

ELIS T AIR CURTAINS

ELIS T

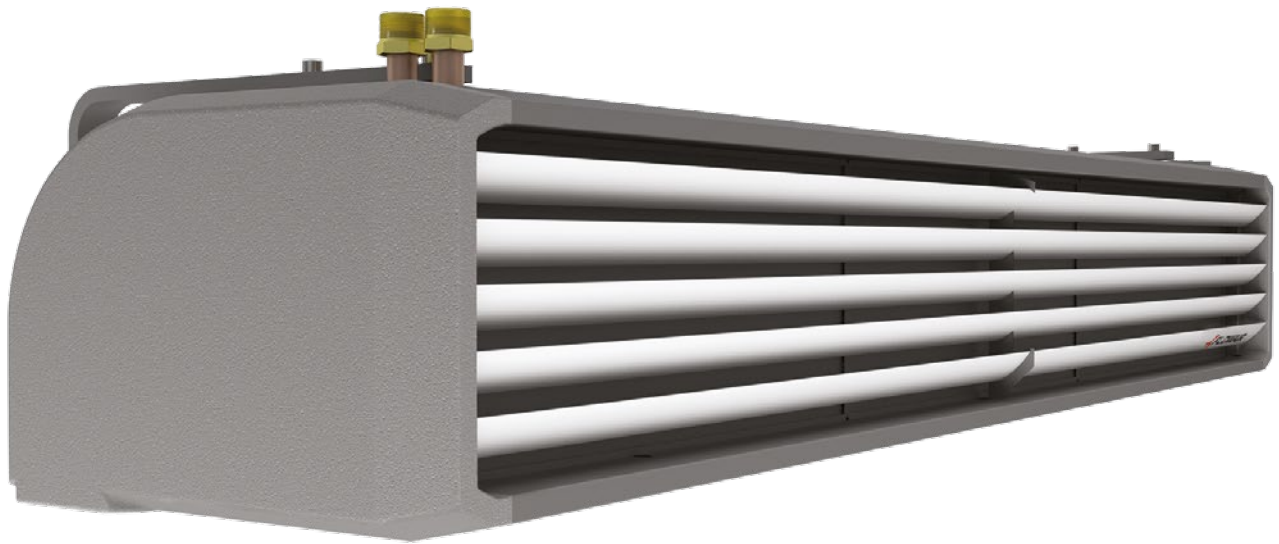


TABLE OF CONTENTS

• General characteristics	3
• Construction	4
• Dimensions	5
• Technical data	5
• Velocity of the air flow	6
• Installation	7
• BMS programming	8
• Control systems	9
• Control system elements	10
• Connection diagrams	11
• Heating capacity tables	
- ELiS T-W-100	13
- ELiS T-W-150	13
- ELiS T-W-200	13
- ELiS T-E-100/150/200	14

GENERAL CHARACTERISTICS



	ELiS T
Max. range* (m)	4
Heating capacity** (kW)	9,1–23,3
Air flow (m³/h)	1900–5300
Weight (kg)	20,7–37
Colour	grey (RAL 9007)
Casing	steel, plastic, EPP, aluminum

* Vertical range of isothermal stream (at velocity boundary equal to 2 m/s).

** For T-W at inlet/outlet water temperature 90/70°C, inlet air temperature 10°C.

ELiS T air curtains are designed to ensure thermal protection of rooms. They generate air barrier on entire door opening plane. It prevents the inflow of cold air during the winter and the inflow of warm air into the air-conditioned rooms during the summer.

ELiS T air curtains are:

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



W - air curtain with water heat exchanger



E - air curtain with electric heaters



N - air curtain without heating elements (ambient)



T-W/N/E-100



T-W/N/E-150



T-W/N/E-200



SIMPLE CONSTRUCTION

Simple and lightweight construction thanks to combination of steel and plastic elements.



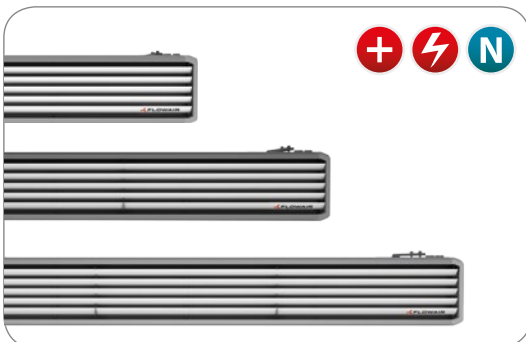
CONTROL SYSTEM WITH BMS

Control system makes possible to connect the units to the intelligent building management system (BMS).



CROSSFLOW FAN

High efficiency thanks to electric motor driving crossflow impellers.



WIDE RANGE OF UNITS

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. Possibility to install the units horizontally and vertically.



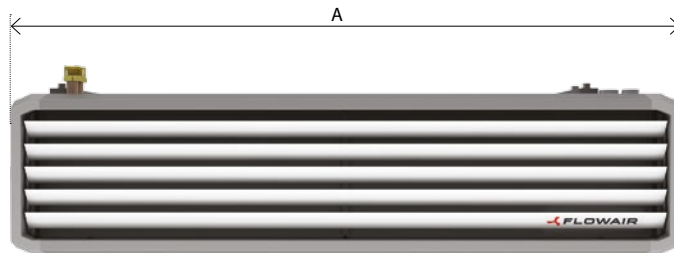
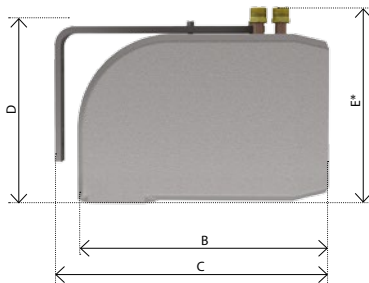
HEATING ELEMENTS

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

DIMENSIONS

Dimensions [mm]	T-W/N/E-100	T-W/N/E-150	T-W/N/E-200
A	1045	1533	2020
B	377	377	377
C	428	428	428
D	263	263	263
E*	300	300	300

* Dimension only for T-W curtains.



