

HITACHI

—
**Catalogue
2022**



Cooling & Heating

Samurai



Samurai S

Heat pump unit
Air cooled



Samurai M

Heat pump unit
Air cooled



Samurai L

Chiller and heat pump unit
Air cooled









Samurai L

Chiller and heat pump unit
Water cooled and condenserless

Selection guide

Chilled water and heat pump units

	Rated power range in cooling mode (kW)		Types of compressor (Refrigerant)
Samurai S Heat pump  Air cooled	11.2 - 18	72.00	Inverter rotary unit (R410a)
Samurai M Heat pump  Air cooled	44 - 255		4,080
Samurai L Chiller  Air cooled	160 - 360		2,880
Samurai L Heat pump  Air cooled	150 - 340		2,720
Samurai L Chiller  Water cooled	140 - 250		2,000
Samurai L  Condenserless	135 - 215		1,720

One unit
 Modular concept: multiple units with a cascading connection

Heat pump models



Separate wired controller
Compatible Samurai M and Samurai S ranges

Controls and accessories included



MODBUS



BACNET

Compatible Samurai L and Samurai M ranges

Benefits

Chilled water and heat pump units

1

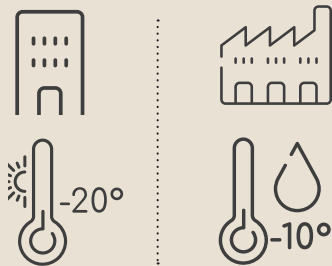
Modular design that adapts to the demands of each space

Thanks to their modular design, Hitachi chillers are ideal for quick, compact installations where the machines must adapt to the space available. The high-efficiency units must be adaptable to reach the required power, thereby guaranteeing continued operation in the event of partial failure.



2

Operating ranges adapted to PROCESS and COMFORT applications



Samurai S/M/L ranges are perfectly suited to the process market. As standard, their extensive operating range of water supply temperatures means they can suit many applications. Complete with a Brine option, the Samurai L can produce cold water down to -10°C with outside temperatures of -15°C. The heat pump versions provide hot water to 55c and can still heat down to -15°C / -20°C ambient dependent on the model.

3

Modular solution for excellent energy performance



SEER
5.52

Samurai ranges incorporate cutting-edge power modulation technologies, to anticipate ERP 2021's energy performance thresholds in cooling mode.

- Samurai S range: Inverter rotary compressor.
- Samurai M: Inverter scroll and ec motor fans.
- Samurai L: modular screw and ec motor fans.

4

Ranges to cater for small and large projects

The Samurai L range, specifically dedicated to larger projects, has a number of options that can ensure a bespoke design will match building needs. Samurai S/M ranges for smaller projects are ready-to-go out of the box with most accessories included as standard.

Samurai S Heat pump

Air cooled – Rotary Inverter compressor



Plug & play design

The Samurai S range for small projects is ready to install straight out of the box with the built-in hydraulic kits including a flow switch, water filter, safety valve and built in pump.

Flexible installation

Modular design: onboard controls to operate up to 4 units in a cascading system. (Fig. 1)

Static pressure available: Each unit has 30 Pa of static pressure available as standard.

Large operating ranges (Fig. 2)

Excellent energy performance

Our Inverter technology promises excellent seasonal energy performance in both heat and cooling mode.



Fig. 1

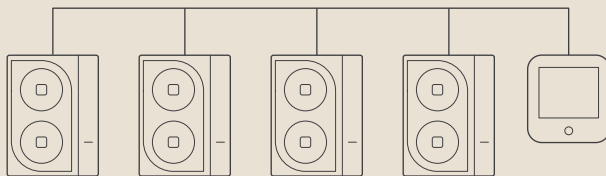
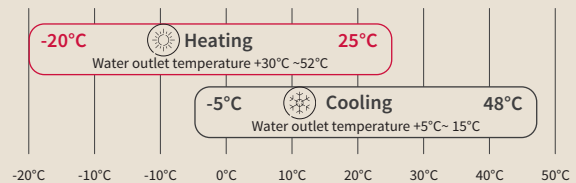
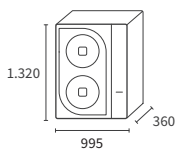


Fig. 2



Heat pump models

Controls and accessories included



- RHMA-4AVN
- RHMA-5AVN
- RHMA-6AVN
- RHMA-7AVN



Separate wired remote control

	Unit	RHMA-4AVN	RHMA-5AVN	RHMA-6AVN	RHMA-7AVN
Performance					
Nominal Cooling capacity	kW	11.2	14.3	16	17.8
Rated power input Cooling	kW	4.01	5.28	5.74	6.95
EER	-	2.8	2.7	2.8	2.56
SEER	-	4.05	4.32	4.52	4.42
ηs, c	%	159	170	178	174
Nominal Heating capacity	kW	10.9	13.1	15.4	18.5
Rated power input Heating	kW	3.7	4.3	4.7	6.3
Heating capacity at -7°C (water outlet 50°C)	kW	7.15	7.89	10.36	12.35
Heating capacity at -15°C (water outlet 45°C)	kW	5.82	4.99	8.63	10.63
COP	-	3	3.06	3.29	2.94
SCOP	-	3.5	3.6	4.02	3.9
ηs, h	%	136	139	158	153
Sound power level Cooling Standard / Low	dB(A)	68 / 64		70 / 65	74 / 69
Sound power level Heating Standard / Low	dB(A)	69 / 66		71 / 67	74 / 70
Sound pressure level 1m Cooling Standard/Low	dB(A)	54 / 52		55 / 53	59 / 54
Sound pressure level 1m Heating Standard/Low	dB(A)	55 / 54		56 / 55	59 / 55
Sound pressure level 10m Cooling Standard/Low	dB(A)	40 / 38		42 / 40	46 / 42
Sound pressure level 10m Heating Standard/Low	dB(A)	41 / 39		43 / 42	46 / 43
Operating ranges at outside Temp° - Cooling mode	°C			-5~48	
Operating ranges at outside Temp° - Heating mode	°C			-20~25	
T° at water outlet – Cooling mode	°C			+5~15	
T° at water outlet – Heating mode	°C			30~52	
Dimensions and weight					
Overall dimensions (height x length x width)	mm			1320 x 995 x 360	
Net weight	kg	126	128		141
Compressor					
Type of compressor	-			Hitachi Inverter DC rotary unit	
R410A pre-charged on delivery	kg	2.8	3.3	3.9	4
Fans					
Number of fans (BLDC/54)	-			2	
Airflow	m³/h			2500-6600	
Total power of fans	kW		0.18		0.22
External static pressure	Pa			0 / 30Pa	
Hydraulic data					
Type of exchanger	-			Braze plate exchanger	
Rated water flow Heating/Cooling	l/s	0.52 / 0.56	0.66 / 0.67	0.75 / 0.79	0.82 / 1.03
Min./max. flow	l/s	1.2 / 2.7	1.2 / 3.4	1.6 / 3.8	1.6 / 4.3
Min. water capacity of the installation – Comfort (Cooling mode)	l	37	48	53	59
Min. water capacity of the installation – Process (Cooling mode)	l	73	93	104	116
Diameter and type of hydraulic connection	inches			1"	
Expansion vessel – not included, to be provided by the installer	L			To be sized by facility	
Pump – HP	kW			0.37	
Electrical data					
Supply voltage	V/Ph/Hz			230 / 1 / 50	
Max. current	A	24		33	36

