KM REGULATION | **KM REGULATION 16.02 EN**

KM CONTROL SYSTEM
TECHNICAL DOCUMENTATION
USER MANUAL

FLOWAIR

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Błąd! Nie zdefiniowano zakładki.

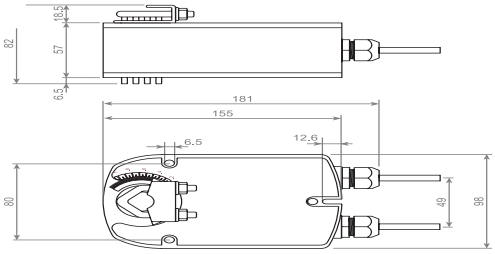
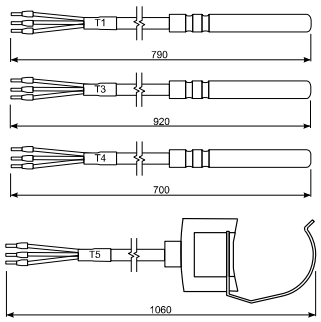
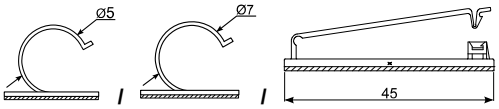
1. GENERAL INFORMATION

For LEO KM mixing chambers there is available the KM control system. It is used as independent power, control and protection system for single fan heater operating with mixing chamber. Its basic functions are:

- modulated or 3-step fan speed regulation (according to model of the heater - LEO M type or LEO V type),
- antifreeze protection,
- stepless regulation of supplied air temperature,
- balance, overpressure or underpressure in terms of roof fans,
- weekly programmer,
- possibility to control up to 31 units in SYSTEM by 1 controller,
- possibility of connection to BMS,
- possibility of connection the gas detection panel.

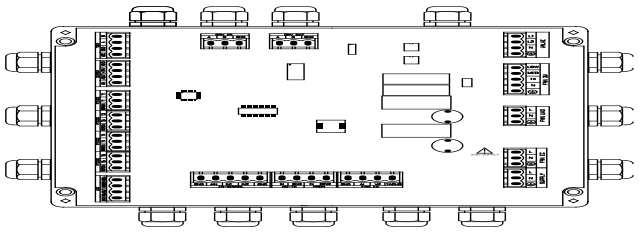
2. ELEMENTS OF KM CONTROL SYSTEM

KMFB set

	**SP 0-10** **Dampers actuator with return spring and continuous operation, controlled by analog signal 0-10V.** Power supply: AC 24V 50/60Hz, DC24V Wires: 4 x 0,5mm^2 Power consumption: 2,5W – operation, 1W – stand-by Protection degree: IP54 Range of operating temperatures: -30^{o}C ÷ +50^{o}C
	**4 x PT-1000** **Temperature sensors:** T1 – Fresh air, T3 – Supplied air into the room, T4 – Recirculating air, T5 – Heating medium.
	**Self-stick wire holder P1/** **Self-stick wire holder P2/** **2 x Self-stick wire holder P3**

2. ELEMENTS OF KM CONTROL SYSTEM

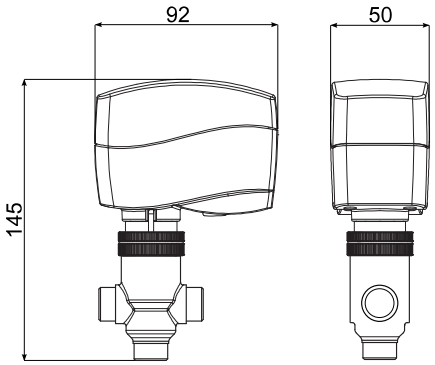
KMFB set



DRV KM – Control board

Control system dedicated for operation with one LEO KM unit.

