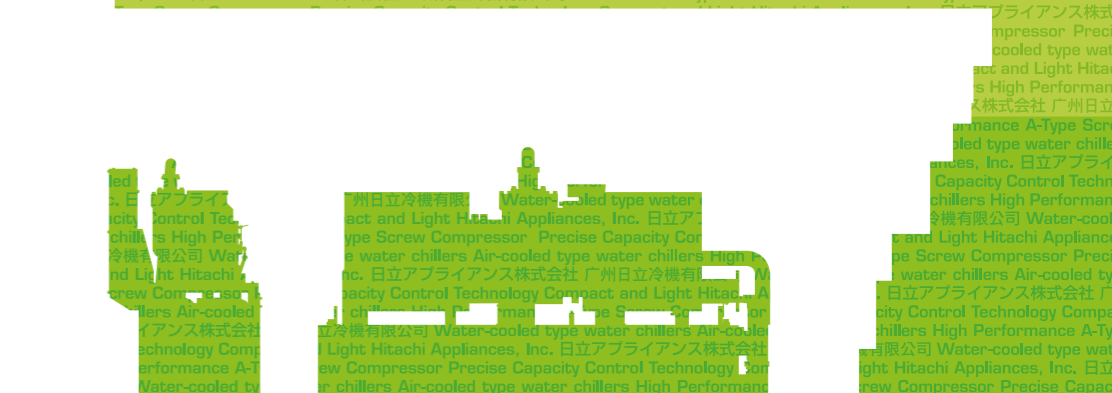
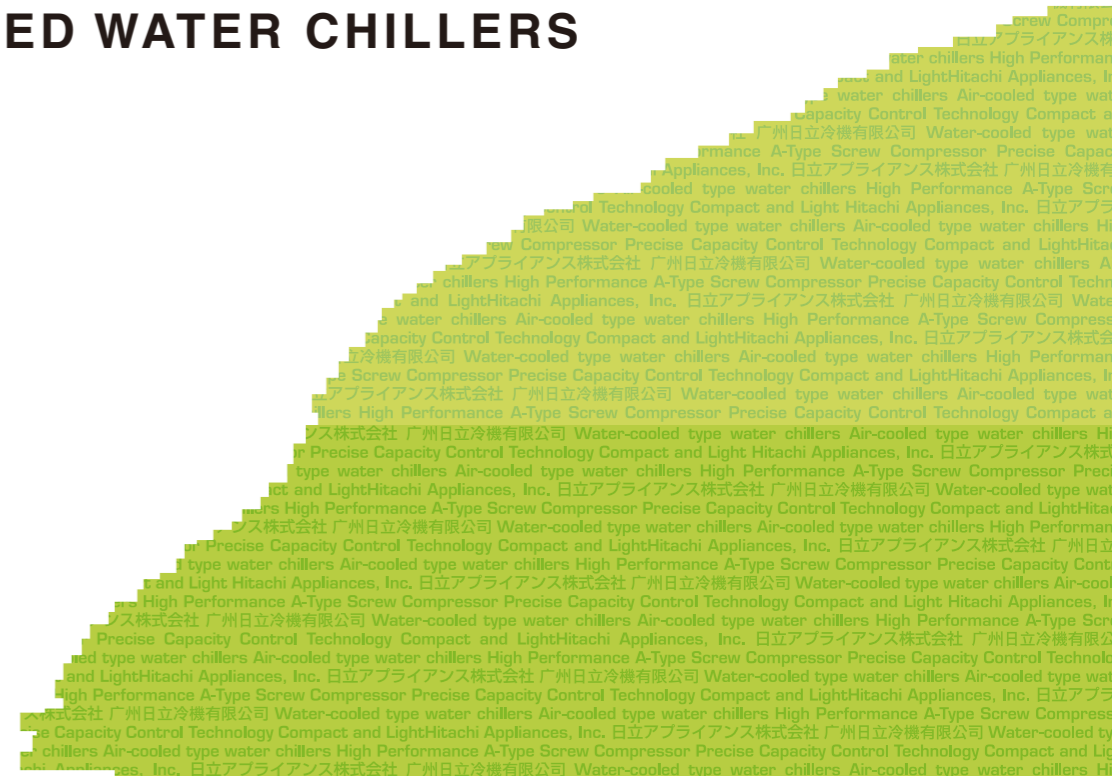


WATER-COOLED WATER CHILLERS

R410A / R407C / R22

- Standard Type
- Heat Recovery Type
- Brine Type



HITACHI

Hitachi Appliances, Inc.

URL : <http://www.hitachi-ap.com>

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Advanced air conditioning solutions for commercial and industrial use



Hitachi Appliances provides advanced air conditioning solutions to meet a wide variety of needs. We offers numerous models for commercial use including packaged air conditioners, chillers and district cooling and heating. Drawing on its extensive experience and advanced air conditioning and refrigerating technology, Hitachi Appliances is able to offer optimum solutions.

Water-cooled Chillers

The Water-cooled chillers with improved efficiency and functionality by several advanced technology. This series with A-type screw compressor that have powerful cooling ability, low noise, low vibration, high efficiency and high reliability is the perfect answer to all your needs!!



Line-up

Type	Refrigerant	Chilled/Hot Water Outlet Temperature	[Capacity class / USRT]														
			30~	40~	50~	60~	70~	80~	90~	100~	200~	300~	400~	500~	600~	700~	
Standard	R22	5~20°C	●	●	●	●	●	●	●	●	●	●	●	●	●		
	R407C	5~20°C	●	●	●	●	●	●	●	●	●	●	●	●	●		
	R407C (compact)	5~20°C	●	●	●	●	●	●	●	●	●	●	●	●	●		
	R410A	5~20°C									●	●	●	●	●	●	●
Heat Recovery	R22	5~20°C / 35~60°C	●	●	●	●	●	●	●	●	●	●	●	●	●		
	R407C	5~20°C / 35~60°C	●	●	●	●	●	●	●	●	●	●	●	●	●		
	R410A	5~20°C / 35~60°C									●	●	●	●	●	●	●
Brine	R22	5~20°C	●	●	●	●	●	●	●	●	●	●	●	●	●		
	R407C	5~20°C	●	●	●	●	●	●	●	●	●	●	●	●	●		
	R407C (compact)	5~20°C	●	●	●	●	●	●	●	●	●	●	●	●	●		
	R410A	5~20°C									●	●	●	●	●	●	●

* Please refer more detail specifications on page 17~18.
 * Other conditions are based on Hitachi standard.
 * Indicating it by a model name.



HITACHI WATER COOLED CHILLER MODEL & FUNCTION TASK LIST

Hitachi technology offers great advantages for the customer.

