2	272	0,9	24,5	20,0	1,6	139	0,3	21,0
II step: V = 2800 m³/h																								
0,0	26,0	773	4,7	27,5	0,0	19,8	873	6,3	21,0	0,0	13,8	602	3,4	14,5	0,0	10,7	464	2,2	11,5	0,0	7,8	678	4,7	8,5
5,0	24,7	735	4,3	31,0	5,0	18,5	815	5,6	24,5	5,0	12,4	543	2,9	18,0	5,0	9,3	405	1,7	15,0	5,0	6,5	559	3,3	12,0
10,0	23,4	697	3,9	34,5	10,0	17,2	757	4,9	28,0	10,0	11,1	485	2,3	21,5	10,0	7,9	344	1,3	18,5	10,0	5,1	437	2,1	15,5
15,0	22,1	659	3,5	38,0	15,0	15,8	699	4,2	31,5	15,0	9,7	425	1,8	25,0	15,0	6,5	281	0,9	21,5	15,0	3,6	310	1,2	18,5
20,0	20,8	621	3,2	41,5	20,0	14,5	641	3,6	35,0	20,0	8,3	365	1,4	28,5	20,0	4,9	214	0,6	25,0	20,0	1,5	127	0,2	21,5
I step: V = 1700 m³/h																								
0,0	19,7	586	2,9	34,5	0,0	15,0	661	3,8	26,0	0,0	10,4	456	2,1	18,0	0,0	8,1	351	1,4	14,0	0,0	5,9	512	2,8	10,5
5,0	18,7	558	2,6	37,5	5,0	14,0	618	3,4	29,5	5,0	9,4	412	1,7	21,5	5,0	7,0	305	1,1	17,0	5,0	4,9	421	2,0	13,5
10,0	17,8	529	2,4	40,5	10,0	13,0	574	2,9	32,5	10,0	8,4	367	1,4	24,5	10,0	5,9	258	0,8	20,5	10,0	3,8	327	1,3	16,5
15,0	16,8	500	2,1	44,0	15,0	12,0	530	2,6	35,5	15,0	7,4	322	1,1	27,5	15,0	4,8	209	0,5	23,5	15,0	2,6	224	0,7	19,5
20,0	15,8	472	1,9	47,0	20,0	11,0	486	2,2	39,0	20,0	6,3	276	0,8	31,0	20,0	3,5	151	0,3	26,0	20,0	1,3	111	0,2	22,0
LEO L2 / LEO L2 BMS																								
III step: V = 3800 m³/h																								
0,0	50,4	1 500	7,9	43,5	0,0	38,4	1693	10,5	33,0	0,0	27,2	1190	5,9	23,5	0,0	21,5	937	4,0	18,5	0,0	15,6	1 351	8,2	13,5
5,0	48,0	1 428	7,2	46,5	5,0	35,9	1584	9,3	36,0	5,0	24,7	1079	4,9	26,5	5,0	18,9	825	3,2	21,5	5,0	13,0	1 128	5,9	16,0
10,0	45,5	1 355	6,5	49,0	10,0	33,4	1474	8,1	38,5	10,0	22,1	968	4,1	29,0	10,0	16,3	712	2,4	24,0	10,0	10,4	902	4,0	19,0
15,0	43,1	1 283	5,9	52,0	15,0	30,9	1364	7,1	41,5	15,0	19,6	856	3,3	31,5	15,0	13,7	598	1,8	26,5	15,0	7,7	671	2,4	21,5
20,0	40,7	1 211	5,3	54,5	20,0	28,4	1254	6,1	44,0	20,0	17,0	743	2,5	34,5	20,0	11,0	480	1,2	29,5	20,0	4,9	425	1,1	24,0
II step: V = 2400 m³/h																								
0,0	38,0	1 132	4,7	52,0	0,0	28,9	1276	6,3	39,5	0,0	20,5	898	3,6	28,0	0,0	16,2	707	2,4	22,0	0,0	11,7	1 018	4,9	16,0
5,0	36,2	1 078	4,3	54,5	5,0	27,1	1194	5,6	42,0	5,0	18,6	815	3,0	30,5	5,0	14,3	622	1,9	24,5	5,0	9,8	850	3,6	18,5
10,0	34,4	1 023	3,9	57,0	10,0	25,2	1112	4,9	44,5	10,0	16,7	731	2,5	33,0	10,0	12,3	537	1,5	27,0	10,0	7,8	679	2,4	20,5
15,0	32,6	969	3,6	59,0	15,0	23,3	1029	4,3	46,5	15,0	14,8	647	2,0	35,0	15,0	10,3	450	1,1	29,0	15,0	5,8	502	1,4	23,0
20,0	30,7	915	3,2	61,5	20,0	21,5	947	3,7	49,0	20,0	12,8	562	1,5	37,5	20,0	8,2	359	0,7	31,0	20,0	3,5	302	0,6	24,5
