

Destratifiers

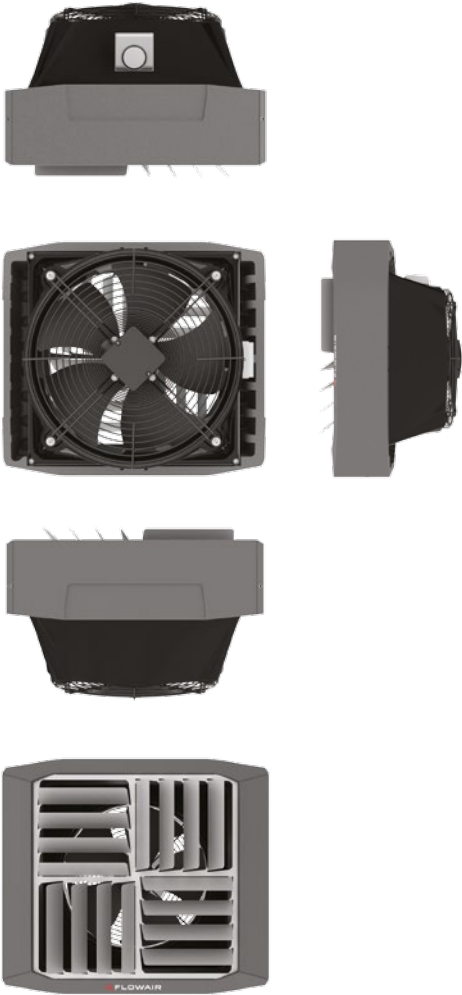
LEO D



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General characteristic



Destratificator LEO D	
Air flow [m ³ /h]	5400
Weight [kg]	13,9
Casing	EPP ⁽¹⁾
Colour	grey ⁽²⁾

⁽¹⁾ EPP - expanded polypropylene is an excellent thermal insulator resistant to dirt and has high ability of vibration damping. Additionally, EPP casing significantly reduces the weight of the unit.

⁽²⁾ Similar to RAL 9007

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 losses through the ceiling and results in faster heating of the building.

There are two types of units available:

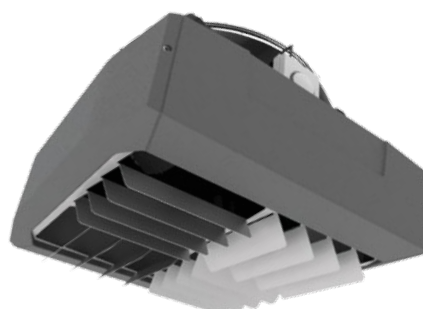
LEO D 2
without additional control systems.

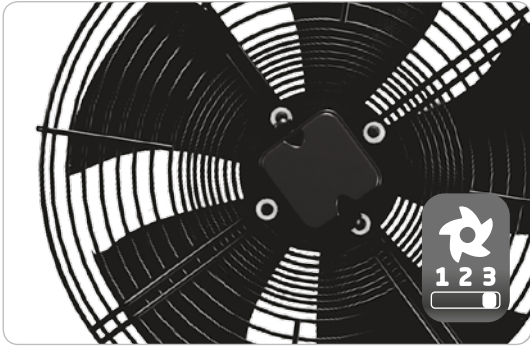
LEO DT 2
with (built-on, built-in) thermostat.

LEO D 2



LEO DT 2





FAN

3-step fan is placed in the air inlet of the unit. It forces the air flow through the unit. The air inlet is secured by the safety mesh.



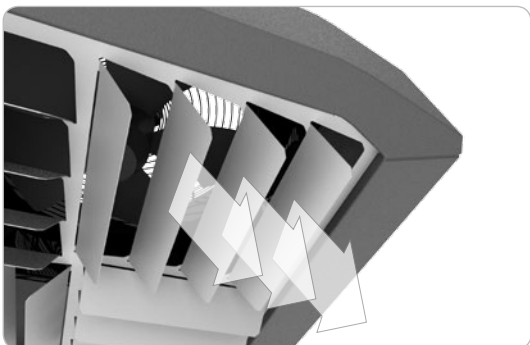
CASING MADE OF EPP

Mechanical strength, resistance to dirt, low weight and aesthetic look. Thanks to use of expanded polypropylene for casing construction, LEO D destratifiers appoint a new quality of use.



