



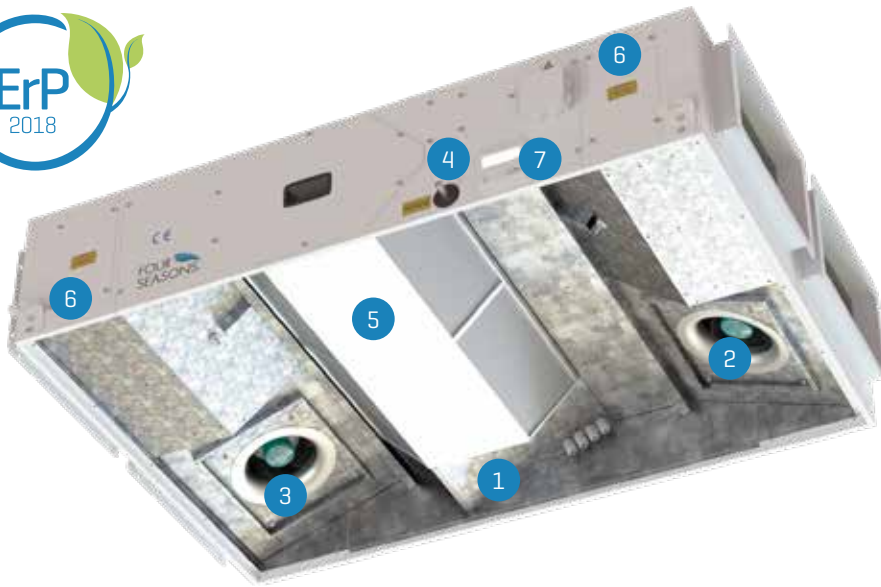
FOUR-CFHR
Counter Flow Heat Recovery Unit

Venues Breathe with DOGU HVAC Systems!

DOGU HVAC founded in 1999, and ever since has been manufacturing Energy-and Cost-Efficient products as Air Handling Units, Air Distribution & Management & Movement Systems [HVAC Components] and constantly enhancing to provide an integrated solution for well-being. DOGU HVAC's core business products which are subsumed under 4 major groups as Air Handling Units, Heat/Energy Recovery Units, Air Distribution & Management Products and Kitchen Ventilation Equipment are all produced under the compliance with EU standarts. Particularly AHU and HRU-ER units are entitled under the "FOUR SEASONS" brand name for domestic and foreign markets. DOGU HVAC's, headquarter in Izmir/Turkey, operates in a large-sized plant spread over 2 factories, in total area of 45.000 sqm in which 25.000 sqm indoor space that enables DOGU HVAC manufactures 140 various type of products. Additionally, DOGU HVAC has a powerful sales network with 3 sales offices located in Istanbul, Ankara and Antalya in Turkey as well as authorized dealers in many other countries for sales and after sales operations. DOGU HVAC has been exporting to more than 50 countries.

Thanks to our "Customer Satisfaction", "Zero-Defect Policy" motto and reinforced by complete certified products, more than 250 employees. DOGU HVAC R&D center developed exclusive products, such as Double Skin Make-Up Kitchen Hood, Recirculated Laminar Airflow Unit, Single Piece Square Ceiling Diffuser and Ecology Units, for the first time have brought to the sector. DOGU HVAC R&D has the ability to make customized production which can meet the requirement of the customers by means of special software such as "ANSYS FLUENT". DOGU HVAC guaranteed its quality of management by having advantages of ISO 9001, ISO 14001, ISO 18001 certifications. Air Handling Units have EUROVENT, TUV Hygiene [in accordance with DIN1946-4, VDI 6022-1, DIN EN 13053 standarts], CE, TSEK, GOST-R certifications; Fire Dampers have EN 1366-2 and EN 13501-3 CE certifications; Smoke Control Dampers have EN 1366-10 and 12101-8 CE certifications; Kitchen Ventilation Products have TSE, CE and GOST-R quality certifications.





- 1- Bypass Damper [%100]
- 2- Extract Fan
- 3- Supply Fan
- 4- Condense Water Drain
- 5- Counter-Flow Heat Exchanger
- 6- Filters
- 7- Control Panel

FOUR CFHR

- ☞ Double skin
- ☞ 30 mm insulation
- ☞ Low sound level
- ☞ Fully integrated plug & play control system
- ☞ Bypass damper [%100]

Heat Exchanger

- ☞ High efficient aluminum counter flow heat exchanger
- ☞ Special application for anti-freeze protection

Filters

- ☞ Large filtering area for energy efficiency and long service period
- ☞ ISO ePM Coarse 55% filters , optional high efficiency ISO ePM1 55% filter

Fans

- ☞ New generation EC fans
- ☞ Low sound level
- ☞ 10 years lifetime (40.000 hours)