I step: V = 1400 m³/h																								
0,0	26,6	793	2,5	62,5	0,0	20,2	892	3,3	47,5	0,0	14,4	628	1,9	34,0	0,0	11,3	494	1,3	26,5	0,0	8,2	710	2,6	19,5
5,0	25,4	755	2,3	64,5	5,0	18,9	835	2,9	49,5	5,0	13,0	570	1,6	35,5	5,0	10,0	434	1,0	28,5	5,0	6,8	592	1,9	21,0
10,0	24,1	717	2,1	66,0	10,0	17,6	778	2,6	51,0	10,0	11,7	512	1,3	37,5	10,0	8,6	374	0,8	30,0	10,0	5,4	471	1,3	22,5
15,0	22,8	679	1,9	68,0	15,0	16,3	720	2,2	53,0	15,0	10,3	453	1,1	39,0	15,0	7,1	311	0,6	31,5	15,0	3,9	342	0,7	24,0
20,0	21,6	641	1,7	69,5	20,0	15,0	663	1,9	54,5	20,0	9,0	393	0,8	40,5	20,0	5,6	242	0,4	33,0	20,0	2,2	187	0,3	25,0
LEO L3 / LEO L3 BMS																								
III step: V = 3400 m³/h																								
0,0	65,2	1 942	11,9	63,0	0,0	49,4	2182	15,7	48,0	0,0	35,7	1564	9,1	34,5	0,0	28,8	1254	6,4	28,0	0,0	20,5	1 775	12,6	20,0
5,0	62,2	1 852	10,9	65,0	5,0	46,4	2046	13,9	49,5	5,0	32,6	1426	7,7	36,5	5,0	25,6	1115	5,2	29,5	5,0	17,3	1 499	9,3	21,5
10,0	59,2	1 762	10,0	67,0	10,0	43,3	1910	12,3	51,5	10,0	29,5	1289	6,4	38,5	10,0	22,4	975	4,1	31,5	10,0	14,1	1 220	6,5	23,5
15,0	56,2	1 672	9,1	68,5	15,0	40,2	1775	10,8	53,5	15,0	26,3	1150	5,3	40,0	15,0	19,1	832	3,1	33,5	15,0	10,8	935	4,0	25,5
20,0	53,2	1 584	8,2	70,5	20,0	37,1	1639	9,3	55,0	20,0	23,1	1010	4,2	42,0	20,0	15,8	686	2,2	35,0	20,0	7,3	637	2,1	27,0
II step: V = 2100 m³/h																								
0,0	47,1	1 402	6,6	73,5	0,0	35,6	1572	8,7	56,0	0,0	25,9	1131	5,1	40,5	0,0	20,9	909	3,6	32,5	0,0	14,8	1 281	7,1	23,0
5,0	44,9	1 338	6,0	75,0	5,0	33,4	1476	7,7	57,0	5,0	23,6	1033	4,3	42,0	5,0	18,6	809	2,9	34,0	5,0	12,5	1 083	5,2	24,5
10,0	42,8	1 274	5,5	76,5	10,0	31,2	1379	6,8	58,5	10,0	21,4	934	3,6	43,0	10,0	16,3	708	2,3	35,5	10,0	10,2	883	3,7	26,0
15,0	40,6	1 210	5,0	78,0	15,0	29,1	1282	6,0	60,0	15,0	19,1	835	3,0	44,5	15,0	13,9	605	1,8	36,5	15,0	7,8	677	2,3	27,0
20,0	38,5	1 147	4,6	79,0	20,0	26,9	1186	5,2	61,5	20,0	16,8	735	2,4	46,0	20,0	11,5	499	1,2	37,5	20,0	5,3	456	1,1	28,0
I step: V = 1200 m³/h																								
0,0	31,2	930	3,1	85,5	0,0	23,6	1040	4,1	64,5	0,0	17,2	752	2,5	47,0	0,0	13,9	606	1,8	38,0	0,0	9,8	849	3,4	27,0
5,0	29,8	887	2,9	86,5	5,0	22,1	977	3,7	65,5	5,0	15,7	688	2,1	48,0	5,0	12,4	539	1,4	39,0	5,0	8,3	719	2,5	27,5
10,0	28,4	846	2,6	87,0	10,0	20,7	914	3,3	66,5	10,0	14,2	623	1,8	49,0	10,0	10,8	472	1,1	39,5	10,0	6,8	586	1,8	28,5
15,0	27,0	804	2,4	88,0	15,0	19,3	851	2,9	67,0	15,0	12,7	557	1,5	49,5	15,0	9,3	403	0,9	40,0	15,0	5,2	446	1,1	29,0
20,0	25,6	763	2,2	89,0	20,0	17,9	788	2,5	68,0	20,0	11,2	491	1,2	50,0	20,0	7,6	330	0,6	40,5	20,0	3,2	279	0,5	28,5

