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Login

Summary of	MA(M/B) 12-14-16 v10	Reg. No.	041-K012-07	
Certificate Holder				
Name	Salvador Escoda S.A.	Salvador Escoda S.A.		
Address	Carrer Nàpols 249 Pl.1	Zip	08013	
City	Barcelona	Country	Spain	
Certification Body	BRE Global Limited			
Subtype title	MA(M/B) 12-14-16 v10			
Heat Pump Type	Outdoor Air/Water			
Refrigerant	R32			
Mass of Refrigerant	1.84 kg			
Certification Date	21.05.2021			
Testing basis	HP Keymark Scheme Rules Rev 08			



Model: MAB-12-V10M + HR-12-14-16-V10M

Configure model		
Model name MAB-12-V10M + HR-12-14-16-V10M		
Application	Heating (medium temp)	
Units	Indoor + Outdoor	
Climate Zone	Colder Climate + Warmer Climate	
Reversibility	Yes	
Cooling mode application (optional)	n/a	

General Data		
Power supply	1x230V 50Hz	

Heating

EN 14511-4		
Shutting off the heat transfer medium flow	passed	
Complete power supply failure	passed	
Defrost test	passed	
Starting and operating test	passed	

EN 14511-2		
	Low temperature	Medium temperature
Heat output	12.10 kW	12.00 kW
El input	2.44 kW	3.87 kW
СОР	4.95	3.10

Average Climate



EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	43 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825		
	Low temperature	Medium temperature
η_{s}	189 %	135 %
Prated	12.00 kW	11.58 kW
SCOP	4.81	3.45
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.61 kW	10.25 kW
COP Tj = -7°C	2.88	2.01
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	6.69 kW	6.52 kW
COP Tj = +2°C	4.65	3.44
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	4.44 kW	4.36 kW
COP Tj = +7°C	6.62	4.59
Cdh Tj = +7 °C	0.90	0.90

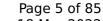




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Pdh Tj = 12°C	3.74 kW	3.30 kW
COP Tj = 12°C	8.47	6.05
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	10.61 kW	10.25 kW
COP Tj = Tbiv	2.88	2.01
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.75 kW	9.10 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.77	1.79
WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.26 kW	2.50 kW
Annual energy consumption Qhe	5152 kWh	6927 kWh

Warmer Climate

EN 12102-1			
	Low temperature	Medium temperature	
Sound power level indoor	43 dB(A)	43 dB(A)	
Sound power level outdoor	64 dB(A)	64 dB(A)	





EN 14825

	Low temperature	Medium temperature
η_{s}	256 %	174 %
Prated	11.11 kW	12.51 kW
SCOP	6.53	4.43
Tbiv	7 °C	7 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	11.11 kW	12.08 kW
COP Tj = +2°C	3.59	2.31
Cdh Tj = +2 °C	0.900	0.900
Pdh Tj = $+7^{\circ}$ C	7.14 kW	8.04 kW
$COPTj = +7^{\circ}C$	5.87	3.86
Cdh Tj = +7 °C	0.900	0.900
Pdh Tj = 12°C	3.56 kW	3.75 kW
COP Tj = 12°C	7.94	5.70
Cdh Tj = +12 °C	0.900	0.900
Pdh Tj = Tbiv	7.14 kW	8.04 kW
COP Tj = Tbiv	5.87	3.86
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.11 kW	12.08 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.59	2.31
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh		





WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.44 kW
Annual energy consumption Qhe	2292 kWh	3776 kWh

Colder Climate

EN 12102-1			
	Low temperature	Medium temperature	
Sound power level indoor	43 dB(A)	43 dB(A)	
Sound power level outdoor	64 dB(A)	64 dB(A)	

EN 14825		
Low temperature	Medium temperature	
160 %	118 %	
11.38 kW	10.32 kW	
4.08	3.02	
-15 °C	-15 °C	
	Low temperature 160 % 11.38 kW 4.08	





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TOL	-22 °C	-22 °C
Pdh Tj = -7°C	7.05 kW	6.63 kW
COP Tj = -7°C	3.48	2.63
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	4.68 kW	4.07 kW
COP Tj = +2°C	4.96	3.60
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = $+7$ °C	3.14 kW	2.78 kW
$COP Tj = +7^{\circ}C$	6.10	4.54
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.57 kW	3.33 kW
COP Tj = 12°C	7.87	6.25
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	9.28 kW	8.42 kW
COP Tj = Tbiv	2.59	1.84
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.01 kW	4.20 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.98	1.13
WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
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PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	4.37 kW	6.12 kW
Annual energy consumption Qhe	6870 kWh	8419 kWh
Pdh Tj = -15°C (if TOL<-20°C)	9.28	8.42
COP Tj = -15°C (if TOL $<$ -20°C)	2.59	1.84
Cdh Tj = -15 °C	0.90	0.90



Model: MAB-16-V10M + HR-12-14-16-V10M

Configure model	
Model name	MAB-16-V10M + HR-12-14-16-V10M
Application Heating (medium temp)	
Units Indoor + Outdoor	
Climate Zone Colder Climate + Warmer Climate	
Reversibility Yes	
Cooling mode application (optional)	n/a

General Data		
Power supply	1x230V 50Hz	

Heating

EN 14511-4	
Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Defrost test	passed
Starting and operating test	passed

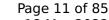
EN 14511-2		
	Low temperature	Medium temperature
Heat output	16.00 kW	16.00 kW
El input	3.56 kW	5.52 kW
СОР	4.50	2.90

Average Climate



EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	43 dB(A)
Sound power level outdoor	68 dB(A)	68 dB(A)

EN 14825		
	Low temperature	Medium temperature
η_{s}	182 %	133 %
Prated	15.21 kW	13.02 kW
SCOP	4.62	3.41
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	13.45 kW	11.52 kW
COP Tj = -7°C	2.72	1.99
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	8.57 kW	7.18 kW
COP Tj = +2°C	4.41	3.34
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	5.70 kW	4.68 kW
COP Tj = +7°C	6.56	4.61
Cdh Tj = +7 °C	0.90	0.90
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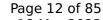




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Pdh Tj = 12°C	3.78 kW	3.32 kW
COP Tj = 12°C	8.51	6.07
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	13.45 kW	11.52 kW
COP Tj = Tbiv	2.72	1.99
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.52 kW	10.33 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.48	1.80
WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
PCK	o w	o w
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.68 kW	2.67 kW
Annual energy consumption Qhe	6804 kWh	7895 kWh

Warmer Climate

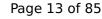
EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	43 dB(A)
Sound power level outdoor	68 dB(A)	68 dB(A)





EN 14825

	Low temperature	Medium temperature
η_{s}	249 %	176 %
Prated	13.09 kW	13.78 kW
SCOP	6.33	4.48
Tbiv	7 °C	7 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	13.09 kW	13.38 kW
COP Tj = +2°C	3.35	2.29
Cdh Tj = +2 °C	0.900	0.900
Pdh Tj = +7°C	8.42 kW	8.86 kW
$COPTj = +7^{\circ}C$	5.36	3.84
Cdh Tj = +7 °C	0.900	0.900
Pdh Tj = 12°C	3.88 kW	4.06 kW
COP Tj = 12°C	8.11	5.86
Cdh Tj = +12 °C	0.900	0.900
Pdh Tj = Tbiv	8.42 kW	8.86 kW
COP Tj = Tbiv	5.36	3.84
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.09 kW	13.38 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.35	2.29
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh		



