

AIR HANDLING UNIT eQ

Project	2 () / Ramsi Lasteaed	Acon 2.14. Test Build
AOC	ACON-01806660	
Unit	29 (SV-1) / KÖÖGI KUBU	2016-02-26
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Customer

Customers ref.

Our ref. Erkki Seinre

Supply air flow	0.49 m³/sec	Exhaust air flow	0.49 m³/sec
Ext. static pressure	200 Pa	Ext. static pressure	200 Pa
Voltage	3 x 400V + N, 50 Hz	Weight	587 kg
Specific electric power demand	1.80 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	0.49 m³/sec	Installation	Indoor horizontal
Ext. static pressure	200 Pa	Material	AlZn sheet steel
Exhaust air flow	0.49 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	-22 °C	Filter grade supply	
Dim. humidity winter	89.9 %	Filter grade extract	
Temperature in, supply air, summer	15 °C	Temperature in, extract air, summer	25 °C
Air humidity in, supply air, summer	50 %	Air humidity in, extract air, summer	55 %
Temperature in, supply air, winter	20 °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	87.8 %	Heat recovery capacity	26.5 kW
SFPv supply air	0.94 kW/(m³/s)	Total dry weight	587 kg
SFPv exhaust air inlet	0.86 kW/(m³/s)		
SFPv total sum	1.80 kW/(m³/s)	Heaviest block	587 kg

Coils

	Capacity [kW]	Air In [°C/%]	Air Out [°C/%]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	3.21	14.6/24.1	20/17.1	35/30		0.15	16.4	
Air cooler	4.7	27/50	19.5/77.6	14/17		0.37	22.4	15

Motor data

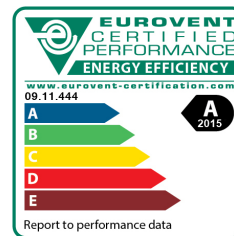
Voltage	3 x 400V + N, 50 Hz		
Power, supply flow	1.5 kW	Power, extract flow	1.5 kW
Current, full load, supply flow	3.4 A	Current, full load, extract flow	3.4 A

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	57	58	67	67	62	61	57	54	69
Supply air connection	62	64	74	71	74	73	70	61	79
Extract connection	56	57	66	66	61	60	56	53	68
Exhaust connection	63	65	75	72	75	73	69	65	79
To surroundings	51	53	56	46	39	44	39	30	51

TOLERANCE



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Customer
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Ext. static pressure 200 Pa Ext. static pressure 200 Pa
Voltage 3 x 400V + N, 50 Hz Weight 587 kg
Specific electric power demand 1.80 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 : 040	
Tightness class : CEN 3	
Function : Outdoor air	
Material : galvanized sheet steel	

Filter function eQ Top

Unit size : 008	
Filter class : F7	
Material: galvanized sheet steel	
Number of filters	2x495x445
Pressure drop, start	64 Pa
Pressure drop, dimensioning	99 Pa
Pressure drop, end	134 Pa
Face area	0.4 m ²
Face velocity	1.2 m/s

REGOTERM rotary heat exchanger

Unit size: 008
Rotor type: SEMCO sorption rotor
Output variant: output variant 9 (1.4)
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

Temperature efficiency according to EN 308	87.8 %
Temperature Efficiency	87.8 %
Humidity efficiency	88.8 %

Supply air

	Summer	Winter
Pressure drop	126	106 Pa
Air temperature	27 / 27	-22 / 16.6 °C
Relative humidity	50 / 50	89.9 / 25.3 %
Capacity reduction		27 kW
Air flow transfer		0.07 m ³ /sec
Face velocity	1.6	1.5 m/s

Exhaust air

	Summer	Winter
Pressure drop	125	109 Pa
Air temperature	25 / 25	22 / -16.6 °C
Relative humidity	55 / 55	20 / 89.7 %
Additional throttling		0 Pa
Face velocity	1.5	1.5 m/s

Multi cable

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Fan function eQ Top

Unit size : 008
Fan size : 2
Design: with integral motor
Motor size: standard motor 2
Fan function: supply air
(not used): 1
Fan position: top, left

