Johnson Controls

HITACHI
Air conditioning solutions

air

Johnson Controls - Hitachi Air Conditioning

ADDRESS
New Pier Takeshiba South Tower
1-16-1, Kaigan Minato-ku, Tokyo 105-0022, JAPAN
Tel: +81-3-6721-5567
www.jci-hitachi.com

HITACHI. CERTIFIED QUALITY

Find the products Hitachi Cooling & Heating with the best service and conditions at your Hitachi Distributor.

JCH PAD CHILLER-C-1808

HITACHI

Samurai Chiller

AIR COOLED | WATER COOLED | CONDENSERLESS

Cooling & Heating

OUR UNIQUE MODULAR DESIGN

RETROFITTING & REFURBISHMENT PROJECTS

Projects change and develop over time. In order to keep up you must be able to rely on your selected products. HITACHI with its modular design is an ideal solution for quick compact and space adaptable installations whilst not limiting your ambitions for high efficiency. And with over 100 possible module combinations for both Air and Water Cooled units, matching your project development couldn't be easier.

INTELLIGENT CONTROLS

You require control. With HITACHI's Modular units you can be confident of optimising the control of the chiller, saving energy and efficiently interfacing with Building Management Systems. Current Limiter settings, second Water Outlet Temperature setting (4 for Heat Pump), Night Shift mode and Modbus and BACNet Gateways will provide your site customisation.
Whilst dynamic sequencing of modules for priority, operation time, backup, maintenance or module failure automatically provides continuity.

PRICE, PERFORMANCE & SPACE FLEXIBILITY

What drives your project, High efficiency? Reduced initial costs?
Or is space flexibility the determining factor?
With HITACHI's Samurai Modular Chiller range you can specify your exact project requirements by configuring a chiller with 1 or up to 8 modules.
Two operating modes selectable at commissioning allow the installation's performance to focus on either high efficiency or high accuracy outlet water temperature. Alternatively, spread the cost of investment and add modules to match your project phases.

CONTINUOUS OPERATIONAL SAFETY

Safety first. Each module has its own compressor, regulators and refrigerant circuit. Should a module fail, the remaining modules maintain operational continuity, whilst HITACHI's unique Dynamic Back-up Control automatically starts any standby modules. Smart defrost, automatic restart after power failure, anti-freeze pump function, automatic fan on/off cycling for snow protection, remote alarms all enhance the security of supply.

INDEX

02 Overview

06 Air Cooled Hi-Efficiency

08 Water Cooled Hi-Efficiency

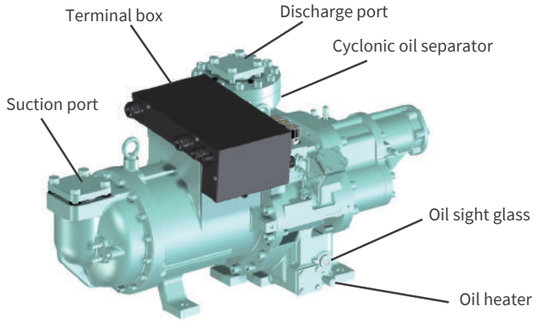
10 Condenserless Hi-Efficiency

AIR COOLED HI-EFFICIENCY

NEW COMPRESSOR

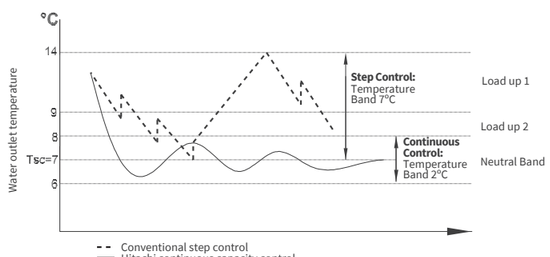
The HITACHI Samurai range incorporates a new twin screw compressor optimized for R134a refrigerant and the latest development of HITACHI's screw compressor technology with the HITACHI's Infinity Capacity Control from 25% to 100%.
With this modulation, the compressor load is always matching with the requested load, and thus accurate chilled water temperature is achieved without expensive inverter devices.

- Cyclonic oil separator to reduce oil carry over and increase efficiency.
- The bearing has been improved and the recommended overhaul period is now extended up to to 40.000h.
- Additional oil port.
- New rotor.
- Light casing.



PRECISE TEMPERATURE CONTROL

Combinations of "Continuous Capacity Control Compressor" and "HITACHI's unique electronic controls" enable the Chiller to control outlet water temperature precisely, independent of cooling load.
This control benefits not only Air-conditioning but also industrial process use.



