

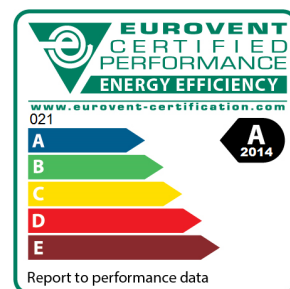
Customer Reference: SZPITAL  
Product: **Climaster ZCN 13/8**  
MPID: mp-b04

Project: Quotation/order  
Site: Our Reference.



**Climaster Data**

Total height	1934	mm
Total length	4308	mm
Width	1417	mm
Width with large function, Rotor exchanger or heating/cooling coil	1547	mm
Casing material AluZinc Without Roof		
The AHU is delivered in sections incl. of baseframe delivered separately		
Mounting and maintenance instruction in	UK-English	
Total weight for AHU	1526	kg
Supply air flow direction	Right	
Supply Voltage	3x400	Volt
Supply Frequency	50	Hz



**Supply air: (Reference 1,2 kg/m3)**

**Section 1**

IN Inlet  
FF FF Fine filter

**Section 2**

LCt Twincoil function  
DA Empty function  
LA Heating function

**Section 3**

DA Empty function  
QB Cooling function

**Section 4**

AC pos C Fan function

Air volume 1.63 m³/s

5855 m³/h

External total pressure loss inlet 450 Pa

External total pressure loss outlet 150 Pa

**Extract air: (Reference 1,2 kg/m3)**

**Section 5**

IN Inlet  
FF FF Fine filter

**Section 6**

QBt Twincoil function

**Section 7**

AC pos C Fan function

Air volume

1.31 m³/s

4715 m³/h

External total pressure loss inlet 450 Pa

External total pressure loss outlet 150 Pa

**Specific Fan Power for complete AHU**

2766 J/m³

**Customer Text**



**Automatic pack mounted and integrated**

Pressure transmitter	Without
CO2 sensor	Without
Room temperature sensor	Without
Outdoor temperature sensor	Without
Fire Thermostat	Without
Safety/Main Switch	Without
Handheld Terminal	Included.
LON network card.	Without
Web control software incl. Modbus	Included.
Frequency Converter, Supply air	Included.
Frequency Converter, Extract air	Included.
QXLX-valve with motor	Included. (Kv: 7.52 m³/h)
LX-valve with motor	Included. (Kv: 9.66 m³/h)
QX-valve with motor	Included. (Kv: 23.56 m³/h)

<b>Section 1 Length 997 mm Height 917 mm Weight 165.2 kg Pos Right</b>
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<b>Inlet</b>		<b>IN</b>	
Supply air		Air quantity	1.63 m³/s
Position	Inlet end	Air velocity	3.3 m/s
		Pressure loss	4 Pa
Panel	For duct connection		
Damper	Inside mounted damper		
Regulation	Damper motor with spring return		
Flex connection	Included		
Inlet box	Not included		
LS flanger for duct connection	Not included		
Length	240 mm	Weight	48.6 kg

<b>FF Fine filter</b>		<b>FF</b>	
Supply air		Air quantity	1.63 m³/s
Filter type	F7 Pocket type filter		
Spare filter type	None		
Spare filter set	0 set	Air velocity over total filter areal	0.12 m/s
Drip pan	Included	Air velocity over filter front areal	2.19 m/s
Water trap	Included	Pressure loss	167 Pa
Inspection window.	Included	Initial pressure loss	84 Pa
Light, switch incl. (230V)	Included	Recommended final pressure loss	250 Pa
Filter guard	Manometer with log scale		
Length	720 mm	Weight	84.7 kg

**Section 2 Length 1237 mm Height 917 mm Weight 277.9 kg Pos Right**

**Twincoil function**

**LCt**

Twincoil function	Mounted		
Supply air		Air quantity	1.63 m <sup>3</sup> /s
Size of heating function	Small	Temp. in	-16.0 °C
Type		Temp. out	3.1 °C
HW-EC-4.2-1150-750-13R-15-V1-Cu 0.35/Al 0.16		Temperature Efficiency (Dry)	50 %
Fin distance	4.2	Air velocity	1.9 m/s
Number of tube rows	13 pcs	Pressure loss	117 Pa
Dimension of inlet connection	1 1/4"	Temp. of fluid in	8.1 °C
Dimension of outlet connection	1 1/4"	Temp. of fluid out	1.8 °C
Connected from access side		Pressure loss fluid	49 kPa
Frost pocket (prep. for thermostat)	Included	Fluid quantity	1.52 l/s
KP61 thermostat	Not included	Fluid velocity	0.83 m/s
		Fluid content	50.61 l
		Output power	38.2 kW
		Type of fluid	Water + propylene glycol
		Glycol	30 %
Length	560 mm	Weight	163.0 kg

