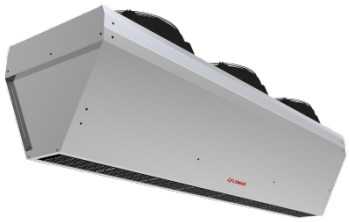
FLOWAIR
intelligent air flow

ELIS G
INDUSTRIAL AIR CURTAINS



TECHNICAL DOCUMENTATION
OPERATION MANUAL

Table of content

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

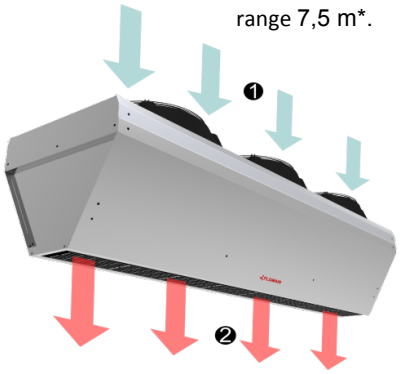
- Get acquainted with this operation manual before performing any works at the device.
- The device may only be installed by qualified personnel with adequate authorisations and skills.
- In the building where ventilation causes underpressure, air curtain may have limited efficiency
- When performing 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

ELiS G air curtain generating an air barrier which protects interior from external environment (its temperature, solids and smog). ELiS G is dedicated to operate indoor, in the areas where ambient temperature is in range -20 ÷ +60. ELiS G can be mounted in vertical or horizontal position and chained with next ELiS G creating wider air barrier.

ELIS G types:

ELIS G1-W-150 – curtain with water heat exchanger max. range 7 m*;
ELIS G1-E-150 – curtain with electric heat exchanger max. range 7 m*;
ELIS G1-N-150 – curtain without heat exchanger (ambient); max. range 7,5 m*;
ELIS G1-W-200 – curtain with water heat exchanger max. range 7 m*;
ELIS G1-E-200 – curtain with electric heat exchanger max. range 7 m*;
ELIS G1-N-200 – curtain without heat exchanger (ambient); max. range 7,5 m*.



❶ air inlet; ❷ air outlet;

* Vertical range of nonisothermal stream (at velocity boundary equal above 3,0 m/s).

2. TECHNICAL DATA

	G1-W/N/E-150			G1-W/N/E-200		
	1 step	**2 step**	**3 step**	**1 step**	**2 step**	**3 step**
Fan power supply [V/Hz]	230/50			230/50		
Fan current consumption [A]	2,0	2,6	2,8	3,0	3,9	4,2
Fab power consumption [kW]	0,4	0,52	0,64	0,6	0,78	0,96
IP	54					
	G-E-150			G-E-200		
Heating elements power supply [V/Hz]	3x400/50			3x400/50		
Heating capacity [kW]	9,0	10,5	12,0	16,5	18,5	20,0
Current consumption [A]	13	15	17	23	26	29
Temperature rise [°C]	12	9	7	12	9	7
	G-W-150			G-W-200		
Max. water temperature [°C]	130			130		
Max. water pressure [MPa]	1,6			1,6		
Connection ["]	$^3/_4$			$^3/_4$		
	G-W-150	G-N-150	G-E-150	G-W-150	G-N-150	G-E-150
Weight [kg]	47,4	43	49,8	62	58	67
Weight of unit filled with water [kg]	49,7	-	-	64,3	-	-

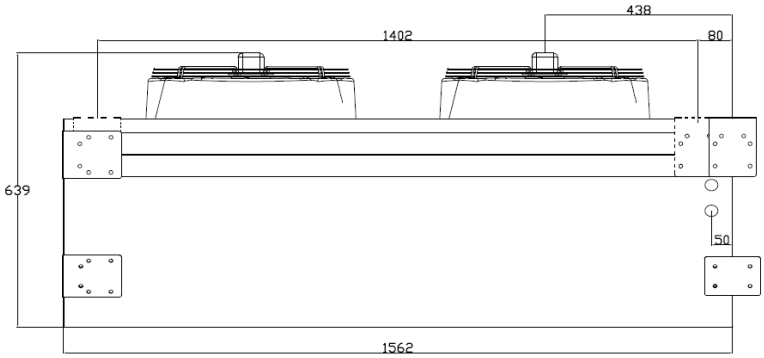
** G1-E-150/200 temperature increase at inlet air 10ºC

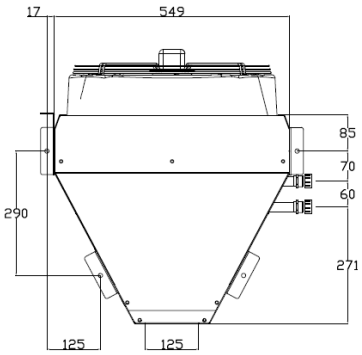
2.1. CONSTRUCTION

- **Fan** – axial fan with plastic blades; IP54;
- **Water heat exchanger** – CU-AL; connection $^3/_4$";
- **Electrical heater –** aluminum PTC heating element;
- **Casing** – galvanized steel ;
  – nozzle made of ABS,
  – air blades: plastic
- **Mounting bracket** – galvanized steel.

