



**ELIS**

**TECHNICAL DOCUMENTATION  
OPERATION MANUAL**

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Thank you for purchasing the ELiS curtain. This operation manual has been issued by the FLOWAIR GŁOGOWSKI I BRZEZIŃSKI SP.J. company. The manufacturer reserves the right to make revisions and changes in the operation manual at any time and without notice, and also to make changes in the device without influencing its operation

This manual is an integral part of the device and it must be delivered to the user together with the device. In order to ensure correct operation of the equipment, get thoroughly acquainted with this manual and keep it for the future.

The devices may only be installed and operated in conditions for which they have been designed. Any other application, inconsistent with this manual, may lead to the occurrence of accidents with dangerous consequences. Every effort must be made in order to eliminate the possibility of improper use of the device. Access of unauthorized persons to the device should be restricted, and the operating personnel should be trained. The manufacturer bears no responsibility for damage resulting from incorrect installation, improper operating, or not getting acquainted with the guidelines of the manufacturer manual.

### RECOMMENDATIONS AND REQUIRED SAFETY MEASURES

- Get acquainted with this operation manual before performing any works at the device.
- The device may only be installed by qualified personnel with adequate authorisations and skills.
- In the building where ventilation causes underpressure, air cutrain may have limited efficiency
- When performing works at the device, remember about your own safety.
- During installation, electrical connection, connection to the heating medium, start-up, repairs and maintenance of air curtains, observe the commonly recognized safety standards and regulations.

## 1. GENERAL INFORMATION

Air Curtain ELiS A is dedicated to install over the door opening, it provides dynamic barrier cutting out external environment from indoor.

ELIS types:

**ELIS A-W-100** – curtain with water heat exchanger max. range 3 m;

**ELIS A-N-100** – curtain without heat exchanger (ambient); max. range 3 m;

**ELIS A-E-100** – curtain with electrical heat exchanger max. range 3 m;

**ELIS A-W-150** – curtain with water heat exchanger max. range 3 m;

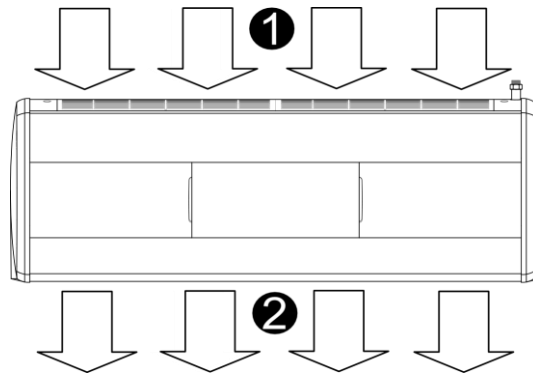
**ELIS A-N-150** – curtain without heat exchanger (ambient); max. range 3 m;

**ELIS A-E-150** – curtain with electrical heat exchanger max. range 3 m;

**ELIS A-W-200** – curtain with water heat exchanger max. range 3 m;

**ELIS A-N-200** – curtain without heat exchanger (ambient); max. range 3 m;

**ELIS A-E-200** – curtain with electrical heat exchanger max. range 3 m;



❶ air inlet; ❷ curtain air outlet;

## 2. TECHNICAL DATA

	A-W-100	A-N-100	A-E-100	A-W-150	A-N-150	A-E-150	A-W-200	A-N-200	A-E-200
Power supply [V/Hz]	230 / 50	3x400 / 50	230 / 50	3x400 / 50	230 / 50	3x400 / 50	230 / 50	3x400 / 50	
Power consumption [kW]	0,17	7	0,25	10,7	0,34	15			
Current consumption [A]	0,72	10	1,1	15,5	1,45	21,5			
IP / Insulation class	21 / F								
Connecting stub ["]	½	-	½	-	½	-			
Max. water temperature [°C]	95	-	95	-	95	-			
Max. water pressure [MPa]	-	1,6	-	1,6	-	1,6	-	1,6	-
Temperature increase (ΔT) [°C]*	34	-	25	25	-	21	24	-	18
Weight [kg]	20,9	18,4	21,4	28,3	25,3	28,5	37,1	33,6	39
Weight of unit filled with water [kg]	22,3	-	-	29,6	-	-	38,8	-	-

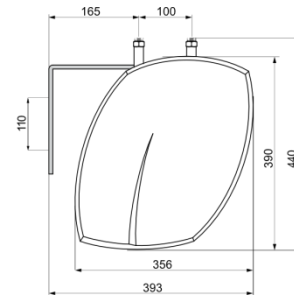
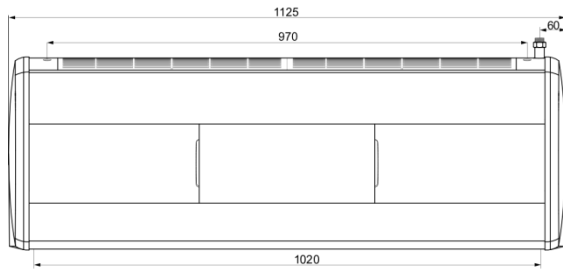
\* T2-W temperature increase at inlet air 10C and heating agent temperature 90/70C / T2-E temperature increase at inlet air 10°C

### 2.1. CONSTRUCTION

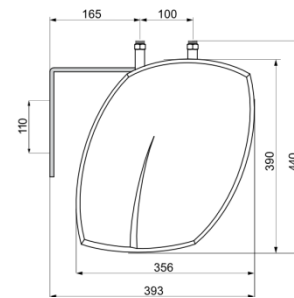
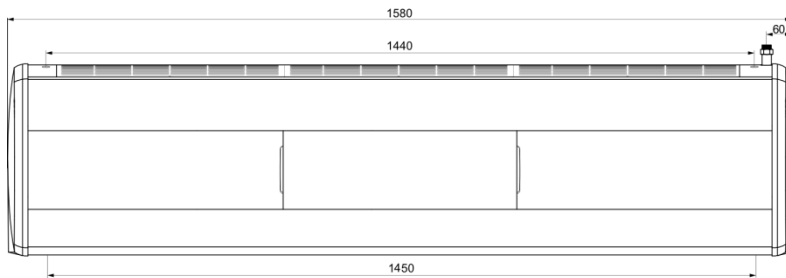
- **Main construction** – aluminium;
- **Fan** – dual inlet radial fan, blades are made of polypropylene, IP20,
- **Heat exchanger** – copper-aluminium, connecting stub ½"; electrical heaters PTC;
- **Casing** – sheet steel RAL 9006 or 9010,
  - side panels are made of ABS, 9006 or 9010
  - inlet grille PA6GF30, RAL 9007 or 9003
  - outlet of air curtain PA6GF30, RAL 7016 or 9003
- **Brackets** – steel, RAL 9006 or 9010

