FLOWAIR

intelligent air flow

DESTRATIFICATOR LEO D

TABLE OF CONTENTS

GENERAL CHARACTERISTICS

Destratificator **LEO D**

Air flow [m³/h]	2500 – 7200
Weight [kg]	8,9 – 19,5
Casing	EPP[1]
Colour	grey[2]

[1] EPP is a foamed polypropylene with thermal insulation properties and resistant to dirt.
[2] 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 and energy savings.

▌ AVAILABLE TYPES OF UNITS

- ■ **LEO D BMS**
  version with a DRV-D module,
  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

CONSTRUCTION

3-SPEED FAN

LEO destratificators are equipped with 3 speed fans. It's the simplest and most effective way to control the operation.
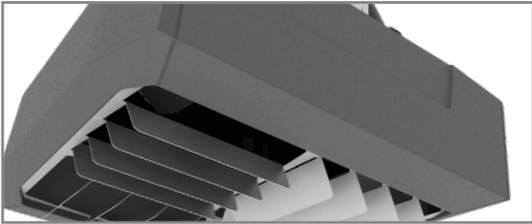
EPP CASING

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 a specially designed nozzle. Its profile reduces air flow noise and increases unit's efficiency.
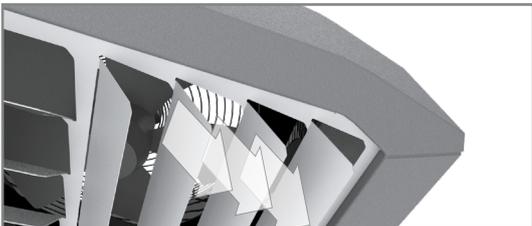
AIR LOUVRES

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

BMS/SYSTEM FLOWAIR

Destratificators are ready to be integrated with the FLOWAIR SYSTEM.
By connecting the DRV D control module, we can integrate LEO D with a T-box or directly with the BMS (Building Management System).

DIMENSIONS
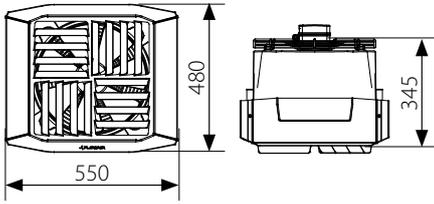
LEO D S / LEO D S BMS / LEO DT S
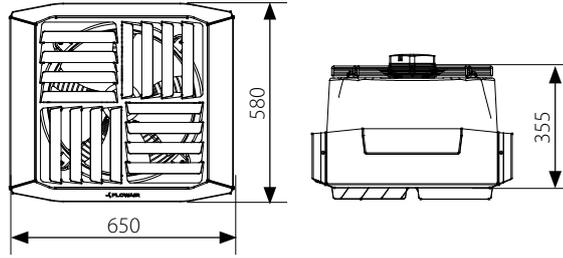
LEO D L / LEO D L BMS / LEO DT L
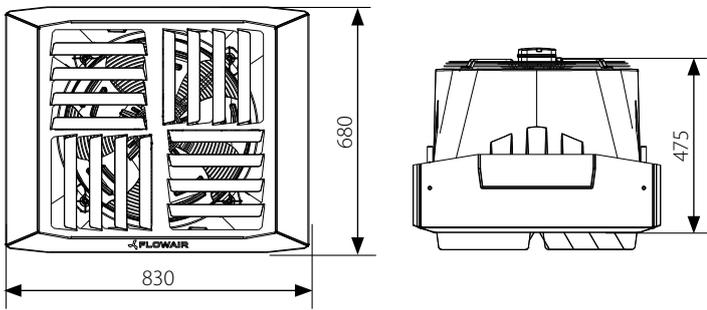
LEO D XL / LEO D XL BMS / LEO DT XL

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

TECHNICAL DATA

Destratificator **LEO D**	LEO D S / D S BMS / DT S			LEO D L / D L BMS / DT L			LEO D XL / D XL BMS / DT XL		
Step	III	II	I	III	II	I	III	II	I
Max. air flow [m³/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)][1]	56,9	55,2	49,4	65,7	58,4	44,9	72,8	66,9	53,7
Max. acoustic power level [dB(A)][2]	72,0	70,3	64,9	80,8	73,5	60,4	87,9	82,0	69,2
Max. ambient temperature [ºC]	60			60			60		
Weight [kg]	8,9			13,9			19,5		

[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] According to PN-EN ISO 3744:2011

▌ **DESTRATIFICATOR SELECTION CALCULATOR**

Scan the QR code and check which unit best suits a specific room.