NOZZLE

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

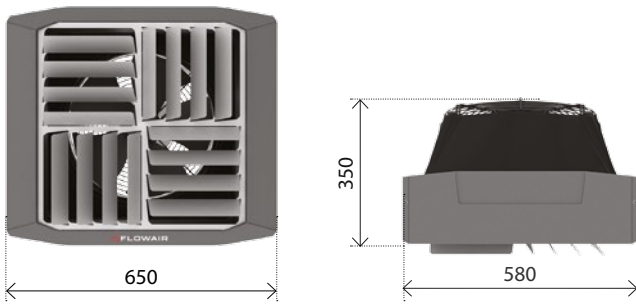


AIR BLADES

Air outlet is equipped with 4 sections of adjustable air blades, which enable freely direction and split of the air flow..

Dimensions

LEO D 2 | DT 2



Technical data

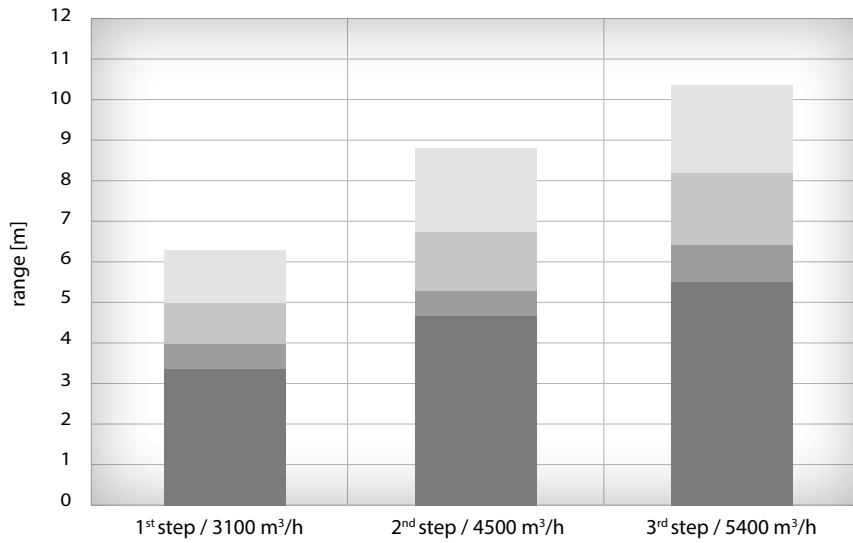
	LEO D 2 DT 2
Fan	axial, single phase, 3-step, AC
Max. air flow stream [m ³ /h]	5400
Power supply [V/Hz]	230/50
Max. current consumption [A]	1,4
Max. power consumption [W]	320
IP / Insulation class	54/F
Max. acoustic pressure level ⁽¹⁾ [dB(A)]	55
Casing	EPP – expanded polypropylene
Colour	grey ⁽²⁾
Place of installation	indoors
Max. operating temperature [°C]	60,0
Installation position	horizontal
Weight of unit [kg]	13,9

⁽¹⁾ 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.

⁽²⁾ Similar to RAL 9007

Vertical range

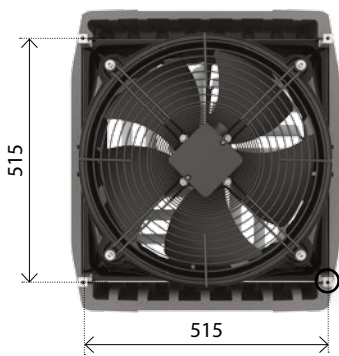
non-isothermal



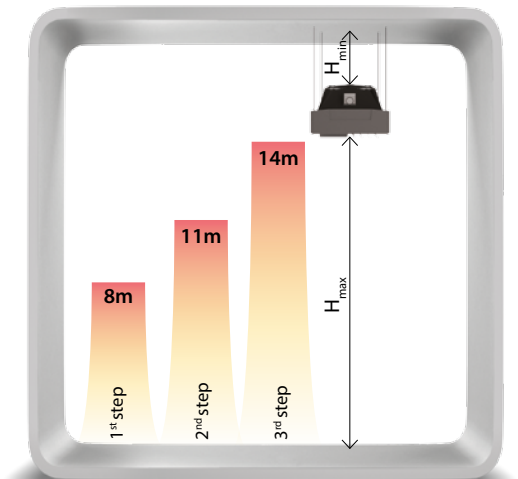
Range of vertical non-isothermal air stream, at 0,5 m/s velocity limit.