## 2.2. DIMENSIONS

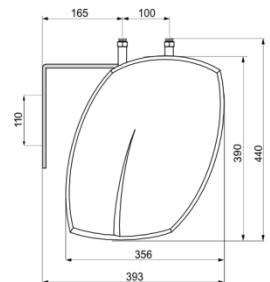
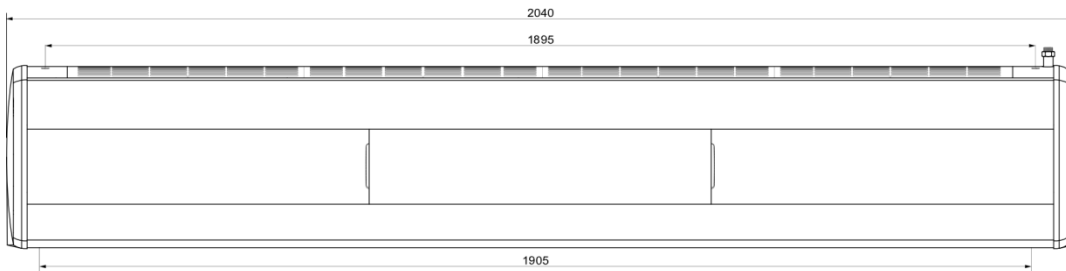
ELIS: A-W-100; A-N-100; A-E-100



ELIS: A-W-150; A-N-150; A-E-150



ELIS: A-W-200; A-N-200; A-E-200



## 2.3. ACOUSTIC PRESSURE LEVEL

step	A-W-100; A-N-100; A-E-100	A-W-150; A-N-150; A-E-150	A-W-200; A-N-200; A-E-200
3	52dB(A)	56dB(A)	57dB(A)
2	46dB(A)	49dB(A)	51dB(A)
1	42dB(A)	45dB(A)	47dB(A)

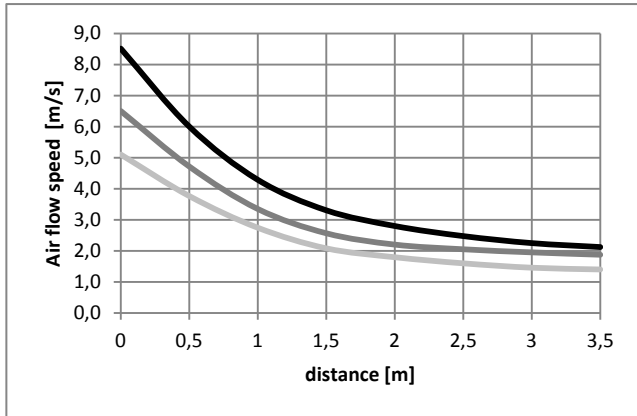
Acoustic pressure level measured in the room of average sound absorption, capacity 500m<sup>3</sup>, at the distance of 3 m apart of the unit.

## 2.4. AIR VOLUME

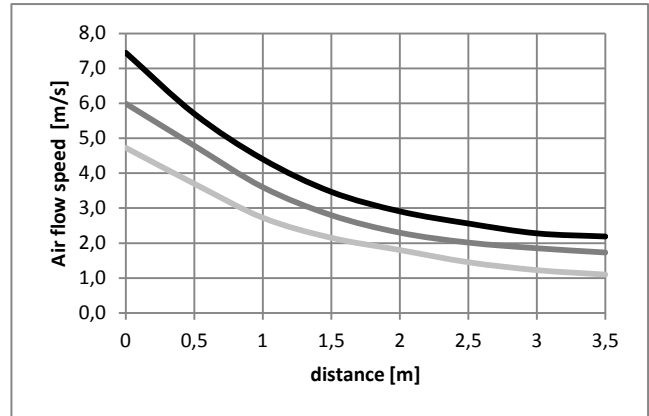
step	A-W-100; A-N-100; A-E-100	A-W-150; A-N-150; A-E-150	A-W-200; A-N-200; A-E-200
3	1500m <sup>3</sup> /h	2500 m <sup>3</sup> /h	3500 m <sup>3</sup> /h
2	1150m <sup>3</sup> /h	2100 m <sup>3</sup> /h	2900 m <sup>3</sup> /h
1	800m <sup>3</sup> /h	1650 m <sup>3</sup> /h	2400 m <sup>3</sup> /h

## 2.5. NOMOGRAM OF AIR FLOW SPEED

ELIS A-W-100; A-N-100; A-E-100



ELIS A-W-150; A-N-150; A-E-150; A-W-200; A-N-200; A-E-200



— step 1  
— step 2  
— step 3

## 3. HEAT OUTPUT DATA

### 3.1. ELIS A-W-100

Tp1	V	PT	Qw	$\Delta p_w$	Tp2	PT	Qw	$\Delta p_w$	Tp2
$^{\circ}\text{C}$	$\text{m}^3/\text{h}$	Tw1 / Tw2 = 90/70 $^{\circ}\text{C}$				Tw1 / Tw2 = 80/60 $^{\circ}\text{C}$			
0	850/1150/1500	14,4/17,7/21,0	637/781/927	4,4/6,4/8,8	47/43/39	12,4/15,2/18,0	545/668/793	3,4/5,0/6,8	40/37/33
5		13,3/16,4/19,4	588/721/857	3,8/5,5/7,6	49/45/41	11,3/13,9/16,5	497/610/724	2,9/4,2/5,7	43/39/36
10		12,3/15,0/17,9	541/663/788	3,3/4,8/6,5	51/47/44	10,3/12,6/15,0	451/553/657	2,4/3,5/4,8	45/41/39
15		11,2/13,7/16,3	494/606/721	2,8/4,0/5,5	53/50/47	9,2/11,3/13,5	405/497/591	2,0/2,9/4,0	47/44/41
20		10,2/12,5/14,8	448/550/654	2,3/3,4/4,6	55/52/49	8,2/10,1/12,0	360/442/526	1,6/2,4/3,2	49/46/44
		Tw1 / Tw2 = 70/50 $^{\circ}\text{C}$				Tw1 / Tw2 = 70/40 $^{\circ}\text{C}$			
0	850/1150/1500	10,4/12,7/15,1	453/555/659	2,5/3,7/5,0	34/31/28	8,6/10,5/12,5	249/306/363	0,9/1,3/1,7	28/25/23
5		9,3/11,4/13,5	407/498/592	2,1/3,0/4,1	36/33/30	7,5/9,2/10,9	218/268/319	0,7/1,0/1,4	30/28/26
10		8,3/10,1/12,0	361/443/526	1,7/2,4/3,3	38/35/33	6,4/7,9/9,4	186/230/274	0,5/0,8/1,1	31/30/28
15		7,2/8,9/10,5	316/388/461	1,3/1,9/2,6	40/37/35	5,2/6,6/7,9	153/191/229	0,4/0,6/0,8	33/32/30
20		6,2/7,6/9,1	271/334/397	1,0/1,5/2,0	42/40/38	3,9/5,1/6,3	114/150/182	0,2/0,4/0,5	34/33/32
		Tw1 / Tw2 = 60/40 $^{\circ}\text{C}$				Tw1 / Tw2 = 50/40 $^{\circ}\text{C}$			
0	850/1150/1500	8,3/10,1/12,0	360/442/525	1,8/2,5/3,4	27/24/22	8,0/9,8/11,6	693/850/1010	5,8/8,3/11,4	26/24/21
5		7,2/8,9/10,5	315/386/459	1,4/2,0/2,7	29/27/25	6,9/8,5/10,1	603/740/880	4,5/6,5/8,9	28/26/24
10		6,2/7,6/9,0	269/331/394	1,0/1,5/2,0	31/29/27	5,9/7,3/8,6	515/633/752	3,4/4,9/6,7	30/28/27
15		5,1/6,3/7,5	224/276/329	0,8/1,1/1,5	33/31/30	4,9/6,1/7,2	428/526/626	2,4/3,5/4,8	32/30/29
20		4,1/5,1/6,1	177/220/264	0,5/0,7/1,0	34/33/32	3,9/4,9/5,8	343/422/502	1,6/2,4/3,2	34/32/31

