

TOSHIBA

2nd version
2021-03

Air-cooled Inverter Modular Chiller
for Diverse Customer Needs



UNIVERSAL SMART X
Series EDGE
Inverter Modular Chiller for Europe



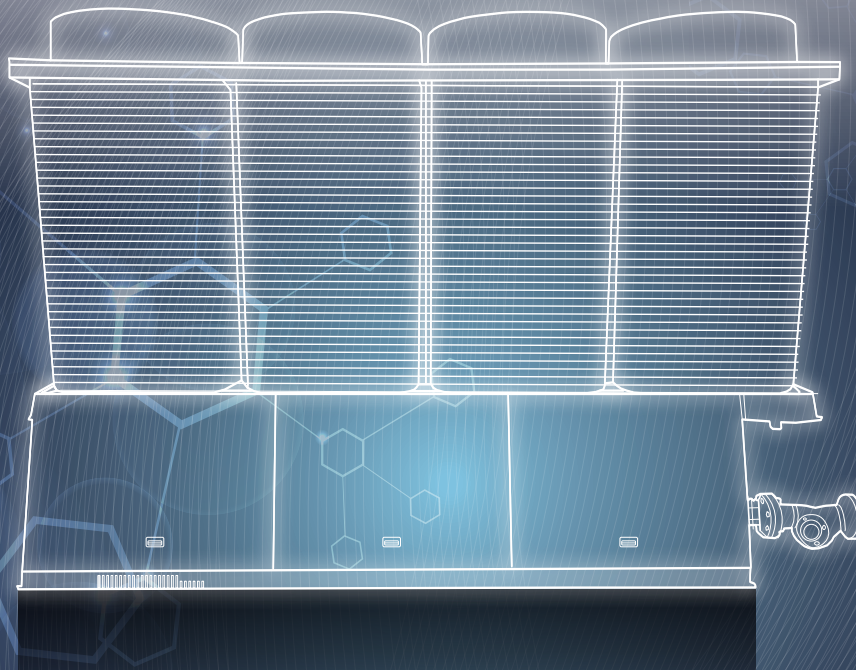
Better Air Solutions

Made in Japan
All-new innovative chiller system



UNIVERSAL SMART X Series **EDGE**

Toshiba's first air-cooled inverter modular chiller designed for Europe.
High efficiency combined with cutting-edge space-saving design.



Internal inverter pump / Pumpless / Brine			
Model	Use	Type	Power supply
Series EDGE <i>(Standard Model)</i> 50HP/60HP/70HP	Cooling only	Standard	3 phase 4 wires 50Hz/60Hz 380-415V
		High EER	
	Heat pump	Standard	
		High EER	
Powerful Heating Type <i>(Apply this to all the following text.)</i> 50HP/60HP	Heat pump	Standard	3 phase 4 wires 50Hz/60Hz 380-415V
		High EER	

Models

- RUA - GP 51 1 H L N R 8 - E
- Air Cooled Chiller
 - Universal Smart X EDGE (R32)
 - Capacity USRT
 - 42: 50HP / 51: 60HP/ 56: 70HP
 - Version number
 - C : Cooling - only
 - H: Heat Pump (cooling/heating)
 - F: High heating Capacity Model
 - L: Pumpless
 - 1: Internal Pump (pump output 1.5kW)
 - 2: Internal Pump (pump output 2.2kW)
 - 3: Internal Pump (pump output 3.7kW)
 - 5: Internal Pump (pump output 5.5kW)
 - 7: Internal Pump (pump output 7.5kW)
 - E : Europe, UK : United Kingdom, TR : Turkey
 - 8: 3ph 4wires 50Hz/60Hz 380 - 415V
 - Blank: Water/R: Brine
 - Blank: Standard type/ N: High - EER type

Operation range

Series EDGE 50HP 60HP 70HP

Leaving water temperature <small>(Note 1)</small>	Cooling <small>(Note 5)</small>	°C	4~30
	Heating <small>(Note 2 • 3)</small>		25~55
	Temperature difference (inlet/outlet)		5~10
Outside air temperature	Cooling	°C	-15~52 <small>(Note 4)</small>
	Heating <small>(Note 2 • 3)</small>		-15~21DB, 15.5WB

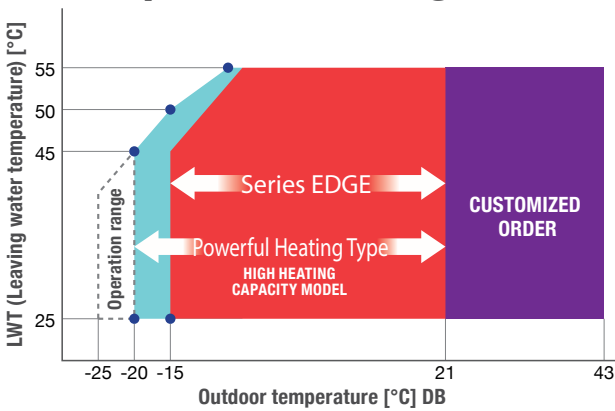
Note 1: LWT not higher than 35°C at cooling or not lower than 20°C at heating operation is allowable till 1 hour after starting up. After then, however, LWT must be within the operating range. Control it with bypass pipe if needed.
 Note 2: For heat pump models only. -20°C is for 60HP powerful heating.
 Note 3: Depending on the outdoor air temperature, leaving hot water temperature is limited as below.

Powerful Heating Type 50HP 60HP

Leaving water temperature <small>(Note 1)</small>	Cooling <small>(Note 5)</small>	°C	4~30
	Heating <small>(Note 2 • 3)</small>		25~55
	Temperature difference (inlet/outlet)		5~10
Outside air temperature	Cooling	°C	-15~52 <small>(Note 4)</small>
	Heating <small>(Note 2 • 3)</small>		-20~21DB, 15.5WB

Note 4: The range of water temperature control may become larger when the cooling operation load is low.

Leaving water temperature range

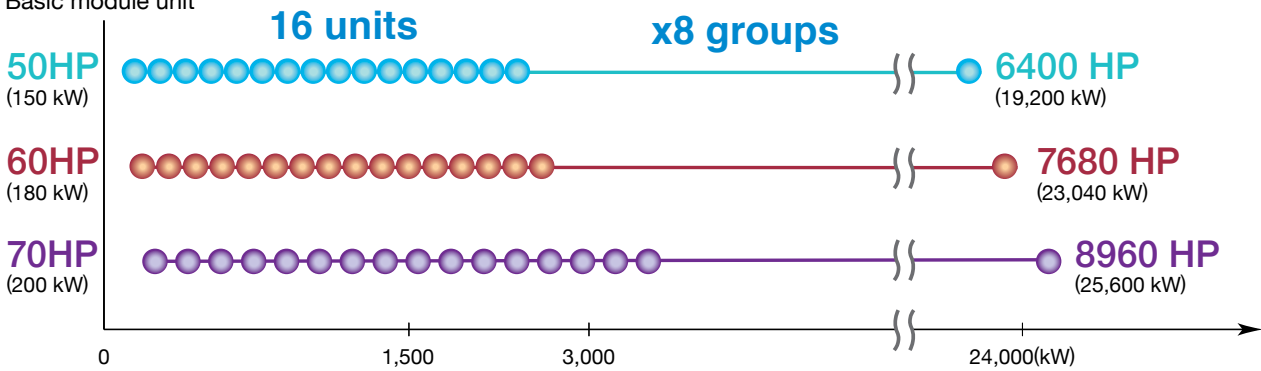


Operating range for water spray device

Water dispersing water temperature range	°C	10~30
Water dispersing preset outdoor air temperature	°C	20~40

Capacity range

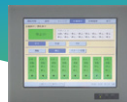
Basic module unit



Up to 16 units can be combined (Module controller)



Module controller



Group controller

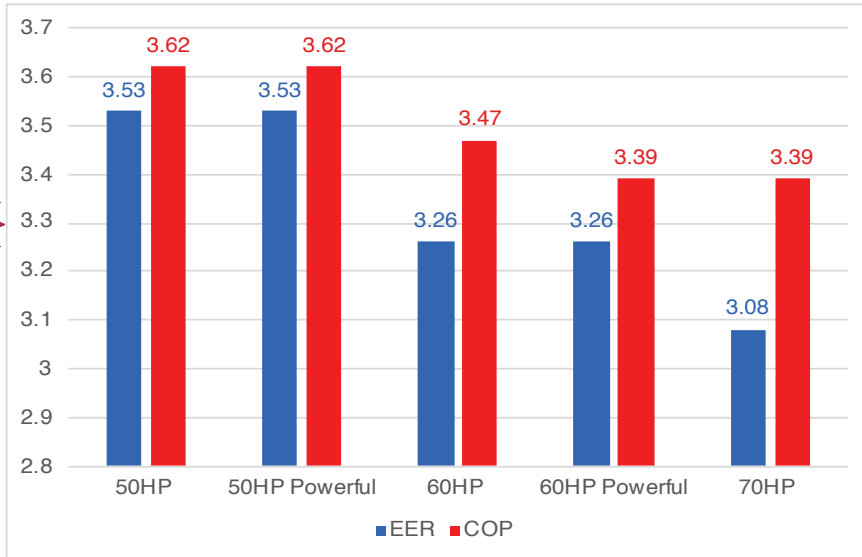
Up to 8 groups of 16 combined-units (Group controller)

Feature

1

High Energy Efficiency

- Extremely high full load and part load energy efficiency as a result of the combination between low GWP refrigerant R32 and newly developed DC inverter compressor.
- 50HP model is a top class energy efficient model.
- Precise adjustment of water flow volume and water pressure based on required load by using internal pump module with variable flow bypass control resulting in even higher system efficiency.