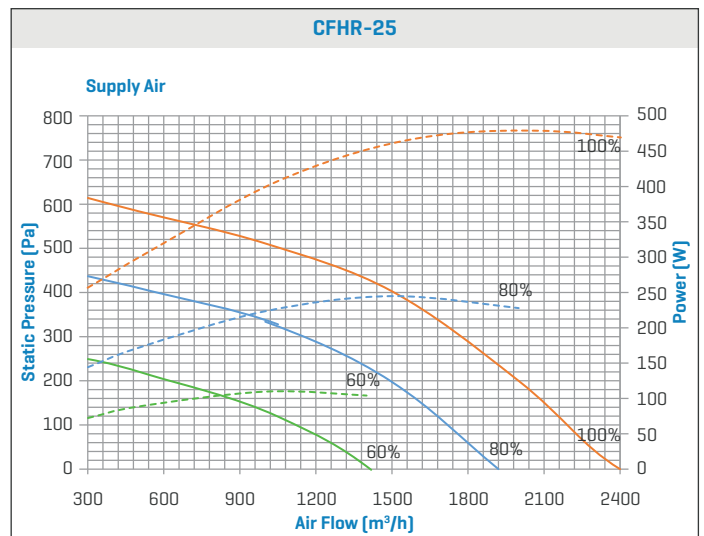
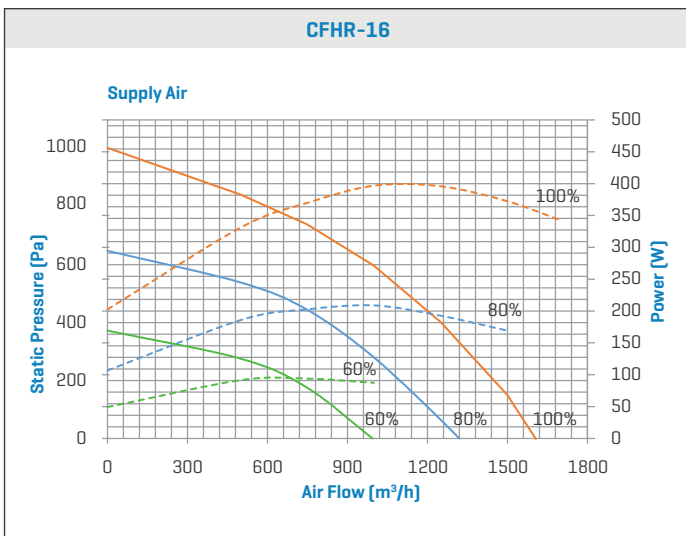
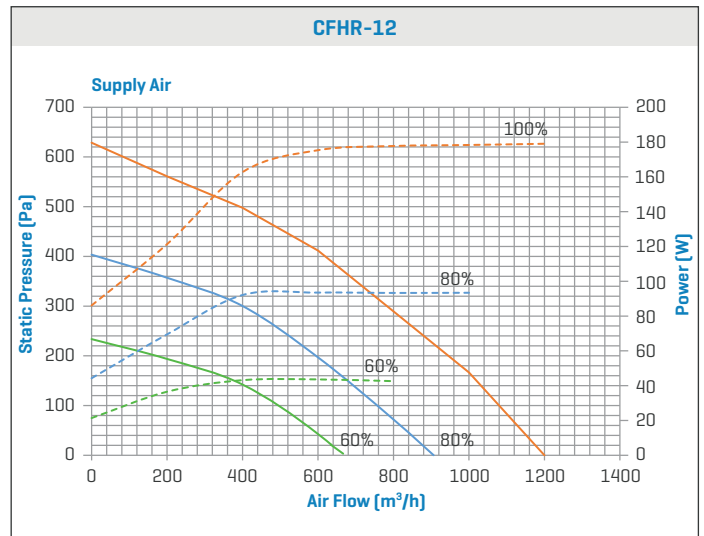
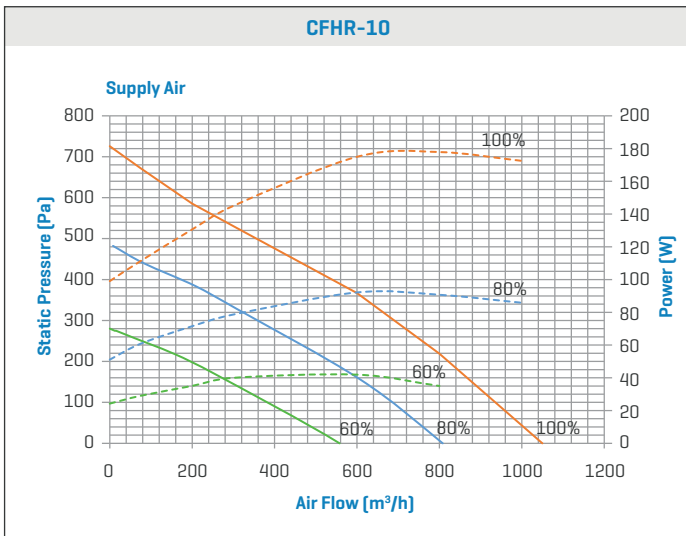
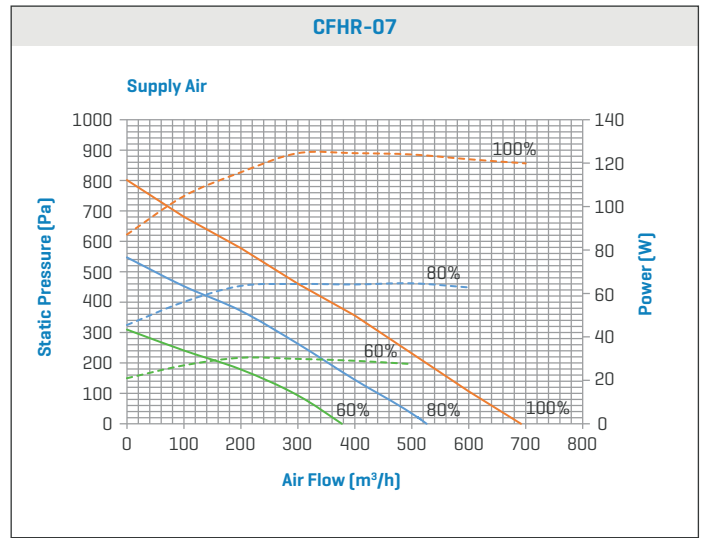
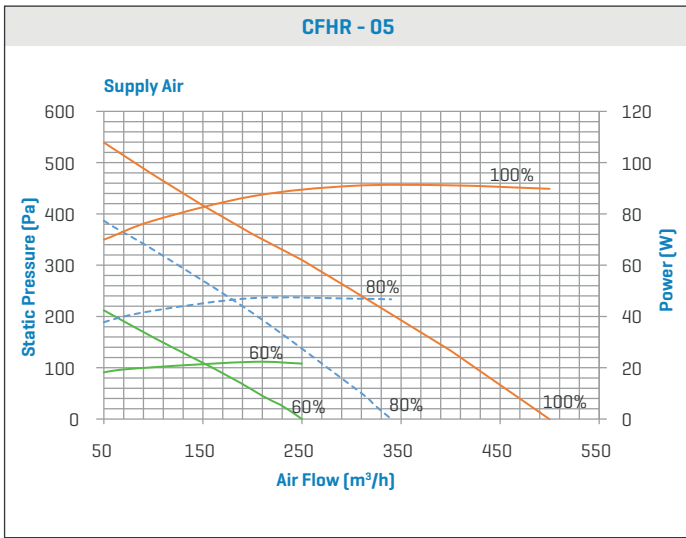
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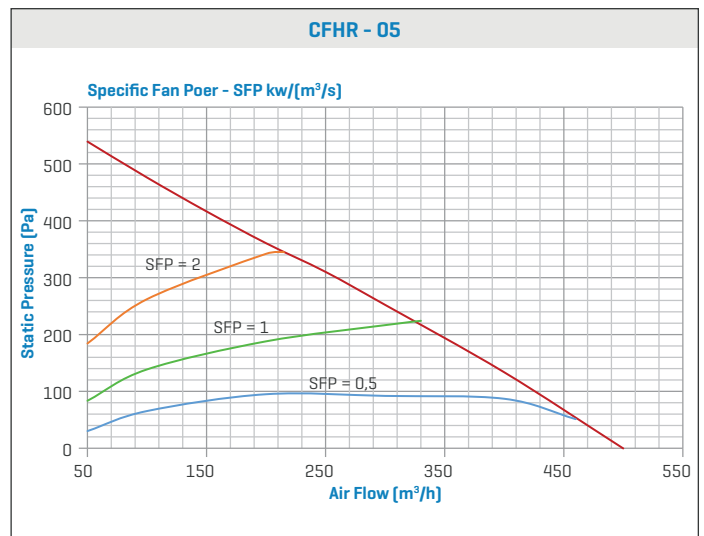
