



**FLEXIHEAT UK LTD**

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01202 822221



**ELIS B | W 100 | W 100 2R | N 100 | E 100 | W 150 | W 150 2R |  
N 150 | E 150 | W 200 | W 200 2R | N 200 | E 200**

**EN**

**AIR CURTAIN**

**TECHNICAL DOCUMENTATION OPERATION MANUAL**

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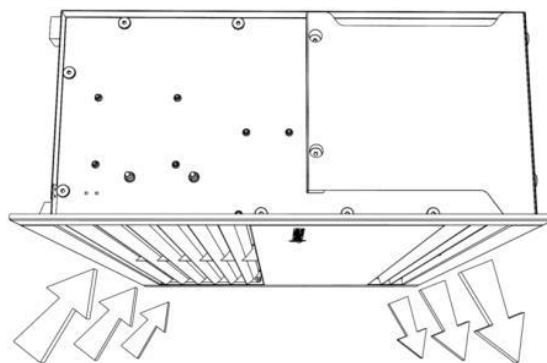
## 1. GENERAL INFORMATION

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Purpose of Eils B is to minimize heat losses (or unwanted heat gains) by door openings. Elis B is a recessed type and can be a part suspended ceiling.  
ELiS types:

**ELIS B-W-100** – curtain with water heat exchanger max. range 5 m;  
**ELIS B-N-100** – curtain without heat exchanger (ambient);  
max. range 5 m;  
**ELIS B-E-100** – curtain with electrical heat exchanger max. range 5 m;  
**ELIS B-W-100 2R** – curtain with two-row heat exchanger  
max. range 5 m  
**ELIS B-W-150** – curtain with water heat exchanger max. range 5 m;  
**ELIS B-N-150** – curtain without heat exchanger (ambient);  
max. range 5 m;  
**ELIS B-E-150** – curtain with electrical heat exchanger max. range 5 m,  
**ELIS B-W-150 2R** – curtain with two-row heat exchanger  
max. range 5 m  
**ELIS B-W-200** – curtain with water heat exchanger max. range 5 m;  
**ELIS B-N-200** – curtain without heat exchanger (ambient);  
max. range 5 m.  
**ELIS B-E-200** – curtain with electrical heat exchanger max. range 5 m,  
**ELIS B-W-200 2R** – curtain with two-row heat exchanger  
max. range 5 m.

\* according to ISO 27327-1



## 2. TECHNICAL DATA

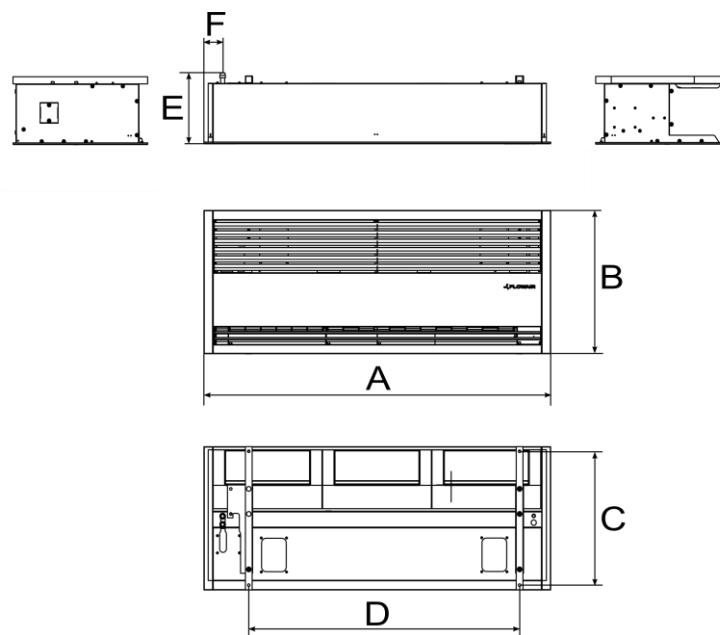
	B-W-100	B-N-100	B-E-100	B-W-100 2R	B-W-150	B-N-150	B-E-150	B-W-150 2R	B-W-200	B-N-200	B-E-200	B-W-200 2R
Power supply [V/Hz]	230/ 50		3x400 / 50	230 / 50	230 / 50		3x400 / 50	230 / 50	230 / 50		3x400 / 50	230 / 50
Power consumption [kW]	0,34	0,42	7,5	0,34	0,36	0,44	11,5	0,36	0,38	0,49	15,5	0,38
Current consumption [A]	1,5	1,9	11	1,5	1,6	2	16,6	1,6	1,7	2,2	22,4	1,7
IP/insulationclass	IP 21 / F											
Connecting stub ["]	½	-		½	½	-		½	½	-		½
Max. water temperature [°C]	95	-		95	95	-		95	95	-		95
Max. water pressure [MPa]	1,6	-	-	1,6	1,6	-	-	1,6	1,6	-	-	1,6
Temperature increase (ΔT) [°C]*	15	-	11	28	15	-	12	31	16	-	13	33
Weight [kg]	32,3	31,7	34,5	33,7	41,2	38,9	42,4	43,7	50	47,2	53,2	53,2
Weight of unit filled with water [kg]	33,1	-	-	35,2	42,4	-	-	45,7	51,6	-	-	56,4

\* B-W temperature increase at inlet air 10°C and heating agent temperature 90/70°C / B-E temperature increase at inlet air 10°C

### 2.1. CONSTRUCTION

- **Fan** – motor with plastic rotor;
- **Heat exchanger** – copper-aluminium, connecting stub ½"; electrical heaters PTC;
- **Casing**– sheet steel RAL; color white RAL 9016,
  - back elements - expanded polypropylene EPP; colour – grey;
  - air inlet fins - anodized aluminum

## 2.2. DIMENSIONS



	A	B	C	D	E	F
ELiS B-W/N/E/2R-100	1057 mm	600 mm	561 mm	770 mm	297*/284** mm	96 mm
ELiS B-W/N/E/2R-150	1546 mm	600 mm	561 mm	1207 mm	297*/284** mm	84 mm
ELiS B-W/N/E/2R-200	2034 mm	600 mm	561 mm	1621 mm	297*/284** mm	157 mm

\* height for B-W ; \*\* height for B-E/N

## 2.3. ACOUSTIC PRESSURE LEVEL/ ACOUSTIC POWER LEVEL

step	B-W-100; B-E-100;	B-N-100;	B-W-150; B-E-150;	B-N-150;	B-W-200; B-E-200;	B-N-200;	B-W-100 2R	B-W-150 2R	B-W-200 2R
3	58 dB(A) / 73 dB(A)	65 dB(A) / 80 dB(A)	62 dB(A) / 77 dB(A)	65 dB(A) / 80 dB(A)	63 dB(A) / 78 dB(A)	66 dB(A) / 81 dB(A)	57 dB(A) / 72 dB(A)	60 dB(A) / 75 dB(A)	61 dB(A) / 76 dB(A)
2	57 dB(A) / 72 dB(A)	63 dB(A) / 78 dB(A)	59 dB(A) / 74 dB(A)	63 dB(A) / 78 dB(A)	61 dB(A) / 76 dB(A)	62 dB(A) / 77 dB(A)	56 dB(A) / 71 dB(A)	58 dB(A) / 73 dB(A)	59 dB(A) / 74 dB(A)
1	55 dB(A) / 70 dB(A)	61 dB(A) / 76 dB(A)	57 dB(A) / 72 dB(A)	58 dB(A) / 73 dB(A)	58 dB(A) / 73 dB(A)	59 dB(A) / 74 dB(A)	55 dB(A) / 70 dB(A)	56 dB(A) / 71 dB(A)	56 dB(A) / 71 dB(A)

