

ATFLEX® AND ATEASY®



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UNITS



HYGIENE AND ENERGY EFFICIENCY

ATFLEX® and ATEASY® are configured from the AL-KO AT4-F construction kit. **Design and setup follow EN 1886 and VDI 6022.**

The **construction of the housing frame** is made up of seawater-suitable aluminium profiles (according to EN DIN 81249-1) with 38 mm flanges, which are thermally decoupled through plastic profiles. The panelling is devoid of cold bridges, detachable, 48 mm strong, double-shell and insulated with incombustible material (DIN 4102, A1, 55 kg/m³). This construction ensures that the unit can be completely dismantled as no welded connections are needed.

All **sealing materials** used are closed-cell and microbially inert.

AT 4-F construction kit **components exposed to humidity** are strictly made of corrosion-resistant material – solely stainless steel. A drip tray ensures the continuous and complete discharge of condensate. Conforming to the highest hygiene standards, AL-KO factory-cleans all components and packages them in a protective film for transport.

COMPLIANCE

Compliant with all national and international standards



Functional units are usually easily accessible from both sides and can mostly be removed without tools for cleaning. Heat exchangers can be cleaned down to the core with little technical effort and in a small amount of time. All filter, fan and humidifier parts starting from a unit height of 1,300 mm come with lighting and inspection glasses. Thus continuous inspection is possible without having to open the equipment.

The **mechanical stability** conforms with EN 1886. Thanks to the raster design, the construction can flexibly be adapted to different structural conditions. The detachable panelling, 47 mm strong and double-shell, is lined with incombustible mineral wool on the inside for sound and heat insulation according to DIN 4102, building material class A1 and EN 13501-1 s1/d0 respectively. The mineral wool has a density of 55 kg/m³.

The inner and outer shell's **panel** is made of 1 mm thick sendzimir-galvanized steel plate. Upon completion, the panel is entirely powder-coated in RAL 7001. Due to the coating strength of at least 60 µm there are no open cut edges, eliminating the risk of corrosion. The patented thermal decoupling of inner and outer shells prevent thermal bridges.

The **inner surfaces** of the housing fit flush with the frame. The interior surfaces are completely smooth and have no cut edges. All joints and grooves in the unit are disinfectant-proof, sealed with microbially inert material and can be cleaned without leaving any residues.

The **door construction** corresponds to the housing panels and is corrosion-resistant without cut edges. Units that are accessible on foot are equipped with hand levers or alternatively with operating covers that are removable from the side. Seals and are thermally decoupled through overlapping profiles.

The **main frame** is galvanised and powder-coated.

Requirement	Classification AT 4-F
Mechanical stability	Class D1
Leakage of the housing	Class L1
Thermal insulation	Class T2
Thermal bridge factor	Class TB2
Medium sound reduction	41 dB(A)

Insertion attenuation DE according to EN 1886							
Hz	125	250	500	1,000	2,000	4,000	8,000
dB(A)	17.6	27.3	27.0	28.9	32.2	37.0	39.7