Δ5°C
 Δ10°C
 Δ20°C
 Δ30°C

Installation



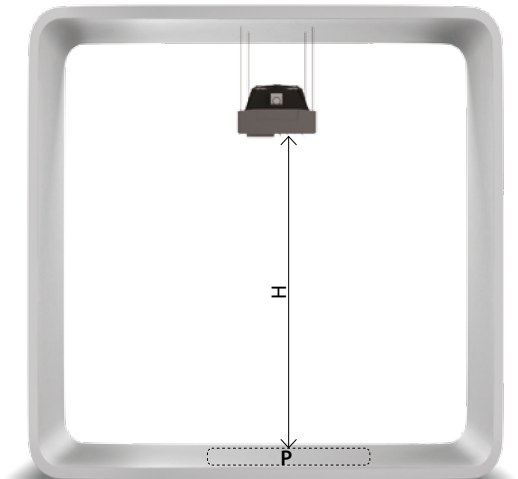
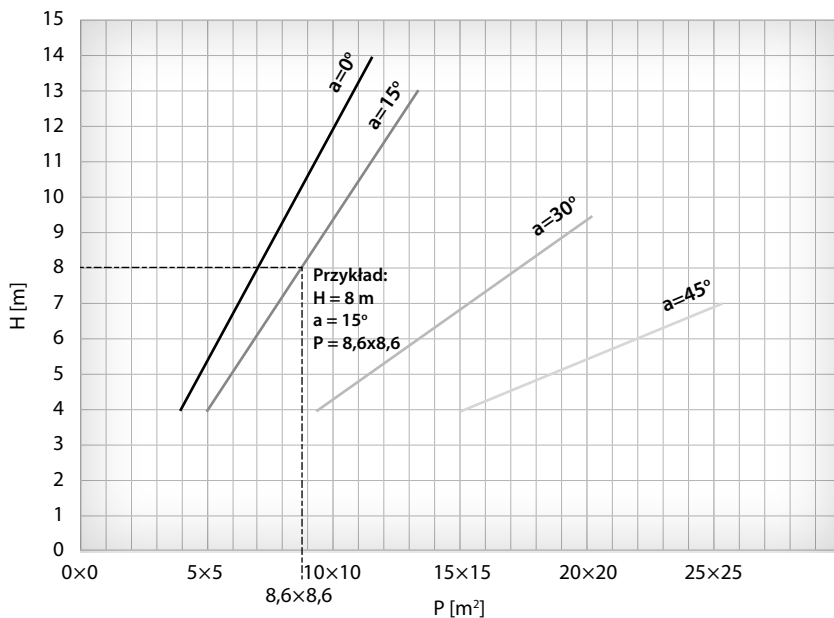
Destratificator is equipped with holders in the corners, which make much easier installation and levelling the unit under the ceiling. In case of installation under the ceiling which transmit vibrations it is recommended to use vibro-isolators.



H_{max} – maximum mounting height for air blades installed vertically

H_{min} – 1/3 height of hall, minimum 1m

Air flow zone



H – height of installation

a – air blades angle

P – air flow zone

T-box control – LEO D 2

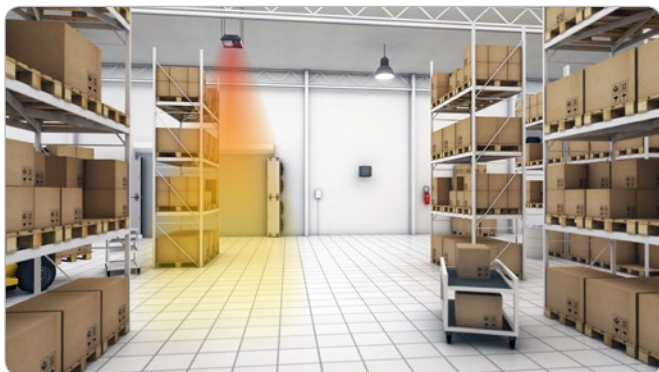
LEO D destratifiers can be equipped with external DRV D control module, which enables:

- operation in “automatic destratification” mode,
- connection to intelligent building management system BMS,
- integration with FLOWAIR SYSTEM.