V – air flow  
PT – heating capacity  
Tp1 – inlet air temperature  
Tp2 – outlet air temperature

Tw1 – inlet water temperature  
Tw2 – outlet water temperature  
Qw – heating water stream  
 $\Delta p_w$  – water pressure

### 3.2. ELIS A-W-150

Tp1	V	PT	Qw	$\Delta p_w$	Tp2	PT	Qw	$\Delta p_w$	Tp2
		kW	l/h	kPa	°C	kW	l/h	kPa	°C
°C	m <sup>3</sup> /h	Tw1 / Tw2 = 90/70°C				Tw1 / Tw2 = 80/60°C			
0	1650/2100/2500	17,9/20,7/22,9	791/914/1011	5,3/6,9/8,3	32/29/27	15,3/17,7/19,6	672/777/861	4/5,6/6,3	27/25/23
5		16,8/19,4/21,4	740/855/946	4,7/6,1/7,4	35/32/30	14,1/16,3/18,1	621/718/795	3,5/4,5/5,5	30/28/26
10		15,6/18/20	688/795/881	4,1/5,3/6,5	38/35/34	13/15/16,6	569/658/728	3/3,9/4,7	33/31/30
15		14,4/16,7/18,5	636/735/814	3,5/4,6/5,6	41/38/37	11,8/13,6/15	517/597/661	2,5/3,2/3,9	36/34/33
20		13,2/15,3/17	584/674/748	3/3,9/4,8	43/41/40	10,6/12,2/13,5	464/532/593	2/2,7/3,2	39/37/36
		Tw1 / Tw2 = 70/50°C				Tw1 / Tw2 = 70/40°C			
0	1650/2100/2500	12,7/14,6/16,2	554/640/709	2,9/3,8/4,6	23/21/19	10,1/11,7/12,9	294/340/377	0,9/1,2/1,5	18/16/15
5		11,5/13,3/14,7	502/580/643	2,4/3,2/3,8	26/24/22	8,8/10/11,4	257/299/331	0,7/1/1,2	21/19/18
10		10,3/11,9/13,2	450/520/576	2/2,6/3,1	28/27/26	7,6/8,8/9,8	220/256/284	0,6/0,7/0,9	23/22/21
15		9,1/10,5/11,6	397/459/508	1,6/2,1/2,5	31/30/29	6,2/7,2/8,1	179/211/235	0,4/0,5/0,6	26/25/24
20		7,84/9,1/10	343/397/439	1,2/1,6/1,9	34/33/32	2,9/5,5/6,2	83/160/181	0,1/0,3/0,4	25/28/27
		Tw1 / Tw2 = 60/40°C				Tw1 / Tw2 = 50/40°C			
0	1650/2100/2500	10/11,5/12,8	434/502/556	1,9/2,5/3	18/16/15	10/11/12,6	857/992/1099	6,8/8,9/10,7	18/16/15
5		9/10,1/11,2	381/441/489	1,5/2/2,4	21/19/18	8,7/10/11,1	754/872/967	5,4/7/8,5	21/19/18
10		7,5/8,7/9,7	328/380/421	1,2/1,5/1,8	23/22/21	7,5/8,6/9,6	649/751/832	4/5,3/6,4	23/22/21
15		6,3/7,3/8	273/316/351	0,8/1,1/1,3	26/25/24	6,3/7,2/8	543/629/696	3/3,9/4,7	26/25/24
20		4,9/5,7/6,4	214/250/279	0,6/0,7/0,9	29/28/27	5/5,8/6,4	436/504/559	2/2,6/3,1	29/28/28

### 3.1. ELIS A-W-200

Tp1	V	PT	Qw	$\Delta p_w$	Tp2	PT	Qw	$\Delta p_w$	Tp2
		kW	l/h	kPa	°C	kW	l/h	kPa	°C
°C	m <sup>3</sup> /h	Tw1 / Tw2 = 90/70°C				Tw1 / Tw2 = 80/60°C			
0	2400/2900/3500	25,7/29/32,2	1135/1271/1419	12/14,5/18	32/29/27	22/24,7/27,6	970/1086/1212	9/11,1/13,6	27/25/23
5		24/27/30	1063/1191/1329	10,4/13/16	35/32/30	20,4/22,9/25,5	898/1006/1122	7,8/9,7/11,8	30/28/27
10		22,5/25,1/28	992/1110/1240	9,2/11,3/14	38/36/34	18,8/21/23,5	825/924/1031	6,7/8,3/10,1	33/31/30
15		20,8/23,3/26	918/1027/1147	7,9/9,8/12	40/38/37	17,1/19,1/21,4	751/841/939	5,7/7/8,5	36/34/33
20		19/21,4/24	844/945/1054	6,8/8,4/10,3	43/42/40	15,4/17,3/19,2	677/758/845	4,7/5,8/7	39/37/36
		Tw1 / Tw2 = 70/50°C				Tw1 / Tw2 = 70/40°C			
0	2400/2900/3500	18,4/20,6/23	805/902/1007	6,6/8,1/10	23/21/20	15,2/17/19,5	443/496/554	2,3/2,8/3,4	19/17/16
5		16,8/18,8/21	733/821/916	5,6/6,9/8,4	26/24/23	13,5/15,1/16,9	394/441/492	1,8/2,3/2,8	22/20/19
10		15,1/16,9/18,9	660/739/824	4,6/5,7/6,9	29/27/26	11,8/13,2/14,7	343/384/429	1,4/1,8/2,2	24/23/22
15		13,4/15/16,7	586/655/731	3,7/4,6/5,6	31/30/29	10/11,2/12,5	291/326/364	1,1/1,3/1,6	27/26/25
20		11,7/13/14,6	510/571/637	2,9/3,5/4,3	34/33/32	8,1/9,1/10,2	237/266/297	0,7/0,9/1,1	30/29/28
		Tw1 / Tw2 = 60/40°C				Tw1 / Tw2 = 50/40°C			
0	2400/2900/3500	14,7/16,5/18,4	641/717/801	4,5/5,5/6,7	18/17/16	14,2/16/17,8	1237/1386/1548	15,2/18,8/23	18/16/15
5		13/14,6/16,3	568/636/709	3,6/4,5/5,4	21/20/19	12,5/14/15,7	1092/1223/1366	12,1/14,9/18,3	20/19/18
10		11,3/12,7/14,1	493/552/616	2,8/3,5/4,2	24/23/22	10,9/12,2/13,6	945/1059/1182	9,3/11,5/14	23/22/21
15		9,6/11/12	418/468/522	2/2,6/3,1	27/26/25	9,2/10,3/11,5	797/892/996	6,8/8,4/10,3	26/25/24
20		7,8/8,7/9,8	340/381/425	1,4/1,8/2,2	30/29/28	7,4/8,3/9,3	646/724/808	4,7/5,7/7	29/28/27