Note: The power and performance are specified without the pump. Rated cooling conditions: water cycle: 7/12°C – outside temperature: 35°C. Rated heating conditions: water cycle: 40/45°C – outside temperature: 6°C WB. Seasonal energy performance is specified according to European standard EN-14825.

Optional controls and accessories available



Modular kit: Remote temperature sensor for modular concept (available as an option)

Samurai M Chiller and heat pump unit

Air cooled Scroll Inverter compressor



Ultra compact

With its very small footprint, the Samurai M is the perfect product for the replacement market. Only a 2.7m² footprint for 130 kW of heating.

Very low noise level

The use of Inverter technology (compressor and fans), coupled with the use of acoustic lower panels as standard, brings you the quietest range on the market. A low noise option is also available with an average lower sound level of 6 dB(A).

Excellent energy performance

Our chiller and heat pump units are designed to meet tomorrow's energy efficiency requirements today in line with the latest European ecodesign regulations.

with optional low noise level **SEER 4.71**

The 'all included' design as standard

Samurai M models are fully equipped with a range of components included as standard. Components include: low leaving water temperature kit, master/slave mode, MODBUS/BACNET interfaces, anti-corrosion protection of fins, flow switch and water filter etc. This range is very easy to select and install, with the ALL INCLUDED design and easy-to-use onboard touch control.

Wide operating ranges

(Fig. 1)

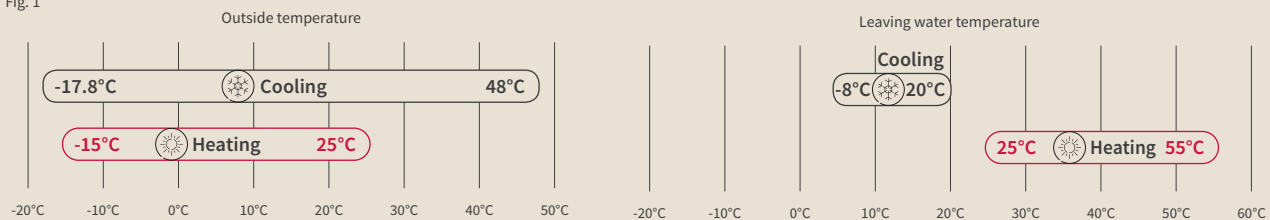
Versatile

Configurable in cooling only mode by changing the dip switches. Modular design: onboard controls to operate up to 16 units in a cascade system.

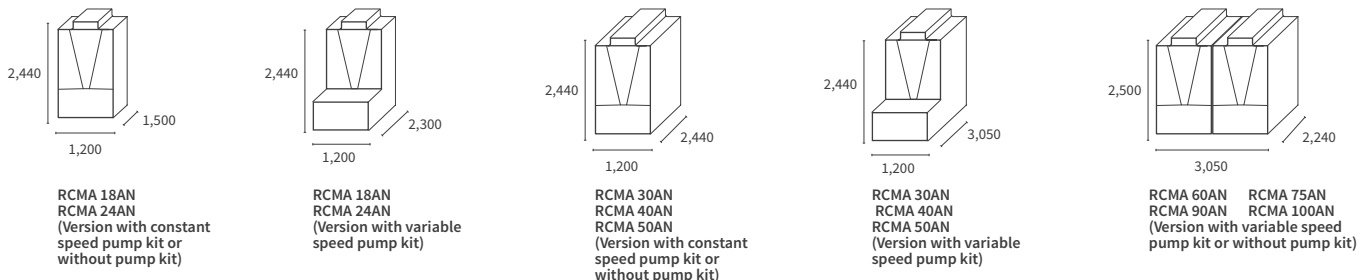
Operational safety

Samurai M chillers feature two to four independent refrigeration circuits from 80 kW cooling, providing operational safety for the user. The automatic distribution of operating hours for the compressors, increases component durability. The modular design ensures continuous operation in the event of one unit failing, and limits site redundancy investment. In addition the multi circuit modular design considerably reduces the potential F-Gas impact in the event of a leak.