AUTOMATIC DESTRATIFICATION:

Energy savings due to integration of operation of destratifiers with LEO heaters and effective use of heat from the upper zones of the room. Destratifier is engaged automatically when there is a suitable amount of accumulated heat in the upper zones of room. When the amount of heat is insufficient, LEO heaters start automatically.

Step 1 – start-up of the destratifiers to force the heat flow from the ceiling.



Step 2 – start-up of the heaters to raise the temperature in the hall to the set value and to ensure thermal comfort.



ON/OFF control – LEO DT 2

Destratifier is equipped with room thermostat. It is turned on when air temperature under the ceiling reaches higher value than temperature set on the thermostat to force the flow of heat in lower zones of the room.

BMS programming

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

Version 1

T-box controller enables to connect the units to the integrated building management system BMS. In case of controlling the units via T-box controller by one address in BMS, it is possible to control independently up to 31 units.

Version 2

DRV D control module enables to connect the units to the BMS. It is possible to set up to 31 addresses. Setting the address for each unit enables independent loading and saving their operating parameters separately.

Communication parameters:

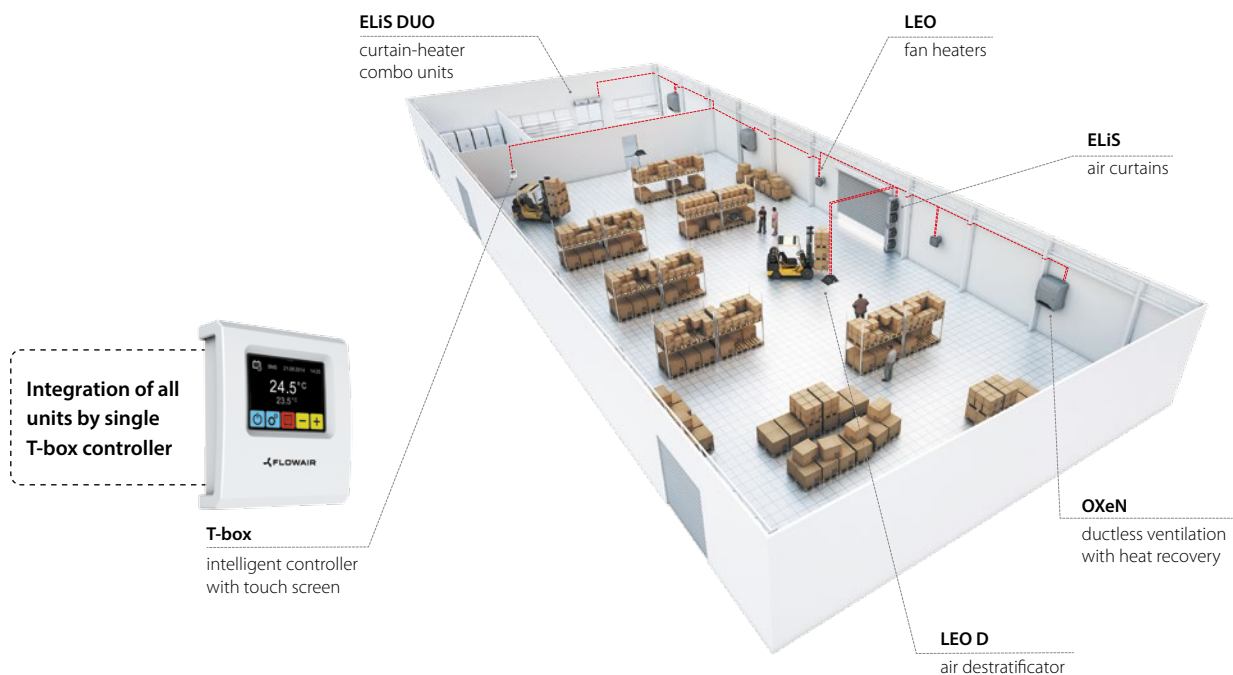
Name	Description
Physical layer	RS485
Protocol	MODBUS-RTU
Transmission rate	9600, 19200, 38400, 57600 lub 115200 [bps]
Parity	Even
Number of data bits	8
Number of stop bits	1

Communication parameters:



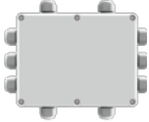

Name	Description
Physical layer	RS485
Protocol	MODBUS-RTU
Transmission rate	38400 [bps]
Parity	Even
Number of data bits	8
Number of stop bits	1

FLOWAIR System

FLOWAIR SYSTEM is the complete offer of heating and ventilation units integrated by 1 controller. T-box controller enables to control and use all of the units from one place.



