

**LG HVAC SOLUTION**

# AIR COOLED SCREW CHILLER



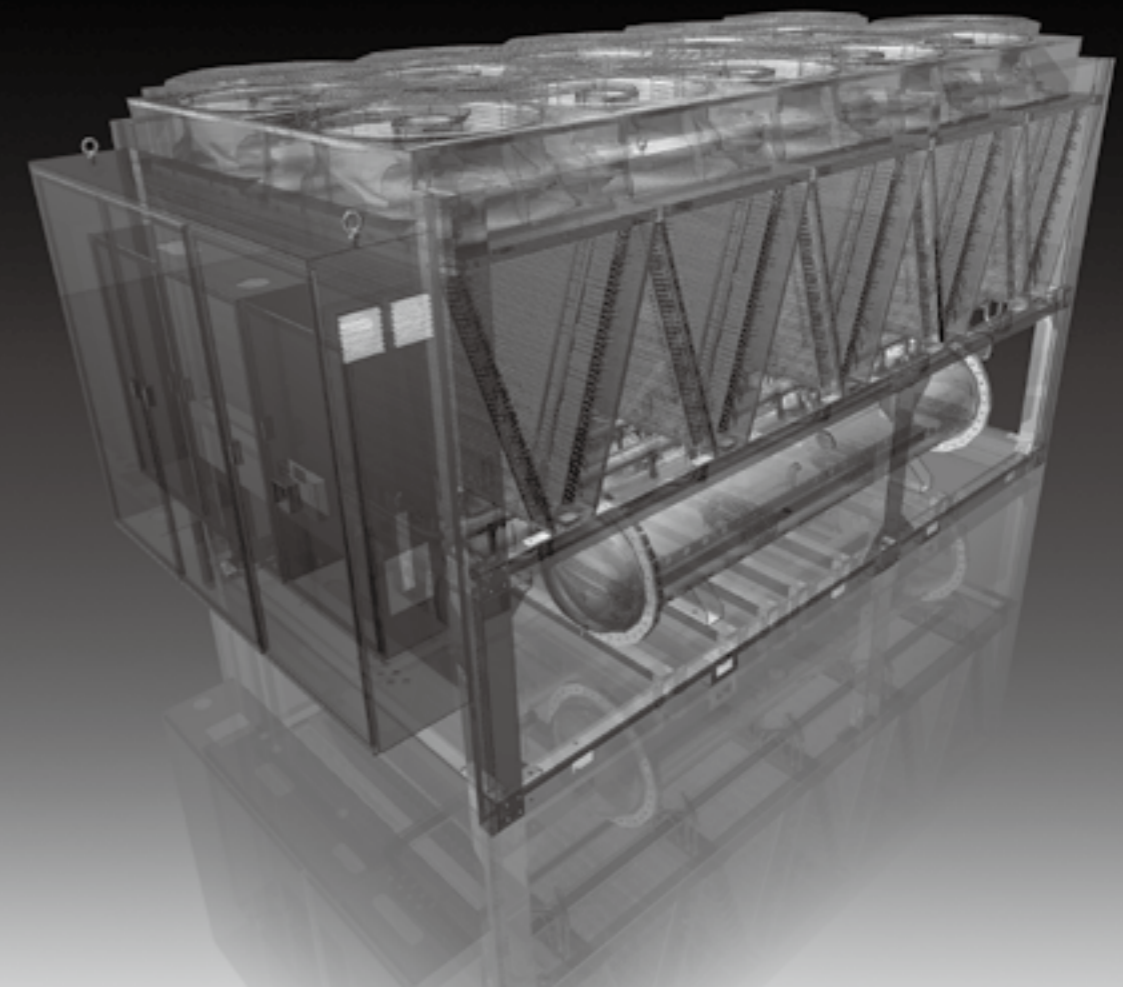
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**LG Electronics, Air Conditioning &  
Energy Solution Company**

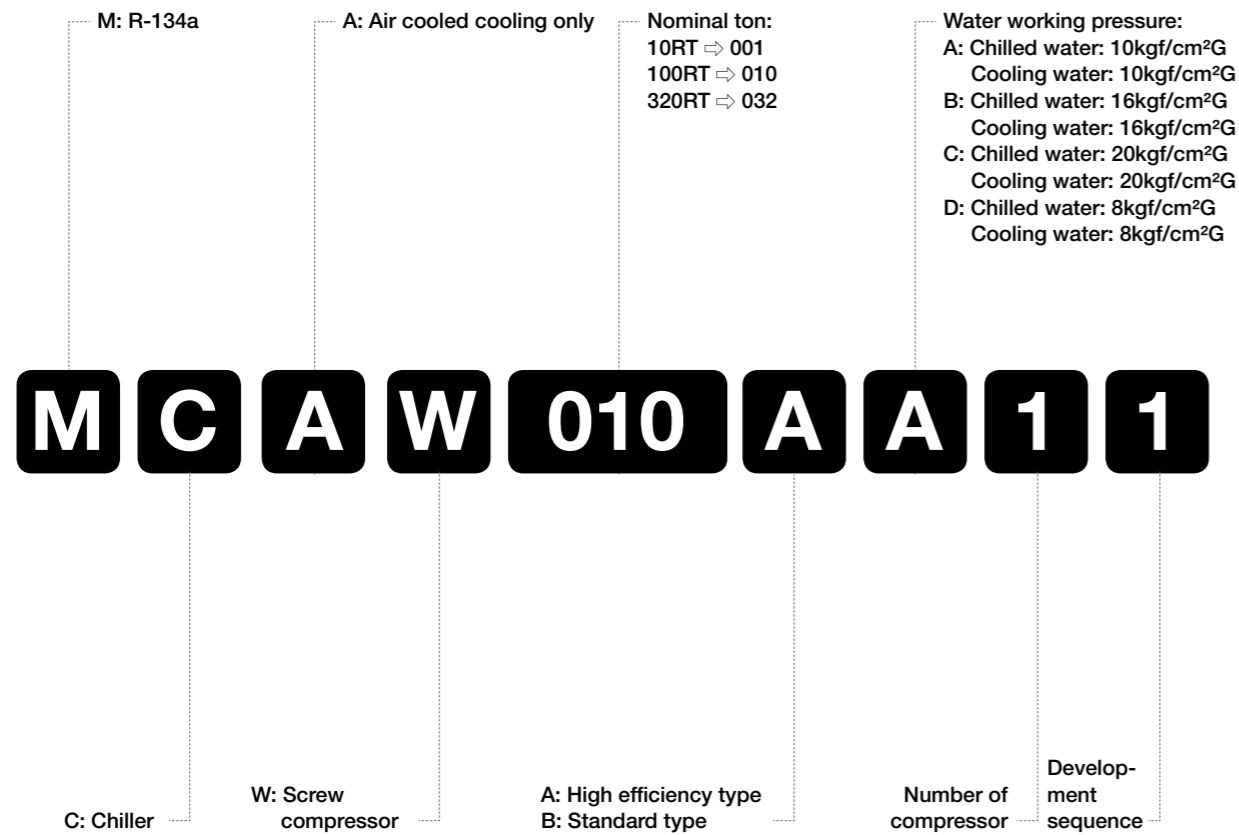
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# Nomenclature



# Line up

Model		100	200	300	400	500
	R-134a	80RT		320RT		
	High efficiency	80RT		500RT		
	Standard	80RT		500RT		

\* Above range is base on the nominal tonnage.

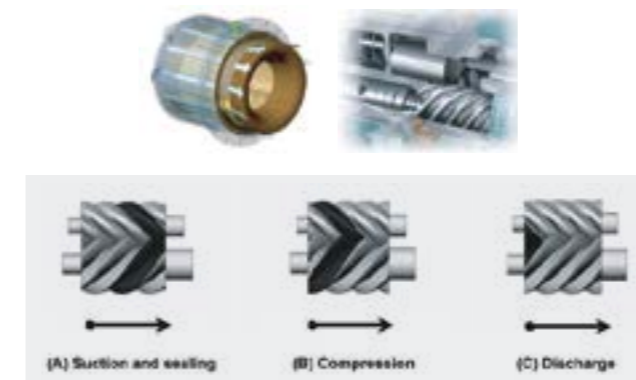
# Features / Benefits

LG's latest Air Cooled Screw Chiller offers excellent operational efficiency thanks to the company's advanced technologies and unrivalled air conditioning expertise. All-new capacity control valves improve performance and overall system stability. The chiller's upgraded heat exchanger and redesigned heat transfer tubes ensure lower energy consumption. Meanwhile, LG's proprietary PID (Proportional, Integral, Differential control), which controls hydraulic-head loss rate, helps to further minimize energy loss.

## Reliability

### High performance screw compressors

Performance, reliability and durability have all been improved via the implementation of LG's advanced screw compressor.



### The world's best technology for increased airflow and quiet operation

LG's Super Aero Fan, a redesigned air outlet with a new, octagonal-shaped grille improves airflow, reduces vibration and lowers compressor noise.



### Fewer vibrations, less noise

The Water Cooled Screw Chiller's direct-drive motor is able to operate effectively at part-load capacity. As a result, noise and vibrations caused by friction have been drastically reduced. With optimal control at 25, 50, 75 and 100 percent of capacity, the compressor's sliding valve capacity-controllers allow the chiller to save energy in part-load conditions.

### Maintaining Optimized Temperature

LG's exceptional solution doesn't require any external cooling. With a simplified internal structure, the well designed chiller utilizes cycling refrigerant to keep the compressor's motor at the perfect operational temperature.

# Features / Benefits

## Reliability

### Stability

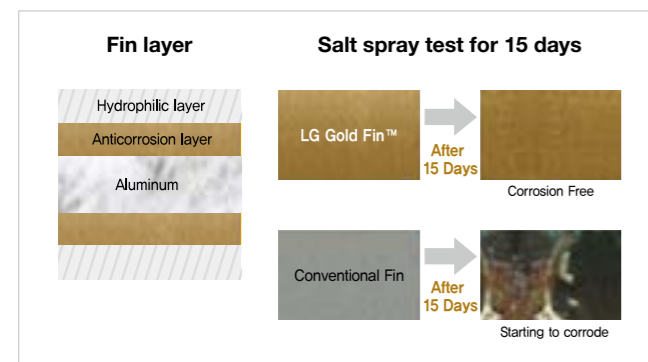
Self-diagnosis functions and a comprehensive monitoring system help to ensure stable operation and greater user convenience. In part-load conditions, the chiller automatically controls the flow rate, resulting in a more efficient performance and less product wear. The chiller's waterproof structures are complimented with advanced system design and expansion technology.

All LG Chillers include protective functions that maximize stability.