Page	Function	Initial Cost-Saving	Running Cost-Saving	Space Saving	User Friendly	Easy Maintenance	Reliability	Hitachi's Technology	Advantages for Customers	Standard Type				Heat Recovery Type			Brine Type								
										R22	R407C	R407C (compact)	R410A	R22	R407C	R410A	R22	R407C	R407C (compact)	R410A					
5	Compressor Quality		●					—	Low vibration, low noise and high reliability	●	●	●	●	●	●	●	●	●	●	●	●				
								Compressor rotation (compressors are rotated automatically according to operating hours.)	For long life operation	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
6	Continuous Capacity Control		●		●			Precise water temperature control	Stable temperature water is supplied which helps product quality control	●	●	●	●	●	●	●	●	●	●	●	●				
								Compressor capacity is optimized depending on the required cooling load.	Stable temperature water is supplied and it helps comfort cooling for air-conditioning.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
									Gives the precise response for required cooling load, and achieves energy-saving	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
7	R410A Chiller		●	●				—	R410A has less impact on the environment than other refrigerants.	—	—	—	●	—	—	●	—	—	—	—	●				
								High COP	Energy-saving	—	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—
								Compact design	Space-saving	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8	Heat recovery (option)	●		●	●	●		Hot water can be taken out while chiller is in cooling operation.	Boiler can be downsized.	—	—	—	—	●	●	●	—	—	—	—					
									Hot water can be supplied free of charge.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9	Large Temperature Difference	●				●		Maximum temperature difference between chilled water inlet and outlet is available.	Water system volume, pump capacity and piping size can be reduced.	●	●	● ^{*1}	●	● ^{*1}	● ^{*1}	● ^{*1}	—	—	—	—					
9	High Water Pressure (option)	●		●		●		Hitachi cooler and condenser withstands high water pressure.	Water tank and pump size are reduced.	●	●	●	●	●	●	●	●	●	●	●					
10	Brine System (option)				●			Supplies low-temperature water maximum to -20°C	Ice storage system is available.	—	—	—	—	—	—	—	●	●	●	●					
									Suitable for industrial use	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	Two Temperature and Operation Mode Setting (option)		●		●			Two different temperature and operation modes can be set.	Temperature setting can be changed depending on daytime or nighttime and cooling load.	●	●	●	●	●	●	●	●	●	●	●					
									Air-conditioning operation and ice storage operation can be set.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
11	Peak Cut Function (option)		●		●			Chiller is automatically download or thermo-offed when setting point is exceeded.	Energy-saving	●	●	●	●	●	●	●	●	●	●	●					
									Cooling capacity can be controlled depending on customer's request.	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
11	Various External Input and Output		●		●		●	There are various external signal input / outputs.	Remote control and monitoring is possible.	●	●	●	●	●	●	●	●	●	●	●					
12	Automatic Recovery from Power Failure				●			Chiller is re-started automatically from power failure.	Power recovery by user is not necessary.	●	●	●	●	●	●	●	●	●	●	●					
12	Error Operation and Setting Prevention Control				●		●	Alarm is displayed in case of error setting.	Prevents human error	●	●	●	●	●	●	●	●	●	●	●					
13	Safety Control Devices		●					Safety devices are supplied as standard.	For long life operation	●	●	●	●	●	●	●	●	●	●	●					
								Supply high-level protection system.																	
14	Alarm Data History				●		●	Unit memorizes alarm code history.	Easy to check the reason for trouble	●	●	●	●	●	●	●	●	●	●	●					
14	Modular System	●			●	●	●	Each module can be operated individually.	Can be overhauled while other modules are in operation.	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}	—	—	●	—				
									Can be used as a back-up unit.																
								—	Transportation and installation is easy.																
15	Controller (option) CSC-5S		●		●			Unit can be controlled by remote controller.	Easy control	—	—	●	—	—	—	—	—	—	—	●	—				
								Several units can be controlled individually or collectively. (max 8 units)	Several units can be controlled as for one chiller.																
15	Schedule setting (option) CSC-5S + CSC-A1T		●		●			Using controller and timer, 3 ON/OFFs per day and weekly schedule	Efficient operation	—	—	●	—	—	—	—	—	—	—	●	—				
16	LCD		●		●		●	Big LCD Unit condition can be checked visually.	Excellent visual display and easy control by touch screen.	●	●	—	●	●	●	●	●	●	●	—	●				
								Weekly schedule can be set.	Efficient operation is available.																
16	BMS (option)				●			Supplies the adapter for BMS.	Can connect to BMS.	● ^{*3}	● ^{*3}	● ^{*4}	● ^{*3}	● ^{*3}	● ^{*3}	● ^{*3}	●	●	●	●					

Notes *1. Depending on the model and the temperature range *2. Without 1 module unit *3. RS-485 *4. LonWORKS®

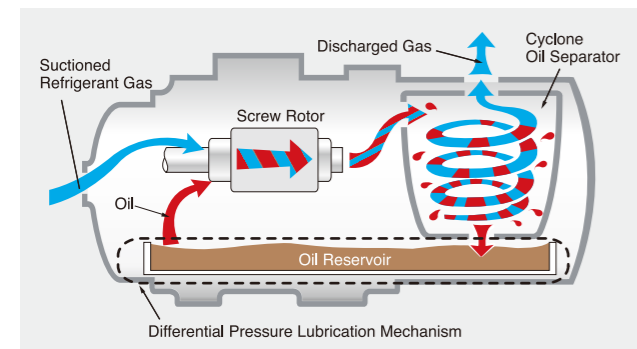
Features

High-performance Twin Screw Compressor

The refrigerant gas and oil flow into the oil separator together. The cyclone system begins to separate the refrigerant gas and oil by centrifugal force. Refrigerant gas is ejected from the discharge port, and oil drops down to the bottom tank.

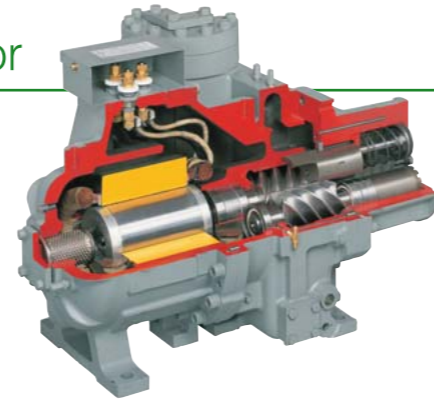
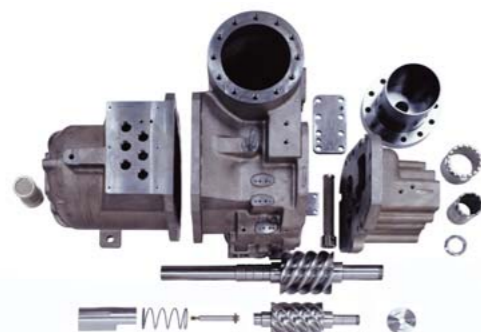
Lubrication oil is required for sealing the area between the two screw rotors as well as for the lubrication of the bearings, but it decreases the efficiency of air-conditioning units at heat exchangers. The oil and refrigerant are separated by centrifugal force in the cyclone oil separator. After it is compressed by the screw rotors, refrigerant gas enters the upper side of the separator.

Refrigerant gas then enters through the lower side of the separator, and the oil is separated by centrifugal forces to the wall of the separator. Oil then goes down to the oil tank along the wall. The oil is accumulated in the oil tank, which is located on the bottom of the separator, and only refrigerant gas is discharged from the discharge port, which is located on the upper side of the separator. The oil that is accumulated in the tank is then supplied to the screw rotors by pressure difference. Unlike other compressor structures, this structure doesn't require mechanical parts such as an oil pump for its oil supply, which leads to higher reliability for the compressor.



Simple Structure with a Small Number of Parts

Whereas the number of main parts for the casing, compression mechanism and capacity control mechanism of a reciprocating compressor is 268, that of a screw compressor is only **27**, just one tenth of the number!! A structure with so few parts offers high reliability and easy maintenance.