*Conditions:

Cooling EER LWT 7C, EWT 12C, OAT 35C

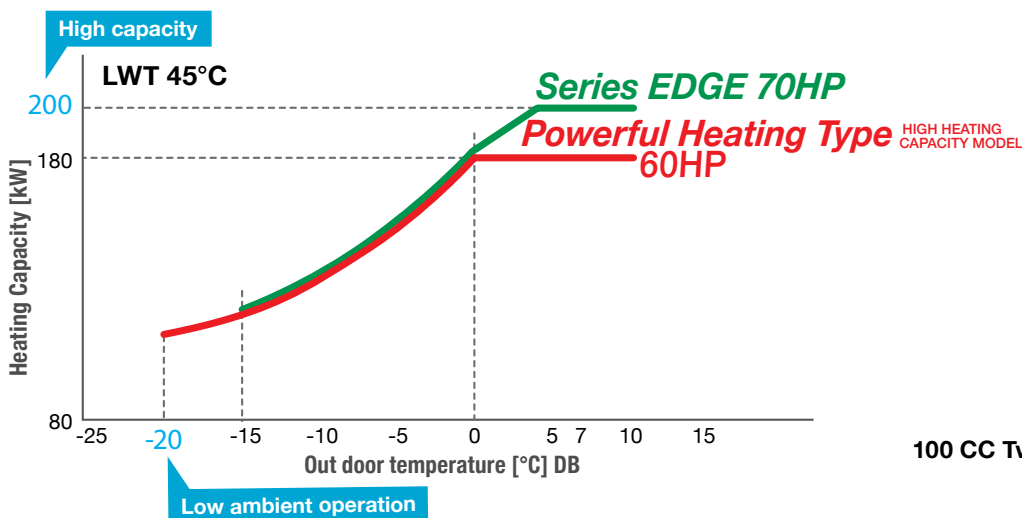
Heating COP LWT 45C, EWT 40C, OAT 7CDB, 8CW

Feature

2

Large Capacity DC Inverter Twin Rotary Compressor

Impressive heating capacity and operation range even in low ambient temperature by using world's largest capacity DC twin rotary compressor equipped with R32 refrigerant.



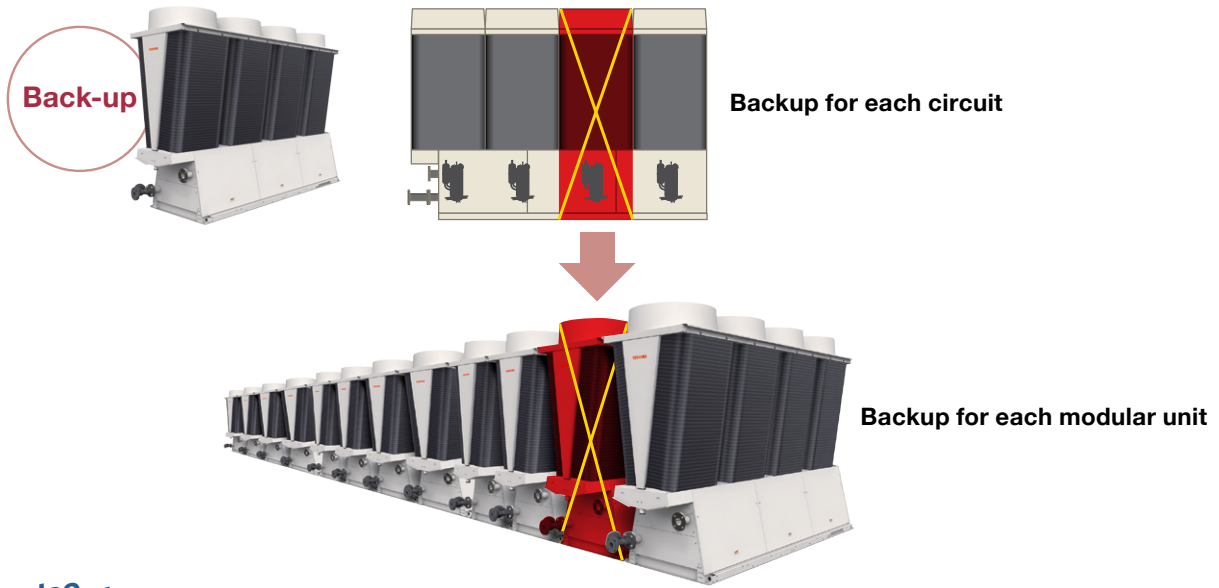
100 CC Twin Rotary Compressor

Feature

3

Highly reliable module system

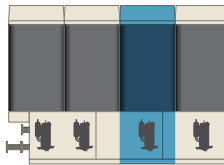
- Four independent refrigerant cycles available in each module promising excellent risk diversification.
- Economical solution with low Initial cost for backup.



And also...

Defrosting operation is performed separately for each compressor

Make use of the backup function to carry out distributed defrost in the module units to prevent a reduction in temperature for hot water.



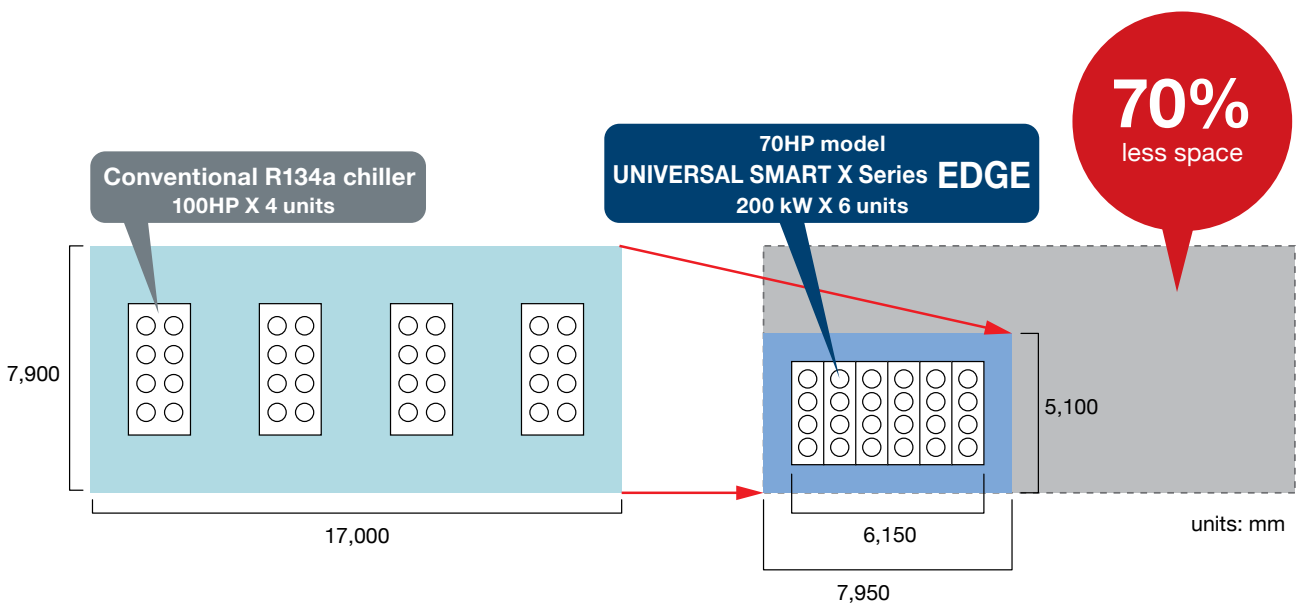
Feature

4

Installation Friendliness

- Optimized airflow by unique X frame design.
- Easy installation even in small spaces due to compact design.
- Easy replacement and installation in stages due to modular design.
- Installation space reduced by 70% compared to conventional R134a model*.

*Compared to the space needed to install a system for a 1200 kW cooling load. Comparison with four RUA-SA30001H units and six 200 kW module units.





Feature

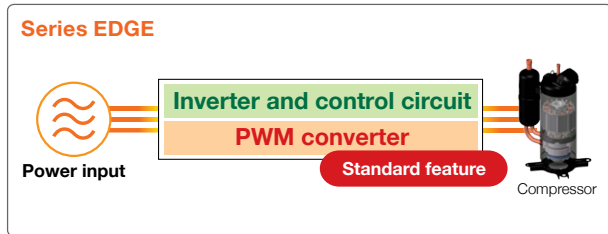
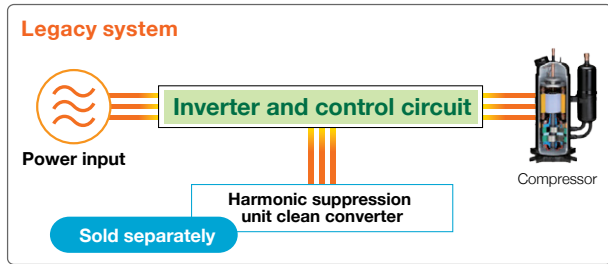
5

Outstanding Harmonic Suppression

The harmonic suppression function is installed as a standard feature on all models and achieves a power factor of up to 99%. This decreases electric transformer volume as well as reducing installation costs.