**Empty function**

**DA**

Supply air		Air quantity	1.63 m <sup>3</sup> /s
Inspection door.	Included	Air velocity	1.5 m/s
Inspection window.	Included	Pressure loss	1 Pa
Light, switch incl. (230V)	Included		
Length	400 mm	Weight	30.4 kg

**Heating function**

**LA**

Heating coil	Mounted		
Supply air		Air quantity	1.63 m <sup>3</sup> /s
Size of heating function	Small	Temp. in	-8.0 °C
Type		Temp. out	22.0 °C
HW-ST-2.1-1150-720-2R-18-V1-Cu 0.30/Al 0.10		Air velocity	1.9 m/s
Fin distance	2.1	Pressure loss	22 Pa
Number of tube rows	2 pcs	Temp. of fluid in	80.0 °C
Dimension of inlet connection	1"	Temp. of fluid out	60.0 °C
Dimension of outlet connection	1"	Pressure loss fluid	7 kPa
Connected from access side		Fluid quantity	0.73 l/s
Frost pocket (prep. for thermostat)	Included	Fluid velocity	0.58 m/s
KP61 thermostat	Not included	Fluid content	5.93 l
Weight coil	26.37 kg	Output power	60.1 kW
Surplus Area	87 %	Type of fluid	Water
Length	240 mm	Weight	52.6 kg

**Section 3 Length 1237 mm Height 917 mm Weight 242.9 kg Pos Right**

**Empty function**

**DA**

Supply air		Air quantity	1.63 m <sup>3</sup> /s
Inspection door.	Included	Air velocity	1.5 m/s
Inspection window.	Included	Pressure loss	1 Pa
Light, switch incl. (230V)	Included		
Length	400 mm	Weight	30.4 kg



**Cooling function**

**QB**

Cooling coil	Mounted	Air quantity	1.63 m <sup>3</sup> /s
Supply air		Temp. in	32.0 °C
Size of cooling function	Large	Relative humidity inlet	50 RH
Type		Temp. out	16.0 °C
CW-EC-2.5-1250-720-8R-41-V1-Cu 0.35/Al 0.12		Relative humidity outlet	100 RH
Fin distance	2.5	Air velocity	1.8 m/s
Number of tube rows	8 pcs	Pressure loss	107 Pa
Dimension of inlet connection	1 1/2"	Temp. of fluid in	6.0 °C
Dimension of outlet connection	1 1/2"	Temp. of fluid out	12.0 °C
Connected from access side		Pressure loss fluid	10 kPa
Droplet separators	Included	Fluid quantity	2.140 l/s
Water trap	Included	Fluid velocity	0.43 m/s
Weight coil	80.89 kg	Fluid content	33.24 l
Condensate	0.44 l/min	Output power	51.4 kW
Surplus Area	3 %	Type of fluid	Water + propylene glycol
		Glycol	30 %
Length	800 mm	Weight	180.7 kg

**Section 4 Length 837 mm Height 917 mm Weight 185.7 kg Pos Right**

**Fan function**

**AC pos C**

Supply air  
 Air quantity 1.63 m³/s  
 Static pressure 1108 Pa  
 Total pressure 1150 Pa  
 External static pressure 1028 Pa  
 External total pressure 1028 Pa  
 Fan outlet position Pos C Horizontal  
 Free outlet  
 For frequency conversion 42 Hz  
 Fan type: Axial AZN - 500 / 350 - 6  
 Spareventilator® 'energy-efficient fan'  
 Blade material Aluminium  
 Blade angel 30 °  
 Fan speed 2398 rpm  
 Max fan speed 3660 rpm  
 Fan efficiency 80 %  
 Temp. in 20.0 °C  
 Temp. out 21.3 °C  
 Fan shaft power 2.4 kW  
 Total sound power level for outlet Lw 91.9 dB(A)  
**Motor make** WEG