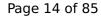


WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
PCK	o w	o w
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.40 kW
Annual energy consumption Qhe	2781 kWh	4112 kWh

Colder Climate

EN 12102-1			
	Low temperature	Medium temperature	
Sound power level indoor	43 dB(A)	43 dB(A)	
Sound power level outdoor	68 dB(A)	68 dB(A)	

EN 14825		
	Low temperature	Medium temperature
η_{S}	158 %	122 %
Prated	13.76 kW	11.79 kW
SCOP	4.02	3.12
Tbiv	-15 °C	-15 °C





TOL	-22 °C	-22 °C
Pdh Tj = -7°C	8.31 kW	7.64 kW
COP Tj = -7°C	3.37	2.65
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	5.27 kW	4.43 kW
COP Tj = +2°C	4.86	3.79
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	3.62 kW	2.98 kW
$COP Tj = +7^{\circ}C$	6.49	4.81
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.35 kW	3.43 kW
COP Tj = 12°C	7.40	6.29
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	11.22 kW	9.62 kW
COP Tj = Tbiv	2.43	1.86
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.89 kW	5.22 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.97	1.23
WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W



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PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	4.87 kW	6.57 kW
Annual energy consumption Qhe	8431 kWh	9309 kWh
Pdh Tj = -15°C (if TOL<-20°C)	11.22	9.62
COP Tj = -15°C (if TOL $<$ -20°C)	2.43	1.86
Cdh Tj = -15 °C	0.90	0.90



Model: MAM-12-V10M

Configure model		
Model name	MAM-12-V10M	
Application	Heating (medium temp)	
Units	Outdoor	
Climate Zone	Colder Climate + Warmer Climate	
Reversibility	Yes	
Cooling mode application (optional)	n/a	

General Data		
Power supply	1x230V 50Hz	

Heating

EN 14511-4		
Shutting off the heat transfer medium flow	passed	
Complete power supply failure	passed	
Defrost test	passed	
Starting and operating test	passed	

EN 14511-2			
Low temperature Medium temperature			
Heat output	12.10 kW	11.90 kW	
El input	2.44 kW	3.90 kW	
СОР	4.95	3.05	

Average Climate



EN 12102-1		
	Low temperature	Medium temperature
Sound power level outdoor	65 dB(A)	65 dB(A)

EN 14825		
	Low temperature	Medium temperature
η_{s}	189 %	135 %
Prated	12.00 kW	11.58 kW
SCOP	4.81	3.45
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.61 kW	10.25 kW
COP Tj = -7°C	2.88	2.01
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	6.69 kW	6.52 kW
COP Tj = +2°C	4.65	3.44
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	4.44 kW	4.36 kW
COP Tj = +7°C	6.62	4.59
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.74 kW	3.30 kW



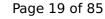


Cdh Tj = +12 °C 0.90 0.90 Pdh Tj = Tbiv 10.61 kW 10.25 kW COP Tj = Tbiv 2.88 2.01 Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh 10.75 kW 9.10 kW COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh 2.77 1.79 WTOL 65 °C 65 °C Poff 14 W 14 W PTO 24 W 24 W PSB 14 W 14 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 2.50 kW			
Pdh Tj = Tbiv 10.61 kW 10.25 kW COP Tj = Tbiv 2.88 2.01 Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	COP Tj = 12°C	8.47	6.05
COP Tj = Tbiv 2.88 2.01 Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	Pdh Tj = Tbiv	10.61 kW	10.25 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	COP Tj = Tbiv	2.88	2.01
WTOL 65 °C 65 °C Poff 14 W 14 W PTO 24 W 24 W PSB 14 W 14 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 2.50 kW	Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.75 kW	9.10 kW
Poff 14 W 14 W PTO 24 W 24 W PSB 14 W 14 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 2.50 kW	COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.77	1.79
PTO 24 W 24 W PSB 14 W 14 W O W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 2.50 kW	WTOL	65 °C	65 °C
PSB 14 W 14 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 2.50 kW	Poff	14 W	14 W
PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 2.50 kW	РТО	24 W	24 W
Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 2.50 kW	PSB	14 W	14 W
Supplementary Heater: PSUP 1.26 kW 2.50 kW	PCK	o w	o w
	Supplementary Heater: Type of energy input	Electricity	Electricity
Annual energy consumption Qhe 5152 kWh 6927 kWh	Supplementary Heater: PSUP	1.26 kW	2.50 kW
	Annual energy consumption Qhe	5152 kWh	6927 kWh

Warmer Climate

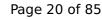
EN 12102-1			
	Low temperature	Medium temperature	
Sound power level outdoor	65 dB(A)	65 dB(A)	

EN 14825		
	Low temperature	Medium temperature





This information was general	•	
η_{s}	256 %	174 %
Prated	11.11 kW	12.51 kW
SCOP	6.53	4.43
Tbiv	7 °C	7 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	11.11 kW	12.08 kW
COP Tj = +2°C	3.59	2.31
Cdh Tj = +2 °C	0.900	0.900
Pdh Tj = $+7^{\circ}$ C	7.14 kW	8.04 kW
$COPTj = +7^{\circ}C$	5.87	3.86
Cdh Tj = +7 °C	0.900	0.900
Pdh Tj = 12°C	3.56 kW	3.75 kW
COP Tj = 12°C	7.94	5.70
Cdh Tj = +12 °C	0.900	0.900
Pdh Tj = Tbiv	7.14 kW	8.04 kW
COP Tj = Tbiv	5.87	3.86
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.11 kW	12.08 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.59	2.31
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh		
WTOL	65 °C	65 °C





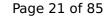
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	14 W	14 W	

Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.44 kW
Annual energy consumption Qhe	2292 kWh	3776 kWh

Colder Climate

EN 12102-1			
	Low temperature	Medium temperature	
Sound power level outdoor	65 dB(A)	65 dB(A)	

EN 14825		
	Low temperature	Medium temperature
η_{s}	160 %	118 %
Prated	11.38 kW	10.32 kW
SCOP	4.08	3.02
Tbiv	-15 °C	-15 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	7.05 kW	6.63 kW





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COP Tj = -7°C	3.48	2.63
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	4.68 kW	4.07 kW
COP Tj = +2°C	4.96	3.60
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	3.14 kW	2.78 kW
$COP Tj = +7^{\circ}C$	6.10	4.54
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.57 kW	3.33 kW
COP Tj = 12°C	7.87	6.25
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	9.28 kW	8.42 kW
COP Tj = Tbiv	2.59	1.84
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.01 kW	4.20 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.98	1.13
WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity



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Supplementary Heater: PSUP	4.37 kW	6.12 kW
Annual energy consumption Qhe	6870 kWh	8419 kWh
Pdh Tj = -15°C (if TOL<-20°C)	9.28	8.42
COP Tj = -15°C (if TOL $<$ -20°C)	2.59	1.84
Cdh Tj = -15 °C	0.90	0.90