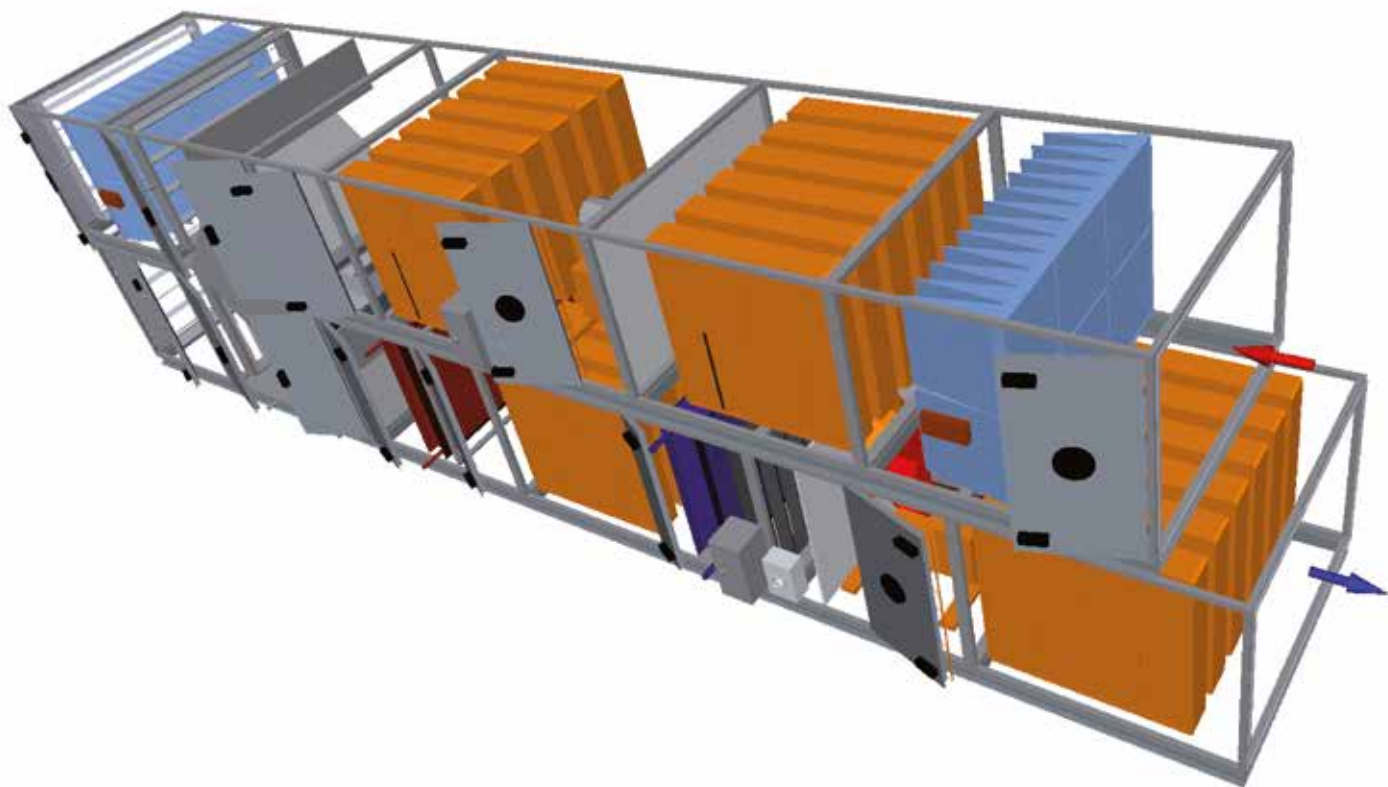


AT 4-F WITH CROSS FLOW HEAT EXCHANGER



Supply air

Equipment size AT 4-F	Flow rate	External pressure	Transport weight (kg)	Total length (mm)	Total width (mm)	Total height (mm)	Connection frame Length (mm)	Damper Length (mm)	Empty chamber Length (mm)	Filter Length (mm)	Class	Maintenance	Empty chamber Length (mm)	Heater Length (mm)	Raster	Empty chamber Length (mm)	Silencer Length (mm)
8x8	3,370	600	1,750	8,447	689	1,608	50	230	383	765	F7	F-quick release	383	459	3	383	1,377
12x8	5,060	600	2,242	8,523	995	1,608	50	230	383	765	F7	F-quick release	383	459	3	—	1,377
16x8	6,740	600	2,810	8,905	1,301	1,608	50	230	383	765	F7	F-quick release	383	536	4	—	1,377
12x12	7,580	600	2,878	9,287	995	2,220	50	230	383	765	F7	F-quick release	459	459	3	383	1,377
16x12	10,100	600	3,518	9,364	1,301	2,220	50	230	383	765	F7	F-quick release	459	536	4	383	1,377
20x12	12,600	600	3,554	9,441	1,301	2,220	50	230	383	765	F7	F-quick release	459	536	4	383	1,377
16x16	13,480	600	4,247	10,206	1,301	2,832	50	230	383	765	F7	F-quick release	612	536	3	383	1,377
20x16	16,850	600	5,027	9,976	1,607	2,832	50	230	383	765	F7	F-quick release	612	536	4	383	1,377
24x16	20,230	600	5,894	10,436	1,913	2,832	50	230	—	765	F7	S polluted air side	612	536	4	383	1,377
32x16	26,970	600	7,312	10,665	2,525	2,832	50	230	—	765	F7	S polluted air side	612	536	2	383	1,377
20x20	21,070	600	6,135	10,971	1,607	3,444	50	230	383	765	F7	F-quick release	765	536	4	383	1,377
24x20	25,280	600	7,104	11,200	1,913	3,444	50	230	383	765	F7	S polluted air side	765	536	4	383	1,377
24x24	30,340	600	8,056	11,659	1,913	4,056	50	230	383	765	F7	S polluted air side	918	536	2	383	1,377



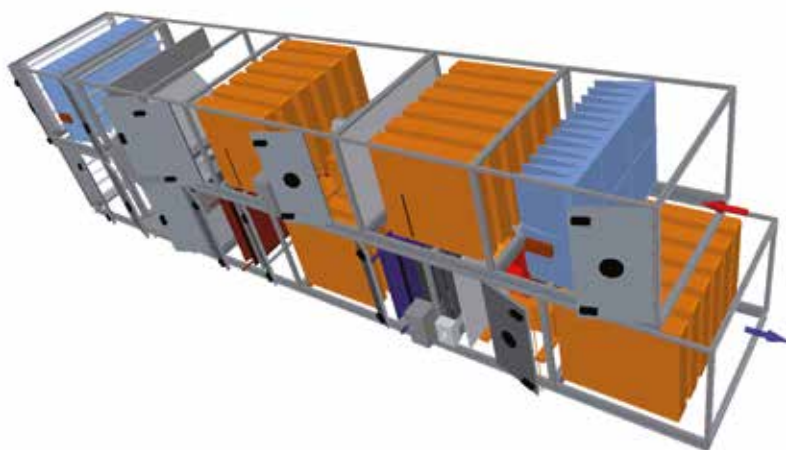
			Combi- nation		Exhaust air									
Cooler Length (mm)	Raster	Fan Length (mm)	Motor size	Silencer Length (mm)	Cross flow heat exchanger Length (mm)	Filter Length (mm)	Class	Maintenance	Silencer Length (mm)	Fan Length (mm)	Motor size	Silencer Length (mm)	Empty chamber Length (mm)	Empty chamber Length (mm)
536	6	765	90	1,377	1,301	765	M5	F-quick release	1,377	765	90	1,377	383	918
536	4	765	100	1,377	1,301	765	M5	F-quick release	1,377	765	100	1,377	383	1,148
612	8	842	112	1,377	1,683	765	M5	F-quick release	1,377	842	112	1,377	383	1,148
536	6	842	132	1,377	1,683	765	M5	F-quick release	1,377	842	112	1,377	459	1,148
536	6	918	132	1,377	1,683	765	M5	F-quick release	1,377	918	132	1,377	459	1,148
536	6	995	160	1,377	1,683	765	M5	F-quick release	1,377	918	132	1,377	459	1,148
536	6	995	160	1,377	1,989	765	M5	F-quick release	1,377	918	132	1,377	612	1,148
536	6	1,071	160	1,377	1,989	765	M5	F-quick release	1,377	995	132	1,377	612	1,071
765	8	1,071	160	1,377	1,989	765	M5	S polluted air side	1,377	1,071	160	1,377	612	1,071
765	6	1,148	160	1,377	2,295	765	M5	S polluted air side	1,377	1,148	160	1,377	612	1,071
765	6	1,148	160	1,377	2,295	765	M5	F-quick release	1,377	1,071	160	1,377	765	1,071
765	6	1,148	160	1,377	2,295	765	M5	S polluted air side	1,377	1,148	160	1,377	765	1,454
765	6	1,301	180	1,377	2,295	765	M5	S polluted air side	1,377	1,301	180	1,377	918	1,607