TECHNICAL DATA

	T-N-100	T-W-100	T-E-100	T-N-150	T-W-150	T-E-150	T-N-200	T-W-200	T-E-200
Fan	Motor with transverse rotor								
Max. air flow [m³/h]	2900	2300		4000	3900		5300	5100	
Power supply [V/Hz]	230 / 50	230 / 50	3x400 / 50	230 / 50	230 / 50	3x400 / 50	230 / 50	230 / 50	3x400 / 50
Max. current consumption [A]	0,39	0,38		0,42	0,4		0,46	0,44	
Max. power consumption [kW]	1,8	1,7		1,9	1,8		2,1	2,0	
IP	21								
Max. acoustic pressure level*[dB(A)]	69	68		70	69		70	69	
Max. air stream range** [m]	4								
	T-W/E-100			T-W/E-150			T-W/E-200		
Fan step	1 st step	2 nd step	3 rd step	1 st step	2 nd step	3 rd step	1 st step	2 nd step	3 rd step
Air flow [m³/h]	1900	2100	2300	3100	3500	3900	3200	4100	5100
Fan current consumption [A]	1,3	1,5	1,7	1,4	1,6	1,8	1,5	1,7	2,0
Fan power consumption [W]	0,29	0,33	0,38	0,3	0,35	0,4	0,33	0,38	0,44
Acoustic pressure level* [dB(A)]	58	62	68	59	63	69	60	64	69
	T-N-100			T-N-150			T-N-200		
Fan step	1 st step	2 nd step	3 rd step	1 st step	2 nd step	3 rd step	1 st step	2 nd step	3 rd step
Air flow [m³/h]	2100	2600	2900	3200	3600	4000	3300	4300	5300
Fan current consumption [A]	1,4	16	1,8	1,5	1,7	1,9	1,6	1,8	2,1
Fan power consumption [W]	0,31	0,5	0,39	0,33	0,38	0,42	0,35	0,4	0,46
Acoustic pressure level* [dB(A)]	59	63	69	60	64	70	60	64	70
	T-W-100			T-W-150			T-W-200		
Heat exchanger	Cu – Al, one row								
Heating capacity***[kW]	11,1			20			27,4		
Air temperature rise (ΔT)***[°C]	15			15			16		
Max. water pressure [MPa]	1,6								
Max. water temperature [°C]	95								
Connection ["]	½								
	T-E-100			T-E-150			T-E-200		
Heating element	2 x PTC heating board			3 x PTC heating board			4 x PTC heating board		
Power supply [V/Hz]	3x400 / 50								
Rated current*** [A]	11			16,6			22,4		
Heating output***[kW]	7,5			11,5			15,5		
Air temperature rise (ΔT) ***[°C]	11			12			13		
	T-N-100	T-W-100	T-E-100	T-N-150	T-W-150	T-E-150	T-N-200	T-W-200	T-E-200
Unit weight [kg]	20,7	22,1	24	27	29,5	31,5	31,5	34,3	37
Weight of unit filled with water [kg]	-	22,9	-	-	30,7	-	-	35,9	-

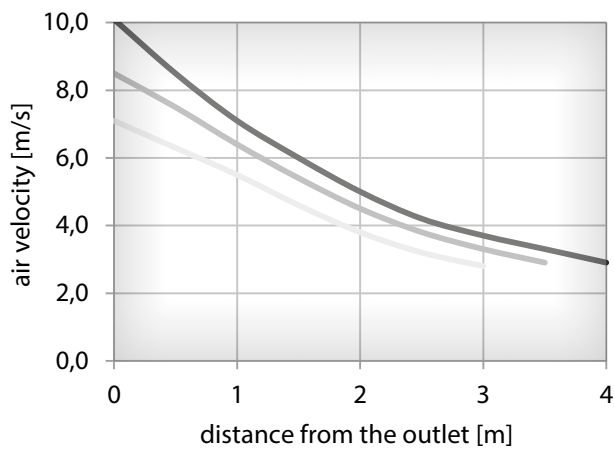
* Acoustic pressure level measured in the room with average sound absorption, capacity 500 m³, at distance of 2 m from the unit.

** Vertical range of isothermal stream (at velocity boundary equal to 2 m/s).

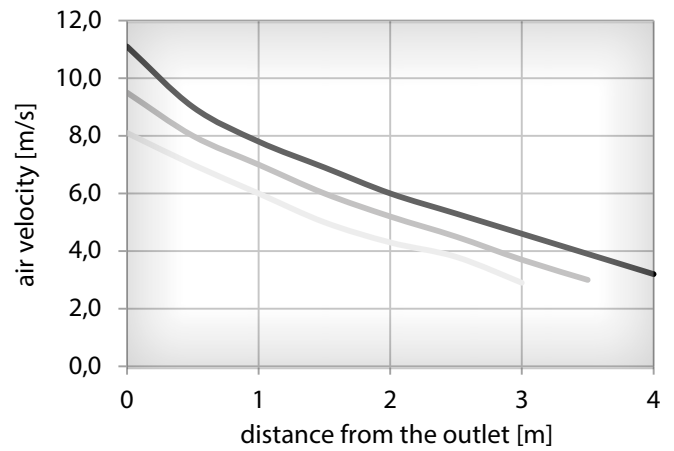
*** At inlet/outlet water temperature 90/70°C, inlet air temperature 10°C.

