

AIR HANDLING UNIT eQ

Project	2 () / Ramsi Lasteaed	Acon 2.14.160210.3
AOC	ACON-01741999	
Unit	23 (SV-3) / uus WC?	2016-02-26
Size	011	Page 1/7

Customer

Customers ref.

Our ref. Erkki Seinre

Supply air flow	0.75 m³/sec	Exhaust air flow	0.76 m³/sec
Ext. static pressure	220 Pa	Ext. static pressure	200 Pa
Voltage	3 x 400V + N, 50 Hz	Weight	730 kg
Specific electric power demand	1.84 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	0.75 m³/sec	Installation	Indoor horizontal
Ext. static pressure	220 Pa	Material	AlZn sheet steel
Exhaust air flow	0.76 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	81.7 %	Heat recovery capacity	39.4 kW
SFPv supply air	1.06 kW/(m³/s)	Total dry weight	730 kg
SFPv exhaust air inlet	0.79 kW/(m³/s)		
SFPv total sum	1.84 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	4.18	13.4/26.9	18/20	35/30		0.2	6.9	22
Air cooler	8.32	26.5/51.5	18/84.9	14/17		0.66	15.4	25

Motor data

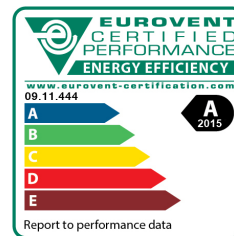
Voltage	3 x 400V + N, 50 Hz		
Power, supply flow	2.2 kW	Power, extract flow	2.2 kW
Current, full load, supply flow	4.7 A	Current, full load, extract flow	4.7 A

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	57	60	71	70	64	61	58	54	71
Supply air connection	65	70	79	77	75	74	69	62	80
Extract connection	53	56	67	66	60	57	54	50	67
Exhaust connection	63	68	77	75	73	71	65	63	78
To surroundings	49	53	58	47	39	42	38	30	52

TOLERANCE



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Project 2 () / Ramsi Lasteaed Acon 2.14.160210.3
AOC ACON-01741999
Unit 23 (SV-3) / uus WC? 2016-02-26
Size 011 Page 2/7

Customer
Customers ref.
Our ref. Erkki Seinre
Supply air flow 0.75 m³/sec Exhaust air flow 0.76 m³/sec
Ext. static pressure 220 Pa Ext. static pressure 200 Pa
Voltage 3 x 400V + N, 50 Hz Weight 730 kg
Specific electric power demand 1.84 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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Project	2 () / Ramsi Lasteaed	Acon 2.14.160210.3
AOC	ACON-01741999	
Unit	23 (SV-3) / uus WC?	2016-02-26
Size	011	Page 3/7

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	77 Pa
Pressure drop, dimensioning	112 Pa
Pressure drop, end	147 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

Temperature efficiency according to EN 308	81.7 %
Cooling recovery	81.2 %
Temperature Efficiency	81.7 %
Humidity efficiency	81.4 %

Supply air

	Summer	Winter
Pressure drop	100	83 Pa
Air temperature	27 / 25.4	-24 / 13.6 °C
Relative humidity	50 / 54.1	89.9 / 28.5 %
Capacity reduction	2	39 kW
Air flow transfer	0.07	0.07 m ³ /sec
Face velocity	1.9	1.8 m/s

Exhaust air

	Summer	Winter
Pressure drop	101	89 Pa
Air temperature	25 / 26.6	22 / -15.1 °C
Relative humidity	55.1 / 50.9	20 / 94.5 %
Additional throttling	12	12 Pa
Face velocity	1.9	1.9 m/s

Multi cable

Project 2 () / Ramsi Lasteaed
AOC ACON-01741999
Unit 23 (SV-3) / uus WC?
Size 011

Acon 2.14.160210.3

2016-02-26

Page 4/7

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	1837 Rpm
Max speed	3325 Rpm
Fan efficiency	68.0 %
Total efficiency	54.9 %
Pressure rise, dimensioning	630 Pa
Fan shaft power at dim. data	0.712 kW
Grid Power	0.882 kW
K factor	22.73
Temperature rise	1 °C

SFP Calculation

Grid power according to SFP	0.798 kW
Pressure rise	583 Pa
Speed	1754 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	64 Hz
Max frequency at frequency control	90.4 Hz
Max speed at frequency control	2599 Rpm

Frequency converter

Housing protection: IP54	
Efficiency	93.2 %

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

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Unit	23 (SV-3) / uus WC?	2016-02-26
Size	011	Page 5/7

Voltage: 400 VAC, 3-phase
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	65 Pa
Output	4.18 kW
Air temperature	13.4 / 18 °C
Face velocity	3.8 m/s
Control principle for water heater	flow control
Water temperature	35 / 30 °C
Water flow	0.2 l/s
Water velocity	0.7 m/s
Pressure drop water	6.9 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	97 Pa
Pressure drop	97 Pa
Pressure drop, dry coil	96 Pa
Output	8.32 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	0.66 l/s
Water velocity	1.1 m/s
Pressure drop water	15.4 kPa

EXHAUST AIR

Filter function eQ Top

Unit size : 011	
Filter class : F7	
Material: galvanized sheet steel	
Number of filters	2x545x545
Pressure drop, start	70 Pa
Pressure drop, dimensioning	105 Pa
Pressure drop, end	140 Pa
Face area	0.6 m²
Face velocity	1.3 m/s

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Size	011	Page 6/7

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	1651 Rpm
Max speed	3325 Rpm
Fan efficiency	73.2 %
Total efficiency	57.1 %
Pressure rise, dimensioning	458 Pa
Fan shaft power at dim. data	0.532 kW
Grid Power	0.682 kW
K factor	22.73
Temperature rise	0.7 °C

SFP Calculation

Grid power according to SFP	0.601 kW
Pressure rise	415 Pa
Speed	1558 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	57.5 Hz
Max frequency at frequency control	90.6 Hz
Max speed at frequency control	2604 Rpm

Frequency converter

Housing protection: IP54	
Efficiency	90.1 %

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



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AOC	ACON-01741999	
Unit	23 (SV-3) / uus WC?	2016-02-26
Size	011	Page 7/7

Voltage: 400 VAC, 3-phase
Rated current high speed: 047
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