

AIR HANDLING UNIT eQ Prime

Project	2 () / Ramsi Lasteaed	Acon 2.13.160127.1
AOC	ACON-01698292	
Unit	3 (SV-1) / KUBU ja üldvent köögi ümbruses	2016-01-29
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Customer

Customers ref.

Our ref. Erkki Seinre

Supply air flow	1.00 m³/sec	Exhaust air flow	1.03 m³/sec
Ext. static pressure	270 Pa	Ext. static pressure	290 Pa
Voltage	3 x 400V + N, 50 Hz	Weight	814 kg
Specific electric power demand	1.92 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	1.00 m³/sec	Installation	Indoor horizontal
Ext. static pressure	270 Pa	Material	AlZn sheet steel
Exhaust air flow	1.03 m³/sec	Thermal insulation	T3
Ext. static pressure	290 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	F7
Dim. humidity winter	89.9 %	Filter grade extract	M5
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 %
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	85.6 %	Heat recovery capacity	54.9 kW
SFPv supply air	0.95 kW/(m³/s)	Total dry weight	814 kg
SFPv exhaust air inlet	1.00 kW/(m³/s)		
SFPv total sum	1.92 kW/(m³/s)	Heaviest block	629 kg

Coils

	Capacity [kW]	Air In [°C/%]	Air Out [°C/%]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	3.03	15.5/24.9	18/21.2	35/30		0.15	1.4	25
Air cooler	9.87	26.1/51	18.1/83.2	14/16.7		0.88	10.5	25

Motor data

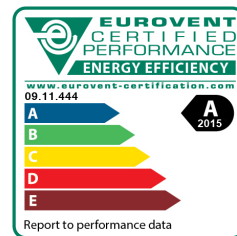
Voltage	3 x 400V + N, 50 Hz		
Power, supply flow	3.6 kW	Power, extract flow	3.6 kW
Current, full load, supply flow	8.3 A	Current, full load, extract flow	8.3 A

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	62	64	70	63	63	60	55	52	68
Supply air connection	64	70	76	74	75	69	61	57	78
Extract connection	63	65	73	66	63	60	55	52	69
Exhaust connection	66	72	80	78	79	75	70	67	83
To surroundings	59	62	64	49	47	50	44	33	58

TOLERANCE



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Customer
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Supply air flow 1.00 m³/sec Exhaust air flow 1.03 m³/sec
Ext. static pressure 270 Pa Ext. static pressure 290 Pa
Voltage 3 x 400V + N, 50 Hz Weight 814 kg
Specific electric power demand 1.92 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

Octave band (Hz)	Lw per octave band (dB)								LwA
	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

Intake air section

Size: 011

Material: AZ sheet steel

Inspection side: left

Pressure drop, dimensioning

6 Pa

Damper

Width cm : 080

Height in cm : 040

Tightness class : CEN 3

Connection: flange

Function : Outdoor air

Location: externally end wall

Damper type: 200 mm blade

Material : galvanized sheet steel

Damper actuator

Type: 2-Point with spring return

Delivery options: Mounted and connected

Filter

Size: 011

Filter length: Long bag (vertical pockets only)

Filter class: F7

Filter type: glass fibre, standard

Filter frame : Plastic or metal

Inspection side: inlet in end wall

Location: negative pressure

Prefilter: G4 50 mm synthetic/plastic cassett

Drain tray: without

Material: AZ sheet steel

Inspection side: left

Number of filters

2x492x492

Pressure drop, start

98 Pa

Pressure drop, dimensioning

183 Pa

Pressure drop, end

268 Pa

Face area

0.5 m²

Face velocity

2.3 m/s

Filter monitoring

Location: Supply air

Type: Combi sensor (modbus)

Delivery options: Mounted and connected

REGOTERM rotary heat exchanger

Size: 11

Rotor type: SEMCO sorption rotor

Output variant: output variant 9 (1.4)

Function lenght: rotary with fan section before and after

Delivery version: Assembled rotor unit, max. face area

Material: galvanized sheet steel

Inspection side: left

Voltage: 1 x 230 V

Control connections: yes

Efficiency

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Efficiency calculated in regard to conditions specified by the EN308 standard 85.6 %

Cooling recovery 84.8 %

Frost protection

Temperature limit when frost protection starts: -50 °C

Supply air

	Summer	Winter
Pressure drop	183	153 Pa
Air temperature	27 / 25.3	-24 / 15.4 °C
Relative humidity	50 / 54.2	89.9 / 26.2 %
Capacity reduction	3	55 kW
Air flow transfer	0.1	0.10 m³/sec
Face velocity	2.2	2.1 m/s

Exhaust air

	Summer	Winter
Pressure drop	188	165 Pa
Air temperature	25 / 26.7	22 / -16.2 °C
Relative humidity	55 / 50.8	20 / 98.8 %
Additional throttling	102	102 Pa
Face velocity	2.3	2.2 m/s

Plenum fan Centriflow Plus

Size: 11

Fan size: size 3

Direction of air discharge: forward, to subsequent function

Anti-vibration mountings: rubber

Material: galvanized sheet steel

Inspection side: left

Dimensioning data

Speed	2006 Rpm
Max speed	2750 Rpm
Total efficiency	64.7 %
Pressure rise, dimensioning	720 Pa
Grid Power	1.14 kW
Temperature rise	0.9 °C