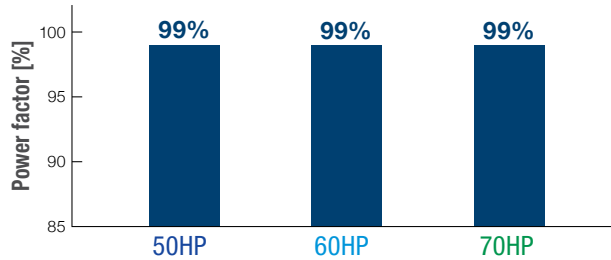
PWM Converter Benefits

- 1 Eliminates problems caused by harmonic current
- 2 Reduces consumption volume of power generator and electrical equipment

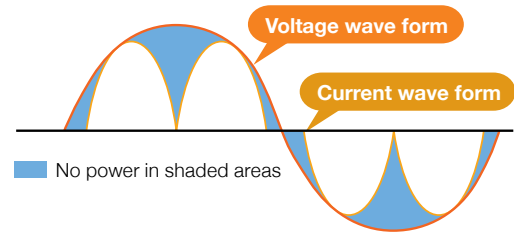


99% Power Factor Benefits

- 1 Reduction in power loss through load current
- 2 Improved efficiency of electrical equipment through reductions in current



Efficiency reduction projection



Feature

6

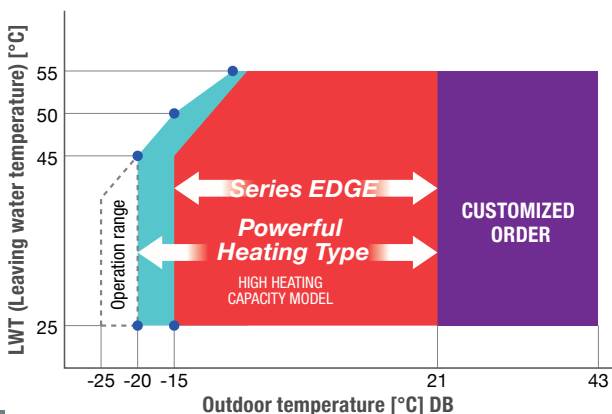
Reinforced heating capacity in low ambient temperatures

Powerful Heating Type achieves high level heating capacity, even in outdoor temperatures as low as -25°C, and minimises capacity drop during defrost operations.

Powerful Heating Type HIGH HEATING CAPACITY MODEL

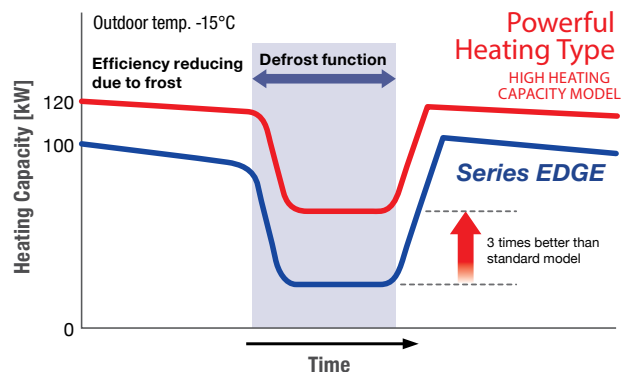
In outdoor temperatures down to -15°C, the system is still capable of producing hot water up to 50°C. At -20°C hot water produced is up to 45°C.

Performance between -20°C and -25°C is not guaranteed. Exceptional environmental factors such as blizzard conditions or ice may inhibit operation in temperatures of -20°C or lower.



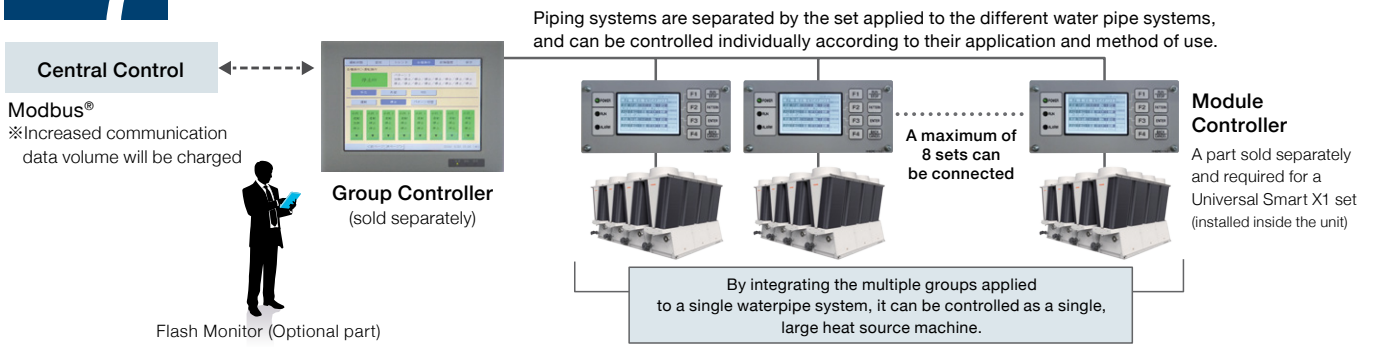
Thanks to a new, advanced controller, the Powerful Heating Type model is capable of reducing capacity loss by three times during defrost than standard models.

Energy Usage During Defrost (1 module)



Excellent Control System

Easy to use and collect data with several types of control available.



Group Controller

Batch control of heat source unit using the group controller

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

Function List

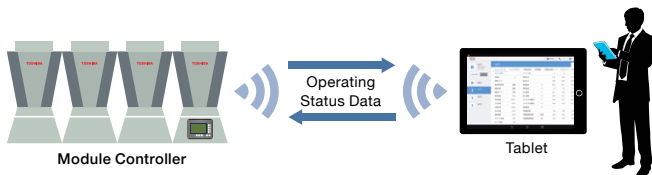
Item	Notes
Operating status display	For each model: Start/Stop, Operational mode, Fault occurrence, Operational capacity, LWT/EWT, Flow rate, Simple production heat capacity, Basic integral power, Basic capabilities, Basic input, Basic COP For each module controller: Start/Stop, Operational mode, Error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

Wifi Data Analysis

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

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

- Confirm run time
- Confirm run pressure
- Confirm breakdown history



Supported tablets: Android 5.0 or higher 10.1" screen recommended

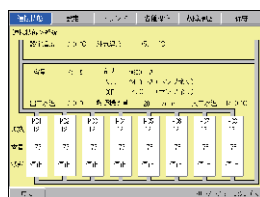
*The machine is not designed for use in all regions. Please contact a representative for details.



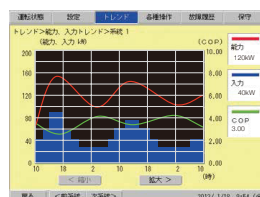
Visualize the operating status of module controller and unit controller!
It allows safe and quick operations even in bad weather!!



Operating Status/Main Screen

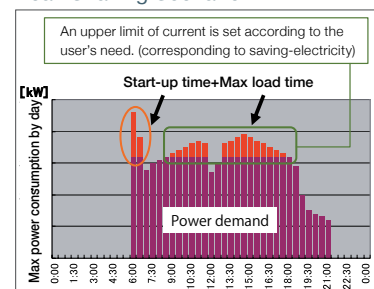


Operating Status/System Data Confirmation Screen



Operating Trends Confirmation Screen
Data displayed over a time frame which is easy to confirm or adjust.

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.



