

Counterflow plate heat recovery exchanger



BASIC FEATURES

ALFA 95

Highly efficient horizontal heat recovery unit range for indoor/outdoor installations designed for commercial application such as **offices, coffee bars, restaurants and sport facilities.**

– 4 series of horizontal version: 800 to 3500 m³/h

- Ecodesign directive 1253/2014 compliant
- Aluminium counterflow exchanger with heat recovery efficiency up to 93 % (EN308)
- Energy-efficient EC fans with low SFP and quiet operation
- Double skin mineral wool insulation 50 mm
- Heated compartment for condensate siphon
- Integrated electric pre-heater (optional)
- Integrated post-heater (option of electric, water, change/over or DX coil)
- Possible control of additional external post-heater and preheater
- **AirGENIO Superior** control system with an option of CAV, VAV or DCV mode, other supplementary modes, antifreeze protection, BMS control via ModBUS RTU, TCP or BACnet.

ALFA 95 heat recovery unit is designed to be operated at an indoor / outdoor environment and at an ambient temperature in the range from -20 °C up to +60 °C.

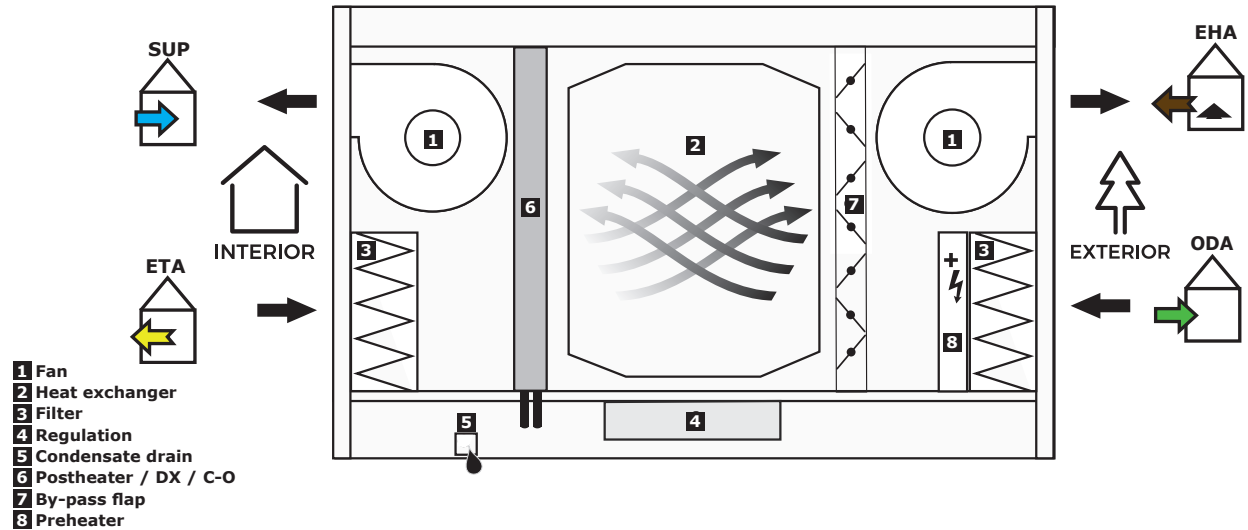
The unit is designed for transporting standard atmospheric air that is free of dust, grease, chemical emissions and other impurities. The transported air relative humidity must not exceed 90 %.

The unit casing is made from double skin mineral wool insulation panels of the thickness 50 mm. The unit, when installed in the ducting system has an IP rating of 54.

The design of the ventilation project must be **always designed by a qualified HVAC designer, engineer or architect.**

HORIZONTAL

Operational diagram



PRIMARY PARAMETERS

Heat recovery efficiency:

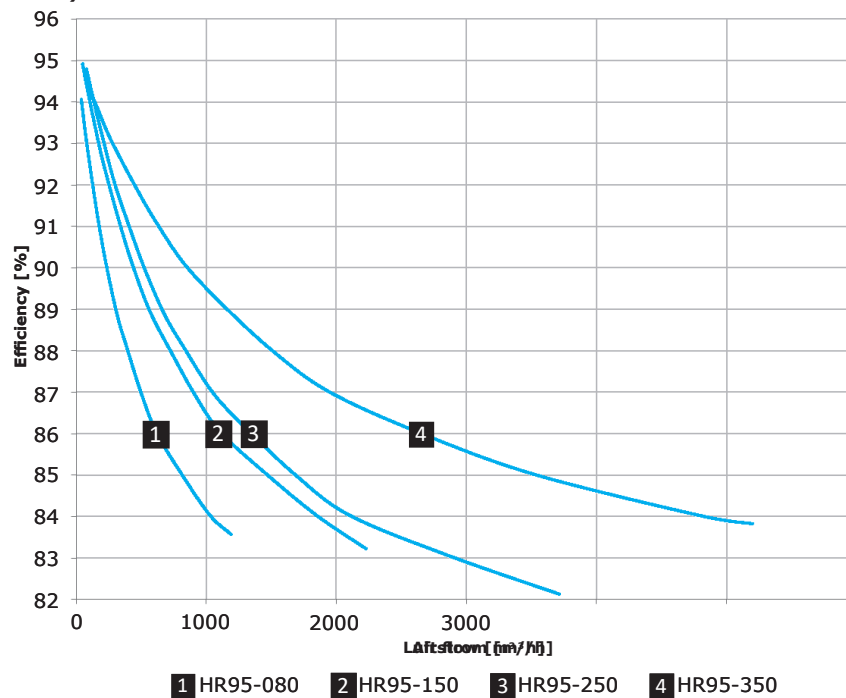
The data is measured under following conditions:

Outdoor air temperature is -5 °C, relative humidity 90 %

Indoor air temperature is 20 °C, relative humidity 65 %

The difference compared with the dry environment is approximately 5 %

HR95 H (HORIZONTAL)