Model: MAM-14-V10M

Configure model		
Model name	MAM-14-V10M	
Application	Heating (medium temp)	
Units	Outdoor	
Climate Zone	Colder Climate + Warmer Climate	
Reversibility	Yes	
Cooling mode application (optional)	n/a	

General Data		
Power supply	1x230V 50Hz	

Heating

EN 14511-4		
Shutting off the heat transfer medium flow	passed	
Complete power supply failure	passed	
Defrost test	passed	
Starting and operating test	passed	

EN 14511-2			
	Low temperature	Medium temperature	
Heat output	14.50 kW	13.80 kW	
El input	3.15 kW	4.68 kW	
СОР	4.60	2.95	

Average Climate



EN 12102-1			
Low temperature Medium temperature			
Sound power level outdoor	65 dB(A)	65 dB(A)	

EN 14825			
	Low temperature	Medium temperature	
η_{s}	186 %	136 %	
Prated	13.73 kW	12.08 kW	
SCOP	4.72	3.47	
Tbiv	-7 °C	-7 °C	
TOL	-10 °C	-10 °C	
Pdh Tj = -7 °C	12.14 kW	10.69 kW	
COP Tj = -7°C	2.79	2.01	
Cdh Tj = -7 °C	0.90	0.90	
Pdh Tj = $+2$ °C	7.95 kW	6.86 kW	
COP Tj = +2°C	4.52	3.43	
Cdh Tj = +2 °C	0.90	0.90	
Pdh Tj = $+7^{\circ}$ C	5.20 kW	4.64 kW	
$COP Tj = +7^{\circ}C$	6.68	4.66	
Cdh Tj = +7 °C	0.90	0.90	
Pdh Tj = 12°C	3.76 kW	3.32 kW	



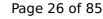


	1	
COP Tj = 12°C	8.52	6.13
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	12.14 kW	10.69 kW
COP Tj = Tbiv	2.79	2.01
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.48 kW	9.19 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.59	1.76
WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
PCK	o w	o w
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.23 kW	2.91 kW
Annual energy consumption Qhe	6012 kWh	7202 kWh

Warmer Climate

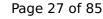
EN 12102-1			
	Low temperature	Medium temperature	
Sound power level outdoor	65 dB(A)	65 dB(A)	

EN 1482	25	
	Low temperature	Medium temperature





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η_{s}	260 %	177 %
Prated	12.11 kW	13.74 kW
SCOP	6.63	4.49
Tbiv	7 °C	7 °C
TOL	2 °C	2 °C
Pdh Tj = $+2$ °C	12.04 kW	13.05 kW
$COP Tj = +2^{\circ}C$	3.44	2.20
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = $+7^{\circ}$ C	7.78 kW	8.83 kW
$COPTj = +7^{\circ}C$	5.84	3.91
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.75 kW	4.09 kW
COP Tj = 12°C	8.25	5.90
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	7.78 kW	8.83 kW
COP Tj = Tbiv	5.84	3.91
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL $<$ Tdesignh	12.04 kW	13.05 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.44	2.20
WTOL	65 °C	65 °C
Poff	14 W	14 W



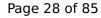


РТО	24 W	24 W
PSB	14 W	14 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.07 kW	0.69 kW
Annual energy consumption Qhe	2457 kWh	4088 kWh

Colder Climate

EN 12102-1			
	Low temperature	Medium temperature	
Sound power level outdoor	65 dB(A)	65 dB(A)	

EN 14825			
	Low temperature	Medium temperature	
η_{s}	160 %	119 %	
Prated	12.64 kW	10.97 kW	
SCOP	4.07	3.05	
Tbiv	-15 °C	-15 °C	
TOL	-22 °C	-22 °C	
Pdh Tj = -7°C	7.97 kW	6.89 kW	
COP Tj = -7°C	3.44	2.66	





This information was genera	iced by the in item in	iii aatabase oii 10 i iai 202
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	5.05 kW	4.32 kW
COP Tj = +2°C	4.92	3.66
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	3.16 kW	3.06 kW
$COPTj = +7^{\circ}C$	6.11	4.72
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.58 kW	3.33 kW
COP Tj = 12°C	7.82	6.25
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	10.31 kW	8.95 kW
COP Tj = Tbiv	2.53	1.79
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.57 kW	4.20 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.92	1.13
WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	5.07 kW	6.77 kW



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Annual energy consumption Qhe	7667 kWh	8866 kWh
Pdh Tj = -15°C (if TOL<-20°C)	10.31	8.95
COP Tj = -15°C (if TOL $<$ -20°C)	2.53	1.79
Cdh Tj = -15 °C	0.90	0.90



Model: MAM-16-V10M

Configure model		
Model name	MAM-16-V10M	
Application	Heating (medium temp)	
Units	Outdoor	
Climate Zone	Colder Climate + Warmer Climate	
Reversibility	Yes	
Cooling mode application (optional)	n/a	

General Data		
Power supply	1x230V 50Hz	

Heating

EN 14511-4		
Shutting off the heat transfer medium flow	passed	
Complete power supply failure	passed	
Defrost test	passed	
Starting and operating test	passed	

EN 14511-2			
Low temperature Medium temperature			
Heat output	15.90 kW	16.00 kW	
El input	3.53 kW	5.61 kW	
СОР	4.50	2.85	

Average Climate



EN 12102-1			
Low temperature Medium temperature			
Sound power level outdoor	68 dB(A)	68 dB(A)	

EN 14825		
	Low temperature	Medium temperature
η_{s}	182 %	133 %
Prated	15.21 kW	13.02 kW
SCOP	4.62	3.41
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	13.45 kW	11.52 kW
COP Tj = -7°C	2.72	1.99
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	8.57 kW	7.18 kW
COP Tj = +2°C	4.41	3.34
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	5.70 kW	4.68 kW
COP Tj = +7°C	6.56	4.61
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.78 kW	3.32 kW



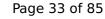


Cdh Tj = +12 °C 0.90 0.90 Pdh Tj = Tbiv 13.45 kW 11.52 kW COP Tj = Tbiv 2.72 1.99 Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh 12.52 kW 10.33 kW COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh 2.48 1.80 WTOL 65 °C 65 °C Poff 14 W 14 W PTO 24 W 24 W PSB 14 W 14 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.68 kW 2.67 kW			
Pdh Tj = Tbiv 13.45 kW 11.52 kW COP Tj = Tbiv 2.72 1.99 Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	COP Tj = 12°C	8.51	6.07
COP Tj = Tbiv 2.72 1.99 Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	Pdh Tj = Tbiv	13.45 kW	11.52 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	COP Tj = Tbiv	2.72	1.99
WTOL 65 °C 65 °C Poff 14 W 14 W PTO 24 W 24 W PSB 14 W 14 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.68 kW 2.67 kW	Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.52 kW	10.33 kW
Poff 14 W 14 W PTO 24 W 24 W PSB 14 W 14 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.68 kW 2.67 kW	COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.48	1.80
PTO 24 W 24 W PSB 14 W 14 W O W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.68 kW 2.67 kW	WTOL	65 °C	65 °C
PSB 14 W 14 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.68 kW 2.67 kW	Poff	14 W	14 W
PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.68 kW 2.67 kW	РТО	24 W	24 W
Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.68 kW 2.67 kW	PSB	14 W	14 W
Supplementary Heater: PSUP 2.68 kW 2.67 kW	PCK	o w	o w
	Supplementary Heater: Type of energy input	Electricity	Electricity
Annual energy consumption Qhe 6804 kWh 7895 kWh	Supplementary Heater: PSUP	2.68 kW	2.67 kW
	Annual energy consumption Qhe	6804 kWh	7895 kWh