Function	Device
<b>Oil supply detection</b>	<ul style="list-style-type: none"> <li>• Oil level switch</li> <li>• Oil filter differential pressure switch</li> </ul>
<b>High pressure cut off</b>	<ul style="list-style-type: none"> <li>• High pressure sensor</li> <li>• High pressure switch</li> <li>• Safety valve</li> </ul>
<b>Low pressure cut off</b>	<ul style="list-style-type: none"> <li>• Low pressure sensor</li> <li>• Low pressure switch</li> <li>• Chilled water temperature sensor</li> </ul>
<b>Compressor overload protection</b>	<ul style="list-style-type: none"> <li>• Motor protector relay</li> <li>• Discharge temperature sensor</li> </ul>
<b>Fan motor overload protection</b>	<ul style="list-style-type: none"> <li>• Fan motor over-current relay</li> </ul>
<b>Low water flow protection</b>	<ul style="list-style-type: none"> <li>• Chilled water flow switch</li> </ul>
<b>Abnormal power supply detection (Reverse phase, phase loss, over/low voltage)</b>	<ul style="list-style-type: none"> <li>• Electrical over current relay</li> </ul>

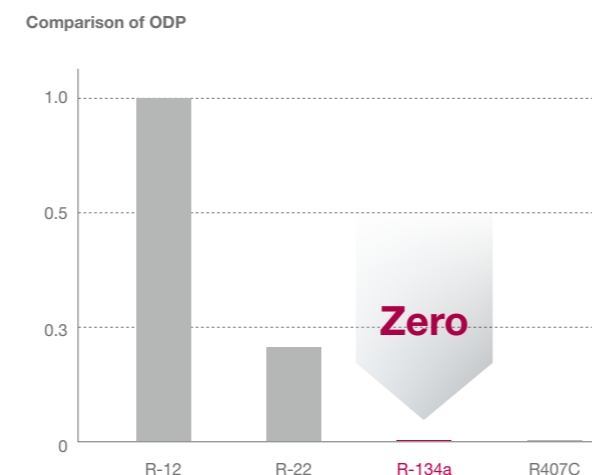
### Improved corrosion resistance with Goldfin™ (option)

LG's patented chloride-induced corrosion-resistant Goldfin™ reduces heat exchanger corrosion. This specially developed coating offers maximum protection, even in the most humid of conditions.



### Eco-friendly R-134a refrigerant

LG produces highly efficient products that help to protect our planet via excellent energy-saving capability and eco-friendly green technologies. LG is setting the example for all other manufacturers to follow; leading the industry with solutions that boast low-carbon emission levels and sustainable design.



## Unit performance testing

LG stands behind the products in designs and builds, taking great pride in its quality control processes. All LG Air Cooled Screw Chillers undergo thorough testing before leaving the factory.

LG's computer-based testing programs check the functionality of every single component, verifying performance, and ensuring smooth operation from the outset. Every LG chiller in the world is provided fully tested and ready to satisfy the customer.

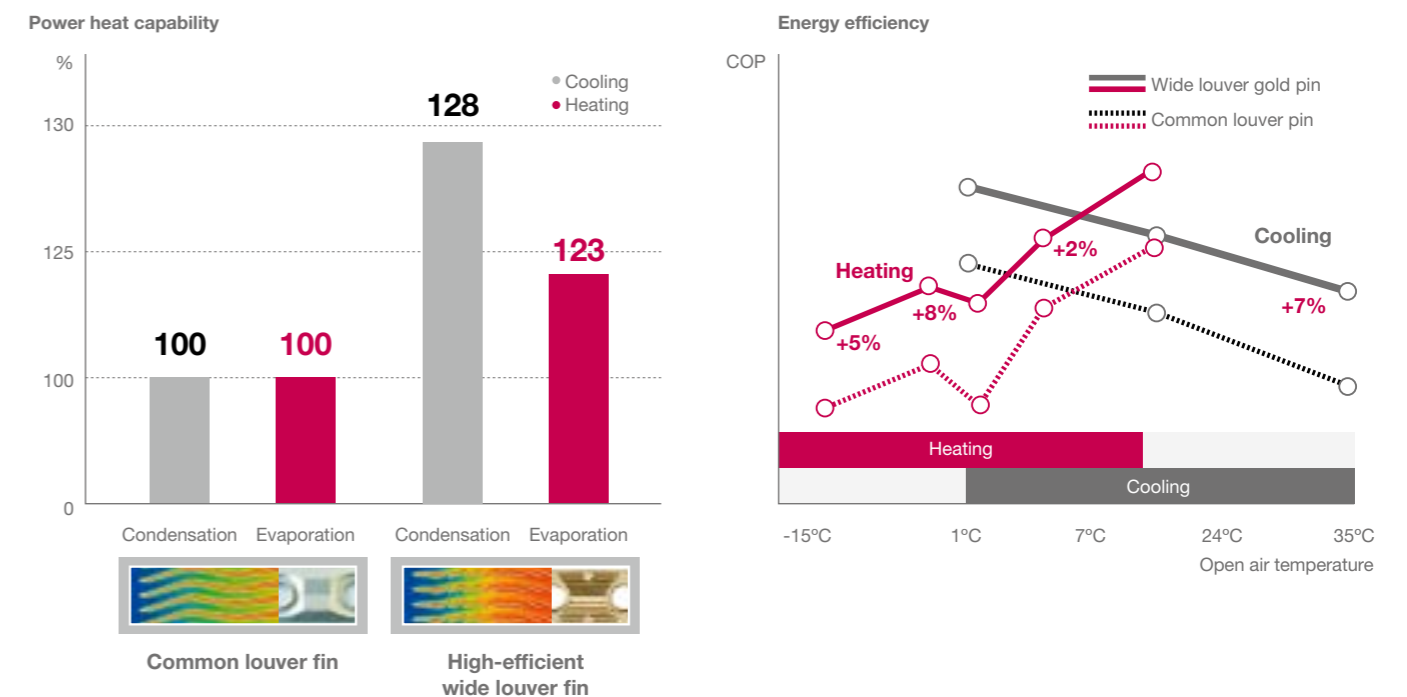
LG's testing facilities are also able to accurately recreate a wide variety of environmental conditions, helping the company to tailor its products to the greatest number of markets.



Performance test facilities

### Highly efficient wide louver and Goldfin™ technology (option)

Heat transfer ratio has been improved by between 23(heating) and 28(cooling) percent and system efficiency has been boosted by 8 percent.



# Features / Benefits

## Convenience

### User-friendly interface

The 7-inch TFT LCD touch screen allows simple operation and maintenance.



Note: All standard models over 300RT come with the high quality 7-inch color LCD screen.

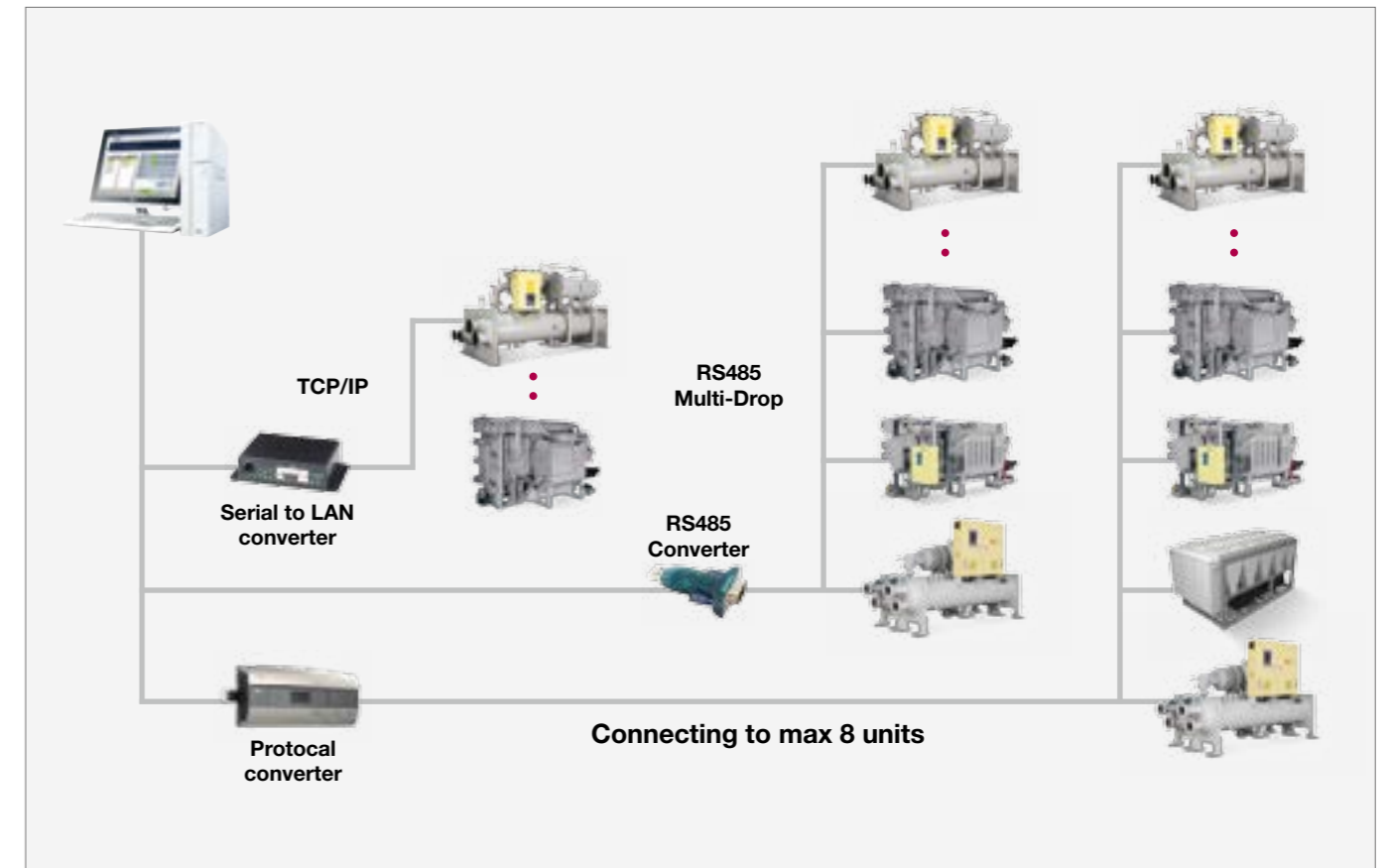
### HMI controller (Human Machine Interface)

A single HMI controller is capable of controlling up to three individual units. If required, the HMI controller can be detached and installed in the management office.



## Various interface solutions

Using industrial standard protocol converters, the chiller can be interfaced with the BMS (Building Management System). The remote monitoring and control of the chillers is possible via BACnet/Ethernet, BACnet/IP, Modbus, Modem or RS485.



The chillers can be managed up to 255 units when using communication of RS485 or TCP/IP.

# Specification

## High efficiency (60Hz) / AHRI condition

Model		Units	MCAW008AA11	MCAW010AA11	MCAW012AA11	MCAW014AA11	MCAW016AA11
General unit data	Unit capacity	RT	74	94	119	141	154
		kW	260	330	418	495	543
	Input power	kW	85.9	107.2	134.2	157.9	175.0
	COP		3.03	3.08	3.11	3.13	3.10
	Number of independent refrigerant circuits		1				
	Refrigerant charge, R-134a	kg	120	140	170	200	230
	Oil charge	l	16	18	20	23	28
Weight	Shipping weight	kg	3,250	3,800	4,150	4,790	5,160
	Operating weight	kg	3,326	3,890	4,251	4,909	5,285
Compressors	Power supply		3PH-380V-60Hz				
	Compressor type		Semihhermetic twin screw				
	Quantity	EA	1				
Condenser	Total chiller coil face area	m <sup>2</sup>	14.8	18.5	22.2	25.9	29.6
	Number of coils	EA	8	10	12	14	16
	Number of rows	-	3				
	Fins per inch	FPI	15				
Fans	Number	EA	8	10	12	14	16
	Fan motor	kW	10.8	13.5	16.2	18.9	21.6
	Fan speed	RPM	1,100				
	Fan diameter	mm	680				
	Fan tip speed	m/s	39.2				
	Total chiller airflow	l/s	28,000	35,000	42,000	49,000	56,000
Evaporator	Water volume	l	76	90	101	119	125
	Maximum water side pressure	MPa	1.0				
	Maximum refrigerant side pressure	Mpa	2.0				
	Minimum chiller water flow rate	l/s	5.6	7.1	9.0	10.5	11.6
	Maximum chiller water flow rate	l/s	22.4	28.4	36.1	42.1	46.4
Water connections	Water connections main pipe (Branch)	DN	100	100	100	125	125
	Drain (NPT)	mm	32				
Dimension	Length	mm	3,454	4,217	4,980	5,743	6,506
	Width	mm	2,156				
	Height	mm	2,270				

Note: 1. RT = 3,024kcal/hr = 3.517kW, 1mH<sub>2</sub>O = 9.8kPa.  
 2. The fouling factor of water in the evaporator is 0.018m<sup>2</sup>C/kW (0.0001h-ft<sup>2</sup>-°F/Btu).  
 3. Operating conditions:  
 The ambient temperature is 35°C (95°F); the chilled-water temperature outlet is 6.7°C (44°F).  
 The temperature difference is 5.5°C (10°F).  
 4. Due to our policy of innovation, some specifications may be changed without prior notification.  
 All the data in this table have been rated in accordance with AHRI Standard 550/590.

