

# Air curtains

## ELiS D

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## General characteristic



Air curtain ELiS D	
Max. range <sup>(1)</sup> [m]	5
Heating capacity <sup>(2)</sup> [kW]	11,0–30,9
Air flow [m <sup>3</sup> /h]	2000–6300
Weight [kg]	24,0–41,9
Materials	steel
Colour	white RAL 9016

<sup>(1)</sup> Vertical range of isothermal stream, at velocity limit above 2 m/s

<sup>(2)</sup> For D-W during operation at 3<sup>rd</sup> step, at inlet air temperature 10°C and water temperature 90/70°C

ELiS D series air curtains generate an effective air barrier protecting the entire entrance to the building. They are designed to ensure thermal protection of the rooms preventing the inflow of cold air during the winter and the inflow of warm air into the air-conditioned rooms during the summer. They effectively secure the room against the inflow of insects and dust.

ELiS D air curtains are:

- available in 3 lengths: 1 m, 1,5 m, 2 m
- available in 3 versions:
  - Ⓝ - without heating elements - ambient air curtain (N)
  - ⊕ - with water heat exchanger (W),
  - ⚡ - with electric heaters (E),
- designed for horizontal installation.



D-N/W/E-100



D-N/W/E-150



D-N/W/E-200

### DESIGNATION OF ELiS D DOOR CURTAINS

#### D-W-100

1 2 3

- D – ELiS D, range of curtain 5 m
- N – curtain without heat exchanger (ambient)  
W – curtain with water heat exchanger  
E – curtain with electric heaters
- 100/150/200 – length of air outlet



### CONTROL SYSTEM WITH BMS

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External control module enables the connection of the unit to BMS – intelligent building management system.



### DIAGONAL FAN

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High efficiency of curtains thanks to motor propelling set of diagonal rotors.



### WIDE RANGE OF UNITS

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Air curtains with water heat exchanger, with electric heaters and without heating elements (ambient) are available in 3 lengths - 1 m, 1,5 m and 2 m.



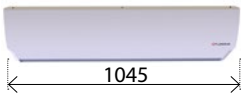
### HEATING ELEMENTS

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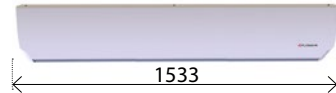
Air curtains can be equipped with PTC heating elements or water heat exchanger made of copper tubes and aluminum fins.

## Dimensions

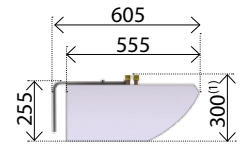
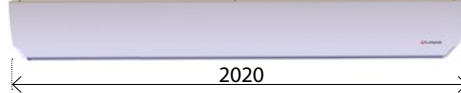
D-N/w/E-100



