

# CO<sub>2</sub> HIGH TEMPERATURE HEAT PUMP



# ABOUT MAMMOTH

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Since 1935, Mammoth has been producing and installing air conditioning units with the most innovative technologies. Our solutions are found in some of the world's most important buildings for its unparalleled flexibility and efficiency. When performance and energy efficiency are important factors to a project, our products are often chosen as the final solution.



## Established in Minneapolis, USA - 1935



Since 1988, Mammoth has been providing energy saving products to projects in China. In 2002, Mammoth invested US\$10 million to establish its manufacturing facility in Anji, China's #1 Ecological County, and its national sales headquarter in Shanghai to provide custom engineered air conditioning systems for projects in China and abroad.

## Energy Saving & Innovation



Mammoth produces air conditioning equipment that leverages energy saving and innovative technologies. Our products include, but not limited to, geothermal & water source heat pumps, air & water cooled commercial air conditioning units, fan coils, AHU, VAV box, screw chillers, and energy recovery units.

## Customization & Energy Saving is Our Standard



Mammoth has been recognized as a leader in providing custom designed Total Energy Solution HVAC Systems. Our solutions can fit any design applications from WSHP systems to geothermal systems, from hybrid systems to various energy saving systems. Based on the needs of our customers, our recommendations help our customers assess the economic benefits of Mammoth solutions over alternative systems.

## Outstanding Achievement



Mammoth has also brought its innovative design concepts to the industry. We have printed numerous technical design manuals and books to facilitate engineers in the design of Renewable Energy HVAC Systems. Together with industry associations and the commercial section of the US Embassy and Consulate General Offices, we have frequently conducted technical seminars in major cities in China and abroad. We have supplied our solutions to projects that amount to almost 10 million sq. m., and have been continuously recognized as the leader in Renewable Energy products in China.

# CO<sub>2</sub> HIGH TEMPERATURE HEAT PUMP

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## PERFORMANCE FEATURES

### Green and Environmentally Friendly

Use natural refrigerant CO<sub>2</sub> (R744), with ODP of 0 and GWP of 1, promoting a green economy and supporting the "dual carbon" goals.

### High Outlet Water Temperature

Inlet temperature range: 5°C to 55°C, Outlet temperature range: 40°C to 95°C.

### Low Ambient Temperature

Air source CO<sub>2</sub> heat pump unit is suitable for ambient temperatures ranging from -35°C to 45°C, allowing stable and reliable operation in a wide range of regions.

### Multi functionality

CO<sub>2</sub> integrated heating and cooling unit provides 7°C chilled water or lower temperature antifreeze fluid while also producing high-temperature hot water, offering both heating and cooling capabilities.

### High Performance

Air source CO<sub>2</sub> heat pump unit features ultra-efficient energy performance across its entire range, with the CO<sub>2</sub> integrated unit achieving a comprehensive energy efficiency of up to 10.0.

## APPLICATIONS

Food processing,  
Chemical dyeing,  
Electronics and Information,  
Biopharmaceuticals,  
Railway stations,  
Industrial hot water,  
Building heating,  
Crude oil heating,  
Mine ventilation,  
Schools,  
Hospitals,  
Shopping malls and other public buildings.



# AIR SOURCE CO<sub>2</sub> HEAT PUMP WATER HEATER

# 95°C



## TECHNICAL SPECIFICATION

Model		MRPAS-30SHDC3A	MRPAS-40SHDC3A	MRPAS-60SHDC3A	MRPAS-75SHDC3A	MRPAS-110SHDC3A	MRPAS-160SHDC3A	MRPAS-320SHDC3A	
Normal Temperature Condition	Heating Capacity	kW	28.4	38.7	56.5	74.5	109.2	160.0	319.0
	Water Yield	m <sup>3</sup> /h	0.6	0.8	1.2	1.6	2.3	3.4	6.9
	Input Power	kW	6.1	8.4	12.2	16.0	23.7	34.8	69.3
	COP	W/W	4.62	4.62	4.63	4.65	4.61	4.60	4.60
Normal and High-temp. Water Outlet Condition	Heating Capacity	kW	24.0	32.8	47.1	62.0	95.5	142.5	284.0
	Water Yield	m <sup>3</sup> /h	0.3	0.4	0.6	0.8	1.3	1.9	3.8
	Input Power	kW	6.8	9.3	13.3	17.6	27.1	40.7	81.1
	COP	W/W	3.55	3.54	3.53	3.52	3.52	3.50	3.50
Nominal Condition	Heating Capacity	kW	25.0	34.4	49.4	64.1	99.7	147.2	294.0
	Water Yield	m <sup>3</sup> /h	0.5	0.6	0.9	1.2	1.9	2.8	5.5
	Input Power	kW	6.0	8.3	11.9	15.4	24.1	35.9	71.7
	COP	W/W	4.15	4.14	4.14	4.15	4.13	4.10	4.10
Low Temperature Condition	Heating Capacity	kW	18.0	24.7	35.2	46.4	71.7	105.8	210.0
	Water Yield	m <sup>3</sup> /h	0.3	0.5	0.7	0.9	1.3	2.0	3.9
	Input Power	kW	5.7	7.8	11.2	14.7	22.8	34.1	67.7
	COP	W/W	3.16	3.15	3.15	3.15	3.14	3.10	3.10
Power Supply			380V/3N-50Hz						
Max. Input Power	kW	10	12	16	22	30	45	90	
Max. Input Current	A	19	23	30	42	57	85	171	
Ambient Temperature	°C	-35~45							
Max. Outlet Temperature	°C	95							
Refrigerant		R744(CO <sub>2</sub> )							
Compressor		CO <sub>2</sub> -Dedicated Semi-hermetic Piston							
Heat Exchanger		Efficient Copper Tube Fin (Air Side)/Double-tube (Hot Water Side)							
Design Pressure	MPa	14.0(HP)/8.0(LP)							
Water System	Pipe Diameter	DN20 (Female)	DN20 (Female)	DN25 (Female)	DN25 (Female)	DN32 (Female)	DN40 (Female)	DN50 (Flange)	
	Pressure Drop	≤150							
Dimension (L*W*H)	mm	1700*950*1800	1700*950*1800	1950*1100*2160	1950*1100*2160	2700*1410*2300	3000*1600*2500	3000*3100*2500	
Sound Power	dB(A)	≤60	≤62	≤65	≤68	≤72	≤75	≤78	
Weight	kg	500	600	750	850	1400	2000	3800	