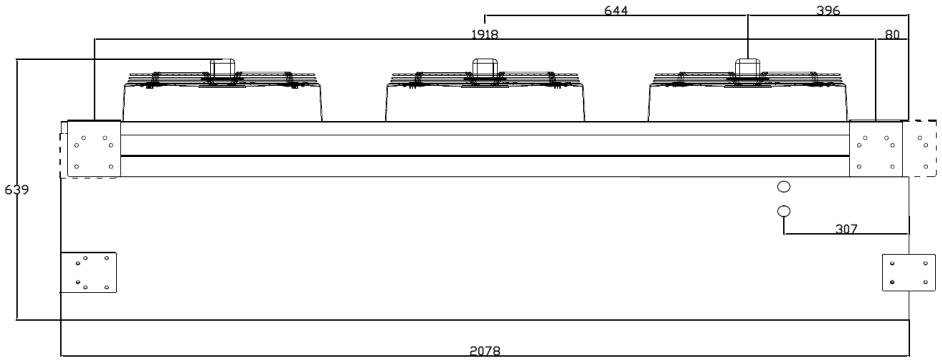
2.2. MAIN DIMENSIONS

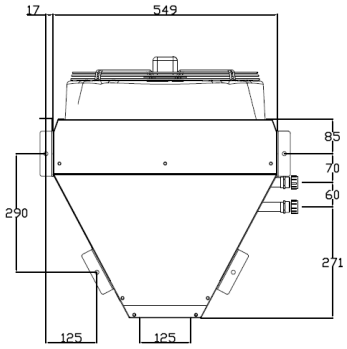
ELIS: G1-N-150; G1-W-150; G1-E-150





ELIS: G1-N-200; G1-W-200; G1-E-200





Above a sample of holders position. Location of those elements for various installation positions are shown in 4th chapter.

2.3. AIR FLOW NOMOGRAMS

step	G-N-150; G-W-150; G-E-150	G-N-200; G-W-200; G-E-200
3	60dB(A)	62dB(A)
2	54dB(A)	56dB(A)
1	49dB(A)	51dB(A)

* Acoustic pressure level measured in the room of average sound absorption, capacity 500 m^3, at distance of 3 m from the unit.

2.4. AIR VOLUME

step	G-N-150	G-W-150	G-E-150	G-N-200	G-W-200	G-E-200
3	6500 m^3/h	6200 m^3/h	6300 m^3/h	8600 m^3/h	8100 m^3/h	8200 m^3/h
2	5400 m^3/h	5100 m^3/h	5200 m^3/h	6500 m^3/h	6200 m^3/h	6300 m^3/h
1	4300 m^3/h	4000 m^3/h	4100 m^3/h	5400 m^3/h	5100 m^3/h	5200 m^3/h

3. HEATING CAPACITY TABLE

ELiS G 150																
Tp1	PT	Qw	Δpw	Tp2	PT	Qw	Δpw	Tp2	PT	Qw	Δpw	Tp2	PT	Qw	Δpw	Tp2
°C	kW	l/h	kPa	°C	kW	l/h	kPa	°C	kW	l/h	kPa	°C	kW	l/h	kPa	°C
	Tw1/Tw2 = 90/70°C				Tw1/Tw2 = 80/60°C				Tw1/Tw2 = 70/50°C				Tw1/Tw2 = 60/40°C			
	V1 = 4000 m³/h															
0	27,0	1190	5	19,0	23,2	1020	5	16,0	19,5	850	4	13,5	15,7	680	4	11,0
5	25,0	1100	6	22,5	21,2	930	5	20,0	17,5	770	3	17,5	13,7	600	3	14,5
10	22,9	1010	5	26,5	19,2	850	4	24,0	15,6	680	4	21,0	11,8	520	2	18,5
15	21,0	920	4	30,5	17,3	760	5	27,5	13,6	600	3	22,5	10,0	430	4	22,5
20	19,0	840	4	34,0	15,4	680	4	31,5	11,8	520	2	29,0	8,1	350	3	26,0
	V2=5100 m³/h															
0	31,2	1370	7	17,0	26,8	1180	5	14,5	22,4	980	5	12,0	18,0	790	3	10,0
5	28,8	1270	6	21,0	24,5	1070	6	18,5	20,1	880	4	16,0	15,8	690	4	14,0
10	26,4	1170	5	25,0	22,2	970	5	22,5	17,9	780	3	20,0	13,6	590	3	17,5
15	24,1	1060	6	29,0	19,9	880	4	26,5	15,7	690	4	24,0	11,4	500	2	21,5
20	21,9	960	5	33,0	17,7	780	3	30,5	13,5	590	3	28,0	9,3	410	3	25,5
	V3 = 6200 m³/h															
0	34,8	1530	9	15,5	29,9	1310	7	13,5	25,0	1090	6	11,0	20,1	880	4	9,0
5	32,1	1420	8	19,5	27,3	1200	6	17,5	22,4	980	5	15,5	17,6	770	3	13,0
10	29,5	1300	6	23,5	24,8	1090	6	21,5	20,0	870	4	19,5	15,1	660	4	17,0
15	27,0	1190	5	28,0	22,2	980	5	25,5	17,5	770	3	23,5	12,7	550	3	21,0
20	24,5	1080	6	32,0	19,8	870	4	29,5	15,1	660	4	27,5	10,4	450	4	25,0