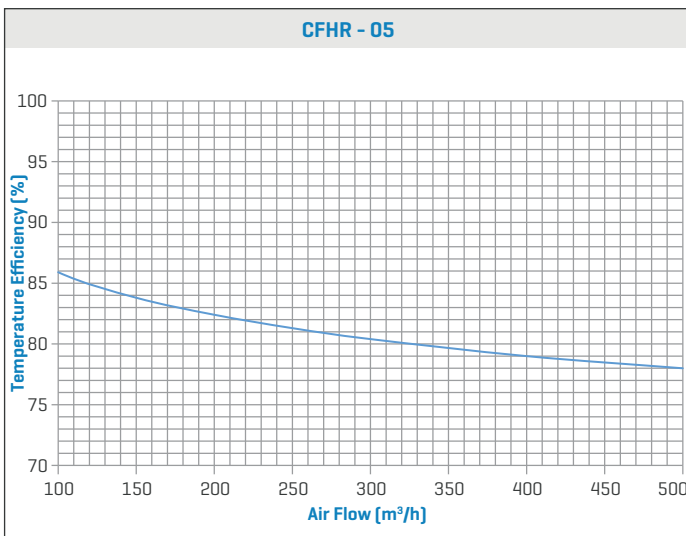
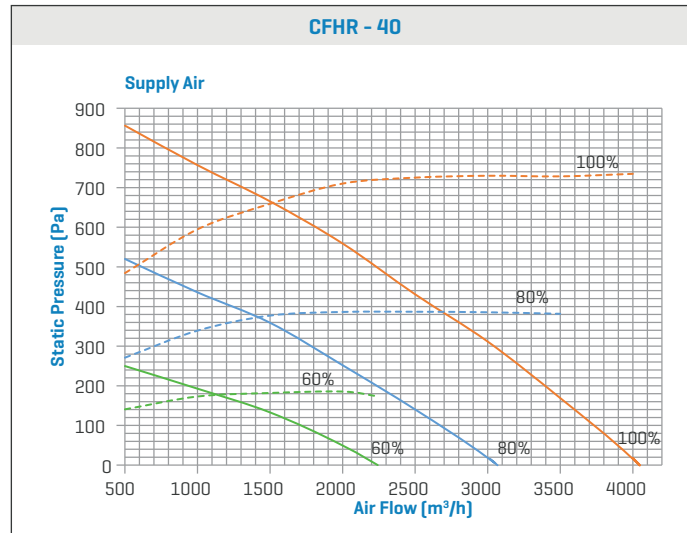
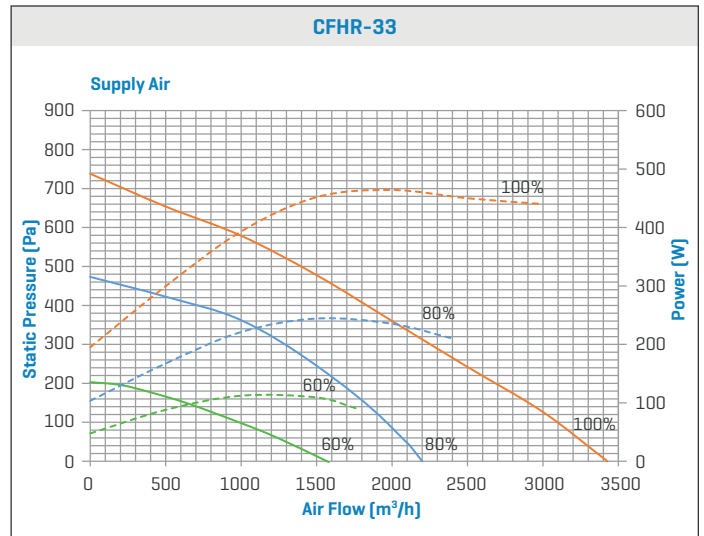
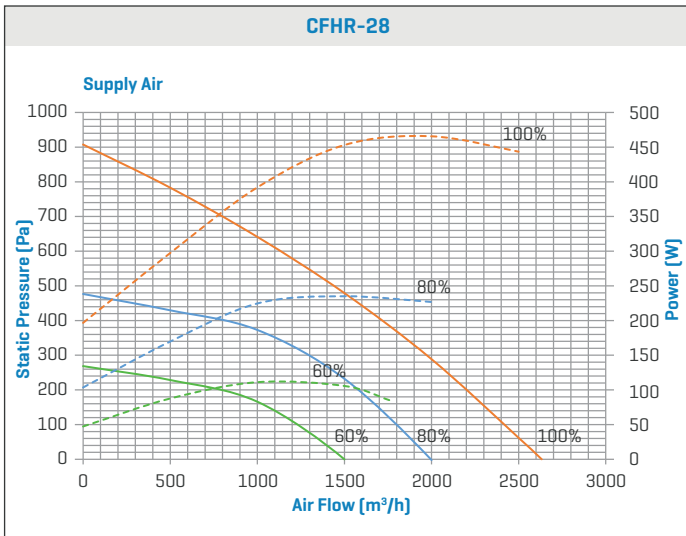
- ☞ Electrical Heater
- ☞ DX/Heating/Cooling coil
- ☞ Attenuator
- ☞ Dampers
- ☞ CO₂ and humidity sensor