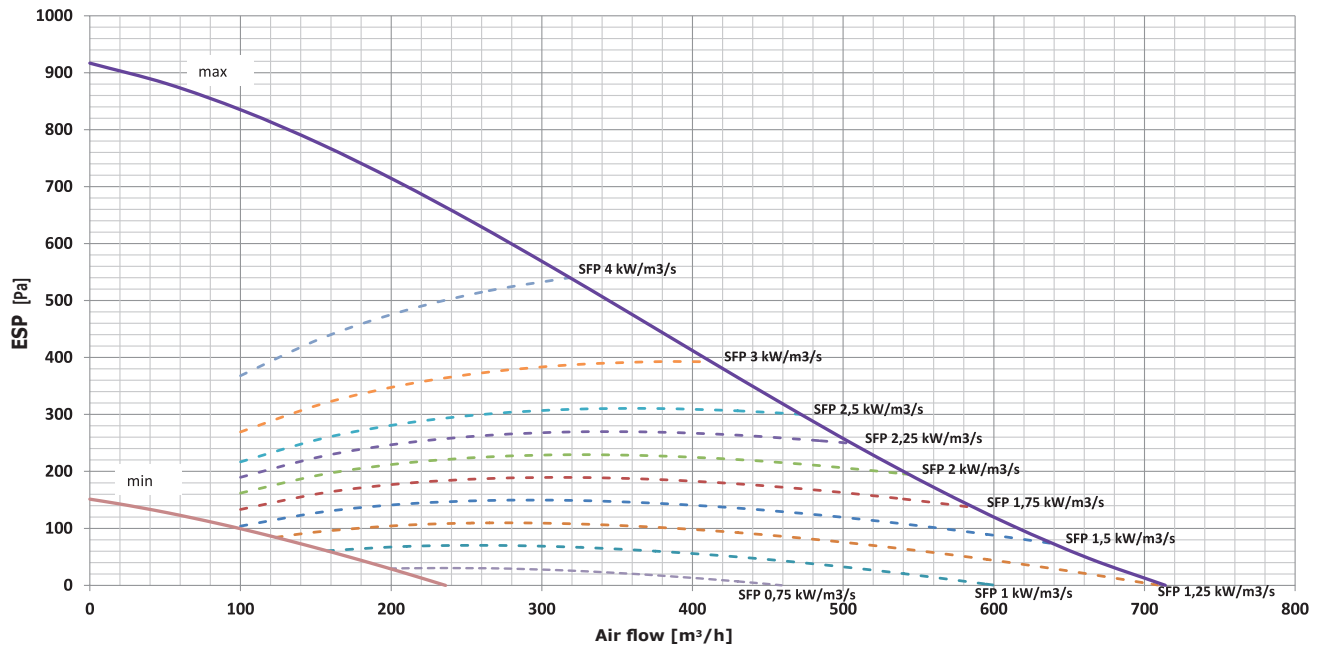




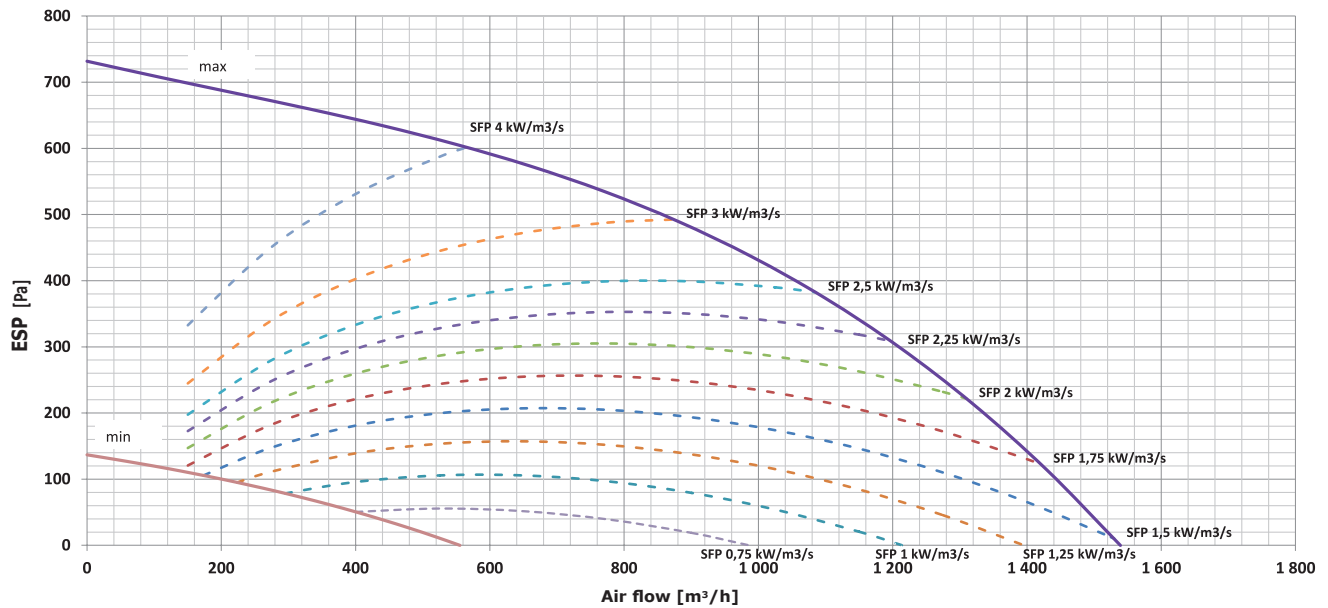
PRIMARY PARAMETERS

SFP=Unit Power input/supply airflow (kW/m³/s)