**Motor type**  
 2P WEG ET-22-112M 4.00 kW IM B14 400D/690Y V 50 Hz  
 Rated Power 4.0 kW  
 Motor speed 2870 rpm  
 Motor operation power input 2.734 kW  
 Voltage 3x400 Volt  
 Frequency 50 Hz  
 Current 7.72 amp  
 Efficiency 86 %  
 Direct start 1 speed  
 Enclosure class IP55  
 Efficiency class IE2  
 Thermal protection Thermistor  
 Weight motor 38.0 kg  
 P/Q Spec. Fan Power (this fan) 1751 J/m³  
 Total efficiency 65.9 %  
 Measurement category (A-D) D  
 Specific Ratio 1.02  
 Efficiency category Total  
 Efficiency grade 77.5  
 Target Efficiency Grade 57(2015)

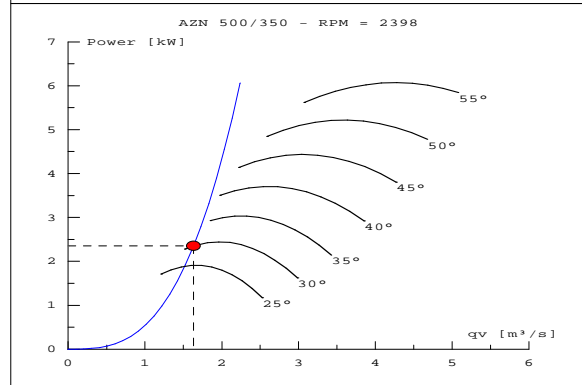
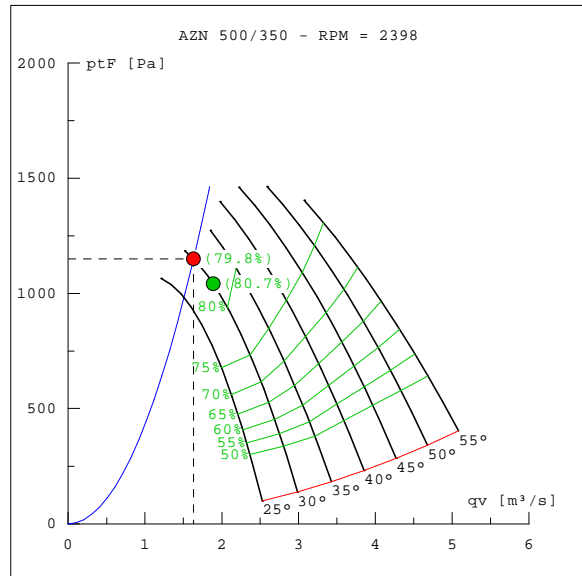
**Accessories**

Inspection window. Included  
 Light, switch incl. (230V) Included  
 Safety switch. Not included  
 Air quantity meter. Not included  
 Flex connection. Not included  
 Acoustic diffuser Not included  
 Frequency Converter FC-101P4KOT4E5AH3XA

Mean frequency in Hz and sound power level i dB

	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Inlet	75	79	95	88	88	81	78	73
Outlet	75	79	95	88	88	81	78	73

Length 800 mm Weight 153.9 kg



**Section 5 Length 997 mm Height 917 mm Weight 165.2 kg Pos Left**

**Inlet**

**IN**

Extract air Air quantity 1.31 m³/s  
 Position Inlet end Air velocity 2.6 m/s  
 Pressure loss 3 Pa  
 Panel For duct connection  
 Damper Inside mounted damper  
 Regulation Damper motor with spring return  
 Flex connection Included  
 Inlet box Not included  
 LS flanger for duct connection Not included

Length 240 mm Weight 48.6 kg



**FF Fine filter**

**FF**

Extract air		Air quantity	1.31	mt/s
Filter type	F7 Pocket type filter			
Spare filter type	None			
Spare filter set	0 set	Air velocity over total filter areal	0.10	m/s
Drip pan	Included	Air velocity over filter front areal	1.76	m/s
Water trap	Included	Pressure loss	143	Pa
Inspection window.	Included	Initial pressure loss	64	Pa
Light, switch incl. (230V)	Included	Recommended final pressure loss	222	Pa
Filter guard	Not included			
Length	720 mm	Weight	84.7	kg

