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Name Walder T. Date 31.08.2022 - 08:29

Order 22-211-1792
Position 111
AHU-1
Project Terminalo g. 14, Vilnius

Drawing 111 [Pcs] 1
Date 30.08.2022

Client UAB "NIT"
Street Vilnius - LIT
23328

Revision	Execution	External unit
	Weight [kg]	1.174
TECHNICAL DATA	specific fan power [W/(m³/s)]	1792
ZHK Inova DG	EU 1253/2014 compliance	2018 OK

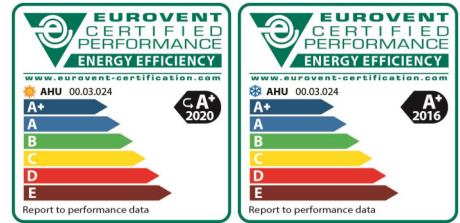
Supply air	Size:18/6	Weight:908 [kg]	Surface: 19,4 [m2]	Velocity: 1,43 [m/s]
design	L-TF-PT-VF-H-L-K		Dimensions [mm]	L: 3.660,0 W: 1.930 H: 740
Air volume [m³/h]	5.750		Panel inside	50 [mm] galvanized steel 1,00 mm
external pressure drop [Pa]	350		Panel inside bottom	galvanized steel
total pressure drop [Pa]	843		Guides	galvanized steel
Specific fan power [W/(m³/s)]	1.133		Panel outside	White A47SME 0,70 mm

Exhaust air	Size:18/6	Weight:266 [kg]	Surface: 7,4 [m2]	Velocity: 0,91 [m/s]
design	TF-PT-VF-L		Dimensions [mm]	L: 2.592,5 W: 1.930 H: 740
Air volume [m³/h]	3.661		Panel inside	50 [mm] galvanized steel 1,00 mm
external pressure drop [Pa]	350		Panel inside bottom	galvanized steel
total pressure drop [Pa]	582		Guides	galvanized steel
Specific fan power [W/(m³/s)]	1.035		Panel outside	White A47SME 0,70 mm

Supply air

L Empty section		305,0 [mm]	1,49 [m2]	64,00 [kg]	2 [Pa]
Opening:	7 Full opening	Dimensions [mm]		1.770,0 x 550,0	
(23) Damper	Frame	GI	seal lip	No	2 [Pa]
torque [Nm]	7,1	Blades	GI	Blade drive	Gearwheels , PPGF
Axle	1	drive type	Suitable for actuator, in air dir. right		
(25) Flexible canvas	GI	Temp. [°C]	80,00	Dimensions [mm]	1.770,0 x 550,0 x 100,0 [Pa]
(22) 1 Pcs	Equipotential wire 6 mm²				

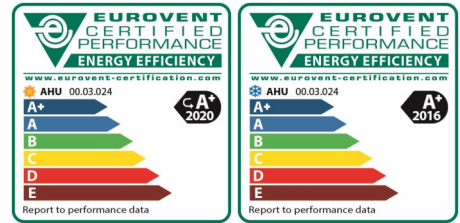
TF Bag Filter		610,0 [mm]	2,98 [m2]	90,00 [kg]	122 [Pa]
Manufacture	Camfil		Filter surface [m2]	12,30	
Type	Basic-Flo-F7 tmax.=70°C		Cells pcs x size [mm]	3 x 592,0 x 592,0	
Init.-Dim.-Fin. press. drop [Pa]	72-122-172		Galvanized frames (front removable) clean air side		
Class ISO 16890	ePM2.5 70%		Final pressure control necessary, not included!		
Airflow [m³/h]	5.750		Final pressure drop acc. EN 13053		
Bag length [mm]	520,0				
Filter energy class (EN 779:2012)	D				
Filter media type	Synthetic				
Standard hinged door	ZIS	Access side: right	Dimensions [mm]	457,5 x 610,0 -[L]	
(300) 1 Pcs	Door lock				
(178) 1 set	Pressure test points mounted				