HR95-080 H



HR95-150 H

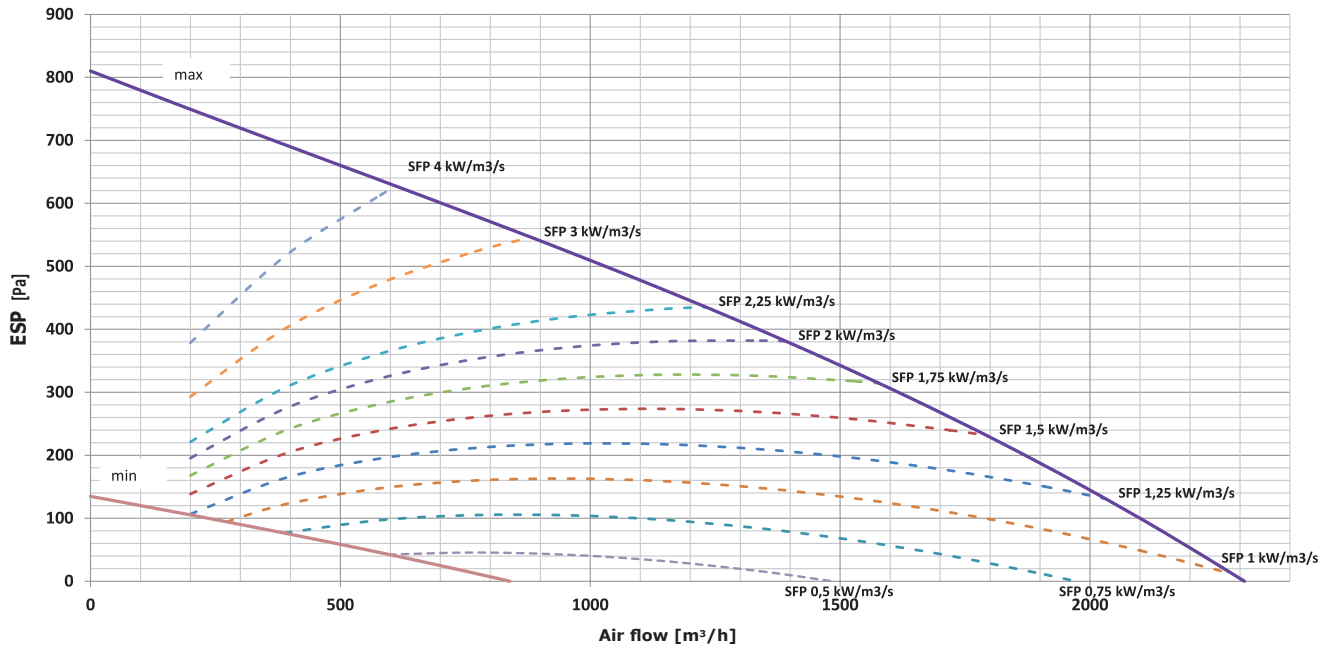




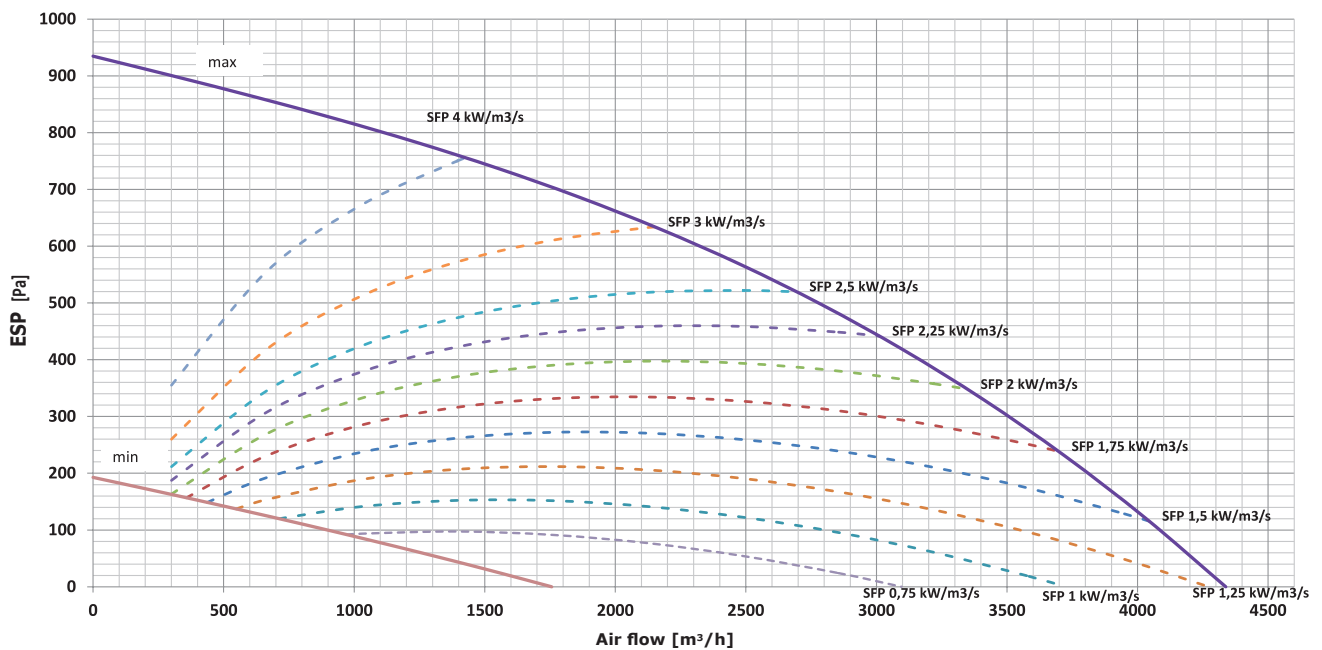
PRIMARY PARAMETERS

SFP=Unit Power input/supply airflow (kW/m³/s)

HR95-250 H



HR95-350 H



Noise specifications:

HR95-080 H

Airflow [m³/h]	Pressure [Pa]	Sound power level per frequency band								Overall	
		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	L _{WA} [dB]	L _{PA} [dB] at 3m
600	100	34,0	46,0	53,9	58,4	58,0	55,3	47,2	35,4	63	41
450		30,4	43,0	49,2	52,4	52,3	49,9	41,6	29,5	57	35
300		25,2	36,8	42,4	45,3	45,5	42,5	32,2	19,0	50	28
200		21,4	32,0	37,4	40,3	40,6	37,2	24,7	10,6	45	23

Branch	Airflow [m³/h]	Pressure [Pa]	Sound power level per frequency band								Overall
			63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	L _{WA} [dB]
EHA	600	100	51,6	58,9	64,0	67,2	63,3	59,5	56,7	51,0	70
SUP			53,3	61,4	66,5	69,6	65,5	61,7	58,6	53,3	73
ETA			43,1	52,8	50,2	50,5	46,0	38,6	34,6	27,9	56
ODA			44,8	55,3	52,7	52,5	47,8	40,5	36,5	30,0	59

HR95-150 H

Airflow [m³/h]	Pressure [Pa]	Sound power level per frequency band								Overall	
		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	L _{WA} [dB]	L _{PA} [dB] at 3m
1300	200	42,9	51,6	58,2	66,4	61,5	59,7	52,9	41,3	68	46
1000		35,2	43,9	48,9	56,7	52,5	51,2	44,2	32,8	59	37
700		33,5	41,5	46,6	54,4	50,2	48,0	40,0	26,7	57	35
400		33,1	39,4	45,0	52,6	48,4	44,9	35,8	20,0	55	33

Branch	Airflow [m³/h]	Pressure [Pa]	Sound power level per frequency band								Overall
			63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	L _{WA} [dB]
EHA	1300	200	57,7	65,2	69,6	74,6	72,1	69,6	64,0	58,2	78
SUP			60,0	67,7	72,8	77,9	75,1	72,3	66,7	60,8	81
ETA			49,9	54,5	51,6	53,7	55,0	46,3	43,2	3,3	60
ODA			52,2	56,8	54,7	56,6	57,6	48,7	45,7	5,9	63

Noise specifications:

HR95-250 H

Airflow [m³/h]	Pressure [Pa]	Sound power level per frequency band								Overall	
		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	L _{WA} [dB]	L _{PA} [dB] at 3m
1850	200	40,3	52,3	55,8	58,0	59,9	57,2	50,9	39,6	64	42
1500		36,2	47,5	50,4	53,4	55,8	53,7	46,7	34,2	60	37
1000		34,1	44,6	46,6	49,7	52,1	49,9	42,1	28,6	56	34
500		34,9	44,4	44,9	47,2	49,3	46,2	37,5	22,9	53	31