D-N/w/E-150



D-N/w/E-200



## Technical data

	D-N-100	D-W-100	D-E-100	D-N-150	D-W-150	D-E-150	D-N-200	D-W-200	D-E-200
Fan	motor with diagonal rotor								
Max. air flow stream for curtain [m <sup>3</sup> /h]	2300	2900		5000	4300		6300	5500	
Power supply [V/Hz]	230/50	230/50	3x400/50	230/50	230/50	3x400/50	230/50	230/50	3x400/50
Max. fan current consumption [A]	1,9	1,7		2,2	2,1		2,4	2,3	
Fan power consumption [kW]	0,4	0,36		0,48	0,46		0,54	0,53	
IP	21								
Max. acoustic pressure level <sup>(1)</sup> [dB(A)]	67	66		68	67		69	68	
Max. air stream range <sup>(2)</sup> [m]	5								
	<b>D-N-100</b>			<b>D-N-150</b>			<b>D-N-200</b>		
Fan setting	I step	II step	III step	I step	II step	III step	I step	II step	III step
Air flow [m <sup>3</sup> /h]	2300	2700	3300	2700	3500	5000	3000	4000	6300
Fan current consumption [A]	1,4	1,6	1,9	1,5	1,9	2,2	1,7	2,1	2,4
Fan power consumption [kW]	0,34	0,35	0,4	0,35	0,42	0,48	0,38	0,46	0,54
Acoustic pressure level <sup>(1)</sup> [dB(A)]	56	60	67	56	61	68	57	61	69
	<b>D-W-100</b>			<b>D-W-150</b>			<b>D-W-200</b>		
Fan setting	I step	II step	III step	I step	II step	III step	I step	II step	III step
Heat exchanger	Cu-Al, one row								
Air flow [m <sup>3</sup> /h]	2000	2300	2900	2500	3200	4300	2900	3700	5500
Fan current consumption [A]	1,3	1,4	1,7	1,4	1,8	2,1	1,7	2,1	2,3
Fan power consumption [kW]	0,31	0,34	0,36	0,34	0,39	0,46	0,38	0,46	0,53
Acoustic pressure level <sup>(1)</sup> [dB(A)]	55	59	55	55	60	67	56	60	68
Heating capacity <sup>(3)</sup> [kW]	11,0	12,0	13,6	16,9	19,5	23,0	21,4	24,7	30,9
Air temperature rise for curtain (ΔT) <sup>(3)</sup> [°C]	16	15	14	20	18	16	22	20	17
Max. operating pressure [MPa]	1,6								
Max. heating water temperature [°C]	95								
Connection ["]	½"								
Weight of unit [kg]	25,8			32,9			39,2		
Weight of unit filled with water [kg]	26,6			34,2			40,8		
	<b>D-E-100</b>			<b>D-E-150</b>			<b>D-E-200</b>		
Fan setting	I step	II step	III step	I step	II step	III step	I step	II step	III step
Air flow [m <sup>3</sup> /h]	2000	2300	2900	2500	3200	4300	2900	3700	5500
Fan current consumption [A]	1,3	1,4	1,7	1,4	1,8	2,1	1,7	2,1	2,3
Fan power consumption [kW]	0,31	0,34	0,36	0,34	0,39	0,46	0,38	0,46	0,53
Acoustic pressure level <sup>(1)</sup> [dB(A)]	55	59	66	55	60	67	57	61	69
Heat exchanger	2 x PTC heating elements			3 x PTC heating elements			4 x PTC heating elements		
Power supply [V/Hz]	3x400/50								
Rated current <sup>(3)</sup> [A]	10,0			15,8			21,5		
Heating capacity <sup>(3)</sup> [kW]	7,0			11,0			15,0		
Air temperature rise for curtain (ΔT) <sup>(3)</sup> [°C]	11			12			13		
	<b>D-N-100</b>	<b>D-E-100</b>	<b>D-N-150</b>	<b>D-E-150</b>	<b>D-N-200</b>	<b>D-E-200</b>			
Weight of unit [kg]	24,0	28,0	30,7	34,9	36,3	41,9			

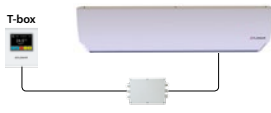

<sup>(1)</sup> Acoustic pressure level measured in the room with medium capability of sound absorption, capacity 500 m<sup>3</sup>, at distance of 3 m from the unit

<sup>(2)</sup> Range of vertical isothermal air stream, at velocity limit above 2 m/s

<sup>(3)</sup> For operation at 3<sup>rd</sup> step, at inlet air temperature 10°C, for D-W at inlet/outlet water temperature 90/70°C

# Control systems

## Comparison of control systems

	T-box control	TS control
		
<b>Controlling options</b>		
Manual 3-step air flow control	✓	✓
<b>Modes</b>		
Heating / Ventilation	✓	✓
Operation depending on door sensor and temperature	✓	✓
Weekly programmer	✓	
BMS	✓	
Curtain switch off delay	✓	
Idle speed mode	✓	
Integration with FLOWAIR SYSTEM	✓	
<b>Max. number of connected units</b>		
Via controller	31	2
<b>Type of controller</b>		
TS – 3-step fan speed controller with thermostat		✓
T-box – intelligent controller with touch screen	✓	
<b>Type of fan</b>		
AC – standard 3-step fan	✓	✓

### T-box control



ELiS D air curtains can be equipped with external control module, which enables to connect:

- DCm/DCE door contact,
- T-box intelligent controller with touch screen.

Controller provides 2 operating modes:

- Configuration 1 - operation of air curtain when overriding signal comes from both door contact as well as from T-box controller,
- Configuration 2 - operation of air curtain when overriding signal comes from door contact, while the T-box controller is responsible for changes of fan speed and engages heating.

Additionally, for both configurations it is possible to choose idle speed mode, switch-off delay time and heating signal. It is possible to graduate fan speed (3 steps).