Operating Principle of The Screw Compressor

1. Refrigerant is taken in from the inlet port.
2. The seal line advances toward the discharge side, tooth space is reduced, and compression is performed.
3. Compression is performed until the seal line of the male and female rotors come to the discharge port, and the pressure is increased.
4. When the seal line reaches the discharge end, the refrigerant in the tooth space is discharged completely.

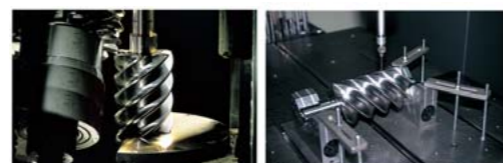
Low Vibration

No exclusive vibration control equipment is necessary due to the low-vibration screw compressor.

Type	Reciprocating	Screw
Comp. speed (rpm) 50/60Hz	1,430/1,720	2,880 / 3,470
Full amplitude	At leg of comp.	20-30
	At base frame	20
Vib. frequency	At leg of comp.	23.8 / 28.7
	At base frame	23.8 / 28.7
Acceleration energy	Screw: 1 / 5 of reciprocating type	Screw: 1 / 5 of reciprocating type

High Technology by Internal Manufacture

Because all manufacturing processes, from rotor manufacturing to unit assembly, are done internally, exceptional reliability is achieved.



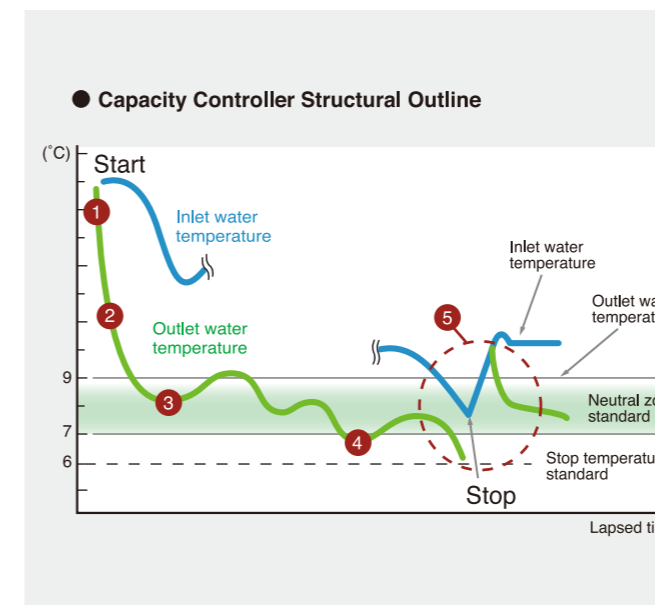
Continuous Capacity Control

Continuous capacity control is based on the precise control of the chilled water outlet temperature, depending on the temperature requirement of the cooling load.

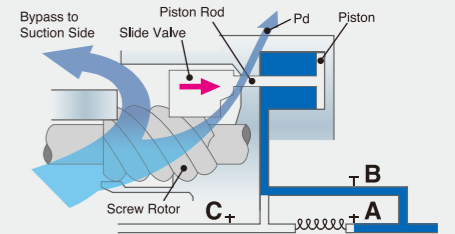
- 1 A slide valve within the screw compressor to change the refrigerant circuit variables according to the requested load.
- 2 An optimized electronic system based on the control band to maintain a constant outlet temperature.

Continuous capacity control is performed by adjusting the position of the slide valve. The position of the slide valve can be changed freely between 15% to 100%.

The electric control system compares the value measured by thermistors with the set value. Depending on the measured value, the control signal instructs the position of the slide valve. When a quick response is needed and the measured temperature is very far from the set point, the system can be programmed to provide quick control. When precise control is required, the measured temperature is close to the set point, and it can be programmed to give a more precise response $\pm 1^\circ\text{C}$. Thanks to Hitachi's technical expertise in the twin screw compressor, it is possible to achieve precise water temperature control that is ideal for industrial processes and air conditioning applications.

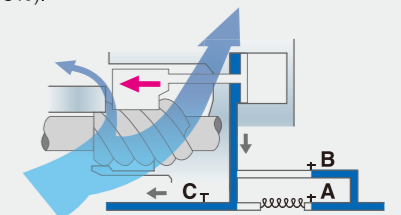


- 1 Starting
 - A: Close
 - B: Open
 - C: Close



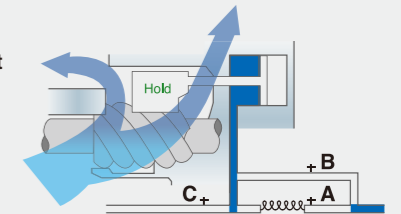
Starting with minimum capacity, solenoid valve B is opened. Oil is discharged to the cylinder, and its discharge pressure moves the piston to the right. The suction pressure moves the slide valve to the right, completely opening the refrigerant bypass. The advantage is quick response with minimum capacity (15%).

- 2 Load Up
 - A: Close
 - B: Close
 - C: Open



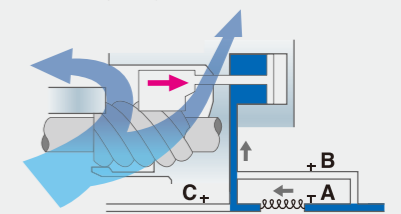
If the chilled water outlet temperature is higher than the set point, the compressor increases its capacity to achieve it by opening solenoid valve C. As the slide valve is moved to the left, the refrigerant bypass is closed and the quantity of compressed refrigerant is increased. This results in an increased capacity.

- 3 Load Constant
 - A: Close
 - B: Close
 - C: Close



If the chilled water outlet temperature is close to the set point, all solenoid valves are closed. The slide valve remains in the same position, and the capacity is maintained.

- 4 Load Down
 - A: Open
 - B: Close
 - C: Close



If the chilled water outlet temperature is lower than the set point, the compressor decreases its capacity by opening solenoid valve A. Oil is discharged to the cylinder little by little through the capillary tube, and the capacity is ratcheted down.

- 5 Stop
 - If the chilled water outlet temperature is lower than the band for stop, its thermo turns off and the compressor is stopped. When the thermo is turned off, it memorizes the chiller water inlet temperature. If the chilled water inlet temperature reaches 2°C higher than the thermo-off point, the compressor is restarted.

Features

R410A Chiller

Hitachi was the first in the world to successfully introduce R410A refrigerant in all its products, including air conditioners, package air conditioners and now the SCREW CHILLER. Innovative technology is applied in the design and development of the compressor, refrigerant cycle, and the chiller itself, etc.



Refrigerant Characteristic Comparison

No.	Refrigerant (Refrigerant Type)	R22 (HCFC)	R134a (HFC)		R410A (HFC)	
1	ODP (Ozone Depletion Potential)	0.055	0	○	0	○
2	GWP (Global Warming Potential)	1,700	1,300	○	2,000	×
3	Cooling Capacity	100%	62%	×	140%	○
4	Amount of Refrigerant	100%	161%	×	71%	○
5	GWP x Amount of Refrigerant	1,700	2,093	×	1,420	○

In terms of GWP (Global Warming Potential), R410A is not more environmentally considerate than other refrigerants. However, since the quantity of refrigerant required for equivalent cooling capacity is smaller (see the table), R410A has less impact on the environment than other refrigerants.