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PT	Plate exchanger - diagonal	1.067,5 [mm]	6,79 [m2]	399,00 [kg]	259 [Pa]
Type	REK+67-1590-26-BP235-14-B	max. allowed pressure difference		800 [Pa]	
With bypass	235,0 [mm]	Density [kg/m ³]		1,20	
<u>Winter condition</u>		<u>Cooling condition</u>			
Supply [m ³ /h]	5.750 air-side humid p.d. [200	Supply [m ³ /h]	air-side humid p.d. [P	
Entering [°C]	-23,00 Humidity [%]	90,0	Entering [°C]	Humidity [%]	
Leaving [°C]	8,20 Humidity [%]	8,0	Leaving [°C]	Humidity [%]	
exhaust [m ³ /h]	3.661 air-side humid p.d. [144	exhaust [m ³ /h]	air-side humid p.d. [P	
Entering [°C]	22,00 Humidity [%]	40,0	Entering [°C]	Humidity [%]	
Leaving [°C]	-13,60 Humidity [%]	100,0	Leaving [°C]	Humidity [%]	
Temperature efficiency (project data) [%]	69,3	Temperature efficiency (project data) [%]			
Temperature efficiency (EUROVENT) [%]	80,6	Effectiveness AHRI (1061-2013-C1) [%]			
Effectiveness AHRI (1061-2013-C1) [%]	99	condense water qty. [l/h]			
condense water qty. [l/h]	22,95	Recovery capacity [kW]			
Recovery capacity [kW]	60,21	Standard pressuredrop (supply/exhaust)			
259 / 142 [Pa]					
Efficiency values refer to supply air side					
Attention: Please respect the maximal allowed pressure difference as above. Electrical Pressure control necessary. Respect: INSTRUCTION MANUAL					
Drain pan	GI - H: 35,0 mm - flat	Size	987,5x1.830,0 Ø1"-R	not threaded	
<u>Bypass-dampers</u>	drive type	Suitable for actuator x 1	External		
(178)	2 set	Pressure test points mounted			
VF	Supply air-Plug fan	610,0 [mm]	2,98 [m2]	115,00 [kg]	5 [Pa]
Fan	Nicotra/Gebhardt/PFP A3-0400 2.6kW 400V-	EC-Motor		IME M6F5	
Air volume [m ³ /h] (density: [kg/m ³ 1,20)	1 x 5.750,00	Protection		IP55	
External press [Pa]	350	Insulation class		F	
ext. press. on intake / outlet [Pa]	-50 / 300	Nominal power [kW]		2,600	
dyn.press.drop [Pa]	49	Speed +-2% [1/min]		2.485	
Tot. pressure [Pa]	843	Current +-5% [A]		4,20	
Speed [1/min]	2.212	Voltage [V]		3x400 / 50/60 Hz	
sound power [db(A)]	87	Tension Range [V]		380 ... 420	
System efficiency [%]	61,0	Electric absorbed power [kW]		2,07	
max. nom. RPM [1/min]	2.485	Motor efficiency class		analog to IEC60034: IE 4	
Calibration faktor K_A [m ² s/h]	131	Control voltage [V]		9,1	
Speed control:	variable speed				
Fan octave band sound power level L _{okt} / dB		fan connection :		rubber sealing	
Frq. [Hz]	63 125 250 500 1000 2000 4000 8000	Temperature increase fan section [°C]		1,10	
Inlet	77 79 85 80 74 72 67 61	No frequency converter needed!			
Outlet	79 80 86 82 83 80 74 68				
(47)	1 set	Motor precabeled (including cable glands)			
(53)	1 set	Gland for power cable 1 x M20 / signal cable glands 2 x M20			
Standard hinged door	ZIS	Access side: right	Dimensions [mm]	457,5 x 610,0 -[L]	
(300)	1 Pcs	Door lock			

