# **TOSHIBA**Leading Innovation >>>>

Air-cooled Inverter Modular Chiller for Diverse Customer Needs







# UNIVERSAL SMART X

30HPmodel / 40HPmodel / 50HPmodel

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 —
	Cooling-only	Standard	3-phase 3-wire	11
30HP	Cooming of my	High-EER	50/60Hz 380V/400V/415V	13
ЗОПР	Heat pump	Standard	3-phase 3-wire 60Hz 440V	15
	ricat pump	High-EER	00112 440V	17
	Cooling-only	Standard	3-phase 3-wire	11
40HP	Gooming-only	High-EER	50/60Hz 380V/400V/415V	13
40NP	Heat pump	Standard	3-phase 3-wire 60Hz 440V	15
	rieat pump	High-EER	00112 440V	17
	Cooling-only	Standard	3-phase 3-wire	11
50HP	Gooming-only	High-EER	50/60Hz 380V/400V/415V	13
ЭИПР	Heat pump	Standard	3-phase 3-wire 60Hz 440V	15
	ricat pump	High-EER	00112 TTOV	17

## Pumpless

Model —		Use ———	Type ———	Power supply —	— Page —
		Cooling-only	Standard	3-phase 3-wire	19
	30HP	Cooming only	High-EER	50/60Hz 380V/400V/415V	21
	SUMP	Heat pump	Standard	3-phase 3-wire 60Hz 440V	23
		ricat pamp	High-EER	00112 440V	25
		Cooling-only	Standard	3-phase 3-wire	19
	40HP	Cooming only	High-EER	50/60Hz 380V/400V/415V	21
	40HP	Heat pump	Standard	3-phase 3-wire 60Hz 440V	23
		ricat pamp	High-EER	00112 440 V	25
		Cooling-only	Standard	3-phase 3-wire	19
	50HP	Occurring-offing	High-EER	50/60Hz 380V/400V/415V	21
	SUHP	Heat pump	Standard	3-phase 3-wire 60Hz 440V	23
		ποαι ραπη	High-EER	00112 440V	25

■View of models ————	RUA - SP 24 3 H L N F	R 1   -   S   M
Air-cooled chiller ◆		Module Controller Blank: None / M: Equipped
Universal Smart X •		For South East Asia model
Capacity USRT •		● 1: 3ph 50/60Hz 380V
24: 30 HP / 33: 40 HP / 42: 50 HP		2: 3ph 50/60Hz 400V
Version number ◆		3: 3ph 50/60Hz 415V
Blank: Cooling-only •-		4: 3ph 60Hz 440V
H: Heat pump (cooling/heating)		Blank: Water / R: Brine
Blank: Internal inverter pump / L: Pumpless -		Blank: Standard type / N: High-EER type

# 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%



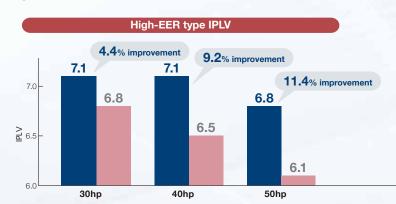
# UNIVERSAL SMART X

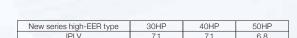
30HPmodel / 40HPmodel / 50HPmodel

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

#### **High-efficiency compressor**

Motors have more coils
 Reduction in pressure loss

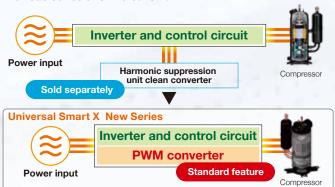




Note: Graph values are based on outside temperature and outlet water temperature of cooling period performance coefficient trials on the AHRIS50-590 'Water Chilling Unit'. However, the difference in inlet/outlet water temperature is the IPLV value based on actual operating control of machines with our 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 AHRIS50-590 '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.

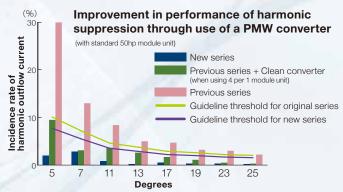
\*2 Flickering on TVs, radio noise, mistaken tripping of an electrical leakage breaker, burnout of a reactor or phase-advanced condenser.

#### **Benefits**

Eliminate problems caused by harmonic current

New series Previous series

- 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%.

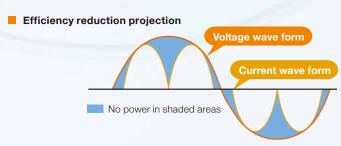
#### **Benefits**

#### 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

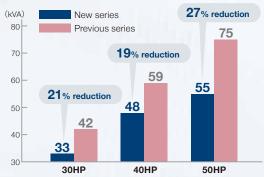


#### **Example design of power savings**

(decreased electrical transformer volume)

Large power-saving design possible over original model!

Comparison of power transformer volume

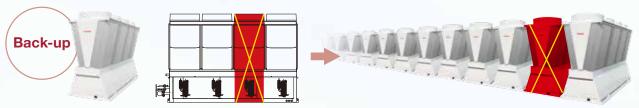


Allows for reductions in wiring, switches, fuses etc!
\*3 Some models (combined with module unit) do not allow a reduction in size.

4

# Highly-reliable module unit system

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



...

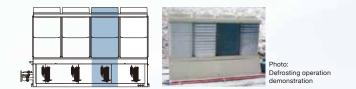
Back-up operations for each compressor

Back-up operations for each module unit

And also...

Defrosting operation is also performed for each compressor.

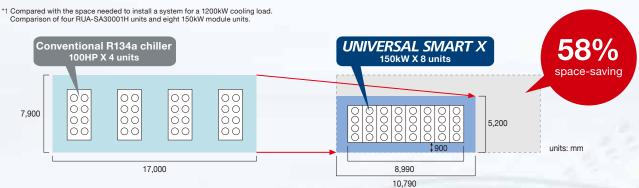
Make use of the back-up function to carry out distributed defrost in the module units, and control a reduction in temperature of the hot-water.



#### ■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.



# 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.



# Flexible control of up to 6400 horsepower



#### ■Superior system management

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



#### ■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.



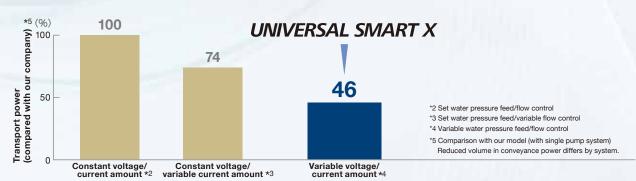


# Voltage/current volume control (bypass flow optimization control)

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 to"0".

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

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



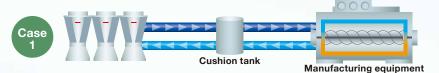


Universal Smart X Provides You with Solutions.

# Solutions for application

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

# For machinery cooling!



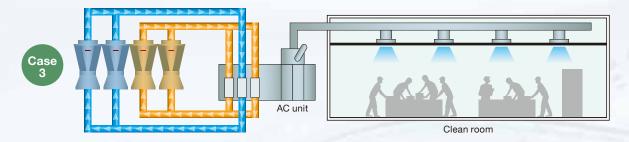


# Year-round hot-water supply with heat machine option!





# **3** For clean rooms!



# For server rooms!



- Module-in-module function reduces the shutdown risk.
- A DC twin-rotary compressor allows long-hour operating (24/7) at high efficiency.



# For large commercial facilities!



Combined module units minimize the installation restrictions, and eliminate any issues with installation space.



# Solutions for operation



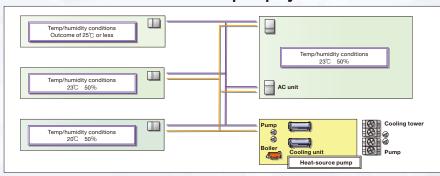
And also... Maximize the function of Universal Smart X with optimal operation in various applications.

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

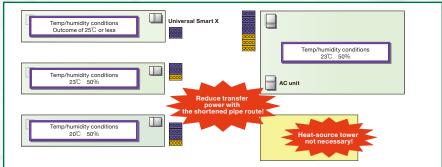
**Solution** 

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

#### Centralized heat pump system



#### Dispersed Air-cooled heat pump system

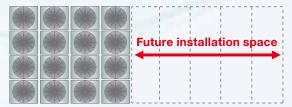


# Uncertainty in the rise of cooling load in the future.

**✓** 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** 

# 30HPmodel 40HPmodel 50HPmodel Cooling-only

						Standar	rd type		
					380V			400V	
				30HP	40HP	50HP	30HP	40HP	50HP
Mod	lel (A single	module unit)		RUA-SP2431-S	RUA-SP3331-S	RUA-SP4231-S	RUA-SP2432-S	RUA-SP3332-S	RUA-SP4232-S
Cool	ling capacit	у	(Note 1)(kW)	85.0	118	150	85.0	118	150
	Unit color	•				Silky shade (I	Munsell 1Y8.5/0.5)	I	
Exterior		Height	(mm)			2,3	300		
eric	Dimensions	Width	(mm)			1,0	080		
=	(Note 2)	Depth	(mm)			3,4	100		
Ship	ping weigh	t	(kg)	1,273	1,273	1,308	1,273	1,273	1,308
Ope	rating weig	ht	(kg)	1,301	1,301	1,343	1,301	1,301	1,343
Pow	er supply		(Note 3)	3-	phase 3-wire 380V 50/60I	Hz	3-	-phase 3-wire 400V 50/60	Hz
Refer	ence current fo	or power supply desig	n <sup>(Note 4)</sup> (A)	50.5	72.2	81.8	50.5	72.2	81.8
Ee		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)
ctric	Cooling	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)
Electrical data	Cooling	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)
(Note 1		Power factor	(%)			9	9		
IPLV	PLV (With a 5°C difference) (Note 5)			7.1	7.1	6.8	7.1	7.1	6.8
	Туре					Hermet	ic rotary		
ç	Model nan	ne				RA792A4	4F-10UC1		
n pr	Model name Motor output×number of units (kW) Type of start			5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4
essc	Type of start					Inverte	r starter		
=	Crankcase	heater	(W)			37	x 4		
C		Туре				RBZ	74A		
Com	pressor oil	Charge	(L)			2.0	x 4		
Con	denser coil -	- air side				Plate f	fin coil		
	Туре			Propeller fan					
Fan	Air quantit	ty	(m/min)			aximum)			
) an	Type of sta	art		Inverter starter					
	Motor out	put x number of t	units (kW)	1.0 x 4					
	Motor out	put	(kW)			1.	.5		
٦,	Туре					Line p	pump		
Pump	Flow contr	rol				Inve	erter		
(Note 4	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
	er - water si	ide	(Note 7)			Brazed plate heat exchar	nger (SUS316 equivalent)		
Refr	Туре						10A		
Refrigerant	R410A cha	rge	(kg)				x 4		
	Control						ansion valve		
<u> </u>	acity contro		(Note 8) (%)	0,9~100	0,6~100	0,5~100	0,9~100	0,6∼100	0,5∼100
<u> </u>	ration contr	ol			Microprocessor co	ntrol based on leaving wat		erature difference	
Defr	ost system						verse cycle system		
Prot	ective devic	te		High-pressure switch, Over cu		d protection (compressor, fan, pu discharge gas overheat protectio			
Pipin	Cold/Hot v	water inlet	(A)	50 flange	(1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange :	x 1 (JIS10K)	65 flange x 1 (JIS10K)
Piping diameters	Cold/Hot v	water outlet	(A)	50 flange	(1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange	x 1 (JIS10K)	65 flange x 1 (JIS10K)
	Coil drain		(A)			PT40 sc	rew x 1		
Sour	Control bo	x side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3
Soundlevel	Coil side		(dBA)	65.4	69.7	72.9	65.4	69.7	72.9
(Note 9	Water pipi	ng side	(dBA)	63.1	65.4	68.1	63.1	65.4	68.1
Requ	uired produ	cts sold separate	ly		I	Module controller (MC) (in	nclude external sensor x 2	(Note 10)	<u> </u>

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

(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°CD8 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°CD8/24°CWD outdoor air (OAT)

Capacity, power consumption, and EER tolerance values based on AHRIS50-590 "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 IPIV (Integrated Part Load Value, cooling) is based on the AHRIS50-590 "Water Chilling Unit."

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

(Note 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.

						Standar	d type		
					415V			440V	
				30HP	40HP	50HP	30HP	40HP	50HP
Mod	el (A single	module unit)		RUA-SP2433-S	RUA-SP3333-S	RUA-SP4233-S	RUA-SP2434-S	RUA-SP3334-S	RUA-SP4234-S
Cool	ing capacit	у	(Note 1)(kW)	85.0	118	150	85.0	118	150
	Unit color	•				Silky shade (A	Munsell 1Y8.5/0.5)		
Ext		Height	(mm)			2,3	600		
Exterior	Dimensions	Width	(mm)			1,0	080		
ř	(Note 2)	Depth	(mm)			3,4	100		
Ship	ping weigh	t	(kg)	1,273	1,273	1,308	1,273	1,273	1,308
Ope	rating weig	ht	(kg)	1,301	1,301	1,343	1,301	1,301	1,343
Pow	er supply		(Note 3)	3-	-phase 3-wire 415V 50/60F	Hz		3-phase 3-wire 440V 60Hz	!
Refer	ence current fo	or power supply desig	ın <sup>(Note 4)</sup> (A)	50.5	72.2	81.8	50.5	72.2	81.8
Ele		Nominal current	t (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)
Electrical data	Cooling	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)
al dat	Cooling	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)
ਿੰਹ (Note 1		Power factor	(%)			9	9		
IPLV	(With a 5℃ d	ifference)	(Note 5)	7.1	7.1	6.8	7.1	7.1	6.8
(	Туре					Hermeti	ic rotary		
Compressor	Model nar	ne				RA792A4	F-10UC1		
ıpre	Motor outp	ut×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
SSO	Type of sta	art				Inverte	r starter		
r	Crankcase	heater	(W)			37	x 4		
Com	pressor oil	Туре				RB7	74A		
Con	pressor on	Charge	(L)			2.0	x 4		
Con	denser coil	- air side				Plate f	în coil		
	Туре								
Fan	Air quanti	ty	(m/min)			1,050 (ma	aximum)		
n	Type of sta	art				Inverte	r starter		
	Motor out	put x number of	units (kW)			1.0	x 4		
	Motor out	put	(kW)			1.	.5		
P	Туре					Line p	oump		
Pump	Flow cont	rol				Inve	erter		
(Note 4	Maximum	current	(Note 6) (A)	6.1	6.1	5.6	3.1	3.1	2.8
	Maximum i		(Note 6)(kW)	2.0	2.0	1.8	2.0	2.0	1.8
	er - water s	ide	(Note 7)			Brazed plate heat exchar	· · · · · · · · · · · · · · · · · · ·		
Refrigerant	Туре					R41			
gera	R410A cha	rge	(kg)			8.2			
	Control		(1)		ı	Electric expa		ı	
<u> </u>	city contro		(Note 8) (%)	0,9~100	0,6~100	0,5~100	0,9~100	0,6~100	0,5~100
_	ration cont	rol			Microprocessor cor	ntrol based on leaving water		erature difference	
Defr	Defrost system						erse cycle system		
Prot	Protective device			High-pressure switch, Over cu	rrent protection, Inverter overloa freeze protection, low flow rate,	d protection (compressor, fan, pur discharge gas overheat protection	mp), Crankcase heater, Open-pha n, low pressure cutout, thermisto	ase protection, Microprocessor co r error, high water pressure error)	ntrol (compressor time guards,
Piping	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)
Piping diameters	Cold/Hot	water outlet	(A)	50 flange	k 1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange	x 1 (JIS10K)	65 flange x 1 (JIS10K)
eters	Coil drain		(A)			PT40 sc	rew x 1		
Sour	Control bo	ox side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3
Sound level	Coil side		(dBA)	65.4	69.7	72.9	65.4	69.7	72.9
(Note 9	Water pipi	ng side	(dBA)	63.1	65.4	68.1	63.1	65.4	68.1
Requ	uired produ	cts sold separate	ly		1	Module controller (MC) (in	nclude 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 AHRIS50-590 "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 IPIV (Integrated Part Load Value, cooling) is based on the AHRIS50-590 "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.