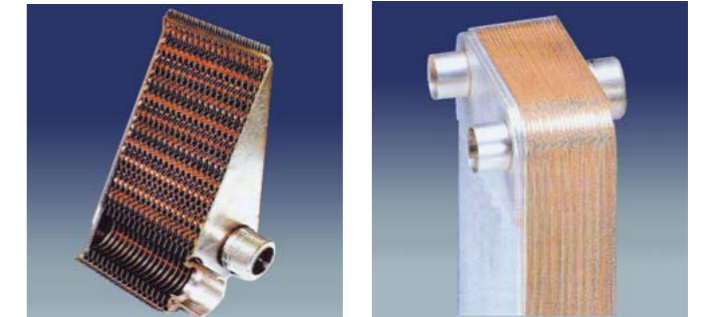
Comparison of Chillers Equipped with HITACHI Shell & Tube Heat Exchanger

Refrigerant Type	Product Weight Comparison(kg)			Cycle Quantity Comparison			Installation Area Comparison (m ²)			
	R410A A	R22 B	A / B	R410A E	R22 F	E - F	R410A C	R22 D	C / D	
Cooling Capacity	200RT Class	3,507	5,452	64%	1	2	-1	3.88	5.04	77%
	250RT Class	3,850	5,584	69%	1	2	-1	3.88	5.04	77%
	270RT Class	3,895	5,716	68%	1	2	-1	3.88	5.04	77%
	400RT Class	7,014	8,574	82%	2	3	-1	8.06	7.66	105%
	450RT Class	7,357	8,834	83%	2	3	-1	8.06	7.66	105%
	500RT Class	7,700	8,964	86%	2	3	-1	8.06	7.66	105%

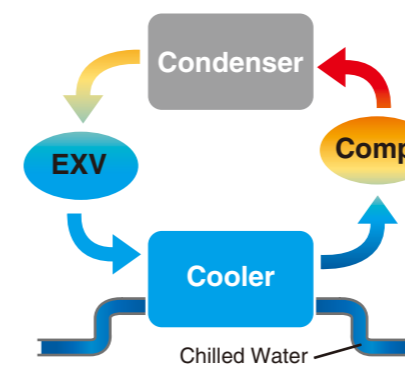
As shown in the refrigerant aspect comparison above, R410A refrigerant has not only a high cooling capacity per unit, enabling saving of refrigerant, but also less environmental impact than other refrigerants, and it largely contributes to weight-saving of the chiller. Although the operating pressure is larger because the cooling capacity is high, we have succeeded in achieving weight-saving by applying the wealth of technology that we have accumulated through the development of our air conditioners. Moreover, for one-cycle machines, the foundation, transportation, lifting and grounding work required to install the chiller can be reduced because the installation area is greatly decreased.

Compact Heat Recovery System by Using a Plate-type Heat Exchanger

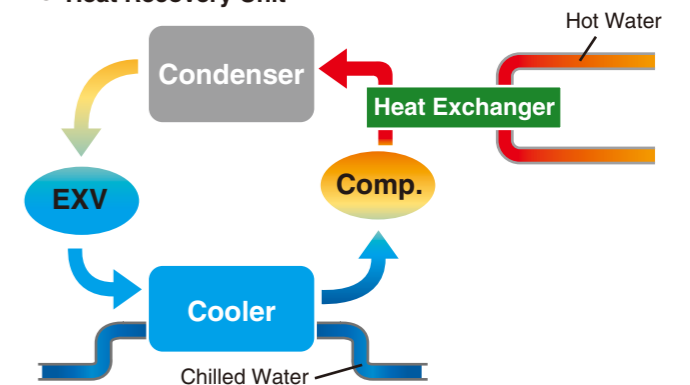
Hitachi's heat recovery unit consists of a small heat exchanger and is compactly designed. This recovery unit utilizes the energy of making chilled water to supply hot water. Therefore, hot water is supplied for free, and the capacity of the boiler can be reduced. It can supply 60°C hot water (at 100% operation), and its COP is improved.



Standard Unit



Heat Recovery Unit



This Heat Recovery chiller is suitable for various uses such as Hospital, Restaurant and Hotel.



Features

Large Temperature Difference

Save On Initial Equipment Cost

A maximum 10°C temperature difference is available as standard. This reduces water system volume, pump capacity and piping size.

(Applicable temperature range: 2.5°C~10°C)

Example

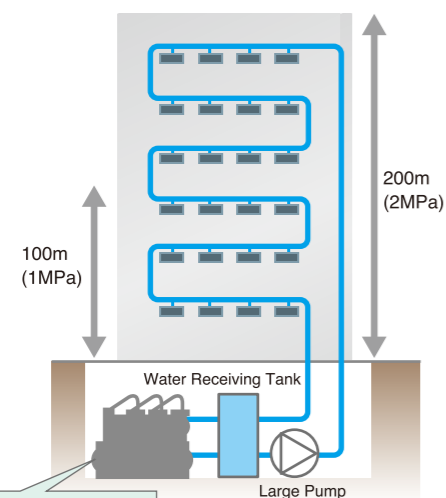
- **Temperature difference of 5°C (inlet / outlet: 12 / 7°C)**
 - Pump transfer ability : 100%
 - Pipe diameter : 100%
- **Temperature difference of 10°C (inlet / outlet: 17 / 7°C)**
 - Reduce initial equipment cost (piping, pump, flange, etc....)
 - Reduce installation time (piping work, welding, etc....)
 - Pump transfer ability : 50%
 - Pipe diameter : 50%

Minimum water system volume and flow rate should be kept within specification.

Heat Exchanger for High Water Pressure (option)

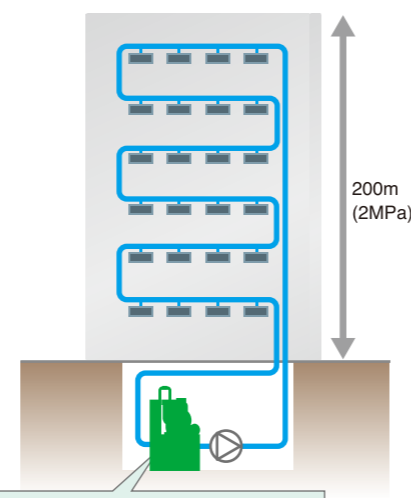
The heat exchanger for the Hitachi water-cooled chiller withstands 1.0Mpa as standard. In addition, it can withstand 1.6Mpa and 2.0Mpa as an option. This contributes to space-saving and cost-saving, because the water tank size and pump size are reduced.

Chiller for 1MPa



In this case, a high-pressure water tank and high-lift pump is needed. (1Mpa Chiller)

Chiller for 2MPa (option)



Chiller withstands 2.0 Mps (option), and a high-pressure water tank and high-lift pump are not needed.

Brine System (option)

By using brine (antifreeze liquid), it can be used for ice-making and industrial cooling (facility cooling and object cooling) applications.

The Hitachi brine chiller can provide a maximum -20°C brine outlet water.

It can be used for an ice storage system and industrial processes.