SFP Calculation

Grid power according to SFP	0.951 kW
Pressure rise	611 Pa
Speed	1859 Rpm

Centriflow Plus Fan Unit + Motor

PM Motor Efficiency equivalent to IE4

Motor output	3.6 kW
Electric current	8.3 A
Output margin, minimum	30 %

Frequency converter

Housing protection: IP66	
Efficiency	100.0 %

Doorstop (for doors on pressurized units)

Motor cable

Voltage: 3 x 400 V

Pressure-/flow sensor

Location: Supply air
Type: Combi sensor (modbus)
Pressure range: 0-1500 Pa
Delivery options: Mounted and connected

Intake air section

Size: 011

Material: AZ sheet steel

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Inspection side: left

Pressure drop, dimensioning

0 Pa

Air cooler for chilled water

Use as: Cooling Coil

Size: 11

Coil Calculation Variant: FWG Standard

Calculation principle: flow control, input data

Output variant: 3

Design: normal face area

Fin spacing: 2 mm

Droplet eliminator: without

Material, coil: Cu/Al, MS header

Material: galvanized sheet steel

Inspection side: left

Design variant: version 3

Shunt control: without

Nom. pipe size

25

Liquid volume

6.0 l

Pressure drop, dimensioning

46 Pa

Pressure drop

46 Pa

Pressure drop, dry coil

37 Pa

Output

9.87 kW

Air temperature

26.1 / 18.1 °C

Relative humidity

51 / 83.2 %

Face velocity

2.2 m/s

Water temperature

14 / 16.7 °C

Water flow

0.88 l/s

Water velocity

1.0 m/s

Pressure drop water

10.5 kPa

Valve / valve actuator

Control alternative: Valve with actuator

Calculated kvs value: 10

Delivery options: Enclosed

Empty section

Size: 011

Length: 400 mm

Drain tray: without

Inspection door: with door

Inspection side: left

Doorstop (for doors on pressurized units)

Air heater for hot water

Size: 11

Calculation principle: flow control, input data

Output variant: 1

Design: normal face area

Fin spacing: 2 mm

Fluid circuits: 04

Material, coil: Cu/Al, MS header

Material: galvanized sheet steel

Inspection side: left

Nom. pipe size

25

Liquid volume

3.0 l

Pressure drop, dimensioning

20 Pa

Output

3.03 kW

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Air temperature	15.5 / 18 °C
Face velocity	2.1 m/s
Control principle for water heater	flow control
Water temperature	35 / 30 °C
Water flow	0.15 l/s
Water velocity	0.4 m/s
Pressure drop water	1.4 kPa

Frost protection sensor

Design: Immersion sensor

Delivery options: Enclosed

Valve / valve actuator

Control alternative: Valve with actuator

Calculated kvs value: 1

Delivery options: Enclosed

Casing end wall

Pressure drop, dimensioning	0 Pa
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Flexible connection

Width: 80

Height: 40

Connection type: flange connection

Material: galvanized sheet steel / AlZn

EXHAUST AIR

Intake air section

Size: 011	
Material: AZ sheet steel	
Inspection side: right	
Pressure drop, dimensioning	0 Pa

Flexible connection

Connection: Flange

Material, frame: galvanized sheet steel / AlZn

Flange isolation: no

Filter

Size: 011	
Filter length: Long bag (vertical pockets only)	
Filter class: M5	
Filter type: synthetic	
Filter frame : Plastic or metal	
Inspection side: inlet in end wall	
Location: negative pressure	
Prefilter: without	
Drain tray: without	
Material: AZ sheet steel	
Inspection side: right	
Number of filters	2x492x492
Pressure drop, start	30 Pa
Pressure drop, dimensioning	80 Pa
Pressure drop, end	130 Pa
Face area	0.5 m²
Face velocity	2.1 m/s

Filter monitoring

Location: Exhaust air

Type: Combi sensor (modbus)

Delivery options: Mounted and connected



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Plenum fan Centriflow Plus

Size: 11

Fan size: size 3

Direction of air discharge: upward

Anti-vibration mountings: rubber

Material: galvanized sheet steel

Inspection side: right

Dimensioning data

Speed

2036 Rpm

Max speed

2750 Rpm

Total efficiency

65.8 %

Pressure rise, dimensioning

675 Pa

Grid Power

1.19 kW

Temperature rise

0.9 °C

SFP Calculation

Grid power according to SFP

1.03 kW

Pressure rise

616 Pa

Speed

1913 Rpm

Centriflow Plus Fan Unit + Motor

PM Motor Efficiency equivalent to IE4

Motor output

3.6 kW

Electric current

8.3 A

Output margin, minimum

30 %

Frequency converter

Housing protection: IP66

Efficiency

100.0 %

Doorstop (for doors on pressurized units)

Motor cable

Voltage: 3 x 400 V

Pressure-/flow sensor

Location: Exhaust air

Type: Combi sensor (modbus)

Pressure range: 0-1500 Pa

Delivery options: Mounted and connected

Damper actuator

Type: 2-Point

Delivery options: Mounted and connected

Damper

Width cm : 080

Height in cm : 040

Tightness class : CEN 3

Connection: flange

Function : extract air

Location: externally top

Damper type: 200 mm blade

Material : galvanized sheet steel