V – air flow
PT – heating capacity
Tp1 – inlet air temperature
Tp2 – outlet air temperature

Tw1 – inlet water temperature
Tw2 – outlet water temperature
Qw – water flow rate in heat exchanger
Δpw – water pressure drop in heat exchanger

HEAT OUTPUT CALCULATOR

In order to select the unit with other parameters scan QR code.

HEATING CAPACITIES

Tw1 / Tw2 = 120/90°C					Tw1 / Tw2 = 90/70°C					Tw1 / Tw2 = 70/50°C					Tw1 / Tw2 = 60/40°C					Tw1 / Tw2 = 40/30°C				
Tp1	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**	**Tp1**	**PT**	**Qw**	**Δpw**	**Tp2**
[°C]	[kW]	[l/h]	[kPa]	[°C]	[°C]	[kW]	[l/h]	[kPa]	[°C]	[°C]	[kW]	[l/h]	[kPa]	[°C]	[°C]	[kW]	[l/h]	[kPa]	[°C]	[°C]	[kW]	[l/h]	[kPa]	[°C]
LEO XL2 / LEO XL2 BMS																								
III step: V = 5800 m³/h																								
0,0	94,0	2 799	23,1	52,5	0,0	71,6	3159	30,7	40,0	0,0	51,4	2248	17,5	28,5	0,0	41,2	1794	12,1	23,0	0,0	29,6	2 568	24,4	16,5
5,0	89,5	2 666	21,1	54,5	5,0	67,0	2958	27,2	42,0	5,0	46,8	2046	14,7	31,0	5,0	36,5	1591	9,7	25,5	5,0	24,9	2 161	17,9	19,0
10,0	85,1	2 533	19,2	57,0	10,0	62,5	2757	23,9	44,5	10,0	42,1	1843	12,2	33,5	10,0	31,8	1386	7,6	27,5	10,0	20,2	1 751	12,3	21,0
15,0	80,6	2 400	17,4	59,5	15,0	57,9	2556	20,8	47,0	15,0	37,5	1639	9,9	35,5	15,0	27,1	1179	5,7	30,0	15,0	15,4	1 336	7,6	23,5
20,0	76,2	2 269	15,7	61,5	20,0	53,4	2355	17,9	49,0	20,0	32,8	1433	7,8	38,0	20,0	22,2	969	4,0	32,0	20,0	10,5	910	3,8	25,5
II step: V = 4600 m³/h																								
0,0	81,2	2 416	17,6	57,0	0,0	61,7	2725	23,4	43,5	0,0	44,4	1941	13,4	31,0	0,0	35,6	1550	9,3	25,0	0,0	25,6	2 216	18,7	18,0
5,0	77,3	2 301	16,1	59,0	5,0	57,8	2552	20,8	45,5	5,0	40,4	1766	11,3	33,5	5,0	31,5	1375	7,5	27,0	5,0	21,5	1 866	13,8	20,0
10,0	73,4	2 186	14,7	61,0	10,0	53,9	2379	18,3	47,5	10,0	36,4	1592	9,4	35,5	10,0	27,5	1198	5,8	29,0	10,0	17,5	1 512	9,5	22,0
15,0	69,6	2 072	13,3	63,5	15,0	50,0	2206	15,9	49,5	15,0	32,4	1416	7,6	37,5	15,0	23,4	1019	4,4	31,0	15,0	13,3	1 154	5,8	24,0
20,0	65,8	1 959	12,0	65,5	20,0	46,1	2033	13,7	51,5	20,0	28,3	1239	6,0	39,5	20,0	19,2	838	3,1	33,0	20,0	9,1	786	3,0	26,5
I step: V = 2900 m³/h																								
0,0	59,5	1 770	10,0	66,0	0,0	45,2	1995	13,3	50,5	0,0	32,5	1424	7,7	36,0	0,0	26,1	1138	5,3	29,0	0,0	18,7	1 624	10,7	21,0
5,0	56,6	1 686	9,1	68,0	5,0	42,4	1869	11,8	52,0	5,0	29,6	1296	6,5	38,0	5,0	23,2	1010	4,3	30,5	5,0	15,8	1 368	7,9	22,5
