

# TOSHIBA

Leading Innovation >>>

CATALOG 2018-5

Air-cooled Inverter Modular Chiller  
for Diverse Customer Needs

Preliminary

## UNIVERSAL SMART X



Better Air Solutions

*Made-in-Japan*  
*All-new innovative chiller system*







# ***Better Air Solutions***

Through our commitment to world-class *efficiency*, versatile *scalability* and leading *quality*, Toshiba Air Conditioning advances leading-edge technologies to find the most forward-thinking solutions possible for your world.

# ***UNIVERSAL SMART X***

***30HP model / 40HP model / 50HP model***

*More energy savings through industry-leading operating efficiency and flexibility among wide-ranging temperature environments, from air conditioning to industrial processes*



# UNIVERSAL SMART X line-up

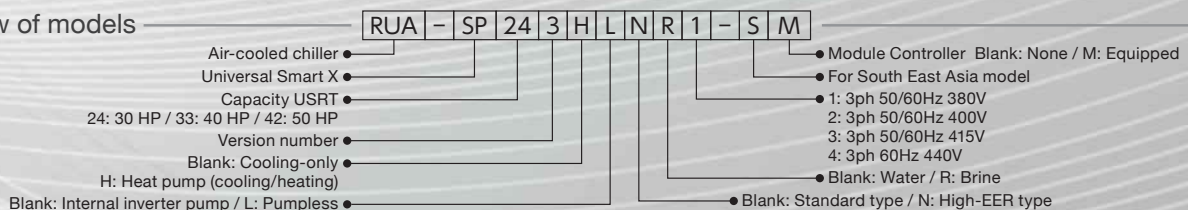
## Internal inverter pump

Model	Use	Type	Power supply	Page	
<b>30HP</b>	Cooling-only	Standard	3-phase 3-wire 50/60Hz 380V/400V/415V	11	
		High-EER		13	
	Heat pump	Standard		3-phase 3-wire 60Hz 440V	15
		High-EER		17	
<b>40HP</b>	Cooling-only	Standard	3-phase 3-wire 50/60Hz 380V/400V/415V	11	
		High-EER		13	
	Heat pump	Standard		3-phase 3-wire 60Hz 440V	15
		High-EER		17	
<b>50HP</b>	Cooling-only	Standard	3-phase 3-wire 50/60Hz 380V/400V/415V	11	
		High-EER		13	
	Heat pump	Standard		3-phase 3-wire 60Hz 440V	15
		High-EER		17	

## Pumpless

Model	Use	Type	Power supply	Page	
<b>30HP</b>	Cooling-only	Standard	3-phase 3-wire 50/60Hz 380V/400V/415V	19	
		High-EER		21	
	Heat pump	Standard		3-phase 3-wire 60Hz 440V	23
		High-EER		25	
<b>40HP</b>	Cooling-only	Standard	3-phase 3-wire 50/60Hz 380V/400V/415V	19	
		High-EER		21	
	Heat pump	Standard		3-phase 3-wire 60Hz 440V	23
		High-EER		25	
<b>50HP</b>	Cooling-only	Standard	3-phase 3-wire 50/60Hz 380V/400V/415V	19	
		High-EER		21	
	Heat pump	Standard		3-phase 3-wire 60Hz 440V	23
		High-EER		25	

### View of models



# 7 Smart features



## 1 Highest operating efficiency in the industry

*With a new DC twin rotary compressor*

*Further improvements to energy efficiency  
Meets highest level of IPLV7.1\*1 in the industry!*

\*1 For high EER type 30hp module unit, internal pump power is not included.  
See the graphs on next page for the values of each unit and IPLV values based on AHRI550-590.



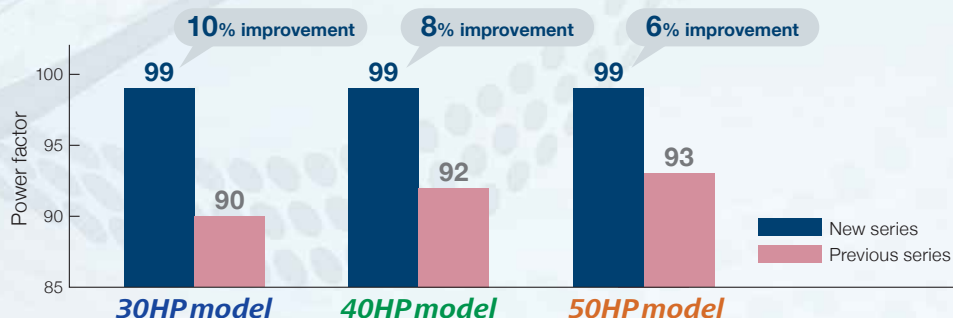
## 2 Improved harmonic suppression function

*Electrical harmonic current suppression function comes as standard*

*Reduced costs by eliminating additional installation for the harmonic current suppression!*

## 3 Achieved 99% Power Factor

*Improvements to harmonic suppression function have brought power factor up to 99%*





# UNIVERSAL SMART X

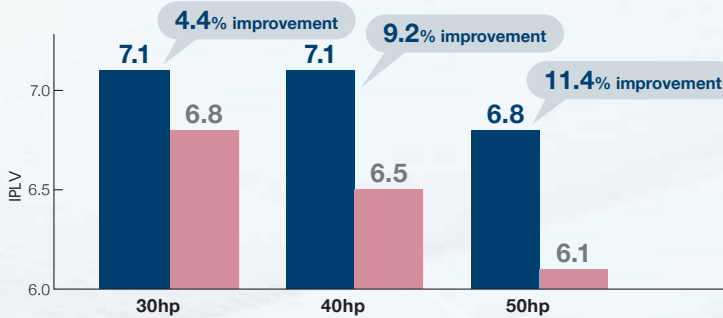
30HP model / 40HP model / 50HP model

...Providing for the diverse needs of our customers with exceptional functionality.

## High-efficiency compressor

- 1 Motors have more coils
- 2 Reduction in pressure loss

### High-EER type IPLV



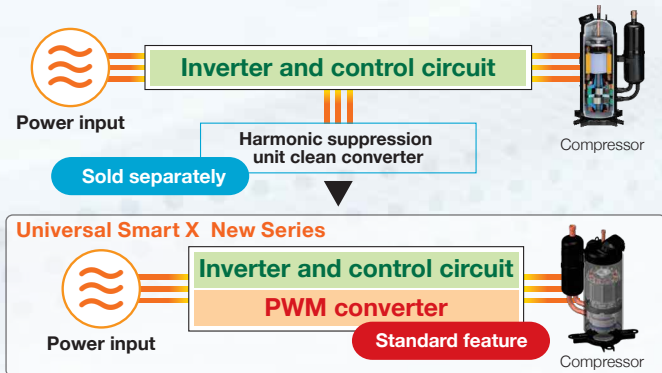
■ New series  
■ Previous series

New series high-EER type IPLV	30HP	40HP	50HP
IPLV	7.1	7.1	6.8

**Note:** Graph values are based on outside temperature and outlet water temperature of cooling period performance coefficient trials on the AHRI550-590 'Water Chilling Unit'. However, the difference in inlet/outlet water temperature is the IPLV value based on actual operating control of machines with our inverter pump in 7°C conditions. The IPLV is based on the cooling period performance coefficient trials (outside temp, outlet water temp, inlet water temp, flow volume) on the AHRI550-590 'Water Chilling Unit'.

## No additional costs are required

Previous Series of Universal Smart X

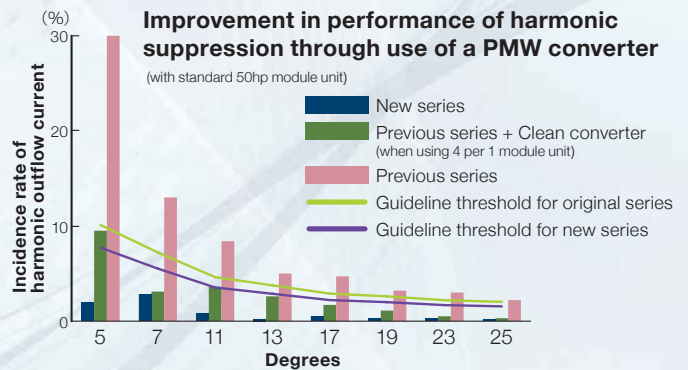


Since damage occurs to power equipment when there is significant harmonic current, controls are required, such as through harmonic suppression countermeasure guidelines for users who receive high voltage or especially high voltage.

\*2 Flickering on TVs, radio noise, mistaken tripping of an electrical leakage breaker, burnout of a reactor or phase-advanced condenser.

## Benefits

- 1 Eliminate problems caused by harmonic current
- 2 Reduction in consumption volume of home appliances
- 3 Reduction in consumption volume of electrical equipment

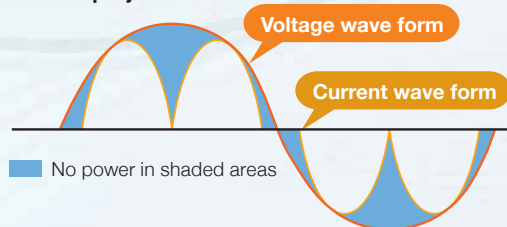


\*Values indicated are guideline thresholds with power transformer volume on contracted output and an operating rate of 60%.

## Benefits

- **When power efficiency drops**  
Electricity equipment becomes larger as power use efficiency drops.
- **Effects of improved power efficiency**
  - Reduction in power loss through less load current
  - Improved efficiency of electrical equipment through reductions in current

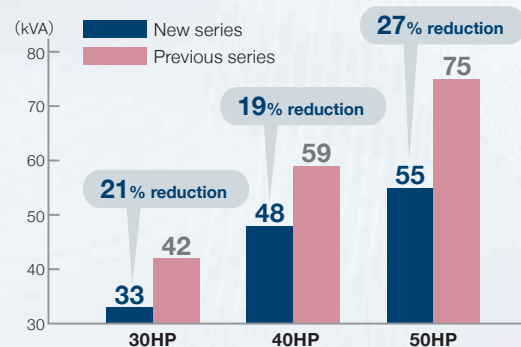
### Efficiency reduction projection



## Example design of power savings (decreased electrical transformer volume)

Large power-saving design possible over original model!

### Comparison of power transformer volume



Allows for reductions in wiring, switches, fuses etc!

\*3 Some models (combined with module unit) do not allow a reduction in size.

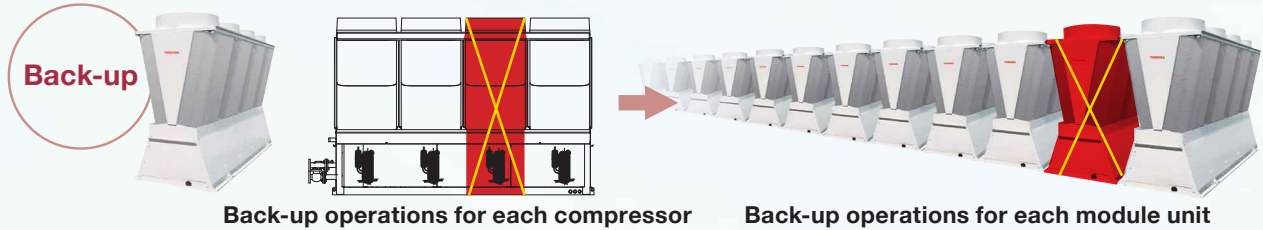


# UNIVERSAL SMART X

30HP model / 40HP model / 50HP model

## 4 Highly-reliable module unit system

Each module unit has independent refrigerant cycle, providing risk-diversification.



And also...

Defrosting operation is also performed for each compressor.

Make use of the back-up function to carry out distributed defrost in the module units, and control a reduction in temperature of the hot-water.

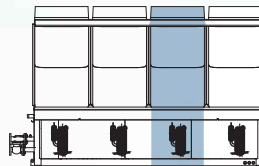


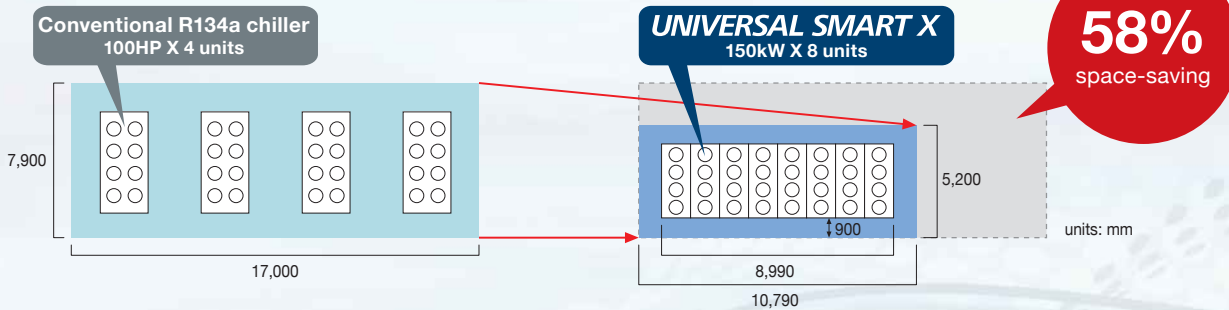
Photo: Defrosting operation demonstration

### Space-saving installation

Optimum air flow with advanced X frame. Easy installation in small spaces.

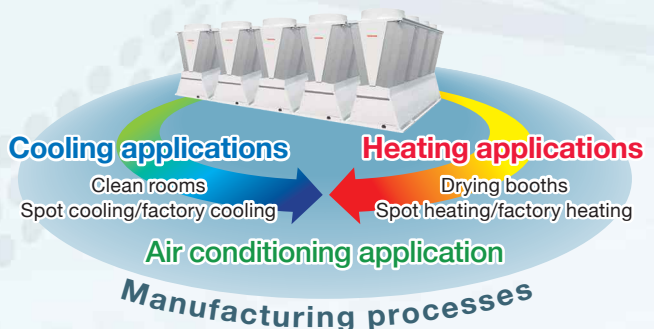
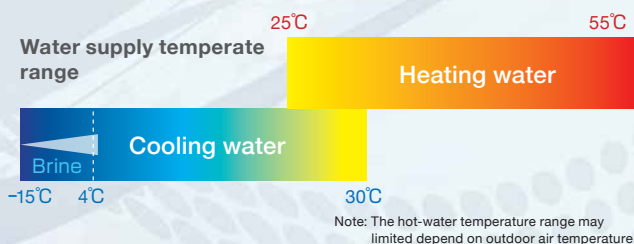
- Installation space has decreased by 58% compared with the R134a model\*1 from 15 years ago, providing enough capacity increase in the same space.
- Space-saving design makes an easy replacement from a system using a chilling tower.

\*1 Compared with the space needed to install a system for a 1200kW cooling load. Comparison of four RUA-SA30001H units and eight 150kW module units.



## 5 Wide range of operating temperatures

This unit can be widely used for both commercial and industrial applications. Operates efficiently from low to medium or high temperature.

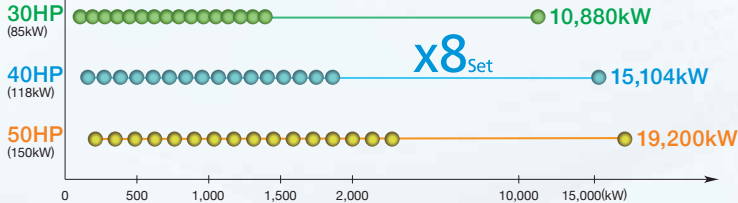




## 6 Flexible control of up to 6400 horsepower

Up to 128 UNIVERSAL SMART X module units can be combined and operated together.

Basic module unit



Up to 16 units can be combined (Module controller)

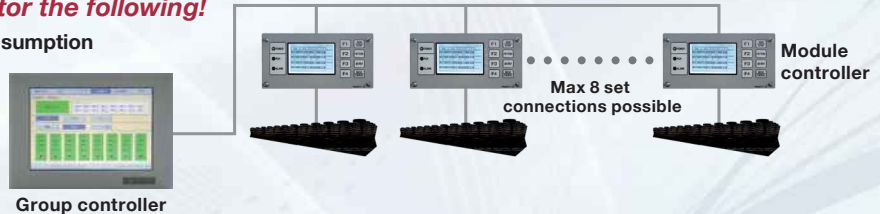
Up to 8 groups of 16 combined units (Group controller)

### Superior system management

Module controller, group controller, and Web monitor are now ready for users to manage and save energy.

*For example, you can even monitor the following!*

- Simple manufacturing heat, power consumption
- Operating capacity
- Water supply temperature
- Error history



### Wifi data analysis

Wireless LAN function comes standard in the module controller. Dedicated application collects data, like power consumption and inlet/outlet temperature, on a device, like a tablet, allowing for the study of optimal operations.



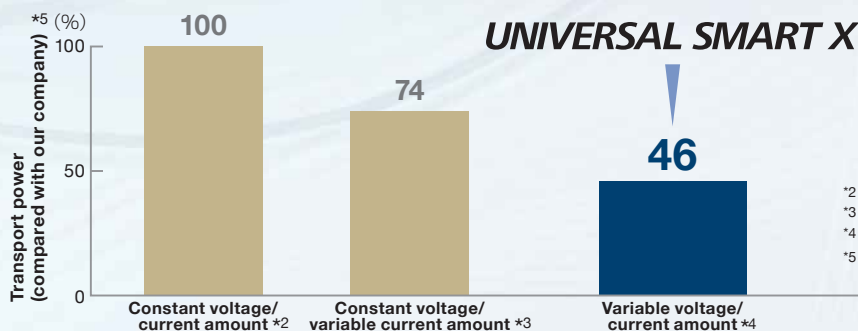
\*The machine is not designed for use in all regions. Please contact a representative for details.

## 7 Voltage/current volume control (bypass flow optimization control)

In addition to the operating control through the water temperature detection in the original model, new operating control via flow rate detection was added to make the bypass flow approach just about "0".

Contribute to energy-savings for both heat source machine and entire system.

*Transport power is greatly reduced through control coordinated with the load!*



- \*2 Set water pressure feed/flow control
- \*3 Set water pressure feed/variable flow control
- \*4 Variable water pressure feed/flow control
- \*5 Comparison with our model (with single pump system)  
Reduced volume in conveyance power differs by system.



# UNIVERSAL SMART X

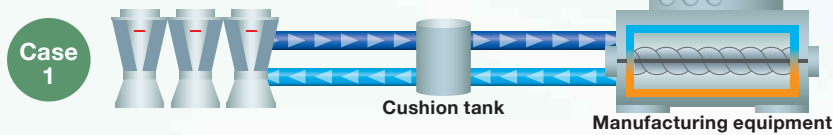
30HP model / 40HP model / 50HP model

Universal Smart X Provides You with Solutions.

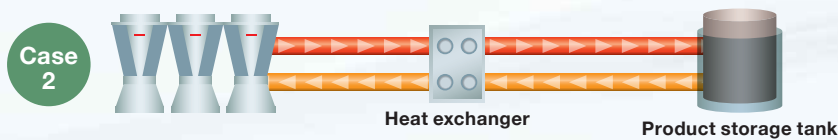
## Solutions for application .....

Providing you appropriate solutions with superior function for every application, from air conditioning to industrial processes!

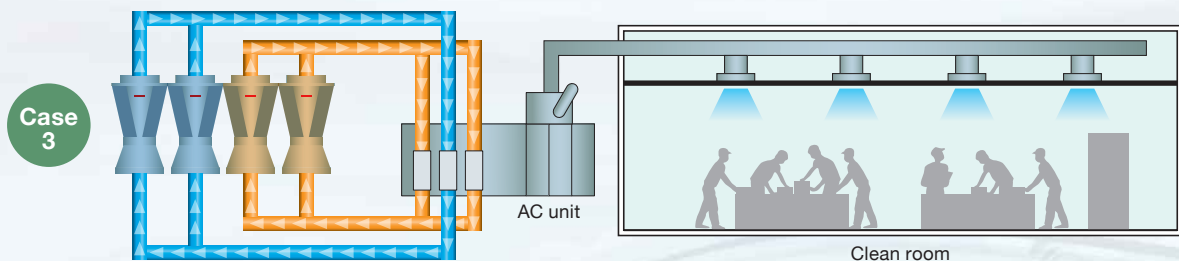
### 1 For machinery cooling!



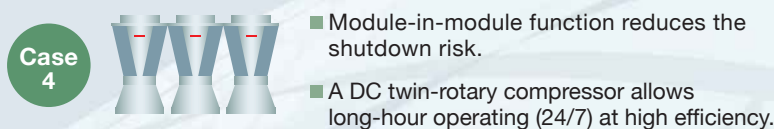
### 2 Year-round hot-water supply with heat machine option!



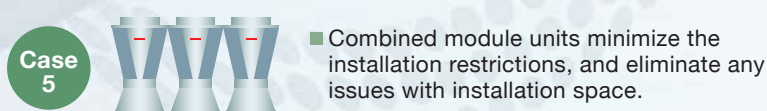
### 3 For clean rooms!



### 4 For server rooms!



### 5 For large commercial facilities!



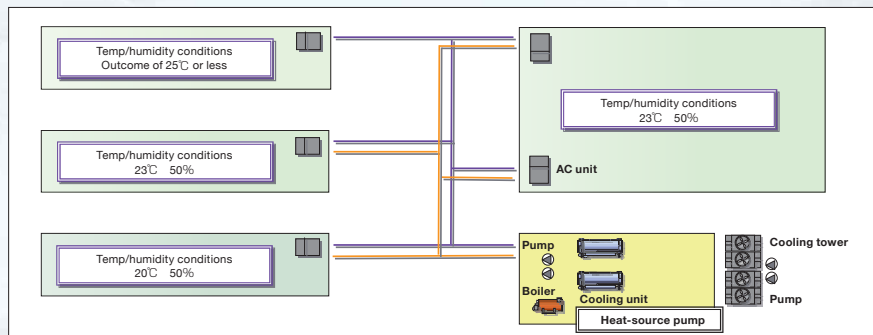
# Solutions for operation

*And also...* Maximize the function of Universal Smart X with optimal operation in various applications.

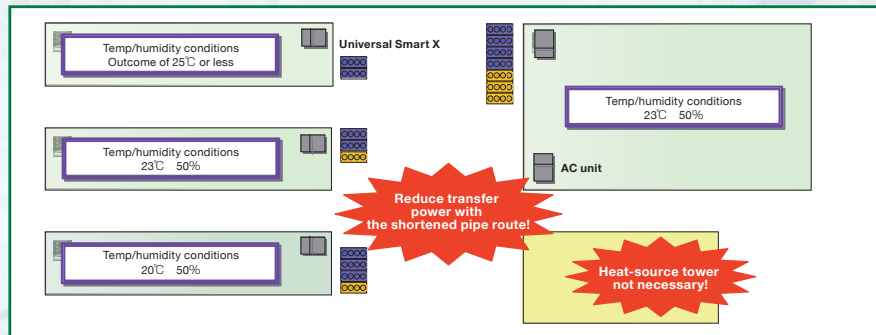
## 1 For when you wish to reduce the heat-transfer loss.

**Solution** New heat pump system with optimal dispersion to accommodate your loads and uses.

**Centralized heat pump system**



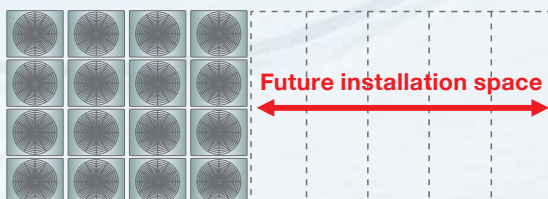
**Dispersed Air-cooled heat pump system**



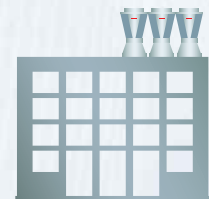
## 2 Uncertainty in the rise of cooling load in the future.