- Normal Temperature Condition: Dry bulb temperature 20°C, wet bulb temperature 15°C, inlet water temperature 15°C, outlet water temperature 55°C;
- Operating Condition for normal and high-temperature water outlet: Dry bulb temperature 20°C, wet bulb temperature 15°C, inlet water temperature 15°C, outlet water temperature 80°C;
- Nominal Condition: Dry bulb temperature 7°C, wet bulb temperature 6°C, inlet water temperature 9°C, outlet water temperature 55°C;
- Low Temperature Condition: Dry bulb temperature -7°C, wet bulb temperature -8°C, inlet water temperature 9°C, outlet water temperature 55°C;
- Reference standards: GB/T 21362-2023, JB/T 12840-2016;
- Specifications are subjected to change with product improvements. No prior notice will be given. Please refer to the actual product for final specifications.

# CO<sub>2</sub> COOLING AND HEATING SUPPLY MODULAR UNIT

# 95°C



## TECHNICAL SPECIFICATION

Unit Model		MRPWD-40SHC3A	MRPWD-70SHC3A	MRPWD-105SHC3A	MRPWDV-160SHC3A	MRPWDV-280SHC3A	
Rated Condition	Heating Capacity	kW	36.3	68.0	103.0	160.0	277.0
	Cooling Capacity	kW	29.2	54.7	82.8	128.5	220.0
	Hot Water Flow	m <sup>3</sup> /h	0.8	1.5	2.2	3.4	6.0
	Chilled Water Flow	m <sup>3</sup> /h	5.0	9.4	14.2	22.1	37.8
	Input Power	kW	7.1	13.3	20.2	31.5	57.0
	COP	W/W	9.23	9.23	9.20	9.16	8.72
High-temp. Water Outlet Condition ①	Heating Capacity	kW	33.8	65.1	99.0	149.5	266.0
	Cooling Capacity	kW	25.3	48.6	74.0	109.4	193.0
	Hot Water Flow	m <sup>3</sup> /h	0.4	0.8	1.2	1.8	3.3
	Chilled Water Flow	m <sup>3</sup> /h	4.4	8.4	12.7	18.8	33.2
	Input Power	kW	8.5	16.5	25.0	40.1	73.0
	COP	W/W	6.95	6.89	6.92	6.46	6.29
High-temp. Water Outlet Condition ②	Heating Capacity	kW	27.0	53.5	83.1	126.0	220.0
	Cooling Capacity	kW	19.0	37.7	58.6	87.8	153.0
	Hot Water Flow	m <sup>3</sup> /h	0.3	0.7	1.0	1.5	2.7
	Chilled Water Flow	m <sup>3</sup> /h	3.3	6.5	10.1	15.1	26.3
	Input Power	kW	8.0	15.8	24.5	38.2	67.0
	COP	W/W	5.75	5.77	5.78	5.60	5.57
Power Supply			380V/3N~50Hz				
Max. Input Power/Current	kW/A	13/23	22/39	32/58	48/86	85/150	
Water Inlet/Hot Water Outlet Temp	°C	-10~25(Chilled Water Side)/40~95(Hot Water Side)					
Refrigerant		R744(CO <sub>2</sub> )					
Compressor		CO <sub>2</sub> -dedicated Semi-hermetic Piston					
Heat Exchanger		Plate (Chilled Water Side)/Tube-in-tube (Hot Water Side)					
Design Pressure	Mpa	14.0(HP)/8.0(LP)					
Water System	Pipe Diameter	DN20/DN40. (Female)	DN25 (Female)/DN50 (Flange)		DN32 (Female)/DN65 (Flange)	DN40 (Female)/DN100 (Flange)	
	Pressure Drop	kPa	≤150				
Dimension (L*W*H)	mm	1300*1050*1700	1300*1050*1800	1500*1250*1800	1700*1250*1800	2500*1500*1800	
Sound Power	dB(A)	≤65	≤70	≤70	≤72	≤78	
Weight	kg	500	750	900	1200	2000	

- Rated Condition: Hot water side inlet/outlet Temperature 15°C/55°C, chilled water side inlet/outlet Temperature 15°C/10°C;
- High Temperature Water Outlet ConditionD: Hot water side inlet/outlet Temperature 15°C/85°C, chilled water side inlet/outlet Temperature 20°C/15°C;
- High Temperature Water Outlet Condition@: Hot water side inlet/outlet Temperature 15°C/85°C, chilled water side inlet/outlet Temperature 12°C/7°C;
- Reference standard: GB/T 21362-2023;
- Specifications are subjected to change with product improvements. No prior notice will be given. Please refer to the actual product for final specifications.

