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**DESTRATIFICATOR  
LEO D**

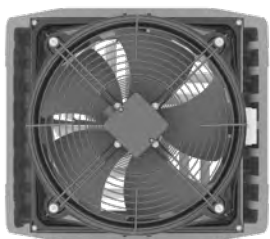


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# GENERAL CHARACTERISTICS



## Destratificator **LEO D**

Air flow [m <sup>3</sup> /h]	2500 – 7200
Weight [kg]	8,9 – 19,5
Casing	EPP <sup>(1)</sup>
Colour	grey <sup>(2)</sup>

<sup>(1)</sup> EPP expanded polypropylene

<sup>(2)</sup> similar to RAL 9007

## APPLICATION

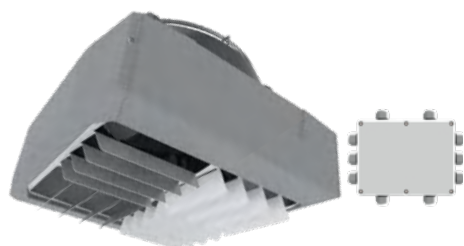
Destratificators are designed to operate indoors. They work together with other units of heating system. They are used to improve efficiency of heating of high industrial and public buildings like: industrial halls, warehouses, supermarkets, exhibition objects.

The main function of destratificator is to prevent accumulation of warm air in upper zones of the room. The fan intakes warm air and forces its flow to the zone occupied by the people. This solution reduces heat loss through the ceiling and results in faster heating of the building.

## AVAILABLE TYPES OF UNITS

- **LEO D BMS**  
version with a DRV-D module with a temperature sensor, integration with FLOWAIR SYSTEM
- **LEO DT**  
with build-on thermostat
- **LEO D**  
without any additional control systems

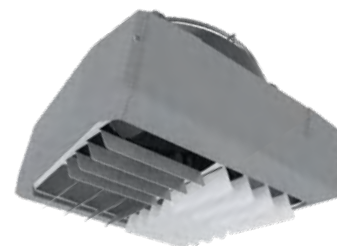
**LEO D S BMS | LEO D L BMS |  
LEO D XL BMS**



**LEO DT S | LEO DT L |  
LEO DT XL**



**LEO D S | LEO D L |  
LEO D XL**



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# CONSTRUCTION



## 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.



## AIR NOZZLE

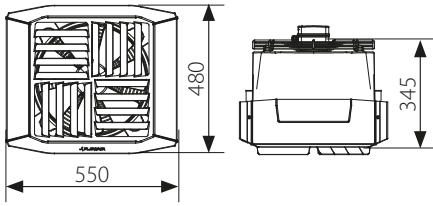
Fan is placed in specially designed nozzle. Its profile reduces air flow noise and increases unit's efficiency.



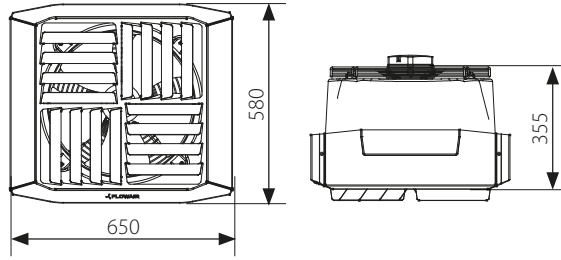
## AIR BLADES

Air outlet is equipped with 4 sections of adjustable air blades. Every single air blade has manual, smooth regulation of the lean angle. It makes possible to direct the air flow in any direction.

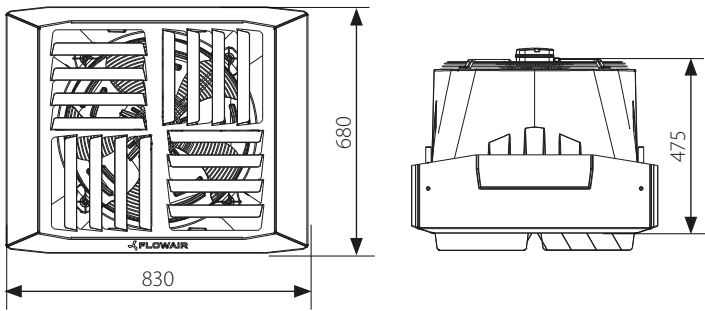
# DIMENSIONS



LEO D S / LEO D S BMS / LEO D T S



LEO D L / LEO D L BMS / LEO D T L



LEO D XL / LEO D XL BMS / LEO D T XL

For CAD drawings, Revit files and documentation for all available versions of LEO visit [www.flowair.com](http://www.flowair.com)