AT 4-F WITH HIGH-PERFORMANCE CIRCUIT COMPOUND SYSTEM



Supply air

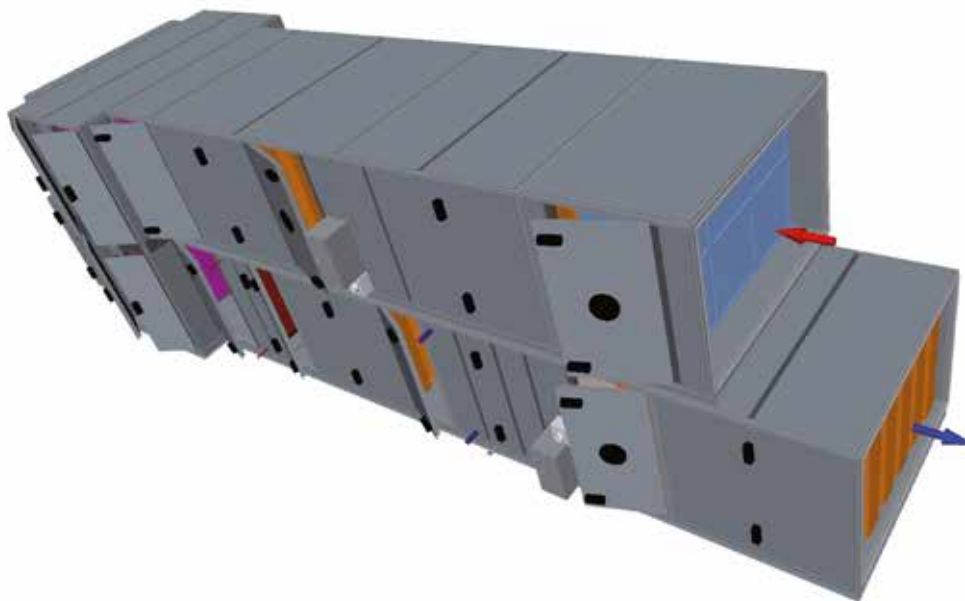
Equipment size AT 4-F	Flow rate	External pressure	Transport weight (kg)	Total length (mm)	Total width (mm)	Total height (mm)	Connection frame Length (mm)	Damper Length (mm)	Empty chamber Length (mm)	Filter Length (mm)	Class	Maintenance	Heater Length (mm)	Raster	Empty chamber Length (mm)	Heater Length (mm)	Raster	Empty chamber Length (mm)	Silencer Length (mm)
8x8	3,370	600	1,589	7,298	689	1,608	50	230	230	765	F7	F-quick release	612	12	383	459	8	306	1,377
12x8	5,060	600	2,019	7,298	995	1,608	50	230	230	765	F7	F-quick release	536	12	383	459	3	306	1,377
16x8	6,740	600	2,394	7,298	1,301	1,608	50	230	230	765	F7	F-quick release	536	12	383	536	3	306	1,377
12x12	7,580	600	2,526	7,528	995	2,220	50	230	230	765	F7	F-quick release	536	12	536	459	3	383	1,377
16x12	10,100	600	3,076	7,528	1,301	2,220	50	230	230	765	F7	F-quick release	612	12	536	536	3	383	1,377
20x12	12,600	600	3,783	7,986	1,607	2,220	50	230	230	765	F7	F-quick release	612	12	536	536	4	383	1,377
16x16	13,480	600	3,659	8,063	1,301	2,832	50	230	230	765	F7	F-quick release	612	12	689	536	3	383	1,377
20x16	16,850	600	4,463	8,293	1,607	2,832	50	230	230	765	F7	F-quick release	536	12	689	536	4	383	1,377
24x16	20,230	600	5,162	8,369	1,913	2,832	50	230	230	765	F7	S polluted air side	612	12	689	536	4	383	1,377
32x16	26,970	600	6,726	9,211	2,525	2,832	50	230	230	765	F7	S polluted air side	612	12	689	536	4	383	1,377
20x20	21,070	600	5,412	8,522	1,607	3,444	50	230	230	765	F7	F-quick release	612	12	842	536	4	383	1,377
24x20	25,280	600	6,527	9,287	1,913	3,444	50	230	230	765	F7	S polluted air side	612	12	765	536	4	383	1,377
24x24	30,340	600	7,653	10,205	1,913	4,012	50	230	536	765	F7	S polluted air side	612	12	995	536	3	383	1,377
28x24	35,390	600	8,559	10,358	2,219	4,056	50	230	536	765	F7	S polluted air side	612	12	995	536	2	383	1,377
32x24	40,450	600	9,007	9,823	2,528	4,056	50	230	230	765	F7	S polluted air side	612	12	995	536	2	383	1,377
28x28	41,290	600	9,380	9,747	4,458	2,329	50	230	689	765	F7	S polluted air side	612	12	1,148	536	2	383	1,377
32x28	47,190	600	10,764	10,206	2,525	2,329	50	230	689	765	F7	S polluted air side	612	12	1,148	536	2	383	1,377
41x28	60,460	600	13,239	10,283	6,446	2,329	50	230	689	765	F7	S polluted air side	612	12	1,148	689	8	383	1,377
32x32	53,930	600	12,456	10,819	5,070	2,635	50	230	689	765	F7	S polluted air side	612	12	1,301	536	3	383	1,377
41x32	69,090	600	14,453	10,512	6,446	2,635	50	230	689	765	F7	S polluted air side	612	12	1,301	612	6	383	1,377
49x32	82,580	600	17,106	11,353	7,670	2,635	50	230	689	765	F7	S polluted air side	612	8	1,607	536	4	612	1,377



Exhaust air

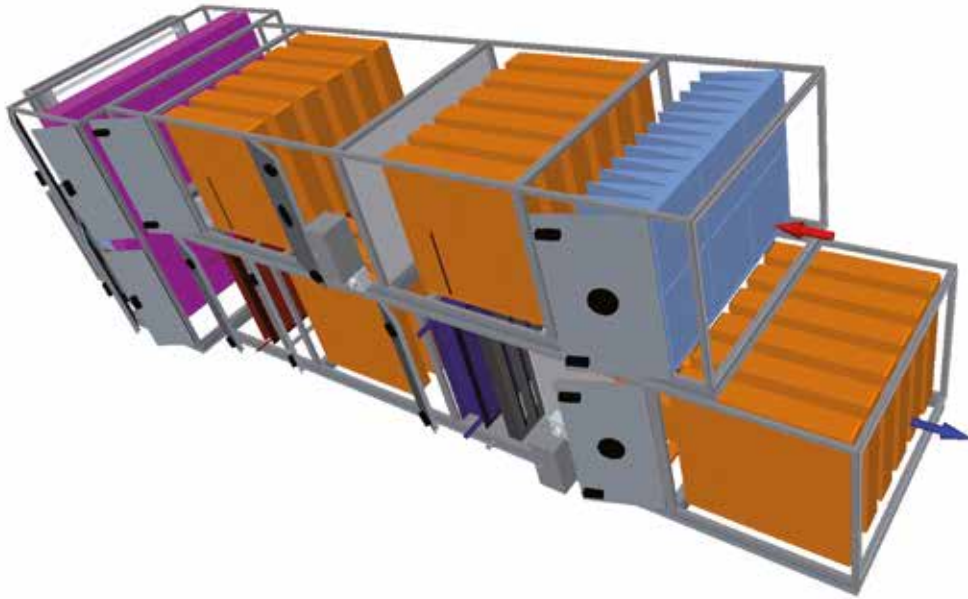
Cooler Length (mm)	Raster	Fan Length (mm)	Motor size	Silencer Length (mm)	Filter Length (mm)	Class	Maintenance	Silencer Length (mm)	Fan Length (mm)	Motor size	Silencer Length (mm)	Empty chamber Length (mm)	Cooler Length (mm)	Raster	Empty chamber Length (mm)
536	4	765	90	1,377	765	M5	F-quick release	1,377	765	90	1,377	383	842	12	230
536	6	842	112	1,377	765	M5	F-quick release	1,377	765	100	1,377	383	918	12	230
536	6	842	112	1,377	765	M5	F-quick release	1,377	842	112	1,377	383	765	12	230
536	6	842	132	1,377	765	M5	F-quick release	1,377	842	132	1,377	536	612	12	230
459	2	918	132	1,377	765	M5	F-quick release	1,377	918	132	1,377	536	765	12	230
612	8	918	132	1,377	765	M5	F-quick release	1,377	918	132	1,377	536	765	12	230
536	6	995	160	1,377	765	M5	F-quick release	1,377	918	132	1,377	689	765	12	230
536	6	1,071	160	1,377	765	M5	F-quick release	1,377	1,071	160	1,377	689	765	12	230
765	8	1,071	160	1,377	765	M5	F-quick release	1,377	1,071	160	1,377	689	995	12	230
765	6	1,148	160	1,377	765	M5	S polluted air side	1,377	1,148	160	1,377	689	995	12	230
765	6	1,071	160	1,377	765	M5	F-quick release	1,377	1,071	160	1,377	842	995	12	230
765	6	1,148	160	1,377	765	M5	S polluted air side	1,377	1,148	160	1,377	765	995	12	230
765	6	1,301	180	1,377	765	M5	S polluted air side	1,377	1,301	180	1,377	995	995	12	230
765	6	1,377	200	1,377	765	M5	S polluted air side	1,377	1,300	180	1,377	995	995	12	230
765	6	1,377	200	1,377	765	M5	S polluted air side	1,377	1,377	200	1,377	995	995	12	230
765	6	1,377	200	1,377	765	M5	S polluted air side	1,377	1,377	200	1,377	1,148	995	12	230
842	8	1,683	225	1,377	765	M5	S polluted air side	1,377	1,683	200	1,377	1,148	995	12	230
842	8	1,760	180	1,377	765	M5	S polluted air side	1,377	1,760	180	1,377	1,148	995	12	230
842	8	1,913	250	1,377	765	M5	S polluted air side	1,377	1,836	225	1,377	1,301	995	12	383
842	8	1,760	180	1,377	765	M5	S polluted air side	1,377	1,760	180	1,377	1,301	918	12	383
842	8	1,836	200	1,377	765	M5	S polluted air side	1,377	1,836	200	1,377	1,607	995	8	383