# 30HPmodel 40HPmodel 50HPmodel

Cooling-only

Model (A single module unit)   RUA-SP23N1-5   RUA-SP23N1-5   RUA-SP23N1-5   RUA-SP23N2-5   RUA							High-El	ER type			
Mode   A single module unit)   RUA-SP243N1-5						380V			400V		
Cooling capacity   Note   No					30HP	40HP	50HP	30HP	40HP	50HP	
Height	Mod	el (A single	module unit)		RUA-SP243N1-S	RUA-SP333N1-S	RUA-SP423N1-S	RUA-SP243N2-S	RUA-SP333N2-S	RUA-SP423N2-S	
Height   Chargo   C	Cooli	ing capacit	V	(Note 1)(kW)	85.0	118	150	85.0	118	150	
Height			,	(,							
March   Depth   March   Marc	EX		Height	(mm)							
Part	teri	Dimensions					•				
Shipping weight   Vision   V	2						3,4	100			
Operating weight   (kg)   1,313   1,313   1,315   3,phase 3-wire 380V 50/06Hz   3-phase 3-wire 400V 50/06Hz   3-phase 3-phase 3-wire 400V 50/06Hz   3-phase 3-ph	Shipi				1,283	1,283			1,283	1,318	
Power supply									1,313		
Reference current for power supply design   News 6   (A)   S0.5   7.2   81.8   S0.5   7.2   81.8											
Mornian   current			or power supply desig	n (Note 4) (A)	50.5	72.2	81.8				
Nominal input									30.6[31.6]	44.5 (46.1)	
	ctri									30.5 (31.6)	
	cal d	Cooling								4.92(4.75)	
PRV   With a 5°C difference    9   9   9   9   9   9   9   9   9	(Note 1)			(%)							
Type											
Model name							Hermet	ic rotary			
Combressorial   Type	Cor		ne					· · · · · · · · · · · · · · · · · · ·			
Standard	npr			nits (kW)	5.5 x 4	7.5 x 4			7.5 x 4	9.25 x 4	
State   Control   Contro	ess	<del></del>								7.2	
State   Stat	o			(W)							
Condenser coil - air side				(/							
Type	Com	ompressor oil									
Type	Conc										
Air quantity   (mi/min)   1,050 (maximum)   1,											
Type of start   Motor output x number of units   (kW)   1.0 x 4	_		tv	(m³/min)			· ·				
Motor output x number of units (kW)  Water spray volume (L/min)  Supply water pressure (Note 7) (MPa)  Control system  Control	-an	· ,									
Water spray volume   (L/min)				units (kW)	1.0 x 4						
Motor output (kW) 1.5 Type Line pump    Flow control   Maximum current   Maximum input   Mote 9   Mote 9   Mote 9   Mote 10   (kg)   Mote 10	S K										
Motor output (kW) 1.5 Type Line pump    Flow control   Maximum current   Maximum input   Mote 9   Mote 9   Mote 9   Mote 10   (kg)   Mote 10	ater sp		·								
Motor output   (kW)   1.5	چ (Note 6)		<u> </u>		Conti	nuous water spraving wh	en outside temperature ex	ceeds setting and compre	essor capacity exceeds set	tina	
Type				(kW)					···· ·· · · · · · · · · · · · · · · ·		
Flow control   Maximum current   Maximum curre											
Maximum input   Mortes  (kW)   2.0   2.0   1.8   2.0   2.0   1.8	Pur		rol								
Maximum input   (Note8) (kW)   2.0   2.0   1.8   2.0   2.0   1.8	np s			(Note 8) (A)	3.1	3.1			3.1	2.8	
Ranged plate heat exchanger (SUS316 equivalent)	(Note 4)	Maximum	input	(Note8) (kW)							
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, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)	Cool						Brazed plate heat excha	nger (SUS316 equivalent)			
Capacity control steps  (Note 10) (%)  0,9~100  0,6~100  0,5~100  0,9~100  0,6~100  0,5~100  0,9~100  0,6~100  0,5~100  0,5~100  0,5~100  0,5~100  0,5~100  0,6~100  0,5~100							-				
Capacity control steps  (Note 10) (%)  0,9~100  0,6~100  0,5~100  0,9~100  0,6~100  0,5~100  0,9~100  0,6~100  0,5~100  0,5~100  0,5~100  0,5~100  0,5~100  0,6~100  0,5~100	frige		rge	(kg)			8.2	x 4			
Capacity control steps  (Note 10) (%)  O, 9 ~100  O, 6 ~100  O, 5 ~100  O, 9 ~100  O, 9 ~100  O, 6 ~100  O, 5 ~100  O, 5 ~100  O, 9 ~100  O, 6 ~100  O, 5	erani						Electric exp	ansion valve			
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 tin freeze protection, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)		city contro	l steps	(Note 10) (%)	0,9~100	0,6~100			0,6~100	0,5~100	
Defrost system  Protective device    Distributed reverse cycle system						Microprocessor co	ntrol based on leaving wat	er temperature and temp	erature difference		
Protective device High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor tin freeze protection, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)						<i>p</i>					
Cold/Hot water inlet   Cold/Hot water inlet   Cold/Hot water outlet   Cold/H					High-pressure switch, Over cu		d protection (compressor, fan, pu	mp), Crankcase heater, Open-pha			
Cold/Hot water outlet   Cold drain	Pipi	Cold/Hot v	water inlet	(A)							
Coil drain (A) PT40 screw x 1  Control box side (dBA) 61.6 67.1 68.3 61.6 67.1 68.3  Coil drain (A) PT40 screw x 1	ng dia				J					65 flange x 1 (JIS10K)	
Control box side (dBA) 61.6 67.1 68.3 61.6 67.1 68.3 61.6 67.1 68.3	ımete					,				. 5 (5.2.1011)	
607 730 654 607 730	IS SOL		x side		61.6	67.1			67.1	68.3	
TO ILOUI SIDE (UDA) I 05.4   05.7   77.9   05.4   69.7   77.9	Ind le	Coil side		(dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
Water piping side	(Note 11)		na side								
Required products sold separately  Module controller (MC) (include external sensor x 2) (Note 12)										1 20	

- (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 AHRIS50-590 "Water Chilling Unit."

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

- 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 IPIV (Integrated Part Load Value, cooling) is based on the AHIS50-590 "Water folliling Units".
  (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)
- (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-El	ER type					
					415V			440V				
				30HP	40HP	50HP	30HP	40HP	50HP			
Mod	el (A single	module unit)		RUA-SP243N3-S	RUA-SP333N3-S	RUA-SP423N3-S	RUA-SP243N4-S	RUA-SP333N4-S	RUA-SP423N4-S			
Cool	ing capacity	у	(Note 1)(kW)	85.0	118	150	85.0	118	150			
	Unit color					Silky shade (	Munsell 1Y8.5/0.5)					
Ex		Height	(mm)			2,3	300					
Exterior	Dimensions	_	(mm)			1,0	)80					
Υ	(Note 2)	Depth	(mm)			3,4	100					
Ship	ping weigh	t	(kg)	1,283	1,283	1,318	1,283	1,283	1,318			
Oper	rating weigl	ht	(kg)	1,313	1,313	1,355	1,313	1,313	1,355			
Powe	er supply		(Note 3)	3-	phase 3-wire 415V 50/60F	Hz		3-phase 3-wire 440V 60H	Z			
Refere	ence current fo	r power supply desig	gn <sup>(Note 4)</sup> (A)	50.5	72.2	81.8	50.5	72.2	81.8			
Ele		Nominal curren	t (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)			
ctric	Cooling	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)			
Electrical data	Cooling	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)			
다 (Note 1)		Power factor	(%)	99	99	99	99	99	99			
PLV	(With a 5℃ di	ifference)	(Note 5)	7.1	7.1	6.8	7.1	7.1	6.8			
_	Туре					Hermet	ic rotary					
Com	Model nan	ne				RA792A4	4F-10UC1					
Model name   Motor output×number of units   (kW   Type of start				5.5 x 4	7.5 x 4	9.25 x 4	5.5 x 4	7.5 x 4	9.25 x 4			
088	Type of sta	ırt				Inverte	r starter					
~	Crankcase heater (W				37 x 4							
Compressor oil Type						RB	74A					
Com	pressor oii	Charge	(L)			2.0	x 4					
Cond	Condenser coil - air side					Plate	fin coil					
	Туре					Prope	ller fan					
Fan	Air quantit	.y	(m/min)			1,050 (m	aximum)					
5	Type of sta	ırt				Inverte	r starter					
	Motor out	put x number of	units (kW)		1.0 x 4							
Water spray 6 system (Note	Water spra	y volume	(L/min)			13	3.6					
erspra	Supply wa	ter pressure	(Note 7)(MPa)			0	.2					
(Note 6)	Control sys	stem		Conti	nuous water spraying whe	en outside temperature ex	ceeds setting and compre	essor capacity exceeds set	ting			
	Motor out	put	(kW)			1	.5					
Б	Туре					Line	pump					
Pump	Flow contr					Inve	erter					
Note 4)	Maximum	current	(Note 8) (A)	3.1	3.1	2.8	3.1	3.1	2.8			
	Maximum		(Note 8)(kW)	2.0	2.0	1.8	2.0	2.0	1.8			
	er - water si	de	(Note 11)				nger (SUS316 equivalent)					
Refrigerant	Туре						10A					
iger.	R410A cha	rge	(kg)			8.2	x 4					
	Control						ansion valve					
	city contro		(Note 10) (%)	0,9~100	0,6~100	0,5∼100	0,9~100	0,6~100	0,5∼100			
Oper	ration contr	ol			Microprocessor co	ntrol based on leaving wa		erature difference				
Defr	Pefrost system						everse cycle system					
Prote	otective device			High-pressure switch, Over cu		d protection (compressor, fan, pu discharge gas overheat protectio						
Pipir	Cold/Hot v	vater inlet	(A)	50 flange	(1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange	x 1 (JIS10K)	65 flange x 1 (JIS10K)			
Piping diameters	Cold/Hot v	vater outlet	(A)	50 flange	(1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange	x 1 (JIS10K)	65 flange x 1 (JIS10K)			
neters	Coil drain		(A)			PT40 sc	rew x 1					
nos s	Control bo	x side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3			
nd le	Control bo Coil side Water pipi		(dBA)	65.4	69.7	72.9	65.4	69.7	72.9			
<u>≨</u> Note 11)	Water pipi	ng side	(dBA)	63.1	65.4	68.1	63.1	65.4	68.1			
		cts sold separate	١٧		Mod	dule controller (MC) (in	clude 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 AHRIS50-590 "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 IPIV (Integrated Part Load Value, cooling) is based on the AHRIS50-590 "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 1) Adjust the how rate to become close to this supply water pressure with the manual flow adjustment valve on the wat (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.

# 30HPmodel 40HPmodel 50HPmodel

Heat pump

						Standar	d type		
					380V			400V	
				30HP	40HP	50HP	30HP	40HP	50HP
Mod	el (A single	module unit)		RUA-SP243H1-S	RUA-SP333H1-S	RUA-SP423H1-S	RUA-SP243H2-S	RUA-SP333H2-S	RUA-SP423H2-S
Cool	ing capacit	v	(Note 1)(kW)	85.0	118	150	85.0	118	150
	ing capacit	<i>'</i>	(Note 1)(kW)	85.0	118	150	85.0	118	150
	Unit color	,	` '		<u> </u>	Silky shade (I	Munsell 1Y8.5/0.5)	I	
E		Height	(mm)			2,3	600		
Exterior	Dimensions		(mm)			1,0	180		
2	(Note 2)	Depth	(mm)			3,4	100		
Ship	ping weigh	t	(kg)	1,303	1,303	1,338	1,303	1,303	1,338
_	rating weig		(kg)	1,331	1,331	1,373	1,331	1,331	1,373
_	er supply		(Note 3)	3-	phase 3-wire 380V 50/60F	Hz .	3-	-phase 3-wire 400V 50/60I	Hz
		or power supply desig	n <sup>(Note 4)</sup> (A)	50.5	72.2	81.8	50.5	72.2	81.8
		Nominal current		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)
Ee	Cooling	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)
Ctr.		Power factor	(%)	99	99	99	99	99	99
Electrical data		Nominal current		33.4(33.5)	48.7(49.5)	67.4(68.1)	31.7(31.9)	46.3 (47.0)	64.0[64.7]
data		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)
Note 1	Heating	COP	(111)	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 (9			99	99	99	99	99	99
IDI V	PLV (With a 5°C difference) (Note 5)			7.1	7.1	6.8	7.1	7.1	6.8
IFLV	Type	illerence)		7.1	7.1	Hermet		7.1	0.0
C	Model nan	mo.				RA792A4			
Compressor		ut×number of unit	(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
ores	Type of sta		s (KVV)	3.3 X 4	7.5 X 4		r starter	7.5 X 4	9.23 X 4
sor	Crankcase		(W)			37			
	Crankcase		(VV)				74A		
Com	pressor oil	Type Charge	(L)			2.0			
Con	denser coil -		(L)						
COIII	Type	- all side		Plate fin coil  Propeller fan					
	Air quantit	tv	(m³/min)			<u> </u>			
Fan	Type of sta		(111/111111)	1,050 (maximum)  Inverter starter					
		put x number of	units (kW)			1.0			
	Motor out		(kW)			1.0			
	Type	put	(KVV)				oump		
Pu	Flow contr	rol				Inve			
Pump	Maximum		(Note 6) (A)	6.1	6.1	5.6	3.1	3.1	2.8
Note 4	Maximum		(Note6) (kW)	2.0	2.0	1.8	2.0	2.0	1.8
Cool	er - water si	<u> </u>	(Note 7)	2.0	2.0	Brazed plate heat exchar		2.0	1.0
	Type	iuc				R41	<del>-</del>		
Refrigerant	R410A cha	rae	(kg)			8.6			
erar	Control	ige	(kg)			Electric expa			
	city contro	Letone	(Note 8) (%)	0,9~100	0.6~100	0, 5 ~100	0.9~100	0.6~100	0,5~100
_			(70)	0, 9 - 100	.,.	ntrol based on leaving wat	.,.	.,	0,5 - 100
Operation control					Microprocessor co			erature uniterence	
Defrost system				High proceure ewitch Over ev	rrent protection. Investor overlan	d protection (compressor, fan, pu	everse cycle system	oco protoction Microprocesses	entral (compressertime asserts
Protective device						u protection (compressor, ran, pu ow flow rate, discharge gas overhe			
Pip	≧ Cold/Hot water inlet (		(A)	50 flange		65 flange x 1 (JIS10K)		k 1 (JIS10K)	65 flange x 1 (JIS10K
Piping diameters		water outlet	(A)	50 flange >		65 flange x 1 (JIS10K)		(1 (JIS10K)	65 flange x 1 (JIS10K
meter	Coil drain		(A)	30 nange /	/	PT40 sc		(=:=:=:v	
	Control bo	x side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3
Ċ		Jiuc		65.4	69.7	72.9	65.4	69.7	72.9
ᇗ	Coil side (dB/			UJ.T	05.7	12.7	UJ.T	07.7	12.7
Sound level 9	Water pipi	na side	(dBA)	63.1	65.4	68.1	63.1	65.4	68.1

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

Cooling: 14℃ entering water (EWT), 7℃ leaving water (LWT), 35℃DB outdoor air (OAT)

Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.