10,0	53,8	1 603	8,3	69,5	10,0	39,5	1743	10,4	53,5	10,0	26,7	1169	5,4	39,5	10,0	20,2	881	3,4	32,5	10,0	12,8	1 110	5,5	24,0
15,0	51,0	1 520	7,6	71,0	15,0	36,6	1617	9,1	55,5	15,0	23,8	1040	4,4	41,0	15,0	17,2	750	2,5	34,0	15,0	9,8	847	3,4	26,0
20,0	48,3	1 437	6,8	72,5	20,0	33,8	1491	7,8	57,0	20,0	20,8	911	3,5	43,0	20,0	14,1	616	1,8	35,5	20,0	6,6	573	1,7	27,0
LEO XL3 / LEO XL3 BMS																								
III step: V = 5300 m³/h																								
0,0	121,0	3 602	18,7	74,0	0,0	91,6	4043	24,6	56,0	0,0	66,6	2916	14,4	41,0	0,0	54,0	2352	10,2	33,0	0,0	38,2	3 313	20,0	23,5
5,0	115,4	3 436	17,2	75,5	5,0	86,0	3794	21,9	57,5	5,0	60,9	2664	12,3	42,0	5,0	48,1	2097	8,3	34,5	5,0	32,4	2 807	14,9	25,0
10,0	109,9	3 270	15,7	76,5	10,0	80,3	3545	19,4	59,0	10,0	55,1	2411	10,2	43,5	10,0	42,2	1840	6,5	35,5	10,0	26,5	2 297	10,4	26,0
15,0	104,3	3 106	14,3	78,0	15,0	74,7	3296	17,0	60,0	15,0	49,3	2157	8,4	45,0	15,0	36,2	1580	5,0	37,0	15,0	20,5	1 777	6,6	27,5
20,0	98,9	2 944	12,9	79,5	20,0	69,1	3048	14,7	61,5	20,0	43,4	1900	6,7	46,0	20,0	30,1	1314	3,6	38,0	20,0	14,3	1 238	3,5	28,5
II step: V = 4100 m³/h																								
0,0	101,1	3 010	13,5	79,5	0,0	76,5	3376	17,7	60,0	0,0	55,8	2441	10,5	44,0	0,0	45,3	1972	7,4	35,5	0,0	32,0	2 770	14,5	25,0
5,0	96,5	2 872	12,4	80,5	5,0	71,8	3169	15,8	61,5	5,0	51,0	2232	8,9	45,0	5,0	40,4	1760	6,0	36,5	5,0	27,1	2 350	10,8	26,5
10,0	91,9	2 735	11,3	82,0	10,0	67,1	2962	14,0	62,5	10,0	46,2	2021	7,5	46,0	10,0	35,5	1546	4,8	38,0	10,0	22,2	1 926	7,6	27,5
15,0	87,3	2 599	10,3	83,0	15,0	62,5	2756	12,3	63,5	15,0	41,4	1810	6,1	47,0	15,0	30,5	1329	3,7	38,5	15,0	17,2	1 492	4,8	28,5
20,0	82,8	2 464	9,4	84,0	20,0	57,8	2551	10,6	64,5	20,0	36,5	1597	4,9	48,0	20,0	25,4	1107	2,7	39,5	20,0	12,0	1 040	2,6	29,5
I step: V = 2500 m³/h																								
0,0	69,6	2 072	6,8	90,0	0,0	52,6	2320	9,0	68,0	0,0	38,5	1687	5,4	50,0	0,0	31,4	1368	3,9	40,5	0,0	22,0	1 911	7,5	28,5
5,0	66,5	1 978	6,3	90,5	5,0	49,4	2179	8,0	68,5	5,0	35,3	1544	4,6	50,5	5,0	28,1	1223	3,2	41,0	5,0	18,7	1 625	5,6	29,0
10,0	63,3	1 885	5,8	91,0	10,0	46,2	2040	7,1	69,5	10,0	32,0	1401	3,9	51,0	10,0	24,7	1076	2,5	41,5	10,0	15,4	1 335	4,0	30,0
15,0	60,2	1 794	5,3	92,0	15,0	43,1	1900	6,3	70,0	15,0	28,7	1258	3,2	51,5	15,0	21,3	927	1,9	42,0	15,0	12,0	1 036	2,5	30,5
20,0	57,2	1 703	4,8	92,5	20,0	39,9	1761	5,5	70,5	20,0	25,4	1112	2,6	52,0	20,0	17,7	773	1,4	42,5	20,0	8,3	720	1,3	30,5