VELOCITY OF THE AIR FLOW

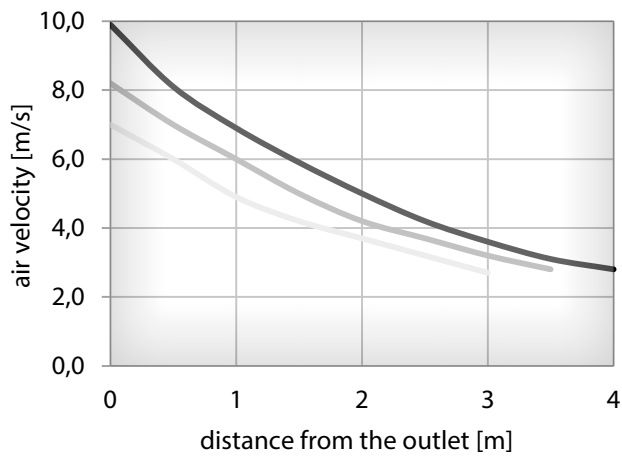
T-W-100; T-E-100



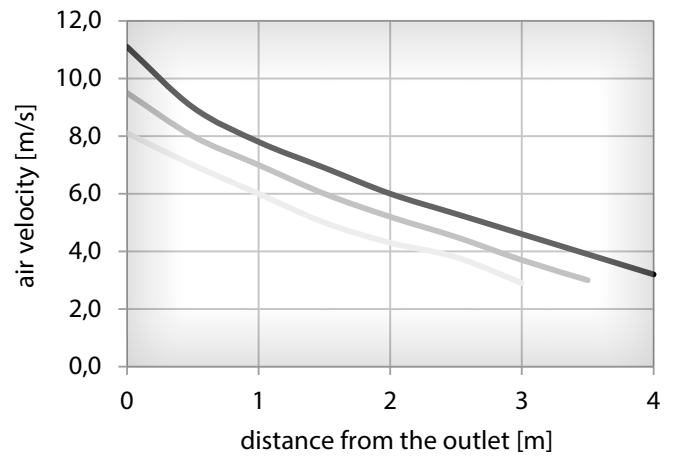
T-N-100



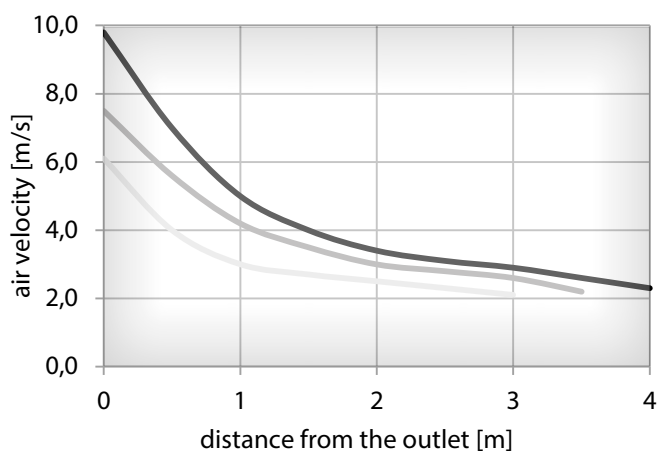
T-W-150; T-E-150



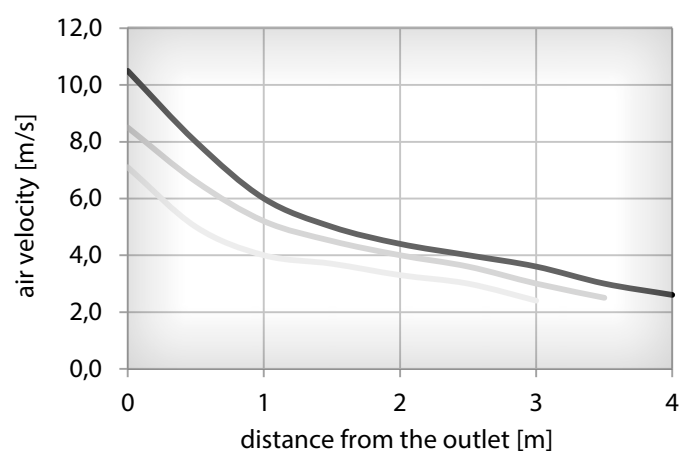
T-N-150



T-W-200; T-E-200



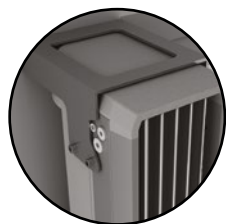
T-N-200



— 1st step
 — 2nd step
 — 3rd step

INSTALLATION

INSTALLATION OPTIONS



Vertical installation of ELiST air curtains using brackets.

In order to vent the air curtains installed on the left side of the doorway, use the vent valve located at the common collector, near the connection terminal at the top of the device.