# TECHNICAL DATA

## Destratificator LEO D

Step	LEO D S / D S BMS / D T S			LEO D L / D L BMS / D T L			LEO D XL / D XL BMS / D T XL		
	III	II	I	III	II	I	III	II	I
Max. air flow [m <sup>3</sup> /h]	2500	2200	1900	5200	4200	2800	7200	6100	3900
Power supply [V/Hz]	230/50			230/50			230/50		
Max. current consumption [A]	0,5	0,4	0,3	1,3	1,0	0,6	2,0	1,5	1,3
Max. power consumption [W]	110	80	70	280	200	120	450	350	260
IP/Insulation class	54/F			54/F			54/F		
Max. acoustic pressure level [dB(A)] <sup>(1)</sup>	56,9	55,2	49,4	65,7	58,4	44,9	72,8	66,9	53,7
Max. acoustic power level [dB(A)] <sup>(2)</sup>	72,0	70,3	64,9	80,8	73,5	60,4	87,9	82,0	69,2
Max. ambient temperature [°C]	60			60			60		
Weight [kg]	8,9			13,9			19,5		

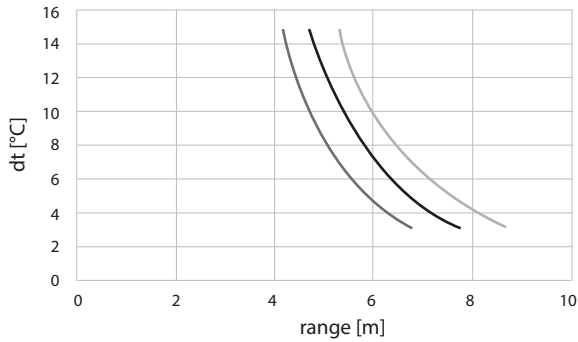
<sup>(1)</sup> Acoustic pressure level at the distance of 5 m from the unit, in the room of medium capability of sound absorption and 1500 m<sup>3</sup> of cubature