Branch	Airflow [m³/h]	Pressure [Pa]	Sound power level per frequency band								Overall
			63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	L _{WA} [dB]
EHA	1850	200	52,0	65,0	73,3	67,3	69,9	63,1	57,6	50,8	76
SUP			53,3	66,6	74,8	68,8	71,4	64,7	59,3	53,0	77
ETA			43,9	50,6	53,9	48,2	50,9	41,8	36,2	2,4	57
ODA			44,8	51,8	55,1	49,4	52,1	43,0	37,5	4,0	58

HR95-350 H

Airflow [m³/h]	Pressure [Pa]	Sound power level per frequency band								Overall	
		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	L _{WA} [dB]	L _{PA} [dB] at 3m
3500	300	39,2	47,5	62,0	59,1	59,5	56,9	52,2	39,6	66	43
2500		35,9	47,0	52,9	53,1	53,5	51,2	46,5	34,0	59	36
1500		38,1	50,3	51,3	52,1	52,9	49,6	42,8	29,9	58	35
500		41,8	51,6	51,1	51,4	51,5	46,5	38,9	26,4	57	35

Branch	Airflow [m³/h]	Pressure [Pa]	Sound power level per frequency band								Overall
			63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	L _{WA} [dB]
EHA	3500	300	49,9	64,6	69,4	64,8	65,9	61,0	54,4	49,1	73
SUP			50,0	64,7	69,6	65,0	66,1	61,2	54,6	49,2	73
ETA			37,4	49,8	49,0	43,8	43,2	39,2	31,3	18,2	53
ODA			37,5	49,9	49,2	43,9	43,3	39,4	31,4	18,3	53

Basic technical parameters of the heat recovery units:

Model without electric preheater or postheater / with water post heater

Horizontal	Phase [pcs]	Voltage [V]	Frequency [Hz]	Rated input [kW]	Total current [A]
HR95-080	1	230	50	0,4	2,8
HR95-150	1	230	50	1,0	6,5
HR95-250	1	230	50	1,0	6,5
HR95-350	3	400	50	1,9	3,7
HR95-450	3	400	50	1,9	3,7
HR95-550	3	400	50	3,6	5,5

Model with electric preheater (without electric postheater)

Model	Phase [pcs]	Voltage [V]	Frequency [Hz]	Rated input [kW]	Total current [A]
HR95-080 H	1	230	50	3,10	14,5
HR95-150 H	3	400	50	6,30	13,3
HR95-250 H	3	400	50	9,40	18,6
HR95-350 H	3	400	50	13,55	20,6

Model with electric postheater only

Model	Phase [pcs]	Voltage [V]	Frequency [Hz]	Rated input [kW]	Total current [A]
HR95-080 H	1	230	50	1,8	8,8
HR95-150 H	1	230	50	3,7	18,0
HR95-250 H	3	400	50	5,8	13,5
HR95-350 H	3	400	50	8,3	13,0

Model with electric preheater and postheater

Model	Phase [pcs]	Voltage [V]	Frequency [Hz]	Rated input [kW]	Total current [A]
HR95-080 H	3	400	50	4,5	11,9
HR95-150 H	3	400	50	9,0	18,0
HR95-250 H	3	400	50	14,2	25,3
HR95-350 H	3	400	50	20,0	29,4

Basic technical parameters of the heat recovery units:

Characteristics of electric motors (1 fan only)

Horizontal	Phase [pcs]	Voltage [V]	Frequency [Hz]	Rated input [W]	Total current [A]	Speed [r/min]	Maximum temperature [°C]	Protection IP	Insulation class	Weight [kg]
HR95-080	1	230	50	175	1,3	2800	60	44	B	2,9
HR95-150	1	230	50	455	3,1	2600	60	54	B	5,0
HR95-250	1	230	50	500	3,15	1970	60	54	B	5,7
HR95-350	3	400	50	1000	1,75	2140	60	54	F	9,8
HR95-450	3	400	50	1000	1,75	2140	60	54	F	9,8
HR95-550	3	400	50	1615	2,5	1750	60	54	B	16,1

Characteristics of electric postheater

Model	Phase [pcs]	Voltage [V]	Frequency [Hz]	Rated input [kW]	Total current [A]	Δ T [°C]
HR95-080 H	1	230	50	1,4	6,1	6,7
HR95-150 H	1	230	50	2,7	11,7	7,4
HR95-250 H	3	400	50	4,8	7,0	6,9
HR95-350 H	3	400	50	6,4	9,3	7,1

Characteristics of water postheater

Horizontal	Rated input [kW]	Outlet air temperature [°C]	Water pressure loss [kPa]	Water flow [m³/h]	Air pressure loss [Pa]	Air flow [m³/h]	Connection diameter
HR95-080	6,4	40,3	10	0,29	20	800	1/2
HR95-150	12,2	40,7	36	1,04	28	1500	1/2
HR95-250	20,5	40,9	23	0,86	27	2250	1/2
HR95-350	30,1	42,2	20	1,30	18	3500	1/2

* For water temperature gradient 90/70 and inlet air temperature 15°C

Basic technical parameters of the heat recovery units:

Correction coefficients of the powers of the hot water coil*						
Air inlet temperature [°C]	Water temperature gradient					
	90/70	85/65	80/60	75/55	70/50	65/45
0	1,3	1,22	1,13	1,04	0,95	0,86
5	1,2	1,11	1,02	0,94	0,85	0,76
10	1,1	1,01	0,92	0,84	0,76	0,67
15	1	0,91	0,83	0,74	0,66	0,58
20	0,9	0,82	0,74	0,66	0,58	0,50

* To apply to the rated power in the characteristics of the hot water coil.