Fig. 1



Heat pump models



Samurai M – heat pump

Unit RHMA-18AN RHMA-24AN RHMA-30AN RHMA-40AN RHMA-50AN RHMA-60AN RHMA-75AN RHMA-90AN RHMA-100AN

Performance										
Nominal Cooling capacity	kW	44	60	78	99	122	159	188	221	254
Rated power input Cooling	kW	15.49	21.51	25.08	33.0	41.36	50.96	61.84	71.75	83.01
EER	-	2.84	2.79	3.11	3.0	2.95	3.12	3.04	3.08	3.06
SEER	-	4.38	4.50	4.43	4.24	4.42	4.24	4.28	4.17	4.34
η_s, c	%	172.2	177.0	174.2	166.6	173.8	166.6	168.2	163.8	170.6
SEPR MT	-	3.76	3.77	3.91	3.53	3.58	2.79	2.70	3.78	3.70
SEPR HT	-	5.70	5.96	5.58	5.69	5.84	5.97	5.81	5.99	6.02
Nominal Heating capacity	kW	50	61	87	99	132	161	191	231	254
Rated power input Heating	kW	16.39	19.87	26.93	31.73	44.44	49.39	59.32	71.74	83.01
Heating capacity at -7°C (water outlet 45°C)	kW	29.35	35.8	50.4	56.26	73.94	95.97	111.39	133.95	148.62
Heating capacity at -15°C (water outlet 40°C)	kW	25.53	31.59	42.4	48.85	64.26	81.4	94.32	118.39	128.91
COP	-	3.05	3.07	3.23	3.12	2.97	3.26	3.22	3.22	3.06
SCOP	-	3.45	3.44	3.4	3.41	3.54	3.32	3.36	3.47	3.3
η_s, h	%	135	134.6	133	133.4	138.6	129.8	131.4	135.8	129
Sound power level Cooling Standard / Low	dB(A)	80 / 75	82 / 77	81 / 77	83 / 79	84 / 80	86 / 82	87 / 82	88 / 83	89 / 84
Sound power level Heating Standard / Low	dB(A)	82 / 72	84 / 76	84 / 76	85 / 80	89 / 81	87 / 82	88 / 82	89 / 83	90 / 84
Sound pressure level 1m Cooling Standard/Low	dB(A)	66 / 61	68 / 63	66 / 62	68 / 64	69 / 65	70 / 66	71 / 66	72 / 67	73 / 68
Sound pressure level 1m Heating Standard/Low	dB(A)	68 / 63	70 / 65	69 / 65	70 / 65	74 / 68	71 / 66	72 / 67	73 / 68	74 / 68
Sound pressure level 10m Cooling Standard/Low	dB(A)	51 / 46	53 / 48	52 / 48	54 / 50	55 / 51	57 / 53	58 / 53	59 / 54	60 / 55
Sound pressure level 10m Heating Standard/Low	dB(A)	53 / 48	55 / 50	55 / 51	56 / 51	60 / 55	58 / 53	59 / 54	60 / 54	61 / 55
Operating ranges at outside Temp°. - Cooling mode	°C	-17.8~48								
Operating ranges at outside Temp°. - Heating mode	°C	-15~25								
T° at water outlet – Cooling mode	°C	-8~20								
T° at water outlet – Heating mode	°C	25~55								

Dimensions and weight

Height	mm	2440						2500		
Width	mm	1200						3050		
Length	mm	1500			2240			2240		
Length (constant pump)	mm	1500			2240			-	-	-
Length (variable flow pump)	mm	2300			3050			2240		
Net weight (without pump / with pump)	kg	587 / 782	610 / 805	893 / 1105	920 / 1132	999 / 1211	1922 / 2115	2003 / 2196	2235 / 2428	2316 / 2509

Compressor

Type of compressor	-	Scroll DC Inverter + Scroll									
Compressor number	-	2		3		4	5	6	7	8	
Adjustment range	%	33~100	25~100	20~100	15~100	12~100	10~100	8~100	7~100	6~100	
R410A prefilled on delivery	Circuit 1	kg	9.5	12.3	8.5	9.5	11.4	9.5	11	9.5	11.4
	Circuit 2	kg	-	-	9.1	11	11.4	10	10.5	11	11.4
	Circuit 3	kg	-	-	-	-	-	10	10.5	-	11.4
	Circuit 4	kg	-	-	-	-	-	-	-	-	11.4

Fans / Air exchangers

Air heat exchanger	-	Cu/Al fin exchanger								
Number of fans (type EC)	-	1		2		3		4		
Airflow	m ³ /min	324.4	349.4	541.1	604.9	702.5	1024.5	1132.4	1370.1	1510
Total power of fans	kW	0.87	1.06	0.95	1.17	1.61	2.41	2.97	3.27	3.95

Hydraulic data

Water heat exchanger	-	Braze plate exchanger								
Rated water flow	l/s	2.1	2.9	3.7	4.7	5.8	7.6	9.0	10.6	12.1
Min./max. flow	l/s	1.1 ~ 2.8	1.4 ~ 3.7	1.9 ~ 5.0	2.4 ~ 6.2	3.0 ~ 7.8	3.7 ~ 11.1	4.5 ~ 13.6	5.3 ~ 15.8	6.0 ~ 17.9
Min. water capacity (without pump kit)	l	7	10	14	16	16	27	29	32	34
Min. water capacity of the installation – Comfort (Cooling mode)	l	148	199	259	327	406	527	622	734	842
Min. water capacity of the installation – Process (Cooling mode)	l	291	392	509	644	799	1038	1224	1445	1658
Pressure drop in the exchanger	kPa	32	25	27	30	36	25	32	41	38
Pump type	-	Constant or variable flow pump (depending on the model)								
Diameter and type of hydraulic connection	inches	2" Victaulic			2 1/2" Victaulic			4" Victaulic		

Electrical data

Supply voltage	V/Ph/Hz	400 / 3 / 50								
Max. current	A	35	38	61	72	85	119	133	166	180

Note: The power and performance are specified without the pump. Rated cooling conditions: water cycle: 7/12°C – outside temperature: 35°C. Rated heating conditions: water cycle: 40/45°C – outside temperature: 6°C WB. Seasonal energy performance is specified according to European standard EN-14825.

Order optional accessories separately



Separate wired remote control



Condenser coil guard



Anti-vibration spring type



Anti-vibration neoprene pad



Modular kit:
Remote temperature sensor

Optional configurations possible



Single constant pump kit configuration
(factory-mounted)



Single variable pump kit configuration
(factory-mounted)



Low noise level (-6dB (A))
(factory-mounted)

Samurai L cooling only chiller

Air cooled
Twin modulating screw



New Twin screw modulating compressor

HITACHI's Samurai L range features a new TWIN screw compressor optimized for R134a refrigerant, with a 25% to 100% continuous capacity control system. With this modulating design, the chiller always meets the demand, and the temperature of the leaving water is accurately maintained without the need for expensive additional accessories.

- This compressor is equipped with a cyclonic oil separator, which does not require maintenance.
- Equipped with new bearings, the overhaul period is extended to 40,000 hours of operation. (Fig. 1)

Two operating modes

Two operating modes are available as standard for perfect adaptability to both the comfort and process markets:

- Standard mode > constant leaving water temperature > all compressors are running at the same load.
- High-energy efficiency mode > intelligent control of the compressor's start/stop function to optimize the system's energy performance.

Partial heat recovery

As an option, you can equip the Samurai L unit with an additional heat exchanger for partial heat recovery, which can be used for the preheating of a DHW circuit or for space heating.