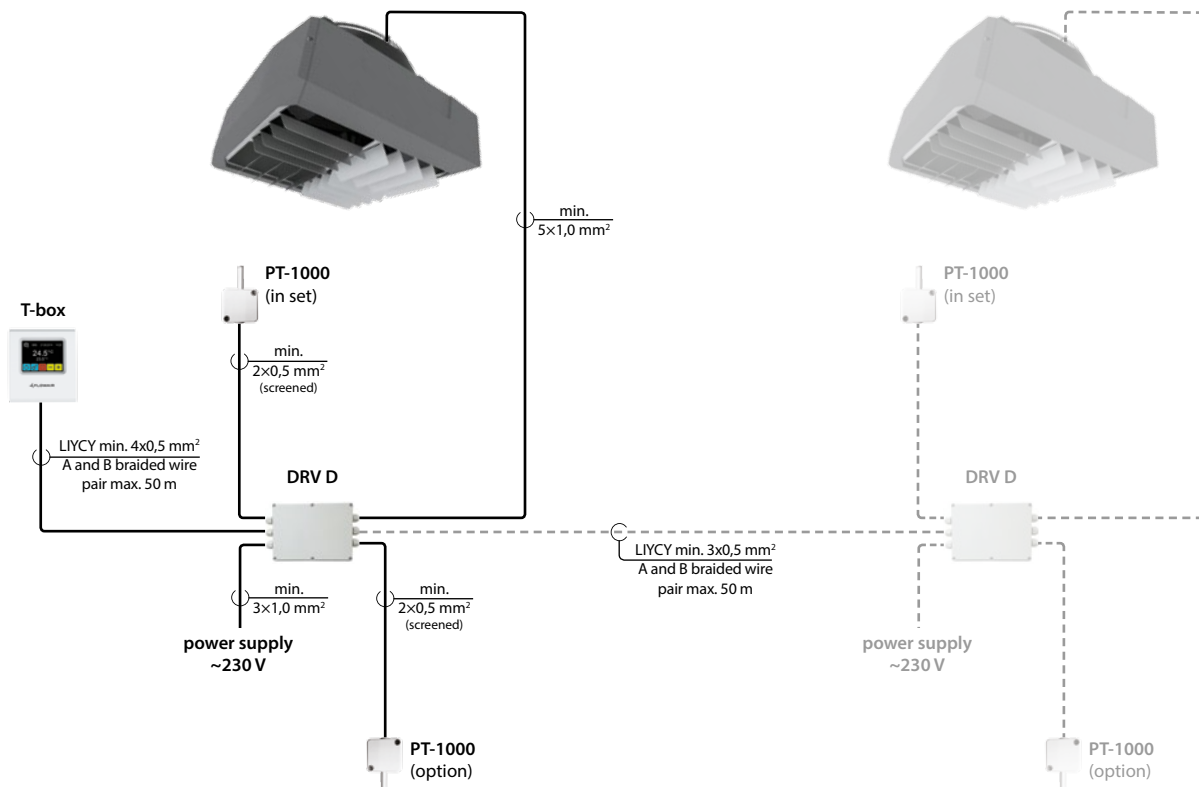
Elements of control systems

Category	Name	Picture	Description
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: -10 ... +60°C Max. wire diameter: 2,5 mm ²
	RA room thermostat		Protection degree: IP30 Temperature adjustment range: +10 ... +30°C Operating temperature range: 0 ... +40°C Contacts load: 3 A Dimensions (HxWxD): 84x84x40 mm Max. wire diameter: 2,5 mm ²
Module	DRV D control module		Protection degree: IP 54 Power supply: 230V/50Hz Dimensions: 175x125x55 mm Operating temperature range: -10 ... +60°C Number of supported units: 1 Max. wire diameter: 2,5 mm ²
Additional equipment	PT-1000 IP65 temperature sensor		Protection degree: IP65 Operating temperature range: -20 ... +80°C Max. wire diameter: 1,5 mm ²