**Section 6 Length 837 mm Height 917 mm Weight 238.2 kg Pos Left**

**Twincoil function**

**QBt**

Twincoil function	Mounted			
Extract air		Air quantity	1.31	mt/s
Size of cooling function	Small	Temp. in	22.0	°C
Type		Relative humidity inlet	51	RH
CW-EC-3.2-1090-720-13R-15-V2-Cu 0.35/Al 0.16		Temp. out	5.8	°C
Fin distance	3.2	Relative humidity outlet	51	RH
Number of tube rows	13 pcs	Temperature Efficiency (Dry)	50	%
Connected from access side		Air velocity	1.7	m/s
Dimension of connection	1 1/4"	Pressure loss	141	Pa
Droplet separators	Included	Temp. of fluid in	1.8	°C
Water trap	Included	Temp. of fluid out	8.1	°C
Condensate	0.28 l/min	Pressure loss fluid	46	kPa
		Fluid quantity	1.520	l/s
		Fluid velocity	0.83	m/s
		Fluid content	46.29	l
		Output power	38.2	kW
		Type of fluid	Water	
		Glycol	30	%
Length	800 mm	Weight	206.4	kg

**Section 7 Length 837 mm Height 917 mm Weight 178.2 kg Pos Left**

**Fan function**

**AC pos C**

Extract air  
 Air quantity 1.31 m³/s  
 Static pressure 944 Pa  
 Total pressure 971 Pa  
 External static pressure 892 Pa  
 External total pressure 892 Pa  
 Fan outlet position Pos C Horizontal  
 Free outlet  
 For frequency conversion 82 Hz  
 Fan type: Axial AZN - 500 / 350 - 6  
 Spareventilator® 'energy-efficient fan'  
 Blade material Aluminium  
 Blade angel 25 °  
 Fan speed 2323 rpm  
 Max fan speed 3660 rpm  
 Fan efficiency 77 %  
 Temp. in 20.0 °C  
 Temp. out 21.2 °C  
 Fan shaft power 1.7 kW  
 Total sound power level for outlet Lw 95.1 dB(A)  
**Motor make** WEG

**Motor type**  
 4P WEG ET-22-100L 2.20 kW IM B14 230D/400Y V 50 Hz  
 Rated Power 2.2 kW  
 Motor speed 1425 rpm  
 Motor operation power input 1.956 kW  
 Voltage 3x400 Volt  
 Frequency 50 Hz  
 Current 4.64 amp  
 Efficiency 85 %  
 Direct start 1 speed  
 Enclosure class IP55  
 Efficiency class IE2  
 Thermal protection Thermistor  
 Weight motor 30.5 kg  
 P/Q Spec. Fan Power (this fan) 1556 J/m³  
 Total efficiency 62.6 %  
 Measurement category (A-D) D  
 Specific Ratio 1.02  
 Efficiency category Total  
 Efficiency grade 77.5  
 Target Efficiency Grade 57(2015)

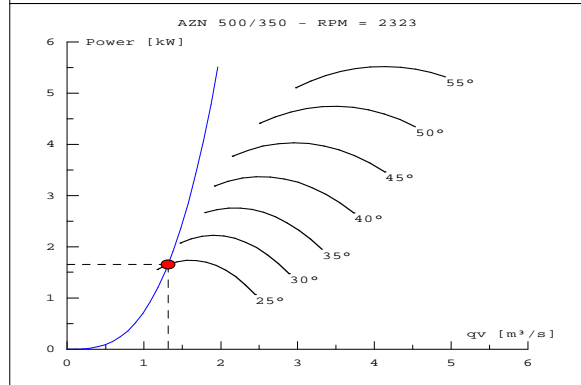
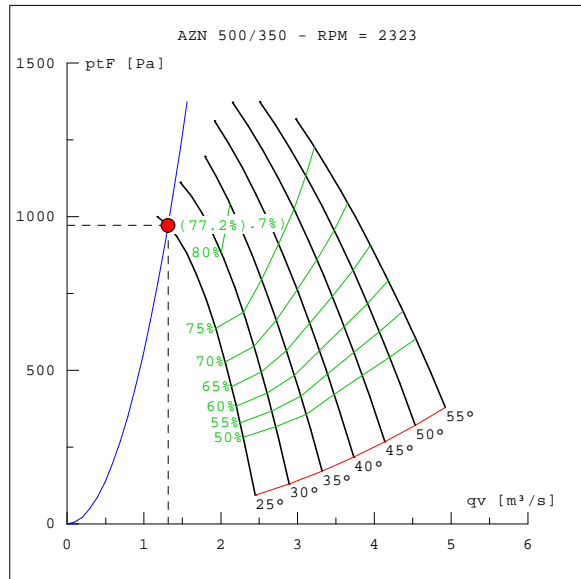
**Accessories**