#### CHAINING OF CURTAINS:

System is adapted to chaining the units and controlling up to 31 air curtains via single T-box controller.

### TS control



ELiS D air curtain is equipped with a control system, which enables the connection of:

- DCm/DCet mechanical door sensor,
- TS 3-step fan speed controller with thermostat.

Control system provides 2 operating modes:

- continuous mode – fan operation independent of temperature setting. Thermostat gives signal for heating.
- thermostatic mode – fan operation depending on thermostat setting.

#### CHAINING OF CURTAINS:

It is possible to connect two ELiS D air curtains to a single TS controller.

## BMS programming

In case of controlling units via T-box controller by single address in BMS it is possible to control independently up to 31 units.

### Parametry komunikacyjne:

Name	Description
Physical layer	RS485
Protocol	MODBUS-RTU
Transmission rate	9600, 19200, 38400, 57600, 115200 or 230400 [bps]
Parity	Even
Number of data bits	8
Number of stop bits	1

## Version 2

ELiS D air curtains can be optionally equipped with external control system, which communicates with BMS (Building Management System). It is possible to set up to 31 addresses. System ensures to set the address for each unit separately and enables independent loading and saving operating parameters of each curtain.

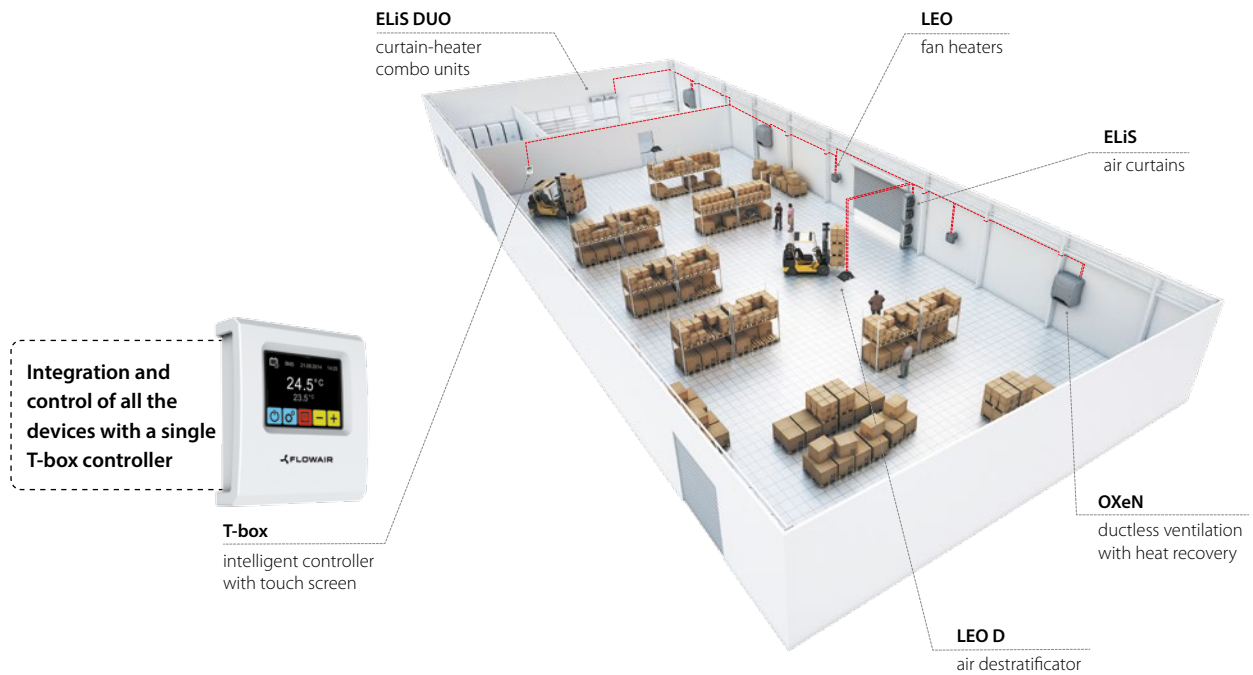
### Parametry komunikacyjne:

Name	Description
Physical layer	RS485
Protocol	MODBUS-RTU
Transmission rate	38400 [bps]
Parity	Even
Number of data bits	8
Number of stop bits	1





# FLOWAIR System

FLOWAIR SYSTEM is a complete offer of heating and ventilation devices integrated with one T-box controller enabling you to control all the units from one location.