<sup>(2)</sup> According to PN-EN ISO 3744:2011

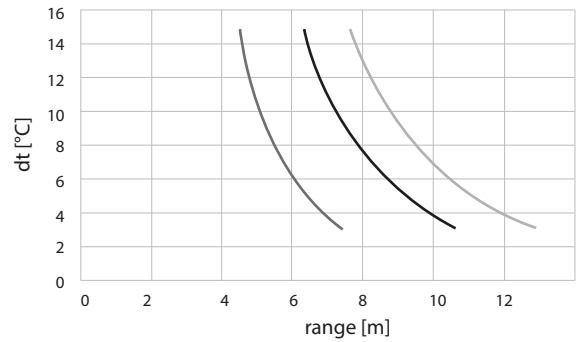
# VERTICAL RANGE OF AIR STREAM

NON-ISOTHERMAL

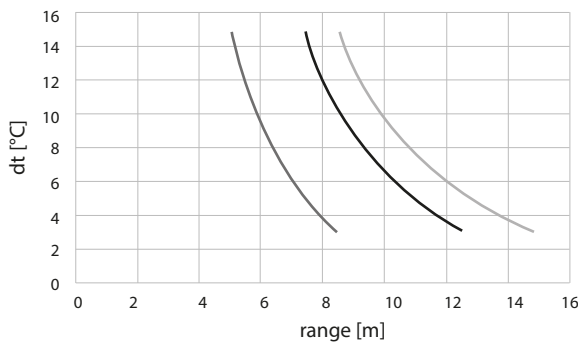
## LEO D S



## LEO D L



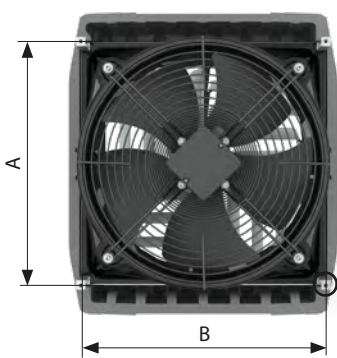
## LEO D XL



— 1<sup>st</sup> step    — 2<sup>nd</sup> step    — 3<sup>rd</sup> step

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

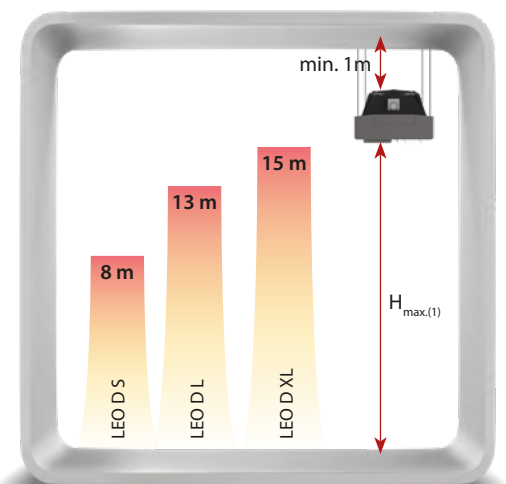
# INSTALLATION AND MOUNTING POSSIBILITIES



The destratificator is equipped with corner holders, which make the installation and leveling of the unit under the ceiling much easier. In case of installation under the ceiling which transmit vibrations it is recommended to use vibro-isolators.



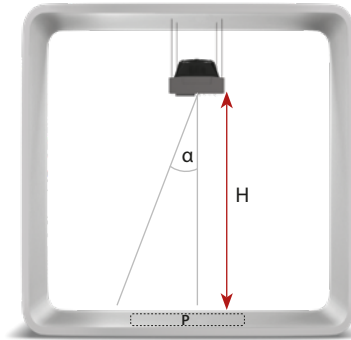
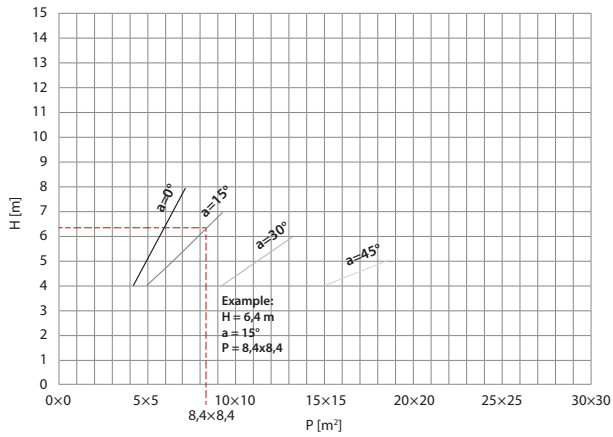
	S	L	XL
A	415	515	585
B	415	515	665



<sup>(1)</sup> for air blades installed vertically. When device is mounted under the ceiling please note the proper nonisothermal air stream range.

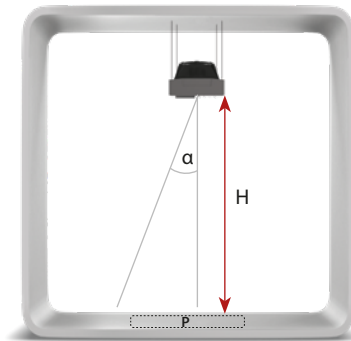
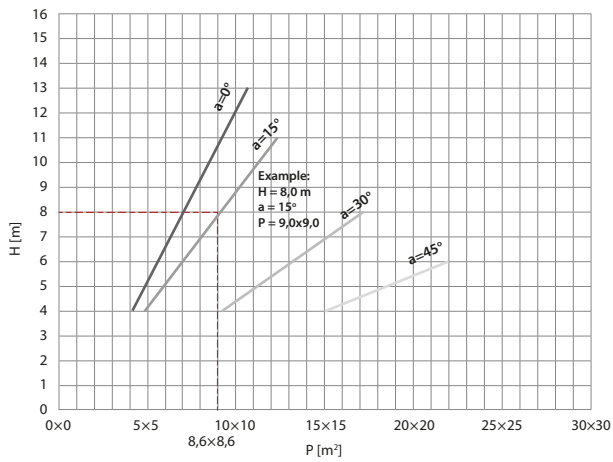
# AIR FLOW ZONE