## High efficiency (60Hz) / AHRI condition

Model		Units	MCAW020AA21	MCAW024AA21	MCAW028AA21	MCAW032AA21
General unit data	Unit capacity	RT	188	237	281	309
		kW	660	835	990	1,086
	Input power	kW	214.4	268.4	315.8	350.0
	COP		3.08	3.11	3.13	3.10
	Number of independent refrigerant circuits		2			
	Refrigerant charge, R-134a	kg	280	340	400	460
	Oil charge	l	36	40	46	56
Weight	Shipping weight	kg	7,600	8,300	9,580	10,320
	Operating weight	kg	7,779	8,502	9,818	10,570
Compressors	Power supply		3PH-380V-60Hz			
	Compressor type		Semihhermetic Twin Screw			
	Quantity	EA	2			
Condenser	Total chiller coil face area	m <sup>2</sup>	37.0	44.4	51.7	59.1
	Number of coils	EA	20	24	28	32
	Number of rows	-	3			
	Fins per inch	FPI	15			
Fans	Number	EA	20	24	28	32
	Fan motor	kW	27.0	32.4	37.8	43.2
	Fan speed	RPM	1,100			
	Fan diameter	mm	680			
	Fan tip speed	m/s	39.2			
	Total chiller airflow	l/s	70,000	84,000	98,000	112,000
Evaporator	Water volume	l	179	202	238	250
	Maximum water side pressure	MPa	1.0			
	Maximum refrigerant side pressure	Mpa	2.0			
	Minimum chiller water flow rate	l/s	14.2	18.1	21.1	23.2
	Maximum chiller water flow rate	l/s	56.8	72.2	84.3	92.9
Water connections	Water connections main pipe (Branch)	DN	100	100	125	125
	Drain (NPT)	mm	32			
Dimension	Length	mm	8,092	9,618	11,144	12,670
	Width	mm	2,156			
	Height	mm	2,270			

Note: 1. RT = 3,024kcal/hr = 3.517kW, 1mH<sub>2</sub>O = 9.8kPa.  
 2. The fouling factor of water in the evaporator is 0.018m<sup>2</sup>C/kW (0.0001h-ft<sup>2</sup>-°F/Btu).  
 3. Operating conditions:  
 The ambient temperature is 35°C (95°F); the chilled-water temperature outlet is 6.7°C (44°F).  
 The temperature difference is 5.5°C (10°F).  
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 All the data in this table have been rated in accordance with AHRI Standard 550/590.



# Specification

## High efficiency (50Hz) / AHRI condition

Model		Units	MCAW008AA11	MCAW010AA11	MCAW012AA11	MCAW014AA11	MCAW016AA11
General unit data	Unit capacity	RT	77	99	117	137	157
		kW	271	347	411	481	551
	Input power	kW	89.3	111.6	131.8	155.3	174.4
	COP		3.03	3.11	3.12	3.10	3.16
	Number of independent refrigerant circuits		1				
	Refrigerant charge, R-134a	kg	120	140	170	200	230
Oil charge	l	18	20	23	28	28	
Weight	Shipping weight	kg	3,420	3,830	4,400	4,900	5,220
	Operating weight	kg	3,496	3,920	4,501	5,019	5,345
Compressors	Power supply		3PH-380V-50Hz				
	Compressor type		Semihhermetic twin screw				
	Quantity	EA	1				
Condenser	Total chiller coil face area	m <sup>2</sup>	14.8	18.5	22.2	25.9	29.6
	Number of coils	EA	8	10	12	14	16
	Number of rows	-	3				
	Fins per inch	FPI	15				
Fans	Number	EA	8	10	12	14	16
	Fan motor	kW	10.8	13.5	16.2	18.9	21.6
	Fan speed	RPM	1,100				
	Fan diameter	mm	680				
	Fan tip speed	m/s	39.2				
	Total chiller airflow	l/s	28,000	35,000	42,000	49,000	56,000
Evaporator	Water volume	l	76	90	101	119	125
	Maximum water side pressure	MPa	1.0				
	Maximum refrigerant side pressure	Mpa	2.0				
	Minimum chiller water flow rate	l/s	5.8	7.5	8.8	10.3	11.8
	Maximum chiller water flow rate	l/s	23.2	30.1	35.3	41.3	47.3
Water connections	Water connections main pipe (Branch)	DN	100	100	100	125	125
	Drain (NPT)	mm	32				
Dimension	Length	mm	3,454	4,217	4,980	5,743	6,506
	Width	mm	2,156				
	Height	mm	2,270				

Note: 1. RT = 3,024kcal/hr = 3.517kW, 1mH<sub>2</sub>O = 9.8kPa.  
 2. The fouling factor of water in the evaporator is 0.018m<sup>2</sup>C/kW (0.0001h·ft<sup>2</sup>·°F/Btu).  
 3. Operating conditions:  
 The ambient temperature is 35°C (95°F); the chilled-water temperature outlet is 6.7°C (44°F).  
 The temperature difference is 5.5°C (10°F).  
 4. Due to our policy of innovation, some specifications may be changed without prior notification.  
 All the data in this table have been rated in accordance with AHRI Standard 550/590.

## High efficiency (50Hz) / AHRI condition

Model		Units	MCAW020AA21	MCAW024AA21	MCAW028AA21	MCAW032AA21
General unit data	Unit capacity	RT	197	234	273	313
		kW	694	823	961	1,102
	Input power	kW	223.2	263.6	310.6	348.8
	COP		3.11	3.12	3.09	3.16
	Number of independent refrigerant circuits		2			
	Refrigerant charge, R-134a	kg	280	340	400	460
Oil charge	l	40	46	56	56	
Weight	Shipping weight	kg	7,660	8,800	9,800	10,440
	Operating weight	kg	7,839	9,002	10,038	10,690
Compressors	Power supply		3PH-380V-50Hz			
	Compressor type		Semihhermetic twin screw			
	Quantity	EA	2			
Condenser	Total chiller coil face area	m <sup>2</sup>	37.0	44.4	51.7	59.1
	Number of coils	EA	20	24	28	32
	Number of rows	-	3			
	Fins per inch	FPI	15			
Fans	Number	EA	20	24	28	32
	Fan motor	kW	27.0	32.4	37.8	43.2
	Fan speed	RPM	1,100			
	Fan diameter	mm	680			
	Fan tip speed	m/s	39.2			
	Total chiller airflow	l/s	70,000	84,000	98,000	112,000
Evaporator	Water volume	l	179	202	238	250
	Maximum water side pressure	MPa	1.0			
	Maximum refrigerant side pressure	Mpa	2.0			
	Minimum chiller water flow rate	l/s	15.1	17.6	20.6	23.7
	Maximum chiller water flow rate	l/s	60.2	70.5	82.6	94.6
Water connections	Water connections main pipe (Branch)	DN	100	100	125	125
	Drain (NPT)	mm	32			
Dimension	Length	mm	8,092	9,618	11,144	12,670
	Width	mm	2,156			
	Height	mm	2,270			

Note: 1. RT = 3,024kcal/hr = 3.517kW, 1mH<sub>2</sub>O = 9.8kPa.  
 2. The fouling factor of water in the evaporator is 0.018m<sup>2</sup>C/kW (0.0001h·ft<sup>2</sup>·°F/Btu).  
 3. Operating conditions:  
 The ambient temperature is 35°C (95°F); the chilled-water temperature outlet is 6.7°C (44°F).  
 The temperature difference is 5.5°C (10°F).  
 4. Due to our policy of innovation, some specifications may be changed without prior notification.  
 All the data in this table have been rated in accordance with AHRI Standard 550/590.

# Specification

## Standard (60Hz) / AHRI condition

Model		Units	MCAW008BA12	MCAW010BA12	MCAW012BA12	MCAW014BA22	MCAW016BA22	MCAW018BA22	MCAW020BA22	MCAW022BA22
General unit data	Unit capacity	RT	75	91	112	129	154	173	191	216
		kW	263	319	393	455	540	610	670	761
	Input power	kW	92.4	113	134.7	161.9	191.2	212.6	237.7	266.2
	COP		2.8	2.8	2.9	2.8	2.8	2.9	2.8	2.9
	Number of independent refrigerant circuits		1	1	1	2	2	2	2	2
	Refrigerant charge, R-134a	kg	80	100	120	70 / 70	80 / 90	90 / 100	90 / 110	110 / 110
	Oil charge	ℓ	15	20	23	16 / 16	15 / 18	18 / 20	20 / 20	23 / 23
Weight	Shipping weight	kg	2,979	3,377	3,836	4,906	5,526	6,046	6,326	6,826
	Operating weight	kg	3,099	3,527	4,016	5,116	5,766	6,316	6,636	7,166
Compressors	Power supply		3PH-380V-60Hz							
	Compressor type		Semihermetic twin screw							
	Quantity	EA	1	1	1	2	2	2	2	2
Condenser	Total chiller coil face area	m <sup>2</sup>	14.8	18.5	22.2	11.1 / 11.1	11.1 / 14.8	14.8 / 18.5	14.8 / 18.5	18.5 / 18.5
	Number of coils	EA	8	10	12	6 / 6	6 / 8	8 / 10	8 / 10	10 / 10
	Number of rows	-	3	3	3	3 / 3	3 / 3	3 / 3	3 / 3	3 / 3
	Fins per inch	FPI	15	15	15	15 / 15	15 / 15	15 / 15	15 / 15	15 / 15
Fans	Number	EA	8	10	12	6 / 6	6 / 8	8 / 10	8 / 10	10 / 10
	Fan motor	kW	10.8	13.5	16.2	8.1 / 8.1	8.1 / 10.8	10.8 / 13.5	10.8 / 13.5	13.5 / 13.5
	Fan speed	RPM	1,150							
	Fan diameter	mm	680							
	Fan tip speed	m/s	39.2							
Total chiller airflow	ℓ / s	28,000	35,000	42,000	21,000 / 21,000	21,000 / 28,000	28,000 / 35,000	28,000 / 35,000	35,000 / 35,000	
Evaporator	Water volume	ℓ	120	150	180	210	240	270	310	340
	Maximum water side pressure	MPa	1							
	Maximum refrigerant side pressure	Mpa	2							
	Minimum chiller water flow rate	ℓ / s	5.7	6.9	8.5	9.8	11.6	13.1	14.4	16.4
	Maximum chiller water flow rate	ℓ / s	22.6	27.5	33.8	39.2	46.5	52.5	57.7	65.5
Water connections	Water connections	DN	100	100	125	125	125	125	125	150
	Drain (NPT)	mm	32							
Dimension	Length	mm	3,132	3,895	4,658	4,658	5,421	6,947	6,947	7,710
	Width	mm	2,154							
	Height	mm	2,040	2,040	2,040	2,040	2,040	2,350	2,350	2,350

Note: 1. RT = 3,024kcal/hr = 3.517kW, 1mH<sub>2</sub>O = 9.8kPa.  
 2. The fouling factor of water in the evaporator is 0.018m<sup>2</sup>C/kW (0.0001h-ft<sup>2</sup>-°F/Btu).  
 3. Operating conditions:  
 The ambient temperature is 35°C (95°F); the chilled-water temperature outlet is 6.7°C (44°F).  
 The temperature difference is 5.5°C (10°F).  
 4. Due to our policy of innovation, some specifications may be changed without prior notification.  
 All the data in this table have been rated in accordance with AHRI Standard 550/590.