VERTICAL RANGE OF AIR STREAM

NON-ISOTHERMAL

LEO D S
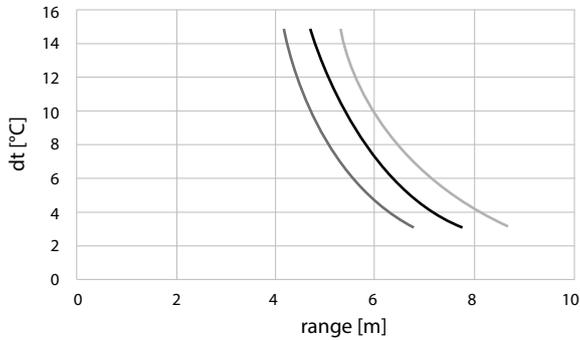
LEO D L
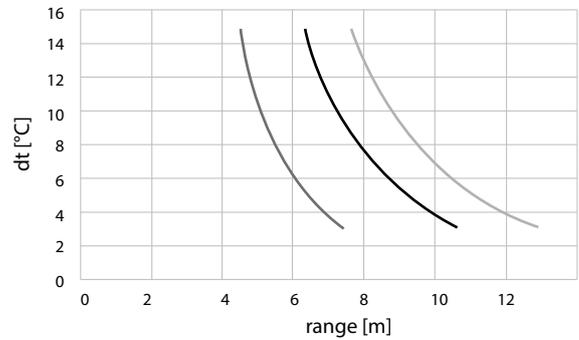
LEO D XL
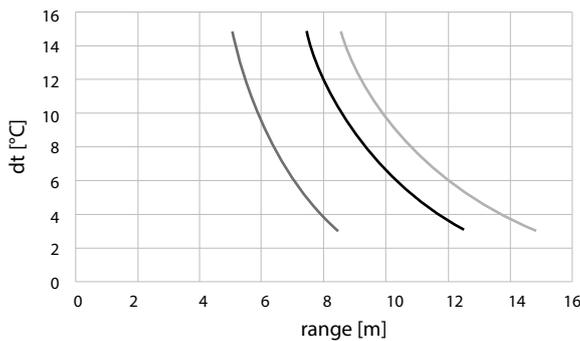
—— 1st step   —— 2nd step   —— 3th step

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

INSTALLATION AND MOUNTING POSSIBILITIES
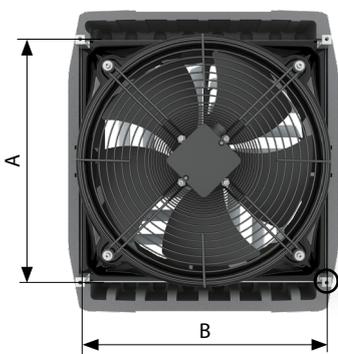
The destratificator is equipped with corner holders, which make the installation and leveling of the unit under the ceiling much easier. In case of installation under the ceiling which transmit vibrations it is recommended to use vibro-isolators.
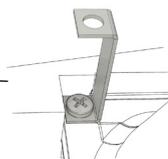
	S	L	XL
A	415	515	585
B	415	515	665

min. 0,3m

15 m

13 m

8 m

LEO D S   LEO D L   LEO D XL

$H_{max.(1)}$
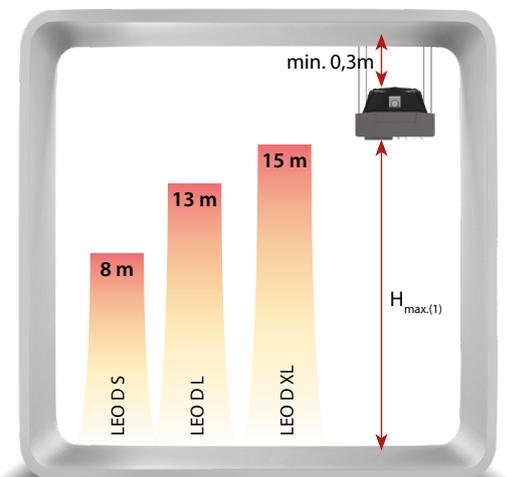
[1] for air blades installed vertically. When unit is mounted under the ceiling please note the proper nonisothermal air stream range.