Recommended K_{vs} for different temperature gradients

Model	K _{vs} [flow / kPa]						Recommended pump pressure [kPa]
	90/70 [°C]	85/65 [°C]	80/60 [°C]	75/55 [°C]	70/50 [°C]	65/45 [°C]	
HR95-080 H	1,6	1,6	0,6	0,6	0,6	0,6	60
HR95-150 H	2,5	2,5	1,6	1,6	1,6	1,6	60
HR95-250 H	4,0	4,0	2,5	2,5	2,5	2,5	60
HR95-350 H	6,3	6,3	4,0	4,0	4,0	4,0	60

Characteristics of heating coil (C/O) / water cooling

Type	Rated input [kW]*	Outlet air temperature [°C]	Water pressure loss [kPa]	Water flow [m³/h]	Air pressure loss [Pa]	Air flow [m³/h]	Connection diameter
HR95-080 H	6,60	39,2	2,0	0,29	75	800	3/4"
HR95-150 H	10,24	35,0	0,8	0,45	76	1500	3/4"
HR95-250 H	19,77	38,2	1,5	0,86	83	2250	1"
HR95-350 H	29,40	39,7	1,3	1,28	62	3500	1 1/2"

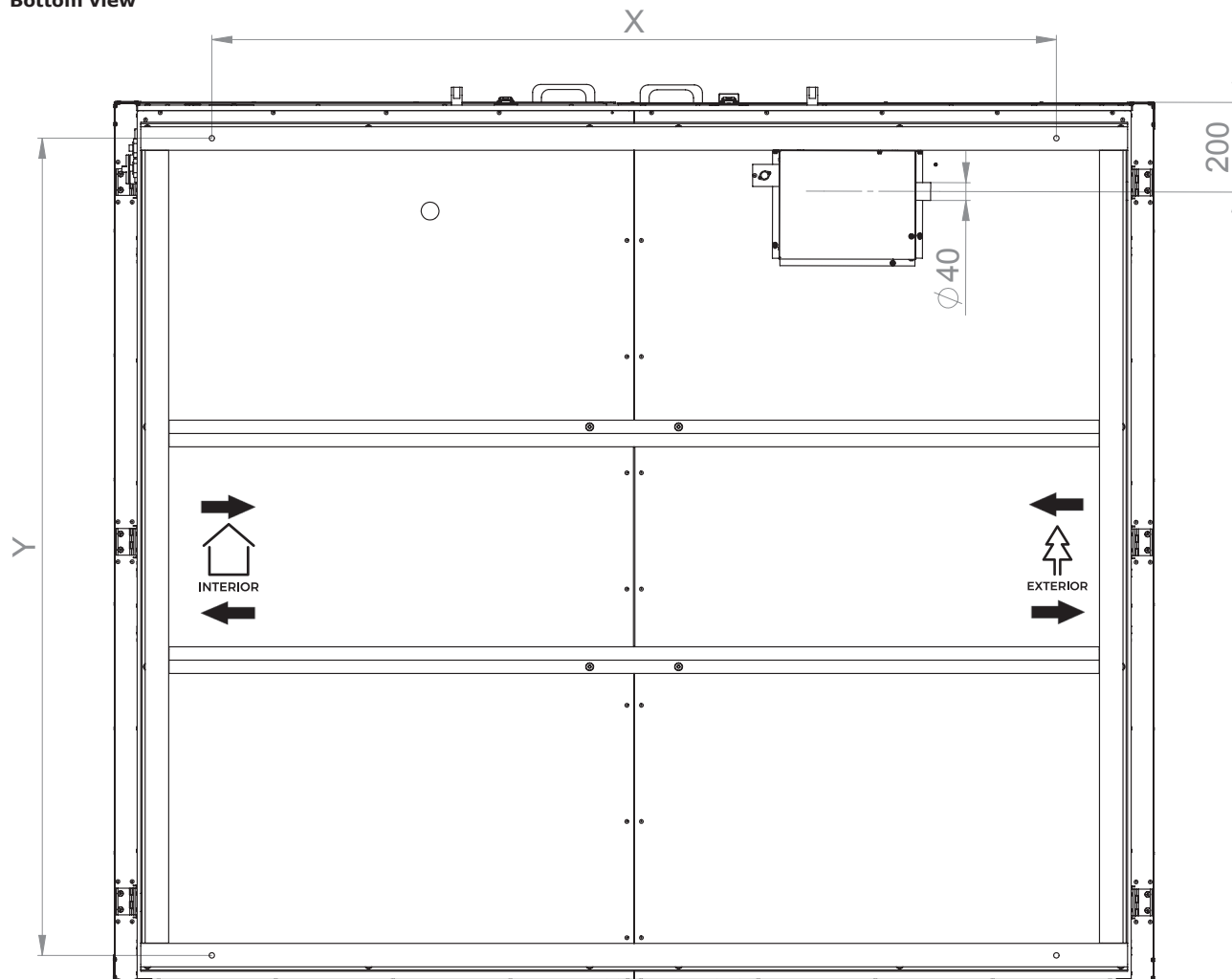
* For water temperature gradient 60/40 and inlet air temperature 15°C.



Horizontal version

HR95-080, HR95-150, HR95-250, HR95-350

Bottom view

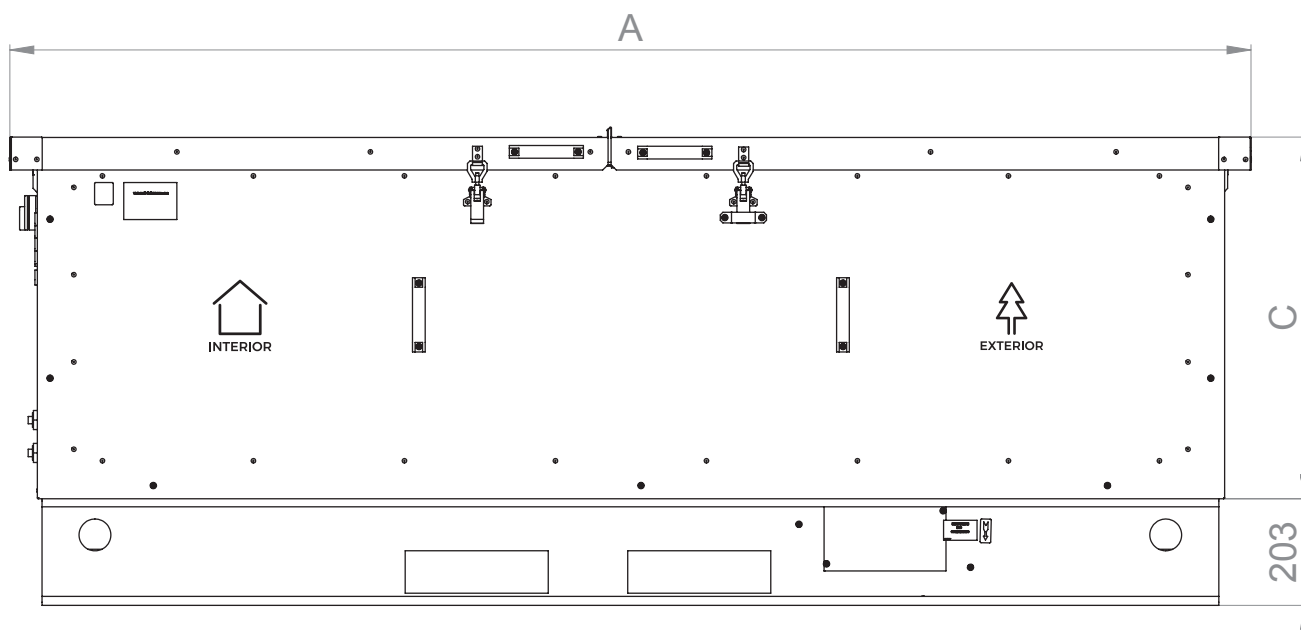


Type	A	B	B1	C	D1	D2	E1	E2	F1	F2	G1	G2	X	Y
HR95-080	1540	1100	1060	410	224	324	200	300	275	85	405	72	1300	890
HR95-150	1830	1540	1500	450	274	524	250	500	319	86	601	62	1600	1330
HR95-250	2140	1855	1815	540	324	624	300	600	368	82	770	62	1900	1650
HR95-350	2340	2020	1980	700	424	724	400	700	351	82	852	87	1900	1850