Cooling: 12℃ entering water (EWT), 7℃ leaving water (LWT), 35℃DB outdoor air (OAT)

Capacity, power consumption, and EER tolerance values based on AHRIS50-590 "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 IPIX (Integrated Part Load Value, cooling) is based on the AHRIS50-590 "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.

_		_				Standar	d type		
					415V			440V	
				30HP	40HP	50HP	30HP	40HP	50HP
Mod	el (A single	module unit)		RUA-SP243H3-S	RUA-SP333H3-S	RUA-SP423H3-S	RUA-SP243H4-S	RUA-SP333H4-S	RUA-SP423H4-S
Cool	ing capacit	V	(Note 1)(kW)	85.0	118	150	85.0	118	150
	ing capacit		(Note 1)(kW)	85.0	118	150	85.0	118	150
	Unit color					Silky shade (I	Munsell 1Y8.5/0.5)		
Ε×		Height	(mm)			2,3	00		
Exterior	Dimensions		(mm)			1,0	180		
2	(Note 2)	Depth	(mm)			3,4	-00		
Ship	ping weigh	nt	(kg)	1,303	1,303	1,338	1,303	1,303	1,338
_	rating weig		(kg)	1,331	1,331	1,373	1,331	1,331	1,373
	er supply	· ·	(Note 3)		phase 3-wire 415V 50/60I			3-phase 3-wire 440V 60Hz	
		or power supply desig	ın <sup>(Note 4)</sup> (A)	50.5	72.2	81.8	50.5	72.2	81.8
		Nominal current		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)
Еe	Cooling	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)
Electrical data		Power factor	(%)	99	99	99	99	99	99
cal		Nominal curren		30.5(30.7)	44.6 (45.3)	61.7(62.4)	28.8 (29.0)	42.0(42.7)	58.2(58.8)
data		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)
Note 1)	Heating	СОР	, ,	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 (Note 5)			99	99	99	99	99	99
PLV	(With a 5℃ d			7.1	7.1	6.8	7.1	7.1	6.8
	Туре	erenee/		,	7.1	Hermet		7	0.0
6	Model nar	me				RA792A4			
Ďρ		ut×number of unit	s (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
(h)	Type of sta		3 (1(44)	3.5 X 1	7.5 % 1	Inverte		7.5 % 1	3.23 X 1
or Or	Crankcase		(W)			37			
		Туре	(,			RBI			
Com	pressor oil	Charge	(L)			2.0			
one	denser coil		(2)				în coil		
	Туре	an side		Propeller fan					
_	Air quanti	tv	(m³/min)			1,050 (m			
Fan	Type of sta	•	(11/11111)	Inverter starter					
		put x number of	units (kW)			1.0			
	Motor out		(kW)			1			
	Туре	put	(1117)			Line			
Pump	Flow conti	rol				Inve			
ф	Maximum		(Note 6) (A)	6.1	6.1	5.6	3.1	3.1	2.8
lote 4)	Maximum		(Note 6) (kW)	2.0	2.0	1.8	2.0	2.0	1.8
-ool	er - water s		(Note 7)	2.10	2.0	Brazed plate heat exchar		2.0	1.0
	Туре					R4	• •		
frig	R410A cha	irae	(kg)			8.6			
Refrigerant	Control	ii ge	(kg)			Electric exp			
	city contro	ol stans	(Note 8) (%)	0,9~100	0.6~100	0,5~100	0.9~100	0,6~100	0,5~100
_			(70)	0,5 100	.,	ntrol based on leaving wat	-/		0,5 100
Operation control					Wilcroprocessor cor		everse cycle system	erature unierence	
Defrost system				High-proceure quitch Over au	rrent protection. Invertor overless	d protection (compressor, fan, pu		asa protection Microprocessor of	ontrol (compressor time guard
rote	ective devic	ce				a protection (compressor, ran, pu ow flow rate, discharge gas overh			
Pip	Cold/Hot water inlet			50 flange		65 flange x 1 (JIS10K)		к 1 (JIS10К)	65 flange x 1 (JIS10)
Piping diameters		water outlet	(A) (A)	50 flange >		65 flange x 1 (JIS10K)		x 1 (JIS10K)	65 flange x 1 (JIS10)
mete	Coil drain		(A)	50 hange 7	(3.3.017)	PT40 sc		(3.3.5.0.)	1 - 3gc x 1 (31310
	Control bo	ny side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3
E.		on side		65.4	69.7	72.9	65.4	69.7	72.9
Control box side (dBA) Coil side (dBA)		ing side		63.1	65.4	68.1	63.1	65.4	68.1
(dBA Required products sold separately							UJ.1		

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

Cooling: 14℃ entering water (EWT), 7℃ leaving water (LWT), 35℃DB outdoor air (OAT)

Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.

Cooling: 12℃ entering water (EWT), 7℃ leaving water (LWT), 35℃DB outdoor air (OAT)

Capacity, power consumption, and EER tolerance values based on AHRIS50-590 "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 IPIX (Integrated Part Load Value, cooling) is based on the AHRIS50-590 "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.

# 30HPmodel 40HPmodel 50HPmodel

Heat pump

						High-E	ER type			
					380V			400V		
				30HP	40HP	50HP	30HP	40HP	50HP	
Mod	el (A single	module unit)		RUA-SP243HN1-S	RUA-SP333HN1-S	RUA-SP423HN1-S	RUA-SP243HN2-S	RUA-SP333HN2-S	RUA-SP423HN2-S	
Cool	ing capacity	у	(Note 1)(kW)	85.0	118	150	85.0	118	150	
Heat	ing capacit	у	(Note 1)(kW)	85.0	118	150	85.0	118	150	
	Unit color					Silky shade (I	Munsell 1Y8.5/0.5)			
Ext		Height	(mm)			2,3	800			
Exterior	Dimensions	Width	(mm)			1,0	080			
	(Note 2)	Depth	(mm)			3,4	100			
Ship	ping weigh	t	(kg)	1,313	1,313	1,348	1,313	1,313	1,348	
Ope	rating weigl	ht	(kg)	1,343	1,343	1,385	1,343	1,343	1,385	
	er supply		(Note 3)		-phase 3-wire 380V 50/60I			phase 3-wire 400V 50/60F		
Refere	ence current fo	r power supply desig		50.5	72.2	81.8	50.5	72.2	81.8	
		Nominal current		20.6 (20.9)	32.3 (33.2)	46.9 (48.5)	19.5 (19.9)	30.6 (31.6)	44.5 (46.1)	
ш	Cooling	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)	
lect	cooming	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)	
trica		Power factor	(%)	99	99	99	99	99	99	
Electrical data		Nominal current		33.4(33.5)	48.7 (49.5)	67.4(68.1)	31.7(31.9)	46.3 (47.0)	64.0 (64.7)	
	Heating	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)	
(Note 1)	ricuting	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℃ di	ifference)	(Note 5)	7.1	7.1	6.8	7.1	7.1	6.8	
	Туре					Hermet	ic rotary			
Compressor	Model nan	ne				RA792A4	IF-10UC1			
pre	Motor output×number of units		s (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	
988	Type of sta	Type of start				Inverte	r starter			
~	Crankcase	heater	(W)			37	x 4			
Com	pressor oil	Туре				RB:	74A			
COIII	pressor on	Charge	(L)			2.0	x 4			
Cond	denser coil -	air side				Plate	fin coil			
	Туре					Prope	ller fan			
Fan	Air quantit	y	(m/min)	1,050 (maximum)						
ח	Type of sta	ırt		Inverter starter						
		put x number of t		1.0 x 4						
Water spray system	Water spra	<u>,                                      </u>	(L/min)				3.6			
m rspra)			(Note 7) (MPa)			0	.2			
(Note 6)	Control sys			Conti	nuous water spraying wh	en outside temperature ex	ceeds setting and compre	essor capacity exceeds set	ting	
	Motor out	put	(kW)				.5			
P	Туре					Line <sub>l</sub>	oump			
Pump	Flow contr					1	erter		I	
(Note 4)	Maximum		(Note 8) (A)	3.1	3.1	2.8	3.1	3.1	2.8	
	Maximum	<u>'</u>	(Note 8)(kW)	2.0	2.0	1.8	2.0	2.0	1.8	
	er - water si	de	(Note 9)				nger (SUS316 equivalent)			
Refriger	Туре						10A			
gera	R410A cha	rge	(kg)				x 4			
	Control				I		ansion valve		T	
	acity contro	•	(Note 10) (%)	0,9~100	0,6~100	0,5~100	0,9~100	0,6~100	0,5∼100	
	ration contr	ol			Microprocessor cor	ntrol based on leaving wat		erature difference		
Defr	Defrost system						everse cycle system			
Prote	rotective device					d protection (compressor, fan, pu ow flow rate, discharge gas overhe				
Pipin	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)	
Piping diameters	Cold/Hot v	vater outlet	(A)	50 flange x	(1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange	( 1 (JIS10K)	65 flange x 1 (JIS10K)	
	Coil drain		(A)			PT40 sc	rew x 1			
	Control bo	x side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
nd lev	Coil side		(dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
8	\$			63.1	65.4	68.1	63.1	65.4	68.1	
(Note 1) Water piping side (df										

- (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 AHRIS50-590 "Water Chilling Unit."
  Note that the electrical data do not include projections of water pipe connections and power cable kit, (when installing optional parts)
  (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 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 AHRIS50-590 "Water Chilling Unit".
  (Note 6) The supply water quality may cause scales and other matter to adhere to the coil surface in frecessary, install a water softener on the supply water side. (Provided locally)
  (Note 8) 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)
  (Not

						High-El	ER type				
					415V			440V			
				30HP	40HP	50HP	30HP	40HP	50HP		
Mode	el (A single	module unit)		RUA-SP243HN3-S	RUA-SP333HN3-S	RUA-SP423HN3-S	RUA-SP243HN4-S	RUA-SP333HN4-S	RUA-SP423HN4-S		
Cooli	ng capacit	у	(Note 1)(kW)	85.0	118	150	85.0	118	150		
Heati	ing capacit	у	(Note 1)(kW)	85.0	118	150	85.0	118	150		
	Unit color					Silky shade (I	Munsell 1Y8.5/0.5)				
Exterior		Height	(mm)			2,3	300				
erio	Dimensions	Width	(mm)			1,0	080				
_	(Note 2)	Depth	(mm)			3,4	100				
Shipp	oing weigh	t	(kg)	1,313	1,313	1,348	1,313	1,313	1,348		
Эper	ating weigl	ht	(kg)	1,343	1,343	1,385	1,343	1,343	1,385		
	er supply		(Note 3)	3-	phase 3-wire 415V 50/60I	Hz		3-phase 3-wire 440V 60H	7		
≀efere	nce current fo	r power supply design		50.5	72.2	81.8	50.5	72.2	81.8		
		Nominal current		18.8(19.2)	29.5 (30.4)	42.9 (44.4)	17.7(18.1)	27.8 (28.7)	40.5 (41.9)		
_	Cooling	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)		
Electrical data	cooming	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)		
rica		Power factor	(%)	99	99	99	99	99	99		
ıl da		Nominal current		30.5 (30.7)	44.6 (45.3)	61.7(62.4)	28.8(29.0)	42.0 (42.7)	58.2 (58.8)		
	Heating	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)		
(Note 1)	ricuting	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		
PLV (	With a 5℃ di	ifference)	(Note 5)	7.1	7.1	6.8	7.1	7.1	6.8		
	Туре						ic rotary				
Model name  Motor output×number of units (kW  Type of start					Г	RA792A4		Г	T		
pre	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			
essor	Type of start Crankcase heater (W)						r starter				
_	Crankcase		(W)		37 x 4  RB74A						
Com	ompressor oil Type										
		Charge	(L)				x 4				
Cond	lenser coil -	air side					fin coil				
	Туре		(31.1)				ller fan				
Fan	Air quantit		(m/min)			1,050 (m					
_	Type of sta		. (114)	Inverter starter							
s =		put x number of u			1.0 x 4						
ਰ ਰ	Water spra		(L/min) (Note 7) (MPa)				3.6				
spray			(IVIPa)	Const		0			Maria		
Note 6)	Control sys		(LAM)	Conti	nuous water spraying who	en outside temperature ex		essor capacity exceeds set	ting		
	Motor out	put	(kW)				.5				
Pu	Type Flow contr	rol .				Line					
Pump	Maximum		(Note 8) (A)	3.1	3.1	2.8	3.1	3.1	2.8		
Note 4)	Maximum ii		(Note 8)(kW)	2.0	2.0	1.8	2.0	2.0	1.8		
	er - water si	•	(Note 9)	2.0	2.0		nger (SUS316 equivalent)	2.0	1.0		
		uc				· · · · · · · · · · · · · · · · · · ·	10A				
efrig	Type Cooler - wa Control	ater side	(kg)				x 4				
erar	Control	atel side	(kg)				ansion valve				
	city contro	l stens	(Note 10) (%)	0,9~100	0,6~100	0,5~100	0, 9 ~100	0,6~100	0.5~100		
			. (70)	0, 5 - 100	·	ntrol based on Leaving wa	· · · · · · · · · · · · · · · · · · ·	L	0,5 -100		
	Operation control Defrost system				microprocessor cor		everse cycle system	c.acare amerence			
· · · · · · · · · · · · · · · · · · ·				High-pressure switch Over cu	rrent protection. Inverter overloa	d protection (compressor, fan, pu		ise protection. Microprocessor co	entrol (compressor time quards		
rote	rotective device			freeze prote	ection, high water temp. cutout, l	ow flow rate, discharge gas overh	eat protection, low pressure cuto	ut, thermistor error, high water p	ressure error)		
Pipi	ි Cold/Hot water inlet (.		(A)	50 flange >		65 flange x 1 (JIS10K)	50 flange		65 flange x 1 (JIS10K)		
Piping diameters		vater outlet	(A)	50 flange >		65 flange x 1 (JIS10K)	50 flange >		65 flange x 1 (JIS10K)		
meters	Coil drain		(A)	321		PT40 sc		· · · · · · · · · · · · · · · · · · ·			
1.0	Control bo	x side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3		
50			(dBA)	65.4	69.7	72.9	65.4	69.7	72.9		
Sound le	Coil side							1	1		
ınd leve	Coil side Water pipi	ng side	(dBA)	63.1	65.4	68.1	63.1	65.4	68.1		

(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 AHRIS50-590 "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 IPUt (integrated Part Load Value, cooling) is based on the AHRIS50-590 "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 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