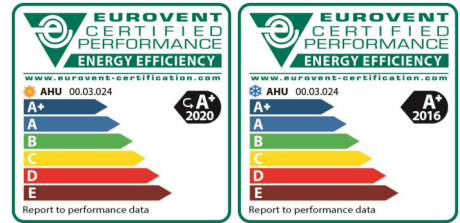


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H Heating coil	305,0 [mm]	1,49 [m2]	83,00 [kg]	25 [Pa]						
Airflow [m³/h] 5.750 Density [kg/m³] 1,20	Medium	H2O + 35 vol. % propyl. glycol								
Coil face velocity [m/s] 1,87	Med. Flow [l/s] 2,1800	Content 11,3 l								
Air in [°C] 0,00	Med. velocity [m/s] 0,87									
Air out [°C] 22,00	Med. in [°C] 50,00									
Air press. Drop [Pa] 25	Med. out [°C] 45,00									
Capacity [kW] 42,44	Med. pres. drop [kPa] 9,38									
40x34-AC/3pa/2R-13T-1641L-13N/V1/CU-GW-1 1/2"/CU-AL-FeZn/LT1821-HT595-C115										
nos. of rows 2 Max press. [bar] 21	Connection side right									
nos. of circuits 13	Fins AL									
Fin spacing [mm] 3,00	Tubes CU									
Connection in 1 1/2" threaded	Header CU									
Connection out 1 1/2" threaded	Frames GI									
(160) 1 Pcs Antifreeze thermostat fitted on the frame (6m)										
L Empty section	457,5 [mm]	2,24 [m2]	55,00 [kg]	0 [Pa]						
Standard hinged door ZIS Access side: right	Dimensions [mm] 457,5 x 610,0		-[L]							
(300) 1 Pcs Door lock										
K Cooling coil	305,0 [mm]	1,49 [m2]	102,00 [kg]	31 [Pa]						
Airflow [m³/h] 5.750 Density [kg/m³] 1,20	Medium	H2O + 35 vol. % propyl. glycol								
Coil face velocity [m/s] 1,85 SHR 1	Med. Flow [l/s] 0,8100	Content 15,1 l								
Air in [°C] 32,00 Humidity [%] 45,0	Med. velocity [m/s] 0,70									
Air out [°C] 24,00 Humidity [%] 71,8	Med. in [°C] 7,00									
Capacity [kW] 15,85	Med. out [°C] 12,00									
air-side dry p.d. [Pa] 29	Med. pres. drop [kPa] 10,94									
40x34-AR/4pa/3R-13T-1656L-6N/V1/CU-GW-1"/CU-AL-FeZn/LT1821-HT595-C145										
nos. of rows 3 Max press. [bar] 21	Connection side right									
nos. of circuits 6	Fins AL									
Fin spacing [mm] 4,00	Tubes CU									
Connection in 1" threaded	Header CU									
Connection out 1" threaded	Frames GI									
Opening: 7 Full opening	Dimensions [mm] 1.770,0 x 550,0									
(25) Flexible canvas GI Temp. [°C] 80,00	Dimensions [mm] 1.770,0 x 550,0 x 100,0		2 [Pa]							
(22) 1 Pcs Equipotential wire 6 mm²										
Drain pan GI - H: 35,0 mm - flat	Size 265,0x1.830,0 Ø1"-R		not threaded							
AHU sound levels	ME	63	125	250	500	1000	2000	4000	8000	Tot db (A)
1> Airborne SWL over casing [db]		67,8	62,4	60,2	54,5	53,9	50,5	42,2	36,4	58,8
2> SWL at air inlet [db]		67,5	74,5	78,0	72,0	67,0	63,0	56,0	48,0	74,0
3> SWL at air outlet [db]		71,5	77,0	82,0	79,0	78,0	74,0	67,0	61,0	82,2
4> Sound press. for 1 [m] distance from AHU		51,1	45,7	43,5	37,8	37,2	33,8	25,5	20,0	42,1
5> Sound press. for 1 [m] distance from air inlet		60,1	67,8	72,0	66,5	61,7	57,8	51,1	43,1	68,4
6> Sound press. for 1 [m] distance from air outlet		64,1	70,3	76,0	73,5	72,7	68,8	62,1	56,1	76,8
Calculated sound pressure levels are indicative only. It corresponds to : free field hemispheric sound radiation from the unit casing (4), the inlet (5) and the outlet (6) opening. Other sound sources, acoustic character of the room, air flow noise, duct connections and vibrations can influence the sound pressure in dependence. In practice, therefore measured values on site May be different from the calculated ones.										