Connection diagrams

T-box control – LEO D 2

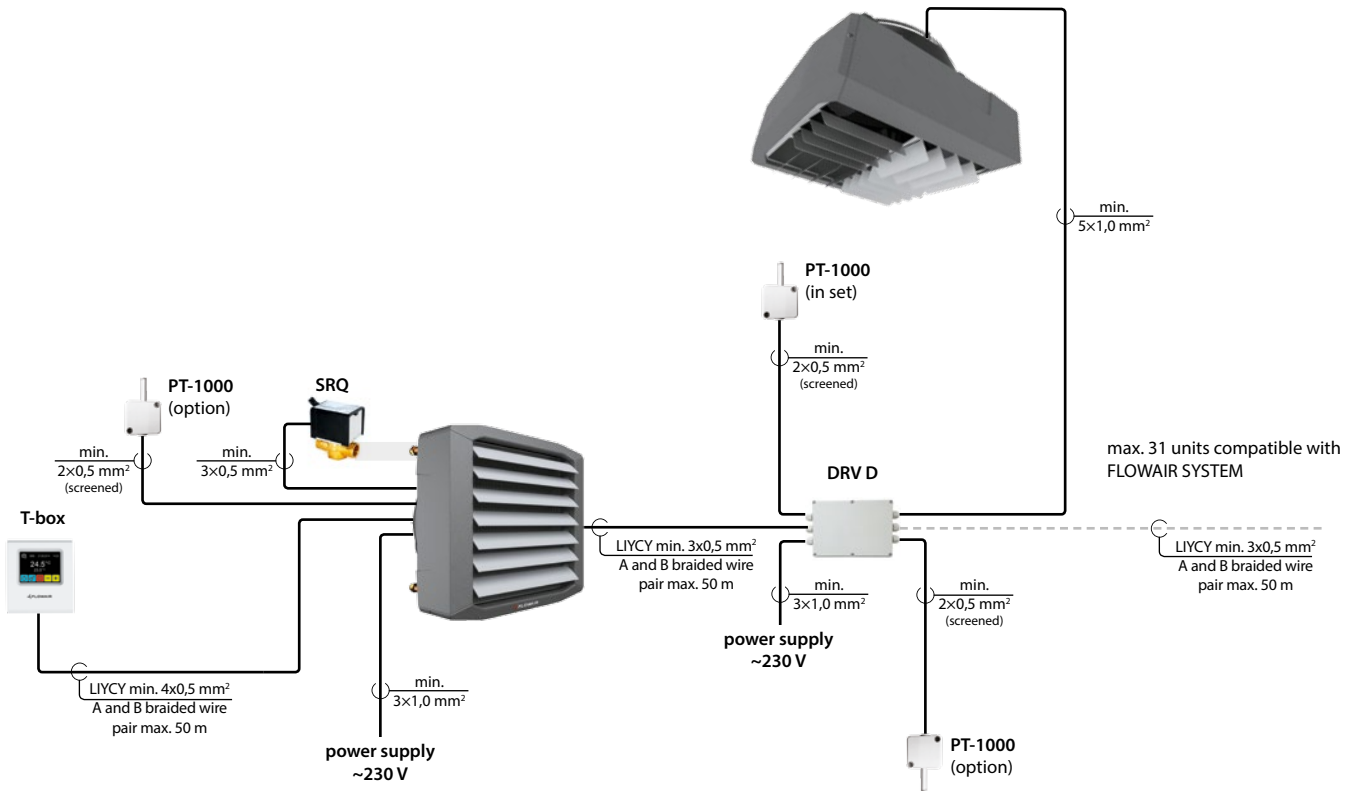
max. 31 units compatible with FLOWAIR SYSTEM



Connection diagrams

T-box control – LEO FB type M + LEO D 2

Exemplary system operatin in AUTOMATIC DESTRATIFICATION mode



ON/OFF control – LEO DT 2



Air flow control – technical data

LEO D

	1 st step	2 nd step	3 rd step
Air flow [m ³ /h]	3100	4500	5400
Power consumption [W]	220	280	320
Current consumption [A]	1,0	1,2	1,4
Acoustic pressure level [dB(A)] ⁽¹⁾	45	50	55

⁽¹⁾ Acoustic pressure level for the room with average capability of sound absorption, capacity 1500 m³, at distance of 5m from the unit