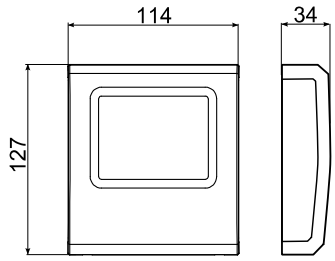
Power supply: 230V/50Hz;
Protection degree: IP54
Range of operating temperatures: -10 – 60°C



SRX3d ¾"

Three-way valve with actuator

Power supply: 230V
Max. heating medium temperature: 120°C
Max. operating pressure: 16bar
Protection degree: IP42
Kvs: 2,5
Thread: external ¾"



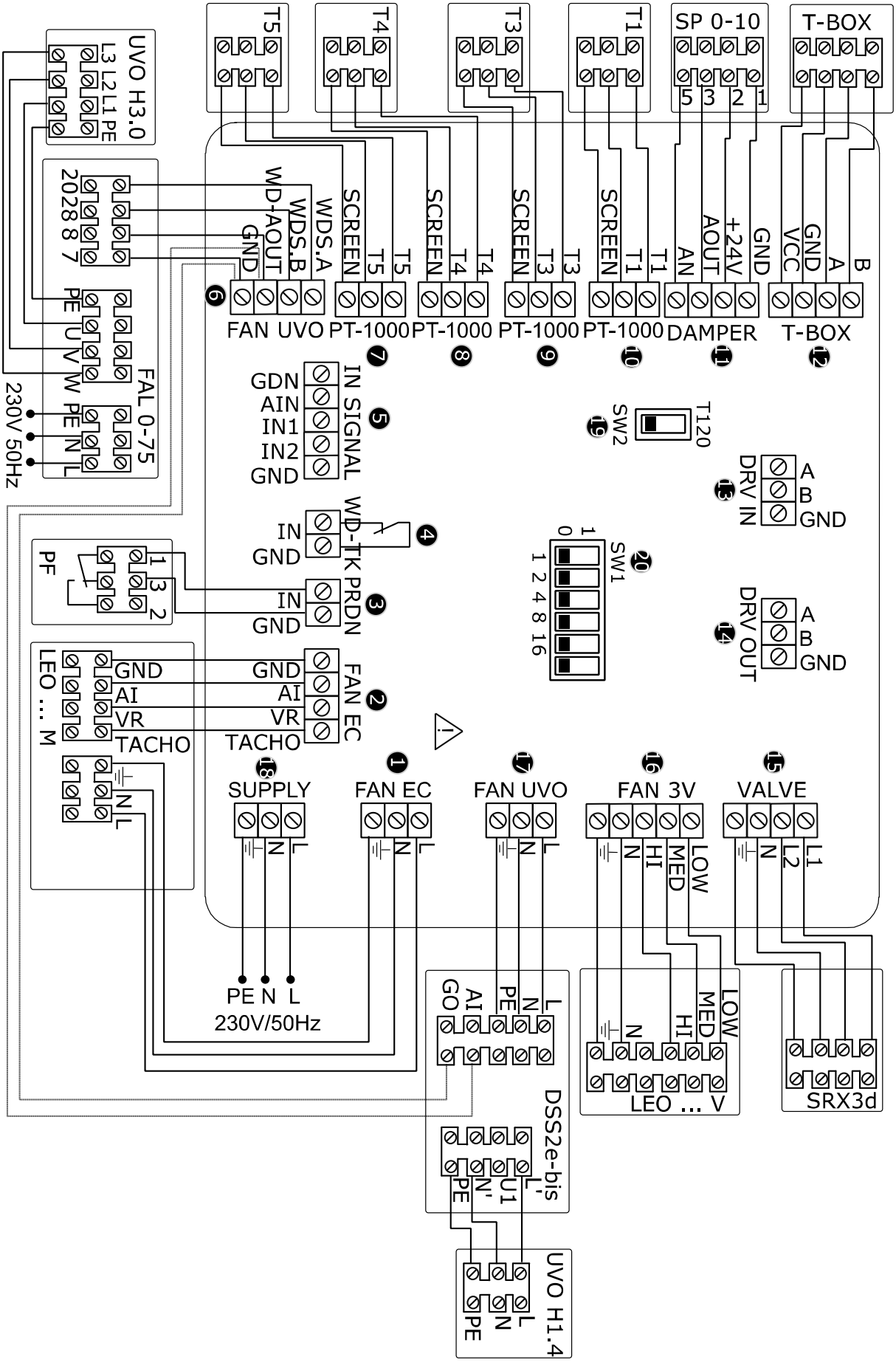
T-box

Intelligent controller with touch screen

Power supply: 24V
Temperature adjustment range: +5 ÷ +35°C
Fan revs range: 10 ÷ 100%
Range of operating temperatures: -10 ÷ +60°C
Temperature sensor: built-in / external PT-1000
Protection degree: IP20

Detailed information about operation of the controller with KMFB set are contained in DTR T-box.