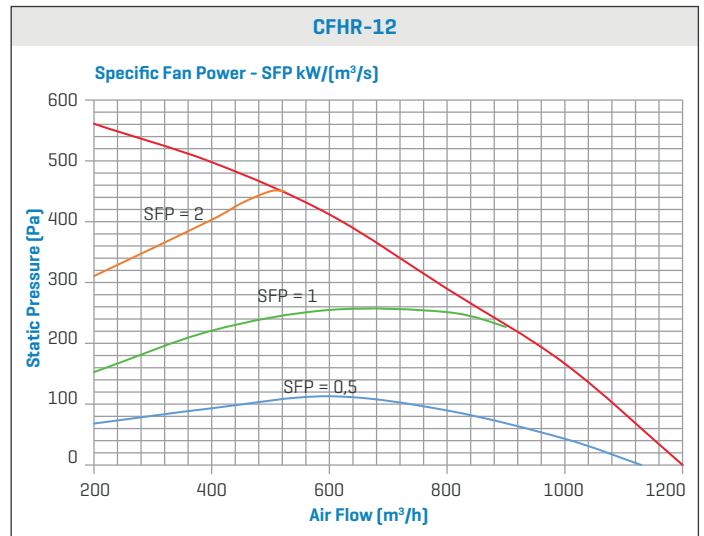
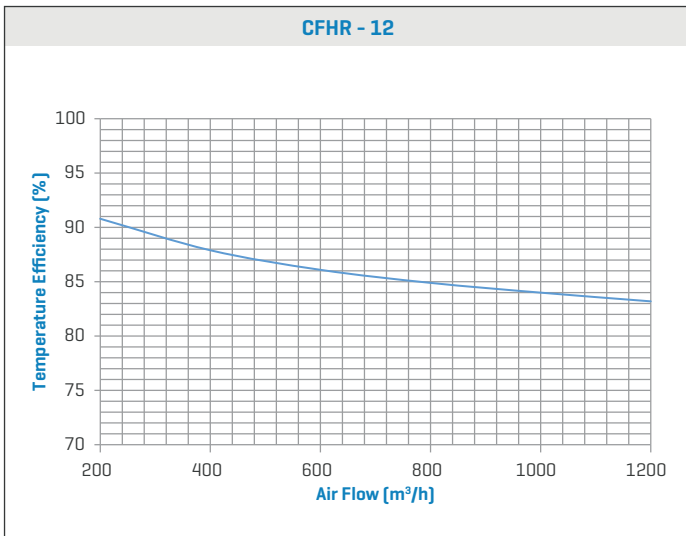
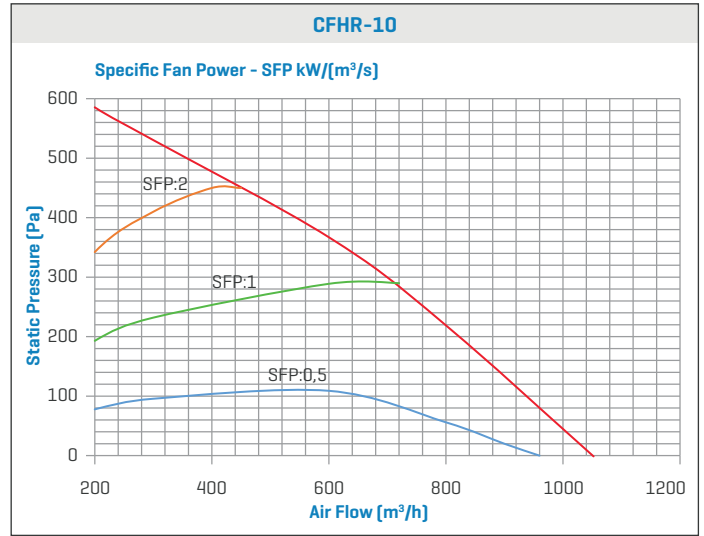
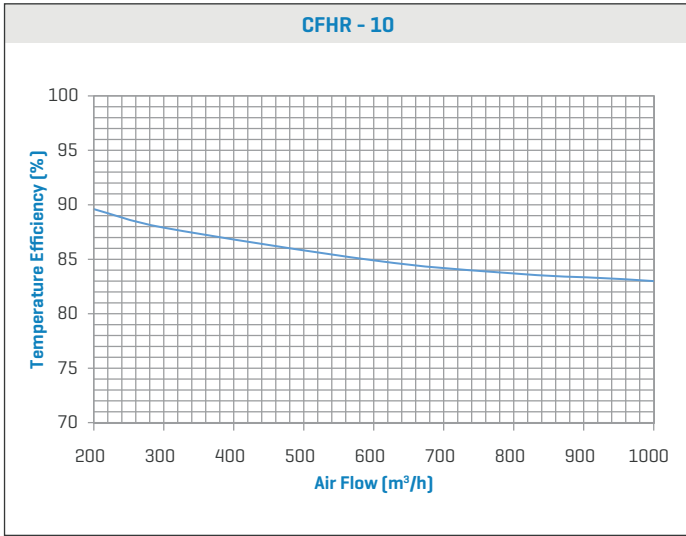
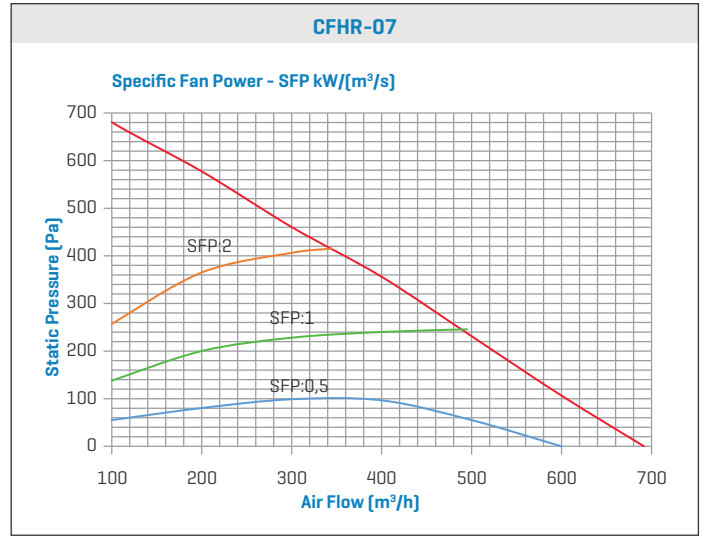
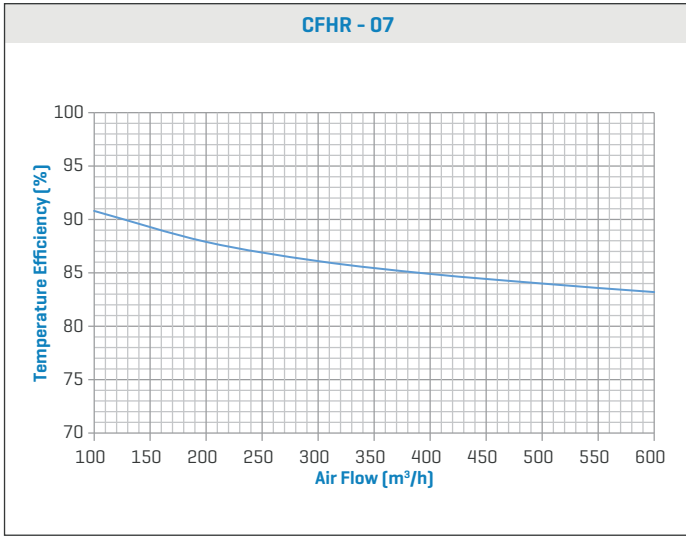
$$SPI = \frac{P_e [W]}{q_v [m^3/h]}$$