ELiS G 200																
Tp1	PT	Qw	Δpw	Tp2	PT	Qw	Δpw	Tp2	PT	Qw	Δpw	Tp2	PT	Qw	Δpw	Tp2
°C	kW	l/h	kPa	°C	kW	l/h	kPa	°C	kW	l/h	kPa	°C	kW	l/h	kPa	°C
	Tw1/Tw2 = 90/70°C				Tw1/Tw2 = 80/60°C				Tw1/Tw2 = 70/50°C				Tw1/Tw2 = 60/40°C			
	V1 = 5100 m³/h															
0	29,3	1290	6	17,5	25,3	1110	6	15,5	21,1	920	5	13,0	17,0	740	5	10,5
5	27,1	1190	5	21,5	23,0	1010	5	19,0	19,0	830	4	16,5	14,9	650	4	14,0
10	24,9	1100	6	25,5	20,9	920	4	23,0	16,9	740	5	20,5	12,8	560	3	18,0
15	22,7	1000	5	29,5	18,8	820	4	27,0	14,8	650	4	24,5	10,8	470	4	22,0
20	20,6	910	4	33,5	16,7	730	5	31,0	12,8	560	3	28,5	8,8	380	3	25,5
	V2=6200 m³/h															
0	33,2	1460	8	16,0	28,5	1250	6	14,0	23,9	1040	6	11,5	19,2	840	4	9,4
5	30,6	1350	7	20,0	26,0	1140	5	18,0	21,4	940	5	15,5	16,8	730	5	13,5
10	28,2	1240	6	24,5	23,6	1040	6	22,0	19,0	830	4	19,5	14,5	630	4	17,5
15	25,7	1130	5	28,0	21,2	930	5	26,0	16,7	730	5	23,5	12,1	530	3	21,5
20	23,3	1030	5	32,0	18,9	830	4	30,0	14,4	630	4	27,5	9,9	430	4	25,0
	V3 = 8100 m³/h															
0	38,9	1720	9	14,5	33,5	1470	8	12,0	28,0	1220	6	10,0	22,4	980	5	8,0
5	36,0	1580	7	18,5	30,5	1340	7	16,5	25,1	1100	6	14,5	19,6	860	4	12,5
10	33,1	1460	8	22,5	27,7	1220	6	20,5	22,3	980	5	18,5	16,9	740	5	16,5
15	30,2	1330	7	26,5	24,9	1090	6	24,5	19,6	860	4	22,5	14,2	620	3	20,5
20	27,4	1210	6	31,0	22,1	970	5	28,5	16,9	740	5	26,5	11,6	500	2	24,5

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
Δpw – water pressure

4. INSTALLATION

Elis G air curtains are delivered with set of hangers which allow install them horizontally as well as vertically. Installation pins and screws required for fix unit to the wall/floor/post are not included.

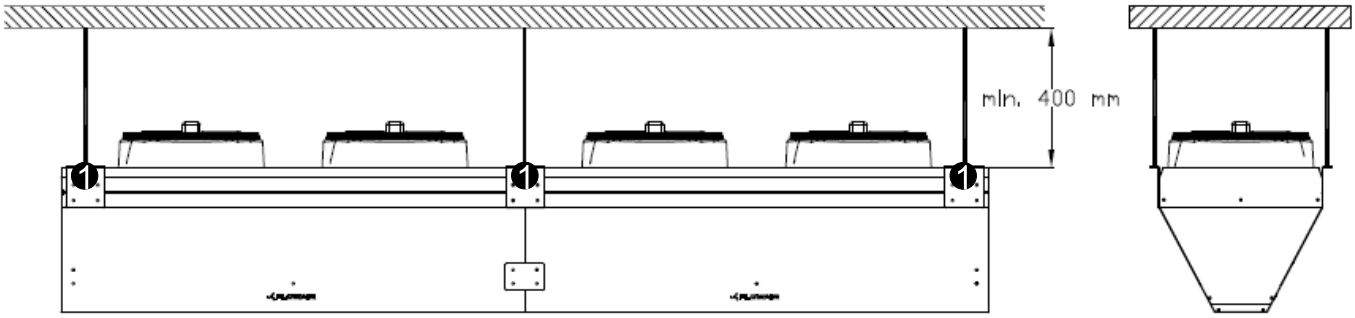
Max size of covered doorway:

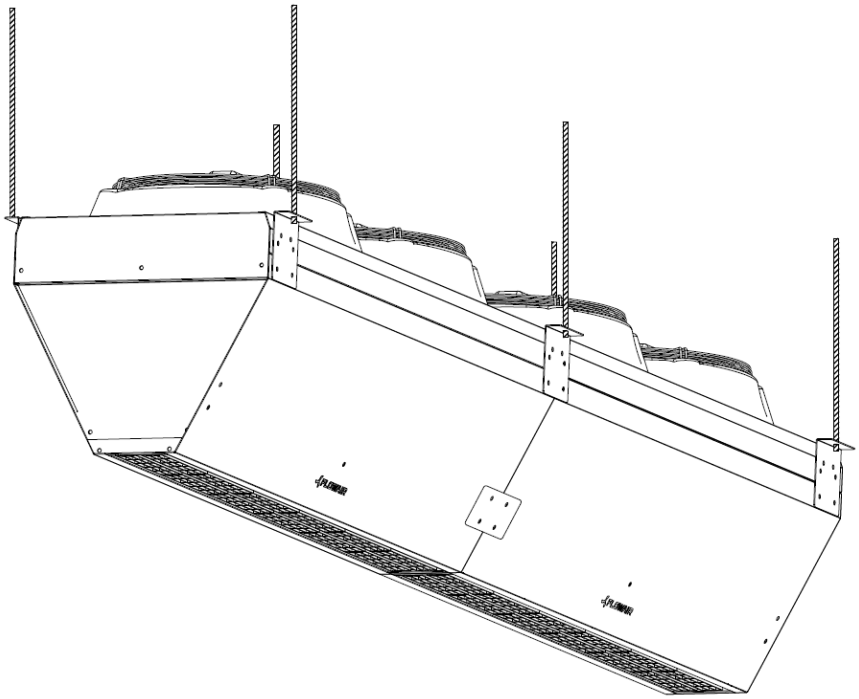
- vertical single side installation: max width 7,5 m,
- vertical double side installation: max width 13 m,
- horizontal installation: max height level 7,5 m,.

Attention: Screw air curtain to the wall/floor/post before first start up.

4.1. HORIZONTAL INSTALLATION

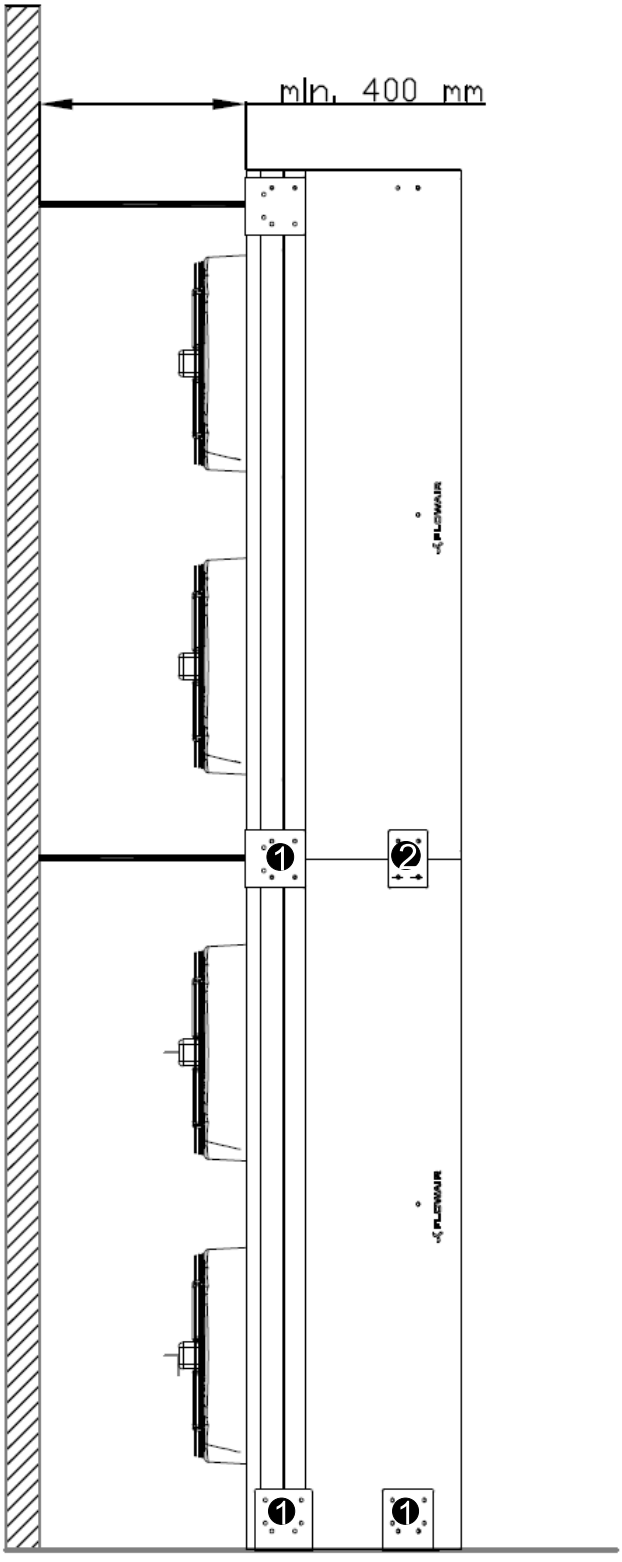
In case of horizontal installation use installation plate and mount unit via threaded pins M10 (not included). Single unit is mounted on 4 installation plates, two units on 6pcs. Installation plates are used to screw units among themselves as show on drawing.