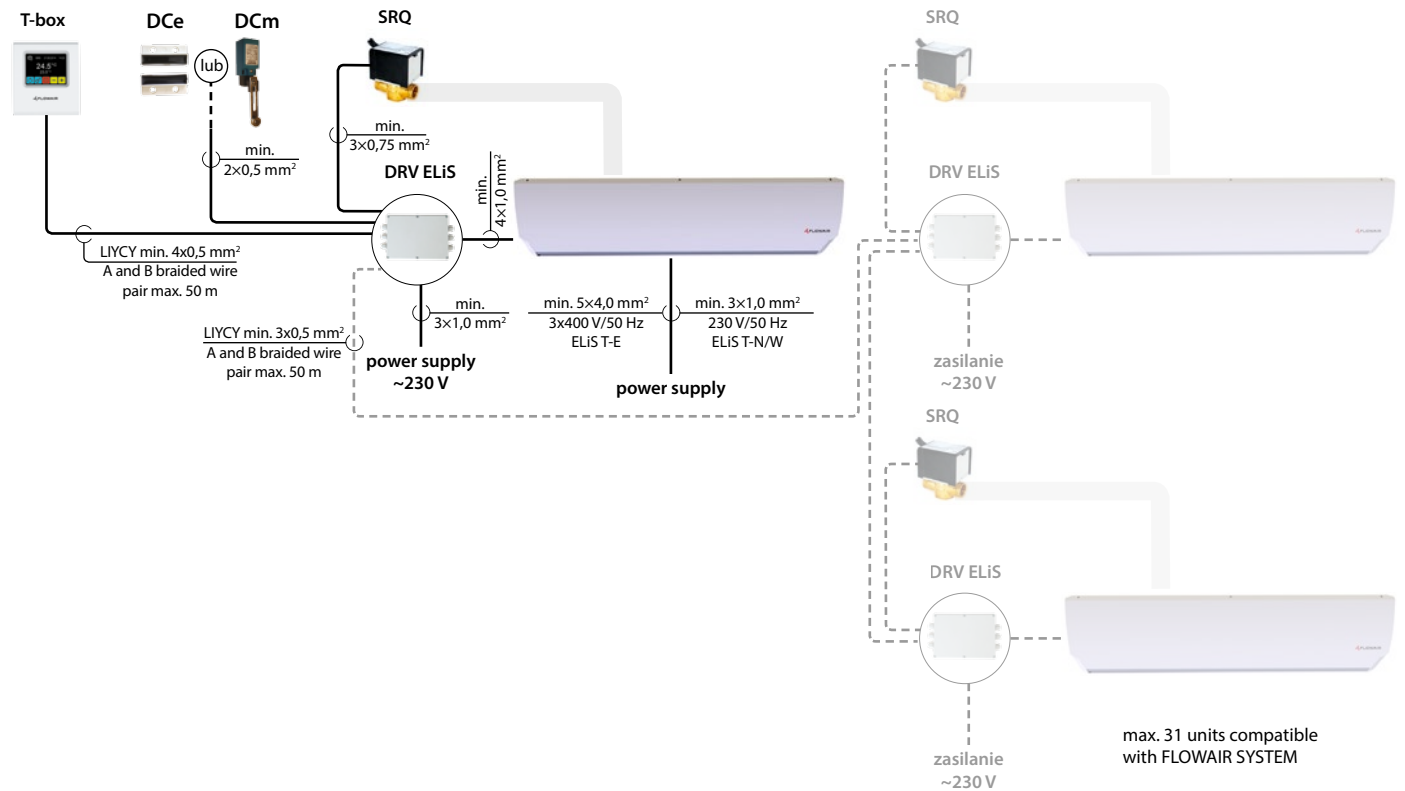


Kategoria	Nazwa	Wygląd	Dane techniczne
Controller	T-box intelligent controller with touch screen		Protection degree: IP 20 Power supply: 24 VDC Operating temperature range: -10 ... +60°C Temperature adjustment range: +5 ... +35°C
	TS 3-step fan speed regulator with touch screen		Protection degree: IP30 Temperature adjustment range: +10 ... +30°C Operating temperature range: 0 ... +40°C Contacts load: inductive 5 A, resistance 6 A
	DRV ELiS external control module		Protection degree: IP 54 Power supply: 230 V/50Hz Dimensions: 175x125x55 mm Operating temperature range: -10 ... +60°C Number of supported units: 1
Door contacts	DCet magnetyczny czujnik drzwiowy z szafką przełącznikową		Operating temperature range: -5 ... +60°C Protection degree: IP64 Material: plastic Length of connection wire: 2 m Jumpers: NO Inductive contacts load: 3 A Max. contacts voltage: 230 VDC Max. distance between contacts: 8 mm
	DCE magnetyczny czujnik drzwiowy		Operating temperature range: -5 ... +60°C Protection degree: IP64 Material: plastic Length of connection wire: 2 m Jumpers: NC Resistance contacts load: 0,5 A Max. contacts voltage: 175 VDC Max. distance between contacts: 8 mm