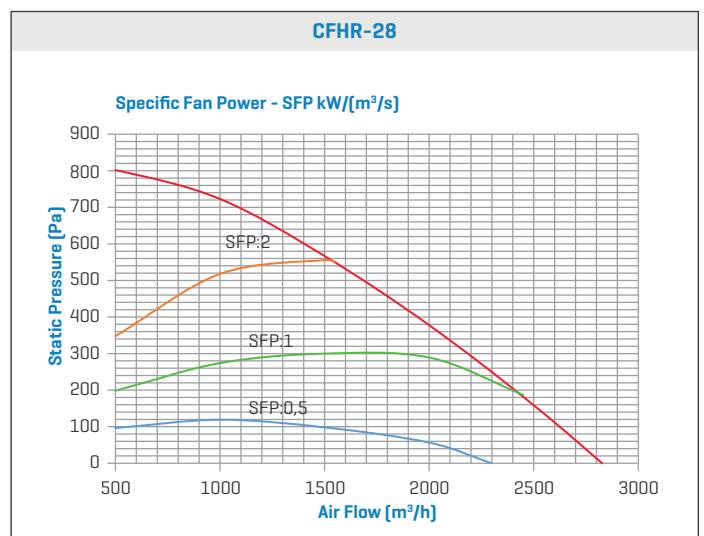
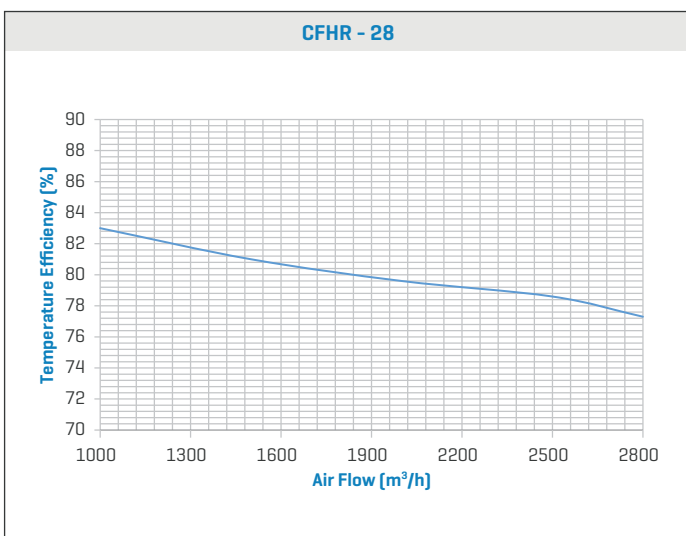
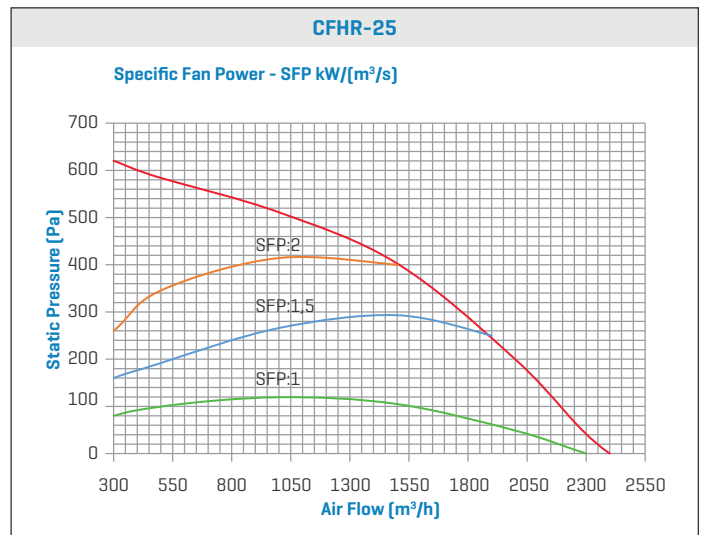
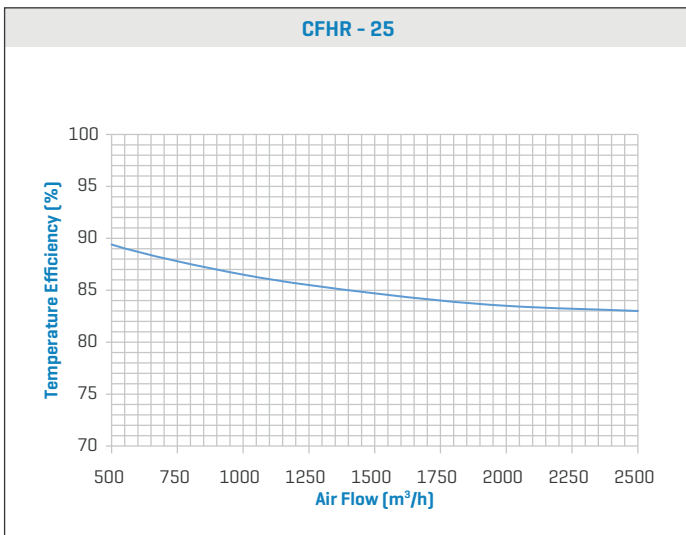
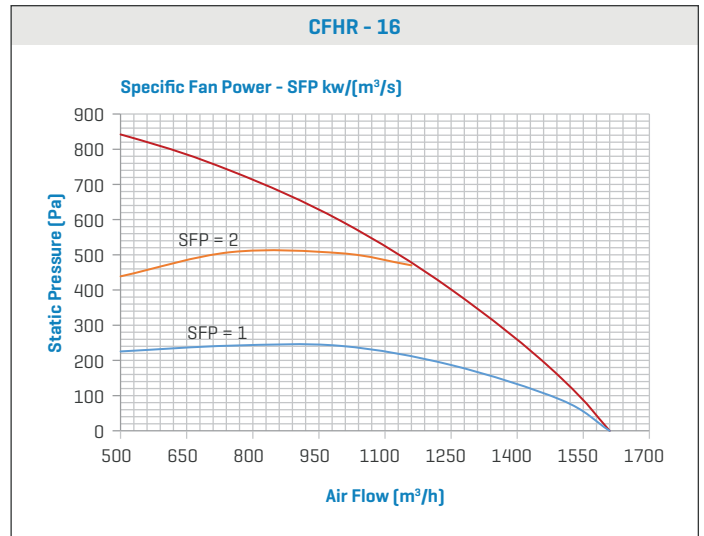
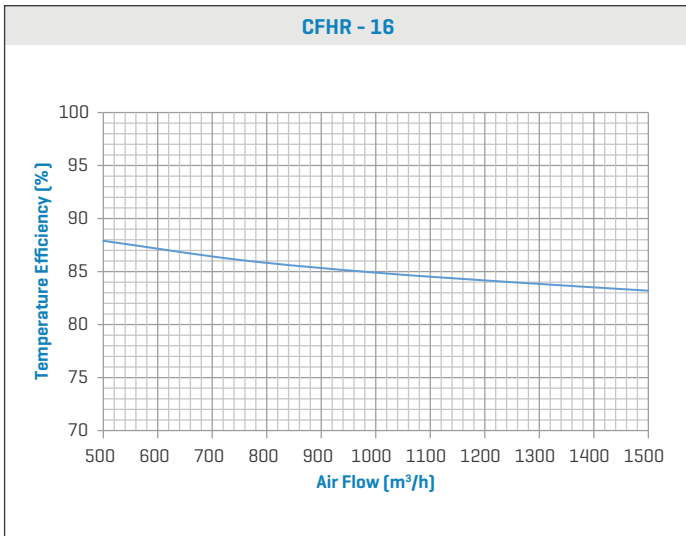
$$SFP = \frac{P_{sfm} + P_{efm} [W]}{q_{max} [m^3/s]} \quad \text{[According to EN 13779]}$$