\* Acoustic power level according to ISO 27327-2 |

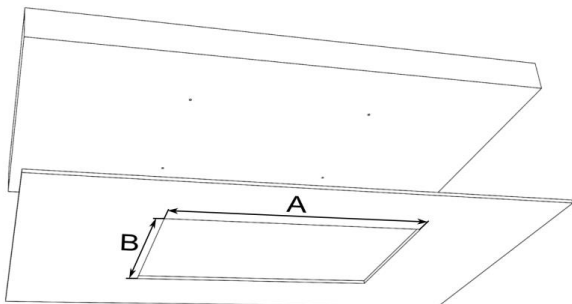
\*\*Acoustic pressure level has been measured 5m from the unit in a 1500 m<sup>3</sup> space with a medium sound absorption coefficient |

## 2.4. AIR VOLUME

step	B-W-100 B-E-100	B-N-100	B-W-150 B-E-150	B-N-150	B-W-200 B-E-200	B-N-200	B-W-100 2R	B-W-150 2R	B-W-200 2R
3	2600 m <sup>3</sup> /h	3500 m <sup>3</sup> /h	4000 m <sup>3</sup> /h	4800 m <sup>3</sup> /h	5200 m <sup>3</sup> /h	6600 m <sup>3</sup> /h	2400 m <sup>3</sup> /h	3800 m <sup>3</sup> /h	4900 m <sup>3</sup> /h
2	2500 m <sup>3</sup> /h	2700 m <sup>3</sup> /h	3500 m <sup>3</sup> /h	4000 m <sup>3</sup> /h	4300 m <sup>3</sup> /h	4300 m <sup>3</sup> /h	2300 m <sup>3</sup> /h	3200 m <sup>3</sup> /h	4100 m <sup>3</sup> /h
1	2200 m <sup>3</sup> /h	2300 m <sup>3</sup> /h	3200 m <sup>3</sup> /h	3200 m <sup>3</sup> /h	4000 m <sup>3</sup> /h	3600 m <sup>3</sup> /h	2000 m <sup>3</sup> /h	3000 m <sup>3</sup> /h	3800 m <sup>3</sup> /h

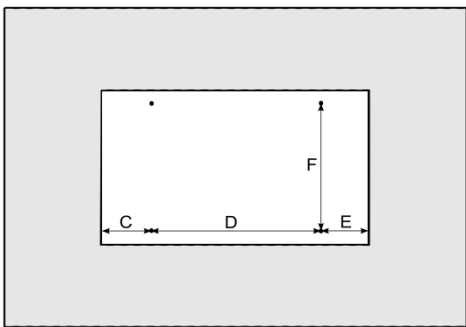
3. INSTALATION

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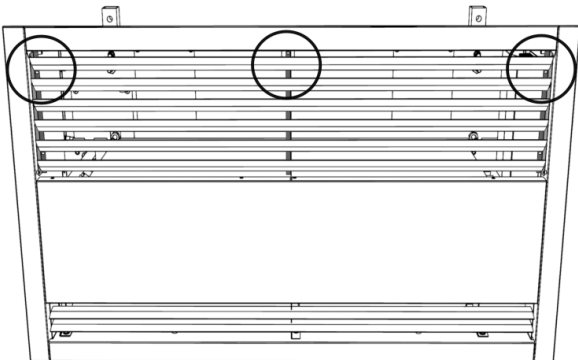
ELiS	B [mm]	A [mm]
B...-100	572	1024
B...-150	572	1510
B...-200	572	2000

2.

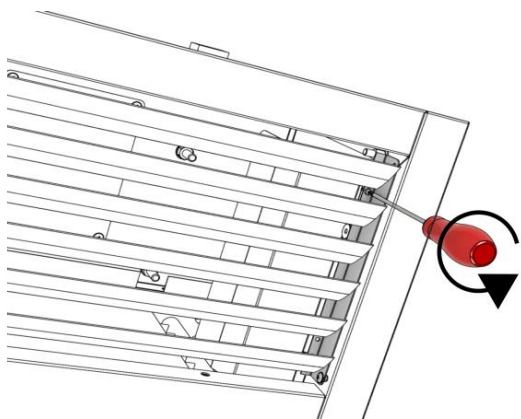


ELiS	C [mm]	D [mm]	E [mm]	F [mm]
B...-100	133	770	121	561
B...-150	182	1207	122	561
B...-200	256	1621	123	561

