

AIR HANDLING UNIT eQ

Project	2 () / Ramsi Lasteaed	Acon 2.13.160111.4
AOC	ACON-01741999	
Unit	23 (SV-3) / uus WC?	2016-01-29
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Customer

Customers ref.

Our ref. Erkki Seinre

Supply air flow	0.76 m³/sec	Exhaust air flow	0.73 m³/sec
Ext. static pressure	310 Pa	Ext. static pressure	200 Pa
Voltage	3 x 400V + N, 50 Hz	Weight	730 kg
Specific electric power demand	2.04 kW/(m³/s)	Dimensioned for wet condition	
Ref. density	1.2 kg/m³	Ref. altitude above sea level	0 m

SUMMARY TECHNICAL SPEC.

Unit

Supply air flow	0.76 m³/sec	Installation	Indoor horizontal
Ext. static pressure	310 Pa	Material	AlZn sheet steel
Exhaust air flow	0.73 m³/sec	Thermal insulation	T3
Ext. static pressure	200 Pa	Condensation insulation	TB3
Dim. temp. summer	27 °C	Leakage class	L2
Dim. humidity summer	50 %	Casing strength	CEN D2
Dim. temp. winter	-24 °C	Filter grade supply	
Dim. humidity winter	89.9 %	Filter grade extract	
Temperature in, supply air, summer	18 °C	Temperature in, extract air, summer	25 °C
Air humidity in, supply air, summer	50 %	Air humidity in, extract air, summer	55.1 %
Temperature in, supply air, winter	18 °C	Temperature in, extract air, winter	22 °C
Air humidity in, supply air, winter	40 %	Air humidity in, extract air, winter	20 %
Heat recovery efficiency	78.7 %	Heat recovery capacity	38.4 kW
SFPv supply air	1.25 kW/(m³/s)	Total dry weight	730 kg
SFPv exhaust air inlet	0.81 kW/(m³/s)		
SFPv total sum	2.04 kW/(m³/s)	Heaviest block	729 kg

Coils

	Capacity [kW]	Air In [°C/%]	Air Out [°C/%]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	4.24	13.4/28.2	18/21	35/30		0.2	7.0	22
Air cooler	8.42	26.5/51.5	18/84.9	14/17		0.67	15.7	25

Motor data

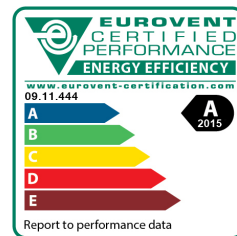
Voltage	3 x 400V + N, 50 Hz		
Power, supply flow	2.2 kW	Power, extract flow	2.2 kW
Current, full load, supply flow	4.7 A	Current, full load, extract flow	4.7 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA dB(A)
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	
Fresh air connection	59	62	73	72	66	63	60	56	73
Supply air connection	67	72	81	79	77	76	71	64	82
Extract connection	53	56	67	66	60	57	54	50	67
Exhaust connection	63	68	77	75	73	71	65	63	78
To surroundings	51	55	60	49	41	44	40	30	54

TOLERANCE



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Customer
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Ext. static pressure 310 Pa Ext. static pressure 200 Pa
Voltage 3 x 400V + N, 50 Hz Weight 730 kg
Specific electric power demand 2.04 kW/(m³/s) Dimensioned for wet condition
Ref. density 1.2 kg/m³ Ref. altitude above sea level 0 m

According to EN 13053 the LwA tolerance is 4dB. Octave band tolerances are presented in the tolerance table

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
TOLERANCE	8	6	6	6	6	4	4	7	4

Frequency converters and motors mounted external are not included in the sound power levels

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TECHNICAL SPECIFICATION (components listed in direction of air flow)

SUPPLY AIR

Damper

Function : Outdoor air	
Pressure drop, dimensioning	5 Pa
Damper	
Width cm : 050	
Tightness class : CEN 3	
Function : Outdoor air	
Material : galvanized sheet steel	

Filter function eQ Top

Unit size : 011	
Filter class : F7	
Material: galvanized sheet steel	
Number of filters	2x545x545
Pressure drop, start	78 Pa
Pressure drop, dimensioning	113 Pa
Pressure drop, end	148 Pa
Face area	0.6 m ²
Face velocity	1.4 m/s

REGOTERM rotary heat exchanger

Unit size: 011
Rotor type: SEMCO sorption rotor
Output variant: output variant 5 (1.7)
Voltage: 1 x 230 V, 50Hz
Drive/Motor class: 200 mm wheel and variable speed
Control connection: with
Function lenght: rotor EQ-top with filter and fan section before supply and exhaust air
Supply air: over
Delivery: Whole rotor
Material: galvanized sheet steel/AlZn
Inspection side : left
Version number: FläktWoods Rotor Drive

Efficiency

Efficiency calculated in regard to conditions specified by the EN308 standard	78.7 %
Cooling recovery	78.1 %

Frost protection

Temperature limit when frost protection starts:	-50 °C
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Supply air

	Summer	Winter
Pressure drop	108	90 Pa
Air temperature	27 / 25.4	-24 / 12.2 °C
Relative humidity	50 / 53.9	89.9 / 30.1 %
Capacity reduction	2	38 kW
Air flow transfer	0.07	0.07 m ³ /sec
Face velocity	2.1	1.9 m/s

Exhaust air

	Summer	Winter
Pressure drop	104	91 Pa
Air temperature	25 / 26.6	22 / -15.7 °C
Relative humidity	55.1 / 50.9	20 / 96.6 %
Additional throttling	24	24 Pa
Face velocity	2.0	1.9 m/s