3. CONNECTION DIAGRAM OF DRV KM



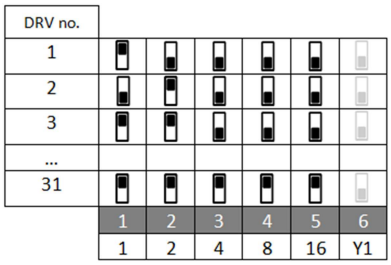
3.1 DESCRIPTION OF WIRES

1. Power supply 230/50Hz of fan of LEO M type fan heater (connection via OMY min. 3x1,0mm2),
2. Control of fan of LEO M type fan heater (connection via LIYCY 4x0,5mm2),
3. Pressure switch of filters PF (connection via OMY min. 2x0,5mm2), in case of not connecting the pressure switch short the connectors,
4. Contact of thermal protection of roof fan TK (OMY min. 2x0,5mm2), in case of not connecting the roof fan short the connectors,
5. Connection of gas detection panel (connection via OMY min. 4x0,5mm2),
6. Contact of inverter start authorization (connection via OMY min. 2x0,5mm2), control of roof fan (OMY min. 2x0,5mm2),
7. T5 – Rebated temperature sensor PT-1000 of heating medium (connection via LIYCY min. 2x0,5mm^2 (screened)),
8. T4 – Temperature sensor PT-1000 of recirculating air (connection via LIYCY min. 2x0,5mm^2 (screened)),
9. T3 – Temperature sensor PT-1000 of supplied air (connection via LIYCY min. 2x0,5mm^2 (screened)),
10. T1 – Temperature sensor PT-1000 of fresh air (connection via LIYCY min. 2x0,5mm^2(screened)),
11. Dampers actuator SP 0-10 (connection via LIYCY min. 4x0,5mm^2),
12. T-box – intelligent controller with touch screen (connection via wire LIYCY 4x1,0mm^2; connection 1:1 – braided wire pair A and B),
13. Connector IN – input connector of communication port RS-485 (connection via wire LIYCY 3x1,0mm^2; connection 1:1 – braided wire pairs are recommended),
14. Connector OUT – output connector of communication port RS-485 (connection via wire LIYCY 3x1,0mm2; connection 1:1 - braided wire pairs are recommended),
15. SRX3d valve actuator (connection via LIYCY min. 4x0,5mm2), L1- valve opening (black), L2- valve closing (brown),
16. Fan of LEO V type fan heater (connection via OMY min. 5x1,0mm2) max. current 3A,
17. Power supply of single-phase roof fan or single-phase inverter (connection via OMY min. 3x1,0mm2) max. current 3A,
18. Power supply 230/50Hz (connection via OMY min. 3x1,0mm2) ,
19. Dip-switch SW2,
20. Dip-switch SW1.

Diameters of wires are selected for long-term current load for B1 arrangement according to project of regulation PN-IEC 60364-5-523 and for overcurrent value limit according to regulation PN-91/E05009/473 p. 473.1.2 [idn. IEC 364-4-473 (1977)]. Due to the length of wires (above 100 m), other arrangement and other guidelines, given dimeters should be reviewed.

3.2 SETTING THE DRV ADDRESSES

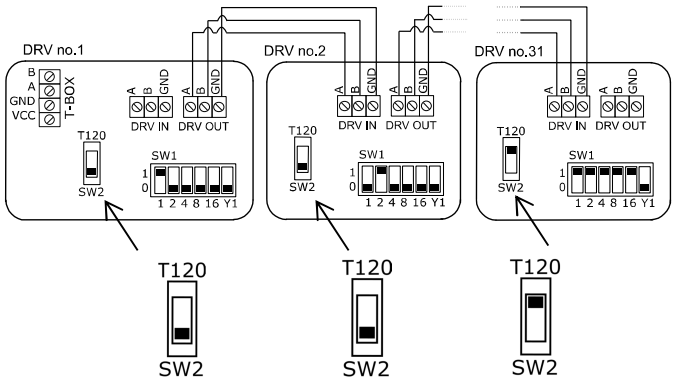
When connecting DRV modules to T-box controller or BMS system it is necessary to set the binary address on the DIP-switch SW1 **(20)**. Each DRV control unit connected to the FLOWAIR System must be given an individual address. To set the address, switch off the voltage, set the address (according to the table) and then turn on the power.