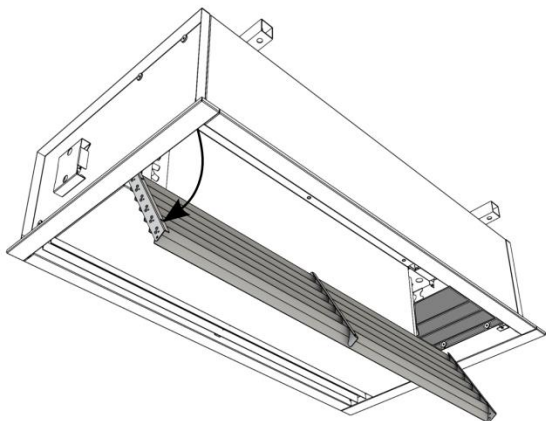
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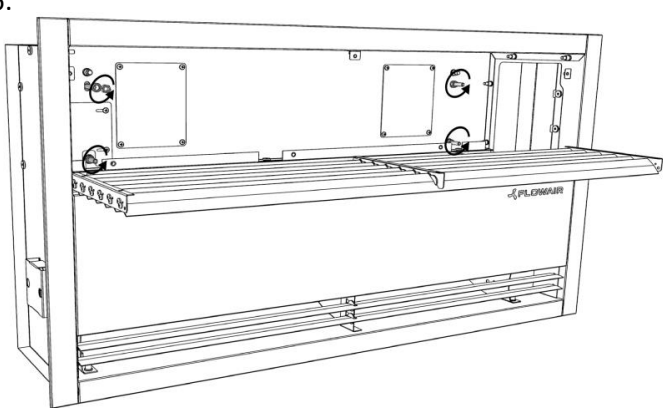
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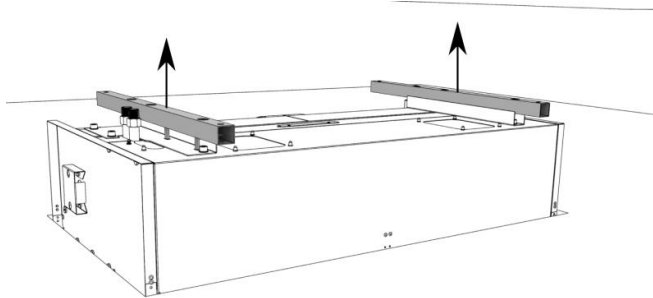
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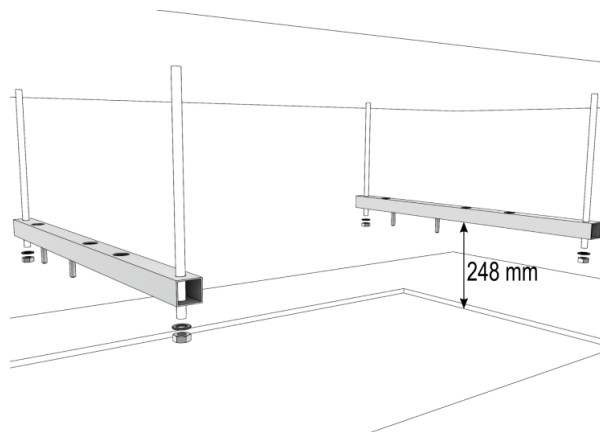
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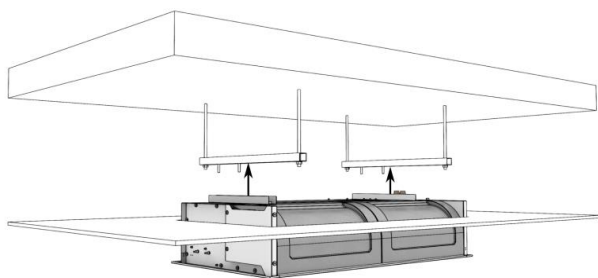
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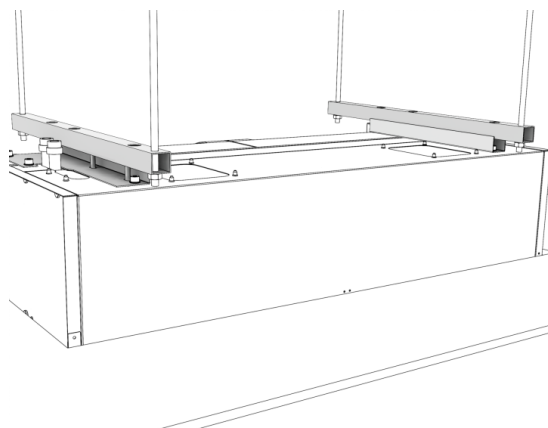
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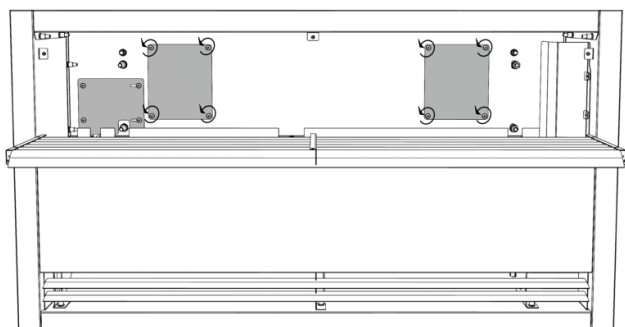
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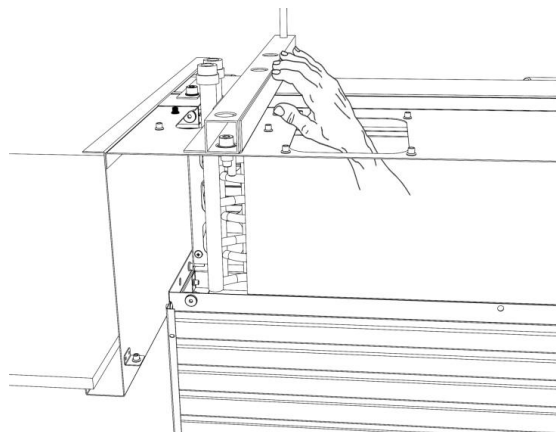
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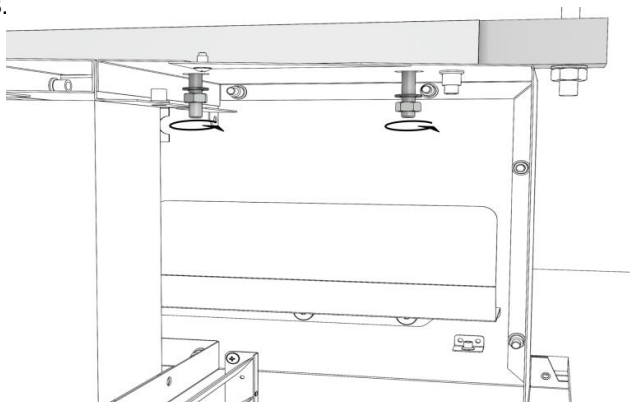
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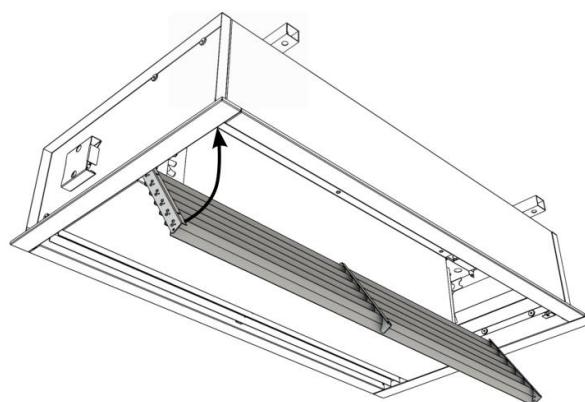
12.



13.



14.



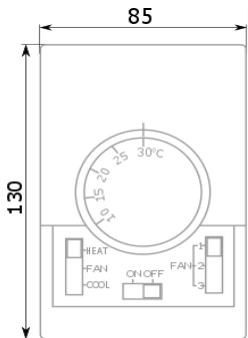
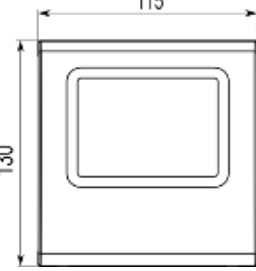
## 4. CONTROL SYSTEM

### DRV CONTROL:

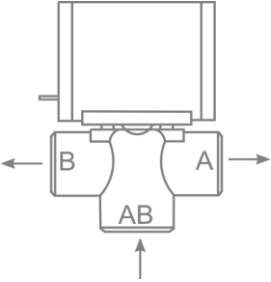
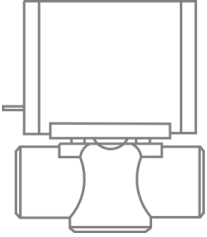
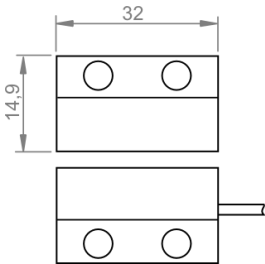
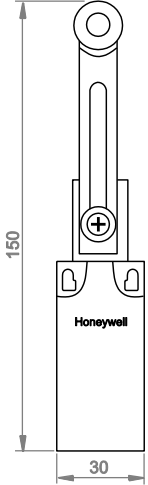
- Connecting curtains – controlling up to 5 units with one controller;
- Connecting to curtain room thermostat\*, door contact\*, valves with actuator\*, speed controller\*;
- BMS connection;
- SYSTEM Flowair connection

\*optional equipment

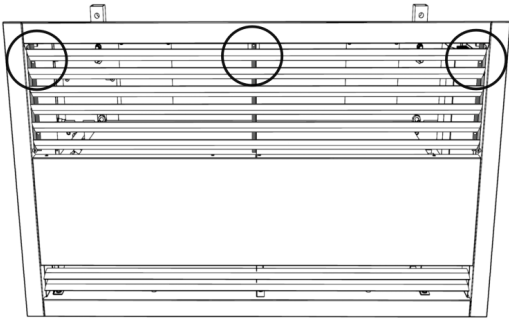
### 4.1. CONTROL SYSTEM ELEMENTS

	<p><b>TS - 3-speed fan switch with room thermostat</b></p> <p>Temperature range:: +10 ... +30°C</p> <p>Operating temperature range: 0 ... +40°C</p> <p>IP/Insulation class:: IP30</p> <p>Max current: inductive 5 A, resistive 6 A</p> <p>Power supply: 230 V/ 50Hz</p>
	<p><b>T-box</b></p> <p>Temperature range: +5 ... +35°C</p> <p>Operating temperature range: -10 ... +60°C</p> <p>IP/Insulation class: IP30</p> <p>Power supply: 24 VDC</p>