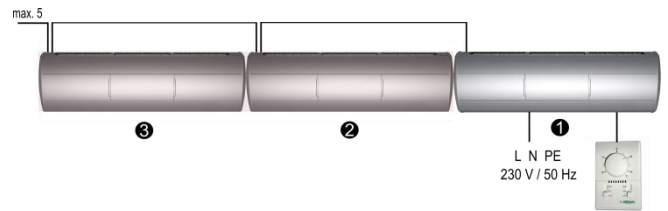
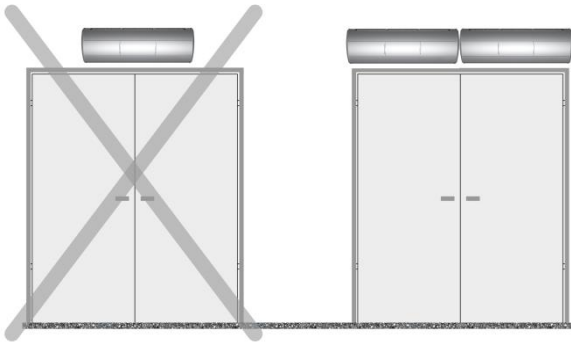
V – air flow  
PT – heating capacity  
Tp1 – inlet air temperature  
Tp2 – outlet air temperature

Tw1 – inlet water temperature  
Tw2 – outlet water temperature  
Qw – heating water stream  
 $\Delta p_w$  – water pressure

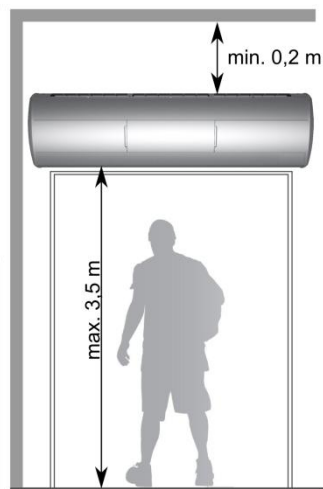
## 4. INSTALLATION

Width of doorway must be equal or lower than width of air curtain outlet (or outlets if air curtains are installed side by side).

While mounting ELiS A side by side it is important to start from right side (like is shown below), all electrical connection should be done before installing following curtain.



### 4.1. RECOMMENDATION OF MONTAGE DISTANCES



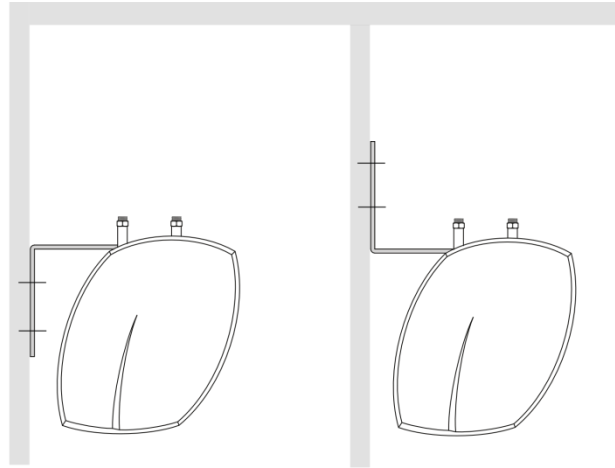
### 4.2. MOUNTING BY RODS UNDER THE CEILING

While mounting curtains under the ceiling, 4 rods M8 should be screwed minimum 20 mm deep.



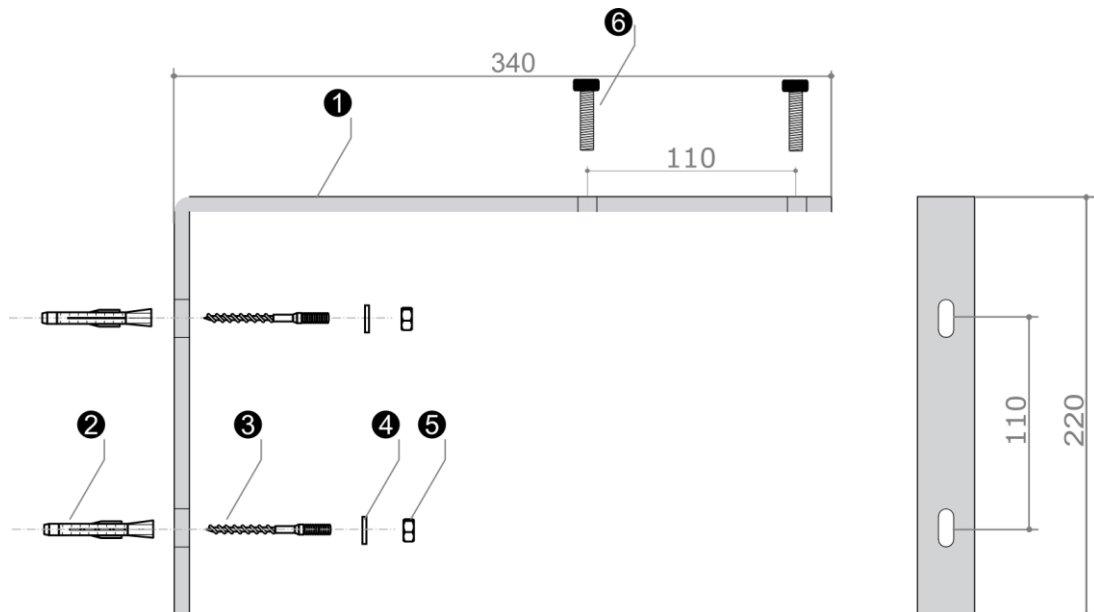
### 4.3. MOUNTING ON THE WALLS BY THE BRACKETS

ELIS: A-W-100; A-N-100; A-E-100; A-W-150; A-N-150; A-E-150; A-W-200; A-N-200; A-E-200;