AT 4-F WITH ROTARY HEAT EXCHANGER



Supply air

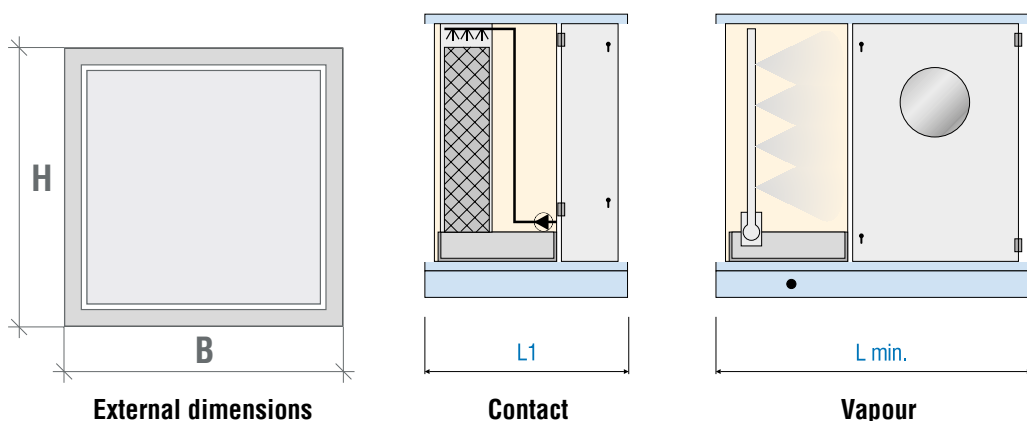
Equipment size AT 4-F	Flow rate	External pressure	Transport weight (kg)	Total length (mm)	Total width (mm)	Total height (mm)	Connection frame Length (mm)	Damper Length (mm)	Empty chamber Length (mm)	Filter Length (mm)	Class	Maintenance	Heater Length (mm)	Raster	Empty chamber Length (mm)	Silencer Length (mm)	Empty chamber Length (mm)
8x8	3,370	600	1,766	8,063	1,301	1,608	50	230	230	765	F7	F-quick release	459	2	230	1,377	459
12x8	5,060	600	2,170	8,063	1,301	1,608	50	230	230	765	F7	F-quick release	459	2	230	1,377	459
16x8	6,740	600	2,523	8,216	1,301	1,608	50	230	230	765	F7	F-quick release	459	2	230	1,377	459
12x12	7,580	600	3,050	8,751	1,913	2,220	50	230	230	765	F7	F-quick release	459	2	230	1,377	459
16x12	10,100	600	3,511	8,828	1,913	2,220	50	230	230	765	F7	F-quick release	459	2	230	1,377	459
20x12	12,600	600	4,140	9,134	1,913	2,220	50	230	230	765	F7	F-quick release	536	2	383	1,377	459
16x16	13,480	600	4,417	9,287	2,525	2,832	50	230	230	765	F7	F-quick release	459	2	383	1,377	459
20x16	16,850	600	5,062	9,363	2,525	2,832	50	230	230	765	F7	F-quick release	459	2	383	1,377	459
24x16	20,230	600	5,625	9,593	2,525	2,832	50	230	230	765	F7	F-quick release	536	2	383	1,377	459
32x16	26,970	600	6,882	10,205	2,525	2,832	50	230	230	765	F7	S polluted air side	536	2	383	1,377	459
20x20	21,070	600	6,513	10,053	2,831	3,444	50	230	230	765	F7	F-quick release	536	2	383	1,377	459
24x20	25,300	600	7,493	10,741	2,831	3,444	50	230	230	765	F7	S polluted air side	536	2	383	1,377	459
24x24	30,340	600	8,817	11,047	3,443	4,056	50	230	230	765	F7	S polluted air side	536	2	383	1,377	459
28x24	35,390	600	9,491	11,123	3,443	4,056	50	230	230	765	F7	S polluted air side	612	2	383	1,377	459
32x24	40,450	600	10,358	11,276	3,443	4,056	50	230	230	765	F7	S polluted air side	459	2	383	1,377	459
28x28	41,290	600	12,129	12,270	4,458	3,553	50	230	230	765	F7	S polluted air side	612	2	383	1,377	459
32x28	47,190	600	14,461	13,647	5,070	4,241	50	230	230	765	F7	S polluted air side	612	2	383	1,377	459
41x28	60,460	600	15,081	13,800	5,070	4,241	50	230	230	765	F7	S polluted air side	612	2	383	1,377	459
32x32	53,930	600	15,548	13,494	5,070	4,241	50	230	230	765	F7	S polluted air side	536	2	383	1,377	459
41x32	69,090	600	19,127	13,877	6,446	4,241	50	230	230	765	F7	S polluted air side	612	3	459	1,377	1,148



			Combi- nation		Exhaust air								
Cooler Length (mm)	Raster	Fan Length (mm)	Motor size	Silencer Length (mm)	Rotary heat exchanger Length (mm)	Filter Length (mm)	Class	Maintenance	Silencer Length (mm)	Fan Length (mm)	Motor size	Silencer Length (mm)	Empty chamber Length (mm)
536	6	765	90	1,377	995	765	M5	F-quick release	1,377	765	90	1,377	230
536	6	765	100	1,377	995	765	M5	F-quick release	1,377	765	100	1,377	230
612	8	842	112	1,377	995	765	M5	F-quick release	1,377	842	112	1,377	230
612	8	842	112	1,377	1,377	765	M5	F-quick release	1,377	842	100	1,377	230
612	8	918	132	1,377	1,377	765	M5	F-quick release	1,377	918	132	1,377	230
612	8	918	132	1,377	1,377	765	M5	F-quick release	1,377	918	132	1,377	230
612	8	995	132	1,377	1,377	765	M5	F-quick release	1,377	995	132	1,377	230
612	8	1,071	160	1,377	1,377	765	M5	F-quick release	1,377	995	132	1,377	230
765	8	1,071	160	1,377	1,377	765	M5	F-quick release	1,377	1,071	160	1,377	230
765	6	1,148	160	1,377	1,377	765	M5	S polluted air side	1,377	1,148	160	1,377	230
765	6	1,148	160	1,377	1,760	765	M5	F-quick release	1,377	1,148	160	1,377	230
765	6	1,148	160	1,377	1,760	765	M5	S polluted air side	1,377	1,224	160	1,377	230
765	6	1,301	180	1,377	1,760	765	M5	S polluted air side	1,377	1,301	180	1,377	230
765	6	1,301	180	1,377	1,760	765	M5	S polluted air side	1,377	1,301	180	1,377	230
765	6	1,377	200	1,377	1,760	765	M5	S polluted air side	1,377	1,454	200	1,377	230
765	6	1,454	200	1,377	2,525	765	M5	S polluted air side	1,377	1,454	200	1,377	230
842	8	1,377	200	1,377	3,902	765	M5	S polluted air side	1,377	1,377	200	1,377	230
842	8	1,530	225	1,377	3,902	765	M5	S polluted air side	1,377	1,913	200	1,377	230
765	6	1,836	225	1,377	3,290	765	M5	S polluted air side	1,377	1,913	225	1,377	230
765	6	2,066	280	1,377	3,213	765	M5	S polluted air side	1,377	1,989	250	1,377	1,148