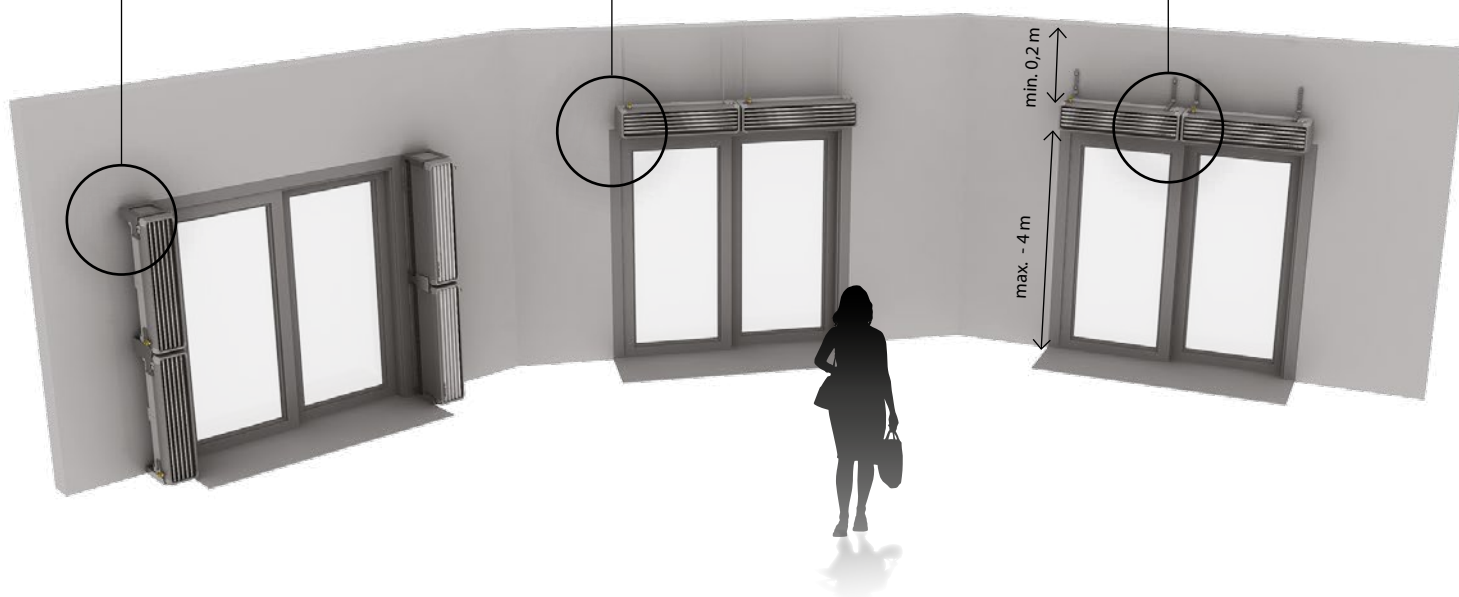


ELiST air curtains are equipped with holders for installation using pins.



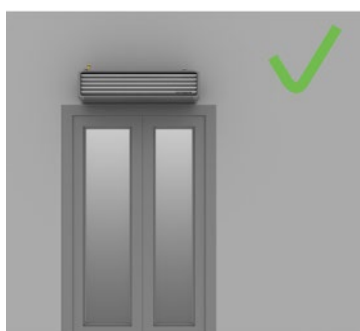
Mounting brackets enable easy and quick installation of air curtains in two ways.

or



CORRECT INSTALLATION

The key to the correct operation of the unit is to ensure air barrier on entire door opening plane. ELiST are adapted to chaining, so covering wider door openings doesn't make any problem. Incorrect installation may result in heat loss during the winter and chill loss in the air-conditioned rooms during the summer.



ELiS T air curtains can be optionally equipped with external control system ELiS, which communicates with BMS (Building Management System). It is possible to set up to 32 addresses.

Holding Register Data (Write and Read)

No.	Modbus address	Name of parameter	Min.	Max.	Modbus address
1	0x04	CurtainFanSpeedRef	0	3	Set value for curtain's fan 0 FAN_SPEED0 Fan is off 1 FAN_SPEED1 1 st step of fan is on 2 FAN_SPEED2 2 nd step of fan is on 3 FAN_SPEED3 3 rd 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 switch 0 DOOR_CLOSE Door is closed 1 DOOR_OPEN Door is open

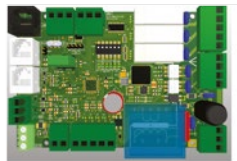
Inputs Register Data (Read)

No.	Modbus address	Name of parameter	Min.	Max.	Modbus address
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 switch 0 DOOR_CLOSE Door is closed 1 DOOR_OPEN Door is open

Communication parameters:

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





SRQ2d
two-way valve
with actuator



SRQ3d
three-way valve
with actuator

TS
3-step fan speed regulator with
built-in room thermostat



DCet/DCE
magnetic
door switch



DCm
mechanical
door switch

ELiS T air curtains are equipped with connection terminal, which enables to connect:

- DCm/DCet door switch
- TS three-step fan speed regulator with thermostat

Control system ensures basic operation of the unit. The master controller is the door switch (in case of no door switches cable jumper must be applied). Fan speed regulator enables to chose one of three speed of air flow. In case of curtains with water heat exchanger, thermostat controls operation of the valve. In case of curtains with electric heaters, thermostat turns on the PTC heating boards.

DRV ELiS:

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

- DCm/DCE door switch
- TS three-step fan speed regulator with thermostat

DRV ELiS has 2 operation modes:

- Configuration 1 - operation of the curtain, when the master signal comes both from door switch and fan speed regulator
- Configuration 2 - operation of the curtain, when the master signal comes from door switch. Fan speed regulator with thermostat changes fan speed and turns on the heaters.

FEATURES:

Regulation of fan speed.
(three steps of efficiency)

Possibility of connection to BMS system using DRV ELiS.

Multiple configurations of curtains operation with DRV ELiS.



Several curtains can be operated by one controller when linked by RJ wire.

CHAINING OF THE AIR CURTAINS

System is equipped with RJ connectors, which enable to connect MASTER and SLAVE units and control up to 5 units by single TS and DC.

BMS

DRV ELiS can be connected to the intelligent building management system BMS. This solution enables saving and loading parameters of curtain's operation (e.g. fan speed).