**Solution** Combined module units allow the number of units be increased to meet the internal load.

Expansion is available to meet the increase in loads and required capacities in the future.



Factory



Commercial facilities



**30HP model 40HP model 50HP model** Cooling-only

		Standard type						
		380V			400V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP2431-S	RUA-SP3331-S	RUA-SP4231-S	RUA-SP2432-S	RUA-SP3332-S	RUA-SP4232-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,273	1,273	1,308	1,273	1,273	1,308	
Operating weight (kg)		1,301	1,301	1,343	1,301	1,301	1,343	
Power supply (Note 3)		3-phase 3-wire 380V 50/60Hz			3-phase 3-wire 400V 50/60Hz			
Reference current for power supply design (Note 4) (A)		50.5	72.2	81.8	50.5	72.2	81.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	32.1 [32.8]	49.3 [50.9]	71.1 [72.9]	30.4 [31.2]	46.7 [48.3]	67.4 [69.3]
		Nominal input (kW)	20.8 [21.3]	32.1 [33.0]	46.3 [47.6]	20.8 [21.3]	32.1 [33.0]	46.3 [47.6]
		EER	4.09 [3.99]	3.68 [3.58]	3.24 [3.15]	4.09 [3.99]	3.68 [3.58]	3.24 [3.15]
		Power factor (%)	99					
IPLV (With a 5°C difference) (Note 5)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output x number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
Compressor oil	Crankcase heater (W)	37 x 4						
	Type	RB74A						
Condenser coil - air side	Charge (L)	2.0 x 4						
	Type	Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
Pump (Note 4)	Motor output x number of units (kW)	1.0 x 4						
	Motor output (kW)	1.5						
	Type	Line pump						
	Flow control	Inverter						
Cooler - water side (Note 7)	Maximum current (Note 6) (A)	6.1	6.1	5.6	3.1	3.1	2.8	
	Maximum input (Note 6)(kW)	2.0	2.0	1.8	2.0	2.0	1.8	
Refrigerant	Type	Plate type (SUS316 equivalent)						
	R410A charge (kg)	8.2 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 8) (%)		0, 9 ~ 100	0, 6 ~ 100	0, 5 ~ 100	0, 9 ~ 100	0, 6 ~ 100	0, 5 ~ 100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping diameters	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 9)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
Legal refrigerant ton (tons)		10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC) (include external sensor x 2) (Note 10)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.

Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) Output of the integrated pump can change depending on the outlet pump head required to comply with the indent. The power supply design at that time differs from those of a standard pump. Refer to the power supply design items. In addition, refer to pump performance features for operating conditions. (pushing pressure range, etc.)

(Note 5) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 6) The figure is at an operating condition with maximum water flow rate and maximum pump inverter frequency. (60Hz)

(Note 7) Working pressure : below 0.7 MPa.

(Note 8) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 9) The on-site sound level will be higher due to the affection of back noise and sound reflection.

(Note 10) The external sensor's lead wire length is 30 m.

		Standard type						
		415V			440V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP2433-S	RUA-SP3333-S	RUA-SP4233-S	RUA-SP2434-S	RUA-SP3334-S	RUA-SP4234-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,273	1,273	1,308	1,273	1,273	1,308	
Operating weight (kg)		1,301	1,301	1,343	1,301	1,301	1,343	
Power supply (Note 3)		3-phase 3-wire 415V 50/60Hz			3-phase 3-wire 440V 60Hz			
Reference current for power supply design (Note 4) (A)		50.5	72.2	81.8	50.5	72.2	81.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	29.3[30.1]	45.1[46.6]	65.0[66.8]	27.7[28.4]	42.5[43.9]	61.3[63.0]
		Nominal input (kW)	20.8[21.3]	32.1[33.0]	46.3[47.6]	20.8[21.3]	32.1[33.0]	46.3[47.6]
		EER	4.09[3.99]	3.68[3.58]	3.24[3.15]	4.09[3.99]	3.68[3.58]	3.24[3.15]
		Power factor (%)	99					
IPLV (With a 5°C difference) (Note 5)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output×number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
Compressor oil	Crankcase heater (W)	37 x 4						
	Type	RB74A						
Condenser coil - air side	Charge (L)	2.0 x 4						
	Type	Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
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Pump (Note 4)	Motor output x number of units (kW)	1.0 x 4						
	Motor output (kW)	1.5						
	Type	Line pump						
	Flow control	Inverter						
Cooler - water side (Note 7)	Maximum current (Note 6) (A)	6.1	6.1	5.6	3.1	3.1	2.8	
	Maximum input (Note 6)(kW)	2.0	2.0	1.8	2.0	2.0	1.8	
Refrigerant	Type	Plate type (SUS316 equivalent)						
	R410A charge (kg)	8.2 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 8) (%)		0, 9~100	0, 6~100	0, 5~100	0, 9~100	0, 6~100	0, 5~100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping diameters	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 9)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
Legal refrigerant ton (tons)		10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC) (include external sensor x 2) (Note 10)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.

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 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

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(Note 6) The figure is at an operating condition with maximum water flow rate and maximum pump inverter frequency. (60Hz)

(Note 7) Working pressure : below 0.7 MPa.

(Note 8) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 9) The on-site sound level will be higher due to the affection of back noise and sound reflection.

(Note 10) The external sensor's lead wire length is 30 m.

**30HP model** **40HP model** **50HP model** Cooling-only

		High-EER type						
		380V			400V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243N1-S	RUA-SP333N1-S	RUA-SP423N1-S	RUA-SP243N2-S	RUA-SP333N2-S	RUA-SP423N2-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,283	1,283	1,318	1,283	1,283	1,318	
Operating weight (kg)		1,313	1,313	1,355	1,313	1,313	1,355	
Power supply (Note 3)		3-phase 3-wire 380V 50/60Hz			3-phase 3-wire 400V 50/60Hz			
Reference current for power supply design (Note 4) (A)		50.5	72.2	81.8	50.5	72.2	81.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	20.6 [20.9]	32.3 [33.2]	46.9 [48.5]	19.5 [19.9]	30.6 [31.6]	44.5 [46.1]
		Nominal input (kW)	13.3 [13.7]	20.9 [21.6]	30.5 [31.6]	13.3 [13.7]	20.9 [21.6]	30.5 [31.6]
		EER	6.39 [6.20]	5.65 [5.46]	4.92 [4.75]	6.39 [6.20]	5.65 [5.46]	4.92 [4.75]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 5)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output x number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
Compressor oil	Crankcase heater (W)	37 x 4						
	Type	RB74A						
Charge (L)		2.0 x 4						
Condenser coil - air side		Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
Water spray system (Note 6)	Water spray volume (L/min)	13.6						
	Supply water pressure (Note 7) (MPa)	0.2						
	Control system	Continuous water spraying when outside temperature exceeds setting and compressor capacity exceeds setting						
	Motor output (kW)	1.5						
Pump (Note 4)	Type	Line pump						
	Flow control	Inverter						
	Maximum current (Note 8) (A)	3.1	3.1	2.8	3.1	3.1	2.8	
	Maximum input (Note 8) (kW)	2.0	2.0	1.8	2.0	2.0	1.8	
Cooler - water side (Note 9)		Plate type (SUS316 equivalent)						
Refrigerant	Type	R410A						
	R410A charge (kg)	8.2 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 10) (%)		0, 9~100	0, 6~100	0, 5~100	0, 9~100	0, 6~100	0, 5~100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping diameters (Sound level)	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)		50 flange x 1 (JIS10K)		
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)		50 flange x 1 (JIS10K)		
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 11)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
Legal refrigerant ton		10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC) (include external sensor x 2) (Note 12)						

- (Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.  
 Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".
- (Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)
- (Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.
- (Note 4) Output of the integrated pump can change depending on the outlet pump head required to comply with the indent. The power supply design at that time differs from those of a standard pump. Refer to the power supply design items. In addition, refer to pump performance features for operating conditions. (pushing pressure range, etc.)
- (Note 5) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".
- (Note 6) The supply water quality may cause scales and other matter to adhere to the coil surface. If necessary, install a water softener on the supply water side. (Provided locally)
- (Note 7) Adjust the flow rate to become close to this supply water pressure with the manual flow adjustment valve on the water spray system inlet. If sufficient supply water pressure is not available, install a pressure pump. (Provided locally)
- (Note 8) The figure is at an operating condition with maximum water flow rate and maximum pump inverter frequency. (60Hz)
- (Note 9) Working pressure: below 0.7 MPa.
- (Note 10) Range of capacity control sometimes can vary depending on the unit's operating condition.
- (Note 11) The on-site sound level will be higher due to the affection of back noise and sound reflection.
- (Note 12) The external sensor's lead wire length is 30 m.



		High-EER type						
		415V			440V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243N3-S	RUA-SP333N3-S	RUA-SP423N3-S	RUA-SP243N4-S	RUA-SP333N4-S	RUA-SP423N4-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,283	1,283	1,318	1,283	1,283	1,318	
Operating weight (kg)		1,313	1,313	1,355	1,313	1,313	1,355	
Power supply (Note 3)		3-phase 3-wire 415V 50/60Hz			3-phase 3-wire 440V 60Hz			
Reference current for power supply design (Note 4) (A)		50.5	72.2	81.8	50.5	72.2	81.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	18.8[19.2]	29.5[30.4]	42.9[44.4]	17.7[18.1]	27.8[28.7]	40.5[41.9]
		Nominal input (kW)	13.3[13.7]	20.9[21.6]	30.5[31.6]	13.3[13.7]	20.9[21.6]	30.5[31.6]
		EER	6.39[6.20]	5.65[5.46]	4.92[4.75]	6.39[6.20]	5.65[5.46]	4.92[4.75]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 5)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output x number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
Crankcase heater	(W)	37 x 4						
	Type	RB74A						
Compressor oil	Charge (L)	2.0 x 4						
	Condenser coil - air side	Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
Water spray system (Note 6)	Water spray volume (L/min)	13.6						
	Supply water pressure (Note 7)(MPa)	0.2						
	Control system	Continuous water spraying when outside temperature exceeds setting and compressor capacity exceeds setting						
Pump (Note 8)	Motor output (kW)	1.5						
	Type	Line pump						
	Flow control	Inverter						
	Maximum current (Note 8) (A)	3.1	3.1	2.8	3.1	3.1	2.8	
Maximum input (Note 8)(kW)	2.0	2.0	1.8	2.0	2.0	1.8		
Cooler - water side (Note 11)		Plate type (SUS316 equivalent)						
Refrigerant	Type	R410A						
	R410A charge (kg)	8.2 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 10) (%)		0, 9~100	0, 6~100	0, 5~100	0, 9~100	0, 6~100	0, 5~100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping/dimensions	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)		50 flange x 1 (JIS10K)		
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)		50 flange x 1 (JIS10K)		
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 11)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
Legal refrigerant ton		10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC) (include external sensor x 2) (Note 12)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.  
Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) Output of the integrated pump can change depending on the outlet pump head required to comply with the indent. The power supply design at that time differs from those of a standard pump. Refer to the power supply design items. In addition, refer to pump performance features for operating conditions. (pushing pressure range, etc.)

(Note 5) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 6) The supply water quality may cause scales and other matter to adhere to the coil surface. If necessary, install a water softener on the supply water side. (Provided locally)

(Note 7) Adjust the flow rate to become close to this supply water pressure with the manual flow adjustment valve on the water spray system inlet. If sufficient supply water pressure is not available, install a pressure pump. (Provided locally)

(Note 8) The figure is at an operating condition with maximum water flow rate and maximum pump inverter frequency. (60Hz)

(Note 9) Working pressure: below 0.7 MPa.

(Note 10) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 11) The on-site sound level will be higher due to the affection of back noise and sound reflection.

(Note 12) The external sensor's lead wire length is 30 m.

**30HP model 40HP model 50HP model** Heat pump

		Standard type						
		380V			400V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243H1-S	RUA-SP333H1-S	RUA-SP423H1-S	RUA-SP243H2-S	RUA-SP333H2-S	RUA-SP423H2-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Heating capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,303	1,303	1,338	1,303	1,303	1,338	
Operating weight (kg)		1,331	1,331	1,373	1,331	1,331	1,373	
Power supply (Note 3)		3-phase 3-wire 380V 50/60Hz			3-phase 3-wire 400V 50/60Hz			
Reference current for power supply design (Note 4) (A)		50.5	72.2	81.8	50.5	72.2	81.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	32.1 [32.8]	49.3 [50.9]	71.1 [72.9]	30.4 [31.2]	46.7 [48.3]	67.4 [69.3]
		Nominal input (kW)	20.8 [21.3]	32.1 [33.0]	46.3 [47.6]	20.8 [21.3]	32.1 [33.0]	46.3 [47.6]
		EER	4.09 [3.99]	3.68 [3.58]	3.24 [3.15]	4.09 [3.99]	3.68 [3.58]	3.24 [3.15]
		Power factor (%)	99	99	99	99	99	99
	Heating	Nominal current (A)	33.4 [33.5]	48.7 [49.5]	67.4 [68.1]	31.7 [31.9]	46.3 [47.0]	64.0 [64.7]
		Nominal input (kW)	21.6 [21.8]	31.7 [32.2]	44.0 [44.3]	21.6 [21.8]	31.7 [32.2]	44.0 [44.3]
		COP	3.94 [3.90]	3.72 [3.66]	3.41 [3.39]	3.94 [3.90]	3.72 [3.66]	3.41 [3.39]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 5)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output×number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
Compressor oil	Crankcase heater (W)	37 x 4						
	Type	RB74A						
Condenser coil - air side	Charge (L)	2.0 x 4						
	Type	Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
Pump (Note 4)	Motor output (kW)	1.5						
	Type	Line pump						
	Flow control	Inverter						
	Maximum current (Note 6) (A)	6.1	6.1	5.6	3.1	3.1	2.8	
Cooler - water side (Note 7)	Maximum input (Note 6)(kW)	2.0	2.0	1.8	2.0	2.0	1.8	
	Type	Plate type (SUS316 equivalent)						
Refrigerant	Type	R410A						
	R410A charge (kg)	8.6 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 8) (%)		0, 9~100	0, 6~100	0, 5~100	0, 9~100	0, 6~100	0, 5~100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping diameters	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)	65 flange x 1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)	65 flange x 1 (JIS10K)	65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)	65 flange x 1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)	65 flange x 1 (JIS10K)	65 flange x 1 (JIS10K)	
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 9)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
Legal refrigerant ton (tons)		10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC) (include external sensor x 2) (Note 10)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.  
 Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) Output of the integrated pump can change depending on the outlet pump head required to comply with the indent. The power supply design at that time differs from those of a standard pump. Refer to the power supply design items. In addition, refer to pump performance features for operating conditions. (pushing pressure range, etc.)

(Note 5) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 6) The figure is at an operating condition with maximum water flow rate and maximum pump inverter frequency. (60Hz)

(Note 7) Working pressure : below 0.7 MPa.

(Note 8) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 9) The on-site sound level will be higher due to the affection of back noise and sound reflection.

(Note 10) The external sensor's lead wire length is 30 m.

		Standard type						
		415V			440V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243H3-S	RUA-SP333H3-S	RUA-SP423H3-S	RUA-SP243H4-S	RUA-SP333H4-S	RUA-SP423H4-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Heating capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,303	1,303	1,338	1,303	1,303	1,338	
Operating weight (kg)		1,331	1,331	1,373	1,331	1,331	1,373	
Power supply (Note 3)		3-phase 3-wire 415V 50/60Hz			3-phase 3-wire 440V 60Hz			
Reference current for power supply design (Note 4) (A)		50.5	72.2	81.8	50.5	72.2	81.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	29.3 [30.1]	45.1 [46.6]	65.0 [66.8]	27.7 [28.4]	42.5 [43.9]	61.3 [63.0]
		Nominal input (kW)	20.8 [21.3]	32.1 [33.0]	46.3 [47.6]	20.8 [21.3]	32.1 [33.0]	46.3 [47.6]
		EER	4.09 [3.99]	3.68 [3.58]	3.24 [3.15]	4.09 [3.99]	3.68 [3.58]	3.24 [3.15]
		Power factor (%)	99	99	99	99	99	99
	Heating	Nominal current (A)	30.5 [30.7]	44.6 [45.3]	61.7 [62.4]	28.8 [29.0]	42.0 [42.7]	58.2 [58.8]
		Nominal input (kW)	21.6 [21.8]	31.7 [32.2]	44.0 [44.3]	21.6 [21.8]	31.7 [32.2]	44.0 [44.3]
		COP	3.94 [3.90]	3.72 [3.66]	3.41 [3.39]	3.94 [3.90]	3.72 [3.66]	3.41 [3.39]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 5)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output x number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
	Crankcase heater (W)	37 x 4						
Compressor oil	Type	RB74A						
	Charge (L)	2.0 x 4						
Condenser coil - air side		Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
Pump (Note 4)	Motor output (kW)	1.5						
	Type	Line pump						
	Flow control	Inverter						
	Maximum current (Note 6) (A)	6.1	6.1	5.6	3.1	3.1	2.8	
	Maximum input (Note 6) (kW)	2.0	2.0	1.8	2.0	2.0	1.8	
Cooler - water side (Note 7)		Plate type (SUS316 equivalent)						
Refrigerant	Type	R410A						
	R410A charge (kg)	8.6 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 8) (%)		0, 9 ~ 100	0, 6 ~ 100	0, 5 ~ 100	0, 9 ~ 100	0, 6 ~ 100	0, 5 ~ 100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping diameters	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)		
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)		
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 9)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
Legal refrigerant ton (tons)		10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC) (include external sensor x 2) (Note 10)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.  
 Cooling: 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) Output of the integrated pump can change depending on the outlet pump head required to comply with the indent. The power supply design at that time differs from those of a standard pump. Refer to the power supply design items. In addition, refer to pump performance features for operating conditions. (pushing pressure range, etc.)

(Note 5) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 6) The figure is at an operating condition with maximum water flow rate and maximum pump inverter frequency. (60Hz)

(Note 7) Working pressure: below 0.7 MPa.

(Note 8) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 9) The on-site sound level will be higher due to the affection of back noise and sound reflection.

(Note 10) The external sensor's lead wire length is 30 m.



**30HP model** **40HP model** **50HP model** Heat pump

		High-EER type						
		380V			400V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243HN1-S	RUA-SP333HN1-S	RUA-SP423HN1-S	RUA-SP243HN2-S	RUA-SP333HN2-S	RUA-SP423HN2-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Heating capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,313	1,313	1,348	1,313	1,313	1,348	
Operating weight (kg)		1,343	1,343	1,385	1,343	1,343	1,385	
Power supply (Note 3)		3-phase 3-wire 380V 50/60Hz			3-phase 3-wire 400V 50/60Hz			
Reference current for power supply design (Note 4) (A)		50.5	72.2	81.8	50.5	72.2	81.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	20.6 [20.9]	32.3 [33.2]	46.9 [48.5]	19.5 [19.9]	30.6 [31.6]	44.5 [46.1]
		Nominal input (kW)	13.3 [13.7]	20.9 [21.6]	30.5 [31.6]	13.3 [13.7]	20.9 [21.6]	30.5 [31.6]
		EER	6.39 [6.20]	5.65 [5.46]	4.92 [4.75]	6.39 [6.20]	5.65 [5.46]	4.92 [4.75]
		Power factor (%)	99	99	99	99	99	99
	Heating	Nominal current (A)	33.4 [33.5]	48.7 [49.5]	67.4 [68.1]	31.7 [31.9]	46.3 [47.0]	64.0 [64.7]
		Nominal input (kW)	21.6 [21.8]	31.7 [32.2]	44.0 [44.3]	21.6 [21.8]	31.7 [32.2]	44.0 [44.3]
		COP	3.94 [3.90]	3.72 [3.66]	3.41 [3.39]	3.94 [3.90]	3.72 [3.66]	3.41 [3.39]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 5)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output x number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
Compressor oil	Crankcase heater (W)	37 x 4						
	Type	RB74A						
Condenser coil - air side	Charge (L)	2.0 x 4						
	Type	Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
Water spray system (Note 6)	Water spray volume (L/min)	13.6						
	Supply water pressure (Note 7) (MPa)	0.2						
	Control system	Continuous water spraying when outside temperature exceeds setting and compressor capacity exceeds setting						
Pump (Note 4)	Motor output (kW)	1.5						
	Type	Line pump						
	Flow control	Inverter						
	Maximum current (Note 8) (A)	3.1	3.1	2.8	3.1	3.1	2.8	
Cooler - water side (Note 9)	Maximum input (Note 8)(kW)	2.0	2.0	1.8	2.0	2.0	1.8	
	Type	Plate type (SUS316 equivalent)						
	R410A charge (kg)	8.6 x 4						
Refrigerant	Type	R410A						
	Control	Electric expansion valve						
Capacity control steps (Note 10) (%)		0, 9 ~ 100	0, 6 ~ 100	0, 5 ~ 100	0, 9 ~ 100	0, 6 ~ 100	0, 5 ~ 100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermostat error, high water pressure error)						
Piping/connections	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 11)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
	Legal refrigerant ton (tons)	10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC) (include external sensor x 2)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.  
 Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) Output of the integrated pump can change depending on the outlet pump head required to comply with the indent. The power supply design at that time differs from those of a standard pump. Refer to the power supply design items. In addition, refer to pump performance features for operating conditions. (pushing pressure range, etc.)

(Note 5) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 6) The supply water quality may cause scales and other matter to adhere to the coil surface. If necessary, install a water softener on the supply water side. (Provided locally)

(Note 7) Adjust the flow rate to become close to this supply water pressure with the manual flow adjustment valve on the water spray system inlet. If sufficient supply water pressure is not available, install a pressure pump. (Provided locally)

(Note 8) The figure is at an operating condition with maximum water flow rate and maximum pump inverter frequency. (60Hz)

(Note 9) Working pressure : below 0.7 MPa.

(Note 10) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 11) The on-site sound level will be higher due to the affection of back noise and sound reflection.

(Note 12) The external sensor's lead wire length is 30 m.

		High-EER type						
		415V			440V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243HN3-S	RUA-SP333HN3-S	RUA-SP423HN3-S	RUA-SP243HN4-S	RUA-SP333HN4-S	RUA-SP423HN4-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Heating capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,313	1,313	1,348	1,313	1,313	1,348	
Operating weight (kg)		1,343	1,343	1,385	1,343	1,343	1,385	
Power supply (Note 3)		3-phase 3-wire 415V 50/60Hz			3-phase 3-wire 440V 60Hz			
Reference current for power supply design (Note 4) (A)		50.5	72.2	81.8	50.5	72.2	81.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	18.8[19.2]	29.5[30.4]	42.9[44.4]	17.7[18.1]	27.8[28.7]	40.5[41.9]
		Nominal input (kW)	13.3[13.7]	20.9[21.6]	30.5[31.6]	13.3[13.7]	20.9[21.6]	30.5[31.6]
		EER	6.39[6.20]	5.65[5.46]	4.92[4.75]	6.39[6.20]	5.65[5.46]	4.92[4.75]
		Power factor (%)	99	99	99	99	99	99
	Heating	Nominal current (A)	30.5[30.7]	44.6[45.3]	61.7[62.4]	28.8[29.0]	42.0[42.7]	58.2[58.8]
		Nominal input (kW)	21.6[21.8]	31.7[32.2]	44.0[44.3]	21.6[21.8]	31.7[32.2]	44.0[44.3]
		COP	3.94[3.90]	3.72[3.66]	3.41[3.39]	3.94[3.90]	3.72[3.66]	3.41[3.39]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 5)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output x number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
Compressor oil	Crankcase heater (W)	37 x 4						
	Type	RB74A						
Condenser coil - air side	Charge (L)	2.0 x 4						
	Type	Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
Water spray system (Note 6)	Water spray volume (L/min)	13.6						
	Supply water pressure (Note 7) (MPa)	0.2						
	Control system	Continuous water spraying when outside temperature exceeds setting and compressor capacity exceeds setting						
Pump (Note 4)	Motor output (kW)	1.5						
	Type	Line pump						
	Flow control	Inverter						
	Maximum current (Note 8) (A)	3.1	3.1	2.8	3.1	3.1	2.8	
Cooler - water side (Note 9)	Maximum input (Note 8)(kW)	2.0	2.0	1.8	2.0	2.0	1.8	
	Type	Plate type (SUS316 equivalent)						
	Refrigerant	R410A						
Cooler - water side	Cooler - water side (kg)	8.6 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 10) (%)		0, 9~100	0, 6~100	0, 5~100	0, 9~100	0, 6~100	0, 5~100	
Operation control		Microprocessor control based on Leaving water temperature and Temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermostat error, high water pressure error)						
Piping/connections	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 11)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
	Legal refrigerant ton (tons)	10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC) (include external sensor x 2) (Note 12)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.  
 Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) Output of the integrated pump can change depending on the outlet pump head required to comply with the indent. The power supply design at that time differs from those of a standard pump.