2 OPERATING MODES

There are 2 running modes available as standard, through unit setting:

- **Standard mode**
  Steady water outlet temperature:
  all compressors running at the same load.
- **High efficiency mode**
  Compressors start/stop smart control.

IMPROVED SERVICING

- **Easier Plate HEX removal**
  The new unit structure of the Air-cooled and Heat Pump units make possible the extraction of the Plate Heat Exchanger from rear side, becoming much easier than in the previous models (AH1).

- **Easier Compressor serviceability**
  For both Air-cooled Cooling-only and Heat Pump units there is more space available for removing the Compressor in case of maintenance, etc… as well as for connecting /disconnecting the compressor cables in the terminal box.

OTHER FEATURES

- Modular design:
  6 Basic Modules: (60, 70, 80, 90, 120 and 140HP)
  Combine up to 8 Modules to match higher capacities
  (Possible modules combinations are equal sizes or 60 with 70, 70 with 80, 80 with 90 and 120 with 140)

- Two Operating Modes as Standard;
  selected at Commissioning
  Steady water outlet temperature (+/-0.5°C).
  All compressors running at thesame load
  High Efficiency Mode, Smart control of compressors start/stop operation

- Capacities from 150kW to 2880kW in cooling and from 145kW to 2320kW in heating

Optional:
- Integrated hydraulic module
- Noise reduction options
- Coil protection
- Safety Valves

RCME 60 - 140AH2

SPECIFICATIONS (COOLING ONLY & HEAT PUMP)

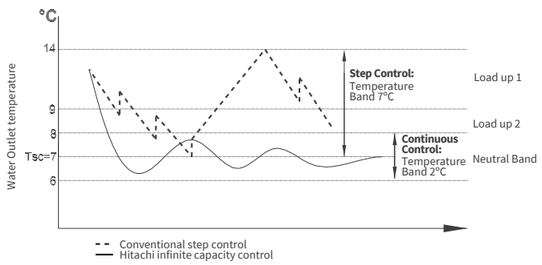
Model (Cooling Only) / Model (Heat Pump)		RCME 60AH2 / RHME 60AH2	RCME 70AH2 / RHME 70AH2	RCME 80AH2 / RHME 80AH2	RCME 90AH2 / RHME 90AH2	RCME 120AH2 / RHME 120AH2	RCME 140AH2 / RHME 140AH2
Cooling Capacity (1) (CO/HP)	kW	160/150	180/170	205/195	225/210	320/300	360/340
Power Input (CO/HP)	kW	51.0/50.8	57.3/57.6	64.9/65.7	70.3/69.8	101.9/101.7	114.6/115.3
EER (inc. pump input) (CO/HP)		3.14 (3.11)/2.95 (2.93)	3.14 (3.11)/2.95 (2.93)	3.16 (3.13)/2.97 (2.95)	3.20 (3.16)/3.01 (2.98)	3.14 (3.12)/3.01 (2.98)	3.14 (3.12)/3.01 (2.98)
SEER (CO/HP)		4.11 (3.88)	4.13 (3.88)	4.12 (3.92)	4.12 (3.96)	4.18 (3.94)	4.19 (3.93)
Heating Capacity	kW	145	145	185	185	290	290
Power Input	kW	51.2	51.2	64.9	64.9	102.5	102.5
COP (inc. pump input)		2.83 (2.82)	2.83 (2.82)	2.85 (2.84)	2.85 (2.84)	2.83 (2.82)	2.83 (2.82)
$SCOP_{LT}$		3.22	3.22	3.25	3.25	3.22	3.22
Sound Power Level (Std/LN/SLN/XSLN)	dB(A)	96 / 93 / 91 / 88	97 / 94 / 92 / 89	98 / 95 / 93 / 90	99 / 96 / 94 / 91	99 / 96 / 94 / 91	100 / 97 / 95 / 92
Sound Pressure Level (Std/LN/SLN/XSLN) (2)	dB(A)	83 / 80 / 78 / 75	84 / 81 / 79 / 76	85 / 82 / 80 / 77	86 / 83 / 81 / 78	86 / 83 / 81 / 78	87 / 84 / 82 / 89
Height	mm	2450	2450	2450	2450	2450	505.9
Width	mm	1955	1955	1955	3970	3970	3970
Depth	mm	2290	2290	3230	3230	2300	2300
Net Weight	kg	1300	1340	1590	1680	2640	2720
Capacity Control	-	Continuous Capacity Control					
	%	25 ~ 100	25 ~ 100	25 ~ 100	25 ~ 100	25 ~ 100	25 ~ 100
Number of Circuits	-	1	1	1	1	2	2
Water Pipe Connection	in	2 ½" Victaulic (1 x Inlet / 1 x Outlet)				2 ½" Victaulic (2 x Inlet / 2 x Outlet)	
Chilled Water Outlet Temperature	˚C	5°C ~ 15°C (Low option down to -10°C, High option up to 30°C)					
Heated Water Outlet Tempearture	˚C	35°C ~ 55°C	35°C ~ 55°C	35°C ~ 55°C	35°C ~ 55°C	35°C ~ 55°C	35°C ~ 55°C
Ambient Temprature - Cooling	˚C	-15°C ~ 46°C	-15°C ~ 46°C	-15°C ~ 46°C	-15°C ~ 46°C	-15°C ~ 46°C	-15°C ~ 46°C
Ambient Temprature - Heating	˚C	-9.5°C (DB), -10°C (WB) ~ 21°C (DB), 15.5°C (WB)					