AIR FLOW ZONE

AIR FLOW ZONE FOR LEO D S
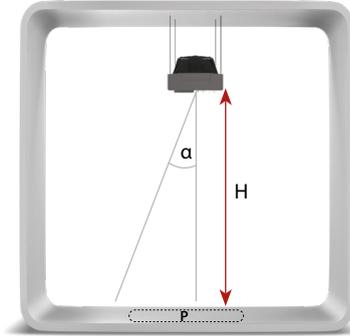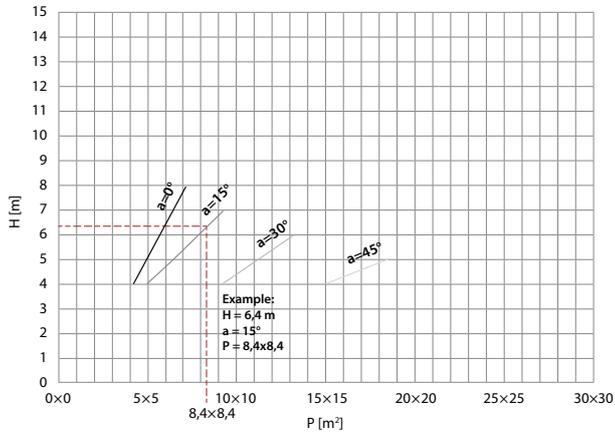
Example:
H = 6,4 m
a = 15°
P = 8,4x8,4

H – height of installation
α – angle of air blades
P – air flow zone

AIR FLOW ZONE FOR LEO D L

Example:
H = 8,0 m
a = 15°
P = 9,0x9,0

H – height of installation
α – angle of air blades
P – air flow zone

AIR FLOW ZONE FOR LEO D XL

Example:
H = 10 m
a = 15°
P = 10,5x10,5
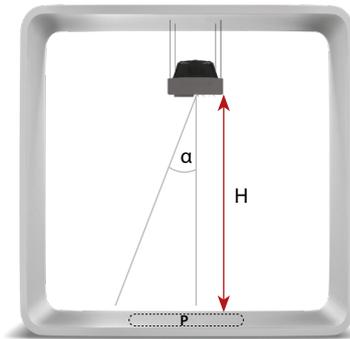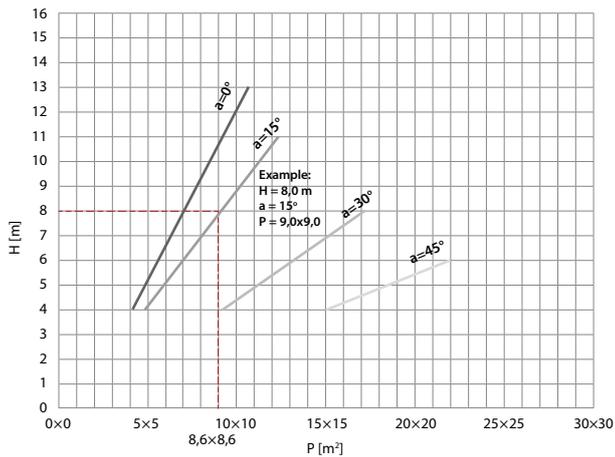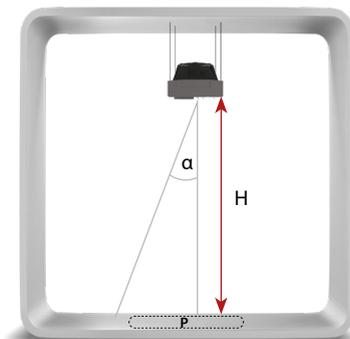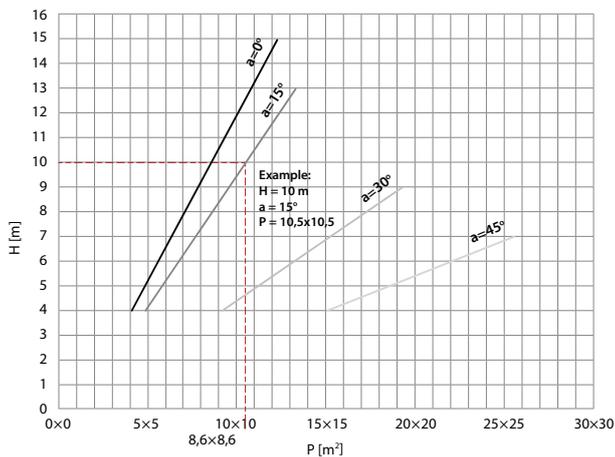
H – height of installation
α – angle of air blades
P – air flow zone

REGULATION

T-BOX REGULATION FOR LEO D BMS

LEO D BMS destratificators 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 destratificators 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.