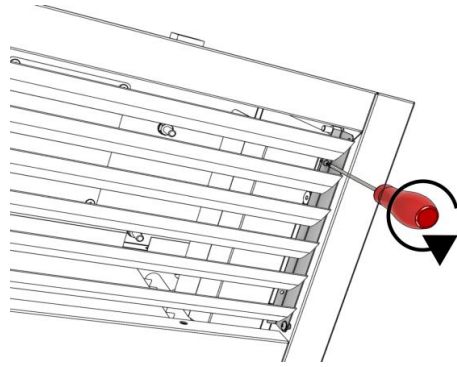


	<p><b>SRQ3d 1/2" – three-way 1/2 valve with actuator</b></p> <p>IP/Insulation class: IP20  Power supply:  200 – 240 V 50/60 Hz  Max water temperature:  +93°C  Max water pressure:  2,1 MPa  Kvs: 3,4 m³/h  Opening time: 18 s</p>
	<p><b>SRQ2d 1/2" – two-way 1/2 valve with actuator</b></p> <p>IP/Insulation class: IP20  Power supply:  200 – 240 V 50/60 Hz  Max water temperature:  +93°C  Max water pressure:  2,1 MPa  Kvs: 3,0 m³/h  Opening time: 18 s</p>
	<p><b>DCe – magnetic door switch with relay</b></p> <p>Operating temperature range:  -5 ... +60°C  IP/Insulation class: IP 64  Connectors: NO  Max current:  inductive/resistive 0,5 A  Max relay current:  inductive 3 A  Max operating contactors distance: 6 mm</p>
	<p><b>DCm – mechanical door switch</b></p> <p>Operating temperature range:: -10 - +80°C  IP/Insulation class: IP 65  Connectors: 1xNC i 1xNO  Max current: resistive 4 A, inductive 10 A  Max Power load:  300 VAC or 250 VDC</p>

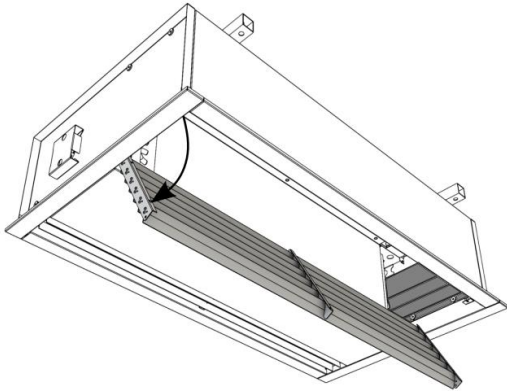
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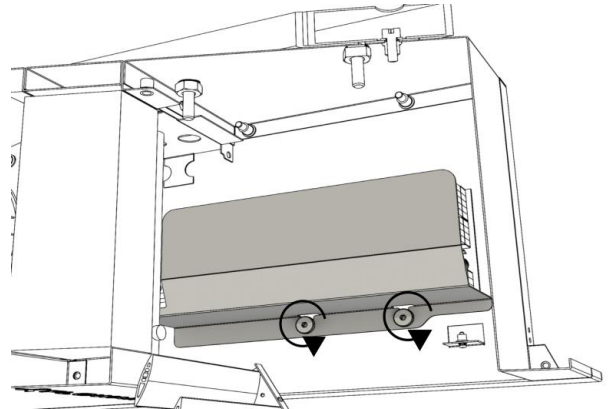
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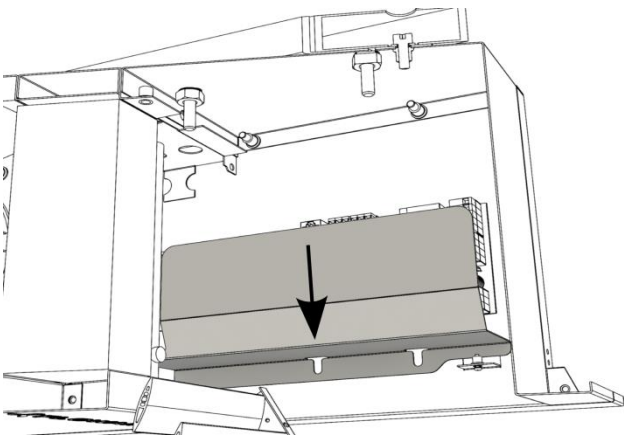
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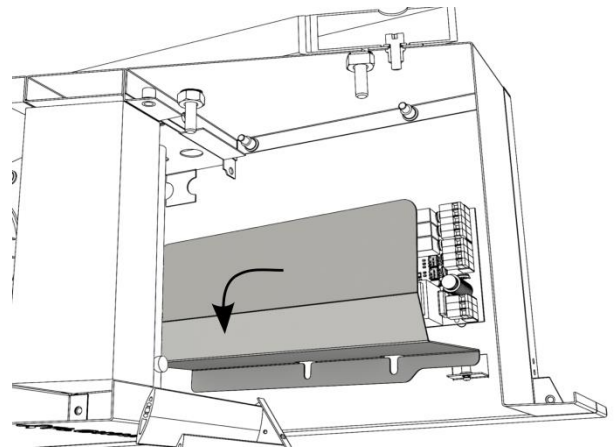
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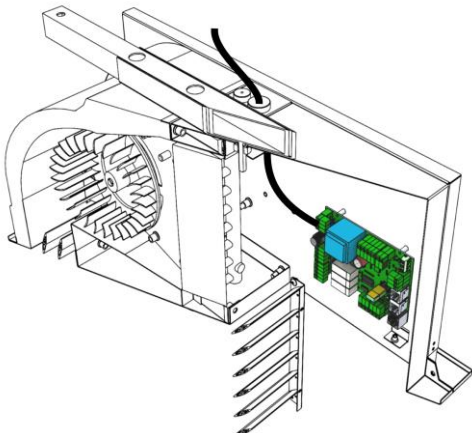
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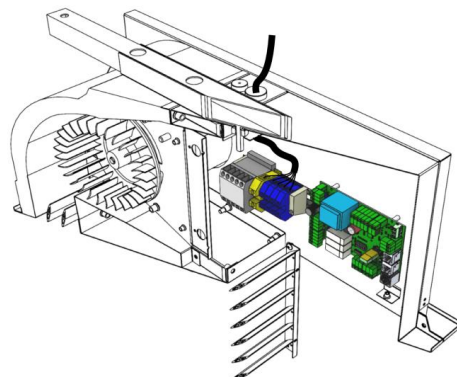
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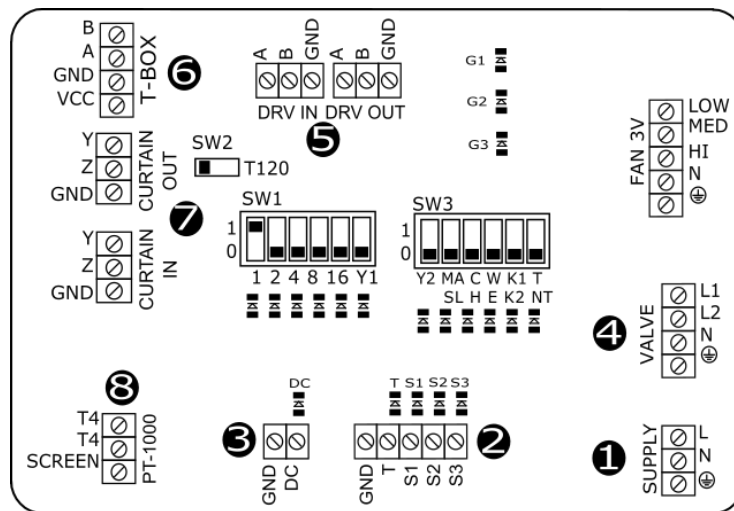
7. ELiS B-W/N



8. ELiS B-E



### 4.3. DRV ELiS CONTROL SYSTEM



- ❶ Power supply 230 V/50 Hz;
- ❷ Connectors for thermostat and fan step switch;
- ❸ Door contact connector;
- ❹ Valve actuator connector ELIS-...W; heaters contactor connector ELIS-...-E;
- ❺ BMS system connection;
- ❻ T-box connectors;
- ❼ MASTER-SLAVE connectors;
- ❽ PT-1000 connectors;