	DCm mechanical door contact		Operating temperature range: -10 ... +80°C Protection degree: IP65 Material: plastic Length of connection wire: none Jumpers: 1xNC i 1xNO Inductive contacts load: 3 A Max. contacts voltage: 300 VAC or 250 VDC
Valves with actuator	SRQ2d two-way valve 1/2" with actuator		Protection degree: IP20 Power supply: 200–240 V 50/60 Hz Max. water temperature: +93°C Max. water pressure: 1,6 MPa Kvs: 3,0 m³/h Installation: on water outlet pipe Opening/closing time: 18s/5s Dimensions (HxWxD): 108x86x66 mm
	SRQ3d three-way valve 1/2" with actuator		Protection degree: IP20 Power supply: 200–240 V 50/60 Hz Max. water temperature: +93°C Max. water pressure: 2 MPa Kvs: 3,4 m³/h Installation: on water inlet pipe Opening/closing time: 18s/5s Dimensions (HxWxD): 118x86x66 mm

## Connection diagrams

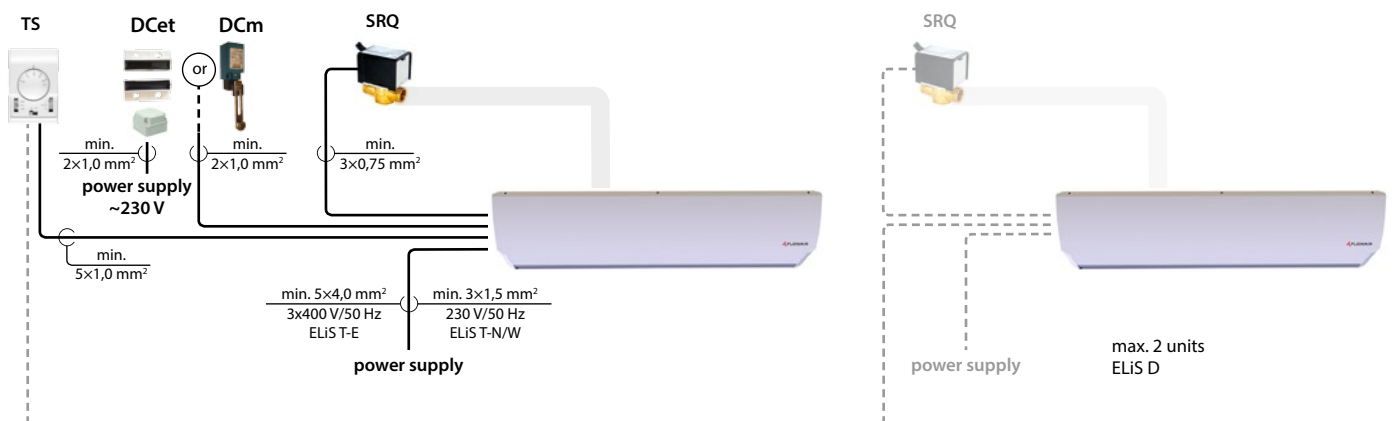
### T-box control

Control by DCe or DCm door contact and T-box controller.



### TS control

Terminal block ensures the control of the curtains by DCet or DCm mechanical door sensor and TS 3-step fan speed controller with thermostat.