1st step – activation of destratificators to push down the warm air from the area under the ceiling.

2nd step – activation of fan heaters in order to reach the temp level set by the user.

ON/OFF REGULATION FOR LEO DT

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

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

[1] LEO DT unit is equipped with build-on thermostat.

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^2
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 mm^2 temperature sensor T3 for measuring the temperature under the ceiling in set
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 mm^2
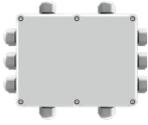
[1] LEO D BMS units are equipped with a DRV D control module with a built-in temperature sensor T3 for measuring the temperature under the ceiling as a standard. Optional PT-1000 sensor for temperature measurement in the T4 human zone is available.

BMS PROGRAMMING

FOR T-box REGULATION

Connection of units 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 enables 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.

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

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 unit separately allows independent reading and saving of the work parameters of each unit.

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

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.

OXeN
ventilation unit with heat recovery

LEO COOL
fan cooler / heater

Cube
rooftop

LEO
fan heaters

Production 18ºC

Werehouse 12ºC

Werehouse16ºC

Vestibule 12°C

LEO D
destratificators

ELiS
air curtains

Office 21ºC

Slim
air curtains
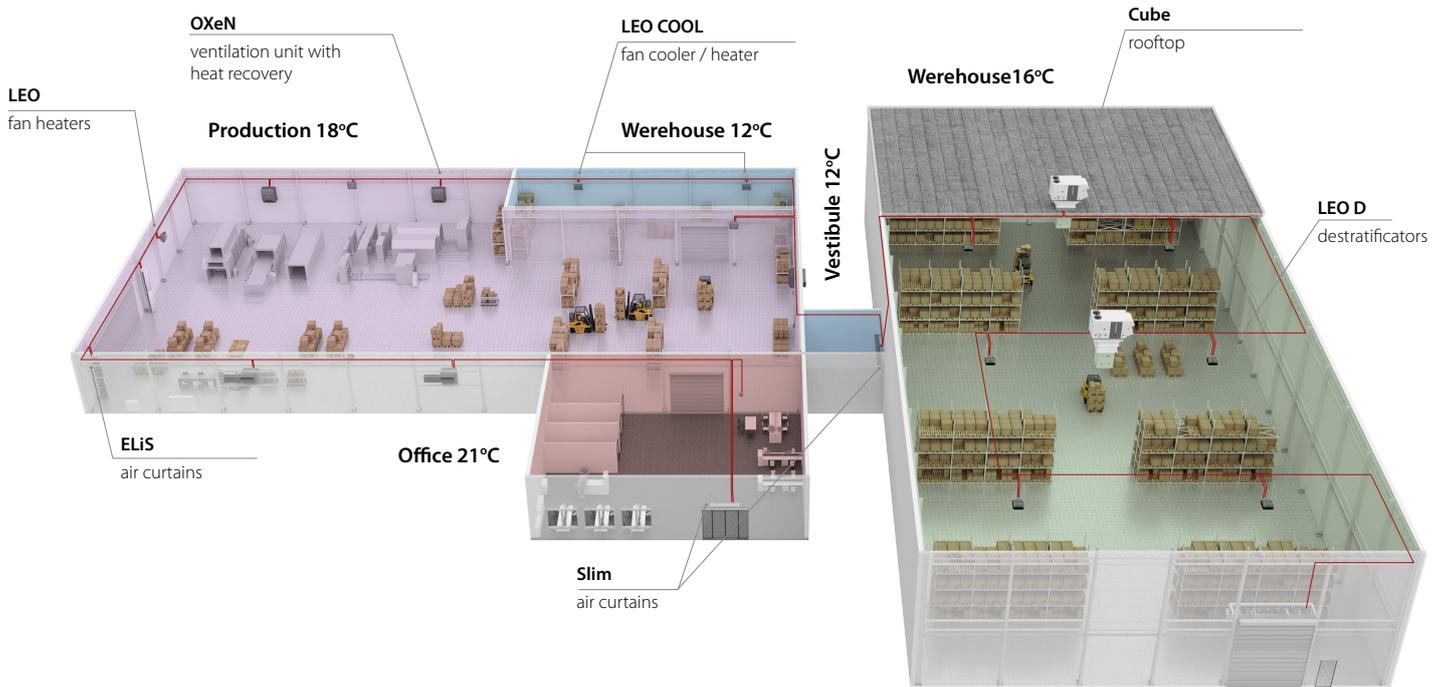
❚ FOR FACILITIES WITH ONE HEATING ZONE