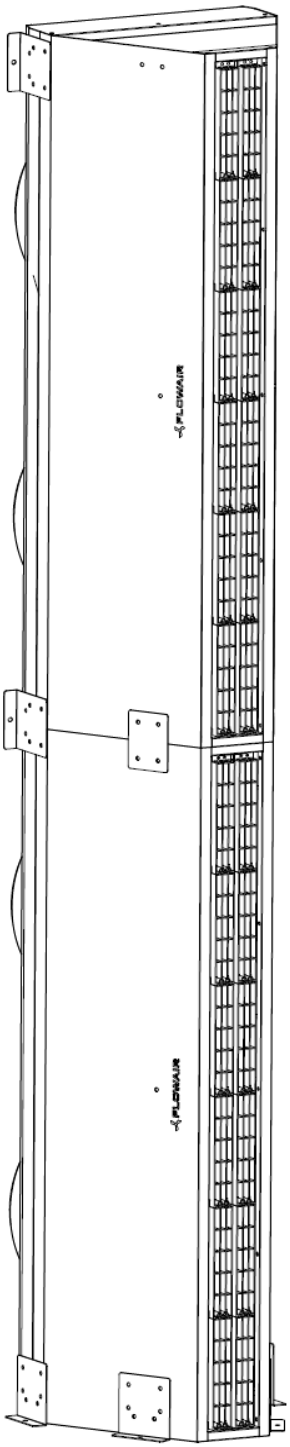




4.2. VERTICAL INSTALLATION

Vertical installation is executed via included in set installation plates, which should mount unit to the floor. Next air curtain should be putted on the first one and screwed with it via installation plate, those installation plates must be anchored to the wall/post (drawing).



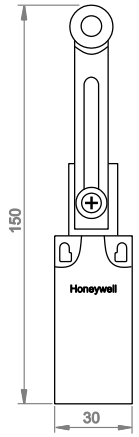


5. CONTROL BOX

RX – splitter allow:

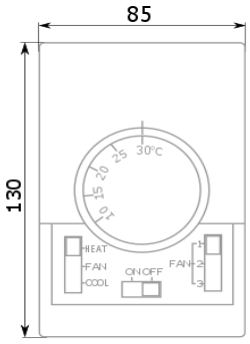
- Supply and protect up to three air curtain;
- Room thermostat connection,
- Valve acturattor connection
- Door contact connection

5.1. ACCESSORIES



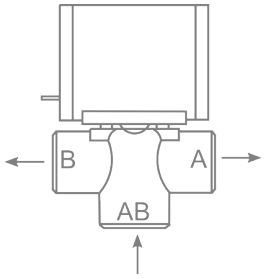
DCm – mechanical door contact

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



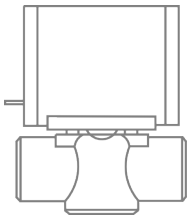
TS - 3-speed fan switch with room thermostat

Temperature range::
+10 … +30°C
Operatiing temperature range:
0 … +40°C
IP/Insulation class:: IP30
Max current:
inductive 5A, resistive 6A
Power supply: 230V/50Hz



SRQ3d 3/4" – three-way 3/4 valve with actuator

IP/Insulation class: IP20
Power supply:
200 – 240V 50/60Hz
Max water temperature: +93°C
Max water pressure
: 1,6 MPa
Kvs: 6,5 m^3/h
Opening time: 18 s



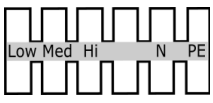
SRQ2d 3/4" – two-way 3/4 valve with actuator

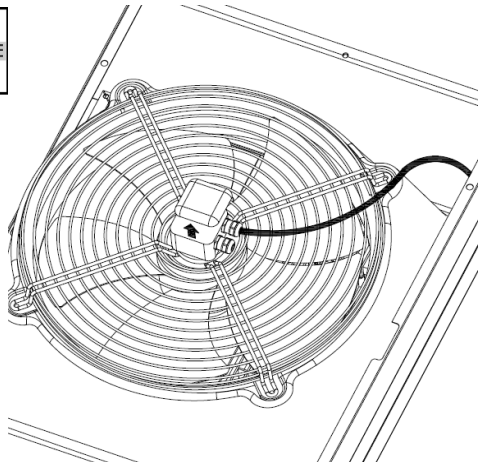
IP/Insulation class: IP20
Power supply:
200 – 240V 50/60Hz
Max water temperature: +93°C
Max water pressure
: 1,6 MPa
Kvs: 6,5 m^3/h
Opening time: 18 s