#### LED INDICATORS:

G1, G2, G3 – signalize number of fan speed operating  
 S1, S2, S3 – signalize number of set fan speed  
 T – signalize of valve set  
 DC – signalize of door contact set

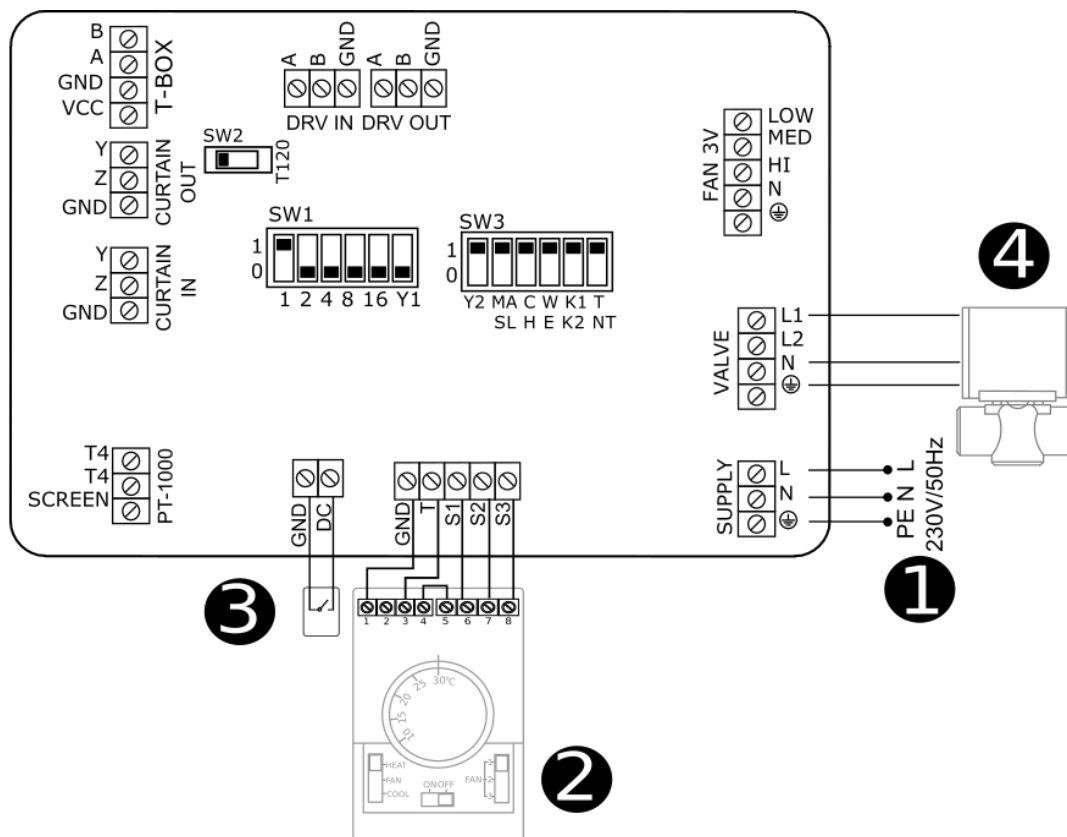
OPEN, CLOSE – signalize valve actuator  
 WORK – signalize of software working  
 SW3 – operating mode switch (default settings)

1	<input type="checkbox"/>	
2	<input type="checkbox"/>	MASTER mode operating
	<input type="checkbox"/>	SLAVE mode operating
3	<input type="checkbox"/>	Service
4	<input type="checkbox"/>	ELIS-...W/N
	<input type="checkbox"/>	ELIS-...E
5	<input type="checkbox"/>	K1 Programme*
	<input type="checkbox"/>	K2 Programme**
6	<input type="checkbox"/>	Operating with thermostat
	<input type="checkbox"/>	Operating w/o thermostat

\*K1 programme – Signal from door switch or thermostat is main signal for the device to run

\*\*K2 programme – Signal from door switch is main signal for the device to run and thermostat is in charge of valve/heaters

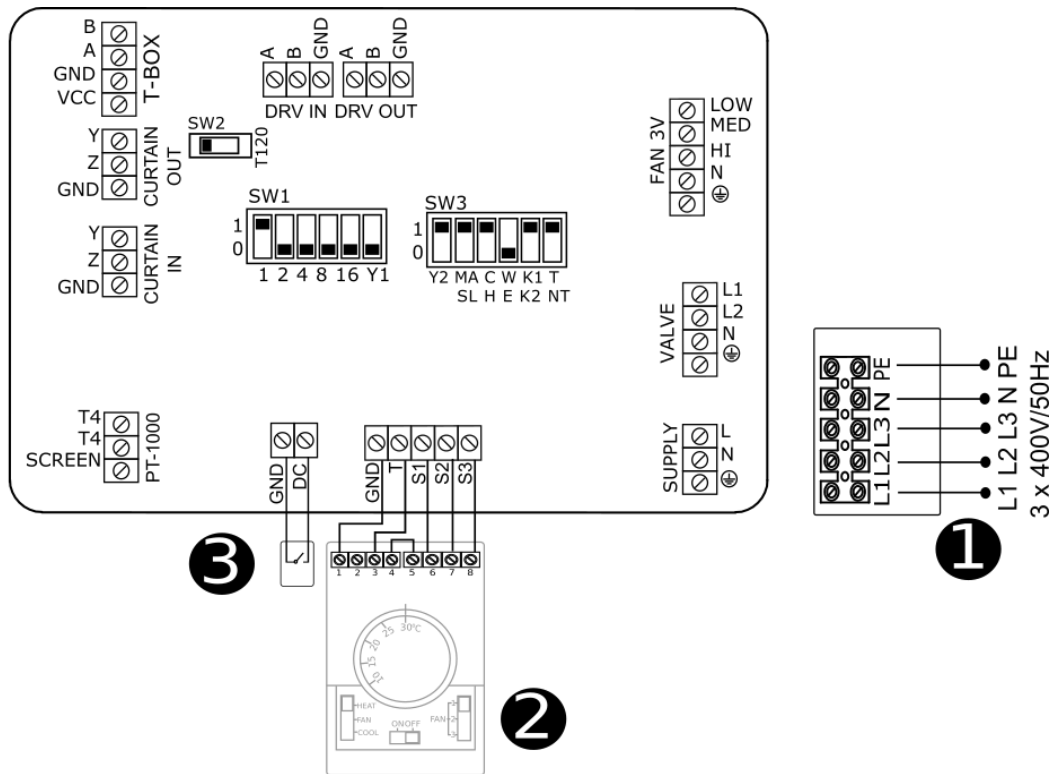
#### 4.3.1. REGULATION TS-ELIS B-W/N WIRING DIAGRAMS



- ❶ Power supply 230 V/50 Hz (OMY 3x1 mm<sup>2</sup>)
- ❷ Air curtain step switch with thermostat TS (OMY 5x0,5mm<sup>2</sup>)
  - HEAT- heating mode
  - FAN - room thermostat deactivated
  - COOL - cooling mode
  - 1;2;3 – step switch
- ❸ Door contact DCe/DCm (door closed – contacts opened; door opened – contacts closed) (OMY 2x0,5 mm<sup>2</sup>)
- ❹ Valve with actuator SRSQ2d (OMY 3x0,75 mm<sup>2</sup>) or SRQ2d (OMY 3x0,75 mm<sup>2</sup>)

A – Exchanger water supply  
 AB – Valve water supply  
 B – Return pipe water supply