# 30HPmodel 40HPmodel 50HPmodel Cooling-only

					Standar	d type			
				380V			400V		
			30HP	40HP	50HP	30HP	40HP	50HP	
Mode	el (A single module unit)		RUA-SP243L1-S	RUA-SP333L1-S	RUA-SP423L1-S	RUA-SP243L2-S	RUA-SP333L2-S	RUA-SP423L2-S	
Coolir	ng capacity	(Note 1)(kW)	85.0	118	150	85.0	118	150	
	Unit color				Silky shade (I	Munsell 1Y8.5/0.5)			
Exterior	Height	(mm)			2,3	300			
erio	Dimensions Width	(mm)			1,0	080			
_	(Note 2) Depth	(mm)			3,4	100			
Shipp	oing weight	(kg)	1,232	1,232	1,254	1,232	1,232	1,254	
Opera	ating weight	(kg)	1,260	1,260	1,289	1,260	1,260	1,289	
Powe	r supply	(Note 3)	3-	phase 3-wire 380V 50/60I	Hz	3-	phase 3-wire 400V 50/60P	Hz	
Referer	nce current for power supply des	ign (A)	47.0	68.7	78.8	47.0	68.7	78.8	
Ee	Nominal curre	nt (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)	
Electrical data	Cooling 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)	
al da	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)	
(Note 1)	Power factor	(%)	99	99	99	99	99	99	
IPLV (V	With a 5°C difference)	(Note 4)	7.1	7.1	6.8	7.1	7.1	6.8	
	Туре		Hermetic rotary						
8	Model name				RA792A4	F-10UC1			
n pre	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	
Compressor	Type of start				Inverte	r starter	1		
= [	Crankcase heater (W)				37	x 4			
	., Type		RB74A						
Comp	Charge	(L)	2.0 x 4						
Conde	enser coil - air side		Plate fin coil						
I .	Туре		Propeller fan						
_ [	Air quantity	(m/min)			1,050 (m	aximum)			
Fan	Type of start				Inverte	r starter			
	Motor output x number o	funits (kW)			1.0	x 4			
Coole	er - water side	(Note 5)			Brazed plate heat excha	nger (SUS316 equivalent)			
Ref	Туре				R4°	10A			
Refrigerant	R410A charge	(kg)			8.2	x 4			
rant	Control				Electric exp	ansion valve			
Capac	city control steps	(Note 6) (%)	0,9~100	0,6~100	0,5~100	0,9~100	0,6~100	0,5~100	
Opera	ation control			Microprocessor co	ntrol based on leaving wa	ter temperature and temp	erature difference		
Defro	st system				Distributed rev	erse cycle system			
Prote	Protective device		High-pressure switch, Over cu		d protection (compressor, fan, pu discharge gas overheat protectio				
Pipi	Cold/Hot water inlet	(A)	50 flange	1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange	k 1 (JIS10K)	65 flange x 1 (JIS10K)	
Piping diameters	Cold/Hot water outlet	(A)	50 flange	1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange x 1 (JIS10K) 65 flange x 1 (JIS10K)			
neters	Coil drain	(A)		·	PT40 sc		·		
	Control box side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
Sound level	Coil side	(dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
(Note 7)	Water piping side	(dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
	ired products sold separat				Module cor	troller (MC)			

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

Cooling: 14℃ entering water (EWT), 7℃ leaving water (LWT), 35℃DB outdoor air (OAT)

Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.

Cooling: 12℃ entering water (EWT), 7℃ leaving water (LWT), 35℃DB/24℃WD outdoor air (OAT)

Capacity, power consumption, and EER tolerance values based on AHRIS50-590 "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 AHRIS50-590 "Water Chilling Unit\*.

(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.

						Standar	d type				
					415V			440V			
				30HP	40HP	50HP	30HP	40HP	50HP		
Mod	lel (A single	module unit)		RUA-SP243L3-S	RUA-SP333L3-S	RUA-SP423L3-S	RUA-SP243L4-S	RUA-SP333L4-S	RUA-SP423L4-S		
Cool	ing capacit	y (1	Note 1)(kW)	85.0	118	150	85.0	118	150		
	Unit color					Silky shade (I	Munsell 1Y8.5/0.5)				
Exterior		Height	(mm)			2,3	00				
erio	Dimensions (Note 2)		(mm)			1,0					
		Depth	(mm)			3,4			T		
<u> </u>	ping weigh		(kg)	1,232	1,232	1,254	1,232	1,232	1,254 1,289		
<u></u>	rating weig		(kg) Note 3)	1,260							
	er supply				3-phase 3-wire 415V 50/60Hz 3-phase 3-wire 440V 60						
	ence current fo	nr power supply design Nominal current	(A)	47.0 29.3 (30.1)	68.7 45.1 (46.6)	78.8	47.0 27.7(28.4)	68.7 42.5 (43.9)	78.8		
Electrical data		Nominal current	(kW)	29.3 (30.1)	32.1 (33.0)	65.0 (66.8) 46.3 (47.6)	27.7 (28.4)	42.5 (43.9) 32.1 (33.0)	61.3 (63.0) 46.3 (47.6)		
ical c	Cooling	FER	(KVV)	4.09[3.99]	3.68[3.58]	3.24[3.15]	4.09[3.99]	3.68 (3.58)	3.24(3.15)		
lata		Power factor	(%)	99	99	99	99	99	99		
(Note 1)	(With a 5°C d		Note 4)	7.1	7.1	6.8	7.1	7.1	6.8		
	Туре	merence)		7	7.1	Hermet	·	711	0.0		
0						RA792A4	,				
mpr		ut×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		
Compressor	Type of sta	ype of start				Inverte	r starter				
=	Crankcase	heater	(W)			37	x 4				
C	pressor oil	Туре		RB74A							
Con	ipressor on	Charge	(L)	2.0 x 4							
Con	denser coil -	- air side		Plate fin coil							
	Туре			Propeller fan							
Fan	Air quantit	,	(m/min)	1,050 (maximum)							
ם	Type of sta						r starter				
	1	put x number of uni	its (kW) Note 5)				x 4				
_	er - water s	ide "	Note 3)			· · · · · · · · · · · · · · · · · · ·	nger (SUS316 equivalent)				
Refrigerant	Type R410A cha	ran	(kg)			R41 8.2					
erar	Control	ige	(kg)			Electric expa					
	acity contro	l stens (I	Note 6) (%)	0.9~100	0.6~100	0, 5 ~100	0.9~100	0.6~100	0.5~100		
⊢÷	ration conti		(70)	0,5 100	.,	itrol based on leaving wat	.,.	.,	0,5 100		
<u> </u>	ost system						erse cycle system				
Protective device					d protection (compressor, fan, pu discharge gas overheat protection	mp), Crankcase heater, Open-pha					
Pipi.	Cold/Hot v	water inlet	(A)	50 flange	<u> </u>	65 flange x 1 (JIS10K)	50 flange		65 flange x 1 (JIS10K)		
iping diameters		water outlet	(A)	50 flange		65 flange x 1 (JIS10K)	50 flange		65 flange x 1 (JIS10K)		
meters	Coil drain		(A)	J.		PT40 sc					
	Control bo	x side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3		
Sound level	Coil side		(dBA)	65.4	69.7	72.9	65.4	69.7	72.9		
(Note 7	Water pipi	ng side	(dBA)	63.1	65.4	68.1	63.1	65.4	68.1		
Requ	uired produ	cts sold separately				Module con	troller (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 AHRIS50-590 "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 AHRIS50-590 "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.

# 30HPmodel 40HPmodel 50HPmodel Cooling-only

		_				High-Ef	ER 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	g capacity	y (N	Note 1)(kW)	85.0	118	150	85.0	118	150		
	nit color					Silky shade (I	Munsell 1Y8.5/0.5)				
E E		Height	(mm)			2,3	300				
Exterior	imensions	Width	(mm)			1,0	)80				
۲	(Note 2)	Depth	(mm)			3,4	100				
Shippin	ng weight	t	(kg)	1,242	1,242	1,264	1,242	1,242	1,264		
Operati	ing weigl	ht	(kg)	1,272	1,272	1,301	1,272	1,272	1,301		
Power s	supply	(N	Note 3)	3-phase 3-wire 380V 50/60Hz		3-	-phase 3-wire 400V 50/60F	-lz			
Reference	e current fo	r power supply design	(A)	47.0	68.7	78.8	47.0	68.7	78.8		
Elec		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)		
itri c	Cooling	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)		
Electrical data	cooming	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)		
نط (Note 1)		Power factor	(%)	99	99	99	99	99	99		
IPLV (Wi	ith a 5℃ di	ifference) (N	lote 4)	7.1	7.1	6.8	7.1	7.1	6.8		
	ype					Hermet	ic rotary				
M M T	1odel nan	ne				RA792A4	1F-10UC1				
pre M	lotor outp	ut×number of units	(kW)	5.5 x 4							
SS Ty	ype of sta	rt				Inverte	r starter				
Cr	rankcase	heater	(W)				x 4				
Compre	essor oil	Туре					74A				
compre	C3301 011	Charge	(L)			2.0	x 4				
	nser coil -	air side			Plate fin coil						
I <u>⊢</u>	ype			Propeller fan							
w <u> </u>	ir quantit	•	(m/min)		1,050 (maximum)						
1 1 1	ype of sta						r starter				
		out x number of unit					x 4				
# # I		y volume	(L/min)				3.6				
a & Sr			ote 6)(MPa)				.2				
	ontrol sys		Note 7)	Conti	nuous water spraying whe	en outside temperature ex		essor capacity exceeds set	ting		
	- water si	de "	vote /)			· · · · · · · · · · · · · · · · · · ·	nger (SUS316 equivalent)				
ef	ype		4. \				10A				
<del>ਨੋ</del>  −	410A chai	rge	(kg)				x 4				
	ontrol	L - t (N	Note 8) (%)	0.0.100	0.6.100		ansion valve	0.6.100	0.5.100		
	ty contro		1016 07 (%)	0,9~100	0,6~100	0,5~100	0,9~100	0,6~100	0,5~100		
<u> </u>	ion contr	01			wiicroprocessor co	ntrol based on leaving wat		erature difference			
Dellost	t system			High proceure quitch Over an	rrent protection. Inverter over-less	d protection (compressor, fan, pu	everse cycle system	aco protection Microprocesses	introl (compressor time queste		
Protect	tive devic	e		riigii-pressure switch, over cu		a protection (compressor, ran, pu discharge gas overheat protectio					
를: Ca	old/Hot v	vater inlet	(A)	50 flange		65 flange x 1 (JIS10K)	50 flange		65 flange x 1 (JIS10K)		
- B		vater outlet	(A)	50 flange	<u> </u>	65 flange x 1 (JIS10K)	50 flange	<u> </u>	65 flange x 1 (JIS10K)		
meter Co	oil drain		(A)		,	PT40 sc		,	J. J. C. 71519		
	ontrol bo	x side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3		
- 5 H	oil side		(dBA)	65.4	69.7	72.9	65.4	69.7	72.9		
(Note 9) W	/ater pipii	ng side	(dBA)	63.1	65.4	68.1	63.1	65.4	68.1		
		cts sold separately				Module con					

(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 AHRIS50-590 "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. (wPen 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 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 AHRIS50-590 "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-El	ER type				
					415V			440V			
				30HP	40HP	50HP	30HP	40HP	50HP		
Mod	el (A single	module unit)		RUA-SP243LN3-S	RUA-SP333LN3-S	RUA-SP423LN3-S	RUA-SP243LN4-S	RUA-SP333LN4-S	RUA-SP423LN4-S		
Cool	ing capacit	Y	(Note 1)(kW)	85.0	118	150	85.0	118	150		
	Unit color	,	, ,			Silky shade (I	Munsell 1Y8.5/0.5)		I.		
EX		Height	(mm)			2,3	300				
Exterior	Dimensions	Width	(mm)			1,0	080				
¥	(Note 2)	Depth	(mm)	3,400							
Ship	ping weigh	it	(kg)	1,242	1,242	1,264	1,242	1,242	1,264		
Ope	rating weig	ht	(kg)	1,272 1,272 1,301		1,272	1,272	1,301			
Pow	er supply		(Note 3)	3-			3-phase 3-wire 440V 60Hz	<u>z</u>			
Refere	ence current fo	or power supply desig	n (A)	47.0	68.7	78.8	47.0	68.7	78.8		
Elec		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)		
Electrical data	Cooling	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)		
al dat	Cooling	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)		
ි (Note 1)		Power factor	(%)	99	99	99	99	99	99		
IPLV	(With a 5℃ d	lifference)	(Note 4)	7.1	7.1	6.8	7.1	7.1	6.8		
_	Туре					Hermet	ic rotary				
Compressor	Model nar	ne				RA792A4	4F-10UC1				
pre	Motor outp	ut×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		
9889	Type of sta	art				Inverte	r starter				
_	Crankcase	heater	(W)			37	x 4				
Com	pressor oil	Туре			RB74A						
COIII	pressor on	Charge	(L)	2.0 x 4							
Cond	denser coil	- air side		Plate fin coil							
	Туре				Propeller fan						
Fan	Air quanti	ty	(m/min)			1,050 (m	aximum)				
ם	Type of sta	art				Inverte	r starter				
		put x number of u				1.0	x 4				
Water spray system	Water spra	•	(L/min)				3.6				
mspra	Supply wa		(Note 6) (MPa)				.2				
(Note 5)	Control sy			Conti	nuous water spraying whe	en outside temperature ex	ceeds setting and compre	essor capacity exceeds set	ting		
	er - water s	ide	(Note 7)			· · · · · · · · · · · · · · · · · · ·	nger (SUS316 equivalent)				
Refr	Туре						10A				
Refrigerant	R410A cha	rge	(kg)				x 4				
	Control					'	ansion valve	T	1		
	city contro	· ·	(Note 8) (%)	0,9~100	0,6∼100	0,5~100	0,9~100	0,6~100	0,5~100		
	ration conti	rol			Microprocessor co	ntrol based on leaving wa		perature difference			
Defr	ost system						everse cycle system				
Protective device				d protection (compressor, fan, pu discharge gas overheat protectio							
Piping	Cold/Hot v	water inlet	(A)	50 flange	c 1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange	x 1 (JIS10K)	65 flange x 1 (JIS10K)		
iping diameters	Cold/Hot v	water outlet	(A)	50 flange	(1 (JIS10K)	65 flange x 1 (JIS10K)		x 1 (JIS10K)	65 flange x 1 (JIS10K)		
	Coil drain		(A)			PT40 sc	rew x 1				
Sour	Control bo	ox side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3		
Sound level	Coil side		(dBA)	65.4	69.7	72.9	65.4	69.7	72.9		
(Note 9)	Water pipi	ing side	(dBA)	63.1	65.4	68.1	63.1	65.4	68.1		
Requ	uired produ	cts sold separate	ly			Module con	troller (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 AHRIS50-590 "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 AHRIS50-590 "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.