UNIVERSAL SMART X Series *EDGE*

Series EDGE - Standard Model

50HP/60HP/70HP

Powerful Heating Type – High Heating Capacity Model

50HP/60HP



Specifications Internal inverter pump

50HP Series EDGE Heat pump

		Standard type		High-EER type	
		380V /400V/ 415V		380V /400V/ 415V	
Model (A single module unit)		RUAGP421H18		RUAGP421H1N8	
Cooling capacity <small>(Note 1)</small> (kW)		150		150	
Heating capacity <small>(Note 1)</small> (kW)		150		150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)		Silky shade (Munsell 1Y8.5/0.5)	
	Dimensions	Height (mm)	2,350	2,350	
		Width <small>(Note 2)</small> (mm)	1,000	1,000	
		Depth <small>(Note 2)</small> (mm)	3,300	3,300	
Shipping weight (kg)		1,348		1,360	
Operating weight (kg)		1,384		1,396	
Power supply <small>(Note 1-3)</small>		3-phase 4-wire 50/60Hz 380V/400V/415V		3-phase 4-wire 50/60Hz 380V/400V/415V	
Reference current for power supply design <small>(Note 4-5)</small> (A)		82.1		82.1	
Electrical data <small>(Note 7)</small>	Cooling	Nominal current (A)	65.3	42.8	
		Nominal input (kW)	42.5	27.9	
		EER	3.53	5.38	
		SEER	4.88	5.06	
		Power factor <small>(Note 6)</small> (%)	99	99	
	Heating	Nominal current (A)	63.6	63.6	
		Nominal input (kW)	41.4	41.4	
		COP	3.62	3.62	
		SCOP	4.26	4.26	
		Power factor <small>(Note 6)</small> (%)	99	99	
Compressor	Type	Hermetic rotary x 4		Hermetic rotary x 4	
	Motor output x number of units (kW)	9.0 x 4		9.0 x 4	
	Type of start	Inverter starter		Inverter starter	
	Case heater (W)	37 x 4		37 x 4	
Compressor oil	Type	RB74AF		RB74AF	
	Charge (L)	2.0 x 4		2.0 x 4	
Condenser coil - air side		Plate fin coil		Plate fin coil	
Fan	Type	Propeller fan		Propeller fan	
	Air quantity (m ³ /min)	1,230 (maximum)		1,230 (maximum)	
	Type of start	Inverter starter		Inverter starter	
	Motor output x number of units (kW)	1.2 x 4		1.2 x 4	
Spray system <small>(Note 8)</small>	Water spray volume (L/min)	-		13.6 x 1	
	Supply water pressure <small>(Note 9)</small> (MPa)	-		0.2	
	Control	-		Continuous spraying when outside temperature and compressor capacity exceeds setting values	
Pump	Motor output (kW)	1.5		1.5	
	Type	Centrifugal pump		Centrifugal pump	
	Flow control	Inverter		Inverter	
	Maximum current (A)	3.1		3.1	
	Minimum input (kW)	2		2	
Cooler - water side <small>(Note 10)</small>		Braze plate heat exchanger (SUS316 equivalent)		Braze plate heat exchanger (SUS316 equivalent)	
Refrigerant	Type	R32		R32	
	R32 charge (kg)	8.8 x 4		8.8 x 4	
	Control	Electric expansion valve		Electric expansion valve	
Capacity control steps <small>(Note 11)</small> (%)		0; 5-100		0; 5-100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference			
Defrost system		Distributed reverse cycle system		Distributed reverse cycle system	
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)			
Piping/angers	Cold/Hot water inlet (A)	2-1/2" flange (JIS10K)		2-1/2" flange (JIS10K)	
	Cold/Hot water outlet (A)	2-1/2" flange (JIS10K)		2-1/2" flange (JIS10K)	
	Coil drain (A)	PT1-1/2" external thread		PT1-1/2" external thread	
Sound power level dB(A)		83.8		83.8	

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

For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature

For heating: 40°C entering water (EWT), 45°C leaving water (LWT), 7°CDB, 6°CWB outdoor air (OAT)

Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.

Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281 and (EU)No813/2013.

(Note 2) Dimensions do not include projections of water pipe connections.

(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 power supply differs from pump capacity. Please refer to pump information table to design power supply correctly.

(Note 5) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 6) Power factors may vary depending on site conditions.

(Note 7) Electrical data does not include inbuilt pump.

(Note 8) 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 9) 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 10) Working pressure is below 0.7 MPa.

(Note 11) Range of capacity control sometimes can vary depending on the unit's operating condition.

50HP *Powerful Heating Type* Heat pump

		Standard type	High-EER type
		380V/400V/415V	380V/400V/415V
Model (A single module unit)		RUAGP421F18	RUAGP421F1N8
Cooling capacity <small>(Note 1)</small> (kW)		150	150
Heating capacity <small>(Note 1)</small> (kW)		150	150
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)	
	Dimensions	Height (mm)	2,350
		Width <small>(Note 2)</small> (mm)	1,000
		Depth <small>(Note 2)</small> (mm)	3,300
Shipping weight (kg)		1,359	1,371
Operating weight (kg)		1,395	1,407
Power supply <small>(Note 1-3)</small>		3-phase 4-wire 50/60Hz 380V/400V/415V	
Reference current for power supply design <small>(Note 4-5)</small> (A)		82.1	82.1
Electrical data <small>(Note 7)</small>	Cooling	Nominal current (A)	65.3
		Nominal input (kW)	42.5
		EER	3.53
		SEER	4.88
		Power factor <small>(Note 6)</small> (%)	99
	Heating	Nominal current (A)	63.6
		Nominal input (kW)	41.4
		COP	3.62
		SCOP	4.26
		Power factor <small>(Note 6)</small> (%)	99
Compressor	Type	Hermetic rotary x 4	
	Motor output x number of units (kW)	9.0 x 4	
	Type of start	Inverter starter	
	Case heater (W)	37 x 4	
Compressor oil	Type	RB74AF	
	Charge (L)	2.0 x 4	
Condenser coil - air side		Plate fin coil	
Fan	Type	Propeller fan	
	Air quantity (m ³ /min)	1,230 (maximum)	
	Type of start	Inverter starter	
	Motor output x number of units (kW)	1.2 x 4	
Pump	Motor output (kW)	1.5	
	Type	Centrifugal pump	
	Flow control	Inverter	
	Maximum current (A)	3.1	
	Minimum input (kW)	2	
Cooler - water side <small>(Note 9)</small>		Braze plate heat exchanger (SUS316 equivalent)	
Refrigerant	Type	R32	
	R32 charge (kg)	8.8 x 4	
	Control	Electric expansion valve	
Drain pan heater (W)		75 x 6	
Capacity control steps <small>(Note 10)</small> (%)		0; 5-100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference	
Defrost system		Distributed reverse cycle system	
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. outout, low flow rate, discharge gas overheat protection, low pressure outout, thermistor error, high water pressure error)	
Piping details	Cold/Hot water inlet (A)	2-1/2" flange (JIS10K)	
	Cold/Hot water outlet (A)	2-1/2" flange (JIS10K)	
	Coil drain (A)	PT1-1/2" external thread	
Sound power level dB(A)		83.8	

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.
 For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
 For heating: 40°C entering water (EWT), 45°C leaving water (LWT), 7°CDB, 6°CWB outdoor air (OAT)
 Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.
 Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281 and (EU)No813/2013.

(Note 2) Dimensions do not include projections of water pipe connections.
 (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 power supply differs from pump capacity. Please refer to pump information table to design power supply correctly.
 (Note 5) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.
 (Note 6) Power factors may vary depending on site conditions.
 (Note 7) Electrical data does not include inbuilt pump.
 (Note 8) 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 9) Working pressure is below 0.7 MPa.
 (Note 10) Range of capacity control sometimes can vary depending on the unit's operating condition.

Specifications Internal inverter pump

50HP Series EDGE Cooling-only

				Standard type		High-EER type	
				380V /400V/ 415V		380V /400V/ 415V	
Model (A single module unit)				RUAGP421C18		RUAGP421C1N8	
Cooling capacity <small>(Note 1)</small> (kW)				150		150	
Exterior	Unit color			Silky shade (Munsell 1Y8.5/0.5)		Silky shade (Munsell 1Y8.5/0.5)	
	Dimensions	Height (mm)		2,350		2,350	
		Width <small>(Note 2)</small> (mm)		1,000		1,000	
		Depth <small>(Note 2)</small> (mm)		3,300		3,300	
Shipping weight (kg)				1,309		1,322	
Operating weight (kg)				1,345		1,358	
Power supply <small>(Note 1-3)</small>				3-phase 4-wire 50/60Hz 380V/400V/415V		3-phase 4-wire 50/60Hz 380V/400V/415V	
Reference current for power supply design <small>(Note 4-5)</small> (A)				82.1		82.1	
Electrical data	Cooling	Nominal current (A)		66.2		44	
		Nominal input (kW)		43.1		28.7	
		EER		3.48		5.23	
		SEER		4.9		5.08	
		Power factor <small>(Note 6)</small> (%)		99		99	
Compressor	Type			Hermetic rotary x 4		Hermetic rotary x 4	
	Motor output x number of units (kW)			8.7 x 4		7.2 x 4	
	Type of start			Inverter starter		Inverter starter	
	Case heater (W)			37 x 4		37 x 4	
Compressor oil	Type		RB74AF		RB74AF		
	Charge (L)		2.0 x 4		2.0 x 4		
Condenser coil - air side				Plate fin coil		Plate fin coil	
Fan	Type			Propeller fan		Propeller fan	
	Air quantity (m ³ /min)			1,230 (maximum)		1,230 (maximum)	
	Type of start			Inverter starter		Inverter starter	
	Motor output x number of units (kW)			1.2 x 4		1.2 x 4	
Spray system <small>(Note 8)</small>	Water spray volume (L/min)			-		13.6 x 1	
	Supply water pressure <small>(Note 9)</small> (MPa)			-		0.2	
	Control			-		Continuous spraying when outside temperature and compressor capacity exceeds setting values	
Pump	Motor output (kW)			1.5		1.5	
	Type			Centrifugal pump		Centrifugal pump	
	Flow control			Inverter		Inverter	
	Maximum current (A)			3.1		3.1	
	Minimum input (kW)			2		2	
Cooler - water side <small>(Note 10)</small>				Brazed plate heat exchanger (SUS316 equivalent)		Brazed plate heat exchanger (SUS316 equivalent)	
Refrigerant	Type			R32		R32	
	R32 charge (kg)			8.8 x 4		8.8 x 4	
	Control			Electric expansion valve		Electric expansion valve	
Capacity control steps <small>(Note 11)</small> (%)				0; 5-100		0; 5-100	
Operation control				Microprocessor control based on leaving water temperature and temperature difference			
Defrost system				Distributed reverse cycle system		Distributed reverse cycle system	
Protective device				High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)			
Piping diameters	Cold/Hot water inlet (A)			2-1/2" flange (JIS10K)		2-1/2" flange (JIS10K)	
	Cold/Hot water outlet (A)			2-1/2" flange (JIS10K)		2-1/2" flange (JIS10K)	
	Coil drain (A)			PT1-1/2" external thread		PT1-1/2" external thread	
Sound power level dB(A)				83.8		83.8	

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

For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.

Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281.

(Note 2) Dimensions do not include projections of water pipe connections.

(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 power supply differs from pump capacity. Please refer to pump information table to design power supply correctly.

(Note 5) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 6) Power factors may vary depending on site conditions.

(Note 7) Electrical data does not include inbuilt pump.

(Note 8) 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 9) 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 10) Working pressure is below 0.7 MPa.

(Note 11) Range of capacity control sometimes can vary depending on the unit's operating condition.

Specifications Internal inverter pump

60HP

Series *EDGE* Heat pump

		Standard type	High-EER type
		380V /400V/ 415V	380V /400V/ 415V
		RUAGP511H18	RUAGP511H1N8
Model (A single module unit)			
Cooling capacity (Note 1) (kW)		180	180
Heating capacity (Note 1) (kW)		180	180
Exterior	Unit color		Silky shade (Munsell 1Y8.5/0.5)
	Dimensions	Height (mm)	2,350
		Width (Note 2) (mm)	1,000
		Depth (Note 2) (mm)	3,300
Shipping weight (kg)		1,348	1,360
Operating weight (kg)		1,384	1,396
Power supply (Note 1-3)		3-phase 4-wire 50/60Hz 380V/400V/415V	3-phase 4-wire 50/60Hz 380V/400V/415V
Reference current for power supply design (Note 4-5) (A)		103	103
Electrical data	Cooling	Nominal current (A)	84.8
		Nominal input (kW)	55.2
		EER	3.26
		SEER	4.77
		Power factor (Note 6) (%)	99
	Heating	Nominal current (A)	79.6
		Nominal input (kW)	51.9
		COP	3.47
		SCOP	4.35
		Power factor (Note 6) (%)	99
(Note 7)			
Compressor	Type		Hermetic rotary x 4
	Motor output x number of units (kW)		11.2 x 4
	Type of start		Inverter starter
	Case heater (W)		37 x 4
Compressor oil	Type	RB74AF	RB74AF
	Charge (L)	2.0 x 4	2.0 x 4
Condenser coil - air side		Plate fin coil	Plate fin coil
Fan	Type		Propeller fan
	Air quantity (m ³ /min)		1,230 (maximum)
	Type of start		Inverter starter
	Motor output x number of units (kW)		1.2 x 4
Spray system	Water spray volume (L/min)		-
	Supply water pressure (Note 9) (MPa)		-
	Control		-
(Note 8)	Continuous spraying when outside temperature and compressor capacity exceeds setting values		
Pump	Motor output (kW)		1.5
	Type		Centrifugal pump
	Flow control		Inverter
	Maximum current (A)		3.1
	Minimum input (kW)		2
Cooler - water side (Note 10)		Braze plate heat exchanger (SUS316 equivalent)	Braze plate heat exchanger (SUS316 equivalent)
Refrigerant	Type		R32
	R32 charge (kg)		8.8 x 4
	Control		Electric expansion valve
Capacity control steps (Note 11) (%)		0; 5-100	0; 5-100
Operation control		Microprocessor control based on leaving water temperature and temperature difference	
Defrost system		Distributed reverse cycle system	
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)	
Piping diameters	Cold/Hot water inlet (A)	2-1/2" flange (JIS10K)	2-1/2" flange (JIS10K)
	Cold/Hot water outlet (A)	2-1/2" flange (JIS10K)	2-1/2" flange (JIS10K)
	Coil drain (A)	PT1-1/2" external thread	PT1-1/2" external thread
Sound power level (dB(A))		87.4	87.4

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.
 For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
 For heating: 40°C entering water (EWT), 45°C leaving water (LWT), 7°CDB, 6°CWB outdoor air (OAT)
 Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.
 Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281 and (EU)No813/2013.

(Note 2) Dimensions do not include projections of water pipe connections.
 (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 power supply differs from pump capacity. Please refer to pump information table to design power supply correctly.
 (Note 5) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.
 (Note 6) Power factors may vary depending on site conditions.
 (Note 7) Electrical data does not include inbuilt pump.
 (Note 8) 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 9) 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 10) Working pressure is below 0.7 MPa.
 (Note 11) Range of capacity control sometimes can vary depending on the unit's operating condition.

Specifications Internal inverter pump

60HP Powerful Heating Type Heat pump

		Standard type		High-EER type		
		380V /400V/ 415V		380V /400V/ 415V		
Model (A single module unit)		RUAGP511F18		RUAGP511F1N8		
Cooling capacity (Note 1) (kW)		180		180		
Heating capacity (Note 1) (kW)		200		200		
Exterior	Unit color		Silky shade (Munsell 1Y8.5/0.5)		Silky shade (Munsell 1Y8.5/0.5)	
	Dimensions	Height (mm)	2,350		2,350	
		Width (Note 2) (mm)	1,000		1,000	
		Depth (Note 2) (mm)	3,300		3,300	
Shipping weight (kg)		1,359		1,371		
Operating weight (kg)		1,395		1,407		
Power supply (Note 1-3)		3-phase 4-wire 50/60Hz 380V/400V/415V		3-phase 4-wire 50/60Hz 380V/400V/415V		
Reference current for power supply design (Note 4-5) (A)		113		113		
Electrical data	Cooling	Nominal current (A)	84.8		57.3	
		Nominal input (kW)	55.2		37.4	
		EER	3.26		4.81	
		SEER	4.77		4.94	
		Power factor (Note 6) (%)	99		99	
	Heating	Nominal current (A)	90.6		90.6	
		Nominal input (kW)	59		59	
		COP	3.39		3.39	
		SCOP	4.23		4.23	
		Power factor (Note 6) (%)	99		99	
(Note 7)						
Compressor	Type		Hermetic rotary x 4		Hermetic rotary x 4	
	Motor output x number of units (kW)		12.5 x 4		12.5 x 4	
	Type of start		Inverter starter		Inverter starter	
	Case heater (W)		37 x 4		37 x 4	
Compressor oil	Type	RB74AF		RB74AF		
	Charge (L)	2.0 x 4		2.0 x 4		
Condenser coil - air side		Plate fin coil		Plate fin coil		
Fan	Type		Propeller fan		Propeller fan	
	Air quantity (m ³ /min)		1,230 (maximum)		1,230 (maximum)	
	Type of start		Inverter starter		Inverter starter	
	Motor output x number of units (kW)		1.2 x 4		1.2 x 4	
Pump	Motor output (kW)		1.5		1.5	
	Type		Centrifugal pump		Centrifugal pump	
	Flow control		Inverter		Inverter	
	Maximum current (A)		3.1		3.1	
	Minimum input (kW)		2		2	
Cooler - water side (Note 9)		Braze plate heat exchanger (SUS316 equivalent)		Braze plate heat exchanger (SUS316 equivalent)		
Refrigerant	Type		R32		R32	
	R32 charge (kg)		8.8 x 4		8.8 x 4	
	Control		Electric expansion valve		Electric expansion valve	
Drain pan heater (W)		75 x 6		75 x 6		
Capacity control steps (Note 10) (%)		0; 5-100		0; 5-100		
Operation control		Microprocessor control based on leaving water temperature and temperature difference				
Defrost system		Distributed reverse cycle system		Distributed reverse cycle system		
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. outout, low flow rate, discharge gas overheat protection, low pressure outout, thermistor error, high water pressure error)				
Piping/valves	Cold/Hot water inlet (A)	2-1/2" flange (JIS10K)		2-1/2" flange (JIS10K)		
	Cold/Hot water outlet (A)	2-1/2" flange (JIS10K)		2-1/2" flange (JIS10K)		
	Coil drain (A)	PT1-1/2" external thread		PT1-1/2" external thread		
Sound power level dB(A)		87.4		87.4		

- (Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.
 For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
 For heating: 40°C entering water (EWT), 45°C leaving water (LWT), 7°CDB, 6°CWB outdoor air (OAT)
 Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.
 Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281 and (EU)No813/2013.
- (Note 2) Dimensions do not include projections of water pipe connections.
- (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 power supply differs from pump capacity. Please refer to pump information table to design power supply correctly.
- (Note 5) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.
- (Note 6) Power factors may vary depending on site conditions.
- (Note 7) Electrical data does not include inbuilt pump.
- (Note 8) 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 9) Working pressure is below 0.7 MPa.
- (Note 10) Range of capacity control sometimes can vary depending on the unit's operating condition.