Brine Outlet Temperature and Capacity Control

Brine Outlet Temperature	R407C (Compact)
5 ~ -10°C	Continuous
-10 ~ -15°C	Step
-15 ~ -20°C	Step

Image of Ice Storage System

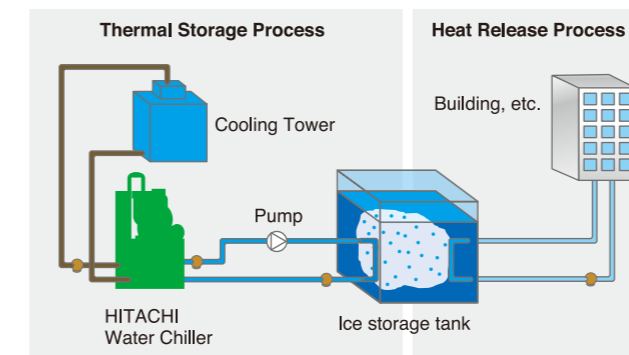
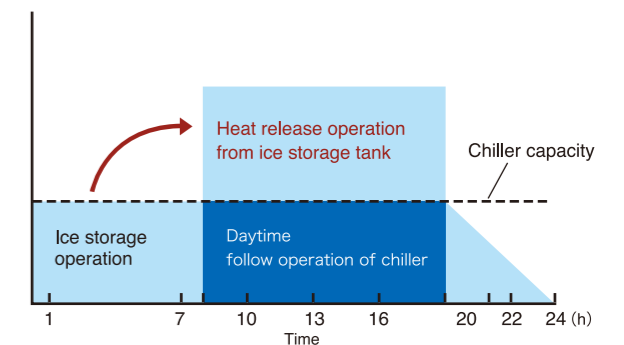


Image of Power Peak Shift by Ice Storage System

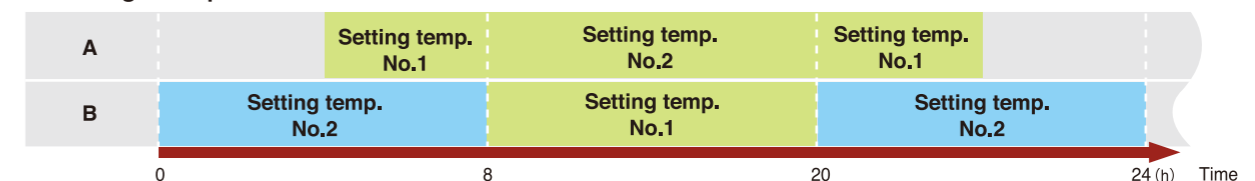


Setting of Two Temperatures (option)

The temperature setting and water control can be selected according to daytime/nighttime operations or load applications.

Combination	Setting temperature		Capacity control		Command		Applications
	No.1	No.2	No.1	No.2	No.1	No.2	
A	Air-conditioning	Air-conditioning	15~100%		RSW setting	7-segment	No.1 for peak time and No.2 for the other times.
B	Air-conditioning	Ice storage	15~100%	0 or 100%	External thermo	External thermo	No.1 for daytime and No.2 for nighttime (Ice storage function).

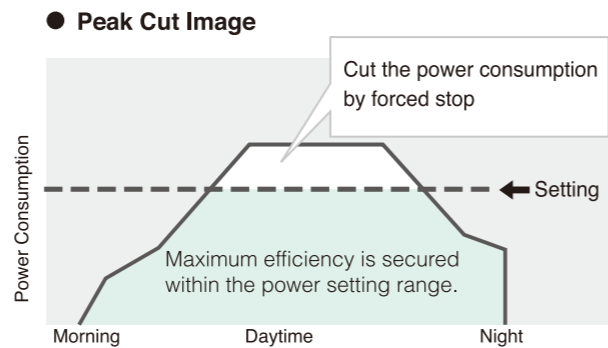
Setting Examples



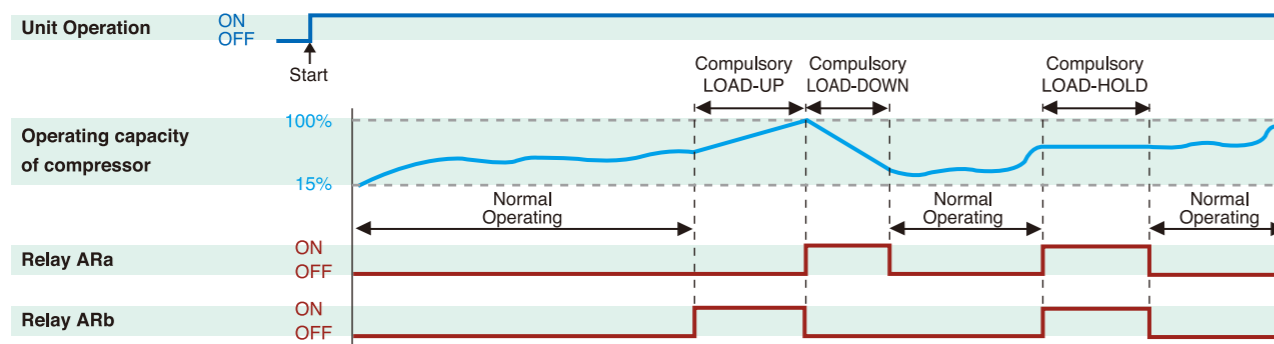
Features

Peak Cut Function (option)

Capacity is controlled in accordance with the desired setting (relay input). Therefore it helps to reduce power consumption.



Structure for compulsory control of the capacity for continuous control type. Using a relay contact, the capacity of the compressor can be controlled.



	Compulsory operating capacity of compressor			Normal operating
	HOLD	LOAD-DOWN	LOAD-UP	
ARa	ON	ON	OFF	OFF
ARb	ON	OFF	ON	OFF

NOTES:
 1. Compulsory unload by protection control should give priority over this demand function.
 2. The final steps of the thermo regulator are effective.
 3. Please input the signal to each compressor.
 4. It is not possible to fix an arbitrary capacity for the continuous model.
 (Only HOLD or DOWN or UP can be chosen.)

External Signal Input / Output

Unit operation can be controlled by external signal input and output.

	Function
Pump operation control	Chiller and Pump operation are synchronized.
Interlock for Pump	When the pump is not operated, the compressor is also stopped. Therefore, the chilled water side heat exchanger is prevented from freezing.
Interlock for Cooling Tower	When the cooling tower is not operated, the compressor is also stopped. Therefore, the condenser side heat exchanger is prevented from freezing.
Unit start and stop	Remote control for unit start and stop is available.
Pilot Lamp for remote operation	Indicates chiller operation.
Pilot Lamp for remote pump	Indicates pump operation.
Pilot lamp for remote alarm (whole unit or each cycle)	Indicates alarm.

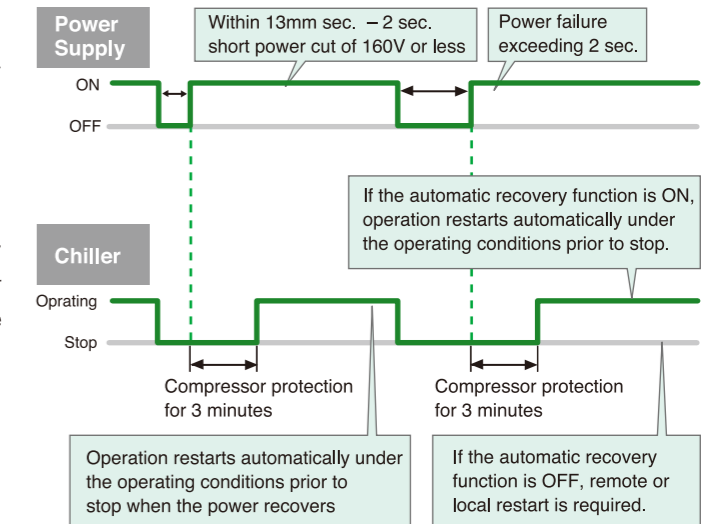
Automatic Recovery from Power Failure (short power cut)

Automatic Recovery from Short Power Cut (standard setting)

During a short power cut, operation is automatically restarted after a 3 minutes time guard.