## Heating capacities

### ELiS D with one row water heat exchanger

#### ELiS D-W-100

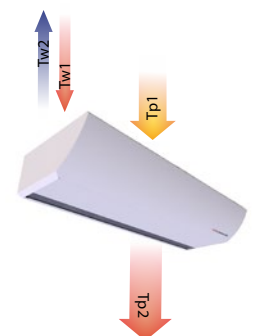
Tp1	V	PT	Qw	Δpw	Tp2	PT	Qw	Δpw	Tp2
°C	m³/h	kW	l/h	kPa	°C	kW	l/h	kPa	°C
<b>Tw1/Tw2 = 90/70°C</b>					<b>Tw1/Tw2 = 80/60°C</b>				
<b>0</b>	2000/ 2300/ 2900	12,9/13,9/15,8	569/615/698	2,0/2,3/2,9	19/18/16	10,8/11,7/13,2	474/512/581	1,5/1,7/2,1	16/15/14
<b>5</b>		12/13/14,7	529/572/649	1,8/2,0/2,6	23/22/20	9,9/10,7/12,1	434/469/532	1,3/1,5/1,8	20/19/18
<b>10</b>		11/12/13,6	490/529/601	1,5/1,8/2,2	26/25/24	9,0/9,7/11	394/426/483	1,1/1,2/1,5	23/22/21
<b>15</b>		10,2/11/12,5	450/486/552	1,3/1,5/1,9	30/29/28	8,1/8,7/9,9	354/382/434	0,9/1,0/1,3	27/26/25
<b>20</b>		9,3/10/11,4	410/443/502	1,1/1,3/1,6	34/33/31	7,1/7,7/8,7	313/338/384	0,7/0,8/1,0	30/29/28
<b>Tw1/Tw2 = 70/50°C</b>					<b>Tw1/Tw2 = 70/40°C</b>				
<b>0</b>	2000/ 2300/ 2900	8,6/9,3/10,6	377/408/463	1,0/1,2/1,5	13/12/11	5,4/6,0/7,0	157/175/203	0,2/0,3/0,4	8/7/7
<b>5</b>		7,7/8,3/9,5	337/364/414	0,8/0,9/1,2	17/16/15	2,9/3,0/5,5	83/86/100	0,1/0,07/0,06	9/8/8
<b>10</b>		6,8/7,3/8,3	295/320/363	0,7/0,8/0,9	20/19/18	2,5/2,6/2,7	73/75/78	0,1/0,06/0,06	14/13/13
<b>15</b>		5,8/6,3/7,1	253/274/312	0,5/0,6/0,7	24/23/22	2,1/2,2/2,3	62/64/67	0,1/0,06/0,05	18/17/17
<b>20</b>		4,8/5,2/5,9	209/227/260	0,3/0,4/0,5	27/27/26	1,7/1,8/1,9	52/53/55	0,1/0,05/0,03	23/22/22
<b>Tw1/Tw2 = 60/40°C</b>					<b>Tw1/Tw2 = 50/40°C</b>				
<b>0</b>	2000/ 2300/ 2900	6,3/6,9/7,8	275/290/340	0,6/0,7/0,9	10/9/8	7,0/7,5/8,6	605/655/744	2,5/2,9/3,6	10/10/9
<b>5</b>		5,3/5,8/6,6	231/251/288	0,4/0,5/0,6	13/12/12	6,0/6,5/7,4	524/567/645	1,9/2,2/2,8	14/13/12
<b>10</b>		4,2/4,6/5,3	182/201/233	0,3/0,3/0,4	16/16/15	5,1/5,5/6,3	442/479/544	1,4/1,6/2,1	17/17/16
<b>15</b>		2,0/2,1/3,8	89/91/167	0,08/0,1/0,2	18/18/19	4,1/4,5/5,1	359/389/442	0,9/1,1/1,4	21/21/20
<b>20</b>		1,6/1,7/1,8	73/75/78	0,07/0,06/0,05	23/22/22	3,1/3,4/3,9	271/295/337	0,6/0,7/0,9	25/24/23