Specifications Internal inverter pump

60HP Series EDGE Cooling-only

		Standard type	High-EER type
Model (A single module unit)		380V /400V/ 415V RUAGP511C18	380V /400V/ 415V RUAGP511C1N8
Cooling capacity (Note 1) (kW)		180	180
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)	
	Dimensions	Height (mm)	2,350
		Width (Note 2) (mm)	1,000
		Depth (Note 2) (mm)	3,300
Shipping weight (kg)		1,309	1,322
Operating weight (kg)		1,345	1,358
Power supply (Note 1-3)		3-phase 4-wire 50/60Hz 380V/400V/415V	3-phase 4-wire 50/60Hz 380V/400V/415V
Reference current for power supply design (Note 4-5) (A)		103	103
Electrical data	Cooling	Nominal current (A)	84.8
		Nominal input (kW)	55
		EER	3.27
		SEER	4.8
		Power factor (Note 6) (%)	99
Compressor	Type	Hermetic rotary x 4	
	Motor output x number of units (kW)	11.2 x 4	8.6 x 4
	Type of start	Inverter starter	
	Case heater (W)	37 x 4	
Compressor oil	Type	RB74AF	
	Charge (L)	2.0 x 4	
Condenser coil - air side		Plate fin coil	
Fan	Type	Propeller fan	
	Air quantity (m ³ /min)	1,230 (maximum)	
	Type of start	Inverter starter	
	Motor output x number of units (kW)	1.2 x 4	
Spray system (Note 8)	Water spray volume (L/min)	-	13.6 x 1
	Supply water pressure (Note 9) (MPa)	-	0.2
	Control	-	Continuous spraying when outside temperature and compressor capacity exceeds setting values
Pump	Motor output (kW)	1.5	
	Type	Centrifugal pump	
	Flow control	Inverter	
	Maximum current (A)	3.1	
	Minimum input (kW)	2	
Cooler - water side (Note 10)		Braze plate heat exchanger (SUS316 equivalent)	
Refrigerant	Type	R32	
	R32 charge (kg)	8.8 x 4	
	Control	Electric expansion valve	
Capacity control steps (Note 11) (%)		0; 5-100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference	
Defrost system		Distributed reverse cycle system	
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)	
Piping diameters	Cold/Hot water inlet (A)	2-1/2" flange	
	Cold/Hot water outlet (A)	2-1/2" flange	
	Coil drain (A)	PT1-1/2" external thread	
Sound power level dB(A)		87.4	

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

For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.

Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281.

(Note 2) Dimensions do not include projections of water pipe connections.

(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 power supply differs from pump capacity. Please refer to pump information table to design power supply correctly.

(Note 5) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 6) Power factors may vary depending on site conditions.

(Note 7) Electrical data does not include inbuilt pump.

(Note 8) 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 9) 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 10) Working pressure is below 0.7 MPa.

(Note 11) Range of capacity control sometimes can vary depending on the unit's operating condition.

Specifications Internal inverter pump

70HP Series EDGE Heat pump

		Standard type	High-EER type	
		380V/400V/415V	380V/400V/415V	
Model (A single module unit)		RUAGP561H28	RUAGP561H2N8	
Cooling capacity <small>(Note 1)</small> (kW)		200	200	
Heating capacity <small>(Note 1)</small> (kW)		200	200	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)		
	Dimensions	Height (mm)	2,350	
		Width <small>(Note 2)</small> (mm)	1,000	
		Depth <small>(Note 2)</small> (mm)	3,300	
Shipping weight (kg)		1,357	1,369	
Operating weight (kg)		1,393	1,405	
Power supply <small>(Note 1-3)</small>		3-phase 4-wire 50/60Hz 380V/400V/415V		
Reference current for power supply design <small>(Note 4-5)</small> (A)		119	119	
Electrical data	Cooling	Nominal current (A)	99.7	68.9
		Nominal input (kW)	64.9	44.8
		EER	3.08	4.46
		SEER	4.75	4.92
		Power factor <small>(Note 6)</small> (%)	99	99
	Heating	Nominal current (A)	90.1	90.1
		Nominal input (kW)	59	59
		COP	3.39	3.39
		SCOP	4.28	4.28
		Power factor <small>(Note 6)</small> (%)	99	99
<small>(Note 7)</small>				
Compressor	Type	Hermetic rotary x 4		
	Motor output x number of units (kW)	13.3 x 4	12.5 x 4	
	Type of start	Inverter starter		
	Case heater (W)	37 x 4	37 x 4	
Compressor oil	Type	RB74AF	RB74AF	
	Charge (L)	2.0 x 4	2.0 x 4	
Condenser coil - air side		Plate fin coil	Plate fin coil	
Fan	Type	Propeller fan		
	Air quantity (m ³ /min)	1,230 (maximum)	1,230 (maximum)	
	Type of start	Inverter starter		
	Motor output x number of units (kW)	1.2 x 4	1.2 x 4	
Spray system	Water spray volume (L/min)	-	13.6 x 1	
	Supply water pressure <small>(Note 9)</small> (MPa)	-	0.2	
	Control	-	Continuous spraying when outside temperature and compressor capacity exceeds setting values	
Pump	Motor output (kW)	2.2	2.2	
	Type	Centrifugal pump		
	Flow control	Inverter		
	Maximum current (A)	4.3	4.3	
	Minimum input (kW)	2.8	2.8	
Cooler - water side <small>(Note 10)</small>		Braze plate heat exchanger (SUS316 equivalent)		
Refrigerant	Type	R32		
	R32 charge (kg)	8.8 x 4	8.8 x 4	
	Control	Electric expansion valve		
Capacity control steps <small>(Note 11)</small> (%)		0; 5-100	0; 5-100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference		
Defrost system		Distributed reverse cycle system		
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)		
Piping diameters	Cold/Hot water inlet (A)	3" flange (JIS10K)		
	Cold/Hot water outlet (A)	3" flange (JIS10K)		
	Coil drain (A)	PT1-1/2" external thread		
Sound power level dB(A)		90.9	90.9	

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

For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
For heating: 40°C entering water (EWT), 45°C leaving water (LWT), 7°CDB, 6°CWB outdoor air (OAT)

Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.

Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281 and (EU)No813/2013.

(Note 2) Dimensions do not include projections of water pipe connections.

(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 power supply differs from pump capacity. Please refer to pump information table to design power supply correctly.

(Note 5) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 6) Power factors may vary depending on site conditions.

(Note 7) Electrical data does not include inbuilt pump.

(Note 8) 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 9) 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 10) Working pressure is below 0.7 MPa.

(Note 11) Range of capacity control sometimes can vary depending on the unit's operating condition.

Specifications Internal inverter pump

70HP Series EDGE Cooling-only

		Standard type	High-EER type
		380V/400V/415V	380V/400V/415V
Model (A single module unit)		RUAGP561C28	RUAGP561C2N8
Cooling capacity <small>(Note 1)</small> (kW)		200	200
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)	
	Dimensions	Height (mm)	2,350
		Width <small>(Note 2)</small> (mm)	1,000
		Depth <small>(Note 2)</small> (mm)	3,300
Shipping weight (kg)		1,318	1,331
Operating weight (kg)		1,354	1,367
Power supply <small>(Note 1-3)</small>		3-phase 4-wire 50/60Hz 380V/400V/415V	3-phase 4-wire 50/60Hz 380V/400V/415V
Reference current for power supply design <small>(Note 4-5)</small> (A)		119	119
Electrical data	Cooling	Nominal current (A)	99.1
		Nominal input (kW)	64.5
		EER	3.1
		SEER	4.75
		Power factor <small>(Note 6)</small> (%)	99
Compressor	Type	Hermetic rotary x 4	
	Motor output x number of units (kW)	13.3 x 4	9.1 x 4
	Type of start	Inverter starter	
	Case heater (W)	37 x 4	
Compressor oil	Type	RB74AF	
	Charge (L)	2.0 x 4	
Condenser coil - air side		Plate fin coil	
Fan	Type	Propeller fan	
	Air quantity (m ³ /min)	1,230 (maximum)	
	Type of start	Inverter starter	
	Motor output x number of units (kW)	1.2 x 4	
Spray system <small>(Note 8)</small>	Water spray volume (L/min)	-	13.6 x 1
	Supply water pressure <small>(Note 9)</small> (MPa)	-	0.2
	Control	-	Continuous spraying when outside temperature and compressor capacity exceeds setting values
Pump	Motor output (kW)	2.2	
	Type	Centrifugal pump	
	Flow control	Inverter	
	Maximum current (A)	4.3	
	Minimum input (kW)	2.8	
Cooler - water side <small>(Note 10)</small>		Braze plate heat exchanger (SUS316 equivalent)	
Refrigerant	Type	R32	
	R32 charge (kg)	8.8 x 4	
	Control	Electric expansion valve	
Capacity control steps <small>(Note 11)</small> (%)		0; 5-100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference	
Defrost system		Distributed reverse cycle system	
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)	
Piping diameters	Cold/Hot water inlet (A)	3" flange (JIS10K)	
	Cold/Hot water outlet (A)	3" flange (JIS10K)	
	Coil drain (A)	PT1-1/2" external thread	
Sound power level dB(A)		90.9	

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

For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.

Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281.

(Note 2) Dimensions do not include projections of water pipe connections.

(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 power supply differs from pump capacity. Please refer to pump information table to design power supply correctly.