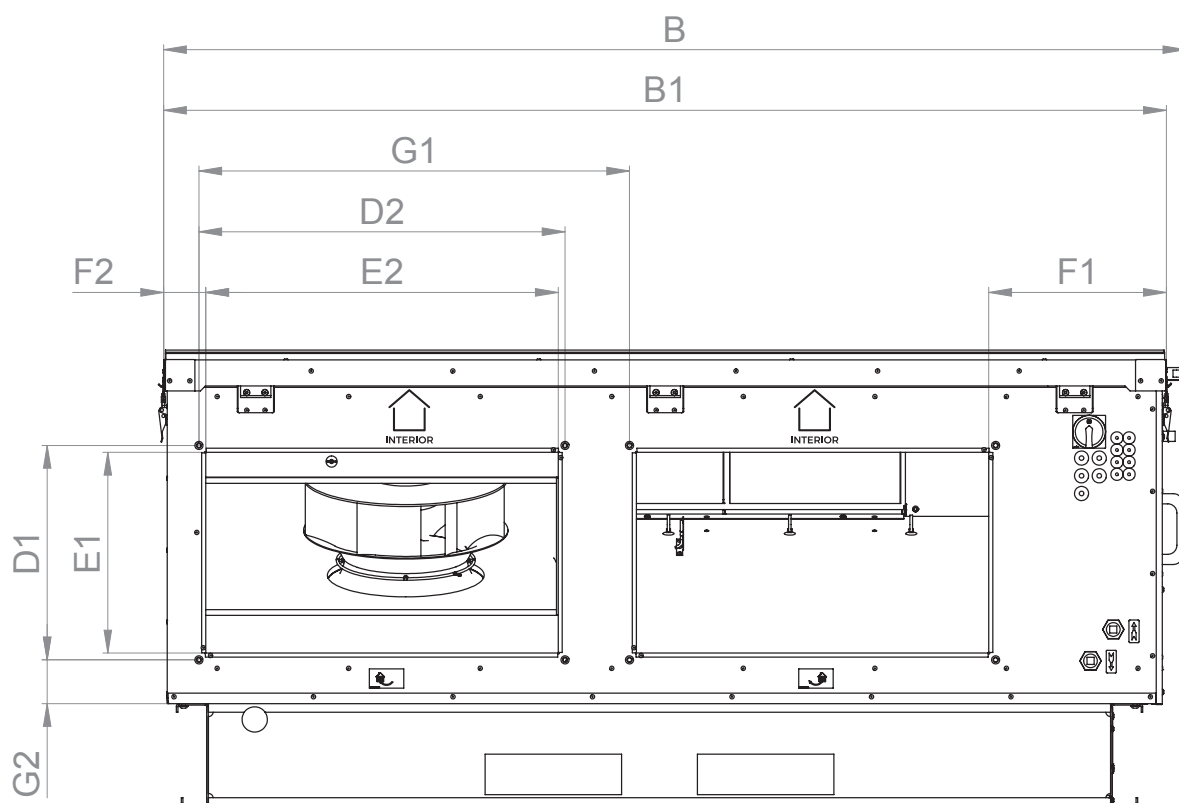
Type	Weight [kg]		
	without coil	electric heater	hot water coil / DX / C-O
Without electric preheater			
HR95-080	185	187	190
HR95-150	290	293	295
HR95-250	385	390	395
HR95-350	505	510	515
With electric preheater			
HR95-080	187	189	192
HR95-150	293	296	298
HR95-250	389	394	399
HR95-350	510	515	520



Side view (regulation)



Side view (duct)



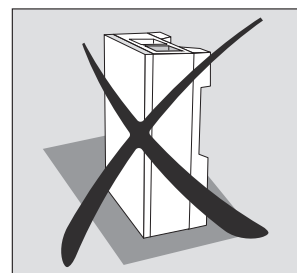
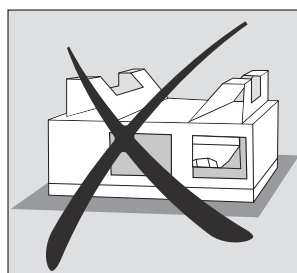
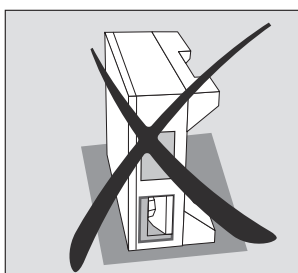
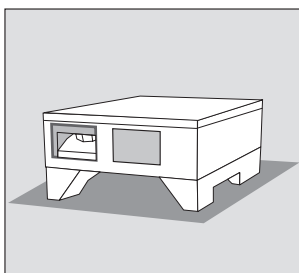


INSTALLATION AND ASSEMBLY

All types of ventilation units must be installed according to the pictures (see below).