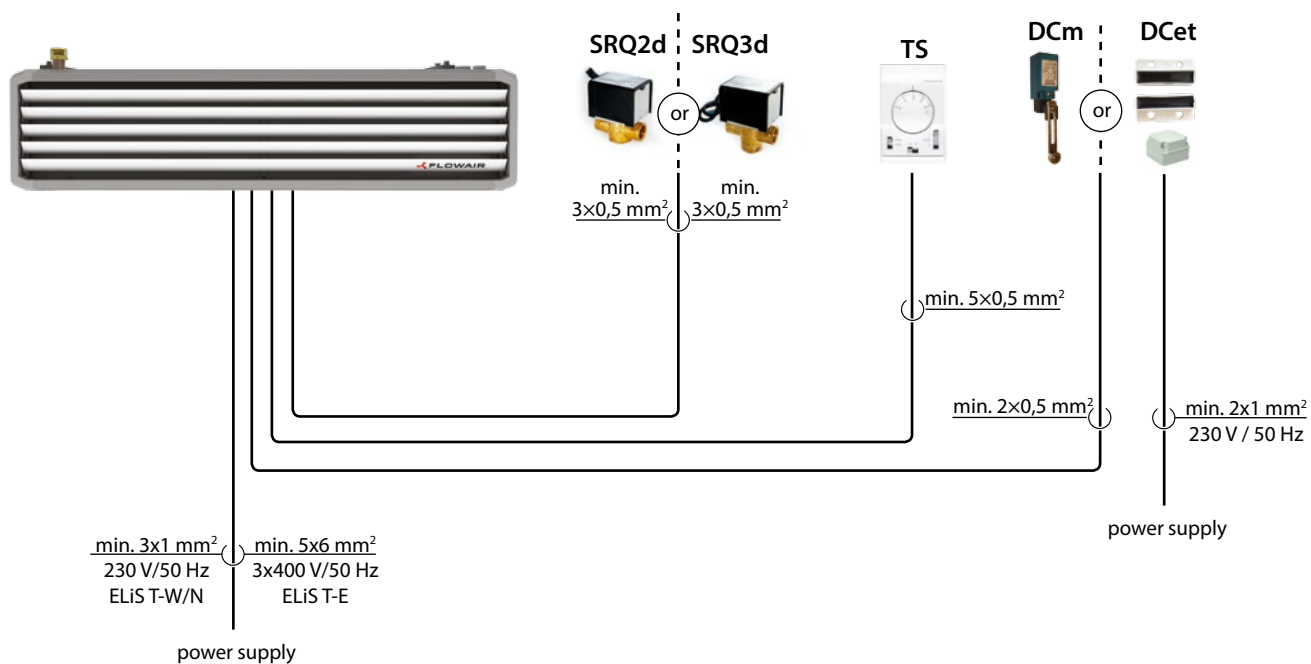
Category	Symbol	Picture	Technical data
valves with actuator	SRQ2d two-way valve 1/2" with actuator		Protection degree: IP20 Power supply: 200–240 V 50/60 Hz Max. water temperature: +93°C Max. operating pressure: 1,6 MPa Kvs: 1/2" - 3,0 m³/h Installation: on water outlet pipe Opening/closing time: 18s/5s Dimensions (HxWxL): 1/2" - 108x86x66 mm
	SRQ3d three-way valve 1/2" with actuator		Protection degree: IP20 Power supply: 200–240 V 50/60 Hz Power supply: +93°C Max. operating pressure: 2 MPa Kvs: 1/2" - 3,4 m³/h Installation: on water inlet pipe Opening/closing time: 18s/5s Dimensions (HxWxL): 1/2" - 118x86x66 mm
thermostat	TS room thermostat with built-in 3-step fan speed regulator		Temperature adjustment range: +10 ... +30°C Operating temperature range: 0 ... +40°C Protection degree: IP30 Contacts load: inductive 4 A, resistance 6 A
door switches	DCet magnetic door switch with relay box		Operating temperature range: -5 ... +60°C Protection degree: IP64 Casing: plastic Connection wire length: 2 m Type: NO Contacts load - inductive: 3 A Max. contacts voltage: 230 VAC Max. distance between contacts: 8 mm
	DCE magnetic door switch		Operating temperature range: -5 ... +60°C Protection degree: IP64 Casing: plastic Connection wire length: 2 m Type: NC Resistance contacts load: 0,5 A Max. contacts voltage: 175 VDC Max. distance between contacts: 8 mm
	DCm mechanical door switch		Operating temperature range: -10 ... +80°C Protection degree: IP65 Casing: plastic Connection wire length: none Type: 1xNC and 1xNO Contacts load - inductive: 3 A Max. contacts voltage: 300 VAC or 250 VDC
wires	CW wire for curtains chaining (master - slave)		Length: 3,7 m Plugs: RJ12

CONNECTION DIAGRAMS

BASIC CONTROL SYSTEM

Connection terminal enables to control the unit by:

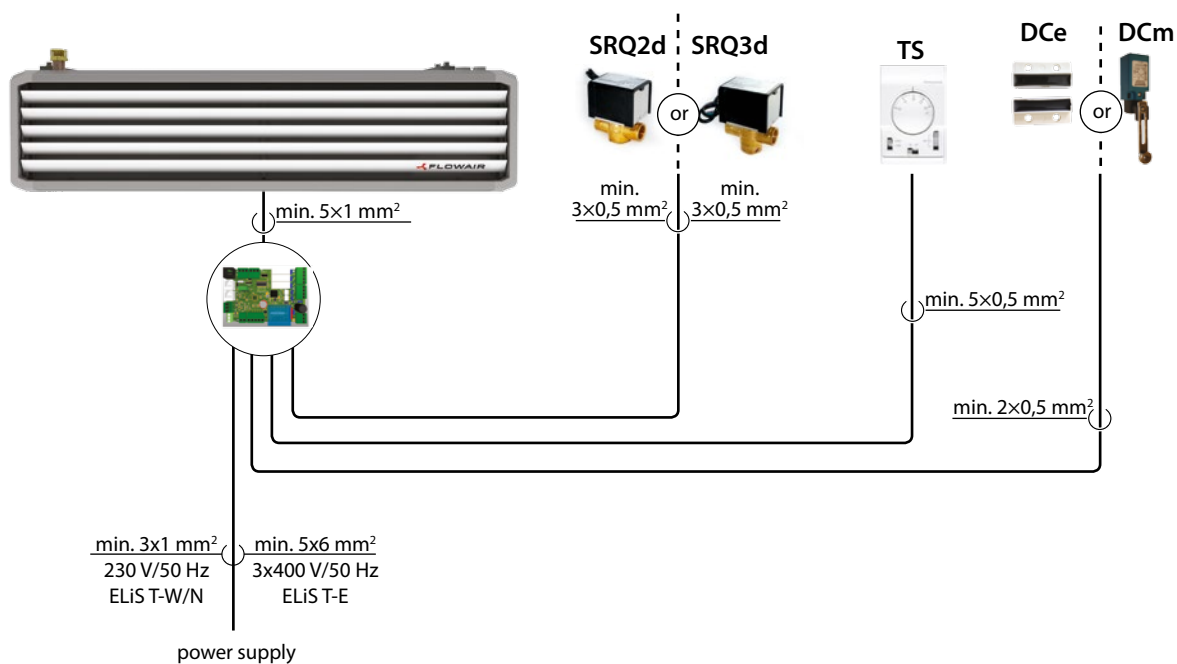
- the door switch DCe or DCm and thermostat with fan speed regulator TS.



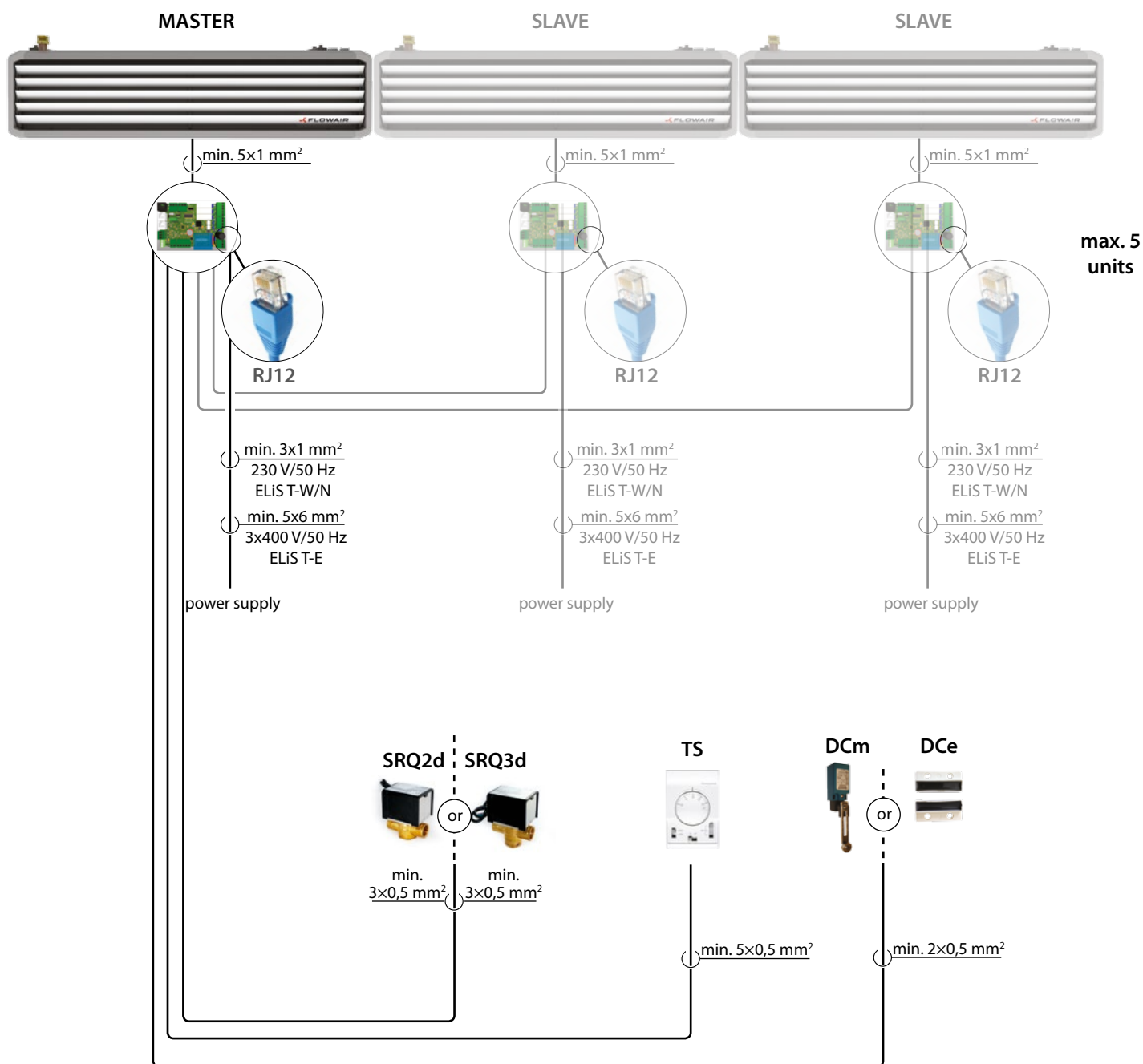
DRV ELiS CONTROL SYSTEM

Operation mode enables to control the unit by:

- the door switch DCe or DCm and thermostat with fan speed regulator TS.



