

AIR HANDLING UNIT eQ Prime

Project	2 () / Ramsi Lasteaed	Acon 2.14.160225.1
AOC	ACON-01698349	
Unit	4 (SV-2) / Saal/üldruumid.v1 (ST ef. 79%)	2016-02-26
Size	023	Page 1/7

Customer

Customers ref.

Our ref. Erkki Seinre

Supply air flow	1.63 m³/sec	Exhaust air flow	1.63 m³/sec
Ext. static pressure	290 Pa	Ext. static pressure	310 Pa
Voltage	3 x 400V + N, 50 Hz	Weight	1376 kg
Specific electric power demand	1.71 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	1.63 m³/sec	Installation	Indoor horizontal
Ext. static pressure	290 Pa	Material	AlZn sheet steel
Exhaust air flow	1.63 m³/sec	Thermal insulation	T3
Ext. static pressure	310 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	F7
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	86.3 %	Heat recovery capacity	90.3 kW
SFPv supply air	0.84 kW/(m³/s)	Total dry weight	1376 kg
SFPv exhaust air inlet	0.86 kW/(m³/s)		
SFPv total sum	1.71 kW/(m³/s)	Heaviest block	1088 kg

Coils

	Capacity [kW]	Air In [°C/%]	Air Out [°C/%]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	7.09	14.4/24.9	18/19.8	35/30		0.34	0.6	32
Air cooler	16.8	26.3/51.1	18/84.7	14/17		1.34	4.8	50

Motor data

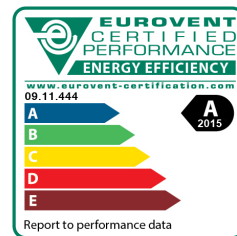
Voltage	3 x 400V + N, 50 Hz		
Power, supply flow	3.6 kW	Power, extract flow	3.6 kW
Current, full load, supply flow	8.3 A	Current, full load, extract flow	8.3 A

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	63	76	67	61	59	52	52	70
Supply air connection	65	64	77	77	76	67	60	57	79
Extract connection	64	66	76	67	61	59	53	52	70
Exhaust connection	68	69	81	81	80	73	70	68	83
To surroundings	60	59	67	52	48	47	40	32	59

TOLERANCE



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Size 023 Page 2/7

Customer
Customers ref.
Our ref. Erkki Seinre
Supply air flow 1.63 m³/sec Exhaust air flow 1.63 m³/sec
Ext. static pressure 290 Pa Ext. static pressure 310 Pa
Voltage 3 x 400V + N, 50 Hz Weight 1376 kg
Specific electric power demand 1.71 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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Size	023	Page 3/7

TECHNICAL SPECIFICATION (components listed in direction of air flow)

SUPPLY AIR

Intake air section

Size: 023

Material: AZ sheet steel

Inspection side: right

Pressure drop, dimensioning

2 Pa

Damper

Width cm : 140

Height in cm : 060

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: 023

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: right

Number of filters

2x592x592, 1x287x592

Pressure drop, start

86 Pa

Pressure drop, dimensioning

171 Pa

Pressure drop, end

256 Pa

Face area

0.9 m²

Face velocity

2.0 m/s

Filter monitoring

Location: Supply air

Type: Combi sensor (modbus)

Delivery options: Mounted and connected

REGOTERM rotary heat exchanger

Size: 23

Rotor type: SEMCO sorption rotor

Output variant: output variant 9 (1.4)

Function lenght: rotary with fan section before and after with control

Delivery version: Assembled rotor unit

Material: galvanized sheet steel

Inspection side: right

Voltage: 1 x 230 V

Control connections: yes

Efficiency

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Size	023	Page 4/7

Temperature efficiency according to EN 308		86.3 %
Cooling recovery		85.4 %
Temperature Efficiency		86.2 %
Humidity efficiency		86.2 %
Supply air	Summer	Winter
Pressure drop	157	131 Pa
Air temperature	27 / 25.3	-24 / 15.6 °C
Relative humidity	50 / 54.2	89.9 / 26.2 %
Capacity reduction	5	90 kW
Air flow transfer	0.16	0.16 m³/sec
Face velocity	1.9	1.8 m/s
Exhaust air	Summer	Winter
Pressure drop	156	136 Pa
Air temperature	25 / 26.7	22 / -17.6 °C
Relative humidity	55 / 50.7	20 / 98.5 %
Additional throttling	22	22 Pa
Face velocity	1.9	1.9 m/s