3.3 JOINING THE DRV MODULES

It is possible to join up to 31 DRV modules. It makes possible to control up to 31 units, compatible with FLOWAIR System, via single T-box controller.

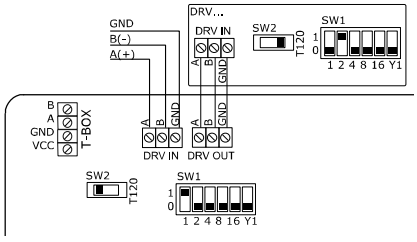
ATTENTION: DIP-switch SW2 **(19)** in the last connected module must be set in upper position (T120). In all other DRV modules, DIP-switch SW2 **(19)** must be in lower position.
ATTENTION: When control system consists of one DRV module, DIP-switch SW2 **(19)** also must be in upper position (T120).



3.4 CONNECTING TO BMS

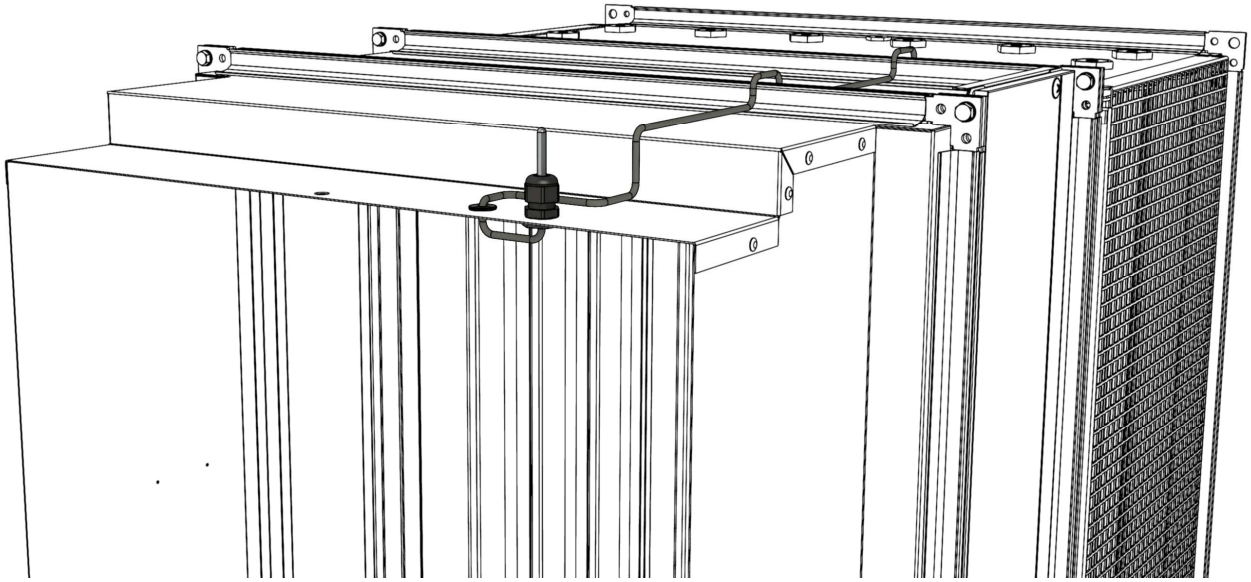
DRV control module enables connection of the system to BMS (Building Management System).

ATTENTION: Connection must be done via 3-wire cable (UTP braid recommended) to DRV IN connectors.