Large operating ranges

With the Samurai L units you can match the needs of multiple cooling applications. Optionally, the leaving water temperature can reach down to -10°C in cooling mode. (Fig. 4)

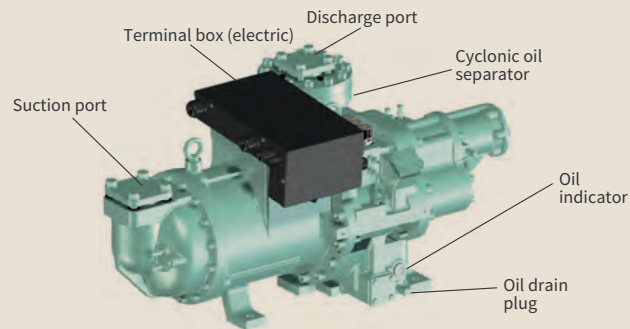
Precise temperature control

Combining the continuous capacity control compressor with "HITACHI's unique electronic controls" allows the precise control of the leaving water temperature, regardless of the cooling load. This control is a benefit for both comfort applications (commercial buildings) and process applications (industry). (Fig. 2)

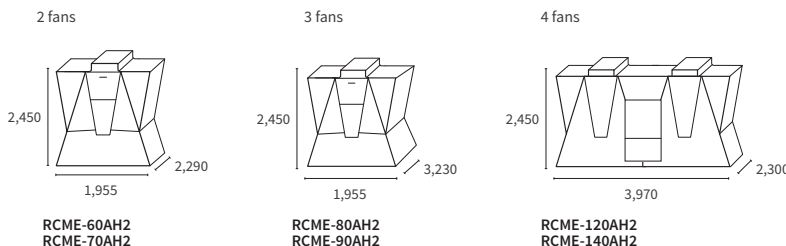
Modular design

Combine as many as 8 modules for unparalleled installation flexibility and make use of the chiller's small footprint to fit it into whatever space is available for the project. (Fig. 3)

Fig. 1



Single cooling models



	Unit	RCME-60AH2	RCME-70AH2	RCME-80AH2	RCME-90AH2	RCME-120AH2	RCME-140AH2
Performance							
Nominal Cooling capacity	kW	160	180	205	255	320	360
Rated power input in Cooling mode	kW	51.00	57.30	64.90	70.30	101.90	114.60
EER	-	3.14	3.14	3.16	3.20	3.14	3.14
SEER	-	4.11	4.13	4.12	4.12	4.18	4.19
SEPR MT	-	3.24	3.24	3.26	3.30	3.25	3.25
SEPR HT	-	5.11	5.11	5.15	5.20	5.13	5.13
Sound pressure level**	dB(A)	83	84	85	86	86	87
Sound power	dB(A)	96	97	98	99	99	100
Operating ranges at outside Temp*, - Cooling mode	°C	-15~46					
T° at water outlet – Cooling mode	°C	+5-15 (standard) / -10-5 (low temperature option) / +15-30 (high temperature option)					
Dimensions and weight							
Dimensions (height x width x length)	mm	2450 x 1955 x 2290		2450 x 1955 x 3230		2450 x 3970 x 2300	
Net weight	kg	1300	1340	1590	1680	2640	2720
Compressor							
Type of compressor	-	Twin semi-hermetic screw					
Compressor number	-	1			2		
Number of circuits	-	1			2		
Capacity range	%	25~100					
Refrigerant	-	R134A					
Refrigerant charge	kg	29	36	47	47	58	72
Fans / Air exchangers							
Air heat exchanger	-	Cu/Al blade exchanger					
Number of fans (type EC)	-	4		6		8	
Hydraulic data							
Water heat exchanger	-	Braze plate exchanger					
Water flow min/rated/max	m³/h	17.2 / 27.5 / 39.3	19.4 / 31.0 / 44.2	22.0 / 35.3 / 50.4	24.2 / 38.7 / 55.3	34.4 / 55.0 / 78.6	38.7 / 61.9 / 88.5
Min. water volume	m³	0.77	0.76	0.98	0.95	1.54	1.52
Pressure drop	kPa	16.6	15.9	20.1	23.8	16.6	15.9
Diameter and type of hydraulic connection	inches	2 1/2" victaulic					
Quantity of hydraulic connections	-	1x input, 1x output			2x input, 2x output		
Electrical data							
Supply voltage	V/Ph/Hz	400 / 3 / 50 + N					
Max. current / starting current	A	118 / 240	132 / 240	140 / 240	143 / 240	237 / 259	264 / 262

Note: The power and performance are specified without the pump. Rated cooling conditions: water cycle: 7/12°C – outside temperature: 35°C. Rated heating conditions: water cycle: 40/45°C – outside temperature: 6°C WB. Seasonal energy performance is specified according to European standard EN-14825. *Preliminary data **Acoustic levels are specified at 10m, facing the unit.

Fig. 2

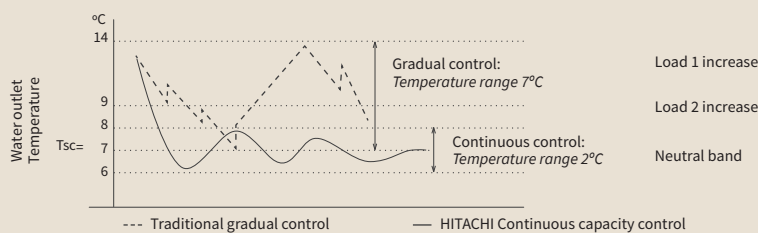


Fig. 3

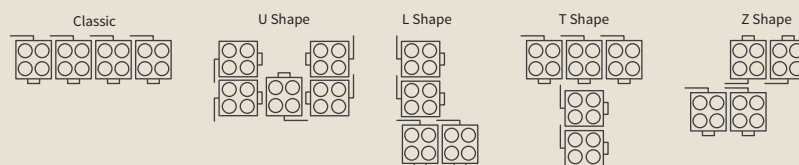
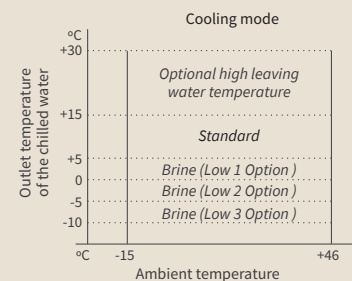


Fig. 4



Samurai L Heat pump

Air cooled
Twin modulating screw



New Twin screw modulating compressor

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- Equipped with new bearings, the overhaul period is extended to 40,000 hours of operation. (Fig. 1)