Warmer Climate

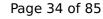
EN 12102-1			
Low temperature Medium temperature			
Sound power level outdoor	68 dB(A)	68 dB(A)	

EN 14825		
	Low temperature	Medium temperature





This information was gener		
η_{s}	249 %	176 %
Prated	13.09 kW	13.78 kW
SCOP	6.33	4.48
Tbiv	7 °C	7 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	13.09 kW	13.38 kW
$COP Tj = +2^{\circ}C$	3.35	2.29
Cdh Tj = +2 °C	0.900	0.900
Pdh Tj = +7°C	8.42 kW	8.86 kW
$COP Tj = +7^{\circ}C$	5.36	3.84
Cdh Tj = +7 °C	0.900	0.900
Pdh Tj = 12°C	3.88 kW	4.06 kW
COP Tj = 12°C	8.11	5.86
Cdh Tj = +12 °C	0.900	0.900
Pdh Tj = Tbiv	8.42 kW	8.86 kW
COP Tj = Tbiv	5.36	3.84
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.09 kW	13.38 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.35	2.29
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh		
WTOL	65 °C	65 °C





Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.40 kW
Annual energy consumption Qhe	2781 kWh	4112 kWh

Colder Climate

EN 12102-1			
Low temperature Medium temperature			
Sound power level outdoor	68 dB(A)	68 dB(A)	

EN 14825			
	Low temperature	Medium temperature	
η_{s}	158 %	122 %	
Prated	13.76 kW	11.79 kW	
SCOP	4.02	3.12	
Tbiv	-15 °C	-15 °C	
TOL	-22 °C	-22 °C	
Pdh Tj = -7°C	8.31 kW	7.64 kW	





This information was gener		
COP Tj = -7° C	3.37	2.65
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	5.27 kW	4.43 kW
COP Tj = +2°C	4.86	3.79
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	3.62 kW	2.98 kW
$COP Tj = +7^{\circ}C$	6.49	4.81
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.35 kW	3.43 kW
COP Tj = 12°C	7.40	6.29
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	11.22 kW	9.62 kW
COP Tj = Tbiv	2.43	1.86
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.89 kW	5.22 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.97	1.23
WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
РСК	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity



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Supplementary Heater: PSUP	4.87 kW	6.57 kW
Annual energy consumption Qhe	8431 kWh	9309 kWh
Pdh Tj = -15°C (if TOL<-20°C)	11.22	9.62
COP Tj = -15°C (if TOL $<$ -20°C)	2.43	1.86
Cdh Tj = -15 °C	0.90	0.90



Model: MAB-12-V10T + HR-12-14-16-V10M

Configure model		
Model name	MAB-12-V10T + HR-12-14-16-V10M	
Application	Heating (medium temp)	
Units	Indoor + Outdoor	
Climate Zone	Colder Climate + Warmer Climate	
Reversibility	Yes	
Cooling mode application (optional)	n/a	

General Data		
Power supply	3x400V 50Hz	

Heating

EN 14511-4		
Shutting off the heat transfer medium flow	passed	
Complete power supply failure	passed	
Defrost test	passed	
Starting and operating test	passed	

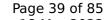
EN 14511-2		
	Low temperature	Medium temperature
Heat output	12.10 kW	12.00 kW
El input	2.44 kW	3.87 kW
СОР	4.95	3.10

Average Climate



EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	43 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825		
	Low temperature	Medium temperature
η_{s}	189 %	135 %
Prated	12.00 kW	11.58 kW
SCOP	4.81	3.45
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.61 kW	10.25 kW
COP Tj = -7°C	2.88	2.01
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	6.69 kW	6.52 kW
COP Tj = +2°C	4.65	3.44
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	4.44 kW	4.36 kW
COP Tj = +7°C	6.62	4.59
Cdh Tj = +7 °C	0.90	0.90

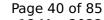




Pdh Tj = 12°C	3.74 kW	3.30 kW
COP Tj = 12°C	8.47	6.05
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	10.61 kW	10.25 kW
COP Tj = Tbiv	2.88	2.01
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.75 kW	9.10 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.77	1.79
WTOL	65 °C	65 °C
Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
PCK	o w	o w
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.26 kW	2.50 kW
Annual energy consumption Qhe	5153 kWh	6928 kWh

Warmer Climate

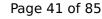
EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	43 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)





EN 14825

	Low temperature	Medium temperature
η_{s}	256 %	174 %
Prated	11.11 kW	12.51 kW
SCOP	6.53	4.42
Tbiv	7 °C	7 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	11.11 kW	12.08 kW
COP Tj = +2°C	3.59	2.31
Cdh Tj = +2 °C	0.900	0.900
Pdh Tj = +7°C	7.14 kW	8.04 kW
$COPTj = +7^{\circ}C$	5.87	3.86
Cdh Tj = +7 °C	0.900	0.900
Pdh Tj = 12°C	3.56 kW	3.75 kW
COP Tj = 12°C	7.94	5.70
Cdh Tj = +12 °C	0.900	0.900
Pdh Tj = Tbiv	7.14 kW	8.04 kW
COP Tj = Tbiv	5.87	3.86
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.11 kW	12.08 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.59	2.31
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh		





WTOL	65 °C	65 °C
Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.44 kW
Annual energy consumption Qhe	2296 kWh	3780 kWh

Colder Climate

EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	43 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825		
	Low temperature	Medium temperature
η_{S}	160 %	118 %
Prated	11.38 kW	10.32 kW
SCOP	4.08	3.02
Tbiv	-15 °C	-15 °C





TOL	-22 °C	-22 °C
Pdh Tj = -7°C	7.05 kW	6.63 kW
COP Tj = -7°C	3.48	2.63
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	4.68 kW	4.07 kW
COP Tj = +2°C	4.96	3.60
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	3.14 kW	2.78 kW
COP Tj = +7°C	6.10	4.54
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.57 kW	3.33 kW
COP Tj = 12°C	7.87	6.25
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	9.28 kW	8.42 kW
COP Tj = Tbiv	2.59	1.84
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.01 kW	4.20 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.98	1.13
WTOL	65 °C	65 °C
Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
	+	!