### 4.4. BRACKETS

#### Brackets ELIS A



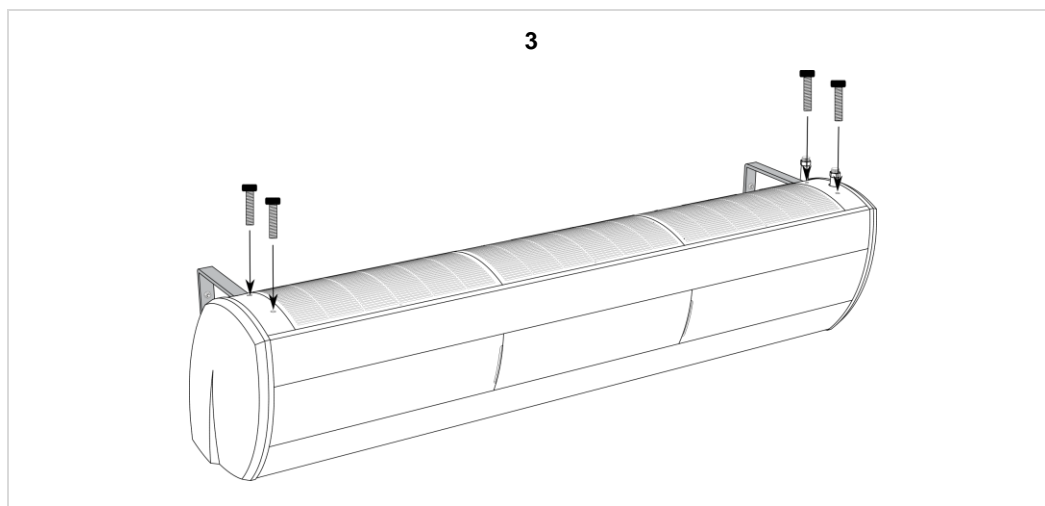
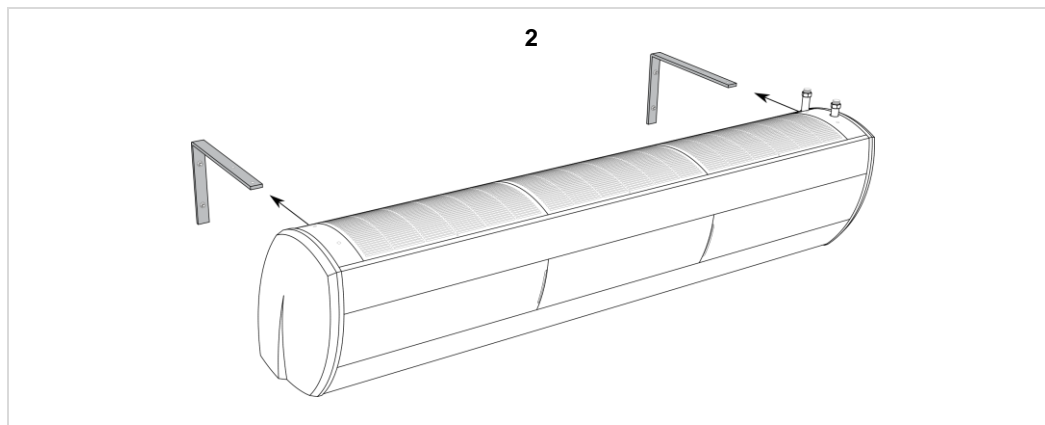
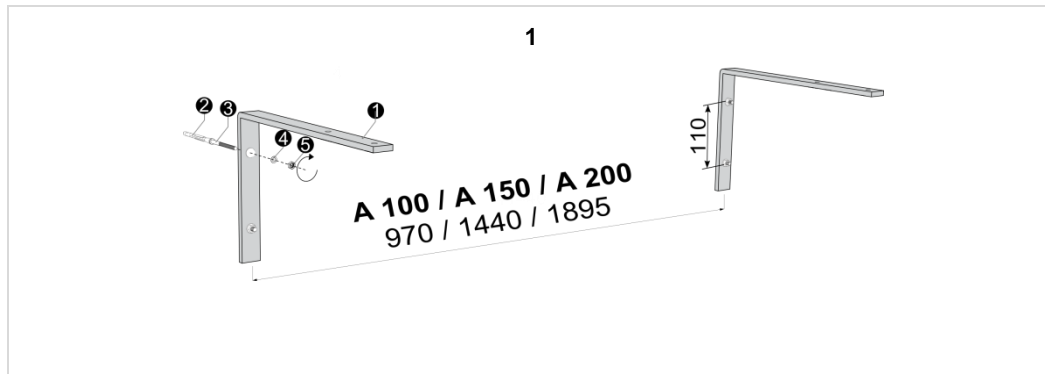
- ❶ 2 x bracket ELIS A
- ❷ 4 x plug (Ø10)\*
- ❸ 4 x double threaded screw (M8)\*
- ❹ 4 x washer (M8)\*
- ❺ 4 x nut (M8)\*
- ❻ 4 x allen screw (M8)

\* not included



## 4.5. STAGES OF INSTALATION

Curtain Type	Distance between brackets [mm]
ELiS A-W-100; ELiS A-E-100; ELiS-A-N-100;	970
ELiS A-W-150; ELiS A-E-150; ELiS-A-N-150;	1440
ELiS A-W-200; ELiS A-E-200; ELiS-A-N-200;	1895



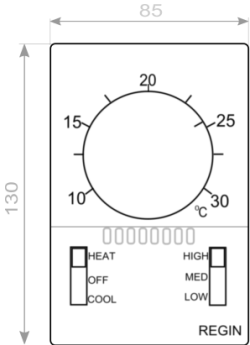
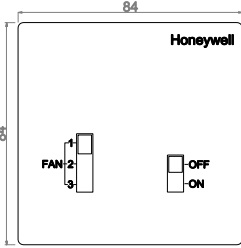
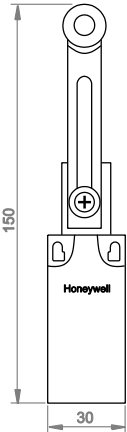
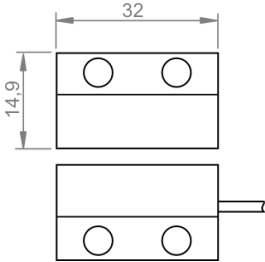
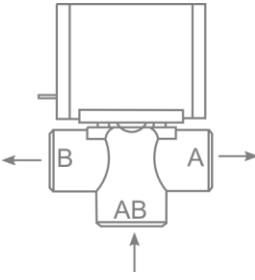
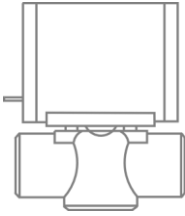
## 5. CONTROL SYSTEMS

### L – TYPE CONTROL:

- Continuous or Intermittent mode of operating (door contact, thermostat, switch)
- Connecting curtains – controlling up to 5 units with one controller;
- Connecting to curtain room thermostat\*, door contact\*, valves with actuator\*, speed controller\*;