## AIR FLOW ZONE FOR LEO D S



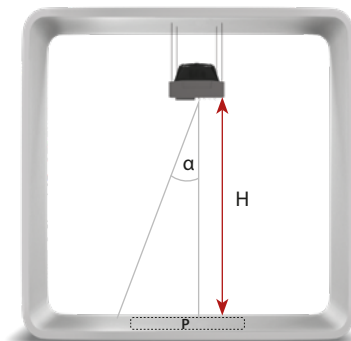
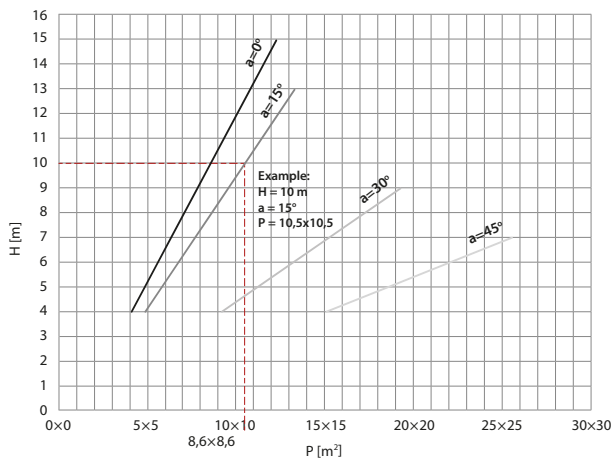
$H$  – height of installation  
 $\alpha$  – angle of air blades  
 $P$  – air flow zone

## AIR FLOW ZONE FOR LEO D L



$H$  – height of installation  
 $\alpha$  – angle of air blades  
 $P$  – air flow zone

## AIR FLOW ZONE FOR LEO D XL



$H$  – height of installation  
 $\alpha$  – angle of air blades  
 $P$  – air flow zone

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# REGULATION

## I T-BOX REGULATION FOR LEO D BMS

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

- work in automatic destratification mode,
- connection to the intelligent building management system BMS,
- integration with FLOWAIR SYSTEM.

### AUTOMATIC DESTRATIFICATION:

It offers energy savings thanks to the redirection of warm air from the upper zone to the lower zone of the room. The destratifiers switch on when the temperature drops in the room and there is an excess of warm air under the ceiling. If this heat is not sufficient the LEO heaters switch on.

**1<sup>st</sup> step** – activation of destratifiers to push down the warm air from the area under the ceiling.



**2<sup>nd</sup> step** – activation of fan heaters in order to reach the temp level set by the user.




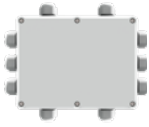

## I ON/OFF REGULATION FOR LEO DT

LEO DT is equipped with additional build-on thermostat which switches on the device when the temperature rises above the set temperature and knocks the accumulated heat into the lower zones of the room.




# CONTROL ELEMENTS

## T-BOX REGULATION FOR LEO D BMS

Category	Symbol	Picture	Technical data
Controllers	T-box intelligent controller with 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: 2,5 mm <sup>2</sup>
Control module <sup>(1)</sup>	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 mm <sup>2</sup> temperature sensor T3 for measuring the temperature under the ceiling in set
Temperature sensor <sup>(1)</sup>	PT-1000 IP65 wall-mounted temperature sensor IP65		Protection degree: IP65 Operating temperature range: -20 ... +80°C Max. wire diameter: 1,5 mm <sup>2</sup>

<sup>(1)</sup> LEO D BMS devices are equipped with a DRV D control module with a built-in temperature sensor T3 for measuring the temperature under the ceiling as a standard. Optional PT-1000 sensor for temperature measurement in the T4 human zone is available.

## ON/OFF REGULATION FOR LEO DT

Category	Symbol	Picture	Technical data
Controllers <sup>(1)</sup>	RA room thermostat		Protection degree: IP30 Temperature adjustment range: +10 ... +30°C Operating temperature range: 0 ... +40°C Contact load: 3 A Dimensions (WxSxG): 83x83x40 mm Max. wire diameter: 2,5 mm <sup>2</sup>

<sup>(1)</sup> LEO DT unit is equipped with build-on thermostat.