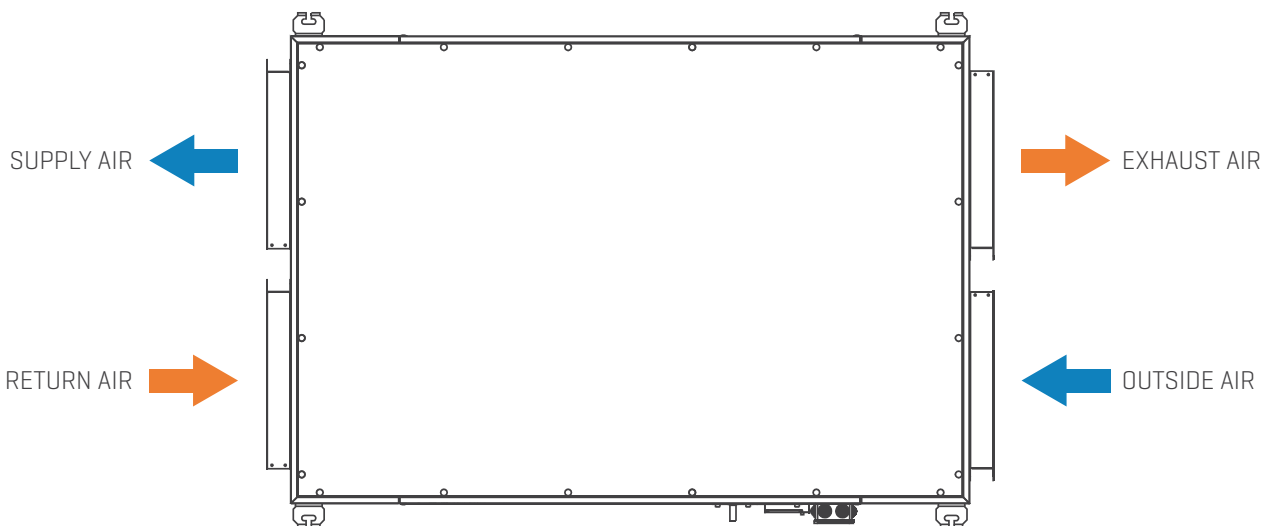
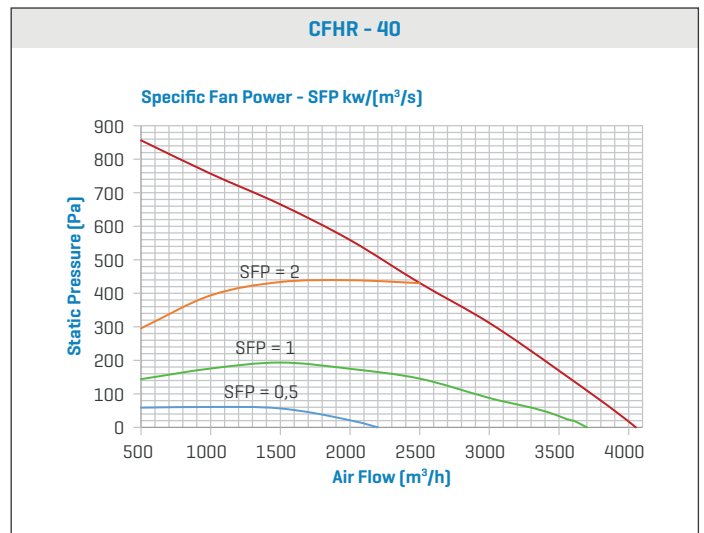
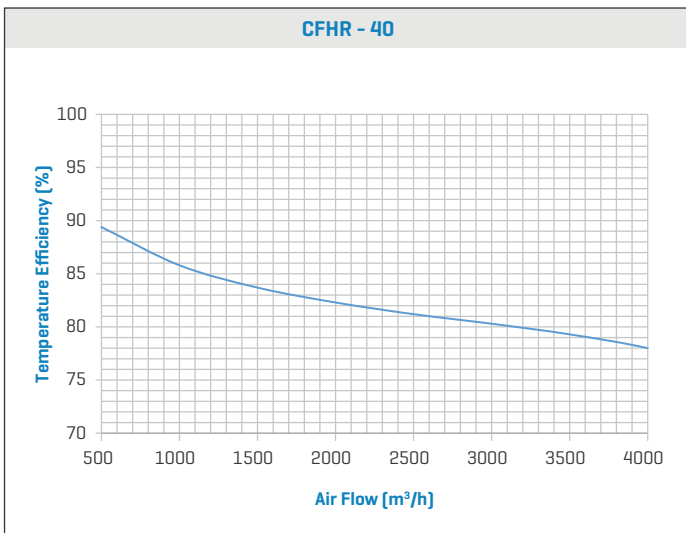
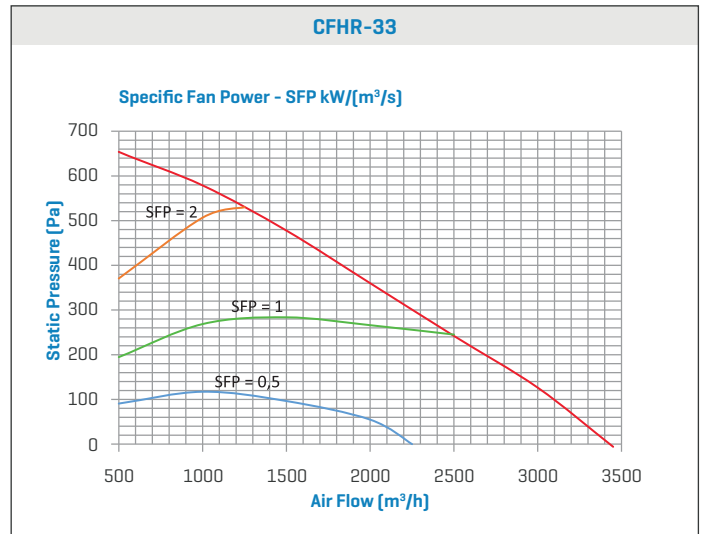
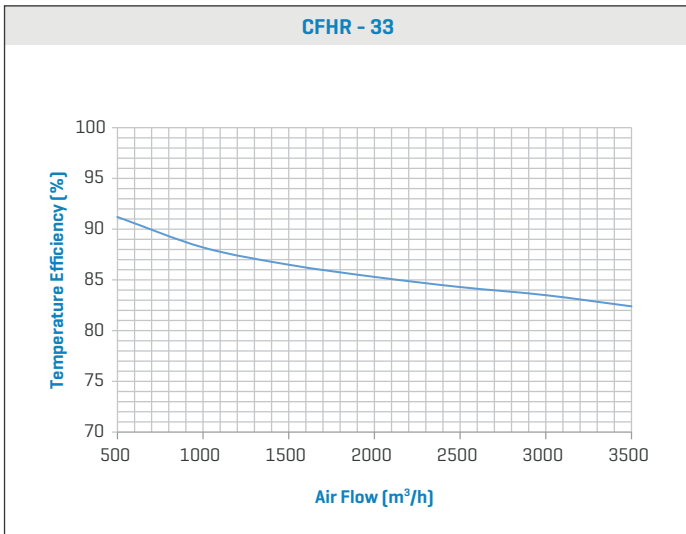
	SPI [W / m ³ / h]	SFP [W / m ³ / s]	EN 13779 SFP CLASS
CFHR - 05	0.166	597	CLASS 2
CFHR - 07	0.164	1180	CLASS 4
CFHR - 10	0.17	1224	CLASS 3
CFHR - 12	0.142	1020	CLASS 3
CFHR - 16	0.24	1732	CLASS 4
CFHR - 25	0.188	1356	CLASS 4
CFHR - 28	0.178	1280	CLASS 4
CFHR - 33	0.15	1090	CLASS 3
CFHR - 40	0.1875	1350	CLASS 4