V – air flow
PT – heating capacity
Tp1 – inlet air temperature
Tp2 – outlet air temperature

Tw1 – inlet water temperature
Tw2 – outlet water temperature
Qw – water flow rate in heat exchanger
Δpw – water pressure drop in heat exchanger

HEAT OUTPUT CALCULATOR

In order to select the unit with other parameters scan QR code.

ACCREDITED TESTING LAB

The testing lab is a renowned company, promoting high standards. The results are respected by producers all over the world. The tests were carried out observing international regulations and norms. Based on these lab reports FLOWAIR has developed quality labels.

TEST OF EFFICIENCY

The test was carried out in an air flow chamber. The air flow has been measured for 3 fan speeds of the unit. This enabled us to gain the knowledge of the real efficiency of the fan heaters, considering flow resistance of unit's structure.

TEST OF HEATING POWER

The heating power of the unit was measured at 9 points: for different temperatures of the heating medium and for various air temperatures at the inlet to the unit. Heating capacity was determined both from the air side and from water side, to compare and to correct measurements carried out. Measured capacities of units were the basis for preparation of the new heating power calculator.

TEST OF SOUND PRESSURE LEVEL

The measurement was made in an anechoic chamber. During the test the pressure and sound power of the unit is determined in conditions reflecting the real working environment. It means that the fan heater was mounted to one partition reflecting sound, as in the case of wall mounting or under ceiling installation in real facilities.

test of efficiency

test of heating power

test of accoustic pressure level

ACCREDITATION

NOTES

NOTES

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