## Standard (60Hz) / AHRI condition

Model		Units	MCAW024BA22	MCAW026BA22	MCAW028BA22	MCAW030BA22	MCAW036BA32	MCAW040BA32	MCAW045BA32	MCAW050BA32
General unit data	Unit capacity	RT	230	257	271	299	366	384	434	480
		kW	810	905	952	1,051	1,288	1,349	1,525	1,688
	Input power	kW	285.4	321.6	338.5	372.6	456.9	478.6	544.4	602.8
	COP		2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	Number of independent refrigerant circuits		2	2	2	2	3	3	3	3
	Refrigerant charge, R-134a	kg	110 / 130	130 / 140	140 / 140	150 / 150	130 / 130 / 130	130 / 140 / 140	150 / 150 / 150	160 / 160 / 160
	Oil charge	ℓ	23 / 28	28 / 28	28 / 28	28 / 28	28 / 28 / 28	28 / 28 / 28	28 / 28 / 28	28 / 28 / 28
Weight	Shipping weight	kg	7,275	7,839	8,176	8,726	9,843	10,119	10,871	11,156
	Operating weight	kg	7,645	8,224	8,576	9,176	10,393	10,729	11,531	11,876
Compressors	Power supply		3PH-380V-60Hz							
	Compressor type		Semihermetic twin screw							
	Quantity	EA	2	2	2	2	3	3	3	3
Condenser	Total chiller coil face area	m <sup>2</sup>	18.5 / 18.5	18.5 / 22.2	22.2 / 22.2	25.9 / 25.9	18.5 / 18.5 / 18.5	18.5 / 18.5 / 18.5	22.2 / 22.2 / 22.2	22.2 / 22.2 / 22.2
	Number of coils	EA	10 / 10	10 / 12	12 / 12	14 / 14	10 / 10 / 10	10 / 10 / 10	12 / 12 / 12	12 / 12 / 12
	Number of rows	-	3 / 3	3 / 3	3 / 3	3 / 3	3 / 3 / 3	3 / 3 / 3	3 / 3 / 3	3 / 3 / 3
	Fins per inch	FPI	15 / 15	15 / 15	15 / 15	15 / 15	15 / 15 / 15	15 / 15 / 15	15 / 15 / 15	15 / 15 / 15
Fans	Number	EA	10 / 10	10 / 12	12 / 12	14 / 14	10 / 10 / 10	10 / 10 / 10	12 / 12 / 12	12 / 12 / 12
	Fan motor	kW	13.5 / 13.5	13.5 / 16.2	16.2 / 16.2	18.9 / 18.9	13.5 / 13.5 / 13.5	13.5 / 13.5 / 13.5	16.2 / 16.2 / 16.2	16.2 / 16.2 / 16.2
	Fan speed	RPM	1,150							
	Fan diameter	mm	680							
	Fan tip speed	m/s	39.2							
Total chiller airflow	ℓ / s	35,000 / 35,000	35,000 / 42,000	42,000 / 42,000	49,000 / 49,000	35,000 / 35,000 / 35,000	35,000 / 35,000 / 35,000	42,000 / 42,000 / 42,000	42,000 / 42,000 / 42,000	
Evaporator	Water volume	ℓ	370	385	400	450	550	610	660	720
	Maximum water side pressure	MPa	1							
	Maximum refrigerant side pressure	Mpa	2							
	Minimum chiller water flow rate	ℓ / s	17.4	19.5	20.5	22.6	27.7	29	32.8	36.3
	Maximum chiller water flow rate	ℓ / s	69.7	77.9	81.9	90.5	110.9	116.1	131.3	145.3
Water connections	Water connections	DN	150	150	150	150	200	200	200	200
	Drain (NPT)	mm	32							
Dimension	Length	mm	7,710	8,473	9,236	10,762	11,525	11,525	13,814	13,814
	Width	mm	2,154							
	Height	mm	2,350							

Note: 1. RT = 3,024kcal/hr = 3.517kW, 1mH<sub>2</sub>O = 9.8kPa.  
 2. The fouling factor of water in the evaporator is 0.018m<sup>2</sup>C/kW (0.0001h-ft<sup>2</sup>-°F/Btu).  
 3. Operating conditions:  
 The ambient temperature is 35°C (95°F); the chilled-water temperature outlet is 6.7°C (44°F).  
 The temperature difference is 5.5°C (10°F).  
 4. Due to our policy of innovation, some specifications may be changed without prior notification.  
 All the data in this table have been rated in accordance with AHRI Standard 550/590.

# Specification

## Standard (50Hz) / AHRI condition

Model		Units	MCAW008BA12	MCAW010BA12	MCAW012BA12	MCAW014BA22	MCAW016BA22	MCAW018BA22	MCAW020BA22	MCAW022BA22
General unit data	Unit capacity	RT	74	91	116	135	148	178	201	216
		kW	261	321	409	475	519	627	707	759
	Input power	kW	93.4	114.2	142.2	169.3	184.5	223.1	252.2	269.8
	COP		2.8	2.8	2.9	2.8	2.8	2.8	2.8	2.8
	Number of independent refrigerant circuits		1	1	1	2	2	2	2	2
	Refrigerant charge, R-134a	kg	80	100	120	70 / 70	70 / 90	90 / 100	100 / 110	110 / 120
	Oil charge	ℓ	20	23	28	18 / 18	18 / 23	23 / 23	28 / 28	28 / 28
Weight	Shipping weight	kg	3,019	3,477	4,136	5,246	5,626	6,216	6,914	7,355
	Operating weight	kg	3,139	3,627	4,316	5,456	5,866	6,486	7,224	7,695
Compressors	Power supply		3PH-380V-50Hz							
	Compressor type		Semihhermetic twin screw							
	Quantity	EA	1	1	1	2	2	2	2	2
Condenser	Total chiller coil face area	m <sup>2</sup>	14.8	18.5	22.2	11.1 / 11.1	11.1 / 14.8	14.8 / 18.5	14.8 / 18.5	18.5 / 18.5
	Number of coils	EA	8	10	12	6 / 6	6 / 8	8 / 10	8 / 10	10 / 10
	Number of rows	-	3	3	3	3 / 3	3 / 3	3 / 3	3 / 3	3 / 3
	Fins per inch	FPI	15	15	15	15 / 15	15 / 15	15 / 15	15 / 15	15 / 15
Fans	Number	EA	8	10	12	6 / 6	6 / 8	8 / 10	8 / 10	10 / 10
	Fan motor	kW	8.0	10.0	12.0	6.0 / 6.0	6.0 / 8.0	8.0 / 10.0	8.0 / 10.0	10.0 / 10.0
	Fan speed	RPM	950							
	Fan diameter	mm	680							
	Fan tip speed	m/s	32.4							
	Total chiller airflow	ℓ / s	23,120	28,900	34,680	17,340 / 17,340	17,340 / 23,120	23,120 / 28,900	23,120 / 28,900	28,900 / 28,900
Evaporator	Water volume	ℓ	120	150	180	210	240	270	310	340
	Maximum water side pressure	MPa	1							
	Maximum refrigerant side pressure	Mpa	2							
	Minimum chiller water flow rate	ℓ / s	5.6	6.9	8.8	10.2	11.2	13.5	15.2	16.3
	Maximum chiller water flow rate	ℓ / s	22.5	27.6	35.2	40.9	44.7	54	60.9	65.3
Water connections	Water connections	DN	100	100	125	125	125	125	125	150
	Drain (NPT)	mm	32							
Dimension	Length	mm	3,132	3,895	4,658	4,658	5,421	6,947	6,947	7,710
	Width	mm	2,154							
	Height	mm	2,040	2,040	2,040	2,040	2,040	2,350	2,350	2,350

Note: 1. RT = 3,024kcal/hr = 3.517kW, 1mH<sub>2</sub>O = 9.8kPa.  
 2. The fouling factor of water in the evaporator is 0.018m<sup>2</sup>C/kW (0.0001h-ft<sup>2</sup>-°F/Btu).  
 3. Operating conditions:  
 The ambient temperature is 35°C (95°F); the chilled-water temperature outlet is 6.7°C (44°F).  
 The temperature difference is 5.5°C (10°F).  
 4. Due to our policy of innovation, some specifications may be changed without prior notification.  
 All the data in this table have been rated in accordance with AHRI Standard 550/590.

## Standard (50Hz) / AHRI condition

Model		Units	MCAW024BA22	MCAW026BA22	MCAW028BA22	MCAW030BA32	MCAW036BA32	MCAW040BA32	MCAW045BA32	MCAW050BA42
General unit data	Unit capacity	RT	235	264	283	304	338	367	442	462
		kW	825	927	995	1,070	1,187	1,289	1,556	1,624
	Input power	kW	291.8	328.1	351	379.9	422.2	457.8	551.4	577.4
	COP		2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	Number of independent refrigerant circuits		2	2	2	3	3	3	4	4
	Refrigerant charge, R-134a	kg	120 / 130	130 / 150	150 / 150	100 / 110 / 110	120 / 120 / 120	130 / 130 / 130	110 / 120 / 110	110 / 130 / 110
	Oil charge	ℓ	28 / 28	28 / 28	28 / 28	28 / 28 / 28	28 / 28 / 28	28 / 28 / 28	28 / 28 / 28	28 / 28 / 28
Weight	Shipping weight	kg	7,701	8,025	8,316	10,013	10,056	10,285	12,356	12,626
	Operating weight	kg	8,071	8,410	8,716	10,463	10,606	10,895	13,016	13,346
Compressors	Power supply		3PH-380V-50Hz							
	Compressor type		Semihhermetic twin screw							
	Quantity	EA	2	2	2	3	3	3	4	4
Condenser	Total chiller coil face area	m <sup>2</sup>	18.5 / 18.5	18.5 / 22.2	22.2 / 22.2	14.8 / 18.5 / 18.5	18.5 / 18.5 / 18.5	18.5 / 18.5 / 18.5	14.8 / 18.5 / 14.8 / 18.5	14.8 / 18.5 / 14.8 / 18.5
	Number of coils	EA	10 / 10	10 / 12	12 / 12	8 / 10 / 10	10 / 10 / 10	10 / 10 / 10	8 / 10 / 8 / 10	8 / 10 / 8 / 10
	Number of rows	-	3 / 3	3 / 3	3 / 3	3 / 3 / 3	3 / 3 / 3	3 / 3 / 3	3 / 3 / 3 / 3	3 / 3 / 3 / 3
	Fins per inch	FPI	15 / 15	15 / 15	15 / 15	15 / 15 / 15	15 / 15 / 15	15 / 15 / 15	15 / 15 / 15 / 15	15 / 15 / 15 / 15
Fans	Number	EA	10 / 10	10 / 12	12 / 12	8 / 10 / 10	10 / 10 / 10	10 / 10 / 10	8 / 10 / 8 / 10	8 / 10 / 8 / 10
	Fan motor	kW	10.0 / 10.0	10.0 / 12.0	12.0 / 12.0	8.0 / 10.0 / 10.0	10.0 / 10.0 / 10.0	10.0 / 10.0 / 10.0	8.0 / 10.0 / 8.0 / 10.0	8.0 / 10.0 / 8.0 / 10.0
	Fan speed	RPM	950							
	Fan diameter	mm	680							
	Fan tip speed	m/s	32.4							
	Total chiller airflow	ℓ / s	28,900 / 28,900	28,900 / 34,680	34,680 / 34,680	23,120 / 28,900 / 28,900	28,900 / 28,900 / 28,900	28,900 / 28,900 / 28,900	23,120 / 28,900 / 23,120 / 28,900	23,120 / 28,900 / 23,120 / 28,900
Evaporator	Water volume	ℓ	370	385	400	450	550	610	660	720
	Maximum water side pressure	MPa	1							
	Maximum refrigerant side pressure	Mpa	2							
	Minimum chiller water flow rate	ℓ / s	17.8	19.9	21.4	23	25.5	27.7	33.5	34.9
	Maximum chiller water flow rate	ℓ / s	71	79.8	85.6	92.1	102.2	110.9	133.9	139.8
Water connections	Water connections	DN	150	150	150	150	200	200	200	200
	Drain (NPT)	mm	32							
Dimension	Length	mm	7,710	8,473	9,236	10,762	11,525	11,525	13,814	13,814
	Width	mm	2,154							
	Height	mm	2,350							