Inspection window. Included  
 Light, switch incl. (230V) Included  
 Safety switch. Not included  
 Air quantity meter. Not included  
 Flex connection. Not included  
 Acoustic diffuser Not included  
 Frequency Converter FC-101P3K0T4E5AH3XA

Mean frequency in Hz and sound power level i dB

	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
Inlet	80	86	93	93	92	85	78	71	dB
Outlet	80	86	93	93	92	85	78	71	dB

Length 800 mm Weight 146.4 kg



**Sound calculation for AHU. (-) for attenuation values**

All values are sound power levels

**Supply air: (Reference 1,2 kg/m3)**

Total sound power level (Lw) to duct for

Inlet	85	dB	77	dB(A)
Outlet	97	dB	92	dB(A)

Sound power level (Lw) to duct for

	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
Inlet	64	71	85	70	67	55	42	29	dB
Outlet	75	79	95	88	88	81	78	73	dB

**Sound attenuation through AHU wall (Breakout noise)**

Breakout noise to service room	79	dB	70	dB(A)					
	64	68	79	58	54	47	44	40	dB

IN	Inlet	0	0	0	0	0	0	0	0	dB
FF	Filter function	-3	-3	-5	-12	-12	-15	-25	-26	dB
LCt	Twincoil function	-1	-1	-1	-1	-2	-3	-3	-4	dB
DA	Empty function	0	0	0	0	0	0	0	0	dB
LA	Heating function	-1	-1	-1	-1	-2	-3	-3	-4	dB
DA	Empty function	0	0	0	0	0	0	0	0	dB
QB	Cooling function	-6	-3	-3	-4	-5	-5	-5	-10	dB
AC pos C	Fan function	75	79	95	88	88	81	78	73	dB
		75	79	95	88	88	81	78	73	dB

**Extract air: (Reference 1,2 kg/m3)**

Total sound power level (Lw) to duct for

Inlet	90	dB	83	dB(A)
Outlet	98	dB	95	dB(A)

Sound power level (Lw) to duct for

	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
Inlet	76	82	87	80	78	67	50	41	dB
Outlet	80	86	93	93	92	85	78	71	dB

**Sound attenuation through AHU wall (Breakout noise)**

Breakout noise to service room	80	dB	70	dB(A)					
	69	75	77	63	58	51	44	38	dB

IN	Inlet	0	0	0	0	0	0	0	0	dB
FF	Filter function	-3	-3	-5	-12	-12	-15	-25	-26	dB
QBt	Twincoil function	-1	-1	-1	-1	-2	-3	-3	-4	dB
AC pos C	Fan function	80	86	93	93	92	85	78	71	dB
		80	86	93	93	92	85	78	71	dB





Customer Reference Product MPID SZPITAL  
**Climaster ZCN 13/8**  
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**LCC energy Calculation**

**LCC energy (2000) standard**

Constant Air Volume

	<b>Electricity</b>	<b>Heat</b>	
Energy Price	0.600	0.400	DKK/kWh
Inflation rate	2.0	2.0	%
Interest rate	5.0	5.0	%
Lifetime	20	20	years
Present value	8.926	5.951	DKK

	<b>Supply</b>	<b>Extract</b>	
Nominal airflow incl. Leakage	1.63	1.31	m/s
Specific effect requirement with qnom	1.62	1.42	kW/m/s
Yearly operation	8760	8760	hours
LCC (Fan energy)	205880	145915	DKK

Supply air temperature after heater	19	C	
Extract air temperature	22	C	
Average outdoor temperature of the year	6.00	C	
heat exchanger efficiency (temperature)	50.2	%	Twin Coil

Degree hours	46113	
LCC (Heating energy)	535577	DKK
Total LCC (Fan + Heat) for the period	887373	DKK

Supply fan energy	23064	kWh/Year
Extract fan energy	16346	kWh/Year
Heating energy	89998	kWh/Year
Total energy	129408	kWh/Year



Customer Reference  
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**Climaster ZCN 13/8**  
mp-b04

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**Price list**

**Total price for system**  
DKK (1.0000)  
(1.0000)

**322066 DKK**



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