Notes:
1. The nominal cooling capacities are based on the European Standard EN14511.
   Chilled Water Inlet / Outlet Temperature: 12 / 7°C
   Condenser Inlet Air Temperature: 35°C
   Heated Water Inlet / Outlet Temperature: 40 / 45°C
   Condenser Inlet Air Temperature: 6°C WB
2. Sound Pressure level measured at 1.5m height and 1m from control panel

WATER COOLED HI-EFFICIENCY

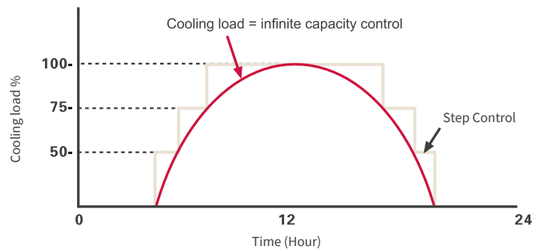
PRECISE TEMPERATURE CONTROL

Combinations of “Infinite capacity control compressor” and “HITACHI’s unique electronic controls” enable the Chiller to control outlet water temperature precisely, independent of cooling load.
This control benefits not only Air-conditioning but also industrial process use.



INFINITE CAPACITY CONTROL

HITACHI´s Infinite Capacity Control system uses advanced electronic controls to position the infinitely variable slide valve within each compressor.
This modulation allows exact load control and accurate chilled water temperature without the need for expensive inverters.



NEW COMPRESSOR

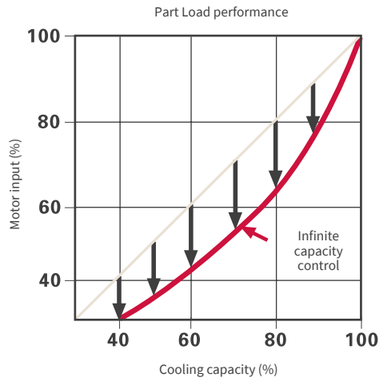
The HITACHI Samurai range incorporates a new twin screw compressor optimized for R134a refrigerant and the latest development of HITACHI’s screw compressor technology with the HITACHI’s Infinite Capacity Control from 25% to 100%.
Thanks to this modulation the compressor load is always matching with the requested load, and thus accurate chilled water temperature is achieved without expensive inverter devices.

- Cyclonic oil separator to reduce oil carry over and increase efficiency
- The bearing has been improved and the recommended overhaul timing is now expanded from 24.000h to 40.000h.
- Additional oil port.
- New rotor
- Light casing

ENERGY SAVING

Thanks to infinite capacity control, 15~20% energy saving is possible compared with current step control systems due to the following:

- The cooling load can be more closely matched
- Infinite capacity control takes advantage of high efficiency part load performance.
- Frequent compressor starts and stops are eliminated.



OTHER FEATURES

- Stainless Steel Plate Heat Exchanger(s)
- Compact size ideal for replacement projects
  806mm(width) x 1271mm(depth)
- R134a Refrigerant
- Modular design (up to 8 modules)
- 2 Operating Modes
  Standard mode: Steady water oulet temperature.
  (all compressors running at the same load)
  High efficiency mode: Compressors start/stop smart control.
- Small service space
  The compressor is loacted in the down position, which allows to disassemble for maintance easily from the front side of the unit therefore, the service space is reduced.