Precise temperature control

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Modular design

Combine as many as 8 modules for unparalleled installation flexibility and make use of the heat pump's small footprint to fit into whatever space is available for the project. (Fig. 3)

Two installation options

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- Standard mode > constant leaving water temperature > all the compressors are running at the same load.
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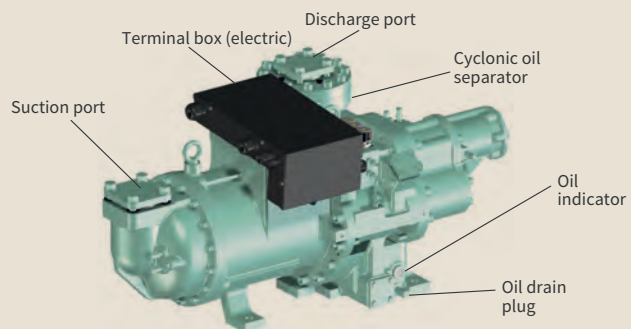
Partial heat recovery

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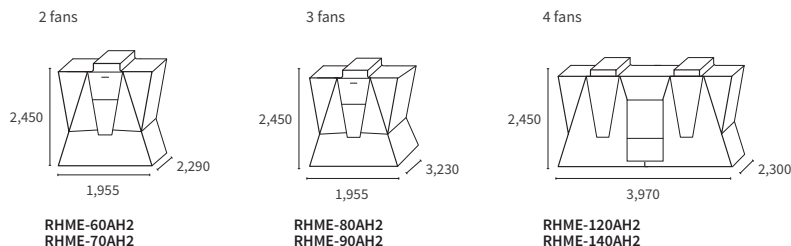
Large operating ranges

With the Samurai L units you can match the needs of multiple cooling applications. Optionally, the leaving water temperature can reach down to -10°C in cooling mode and up to 55°C in heating mode. (Fig. 4)

Fig. 1



Single heat pump models



	Unit	RHME-60AH2	RHME-70AH2	RHME-80AH2	RHME-90AH2	RHME-120AH2	RHME-140AH2
Performance							
Nominal Cooling capacity	kW	150	170	195	210	300	340
Rated power input in Cooling mode	kW	50.8	57.6	65.7	69.8	101.7	115.3
EER	-	2.95		2.97	3.01	2.95	
SEER	-	3.88		3.92	3.96	3.94	3.93
Nominal Heating capacity	kW	145		185		290	
Rated power input in Heating mode	kW	51.2		64.9		102.5	
Heating capacity at -5°C (water outlet 55°C)	kW	84	84	107.2	107.2	168	168
Heating capacity at -10°C (water outlet 50°C)	kW	74	74	95.4	95.4	148.1	148.1
COP	-	2.83		2.85		2.83	
SCOP LT	-	3.22		3.25		3.22	
Sound pressure level**	dB(A)	83	84	85	86	86	87
Sound power	dB(A)	96	97	98	99	99	100
Operating ranges at outside Temp°. - Cooling mode	°C	-15~46					
Operating ranges at outside Temp°. - Heating mode	°C	-9.5~21 (dry bulb) / -10~15.5 (wet bulb)					
T° at water outlet – Cooling mode	°C	5~15 (standard) / -10~5 (low temperature option) / 15~30 (high temperature option)					
T° at water outlet – Heating mode	°C	35~55					
Dimensions and weight							
Dimensions (height x width x length)	mm	2450 x 1955 x 2290		2450 x 1955 x 3230		2450 x 3970 x 2300	
Net weight	kg	1400	1420	1680	1760	2820	2880
Compressor							
Type of compressor	-	Twin semi-hermetic screw					
Compressor number	-	1			2		2
Number of circuits	-	1			2		2
Capacity range	%	25~100					
Refrigerant	-	R134A					
Refrigerant charge	kg	37	39	58	60	74	78
Fans / Air exchangers							
Air heat exchanger	-	Cu/Al fin exchanger					
Number of fans (type EC)	-	4		6		8	
Hydraulic data							
Water heat exchanger	-	Brazen plate exchanger					
Water flow min/rated/max	m³/h	16.1 / 24.9 / 36.9	18.3 / 24.9 / 41.8	21.0 / 31.8 / 47.9	22.6 / 31.8 / 51.6	32.3 / 49.9 / 73.7	36.6 / 49.9 / 83.5
Min. water volume	m³	0.72		0.94	0.89	1.44	
Pressure drop	kPa	10.7		13.7		10.7	
Diameter and type of hydraulic connection	inches	2 1/2" victaulic					
Quantity of hydraulic connections	-	1x input, 1x output			2x input, 2x output		
Electrical data							
Supply voltage	V/Ph/Hz	400/3/50 + N					
Max. current / starting current	A	119/240	133/240	140/240	143/240	238/259	266/262

Note: The power and performance are specified without the pump. Rated cooling conditions: water cycle: 7/12°C – outside temperature: 35°C. Rated heating conditions: water cycle: 40/45°C – outside temperature: 6°C WB. Seasonal energy performance is specified according to European standard EN-14825. *Preliminary data **Acoustic levels are specified at 10m, facing the unit.

Fig. 2

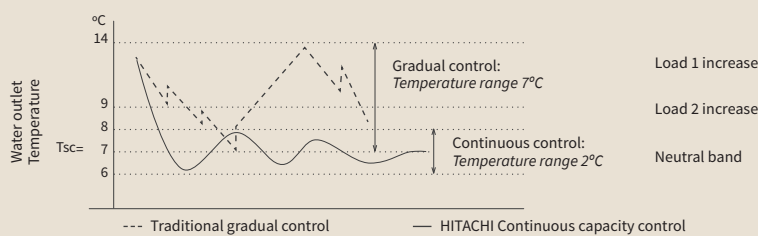


Fig. 4

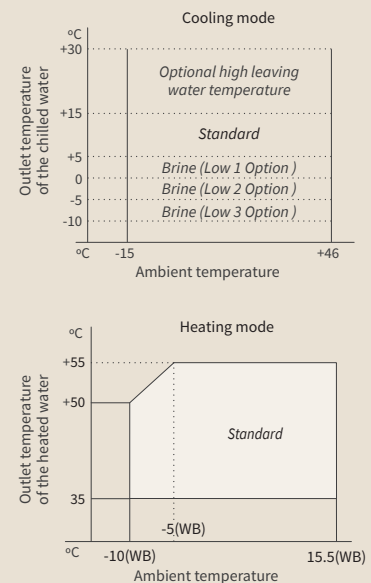
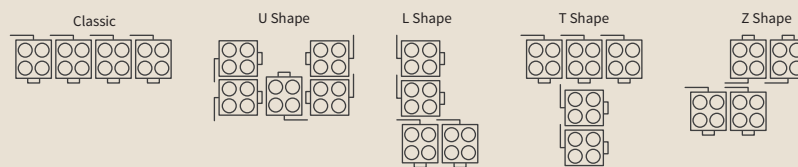


Fig. 3



Samurai L Chiller

Water cooled unit
Twin modulating screw



Ultra compact

With a footprint equivalent to 1m² for every 250 kW of cooling provided, the Samurai L water cooled unit is the most compact unit on the market.