# BMS PROGRAMMING

## FOR T-box REGULATION

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

### VERSION 1

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

### VERSION 2

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

#### Communication parameters:

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

#### Communication parameters:

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

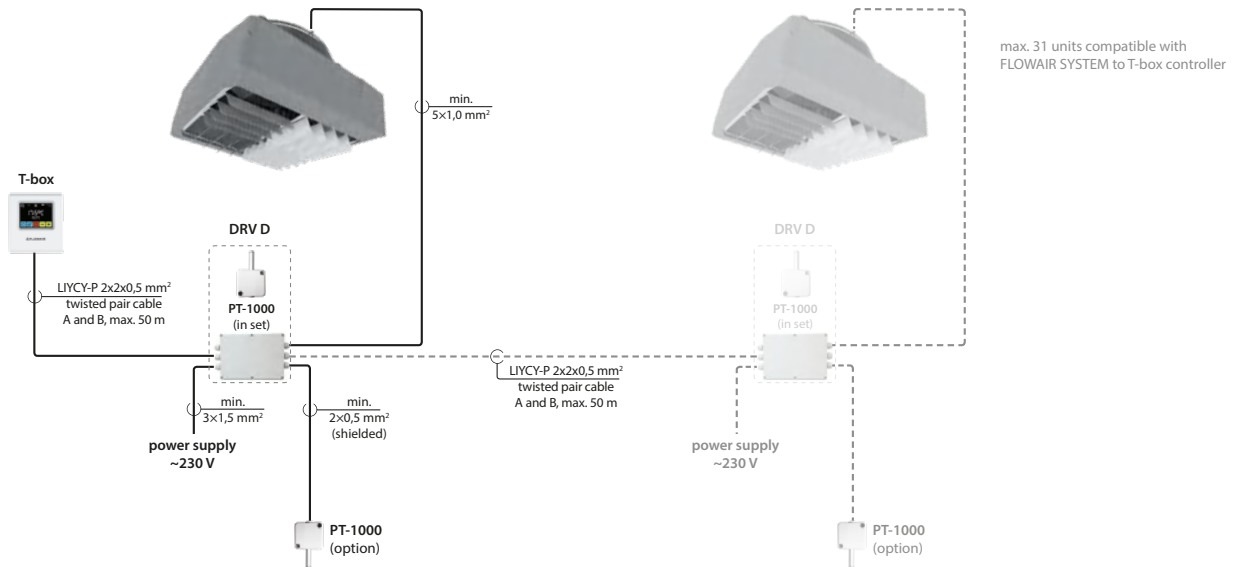
# FLOWAIR SYSTEM

FLOWAIR SYSTEM is an intelligent solution which makes it possible to integrate the devices into a system with only one controller. T-box offers many functions necessary for effective management of a heating-ventilating system. These function were previously reserved for an extensive Building Management System (BMS).

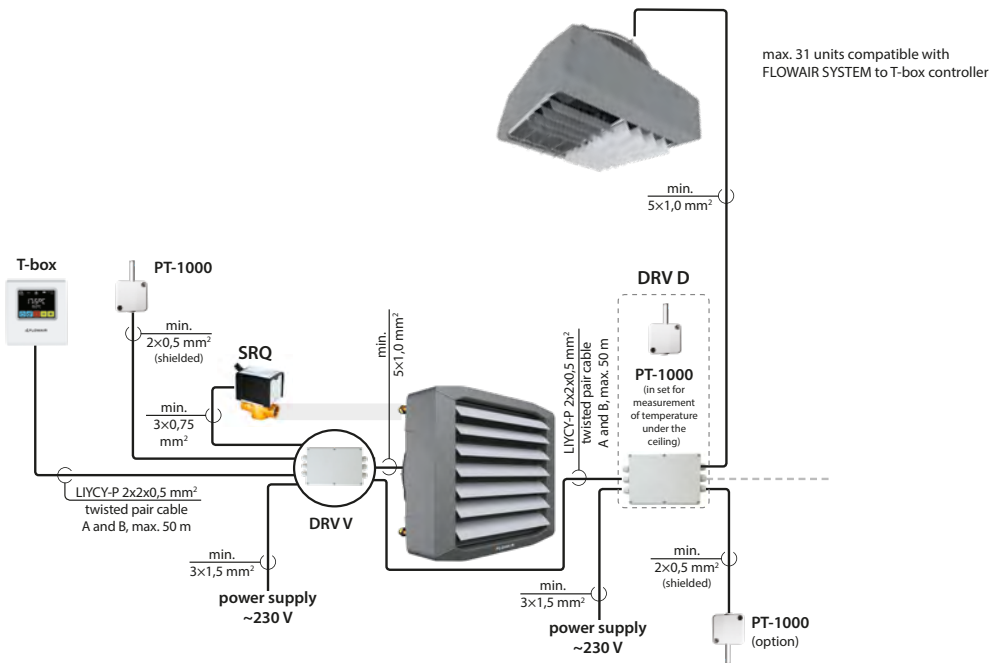


# CONNECTION DIAGRAMS

## LEO D BMS REGULATION WITH T-box CONTROLLER



## LEO D BMS AND LEO BMS REGULATION WITH T-box CONTROLLER – EXAMPLE FOR WORK IN AUTOMATIC DESTRATIFYING MODE



## ON/OFF REGULATION FOR LEO DT





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