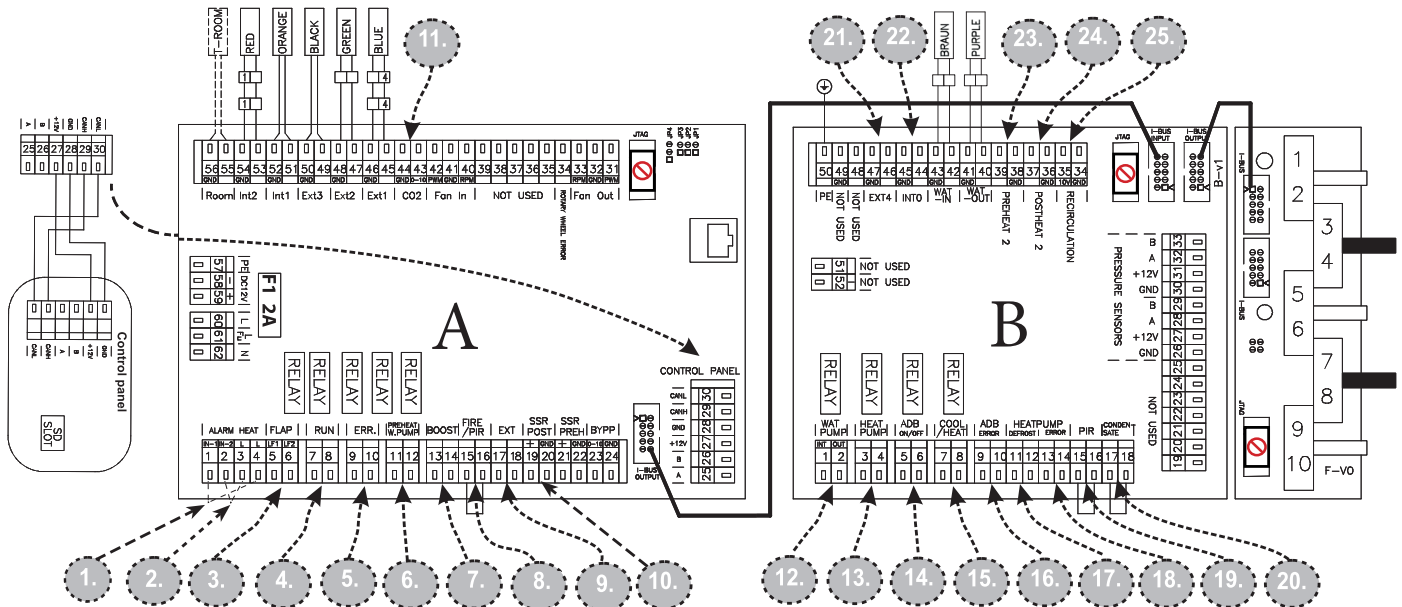
The unit must be installed in such a way that the direction of the air blown corresponds to the direction of air circulation in the distribution system. The unit must be installed so as to give free access for maintenance, service or dismantling. This is to allow access to service flaps and possibility to open them, access to the lid of the control panel, access to the lateral connections and access to the filter cover.

ALFA95 Horizontal





WIRING DIAGRAMS



1.	A (1,4)	Safety thermostat postheating
2.	A (2,3)	Safety preheating thermostat
3.	A (5-6)	LF1 - FLAP INLET (output L-open), LF2 - FLAP OUTLET (output L-open)
4.	A (7-8)	RUN CONTACT (output - NO/NC settable)
5.	A (9-10)	ERROR CONTACT (output NO)
6.	A (11-12)	PREHEATER WATER PUMP (11 - Lint, 12 - Lout)
7.	A (13-14)	BOOST (input NO)
8.	A (15-16)	FIRE (input NC)
9.	A (17-18)	EXTERNAL CONTROL ON/OFF (input NC)
10.	A (19,20)	OUTPUT PERFORMANCE OF POSTHEATING (0-10V OR PWM)
11.	A (43-44)	AQS SENSOR 0-10V (input)
12.	B (1-2)	WATER PUMP (1 - Lint, 2 - Lout)
13.	B (3-4)	HEAT PUMP CONTROL settable (output - ON/OFF)
14.	B (5-6)	ADIABATIC MODULE (output - ON/OFF)
15.	B (7-8)	COOL / HEAT settable (CO = NC/NO - DX = output settable)
16.	B (9-10)	ADIABATIC MODULE ERROR (input NO)
17.	B (11-12)	HEAT PUMP DEFROST settable (input NC/NO)
18.	B (13-14)	HEAT PUMP ERROR settable (input NC/NO)
19.	B (15-16)	PIR (input NC)
20.	B (17-18)	CONDENSATE OVERFLOW (input NC)
21.	B (46-47)	EXTERNAL TEMPERATURE SENSOR (external postheater - input)
22.	B (44-45)	EXTERNAL TEMPERATURE SENSOR (adiabatic module / recirc. chamber - input)
23.	B (38-39)	EXTERNAL PREHEATER (output 0-10V)
24.	B (36-37)	EXTERNAL POSTHEATER (output 0-10V)
25.	B (34-35)	RECIRCULATION CHAMBER (output 0-10V)



CONTROL

AirGENIO SUPERIOR - Main control functions

- Touch-screen control panel for easy control and complete overview of device operational status (recommended connecting data cable to control panel is UTP cable and it should not exceed 50m length).
- Manual stepless fans control (PWM)
- CAV, VAV or DCV ventilation in automatic mode
- BOOST mode - intensive airflow for a pre-set time period
- Freecooling mode - night ventilation (cooling)
- Occupancy mode - reducing ventilation intensity according to the PIR sensor
- FIRE protection mode with settable logic
- Stepless by-pass control (temperature control: freecooling, antifreeze protection)
- Integrated timer (day, week, year)
- Optional connection of sensors: CO2, RH, VOC (0-10)
- Clogged filter indication by pressure sensors
- Stepless pre-heating control and post-heating control
- Electric coil control (PWM) and LPHW coil control (0-10V)
- Change-over control with automatic detection of the heating / cooling (0-10V)
- Wide choice of different ways for DX coil control*
- Possible control of external pre-heater and post-heater
- Offset fan adjustment (over-pressure / underpressure)
- BMS control via Modbus RTU / TCP or BACnet
- Remote control via smart device



*AirGENIO SUPERIOR control system allows a different ways of DX coil control

- ON-OFF
- 0-10 V
- 0-10 V - 0-10 V signal control
- On/Off - On/Off switching
- Off/On - Off/On switching
- 0-10 V + On/Off - On/Off switching + 0-10 V signal control
- 0-10 V + Off/On - Off/On switching + 0-10 V signal control

With reverse control cycle (heating - cooling mode)

- 10-0 V + On/Off - On/Off switching + 0-10 V signal control cooling, heating 10-0 V
- 10-0 V Off/On - Off/On switching + 0-10 V signal control cooling, heating 10-0 V

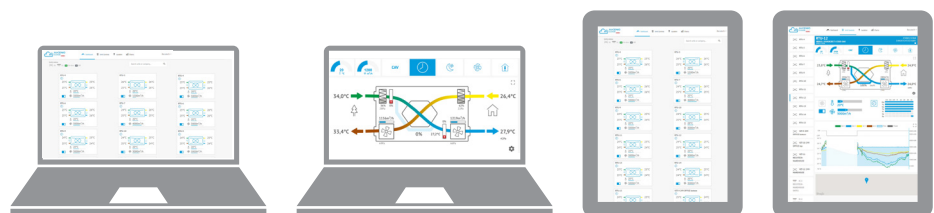
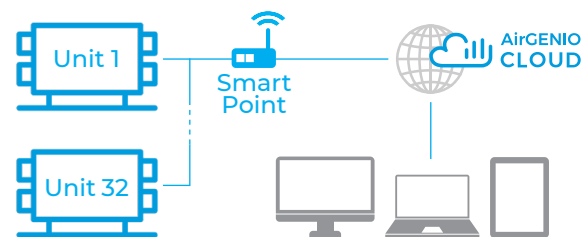
2V Service software:

- Easy and quick commissioning from your computer
- Error log - error display and identification
- Easy service (device status loading/reset to backup setting)
- Fast FW update
- OFFLINE version

AirGENIO CLOUD - Connections you can trust

2V cloud service operated on secure cloud server.