#### 4.3.2. REGULATION TS-ELIS B-E WIRING DIAGRAMS

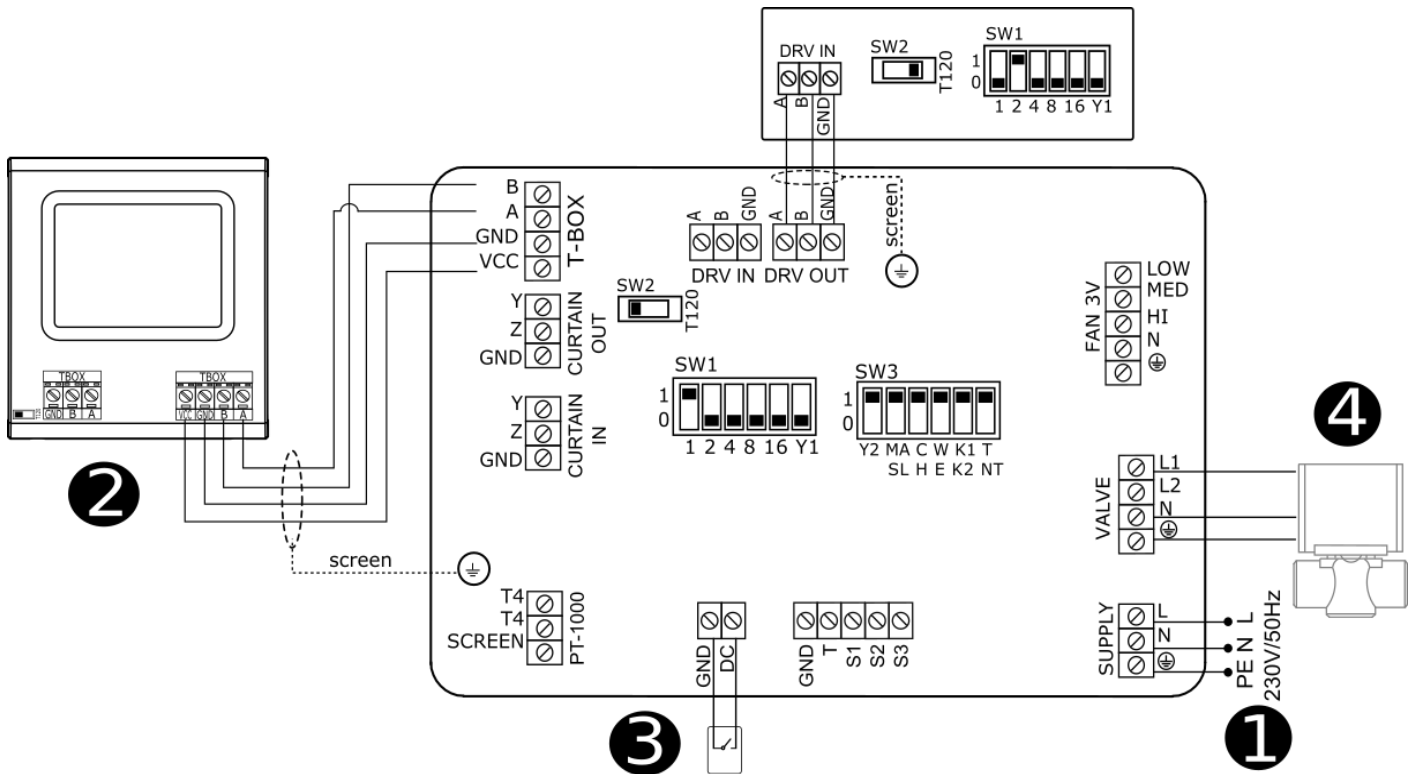


- ❶ Power supply 3x400V/50Hz
  - ELiS B-E-100 (min. 5x2,5 mm<sup>2</sup>) (Overcurrent B16)
  - ELiS B-E-150 (min. 5x4,0 mm<sup>2</sup>) (Overcurrent B20)
  - ELiS B-E-200 (min. 5x4,0 mm<sup>2</sup>) (Overcurrent B25)
- ❷ Air curtain step switch with thermostat TS (OMY 5x0,5 mm<sup>2</sup>)
  - HEAT- heating mode
  - FAN - room thermostat deactivated
  - COOL - cooling mode
  - 1;2;3 – step switch
- ❸ Door contact DCe/DCm (door closed – contacts opened; door opened – contacts closed) (OMY 2x0,5 mm<sup>2</sup>)

#### ATTENTION:

Switch 4 on SW3 to the position "E" and then restart the system switching it off for 5 seconds. Each time the device is switched off the heaters are being cooled for next 30 seconds

### 4.3.3. REGULATION T-box - ELIS B-W/N WIRING DIAGRAMS

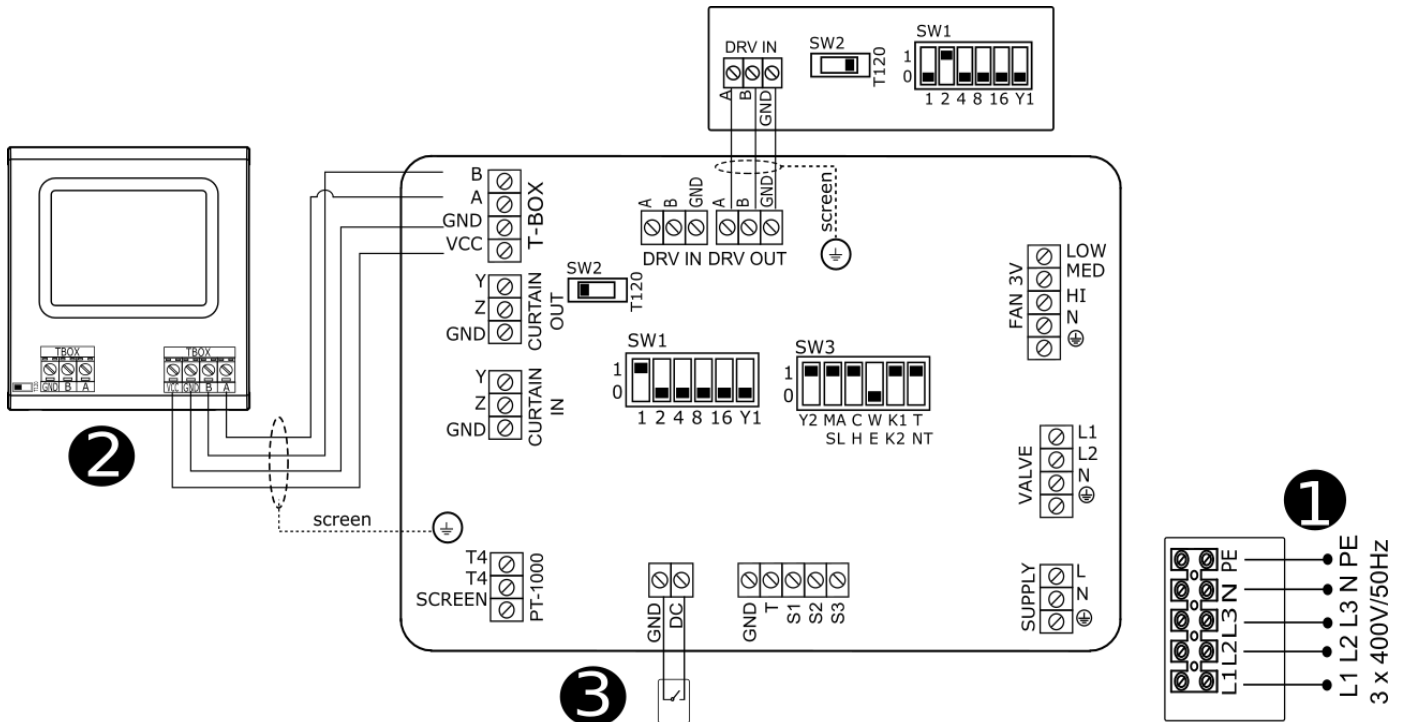


- ❶ Power supply 230V/50Hz (OMY 3x1 mm<sup>2</sup>)
- ❷ T-box (LIYCY-P 2x2x0,5mm<sup>2</sup>)
- ❸ Door contact DCe/DCm (door closed – contacts opened; door opened – contacts closed) (OMY 2x0,5 mm<sup>2</sup>)
- ❹ Valve with actuator SRSQ2d (OMY 3x0,75 mm<sup>2</sup>) or SRQ3d (OMY 3x0,75mm<sup>2</sup>)