Dimensioning data

Speed	2630 Rpm
Max speed	5000 Rpm
Fan efficiency	72.3 %
Total efficiency	54.7 %
Pressure rise, dimensioning	554 Pa
Fan shaft power at dim. data	0.387 kW
Grid Power	0.512 kW
K factor	42.55
Temperature rise	0.9 °C

SFP Calculation

Grid power according to SFP	0.462 kW
Pressure rise	508 Pa
Speed	2507 Rpm

Multi cable

Integral motor

Voltage: 3 x 400V	
Temperature sensors in stator winding: Danfoss integral, ABT-version	
Efficiency	84.1 %
Speed	2870 Rpm
Motor output	1.5 kW
Electric current	3.4 A
Number of Poles	2
Operating frequency at frequency control	45.8 Hz
Max frequency at frequency control	71 Hz
Max speed at frequency control	4076 Rpm

Frequency converter

Housing protection: IP54	
Efficiency	89.9 %

Motor accessories

Motor: 1-Speed
Motor control: Integral motor
Connection accessories: Quick connection
Type: Standard
Length: 201
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: 034

Delivery options: Mounted on current sub, quick connection

Air heater for hot water Mounted in ductwork

Width cm: Ø 31.5	
Output variant: 2	
Connection side: left	
Liquid volume	1.0 l
Pressure drop, dimensioning	59 Pa
Output	3.21 kW
Air temperature	14.6 / 20 °C
Face velocity	3.6 m/s
Control principle for water heater	flow control
Water temperature	35 / 30 °C
Water flow	0.15 l/s
Water velocity	1.1 m/s
Pressure drop water	16.4 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: Ø 40	
Output variant: 1	
Connection side: left	
Nom. pipe size	15
Liquid volume	3.0 l
Pressure drop, dimensioning	25 Pa
Pressure drop	25 Pa
Pressure drop, dry coil	24 Pa
Output	4.7 kW
Air temperature	27 / 19.5 °C
Relative humidity	50 / 77.6 %
Face velocity	1.8 m/s
Water temperature	14 / 17 °C
Water flow	0.37 l/s
Water velocity	1.1 m/s
Pressure drop water	22.4 kPa

EXHAUST AIR

Filter function eQ Top

Unit size : 008	
Filter class : F7	
Material: galvanized sheet steel	
Number of filters	2x495x445
Pressure drop, start	60 Pa
Pressure drop, dimensioning	95 Pa
Pressure drop, end	130 Pa
Face area	0.4 m ²
Face velocity	1.1 m/s

Fan function eQ Top

Unit size : 008

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Fan size : 2

Design: with integral motor

Motor size: standard motor 2

Fan function: exhaust air

(not used): 1

Fan position: bottom, right

Dimensioning data

Speed	2529 Rpm
Max speed	5000 Rpm
Fan efficiency	72.7 %
Total efficiency	54.0 %
Pressure rise, dimensioning	465 Pa
Fan shaft power at dim. data	0.341 kW
Grid Power	0.459 kW
K factor	42.55
Temperature rise	0.7 °C

SFP Calculation

Grid power according to SFP	0.424 kW
Pressure rise	425 Pa
Speed	2443 Rpm

Multi cable

Integral motor

Voltage: 3 x 400V

Temperature sensors in stator winding: Danfoss integral, ABT-version

Efficiency	84.1 %
Speed	2870 Rpm
Motor output	1.5 kW
Electric current	3.4 A
Number of Poles	2
Operating frequency at frequency control	44.1 Hz
Max frequency at frequency control	70.9 Hz
Max speed at frequency control	4069 Rpm

Frequency converter

Housing protection: IP54

Efficiency	88.4 %
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Motor accessories

Motor: 1-Speed

Motor control: Integral motor

Connection accessories: Quick connection

Type: Standard

Length: 201

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: 034

Delivery options: Mounted on current sub, quick connection



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Damper

Function : extract air

Pressure drop, dimensioning

5 Pa

Damper

Width cm : 040

Tightness class : CEN 3

Function : extract air

Material : galvanized sheet steel