Plenum fan Centriflow Plus

Size: 23
Fan size: size 2
Direction of air discharge: forward, to subsequent function
Anti-vibration mountings: rubber
Material: galvanized sheet steel
Inspection side: right

Dimensioning data

Speed	1568 Rpm
Max speed	2000 Rpm
Total efficiency	66.3 %
Pressure rise, dimensioning	673 Pa
Grid Power	1.7 kW
K factor	15.34
Temperature rise	0.9 °C

SFP Calculation

Grid power according to SFP	1.38 kW
Pressure rise	565 Pa
Speed	1448 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: 0-3000 Pa
Delivery options: Mounted and connected

Air cooler for chilled water

Use as: Cooling Coil
Size: 23

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Size	023	Page 5/7

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: right

Design variant: version 3

Shunt control: without

Nom. pipe size

50

Liquid volume

15.3 l

Pressure drop, dimensioning

29 Pa

Pressure drop

29 Pa

Pressure drop, dry coil

21 Pa

Output

16.8 kW

Air temperature

26.3 / 18 °C

Relative humidity

51.1 / 84.7 %

Face velocity

1.6 m/s

Water temperature

14 / 17 °C

Water flow

1.34 l/s

Water velocity

0.7 m/s

Pressure drop water

4.8 kPa

Valve / valve actuator

Control alternative: Valve with actuator

Calculated kvs value: 10

Delivery options: Enclosed

Empty section

Size: 023

Length: 400 mm

Drain tray: without

Inspection door: with door

Inspection side: right

Doorstop (for doors on pressurized units)

Air heater for hot water

Size: 23

Calculation principle: flow control, input data

Output variant: 1

Design: normal face area

Fin spacing: 2 mm

Fluid passes: 02

Material, coil: Cu/Al, MS header

Material: galvanized sheet steel

Inspection side: right

Nom. pipe size

32

Liquid volume

6.0 l

Pressure drop, dimensioning

12 Pa

Output

7.09 kW

Air temperature

14.4 / 18 °C

Face velocity

1.5 m/s

Control principle for water heater

flow control

Water temperature

35 / 30 °C

Water flow

0.34 l/s

Water velocity

0.3 m/s



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Size	023	Page 6/7

Pressure drop water 0.6 kPa

Frost protection sensor

Design: Immersion sensor

Delivery options: Enclosed

Valve / valve actuator

Control alternative: Valve with actuator

Calculated kvs value: 1.6

Delivery options: Enclosed

Casing end wall

Pressure drop, dimensioning 0 Pa

Flexible connection

Width: 140

Height: 60

Connection type: flange connection

Material: galvanized sheet steel / AlZn

EXHAUST AIR

Casing end wall

Pressure drop, dimensioning 0 Pa

Flexible connection

Width: 140

Height: 60

Connection type: flange connection

Material: galvanized sheet steel / AlZn

Filter

Size: 023

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: without

Drain tray: without

Material: AZ sheet steel

Inspection side: left

Number of filters

2x592x592, 1x287x592

Pressure drop, start

47 Pa

Pressure drop, dimensioning

97 Pa

Pressure drop, end

147 Pa

Face area

0.9 m²

Face velocity

1.9 m/s

Filter monitoring

Location: Exhaust air

Type: Combi sensor (modbus)

Delivery options: Mounted and connected

Plenum fan Centriflow Plus

Size: 23

Fan size: size 2

Direction of air discharge: upward

Anti-vibration mountings: rubber

Material: galvanized sheet steel

Inspection side: left

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Size	023	Page 7/7

Dimensioning data

Speed	1554 Rpm
Max speed	2000 Rpm
Total efficiency	67.3 %
Pressure rise, dimensioning	601 Pa
Grid Power	1.64 kW
K factor	15.34
Temperature rise	0.8 °C

SFP Calculation

Grid power according to SFP	1.41 kW
Pressure rise	543 Pa
Speed	1458 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: 0-3000 Pa
Delivery options: Mounted and connected

Damper actuator

Type: 2-Point
Delivery options: Mounted and connected

Damper

Width cm : 140
Height in cm : 060
Tightness class : CEN 3
Connection: flange
Function : extract air
Location: externally top
Damper type: 200 mm blade
Material : galvanized sheet steel