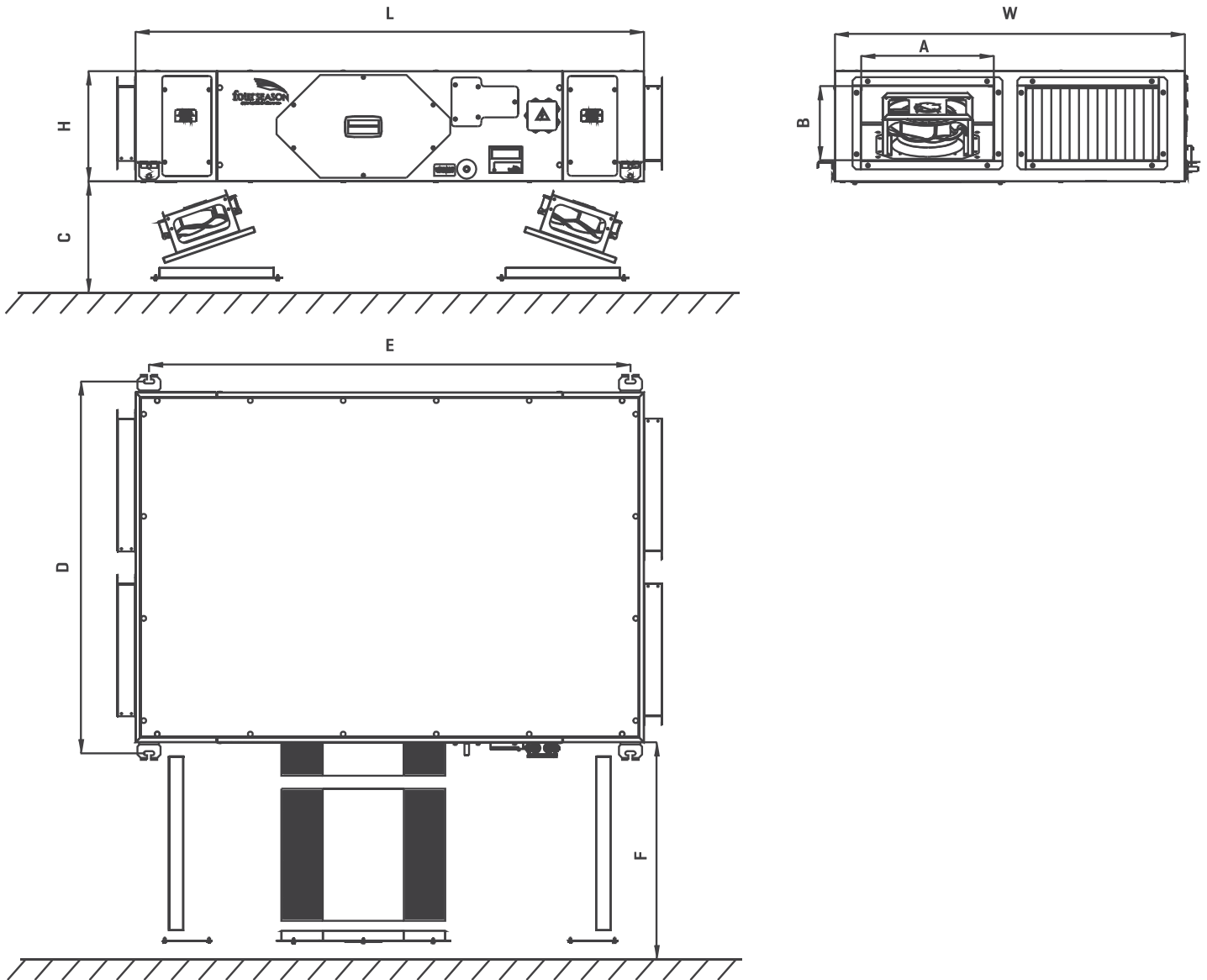


	Power [W]		Voltage [V] / Current [A]		RPM [1/min]	
	Supply Fan	Extract Fan	Supply Fan	Extract Fan	Supply Fan	Extract Fan
CFHR - 05	83	83	230/0.75	230/0.75	3200	3200
CFHR - 07	119	119	230/0.9	230/0.9	3635	3635
CFHR - 10	170	170	230/1.4	230/1.4	2860	2860
CFHR - 12	170	170	230/1.4	230/1.4	2510	2510
CFHR - 16	385	385	230/2.5	230/2.5	3400	3400
CFHR - 25	470	470	230/3.1	230/3.1	2530	2530
CFHR - 28	500	500	230/2.2	230/2.2	2700	2700
CFHR - 33	500	500	230/2.2	230/2.2	1850	1850
CFHR - 40	750	750	230/3.3	230/3.3	2100	2100

	CFHR - 05	CFHR - 07	CFHR - 10	CFHR - 12	CFHR - 16	CFHR - 25	CFHR - 28	CFHR - 33	CFHR - 40
MAX. AIR FLOW [m ³ /h]	500	700	1040	1200	1580	2400	2650	3450	4010
Pext. [Pa]	0								
NOMINAL AIR FLOW [m ³ /h]	390	510	845	1000	1440	2100	2200	3000	3510
Pext. [Pa]	150								

dB [A]	CFHR-05	CFHR-07	CFHR-10	CFHR-12	CFHR-16	CFHR-25	CFHR-28	CFHR-33	CFHR-40
SOUND LEVEL*	32	33	37	34	34	42	45	44	47

*Sound pressure level is measured 1,5 m away from the device.