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PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	4.37 kW	6.12 kW
Annual energy consumption Qhe	6871 kWh	8420 kWh
Pdh Tj = -15°C (if TOL<-20°C)	9.28	8.42
COP Tj = -15°C (if TOL $<$ -20°C)	2.59	1.84
Cdh Tj = -15 °C	0.90	0.90



Model: MAB-14-V10T + HR-12-14-16-V10M

Configure model		
Model name	MAB-14-V10T + HR-12-14-16-V10M	
Application	Heating (medium temp)	
Units	Indoor + Outdoor	
Climate Zone	Colder Climate + Warmer Climate	
Reversibility	Yes	
Cooling mode application (optional)	n/a	

General Data		
Power supply	3x400V 50Hz	

Heating

EN 14511-4		
Shutting off the heat transfer medium flow	passed	
Complete power supply failure	passed	
Defrost test	passed	
Starting and operating test	passed	

EN 14511-2		
	Low temperature	Medium temperature
Heat output	14.50 kW	13.80 kW
El input	3.09 kW	4.60 kW
СОР	4.70	3.00

Average Climate



EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	43 dB(A)
Sound power level outdoor	65 dB(A)	65 dB(A)

EN 14825		
	Low temperature	Medium temperature
η_{s}	186 %	136 %
Prated	13.73 kW	12.08 kW
SCOP	4.72	3.47
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.14 kW	10.69 kW
COP Tj = -7°C	2.79	2.01
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	7.95 kW	6.86 kW
COP Tj = +2°C	4.52	3.43
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	5.20 kW	4.64 kW
COP Tj = +7°C	6.68	4.66
Cdh Tj = +7 °C	0.90	0.90





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Pdh Tj = 12°C	3.76 kW	3.32 kW
COP Tj = 12°C	8.52	6.13
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	12.14 kW	10.69 kW
COP Tj = Tbiv	2.79	2.01
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.48 kW	9.19 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.59	1.76
WTOL	65 °C	65 °C
Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.23 kW	2.91 kW
Annual energy consumption Qhe	6013 kWh	7203 kWh

Warmer Climate

EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	43 dB(A)
Sound power level outdoor	65 dB(A)	65 dB(A)





EN 14825

	Low temperature	Medium temperature
η_{s}	260 %	176 %
Prated	12.11 kW	13.74 kW
SCOP	6.63	4.48
Tbiv	7 °C	7 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	12.04 kW	13.05 kW
COP Tj = +2°C	3.44	2.20
Cdh Tj = +2 °C	0.900	0.900
Pdh Tj = +7°C	7.78 kW	8.83 kW
$COP Tj = +7^{\circ}C$	5.84	3.91
Cdh Tj = +7 °C	0.900	0.900
Pdh Tj = 12°C	3.75 kW	4.09 kW
COP Tj = 12°C	8.25	5.90
Cdh Tj = +12 °C	0.900	0.900
Pdh Tj = Tbiv	7.78 kW	8.83 kW
COP Tj = Tbiv	5.84	3.91
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.04 kW	13.05 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.44	2.20
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh		





WTOL	65 °C	65 °C
Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.07 kW	0.69 kW
Annual energy consumption Qhe	2462 kWh	4092 kWh

Colder Climate

EN 12102-1			
	Low temperature	Medium temperature	
Sound power level indoor	43 dB(A)	43 dB(A)	
Sound power level outdoor	65 dB(A)	65 dB(A)	

EN 14825		
	Low temperature	Medium temperature
η_{s}	160 %	119 %
Prated	12.64 kW	10.97 kW
SCOP	4.06	3.05
Tbiv	-15 °C	-15 °C
	·	·





	<u> </u>	
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	7.97 kW	6.89 kW
COP Tj = -7°C	3.44	2.66
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	5.05 kW	4.32 kW
COP Tj = +2°C	4.92	3.66
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = $+7$ °C	3.16 kW	3.06 kW
$COP Tj = +7^{\circ}C$	6.11	4.72
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.58 kW	3.33 kW
COP Tj = 12°C	7.82	6.25
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	10.31 kW	8.95 kW
COP Tj = Tbiv	2.53	1.79
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.57 kW	4.20 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.92	1.13
WTOL	65 °C	65 °C
Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
	+	•



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PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	5.07 kW	6.77 kW
Annual energy consumption Qhe	7667 kWh	8867 kWh
Pdh Tj = -15°C (if TOL<-20°C)	10.31	8.95
COP Tj = -15°C (if TOL $<$ -20°C)	2.53	1.79
Cdh Tj = -15 °C	0.90	0.90



Model: MAB-16-V10T + HR-12-14-16-V10M

Configure model		
Model name	MAB-16-V10T + HR-12-14-16-V10M	
Application	Heating (medium temp)	
Units	Indoor + Outdoor	
Climate Zone	Colder Climate + Warmer Climate	
Reversibility	Yes	
Cooling mode application (optional)	n/a	

General Data		
Power supply 3x400V 50Hz		

Heating

EN 14511-4		
Shutting off the heat transfer medium flow	passed	
Complete power supply failure	passed	
Defrost test	passed	
Starting and operating test	passed	

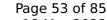
EN 14511-2		
Low temperature Medium temperature		
Heat output	16.00 kW	16.00 kW
El input	3.56 kW	5.52 kW
СОР	4.50	2.90

Average Climate



EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	43 dB(A)
Sound power level outdoor	68 dB(A)	68 dB(A)

EN 14825		
	Low temperature	Medium temperature
η_{s}	182 %	133 %
Prated	15.21 kW	13.02 kW
SCOP	4.62	3.41
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	13.45 kW	11.52 kW
COP Tj = -7°C	2.72	1.99
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = $+2$ °C	8.57 kW	7.18 kW
COP Tj = +2°C	4.41	3.34
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	5.70 kW	4.68 kW
COP Tj = +7°C	6.56	4.61
Cdh Tj = +7 °C	0.90	0.90

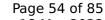




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Pdh Tj = 12°C	3.78 kW	3.32 kW
COP Tj = 12°C	8.51	6.07
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	13.45 kW	11.52 kW
COP Tj = Tbiv	2.72	1.99
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.52 kW	10.33 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.48	1.80
WTOL	65 °C	65 °C
Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
PCK	o w	o w
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.68 kW	2.67 kW
Annual energy consumption Qhe	6805 kWh	7896 kWh

Warmer Climate

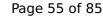
EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	43 dB(A)
Sound power level outdoor	68 dB(A)	68 dB(A)





EN 14825

	Low temperature	Medium temperature
η_{s}	248 %	176 %
Prated	13.09 kW	13.78 kW
SCOP	6.33	4.47
Tbiv	7 °C	7 °C
TOL	2 °C	2 °C
Pdh Tj = $+2$ °C	13.09 kW	13.38 kW
COP Tj = +2°C	3.35	2.29
Cdh Tj = +2 °C	0.900	0.900
Pdh Tj = $+7^{\circ}$ C	8.42 kW	8.86 kW
$COPTj = +7^{\circ}C$	5.36	3.84
Cdh Tj = +7 °C	0.900	0.900
Pdh Tj = 12°C	3.88 kW	4.06 kW
COP Tj = 12°C	8.11	5.86
Cdh Tj = +12 °C	0.900	0.900
Pdh Tj = Tbiv	8.42 kW	8.86 kW
COP Tj = Tbiv	5.36	3.84
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL $<$ Tdesignh	13.09 kW	13.38 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.35	2.29
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh		



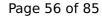


WTOL	65 °C	65 °C
Poff	20 W	20 W
PTO	30 W	30 W
PSB	20 W	20 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.40 kW
Annual energy consumption Qhe	2786 kWh	4116 kWh

Colder Climate

EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	43 dB(A)
Sound power level outdoor	68 dB(A)	68 dB(A)