Automatic Recovery from Power Failure (selection system by DIP Switch)

If this function is selected, operation is automatically restarted when a 3 minute time guard has elapsed after the power comes on, even if the power failure lasts more than 2 seconds.

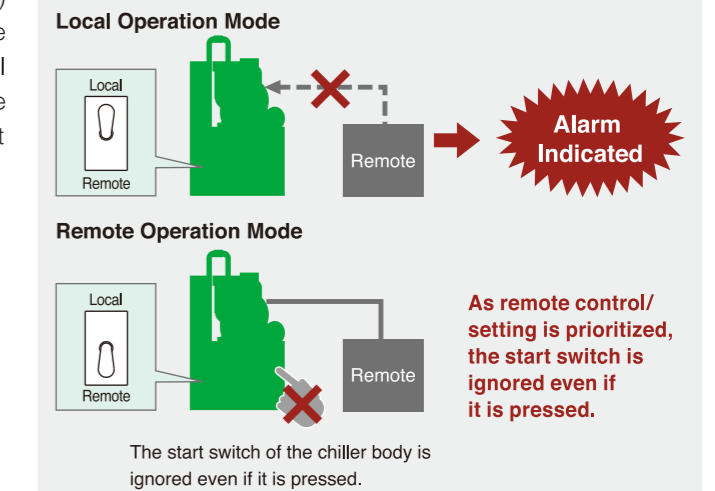


Error Operation/ Error Setting Prevention Control

Error Operation

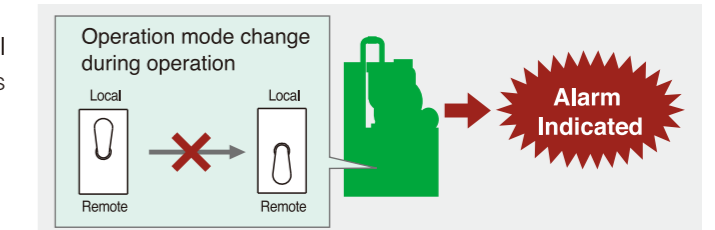
If there is an input (including an external thermo signal) from a remote location, an alarm is displayed even in the local operation mode. If there is an input from a local source (the operation switch on the body) when in remote operation mode, it is ignored and an alarm is not displayed.

Example of Error Setting/Operation Prevention Control



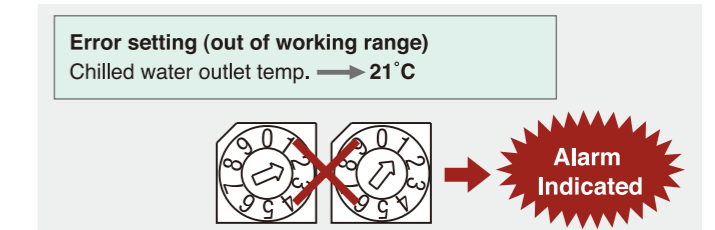
Local / Remote Error Operation

If the local/remote selector switch is changed from local to remote or vice-versa while the unit is ON, the unit is stopped, and an alarm is displayed.



Error Setting of DIP Switch

In case of an error setting (e.g., out of working range), an alarm is displayed.



Features

Safety Devices

The unit is equipped with safety and protective devices to ensure dependable and long life operation.

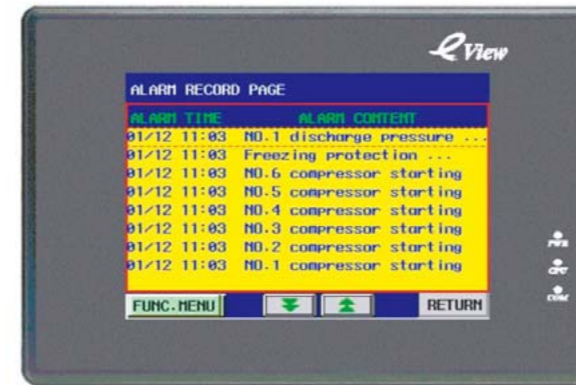
List of Safty Devices	Protection Function	
Prevents compressor from damage	Three-Phase Over-Current Relay	Overcurrent relays equipped with a magnetic switch box cut out each compressor when the current to the compressor exceeds the setting.
	High-Pressure Switch Low-Pressure Switch	The high pressure switch and the low pressure control protect against excessive discharge pressure and exceedingly low suction pressure. The switch and control cut out the compressor operation when the discharge pressure exceeds the setting or when the suction pressure decreases below the setting.
	Internal Thermostat for Compressor Motor	The internal thermostat embedded in the compressor motor winding cuts out each operation when the temperature of the motor winding exceeds the setting.
	Reverse Phase Protection Relay	This circuit is composed of a reverse-phase protection device preventing reverse operation of the screw compressor, because the screw compressor definitely cannot be operated in the wrong direction due to misconnection of the main power phases.
	Screw Compressor Protection	The electric timer of the screw compressor cycling protection (ccp) connected in the compressor control circuit delays the screw compressor restarting period for approximately 3 minutes after the electronic thermostat calls for the cooling operation or automatic resetting of the protection devices, thereby preventing harmful screw compressor cycling operation.
Prevents condenser from damage	Fusible Plug	The fusible plug is equipped with upsteam of the liquid line. When the refrigerant temperature exceeds the melting point, the plug melts and purges the refrigerant gas in order to avoid explosion of the condenser.
Prevents cooler from freezing	Freeze Protection Thermistor	Freeze protection control, for which a sensor is located in the water outlet near the water cooler, cuts out the compressor when the water outlet temperature decreases below the setting.
For long life operation	Oil Heater	An oil heater in the compressor prevents from oil foaming during cold starting. This heater warms the oil, while the compressor is stopped.
	Operation Hour-Meter	This hour-meter indicates the sum of the compressor operation.
	Rotation of Compressor Operation	The compressor operation order can be rotated in order to balance the operation hours of the compressors. This function extends machine life.

Alarm Data History

A maximum of 10 alarm data is memorized, and can be checked by LCD or by 7-segment on an electrical box (operation data just before alarm is memorized can be checked).