Note: 1. RT = 3,024kcal/hr = 3.517kW, 1mH<sub>2</sub>O = 9.8kPa.  
 2. The fouling factor of water in the evaporator is 0.018m<sup>2</sup>C/kW (0.0001h-ft<sup>2</sup>-°F/Btu).  
 3. Operating conditions:  
 The ambient temperature is 35°C (95°F); the chilled-water temperature outlet is 6.7°C (44°F).  
 The temperature difference is 5.5°C (10°F).  
 4. Due to our policy of innovation, some specifications may be changed without prior notification.  
 All the data in this table have been rated in accordance with AHRI Standard 550/590.



# Performance Data

## High efficiency (60Hz) / AHRI condition

Model	LCWT (°C)	Air temperature on condenser (°C)								
		25			30			35		
		Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)
MCAW 008AA11	5	81.7	70.0	12.4	75.0	76.8	11.3	68.9	84.9	10.4
	7	88.2	70.9	13.3	81.2	77.9	12.3	74.7	86.0	11.3
	9	95.2	71.8	14.4	87.7	78.9	13.3	80.8	87.2	12.2
	11	102.5	72.6	15.5	94.5	79.9	14.3	87.3	88.3	13.2
	13	110.3	73.4	16.7	101.8	80.9	15.4	94.2	89.4	14.2
MCAW 010AA11	5	102.5	87.5	15.5	94.1	96.1	14.2	86.5	106.2	13.1
	7	110.7	88.6	16.7	101.8	97.4	15.4	93.7	107.7	14.2
	9	119.4	89.7	18.1	110.0	98.7	16.6	101.4	109.1	15.3
	11	128.6	90.8	19.5	118.6	100.0	17.9	109.5	110.5	16.6
	13	138.4	91.8	20.9	127.7	101.2	19.3	118.1	112.0	17.9
MCAW 012AA11	5	131.4	109.3	19.9	120.7	120.0	18.3	110.9	132.7	16.8
	7	141.9	110.7	21.5	130.6	121.6	19.7	120.2	134.5	18.2
	9	153.1	112.0	23.2	141.0	123.3	21.3	130.0	136.3	19.7
	11	164.9	113.4	24.9	152.1	124.9	23.0	140.4	138.1	21.2
	13	177.4	114.7	26.8	163.8	126.4	24.8	151.4	139.8	22.9
MCAW 014AA11	5	155.6	128.5	23.5	143.0	141.2	21.6	131.4	156.1	19.9
	7	168.1	130.2	25.4	154.7	143.1	23.4	142.4	158.2	21.5
	9	181.4	131.8	27.4	167.0	145.0	25.3	154.0	160.3	23.3
	11	195.4	133.4	29.5	180.1	146.9	27.2	166.3	162.4	25.2
	13	210.2	134.9	31.8	194.0	148.7	29.3	179.4	164.5	27.1
MCAW 016AA11	5	170.9	142.6	25.8	157.0	156.5	23.7	144.2	173.0	21.8
	7	184.6	144.4	27.9	169.8	158.7	25.7	156.3	175.3	23.6
	9	199.1	146.2	30.1	183.4	160.8	27.7	169.1	177.7	25.6
	11	214.5	147.9	32.4	197.8	162.9	29.9	182.6	180.0	27.6
	13	230.7	149.6	34.9	213.0	164.9	32.2	197.0	182.3	29.8
MCAW 020AA21	5	205.0	175.0	31.0	188.3	192.2	28.5	173.0	212.5	26.2
	7	221.4	177.2	33.5	203.7	194.8	30.8	187.5	215.4	28.4
	9	238.8	179.4	36.1	220.0	197.4	33.3	202.8	218.2	30.7
	11	257.3	181.6	38.9	237.2	200.0	35.9	219.1	221.1	33.1
	13	276.8	183.6	41.9	255.5	202.5	38.6	236.3	223.9	35.7
MCAW 024AA21	5	262.8	218.5	39.7	241.4	240.0	36.5	221.8	265.3	33.5
	7	283.8	221.3	42.9	261.1	243.3	39.5	240.3	268.9	36.3
	9	306.2	224.1	46.3	282.0	246.5	42.6	260.0	272.5	39.3
	11	329.8	226.7	49.9	304.1	249.7	46.0	280.8	276.1	42.5
	13	354.8	229.3	53.7	327.5	252.9	49.5	302.9	279.6	45.8
MCAW 028AA21	5	311.3	257.1	47.1	286.0	282.4	43.2	262.7	312.2	39.7
	7	336.3	260.4	50.9	309.3	286.2	46.8	284.7	316.4	43.1
	9	362.7	263.6	54.9	334.1	290.0	50.5	308.0	320.7	46.6
	11	390.7	266.7	59.1	360.3	293.8	54.5	332.7	324.9	50.3
	13	420.4	269.8	63.6	388.0	297.5	58.7	358.8	329.0	54.3
MCAW 032AA21	5	341.7	285.2	51.7	313.9	313.1	47.5	288.4	346.0	43.6
	7	369.1	288.8	55.8	339.6	317.4	51.4	312.6	350.7	47.3
	9	398.2	292.4	60.2	366.7	321.6	55.5	338.1	355.4	51.1
	11	428.9	295.8	64.9	395.5	325.7	59.8	365.2	360.0	55.2
	13	461.5	299.2	69.8	426.0	329.8	64.4	393.9	364.6	59.6
15	495.9	302.5	75.0	458.2	333.8	69.3	424.2	369.2	64.2	

- Note: 1. LCWT: Leaving chilled-water temperature.  
 2. The power input includes compressors and condenser fans.  
 3. The ratings are based on 0.043 l/s per kW (2.4 gpm/ton) and 5.6°C (10°F) evaporator temperature drop.  
 4. The fouling factor in the evaporator is 0.018 m<sup>2</sup>·°C/kW (0.0001 h·ft<sup>2</sup>·°F/Btu).  
 5. Interpolation between points is permissible. Extrapolation is not permitted.  
 6. Due to our policy of innovation, some specifications may be changed without prior notification.

## High efficiency (60Hz) / AHRI condition

Model	LCWT (°C)	Air temperature on condenser (°C)								
		40			45			50		
		Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)
MCAW 008AA11	5	65.1	93.1	9.8	62.0	100.5	9.4	59.9	106.4	9.1
	7	70.7	94.3	10.7	67.4	101.8	10.2	65.3	107.7	9.9
	9	76.6	95.5	11.6	73.2	103.1	11.1	71.0	109.1	10.7
	11	82.9	96.8	12.5	79.4	104.4	12.0	77.1	110.4	11.7
	13	89.5	98.0	13.5	85.9	105.6	13.0	83.6	111.7	12.6
MCAW 010AA11	5	81.6	116.6	12.3	77.8	126.0	11.8	75.1	133.4	11.4
	7	88.7	118.1	13.4	84.6	127.6	12.8	81.9	135.0	12.4
	9	96.1	119.7	14.5	91.9	129.2	13.9	89.1	136.7	13.5
	11	104.0	121.2	15.7	99.6	130.8	15.1	96.8	138.3	14.6
	13	112.3	122.7	17.0	107.8	132.4	16.3	104.8	140.0	15.9
MCAW 012AA11	5	104.7	145.6	15.8	99.7	157.3	15.1	96.3	166.6	14.6
	7	113.7	147.5	17.2	108.5	159.3	16.4	105.0	168.6	15.9
	9	123.2	149.4	18.6	117.8	161.3	17.8	114.3	170.7	17.3
	11	133.3	151.4	20.2	127.7	163.3	19.3	124.0	172.7	18.8
	13	144.0	153.3	21.8	138.2	165.3	20.9	134.4	174.8	20.3
MCAW 014AA11	5	124.0	171.3	18.8	118.1	185.1	17.9	114.1	196.0	17.3
	7	134.7	173.6	20.4	128.5	187.5	19.4	124.4	198.4	18.8
	9	145.9	175.9	22.1	139.6	189.8	21.1	135.3	200.9	20.5
	11	157.9	178.1	23.9	151.3	192.2	22.9	146.9	203.3	22.2
	13	170.6	180.4	25.8	163.7	194.6	24.8	159.2	205.7	24.1
MCAW 016AA11	5	136.1	189.8	20.6	129.6	205.0	19.6	125.3	217.0	18.9
	7	147.8	192.3	22.4	141.1	207.6	21.3	136.6	219.7	20.7
	9	160.2	194.8	24.2	153.2	210.2	23.2	148.6	222.4	22.5
	11	173.4	197.3	26.2	166.1	212.9	25.1	161.3	225.1	24.4
	13	187.3	199.8	28.3	179.7	215.5	27.2	174.8	227.8	26.4
MCAW 020AA21	5	163.3	233.1	24.7	155.5	251.9	23.5	150.3	266.7	22.7
	7	177.3	236.2	26.8	169.2	255.1	25.6	163.8	270.0	24.8
	9	192.2	239.3	29.1	183.8	258.3	27.8	178.2	273.3	27.0
	11	208.0	242.4	31.4	199.2	261.6	30.1	193.5	276.6	29.3
	13	224.6	245.4	34.0	215.6	264.8	32.6	209.7	279.9	31.7
MCAW 024AA21	5	209.3	291.2	31.7	199.4	314.6	30.1	192.6	333.1	29.1
	7	227.3	295.0	34.4	217.0	318.6	32.8	210.0	337.2	31.8
	9	246.4	298.9	37.3	235.6	322.6	35.6	228.5	341.3	34.6
	11	266.6	302.7	40.3	255.4	326.6	38.6	248.1	345.5	37.5
	13	288.0	306.5	43.6	276.3	330.6	41.8	268.8	349.6	40.7
MCAW 028AA21	5	310.6	310.3	47.0	298.5	334.6	45.1	290.8	353.7	44.0
	7	342.0	342.6	51.6	326.2	370.2	50.3	322.2	392.0	49.5
	9	369.3	347.2	55.7	353.7	393.8	53.5	344.5	416.3	52.1
	11	398.0	351.7	60.3	382.6	417.7	57.8	374.4	441.5	56.7
	13	428.0	356.2	65.4	412.6	442.6	62.1	405.4	466.7	61.3
MCAW 032AA21	5	272.2	379.6	41.2	259.3	410.0	39.2	250.5	434.1	37.9
	7	295.6	384.6	44.7	282.2	415.3	42.7	273.2	439.5	41.3
	9	320.4	389.6	48.5	306.4	420.5	46.3	297.2	444.8	44.9
	11	346.7	394.6	52.4	332.1	425.7	50.2	322.6	450.2	48.8
	13	374.5	399.6	56.6	359.4	430.9	54.4	349.6	455.5	52.9
15	404.0	404.5	61.1	388.2	436.1	58.7	378.1	460.9	57.2	

- Note: 1. LCWT: Leaving chilled-water temperature.  
 2. The power input includes compressors and condenser fans.  
 3. The ratings are based on 0.043 l/s per kW (2.4 gpm/ton) and 5.6°C (10°F) evaporator temperature drop.  
 4. The fouling factor in the evaporator is 0.018 m<sup>2</sup>·°C/kW (0.0001 h·ft<sup>2</sup>·°F/Btu).  
 5. Interpolation between points is permissible. Extrapolation is not permitted.  
 6. Due to our policy of innovation, some specifications may be changed without prior notification.