5.2. CONNECTION DIAGRAM

G1-N-150; G1-W-150; G1-N-200; G1-W-200

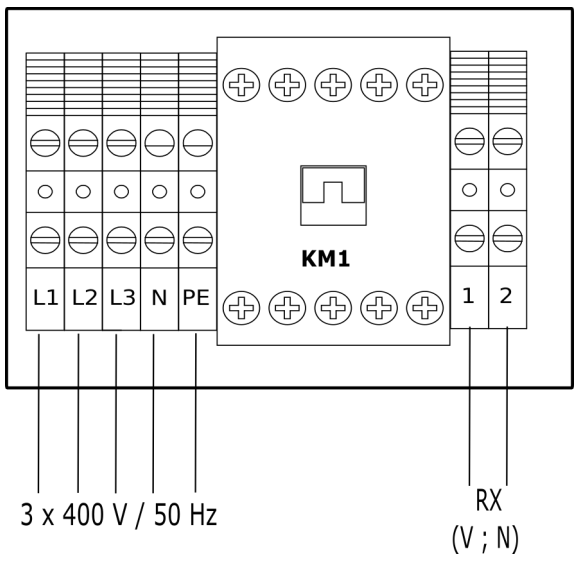
To supply curtain with power connect it by connection box closest to unit side. Protract cable by glands and connect wires according to scheme from box cover.



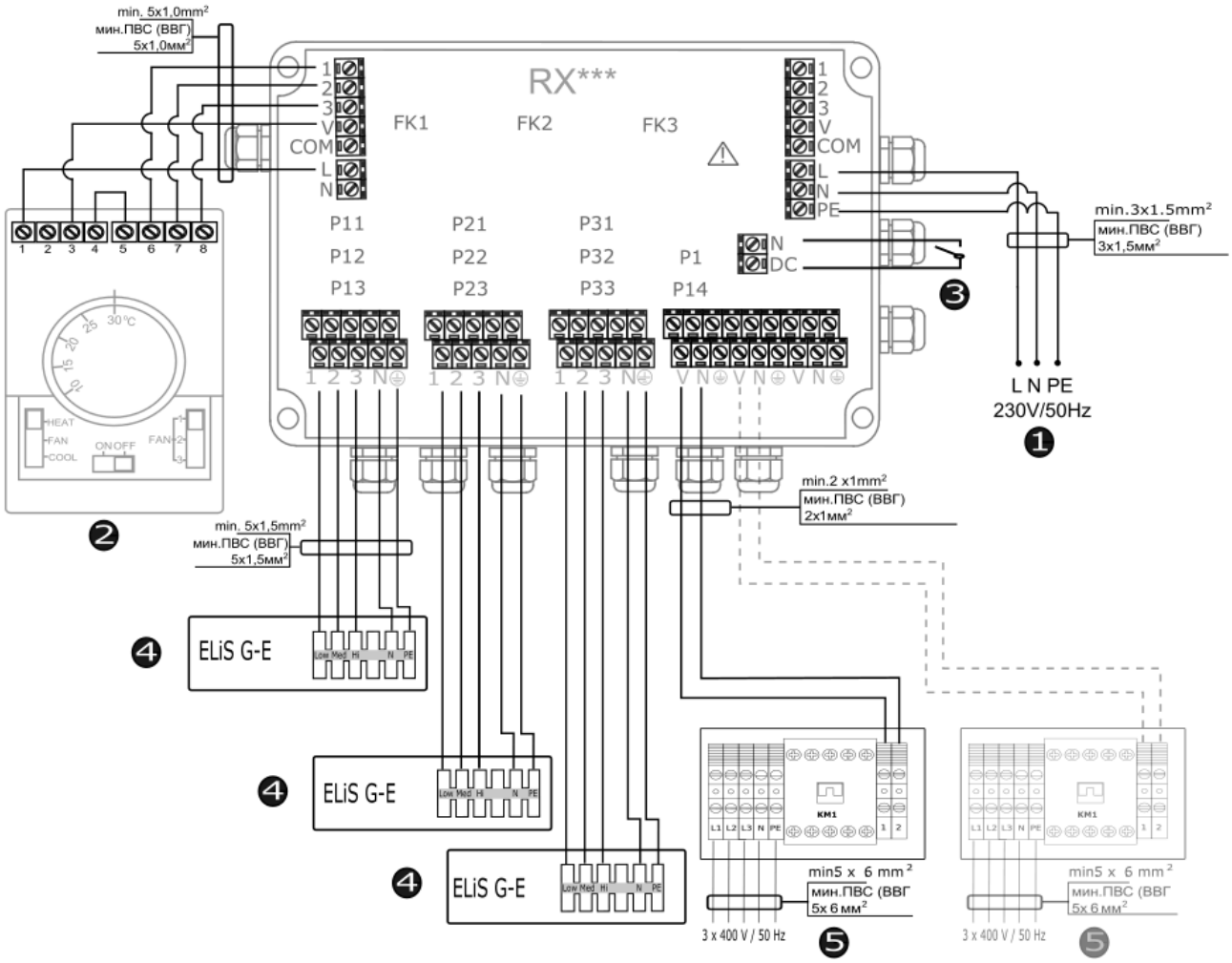


G1-E-150; G1-E-200

To start up curtain connect 3 x 400 V / 50 Hz current to junction box placed between fan's nozzles. Next connect terminals 1; 2 with RX.