RCME 40~70WH1

SPECIFICATIONS (COOLING ONLY & HEAT PUMP)

Model		RCME 40WH1	RCME 50WH1	RCME 60WH1	RCME 70WH1
Cooling Capacity (1)	kW	140	180	220	250
Heating Capacity (2)	kW	159.9	205.9	252.9	297.1
Power Input (Cooling) 1	kW	28.0	36.3	45.4	51.3
Power Input (Heating) 2	kW	33.4	43.3	54.1	61.2
EER (incl.pump)		5.00 (4.84)	4.96 (4.80)	4.85 (4.71)	4.87 (4.72)
COP (incl.pump)		4.80 (4.67)	4.76 (4.64)	4.67 (4.57)	4.69 (4.58)
$SCOP_{LT}$		5.90	5.86	5.75	5.78
$SCOP_{MT}$		4.42	4.39	4.32	4.33
SEER		5.14	5.46	5.51	5.52
Sound Power Level (Std/LN/SLN)	dB(A)	88 / 82 / 72	89 / 83 / 73	90 / 84 / 74	91 / 85 / 75
Sound Pressure Level (Std/LN/SLN) (4)	dB(A)	75 / 69 / 59	76 / 70 / 60	77 / 71 / 61	78 / 72 / 62
Height	mm	1681	1681	1681	1681
Width	mm	806	806	806	806
Depth	mm	1271	1271	1271	1271
Net Weight	kg	860	950	1040	1075
Capacity Control	-	Continuous Capacity Control			
	%	25 ~ 100	25 ~ 100	25 ~ 100	25 ~ 100
Number of Circuits	-	1	1	1	1
Water Pipe Connection (Evaporator)	in	2 ½” Victaulic (1 x Inlet / 1 x Outlet)			
Water Pipe Connection (Condenser)	in	2 ½” Victaulic (1 x Inlet / 1 x Outlet)			
Leaving Water Outlet Temperature (Cool)	°C	5 ~ 15 (-10 option)	5 ~ 15 (-10 option)	5 ~ 15 (-10 option)	5 ~ 15 (-10 option)
Leaving Water Outlet Temperature (Heat)	°C	22 ~ 50	22 ~ 50	22 ~ 50	22 ~ 50
Condenser Water Outlet Temprature 3	°C	22 ~ 50 (60° option)	22 ~ 50 (60° option)	22 ~ 50 (60° option)	22 ~ 50 (60° option)

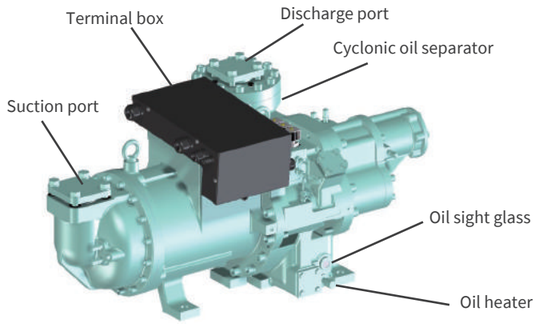
Notes:
1. The nominal cooling capacities are based on the European Standard EN12055.
   Chilled Water Inlet / Outlet Temperature: 12 / 7°C
   Cooling Water Inlet / Outlet Temperature: 30 / 35°C
2. The nominal heating capacities are only for Heat Pump Operation Option and based on following conditions.
   Chilled Water Inlet / Outlet Temperature: 12 / 7°C
   Hot Water (Condenser) Inlet / Outlet Temperature: 40 / 45°C
3. In case of high condensing option and heat pump operation option.
4. Sound Pressure level measured at 1.5m height and 1m from control panel.

CONDENSERLESS HI-EFFICIENCY

NEW COMPRESSOR

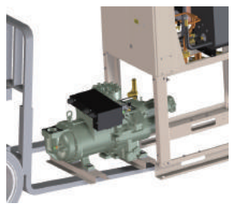
The HITACHI Samurai range incorporates a new twin screw compressor optimized for R134a refrigerant and the latest development of HITACHI's screw compressor technology with the HITACHI's infinite capacity control from 25% to 100%.
Thanks to this modulation the compressor load is always matching with the requested load, and thus accurate chilled water temperature is achieved without expensive inverter devices.

- Cyclonic oil separator to reduce oil carry over and increase efficiency
- The bearing has been improved and the recommended overhaul timing is now expanded from 24.000h to 40.000h.
- Additional oil port.
- New rotor
- Light casing



SMALL SERVICE SPACE

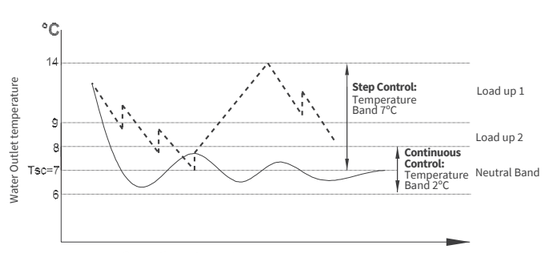
The compressor is located in the down position, which allows to disassemble for maintenance easily from the front side of the unit and therefore the service space is reduced.