AT 4-F HUMIDIFIER AND WEATHER PROTECTION

Humidifier

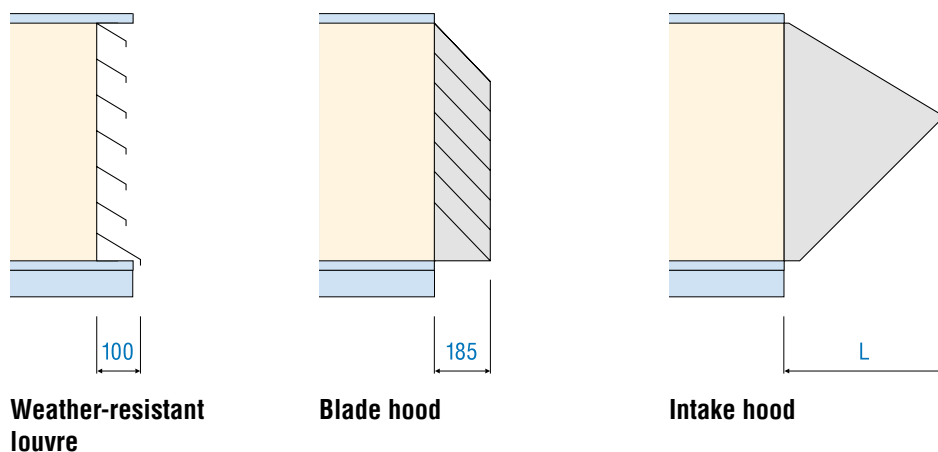


The humidifier units are entirely extendible from the side. The entire wiring is connected on the external terminal box. The drain pipe's nominal width is DN 32. The specified standard values refer to a low-pressure manifold at nominal airflow rate. If you plan for the following fine particle filter sectors, the specified sector should be increased by 306 mm and 612 mm respectively.

Humidifier

Installation size AT 4-F	External dimensions	Contact Fresh water		Contact Circulating water		Vapour L min. standard values at 18°C			High pressure humidifier	
	W x H in mm (H incl. main frame)	L1	kg ¹⁾	L1	kg ¹⁾	4 g / kg	7 g / kg	10 g / kg	L2	kg ²⁾
8 x 8	688 x 688 (798)	612	25	1,148	43	918	1,224	1,530	1,300	288
12 x 8	994 x 688 (798)	612	30	1,148	57	918	1,224	1,530	1,300	472
12 x 12	1,300 x 688 (798)	612	38	1,148	71	918	1,224	1,530	1,300	544
20 x 12	994 x 994 (1,104)	612	40	1,148	80	918	1,224	1,530	1,300	522
20 x 16	1,300 x 994 (1,104)	612	50	1,148	100	918	1,224	1,530	1,300	767
32 x 16	1,606 x 994 (1,104)	918	57	1,148	116	918	1,224	1,530	1,300	902
24 x 20	1,300 x 1,300 (1,410)	612	66	1,148	137	918	1,224	1,530	1,300	922
28 x 24	1,606 x 1,300 (1,410)	918	87	1,148	182	918	1,224	1,530	1,300	922
28 x 28	1,912 x 1,300 (1,410)	918	93	1,148	195	918	1,224	1,530	1,300	922
32 x 32	2,524 x 1,300 (1,410)	918	120	1,148	256	918	1,224	1,530	1,300	1,173
41 x 32	1,606 x 1,606 (1,716)	1,148	130	1,148	275	918	1,224	1,530	1,300	1,029
16 x 8	1,912 x 1,606 (1,716)	1,148	32	1,148	62	918	1,224	1,530	1,300	1,029
16 x 12	1,912 x 1,912 (2,022)	1,148	37	1,148	73	918	1,224	1,530	1,300	1,029
16 x 16	2,218 x 1,912 (2,022)	1,148	44	1,148	91	918	1,224	1,530	1,300	1,400
24 x 16	2,524 x 1,912 (2,022)	1,148	52	1,148	107	918	1,224	1,530	—	—
20 x 20	2,218 x 2,218 (2,328)	1,148	60	1,148	126	918	1,224	1,530	—	—
24 x 24	2,524 x 2,218 (2,328)	1,148	72	1,148	148	918	1,224	1,530	—	—
32 x 24	2,524 x 2,524 (2,634)	1,148	80	1,148	167	918	1,224	1,530	—	—
32 x 28	3,213 x 2,218 (2,426)	1,148	98	1,148	207	918	1,224	1,530	—	—
41 x 28	3,213 x 2,524 (2,732)	1,148	105	1,148	221	918	1,224	1,530	—	—
49 x 32	3,825 x 2,524 (2,732)	1,148	150	1,148	324	918	1,224	1,530	—	—

Weather protection



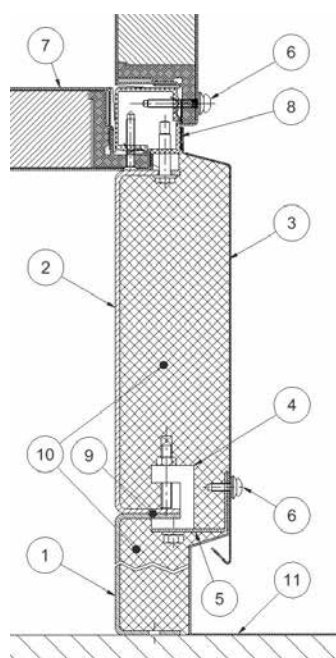
Weather protection

Installation size AT 4-F	Weather-resistant louver	Blade hood	Intake hood		
	Individual parts	Individual parts	Width	Height	Length
8 x 8	1	1	612	612	510
12 x 8	1	1	918	612	510
12 x 12	1	1	1,224	612	510
20 x 12	1	1	918	918	725
20 x 16	1	1	1,224	918	725
32 x 16	1	1	1,530	918	725
24 x 20	1	1	1,224	1,224	945
28 x 24	1	1	1,530	1,224	945
28 x 28	1	1	1,836	1,224	945
32 x 32	1	2	2,448	1,224	945
41 x 32	1	1	1,530	1,530	1,160
16 x 8	1	1	1,836	1,530	1,160
16 x 12	2	1	1,836	1,836	1,375
16 x 16	4	2	2,142	1,836	1,375
24 x 16	2	2	2,448	1,836	1,375
20 x 20	2	2	2,142	2,142	1,591
24 x 24	4	2	2,448	2,142	1,591
32 x 24	4	2	2,448	2,448	1,807
32 x 28	4	2	3,136*	2,142*	1,591*
41 x 28	4	2	3,136*	2,448*	1,807*
49 x 32	4	2	3,748*	2,448*	1,807*