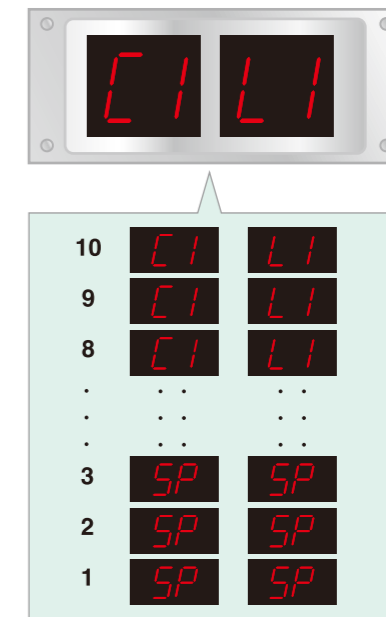
● Liquid Crystal Screen Display

Easy to check alarm history with LCD



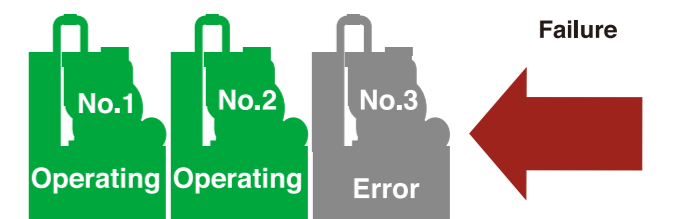
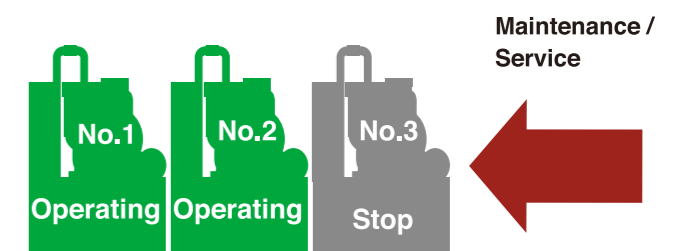
● Electrical Box

Alarm history can be checked by 7-segment on electrical box.



Modular System

Hitachi water chiller units feature a modular cycle structure, so each module can be packed and transported individually for more convenient local installation and displacement. Further, the refrigerant system of each module can be operated independently, which makes maintenance easier. If unexpected trouble occurs in one module, the remaining modules are operated as a backup.

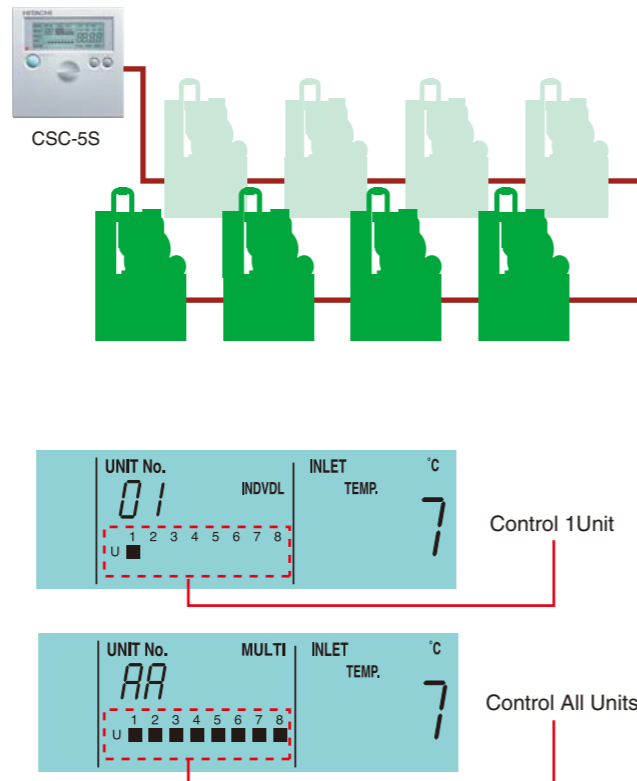


Features

Control of Number of Units by CSC-5S [compact type only]

1 unit or more units can be controlled individually or collectively.

CSC-5S, central control and monitoring system for chiller. This can be used for up to 8 chillers and installed according to the customer's air-conditioning environment. By remote control, the functions can be checked from the control room, so there's no need to go out or to the machine room for checking.



Functions

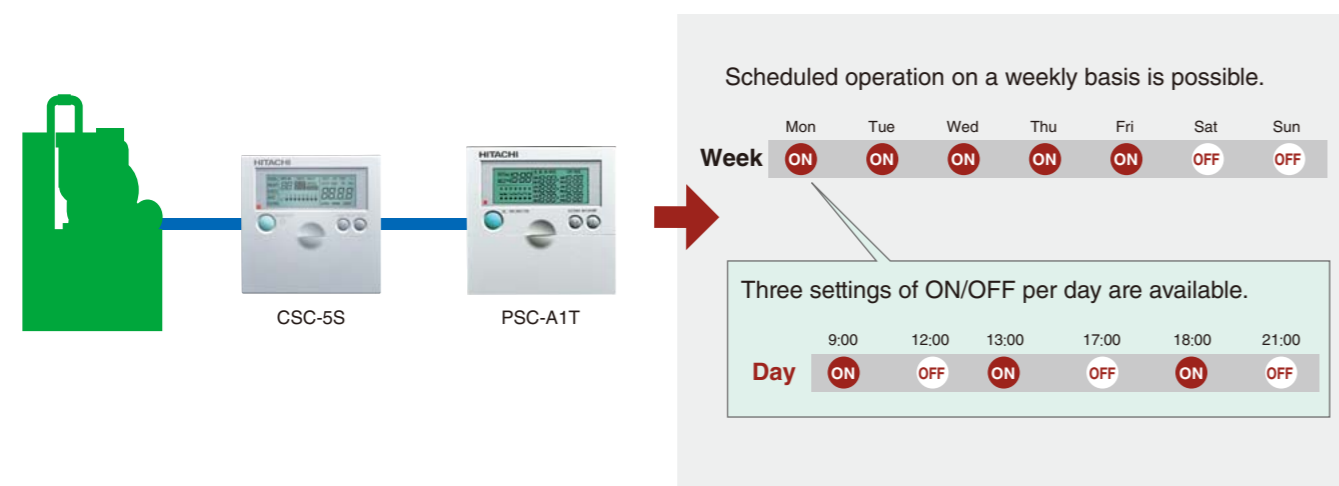
- ON/OFF
- Depends on the load condition, controls ON/OFF of several units as for one chiller
- Setting temperature
- Rotates units and averages the running hours.



Operation Schedule Setting

Combined use of CSC-5S and PSC-A1T

Scheduled operation on a weekly basis, and 3 settings of ON/OFF per day, are available for each day of the week.



Liquid Crystal Screen Display

LCD can be set for easy control.

Functions

- Operation started/stopped
- Operation status check
- Setting condition check/change
- Alarm data check
- Schedule setting



You can choose Chinese or English.

Operation status screen

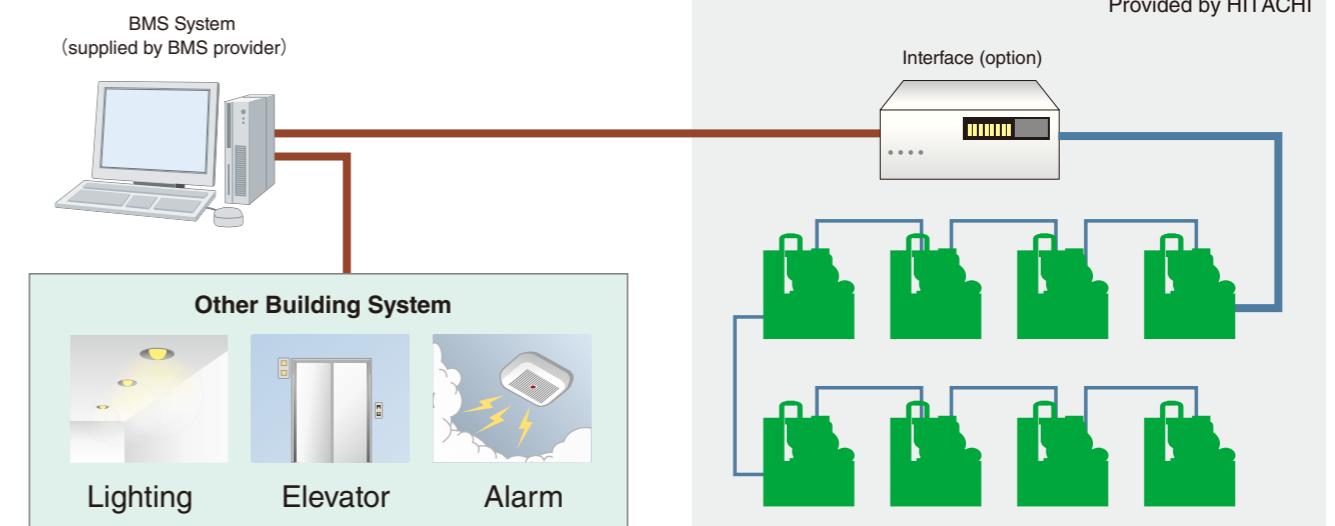
Alarm data screen

Schedule screen

Connectable to Building Management System

A BMS-connecting interface can be supplied.