PRECISE TEMPERATURE CONTROL

Combinations of "Infinite capacity control compressor" and "HITACHI's unique electronic controls" enable the Chiller to control outlet water temperature precisely, independent of cooling load.

This control benefits not only Air-conditioning but also industrial process use.



2 OPERATION MODES

There are 2 available running modes by unit setting as standard:

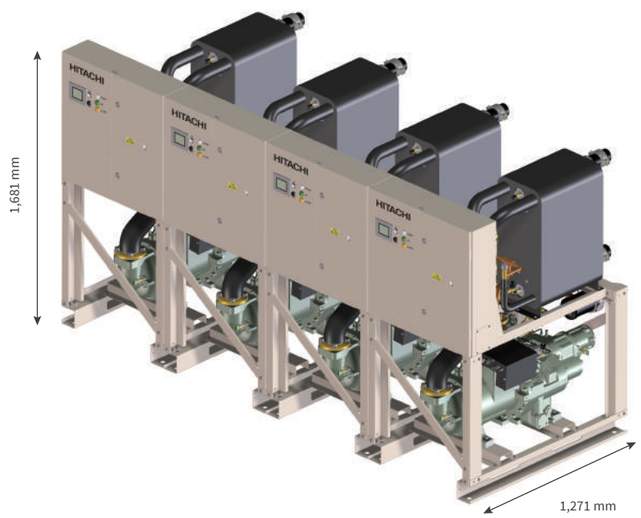
- Standard mode: all compressors running at the same load.
- High efficiency: compressors start/stop smart control.

Modules combination system offers several advantages:

- Optimisation of the efficiency at any load by stopping /starting up to 8 continuous capacity control compressors through a smart unit control (if High efficiency mode is selected).
- Flexibility in running mode: customer can put priority on efficiency or on stable water outlet temperature by unit setting.
- Possibility to add modules and expand the total capacity of the unit if installation load is increased later on.
- Redundancy: each module has its own compressor, refrigerant circuit and controller, therefore in case of 1 module failure, the remaining modules can keep on running.

OTHER FEATURES

- Stainless Steel Plate Heat Exchanger(s)
- Compact size ideal for replacement projects 806mm(width) x 1271mm(depth)
- R134a Refrigerant
- Modular design (up to 8 modules)
- Operating Modes x 2
- New true dual brazed plate heat exchangers
- Double electronic expansion valve
- New filter drier
- Compressor safety valve



RCME40~60CLH1

SPECIFICATIONS

Model			RCME 40CLH1	RCME 50CLH1	RCME 60CLH1
Cooling Capacity (1)		kW	135	175	215
Power Input		kW	32	41.8	52.4
EER		kW	4.22	4.19	4.10
Sound Power Level (Std/LN/SLN)		dB(A)	88 / 60 / 72	89 / 83 / 73	90 / 84 / 74
Sound Pressure Level (Std, LN, SLN) (1)		dB(A)	75 / 69 / 59	76 / 68 / 58	77 / 69 / 59
Height		mm	1681	1681	1681
Width		mm	806	806	806
Depth		mm	1271	1271	1271
Net Weight		kg	765	835	900
Capacity Control		-	Continuous Capacity Control		
		%	25 ~ 100	25 ~ 100	25 ~ 100
Number of Circuits		-	1	1	1
Water Pipe Connection (Evaporator)		in	2 ½" Victaulic (1 x Inlet / 1 x Outlet)	2 ½" Victaulic (1 x Inlet / 1 x Outlet)	2 ½" Victaulic (1 x Inlet / 1 x Outlet)
Condensing Temperature		℃	30 ~ 60	30 ~ 60	30 ~ 60
Refrigerant pipe connection	Gas	in(mm)	2 1/8" (53.98)	2 1/8" (53.98)	2 1/8" (53.98)
	Liquid	in(mm)	1 1/8" (28.6)	1 1/8" (28.6)	1 1/8" (28.6)

Notes:
The nominal cooling capacities are based on the following conditions.
Chilled Water Inlet / Outlet Temperature: 12 / 7°C
Condensing Temperature: 45°C
1. Sound Pressure level measured at 1.5m height and 1m from control panel.