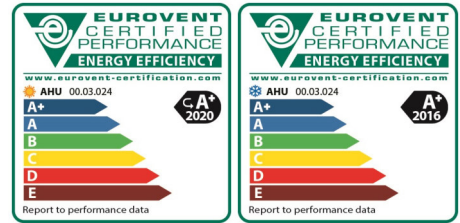
Exhaust air



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TF	Bag Filter	610,0 [mm]	2,98 [m2]	98,00 [kg]	35 [Pa]
Manufacture Camfil Type Basic-Flo-M5 tmax.=70°C Init.-Dim.-Fin. press. drop [Pa] 17-34-51 Class ISO 16890 ePM10 50% Airflow [m³/h] 3.661 Bag length [mm] 520,0 Filter energy class (EN 779:2012) D Filter media type Synthetic		Filter surface [m2] 12,30 Cells pcs x size [mm] 3 x 592,0 x 592,0 Galvanized frames (front removable) clean air side Final pressure control necessary, not included! Final pressure drop acc. EN 13053			
Standard hinged door ZIS Access side: left		Dimensions [mm] 457,5 x 610,0 -[R]			
(300) 1 Pcs Door lock					
Opening: 7 Full opening		Dimensions [mm] 1.770,0 x 550,0			
(25) Flexible canvas GI Temp. [°C]		80,00 Dimensions [mm] 1.770,0 x 550,0 x 100,0 1 [Pa]			
(22) 1 Pcs Equipotential wire 6 mm²					
(178) 1 set Pressure test points mounted					
PT	Plate exchanger - diagonal	1.067,5 [mm]	6,79 [m2]	399,00 [kg]	142 [Pa]
For values/performances please refer to supply side					
VF	Exhaust air-Plug fan	610,0 [mm]	2,98 [m2]	106,00 [kg]	5 [Pa]
Fan Nicotra/Gebhardt/PFP A3-0315 1.4kW 230V- Air volume [m³/h] (density: [kg/m³] 1,20) 1 x 3.661,00 External press [Pa] 350 ext. press. on intake / outlet [Pa] -300 / 50 dyn.press.drop [Pa] 49 Tot. pressure [Pa] 582 Speed [1/min] 2.586 sound power [db(A)] 85,9 System efficiency [%] 50,0 max. nom. RPM [1/min] 2.900 Calibration faktor K_A [m²s/h] 83 Speed control: variable speed		EC-Motor IME M6F0 Protection IP55 Insulation class F Nominal power [kW] 1,400 Speed +-2% [1/min] 2.900 Current +-5% [A] 5,90 Voltage [V] 1x230 / 50/60 Hz Tension Range [V] 220 ... 240 Electric absorbed power [kW] 1,08 Motor efficiency class analog to IEC60034: IE 4 Control voltage [V] 9,3			
Fan octave band sound power level L _{okt} / dB		fan connection : rubber sealing			
Frq. [Hz]	63 125 250 500 1000 2000 4000 8000	Temperature increase fan section [°C] 0,90			
Inlet	71 73 81 77 74 72 68 62	No frequency converter needed!			
Outlet	73 74 82 79 81 80 77 70				
(47) 1 set Motor precabeled (including cable glands)					
(53) 1 set Gland for power cable 1 x M20 / signal cable glands 2 x M20					
Standard hinged door ZIS Access side: left		Dimensions [mm] 457,5 x 610,0 -[R]			
(300) 1 Pcs Door lock					
L	Empty section	305,0 [mm]	1,49 [m2]	62,00 [kg]	1 [Pa]
Opening: 7 Full opening		Dimensions [mm] 1.770,0 x 550,0			
(23) Damper		Frame GI seal lip No 1 [Pa]			
torque [Nm] 7,1 Blades GI Blade drive Gearwheels , PPGF					
Axle 1 drive type Suitable for actuator, in air dir. left					
(25) Flexible canvas GI Temp. [°C]		80,00 Dimensions [mm] 1.770,0 x 550,0 x 100,0 [Pa]			
(22) 1 Pcs Equipotential wire 6 mm²					



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AHU sound levels	ME	63	125	250	500	1000	2000	4000	8000	Tot db (A)
1> Airborne SWL over casing [db]		61,8	56,4	56,2	51,5	51,9	50,5	45,2	38,4	56,9
2> SWL at air inlet [db]		61,5	68,5	74,0	69,0	67,0	63,0	57,0	49,0	72,0
3> SWL at air outlet [db]		70,5	74,0	82,0	79,0	81,0	80,0	77,0	70,0	85,9
4> Sound press. for 1 [m] distance from AHU		45,8	40,4	40,2	35,5	35,9	34,5	29,2	22,4	40,9
5> Sound press. for 1 [m] distance from air inlet		54,1	61,8	68,0	63,5	61,7	57,8	52,1	44,1	66,5
6> Sound press. for 1 [m] distance from air outlet		63,1	67,3	76,0	73,5	75,7	74,8	72,1	65,1	80,7

Calculated sound pressure levels are indicative only. It corresponds to : free field hemispheric sound radiation from the unit casing (4), the inlet (5) and the outlet (6) opening. Other sound sources, acoustic character of the room, air flow noise, duct connections and vibrations can influence the sound pressure in dependence. In practice, therefore measured values on site May be different from the calculated ones.