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# 30HPmodel 40HPmodel 50HPmodel Heat pump

		_				Standar	d type					
					380V			400V				
				30HP	40HP	50HP	30HP	40HP	50HP			
Mod	el (A single	module unit)		RUA-SP243HL1-S	RUA-SP333HL1-S	RUA-SP423HL1-S	RUA-SP243HL2-S	RUA-SP333HL2-S	RUA-SP423HL2-S			
Cool	ing capacit	у	(Note 1)(kW)	85.0	118	150	85.0	118	150			
Heat	ing capacit	у	(Note 1)(kW)	85.0	118	150	85.0	118	150			
	Unit color	-				Silky shade (Mu	unsell 1Y8.5/0.5)	•				
EX		Height	(mm)			2,3	800					
Exterior	Dimensions	Width	(mm)		1,080							
~	(Note 2)	Depth	(mm)			3,4	100					
Ship	ping weigh	t	(kg)	1,262	1,262 1,262 1,284 1,262		1,262	1,284				
Oper	rating weig	ht	(kg)	1,290	1,290	1,319	1,290	1,290	1,319			
Powe	er supply		(Note 3)	3-	3-phase 3-wire 380V 50/60Hz 3-phase 3-wire 400V 50/60Hz							
Refere	ence current fo	r power supply desig	n (A)	47.0	68.7	78.8	47.0	68.7	78.8			
		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)			
	Cooling	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)			
Electrical data	Cooming	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)			
<u>E</u>		Power factor	(%)	99	99	99	99	99	99			
al d		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)			
	Heating	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)			
(Note 1)	neating	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 (	PLV (With a 5°C difference) (Note 4)			7.1	7.1	6.8	7.1	7.1	6.8			
	Туре					Hermet	ic rotary					
S	Model nan	ne				RA792A4	F-10UC1					
ngre	Motor outp	ut×number of units	s (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			
Compressor	Type of sta	ırt			Inverter starter							
_	Crankcase	heater	(W)	37 x 4								
C = ===	pressor oil	Туре				RB:	74A					
Com	pressor on	Charge	(L)	2.0 x 4								
Conc	denser coil -	air side		Plate fin coil								
	Туре			Propeller fan								
Fan	Air quantit	У	(m/min)			1,050 (m	aximum)					
Б	Type of sta	ırt				Inverte	r starter					
	Motor out	put x number of t				1.0	x 4					
	er - water si	de	(Note 5)			Brazed plate heat excha	nger (SUS316 equivalent)					
Refr	Туре					R4°	10A					
Refrigerant	R410A cha	rge	(kg)			8.6	x 4					
an a	Control					Electric exp						
<u> </u>	city contro	•	(Note 6) (%)	0,9~100	0,6~100	0,5~100	0,9~100	0,6∼100	0,5∼100			
Oper	ration contr	ol			Microprocessor cor	ntrol based on leaving wat	er temperature and temp	erature difference				
Defr	ost system						everse cycle system					
Prote	Protective device				d protection (compressor, fan, pu ow flow rate, discharge gas overhe							
Pipin	Cold/Hot v	vater inlet	(A)	50 flange	x 1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange	x 1 (JIS10K)	65 flange x 1 (JIS10K)			
<sup>o</sup> iping diame ters	Cold/Hot v	vater outlet	(A)	50 flange	x 1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange	x 1 (JIS10K)	65 flange x 1 (JIS10K)			
ne ters	Coil drain (A		(A)			PT40 sc	rew x 1					
Soul	Control bo	x side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3			
Sound level	Coil side		(dBA)	65.4	69.7	72.9	65.4	69.7	72.9			
<u>≨</u> (Note 7)	Water pipi	ng side	(dBA)	63.1	65.4	68.1	63.1	65.4	68.1			
Dogu	ired produ	cts sold separate	ly			Module con	troller (MC)					

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

Cooling: 14℃ entering water (EWT), 7℃ leaving water (LWT), 35℃DB outdoor air (OAT)

Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.

Cooling: 12℃ entering water (EWT), 7℃ leaving water (LWT), 35℃DB/24℃WD 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.

						Standa	rd type				
					415V			440V			
				30HP	40HP	50HP	30HP	40HP	50HP		
Mod	el (A single	module unit)		RUA-SP243HL3-S	RUA-SP333HL3-S	RUA-SP423HL3-S	RUA-SP243HL4-S	RUA-SP333HL4-S	RUA-SP423HL4-S		
Cooli	ing capacit	у	(Note 1)(kW)	85.0	118	150	85.0	118	150		
Heat	ing capacit	y	(Note 1)(kW)	85.0	118	150	85.0	118	150		
	Unit color	·				Silky shade (Mı	unsell 1Y8.5/0.5)				
Exi		Height	(mm)			2,3	300				
Exterior	Dimensions	Width	(mm)			1,0	)80				
×	(Note 2)	Depth	(mm)		3,400						
Ship	ping weigh	t	(kg)	1,262 1,262		1,284	1,262	1,262	1,284		
Oper	ating weig	ht	(kg)	1,290	1,290	1,319	1,290	1,290	1,319		
Powe	er supply		(Note 3)	3-	3-phase 3-wire 415V 50/60Hz 3-phase 3-wire 440V 60						
Refere	nce current fo	or power supply desig	n (A)	47.0	68.7	78.8	47.0	68.7	78.8		
		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)		
ш	Cooling	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)		
Electrical data	Cooling	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)		
rica		Power factor	(%)	99	99	99	99	99	99		
l da		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)		
	I I a setim m	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)		
(Note 1)	Heating	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 (	IPLV (With a 5°C difference) (Note 4)			7.1	7.1	6.8	7.1	7.1	6.8		
_	Туре					Hermet	ic rotary		•		
Con	Model nar	Model name				RA792A4	4F-10UC1				
npre	Motor outp	ut×number of unit	s (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		
Compressor	Type of sta	art				Inverte	r starter				
=	Crankcase	heater	(W)	37 x 4							
C = ===	pressor oil	Туре				RB	74A				
Com	pressor on	Charge	(L)	2.0 x 4							
Conc	denser coil	- air side		Plate fin coil							
	Туре			Propeller fan							
ZP.	Air quanti	ty	(m/min)			1,050 (m	aximum)				
Fan	Type of sta	art				Inverte	r starter				
	Motor out	put x number of ι				1.0	x 4				
Cool	er - water s	ide	(Note 5)			Brazed plate heat excha	nger (SUS316 equivalent)				
Refr	Туре					R4	10A				
	R410A cha	rge	(kg)			8.6	x 4				
	Control						ansion valve				
<u> </u>	city contro		(Note 6) (%)	0,9~100	0,6~100	0,5∼100	0,9~100	0,6~100	0,5∼100		
	ation cont	rol			Microprocessor co	ntrol based on leaving wa	<u> </u>	perature difference			
Defro	ost system						everse cycle system				
Protective device								ase protection, Microprocessor co ut, thermistor error, high water p			
Pipin	Cold/Hot	water inlet	(A)	50 flange	k 1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange	x 1 (JIS10K)	65 flange x 1 (JIS10K)		
iping diameters	Cold/Hot	water outlet	(A)	50 flange	k 1 (JIS10K)	65 flange x 1 (JIS10K)	50 flange	x 1 (JIS10K)	65 flange x 1 (JIS10K)		
neters	Coil drain		(A)			PT40 sc	rew x 1				
Soul	Control bo	ox side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3		
Sound level	Coil side		(dBA)	65.4	69.7	72.9	65.4	69.7	72.9		
(Note 7)	Water pipi	ng side	(dBA)	63.1	65.4	68.1	63.1	65.4	68.1		
Regu	ired produ	cts sold separate	ly			Module cor	ntroller (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 AHRIS50-590 "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 AHRIS50-590 "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.

# 30HPmodel 40HPmodel 50HPmodel

Heat pump

						High-E	ER 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	g capacit	/	(Note 1)(kW)	85.0	118	150	85.0	118	150	
Heating	g capacit	у	(Note 1)(kW)	85.0	118	150	85.0	118	150	
U	nit color					Silky shade (I	Munsell 1Y8.5/0.5)			
Ext		Height	(mm)			2,3	300			
Exterior	imensions	Width	(mm)			1,0	080			
r	(Note 2)	Depth	(mm)				100			
Shippir	ng weigh	t	(kg)	1,272	1,272	1,293	1,272 1,302	1,272	1,293	
	ing weig	nt	(kg)	1,302				1,302	1,331	
Power			(Note 3)	3-phase 3-wire 380V 50/60Hz				-phase 3-wire 400V 50/60I		
Referenc	e current fo	r power supply desig		47.0	68.7	78.8	47.0	68.7	78.8	
		Nominal current		20.6 (20.9)	32.3 (33.2)	46.9 (48.5)	19.5 (19.9)	30.6(31.6)	44.5 (46.1)	
m (	Cooling	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)	
Electrical data		EER	(a.)	6.39 (6.20)	5.65 (5.46)	4.92 (4.75)	6.39(6.20)	5.65 (5.46)	4.92(4.75)	
rica		Power factor	(%)	99	99	99	99	99	99	
l da		Nominal current		33.4(33.5)	48.7(49.5)	67.4(68.1)	31.7(31.9)	46.3 (47.0)	64.0 (64.7)	
답 (Note 1)	Heating	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)	
(NOTE I)	_	COP	(0/)	3.94(3.90)	3.72(3.66)	3.41 (3.39)	3.94(3.90)	3.72(3.66)	3.41 (3.39)	
IDING		Power factor	(%) (Note 4)	99	99	99	99	99	99	
IF LV (With a 3 C difference)			(NOTE T)	7.1	7.1	6.8	7.1	7.1	6.8	
S 17	Type Model name					RA792A	ic rotary			
J M			(1.147)	5.54	754			754	0.254	
10		ut×number of unit	s (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	
	ype of sta rankcase		(W)				r starter			
CI	Idlikcase	Туре	(00)	37 x 4 RB74A						
Compr	essor oil	Charge	(L)	2.0 x 4						
Conde	nser coil -		(L)	2.0 x 4 Plate fin coil						
	уре	un side		Propeller fan						
Λ	ir quantit	v	(m³/min)			1,050 (m				
9.	ype of sta		(,)				r starter			
I —		out x number of u	units (kW)				x 4			
		y volume	(L/min)			13	3.6			
Water sprayes system (Note )	upply wa	ter pressure	(Note 6) (MPa)			0	.2			
(Note 5) C	ontrol sy	stem		Conti	nuous water spraying whe	en outside temperature ex	ceeds setting and compre	essor capacity exceeds set	ting	
	- water si	de	(Note 7)			Brazed plate heat excha	nger (SUS316 equivalent)			
Ref Ty	ype					R4	10A			
Refrigerant	410A cha	rge	(kg)			8.6	x 4			
ant C	ontrol					Electric exp	ansion valve			
Capacit	ty contro	steps	(Note 8) (%)	0,9~100	0,6~100	0,5~100	0,9~100	0,6~100	0,5~100	
	ion contr	ol			Microprocessor co	ntrol based on leaving wa	ter temperature and temp	erature difference		
Defrost	t system						everse cycle system			
Protective device				d protection (compressor, fan, pu ow flow rate, discharge gas overho						
Pig. Co		vater inlet	(A)		(1 (JIS10K)	65 flange x 1 (JIS10K)		x 1 (JIS10K)	65 flange x 1 (JIS10K)	
Piping diameters	old/Hot v	vater outlet	(A)	50 flange	(1 (JIS10K)	65 flange x 1 (JIS10K)		x 1 (JIS10K)	65 flange x 1 (JIS10K)	
eter Co	oil drain		(A)			PT40 sc	rew x 1			
Se Co	ontrol bo	x side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
d eve	ontrol bo oil side /ater pipi		(dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
			(dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
Require	ed produ	cts sold separate	ly			Module con	troller (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 AHRIS50-590 "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 AHRIS50-590 "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 6) Adjust the flow rate to become close to this supply water pressure with the mandal nor sega-(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-E	ER type			
					415V			440V		
				30HP	40HP	50HP	30HP	40HP	50HP	
Mode	el (A single r	module unit)		RUA-SP243HLN3-S	RUA-SP333HLN3-S	RUA-SP423HLN3-S	RUA-SP243HLN4-S	RUA-SP333HLN4-S	RUA-SP423HLN4-S	
Cool	ing capacit	у	(Note 1) (kW)	85.0	118	150	85.0	118	150	
Heat	ing capacit	у	(Note 1) (kW)	85.0	118	150	85.0	118	150	
	Unit color					Silky shade (I	Munsell 1Y8.5/0.5)			
Exte		Height	(mm)			2,3	300			
Exterior	Dimensions (Note 2)	Width	(mm)				080			
	(Note 2)	Depth	(mm)				100			
	ping weigh		(kg)	1,272	1,272	1,293	1,272	1,272	1,293	
_	rating weig	ht	(kg)	1,302	1,302	1,331	1,302	1,302	1,331	
	er supply		(Note 3)	3-phase 3-wire 415V 50/60Hz		17.0	3-phase 3-wire 440V 60Hz			
Refere	ence current fo	or power supply desig		47.0	68.7	78.8	47.0	68.7	78.8	
1		Nominal current		18.8(19.2)	29.5 (30.4)	42.9(44.4)	17.7(18.1)	27.8(28.7)	40.5 (41.9)	
Ξ.	Cooling	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)	
Electrical data		EER	(0/)	6.39(6.20)	5.65 (5.46)	4.92(4.75)	6.39(6.20)	5.65 (5.46)	4.92 (4.75)	
ical		Power factor	(%)	99	99	99	99	99	99	
dat		Nominal current		30.5 (30.7)	44.6(45.3)	61.7(62.4)	28.8(29.0)	42.0 (42.7)	58.2 (58.8)	
עם (Note 1)	Heating	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)	
			(0/)	3.94(3.90)	3.72(3.66)	3.41 (3.39)	3.94(3.90)	3.72 (3.66)	3.41 (3.39)	
IDLA	(M/H - 5% -	Power factor	(%) (Note 4)	99	99	99	99	99	99	
IPLV (	IF LV (WILLIAD C dillerence)			7.1	7.1	6.8	7.1	7.1	6.8	
6	Type	Model name					ic rotary 4F-10UC1			
mp	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	
Compressor	Type of sta		S (KVV)	3.3 X 4	7.5 X 4		r starter	7.5 X 4	9.25 X 4	
Q.	Crankcase		(W)							
	Crankcase	Type (w)		37 x 4 RB74A						
Com	pressor oil	Charge	(L)							
Conc	denser coil		(L)							
Come	Туре	un siac		Plate fin coil Propeller fan						
_	Air quanti	tv	(m/min)			1,050 (m				
Fan	Type of sta		(11111111)				r starter			
		put x number of ı	units (kW)				x 4			
Sys	Water spra	•	(L/min)				3.6			
Water spray system	Supply wa	ter pressure	(Note 6) (MPa)			0	.2			
(Note 5)	Control sy	stem		Conti	nuous water spraying whe	en outside temperature ex	ceeds setting and compre	essor capacity exceeds set	ting	
Cool	er - water s	ide	(Note 7)			Brazed plate heat excha	nger (SUS316 equivalent)		-	
Ref	Туре					R4°	10A			
Refrigerant	R410A cha	rge	(kg)			8.6	x 4			
ant	Control					Electric exp	ansion valve			
Capa	city contro	l steps	(Note 8) (%)	0,9~100	0,6~100	0,5∼100	0,9~100	0,6~100	0,5~100	
Oper	ration conti	rol			Microprocessor co	ntrol based on leaving wat	ter temperature and temp	erature difference		
Defr	ost system						everse cycle system			
Protective device						ase protection, Microprocessor co ut, thermistor error, high water pr				
Pipin	Cold/Hot	water inlet	(A)	50 flange		65 flange x 1 (JIS10K)		x 1 (JIS10K)	65 flange x 1 (JIS10K)	
Piping diameters	Cold/Hot	water outlet	(A)	50 flange	(1 (JIS10K)	65 flange x 1 (JIS10K)		x 1 (JIS10K)	65 flange x 1 (JIS10K)	
neters	Coil drain		(A)			PT40 sc	rew x 1			
Sou	Control bo	ox side	(dBA)	61.6	67.1	68.3	61.6	67.1	68.3	
Sound level	Coil side		(dBA)	65.4	69.7	72.9	65.4	69.7	72.9	
(Note 9)	Water pipi	ng side	(dBA)	63.1	65.4	68.1	63.1	65.4	68.1	
Regu	ired produ	cts sold separate	ly			Module cont	troller (MC)			

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

Cooling: 14℃ entering water (EWT), 7℃ leaving water (LWT), 35℃DB outdoor air (OAT)

Numbers in brackets indicate values for the capacity listed above under the conditions indicated below.