A – Exchanger water supply  
 AB – Valve water supply  
 B – Return pipe water supply

**NOTE:** In last DRV in line, dipswitch SW2 has to be switched to the right – T120.

#### 4.3.4. REGULATION T-box - ELIS B-E WIRING DIAGRAMS



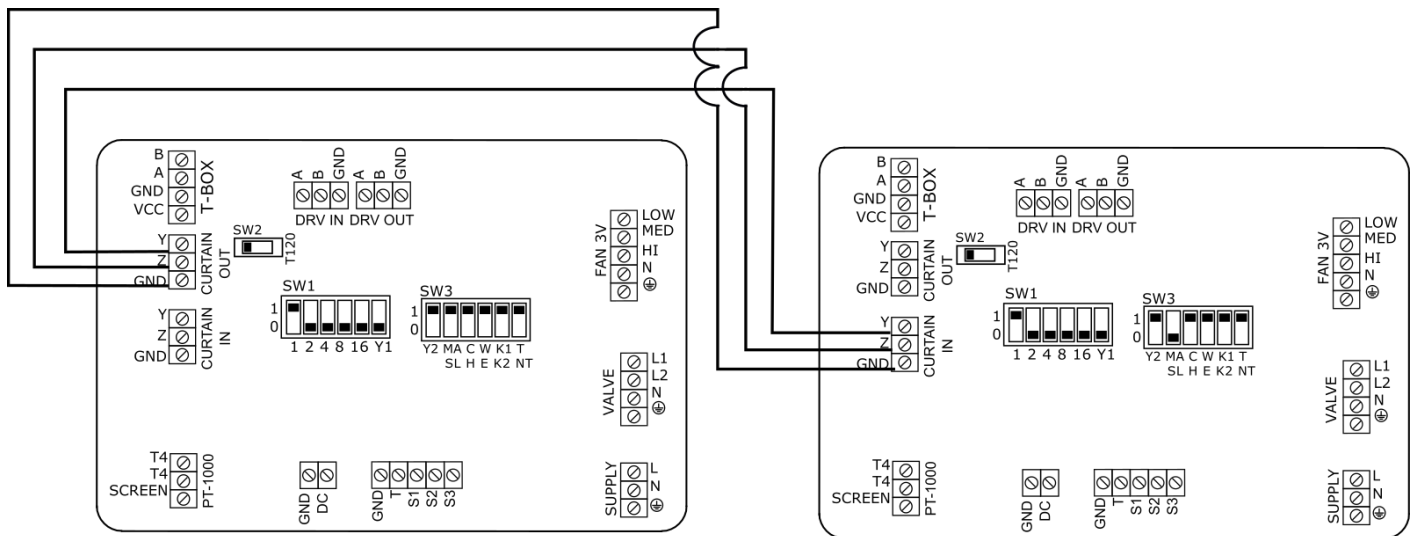
- ❶ Power supply 3x400V/50Hz
  - ELiS B-E-100 (min. 5x2,5 mm<sup>2</sup>) (Overcurrent B16)
  - ELiS B-E-150 (min. 5x4,0 mm<sup>2</sup>) (Overcurrent B20)
  - ELiS B-E-200 (min. 5x4,0 mm<sup>2</sup>) (Overcurrent B25)
- ❷ T-box (LIYCY-P 2x2x0,5 mm<sup>2</sup>)
- ❸ Door contact DCe/DCm (door closed – contacts opened; door opened – contacts closed) (OMY 2x0,5 mm<sup>2</sup>)

#### ATTENTION:

Switch 4 on SW3 to the position “E” and then restart the system switching it off for 5 seconds. Each time the device is switched off the heaters are being cooled for next 30 seconds.

**NOTE :** In last DRV in line, dipswitch SW2 has to be switched to the right – T120.

#### 4.3.5. CONTROL SYSTEM – MASTER-SLAVE COMMUNICATION



Electrical air curtain chaining provides control from 1 to 5 devices using one TS and DC.

Electrical air curtain chaining might be done by cable OMY 3x0,5mm<sup>2</sup> using connectors CURTAIN IN; CURTAIN OUT

**Connecting units among themselves ensure transfer of controlling signals. Whatever each curtain need to be supplied directly.**

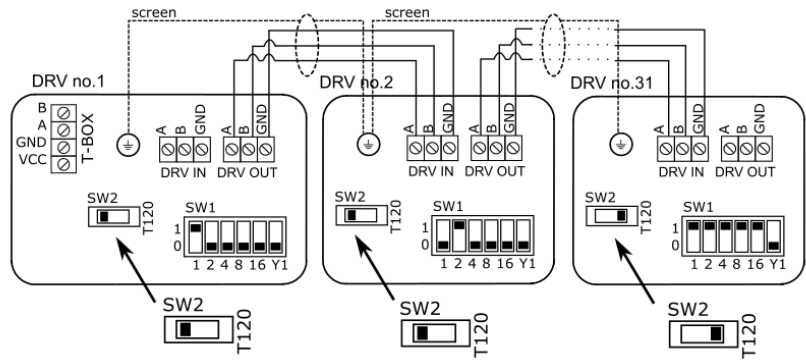
**Switch 2 on SW3 set In position:**

- For MASTER curtain
- For SLAVE curtain

In case to connect several devices to one T-box and independent ( local ) work of curtains with door switches use DRV IN ; DRV OUT connectors.



4.3.6. CONTROL SYSTEM- DRV CHAINING



It is possible to connect up to 31 modules DRV and control them with one T-box controller  
**NOTE:** In last DRV in line, dipswitch SW2 has to be switched to the right – T120. The maximum length of the connecting cable 50 m (LIYCY-P 2x2x0,5 mm<sup>2</sup>).

4.3.7. CONTROL SYSTEM – BMS CONNECTION

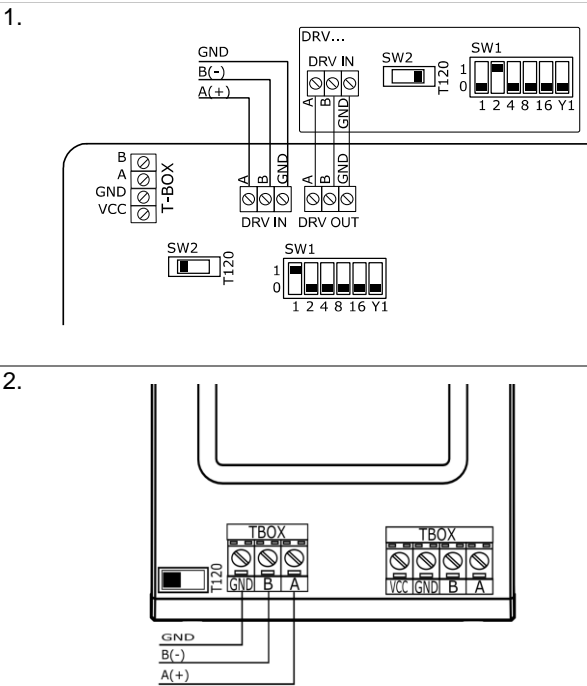
DRV driver has a possibility to be connected to integrated Building Management System (BMS). Connection can be done in two ways:

1. To DRV pcb board (in case of work without T-box)
2. To T-box controller (LIYCY-P 2x2x0,5 mm<sup>2</sup>)

Name	Description
Physical layer	RS485
Protocol	MODBUS-RTU
Baud rate	38400 [bps]
Parity	Even
Data bits	8
STOP bits	1

