Refer to the power supply design items. In addition, refer to pump performance features for operating conditions. (pushing pressure range, etc.)

(Note 5) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 6) The supply water quality may cause scales and other matter to adhere to the coil surface. If necessary, install a water softener on the supply water side. (Provided locally)

(Note 7) Adjust the flow rate to become close to this supply water pressure with the manual flow adjustment valve on the water spray system inlet. If sufficient supply water pressure is not available, install a pressure pump. (Provided locally)

(Note 8) The figure is at an operating condition with maximum water flow rate and maximum pump inverter frequency. (60Hz)

(Note 9) Working pressure : below 0.7 MPa.

(Note 10) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 11) The on-site sound level will be higher due to the affection of back noise and sound reflection.

(Note 12) The external sensor's lead wire length is 30 m.

**30HP model 40HP model 50HP model** Cooling-only

		Standard type						
		380V			400V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243L1-S	RUA-SP333L1-S	RUA-SP423L1-S	RUA-SP243L2-S	RUA-SP333L2-S	RUA-SP423L2-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,232	1,232	1,254	1,232	1,232	1,254	
Operating weight (kg)		1,260	1,260	1,289	1,260	1,260	1,289	
Power supply (Note 3)		3-phase 3-wire 380V 50/60Hz			3-phase 3-wire 400V 50/60Hz			
Reference current for power supply design (A)		47.0	68.7	78.8	47.0	68.7	78.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	32.1 [32.8]	49.3 [50.9]	71.1 [72.9]	30.4 [31.2]	46.7 [48.3]	67.4 [69.3]
		Nominal input (kW)	20.8 [21.3]	32.1 [33.0]	46.3 [47.6]	20.8 [21.3]	32.1 [33.0]	46.3 [47.6]
		EER	4.09 [3.99]	3.68 [3.58]	3.24 [3.15]	4.09 [3.99]	3.68 [3.58]	3.24 [3.15]
		Power factor (%)	99	99	99	99	99	99
	IPLV (With a 5°C difference) (Note 4)	7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output x number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
Compressor oil	Crankcase heater (W)	37 x 4						
	Type	RB74A						
Condenser coil - air side	Charge (L)	2.0 x 4						
	Type	Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
Cooler - water side (Note 5)		Plate type (SUS316 equivalent)						
Refrigerant	Type	R410A						
	R410A charge (kg)	8.2 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 6) (%)		0, 9 ~100	0, 6 ~100	0, 5 ~100	0, 9 ~100	0, 6 ~100	0, 5 ~100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping diameters	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 7)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
	Legal refrigerant ton (tons)	10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.  
 Cooling: 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".  
 (Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)  
 (Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.  
 (Note 4) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".  
 (Note 5) Working pressure: below 0.98 MPa.  
 (Note 6) Range of capacity control sometimes can vary depending on the unit's operating condition.  
 (Note 7) The on-site sound level will be higher due to the affection of back noise and sound reflection.

	Standard type							
	415V			440V				
	30HP	40HP	50HP	30HP	40HP	50HP		
Model (A single module unit)	RUA-SP243L3-S	RUA-SP333L3-S	RUA-SP423L3-S	RUA-SP243L4-S	RUA-SP333L4-S	RUA-SP423L4-S		
Cooling capacity (Note 1)(kW)	85.0	118	150	85.0	118	150		
Exterior	Unit color Silky shade (Munsell 1Y8.5/0.5)							
	Dimensions (Note 2)	Height (mm)					2,300	
		Width (mm)					1,080	
		Depth (mm)					3,400	
Shipping weight (kg)	1,232	1,232	1,254	1,232	1,232	1,254		
Operating weight (kg)	1,260	1,260	1,289	1,260	1,260	1,289		
Power supply (Note 3)	3-phase 3-wire 415V 50/60Hz			3-phase 3-wire 440V 60Hz				
Reference current for power supply design (A)	47.0	68.7	78.8	47.0	68.7	78.8		
Electrical data (Note 1)	Cooling	Nominal current (A)	29.3[30.1]	45.1[46.6]	65.0[66.8]	27.7[28.4]	42.5[43.9]	61.3[63.0]
		Nominal input (kW)	20.8[21.3]	32.1[33.0]	46.3[47.6]	20.8[21.3]	32.1[33.0]	46.3[47.6]
		EER	4.09[3.99]	3.68[3.58]	3.24[3.15]	4.09[3.99]	3.68[3.58]	3.24[3.15]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 4)	7.1	7.1	6.8	7.1	7.1	6.8		
Compressor	Type Hermetic rotary							
	Model name RA792A4F-10UC1							
	Motor output x number of units (kW)		5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4
	Type of start Inverter starter							
Compressor oil	Crankcase heater (W) 37 x 4							
	Type		RB74A					
Charge (L)		2.0 x 4						
Condenser coil - air side Plate fin coil								
Fan	Type Propeller fan							
	Air quantity (m <sup>3</sup> /min)		1,050 (maximum)					
	Type of start Inverter starter							
	Motor output x number of units (kW)		1.0 x 4					
Cooler - water side (Note 5) Plate type (SUS316 equivalent)								
Refrigerant	Type R410A							
	R410A charge (kg)		8.2 x 4					
	Control Electric expansion valve							
Capacity control steps (Note 6) (%)	0, 9 ~100	0, 6 ~100	0, 5 ~100	0, 9 ~100	0, 6 ~100	0, 5 ~100		
Operation control	Microprocessor control based on leaving water temperature and temperature difference							
Defrost system	Distributed reverse cycle system							
Protective device	High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)							
Piping diameters	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)		50 flange x 1 (JIS10K)	65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)		50 flange x 1 (JIS10K)		
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 7)	Control box side (dBA)		61.6	67.1	68.3	61.6	67.1	68.3
	Coil side (dBA)		65.4	69.7	72.9	65.4	69.7	72.9
	Water piping side (dBA)		63.1	65.4	68.1	63.1	65.4	68.1
	Legal refrigerant ton (tons)		10.62	14.03	16.64	10.62	14.03	16.64
Required products sold separately			Module controller (MC)					

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.  
 Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 5) Working pressure: below 0.98 MPa.

(Note 6) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 7) The on-site sound level will be higher due to the affection of back noise and sound reflection.



**30HP model 40HP model 50HP model** Cooling-only

		High-EER type						
		380V			400V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243LN1-S	RUA-SP333LN1-S	RUA-SP423LN1-S	RUA-SP243LN2-S	RUA-SP333LN2-S	RUA-SP423LN2-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,242	1,242	1,264	1,242	1,242	1,264	
Operating weight (kg)		1,272	1,272	1,301	1,272	1,272	1,301	
Power supply (Note 3)		3-phase 3-wire 380V 50/60Hz			3-phase 3-wire 400V 50/60Hz			
Reference current for power supply design (A)		47.0	68.7	78.8	47.0	68.7	78.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	20.6 [20.9]	32.3 [33.2]	46.9 [48.5]	19.5 [19.9]	30.6 [31.6]	44.5 [46.1]
		Nominal input (kW)	13.3 [13.7]	20.9 [21.6]	30.5 [31.6]	13.3 [13.7]	20.9 [21.6]	30.5 [31.6]
		EER	6.39 [6.20]	5.65 [5.46]	4.92 [4.75]	6.39 [6.20]	5.65 [5.46]	4.92 [4.75]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 4)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output x number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
Compressor oil	Crankcase heater (W)	37 x 4						
	Type	RB74A						
Condenser coil - air side	Charge (L)	2.0 x 4						
	Type	Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
Water spray system (Note 5)	Water spray volume (L/min)	13.6						
	Supply water pressure (Note 6)(MPa)	0.2						
	Control system	Continuous water spraying when outside temperature exceeds setting and compressor capacity exceeds setting						
Cooler - water side (Note 7)		Plate type (SUS316 equivalent)						
Refrigerant	Type	R410A						
	R410A charge (kg)	8.2 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 8) (%)		0, 9 ~100	0, 6 ~100	0, 5 ~100	0, 9 ~100	0, 6 ~100	0, 5 ~100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping/ducts	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 9)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
Legal refrigerant ton (tons)		10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.  
 Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 5) The supply water quality may cause scales and other matter to adhere to the coil surface. If necessary, install a water softener on the supply water side. (Provided locally)

(Note 6) Adjust the flow rate to become close to this supply water pressure with the manual flow adjustment valve on the water spray system inlet. If sufficient supply water pressure is not available, install a pressure pump. (Provided locally)

(Note 7) Working pressure : below 0.98 MPa.

(Note 8) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 9) The on-site sound level will be higher due to the affection of back noise and sound reflection.

		High-EER type						
		415V			440V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243LN3-S	RUA-SP333LN3-S	RUA-SP423LN3-S	RUA-SP243LN4-S	RUA-SP333LN4-S	RUA-SP423LN4-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,242	1,242	1,264	1,242	1,242	1,264	
Operating weight (kg)		1,272	1,272	1,301	1,272	1,272	1,301	
Power supply (Note 3)		3-phase 3-wire 415V 50/60Hz			3-phase 3-wire 440V 60Hz			
Reference current for power supply design (A)		47.0	68.7	78.8	47.0	68.7	78.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	18.8[19.2]	29.5[30.4]	42.9[44.4]	17.7[18.1]	27.8[28.7]	40.5[41.9]
		Nominal input (kW)	13.3[13.7]	20.9[21.6]	30.5[31.6]	13.3[13.7]	20.9[21.6]	30.5[31.6]
		EER	6.39[6.20]	5.65[5.46]	4.92[4.75]	6.39[6.20]	5.65[5.46]	4.92[4.75]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 4)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output x number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
Compressor oil	Crankcase heater (W)	37 x 4						
	Type	RB74A						
Condenser coil - air side	Charge (L)	2.0 x 4						
	Type	Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
Water spray system (Note 5)	Water spray volume (L/min)	13.6						
	Supply water pressure (Note 6) (MPa)	0.2						
	Control system	Continuous water spraying when outside temperature exceeds setting and compressor capacity exceeds setting						
Cooler - water side (Note 7)		Plate type (SUS316 equivalent)						
Refrigerant	Type	R410A						
	R410A charge (kg)	8.2 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 8) (%)		0, 9 ~100	0, 6 ~100	0, 5 ~100	0, 9 ~100	0, 6 ~100	0, 5 ~100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping/drainers	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 9)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
Legal refrigerant ton (tons)		10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.

Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 5) The supply water quality may cause scales and other matter to adhere to the coil surface. If necessary, install a water softener on the supply water side. (Provided locally)

(Note 6) Adjust the flow rate to become close to this supply water pressure with the manual flow adjustment valve on the water spray system inlet. If sufficient supply water pressure is not available, install a pressure pump. (Provided locally)

(Note 7) Working pressure : below 0.98 MPa.

(Note 8) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 9) The on-site sound level will be higher due to the affection of back noise and sound reflection.

**30HP model 40HP model 50HP model** Heat pump

		Standard type						
		380V			400V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243HL1-S	RUA-SP333HL1-S	RUA-SP423HL1-S	RUA-SP243HL2-S	RUA-SP333HL2-S	RUA-SP423HL2-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Heating capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,262	1,262	1,284	1,262	1,262	1,284	
Operating weight (kg)		1,290	1,290	1,319	1,290	1,290	1,319	
Power supply (Note 3)		3-phase 3-wire 380V 50/60Hz			3-phase 3-wire 400V 50/60Hz			
Reference current for power supply design (A)		47.0	68.7	78.8	47.0	68.7	78.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	32.1 [32.8]	49.3 [50.9]	71.1 [72.9]	30.4 [31.2]	46.7 [48.3]	67.4 [69.3]
		Nominal input (kW)	20.8 [21.3]	32.1 [33.0]	46.3 [47.6]	20.8 [21.3]	32.1 [33.0]	46.3 [47.6]
		EER	4.09 [3.99]	3.68 [3.58]	3.24 [3.15]	4.09 [3.99]	3.68 [3.58]	3.24 [3.15]
		Power factor (%)	99	99	99	99	99	99
	Heating	Nominal current (A)	33.4 [33.5]	48.7 [49.5]	67.4 [68.1]	31.7 [31.9]	46.3 [47.0]	64.0 [64.7]
		Nominal input (kW)	21.6 [21.8]	31.7 [32.2]	44.0 [44.3]	21.6 [21.8]	31.7 [32.2]	44.0 [44.3]
		COP	3.94 [3.90]	3.72 [3.66]	3.41 [3.39]	3.94 [3.90]	3.72 [3.66]	3.41 [3.39]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 4)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output×number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
Compressor oil	Crankcase heater (W)	37 x 4						
	Type	RB74A						
Condenser coil - air side	Charge (L)	2.0 x 4						
	Type	Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
Cooler - water side (Note 5)		Plate type (SUS316 equivalent)						
Refrigerant	Type	R410A						
	R410A charge (kg)	8.6 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 6) (%)		0, 9~100	0, 6~100	0, 5~100	0, 9~100	0, 6~100	0, 5~100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping diameters	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 7)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
	Legal refrigerant ton (tons)	10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.  
 Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 5) Working pressure : below 0.98 MPa.

(Note 6) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 7) The on-site sound level will be higher due to the affection of back noise and sound reflection.

		Standard type						
		415V			440V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243HL3-S	RUA-SP333HL3-S	RUA-SP423HL3-S	RUA-SP243HL4-S	RUA-SP333HL4-S	RUA-SP423HL4-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Heating capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,262	1,262	1,284	1,262	1,262	1,284	
Operating weight (kg)		1,290	1,290	1,319	1,290	1,290	1,319	
Power supply (Note 3)		3-phase 3-wire 415V 50/60Hz			3-phase 3-wire 440V 60Hz			
Reference current for power supply design (A)		47.0	68.7	78.8	47.0	68.7	78.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	29.3 [30.1]	45.1 [46.6]	65.0 [66.8]	27.7 [28.4]	42.5 [43.9]	61.3 [63.0]
		Nominal input (kW)	20.8 [21.3]	32.1 [33.0]	46.3 [47.6]	20.8 [21.3]	32.1 [33.0]	46.3 [47.6]
		EER	4.09 [3.99]	3.68 [3.58]	3.24 [3.15]	4.09 [3.99]	3.68 [3.58]	3.24 [3.15]
		Power factor (%)	99	99	99	99	99	99
	Heating	Nominal current (A)	30.5 [30.7]	44.6 [45.3]	61.7 [62.4]	28.8 [29.0]	42.0 [42.7]	58.2 [58.8]
		Nominal input (kW)	21.6 [21.8]	31.7 [32.2]	44.0 [44.3]	21.6 [21.8]	31.7 [32.2]	44.0 [44.3]
		COP	3.94 [3.90]	3.72 [3.66]	3.41 [3.39]	3.94 [3.90]	3.72 [3.66]	3.41 [3.39]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 4) (%)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output x number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
	Crankcase heater (W)	37 x 4						
Compressor oil	Type	RB74A						
	Charge (L)	2.0 x 4						
Condenser coil - air side		Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
Cooler - water side (Note 5)		Plate type (SUS316 equivalent)						
Refrigerant	Type	R410A						
	R410A charge (kg)	8.6 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 6) (%)		0, 9 ~ 100	0, 6 ~ 100	0, 5 ~ 100	0, 9 ~ 100	0, 6 ~ 100	0, 5 ~ 100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping diameters	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 7)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
Legal refrigerant ton (tons)		10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.

Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 5) Working pressure : below 0.98 MPa.

(Note 6) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 7) The on-site sound level will be higher due to the affection of back noise and sound reflection.



**30HP model 40HP model 50HP model** Heat pump

		High-EER type						
		380V			400V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243HLN1-S	RUA-SP333HLN1-S	RUA-SP423HLN1-S	RUA-SP243HLN2-S	RUA-SP333HLN2-S	RUA-SP423HLN2-S	
Cooling capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Heating capacity (Note 1)(kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,272	1,272	1,293	1,272	1,272	1,293	
Operating weight (kg)		1,302	1,302	1,331	1,302	1,302	1,331	
Power supply (Note 3)		3-phase 3-wire 380V 50/60Hz			3-phase 3-wire 400V 50/60Hz			
Reference current for power supply design (A)		47.0	68.7	78.8	47.0	68.7	78.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	20.6[20.9]	32.3[33.2]	46.9[48.5]	19.5[19.9]	30.6[31.6]	44.5[46.1]
		Nominal input (kW)	13.3[13.7]	20.9[21.6]	30.5[31.6]	13.3[13.7]	20.9[21.6]	30.5[31.6]
		EER	6.39[6.20]	5.65[5.46]	4.92[4.75]	6.39[6.20]	5.65[5.46]	4.92[4.75]
		Power factor (%)	99	99	99	99	99	99
	Heating	Nominal current (A)	33.4[33.5]	48.7[49.5]	67.4[68.1]	31.7[31.9]	46.3[47.0]	64.0[64.7]
		Nominal input (kW)	21.6[21.8]	31.7[32.2]	44.0[44.3]	21.6[21.8]	31.7[32.2]	44.0[44.3]
		COP	3.94[3.90]	3.72[3.66]	3.41[3.39]	3.94[3.90]	3.72[3.66]	3.41[3.39]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 4)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output x number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
Compressor oil	Crankcase heater (W)	37 x 4						
	Type	RB74A						
Condenser coil - air side	Charge (L)	2.0 x 4						
	Type	Plate fin coil						
	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
Fan	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
	Water spray volume (L/min)	13.6						
	Supply water pressure (Note 6) (MPa)	0.2						
Water spray system (Note 5)	Control system	Continuous water spraying when outside temperature exceeds setting and compressor capacity exceeds setting						
Cooler - water side (Note 7)		Plate type (SUS316 equivalent)						
Refrigerant	Type	R410A						
	R410A charge (kg)	8.6 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 8) (%)		0, 9~100	0, 6~100	0, 5~100	0, 9~100	0, 6~100	0, 5~100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping/ducts	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 9)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
	Legal refrigerant ton	10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.  
 Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
 Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
 Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
 Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
 Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)  
 (Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.  
 (Note 4) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".  
 (Note 5) The supply water quality may cause scales and other matter to adhere to the coil surface. If necessary, install a water softener on the supply water side. (Provided locally)  
 (Note 6) Adjust the flow rate to become close to this supply water pressure with the manual flow adjustment valve on the water spray system inlet. If sufficient supply water pressure is not available, install a pressure pump. (Provided locally)  
 (Note 7) Working pressure : below 0.98 MPa.  
 (Note 8) Range of capacity control sometimes can vary depending on the unit's operating condition.  
 (Note 9) The on-site sound level will be higher due to the affection of back noise and sound reflection.

		High-EER type						
		415V			440V			
		30HP	40HP	50HP	30HP	40HP	50HP	
Model (A single module unit)		RUA-SP243HLN3-S	RUA-SP333HLN3-S	RUA-SP423HLN3-S	RUA-SP243HLN4-S	RUA-SP333HLN4-S	RUA-SP423HLN4-S	
Cooling capacity (Note 1) (kW)		85.0	118	150	85.0	118	150	
Heating capacity (Note 1) (kW)		85.0	118	150	85.0	118	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)						
	Dimensions (Note 2)	Height (mm)	2,300					
		Width (mm)	1,080					
		Depth (mm)	3,400					
Shipping weight (kg)		1,272	1,272	1,293	1,272	1,272	1,293	
Operating weight (kg)		1,302	1,302	1,331	1,302	1,302	1,331	
Power supply (Note 3)		3-phase 3-wire 415V 50/60Hz			3-phase 3-wire 440V 60Hz			
Reference current for power supply design (A)		47.0	68.7	78.8	47.0	68.7	78.8	
Electrical data (Note 1)	Cooling	Nominal current (A)	18.8[19.2]	29.5[30.4]	42.9[44.4]	17.7[18.1]	27.8[28.7]	40.5[41.9]
		Nominal input (kW)	13.3[13.7]	20.9[21.6]	30.5[31.6]	13.3[13.7]	20.9[21.6]	30.5[31.6]
		EER	6.39[6.20]	5.65[5.46]	4.92[4.75]	6.39[6.20]	5.65[5.46]	4.92[4.75]
		Power factor (%)	99	99	99	99	99	99
	Heating	Nominal current (A)	30.5[30.7]	44.6[45.3]	61.7[62.4]	28.8[29.0]	42.0[42.7]	58.2[58.8]
		Nominal input (kW)	21.6[21.8]	31.7[32.2]	44.0[44.3]	21.6[21.8]	31.7[32.2]	44.0[44.3]
		COP	3.94[3.90]	3.72[3.66]	3.41[3.39]	3.94[3.90]	3.72[3.66]	3.41[3.39]
		Power factor (%)	99	99	99	99	99	99
IPLV (With a 5°C difference) (Note 4)		7.1	7.1	6.8	7.1	7.1	6.8	
Compressor	Type	Hermetic rotary						
	Model name	RA792A4F-10UC1						
	Motor output x number of units (kW)	5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4	
	Type of start	Inverter starter						
	Crankcase heater (W)	37 x 4						
Compressor oil	Type	RB74A						
	Charge (L)	2.0 x 4						
Condenser coil - air side		Plate fin coil						
Fan	Type	Propeller fan						
	Air quantity (m <sup>3</sup> /min)	1,050 (maximum)						
	Type of start	Inverter starter						
	Motor output x number of units (kW)	1.0 x 4						
Water spray system (Note 5)	Water spray volume (L/min)	13.6						
	Supply water pressure (Note 6) (MPa)	0.2						
	Control system	Continuous water spraying when outside temperature exceeds setting and compressor capacity exceeds setting						
Cooler - water side (Note 7)		Plate type (SUS316 equivalent)						
Refrigerant	Type	R410A						
	R410A charge (kg)	8.6 x 4						
	Control	Electric expansion valve						
Capacity control steps (Note 8) (%)		0, 9 ~ 100	0, 6 ~ 100	0, 5 ~ 100	0, 9 ~ 100	0, 6 ~ 100	0, 5 ~ 100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference						
Defrost system		Distributed reverse cycle system						
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						
Piping/ducts	Cold/Hot water inlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Cold/Hot water outlet (A)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K)		65 flange x 1 (JIS10K)	
	Coil drain (A)	PT40 screw x 1						
Sound level (Note 9)	Control box side (dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
	Coil side (dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
	Water piping side (dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
	Legal refrigerant ton	10.62	14.03	16.64	10.62	14.03	16.64	
Required products sold separately		Module controller (MC)						

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.

Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.

Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)

Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."

Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 5) The supply water quality may cause scales and other matter to adhere to the coil surface. If necessary, install a water softener on the supply water side. (Provided locally)

(Note 6) Adjust the flow rate to become close to this supply water pressure with the manual flow adjustment valve on the water spray system inlet. If sufficient supply water pressure is not available, install a pressure pump. (Provided locally)

(Note 7) Working pressure : below 0.98 MPa.

(Note 8) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 9) The on-site sound level will be higher due to the affection of back noise and sound reflection.

# Perspective on Set Specifications (Calculation Method)

## Ex.) Internal inverter pump Air-cooled heat pump [High-EER type] 16 combined module units

		Ex.) 30 HP x 1 (single unit)	Ex.) 30 HP x 16 units	Calculation method	
Model (A single module unit)		RUA-SP243HN1-S	RUA-SP243HN1-S x 16 units	Tail numbers indicate number of module units.	
Cooling capacity (Note 1) (kW)		85.0	1,360	See General Charts or (single unit value) x (number of module units in set)	
Heating capacity (Note 1) (kW)		85.0	1,360		
Exterior	Unit color		Silky shade (Munsell 1Y8.5/0.5)		
	Dimensions (Note 2)	Height (mm)	2,300	2,300	See General Charts
		Width (mm)	1,080	18,030	
		Depth (mm)	3,400	3,400	
Shipping weight (kg)		1,271	20,336	(Single unit value) x (number of module units in set)	
Operating weight (kg)		1,301	20,816	(Single unit value) x (number of module units in set)	
Power supply (Note 3)		3-phase 3-wire 400V 50/60Hz		—	
Reference current for power supply design (Note 4)		101	101 x 16	(Single unit value) x (number of module units in set)	
Electrical data (Note 1)	Cooling	Nominal current (A)	20.5 [20.9]	624 [637]	(Single unit value) x (number of module units in set)
		Nominal input (kW)	13.3 [13.7]	213 [219]	(Single unit value) x (number of module units in set)
		EER	6.39 [6.20]	6.39 [6.20]	—
		Power factor (%)	99	99	—
	Heating	Nominal current (A)	33.4 [33.6]	1,013 [1,019]	(Single unit value) x (number of module units in set)
		Nominal input (kW)	21.6 [21.8]	346 [349]	(Single unit value) x (number of module units in set)
COP		3.94 [3.90]	3.94 [3.90]	—	
Power factor (%)		99	99	—	
IPLV (With a 5°C difference) (Note 5)		13.6		—	
Compressor	Type		Hermetic rotary		—
	Model name		RA792A4F-10UC1		—
	Motor output x number of units (kW)		5.5 x 4	5.5 x 64	(Single unit value) x (number of module units in set)
	Type of start		Inverter starter		—
Crankcase heater (W)		37 x 4	37 x 64	(Single unit value) x (number of module units in set)	
Compressor oil		Type		RB74AF	—
Charge (L)		2.0 x 4	2.0 x 64	(Single unit value) x (number of module units in set)	
Condenser coil - air side		Type		Plate fin coil	—
Fan	Type		Propeller fan		—
	Air quantity (m <sup>3</sup> /min)		1,050 (maximum)	16,800 (maximum)	(Single unit value) x (number of module units in set)
	Type of start		Inverter starter		—
Motor output x number of units (kW)		1.0 x 4	1.0 x 64	(Single unit value) x (number of module units in set)	
Water spray system (Note 6)	Water spray volume (L/min)		13.6 x 4	13.6 x 64	(Single unit value) x (number of module units in set)
	Supply water pressure (Note 7) (MPa)		0.2	0.2	—
Control system		Continuous water spraying when outside temperature exceeds setting and compressor capacity exceeds set		—	
Pump (Note 4)	Motor output (kW)		1.5	1.5 x 16	(Single unit value) x (number of module units in set)
	Type		Line pump		—
	Flow control		Inverter		—
	Maximum current (Note 8) (A)		6.1	6.1 x 16	(Single unit value) x (number of module units in set)
Maximum input (Note 8) (kW)		2.0	2.0 x 16	(Single unit value) x (number of module units in set)	
Cooler - water side (Note 9)		Type		Plate type (SUS316 equivalent)	—
Refrigerant	Type		R410A		—
	R410A charge (kg)		8.6 x 4	8.6 x 64	(Single unit value) x (number of module units in set)
	Control		Electric expansion valve		—
Capacity control steps (Note 10) (%)		0, 9~100		—	
Operation control		Microprocessor control based on leaving water temperature and temperature difference		—	
Defrost system		Distributed reverse cycle system		—	
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)		—	
Piping/dimensions	Cold/Hot water inlet (A)		50 flange (JIS10K)	50 flange (JIS10K) x 16	(Single unit value) x (number of module units in set) *Each module unit has one connection port
	Cold/Hot water outlet (A)		50 flange (JIS10K)	50 flange (JIS10K) x 16	
	Coil drain (A)		PT40 screw	PT40 screw x 16	
Sound level (Note 11)	Control box side (dBA)		61.6	69.4	See General Charts
	Coil side (dBA)		65.4	68.1	
	Water piping side (dBA)		63.1	71.0	
Legal refrigerant ton		10.62	10.62 x 16	(Single unit value) x (number of module units in set)	
Required products sold separately		Module controller (MC) (include external sensor x 2) (Note 12)		—	

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.  
Cooling : 14°C entering water (EWT), 7°C leaving water (LWT), 35°CDB outdoor air (OAT)  
Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.  
Cooling : 12°C entering water (EWT), 7°C leaving water (LWT), 35°CDB/24°CWD outdoor air (OAT)  
Capacity, power consumption, and EER tolerance values based on AHRI550-590 "Water Chilling Unit."  
Note that the electrical data do not include internal pump. Refer to the values indicated for "Pump".

(Note 2) Dimensions do not include projections of water pipe connections and power cable kit. (when installing optional parts)

(Note 3) Even when there is a fluctuation in supply voltage, do not exceed ±10% and keep imbalances between the supply voltages within 2%.

(Note 4) Output of the integrated pump can change depending on the outlet pump head required to comply with the indent. The power supply design at that time differs from those of a standard pump. Refer to the power supply design items. In addition, refer to pump performance features for operating conditions. (pushing pressure range, etc.)

(Note 5) The indicated value for IPLV (Integrated Part Load Value, cooling) is based on the AHRI550-590 "Water Chilling Unit".

(Note 6) The supply water quality may cause scales and other matter to adhere to the coil surface. If necessary, install a water softener on the supply water side. (Provided locally)

(Note 7) Adjust the flow rate to become close to this supply water pressure with the manual flow adjustment valve on the water spray system inlet. If sufficient supply water pressure is not available, install a pressure pump. (Provided locally)

(Note 8) The figure is at an operating condition with maximum water flow rate and maximum pump inverter frequency. (60Hz)

(Note 9) Working pressure : below 0.7 MPa.

(Note 10) Range of capacity control sometimes can vary depending on the unit's operating condition.

(Note 11) The on-site sound level will be higher due to the affection of back noise and sound reflection.

(Note 12) The external sensor's lead wire length is 30 m.

General Charts for Combined Module units : Capacity, Outside Dimensions, and Sound Levels

30HP model

(Note 1)	Cooling capacity (kW)	Heating capacity (kW) (Note 2)	Dimensions (mm) H×W×D (Note 3)	Sound level (dBA) (Note 4)		
				Control box side	Coil side	Water pipe side
RUA-SP243(H)(L)(N)#	85	85	2,300 x 1,080 x 3,400	61.6	65.4	63.1
RUA-SP243(H)(L)(N)# x 2 units	170	170	2,300 x 2,210 x 3,400	64.4	66.7	66.0
RUA-SP243(H)(L)(N)# x 3 units	255	255	2,300 x 3,340 x 3,400	65.9	67.2	67.5
RUA-SP243(H)(L)(N)# x 4 units	340	340	2,300 x 4,470 x 3,400	66.8	67.5	68.4
RUA-SP243(H)(L)(N)# x 5 units	425	425	2,300 x 5,600 x 3,400	67.5	67.6	69.0
RUA-SP243(H)(L)(N)# x 6 units	510	510	2,300 x 6,730 x 3,400	67.9	67.7	69.5
RUA-SP243(H)(L)(N)# x 7 units	595	595	2,300 x 7,860 x 3,400	68.3	67.8	69.8
RUA-SP243(H)(L)(N)# x 8 units	680	680	2,300 x 8,990 x 3,400	68.5	67.9	70.1
RUA-SP243(H)(L)(N)# x 9 units	765	765	2,300 x 10,120 x 3,400	68.7	68.0	70.3
RUA-SP243(H)(L)(N)# x 10 units	850	850	2,300 x 11,250 x 3,400	68.9	68.0	70.4
RUA-SP243(H)(L)(N)# x 11 units	935	935	2,300 x 12,380 x 3,400	69.0	68.0	70.6
RUA-SP243(H)(L)(N)# x 12 units	1,020	1,020	2,300 x 13,510 x 3,400	69.1	68.1	70.7
RUA-SP243(H)(L)(N)# x 13 units	1,105	1,105	2,300 x 14,640 x 3,400	69.2	68.1	70.8
RUA-SP243(H)(L)(N)# x 14 units	1,190	1,190	2,300 x 15,770 x 3,400	69.3	68.1	70.9
RUA-SP243(H)(L)(N)# x 15 units	1,275	1,275	2,300 x 16,900 x 3,400	69.4	68.1	70.9
RUA-SP243(H)(L)(N)# x 16 units	1,360	1,360	2,300 x 18,030 x 3,400	69.4	68.1	71.0

40HP model

(Note 1)	Cooling capacity (kW)	Heating capacity (kW) (Note 2)	Dimensions (mm) H×W×D (Note 3)	Sound level (dBA) (Note 4)		
				Control box side	Coil side	Water pipe side
RUA-SP333(H)(L)(N)#	118	118	2,300 x 1,080 x 3,400	67.1	69.7	65.4
RUA-SP333(H)(L)(N)# x 2 units	236	236	2,300 x 2,210 x 3,400	69.9	71.0	68.2
RUA-SP333(H)(L)(N)# x 3 units	354	354	2,300 x 3,340 x 3,400	71.4	71.5	69.7
RUA-SP333(H)(L)(N)# x 4 units	472	472	2,300 x 4,470 x 3,400	72.3	71.8	70.6
RUA-SP333(H)(L)(N)# x 5 units	590	590	2,300 x 5,600 x 3,400	73.0	71.9	71.3
RUA-SP333(H)(L)(N)# x 6 units	708	708	2,300 x 6,730 x 3,400	73.4	72.1	71.7
RUA-SP333(H)(L)(N)# x 7 units	826	826	2,300 x 7,860 x 3,400	73.8	72.1	72.1
RUA-SP333(H)(L)(N)# x 8 units	944	944	2,300 x 8,990 x 3,400	74.0	72.2	72.3
RUA-SP333(H)(L)(N)# x 9 units	1,062	1,062	2,300 x 10,120 x 3,400	74.2	72.3	72.5
RUA-SP333(H)(L)(N)# x 10 units	1,180	1,180	2,300 x 11,250 x 3,400	74.4	72.3	72.7
RUA-SP333(H)(L)(N)# x 11 units	1,298	1,298	2,300 x 12,380 x 3,400	74.5	72.3	72.8
RUA-SP333(H)(L)(N)# x 12 units	1,416	1,416	2,300 x 13,510 x 3,400	74.7	72.4	72.9
RUA-SP333(H)(L)(N)# x 13 units	1,534	1,534	2,300 x 14,640 x 3,400	74.8	72.4	73.0
RUA-SP333(H)(L)(N)# x 14 units	1,652	1,652	2,300 x 15,770 x 3,400	74.8	72.4	73.1
RUA-SP333(H)(L)(N)# x 15 units	1,770	1,770	2,300 x 16,900 x 3,400	74.9	72.4	73.2
RUA-SP333(H)(L)(N)# x 16 units	1,888	1,888	2,300 x 18,030 x 3,400	75.0	72.4	73.2

50HP model

(Note 1)	Cooling capacity (kW)	Heating capacity (kW) (Note 2)	Dimensions (mm) H×W×D (Note 3)	Sound level (dBA) (Note 4)		
				Control box side	Coil side	Water pipe side
RUA-SP423(H)(L)(N)#	150	150	2,300 x 1,080 x 3,400	68.3	72.9	68.1
RUA-SP423(H)(L)(N)# x 2 units	300	300	2,300 x 2,210 x 3,400	71.1	74.1	70.9
RUA-SP423(H)(L)(N)# x 3 units	450	450	2,300 x 3,340 x 3,400	72.6	74.6	72.4
RUA-SP423(H)(L)(N)# x 4 units	600	600	2,300 x 4,470 x 3,400	73.5	74.9	73.3
RUA-SP423(H)(L)(N)# x 5 units	750	750	2,300 x 5,600 x 3,400	74.2	75.1	74.0
RUA-SP423(H)(L)(N)# x 6 units	900	900	2,300 x 6,730 x 3,400	74.6	75.2	74.4
RUA-SP423(H)(L)(N)# x 7 units	1,050	1,050	2,300 x 7,860 x 3,400	74.9	75.3	74.7
RUA-SP423(H)(L)(N)# x 8 units	1,200	1,200	2,300 x 8,990 x 3,400	75.2	75.3	75.0
RUA-SP423(H)(L)(N)# x 9 units	1,350	1,350	2,300 x 10,120 x 3,400	75.4	75.4	75.2
RUA-SP423(H)(L)(N)# x 10 units	1,500	1,500	2,300 x 11,250 x 3,400	75.6	75.4	75.4
RUA-SP423(H)(L)(N)# x 11 units	1,650	1,650	2,300 x 12,380 x 3,400	75.7	75.5	75.5
RUA-SP423(H)(L)(N)# x 12 units	1,800	1,800	2,300 x 13,510 x 3,400	75.8	75.5	75.6
RUA-SP423(H)(L)(N)# x 13 units	1,950	1,950	2,300 x 14,640 x 3,400	75.9	75.5	75.7
RUA-SP423(H)(L)(N)# x 14 units	2,100	2,100	2,300 x 15,770 x 3,400	76.0	75.5	75.8
RUA-SP423(H)(L)(N)# x 15 units	2,250	2,250	2,300 x 16,900 x 3,400	76.1	75.6	75.9
RUA-SP423(H)(L)(N)# x 16 units	2,400	2,400	2,300 x 18,030 x 3,400	76.1	75.6	75.9

Note 1: The power supply voltage specification (1: 380V, 2: 400V, 3: 415V, 4: 440V) is entered in the "#" in the table.

Note 2: Only for heat pump types.

Note 3: Dimensions (width, depth) do not include projections of water pipe connections and power cable kit. (when installing optional parts)

Note 4: The on-site sound level will be higher due to the affection of back noise and sound reflection.



# General Charts for Combined Module units : Standard Water Flow Rate / Water Volume Range Leaving (LVG)/Entering (ETG) water temperature difference = 7°C

Internal inverter pump

## 30HP model

(Note 1)	Standard flow rate (L/min) (Note 2)	Flow rate range (L/min) (Note 3-6)	Minimum water loop volume (L) (Note 4-5-6)	In-unit water volume (L)
RUA-SP243(H)(N)#	174	75 ~ 244	406	28
RUA-SP243(H)(N)# x 2 units	348	75 ~ 487		56
RUA-SP243(H)(N)# x 3 units	522	75 ~ 731		84
RUA-SP243(H)(N)# x 4 units	696	75 ~ 975		112
RUA-SP243(H)(N)# x 5 units	870	75 ~ 1,218		140
RUA-SP243(H)(N)# x 6 units	1,044	75 ~ 1,462		168
RUA-SP243(H)(N)# x 7 units	1,218	75 ~ 1,706		196
RUA-SP243(H)(N)# x 8 units	1,392	75 ~ 1,949		224
RUA-SP243(H)(N)# x 9 units	1,566	75 ~ 2,193		252
RUA-SP243(H)(N)# x 10 units	1,740	75 ~ 2,437		280
RUA-SP243(H)(N)# x 11 units	1,915	75 ~ 2,680		308
RUA-SP243(H)(N)# x 12 units	2,089	75 ~ 2,924		336
RUA-SP243(H)(N)# x 13 units	2,263	75 ~ 3,168		364
RUA-SP243(H)(N)# x 14 units	2,437	75 ~ 3,411		392
RUA-SP243(H)(N)# x 15 units	2,611	75 ~ 3,655		420
RUA-SP243(H)(N)# x 16 units	2,785	75 ~ 3,899		448

## 40HP model

(Note 1)	Standard flow rate (L/min) (Note 2)	Flow rate range (L/min) (Note 3-6)	Minimum water loop volume (L) (Note 4-5-6)	In-unit water volume (L)
RUA-SP333(H)(N)#	242	75 ~ 338	564	28
RUA-SP333(H)(N)# x 2 units	483	75 ~ 677		56
RUA-SP333(H)(N)# x 3 units	725	75 ~ 1,015		84
RUA-SP333(H)(N)# x 4 units	966	75 ~ 1,353		112
RUA-SP333(H)(N)# x 5 units	1,208	75 ~ 1,692		140
RUA-SP333(H)(N)# x 6 units	1,450	75 ~ 2,030		168
RUA-SP333(H)(N)# x 7 units	1,691	75 ~ 2,368		196
RUA-SP333(H)(N)# x 8 units	1,933	75 ~ 2,706		224
RUA-SP333(H)(N)# x 9 units	2,175	75 ~ 3,045		252
RUA-SP333(H)(N)# x 10 units	2,416	75 ~ 3,383		280
RUA-SP333(H)(N)# x 11 units	2,658	75 ~ 3,721		308
RUA-SP333(H)(N)# x 12 units	2,899	75 ~ 4,060		336
RUA-SP333(H)(N)# x 13 units	3,141	75 ~ 4,398		364
RUA-SP333(H)(N)# x 14 units	3,383	75 ~ 4,736		392
RUA-SP333(H)(N)# x 15 units	3,624	75 ~ 5,075		420
RUA-SP333(H)(N)# x 16 units	3,866	75 ~ 5,413		448

## 50HP model

(Note 1)	Standard flow rate (L/min) (Note 2)	Flow rate range (L/min) (Note 3-6)	Minimum water loop volume (L) (Note 4-5-6)	In-unit water volume (L)
RUA-SP423(H)(N)#	307	75 ~ 430	717	35
RUA-SP423(H)(N)# x 2 units	614	75 ~ 860		860
RUA-SP423(H)(N)# x 3 units	921	75 ~ 1,290		105
RUA-SP423(H)(N)# x 4 units	1,229	75 ~ 1,720		140
RUA-SP423(H)(N)# x 5 units	1,536	75 ~ 2,150		175
RUA-SP423(H)(N)# x 6 units	1,843	75 ~ 2,580		210
RUA-SP423(H)(N)# x 7 units	2,150	75 ~ 3,010		245
RUA-SP423(H)(N)# x 8 units	2,457	75 ~ 3,440		280
RUA-SP423(H)(N)# x 9 units	2,764	75 ~ 3,870		315
RUA-SP423(H)(N)# x 10 units	3,071	75 ~ 4,300		350
RUA-SP423(H)(N)# x 11 units	3,379	75 ~ 4,730		385
RUA-SP423(H)(N)# x 12 units	3,686	75 ~ 5,160		420
RUA-SP423(H)(N)# x 13 units	3,993	75 ~ 5,590		455
RUA-SP423(H)(N)# x 14 units	4,300	75 ~ 6,020		490
RUA-SP423(H)(N)# x 15 units	4,607	75 ~ 6,450		525
RUA-SP423(H)(N)# x 16 units	4,914	75 ~ 6,880		560

Note 1: The power supply voltage specification (1: 380V, 2: 400V, 3: 415V, 4: 440V) is entered in the "#" in the table.  
 Note 2: For both at cooling/heating. Indicates the flow rate and water pressure loss when leaving/entering water temperature difference is 7°C at rated capacity. (water pressure loss is only for pumpless models)  
 Note 3: Within the indicate flow rate range, the flow rate automatically changes from the pump integrated into each module unit. (only for internal inverter pump models)  
 Note 4: Value indicated for retained water amount is with a standard flow amount. (Rated capacity, change in water outlet/inlet temperature difference = 7°C)  
 Note 5: When calculating the retained water amount, calculate the greatest water loss in the piping flow channel, giving consideration to the bypass channel etc.  
 Note 6: Please make a separate inquiry if you would like to control the effect of a temperature reduction in the water supply due to the defrost mechanism.  
 Note 7: When operating at the rated flow capacity, even with internal inverter pump installed models, set the flow amount range and system retained water amount to the same value as the pumpless model.

Pumpless

### 30HP model

(Note 1)	Standard flow rate • Water pressure loss (Note 2)		Flow rate range (L/min) (Note 5)	Minimum water loop volume (L) (Note 3-4-5)	In-unit water volume (L)
	(L/min)	(kPa)			
RUA-SP243(H)L(N)#	174	31.5	121 ~ 244	406	28
RUA-SP243(H)L(N)# x 2 units	348		244 ~ 487	812	56
RUA-SP243(H)L(N)# x 3 units	522		366 ~ 731	1,218	84
RUA-SP243(H)L(N)# x 4 units	696		487 ~ 975	1,624	112
RUA-SP243(H)L(N)# x 5 units	870		609 ~ 1,218	2,030	140
RUA-SP243(H)L(N)# x 6 units	1,044		731 ~ 1,462	2,436	168
RUA-SP243(H)L(N)# x 7 units	1,218		853 ~ 1,706	2,842	196
RUA-SP243(H)L(N)# x 8 units	1,392		975 ~ 1,949	3,248	224
RUA-SP243(H)L(N)# x 9 units	1,566		1,096 ~ 2,193	3,654	252
RUA-SP243(H)L(N)# x 10 units	1,740		1,218 ~ 2,437	4,060	280
RUA-SP243(H)L(N)# x 11 units	1,915		1,340 ~ 2,680	4,466	308
RUA-SP243(H)L(N)# x 12 units	2,089		1,462 ~ 2,924	4,872	336
RUA-SP243(H)L(N)# x 13 units	2,263		1,584 ~ 3,168	5,278	364
RUA-SP243(H)L(N)# x 14 units	2,437		1,706 ~ 3,411	5,684	392
RUA-SP243(H)L(N)# x 15 units	2,611		1,827 ~ 3,655	6,090	420
RUA-SP243(H)L(N)# x 16 units	2,785		1,949 ~ 3,899	6,496	448

### 40HP model

(Note 1)	Standard flow rate • Water pressure loss (Note 2)		Flow rate range (L/min) (Note 5)	Minimum water loop volume (L) (Note 3-4-5)	In-unit water volume (L)
	(L/min)	(kPa)			
RUA-SP333(H)L(N)#	242	57.9	169 ~ 338	564	28
RUA-SP333(H)L(N)# x 2 units	483		338 ~ 677	1,128	56
RUA-SP333(H)L(N)# x 3 units	725		507 ~ 1,015	1,692	84
RUA-SP333(H)L(N)# x 4 units	966		677 ~ 1,353	2,256	112
RUA-SP333(H)L(N)# x 5 units	1,208		846 ~ 1,692	2,820	140
RUA-SP333(H)L(N)# x 6 units	1,450		1,015 ~ 2,030	3,384	168
RUA-SP333(H)L(N)# x 7 units	1,691		1,184 ~ 2,368	3,948	196
RUA-SP333(H)L(N)# x 8 units	1,933		1,353 ~ 2,706	4,512	224
RUA-SP333(H)L(N)# x 9 units	2,175		1,522 ~ 3,045	5,076	252
RUA-SP333(H)L(N)# x 10 units	2,416		1,691 ~ 3,383	5,640	280
RUA-SP333(H)L(N)# x 11 units	2,658		1,860 ~ 3,721	6,204	308
RUA-SP333(H)L(N)# x 12 units	2,899		2,030 ~ 4,060	6,768	336
RUA-SP333(H)L(N)# x 13 units	3,141		2,199 ~ 4,398	7,332	364
RUA-SP333(H)L(N)# x 14 units	3,383		2,368 ~ 4,736	7,896	392
RUA-SP333(H)L(N)# x 15 units	3,624		2,537 ~ 5,075	8,460	420
RUA-SP333(H)L(N)# x 16 units	3,866		2,707 ~ 5,413	9,024	448

### 50HP model

(Note 1)	Standard flow rate • Water pressure loss (Note 2)		Flow rate range (L/min) (Note 5)	Minimum water loop volume (L) (Note 3-4-5)	In-unit water volume (L)
	(L/min)	(kPa)			
RUA-SP423(H)L(N)#	307	68.2	215 ~ 430	717	35
RUA-SP423(H)L(N)# x 2 units	614		430 ~ 860	1,434	70
RUA-SP423(H)L(N)# x 3 units	921		645 ~ 1,290	2,151	105
RUA-SP423(H)L(N)# x 4 units	1,229		860 ~ 1,720	2,868	140
RUA-SP423(H)L(N)# x 5 units	1,536		1,075 ~ 2,150	3,585	175
RUA-SP423(H)L(N)# x 6 units	1,843		1,290 ~ 2,580	4,302	210
RUA-SP423(H)L(N)# x 7 units	2,150		1,505 ~ 3,010	5,019	245
RUA-SP423(H)L(N)# x 8 units	2,457		1,720 ~ 3,440	5,736	280
RUA-SP423(H)L(N)# x 9 units	2,764		1,935 ~ 3,870	6,453	315
RUA-SP423(H)L(N)# x 10 units	3,071		2,150 ~ 4,300	7,170	350
RUA-SP423(H)L(N)# x 11 units	3,379		2,365 ~ 4,730	7,887	385
RUA-SP423(H)L(N)# x 12 units	3,686		2,580 ~ 5,160	8,604	420
RUA-SP423(H)L(N)# x 13 units	3,993		2,795 ~ 5,590	9,321	455
RUA-SP423(H)L(N)# x 14 units	4,300		3,010 ~ 6,020	10,038	490
RUA-SP423(H)L(N)# x 15 units	4,607		3,225 ~ 6,450	10,755	525
RUA-SP423(H)L(N)# x 16 units	4,914		3,440 ~ 6,880	11,472	560

Note 1: The power supply voltage specification (1: 380V, 2: 400V, 3: 415V, 4: 440V) is entered in the "#" in the table.