# Performance Data

## High efficiency (50Hz) / AHRI condition

Model	LCWT (°C)	Air temperature on condenser (°C)								
		25			30			35		
		Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)
MCAW 008AA11	5	85.2	72.7	12.9	78.3	79.9	11.8	71.9	88.3	10.9
	7	92.0	73.7	13.9	84.7	81.0	12.8	77.9	89.5	11.8
	9	99.3	74.6	15.0	91.4	82.0	13.8	84.3	90.7	12.7
	11	106.9	75.5	16.2	98.6	83.1	14.9	91.0	91.9	13.8
	13	115.0	76.3	17.4	106.2	84.2	16.1	98.2	93.1	14.9
MCAW 010AA11	5	109.2	90.9	16.5	100.3	99.8	15.2	92.2	110.3	13.9
	7	118.0	92.0	17.8	108.5	101.2	16.4	99.9	111.8	15.1
	9	127.3	93.2	19.2	117.2	102.5	17.7	108.1	113.3	16.3
	11	137.1	94.3	20.7	126.4	103.8	19.1	116.7	114.8	17.7
	13	147.5	95.3	22.3	136.1	105.1	20.6	125.9	116.3	19.0
MCAW 012AA11	5	129.4	107.3	19.6	118.9	117.9	18.0	109.2	130.2	16.5
	7	139.8	108.7	21.1	128.6	119.5	19.4	118.3	132.0	17.9
	9	150.8	110.0	22.8	138.9	121.0	21.0	128.0	133.8	19.4
	11	162.4	111.3	24.6	149.7	122.6	22.6	138.3	135.5	20.9
	13	174.7	112.6	26.4	161.3	124.1	24.4	149.1	137.3	22.6
MCAW 014AA11	5	151.2	126.5	22.9	138.9	138.9	21.0	127.6	153.6	19.3
	7	163.3	128.1	24.7	150.2	140.8	22.7	138.3	155.7	20.9
	9	176.1	129.7	26.6	162.2	142.7	24.5	149.6	157.7	22.6
	11	189.7	131.2	28.7	175.0	144.5	26.5	161.6	159.8	24.4
	13	204.1	132.7	30.9	188.4	146.4	28.5	174.2	161.8	26.4
MCAW 016AA11	5	173.4	142.1	26.2	159.3	156.0	24.1	146.4	172.4	22.1
	7	187.3	143.9	28.3	172.3	158.1	26.1	158.6	174.7	24.0
	9	202.1	145.7	30.6	186.1	160.2	28.1	171.6	177.1	26.0
	11	217.7	147.4	32.9	200.7	162.3	30.4	185.3	179.4	28.0
	13	234.2	149.1	35.4	216.2	164.3	32.7	199.9	181.7	30.2
MCAW 020AA21	5	218.4	181.7	33.0	200.7	199.6	30.3	184.4	220.6	27.9
	7	235.9	184.0	35.7	217.0	202.3	32.8	199.8	223.6	30.2
	9	254.5	186.3	38.5	234.4	205.0	35.5	216.1	226.6	32.7
	11	274.2	188.5	41.5	252.8	207.6	38.2	233.4	229.6	35.3
	13	295.0	190.7	44.6	272.3	210.3	41.2	251.8	232.5	38.1
MCAW 024AA21	5	258.8	214.7	39.1	237.7	235.7	35.9	218.4	260.5	33.0
	7	279.5	217.4	42.3	257.1	238.9	38.9	236.7	264.0	35.8
	9	301.5	220.1	45.6	277.7	242.1	42.0	256.0	267.6	38.7
	11	324.8	222.7	49.1	299.5	245.2	45.3	276.6	271.1	41.8
	13	349.4	225.2	52.8	322.6	248.3	48.8	298.3	274.5	45.1
MCAW 028AA21	5	302.3	253.0	45.7	277.7	277.9	42.0	255.2	307.1	38.6
	7	326.6	256.3	49.4	300.4	281.7	45.4	276.5	311.3	41.8
	9	352.3	259.4	53.3	324.4	285.4	49.1	299.1	315.5	45.2
	11	379.5	262.5	57.4	349.9	289.1	52.9	323.1	319.6	48.9
	13	408.3	265.5	61.7	376.8	292.7	57.0	348.5	323.7	52.7
MCAW 032AA21	5	346.8	284.2	52.4	318.6	312.0	48.2	292.7	344.8	44.3
	7	374.6	287.8	56.7	344.6	316.3	52.1	317.2	349.5	48.0
	9	404.1	291.4	61.1	372.2	320.5	56.3	343.2	354.2	51.9
	11	435.3	294.8	65.8	401.4	324.6	60.7	370.7	358.8	56.1
	13	468.4	298.2	70.8	432.3	328.7	65.4	399.8	363.3	60.5
15	503.3	301.4	76.1	465.0	332.7	70.3	430.6	367.9	65.1	

- Note: 1. LCWT: Leaving chilled-water temperature.  
 2. The power input includes compressors and condenser fans.  
 3. The ratings are based on 0.043l/s per kW (2.4gpm/ton) and 5.6°C (10°F) evaporator temperature drop.  
 4. The fouling factor in the evaporator is 0.018m<sup>2</sup>·°C/kW (0.0001h·ft<sup>2</sup>·°F/Btu).  
 5. Interpolation between points is permissible. Extrapolation is not permitted.  
 6. Due to our policy of innovation, some specifications may be changed without prior notification.

## High efficiency (50Hz) / AHRI condition

Model	LCWT (°C)	Air temperature on condenser (°C)								
		40			45			50		
		Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)
MCAW 008AA11	5	67.9	96.9	10.3	64.6	104.7	9.8	62.5	110.9	9.4
	7	73.7	98.2	11.1	70.3	106.0	10.6	68.1	112.2	10.3
	9	79.9	99.5	12.1	76.4	107.4	11.6	74.1	113.6	11.2
	11	86.4	100.7	13.1	82.8	108.7	12.5	80.4	115.0	12.2
	13	93.4	102.0	14.1	89.6	110.0	13.5	87.1	116.3	13.2
MCAW 010AA11	5	87.0	121.0	13.2	82.9	130.8	12.5	80.1	138.5	12.1
	7	94.5	122.7	14.3	90.2	132.5	13.6	87.3	140.2	13.2
	9	102.4	124.3	15.5	97.9	134.1	14.8	95.0	141.9	14.4
	11	110.8	125.8	16.8	106.2	135.8	16.1	103.1	143.6	15.6
	13	119.7	127.4	18.1	114.9	137.5	17.4	111.7	145.3	16.9
MCAW 012AA11	5	103.1	142.9	15.6	98.2	154.4	14.8	94.9	163.4	14.3
	7	111.9	144.8	16.9	106.8	156.3	16.2	103.4	165.5	15.6
	9	121.3	146.7	18.3	116.0	158.3	17.5	112.5	167.5	17.0
	11	131.3	148.6	19.9	125.8	160.3	19.0	122.1	169.5	18.5
	13	141.8	150.4	21.4	136.1	162.2	20.6	132.4	171.5	20.0
MCAW 014AA11	5	120.4	168.5	18.2	114.7	182.1	17.3	110.8	192.8	16.8
	7	130.8	170.7	19.8	124.8	184.4	18.9	120.8	195.1	18.3
	9	141.7	173.0	21.4	135.5	186.7	20.5	131.4	197.5	19.9
	11	153.4	175.2	23.2	146.9	189.0	22.2	142.7	199.9	21.6
	13	165.7	177.4	25.1	159.0	191.3	24.0	154.6	202.3	23.4
MCAW 016AA11	5	138.2	189.1	20.9	131.6	204.3	19.9	127.1	216.3	19.2
	7	150.0	191.6	22.7	143.2	206.9	21.7	138.6	219.0	21.0
	9	162.6	194.1	24.6	155.5	209.5	23.5	150.8	221.6	22.8
	11	175.9	196.6	26.6	168.5	212.1	25.5	163.7	224.3	24.8
	13	190.1	199.1	28.7	182.4	214.7	27.6	177.4	227.0	26.8
MCAW 020AA21	5	174.0	242.1	26.3	165.7	261.6	25.1	160.1	277.0	24.2
	7	189.0	245.3	28.6	180.4	264.9	27.3	174.6	280.4	26.4
	9	204.8	248.5	31.0	195.9	268.2	29.6	189.9	283.8	28.7
	11	221.6	251.7	33.5	212.3	271.6	32.1	206.2	287.2	31.2
	13	239.4	254.9	36.2	229.7	274.9	34.7	223.4	290.7	33.8
MCAW 024AA21	5	206.2	285.8	31.2	196.3	308.8	29.7	189.7	326.9	28.7
	7	223.9	289.6	33.9	213.7	312.7	32.3	206.9	330.9	31.3
	9	242.6	293.4	36.7	232.0	316.6	35.1	225.0	335.0	34.0
	11	262.5	297.1	39.7	251.5	320.6	38.0	244.3	339.0	36.9
	13	283.6	300.9	42.9	272.1	324.5	41.2	264.7	343.0	40.0
MCAW 028AA21	5	305.9	304.6	46.3	294.0	328.4	44.5	286.3	347.1	43.3
	7	324.8	307.0	49.6	313.7	332.3	47.8	306.3	351.0	46.6
	9	345.9	310.4	53.1	334.5	336.2	51.1	327.4	354.9	50.0
	11	368.4	313.8	56.7	356.3	340.1	54.4	349.5	358.8	53.4
	13	392.3	317.2	60.4	379.1	344.0	57.7	372.6	362.7	56.8
MCAW 032AA21	5	276.3	378.3	41.8	263.1	408.6	39.8	254.3	432.6	38.5
	7	300.0	383.3	45.4	286.4	413.8	43.3	277.2	437.9	41.9
	9	325.2	388.3	49.2	311.0	419.0	47.0	301.6	443.3	45.6
	11	351.9	393.2	53.2	337.1	424.2	51.0	327.4	448.6	49.5
	13	380.1	398.2	57.5	364.7	429.4	55.2	354.8	453.9	53.7
15	410.0	403.1	62.0	394.0	434.6	59.6	383.8	459.3	58.0	

- Note: 1. LCWT: Leaving chilled-water temperature.  
 2. The power input includes compressors and condenser fans.  
 3. The ratings are based on 0.043l/s per kW (2.4gpm/ton) and 5.6°C (10°F) evaporator temperature drop.  
 4. The fouling factor in the evaporator is 0.018m<sup>2</sup>·°C/kW (0.0001h·ft<sup>2</sup>·°F/Btu).  
 5. Interpolation between points is permissible. Extrapolation is not permitted.  
 6. Due to our policy of innovation, some specifications may be changed without prior notification.