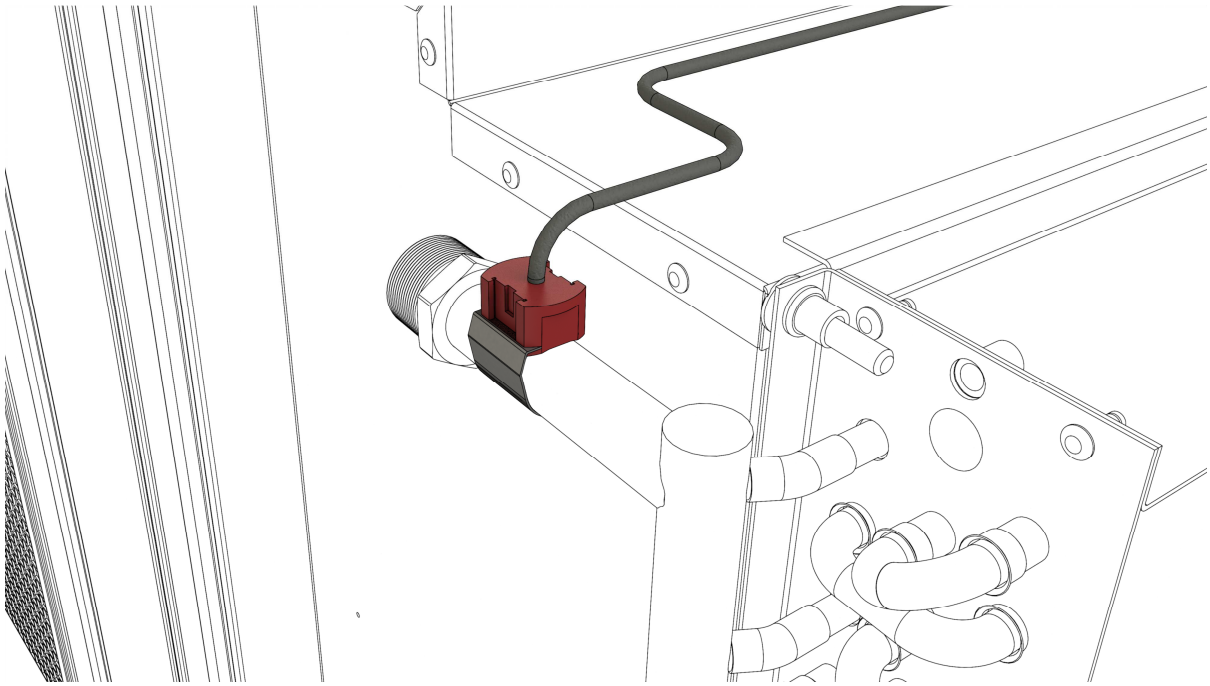


4. INSTALLATION

4.1. INSTALLATION OF RECIRCULATING AIR TEMPERATURE SENSOR T4



4.1. INSTALLATION OF REBATED HEATING MEDIUM TEMPERATURE SENSOR T5



4.2. INSTALLATION OF SUPPLIED AIR TEMPERATURE SENSOR T3

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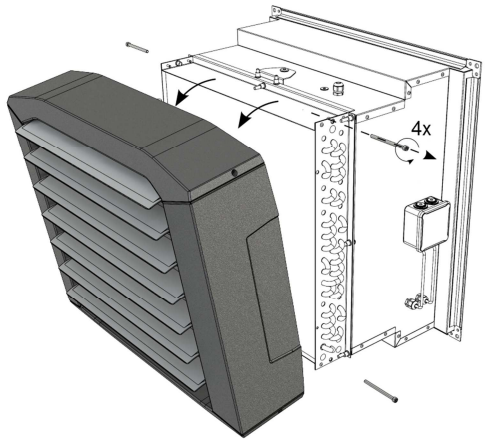

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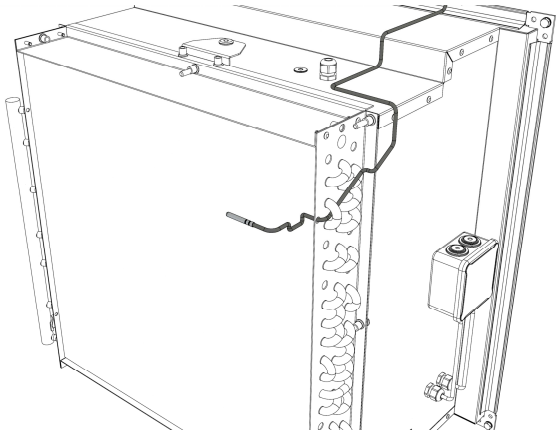