Note 2: For both at cooling/heating. Indicates the flow rate and water pressure loss when leaving/entering water temperature difference is 7°C at rated capacity. (water pressure loss is only for pumpless models)

Note 3: Within the indicate flow rate range, the flow rate automatically changes from the pump integrated into each module unit. (only for internal inverter pump models)

Note 4: Value indicated for retained water amount is with a standard flow amount. (Rated capacity, change in water outlet/inlet temperature difference = 7°C)

When calculating the retained water amount, calculate the greatest water loss in the piping flow channel, giving consideration to the bypass channel etc.

Note 5: Please make a separate inquiry if you would like to control the effect of a temperature reduction in the water supply due to the defrost mechanism.

Note 6: When operating at the rated flow capacity, even with internal inverter pump installed models, set the flow amount range and system retained water amount to the same value as the pumpless model.

# Capacity Chart / Standard Type (LVG/ENG water temperature difference = 7°C)

## 30HP model

List of cooling capacities RUA-SP243(H) (L)

LVG cold-water temperature (°C)	Item	Outdoor air temperature (°C) (DB)						
		15	20	25	30	35	40	43
4	Cooling capacity (kW)	93.6	89.8	85.7	81.3	76.6	71.8	68.9
	Nominal input (kW)	12.4	14.4	16.5	18.5	20.5	22.5	23.7
	Water flow rate (L/min)	192	184	176	167	157	147	141
	Nominal current (A)	19.2	22.3	25.3	28.7	31.7	34.8	36.6
7	Cooling capacity (kW)	104	99.5	95.1	90.2	85.0	79.7	76.4
	Nominal input (kW)	12.1	14.3	16.5	18.7	20.8	22.9	24.2
	Water flow rate (L/min)	213	204	195	185	174	163	156
	Nominal current (A)	18.8	21.9	25.6	28.7	32.1	35.4	37.3
9	Cooling capacity (kW)	111	106	102	96.4	90.8	85.0	81.5
	Nominal input (kW)	12.0	14.3	16.5	18.7	21.0	23.2	24.5
	Water flow rate (L/min)	227	217	209	197	186	174	167
	Nominal current (A)	18.3	21.9	25.6	28.7	32.4	35.7	37.9
12	Cooling capacity (kW)	122	117	112	106	99.6	93.2	89.3
	Nominal input (kW)	11.6	14.1	16.4	18.8	21.1	23.5	24.9
	Water flow rate (L/min)	*244	240	229	217	204	191	183
	Nominal current (A)	17.9	21.6	25.3	29.0	32.7	36.4	38.2
15	Cooling capacity (kW)	131	126	120	114	107	99.8	95.6
	Nominal input (kW)	11.3	13.9	16.4	18.8	21.2	23.6	25.1
	Water flow rate (L/min)	*244	*244	*244	233	219	204	196
	Nominal current (A)	17.6	21.3	25.3	29.0	32.7	36.4	38.8
20	Cooling capacity (kW)	136	131	125	118	111	103	98.8
	Nominal input (kW)	11.1	13.7	16.3	18.8	21.3	23.7	25.2
	Water flow rate (L/min)	*244	*244	*244	242	227	211	202
	Nominal current (A)	17.3	21.3	25.0	29.0	32.7	36.6	38.8
25	Cooling capacity (kW)	136	131	125	118	111	103	98.8
	Nominal input (kW)	11.1	13.7	16.3	18.8	21.3	23.7	25.2
	Water flow rate (L/min)	*244	*244	*244	242	227	211	202
	Nominal current (A)	17.3	21.3	25.0	29.0	32.7	36.6	38.8
30	Cooling capacity (kW)	136	131	125	118	111	103	98.8
	Nominal input (kW)	11.1	13.7	16.3	18.8	21.3	23.7	25.2
	Water flow rate (L/min)	*244	*244	*244	242	227	211	202
	Nominal current (A)	17.3	21.3	25.0	29.0	32.7	36.6	38.8

List of heating capacities RUA-SP243H(L)

LVG hot-water temperature (°C)	Item	Outdoor air temperature (°C) (DB)						
		-15	-10	-5	0	4	7	15
25	Heating capacity (kW)	51.4	54.9	63.8	73.3	81.8	89.3	112
	Nominal input (kW)	14.2	14.2	14.2	14.0	13.8	13.4	12.0
	Water flow rate (L/min)	◇105	◇112	131	150	168	183	229
	Nominal current (A)	21.9	21.9	21.9	21.6	21.3	20.7	18.6
30	Heating capacity (kW)	49.2	54.1	62.2	71.9	80.8	88.4	112
	Nominal input (kW)	15.1	15.4	15.6	15.7	15.6	15.4	14.4
	Water flow rate (L/min)	◇101	◇111	127	147	165	181	229
	Nominal current (A)	23.2	23.8	24.1	24.1	24.1	23.8	22.3
35	Heating capacity (kW)	47.0	52.5	55.3	70.7	80.0	87.3	110
	Nominal input (kW)	16.1	16.6	17.1	17.4	17.5	17.5	16.8
	Water flow rate (L/min)	◇96.2	◇108	◇113	145	164	179	225
	Nominal current (A)	25.0	25.6	26.5	26.8	26.8	26.8	25.9
40	Heating capacity (kW)	45.2	51.0	55.2	69.9	78.7	86.3	109
	Nominal input (kW)	17.1	17.8	18.6	19.1	19.4	19.5	19.2
	Water flow rate (L/min)	◇92.6	◇104	◇113	143	161	177	223
	Nominal current (A)	26.2	27.5	28.4	29.6	29.9	29.9	29.6
45	Heating capacity (kW)	43.5	49.5	55.4	68.5	77.7	85.0	107
	Nominal input (kW)	18.1	19.0	20.0	20.9	21.3	21.6	21.7
	Water flow rate (L/min)	◇89.1	◇101	◇113	140	159	174	219
	Nominal current (A)	28.0	29.3	30.8	32.0	33.0	33.3	33.3
50	Heating capacity (kW)		48.1	55.1	67.5	76.6	83.5	105
	Nominal input (kW)		20.3	21.6	22.6	23.2	23.6	24.2
	Water flow rate (L/min)		◇98.5	◇113	138	157	171	215
	Nominal current (A)			31.4	33.3	34.8	36.0	36.4
55	Heating capacity (kW)			55.5	66.3	74.9	81.9	102
	Nominal input (kW)			23.1	24.4	25.2	25.7	26.7
	Water flow rate (L/min)			◇114	136	153	168	209
	Nominal current (A)				35.7	37.3	38.8	39.4

Note 1: \* mark indicates max. Flow rate due to flow rate limitation. For max/ flow rate, leaving/entering temperature difference is 7°C or more.

Note 2: The ◇ mark indicates that flow rate is limited at min. Flow rate 121L/min, LWT/EWT difference to be below 7°C.

Note 3: Relative humidity is 85%.

Note 4: In case the nominal current is 380V.

## 40HP model

List of cooling capacities RUA-SP333(H) (L)

LVG cold-water temperature (°C)	Item	Outdoor air temperature (°C) (DB)						
		15	20	25	30	35	40	43
4	Cooling capacity (kW)	132	126	120	113	106	99.4	95.4
	Nominal input (kW)	20.6	23.2	25.9	28.6	31.3	34.0	35.6
	Water flow rate (L/min)	270	258	246	231	217	204	195
	Nominal current (A)	31.7	35.7	40.0	44.0	48.0	52.3	54.8
7	Cooling capacity (kW)	146	140	133	126	118	111	106
	Nominal input (kW)	20.8	23.6	26.4	29.2	32.1	35.0	36.7
	Water flow rate (L/min)	299	287	272	258	242	227	217
	Nominal current (A)	32.0	36.0	40.3	44.9	49.2	53.7	56.4
9	Cooling capacity (kW)	156	150	142	134	126	118	113
	Nominal input (kW)	20.8	23.8	26.7	29.6	32.6	35.5	37.3
	Water flow rate (L/min)	319	307	291	274	258	242	231
	Nominal current (A)	32.4	36.6	40.9	45.5	49.8	54.8	57.4
12	Cooling capacity (kW)	173	164	156	148	139	130	124
	Nominal input (kW)	20.9	24.0	27.1	30.1	33.2	36.3	38.1
	Water flow rate (L/min)	*339	336	319	303	285	266	254
	Nominal current (A)	32.0	36.9	41.8	46.5	51.0	55.8	58.5
15	Cooling capacity (kW)	187	178	169	159	149	140	134
	Nominal input (kW)	21.0	24.2	27.4	30.5	33.7	36.8	38.7
	Water flow rate (L/min)	*339	*339	*339	326	305	287	274
	Nominal current (A)	32.4	37.3	42.2	47.0	51.6	56.4	59.5
20	Cooling capacity (kW)	194	185	175	165	155	145	139
	Nominal input (kW)	21.0	24.3	27.5	30.7	33.9	37.1	39.0
	Water flow rate (L/min)	*339	*339	*339	338	317	297	285
	Nominal current (A)	32.4	37.3	42.5	47.4	51.9	56.9	59.5
25	Cooling capacity (kW)	194	185	175	165	155	145	139
	Nominal input (kW)	21.0	24.3	27.5	30.7	33.9	37.0	38.9
	Water flow rate (L/min)	*339	*339	*339	338	317	297	285
	Nominal current (A)	32.4	37.3	42.5	47.4	51.9	56.9	59.5
30	Cooling capacity (kW)	194	185	175	165	155	145	139
	Nominal input (kW)	21.0	24.3	27.5	30.7	33.9	37.1	38.9
	Water flow rate (L/min)	*339	*339	*339	338	317	297	285
	Nominal current (A)	32.4	37.3	42.5	47.4	51.9	56.9	59.5

List of heating capacities RUA-SP333H(L)

LVG hot-water temperature (°C)	Item	Outdoor air temperature (°C) (DB)						
		-15	-10	-5	0	4	7	15
25	Heating capacity (kW)	71.2	77.1	87.7	101	112	123	156
	Nominal input (kW)	21.5	21.4	21.6	21.5	21.3	21.0	19.7
	Water flow rate (L/min)	◇146	◇158	180	207	229	252	319
	Nominal current (A)	33.3	33.0	33.3	33.3	33.0	32.4	30.2
30	Heating capacity (kW)	69.3	75.4	86.2	99.6	111	122	155
	Nominal input (kW)	22.6	22.8	23.3	23.6	23.6	23.6	22.8
	Water flow rate (L/min)	◇142	◇154	177	204	227	250	317
	Nominal current (A)	34.8	35.4	35.7	36.4	36.6	36.4	35.1
35	Heating capacity (kW)	67.0	73.6	85.0	98.2	110	121.0	154
	Nominal input (kW)	23.8	24.3	25.1	25.7	26.0	26.2	26.0
	Water flow rate (L/min)	◇137	◇151	174	201	225	248	315
	Nominal current (A)	36.6	37.3	38.8	39.7	40.0	40.3	40.3
40	Heating capacity (kW)	65.0	71.6	83.3	96.9	109	119	152
	Nominal input (kW)	25.1	25.8	27.0	27.9	28.5	28.9	29.3
	Water flow rate (L/min)	◇133	◇147	171	198	223	244	311
	Nominal current (A)	38.5	39.7	41.6	42.8	43.7	44.3	45.2
45	Heating capacity (kW)	62.7	69.8	81.4	95.4	107	118	149
	Nominal input (kW)	26.4	27.4	28.9	30.2	31.1	31.7	32.6
	Water flow rate (L/min)	◇128	◇143	167	195	219	242	305
	Nominal current (A)	40.6	42.5	44.6	46.5	48.0	48.7	50.4
50	Heating capacity (kW)		68.2	79.6	93.3	106	116	146
	Nominal input (kW)		29.1	30.9	32.5	33.7	34.5	36.1
	Water flow rate (L/min)		◇140	◇163	191	217	238	299
	Nominal current (A)			44.9	47.7	49.8	51.9	53.2
55	Heating capacity (kW)			78.2	91.8	104	114	144
	Nominal input (kW)			33.0	35.0	36.4	37.4	39.5
	Water flow rate (L/min)			◇160	188	213	233	295
	Nominal current (A)				50.7	53.7	56.4	57.4

Note 1: \* mark indicates max. Flow rate due to flow rate limitation. For max/ flow rate, leaving/entering temperature difference is 7°C or more.

Note 2: The ◇ mark indicates that flow rate is limited at min. Flow rate 169L/min, LWT/EWT difference to be below 7°C.

Note 3: Relative humidity is 85%.

Note 4: In case the nominal current is 380V.

## 50HP model

List of cooling capacities RUA-SP423 (H) (L)

LVG cold-water temperature (°C)	Item	Outdoor air temperature (°C) (DB)						
		15	20	25	30	35	40	43
4	Cooling capacity (kW)	170	162	153	144	136	127	122
	Nominal input (kW)	29.7	33.5	37.3	41.0	44.7	48.3	50.6
	Water flow rate (L/min)	348	332	313	295	279	260	250
	Nominal current (A)	45.8	51.6	57.4	63.2	69.0	74.3	77.4
7	Cooling capacity (kW)	188	179	169	160	150	141	135
	Nominal input (kW)	30.6	34.5	38.5	42.4	46.3	50.2	52.5
	Water flow rate (L/min)	385	367	346	328	307	289	276
	Nominal current (A)	46.7	53.2	59.0	65.3	71.0	76.9	80.6
9	Cooling capacity (kW)	200	190	181	171	160	150	144
	Nominal input (kW)	31.2	35.2	39.3	43.3	47.3	51.3	53.7
	Water flow rate (L/min)	410	389	371	350	328	307	295
	Nominal current (A)	48.0	54.3	60.0	66.9	72.7	79.0	82.2
12	Cooling capacity (kW)	218	207	197	186	175	164	☆156
	Nominal input (kW)	32.1	36.3	40.5	44.6	48.8	52.9	54.3
	Water flow rate (L/min)	*430	424	403	381	358	336	319
	Nominal current (A)	49.5	55.8	62.2	68.5	74.8	81.1	83.2
15	Cooling capacity (kW)	234	223	212	200	189	176	☆166
	Nominal input (kW)	33.2	37.3	41.5	45.7	49.9	54.0	54.3
	Water flow rate (L/min)	*430	*430	*430	410	387	360	340
	Nominal current (A)	51.0	57.4	63.7	70.6	76.9	82.7	83.2
20	Cooling capacity (kW)	235	224	212	200	189	176	☆166
	Nominal input (kW)	33.1	37.3	41.5	45.7	49.8	54.0	54.3
	Water flow rate (L/min)	*430	*430	*430	410	387	360	340
	Nominal current (A)	50.7	57.4	63.7	70.6	76.4	82.7	83.2
25	Cooling capacity (kW)	235	224	212	200	189	176	☆166
	Nominal input (kW)	33.1	37.3	41.5	45.7	49.8	54.0	54.3
	Water flow rate (L/min)	*430	*430	*430	410	387	360	340
	Nominal current (A)	50.7	57.4	63.7	70.6	76.4	82.7	83.2
30	Cooling capacity (kW)	235	223	212	200	189	176	☆166
	Nominal input (kW)	33.2	37.3	41.5	45.7	49.9	54.0	54.3
	Water flow rate (L/min)	*430	*430	*430	410	387	360	240
	Nominal current (A)	50.7	57.4	63.7	70.6	76.9	82.7	83.2

List of heating capacities RUA-SP423H (L)

LVG hot-water temperature (°C)	Item	Outdoor air temperature (°C) (DB)						
		-15	-10	-5	0	4	7	15
25	Heating capacity (kW)	88.3	95.6	109	126	141	154	181
	Nominal input (kW)	26.7	27.2	27.7	28.1	28.2	28.2	24.2
	Water flow rate (L/min)	◇181	◇196	223	258	289	315	371
	Nominal current (A)	40.9	41.8	42.5	43.4	43.4	43.4	37.3
30	Heating capacity (kW)	87.3	94.8	109	125	141	154	187
	Nominal input (kW)	29.5	30.0	30.8	31.5	31.9	32.1	29.8
	Water flow rate (L/min)	◇179	◇194	223	256	289	315	383
	Nominal current (A)	45.2	46.2	47.4	48.3	48.9	49.2	45.8
35	Heating capacity (kW)	86.1	94.0	107	124	140	153	193
	Nominal input (kW)	32.1	32.7	33.8	34.9	35.6	36.1	36.3
	Water flow rate (L/min)	◇176	◇193	219	254	287	313	395
	Nominal current (A)	49.2	50.4	51.9	53.7	54.8	55.3	55.8
40	Heating capacity (kW)	84.4	92.2	106	124	139	152	193
	Nominal input (kW)	34.6	35.3	36.8	38.2	39.3	40.0	41.6
	Water flow rate (L/min)	◇173	◇189	217	254	285	311	395
	Nominal current (A)	53.2	54.3	56.4	58.5	60.0	61.6	63.7
45	Heating capacity (kW)	82.1	90.4	105	122	137	150	190
	Nominal input (kW)	36.8	37.8	39.6	41.5	43.0	44.0	46.3
	Water flow rate (L/min)	◇168	◇185	215	250	281	307	389
	Nominal current (A)	56.4	57.9	61.1	63.7	65.8	67.4	71.1
50	Heating capacity (kW)	88.4	103	120	136	148	189	
	Nominal input (kW)		40.2	42.5	44.9	46.7	48.0	51.1
	Water flow rate (L/min)		◇181	◇211	246	279	303	387
	Nominal current (A)		61.6	65.3	69.0	71.6	73.2	78.5
55	Heating capacity (kW)			101	119	135	147	☆182
	Nominal input (kW)			45.3	48.2	50.4	52.0	54.2
	Water flow rate (L/min)			◇207	244	276	301	373
	Nominal current (A)			69.5	73.7	77.4	80.0	83.2

Note 1: \* mark indicates max. Flow rate due to flow rate limitation. For max/ flow rate, leaving/entering temperature difference is 7°C or more.

Note 2: The ☆ mark indicates that LWT/EWT difference due to the capacity limitation.

Note 3: The ◇ mark indicates that flow rate is limited at min. Flow rate 215L/min, LWT/EWT difference to be below 7°C.

Note 4: Relative humidity is 85%.

Note 5: In case the nominal current is 380V.



# Capacity Chart / High-EER Type (LVG/ENG water temperature difference = 7°C)

## 30HP model

List of cooling capacities RUA-SP243(H) (L)N

LVG cold-water temperature (°C)	Item	Outdoor air temperature (°C) (DB)		
		35	40	43
4	Water spray	ON	ON	ON
	Cooling capacity (kW)	76.7	75.0	74.3
	Nominal input (kW)	13.3	14.4	14.9
	Water flow rate (L/min)	157	154	152
	Nominal current (A)	20.4	22.3	23.2
7	Cooling capacity (kW)	85.0	83.2	82.4
	Nominal input (kW)	13.3	14.4	15.0
	Water flow rate (L/min)	174	170	169
	Nominal current (A)	20.5	22.3	23.2
9	Cooling capacity (kW)	90.8	88.8	88.0
	Nominal input (kW)	13.2	14.4	15.0
	Water flow rate (L/min)	186	182	180
	Nominal current (A)	20.4	22.3	23.2
12	Cooling capacity (kW)	99.6	97.4	96.5
	Nominal input (kW)	13.1	14.3	14.9
	Water flow rate (L/min)	204	199	198
	Nominal current (A)	20.4	21.9	23.2
15	Cooling capacity (kW)	106	104	103
	Nominal input (kW)	13.0	14.2	14.8
	Water flow rate (L/min)	217	213	211
	Nominal current (A)	20.1	21.9	22.8
20	Cooling capacity (kW)	110	107	106
	Nominal input (kW)	12.9	14.2	14.8
	Water flow rate (L/min)	225	219	217
	Nominal current (A)	19.8	21.9	22.5
25	Cooling capacity (kW)	110	107	106
	Nominal input (kW)	12.9	14.2	14.8
	Water flow rate (L/min)	225	219	217
	Nominal current (A)	19.8	21.9	22.5
30	Cooling capacity (kW)	110	107	106
	Nominal input (kW)	12.9	14.1	14.8
	Water flow rate (L/min)	225	219	217
	Nominal current (A)	19.8	21.9	22.5

List of heating capacities RUA-SP243(H) (L)N

LVG hot-water temperature (°C)	Item	Outdoor air temperature (°C) (DB)						
		-15	-10	-5	0	4	7	15
25	Heating capacity (kW)	51.4	54.9	63.8	73.3	81.8	89.3	112
	Nominal input (kW)	14.2	14.2	14.2	14.0	13.8	13.4	12.0
	Water flow rate (L/min)	◇105	◇112	131	150	168	183	229
	Nominal current (A)	21.9	21.9	21.9	21.6	21.3	20.7	18.6
30	Heating capacity (kW)	49.2	54.1	62.2	71.9	80.8	88.4	112
	Nominal input (kW)	15.1	15.4	15.6	15.7	15.6	15.4	14.4
	Water flow rate (L/min)	◇101	◇111	127	147	165	181	229
	Nominal current (A)	23.2	23.8	24.1	24.1	24.1	23.8	22.3
35	Heating capacity (kW)	47.0	52.5	55.3	70.7	80.0	87.3	110
	Nominal input (kW)	16.1	16.6	17.1	17.4	17.5	17.5	16.8
	Water flow rate (L/min)	◇96.2	◇108	◇113	145	164	179	225
	Nominal current (A)	25.0	25.6	26.5	26.8	26.8	26.8	25.9
40	Heating capacity (kW)	45.2	51.0	55.2	69.9	78.7	86.3	109
	Nominal input (kW)	17.1	17.8	18.6	19.1	19.4	19.5	19.2
	Water flow rate (L/min)	◇92.6	◇104	◇113	143	161	177	223
	Nominal current (A)	26.2	27.5	28.4	29.6	29.9	29.9	29.6
45	Heating capacity (kW)	43.5	49.5	55.4	68.5	77.7	85.0	107
	Nominal input (kW)	18.1	19.0	20.0	20.9	21.3	21.6	21.7
	Water flow rate (L/min)	◇89.1	◇101	◇113	140	159	174	219
	Nominal current (A)	28.0	29.3	30.8	32.0	33.0	33.3	33.3
50	Heating capacity (kW)		48.1	55.1	67.5	76.6	83.5	105
	Nominal input (kW)		20.3	21.6	22.6	23.2	23.6	24.2
	Water flow rate (L/min)		◇98.5	◇113	138	157	171	215
	Nominal current (A)		31.4	33.3	34.8	36.0	36.4	37.3
55	Heating capacity (kW)			55.5	66.3	74.9	81.9	102
	Nominal input (kW)			23.1	24.4	25.2	25.7	26.7
	Water flow rate (L/min)			◇114	136	153	168	209
	Nominal current (A)			35.7	37.3	38.8	39.4	40.9

Note 1: \* mark indicates max. Flow rate due to flow rate limitation. For max/ flow rate, leaving/entering temperature difference is 7°C or more.