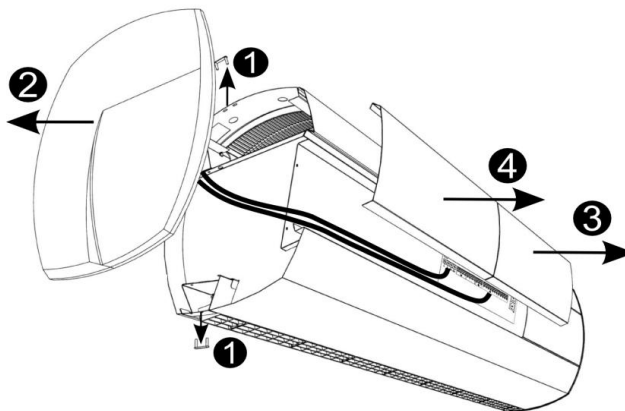
\*optional equipment

### 5.1. CONTROL ELEMENTS

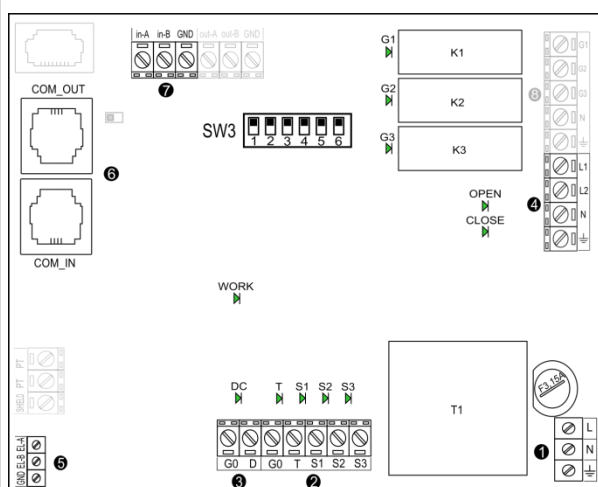
	<p><b>TS - 3-speed fan switch with room thermostat</b></p> <p>Temperature range: +10 ... +30°C            Operating temperature range: 0 ... +40°C            IP/Insulation class: IP30            Max current: inductive 2A, resistive 4A            Power supply: 230V/50Hz</p>		<p><b>TA - 3-speed fan switch</b></p> <p>Operating temperature range: 0 ... +40°C            IP/Insulation class: IP30            Max current: inductive 4A, resistive 6A</p>
	<p><b>DCm – mechanical door contact</b></p> <p>Operating temperature range: -10 - +80 °C            IP/Insulation class: IP 65            Connectors: 1xNC i 1xNO            Max current: resistive 10A – inductive 3A            Max Power load: 300Vac or 250Vdc</p>		<p><b>DCe – magnetic door contact</b></p> <p>Operating temperature range: -5 - +60 °C            IP/Insulation class: IP 64            Connectors: NC            Max current: inductive/resistive 0,5A            Max power Load: 175Vdc            Length of cabel: 2m            Max operating contactors distance: 8mm</p>
	<p><b>SRQ3d 1/2" – three-way 1/2 valve with actuator</b></p> <p>IP/Insulation class: IP20            Power supply: 200 – 240V 50/60Hz            Max water temperature: +93°C            Max water pressure : 2,1MPa            Kvs: 3,4 m<sup>3</sup>/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 – 240V 50/60Hz            Max water temperature: +93°C            Max water pressure : 2,1MPa            Kvs: 3,0 m<sup>3</sup>/h            Opening time: 18 s</p>

## 5.2 CONNECTING GUIDE

While connecting ELiS A dismount left side panel and left front panel, cables protract by glands.



## 5.2. DRV CONTROL SYSTEM



- 1 Power supply 230V/50Hz;
- 2 Connectors for thermostat and fan step switch;
- 3 Door contact connector;
- 4 Valve actuator connector ELiS-...-W; heaters contactor connector ELiS-...-E;
- 5 MASTER-SLAVE connectors;
- 6 T JACK slot for MASTER-SLAVE curtain connection;
- 7 BMS system connection;
- 8 Fans 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

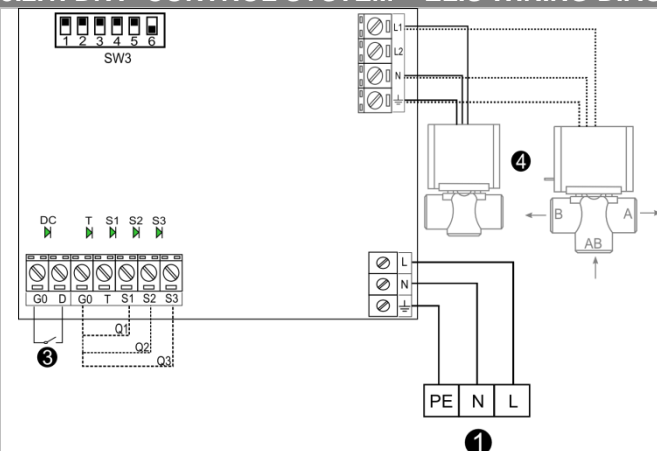
### SW3 – operating mode switch (default settings)

1	<input type="checkbox"/>	Device function selection	<input type="checkbox"/>	BMS Address adjustment
2	<input type="checkbox"/>	MASTER mode operating	<input type="checkbox"/>	SLAVE mode operating
3	<input type="checkbox"/>	Curtain	<input type="checkbox"/>	Heater (DUO)
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

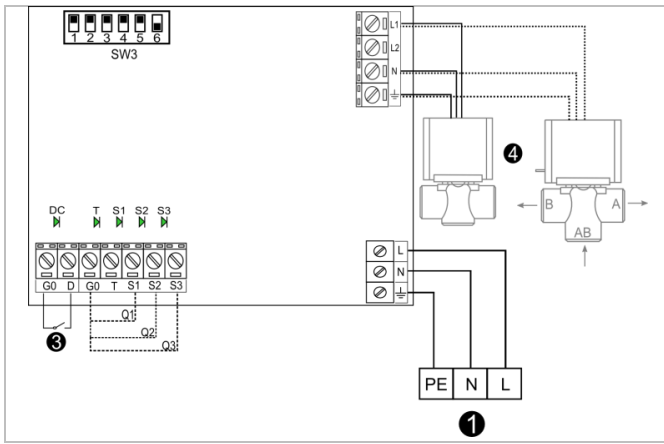
\*\*K2 programme – Signal from door switch is main signal for the device to run and thermostat is in charge of valve/heaters

### 5.2.1. DRV CONTROL SYSTEM – ELIS WIRING DIAGRAMS



- 1 Power supply 230V/50Hz (OMY 3x1mm<sup>2</sup>)
- 2 Air curtain step switch with thermostat TS (OMY 5x0,5mm<sup>2</sup>)
- 3 Door contact DCe/DCm (door closed – contacts opened; door opened – contacts closed)
- 4 Valve with actuator SRSQ3d (OMY 3x0,5mm<sup>2</sup>) or SRQ (OMY 3x0,5mm<sup>2</sup>)

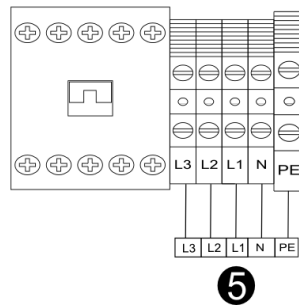
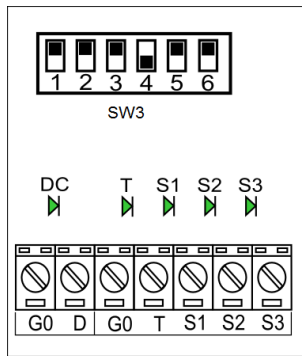
A – Exchanger water supply  
 AB – Valve water supply  
 B – Return pipe water supply



- ❶ Power supply 230V/50Hz (OMY 3x1mm<sup>2</sup>)
- ❷ Door contact DCe/DCm (door closed – contacts opened; door opened – contact closed)
- ❸ Valve with actuator SRSQ3d (OMY 3x0,5mm<sup>2</sup>) or SRQ (OMY 3x0,5mm<sup>2</sup>)
- ❹ Q1, Q2, Q3 – first, second or third curtain fan speed selection (1mm<sup>2</sup> jumper must be made on chosen step)

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

### 5.2.2. DRV CONTROL SYSTEM – WIRING DIAGRAMS

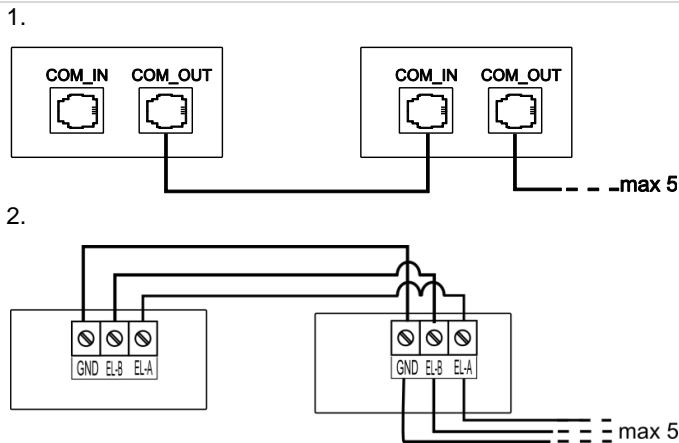


In order to connect the drivers to the curtains with electric heaters use the diagrams in section 5.2.1. (not considering single-phase power automation ❶). Three-phase power ❷ for electric curtains should be connected to the terminal block located on the left side of the device shown in the illustration

**NOTE:**

Switch 4 on SW3 to the position as shown in the picture (the other switches in accordance with the diagrams shown in section 5.2.1) 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 15 seconds.