EN 14825		
	Low temperature	Medium temperature
η_{s}	158 %	122 %
Prated	13.76 kW	11.79 kW
SCOP	4.02	3.12
Tbiv	-15 °C	-15 °C
		·





	-	
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	8.31 kW	7.64 kW
COP Tj = -7°C	3.37	2.65
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	5.27 kW	4.43 kW
$COP Tj = +2^{\circ}C$	4.86	3.79
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	3.62 kW	2.98 kW
$COP Tj = +7^{\circ}C$	6.49	4.81
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.35 kW	3.43 kW
COP Tj = 12°C	7.40	6.29
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	11.22 kW	9.62 kW
COP Tj = Tbiv	2.43	1.86
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.89 kW	5.22 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.97	1.23
WTOL	65 °C	65 °C
Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
	·	·



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PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	4.87 kW	6.57 kW
Annual energy consumption Qhe	8431 kWh	9310 kWh
Pdh Tj = -15°C (if TOL<-20°C)	11.22	9.62
COP Tj = -15°C (if TOL $<$ -20°C)	2.43	1.86
Cdh Tj = -15 °C	0.90	0.90





Model: MAM-12-V10T

Configure model		
Model name	MAM-12-V10T	
Application	Heating (medium temp)	
Units	Outdoor	
Climate Zone	Colder Climate + Warmer Climate	
Reversibility	Yes	
Cooling mode application (optional)	n/a	

General Data		
Power supply	3x400V 50Hz	

Heating

EN 14511-4		
Shutting off the heat transfer medium flow	passed	
Complete power supply failure	passed	
Defrost test	passed	
Starting and operating test	passed	

EN 14511-2		
	Low temperature	Medium temperature
Heat output	12.10 kW	11.90 kW
El input	2.44 kW	3.90 kW
СОР	4.95	3.05

Average Climate



EN 12102-1		
	Low temperature	Medium temperature
Sound power level outdoor	65 dB(A)	65 dB(A)

EN 14825		
	Low temperature	Medium temperature
η_{s}	189 %	135 %
Prated	12.00 kW	11.58 kW
SCOP	4.81	3.45
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.61 kW	10.25 kW
COP Tj = -7°C	2.88	2.01
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	6.69 kW	6.52 kW
COP Tj = +2°C	4.65	3.44
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	4.44 kW	4.36 kW
COP Tj = +7°C	6.62	4.59
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.74 kW	3.30 kW



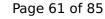


Cdh Tj = +12 °C 0.90 0.90 Pdh Tj = Tbiv 10.61 kW 10.25 kW COP Tj = Tbiv 2.88 2.01 Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh 10.75 kW 9.10 kW COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh 2.77 1.79 WTOL 65 °C 65 °C Poff 20 W 20 W PTO 30 W 30 W PSB 20 W 20 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 2.50 kW			
Pdh Tj = Tbiv 10.61 kW 10.25 kW COP Tj = Tbiv 2.88 2.01 Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	COP Tj = 12°C	8.47	6.05
COP Tj = Tbiv 2.88 2.01 Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	Pdh Tj = Tbiv	10.61 kW	10.25 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	COP Tj = Tbiv	2.88	2.01
WTOL 65 °C 65 °C Poff 20 W 20 W PTO 30 W 20 W PSB 20 W 20 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 20 W	Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.75 kW	9.10 kW
Poff 20 W 20 W PTO 30 W 30 W PSB 20 W 20 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 2.50 kW	COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.77	1.79
PTO 30 W 30 W PSB 20 W 20 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 2.50 kW	WTOL	65 °C	65 °C
PSB 20 W 20 W PCK 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 20 W 20 W	Poff	20 W	20 W
PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 2.50 kW	РТО	30 W	30 W
Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 1.26 kW 2.50 kW	PSB	20 W	20 W
Supplementary Heater: PSUP 1.26 kW 2.50 kW	PCK	0 W	0 W
	Supplementary Heater: Type of energy input	Electricity	Electricity
Annual energy consumption Qhe 5153 kWh 6928 kWh	Supplementary Heater: PSUP	1.26 kW	2.50 kW
	Annual energy consumption Qhe	5153 kWh	6928 kWh

Warmer Climate

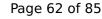
EN 12102-1			
	Low temperature	Medium temperature	
Sound power level outdoor	65 dB(A)	65 dB(A)	

EN 1482	25	
	Low temperature	Medium temperature





n _s	256 %	174 %
Prated	11.11 kW	12.51 kW
SCOP	6.53	4.42
Гbіv	7 °C	7 °C
ΓOL	2 °C	2 °C
Pdh Tj = +2°C	11.11 kW	12.08 kW
COP Tj = +2°C	3.59	2.31
Cdh Tj = +2 °C	0.900	0.900
Pdh Tj = $+7^{\circ}$ C	7.14 kW	8.04 kW
$COP Tj = +7^{\circ}C$	5.87	3.86
Cdh Tj = +7 °C	0.900	0.900
Pdh Tj = 12°C	3.56 kW	3.75 kW
COP Tj = 12°C	7.94	5.70
Cdh Tj = +12 °C	0.900	0.900
Pdh Tj = Tbiv	7.14 kW	8.04 kW
COP Tj = Tbiv	5.87	3.86
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.11 kW	12.08 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.59	2.31
dh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh		
VTOL	65 °C	65 °C



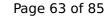


Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.44 kW
Annual energy consumption Qhe	2296 kWh	3780 kWh

Colder Climate

EN 12102-1			
	Low temperature	Medium temperature	
Sound power level outdoor	65 dB(A)	65 dB(A)	

EN 14825		
	Low temperature	Medium temperature
η_{s}	160 %	118 %
Prated	11.38 kW	10.32 kW
SCOP	4.08	3.02
Tbiv	-15 °C	-15 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	7.05 kW	6.63 kW





J j		in database on 10 mai 202
COP Tj = -7°C	3.48	2.63
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	4.68 kW	4.07 kW
COP Tj = +2°C	4.96	3.60
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	3.14 kW	2.78 kW
$COP Tj = +7^{\circ}C$	6.10	4.54
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.57 kW	3.33 kW
COP Tj = 12°C	7.87	6.25
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	9.28 kW	8.42 kW
COP Tj = Tbiv	2.59	1.84
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.01 kW	4.20 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.98	1.13
WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	30 W	30 W
PSB	20 W	20 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity



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Supplementary Heater: PSUP	4.37 kW	6.12 kW
Annual energy consumption Qhe	6871 kWh	8420 kWh
Pdh Tj = -15°C (if TOL<-20°C)	9.28	8.42
COP Tj = -15°C (if TOL $<$ -20°C)	2.59	1.84
Cdh Tj = -15 °C	0.90	0.90



Model: MAM-14-V10T

Configure model		
Model name	MAM-14-V10T	
Application	Heating (medium temp)	
Units	Outdoor	
Climate Zone	Colder Climate + Warmer Climate	
Reversibility	Yes	
Cooling mode application (optional)	n/a	

General Data		
Power supply	3x400V 50Hz	

Heating

EN 14511-4		
Shutting off the heat transfer medium flow	passed	
Complete power supply failure	passed	
Defrost test	passed	
Starting and operating test	passed	

EN 14511-2			
	Low temperature	Medium temperature	
Heat output	14.50 kW	13.80 kW	
El input	3.15 kW	4.68 kW	
СОР	4.60	2.95	