- Control, monitoring and servicing
- Web communication interface with clear and structured layout
- Easy customization of settings
- History logs providing accurate and timely info
- Smart notifications and warning/error messages clearly displayed in overview dashboard
- Backup and restore settings

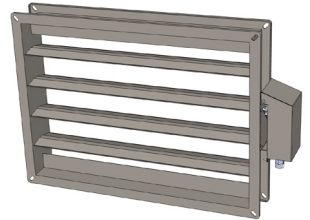


**ACCESSORIES**

More details can be found on the relevant page in this catalog

Four-sided closing flap with servo drive

The **MLKR** rectangular control flap is designed for controlling and closing the HVAC systems. The flap is designed for operation in the basic environment for conveying air free of rough dust, grease, chemical fumes, and other contaminants. The flanged damper frame and blades are made of galvanized plate.



Unit type	Four-sided closing flap with servo drive
Horizontal	
HR95-080	MLKR-0300-0200-SR*
HR95-150	MLKR-0500-0250-SR*
HR95-250	MLKR-0600-0300-SR*
HR95-350	MLKR-0700-0400-SR*

* **SR** - servodrive with spring, **SX** - servodrive without spring

Electric heater

EOKO – The heater output is controlled by the ALFA95 unit control system via 0-10V

Recommended combinations:

Unit type	Type of el. Pre-heater
HR95-080 H	EOKO2-250-3,0-1-D
HR95-150 H	EOKO2-315-9,0-3-D
HR95-250 H	EOKO2-400-9,0-3-D
HR95-350 H	EOKO2-500-18,0-3-D





Adapter four-sided to circular

PR-O – adapter from four-sided to circular pipes made from a galvanised metal sheet

Unit type	Circular adapter
Horizontal	
HR95-080	PR-O-0300X200-D250-L150
HR95-150	PR-O-0500X250-D315-L250
HR95-250	PR-O-0600X300-D400-L300
HR95-350	PR-O-0700X400-D500-L400



Filtration inserts

FILTR-HR95 – replacement filtration inserts of various filtration classes and configurations.



Unit type	PreFilter Coarse 60%	Filter Coarse 60%	Filter ePM 10 50%
Horizontal			
HR95-080	FILTR-HR95-2-H0800-G4-PRE	FILTR-HR95-2-H0800-G4	FILTR-HR95-2-H0800-F7-MPP
HR95-150	FILTR-HR95-2-H1500-G4-PRE	FILTR-HR95-2-H1500-G4	FILTR-HR95-2-H1500-F7-MPP
HR95-250	FILTR-HR95-2-H2500-G4-PRE	FILTR-HR95-2-H2500-G4	FILTR-HR95-2-H2500-F7-MPP
HR95-350	FILTR-HR95-2-H3500-G4-PRE	FILTR-HR95-2-H3500-G4	FILTR-HR95-2-H3500-F7-MPP

**Mixing valve**

The **SMU** mixing unit is designed for controlling the heat-output of water-type heat exchangers. It is used especially for controlling standalone water-type air heaters, heaters inbuilt into the ventilation units

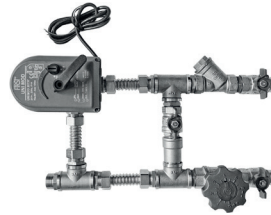
Recommended values for individual types of the **ALFA 95** units:

SMU2-024-06,3-SC

- SC** – with short circuit
- WO** – without short circuit
- 00,6** – mixing valve – k_{VS} 0,6
- 01,6** – mixing valve – k_{VS} 1,6
- 02,5** – mixing valve – k_{VS} 2,5
- 04,0** – mixing valve – k_{VS} 4,0
- 06,3** – mixing valve – k_{VS} 6,3
- 12,0** – mixing valve – k_{VS} 12,0
- 24,0** – mixing valve – k_{VS} 24,0

024 – 24V stepless control

SMU2 – mixing unit





Channel sensor CO₂ *CI-CO2-22DC-11*

The transmitter is ideally suited for duct mounting in the fields of building management and demand controlled ventilation. The elegant, compact housing enables easy installation directly at the ventilation duct using a mounting flange.



Duct sensor of relative humidity *CI-RH-22DTH-11M*

Duct sensor for measuring relative humidity in air-conditioning systems.



Spatial sensor CO₂ *CI-CO2-R*

Sensor combines CO₂. The snap-in mounting concept stands for easy installation.



Spatial sensor RH *CI-RH-R*

Capacitive relative humidity sensor with 0-10V analog and relay output.



Signal combiner *CI-AQS-COMBI*

The signal combiner for AQS sensors uses 0-10V logic which you can connect up to 10 different sensors. The input signal with the highest voltage will be the signal that is on the output terminal.



PIR sensor *CI-PS 1003*

Spatial infrared sensor for automatic ventilation based on presence of people in the ventilated area.

Power supply of this sensor must be outsourced. Unit doesn't support this kind of power supply (12V DC).



AirGENIO CLOUD smart point *AirGENIO-SMART-POINT*

2V cloud service operated on secure cloud server





KEY TO CODING

HR95-080	EC	CF	H	B	X	X-74	R	P	1	
									1	Reserve code
									1	Reserve
								P		Version of access
								P		Right side version
							R			Control
							R			AirGENIO Superior control
						74				Filtration (inlet / outlet)
						74				inlet Coarse 60%+ ePM 10 50%; outlet Coarse 60%
					X					Postheater
					X					Without postheater
					E					Electric postheater
					W					Water postheater
					C					Heater/cooler
					D					Direct evaporator
					X					Preheater
					X					Without preheater
					E					Electric preheater
				B						By-pass
				B						With by-pass
			H							Installation
			H							Horizontal installation
		CF								Heat exchanger
		CF								Counterflow plate heat exchanger
	EC									Type of fan
	EC									EC motors
080										Nominal airflow
080										Nominal flow rate 800 m³/h
150										Nominal flow rate 1500 m³/h
250										Nominal flow rate 2500 m³/h
350										Nominal flow rate 3500 m³/h
HR95										HR95 Unit Type
HR95										Commercial recovery unit ALFA95