#### ELiS D-W-150

Tp1	V	PT	Qw	Δpw	Tp2	PT	Qw	Δpw	Tp2
°C	m³/h	kW	l/h	kPa	°C	kW	l/h	kPa	°C
<b>Tw1/Tw2 = 90/70°C</b>					<b>Tw1/Tw2 = 80/60°C</b>				
<b>0</b>	2500/ 3200/ 4300	19,5/22,4//26,5	858/989/1167	5,2/6,8/9,2	23/21/18	16,6/19,1/22,5	728/839/990	4,0/5,1/7,0	20/18/16
<b>5</b>		21,0/24,7	925/1092	6,0/8,1	24/22	15,3/17,6/20,8	672/774/913	3,4/4,4/6,0	23/21/19
<b>10</b>		16,9/19,5/23	747/861/1015	4,0/5,2/7,1	30/28/26	14/16,1/19,0	616/709/836	2,9/3,8/5,1	26/25/23
<b>15</b>		15,7/18,0/21,3	691/796/939	3,5/4,5/6,1	33/32/29	12,7/14,7/17,3	559/644/759	2,5/3,2/4,3	30/28/27
<b>20</b>		14,3/16,6/19,5	635/731/862	3,0/3,9/5,4	37/35/33/	11,4/13,2/15,5	502/578/681	2,0/2,6/3,5	33/32/30
<b>Tw1/Tw2 = 70/50°C</b>					<b>Tw1/Tw2 = 70/40°C</b>				
<b>0</b>	2500/ 3200/ 4300	13,7/15,7/18,6	597/688/812	2,9/3,7/5,0	16/15/13	10,7/12,3/14,6	311/359/424	0,9/1,2/1,6	13/11/10
<b>5</b>		12,4/14,2/16,8	541/623/735	2,4/3,1/4,2	20/18/17	9,3/10,8/12,8	272/314/371	0,7/0,9/1,2	16/15/14
<b>10</b>		11,6/12,7/15,0	484/557/657	2,0/2,5/3,4	23/22/20	7,9/9,2/10,9	231/268/317	0,5/0,7/0,9	19/18/17
<b>15</b>		9,7/11,2/13,2	426/491/579	1,6/2,0/2,7	26/25/24	6,4/7,5/9,0	186/218/261	0,4/0,5/0,7	23/22/21
<b>20</b>		8,4/9,7/11,4	368/424/500	1,2/1,5/2,1	30/29/28	4,5/5,6/6,8	131/163/199	0,2/0,3/0,4	25/25/24
<b>Tw1/Tw2 = 60/40°C</b>					<b>Tw1/Tw2 = 50/40°C</b>				
<b>0</b>	2500/ 3200/ 4300	10,7/12,3/14,5	465/536/632	1,9/2,4/3,3	13/11/10	10,7/12,3/14,6	929/1072/1267	6,7/8,7/11,8	13/11/10
<b>5</b>		9,4/10,8/12,7	407/470/554	1,5/1,9/2,6	16/15/14	9,4/10,8/12,8	816/942/1112	5,3/6,9/9,3	16/15/14
<b>10</b>		8,0/9,2/10,9	349/403/475	1,1/1,5/2,0	19/18/17	8,1/9,3/11	702/810/956	4,0/5,2/7,0	20/19/18
<b>15</b>		6,6/7,7/9,1	289/334/395	0,8/1,1/1,4	23/22/21	6,7/7,8/9,1	587/676/798	2,9/3,8/5,1	23/22/21
<b>20</b>		5,2/6,0/7,2	225/262/312	0,5/0,7/0,9	26/25/25	5,4/6,2/7,3	469/541/639	2,0/2,5/3,4	26/26/25

To obtain operating parameters concerning other water temperatures, please contact Sales Office.

- PT – heating capacity
- Tp1 – inlet air temperature
- Tp2 – outlet air temperature
- Tw1 – inlet water temperature
- Tw2 – outlet water temperature
- Qw – water stream flow in the heat exchanger
- Δpw – water pressure drop in the heat exchanger