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

ELiS
air curtains

LEO
fan heaters

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

17,5ºC
19,0ºC

FLOWAIR

Werehouse 18ºC

OXeN
ventilation unit with heat recovery

LEO D
destratificators

Cube
rooftop
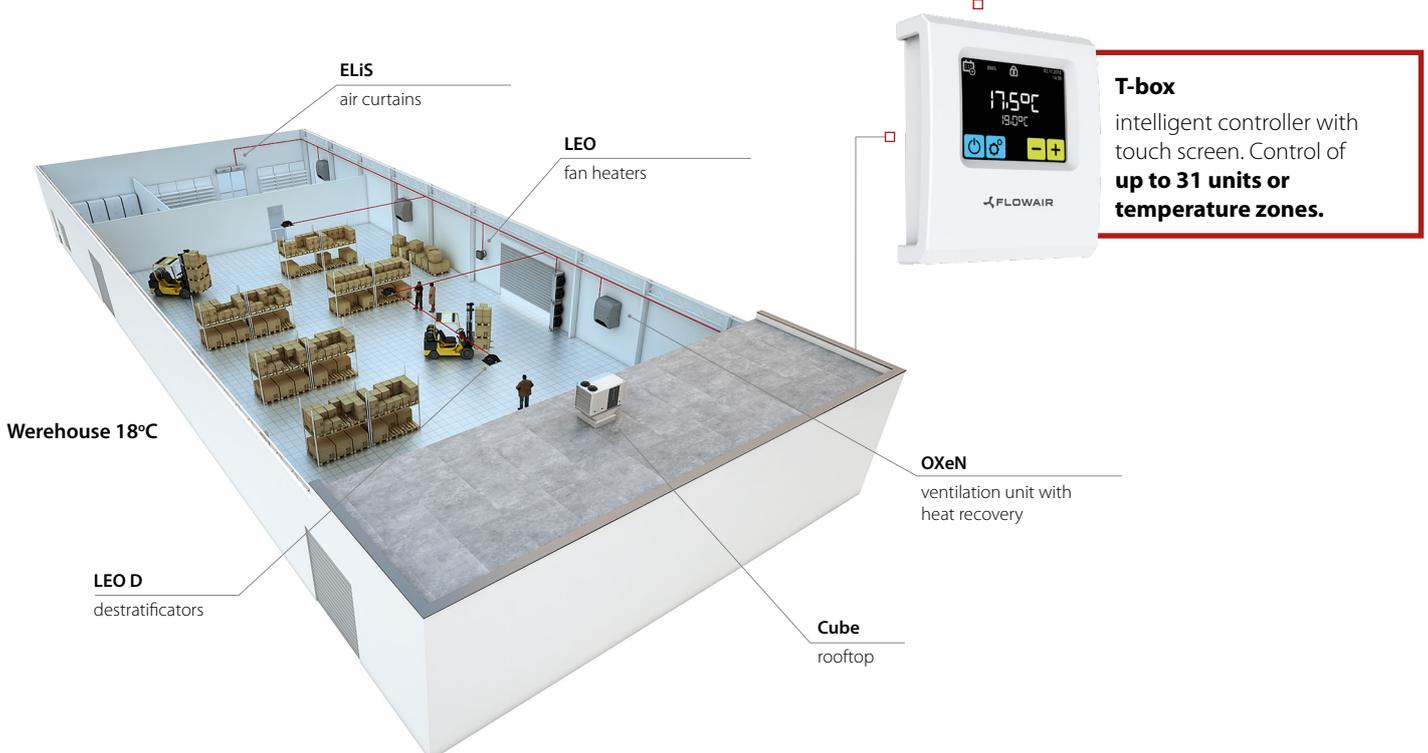
CONNECTION DIAGRAMS

LEO D BMS REGULATION WITH T-box CONTROLLER

max. 31 units compatible with SYSTEM FLOWAIR to T-box controller

min. 5×1,0 mm²

T-box

DRV D

DRV D

LIYCY-P 2x2x0,5 mm²
twisted pair cable
A and B, max. 50 m

PT-1000
(in set)