*Divided intake hood

AT 4-F MAIN AND ROOF FRAMES

Main frame for configuration of roof frames, pre-assembled on top of each other, for outdoor setup as a substructure on the foundations



- 1 Roof frame
- 2 Main frame
- 3 Cover plate
- 4 Clamp (at least 2 per component.
Max. distance between the clamps: 700 mm)
- 5 Screw-on bracket
- 6 Drilling screw with EPDM washer
- 7 Interior housing
- 8 Drip edge
- 9 Sealing compound
- 10 On-site insulation
- 11 Membrane

Main and roof frames

Installation size AT 4-F	Width (mm)	Height (mm)	Height with main frame (mm)	Height with roof frame 100 (mm)	Height with roof frame 200 (mm)	Height with roof frame 300 (mm)	Height with roof frame 400 (mm)
8x8	688	688	798	788	888	988	1,088
12x8	994	688	798	788	888	988	1,088
12x12	1,300	688	798	788	888	988	1,088
20x12	994	994	1,104	1,094	1,194	1,294	1,394
20x16	1,300	994	1,104	1,094	1,194	1,294	1,394
32x16	1,606	994	1,104	1,094	1,194	1,294	1,394
24x20	1,300	1,300	1,410	1,400	1,500	1,600	1,700
28x24	1,606	1,300	1,410	1,400	1,500	1,600	1,700
28x28	1,912	1,300	1,410	1,400	1,500	1,600	1,700
32x32	2,524	1,300	1,410	1,400	1,500	1,600	1,700
41x32	1,606	1,606	1,716	1,706	1,806	1,906	2,006
16x8	1,912	1,606	1,716	1,706	1,806	1,906	2,006
16x12	1,912	1,912	2,022	2,012	2,112	2,212	2,312
16x16	2,218	1,912	2,022	2,012	2,112	2,212	2,312
24x16	2,524	1,912	2,022	2,012	2,112	2,212	2,312
20x20	2,218	2,218	2,328	2,318	2,418	2,518	2,618
24x24	2,524	2,218	2,328	2,318	2,418	2,518	2,618
32x24	2,524	2,524	2,634	2,624	2,724	2,824	2,924
32x28	3,213	2,218	2,328	2,318	2,418	2,518	2,618
41x28	3,213	2,524	2,634	2,624	2,724	2,824	2,924
49x32	3,825	2,524	2,634	2,624	2,724	2,824	2,924

AT 4-F STANDARD AND SPECIAL DESIGNS

Components			Design	
			Standard	Option 1 Special designs at an additional charge
Housing walls	Frame profiles		Aluminium	Aluminium + pc
	Outer panels		sg + pc	V2A*
	Inner panels	Walls and cover	sg + pc	V2A*
		Floor	sg + pc	V2A*
	Insulation		Mineral fibreboard, fire class A, temperature-resistant up to 110°C	–
	Filter sector base	Recirculation	sg + pc	V2A*
		Fresh air intake	sg + pc	V2A*
Structural components	Assembly parts		sg	sg + pc
	Eliminator		V2A* / pp	V2A* / pp
	Drip trays		V2A*	V2A*
	Hinges		Aluminium	Aluminium
	Handles		Plastic	Plastic
	Mounting and connecting material	internal	g	sg + pc
		external	sg	V2A*
	Filter frame		sg	sg + pc / V2A*
	Cooler installation rails		V2A* / sg	V2A*
Functional units	Fan	Housing	sg	sg + pc
		Impeller	sg + pc	sg + pc
		Shaft	Tectylated steel	Tectylated steel
	Motor	Housing	coated	coated
		Shaft end	Steel	Steel
		V-belt pulley	ph	ph + coated
	Dampers	Dampers / blades	Aluminium / sg	–
		Shafts and rods	g	g
		Drive wheels	Plastic	Plastic
		Frame	sg	sg + pc / aluminium
	Air heater	Blades	Aluminium	Aluminium + ep
		Frame	sg	Aluminium + V2A*
		Ducts	Copper	sg
		Collectors	Coated copper / steel	–
	Air cooler	Blades	Aluminium	Aluminium + ep
		Frame	Aluminium	V2A*
		Ducts	Copper	V2A*
		Collectors	Copper	–
	Humidifier		Upon request	Upon request
	Silencer	Casing	sg	sg + pc / V2A*
		Cover	Fibre glass	Fibre glass
	Rotary heat exchanger	Housing	Aluminium / sg	Aluminium / sg
	Plate heat exchanger		Aluminium / sg	Aluminium + ep
External parts	Flexible sleeves		PVC / EP9M	Fabric BL VI q 3, temp.-resistant up to 110°C
	Air duct mounting frame		sg	sg
	Main frame		sg + pc	sg + pc
Outdoor models	Roof		Weatherproof roof panel, accessible on foot	–
	Outdoor mounting material		g	g
	Base and mounting frame		g	sg + pc

g = galvanic zinc-coated or electrogalvanised
sg = sendzimir-galvanized

pc = powder-coated min. 60 µm
pp = polypropylene

ph = phosphate-treated
ep = epoxy resin coating

V2A* = e.g. 1.4301

Subject to
material changes

AT 4-F HOUSING DESIGN



EXTERIOR SHELL AND DOOR STRUCTURE

- | Demountable frame construction
- | Galvanised panels with powder-coating (RAL 7001), coating strength 60 µm (optionally 120 µm)
- | Aluminium frame profiles (optionally powder-coated)
- | Elaborate sealing geometry with overlapping profile for complete decoupling
- | T2 / TB2 in every configuration
- | Door structure like housing panels, hinged with clamps
- | Door catch in overpressure range
- | Option: Lockable hand lever
- | Option: Inspection glass



INTERIOR SHELL AND UNIT CONNECTIONS

- | Completely smooth interior with sealed joints
- | Powder-coated internal panels (RAL 7001, coating strength 60 µm)
- | Easy to install unit connections through gusset plates
- | Option: Stainless steel interior shell
- | Option: Double powder-coated interior shell



FILTER

- | Choice of galvanised, powder-coated or stainless steel filter frames
- | Filter seat with classic tension spring technology
- | Option: AL-KO filter quick release devices