Average Climate



EN 12102-1			
	Low temperature	Medium temperature	
Sound power level outdoor	65 dB(A)	65 dB(A)	

EN 14825			
	Low temperature	Medium temperature	
η_{s}	186 %	136 %	
Prated	13.73 kW	12.08 kW	
SCOP	4.72	3.47	
Tbiv	-7 °C	-7 °C	
TOL	-10 °C	-10 °C	
Pdh Tj = -7°C	12.14 kW	10.69 kW	
COP Tj = -7°C	2.79	2.01	
Cdh Tj = -7 °C	0.90	0.90	
Pdh Tj = +2°C	7.95 kW	6.86 kW	
COP Tj = +2°C	4.52	3.43	
Cdh Tj = +2 °C	0.90	0.90	
Pdh Tj = +7°C	5.20 kW	4.64 kW	
COP Tj = +7°C	6.68	4.66	
Cdh Tj = +7 °C	0.90	0.90	
Pdh Tj = 12°C	3.76 kW	3.32 kW	





Cdh Tj = +12 °C 0.90 0.90 Pdh Tj = Tbiv 12.14 kW 10.69 kW COP Tj = Tbiv 2.79 2.01 Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh 11.48 kW 9.19 kW COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh 2.59 1.76 WTOL 65 °C 65 °C Poff 20 W 20 W PTO 30 W 30 W PSB 20 W 20 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.23 kW 2.91 kW			
Pdh Tj = Tbiv 12.14 kW 10.69 kW COP Tj = Tbiv 2.79 2.01 Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	COP Tj = 12°C	8.52	6.13
COP Tj = Tbiv 2.79 2.01 Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	Pdh Tj = Tbiv	12.14 kW	10.69 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	COP Tj = Tbiv	2.79	2.01
WTOL 65 °C 65 °C Poff 20 W 20 W PTO 30 W 30 W PSB 20 W 20 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.23 kW 2.91 kW	Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.48 kW	9.19 kW
Poff 20 W 20 W PTO 30 W 30 W PSB 20 W 20 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.23 kW 2.91 kW	COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.59	1.76
PTO 30 W 30 W PSB 20 W 20 W PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.23 kW 2.91 kW	WTOL	65 °C	65 °C
PSB 20 W 20 W PCK 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.23 kW 20 W	Poff	20 W	20 W
PCK 0 W 0 W Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.23 kW 2.91 kW	РТО	30 W	30 W
Supplementary Heater: Type of energy input Electricity Electricity Supplementary Heater: PSUP 2.23 kW 2.91 kW	PSB	20 W	20 W
Supplementary Heater: PSUP 2.23 kW 2.91 kW	PCK	o w	o w
	Supplementary Heater: Type of energy input	Electricity	Electricity
Annual energy consumption Qhe 6013 kWh 7203 kWh	Supplementary Heater: PSUP	2.23 kW	2.91 kW
	Annual energy consumption Qhe	6013 kWh	7203 kWh

Warmer Climate

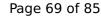
EN 12102-1			
	Low temperature	Medium temperature	
Sound power level outdoor	65 dB(A)	65 dB(A)	

EN 14825		
	Low temperature	Medium temperature





This information was general	,	
η_{s}	260 %	176 %
Prated	12.11 kW	13.74 kW
SCOP	6.63	4.48
Tbiv	7 °C	7 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	12.04 kW	13.05 kW
$COP Tj = +2^{\circ}C$	3.44	2.20
Cdh Tj = +2 °C	0.900	0.900
Pdh Tj = $+7^{\circ}$ C	7.78 kW	8.83 kW
$COPTj = +7^{\circ}C$	5.84	3.91
Cdh Tj = +7 °C	0.900	0.900
Pdh Tj = 12°C	3.75 kW	4.09 kW
COP Tj = 12°C	8.25	5.90
Cdh Tj = +12 °C	0.900	0.900
Pdh Tj = Tbiv	7.78 kW	8.83 kW
COP Tj = Tbiv	5.84	3.91
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.04 kW	13.05 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.44	2.20
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh		
WTOL	65 °C	65 °C



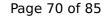


Poff	20 W	20 W
PTO	30 W	30 W
PSB	20 W	20 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.07 kW	0.69 kW
Annual energy consumption Qhe	2462 kWh	4092 kWh

Colder Climate

EN 12102-1			
	Low temperature	Medium temperature	
Sound power level outdoor	65 dB(A)	65 dB(A)	

Low temperature	Medium temperature
160 %	119 %
12.64 kW	10.97 kW
4.06	3.05
-15 °C	-15 °C
-22 °C	-22 °C
7.97 kW	6.89 kW
	160 % 12.64 kW 4.06 -15 °C -22 °C





This information was genera	iced by the in item in	iii database oii 10 i idi 202
COP Tj = -7°C	3.44	2.66
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	5.05 kW	4.32 kW
COP Tj = +2°C	4.92	3.66
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	3.16 kW	3.06 kW
$COP Tj = +7^{\circ}C$	6.11	4.72
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.58 kW	3.33 kW
COP Tj = 12°C	7.82	6.25
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	10.31 kW	8.95 kW
COP Tj = Tbiv	2.53	1.79
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.57 kW	4.20 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.92	1.13
WTOL	65 °C	65 °C
Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity



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Supplementary Heater: PSUP	5.07 kW	6.77 kW
Annual energy consumption Qhe	7667 kWh	8867 kWh
Pdh Tj = -15°C (if TOL<-20°C)	10.31	8.95
COP Tj = -15°C (if TOL $<$ -20°C)	2.53	1.79
Cdh Tj = -15 °C	0.90	0.90



Model: MAM-16-V10T

Configure model			
Model name	MAM-16-V10T		
Application	Heating (medium temp)		
Units	Outdoor		
Climate Zone	Colder Climate + Warmer Climate		
Reversibility	Yes		
Cooling mode application (optional)	n/a		

General Data		
Power supply	3x400V 50Hz	

Heating

EN 14511-4			
Shutting off the heat transfer medium flow	passed		
Complete power supply failure	passed		
Defrost test	passed		
Starting and operating test	passed		

EN 14511-2			
	Low temperature	Medium temperature	
Heat output	15.90 kW	16.00 kW	
El input	3.53 kW	5.61 kW	
СОР	4.50	2.85	

Average Climate



EN 12102-1		
	Low temperature	Medium temperature
Sound power level outdoor	68 dB(A)	68 dB(A)

EN 14825		
	Low temperature	Medium temperature
η_{s}	182 %	133 %
Prated	15.21 kW	13.02 kW
SCOP	4.62	3.41
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	13.45 kW	11.52 kW
COP Tj = -7°C	2.72	1.99
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	8.57 kW	7.18 kW
COP Tj = +2°C	4.41	3.34
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	5.70 kW	4.68 kW
$COP Tj = +7^{\circ}C$	6.56	4.61
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.78 kW	3.32 kW



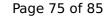


COP Tj = 12°C	8.51	6.07
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	13.45 kW	11.52 kW
COP Tj = Tbiv	2.72	1.99
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.52 kW	10.33 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.48	1.80
WTOL	65 °C	65 °C
Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
PCK	o w	o w
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.68 kW	2.67 kW
Annual energy consumption Qhe	6805 kWh	7896 kWh