5.2. WIRING SCHEMES ELIS G-E



RX

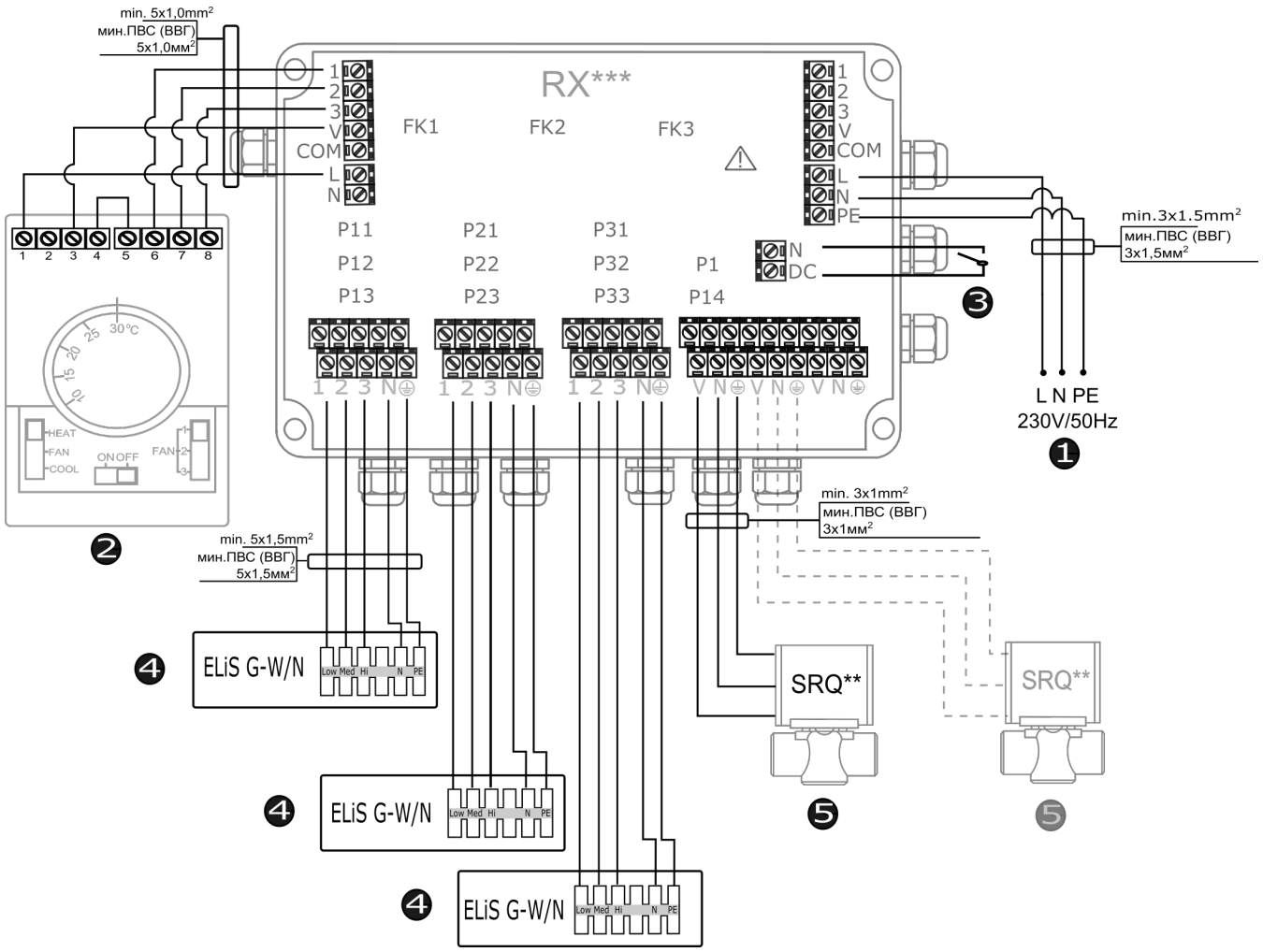
❶ RX Power supply: 230 V / 50 Hz (OMY 3x1,5 mm^2);
❷ Air curtain step switch with thermostat TS (OMY 5x1,0 mm^2)

HEAT – heating mode
FAN –room thermostat deactivated
COOL – cooling mode
FAN AUTO – Fan auto - fan operating depending on room thermostat signal
FAN CONT- fan operating continously (deactivated thermostat signal)

❸ Door contact DCm (door closed – closed contats; door opened – opened contacts).
❹ Air curtain power supply (OMY 3x1,5 mm^2);
❺ Power supply junction box (OMY 5x6 mm^2)

FK1; FK2; FK3 – overload protector (6,3 A);