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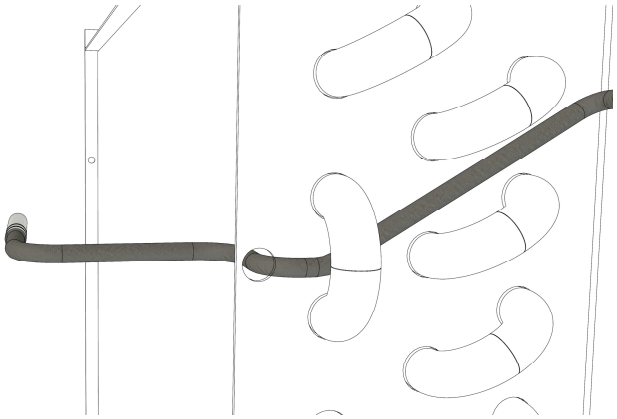

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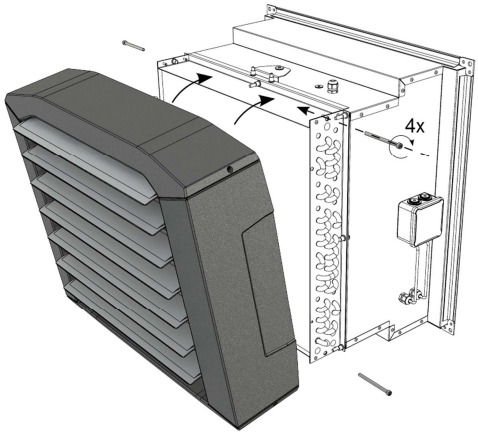

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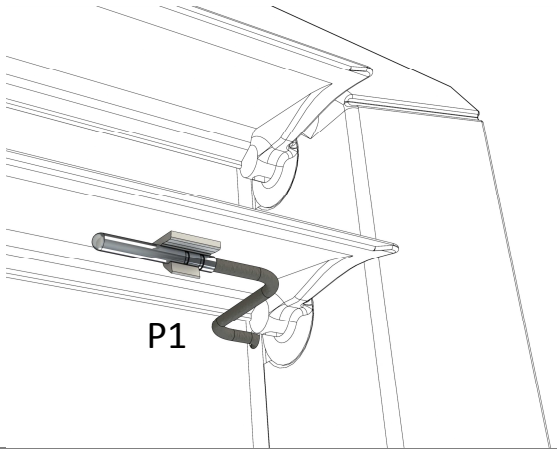
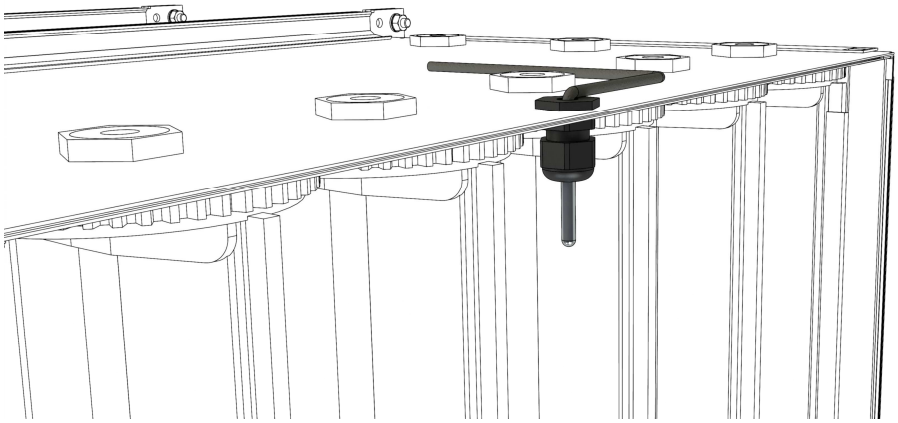