### 5.2.3. DRV CONTROL SYSTEM – MASTER-SLAVE COMMUNICATION



Electrical air curtain chaining provides control from 1 to 5 devices using one driver.

Electrical air curtain chaining might be done in two ways:

1. With wire with modular straight plug 4-contact (RJ12);
2. With OMY 3x0,5mm<sup>2</sup> wire.

**Connecting units among themselves ensure transfer of controlling signals. Whatever each curtain need to be supplied directly with 230V.**

**Switch 4 on SW3 set in position:**

- for MASTER curtain
- for SLAVE curtain

### 5.2.4. DRV CONTROL SYSTEM – BMS CONNECTION

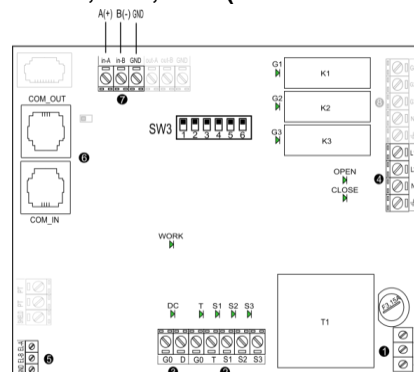
DRV driver has a possibility to be connected to integrated Building Management System (BMS).

Parameters:

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

Connection must be made using 3-poliges wire to connectors:







- **IN-A; IN-B; GND (SIGNAL GROUND)**

































## 5.2.5. DRV CONTROL SYSTEM – SETTING BMS ADDRESS

There is a possibility to set 32 addresses which are set binary on SW3 switch. In order to set address must be made the following steps:

- 1) Turn off the power supply for driver;
- 2) Set the SW3 switches in position:

SW3 Switch	1	2	3	4	5	6
						







- 3) Set the device address with SW3 switches:

1	2	3	4	5	6	
	B0	B1	B2	B3	B4	Address
						0
						1
						2
						3
						...
						32

 Switch down

 Switch up

- 4) Turn on the power supply – WORK LED continuous signalization means that driver saves the address (address is saved when WORK LED turns off);
- 5) Turn off power supply;
- 6) Set the first switch on SW3 switch in upper position (remaining switches set according to curtain version and work programs):

SW3 Switch	1	2	3	4	5	6
						

- 7) Turn on the power supply, system is ready to run.

## 5.2.6. DRV CONTROL SYSTEM – BMS REGISTERS

### Holding Register Data

Lp.	modbus register address	Name of parameter	Min	Max	Description
1	0x04	CurtainFanSpeedRef	0	3	Set value for curtain's fan 0 FAN_SPEED0 Fan is off 1 FAN_SPEED1 1st step of fan is on 2 FAN_SPEED2 2nd step of fan is on 3 FAN_SPEED3 3rd step of fan is on
2	0x05	CurtainHeatRef	0	1	Set value for thermostat 0 HEAT_OFF Curtain's thermostat is off 1 HEAT_ON Curtain's thermostat is on
3	0x08	ContactDoor	0	1	Set value for door contact 0 DOOR_CLOSE Door is closed 1 DOOR_OPEN Door is open

### Inputs Register Data

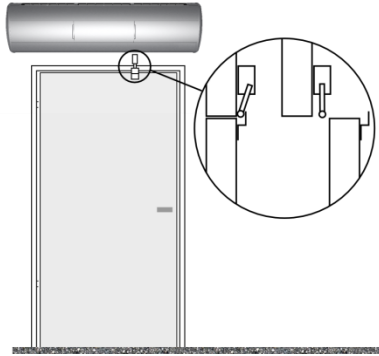
Lp.	modbus register address	Name of parameter	Min	Max	Description
1	0x04	FanSpeed	0	3	Current fan step 0 FAN_SPEED0 Fan is off 1 FAN_SPEED1 1st step of fan is on 2 FAN_SPEED2 2nd step of fan is on 3 FAN_SPEED3 3rd step of fan is on
2	0x05	ValveState	0	2	Current valve status 1 VALVE_CLOSE Valve closing 2 VALVE_OPEN Valve opening
3	0x08	ContactDoor	0	1	Set value for door contact 0 DOOR_CLOSE Door is closed 1 DOOR_OPEN Door is open

### 5.3. 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

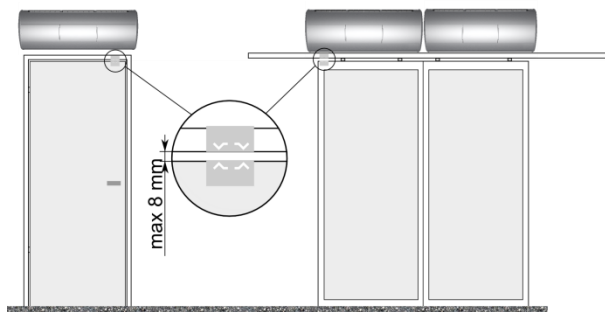
Hinged doors



**Dce** – In case of installation in way which is show on drawing below, cable yellow and green need to be used. Other cables must be isolated.

Hinged door

Sliding doors



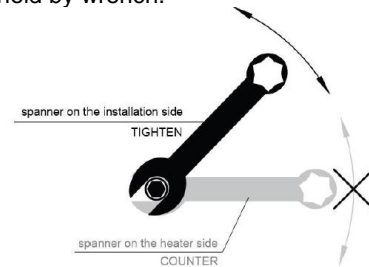
### 6. GUIDELINES FOR CONNECTION WITH POWER SUPPLY

- Before connecting the power supply check the correctness of connection of the fan motor and the controllers. 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.
- The electrical system supplying the fan motor should be additionally protected with a circuit breaker against the effects of a possible short-circuit in the system
- Starting the device without connecting the ground conductor is forbidden.

### 7. GUIDELINES FOR CONNECTION WITH PIPELINE



- The connection should be executed in a way which does not induce stresses.
- 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.



### 6. OPERATION

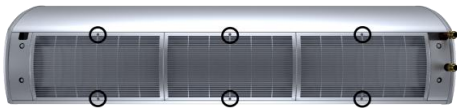
- The device is designed for operation inside buildings, at temperatures above 0°C. In low temperatures (below 0°C) there is a danger of freezing of the medium.
- The manufacturer bears no responsibility for damage of the heat exchanger resulting from freezing of the medium in the exchanger.** It is 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.