Cooling: 12℃ entering water (EWT), 7℃ leaving water (LWT), 35℃DB/24℃WD 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 6) Adjust the flow rate to become close to this supply water pressure with the mandarinor aspective (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		
Mod			RUA-SP243HN1-S	RUA-SP243HN1-S x 16 units	Tail numbers indicate number of module units.		
Cooli	poling capacity (Note 1)(k eating capacity (Note 1)(k		85.0	1,360			
_			85.0	1,360	See General Charts or (single unit value) x (number of module units in set)		
	Unit color	,	Silky shade (Mu	nsell 1Y8.5/0.5)	_		
Ϋ́		Height (mm)	2,300	2,300			
Exterior	Dimensions	Width (mm)	1,080	18,030	See General Charts		
윽	0.1010 =>	Depth (mm)	3,400	3,400			
Shipi	oing weigh		1,271	20,336	(Single unit value) x (number of module units in set)		
	ating weig		1,301	20,816	(Single unit value) x (number of module units in set)		
_	er supply	(Note 3)	3-phase 3-wire	,	_		
_		r power supply design (Note 4)	101	101 x 16	(Single unit value) x (number of module units in set)		
Herere		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)		
Electrical data	Cooling	EER (KVV)	6.39(6.20)	6.39(6.20)	(Single unit value) x (number of module units in set)		
<u>₽</u> .		Power factor (%)	99	99	_		
ca					(Single unit value) x (number of module units in set)		
dat			33.4(33.6)	1,013 (1,019)			
(Note 1)	Heating	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)	_		
IDLY		Power factor (%) ifference) (Note 5)	99	99			
IPLV (	With a 5°C d	interence) (Note 3)	13 Hermet		_		
5	Type Model nan	^^	RA792A4		_		
Compressor		ut×number of units (kW)		5.5 x 64	(Cinale unit value) v (number of mondule unite in cot)		
ores	Type of sta		5.5 x 4		(Single unit value) x (number of module units in set)		
sor				r starter			
	Crankcase		37 x 4	37 x 64	(Single unit value) x (number of module units in set)		
Com	nressor ou	71		4AF	-		
_		Charge (L)	2.0 x 4	2.0 x 64	(Single unit value) x (number of module units in set)		
Conc	lenser coil -	- air side	Plate f		_		
	Туре		Propel		_		
Fan	Air quantit	•	1,050 (maximum)	16,800 (maximum)	(Single unit value) x (number of module units in set)		
-	Type of sta			_			
		out x number of units (kW)	1.0 x 4	1.0 x 64	(Single unit value) x (number of module units in set)		
Wate syste	Water spra		13.6 x 4	13.6 x 64	(Single unit value) x (number of module units in set)		
Water spray system		ter pressure (Note 7) (MPa)	0.2	0.2	_		
(Note 6)	Control sys		. , , ,	exceeds setting and compressor capacity exceeds sett	_		
	Motor out	put (kW)	1.5	1.5 x 16	(Single unit value) x (number of module units in set)		
Pump	Туре		Line p	oump	_		
l 🗒	Flow contr	ol	Inve	erter	_		
(Note 4)	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)		
	er - water si	de (Note 9)	Brazed plate heat exchar	nger (SUS316 equivalent)	_		
Ref	Туре		R41	0A	_		
Refrigerant	R410A cha	rge (kg)	8.6 x 4	8.6 x 64	(Single unit value) x (number of module units in set)		
ant	Control		Electric expa	ansion valve	_		
Capa	city contro	l steps (Note 10) (%)	0,9~	~100	_		
Oper	ation contr	ol	Microprocessor control based on leaving wa	ter temperature and temperature difference	_		
Defro	ost system		Distributed reve	rse cycle system	_		
			High-pressure switch. Over current protection, Inv	erter overload protection (compressor, fan, pump),			
Prote	Protective device		Crankcase heater, Open-phase protection, Mic freeze protection, high water temp. cutout, lov low pressure cutout, thermistor	croprocessor control (compressor time guards, w flow rate, discharge gas overheat protection,	_		
Pipir	Cold/Hot v	vater inlet (A)	50 flange (JIS10K)	50 flange (JIS10K) x 16			
Piping diameters		vater outlet (A)	50 flange (JIS10K)	50 flange (JIS10K) x 16	(Single unit value) x (number of module units in set)		
meters	Coil drain	(A)	PT40 screw	PT40 screw x 16	*Each module unit has one connection port		
	Control bo		61.6	69.4			
Sound leve   11)	Coil side	(dBA)	65.4	68.1	See General Charts		
(Note 11)	Water pipi		63.1	71.0			
		cts sold separately		iclude external sensor x 2) (Note 12)	_		
	za produ			CALCANIA SCASOT A Z			

- (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 AHRIS50-590 "Water Chilling Unit."

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

- 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 AHRIS50-590 "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

	Cooling capacity	Heating capacity	Dimensions (mm)		Sound level (dBA)	(Note 4)
(Note 1)	(kW)	(kW) (Note 2)	H×W×D (Note 3)	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

	Cooling capacity	Heating capacity	Dimensions (mm)		Sound level (dBA)	(Note 4)
(Note 1)	(kW)	(kW) (Note 2)	H×W×D (Note 3)	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

	Cooling capacity	Heating capacity	Dimensions (mm)		Sound level (dBA)	(Note 4)
(Note 1)	(kW)	(kW) (Note 2)	H×W×D (Note 3)	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		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	406	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		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	564	224
RUA-SP333(H)(N)# x 9 units	2,175	75 ~ 3,045	50.	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		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	717	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

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.

#### Pumpless

## 30HP model

	Standard flow rate •	Water pressure loss (Note 2)	Flow rate range	Minimum water loop volume	In-unit water volume
(Note 1)	(L/min)	(kPa)	(L/min) (Note 5)	(L) (Note 3 · 4 · 5)	(L)
RUA-SP243(H)L(N)#	174		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	31.5	975 ~ 1,949	3,248	224
RUA-SP243(H)L(N)# x 9 units	1,566	31.3	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

	Standard flow rate •	Water pressure loss (Note 2)	Flow rate range	Minimum water loop volume	In-unit water volume
(Note 1)	(L/min)	(kPa)	(L/min) (Note 5)	(L) (Note 3 • 4 • 5)	(L)
RUA-SP333(H)L(N)#	242		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	57.9	1,353 ~ 2,706	4,512	224
RUA-SP333(H)L(N)# x 9 units	2,175	37.5	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

	Standard flow rate •	Water pressure loss (Note 2)	Flow rate range	Minimum water loop volume	In-unit water volume
(Note 1)	(L/min)	(kPa)	(L/min) (Note 5)	(L) (Note 3 • 4 • 5)	(L)
RUA-SP423(H)L(N)#	307		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	68.2	1,720 ~ 3,440	5,736	280
RUA-SP423(H)L(N)# x 9 units	2,764	00.2	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				Outdo	or air t	emner:	ature (°	C) (DR)	
temperature (°C)	ltem		15	20	25	30	35	40	43
( C)	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
4	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
	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
7	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
	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
9	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
	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
12	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
	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
15	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
	Cooling capacity	(kW)	136	131	125	118	111	103	98.8
20	Nominal input	(kW)	11.1	13.7	16.3	18.8	21.3	23.7	25.2
20	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
	Cooling capacity	(kW)	136	131	125	118	111	103	98.8
25	Nominal input	(kW)	11.1	13.7	16.3	18.8	21.3	23.7	25.2
25	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
	Cooling capacity	(kW)	136	131	125	118	111	103	98.8
30	Nominal input	(kW)	11.1	13.7	16.3	18.8	21.3	23.7	25.2
30	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				Out	door air	tempera	ature (°C	) (DB)	
temperature (°C)	Item		-15	-10	-5	0	4	7	15
	Heating capacity	(kW)	51.4	54.9	63.8	73.3	81.8	89.3	112
25	Nominal input	(kW)	14.2	14.2	14.2	14.0	13.8	13.4	12.0
25	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
	Heating capacity	(kW)	49.2	54.1	62.2	71.9	80.8	88.4	112
30	Nominal input	(kW)	15.1	15.4	15.6	15.7	15.6	15.4	14.4
30	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
	Heating capacity	(kW)	47.0	52.5	55.3	70.7	80.0	87.3	110
35	Nominal input	(kW)	16.1	16.6	17.1	17.4	17.5	17.5	16.8
35	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
	Heating capacity	(kW)	45.2	51.0	55.2	69.9	78.7	86.3	109
40	Nominal input	(kW)	17.1	17.8	18.6	19.1	19.4	19.5	19.2
40	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
	Heating capacity	(kW)	43.5	49.5	55.4	68.5	77.7	85.0	107
45	Nominal input	(kW)	18.1	19.0	20.0	20.9	21.3	21.6	21.7
45	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	33.4	33.3
	Heating capacity	(kW)		48.1	55.1	67.5	76.6	83.5	105
50	Nominal input	(kW)		20.3	21.6	22.6	23.2	23.6	24.2
50	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
	Heating capacity	(kW)			55.5	66.3	74.9	81.9	102
55	Nominal input	(kW)			23.1	24.4	25.2	25.7	26.7
22	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: 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	ltem			Outdo	or air t	emper	ature (°	C) (DB)	
(°C)	item		15	20	25	30	35	40	43
	Cooling capacity	(kW)	132	126	120	113	106	99.4	95.4
4	Nominal input	(kW)	20.6	23.2	25.9	28.6	31.3	34.0	35.6
4	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
	Cooling capacity	(kW)	146	140	133	126	118	111	106
7	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	49.3	53.7	56.4
	Cooling capacity	(kW)	156	150	142	134	126	118	113
9	Nominal input	(kW)	20.8	23.8	26.7	29.6	32.6	35.5	37.3
9	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
	Cooling capacity	(kW)	173	164	156	148	139	130	124
12	Nominal input	(kW)	20.9	24.0	27.1	30.1	33.2	36.3	38.1
12	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
	Cooling capacity	(kW)	187	178	169	159	149	140	134
15	Nominal input	(kW)	21.0	24.2	27.4	30.5	33.7	36.8	38.7
15	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
	Cooling capacity	(kW)	194	185	175	165	155	145	139
20	Nominal input	(kW)	21.0	24.3	27.5	30.7	33.9	37.1	39.0
20	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
	Cooling capacity	(kW)	194	185	175	165	155	145	139
25	Nominal input	(kW)	21.0	24.3	27.5	30.7	33.9	37.0	38.9
25	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
	Cooling capacity	(kW)	194	185	175	165	155	145	139
30	Nominal input	(kW)	21.0	24.3	27.5	30.7	33.9	37.1	38.9
30	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	ltem			Ou	tdoor aiı	temper	ature (°C	(DB)	
(°C)	item		-15	-10	-5	0	4	7	15
	Heating capacity	(kW)	71.2	77.1	87.7	101	112	123	156
25	Nominal input	(kW)	21.5	21.4	21.6	21.5	21.3	21.0	19.
23	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.
	Heating capacity	(kW)	69.3	75.4	86.2	99.6	111	122	155
30	Nominal input	(kW)	22.6	22.8	23.3	23.6	23.6	23.6	22.
30	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.
	Heating capacity	(kW)	67.0	73.6	85.0	98.2	110	121.0	154
35	Nominal input	(kW)	23.8	24.3	25.1	25.7	26.0	26.2	26.
33	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.
	Heating capacity	(kW)	65.0	71.6	83.3	96.9	109	119	15
40	Nominal input	(kW)	25.1	25.8	27.0	27.9	28.5	28.9	29.
40	Water flow rate	(L/min)	♦133	♦147	171	198	223	244	31
	Nominal current	(A)	38.5	39.7	41.6	42.8	43.7	44.3	45.
	Heating capacity	(kW)	62.7	69.8	81.4	95.4	107	118	14
45	Nominal input	(kW)	26.4	27.4	28.9	30.2	31.1	31.7	32.
45	Water flow rate	(L/min)	♦128	♦143	167	195	219	242	30
	Nominal current	(A)	40.6	42.5	44.6	46.5	48.0	48.7	50.
	Heating capacity	(kW)		68.2	79.6	93.3	106	116	14
50	Nominal input	(kW)		29.1	30.9	32.5	33.7	34.5	36.
30	Water flow rate	(L/min)		♦140	♦163	191	217	238	29
	Nominal current	(A)		44.9	47.7	49.8	51.9	53.2	55.
	Heating capacity	(kW)			78.2	91.8	104	114	14
55	Nominal input	(kW)			33.0	35.0	36.4	37.4	39.
33	Water flow rate	(L/min)			♦160	188	213	233	29
	Nominal current	(A)			50.7	53.7	56.4	57.4	60.