New Twin screw modulating compressor

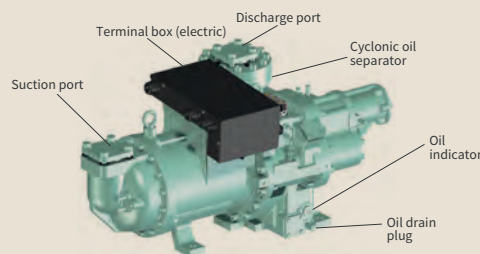
HITACHI's Samurai L range features a new TWIN screw compressor optimized for R134a and R513A refrigerants, with a 25% to 100% continuous capacity control system. With this modulating design, the chiller always meets the demand, and the temperature of the leaving water is accurately maintained without the need for expensive additional accessories.

- This compressor is equipped with a cyclonic oil separator, which does not require maintenance.
- Equipped with new bearings, the overhaul period is extended to 40,000 hours of operation. (Fig. 1).

New R513A refrigerant models

HITACHI's new units have the same capacity performance as the R134a range but with a lower GWP refrigerant for more environmentally friendly operation.

Fig. 1



Precise temperature control

Combining the continuous capacity control compressor with "HITACHI's unique electronic controls" allows the precise control of the leaving water temperature, regardless of the cooling load. This control is a benefit for both comfort applications (commercial buildings) and process applications (industry). (Fig. 2)

Modular design

Combine as many as 8 modules for unparalleled installation options and make use of the chiller unit's small footprint to fit into whatever space is available for the project. The unit will fit in lifts and will even go through a standard door making even the tightest plant rooms accessible.

Two operation modes

Two operating modes are available as standard for perfect adaptability to both the comfort and process markets:

- Standard mode > constant leaving water temperature > all the compressors are running at the same load.
- High-energy efficiency mode > intelligent control of the compressor's start/stop function to optimize the system's energy performance.

Cooling only unit with heat pump option

The System can also work as a heat pump by moving control from the evaporator side to the condenser side. (Fig. 3)

Fig. 2

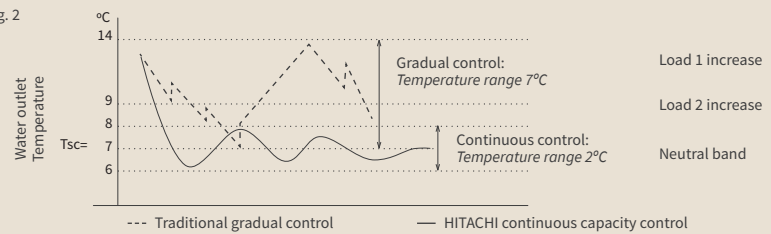
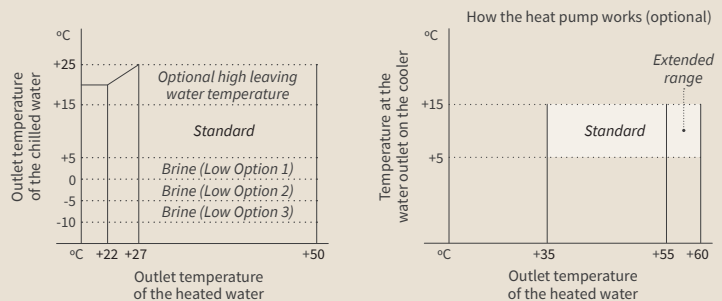
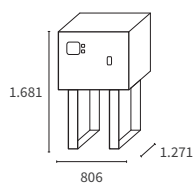