Name	Description
Physical layer	RS485
Protocol	MODBUS-RTU
Baud rate	9600-230400 [bps]
Parity	Even
Data bits	8
STOP bits	1

**ATTENTION:** In last DRV in line, dipswitch SW2 has to be switched to the right – T120



#### 4.3.8. CONTROL SYSTEM – SETTING BMS ADDRESS

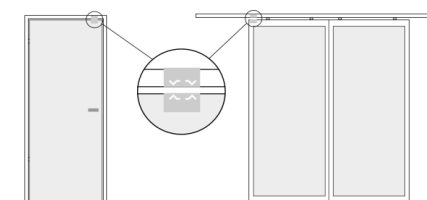
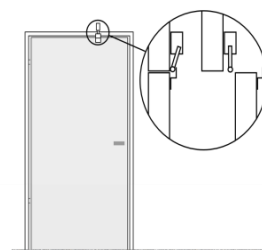
When connecting DRV modules to the T-box controller or BMS, you have to binary set addresses on each (each DRV must have individual address) DRV module by DIP-switch SW1. To address modules, check if the power supply is turned off, then set the addresses as shown in the table, then turn on the power supply.

DRV						
1						
2						
3						
...						
31						
	1	2	3	4	5	6
	1	2	4	8	16	Y1

#### 5. DOOR CONTACT INSTALLATION

Sample of door contact installation.

**DCm** – In case of installation in way which is show on drawing below, connectors 21 and 22 need to be used.



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## 6. GUIDELINES FOR CONNECTION WITH POWER SUPPLY

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- Before connecting the power supply check the correctness of controllers connection. These connections should be executed in accordance with their technical documentation.
- Before connecting the power supply check whether the mains voltage is in accordance with the voltage on the device data shield.
- Starting the device without connecting the ground conductor is forbidden.

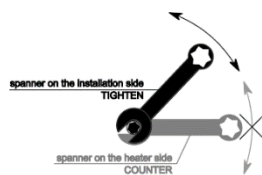
- 
- Controleer voordat u de stroomvoorziening aansluit of de regelingen correct zijn aangesloten. Deze aansluitingen moeten worden gemaakt in overeenstemming met de technische documentatie.
  - Controleer voordat u de stroomvoorziening aansluit of de spanning van de netvoeding overeenkomt met de werkspanning op het typeplaatje op de unit.
  - Het is niet toegestaan om de unit op te starten zonder dat de aarding aangesloten is.

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## 7. GUIDELINES FOR CONNECTION WITH PIPELINE

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- The connection should be executed in a way which does not induce stresses. It is recommended to use flexible pipes to deliver heating agent to the exchanger.
- It is recommended to install vent valves at the highest point of the system.
- The system should be executed so that, in the case of a failure, it is possible to disassemble the device. For this purpose it is best to use shut-off valves just by the device.
- The system with the heating medium must be protected against an increase of the heating medium pressure above the permissible value (1.6 MPa).
- While screwing exchanger to pipeline - connecting stubs has to be hold by wrench.



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## 8. OPERATION

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- The device is designed for operation inside buildings, at temperatures above 0°C. In low temperatures (below 0°C) there is a danger of freezing of the medium.  
**The manufacturer bears no responsibility for damage of the heat exchanger resulting from freezing of the medium in the exchanger.** It is forbidden to place any objects on the heater or to hang any objects on the connecting stubs.
- The device must be inspected periodically. In the case of incorrect operation of the device it should be switched off immediately.
- It is forbidden to use a damaged device. The manufacturer bears no responsibility for damage resulting from the use of a damaged device.
- If it is necessary to clean the exchanger, be careful not to damage the aluminium lamellas.
- For the time of performing inspection or cleaning the device, the electrical power supply should be disconnected.
- In case water is drained from the device for a longer period of time, the exchanger tubes should be emptied with compressed air

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## 9. CLEANING AND CONSERVATION

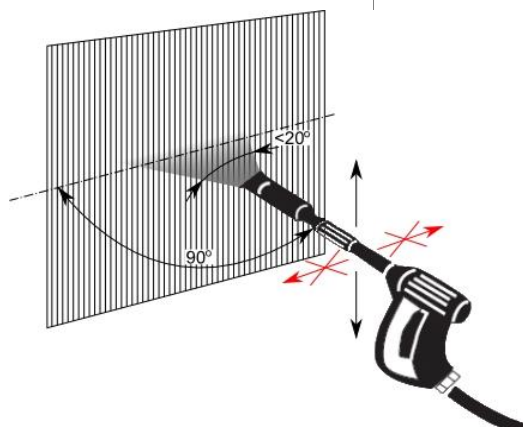
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Periodically check (min. twice a year) state of contamination of the heat exchanger (ELiS B-W), electric heaters (ELiS B-E ). Contamination of the air inlet causes a decrease of heating capacity of the unit and the adverse impact on fan operation (causes waving). Excessive dirt on the heaters can cause permanent loss of the rated parameters.

If cleaning of heat exchanger is needed use listed guidelines.

- Disconnect power supply of unit.
- Dismount inlet grill guard
- It is recommended to use pressured air to clean the exchanger, air stream need to be directed perpendicular to exchanger and moved along lamellas.

It is prohibited to use water or sharp items to clean exchanger



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## 10. OUTLET GRILL ADJUSTING

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Outlet lamellas/blades are adjustable within  $\pm 10^\circ$  range. By manually setting the angle of the airflow stream, you can adjust an air barrier to the conditions around the door opening.

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## 11. SERVICE

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**Please contact your dealer in order to get acquainted with the warranty terms and its limitation.**

In the case of any irregularities in the device operation, please contact the manufacturer's service department.

**The manufacturer bears no responsibility for operating the device in a manner inconsistent with its purpose, by persons not authorised for this, and for damage resulting from this!**

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## 12. CONFORMITY WITH WEEE DIRECTIVE 2012/19/UE

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Running a business without harming the environment and observing the rules of proper handling of waste electrical and electronic equipment is a priority for Flexiheat.

The symbol of the crossed out wheeled bin placed on the equipment, packaging or documents attached means that the product must not be disposed of with other wastes. It is the responsibility of the user to hand the used equipment to a designated collection point for proper processing. The symbol means at the same time that the equipment was placed on the market after August 13, 2005.

**For information on the collection system of waste electrical and electronic equipment, please contact the distributor.**

### **R E M E M B E R :**

Do not dispose of used equipment together with other waste! There are financial penalties for this. Proper handling of used equipment prevents potential negative consequences for the environment and human health. At the same time, we save the Earth's natural resources, reusing resources obtained from the processing of equipment.



## ***Declaration Of Conformity***

*Flexiheat hereby confirms that air curtain units*

- ELIS B: W-100 (2R); W-150 (2R); W-200 (2R); E-100; E-150; E-200; N-100; N-150; N-200;

*were produced in accordance to the following Europeans Directives*

1. **2014/30/UE** – *Electromagnetic Compatibility (EMC)*
2. **2006/42/WE** – *Machinery*
3. **2014/35/UE** – *Low Voltage Electrical Equipment (LVD)*
4. **2009/125/WE** – *Energy-related products (ErP 2015)*

*and harmonized norms ,with above directives*

**PN-EN ISO 12100:2012**     *Safety Of Machinery - General Principles For Design - Risk Assessment And Risk Reduction /*

**PN-EN 60204-1:2010**     *Safety of machinery – Electrical equipment of machines – Part 1: General requirements*

**PN-EN 60034-1:2011**     *Rotating electrical  
machines — Part 1: Rating and performance*

**PN-EN 61000-6-2:2008**     *Electromagnetic compatibility (EMC). Generic standards. Immunity for industrial  
environments*

Gdynia, 12.04.2018  
Product Manager

*Dunajski Maciej*