(410)	1 set	Weatherproof roof, flat	Peraluman
(3169)	1 Pcs	Panel insulation mineral wool	
(2023)	1 set	Base frame cover and insulation upper sections, not mounted	
(407)	1 set	Base frame ZHK GR-LP80 galvanized steel	
(3125)	1	Plug in profiles in PVC	
(3166)	1	Truck - Transport	
(318)	1 Pcs	Nylon Wrapping	
(1000)	1 set	Unit feet Std 170 mm fixed height, Galvanized steel	
(3159)	1	Connection of delivery sections from AHU outside with EASY CONNECTION	
(904)	1 Pcs	Front side covering White	
(3134)	1 set	UV-Protected electrical components mounted outside (f.ex. Light switch, cabling, repair switch...)	

For compact delivery dimensions and to avoid transport damage, protruding AHU accessories may be supplied loose for on-site assembly

EUROVENT Datas

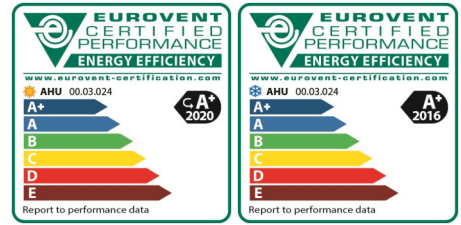
Range / Casing MB	ZHK / ZHK INOVA	t _{ODA} EEC	-23,00 [°C]
Thermal classes (MB)	T2 - TB2	Mixing Ratio	0 [%]
Casing air leakage (MB)	L1	Size reference velocity S/R	1,43 / 0,91 [m/s]
Mechanical strength (MB)	D1	Total static pressure EEC S/R	790 / 529 [Pa]
Energy efficiency class winter	A+ (2016)	Internal Static Pressure S/R	440 / 179 [Pa]
fan design for dry/wet conditions	see relating section	Power input real S/R	2,07 / 1,08 [kW]
		Pressure drop ERS S/R	259 / 142 [Pa]
Country	Lithuania	Total static pressure EEC S/R	790 / 529 [Pa]
ASHRAE - Install.	VILNIUS INTL	Internal Static Pressure S/R	440 / 179 [Pa]
Design temperature dry bulb	29,10 [°C]	Power input real S/R	2,07 / 1,08 [kW]
Design temperature dew point	14,80 [°C]	Summer Temperature efficiency S/R	0 / 0 [%]
Winter design outdoor temperature	-16 [°C]	Summer wet/humidity efficiency S/R	0 / 0 [%]
Energy efficiency class summer	A+ (2020)	Pressure drop ERS S/R	0 / 0 [Pa]
		Mixing Ratio	0 [%]

ErP compliance according EU regulation no. 1253/2014

a) Manufacturer	Euroclima	j) Face velocity S/R	1,43 / 0,91 [m/s]
b) Model identifier	22-211-1792 / 111	k) Nominal external pressure S/R	350 / 350 [Pa]
c) Unit type	NRVU - BVU	l) Int press.drop vent. components S/R	276 / 165 [Pa]
d) Type of drive Supply	variable speed	m) int press.drop not vent. components S/R	114 / -3 [Pa]
Type of drive Return	variable speed	n) Static fan efficiency (EU No 327/2011) S/R	65,9 / 61,2 [%]
e) Energy recovery system type	other HRS	o) External leakage -400 / +400 Pa (RU)	1,16 / 1,16 [%]
f) thermal efficiency of HRS	80,5[%]	Internal leakage	on request
g) Nominal air flow rate S/R	1,6 / 1,02 [m³/s]	p) energy classification filters	see filter data
h) effective electric power input	3,15 [kW]	r) Casing sound power level LWA	61 [dB(A)]
i) SFP int	782 [W/(m³/s)]	s) www.euroclima.at	



airCalc++
v. 2.1.20 / Pricelist P10_2008
Update Nr. 10CB2/6.4.22
Name Walder T.
Date 31.08.2022 - 08:29



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Euroclima participates in the ECP programme for: Air Handling Units (AHU). Check ongoing validity of certificate: www.eurovent-certification.com