# Performance Data

## Standard (60Hz) / AHRI condition

Model	LCWT (°C)	Air temperature on condenser (°C)																	
		25			30			35			40			45			50		
		Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)
MCAW 008BA12	5	79	78.1	11.9	75	83.7	11.4	71	90.8	10.8	67	99.5	10.1	62	109.8	9.4	57	122.2	8.6
	7	84	79.4	12.6	80	85.3	12	75	92.7	11.4	71	101.6	10.8	66	112.2	10	61	124.8	9.2
	9	89	80.8	13.4	84	86.9	12.8	80	94.5	12.1	75	103.7	11.4	70	114.6	10.6	65	127.5	9.8
	11	94	82.2	14.1	89	88.6	13.5	85	96.4	12.8	80	105.8	12.1	75	117.0	11.3	69	130.1	10.4
	13	99	83.6	15	94	90.2	14.3	90	98.3	13.5	84	108.0	12.8	79	119.4	12	73	132.7	11.1
	15	104	85.0	15.8	100	91.9	15.1	94	100.3	14.3	89	110.2	13.5	84	121.8	12.6	77	135.4	11.7
MCAW 010BA12	5	96	94.1	14.5	91	102.4	13.8	86	111.6	13	81	121.9	12.3	75	133.4	11.4	69	146.4	10.4
	7	102	95.4	15.4	97	103.8	14.6	92	113.2	13.8	86	123.7	13	80	135.5	12.1	74	148.7	11.2
	9	108	96.6	16.3	103	105.3	15.5	97	114.8	14.7	92	125.5	13.8	86	137.5	12.9	79	150.9	11.9
	11	114	97.9	17.2	109	106.7	16.4	103	116.4	15.6	97	127.3	14.7	91	139.4	13.7	84	153.0	12.7
	13	121	99.2	18.2	115	108.1	17.4	109	118.0	16.5	103	129.1	15.6	96	141.4	14.6	89	155.2	13.5
	15	127	100.4	19.2	121	109.5	18.4	115	119.6	17.5	109	130.8	16.5	102	143.3	15.4	95	157.3	14.3
MCAW 012BA12	5	118	112.2	17.8	112	122.0	16.9	106	133.0	16	100	145.3	15.1	93	159.1	14	85	174.5	12.9
	7	125	113.7	18.9	119	123.8	18	113	135.0	17	106	147.5	16	99	161.5	14.9	91	177.2	13.7
	9	133	115.2	20	126	125.5	19.1	120	136.9	18.1	113	149.7	17	105	163.9	15.9	97	179.9	14.6
	11	140	116.7	21.2	134	127.2	20.2	127	138.8	19.2	119	151.8	18.1	112	166.2	16.9	103	182.4	15.6
	13	148	118.2	22.4	141	128.9	21.4	134	140.7	20.3	127	153.9	19.1	119	168.6	17.9	109	185.0	16.6
	15	156	119.8	23.7	149	130.6	22.6	142	142.6	21.5	134	156.0	20.3	125	170.9	19	116	187.5	17.6
MCAW 014BA22	5	137	133.8	20.8	130	146.1	19.7	123	159.7	18.6	115	174.8	17.4	106	191.5	16.1	97	210.0	14.7
	7	146	135.8	22.1	138	148.4	20.9	131	162.3	19.7	122	177.6	18.5	113	194.5	17.2	104	213.4	15.7
	9	154	137.8	23.3	147	150.6	22.2	138	164.8	20.9	130	180.4	19.7	121	197.6	18.2	110	216.8	16.7
	11	163	139.8	24.7	155	152.9	23.5	147	167.3	22.2	138	183.1	20.9	128	200.7	19.4	118	220.1	17.8
	13	173	141.9	26.1	164	155.2	24.8	155	169.8	23.5	146	185.9	22.1	136	203.7	20.6	125	223.4	18.9
	15	182	143.9	27.5	173	157.5	26.2	164	172.3	24.8	154	188.7	23.3	143	206.3	21.6	133	226.7	20.1
MCAW 016BA22	5	163	158.8	24.6	155	171.8	23.4	146	187.7	22.1	137	206.7	20.6	127	229.4	19.1	115	255.8	17.4
	7	173	161.9	26.1	164	175.4	24.8	155	191.9	23.4	145	211.4	22	135	234.5	20.3	123	261.6	18.6
	9	183	165.1	27.6	174	179.1	26.3	164	196.1	24.9	154	216.2	23.3	143	239.8	21.6	131	267.4	19.8
	11	193	168.3	29.2	184	182.9	27.8	174	200.4	26.3	163	221.0	24.7	152	245.1	23	139	273.3	21.1
	13	204	171.5	30.8	194	186.7	29.4	184	204.7	27.8	173	225.9	26.1	161	250.5	24.3	148	279.2	22.4
	15	215	174.9	32.5	205	190.6	31	194	209.2	29.3	182	230.9	27.6	169	255.2	25.5	157	285.2	23.7
MCAW 018BA22	5	183	177.2	27.7	174	192.1	26.3	165	209.4	24.9	154	229.5	23.3	144	252.7	21.7	131	279.4	19.9
	7	194	180.1	29.4	185	195.4	28	175	213.2	26.4	164	233.7	24.9	153	257.3	23.1	140	284.6	21.2
	9	206	182.9	31.1	196	198.7	29.6	186	216.9	28.1	175	237.9	26.4	163	262.0	24.6	150	289.8	22.6
	11	218	185.8	32.9	207	202.0	31.3	197	220.7	29.8	185	242.2	28	173	266.7	26.1	159	294.9	24.1
	13	230	188.7	34.8	219	205.4	33.2	208	224.5	31.5	196	246.4	29.7	183	271.4	27.7	169	300.1	25.6
	15	243	191.7	36.7	231	208.8	35	220	228.4	33.2	207	250.7	31.3	192	275.6	29.1	179	305.2	27.1
MCAW 020BA22	5	202	196.5	30.5	192	214.5	29	181	234.5	27.4	169	256.6	25.6	157	281.3	23.8	144	308.6	21.7
	7	214	199.4	32.4	204	217.8	30.8	192	238.2	29.1	180	260.7	27.3	168	285.8	25.3	153	313.6	23.2
	9	227	202.3	34.3	216	221.1	32.6	204	241.9	30.9	192	264.8	29	178	290.2	27	164	318.6	24.7
	11	240	205.3	36.3	229	224.4	34.6	216	245.5	32.7	203	268.9	30.7	189	294.7	28.6	174	323.4	26.3
	13	254	208.2	38.4	242	227.7	36.6	229	249.2	34.6	215	272.9	32.6	201	299.1	30.4	185	328.3	28
	15	268	211.2	40.5	255	231.0	38.6	242	252.9	36.6	228	277.0	34.4	211	302.9	31.9	197	333.1	29.7
MCAW 022BA22	5	229	220.0	34.7	218	240.2	32.9	205	262.7	31	192	287.5	29.1	179	315.2	27	163	345.8	24.6
	7	243	223.3	36.8	231	243.9	34.9	218	266.8	33	205	292.1	31	190	320.2	28.7	174	351.4	26.3
	9	258	226.6	39	245	247.7	37	231	271.0	35	217	296.7	32.9	202	325.2	30.6	185	357.0	28
	11	272	229.9	41.2	259	251.4	39.2	245	275.1	37.1	231	301.3	34.9	215	330.3	32.5	197	362.5	29.8
	13	288	233.3	43.5	274	255.1	41.5	260	279.3	39.3	244	305.9	36.9	228	335.3	34.4	210	367.9	31.7
	15	304	236.6	45.9	289	258.9	43.7	274	283.5	41.5	258	310.5	39	239	339.6	36.2	223	373.3	33.7

- Note: 1. LCWT: Leaving chilled-water temperature.  
 2. The power input includes compressors and condenser fans.  
 3. The ratings are based on 0.043l/s per kW (2.4gpm/ton) and 5.6°C (10°F) evaporator temperature drop.  
 4. The fouling factor in the evaporator is 0.018m<sup>2</sup>·°C/kW (0.0001 h·ft<sup>2</sup>·°F/Btu).  
 5. Interpolation between points is permissible. Extrapolation is not permitted.  
 6. Due to our policy of innovation, some specifications may be changed without prior notification.

## Standard (60Hz) / AHRI condition

Model	LCWT (°C)	Air temperature on condenser (°C)																	
		25			30			35			40			45			50		
		Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)
MCAW 024BA22	5	245	235.2	37	232	257.2	35	219	281.5	33.1	204	308.3	30.9	190	338.1	28.7	173	371.0	26.1
	7	259	238.9	39.2	246	261.3	37.2	232	286.1	35.1	218	313.4	32.9	202	343.6	30.5	184	377.2	27.9
	9	275	242.6	41.5	261	265.5	39.4	246	290.7	37.2	231	318.5	34.9	214	349.3	32.4	197	383.3	29.7
	11	290	246.4	43.9	276	269.7	41.7	261	295.3	39.5	245	323.6	37	228	354.8	34.4	209	389.4	31.6
	13	307	250.1	46.4	292	273.9	44.1	276	300.0	41.7	259	328.8	39.2	241	360.4	36.5	222	395.5	33.6
	15	323	253.9	48.9	308	278.1	46.5	292	304.7	44.1	274	333.9	41.5	253	365.1	38.3	236	401.5	35.6
MCAW 026BA22	5	274	264.9	41.4	259	289.7	39.2	245	317.1	37	229	347.4	34.6	212	381.0	32	193	418.0	29.1
	7	290	269.1	43.9	275	294.4	41.6	260	322.4	39.3	243	353.2	36.8	225	387.2	34.1	206	425.0	31.1
	9	307	273.3	46.4	292	299.2	44.1	276	327.6	41.7	258	359.0	39	240	393.6	36.2	219	432.0	33.2
	11	325	277.6	49.1	309	303.9	46.7	292	332.9	44.1	274	364.8	41.4	255	400.0	38.5	233	438.9	35.3
	13	343	281.9	51.9	326	308.7	49.3	309	338.2	46.7	290	370.6	43.9	270	406.3	40.8	248	445.7	37.5
	15	362	286.3	54.7	344	313.6	52.1	326	343.6	49.3	307	376.5	46.4	283	411.7	42.8	263	452.6	39.8
MCAW 028BA22	5	288	279.3	43.5	273	305.3	41.2	257	333.9	38.9	240	365.5	36.3	223	400.7	33.7	202	439.5	30.6
	7	305	283.6	46.1	290	310.1	43.8	273	339.3	41.3	256	371.5	38.7	237	407.2	35.8	216	446.8	32.7
	9	323	288.0	48.8	307	314.9	46.4	290	344.7	43.8	272	377.5	41.1	252	413.7	38.1	231	453.9	34.9
	11	342	292.3	51.6	325	319.8	49.1	307	350.1	46.4	288	383.4	43.6	268	420.2	40.5	246	461.0	37.2
	13	361	296.7	54.6	343	324.7	51.9	325	355.5	49.1	305	389.4	46.1	284	426.7	43	261	468.0	39.5