PT-1000
(in set)

LIYCY-P 2x2x0,5 mm²
twisted pair cable
A and B, max. 50 m

min. 3×1,5 mm²

min. 2×0,5 mm² (shielded)

power supply
~230 V

power supply
~230 V

PT-1000
(option)

PT-1000
(option)
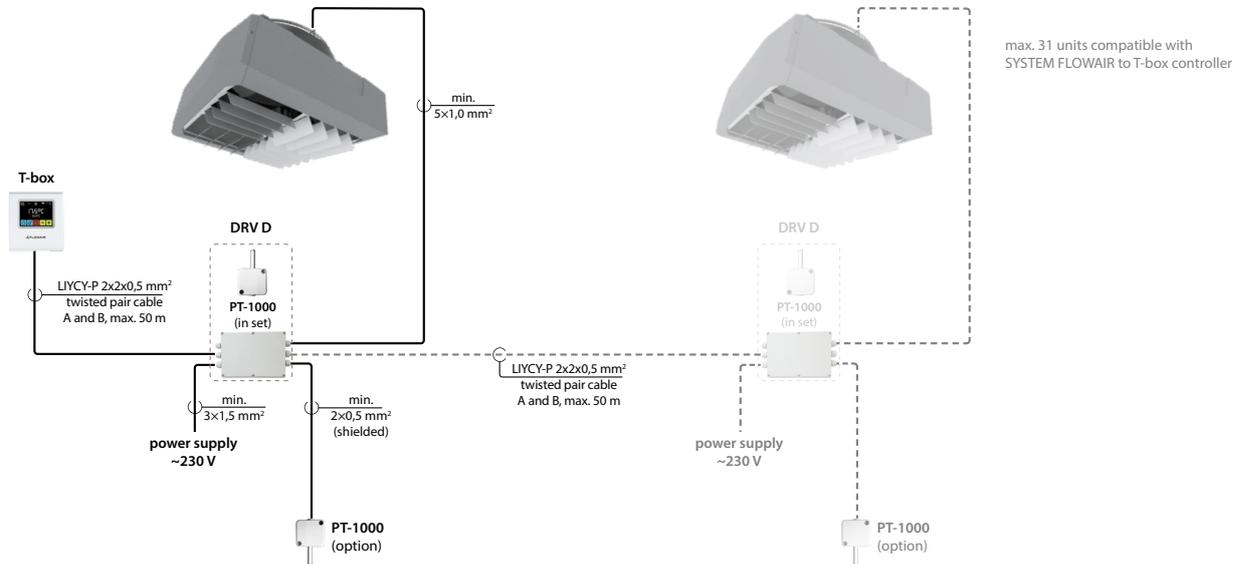
LEO D BMS AND LEO BMS REGULATION WITH T-box CONTROLLER – EXAMPLE FOR WORK IN AUTOMATIC DESTRATIFICATION MODE

max. 31 units compatible with SYSTEM FLOWAIR to T-box controller

min. 5×1,0 mm²

T-box

PT-1000

DRV D

min. 2×0,5 mm² (shielded)

SRQ

min. 5×1,0 mm²

LIYCY-P 2x2x0,5 mm²
twisted pair cable
A and B, max. 50 m

PT-1000
(in set for measurement of temperature under the ceiling)

min. 3×0,75 mm²

LIYCY-P 2x2x0,5 mm²
twisted pair cable
A and B, max. 50 m

DRV V

min. 3×1,5 mm²

power supply
~230 V

min. 3×1,5 mm²

power supply
~230 V

min. 2×0,5 mm² (shielded)

PT-1000
(option)

ON/OFF REGULATION FOR LEO DT

min. 3×1,0 mm²

power supply
~230 V

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PRZEDSIĘBIORSTWO
FAIR PLAY