5.3. WIRING SCHEMES ELIS G-N/W



RX

❶ RX Power supply: 230 V / 50 Hz (OMY 3x1,5 mm^2);
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HEAT – heating mode
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FAN CONT- fan operating continously (deactivated thermostat signal)

❸ Door contact DCm (door closed – closed contats; door opened – opened contacts).
❹ Air curtain power supply (OMY 3x1,5 mm^2);
❺ Valve SRQ2d/3d (OMY 3x1,0 mm^2)

FK1; FK2; FK3 – overload protector (6,3 A);

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.
- Minimal diameter of suppling wires:
  - 1,5 mm^2 for ELiS G1-N/W-150/200
  - 4 mm^2 for ELiS G1-E-150
  - 6 mm^2 for ELiS G1-E-200
- 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.

8. OPERATION

- The device is designed for operation inside buildings, at temperatures above 0°C. In low temperatures (below 0ºC) there is a danger of freezing of the medium

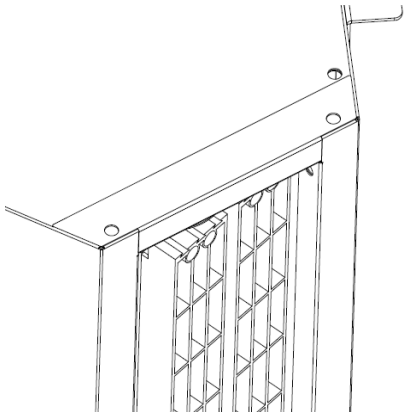
The manufacturer bears no responsibility for damage of the heat exchanger resulting from freezing of the medium in the exchanger.

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.

9. AIR BLADES REGULATION

Air blades can be regulated in range ± 10º. To change an angle of air stream is needed to put stress at the same time for both ends of blades.



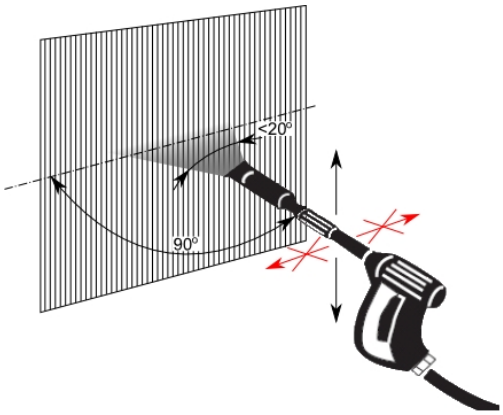
10. CLEANING AND MAINTANACE

Periodically need to be checked exchanger condition. Exchanger filled with dirt causes 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.

  Cleaning heating elements with water is prohibited
- It is prohibited to use water or sharp items to clean exchanger.



- Other installed equipment do not need be cleaned

11. SERVICE

In the case of any irregularities in the device operation, please contact the dealer.
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.
ul. Chwaszczyńska 151E, 81-571 Gdynia
phone. +48 58 669 82 20, fax.: +48 58 627 57 21
e-mail: info@flowair.pl

www.flowair.com

DEKLARACJA ZGODNOŚCI WE / *Declaration of Conformity*

Producent */ Manufacturer:*	**FLOWAIR GŁOGOWSKI I BRZEZIŃSKI SP.J.** **Biuro / *Office*: Chwaszczyńska 151E, 81-571 Gdynia** **Siedziba / *Headquater*: Amona 84; 81-601 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 G**
typ / *types*:	**ELIS G1-N-150; ELIS G1-W-150; ELIS G1-E-150;** **ELIS G2-N-150; ELIS G2-W-150; ELIS G2-E-150;** **ELIS G1-N-200; ELIS G1-W-200; ELIS G1-E-200;** **ELIS G2-N-200; ELIS G2-W-200; ELIS G2-E-200;**
data wprowadzenia produktu do obrotu / *product launch date*:	**2013**
jest zgodna z zasadniczymi wymaganiami / *was produced in accordance to the following European Directives*:	**dyrektywy / *directives* MD 2006/42/WE;** **dyrektywy / *directives* EMC 2004/108/WE**
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 60335-1:2012 –** Elektryczny sprzęt do użytku domowego i podobnego - Bezpieczeństwo użytkowania Część 1: Wymagania ogólne / *Household and similar electrical appliances - Safety - Part 1: General requirements* **PN-EN 60335-2-80:2007 –** Elektryczny sprzęt do użytku domowego i podobnego - Bezpieczeństwo użytkowania Część 2-80: Wymagania szczegółowe dotyczące wentylatorów / *Household and similar electrical appliances - Safety – Part 2-30: Particular requirements for room heaters*

PN-EN 60034-1:2011 – 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: Oznaczanie 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 uprzemysłowionym / *Electromagnetic compatibility (EMC) Part 6-1: Generic standards. Immunity for residential, commercial and light-industrial environments.*
PN-EN 61000-6-2:2008 – 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 uprzemysłowionym / *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, 17.01.2016
Product Manager
Dunajski Maciej