Note 2: Outside relative humidity is 40%.

Note 3: The ◇ mark indicates that flow rate is limited at min. Flow rate 121L/min, LWT/EWT difference to be below 7°C.

Note 4: Relative humidity is 85%.

Note 5: In case the nominal current is 380V.

## 40HP model

List of cooling capacities RUA-SP333(H) (L)N

LVG cold-water temperature (°C)	Item	Outdoor air temperature (°C) (DB)		
		35	40	43
4	Water spray	ON	ON	ON
	Cooling capacity (kW)	107	104	103
	Nominal input (kW)	20.7	22.4	23.2
	Water flow rate (L/min)	219	213	211
	Nominal current (A)	32.0	34.2	35.7
7	Cooling capacity (kW)	118	116	115
	Nominal input (kW)	20.9	22.7	23.6
	Water flow rate (L/min)	242	238	236
	Nominal current (A)	32.2	34.8	36.4
9	Cooling capacity (kW)	126	123	122
	Nominal input (kW)	21.1	22.8	23.7
	Water flow rate (L/min)	258	252	250
	Nominal current (A)	32.4	35.1	36.6
12	Cooling capacity (kW)	139	136	134
	Nominal input (kW)	21.2	23.0	23.9
	Water flow rate (L/min)	285	279	274
	Nominal current (A)	32.7	35.4	36.6
15	Cooling capacity (kW)	149	145	144
	Nominal input (kW)	21.2	23.1	24.1
	Water flow rate (L/min)	305	297	295
	Nominal current (A)	32.7	35.4	36.9
20	Cooling capacity (kW)	153	150	148
	Nominal input (kW)	21.2	23.1	24.1
	Water flow rate (L/min)	313	307	303
	Nominal current (A)	32.7	35.4	36.9
25	Cooling capacity (kW)	153	150	148
	Nominal input (kW)	21.2	23.1	24.1
	Water flow rate (L/min)	313	307	303
	Nominal current (A)	32.7	35.4	36.9
30	Cooling capacity (kW)	153	150	148
	Nominal input (kW)	21.2	23.1	24.1
	Water flow rate (L/min)	313	307	303
	Nominal current (A)	32.7	35.4	36.9

List of heating capacities RUA-SP333(H) (L)N

LVG hot-water temperature (°C)	Item	Outdoor air temperature (°C) (DB)						
		-15	-10	-5	0	4	7	15
25	Heating capacity (kW)	71.2	77.1	87.7	101	112	123	156
	Nominal input (kW)	21.5	21.4	21.6	21.5	21.3	21.0	19.7
	Water flow rate (L/min)	◇146	◇158	180	207	229	252	319
	Nominal current (A)	33.3	33.0	33.3	33.3	33.0	32.4	30.2
30	Heating capacity (kW)	69.3	75.4	86.2	99.6	111	122	155
	Nominal input (kW)	22.6	22.8	23.3	23.6	23.6	23.6	22.8
	Water flow rate (L/min)	◇142	◇154	177	204	227	250	317
	Nominal current (A)	34.8	35.4	35.7	36.4	36.6	36.4	35.1
35	Heating capacity (kW)	67.0	73.6	85.0	98.2	110	121	154
	Nominal input (kW)	23.8	24.3	25.1	25.7	26.0	26.2	26.0
	Water flow rate (L/min)	◇137	◇151	174	201	225	248	315
	Nominal current (A)	36.6	37.3	38.8	39.7	40.0	40.3	40.3
40	Heating capacity (kW)	65.0	71.6	83.3	96.9	109	119	152
	Nominal input (kW)	25.1	25.8	27.0	27.9	28.5	28.9	29.3
	Water flow rate (L/min)	◇133	◇147	171	198	223	244	311
	Nominal current (A)	38.5	39.7	41.6	42.8	43.7	44.3	45.2
45	Heating capacity (kW)	62.7	69.8	81.4	95.4	107	118	149
	Nominal input (kW)	26.4	27.4	28.9	30.2	31.1	31.7	32.6
	Water flow rate (L/min)	◇128	◇143	167	195	219	242	305
	Nominal current (A)	40.6	42.5	44.6	46.5	48.0	48.7	50.4
50	Heating capacity (kW)		68.2	79.6	93.3	106	116	146
	Nominal input (kW)		29.1	30.9	32.5	33.7	34.5	36.1
	Water flow rate (L/min)		◇140	◇163	191	217	238	299
	Nominal current (A)		44.9	47.7	49.8	51.9	53.2	55.3
55	Heating capacity (kW)			78.2	91.8	104	114	144
	Nominal input (kW)			33.0	35.0	36.4	37.4	39.5
	Water flow rate (L/min)			◇160	188	213	233	295
	Nominal current (A)			50.7	53.7	56.4	57.4	60.6

Note 1: \* mark indicates max. Flow rate due to flow rate limitation. For max/ flow rate, leaving/entering temperature difference is 7°C or more.

Note 2: Outside relative humidity is 40%.

Note 3: The ◇ mark indicates that flow rate is limited at min. Flow rate 169L/min, LWT/EWT difference to be below 7°C.

Note 4: Relative humidity is 85%.

Note 5: In case the nominal current is 380V.

## 50HP model

List of cooling capacities RUA-SP423(H) (L)N

LVG cold-water temperature (°C)	Item	Outdoor air temperature (°C) (DB)		
		35	40	43
	Water spray	ON	ON	ON
4	Cooling capacity (kW)	136	132	131
	Nominal input (kW)	29.8	32.2	33.5
	Water flow rate (L/min)	279	270	268
	Nominal current (A)	45.8	49.5	51.4
7	Cooling capacity (kW)	150	147	145
	Nominal input (kW)	30.5	33.0	34.4
	Water flow rate (L/min)	307	301	297
	Nominal current (A)	46.9	50.7	53
9	Cooling capacity (kW)	160	156	155
	Nominal input (kW)	31.0	33.5	34.9
	Water flow rate (L/min)	328	319	317
	Nominal current (A)	48.0	51.6	54
12	Cooling capacity (kW)	176	171	170
	Nominal input (kW)	31.7	34.3	35.7
	Water flow rate (L/min)	360	350	348
	Nominal current (A)	48.9	52.6	55
15	Cooling capacity (kW)	187	183	181
	Nominal input (kW)	32.2	34.8	36.3
	Water flow rate (L/min)	383	375	371
	Nominal current (A)	49.5	54	56
20	Cooling capacity (kW)	193	189	187
	Nominal input (kW)	32.4	35.1	36.6
	Water flow rate (L/min)	395	387	383
	Nominal current (A)	49.8	54	56
25	Cooling capacity (kW)	193	189	187
	Nominal input (kW)	32.4	35.1	36.6
	Water flow rate (L/min)	395	387	383
	Nominal current (A)	49.8	54	56
30	Cooling capacity (kW)	193	189	187
	Nominal input (kW)	32.4	35.1	36.6
	Water flow rate (L/min)	395	387	383
	Nominal current (A)	49.8	54	56

List of heating capacities RUA-SP423(H) (L)N

LVG hot-water temperature (°C)	Item	Outdoor air temperature (°C) (DB)							
		-15	-10	-5	0	4	7	15	
25	Heating capacity (kW)	88.3	95.6	109	126	141	154	181	
	Nominal input (kW)	26.7	27.2	27.7	28.1	28.2	28.2	24.2	
	Water flow rate (L/min)	◇181	◇196	223	258	289	315	371	
	Nominal current (A)	40.9	41.8	42.5	43.4	43.4	43.4	37.3	
30	Heating capacity (kW)	87.3	94.8	109	125	141	154	187	
	Nominal input (kW)	29.5	30.0	30.8	31.5	31.9	32.1	29.8	
	Water flow rate (L/min)	◇179	◇194	223	256	289	315	383	
	Nominal current (A)	45.2	46.2	47.4	48.3	48.9	49.2	45.8	
35	Heating capacity (kW)	86.1	94.0	107	124	140	153	193	
	Nominal input (kW)	32.1	32.7	33.8	34.9	35.6	36.1	36.3	
	Water flow rate (L/min)	◇176	◇193	219	254	287	313	395	
	Nominal current (A)	49.2	50.4	51.9	53.7	54.8	55.3	55.8	
40	Heating capacity (kW)	84.4	92.2	106	124	139	152	193	
	Nominal input (kW)	34.6	35.3	36.8	38.2	39.3	40.0	41.6	
	Water flow rate (L/min)	◇173	◇189	217	254	285	311	395	
	Nominal current (A)	53.2	54.3	56.4	58.5	60.0	61.6	63.7	
45	Heating capacity (kW)	82.1	90.4	105	122	137	150	190	
	Nominal input (kW)	36.8	37.8	39.6	41.5	43.0	44.0	46.3	
	Water flow rate (L/min)	◇168	◇185	215	250	281	307	389	
	Nominal current (A)	56.4	57.9	61.1	63.7	65.8	67.4	71.1	
50	Heating capacity (kW)		88.4	103	120	136	148	189	
	Nominal input (kW)		40.2	42.5	44.9	46.7	48.0	51.1	
	Water flow rate (L/min)		◇181	◇211	246	279	303	387	
	Nominal current (A)		61.6	65.3	69.0	71.6	73.2	78.5	
55	Heating capacity (kW)			101	119	135	147	☆182	
	Nominal input (kW)			45.3	48.2	50.4	52.0	54.2	
	Water flow rate (L/min)			◇207	244	276	301	373	
	Nominal current (A)			69.5	73.7	77.4	80.0	83.2	

Note 1: \* mark indicates max. Flow rate due to flow rate limitation. For max/ flow rate, leaving/entering temperature difference is 7°C or more.

Note 2: Outside relative humidity is 40%.

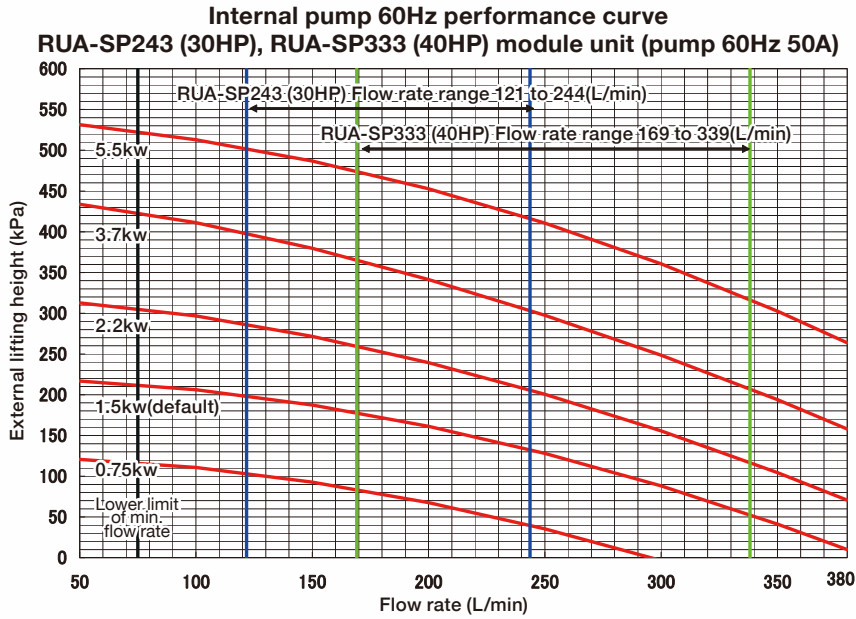
Note 3: The ◇ mark indicates that flow rate is limited at min. Flow rate 215L/min, LWT/EWT difference to be below 7°C.

Note 4: The ☆ mark indicates a temperature difference of 7°C or less between the outlet and inlet due to a restriction on capacity.

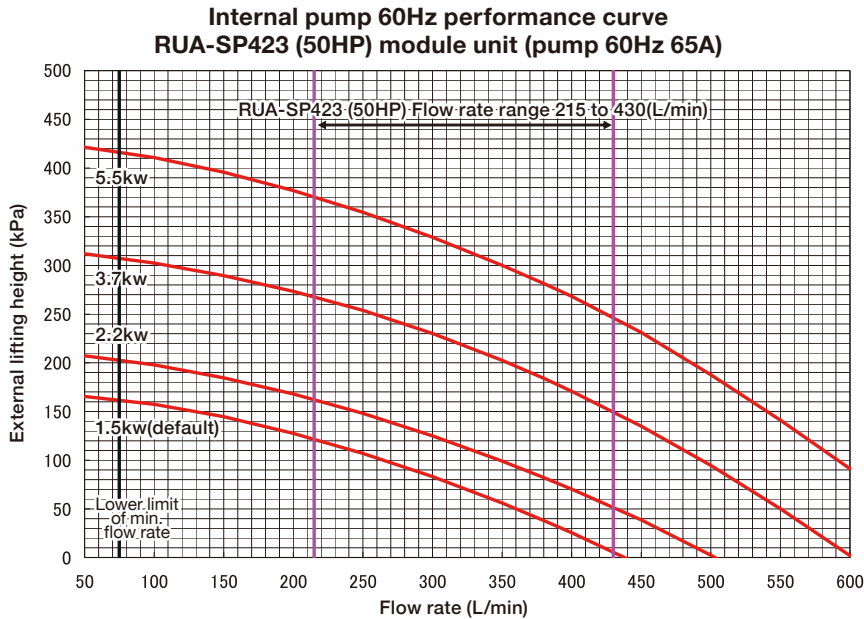
Note 5: Relative humidity is 85%.

Note 6: In case the nominal current is 380V.

30HP model, 40HP model Internal pump performance curve



50HP model Internal pump performance curve



● Pump specification values

Pump output	30, 40HP model					50HP model			
	0.75kW	1.5kW	2.2kW	3.7kW	5.5kW	1.5kW	2.2kW	3.7kW	5.5kW
Flow rate range <sup>(*)</sup>	Rated specification range (121~244)					Rated specification range (215~430)			
	Rated specification range (169~339)								
External lifting height <sup>(**)</sup>	40~116	133~212	206~305	304~423	416~523	6~162	51~203	150~307	245~416
	~116	52~212	116~305	206~423	316~523				
Max. operation current <sup>(***)</sup>	1.6	3.1	4.3	6.9	10.0	2.8	3.8	5.9	8.4
Max. power consumption <sup>(***)</sup>	1.0	2.0	2.8	4.5	6.4	1.8	2.4	3.8	5.4
Max. allowable boost pressure	0.54	0.45	0.36	0.24	0.16	0.52	0.48	0.37	0.25
Max. suction head (water temp. 60°C or less)	40	40	40	40	40	40	40	40	40

Note 1: Flow rate range (upper limit), max. current and max. power consumption in the table above are values for a pump. Multiply the number of pumps (module units) by these values depending on the unit size. When selecting anything other than rated output, you can also use values outside of the flow amount range shown in the graph. Use the formula below to find the flow amount range outside of the rated capacity.

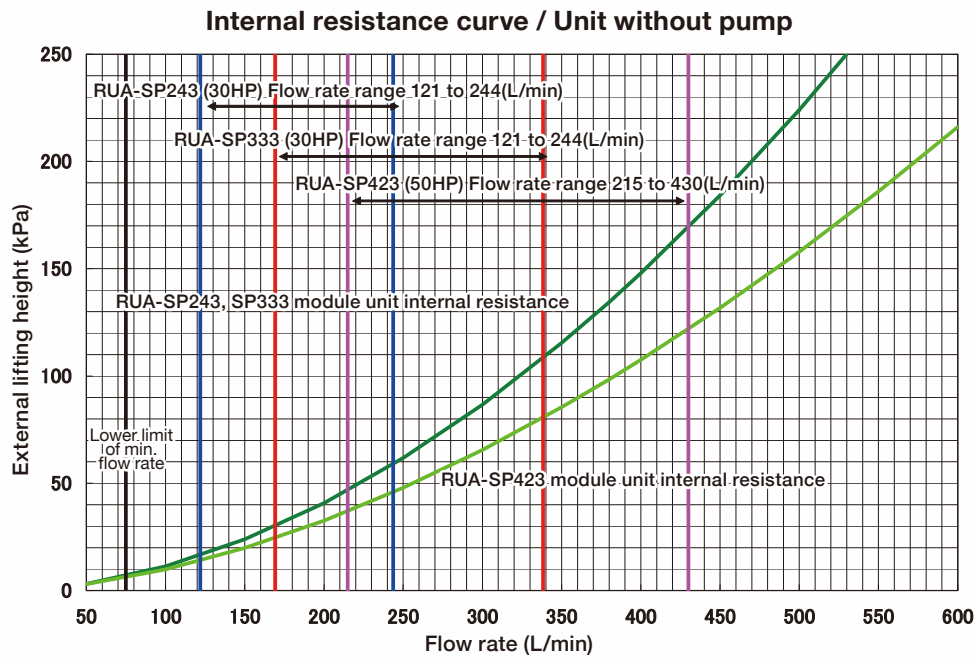
Minimum flow rate=capacity x 860/60/10 (maximum temperature difference)  
 \*However, minimum flow amount must be at or above 75L/min  
 Maximum flow amount=capacity x 860/60/5 (minimum temperature difference)  
 \*However, maximum flow amount must be at or below 380L/min for the 30,40HP model, and at or below 600L/min for the 50HP model

- Note 2: Lifting height outside of the unit shown in the table is the value when the pump frequency is 60Hz at the flow rate range above. The pump lift outside of the machine is the value reached when subtracting the resistance inside the machine from the total pump lift.
- Note 3: Max. current and max. power consumption are the max. values when the pump operation frequency is 60Hz.
- Note 4: 60Hz pumps are commonly used in the 50Hz area.
- Note 5: Select a pump that can handle the needed lift and flow amount.
- Note 6: In case the nominal current is 380V.

Pump Characteristics / Internal Resistance Curve (For pumpless)

Internal resistance curve (For pumpless)

Note: For a unit without a pump, select a pump outside of the heat pump unit considering internal resistance below



# Operating Temperature Range

## 1. Operating Ranges

### 30HP model 40HP model 50HP model

Leaving water temperature (Note 1)	Cooling	°C	4~30
	Heating (Note 2) (Note 3)		25~55
	Temperature difference (inlet/outlet)		5~10
Outside air temperature	Cooling	°C	-15~46
	Heating (Note 2) (Note 3)		-15~21DB, 15.5WB

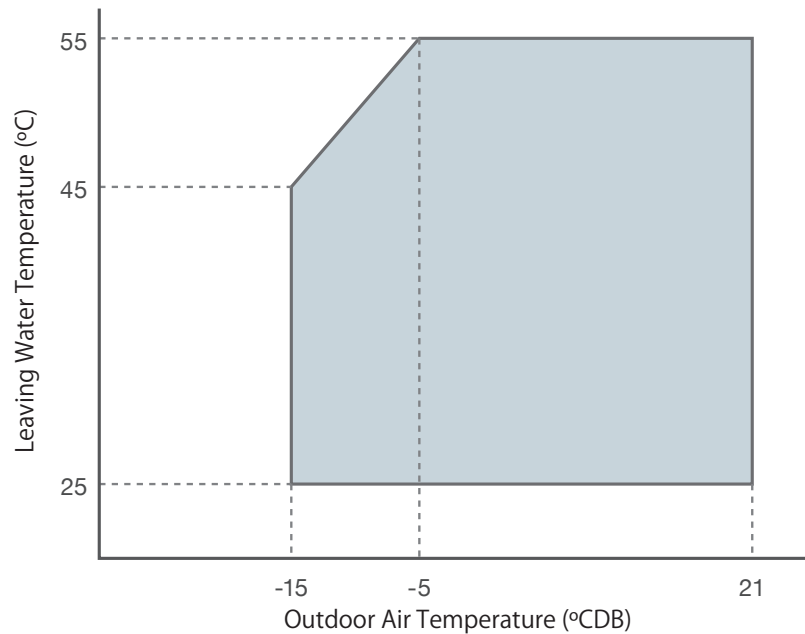
Note 1: LWT not higher than 35°C at cooling or not lower than 20°C at heating operation is allowable till 1 hour after starting up. After then, however, LWT must be within the operating range. Control it with bypass pipe if needed.

Note 2: For heat pump models only.

Note 3: Depend on the outdoor air temperature, leaving hot water temperature is limited as below.

### ●Leaving Hot Water Temperature Range

### 30HP model 40HP model 50HP model



For the heat machine specification (correspond to indent), the outdoor air temperature range at heating operation is -15 to 43°CDB, 32°CWB.

## 2. Operating Range for Water Dispersing Device

Water spray - Water temperature range	°C	10~30
Water spray - Setting outdoor air temperature	°C	20~40



## Power Supply Design

Power supply design specifications for each module unit are as below.

Internal pump output for inverter units is 1.5kW (standard), and can be changed to 0.75, 2.2, 3.7, 5.5kW as a special order. (except 0.75kW for 50HP unit)

Note 1: The internal pump can be replaced with another pump with appropriate output according to the lifting height outside of the unit required by a custom option. Since power supply design is different depending on the pump output, be sure to see the values in the corresponding field.

Note 2: Fuse capacities in the tables are for B class fuses.

Note 3: Select a power supply transformer that can support values greater than those shown in the tables.

Note 4: Power supply line thickness values are for metal conduits with three or fewer wires inside a single conduit. (or six or fewer wires when two wires are used for one pole)

Note 5: Determine operating condition-specific maximum line length and other parameters in accordance with Indoor Wiring Regulations based on local conditions.

Note 6: The pump operates at a maximum frequency of 60 Hz at a maximum flow rate. (per module unit)

Note 7: A leakage breaker must be installed. Use the one conformed to higher harmonic to prevent malfunction since this unit includes an inverter.

Note 8: Standard Current is the value considering the unbalance of 2% between power supply voltages.