MODEL	L	W	H	A	B	C	D	E	F	WEIGHT
CFHR-05	1297	560	293	200	210	230	626	1217	450	80
CFHR-07	1340	580	334	200	210	230	646	1259	450	90
CFHR-10	1450	840	334	320	210	290	906	1368	450	130
CFHR-12	1540	1060	334	400	210	300	1126	1458	550	165
CFHR-16	1790	1320	375	530	210	340	1386	1708	600	195
CFHR-25	1890	1650	375	700	210	350	1716	1808	600	270
CFHR-28	1890	1950	375	830	210	350	2016	1808	600	310
CFHR-33	1990	1950	457	800	310	430	2016	1910	600	345
CFHR-40	2130	2000	597	850	410	520	2066	2049	600	370

* All units are in mm

Operation	Description	Standart
On / Off	Control panel or external start stop function is available.	Standard
Display	Digital control panel is available.	Standard
Display	Wireless controller is available as option.	Optional
Fan Speed Control	3 steps fan speed control of supply and exhaust fan is available.	Standard
Fan Speed Control	Constant air flow or constant pressure.	Optional
Fan Speed Control	Airflow control based on the air quality sensor is available.	Optional
Bypass Damper Function	Free cooling is available ,by controlling the indoor and outdoor air conditions.	Standard
Frost Protection Function	When outdoor temperature is low, this function will become active by receiving information from humidity and temperature sensors. Unbalanced, pre-heater, by-pass	Standard
ModBus	It controls all functions of unit via PC or central control system board.	Standard
Filter Function	There are 2 alternatives to control filters: 1: It records run time of the unit and when set time expires, control panel gives an alert for filter change. 2: Filter change time can be controlled with pressure switch mechanically. By this way, control panel givesan alert when filter needs to be changed.	Standard
Boost Function	It is used in order to increase fan speed: Alternative1: Via boast button on the control panel. Alternative 2: Via dry contact or light power input [230V] on PCB board.	Standard
Safety	It automatically stops operatingin case of interfering to the unit while it is working.	Standard
Fire Alarm Function	It will be active in case of fire.	Standard
Electrical Heater	Step control	
Heating Coil	Heating coil valves on the device which include optional heating coil, are controlled by proportional valve motors with PID logic and sensitivity.	Optional

ACCESSORIES

Attenuator



Attenuators are designed to remove the noise resulting from the Air-conditioning and Ventilation systems. The flat sound attenuating panel is used to eliminate the fan noise of 250 Hz octave strength.

	CFHR - 05	CFHR - 07	CFHR - 10	CFHR - 12	CFHR - 16	CFHR - 20	CFHR - 25	CFHR - 33	CFHR - 40
Width [mm]	200	310	470	490	800	1130	1290	1390	600
Height [mm]	210	210	210	210	210	210	210	310	410
Lenght [mm]	600	600	600	600	600	600	600	600	600
De 63 Hz	3	3	2	2	2	2	2	2	2
De 125 Hz	5	4	3	3	3	2	2	2	2
De 250 Hz	9	9	9	6	6	6	6	6	6
De 500 Hz	16	16	16	13	12	12	11	11	12
De 1 kHz	19	19	19	14	14	13	12	13	13
De 2 kHz	16	16	16	14	14	12	11	11	12
De 4 kHz	13	13	13	10	10	7	7	8	9
De 8 kHz	10	10	10	7	7	7	6	6	7
Press [Pa]	26	16	16	15	17	17	17	17	21

	CFHR - 05	CFHR - 07	CFHR - 10	CFHR - 12	CFHR - 16	CFHR - 20	CFHR - 25	CFHR - 33	CFHR - 40
Width [mm]	200	310	470	490	800	1130	1290	1390	600
Height [mm]	210	210	210	210	210	210	210	310	410
Lenght [mm]	1000	1000	1000	1000	1000	1000	1000	1000	1000
De 63 Hz	3	4	4	4	4	4	4	4	3
De 125 Hz	4	7	7	7	7	7	7	7	4
De 250 Hz	10	15	15	14	14	14	14	15	10
De 500 Hz	18	25	24	23	24	24	24	25	18
De 1 kHz	21	28	28	27	28	27	27	29	21
De 2 kHz	19	26	25	25	25	25	25	26	19
De 4 kHz	13	20	20	19	20	20	20	20	13
De 8 kHz	10	16	16	15	15	15	15	16	10
Press [Pa]	17	17	19	18	19	19	19	30	23

DX / Heating / Cooling Coil



- ☞ Coils are Eurovent certified.
- ☞ Coils are made of copper pipes and aluminum fins.
- ☞ The cassette material is galvanized or stainless steel.
- ☞ The coils were tested at a pressure of at least 20 bar. On request, 30 bars can be tested under pressure.
- ☞ The collectors used in the coils are copper pipes.
- ☞ In hot and cold water coils, the water inlet is from the bottom and the water outlet is at the top.
- ☞ Air and water flows are counter-flowing to increase the heat transfer between them.
- ☞ Under the cooling coil, a condensate pan with a double slope is placed and the accumulated water is discharged through the drain pipe. In the case of a Drip Holder, a high-performance drip holder made of PVC material that can withstand up to 90 ° C is used.

Electrical Heater



Rectangular electric heaters have two thermostats as standard.

The first thermostat is set to 70 ° C, the air in the electric heater cuts off the electric current when it reaches 70 ° C, allowing the device to restart automatically when the temperature drops.

The second thermostat used for safety purposes is activated at 110 ° C and cuts off the electric current.

The thermostat must be reset manually from the red button in order for the appliance to operate again.

	Air Flow [m³/h]	Width [mm]	Length [mm]	ΔT:5	ΔT:10	ΔT:15
				kW	kW	kW
CFHR 05	450	210	200	1	1,5	2,5
CFHR 07	500	210	200	1	2	3
CFHR 10	845	210	320	1,5	3	5
CFHR 12	950	210	400	2	4	6
CFHR 16	1500	210	530	3	6	9
CFHR 25	2200	210	700	4	8	12
CFHR 28	2500	210	830	5	9	14
CFHR 33	3000	310	800	6	11	16
CFHR 40	3500	410	850	7	13	19



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