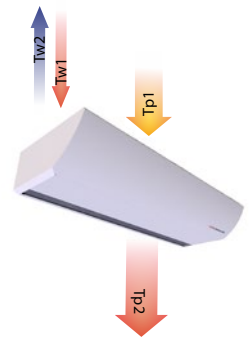
## Heating capacities

### ELiS D with one row water heat exchanger

#### ELiS D-W-200

<b>Tp1</b>	<b>V</b>	<b>PT</b>	<b>Qw</b>	<b>Δpw</b>	<b>Tp2</b>	<b>PT</b>	<b>Qw</b>	<b>Δpw</b>	<b>Tp2</b>
°C	m <sup>3</sup> /h	kW	l/h	kPa	°C	kW	l/h	kPa	°C
<b>Tw1/Tw2 = 90/70°C</b>					<b>Tw1/Tw2 = 80/60°C</b>				
<b>0</b>	2900/ 3700/ 5500	24,5/28,2/35,4	1080/1246/1560	9,1/11,8/18,0	25/23/19	21/24,2/30,3	921/1062/1330	7,0/9,1/13,8	21/19/16
<b>5</b>		22,9/26,4/33,1	1012/1167/1461	8,1/10,5/15,9	28/26/23	19,4/22,4/28,1	853/983/1231	6,1/7,9/11,9	25/23/20
<b>10</b>		21,4/24,7/30,9	943/1088/1362	7,1/9,3/14	32/30/27	17,8/20,6/25,7	784/903/1131	5,2/6,8/10,2	28/26/24
<b>15</b>		19,8/22,9/28,6	875/1008/1262	6,2/8,1/12,2	35/33/30	16,3/18,7/23,4	714/823/1030	4,4/5,7/8,6	31/30/27
<b>20</b>		18,3/21,1/26,3	635/731/862	3,0/3,9/5,4	37/35/33/	11,4/13,2/15,5	645/743/929	3,7/4,8/7,1	35/33/31
<b>Tw1/Tw2 = 70/50°C</b>					<b>Tw1/Tw2 = 70/40°C</b>				
<b>0</b>	2900/ 3700/ 5500	17,4/20,1/25,2	763/880/1101	5,2/6,7/10	18/16/14	14,3/16,4/20,6	415/479/600	1,8/2,3/3,4	15/13/11
<b>5</b>		15,9/18,3/22,9	694/800/1001	4,3/5,6/8,4	21/20/17	12,6/14,6/18,2	368/424/530	1,4/1,8/2,7	18/17/15
<b>10</b>		14,3/16,4/20,6	624/720/900	3,6/4,6/7,0	24/23/21	11,0/12,7/15,8	319/368/461	1,1/1,4/2,1	21/20/18
<b>15</b>		12,7/14,6/18,2	554/638/798	2,9/3,7/5,6	28/27/25	9,3/10,7/13,4	269/311/390	0,8/1,1/1,6	24/23/22
<b>20</b>		11,0/12,7/15,9	483/557/695	2,3/2,9/4,4	31/30/28	7,4/8,6/10,9	217/250/317	0,6/0,7/1,1	27/27/26
<b>Tw1/Tw2 = 60/40°C</b>					<b>Tw1/Tw2 = 50/40°C</b>				
<b>0</b>	2900/ 3700/ 5500	13,8/15,6/20	604/697/872	3,5/4,5/6,8	14/13/11	13,5/15,6/19,5	1176/1357/1702	11,9/15,4/22,3	14/12/10
<b>5</b>		12,3/14,1/17,7	534/616/770	2,8/3,6/5,4	17/16/14	11,9/13,8/17,2	1037/1197/1500	9,5/12,3/18,5	17/16/14
<b>10</b>		10,6/12,3/15,3	463/534/668	2,2/2,8/4,2	21/20/18	10,3/11,9/14,9	897/1035/1297	7,3/9,4/14,2	20/19/18
<b>15</b>		9,0/10,4/13	391/451/584	1,6/2,1/3,1	24/23/22	8,7/10/12,5	756/872/1092	5,4/6,9/10,4	24/23/22
<b>20</b>		7,3/8,4/10,5	317/366/459	1,1/1,4/2,1	27/27/26	7,0/8,1/10,2	613/707/884	3,7/4,7/7,1	27/26/25

To obtain operating parameters concerning other water temperatures, please contact Sales Office.



### ELiS D with electric heaters

	<b>T-E-100</b>			<b>T-E-150</b>			<b>T-E-200</b>		
	1 STEP	2 STEP	3 STEP	1 STEP	2 STEP	3 STEP	1 STEP	2 STEP	3 STEP
Power supply [V/Hz]	3x400/50								
Rated current <sup>(1)</sup> [A]	9,2	9,5	10,0	15,0	15,3	15,8	20,5	21,0	21,5
Heating capacity <sup>(1)</sup> [kW]	6,6	6,8	7,0	10,5	10,7	11,0	14,3	14,6	15,0
Air temperature rise for curtain (ΔT) <sup>(1)</sup> [°C]	12	12	11	13	12	12	14	14	13

<sup>(1)</sup> At inlet air temperature 10°C