## 7. FILTERS REPLACEMENT

Elis curtains can be equipped with EU2 filters. Filters need to be replaced periodically. Filled filters can cause an air flow drop. Zbytnie zabrudzenie filtrów może powodować spadek wydajności wentylatora a tym samym zmniejszenie skuteczności wytwarzanej bariery powietrznej. Zabrania się montażu filtrów dla kurtyń z grzałkami elektrycznymi. W przypadku urządzenia z wymiennikiem wodnym montaż filtra EU2 skutkuje spadkiem zasięgu do 2,5 m.

Replacing of filters step by step:

1. Dismount inlet grill guard (unscrew the screws).



2. Dismount filters holders by unscrewing screws



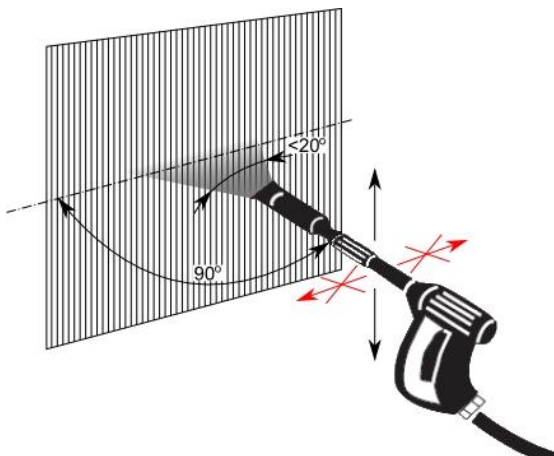
3. Install grill guard

## 8. CLEANING AND CONSERVATION

Periodically need to be checked exchanger condition. Exchanger filled with dirt causes a decrease in heat output and air flow drop.

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.



- Other installed equipment do not need be cleaned.

## 9. SERVICE

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 authorized for this, and for damage resulting from this!

Made in Poland

Made in EU

Manufacturer: FLOWAIR GŁOGOWSKI I BRZEZIŃSKI SP.J.

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[www.flowair.com](http://www.flowair.com)



## DEKLARACJA ZGODNOŚCI WE / *Declaration of Conformity*

Producent / *Manufacturer:*

**FLOWAIR GŁOGOWSKI I BRZEZIŃSKI SP.J.**  
**Biuro / *Office:* Chwaszczyńska 151E, 81-571 Gdynia**  
**tel. (058) 669 82 20**  
**tel./fax: (058) 627 57 21**  
**e-mail: info@flowair.pl**  
**www.flowair.pl**

deklaruje, że / *hereby confirms, that*

nazwa / *device name:*

**Kurtyna powietrzna / *Air curtain***

modele / *models:*

**ELIS DUO, ELIS A,**

typ / *types:*

**ELIS A-W-100 ; ELIS A-N-100 ; ELIS A-E-100 ; ELIS A-W-150 ; ELIS A-N-150 ;  
ELIS A-E-150; ELIS A-W-200; ELIS A-N-200; ELIS A-E-200;  
ELIS A-W-100/AF ; ELIS A-W-100/L ; ELIS A-N-100/AF ; ELIS A-N-100/L ;  
ELIS A-E-100/AF ; ELIS A-E-100/L ; ELIS A-W-150/AF ; ELIS A-W-150/L ;  
ELIS A-N-150/AF ; ELIS A-N-150/L ; ELIS A-E-150/AF ; ELIS A-E-150/L ;  
ELIS A-W-200/AF ; ELIS A-W-200/L ; ELIS A-N-200/AF ; ELIS A-N-200/L ;  
ELIS A-E-200/AF ; ELIS A-E-200/L ;  
ELIS DUO; ELIS DUO EL; ELIS DUO-W-100; ELIS DUO-W-200; ELIS DUO-E-100**

data wprowadzenia produktu do  
obrotu / *product launch date:*

**2014**

jest zgodna z zasadniczymi  
wymaganiami / *was produced in  
accordance to the following*

**dyrektywy / *directives* MD 2006/42/WE;  
dyrektywy / *directives* EMC 2004/108/WE**

*European Directives:*

oraz zharmonizowanymi z tymi  
dyrektywami normami / *and  
harmonized norms, with above  
directives:*

**PN-EN 60204-1:2010** – Bezpieczeństwo maszyn - Wyposażenie elektryczne maszyn  
Część 1: Wymagania ogólne / *Safety of machinery - Electrical equipment of machines -  
Part 1: General requirements*  
**PN-EN 60335-1:2004 + A1:2005 + A2:2008 + A12:2008 + A13:2009 + A14:2010 +  
Ap:2005 + Ap:2006** – Elektryczny sprzęt do użytku domowego i podobnego -  
Bezpieczeństwo użytkownika Część 1: Wymagania ogólne / *Household and similar  
electrical appliances - Safety - Part 1: General requirements*  
**PN-EN 60335-2-80:2007 + A2:2009** – Elektryczny sprzęt do użytku domowego i  
podobnego - Bezpieczeństwo użytkownika Część 2-80: Wymagania szczegółowe  
dotyczące wentylatorów / *Household and similar electrical appliances - Safety – Part 2-  
30: Particular requirements for room heaters*  
**PN-EN 60034-1:2009 + Ap1:2009** – Maszyny elektryczne wirujące Część 1: Dane



znamionowe i parametry / *Rotating electrical machines – Part 1: Rating and performance*

**PN-EN 60034-5:2004 + A1:2009** – Maszyny elektryczne wirujące Część 5: Stopnie ochrony zapewniane przez rozwiązania konstrukcyjne maszyn elektrycznych wirujących (kod IP) – Klasyfikacja / *Rotating electrical machines – Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code). Classification.*

**PN-EN 60034-8:2007** – Maszyny elektryczne wirujące Część 8: Oznaczenie wyprowadzeń i kierunek wirowania maszyn wirujących / *Rotating electrical machines – Part 8: Terminal markings and direction of rotation.*

**PN-EN 60034-9:2009** – Maszyny elektryczne wirujące Część 9: Dopuszczalne poziomy hałasu / *Rotating electrical machines – Part 9: Noise limits.*

**PN-EN 61000-6-1:2008** – Kompatybilność elektromagnetyczna (EMC) Część 6-1: Normy ogólne - Odporność w środowiskach: mieszkalnym, handlowym i lekko przemysłowym / *Electromagnetic compatibility (EMC) Part 6-1: Generic standards. Immunity for residential, commercial and light-industrial environments.*

**PN-EN 61000-6-2:2008 + Ap1:2009 + Ap2:2009** – Kompatybilność elektromagnetyczna (EMC) Część 6-2: Normy ogólne – Odporność w środowiskach przemysłowych / *Electromagnetic compatibility (EMC) - Part 6-2: Generic standards. Immunity for industrial environments.*

**PN-EN 61000-6-3:2008** – Kompatybilność elektromagnetyczna (EMC) Część 6-3: Normy ogólne – Norma emisji w środowiskach: mieszkalnym, handlowym i lekko przemysłowym / *Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments.*

**PN-EN 61000-6-4:2008** – Kompatybilność elektromagnetyczna (EMC) Część 6-4: Normy ogólne - Norma emisji w środowiskach przemysłowych / *Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments.*

Gdynia, 01.04.2012  
Product Manager  
Dunajski Maciej

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