Building Management System (BMS)



Specifications



R22 RCU-WHYZ(-E)

Model	40	50	60	80	100	120	140	150	170	180	200	220	260	300	340	380	410	450	490	530	570	
Cooling Capacity [USRT]	39.7	48.9	60.4	79.4	97.8	120.9	137.9	146.8	172.9	181.2	190.2	202.8	239.5	276.2	311.1	346.1	377.7	414.4	449.1	484.4	519.1	
Cooling Capacity [kW]	140	172	213	279	344	425	485	516	608	637	669	713	842	971	1,094	1,217	1,328	1,457	1,579	1,703	1,825	
Net Weight [kg]	1,072	1,142	1,212	1,800	1,980	2,070	2,858	3,010	2,988	3,220	3,038	5,452	5,584	5,716	5,846	5,976	8,442	8,574	8,704	8,834	8,964	
Refrigerant Cycle	1	1	1	2	2	2	1	3	1	3	1	2	2	2	2	2	3	3	3	3	3	
Dimensions [mm]	Height	1,506	1,506	1,506	1,505	1,505	1,505	1,877	1,688	1,877	1,688	1,877	1,810	1,877	1,877	1,877	1,877	1,877	1,877	1,877	1,877	1,877
	Width	965	965	965	1,106	1,106	1,106	1,296	1,220	1,296	1,220	1,296	2,692	2,692	2,692	2,692	2,692	2,692	4,088	4,088	4,088	4,088
	Depth	1,977	1,977	1,977	2,956	2,956	2,956	2,134	3,531	2,134	3,531	2,134	2,134	2,134	2,134	2,134	2,134	2,134	2,134	2,134	2,134	2,134

R407C RCUG-WHYZ(-E)

Model	40	50	60	80	100	120	140	150	170	180	200	220	260	300	340	380	410	450	490	530	570	
Cooling Capacity [USRT]	37.0	46.1	56.0	73.9	92.2	112.1	135.3	138.2	166.3	168.1	183.1	195.7	233.2	270.8	301.8	332.8	368.6	406.1	437.1	468.1	499.1	
Cooling Capacity [kW]	130	162	197	260	324	394	476	486	585	591	644	688	820	952	1,061	1,170	1,296	1,428	1,537	1,646	1,755	
Net Weight [kg]	1,072	1,142	1,212	1,800	1,980	2,070	2,858	3,010	2,988	3,220	3,038	5,452	5,584	5,716	5,846	5,976	8,442	8,574	8,704	8,834	8,964	
Refrigerant Cycle	1	1	1	2	2	2	1	3	1	3	1	2	2	2	2	2	3	3	3	3	3	
Dimensions [mm]	Height	1,506	1,506	1,506	1,505	1,505	1,505	1,877	1,688	1,877	1,688	1,877	1,810	1,877	1,877	1,877	1,877	1,877	1,877	1,877	1,877	1,877
	Width	965	965	965	1,106	1,106	1,106	1,296	1,220	1,296	1,220	1,296	2,692	2,692	2,692	2,692	2,692	2,692	4,088	4,088	4,088	4,088
	Depth	1,977	1,977	1,977	2,956	2,956	2,956	2,134	3,531	2,134	3,531	2,134	2,134	2,134	2,134	2,134	2,134	2,134	2,134	2,134	2,134	2,134

R407C RCUP-WUZ

Model	34	43	51	67	85	101	128	151	171	202
Cooling Capacity [USRT]	50Hz	33.6	42.7	51.2	67.1	85.3	101	128	150.7	170.6
	60Hz	37.5	48.3	56.9	75.4	95.3	113.8	145	170.6	190.5
Cooling Capacity [kW]	50Hz	118	150	180	236	300	355	450	530	600
	60Hz	132	170	200	265	335	400	510	600	670
Net Weight [kg]	750	765	830	950	1,550	1,650	1,750	2,470	2,550	2,670
Refrigerant Cycle	1	1	1	1	2	2	2	3	3	3
Dimensions [mm]	Height	1,524	1,524	1,524	1,524	1,672	1,672	1,672	1,646	1,646
	Width	1,225	1,225	1,225	1,400	1,260	1,260	1,260	1,207	1,300
	Depth	934	934	934	934	1,661	1,661	1,661	2,466	2,466

Temperature Conditions

Chilled water outlet temperature	7°C
Chilled water inlet temperature	12°C
Condenser water inlet temperature	30°C
Condenser water outlet temperature	35°C

Working Range

	RCU-WHYZ	RCUG-WHYZ	RCUP-WUZ	RCUA-WHYZ
Condenser water outlet temperature (°C)	22 ~ 40	22 ~ 37	22 ~ 37	22 ~ 37
Chilled water outlet temperature (°C)	5 ~ 20	5 ~ 20	5 ~ 20	5 ~ 20
Main power supply (3 phase)	380V 50Hz 415V 50Hz	380V 50Hz 415V 50Hz	380V 50Hz 415V 50Hz	380V 50Hz 415V 50Hz
Control power supply (1 phase)	220V 50Hz 240V 50Hz	220V 50Hz 240V 50Hz	220V 50Hz 240V 50Hz	220V 50Hz 240V 50Hz
Standard	GB/T 18430.1-2007	GB/T 18430.1-2007	JIS B 8613	GB/T 18430.1-2007

R410A RCUA-WHYZ(-E)

Model	160	180	220	240	280	300	380	440	500	560	600	660	720	780	840	900
Cooling Capacity [USRT]	147.6	162.4	200.2	220.4	251.4	276	347.8	400	451.6	502.8	553	600.6	651.8	703	754.2	829.1
Cooling Capacity [kW]	519	571	704	775	884	972	1,223	1,408	1,588	1,768	1,944	2,112	2,292	2,473	2,653	2,916
Net Weight [kg]	3,082	3,122	3,507	3,547	3,850	3,895	6,589	7,014	7,357	7,700	7,790	10,521	10,864	11,207	11,550	11,685
Refrigerant Cycle	1	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3
Dimensions [mm]	Height	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900
	Width	1,285	1,285	1,285	1,285	1,285	1,285	2,670	2,670	2,670	2,670	4,055	4,055	4,055	4,055	4,055
	Depth	3,104	3,104	3,104	3,104	3,104	3,104	3,104	3,104	3,104	3,104	3,104	3,104	3,104	3,104	3,104