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  $\diamondsuit$  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	lanna			Outdo	or air t	empera	ature (°	C) (DB)	
(°C)	Item		15	20	25	30	35	40	43
	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
4	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
	Cooling capacity	(kW)	188	179	169	160	150	141	135
7	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	71.1	76.9	80.6
	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
9	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
	Cooling capacity	(kW)	218	207	197	186	175	164	☆156
12	Nominal input	(kW)	32.1	36.3	40.5	44.6	48.8	52.9	54.3
12	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
	Cooling capacity	(kW)	234	223	212	200	189	176	☆166
15	Nominal input	(kW)	33.2	37.3	41.5	45.7	49.9	54.0	54.3
15	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
	Cooling capacity	(kW)	235	224	212	200	189	176	☆166
20	Nominal input	(kW)	33.1	37.3	41.5	45.7	49.8	54.0	54.3
20	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
	Cooling capacity	(kW)	235	224	212	200	189	176	☆166
25	Nominal input	(kW)	33.1	37.3	41.5	45.7	49.8	54.0	54.3
25	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
	Cooling capacity	(kW)	235	223	212	200	189	176	☆166
30	Nominal input	(kW)	33.2	37.3	41.5	45.7	49.9	54.0	54.3
30	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	le			Ou	tdoor air	temper	ature (°C	(DB)	
(°C)	ltem		-15	-10	-5	0	4	7	15
	Heating capacity	(kW)	88.3	95.6	109	126	141	154	181
25	Nominal input	(kW)	26.7	27.2	27.7	28.1	28.2	28.2	24.2
25	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
	Heating capacity	(kW)	87.3	94.8	109	125	141	154	187
30	Nominal input	(kW)	29.5	30.0	30.8	31.5	31.9	32.1	29.8
30	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
	Heating capacity	(kW)	86.1	94.0	107	124	140	153	193
35	Nominal input	(kW)	32.1	32.7	33.8	34.9	35.6	36.1	36.3
35	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
	Heating capacity	(kW)	84.4	92.2	106	124	139	152	193
40	Nominal input	(kW)	34.6	35.3	36.8	38.2	39.3	40.0	41.6
40	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
	Heating capacity	(kW)	82.1	90.4	105	122	137	150	190
45	Nominal input	(kW)	36.8	37.8	39.6	41.5	43.0	44.0	46.3
45	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
	Heating capacity	(kW)		88.4	103	120	136	148	189
50	Nominal input	(kW)		40.2	42.5	44.9	46.7	48.0	51.1
50	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
	Heating capacity	(kW)			101	119	135	147	☆182
55	Nominal input	(kW)			45.3	48.2	50.4	52.0	54.2
22	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			Outdoor	air temperature	(°C) (DB)
temperature (°C)	Item		35	40	43
	Water spray		ON	ON	ON
	Cooling capacity	(kW)	76.7	75.0	74.3
	Nominal input	(kW)	13.3	14.4	14.9
4	Water flow rate	(L/min)	157	154	152
	Nominal current	(A)	20.4	22.3	23.2
	Cooling capacity	(kW)	85.0	83.2	82.4
_	Nominal input	(kW)	13.3	14.4	15.0
7	Water flow rate	(L/min)	174	170	169
	Nominal current	(A)	20.6	22.3	23.2
	Cooling capacity	(kW)	90.8	88.8	88.0
	Nominal input	(kW)	13.2	14.4	15.0
9	Water flow rate	(L/min)	186	182	180
	Nominal current	(A)	20.4	22.3	23.2
	Cooling capacity	(kW)	99.6	97.4	96.5
12	Nominal input	(kW)	13.1	14.3	14.9
12	Water flow rate	(L/min)	204	199	198
	Nominal current	(A)	20.4	21.9	23.2
	Cooling capacity	(kW)	106	104	103
4.5	Nominal input	(kW)	13.0	14.2	14.8
15	Water flow rate	(L/min)	217	213	211
	Nominal current	(A)	20.1	21.9	22.8
	Cooling capacity	(kW)	110	107	106
20	Nominal input	(kW)	12.9	14.2	14.8
20	Water flow rate	(L/min)	225	219	217
	Nominal current	(A)	19.8	21.9	22.5
	Cooling capacity	(kW)	110	107	106
25	Nominal input	(kW)	12.9	14.2	14.8
25	Water flow rate	(L/min)	225	219	217
	Nominal current	(A)	19.8	21.9	22.5
	Cooling capacity	(kW)	110	107	106
20	Nominal input	(kW)	12.9	14.1	14.8
30	Water flow rate	(L/min)	225	219	217
	Nominal current	(A)	19.8	21.9	22.5

#### List of heating capacities RUA-SP243H(L)N

LVG hot-water	ltem -		Outdoor air temperature (°C) (DB)								
temperature (°C)			-15	-10	-5	0	4	7	15		
	Heating capacity	(kW)	51.4	54.9	63.8	73.3	81.8	89.3	112		
25	Nominal input	(kW)	14.2	14.2	14.2	14.0	13.8	13.4	12.0		
25	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		
	Heating capacity	(kW)	49.2	54.1	62.2	71.9	80.8	88.4	112		
30	Nominal input	(kW)	15.1	15.4	15.6	15.7	15.6	15.4	14.4		
30	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		
	Heating capacity	(kW)	47.0	52.5	55.3	70.7	80.0	87.3	110		
35	Nominal input	(kW)	16.1	16.6	17.1	17.4	17.5	17.5	16.8		
33	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		
	Heating capacity	(kW)	45.2	51.0	55.2	69.9	78.7	86.3	109		
40	Nominal input	(kW)	17.1	17.8	18.6	19.1	19.4	19.5	19.2		
40	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		
	Heating capacity	(kW)	43.5	49.5	55.4	68.5	77.7	85.0	107		
45	Nominal input	(kW)	18.1	19.0	20.0	20.9	21.3	21.6	21.7		
45	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	33.4	33.3		
	Heating capacity	(kW)		48.1	55.1	67.5	76.6	83.5	105		
50	Nominal input	(kW)		20.3	21.6	22.6	23.2	23.6	24.2		
30	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		
	Heating capacity	(kW)			55.5	66.3	74.9	81.9	102		
55	Nominal input	(kW)			23.1	24.4	25.2	25.7	26.7		
33	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  $7^{\circ}$ C or more.

Note 2: Outside relative humidity is 40%.

Note 3: The  $\diamondsuit$  mark indicates that flow rate is limited at min. Flow rate 121L/min, LWT/EWT difference to be below  $7^{\circ}$ 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	la		Outdoor air temperature (°C) (DB)						
(°C)	ltem		35	40	43				
,	Water spray		ON	ON	ON				
	Cooling capacity	(kW)	107	104	103				
4	Nominal input	(kW)	20.7	22.4	23.2				
4	Water flow rate	(L/min)	219	213	211				
	Nominal current	(A)	32.0	34.2	35.7				
	Cooling capacity	(kW)	118	116	115				
7	Nominal input	(kW)	20.9	22.7	23.6				
/	Water flow rate	(L/min)	242	238	236				
	Nominal current	(A)	32.3	34.8	36.4				
	Cooling capacity	(kW)	126	123	122				
9	Nominal input	(kW)	21.1	22.8	23.7				
9	Water flow rate	(L/min)	258	252	250				
	Nominal current	(A)	32.4	35.1	36.6				
	Cooling capacity	(kW)	139	136	134				
12	Nominal input	(kW)	21.2	23.0	23.9				
12	Water flow rate	(L/min)	285	279	274				
	Nominal current	(A)	32.7	35.4	36.6				
	Cooling capacity	(kW)	149	145	144				
15	Nominal input	(kW)	21.2	23.1	24.1				
15	Water flow rate	(L/min)	305	297	295				
	Nominal current	(A)	32.7	35.4	36.9				
	Cooling capacity	(kW)	153	150	148				
20	Nominal input	(kW)	21.2	23.1	24.1				
20	Water flow rate	(L/min)	313	307	303				
	Nominal current	(A)	32.7	35.4	36.9				
	Cooling capacity	(kW)	153	150	148				
25	Nominal input	(kW)	21.2	23.1	24.1				
25	Water flow rate	(L/min)	313	307	303				
	Nominal current	(A)	32.7	35.4	36.9				
	Cooling capacity	(kW)	153	150	148				
30	Nominal input	(kW)	21.2	23.1	24.1				
30	Water flow rate	(L/min)	313	307	303				
	Nominal current	(A)	32.7	35.4	36.9				

#### List of heating capacities RUA-SP333H(L)N

LVG hot-water temperature	ltem	Outdoor air temperature (°C) (DB)								
(°C)				-10	-5	0	4	7	15	
	Heating capacity	(kW)	71.2	77.1	87.7	101	112	123	156	
25	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	
	Heating capacity	(kW)	69.3	75.4	86.2	99.6	111	122	155	
30	Nominal input	(kW)	22.6	22.8	23.3	23.6	23.6	23.6	22.8	
30	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.	
	Heating capacity	(kW)	67.0	73.6	85.0	98.2	110	121	154	
35	Nominal input	(kW)	23.8	24.3	25.1	25.7	26.0	26.2	26.	
33	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.	
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.	
	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.	
	Heating capacity	(kW)	62.7	69.8	81.4	95.4	107	118	149	
45	Nominal input	(kW)	26.4	27.4	28.9	30.2	31.1	31.7	32.	
45	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.	
	Heating capacity	(kW)		68.2	79.6	93.3	106	116	146	
50	Nominal input	(kW)		29.1	30.9	32.5	33.7	34.5	36.	
30	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	
55	Nominal input	(kW)			33.0	35.0	36.4	37.4	39.	
33	Water flow rate	(L/min)			♦160	188	213	233	29:	
	Nominal current	(A)			50.7	53.7	56.4	57.4	60.	

Note 1: \* mark indicates max. Flow rate due to flow rate limitation. For max/ flow rate, leaving/entering

temperature difference is  $7^{\circ}\text{C}$  or more. Note 2: Outside relative humidity is 40%.

Note 3: The  $\Diamond$  mark indicates that flow rate is limited at min. Flow rate 169L/min, LWT/EWT difference to be below 7℃. 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	- ·		Outdoor air temperature (°C) (DB)						
temperature (°C)	Item		35	40	43				
	Water spray		ON	ON	ON				
	Cooling capacity	(kW)	136	132	131				
	Nominal input	(kW)	29.8	32.2	33.5				
4	Water flow rate	(L/min)	279	270	268				
	Nominal current	(A)	45.8	49.5	51.4				
	Cooling capacity	(kW)	150	147	145				
	Nominal input	(kW)	30.5	33.0	34.4				
7	Water flow rate	(L/min)	307	301	297				
	Nominal current	(A)	46.9	50.7	52.7				
	Cooling capacity	(kW)	160	156	155				
	Nominal input	(kW)	31.0	33.5	34.9				
9	Water flow rate	(L/min)	328	319	317				
	Nominal current	(A)	48.0	51.6	53.7				
	Cooling capacity	(kW)	176	171	170				
	Nominal input	(kW)	31.7	34.3	35.7				
12	Water flow rate	(L/min)	360	350	348				
	Nominal current	(A)	48.9	52.6	54.8				
	Cooling capacity	(kW)	187	183	181				
	Nominal input	(kW)	32.2	34.8	36.3				
15	Water flow rate	(L/min)	383	375	371				
	Nominal current	(A)	49.5	53.7	55.8				
	Cooling capacity	(kW)	193	189	187				
	Nominal input	(kW)	32.4	35.1	36.6				
20	Water flow rate	(L/min)	395	387	383				
	Nominal current	(A)	49.8	54.3	56.4				
	Cooling capacity	(kW)	193	189	187				
25	Nominal input	(kW)	32.4	35.1	36.6				
25	Water flow rate	(L/min)	395	387	383				
	Nominal current	(A)	49.8	54.3	56.4				
	Cooling capacity	(kW)	193	189	187				
30	Nominal input	(kW)	32.4	35.1	36.6				
30	Water flow rate	(L/min)	395	387	383				
	Nominal current	(A)	49.8	54.3	56.4				

List of heating capacities  $\,RUA\text{-}SP423H(L)\,N\,$ 

LVG hot-water		Outdoor air temperature (°C) (DB)								
temperature (°C)	Item		-15	-10	-5	0	4	7	15	
	Heating capacity	(kW)	88.3	95.6	109	126	141	154	181	
25	Nominal input	(kW)	26.7	27.2	27.7	28.1	28.2	28.2	24.2	
25	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	
	Heating capacity	(kW)	87.3	94.8	109	125	141	154	187	
30	Nominal input	(kW)	29.5	30.0	30.8	31.5	31.9	32.1	29.8	
30	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	
	Heating capacity	(kW)	86.1	94.0	107	124	140	153	193	
35	Nominal input	(kW)	32.1	32.7	33.8	34.9	35.6	36.1	36.3	
33	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	
	Heating capacity	(kW)	84.4	92.2	106	124	139	152	193	
40	Nominal input	(kW)	34.6	35.3	36.8	38.2	39.3	40.0	41.6	
40	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	
	Heating capacity	(kW)	82.1	90.4	105	122	137	150	190	
45	Nominal input	(kW)	36.8	37.8	39.6	41.5	43.0	44.0	46.3	
43	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	
	Heating capacity	(kW)		88.4	103	120	136	148	189	
50	Nominal input	(kW)		40.2	42.5	44.9	46.7	48.0	51.1	
50	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	
	Heating capacity	(kW)			101	119	135	147	☆182	
55	Nominal input	(kW)			45.3	48.2	50.4	52.0	54.2	
55	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.

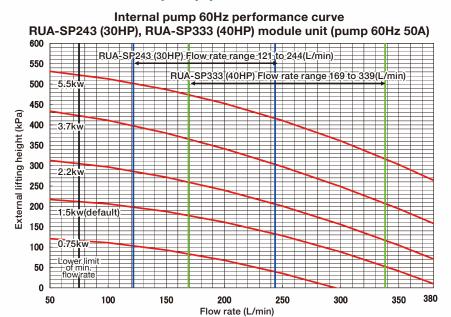
Note 4: The ☆ mark indicates a temperature difference of 7°C or less between the outlet and inlet due to

a restriction on capacity.

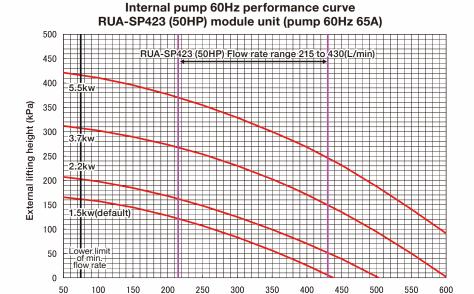
Note 5: Relative humidity is 85%.

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

#### 30HP model, 40HPmodel Internal pump performance curve



#### Internal pump performance curve 50HP model



#### Pump specification values

			30, 40HP model					50HP model				
Pump output			0.75kW	1.5kW	2.2kW	3.7kW	5.5kW	1.5kW	2.2kW	3.7kW	5.5kW	
Flow rate range (*1)	Upper section:30HP (L/	(min)		Rated sp	ecification rang	e (121~244)		Rated specification range (215 $\sim$ 430)				
riow rate range	Lower section:40HP	111111)		Rated sp	ecification rang	e (169~339)	, no	itea specification	1 range (215~45	0)		
External lifting height **	Upper section:30HP	(kPa)	40~116	133~212	206~305	304~423	416~523	6~162	51~203	150~307	245~416	
External litting fleight	Lower section:40HP		<b>−</b> ~116	52~212	116~305	206~423	316~523					
Max. operation current	(*3)	(A)	1.6	3.1	4.3	6.9	10.0	2.8	3.8	5.9	8.4	
Max. power consumption (*3) (kW)		(kW)	1.0	2.0	2.8	4.5	6.4	1.8	2.4	3.8	5.4	
Max. allowable boost pressure (MPa)		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) (kPa)		40	40	40	40	40	40	40	40	40		

Flow rate (L/min)

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

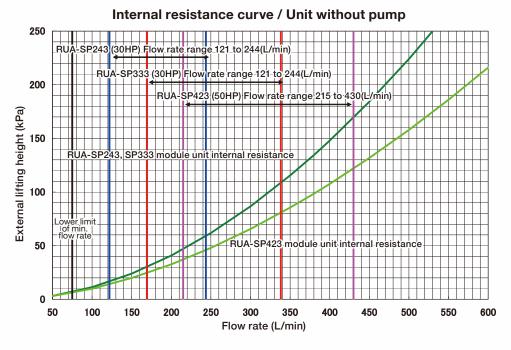
Note 5: Select a pump that can handle the needed lift and flow amount.

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



### 1. Operating Ranges

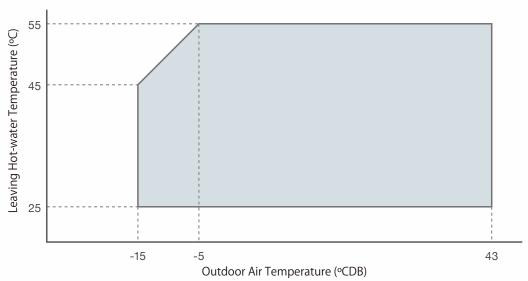
## 30HPmodel 40HPmodel 50HPmodel

	Cooling			4~30
Leaving water temperature	Heating	(Note 2) (Note 3)		25~55
(loce l)	Temperature differend (inlet/outlet)	ce	℃	5~10
Outside air temperature	Cooling			-15~46
Outside all temperature	Heating	(Note 2) (Note 3)		-15∼43DB, 32WB

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.