POSSIBLE FILTERS

- | **Bag filter** in Euro mounting frame with nylon spacers between the filter bags.
Available as:
 - Medium filter M5 to M6
 - Fine particle filter M5 to F9
- | **Fine particle filter cartridge** as V-cell filter with modular length of 360 mm.
Consists of folded filter material. Available as:
 - Fine particle filter M5 to F9
- | **Flat filter/panel filter** in Euro mounting frame, up to a unit size of 16 x 16 extendible from the side. Strength 94 mm, for shortened filter units (module length 250 mm). Available as:
 - Coarse dust filter G4
 - Medium filter M5
- | **HEPA filter** with circumferential neoprene seal and textile threads as spacers.
Medium, made of high-quality, wet-proof fibre glass paper.
Particularly efficient in combination with upstream F9 filter.
Available as:
 - Filter class R (E10 - E12)
 - Filter class S (H13)
- | **Activated charcoal filter** mounted to a special base plate with leak-free bayonet coupling. Available as:
 - Filter type A20
 - Filter type A26
- | **Activated charcoal filter cartridge** with quick release device
- | **Grease filter** G3 made of galvanised wire mesh

AT 4-F FUNCTIONAL UNITS



FANS AND MOTORS

- | Free-wheeling fans combined with a selection of highly efficient three-phase motors by different manufacturers
- | Mounted entirely on pressure-loaded spring anti-vibration dampers
- | Radial impeller with single-side suction and backward-curved blades
- | Motor protection through PTC thermistor
- | Impeller directly fitted onto the motor shaft
 - Option: EC fans (see picture) and IE4 permanent magnet motors with frequency converter
 - Option: belt-driven radial fans on joint main frame with three-phase motor and motor clamping slide for belt tensioning without tools as fan with forward- or backward-curved blades in reinforced housing and bearing design.
- | All fan units can be removed from the side
- | Accessories: Grid barrier, pipe loop, pressure transducer, pressure gauge, frequency converter, repair switch incl. wiring



SILENCER

- | Vertically arranged mineral fibreboard panels, mounted in the housing via angular rails
- | Glass silk surface, abrasion-proof up to a flow velocity of 20 m/s
- | Aerodynamic and low-in-turbulence frame to reduce pressure losses
- | Option: extendible from the side



HEATERS AND COOLERS

- | Removable from the side
- | Eliminator for residual water made of temperature-resistant polypropylene profiles, without frame
- | Seamless copper pipes with mechanically integrally moulded aluminium blades
- | Cased in corrosion-protected frames
- | Steel or copper heater collection pipes
- | Copper cooler collection pipes
- | Cooler with direct heat exchanger
- | Stainless steel (1.4301) cooler drip tray with an incline on all sides to PVC drain pipes (DN 40), lead through the side of the installation frame
- | Accessories: Flange and mating flange
- | Accessories cooler: Siphon
- | Accessories heater: Extendible sensor frame, frost protection thermostat, electronic heating register, refrigerant condenser

AT 4-F FUNCTIONAL UNITS



HEAT RECOVERY

Diagonal flow plate heat exchanger

- | Heat recovery with efficiency of up to 80%
- | Made of corrosion-resistant aluminium, optionally with epoxy resin coating
- | Bypass dampers for summer bypassing and to prevent freezing
- | Stainless steel (1.4301) drip tray with DN 40 PVC drain pipes, lead through the side of the installation frame
- | Eliminator made of temperature-resistant polypropylene profile, extendible
- | Accessories: Siphon
- | Option: Stainless steel frame (1.4301)



Rotary heat exchanger

- | Heat recovery with efficiency of up to 90%
- | Storage mass made of alternating smooth and corrugated aluminium foil
- | Adjustable felt seal between rotor and housing
- | Separation from rotor diameter 2,500 mm
- | Optionally with or without humidity recovery
- | Option: Special housing made of seawater-proof aluminium
- | Option: Sorption rotor or rotor with epoxy resin coating
- | Option: Rotor control with flow monitoring. Built into the housing and wired internally



HYDROOPT® circuit compound systems

- | Circuit compound system with more than 80% efficiency of heat recovery
- | Can demonstrably be cleaned down to the core
- | Piping unit for connection of supply and exhaust air heat exchanger, integrated into the unit or mounted externally (optional)
- | Option: integrated dehumidification and humidification
- | Option: Hydraulic pump with control valves, field devices and control system. Optionally with integrated infeed of heat and cooling as well as adiabatic cooling.

HYDROOPT®



HUMIDIFIER

Contact humidifier as circulating water system (CWS) or fresh water system (FWS)

- | Self-contained component
- | Inspection door across the full unit height (for FWS only starting from 20 x 20)
- | Contact body made of waterproofed, inorganic fibre glass in a stainless steel frame
- | Contact body extendible from the side or removable in the direction of the air flow
- | Desalination pipe with control valve directly into the discharge pipe
- | PPTV eliminator cartridges with stainless steel frame
- | Bypass, multilevel adjustable via magnetic valves and integrated control damper with actuator
- | Entire wiring on external terminal box
- | Supplementary for CWS: Stainless steel water tray with incline on three sides and safety overflow
- | Supplementary for CWS: electronic water level control, infeed and solenoid valve for supply of the fresh water pipe and discharge pipe
- | Supplementary for CWS: Plastic/stainless steel immersion pump, stainless steel pump water distributor with plastic distribution hoses.
- | Supplementary for CWS: Dry run protector for pump

High pressure humidifier

- | For use of DI-water < 10 µs/cm
- | Built-in humidifier with nozzle grid, nozzle holder with molecular diffuser nozzles and spray pipes.
- | Separator elements can easily be removed
- | Pump station with controller, mounted to the ventilation unit, incl. connection to nozzle grid
- | Housing with inspection door and glass as well as lighting
- | Base as continuous drip tray, 2 drain pipes with chrome steel threading
- | Type examination with certificate according to VDI 6022
- | Option: Measure and pressure increase from 4 to 8 bar
- | Option: Sterilisation through silver ionisation
- | Option: Integrated water treatment
- | Option: Master/slave control with pump station

Vapour humidifier

- | Housing with inspection door and glass as well as lighting
- | Base under the humidifier as drip tray, 2 drain pipes with chrome steel threading
- | Options: Built-in vapour distributor ready for connection, contact steam generator with control system and connecting hose

WEATHERPROOF DESIGN



INTAKE CHAMBER

- | Interior multi-leaf damper with control lever
- | Stainless steel base tray (1.4301) Central outlet in DN 40 PVC, lead outside through the installation frame
- | Drip edge



BLADES INTAKE HOOD

- | Coated corpus, roof covered with purpose-designed plastic film
- | Galvanised and powder-coated main frame, opening for crane transport
- | Drip edge circumferential at top and bottom
- | Integrated bird exclusionary grating
- | Option: powder-coated weather-resistant louvre

COOLING SYSTEMS



INTEGRATED COOLING

- | Cooling systems that can be adjusted continuously or to different settings
- | Completely piped and wired in the factory
- | Cooling alternatively with R 407C or R 410A
- | Option: external condenser
- | Heat pump switchover

OPERATING AND ON-SITE DETAILS



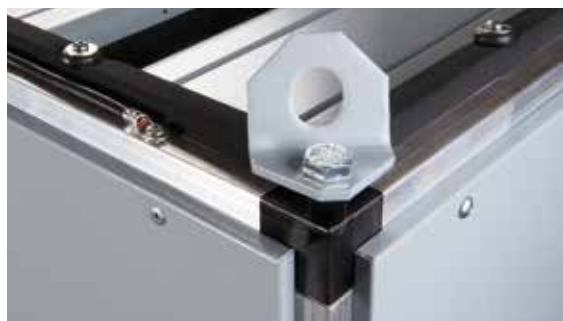
MULTI-LEAF DAMPERS

- | Opposed, torsion-resistant blades with special sealing lips.
Frame made of galvanised steel plate
- | Driven by cog wheels or rods
- | Optional: Galvanised, powder-coated or stainless steel
- | Available in air tightness class 2 or 4 (airtight according to EN 1751)
- | Choice of external mounting or integration into the housing