# Performance Data

## Standard (50Hz) / AHRI condition

Model	LCWT (°C)	Air temperature on condenser (°C)																	
		25			30			35			40			45			50		
		Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)
MCAW 008BA12	5	78	77.2	11.9	75	84.3	11.3	71	92.2	10.7	66	101.0	10	61	110.8	9.3	56	121.8	8.5
	7	83	78.3	12.6	79	85.6	12	75	93.6	11.4	71	102.6	10.7	65	112.5	9.9	60	123.7	9.1
	9	88	79.4	13.3	84	86.8	12.7	80	95.0	12	75	104.1	11.3	70	114.3	10.5	64	125.6	9.7
	11	93	80.5	14.1	89	88.0	13.5	84	96.4	12.8	79	105.6	12	74	115.9	11.2	68	127.5	10.3
	13	99	81.6	14.9	94	89.2	14.2	89	97.7	13.5	84	107.2	12.7	79	117.6	11.9	73	129.3	11
	15	104	82.7	15.8	100	90.5	15.1	94	99.1	14.3	89	108.7	13.5	83	119.3	12.6	77	131.1	11.7
MCAW 010BA12	5	96	94.5	14.6	92	103.2	13.8	87	112.8	13.1	81	123.4	12.3	76	135.3	11.4	69	148.7	10.4
	7	102	95.9	15.5	98	104.7	14.7	92	114.5	13.9	87	125.3	13.1	80	137.4	12.2	74	151.1	11.2
	9	109	97.2	16.4	103	106.2	15.6	98	116.1	14.8	92	127.2	13.9	86	139.5	13	79	153.4	11.9
	11	115	98.5	17.4	109	107.6	16.6	104	117.8	15.7	98	129.0	14.8	91	141.6	13.8	84	155.6	12.7
	13	121	99.8	18.4	116	109.1	17.5	110	119.4	16.6	104	130.9	15.7	97	143.6	14.6	89	157.8	13.5
	15	128	101.1	19.4	122	110.6	18.5	116	121.1	17.5	109	132.7	16.6	103	145.6	15.5	95	160.0	14.4
MCAW 012BA12	5	123	117.5	18.6	117	128.3	17.7	110	140.4	16.7	104	153.8	15.7	96	168.7	14.5	88	185.5	13.3
	7	130	119.2	19.7	124	130.2	18.7	117	142.5	17.8	110	156.2	16.7	103	171.4	15.5	94	188.4	14.2
	9	138	120.9	20.9	131	132.1	19.9	125	144.7	18.8	117	158.5	17.7	109	174.0	16.5	100	191.3	15.2
	11	146	122.6	22.1	139	134.0	21.1	132	146.8	20	124	160.9	18.8	116	176.6	17.5	107	194.2	16.2
	13	154	124.3	23.3	147	136.0	22.3	140	148.9	21.1	132	163.3	19.9	123	179.2	18.6	114	197.0	17.2
	15	163	126.0	24.6	156	137.9	23.5	148	151.0	22.3	139	165.6	21.1	131	181.8	19.7	121	199.8	18.2
MCAW 014BA22	5	143	138.9	21.7	136	152.2	20.6	128	166.9	19.4	120	183.2	18.1	111	201.2	16.8	101	221.2	15.3
	7	152	141.1	23	144	154.7	21.8	136	169.7	20.6	127	186.3	19.3	118	204.6	17.8	108	224.9	16.3
	9	161	143.3	24.3	153	157.2	23.1	144	172.5	21.8	135	189.3	20.5	126	207.9	19	115	228.6	17.4
	11	170	145.6	25.8	162	159.7	24.5	153	175.3	23.1	144	192.4	21.7	134	211.3	20.2	123	232.3	18.5
	13	180	147.8	27.2	171	162.2	25.9	162	178.0	24.5	152	195.5	23	142	214.6	21.4	130	235.9	19.7
	15	190	150.1	28.7	181	164.7	27.3	171	180.8	25.8	161	198.5	24.3	150	218.0	22.7	138	239.5	20.9
MCAW 016BA22	5	156	151.8	23.7	148	166.1	22.4	140	182.0	21.2	131	199.6	19.8	122	219.2	18.4	111	240.9	16.8
	7	166	154.1	25.1	158	168.7	23.8	149	184.9	22.5	140	202.9	21.1	129	222.7	19.6	118	244.9	17.9
	9	176	156.4	26.6	167	171.3	25.3	158	187.9	23.9	148	206.1	22.4	138	226.3	20.9	126	248.8	19.1
	11	186	158.7	28.1	177	174.0	26.7	168	190.8	25.3	157	209.3	23.8	146	229.8	22.1	135	252.6	20.3
	13	197	161.1	29.7	187	176.6	28.3	177	193.7	26.8	167	212.5	25.2	156	233.3	23.5	143	256.5	21.6
	15	207	163.5	31.3	198	179.2	29.9	187	196.6	28.3	176	215.8	26.7	163	236.3	24.7	152	260.3	23
MCAW 018BA22	5	189	184.0	28.5	179	201.2	27.1	169	220.2	25.6	158	241.2	24	147	264.7	22.2	134	290.8	20.3
	7	200	186.7	30.3	190	204.2	28.8	180	223.6	27.2	169	245.0	25.5	157	268.9	23.7	143	295.5	21.7
	9	212	189.4	32.1	202	207.3	30.5	191	227.0	28.9	179	248.8	27.1	167	273.0	25.2	153	300.1	23.1
	11	225	192.2	34	214	210.3	32.3	202	230.4	30.6	190	252.6	28.8	177	277.2	26.8	163	304.6	24.6
	13	237	194.9	35.9	226	213.4	34.2	214	233.8	32.4	202	256.4	30.5	188	281.3	28.5	173	309.1	26.2
	15	251	197.7	37.9	239	216.5	36.1	226	237.2	34.2	214	260.1	32.3	198	284.8	29.9	184	313.5	27.8
MCAW 020BA22	5	214	207.0	32.3	202	226.8	30.6	191	248.7	28.9	179	272.8	27	165	299.6	25	150	329.2	22.7
	7	227	210.3	34.3	215	230.5	32.5	203	252.8	30.7	190	277.4	28.7	176	304.5	26.6	161	334.7	24.3
	9	240	213.6	36.3	228	234.2	34.5	215	256.9	32.6	202	281.9	30.5	187	309.5	28.3	171	340.2	25.9
	11	254	217.0	38.4	241	238.0	36.5	228	261.1	34.5	214	286.5	32.4	199	314.5	30.1	183	345.6	27.6
	13	268	220.3	40.5	255	241.7	38.6	241	265.2	36.5	227	291.0	34.3	211	319.5	31.9	194	351.0	29.3
	15	283	223.8	42.8	269	245.5	40.7	255	269.4	38.6	240	295.6	36.3	222	323.7	33.5	206	356.3	31.2
MCAW 022BA22	5	229	221.9	34.6	217	242.9	32.9	205	266.1	31	192	291.8	29	178	320.5	26.9	162	352.1	24.5
	7	243	225.3	36.7	231	246.8	34.9	218	270.4	32.9	204	296.6	30.8	189	325.6	28.6	173	357.9	26.1
	9	257	228.7	38.9	244	250.6	36.9	231	274.7	34.9	217	301.4	32.8	201	330.9	30.4	184	363.7	27.9
	11	272	232.2	41.2	259	254.5	39.1	245	279.0	37	230	306.1	34.7	214	336.1	32.3	196	369.3	29.7
	13	288	235.7	43.5	274	258.4	41.4	259	283.3	39.1	243	310.9	36.8	227	341.2	34.3	209	375.0	31.6
	15	303	239.2	45.8	289	262.3	43.6	274	287.7	41.4	257	315.6	38.9	238	345.6	36	222	380.6	33.5

- Note: 1. LCWT: Leaving chilled-water temperature.  
 2. The power input includes compressors and condenser fans.  
 3. The ratings are based on 0.043l/s per kW (2.4gpm/ton) and 5.6°C (10°F) evaporator temperature drop.  
 4. The fouling factor in the evaporator is 0.018m<sup>2</sup>·°C/kW (0.0001 h·ft<sup>2</sup>·°F/Btu).  
 5. Interpolation between points is permissible. Extrapolation is not permitted.  
 6. Due to our policy of innovation, some specifications may be changed without prior notification.

## Standard (50Hz) / AHRI condition

Model	LCWT (°C)	Air temperature on condenser (°C)																	
		25			30			35			40			45			50		
		Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)	Capacity (Tons)	Input (kW)	Flow Rate (l/s)
MCAW 024BA22	5	249	239.2	37.7	237	262.2	35.8	223	287.7	33.7	208	315.7	31.5	193	346.9	29.2	175	381.3	26.5
	7	264	243.1	40	251	266.6	38	237	292.5	35.8	222	321.1	33.5	205	352.7	31	187	387.8	28.3
	9	280	247.0	42.4	266	271.0	40.2	251	297.4	38	235	326.5	35.6	218	358.6	33	200	394.2	30.2
	11	296	250.9	44.8	282	275.4	42.6	266	302.3	40.2	250	331.9	37.8	232	364.5	35.1	213	400.6	32.2
	13	313	254.9	47.3	297	279.8	45	281	307.2	42.5	264	337.3	39.9	246	370.4	37.2	226	407.0	34.2
	15	330	259.0	49.9	314	284.3	47.4	297	312.2	44.9	280	342.8	42.3	258	375.4	39	240	413.4	36.3
MCAW 026BA22	5	280	268.7	42.4	266	294.7	40.2	251	323.4	37.9	234	355.0	35.4	217	390.2	32.8	197	428.8	29.8
	7	297	273.2	44.9	282	299.7	42.7	266	328.9	40.2	249	361.2	37.7	231	396.7	34.9	211	436.2	31.9
	9	315	277.6	47.6	299	304.7	45.2	282	334.5	42.7	264	367.3	40	245	403.5	37.1	225	443.5	34
	11	333	282.2	50.3	316	309.7	47.8	299	340.1	45.2	280	373.4	42.4	261	410.2	39.4	239	450.8	36.2
	13	351	286.7	53.1	334	314.8	50.5	316	345.7	47.8	297	379.6	44.9	276	416.9	41.8	254	458.1	38.4
	15	371	291.4	56	353	320.0	53.3	334	351.4	50.5	314	385.8	47.5	290	422.6	43.9	270	465.3	40.8
MCAW 028BA22	5	301	287.7	45.5	285	315.4	43.1	269	346.0	40.6	251	379.8	38	233	417.3	35.2	212	458.5	32
	7	319	292.4	48.2	303	320.7	45.8	286	351.9	43.2	267	386.3	40.4	248	424.2	37.5	226	466.4	34.2
	9	338	297.2	51.1	321	326.0	48.5	303	357.7	45.8	284	392.7	42.9	263	431.3	39.8	241	474.1	36.5
	11	357	301.9	54	340	331.3	51.3	321	363.6	48.5	301	399.2	45.5	280	438.4	42.3	257	481.8	38.8
	13	377	306.7	57	359	336.7	54.2	339	369.6	51.3	319	405.7	48.2	297	445.5	44.8	273	489	