4.3. INSTALLATION OF FRESH AIR TEMPERATURE SENSOR T1



4.4. INSTALLATION OF ACTUATOR SP 0-10

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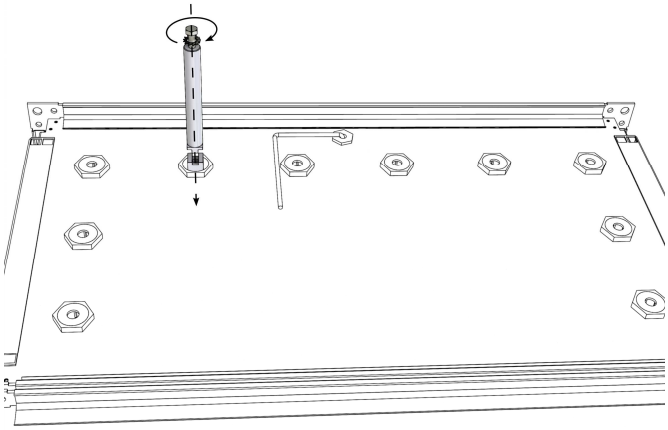

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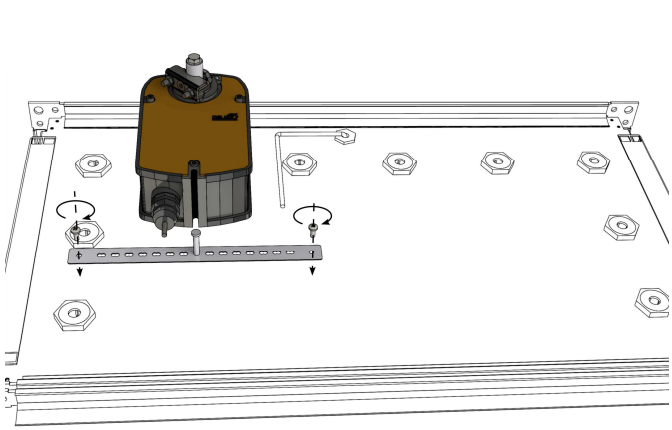