## Leaving Hot Water Temperature Range

## 30HPmodel 40HPmodel 50HPmodel



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	℃	20~40

Note 2: For heat pump models only.

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

## **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.

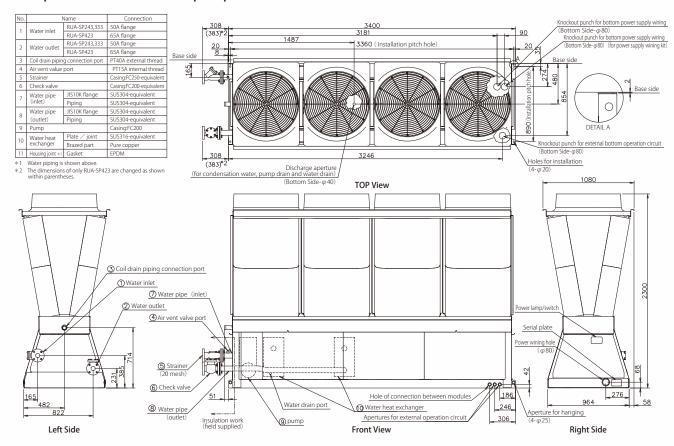
### Power supply design (380V/400V/415V/440V specifications)

#### Internal inverter pump model Pumpless model

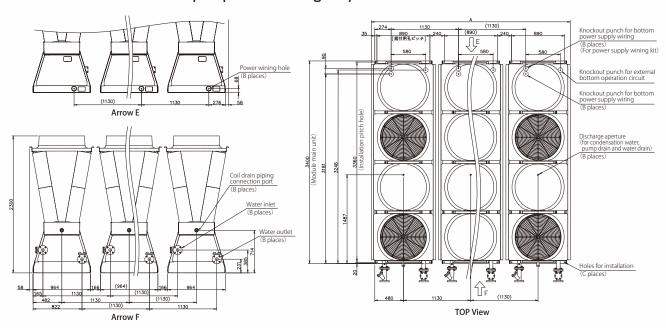
					30HP	model					40HP r	model				50	)HP mod	lel	
	Power su	ıpply	5	0/60Hz 3	380V/400\	V/415V, (	50Hz 440	V	5	0/60Hz 3	80V/400V	//415V, 6	0Hz 440	V	50/60	Hz 380V/	400V/41	5V, 60Hz	2 440V
					Model with internal pump				Model with interr			rnal pump			Model with internal pump			ump	
Pump		(Note 1,6)	Model without pump	For special order	Standard	For	special o	rder	Model without pump	For special order	Standard	For	special o	rder	Model without pump	Standard	For	special c	order
a P	Motor O	utput (kW)	Pamp	0.75	1.5	2.2	3.7	5.5	Pamp	0.75	1.5	2.2	3.7	5.5	] Pup	1.5	2.2	3.7	5.5
Internal	Туре		_		L	ine Pum	р		_		L	ine Pum	)		_		Line l	Pump	
Int	Type of s	start	_			Inverter			_			Inverter			_		Inve	erter	
	Control		-			Inverter			_			Inverter			_		Inve	erter	
	Max. Cur	rrent (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. Inp	ut (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
	No. of primary connecting part for power supply wirir		Termi	Terminal in the power box of each module unit			Termi	nal in the	e power b	ox of eac	h modul	e unit	Terminal	in the pov	ver box o	f each mo	odule unit		
	Standard	d 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 So	ource 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	IV: Power Supply $\leq 20$ m (m $\mathring{n}$ )			14			22		22			38				38		
Design	Supply	IV: Power Supply $\leq 50 \text{m}$ (mm)			14			22		22			38				38		
Des		CV: Power Supply $\leq 20 \text{m}$ (mm)			8		1	4			14			22			22		
Supply	(mm <sup>2</sup> )	CV: Power Supply $\leq 50 \text{m}$ (mm)			14	4					22						22		
dn	Ground (mm) Switch (A) Fuse (A)		5	.5			8			8	3		1	4			5.5		
er S					6	0					10	0					100		
Power			5	0		6	0			7	5		10	00			100		
۵	Earth Leakage Circuit Breaker (Capacity) (A)			0		6	0			7	5		10	00	100				
	Earth Leak	age Circuit Breaker (Sensibility) (mA)			10	00					10	0					100		

<sup>•</sup> 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.)



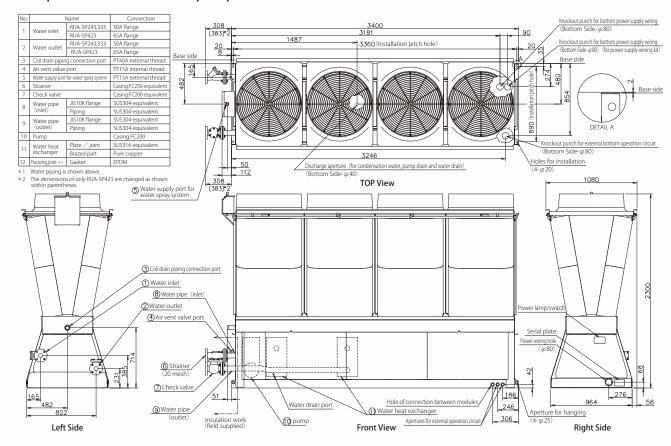
### Combined installation Heat pump unit, Cooling-only 30, 40, and 50HP module units



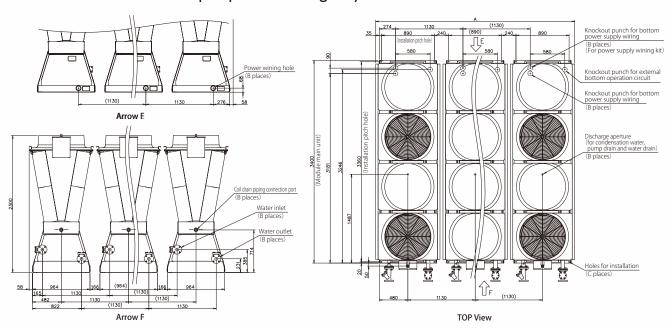
The number of modules	А	В	С	The number of modules	А	В	С	The number of modules	А	В	С	The number of modules	А	В	С
1 module	1080	1	4	5 modules	5600	5	20	9 modules	10120	9	36	13 modules	14640	13	52
2 modules	2210	2	8	6 modules	6730	6	24	10 modules	11250	10	40	14 modules	15770	14	56
3 modules	3340	3	12	7 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.

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



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



The number of modules	А	В	С	The number of modules	Α	В	С	The number of modules	А	В	С	The number of modules	А	В	С
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.

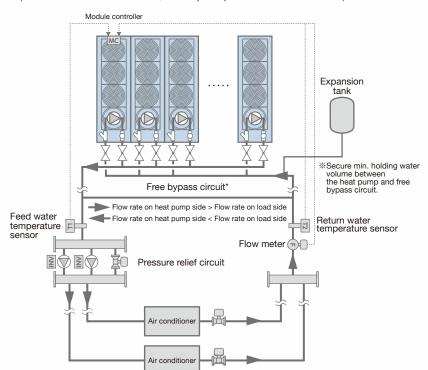
Note2. The values indicated above are applied to A through C.

## 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.

## Example of multiple pump system

(load side: variable flow, heat pump side: variable flow)



- 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.

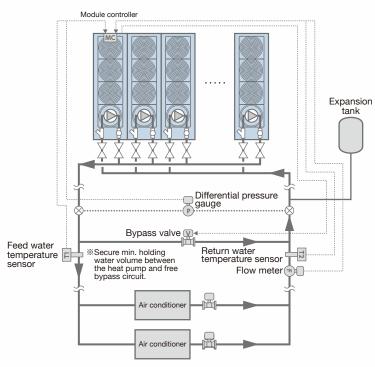
### List of equipment for control

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

<sup>\*)</sup> Attach  $250\Omega\pm1\%$  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)



- 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.
- 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.).

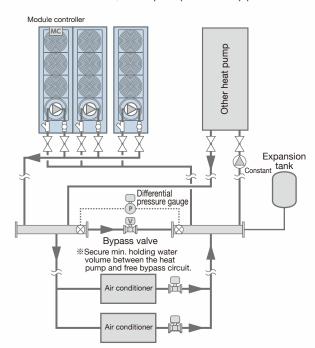
### List of equipment for control

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

<sup>\*)</sup> Attach  $150\Omega\pm1\%$  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))



- 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

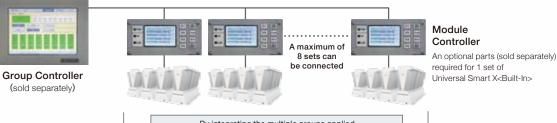
Up to eight sets, total 128 units, can be controlled at once from a single controller. Individual settings and operation states can be controlled and displayed via a touch panel, supporting customer energy management.

#### Function List

	Item	Notes						
	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						
Operating	For each module controller	Start/Stop, Operational mode, Error code, Operational capacity, LWT/EWT, Flow conversion volume, Basic capabilities, Basic input, Basic COP						
status display	For each module	Start/Stop, Operational mode, Error code, Operational capacity, LWT/EWT, Flow coversion volume, Basic capabilities, Outside air temperature, Basic input, Basic COP						
, .,	For each circuit	Refrigeration cycle information, Compressor operation time, Compressor startup counts						
Operation	nal state output (Total)	Start/Stop, Failure, Operational capacity, Basic capabilities, Basic input, Operational pattern						
Start/Stop	)	or entire system, Each model, and Each module controller						
Pattern se	ettings (Switch)	Enables setting and switching operating pattern of group controller						
Operation	nal mode settings (Switch)	Enables setting and switching the operation mode for entire system.						
Preset ten	nperature changes	All model temperature settings can be changed.						
Current de	emand settings	Electrical current demand can be configured.						
System se	ttings	All connected modules can be systematically classified. (for each module controller system)						
Schedule	settings	Operational schedule can be configured. (monthly, weekly, daily)						
Error histo	ory display	Error history can be verified.						
Operational data savings		Displayed data can be saved to MMC.						
Trend disp	olay	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 sav	ring	Enables switching the demand setting to validation or invalidation.						

#### ■Example of System Configuration

Piping systems are separated by the set applied to different water pipe system, and can be controlled individually according to their application and method of use.



By integrating the multiple groups applied to a single water pipe system, it can be controlled as a single, large heat source machine.

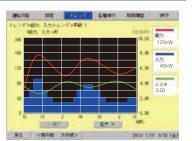
#### Example of a Screen Display



Operating Status/Main Screen



Operating Status/System Data Confirmation Screen



#### Operating Trends (capacity, input, COP) Confirmation Screen

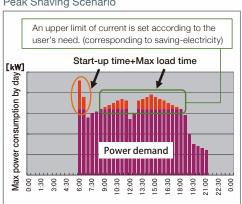
By displaying the capacity/input (power consumption) over the past 48 hours, users can easily confirm the day-over-day effects of power conservation efforts, such as adjusting demand or the temperature settings.

(time frame can be switched to the past 24 hours, 12 hours, and 6 hours)

### 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.

## 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**

			Rem	arks
	ltem		Factory assembly	Locally constructed
el-	Module controller (MC) (Note 1) (Note 2)	Required products sold separately	0	×
separately	Group controller (GC)	Products sold separately	×	O (Note 3)
products sold se	External sensor (Note 2) (two locations for temperature of outgoing and returning water)	Products sold separately	×	O (Note 3)
Эpp	Connecting Bracket	Products sold separately	×	O (Note 3)
2	Protective screen kit	Products sold separately	0	(Note 3)
ated	Flange kit for hood installation (for both intake and dischargesides)	Products sold separately	0	×

- 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.

			Locally constructed
	ltem		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 (Note4)
	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
her	Simple watt-hour display (daily usage) Simple input/output (instant values) Simple capacity display (instant values)	GC standard functions	Required
ਰ	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.
- Corresponding to Chilled-water storage (fresh water) Optimized energy-saving control to chilled-water storage.
- 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.)

## Brine specifications

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



### Brine-Spec Line-Up and Module Names

Mod	al		Internal inverter pump											
Mod	ei		Coolin	g only		Heat pump								
30HP	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					
SUHP	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					
40HP	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					
4000	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					
50HP	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					
SURP	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					

Mod	dol.				Pum	pless					
IVIOC	iei		Coolin	g only		Heat pump					
30HP	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		
ЗОПР	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		
40HP	Standard type	RUA-SP333LR1-S	RUA-SP333LR2-S	RUA-SP333LR3-S	RUA-SP333R4-S	RUA-SP333HLR1-S	RUA-SP333HLR2-S	RUA-SP333HLR3-S	RUA-SP333HLR4-S		
4007	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		
50HP	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		
SURP	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		

<sup>\*</sup>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

①Refer 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

②Commercially 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)

30 HP model BUA-SP243(H)(L)R RUA-SP333(H)(L)R

50 HP model RUA-SP423(H)(L)R

110/1 GI 2-0 (11/12)11					11071 01 000 (11) (2)11				11071 01 420(11) (2)11								
Brine leaving temperature (°C)		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	
	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
-15	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
-10	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
<b>-</b> 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
	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
0	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

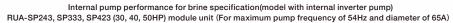
Note: The \* mark indicates the minimum or maximum flow rate, due to restrictions on the flow rate. For min. flow rate, the brine LWE/EWT difference shall be below  $3^{\circ}$ C. For max. flow rate, the brine LWE/EWT difference shall be above  $3^{\circ}$ C. (In case the operationg current is 380V)

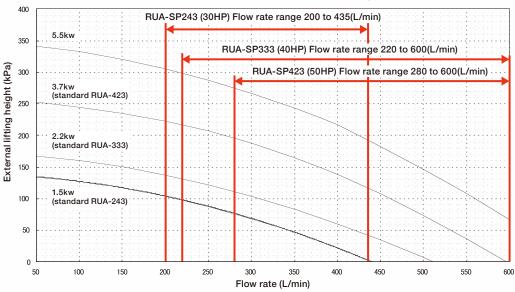
### Pump characteristics (Internal inverter pump model)

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 32we%. 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	Who	When changing output			When chan	ging 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~	<b>-435</b>		220~511	220~596	220~600	280~596	280~600	
External lifting height (Note 2) (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 (Note 3) (A)	3.4	4.6	7.4	11.4	4.3	6.6	9.6	7.2	10.5	
Maximum power consumption (Note 3) (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.

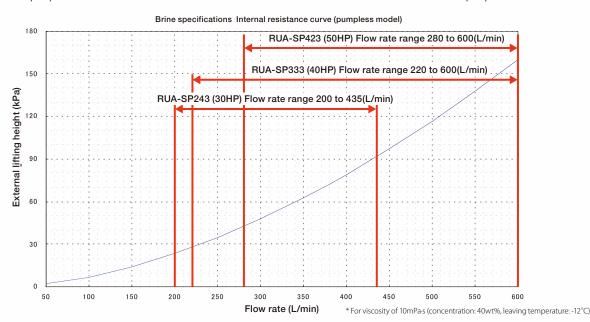
Note 3: The values indicated for maximum current and maximum consumption power are the highest values for when the pump operates at a frequency of 60Hz. (In case the operationg current is 380V)

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.



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

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.



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.