Warmer Climate

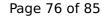
EN 12102-1		
	Low temperature	Medium temperature
Sound power level outdoor	68 dB(A)	68 dB(A)

EN 1482	25	
	Low temperature	Medium temperature





n_s	248 %	176 %
Prated	13.09 kW	13.78 kW
SCOP	6.33	4.47
ГЬіν	7 °C	7 °C
ΓOL	2 °C	2 °C
Pdh Tj = +2°C	13.09 kW	13.38 kW
COP Tj = +2°C	3.35	2.29
Cdh Tj = +2 °C	0.900	0.900
Pdh Tj = +7°C	8.42 kW	8.86 kW
COP Tj = +7°C	5.36	3.84
Cdh Tj = +7 °C	0.900	0.900
Pdh Tj = 12°C	3.88 kW	4.06 kW
COP Tj = 12°C	8.11	5.86
Cdh Tj = +12 °C	0.900	0.900
Pdh Tj = Tbiv	8.42 kW	8.86 kW
COP Tj = Tbiv	5.36	3.84
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.09 kW	13.38 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.35	2.29
dh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh		
VTOL	65 °C	65 °C



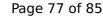


Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.40 kW
Annual energy consumption Qhe	2786 kWh	4116 kWh

Colder Climate

EN 12102-1		
	Low temperature	Medium temperature
Sound power level outdoor	68 dB(A)	68 dB(A)

EN 14825		
	Low temperature	Medium temperature
η_{s}	158 %	122 %
Prated	13.76 kW	11.79 kW
SCOP	4.02	3.12
Tbiv	-15 °C	-15 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	8.31 kW	7.64 kW





This information was genera	acca by the in Reimin	iii database on 10 mai 2022
COP Tj = -7°C	3.37	2.65
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	5.27 kW	4.43 kW
COP Tj = +2°C	4.86	3.79
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = $+7^{\circ}$ C	3.62 kW	2.98 kW
$COPTj = +7^{\circ}C$	6.49	4.81
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.35 kW	3.43 kW
COP Tj = 12°C	7.40	6.29
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	11.22 kW	9.62 kW
COP Tj = Tbiv	2.43	1.86
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.89 kW	5.22 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.97	1.23
WTOL	65 °C	65 °C
Poff	20 W	20 W
РТО	30 W	30 W
PSB	20 W	20 W
РСК	o w	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity



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Supplementary Heater: PSUP	4.87 kW	6.57 kW
Annual energy consumption Qhe	8431 kWh	9310 kWh
Pdh Tj = -15°C (if TOL<-20°C)	11.22	9.62
COP Tj = -15°C (if TOL $<$ -20°C)	2.43	1.86
Cdh Tj = -15 °C	0.90	0.90



Model: MAB-14-V10M + HR-12-14-16-V10M

Configure model	
Model name	MAB-14-V10M + HR-12-14-16-V10M
Application	Heating (medium temp)
Units	Indoor + Outdoor
Climate Zone	Colder Climate + Warmer Climate
Reversibility	Yes
Cooling mode application (optional)	n/a

General Data		
Power supply	1x230V 50Hz	

Heating

EN 14511-4		
Shutting off the heat transfer medium flow	passed	
Complete power supply failure	passed	
Defrost test	passed	
Starting and operating test	passed	

EN 14511-2				
Low temperature Medium temperature				
Heat output	14.50 kW	13.80 kW		
El input	3.09 kW	4.60 kW		
СОР	4.70	3.00		

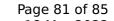
Average Climate





EN 12102-1			
	Low temperature	Medium temperature	
Sound power level indoor	43 dB(A)	43 dB(A)	
Sound power level outdoor	65 dB(A)	65 dB(A)	

EN 14825		
	Low temperature	Medium temperature
η_{s}	186 %	136 %
Prated	13.73 kW	12.08 kW
SCOP	4.72	3.47
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.14 kW	10.69 kW
COP Tj = -7°C	2.79	2.01
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	7.95 kW	6.86 kW
COP Tj = +2°C	4.52	3.43
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	5.20 kW	4.64 kW
COP Tj = +7°C	6.68	4.66
Cdh Tj = +7 °C	0.90	0.90

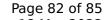




This information was generated by the HP KEYMARK database on 18 Mar 202		
Pdh Tj = 12°C	3.76 kW	3.32 kW
COP Tj = 12°C	8.52	6.13
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	12.14 kW	10.69 kW
COP Tj = Tbiv	2.79	2.01
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.48 kW	9.19 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.59	1.76
WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.23 kW	2.91 kW
Annual energy consumption Qhe	6012 kWh	7202 kWh

Warmer Climate

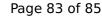
EN 12102-1			
	Low temperature	Medium temperature	
Sound power level indoor	43 dB(A)	43 dB(A)	
Sound power level outdoor	65 dB(A)	65 dB(A)	





EN 14825

	Low temperature	Medium temperature
η_{s}	260 %	177 %
Prated	12.11 kW	13.74 kW
SCOP	6.63	4.49
Tbiv	7 °C	7 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	12.04 kW	13.05 kW
COP Tj = +2°C	3.44	2.20
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	7.78 kW	8.83 kW
$COPTj = +7^{\circ}C$	5.84	3.91
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.75 kW	4.09 kW
COP Tj = 12°C	8.25	5.90
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	7.78 kW	8.83 kW
COP Tj = Tbiv	5.84	3.91
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.04 kW	13.05 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.44	2.20
WTOL	65 °C	65 °C



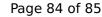


Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.07 kW	0.69 kW
Annual energy consumption Qhe	2457 kWh	4088 kWh

Colder Climate

EN 12102-1			
Low temperature Medium temperature			
Sound power level indoor	43 dB(A)	43 dB(A)	
Sound power level outdoor	65 dB(A)	65 dB(A)	

EN 14825		
Low temperature	Medium temperature	
160 %	119 %	
12.64 kW	10.97 kW	
4.07	3.05	
-15 °C	-15 °C	
-22 °C	-22 °C	
	160 % 12.64 kW 4.07 -15 °C	





This information was genera		iii database on 10 mai 202
Pdh Tj = -7°C	7.97 kW	6.89 kW
COP Tj = -7°C	3.44	2.66
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	5.05 kW	4.32 kW
COP Tj = +2°C	4.92	3.66
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = $+7$ °C	3.16 kW	3.06 kW
$COP Tj = +7^{\circ}C$	6.11	4.72
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.58 kW	3.33 kW
COP Tj = 12°C	7.82	6.25
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	10.31 kW	8.95 kW
COP Tj = Tbiv	2.53	1.79
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.57 kW	4.20 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.92	1.13
WTOL	65 °C	65 °C
Poff	14 W	14 W
РТО	24 W	24 W
PSB	14 W	14 W
РСК	0 W	o w



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Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	5.07 kW	6.77 kW
Annual energy consumption Qhe	7667 kWh	8866 kWh
Pdh Tj = -15°C (if TOL<-20°C)	10.31	8.95
COP Tj = -15°C (if TOL $<$ -20°C)	2.53	1.79
Cdh Tj = -15 °C	0.90	0.90