Multi cable

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Fan function eQ Top

Unit size : 011
Fan size : 3
Design: with integral motor
Motor size: standard motor 2
Fan function: supply air
(not used): 1
Fan position: top, left

Dimensioning data

Speed	1966 Rpm
Max speed	3325 Rpm
Fan efficiency	66.3 %
Total efficiency	54.4 %
Pressure rise, dimensioning	734 Pa
Fan shaft power at dim. data	0.862 kW
Grid Power	1.05 kW
Temperature rise	1.1 °C

SFP Calculation

Grid power according to SFP	0.957 kW
Pressure rise	685 Pa
Speed	1883 Rpm

Multi cable

Integral motor

Voltage: 3 x 400V	
Temperature sensors in stator winding: Danfoss integral, ABT-version	
Efficiency	86.6 %
Speed	1437 Rpm
Motor output	2.2 kW
Electric current	4.7 A
Number of Poles	4
Operating frequency at frequency control	68.4 Hz
Max frequency at frequency control	90.4 Hz
Max speed at frequency control	2599 Rpm

Frequency converter

Housing protection: IP54	
Efficiency	94.8 %

Motor accessories

Motor: 1-Speed
Motor control: Integral motor
Connection accessories: Quick connection
Type: Standard
Length: 261
Power supply: 3x400 VAC

Fan control

Fan location: Supply fan
Control function: Flow control
Control reference: Setpoint in DUC
Pressure range: 0-3000 Pa
Fire function: Supply fan in operation
Design: Standard
Delivery option: Mounted on current sub, quick connection

Start equipment fan

Fan location: Supply 1
Motor: 1-Speed
Start method: Integral motor
Voltage: 400 VAC, 3-phase

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Rated current high speed: 047

Delivery options: Mounted on current sub, quick connection

Air heater for hot water Mounted in ductwork

Width cm: Ø 40	
Output variant: 2	
Connection side: right	
Nom. pipe size	22
Liquid volume	1.0 l
Pressure drop, dimensioning	66 Pa
Output	4.24 kW
Air temperature	13.4 / 18 °C
Face velocity	3.9 m/s
Control principle for water heater	flow control
Water temperature	35 / 30 °C
Water flow	0.2 l/s
Water velocity	0.8 m/s
Pressure drop water	7.0 kPa
Frost protection sensor	
Type of heater: Air heater	
Sensor type: Standard	
Design: Clamp on sensor	
Delivery option: Supplied with STEQ	

Air cooler for chilled water, Mounted in ductwork

Use as: Cooling Coil	
Width cm: 80	
Height cm: 40	
Output variant: 2	
Connection side: right	
Nom. pipe size	25
Liquid volume	6.0 l
Pressure drop, dimensioning	99 Pa
Pressure drop	99 Pa
Pressure drop, dry coil	98 Pa
Output	8.42 kW
Air temperature	26.5 / 18 °C
Relative humidity	51.5 / 84.9 %
Face velocity	2.4 m/s
Water temperature	14 / 17 °C
Water flow	0.67 l/s
Water velocity	1.1 m/s
Pressure drop water	15.7 kPa

EXHAUST AIR

Filter function eQ Top

Unit size : 011	
Filter class : F7	
Material: galvanized sheet steel	
Number of filters	2x545x545
Pressure drop, start	67 Pa
Pressure drop, dimensioning	102 Pa
Pressure drop, end	137 Pa
Face area	0.6 m²
Face velocity	1.3 m/s

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Fan function eQ Top

Unit size : 011
Fan size : 3
Design: with integral motor
Motor size: standard motor 2
Fan function: exhaust air
(not used): 1
Fan position: bottom, right

Dimensioning data

Speed	1649 Rpm
Max speed	3325 Rpm
Fan efficiency	72.5 %
Total efficiency	56.5 %
Pressure rise, dimensioning	467 Pa
Fan shaft power at dim. data	0.528 kW
Grid Power	0.678 kW
Temperature rise	0.7 °C

SFP Calculation

Grid power according to SFP	0.594 kW
Pressure rise	424 Pa
Speed	1554 Rpm

Multi cable

Integral motor

Voltage: 3 x 400V	
Temperature sensors in stator winding: Danfoss integral, ABT-version	
Efficiency	86.6 %
Speed	1437 Rpm
Motor output	2.2 kW
Electric current	4.7 A
Number of Poles	4
Operating frequency at frequency control	57.4 Hz
Max frequency at frequency control	90.6 Hz
Max speed at frequency control	2604 Rpm

Frequency converter

Housing protection: IP54	
Efficiency	90.0 %

Motor accessories

Motor: 1-Speed
Motor control: Integral motor
Connection accessories: Quick connection
Type: Standard
Length: 261
Power supply: 3x400 VAC

Fan control

Fan location: Exhaust fan
Control function: Flow control
Control reference: Setpoint in DUC
Pressure range: 0-3000 Pa
Fire function: Supply fan in operation
Design: Standard
Delivery option: Mounted on current sub, quick connection

Start equipment fan

Fan location: Exhaust 1
Motor: 1-Speed
Start method: Integral motor
Voltage: 400 VAC, 3-phase
Rated current high speed: 047



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Delivery options: Mounted on current sub, quick connection

Damper

Function : extract air

Pressure drop, dimensioning

5 Pa

Damper

Width cm : 050

Tightness class : CEN 3

Function : extract air

Material : galvanized sheet steel