### ● Power supply design (380V/400V/415V/440V specifications)

#### Internal inverter pump model Pumpless model

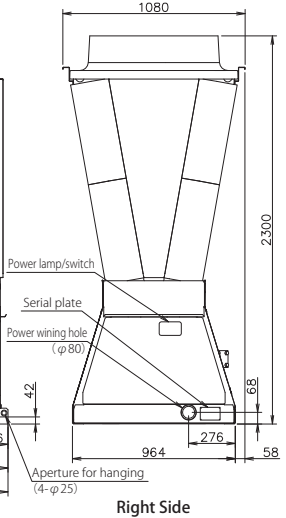
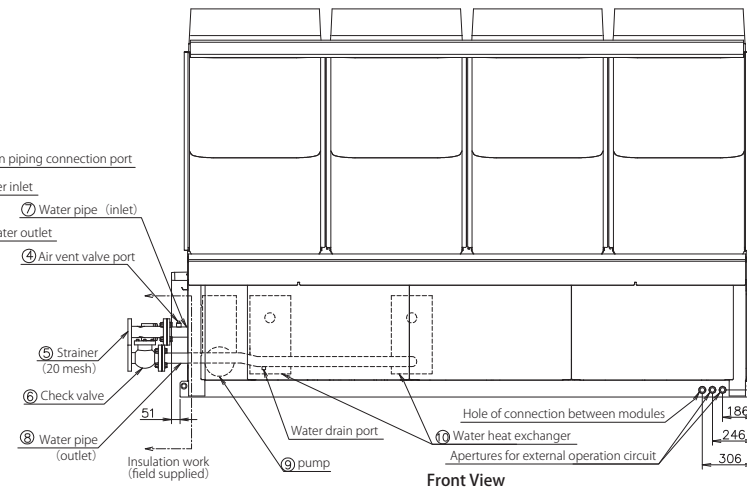
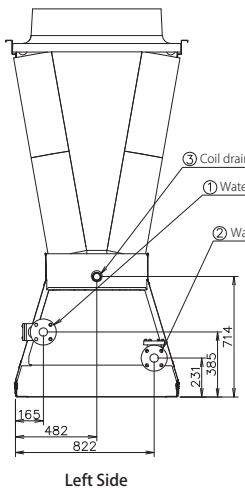
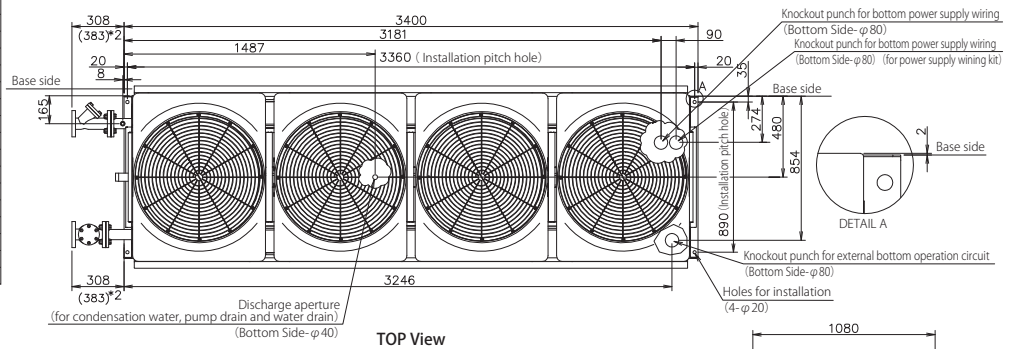
Internal Pump	Power supply	30HP model					40HP model					50HP model							
		50/60Hz 380V/400V/415V, 60Hz 440V										50/60Hz 380V/400V/415V, 60Hz 440V				50/60Hz 380V/400V/415V, 60Hz 440V			
		Model without pump (Note 1.6)	Model with internal pump					Model without pump	Model with internal pump					Model without pump	Model with internal pump				
			For special order	Standard	For special order				For special order	Standard	For special order				Standard	For special order			
	Motor Output (kW)	0.75	1.5	2.2	3.7	5.5	0.75	1.5	2.2	3.7	5.5	1.5	2.2	3.7	5.5				
	Type	Line Pump					Line Pump					Line Pump							
	Type of start	Inverter					Inverter					Inverter							
	Control	Inverter					Inverter					Inverter							
	Max. Current (A)	1.6	3.1	4.3	6.9	10.0	1.6	3.1	4.3	6.9	10.0	2.8	3.8	5.9	8.4				
	Max. Input (kW)	1.0	2.0	2.8	4.5	6.4	1.0	2.0	2.8	4.5	6.4	1.8	2.4	3.8	5.4				
Power Supply Design	No. of primary connecting part for power supply wiring	Terminal in the power box of each module unit					Terminal in the power box of each module unit					Terminal in the power box of each module unit							
	Standard Current (Note 8)	47	49	50.5	51.5	54	57	68.7	70.7	72.2	73.2	75.7	78.7	78.8	81.8	82.8	84.8	87.8	
	Power Source Capacity (kVA)	32.6	34	35	35.7	37.4	39.5	47.6	49	50	50.7	52.4	54.5	54.6	56.7	57.4	58.7	60.8	
	Power Supply Wiring (mm <sup>2</sup> )	IV: Power Supply ≤ 20m (mm)	14					22					38						
		IV: Power Supply ≤ 50m (mm)	14					22					38						
		CV: Power Supply ≤ 20m (mm)	8					14					22						
		CV: Power Supply ≤ 50m (mm)	14					22					22						
	Ground (mm)	5.5		8			8			14		5.5							
	Switch (A)	60					100					100							
	Fuse (A)	60					75					100							
Earth Leakage Breaker (Capacity) (A)	50					60					75								
Earth Leakage Breaker (Sensibility) (mA)	100					100					100								

● Selected based on Japanese regulations. Select the appropriate unit based on the laws and regulations of the location where the unit is to be installed.

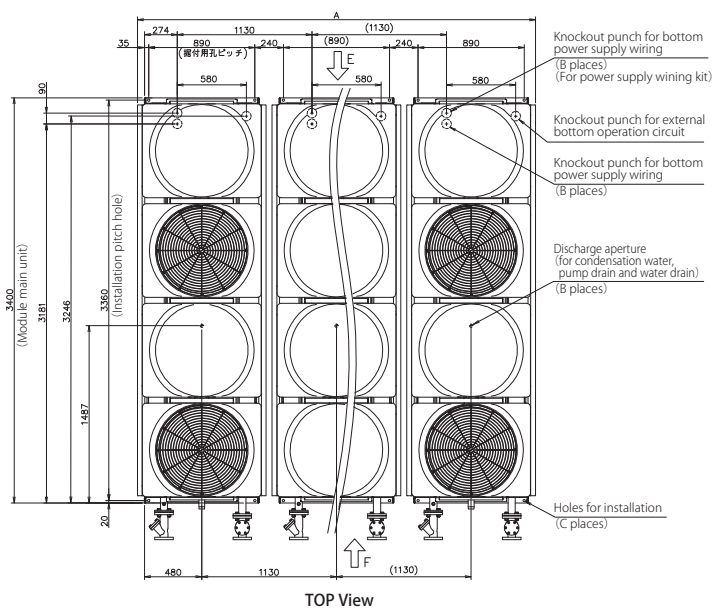
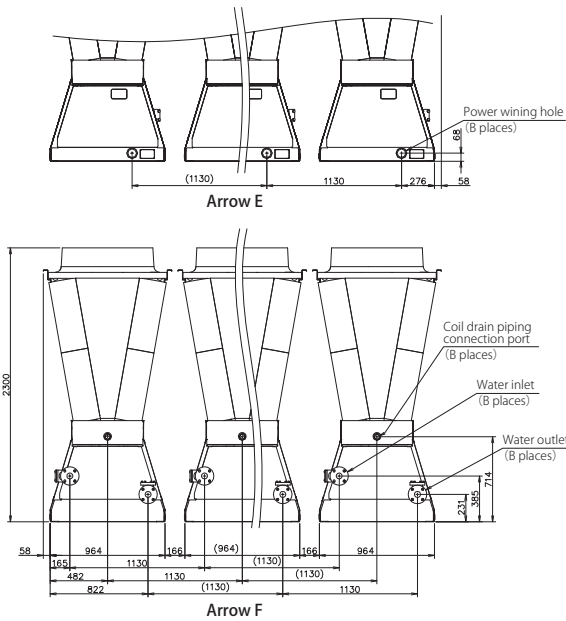
A single module Heat pump unit, Cooling-only 30, 40, and 50HP module units  
(Pumpless model excludes pump, and check valves.)

No.	Name	Connection
1	Water inlet	RUA-SP243,333 50A flange
2	Water outlet	RUA-SP243,333 65A flange
3	Coil drain piping connection port	PT40A external thread
4	Air vent valve port	PT15A internal thread
5	Strainer	CasingFC250-equivalent
6	Check valve	CasingFC200-equivalent
7	Water pipe (inlet)	JIS10K flange Piping SUS304-equivalent
8	Water pipe (outlet)	JIS10K flange Piping SUS304-equivalent
9	Pump	CasingFC200
10	Water heat exchanger	Plate / joint SUS316-equivalent Braze part Pure copper
11	Housing joint	Gasket EPDM

\*1 Water piping is shown above.  
\*2 The dimensions of only RUA-SP423 are changed as shown within parentheses.



Combined installation Heat pump unit, Cooling-only 30, 40, and 50HP module units



The number of modules	A	B	C	The number of modules	A	B	C	The number of modules	A	B	C	The number of modules	A	B	C
1 module	1080	1	4	5 modules	5600	5	20	9 modules	10120	9	36	13 modules	14640	13	52
2 modules	2210	2	8	6 modules	6730	6	24	10 modules	11250	10	40	14 modules	15770	14	56
3 modules	3340	3	12	7 modules	7860	7	28	11 modules	12380	11	44	15 modules	16900	15	60
4 modules	4470	4	16	8 modules	8990	8	32	12 modules	13510	12	48	16 modules	18030	16	64

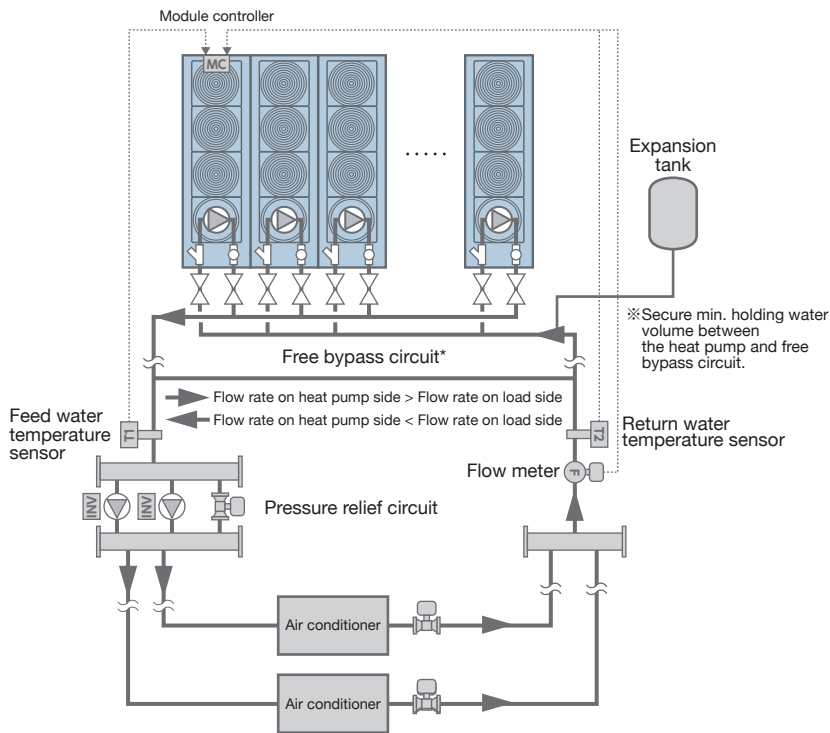
Note1. All of 30hp, 40hp, and 50hp have the same dimensional drawings.  
Note2. The values indicated above are applied to A through C.



# System Examples for Internal Inverter Pump Units

- When using a combination of several Heat Pumps, or combining with other heat pump units, a meeting about water provision must be held. Please contact us separately.
- As a cold (hot) water circulation pump is built in, test run adjustment which includes the whole piping system must be necessary. (Forced open/close of auto control valve in A/C is required.)
- The system detects the required flow rate on load side, and automatically fluctuates the number of internal cold (hot) water circulating pump and the operating frequency. Refer to "Pump Characteristics" and select an internal pump by considering the required max. flow rate and max. lifting for the system.
- Also consider construction on the suction side of internal pumps (boost pressure/pipe resistance). While internal pumps are stopped, ensure that the pressure on the suction side is not negative to prevent the air from entering the pumps from mechanical seals. Or ensure that the suction side main water pipes are higher than the heat pump cold (hot) water inlet piping to prevent the air from accumulating in the heat pump. Closer attention is required when an open-type tank is set up as an expansion tank on the heat pump inlet side.
- To improve energy saving abilities, we recommend that you make a variable flow system using 2 way valves on the secondary side etc.
- If the heat pump locates at the highest point in the system, install an automatic air vent valve (with a check valve function) at the inlet pipe for each module.
- Secure a sufficient holding water volume between the heat pump and the bypass circuit to ensure water temperature controllability. The water volume described in the specifications table is required to operate a module for two minutes, the minimum running time. The values in the table show the minimum holding water volume required to protect the unit. Ensure as much holding water volume as possible to minimize the variation of supply water temperature.
- Differential pressure regulating valves or flow meters may be required depending on the system. In that case, use different power supply from that of the heat pump. Follow instructions by the manufacturer for how to wire the valves or flow meters.
- For any system not listed below, please contact us.

## 1. Example of multiple pump system (load side: variable flow, heat pump side: variable flow)



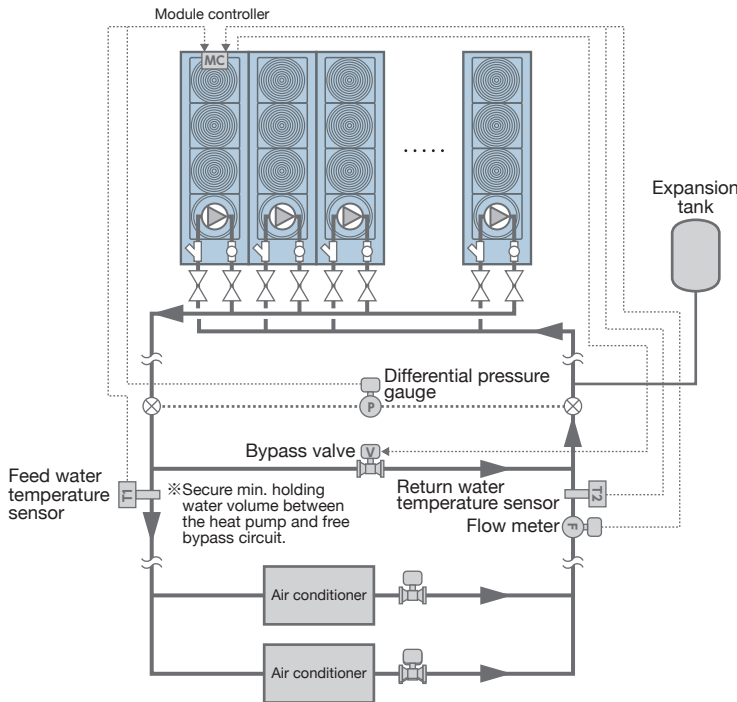
1. As there may be an unbalance in the load side pump flow rate and the heat pump flow rate, construct a normally open free bypass circuit.
2. LWT/EWT sensor in heat pump and water temperature sensor on feed/return water pipes detect the temperature balance inside system, and control the number of internal pump for cold/hot-water circulation and the frequency to minimize the unbalance between estimated load side flow rate and heat pump side flow rate. Mount the external sensors attached to the module controller on feedwater pipes and return water pipes, and connect the sensors to the module controller.
3. If there is a flow meter F (provided locally) in the system, connect its output to the module controller. This enables control which directly detects flow rate on the load side (mounting of external sensors on feed/return water pipes is required even when using a flow meter).
4. The module compressor which internal pump for cold/hot-water circulation controls the number of compressor and frequency so that the leaving water temperature approaches to the set temperature.

### ●List of equipment for control

Part name	Specification	Quantity	Provided locally	Constructed locally
Water temperature sensor (mandatory)	10kΩ external sensor	2	Attached to module controller	○
Flow meter	Able to measure instantaneous value Support voltage/current output*) (Able to adjust input range span: DC 0 to 5V)	1	○	○

\*) Attach 250Ω±1% metal film resistor (provided locally) when the signal has current 4-20mA. (In that case, input range span is DC 1 to 5 V)

## 2. Single Pump Example of standard system (load side: variable flow, heat pump side: variable flow)



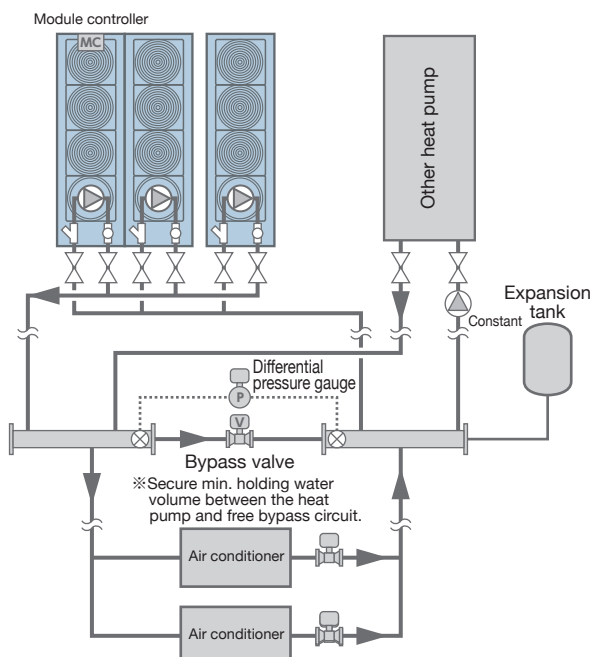
1. LWT/EWT sensor in heat pump and water temperature sensor on feed/return water pipes detect the temperature balance inside system, and control the number of internal pump for cold/hot-water circulation and the frequency to minimize the unbalance between estimated load side flow rate and heat pump side flow rate.
2. If there is a flow meter F (provided locally) in the system, connect its output to the module controller. This enables control which directly detects flow rate on the load side (mounting of external sensors on feed/return water pipes is required even when using a flow meter).
3. The module compressor which internal pump for cold/hot-water circulation controls the number of compressor and frequency so that the leaving water temperature approaches to the set temperature.
4. As there may be an unbalance in the load side required flow rate and the heat pump flow rate, construct a bypass valve V (provided locally) which is operated according to detection of differential pressure between feed/return water pipes. The bypass valve V is controlled by a module controller.
5. Even while the operation is stopped, freeze protection control may automatically operate the internal pump. The bypass valve may be forcibly opened to secure the flow path, and in this case water may not be supplied to equipment on load side (to feed water to the equipment on load side, be sure to open the 2-way valve on load side in accordance with freeze protection control of the heat pump, instead of configuring settings not to open the bypass valve).

### List of equipment for control

Part name	Specification	Quantity	Provided locally	Constructed locally
Water temperature sensor (mandatory)	10kΩ external sensor	2	Attached to module controller	○
Flow meter	Able to measure instantaneous value Support voltage/current output*) (Able to adjust input range span: DC 0 to 5V)	1	○	○
Differential pressure gauge (mandatory)	pressure gauge (mandatory) Able to measure instantaneous value Support voltage/current output*) (Able to adjust input range span: DC 0 to 5V)	1	○	○
Bypass valve (mandatory)	Globe valve which can perform proportional control at current input DC 4 to 20mA (Able to adjust span)	1	○	○

\*) Attach 150Ω±1% metal film resistor (provided locally) when the signal has current 4-20mA. (In that case, input range span is DC 0.6 to 3 V)

## 3. Single Pump Example of other heat source dual-use system (load side: variable flow, heat pump side:stepped variable flow (other heat pump: constant flow))



1. The internal pump for cold/hot-water circulation perform constant-control of the number of units (stepped variable flow) in accordance with the heat pump operation capacity.
2. The module compressor which internal pump for cold/hot-water circulation controls the number of compressor and frequency so that the leaving water temperature approaches to the set temperature.
3. As there may be an unbalance in the load side required flow rate and the heat pump flow rate, construct a bypass valve (provided locally) which is operated according to detection of differential pressure between feed/return water pipes.
4. Even while the operation is stopped, freeze protection control may automatically operate the internal pump. The bypass valve may be forcibly opened to secure the flow path to prevent, and in this case water may not be supplied to equipment on load side. (to feed water to the equipment on load side, be sure to open the 2-way valve on load side in accordance with freeze protection control of the internal chilled (warm) water circulation pump, instead of configuring settings not to open the bypass valve)



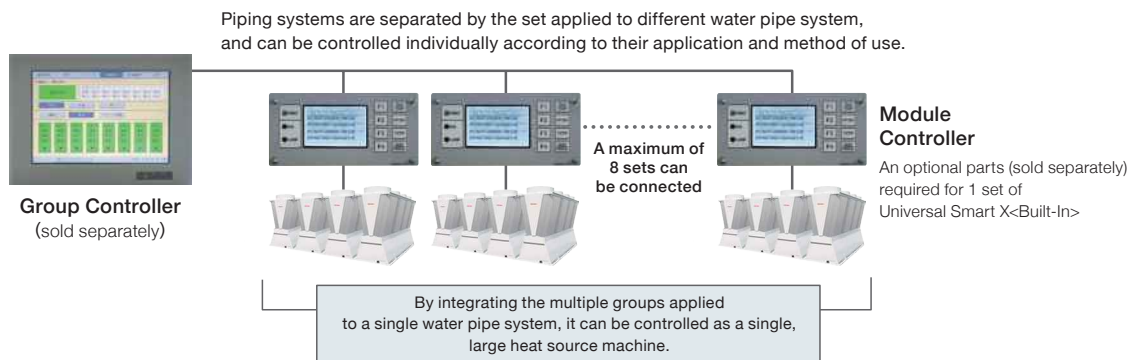
## Batch control of heat source unit using the group controller

Up to eight sets, total 128 units, can be controlled at once from a single controller. Individual settings and operation states can be controlled and displayed via a touch panel, supporting customer energy management.

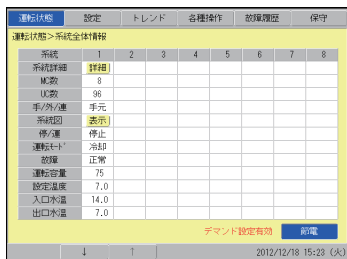
### Function List

Item	Notes	
Operating status display	For each model	Start/Stop, Operational mode, Fault occurrence, Operational capacity, LWT/EWT, Flow rate, Simple production heat capacity, Basic integral power, Basic capabilities, Basic input, Basic COP
	For each module controller	Start/Stop, Operational mode, Error code, Operational capacity, LWT/EWT, Flow conversion volume, Basic capabilities, Basic input, Basic COP
	For each module	Start/Stop, Operational mode, Error code, Operational capacity, LWT/EWT, Flow conversion volume, Basic capabilities, Outside air temperature, Basic input, Basic COP
	For each circuit	Refrigeration cycle information, Compressor operation time, Compressor startup counts
Operational state output (Total)	Start/Stop, Failure, Operational capacity, Basic capabilities, Basic input, Operational pattern	
Start/Stop	For entire system, Each model, and Each module controller	
Pattern settings (Switch)	Enables setting and switching operating pattern of group controller	
Operational mode settings (Switch)	Enables setting and switching the operation mode for entire system.	
Preset temperature changes	All model temperature settings can be changed.	
Current demand settings	Electrical current demand can be configured.	
System settings	All connected modules can be systematically classified. (for each module controller system)	
Schedule settings	Operational schedule can be configured. (monthly, weekly, daily)	
Error history display	Error history can be verified.	
Operational data savings	Displayed data can be saved to MMC.	
Trend display	Water temperature, outside air temperature, operational capacity, basic capabilities, basic input, basic COP, basic production heat capacity, and basic integral power can be displayed on a graph.	
Power saving	Enables switching the demand setting to validation or invalidation.	