It is possible to chain ELIS T units among themselves. All of the control system components must be connected to the first unit (MASTER). Control signals are transmitting to the other units (SLAVE) by CW wire (with RJ12 plugs) - it is possible to connect up to 5 units in this way.



ELIS T 100

Tp1	V	PT	Qw	Δpw	Tp2	PT	Qw	Δpw	Tp2
°C	m³/h	kW	l/h	kPa	°C	kW	l/h	kPa	°C
Tw1 / Tw2 = 90/70°C						Tw1 / Tw2 = 80/60°C			
0	1900/2100/2300	11,7/12,3/12,9	516/544/571	1,7/1,8/2	18/17,5/17	9,8/10,3/10,8	430/454/476	1,2/1,4/1,5	15/14,5/14
5		10,9/11,5/12	480/507/531	1,5/1,6/1,8	22/21,5/21	9/9,5/9,9	394/415/436	1,1/1,2/1,3	19/18,5/18
10		10,1/10,6/11,1	444/469/492	1,3/1,4/1,5	25,5/25/24,5	8,1/8,6/9	357/377/395	0,9/1/1,1	22,5/22/21,5
15		9,3/9,8/10,2	408/430/451	1,1/1,2/1,3	29/28,5/28	7,3/7,7/8,1	321/338/355	0,7/0,8/0,9	26/25,5/25
20		8,4/8,9/9,3	372/392/411	0,9/1/1,1	33/32,5/32	6,5/6,8/7,1	283/299/314	0,6/0,6/0,7	30/29,5/29
Tw1 / Tw2 = 70/50°C						Tw1 / Tw2 = 60/40°C			
0	1900/2100/2300	7,8/8,3/8,7	342/361/379	0,8/0,9/1	12/11,5/11	5,7/6/6,3	248/262/276	0,5/0,5/0,6	9/8,5/8
5		7/7,4/7,7	305/322/338	0,7/0,8/0,8	16/15,5/15	4,8/5/5,3	207/220/232	0,4/0,4/0,4	12,5/12/11,5
10		6,1/6,5/6,8	267/282/296	0,5/0,6/0,7	19,5/19/18,5	3,7/3,9/4,2	159/172/183	0,2/0,3/0,3	16/15,5/15
15		5,2/5,5/5,8	229/242/254	0,4/0,5/0,5	23/22,5/22	1,9/2/2,1	85/87/89	0,1/0,1/0,1	18,5/18/17,5
20		4,3/4,6/4,8	188/199/210	0,3/0,3/0,4	27/26,5/26	1,6/1,6/1,7	70/71/73	0,1/0,1/0,1	22,5/22/22
Tw1 / Tw2 = 70/40°C						Tw1 / Tw2 = 50/40°C			
0	1900/2100/2300	4,7/5,1/5,4	135/148/158	0,2/0,2/0,2	7,5/7/6,5	6,3/6,7/7	549/579/608	2,1/2,3/2,5	10/9,5/9
5		2,8/2,8/2,9	80/82/84	0,1/0,1/0,1	9,5/9/8,5	5,5/5,8/6,1	475/502/527	1,6/1,8/1,9	13,5/13/12,5
10		2,4/2,5/2,6	70/71/73	0,1/0,1/0,1	13,5/13/12,5	4,6/4,9/5,1	401/423/444	1,2/1,3/1,4	17/16,5/16
15		2,1/2,1/2,1	60/61/62	0,1/0,1/0,1	18,5/18/17,5	3,7/3,9/4,1	324/343/360	0,8/0,8/1	21/20,5/20
20		1,7/1,8/1,8	50/51/52	0,1/0,1/0,1	23/22,5/22	2,8/3/3,1	244/259/272	0,5/0,5/0,6	25/24,5/24