4.5. INSTALLATION OF DRV KM

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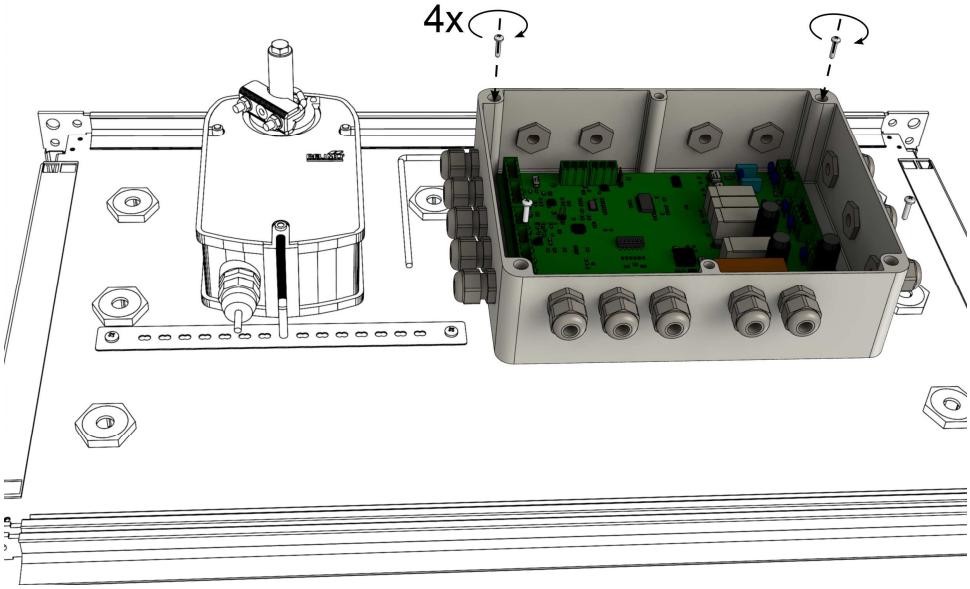
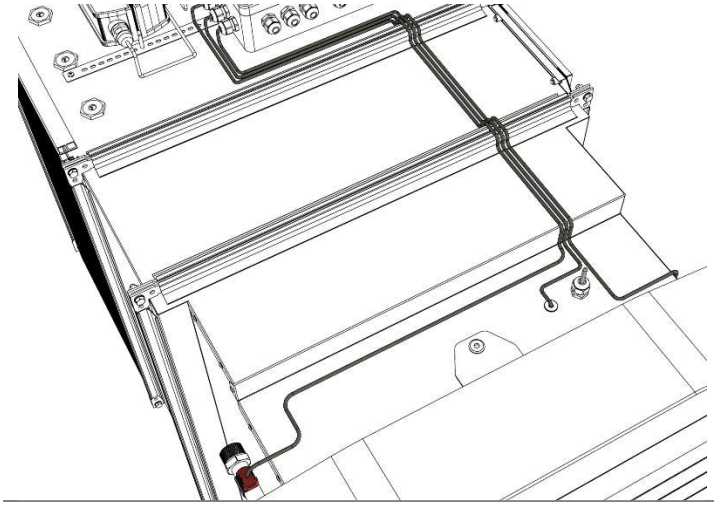
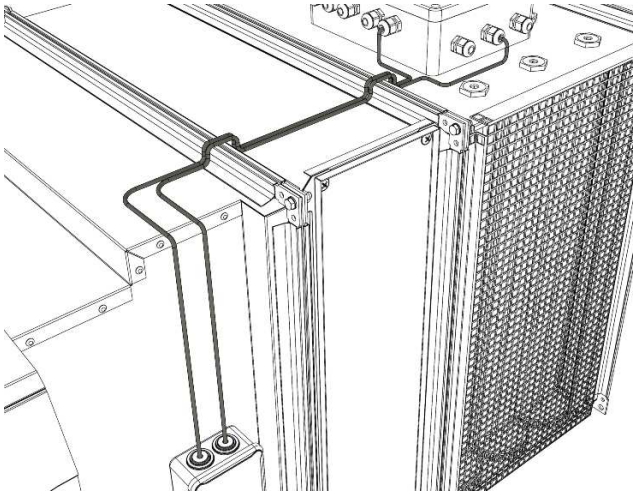
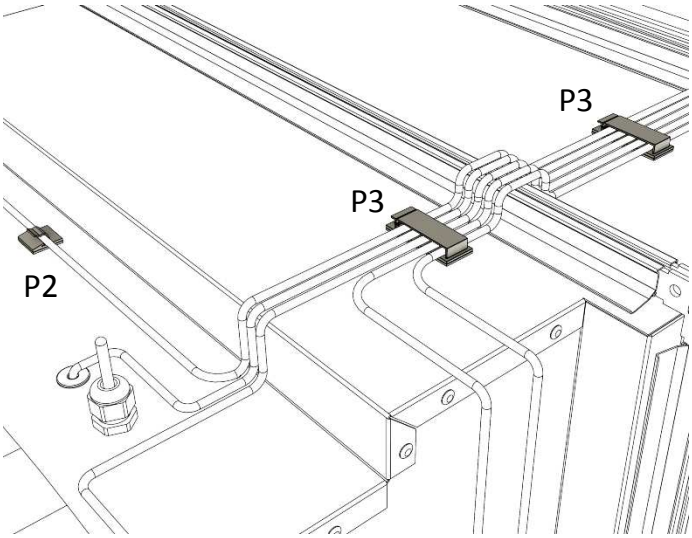
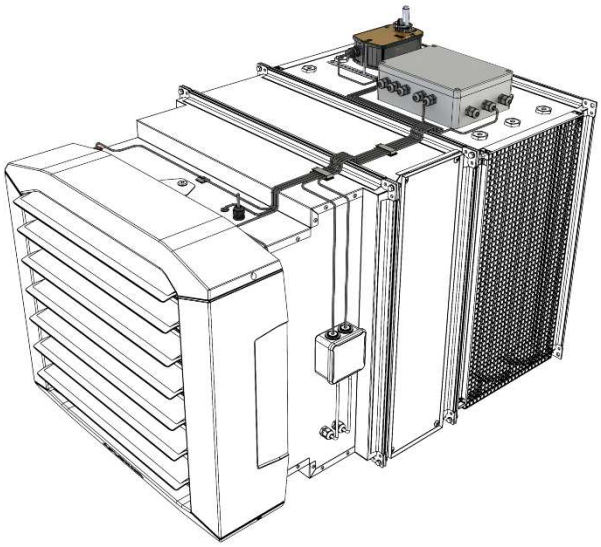


4.6. PLACING THE WIRES









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