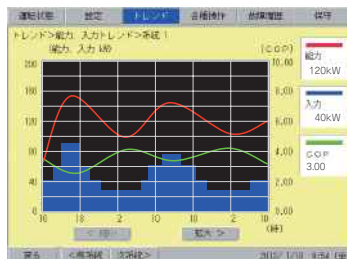
### Example of System Configuration



### Example of a Screen Display

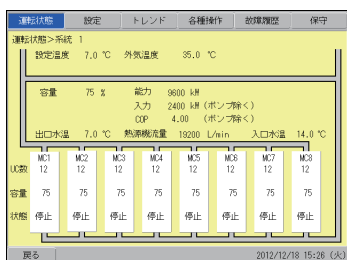


Operating Status/Main Screen



Operating Trends (capacity, input, COP) Confirmation Screen

By displaying the capacity/input (power consumption) over the past 48 hours, users can easily confirm the day-over-day effects of power conservation efforts, such as adjusting demand or the temperature settings. (time frame can be switched to the past 24 hours, 12 hours, and 6 hours)

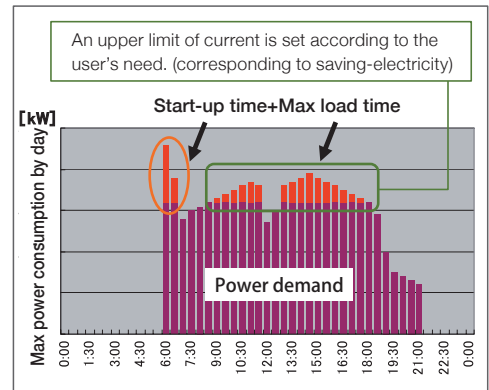


Operating Status/System Data Confirmation Screen

### Demand Function

Users can set an upper limit of current (demand) using the Group Controller and peak shave.

#### Peak Shaving Scenario



The upper limit of current (demand) can be set in units of 1 amp for each system.

## Wifi Data Analysis

### Wireless LAN-Equipped - Operating data can be obtained with tablet

The tablet improves the convenience of operation and management.  
 Wireless LAN comes as standard in the module controller!  
 Information can be collected without opening service panel.

Confirm run time    Confirm run pressure    Confirm breakdown history



Supported tablets: Android 5.0 or higher 10.1" screen recommended



Visualized the operating status of module controller and unit controller!  
 It allows safe and quick operations even in bad weather!!

## Option List

Item		Remarks	
		Factory assembly	Locally constructed
Related to products sold separately	Module controller (MC) (Note 1) (Note 2)	Required products sold separately	○ ×
	Group controller (GC)	Products sold separately	× ○ (Note 3)
	External sensor (Note 2) (two locations for temperature of outgoing and returning water)	Products sold separately	× ○ (Note 3)
	Connecting Bracket	Products sold separately	× ○ (Note 3)
	Protective screen kit	Products sold separately	○ ○ (Note 3)
	Flange kit for hood installation (for both intake and dischargesides)	Products sold separately	○ ×

Note 1: Required to control multiple modules. It is installed in one of the modules.  
 Note 2: Module controller with internal inverter pump contains external sensor (2 sensors for feed/return water temperature) for controlling one system of the water pipe systems. If an external sensor to control a secondary circuit of water pipes is required, an additional order must be placed. You also need to place an order for an external sensor for monitoring the temperature of return and condensation water for module controllers in pumpless models, which do not have external sensors.  
 Note 3: On-site installation work is needed. (Not included in seller's work description.)  
 Note 4: On-site support is not available after delivery of standard specification products.  
 Note 5: Set according to pattern settings.

Item		Locally constructed and locally set up
Ext. temp setpoint input	MC and GC standard functions	Required
External capacity input	indent (MC)	Required (Note 4)
Maximum number of modules that can be operated input	indent (MC)	Required (Note 4)
Demand capacity input	indent (MC)	Required (Note 4)
Run/Stop input, make signal supported	MC and GC standard functions	Required
Run/Stop input, pulse signal supported (over 500 msec)	MC and GC standard functions	Required
Operation pattern input	MC and GC standard functions	Required
Enabling operation by each system input	MC standard functions	Required
Demand input	MC standard functions	Required
Pump interlock input	MC standard functions	Required
Forced fan operation input	indent (MC)	Required (Note 4)
Power outage recovery input	indent (MC·GC)	Required (Note 4)
Anti-freezing pump interlock input	indent (MC)	Required (Note 4)
Signal for mixed use of other heat pump inputs	indent (MC)	Required (Note 4)
Operation mode output (for each system)	indent (MC)	Required (Note 4)
Operating capacity output	MC and GC standard functions	Required
Simple input display (instant values)	GC standard functions	Not necessary
Simple watt-hour display (daily usage)	GC standard functions	Not necessary
Simple input/output (instant values)	GC standard functions	Required
Simple capacity display (instant values)	MC and GC standard functions	Not necessary
Simple heat production display (daily usage)	GC standard functions	Not necessary
Simple capacity output (instant values)	MC and GC standard functions	Required
Operation output (GC: Overall or by system)	MC and GC standard functions	Required
Malfunction output (GC: Overall or by system)	MC and GC standard functions	Required
Operation pattern output	MC and GC standard functions	Required
Operation mode output (cooling, heating, cooling/heating thermal storage)	MC standard functions	Required
Pump interlock output	MC standard functions	Required
Water spray device interlock output	MC standard functions	Required
Group output for peripheral devices (such as air conditioners)	indent (MC)	Required (Note 4)
Group output for defrosting	indent (MC)	Required (Note 4)
Output for freeze protection pump operation	indent (MC)	Required (Note 4)
Output at maximum-capacity operation	indent (MC)	Required (Note 4)
Scheduled operation function	GC standard functions	Required
Double setpoints (temperature setpoint) (Note 5)	MC standard functions	Required
Module operating time display	MC standard functions	Not necessary
Compressor run hours display	MC standard functions	Not necessary
Module startup counts display	MC standard functions	Not necessary
Compressor startup counts display	MC standard functions	Not necessary
Module operating time averaging control	MC standard functions	Not necessary
Compressor run hours averaging control	MC standard functions	Not necessary

## Special Specifications Available

- **Brine specifications (can be used with ice thermal)**  
 Support brine leaving temperature from -15°C to 4°C.  
 Ice thermal is also supported.
- **Heat Machine Specifications**  
 Heating operation is available throughout the year.  
 (upper limit of outside temperature 43°CDB)
- **High Temperature Difference Specifications**  
 Support units with design LVG/ETG water temperature difference over 10°C and at or below 16°C  
 (There is a limit to the settings of the leaving water temperature.  
 Please make an individual inquiry regarding this.)
- **Corresponding to Chilled-water storage (fresh water)**  
 Optimized energy-saving control to chilled-water storage.

# Brine specifications

Can efficiently and precisely support various low-temperature processes with the brine specifications of the Universal Smart X.



## Brine-Spec Line-Up and Module Names

Model		Internal inverter pump							
		Cooling only				Heat pump			
<b>30HP</b>	Standard type	RUA-SP243R1-S	RUA-SP243R2-S	RUA-SP243R3-S	RUA-SP243R4-S	RUA-SP243HR1-S	RUA-SP243HR2-S	RUA-SP243HR3-S	RUA-SP243HR4-S
	High-EER type	RUA-SP243NR1-S	RUA-SP243NR2-S	RUA-SP243NR3-S	RUA-SP243NR4-S	RUA-SP243HNR1-S	RUA-SP243HNR2-S	RUA-SP243HNR3-S	RUA-SP243HNR4-S
<b>40HP</b>	Standard type	RUA-SP333R1-S	RUA-SP333R2-S	RUA-SP333R3-S	RUA-SP333R4-S	RUA-SP333HR1-S	RUA-SP333HR2-S	RUA-SP333HR3-S	RUA-SP333HR4-S
	High-EER type	RUA-SP333NR1-S	RUA-SP333NR2-S	RUA-SP333NR3-S	RUA-SP333NR4-S	RUA-SP333HNR1-S	RUA-SP333HNR2-S	RUA-SP333HNR3-S	RUA-SP333HNR4-S
<b>50HP</b>	Standard type	RUA-SP423R1-S	RUA-SP423R2-S	RUA-SP423R3-S	RUA-SP423R4-S	RUA-SP423HR1-S	RUA-SP423HR2-S	RUA-SP423HR3-S	RUA-SP423HR4-S
	High-EER type	RUA-SP423NR1-S	RUA-SP423NR2-S	RUA-SP423NR3-S	RUA-SP423NR4-S	RUA-SP423HNR1-S	RUA-SP423HNR2-S	RUA-SP423HNR3-S	RUA-SP423HNR4-S

Model		Pumpless							
		Cooling only				Heat pump			
<b>30HP</b>	Standard type	RUA-SP243LR1-S	RUA-SP243LR2-S	RUA-SP243LR3-S	RUA-SP243LR4-S	RUA-SP243HLR1-S	RUA-SP243HLR2-S	RUA-SP243HLR3-S	RUA-SP243HLR4-S
	High-EER type	RUA-SP243LNR1-S	RUA-SP243LNR2-S	RUA-SP243LNR3-S	RUA-SP243LNR4-S	RUA-SP243HLNR1-S	RUA-SP243HLNR2-S	RUA-SP243HLNR3-S	RUA-SP243HLNR4-S
<b>40HP</b>	Standard type	RUA-SP333LR1-S	RUA-SP333LR2-S	RUA-SP333LR3-S	RUA-SP333LR4-S	RUA-SP333HLR1-S	RUA-SP333HLR2-S	RUA-SP333HLR3-S	RUA-SP333HLR4-S
	High-EER type	RUA-SP333LNR1-S	RUA-SP333LNR2-S	RUA-SP333LNR3-S	RUA-SP333LNR4-S	RUA-SP333HLNR1-S	RUA-SP333HLNR2-S	RUA-SP333HLNR3-S	RUA-SP333HLNR4-S
<b>50HP</b>	Standard type	RUA-SP423LR1-S	RUA-SP423LR2-S	RUA-SP423LR3-S	RUA-SP423LR4-S	RUA-SP423HLR1-S	RUA-SP423HLR2-S	RUA-SP423HLR3-S	RUA-SP423HLR4-S
	High-EER type	RUA-SP423LNR1-S	RUA-SP423LNR2-S	RUA-SP423LNR3-S	RUA-SP423LNR4-S	RUA-SP423HLNR1-S	RUA-SP423HLNR2-S	RUA-SP423HLNR3-S	RUA-SP423HLNR4-S

\* The number of combined units is indicated at the end of the set name.

The brine is ethylene glycol with an added anti-corrosive agent.

The unit can handle propylene glycol; however, this will affect the performance characteristics. Please inquire for more details.

### ● Brine leaving temperature and brine density

① Refer to the capacity table regarding the performance of the brine chiller. In addition, the density of the brine (ethylene glycol) is the density noted below so the freezing temperature is (brine outlet temperature) - (8°C).

Brine leaving temperature (°C)	+5	0	-5	-10	-15
Ethylene glycol density (wt%)	11	20	28	34	40

② Commercially available ethylene glycol generally is a preservative added aqueous solution. Confirm the density of the base liquid when you purchase it, and then determine the required density according to the following example.

[Example] If you are using Nybrine Z1 with a brine leaving temperature of -5°C, then given a base liquid that is 74.5% aqueous solution, then in Nybrine Z1 a 28 wt% density of ethylene glycol is 28 wt% ÷ 0.745 = 38 wt%.

### ● Single Module unit Cooling Capacity Chart (For both internal inverter pump models and pumpless models)

Brine leaving temperature (°C)	Item	30 HP model RUA-SP243(H) (L)R					40 HP model RUA-SP333(H) (L)R					50 HP model RUA-SP423(H) (L)R				
		Outdoor air temperature (°C) (DB)					Outdoor air temperature (°C) (DB)					Outdoor air temperature (°C) (DB)				
		25	30	35	40	43	25	30	35	40	43	25	30	35	40	43
-15	Cooling capacity (kW)	40.8	37.2	32.9	29.4	27.3	57.6	53.1	48.2	43.1	39.3	75.6	69.5	63.2	56.6	52.5
	Nominal input (kW)	16.3	17.6	19.0	20.5	21.4	23.9	25.8	27.7	29.8	30.8	33.7	36.0	38.5	41.0	42.6
	Brine density (L/min)	221	202	*200	*200	*200	313	288	262	234	220	410	377	343	307	285
	Nominal current (A)	27.5	29.3	31.0	33.1	34.4	40.2	42.8	45.5	48.3	49.7	54.8	57.9	61.6	65.8	67.9
-10	Cooling capacity (kW)	49.8	46.2	42.6	39.2	36.1	70.2	65.4	60.4	55.2	52.0	92.2	85.9	79.4	72.7	68.7
	Nominal input (kW)	16.9	18.5	20.2	22.0	22.9	25.2	27.4	29.6	31.9	33.3	35.9	38.6	41.4	44.2	46.0
	Brine density (L/min)	262	243	224	206	*200	369	344	318	290	273	485	452	417	382	361
	Nominal current (A)	28.5	30.6	32.9	35.3	36.7	42.2	45.2	48.3	51.6	53.7	57.9	62.2	66.4	70.6	73.2
-7	Cooling capacity (kW)	55.8	52.2	48.6	44.9	42.7	78.7	73.7	68.5	63.1	59.8	104	96.8	90.0	83.1	79.0
	Nominal input (kW)	17.2	18.9	20.8	22.7	23.8	26.0	28.3	30.7	33.1	34.7	37.3	40.2	43.2	46.3	48.2
	Brine density (L/min)	288	269	251	232	220	406	380	353	325	308	536	499	464	429	407
	Nominal current (A)	28.8	31.2	33.7	36.4	38.1	43.3	46.6	50.0	53.7	55.8	60.0	64.3	69.0	73.7	76.4
-5	Cooling capacity (kW)	60.1	56.4	52.7	49.0	46.6	84.8	79.6	74.2	68.6	65.2	111	105	97.4	90.3	86.0
	Nominal input (kW)	17.3	19.2	21.1	23.1	24.3	26.6	28.9	31.4	34.0	35.6	38.3	41.3	44.4	47.6	49.6
	Brine density (L/min)	307	288	269	250	238	433	407	379	350	333	567	536	498	461	439
	Nominal current (A)	28.9	31.4	34.1	36.9	38.8	44.0	47.5	51.1	54.8	56.9	61.6	65.8	70.6	75.8	78.5
0	Cooling capacity (kW)	71.7	67.8	63.7	59.5	57.0	101	95.3	89.2	83.0	79.4	131	123	117	109	104
	Nominal input (kW)	17.4	19.5	21.7	23.9	25.3	27.9	30.5	33.2	36.1	37.8	40.6	43.9	47.6	51.2	53.4
	Brine density (L/min)	354	335	314	294	281	498	470	440	410	392	*600	*600	577	538	513
	Nominal current (A)	28.8	31.7	34.8	38.1	40.2	45.9	49.8	53.7	57.9	60.6	64.8	70.0	75.3	80.6	84.3

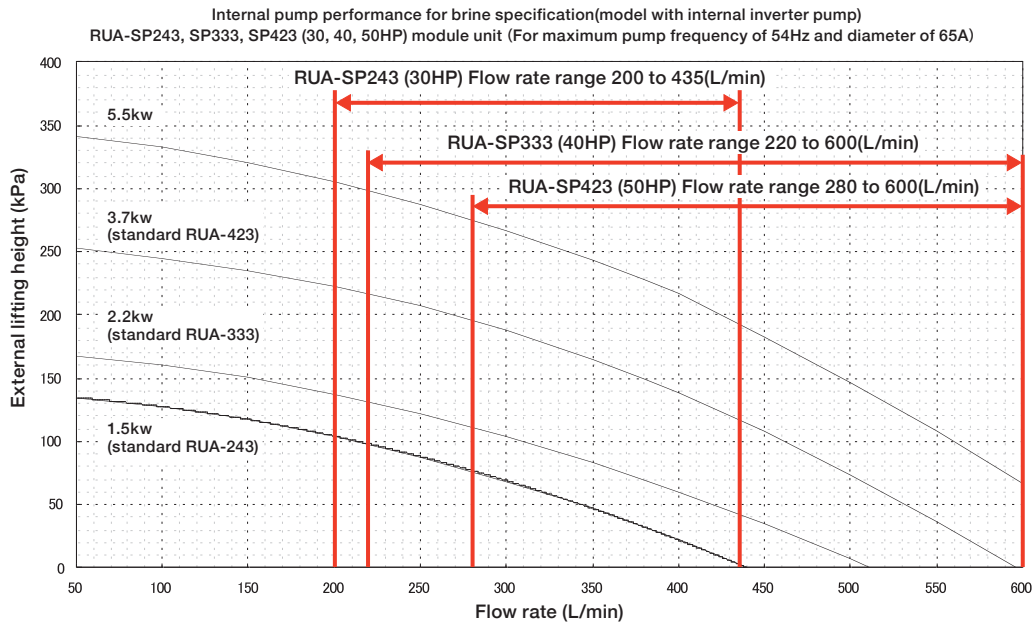
Note: The \* mark indicates the minimum or maximum flow rate, due to restrictions on the flow rate. For min. flow rate, the brine LWE/EWT difference shall be below 3°C. For max. flow rate, the brine LWE/EWT difference shall be above 3°C. (In case the operating current is 380V)

### ● Pump characteristics (Internal inverter pump model)

For reference, performance characteristic graph for models with internal pump shows values for a brine leaving temperature of -15°C, an ethylene glycol density of 40wt%, -8°C, and a propylene glycol density of 32wt%. Select a pump that can handle the required lift and flow rate.

Note 1: When brine leaving temperature is different or propylene glycol is used, the performance characteristics differ. Please contact to us.

Note 2: Please be aware that with an internal inverter pump for the brine specifications, the pump output set as standard differs from pure water specifications.



### ● Pump specifications

	30 HP model				40 HP model			50 HP model	
	Standard	When changing output			Standard	When changing output		Standard	When changing output
Pump output	1.5kW	2.2kW	3.7kW	5.5kW	2.2kW	3.7kW	5.5kW	3.7kW	5.5kW
Flow rate range (L/min)	200~435								
External lifting height <sup>(Note 2)</sup> (kPa)	1.8~104	43~137	116~224	192~307	0 <sup>(Note 5)</sup> ~131	0 <sup>(Note 5)</sup> ~217	64.7~300	0 <sup>(Note 5)</sup> ~196	65~276
Maximum operating current <sup>(Note 3)</sup> (A)	3.4	4.6	7.4	11.4	4.3	6.6	9.6	7.2	10.5
Maximum power consumption <sup>(Note 3)</sup> (kW)	2.1	2.9	4.6	6.9	2.6	4.0	5.9	4.4	6.4
Maximum allowable boost pressure (MPa)	0.52	0.48	0.37	0.25	0.48	0.37	0.25	0.37	0.25
Maximum suction head (water temperature 60° Corless) (kPa)	40	40	40	40	40	40	40	40	40

Note 1: The flow amount range (upper limit), maximum current, and maximum consumption power on the graph are for one pump. Multiple by the number of pumps (modules) according to the size of the unit.

Note 2: The value for the pump lift outside the machine on the graph is when there is a pump frequency of 54Hz in the above flow amount range.

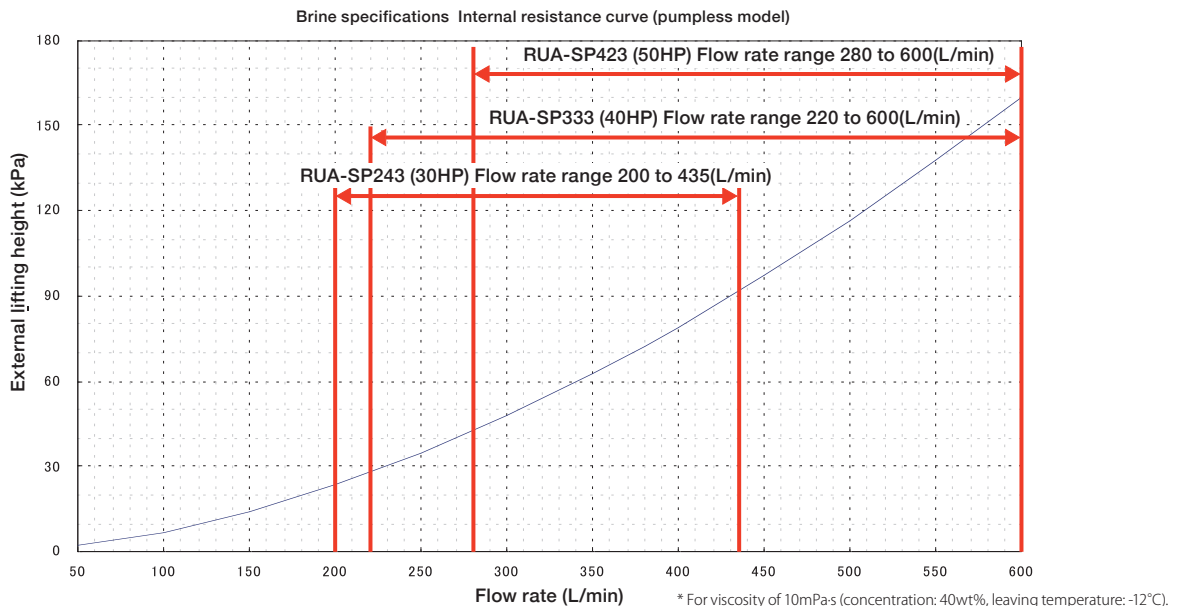
Note 3: The values indicated for maximum current and maximum consumption power are the highest values for when the pump operates at a frequency of 60Hz. (In case the operating current is 380V)

Note 4: Please use a 60Hz pump in common with other pumps in a 50Hz region.

Note 5: There are some ranges where the system cannot be flushed within the above flow amount range, and an increase in pump horsepower will be necessary.

### ● Internal resistance curve (pumpless model)

Note: Please select a pump external to the heat source machine in consideration of the internal resistance indicated below for pumpless models.



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## Installation and the use of refrigerants not specified by Toshiba Carrier Corporation

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Toshiba refrigeration and air-conditioning units are designed and manufactured on the assumption that the product is used with a specific refrigerant suitable for each unit.

We have recently seen some cases where the type of refrigerant used is different from the one originally installed in the product.

Such actions may cause mechanical defects, malfunctions, failures and in some cases result in a serious safety issue. Therefore do not install any refrigerant other than the one specified by Toshiba Carrier Corporation for its respective products.

The type of the refrigerant used for each of our products is shown in the accompanying owners manual, or on the product label attached on the product itself.

Toshiba Carrier Corporation shall not assume any liability for failures, malfunctions or safety in its products if the refrigerant used is different from the one specified.



### **SAFETY PRECAUTIONS**

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Please see the Technical Document for details.

Notice : Toshiba is committed to continuously improving its products to ensure the highest quality and reliability standards, and to meet local regulations and market requirements. All features and specifications are subject to change without prior notice.

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