Fig. 3



Single cooling models



RCME-40WH1 RCME-50WH1
RCME-60WH1 RCME-70WH1

	Unit	R134A REFRIGERANT				R513A REFRIGERANT			
		RCME-40WH1	RCME-50WH1	RCME-60WH1	RCME-70WH1	RCME-40WH1	RCME-50WH1	RCME-60WH1	RCME-70WH1
Performance									
Nominal Cooling capacity	kW	140	180	220	250	140	180	220	250
Rated power input Cooling	kW	28	37	45	51	29.4	38.1	47.7	53.9
EER	-	5.00	4.96	4.85	4.87	4.76	4.72	4.61	4.64
SEER	-	5.27	5.46	5.51	5.52	5.10	5.25	5.28	5.30
SEPR MT	-	4.88	4.85	4.89	4.90	4.65	4.62	4.65	4.67
SEPR HT	-	7.58	7.51	7.57	7.59	7.22	7.17	7.20	7.24
Nominal Heating capacity (option)	kW	160	205	252	287	162	209	256	291
Rated power input in Heating mode (optional)	kW	33.40	43.30	54.10	61.20	35.4	45.9	57.4	64.9
COP (optional)	-	4.79	4.76	4.67	4.69	4.57	4.54	4.46	4.48
SCOP LT (optional)	-	5.90	5.86	5.75	5.78	5.70	5.66	5.55	5.58
SCOP MT (optional)	-	4.42	4.39	4.32	4.33	4.24	4.21	4.14	4.15
Sound pressure level*	dB(A)	60	61	62	63	60	61	62	63
Sound power	dB(A)	88	89	90	91	88	89	90	91
Temp° at water outlet – Cooling mode (evaporator)	°C	5~15 standard / -10~5 (low temperature option) / 15~25 (high temperature option)				5~15 standard / -10~5 (low temperature option) / 15~25 (high temperature option)			
Temp° at water outlet – Cooling mode (condenser)	°C	22~50				22~47			
Temp° at water outlet – Heating mode (condenser)	°C	35~60 (heat pump option)				35~57 (heat pump option)			
Dimensions and weight									
Dimensions (height x width x length)	mm	1681 x 806 x 1271				1681 x 806 x 1271			
Net weight	kg	860	950	1040	1075	860	950	1040	1075
Compressor									
Type of compressor	-	Twin semi-hermetic screw				Twin semi-hermetic screw			
Compressor number	-	1				1			
Circuit number	-	1				1			
Capacity range	%	25~100				25~100			
Refrigerant	-	R134A				R513A			
Quantity of refrigerant	kg	19	20	24	29	15	17.5	22.5	28
Hydraulic data									
Type of exchanger (condenser)	-	Braze plate exchanger				Braze plate exchanger			
Type of exchanger (evaporator)	-	Braze plate exchanger				Braze plate exchanger			
Rated water flow (evaporator / condenser)	m³/h	24.1 / 28.9	31 / 37.2	37.8 / 45.6	43 / 51.8	24.1 / 28.9	31 / 37.2	37.8 / 45.6	43 / 51.8
Min. water flow (evaporator)	m³/h	15.1	19.4	23.7	26.9	15.1	19.4	23.7	26.9
Max. flow (evaporator / condenser)	m³/h	52.3 / 62.8	67.3 / 80.9	82.3 / 83.8	83.8 / 83.8	52.3 / 62.8	67.3 / 80.9	82.3 / 83.8	83.8 / 83.8
Min. water volume	m³	0.51	0.65	0.8	0.9	0.51	0.65	0.8	0.9
Water pressure drop (evaporator / condenser)	kPa	20 / 21.3	21.5 / 23.8	19.7 / 26.4	25 / 27.8	20 / 21.3	21.5 / 23.8	19.7 / 26.4	25 / 27.8
Diameter and type of hydraulic connection	-	2 1/2" victaulic				2 1/2" victaulic			
Quantity of hydraulic connections	-	1x input, 1x output per exchanger				1x input, 1x output per exchanger			
Electrical data									
Supply voltage	V/Ph/Hz	400 / 3 / 50 + N				400 / 3 / 50 + N			
Max. current / starting current	A	66.2 / 179	84.6 / 240	105 / 240	118 / 240	66.2 / 179	84.6 / 240	105 / 240	118 / 240

Note: The power and performance are specified without the pump. Rated cooling conditions: water cycle: 7/12°C – outside temperature: 35°C. Rated heating conditions: water cycle: 40/45°C – outside temperature: 6°C WB. Seasonal energy performance is specified according to the European standard EN-14825.*Acoustic levels are specified at 10m, facing the unit.

Options and accessories (see pages 310-311)

Samurai L

Condenserless
Twin modulating screw



Ultra compact

With a footprint equivalent to 1m² for every 250 kW of cooling provided, the Samurai L condenserless unit is the most compact unit on the market.

New Twin screw modulating compressor

HITACHI's Samurai L range features a new TWIN screw compressor optimized for R134a and R513A refrigerants, with a 25% to 100% continuous capacity control system. With this modulating design, the chiller always meets the demand, and the temperature of the leaving water is accurately maintained without the need for expensive additional accessories.

- This compressor is equipped with a cyclonic oil separator, which does not require maintenance.
- Equipped with new bearings, the overhaul period is extended to 40,000 hours of operation. (Fig. 1)

Precise temperature control

Combining the continuous capacity control compressor with "HITACHI's unique electronic controls" allows the precise control of the leaving water temperature, regardless of the cooling load. This control is a benefit for both comfort applications (commercial buildings) and process applications (industry). (Fig. 2)

New R513A refrigerant models

HITACHI's new units have the same capacity performance as the R134a range but with a lower GWP refrigerant for more environmentally friendly operation.

Two operation modes

Two operating modes are available as standard for perfect adaptability to both the comfort and process markets:

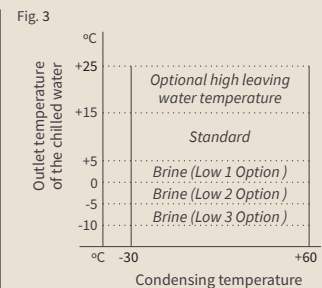
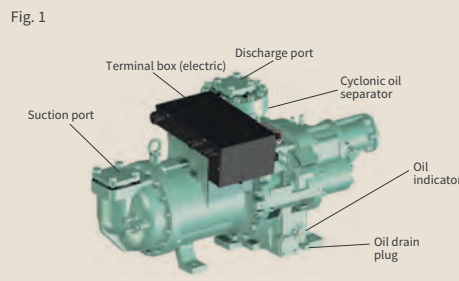
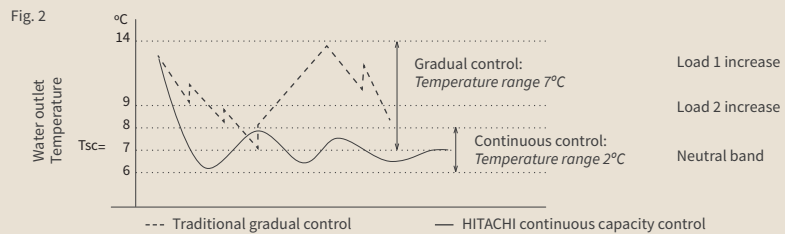
- Standard mode > constant leaving water temperature > all the compressors are running at the same load.
- High-energy efficiency mode > intelligent control of the compressor's start/stop function to optimize the system's energy performance.

Flexible installation

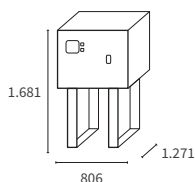
Samurai L condenserless models offer flexible installation options: the unit is compact and the condenser can be up to 30 m away. The wide operating ranges provide flexibility when it comes to sizing the condenser. (Fig. 3)

Modular design

Combine as many as 8 modules for unparalleled installation options and make use of the chiller unit's small footprint to fit into whatever space is available for the project. The unit will fit in lifts and will even go through a standard door making even the tightest plant rooms accessible.