ELIS T 150

ELIS T 150									
Tp1	V	PT	Qw	Δpw	Tp2	PT	Qw	Δpw	Tp2
°C	m³/h	kW	l/h	kPa	°C	kW	l/h	kPa	°C
Tw1 / Tw2 = 90/70°C						Tw1 / Tw2 = 80/60°C			
0	3100/3500/3900	20,6/21,9/23,2	907/968/1026	5,8/6,5/7,2	19,5/18,5/17,5	17,5/18,7/19,8	769/821/870	4,4/4,9/5,5	17/16/15
5		19,2/20,5/21,7	848/905/959	5,1/5,8/6,4	23/22/21	16,2/17,3/18,3	710/758/802	3,8/4,3/4,7	20,5/19,5/18,5
10		17,9/19,1/20,2	789/842/892	4,5/5/5,6	27/26/25	14,8/15,8/16,7	650/694/735	3,2/3,6/4	24,5/23,5/22,5
15		16,5/17,7/18,7	730/779/824	3,9/4,4/4,8	31/30/29	13,4/14,3/15,2	591/630/667	2,7/3,1/3,4	28/27/26
20		15,2/16,2/17,2	670/715/757	3,3/3,7/4,1	34,5/33,5/32,5	12,1/12,9/13,6	530/566/599	2,2/2,5/2,8	32/31/30
Tw1 / Tw2 = 70/50°C						Tw1 / Tw2 = 60/40°C			
0	3100/3500/3900	14,4/15,4/16,3	631/674/714	3,2/3,6/4	14/13/12	11,3/12/12,8	492/525/556	2,1/2,4/2,6	11/10/9
5		13,1/13,9/14,8	572/610/646	2,6/3/3,3	18/17/16	9,9/10,6/11,2	431/460/487	1,7/1,9/2,1	15/14/13
10		11,7/12,5/13,2	511/546/578	2,2/2,4/2,7	22/21/20	8,5/9/9,6	369/394/417	1,3/1,4/1,6	18,5/17,5/16,5
15		10,3/11/11,6	450/481/509	1,7/1,9/2,1	25,5/24,5/23,5	7/7,5/7,9	305/327/346	0,9/1/1,1	22,5/21,5/20,5
20		8,9/9,5/10	389/415/439	1,3/1,5/1,6	29,5/28,5/27,5	5,5/5,9/6,2	239/256/272	0,6/0,7/0,07	26/25/24
Tw1 / Tw2 = 70/40°C						Tw1 / Tw2 = 50/40°C			
0	3100/3500/3900	11,31/12,09/12,8	329/352/373	1/1,12/1,25	11/10/9	11,3/12,07/12,79	983/1050/1113	7,45/8,39/9,32	11/10/90
5		9,88/10,56/11,19	288/307/326	0,8/0,9/1	15/14/13	9,92/10,6/11,22	863/922/977	5,88/6,62/7,35	15/14/13
10		8,39/9/9,53	244/262/278	0,6/0,66/0,8	18,5/17,5/16,5	8,53/9,11/9,65	742/793/839	4,47/5,5/5,59	18,5/17,5/16,5
15		6,82/7,33/7,8	198/213/227	0,4/0,5/0,5	22/21/20	7,13/7,61/8,06	620/662/701	3,23/3,64/4	22/21/20
20		4,93/5,42/5,85	143/158/170	0,2/0,3/0,3	25/24/23	5,7/6,09/6,45	496/530/561	2,16/2,43/2,7	26/25/24

ELIS T 200

ELIS T 200									
Tp1	V	PT	Qw	Δpw	Tp2	PT	Qw	Δpw	Tp2
°C	m³/h	kW	l/h	kPa	°C	kW	l/h	kPa	°C
Tw1 / Tw2 = 90/70°C						Tw1 / Tw2 = 80/60°C			
0	3000/4100/5100	23,5/28/31,4	1037/1234/1387	8,5/11,7/14,5	23/20/18	20,2/24/26,9	885/1052/1183	6,5/9/11,1	19/17/15
5		22/26,2/29,4	972/1155/1299	7,5/10,3/12,8	27/24/22	18,6/22,2/24,9	819/974/1095	5,7/7,8/9,6	23,5/21/19,5
10		20,5/24,4/27,4	906/1077/1211	6,6/9,1/11,3	30/27/26	17,1/20,4/22,9	753/895/1005	4,9/6,7/8,2	27/24,5/23
15		19/22,6/25,4	840/998/1122	5,8/7,9/9,8	34/31/29	15,6/18,6/20,8	686/815/916	4,1/5,6/7	30/28/27
20		17,5/20,8/23,4	774/919/1033	5/6,8/8,4	38/35/33	14,1/16,7/18,8	619/735/826	3,4/4,7/5,8	33,5/32/30,5
Tw1 / Tw2 = 70/50°C						Tw1 / Tw2 = 60/40°C			
0	3000/4100/5100	16,8/19,9/22,4	733/872/980	4,8/6,6/8,1	16,5/14,5/12,5	13,3/15,8/17,8	581/690/776	3,3/4,5/5,5	13/11,5/10
5		15,2/18,1/20,6	667/792/891	4/5,5/6,8	20/18/16	11,8/14/15,7	513/610/686	2,6/3,6/4,4	16,5/15/14
10		13,7/16,3/18,3	600/713/801	3,3/4,6/5,6	23,5/21,5/20,5	10,2/12,1/13,6	445/529/595	2/2,7/3,4	20/19/18
15		12,2/14,5/16,2	532/632/710	2,7/3,7/4,5	27/25/24	8,6/10,2/11,5	376/447/502	1,5/2/2,5	23,5/22,5/21,5
20		10,6/12,6/14,4	464/551/619	2,1/2,9/3,5	30,5/28,5/27,5	7/8,3/9,4	304/362/408	1/1,4/1,7	26,5/25,5/25
Tw1 / Tw2 = 70/40°C						Tw1 / Tw2 = 50/40°C			
0	3000/4100/5100	13,7/16,3/18,3	399/474/533	1,6/2,2/2,8	13,5/11,5/10,5	13/15,5/17,4	1130/1345/1513	11/15,2/18,8	12,5/11/10
5		12,1/14,4/16,2	353/420/472	1,3/1,8/2,2	17/15/14	11,5/13,6/15,3	997/1186/1334	8,8/12/15	16/14,5/14
10		1,5/12,5/14,1	306/365/410	1/1,4/1,7	20/19/18	9,9/11,8/13,3	862/1025/1153	6,8/9,3/11,5	20/18,5/17,5
15		8,9/10,6/11,9	258/308/347	0,8/1/1,3	23,5/22,5/21,5	8,4/9,9/11,2	726/864/971	5/6,8/8,4	23/22/21
20		7,1/8,6/9,7	207/249/281	0,5/0,7/0,9	27/26/25	6,8/8/9	589/700/786	3,4/4,7/5,8	26,5/25,5/24,5

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

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

	T-E-100	T-E-150	T-E-200
Power supply [V/Hz]	3x400 / 50		
Rated current* [A]	11	16,6	22,4
Heating capacity* [kW]	7,5	11,5	15,5
Air temperature rise (ΔT)*[°C]	11	12	13

*At inlet air temperature 10°C.

