

AIR HANDLING UNIT eQ

Project	2 () / Ramsi Lasteaed	Acon 2.13.160127.1
AOC	ACON-01707662	
Unit	14 (SV-4) / Basseinei seade econet	2016-01-29
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Customer

Customers ref.

Our ref. Erkki Seinre

Supply air flow	0.54 m³/sec	Exhaust air flow	0.54 m³/sec
Ext. static pressure	200 Pa	Ext. static pressure	200 Pa
Voltage	3 x 400V + N, 50 Hz	Weight	774 kg
Specific electric power demand	1.42 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	0.54 m³/sec	Installation	Indoor horizontal
Ext. static pressure	200 Pa	Material	More than one, see specification
Exhaust air flow	0.54 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	F7
Dim. humidity winter	89.9 %	Filter grade extract	M5
Temperature in, supply air, summer	29 °C	Temperature in, extract air, summer	29 °C
Air humidity in, supply air, summer	50 %	Air humidity in, extract air, summer	60 %
Temperature in, supply air, winter	29 °C	Temperature in, extract air, winter	29 °C
Air humidity in, supply air, winter	20 %	Air humidity in, extract air, winter	60 %
Heat recovery efficiency	67.4 %	Heat recovery capacity	32.6 kW
SFPv supply air	0.75 kW/(m³/s)	Total dry weight	774 kg
SFPv exhaust air inlet	0.67 kW/(m³/s)		
SFPv total sum	1.42 kW/(m³/s)	Heaviest block	465 kg

Motor data

Voltage	3 x 400V + N, 50 Hz		
Power, supply flow	1.1 kW	Power, extract flow	0.80 kW
Current, full load, supply flow	2.4 A	Current, full load, extract flow	1.6 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	57	57	64	57	61	58	52	50	65
Supply air connection	58	63	69	68	71	69	66	62	75
Extract connection	60	62	66	58	63	61	52	49	67
Exhaust connection	59	65	70	67	72	71	66	63	76
To surroundings	56	58	57	41	42	48	40	30	53

TOLERANCE

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

End connection frame

Pressure drop, dimensioning 1 Pa

Casing end wall

Multi cable

Damper

Width cm : 080

Height in cm : 040

Tightness class : CEN 3

Connection: slip joint (PG)

Function : Outdoor air

Location: externally end wall

Damper type: 200 mm blade

Insulation: insulated blades

Material : galvanized sheet steel

Damper actuator

Delivery options: Mounted on current sub, quick connection

Filter

Size: 008

Filter length: Short bag (vertical pockets only)

Filter class: F7

Filter type: glass fibre, standard

Filter frame : plastic

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

1x792x392

Pressure drop, start

90 Pa

Pressure drop, dimensioning

175 Pa

Pressure drop, end

260 Pa

Face area

0.3 m²

Face velocity

1.7 m/s

Filter monitoring

Liquid-coupled heat exchanger ECONET

Size: 008

Finned heat exchanger: supply air, heat exchanger

Coil Calculation Variant: Configure Luvata

Output variant: 5

Design: normal face area

Fin spacing: 2 mm

Fluid circuits: 78

Droplet eliminator: without

Material, coil: Cu/Al, MS header

Material: galvanized sheet steel

Inspection side: right

Design variant: version 1

Liquid volume

20.0 l

Ethylene glycol

40 %

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Nom. pipe size		25
Pressure drop, dimensioning		135 Pa
Coil data	Summer	Winter
Pressure drop	135	120 Pa
Face velocity	1.5	1.4 m/s
Capacity	1.39	32.6 kW
Air temperature	27 / 29.1	-24 / 26 °C
Relative humidity	50 / 44.2	89.9 / 1.9 %
Liquid temperature	29.5 / 27.5	34.2 / -6.8 °C
Pressure drop water	86.1	123.0 kPa

System data

Temperature efficiency at an outdoor temperature of 0°C without supplementary energy 84.6 %

EN308

Efficiency calculated in regard to conditions specified by the EN308 standard 67.4 %

Supplementary energy

	Summer	Winter
Output additional heating/cooling	0.00	5.98 kW
Liquid flow	0.2	0.23 l/s
Liquid temperature	29.5 / 29.5	26.8 / 34.2 °C

Energy exchanger package

	Summer	Winter
Design		B8-40
Liquid flow		0.6 l/s
Liquid temperature		35 / 32.6 °C
Pressure drop Primary		16.2 kPa
Pressure drop ECONET (secondary)		2.9 kPa
Output		5.98 kW

ECONET pump unit

Size AHU: 008

Energy exchanger package

Heat exchangers for: Heating
Size, Heat exchanger: B8
Number of plates, Heat exchanger: 40
Type of pipes: High pressure steel, Anti-corrosion painted (Normal)

Empty section

Unit size : 008
Length: 030
Inspection side : right

Plenum fan Centriflow Plus

Unit size : 008
Fan size : 3
Equipment: normal + pressure tapping for air flow measurement
Anti-vibration mountings : rubber
Position inside the casing : supply air
Outlet direction : forward, to duct (rectangular)
Material : stainless steel (AISI 304) (epoxypainted frame and wheel)
Inspection side: right