Single cooling models



RCME-40CLH1
RCME-50CLH1
RCME-60CLH1

	Unit	R134A REFRIGERANT			R513A REFRIGERANT		
		RCME-40CLH1	RCME-50CLH1	RCME-60CLH1	RCME-40CLH1	RCME-50CLH1	RCME-60CLH1
Performance							
Nominal Cooling capacity	kW	135	175	215	135	175	215
Rated power input Cooling	kW	32	42	52	32	42	52
EER	-	4.22	4.19	4.10	4.22	4.19	4.10
Sound pressure level*	dB(A)	60	61	62	60	61	62
Sound power	dB(A)	88	89	90	88	89	90
Temp° at water outlet – Cooling mode (evaporator)	°C	5~15 standard / -5~5 (low temperature option) / 15~25 (high temperature option)			5~15 standard / -5~5 (low temperature option) / 15~25 (high temperature option)		
Condensing temperature – Cooling mode (condenser)	°C	30~60			30~57		
Dimensions and weight							
Dimensions (height x width x length)	mm	1681 x 806 x 1271			1681 x 806 x 1271		
Net weight	kg	765	835	900	765	835	900
Compressor							
Type of compressor	-	Twin semi-hermetic screw			Twin semi-hermetic screw		
Compressor number	-	1			1		
Circuit number	-	1			1		
Capacity range	%	25~100			25~100		
Refrigerant	-	R134A			R513A		
Air exchanger							
Type of exchanger	-	Remote (provided on site)			Remote (provided on site)		
Diameter of pipes (Liq / Gas)	inches	1 1/8 ~ 2 1/8			1 1/8 ~ 2 1/8		
Hydraulic data							
Type of exchanger	-	Brazen plate exchanger			Brazen plate exchanger		
Rated water flow	m³/h	23.2	30.1	37.0	23.2	30.1	37.0
Min. water flow	m³/h	14.5	18.8	23.1	14.5	18.8	23.1
Max. flow	m³/h	50.5	65.4	80.4	50.5	65.4	80.4
Min. water volume	m³	0.49	0.63	0.78	0.49	0.63	0.78
Pressure drop	kPa	18.7	20.4	18.9	18.7	20.4	18.9
Diameter and type of hydraulic connection	-	2 1/2" victaulic			2 1/2" victaulic		
Quantity of hydraulic connections	-	1x input, 1x output			1x input, 1x output		
Electrical data							
Supply voltage	V/Ph/Hz	400 / 3 / 50 + N			400 / 3 / 50 + N		
Max. current / starting current	A	72.7 / 179	92.7 / 240	116 / 240	72.7 / 179	92.7 / 240	116 / 240

Note: The power and performance are specified without the pump. Rated cooling conditions: water cycle: 7/12°C – outside temperature: 35°C. Rated heating conditions: water cycle: 40/45°C – outside temperature: 6°C WB. Seasonal energy performance is specified according to the European standard EN-14825.**Acoustic levels are specified at 10m, facing the unit.

Options and accessories (see pages 310-311)

Options and accessories

Samurai L options

	RCME- (60-90)AH2	RCME- (120-140)AH2	RHME- (60-90)AH2	RHME- (120-140)AH2	RCME-WH1	RCME-CLH1
Unit options	Wooden base	•		•	Standard	Standard
	Wooden skid	•		•		
	Crate packaging				•	•
	Lower safety cover on the electric box	•	•	•	•	
	Lower aesthetic panels on the unit – ST	•	•	•	•	
	Lower aesthetic panels on the unit – LN	• (80-90AH2)		• (80-90AH2)		
	Coil guard	•	•	•	•	
	Air heat exchangers heavy corrosion protection	•	•	•	•	
	Power cable routing				•	•
	Power cable routing W	•		•		
	Power cable routing WO	•		•		
	Low noise level	•	•	•	•	•
	Very low noise level	•	•	•	•	•
	Extra low noise level	•	•	•	•	
	Factory performance tests	•	•	•	•	•
Cooling circuit options	Dual safety valve	•	•	•	•	•
	Suction safety valve				•	•
	Discharge valve	•	•	•	•	Standard
	Suction valve	•	•		•	•
	Differential water pressure switch	•	•	•	•	•
	Partial heat recovery	•	•	•	•	
Hydraulic options	Water cooler heater	•	•	•	•	•
	High water outlet temperature	•	•	•	•	•
	Common water pipe		•		•	
	Stainless steel water pipe	•	•	•	•	•
	Water pressure port	•	•	•	•	•
	Single pump kit – standard pressure (constant or variable speed)	•	•	•	•	
	Standard pump kit – high pressure (constant or variable speed)	•	•	•	•	
	Twin pump kit – standard pressure (constant or variable speed)	•	•	•	•	
	Twin pump kit – high pressure (constant or variable speed)	•	•	•	•	
	Brine (low 1): 5 to 0°C	•	•	•	•	•
	Brine (low 2): 0 to -5°C	•	•	•	•	•
	Brine (low 3): -5 to -10°C	•	•	•	•	•
High water pressure PN16 16 bars	•	•	•	•	•	
Control options	Magnetic circuit breaker	•	•	•	•	•
	Energy meter	•	•	•	•	•
	LCD in multiple languages	•	•	•	•	•
	Heat pump operation				•	

Samurai L accessories

Name	Code
Flow switch	CHL-WFS-01
2,1/2" water filter	CHL-WST-01
5" RC/HM1E-AH2 and RCME-CLH1 water filter	CHL-WST-04
6" RCME-WH1 and RCME-CLH1 water filter	CHL-WST-05
Water flange connection 2,1/2" (PN16)	CHL-FLA-01
Common water pipe RCME-WH1 and RCME-CLH1	CHL-CWP-05 / CHL-CWP-06
Common water pipe RC/HM1E-AH2	CHL-CWP-07 / CHL-CWP-08
Anti-vibration rubber mats	CHL-AVR-02
Anti-vibration spring system RCME-CLH1	CHL-AVS-04
Anti-vibration spring system RCME-WH1	CHL-AVS-05
Anti-vibration spring system RC/HM1E-AH2	CHL-AVS-06 (60-70AH2) / CHL-AVS-07 (80-90AH2) / CHL-AVS-08 (120-140AH2)
Modbus	CHL-MSB-02
Bacnet	CHL-BAC-01
Energy meter (200A)	CHL-PMM-04
Energy meter (400A)	CHL-PMM-05
Energy meter (1000A)	CHL-PMM-06



MODBUS interface
CHL-MBS-02



BACnet interface
CHL-BAC-01



Energy meter
CLH-PMM (04-05-06)



Samurai sizing tool



—
**Johnson Controls
Hitachi Air Conditioning Europe S.A.S**

Building 7, Foundation Park,
Roxborough Way,
Maidenhead,
SL6 3UD

HITACHI. CERTIFIED QUALITY



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