INTEGRATED CONDUIT

- | Cable routing in the unit's base or for multi-level units also in the middle section
- | Location outside the air flow
- | Less and simpler wiring on site



CRANE TRANSPORT

- | Carried out via crane eyelets

REPAIR SWITCH

- | Fixed to the fan or up to 7.5 kW integrated into the frequency converter
- | As circuit breaker with two auxiliary contacts (open, close)
Protection type IP 65, from 15 kW only as control switch
- | With integrated PTC thermistor connection
- | For weatherproof design with UV protection for ducts
- | Option: Wiring with motor incl. PTC thermistor

FLEXIBLE CONNECTIONS

- | Polyester fabric, particularly tearproof
- | Air duct connection flange circumferential on both sides, airtight joint
- | With equipotential bonding

CONTROL SYSTEMS

Advantages of the AL-KO control concept

- | Programmable controls (DDC)
- | Highly flexible hardware and software
- | International usability (up to 10 languages)
- | Computer-based programming and service tools
- | Open communications and integration
- | Use of innovative technologies

The modular AL-KO control concept impresses with its optimised hardware components for HVAC applications. Furthermore, it proves its high flexibility through programmable functions, the I/Os and operating structure. The choice of operating languages in particular facilitates the setup and operation abroad. International character sets are used for this.

There are endless possibilities in terms of control unit communication and integration into existing systems. The control units have slots for the ideal communication modules, for a LON-, Bacnet- or Modbus-connection.



Integrated control cabinet

(for weatherproof units)

- | Integrated control system for central ventilation units
- | Optional control cabinet integrated into the unit (weatherproof design), attached or as a separate control cabinet
- | Control cabinet attached to the unit with complete wiring



EXAMPLE OF AN AT4 CONTROL SYSTEM DIAGRAM

Allocation of the inputs and outputs

I/O-allocation:

Universal inputs

- UI01 = External air sensor
- UI02 = Room sensor or exhaust air sensor
- UI03 = Supply air sensor
- UI04 = Frost sensor (heater)
- UI05 = Supply air sensor (after preheater)
- UI06 = Humidity sensor (supply air, room, exhaust air)
- UI07 = Frost sensor (heater)
- UI08 = Overload heating pump heater / preheater
- UI09 = Filter monitoring
- UI10 = Overload cooling pump / malfunction cooling
- UI11 = Overload fan

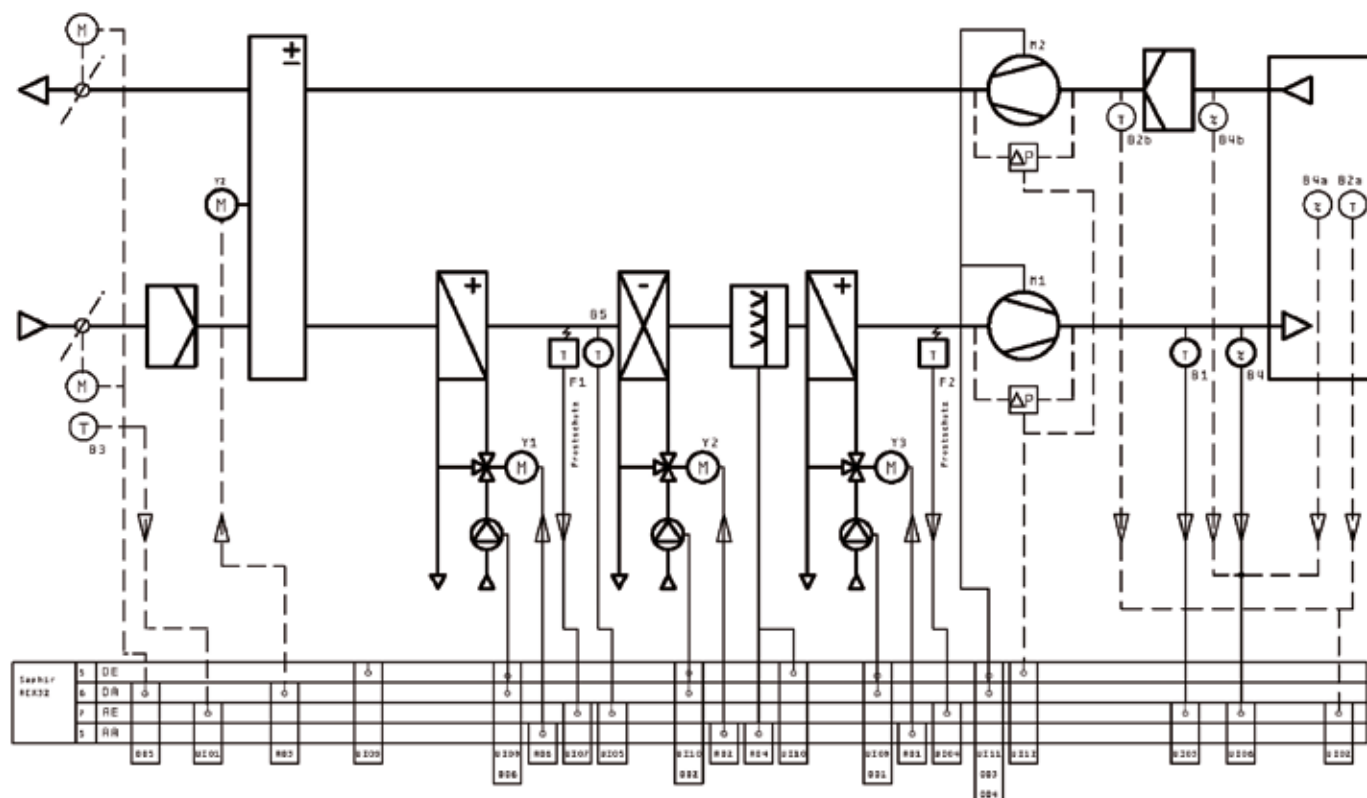
- UI12 = Flow monitoring fan
- UI13 = CO₂ sensor (optional)
- UI14 = Fire alarm (optional)

Digital outputs

- D01 = Heating pump
- D02 = Cooling pump / enabling cooling
- D03 = Fan level 1
- D04 = Fan level 2
- D05 = Dampers (ODA- / EHA-dampers)
- D06 = Heating pump preheater
- D07 = Alarm output for A-alarms
- D08 = Alarm output for B-alarms

Analogue outputs (0 to 10V)

- A01 = Heating valve
- A02 = cooling valve / suction throttle or hot-gas bypass
- A03 = Control efficiency of heat recovery
- A04 = Humidifier
- A05 = Mixed air dampers (optional)
- A06 = Heating valve preheater



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Figures show configuration examples which are not available in every market.
Please ask your AL-KO advisor.

Provided by your AL-KO partner:

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