Dimensioning data

Speed	2186 Rpm
Max speed	3000 Rpm
Total efficiency	57.7 %
Pressure rise, dimensioning	520 Pa
Grid Power	0.505 kW
Temperature rise	0.8 °C

SFP Calculation

Grid power according to SFP 0.406 kW

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Pressure rise	427 Pa
Speed	1983 Rpm

PM Motor Efficiency equivalent to IE4

Motor output	1.1 kW
Electric current	2.4 A
Output margin, minimum	10 %

Multi cable

Frequency converter

Housing protection: IP54	
Efficiency	100.0 %

Motor accessories

Motor: PM motor
 Motor control: Mounted frequency converter
 Connection accessories: Quick connection
 Type: Standard
 Length: 308
 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: Without
 Design: Standard
 Delivery option: Mounted on current sub, quick connection

Start equipment fan

Fan location: Supply 1
 Motor: 1-Speed
 Start method: Frequency converter
 Voltage: 400 VAC, 3-phase
 Rated current high speed: 024
 Delivery options: Mounted on current sub, quick connection

Pressure/flow indication

Location: Supply fan
 Type: Pressure/flow linear
 Pressure range: 0-3000 Pa
 Display: With
 Delivery options: Mounted on current sub

Flexible connection

Width: 80
 Height: 40
 Connection type: PG connection
 Material: galvanized sheet steel / AlZn

EXHAUST AIR

End connection frame

Pressure drop, dimensioning	0 Pa
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Casing end wall

Filter

Size: 008
 Filter length: Short bag (vertical pockets only)
 Filter class: M5
 Filter type: synthetic
 Filter frame : galvanized sheet steel
 Inspection side: inlet in end wall

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Location: negative pressure	
Prefilter: without	
Drain tray: without	
Material: stainless steel (AISI 304)	
Inspection side: right	
Number of filters	1x792x392
Pressure drop, start	23 Pa
Pressure drop, dimensioning	73 Pa
Pressure drop, end	123 Pa
Face area	0.3 m ²
Face velocity	1.8 m/s
Multi cable	
Filter monitoring	

Liquid-coupled heat exchanger ECONET

Size: 008		
Finned heat exchanger: exhaust air, heat exchanger		
Coil Calculation Variant: Configure Luvata		
Output variant: 5		
Design: normal face area		
Fin spacing: 2 mm		
Fluid circuits: 78		
Droplet eliminator: without		
Material, coil: Cu/Al, Corropaint		
Material: stainless steel (AISI 304)		
Inspection side: right		
Design variant: version 1		
Liquid volume		20.0 l
Nom. pipe size		25
Pressure drop, dimensioning		136 Pa
Coil data	Summer	Winter
Pressure drop	136	150 Pa
Face velocity	1.5	1.5 m/s
Capacity	1.39	26.6 kW
Air temperature	30 / 27.9	30 / 10.3 °C
Relative humidity	60 / 67.6	60 / 100 %
Liquid temperature	27.5 / 29.5	-6.8 / 26.8 °C
Pressure drop water	86.1	127.1 kPa

Empty section

Unit size : 008
Length: 030
Inspection side : right

Plenum fan Centriflow Plus

Unit size : 008	
Fan size : 2	
Equipment: normal + pressure tapping for air flow measurement	
Anti-vibration mountings : rubber	
Position inside the casing : exhaust air	
Outlet direction : upwards (rectangular)	
Material : galvanized sheet steel	
Inspection side: right	
Dimensioning data	
Speed	2616 Rpm
Max speed	3150 Rpm
Total efficiency	56.5 %

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Pressure rise, dimensioning	424 Pa
Grid Power	0.42 kW
Temperature rise	0.6 °C

SFP Calculation

Grid power according to SFP	0.364 kW
Pressure rise	366 Pa
Speed	2453 Rpm

Multi cable

PM Motor Efficiency equivalent to IE4

Motor output	0.80 kW
Electric current	1.6 A
Output margin, minimum	10 %

Frequency converter

Housing protection: IP54	
Efficiency	100.0 %

Motor accessories

Motor: PM motor
 Motor control: Mounted frequency converter
 Connection accessories: Quick connection
 Type: Standard
 Length: 308
 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: Without
 Design: Standard
 Delivery option: Mounted on current sub, quick connection

Start equipment fan

Fan location: Exhaust 1
 Motor: 1-Speed
 Start method: Frequency converter
 Voltage: 400 VAC, 3-phase
 Rated current high speed: 015
 Delivery options: Mounted on current sub, quick connection

Damper actuator

Delivery options: Mounted on current sub, quick connection

Damper

Width cm : 080
 Height in cm : 040
 Tightness class : CEN 3
 Connection: slip joint (PG)
 Function : extract air
 Location: externally top
 Damper type: 200 mm blade
 Insulation: insulated blades
 Material : stainless sheet steel (AISI 304)