(Note 5) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 6) Power factors may vary depending on site conditions.

(Note 7) Electrical data does not include inbuilt pump.

(Note 8) 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 9) 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 10) Working pressure is below 0.7 MPa.

(Note 11) Range of capacity control sometimes can vary depending on the unit's operating condition.

Specifications Pumpless

50HP Series EDGE Heat pump

		Standard type	High-EER type
		380V/400V/415V	380V/400V/415V
Model (A single module unit)		RUAGP421HL8	RUAGP421HLN8
Cooling capacity ^(Note 1) (kW)		150	150
Heating capacity ^(Note 1) (kW)		150	150
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)	Silky shade (Munsell 1Y8.5/0.5)
	Dimensions	Height (mm)	2,350
		Width ^(Note 2) (mm)	1,000
		Depth ^(Note 2) (mm)	3,300
Shipping weight (kg)		1,290	1,302
Operating weight (kg)		1,326	1,338
Power supply ^(Note 1-3)		3-phase 4-wire 50/60Hz 380V/400V/415V	3-phase 4-wire 50/60Hz 380V/400V/415V
Reference current for power supply design ^(Note 4) (A)		79	79
Electrical data	Cooling	Nominal current (A)	65.3
		Nominal input (kW)	42.5
		EER	3.53
		SEER	4.88
	Heating	Power factor ^(Note 5) (%)	99
		Nominal current (A)	63.6
		Nominal input (kW)	41.4
		COP	3.62
SCOP		4.26	
Power factor ^(Note 5) (%)		99	
Compressor	Type	Hermetic rotary x 4	Hermetic rotary x 4
	Motor output x number of units (kW)	9.0 x 4	9.0 x 4
	Type of start	Inverter starter	Inverter starter
	Case heater (W)	37 x 4	37 x 4
Compressor oil	Type	RB74AF	RB74AF
	Charge (L)	2.0 x 4	2.0 x 4
Condenser coil - air side		Plate fin coil	Plate fin coil
Fan	Type	Propeller fan	Propeller fan
	Air quantity (m ³ /min)	1,230 (maximum)	1,230 (maximum)
	Type of start	Inverter starter	Inverter starter
	Motor output x number of units (kW)	1.2 x 4	1.2 x 4
Spray system ^(Note 7)	Water spray volume (L/min)	-	13.6 x 1
	Supply water pressure ^(Note 8) (MPa)	-	0.2
	Control	-	Continuous spraying when outside temperature and compressor capacity exceeds setting values
Cooler - water side ^(Note 9)		Brazed plate heat exchanger (SUS316 equivalent)	Brazed plate heat exchanger (SUS316 equivalent)
Refrigerant	Type	R32	R32
	R32 charge (kg)	8.8 x 4	8.8 x 4
	Control	Electric expansion valve	Electric expansion valve
Capacity control steps ^(Note 10) (%)		0; 5-100	0; 5-100
Operation control		Microprocessor control based on leaving water temperature and temperature difference	
Defrost system		Distributed reverse cycle system	Distributed reverse cycle system
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. outout, low flow rate, discharge gas overheat protection, low pressure outout, thermistor error, high water pressure error)	
Piping diameters	Cold/Hot water inlet (A)	2-1/2" flange (JIS10K)	2-1/2" flange (JIS10K)
	Cold/Hot water outlet (A)	2-1/2" flange (JIS10K)	2-1/2" flange (JIS10K)
	Coil drain (A)	PT1-1/2" external thread	PT1-1/2" external thread
Sound power level dB(A)		83.8	83.8

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

For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
 For heating: 40°C entering water (EWT), 45°C leaving water (LWT), 7°CDB, 6°CWB outdoor air (OAT)

Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.

Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281 and (EU)No813/2013.

(Note 2) Dimensions do not include projections of water pipe connections.

(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) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 5) Power factors may vary depending on site conditions.

(Note 6) Electrical data does not include inbuilt pump.

(Note 7) 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 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 9) Working pressure is below 0.7 MPa.

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

Specifications Pumpless

50HP *Powerful Heating Type* Heat pump

		Standard type	High-EER type	
		380V/400V/415V	380V/400V/415V	
Model (A single module unit)		RUAGP421FL8	RUAGP421FLN8	
Cooling capacity ^(Note 1) (kW)		150	150	
Heating capacity ^(Note 1) (kW)		150	150	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)		
	Dimensions	Height (mm)	2,350	
		Width ^(Note 2) (mm)	1,000	
		Depth ^(Note 2) (mm)	3,300	
Shipping weight (kg)		1,302	1,314	
Operating weight (kg)		1,338	1,350	
Power supply ^(Note 1-3)		3-phase 4-wire 50/60Hz 380V/400V/415V		
Reference current for power supply design ^(Note 4) (A)		82.1	82.1	
Electrical data	Cooling	Nominal current (A)	65.3	42.8
		Nominal input (kW)	42.5	27.9
		EER	3.53	5.38
		SEER	4.88	5.06
		Power factor ^(Note 5) (%)	99	99
	Heating	Nominal current (A)	99	99
		Nominal input (kW)	63.6	63.6
		COP	41.4	41.4
		SCOP	4.26	4.26
		Power factor ^(Note 5) (%)	99	99
Compressor	Type	Hermetic rotary x 4		
	Motor output x number of units (kW)	9.0 x 4		
	Type of start	Inverter starter		
	Case heater (W)	37 x 4		
Compressor oil	Type	RB74AF		
	Charge (L)	2.0 x 4		
Condenser coil - air side		Plate fin coil		
Fan	Type	Propeller fan		
	Air quantity (m ³ /min)	1,230 (maximum)		
	Type of start	Inverter starter		
	Motor output x number of units (kW)	1.2 x 4		
Spray system ^(Note 7)	Water spray volume (L/min)	-		
	Supply water pressure ^(Note 8) (MPa)	-		
	Control	-		
Cooler - water side ^(Note 9)		Brazed plate heat exchanger (SUS316 equivalent)		
Refrigerant	Type	R32		
	R32 charge (kg)	8.8 x 4		
	Control	Electric expansion valve		
Drain pan heater (W)		75 x 6		
Capacity control steps (Note 10) (%)		0; 5~100		
Operation control		Microprocessor control based on leaving water temperature and temperature difference		
Defrost system		Distributed reverse cycle system		
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)		
Piping diameters	Cold/Hot water inlet (A)	2-1/2" flange (JIS10K)		
	Cold/Hot water outlet (A)	2-1/2" flange (JIS10K)		
	Coil drain (A)	PT1-1/2" external thread		
Sound power level dB(A)		83.8		

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.
 For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
 For heating: 40°C entering water (EWT), 45°C leaving water (LWT), 7°CDB, 6°CWB outdoor air (OAT)
 Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.
 Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281 and (EU)No813/2013.

(Note 2) Dimensions do not include projections of water pipe connections.

(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) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 5) Power factors may vary depending on site conditions.

(Note 6) Electrical data does not include inbuilt pump.

(Note 7) 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 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 9) Working pressure is below 0.7 MPa.

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

Specifications Pumpless

50HP *Series EDGE* Cooling-only

		Standard type	High-EER type
Model (A single module unit)		380V/400V/415V RUAGP421CL8	380V/400V/415V RUAGP421CLN8
Cooling capacity ^(Note 1) (kW)		150	150
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)	
	Dimensions	Height (mm)	2,350
		Width ^(Note 2) (mm)	1,000
		Depth ^(Note 2) (mm)	3,300
Shipping weight (kg)		1,251	1,264
Operating weight (kg)		1,287	1,300
Power supply ^(Note 1-3)		3-phase 4-wire 50/60Hz 380V/400V/415V	3-phase 4-wire 50/60Hz 380V/400V/415V
Reference current for power supply design ^(Note 4) (A)		79	79
Electrical data ^(Note 5)	Cooling	Nominal current (A)	66.2
		Nominal input (kW)	43.1
		EER	3.48
		SEER	4.9
		Power factor ^(Note 5) (%)	99
Compressor	Type	Hermetic rotary x 4	
	Motor output x number of units (kW)	8.7 x 4	7.2 x 4
	Type of start	Inverter starter	
	Case heater (W)	37 x 4	37 x 4
Compressor oil	Type	RB74AF	RB74AF
	Charge (L)	2.0 x 4	2.0 x 4
Condenser coil - air side		Plate fin coil	Plate fin coil
Fan	Type	Propeller fan	
	Air quantity (m ³ /min)	1,230 (maximum)	1,230 (maximum)
	Type of start	Inverter starter	
	Motor output x number of units (kW)	1.2 x 4	1.2 x 4
Spray system ^(Note 7)	Water spray volume (L/min)	-	13.6 x 1
	Supply water pressure ^(Note 8) (MPa)	-	0.2
	Control	-	Continuous spraying when outside temperature and compressor capacity exceeds setting values
Cooler - water side ^(Note 9)		Brazed plate heat exchanger (SUS316 equivalent)	Brazed plate heat exchanger (SUS316 equivalent)
Refrigerant	Type	R32	
	R32 charge (kg)	8.8 x 4	8.8 x 4
	Control	Electric expansion valve	
Capacity control steps ^(Note 10) (%)		0; 5-100	0; 5-100
Operation control		Microprocessor control based on leaving water temperature and temperature difference	
Defrost system		Distributed reverse cycle system	Distributed reverse cycle system
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. outout, low flow rate, discharge gas overheat protection, low pressure outout, thermistor error, high water pressure error)	
Piping diameters	Cold/Hot water inlet (A)	2-1/2" flange (JIS10K)	2-1/2" flange (JIS10K)
	Cold/Hot water outlet (A)	2-1/2" flange (JIS10K)	2-1/2" flange (JIS10K)
	Coil drain (A)	PT1-1/2" external thread	PT1-1/2" external thread
Sound power level dB(A)		83.8	83.8

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

For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.

Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281.

(Note 2) Dimensions do not include projections of water pipe connections.

(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) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 5) Power factors may vary depending on site conditions.

(Note 6) Electrical data does not include inbuilt pump.

(Note 7) 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 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 9) Working pressure is below 0.7 MPa.

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

Specifications Pumpless

60HP Series EDGE Heat pump

		Standard type	High-EER type	
		380V/400V/415V	380V/400V/415V	
Model (A single module unit)		RUAGP511HL8	RUAGP511HLN8	
Cooling capacity ^(Note 1) (kW)		180	180	
Heating capacity ^(Note 1) (kW)		180	180	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)		
	Dimensions	Height (mm)	2,350	
		Width ^(Note 2) (mm)	1,000	
		Depth ^(Note 2) (mm)	3,300	
Shipping weight (kg)		1,290	1,302	
Operating weight (kg)		1,326	1,338	
Power supply ^(Note 1-3)		3-phase 4-wire 50/60Hz 380V/400V/415V		
Reference current for power supply design ^(Note 4) (A)		99	99	
Electrical data ^(Note 5)	Cooling	Nominal current (A)	84.8	57.3
		Nominal input (kW)	55.2	37.3
		EER	3.26	4.82
		SEER	4.77	4.94
		Power factor ^(Note 5) (%)	99	99
	Heating	Nominal current (A)	79.6	79.6
		Nominal input (kW)	51.9	51.9
		COP	3.47	3.47
		SCOP	4.35	4.35
		Power factor ^(Note 5) (%)	99	99
Compressor	Type	Hermetic rotary x 4		
	Motor output x number of units (kW)	11.2 x 4	11.1 x 4	
	Type of start	Inverter starter		
	Case heater (W)	37 x 4	37 x 4	
Compressor oil	Type	RB74AF	RB74AF	
	Charge (L)	2.0 x 4	2.0 x 4	
Condenser coil - air side		Plate fin coil	Plate fin coil	
Fan	Type	Propeller fan		
	Air quantity (m ³ /min)	1,230 (maximum)	1,230 (maximum)	
	Type of start	Inverter starter		
	Motor output x number of units (kW)	1.2 x 4	1.2 x 4	
Spray system ^(Note 7)	Water spray volume (L/min)	-	13.6 x 1	
	Supply water pressure ^(Note 8) (MPa)	-	0.2	
	Control	-	Continuous spraying when outside temperature and compressor capacity exceeds setting values	
Cooler - water side ^(Note 9)		Braze plate heat exchanger (SUS316 equivalent)		
Refrigerant	Type	R32		
	R32 charge (kg)	8.8 x 4	8.8 x 4	
	Control	Electric expansion valve		
Capacity control steps ^(Note 10) (%)		0; 5-100	0; 5-100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference		
Defrost system		Distributed reverse cycle system	Distributed reverse cycle system	
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. outout, low flow rate, discharge gas overheat protection, low pressure outout, thermistor error, high water pressure error)		
Piping diameters	Cold/Hot water inlet (A)	2-1/2" flange (JIS10K)	2-1/2" flange (JIS10K)	
	Cold/Hot water outlet (A)	2-1/2" flange (JIS10K)	2-1/2" flange (JIS10K)	
	Coil drain (A)	PT1-1/2" external thread	PT1-1/2" external thread	
Sound power level dB(A)		87.4	87.4	

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

For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
 For heating: 40°C entering water (EWT), 45°C leaving water (LWT), 7°CDB, 6°CWB outdoor air (OAT)

Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.

Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281 and (EU)No813/2013.

(Note 2) Dimensions do not include projections of water pipe connections.

(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) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 5) Power factors may vary depending on site conditions.

(Note 6) Electrical data does not include inbuilt pump.

(Note 7) 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 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 9) Working pressure is below 0.7 MPa.

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

Specifications Pumpless

60HP *Powerful Heating Type* Heat pump

		Standard type	High-EER type	
		380V/400V/415V	380V/400V/415V	
Model (A single module unit)		RUAGP511FL8	RUAGP511FLN8	
Cooling capacity ^(Note 1) (kW)		180	180	
Heating capacity ^(Note 1) (kW)		200	200	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)		
	Dimensions	Height (mm)	2,350	
		Width ^(Note 2) (mm)	1,000	
		Depth ^(Note 2) (mm)	3,300	
Shipping weight (kg)		1,302	1,314	
Operating weight (kg)		1,338	1,350	
Power supply ^(Note 1-3)		3-phase 4-wire 50/60Hz 380V/400V/415V		
Reference current for power supply design ^(Note 4) (A)		110	110	
Electrical data	Cooling	Nominal current (A)	84.8	57.3
		Nominal input (kW)	55.2	37.4
		EER	3.26	4.81
		SEER	4.77	4.94
		Power factor ^(Note 5) (%)	99	99
	Heating	Nominal current (A)	90.6	90.6
		Nominal input (kW)	59	59
		COP	3.39	3.39
		SCOP	4.23	4.23
		Power factor ^(Note 5) (%)	99	99
Compressor	Type	Hermetic rotary x 4		
	Motor output x number of units (kW)	12.5 x 4		
	Type of start	Inverter starter		
	Case heater (W)	37 x 4		
Compressor oil	Type	RB74AF		
	Charge (L)	2.0 x 4		
Condenser coil - air side		Plate fin coil		
Fan	Type	Propeller fan		
	Air quantity (m ³ /min)	1,230 (maximum)		
	Type of start	Inverter starter		
	Motor output x number of units (kW)	1.2 x 4		
Spray system ^(Note 7)	Water spray volume (L/min)	-	13.6 x 1	
	Supply water pressure ^(Note 8) (MPa)	-	0.2	
	Control	-	Continuous spraying when outside temperature and compressor capacity exceeds setting values	
Cooler - water side ^(Note 9)		Brazed plate heat exchanger (SUS316 equivalent)		
Refrigerant	Type	R32		
	R32 charge (kg)	8.8 x 4		
	Control	Electric expansion valve		
Drain pan heater (W)		75 x 6		
Capacity control steps (Note 10) (%)		0; 5-100		
Operation control		Microprocessor control based on leaving water temperature and temperature difference		
Defrost system		Distributed reverse cycle system	Distributed reverse cycle system	
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. outout, low flow rate, discharge gas overheat protection, low pressure outout, thermistor error, high water pressure error)		
Piping diameters	Cold/Hot water inlet (A)	2-1/2" flange (JIS10K)		
	Cold/Hot water outlet (A)	2-1/2" flange (JIS10K)		
	Coil drain (A)	PT1-1/2" external thread		
Sound power level dB(A)		87.4		

(Note 1) Rated conditions, such as capacity, electrical data, and standard flow rate are as follows.
 For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
 For heating: 40°C entering water (EWT), 45°C leaving water (LWT), 7°CDB, 6°CWB outdoor air (OAT)
 Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.
 Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281 and (EU)No813/2013.

(Note 2) Dimensions do not include projections of water pipe connections.

(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) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 5) Power factors may vary depending on site conditions.

(Note 6) Electrical data does not include inbuilt pump.

(Note 7) 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 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 9) Working pressure is below 0.7 MPa.

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

Specifications Pumpless

60HP Series EDGE Cooling-only

		Standard type		High-EER type	
		380V/400V/415V		380V/400V/415V	
Model (A single module unit)		RUAGP511CL8		RUAGP511CLN8	
Cooling capacity <small>(Note 1)</small> (kW)		180		180	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)		Silky shade (Munsell 1Y8.5/0.5)	
	Dimensions	Height (mm)	2,350	2,350	
		Width <small>(Note 2)</small> (mm)	1,000	1,000	
		Depth <small>(Note 2)</small> (mm)	3,300	3,300	
Shipping weight (kg)		1,251		1,264	
Operating weight (kg)		1,287		1,300	
Power supply <small>(Note 1-3)</small>		3-phase 4-wire 50/60Hz 380V/400V/415V		3-phase 4-wire 50/60Hz 380V/400V/415V	
Reference current for power supply design <small>(Note 4)</small> (A)		99		99	
Electrical data	Cooling	Nominal current (A)	84.8	57.5	
		Nominal input (kW)	55	37.4	
		EER	3.27	4.81	
		SEER	4.8	4.99	
		Power factor <small>(Note 5)</small> (%)	99	99	
Compressor	Type	Hermetic rotary x 4		Hermetic rotary x 4	
	Motor output x number of units (kW)	11.2 x 4		8.6 x 4	
	Type of start	Inverter starter		Inverter starter	
	Case heater (W)	37 x 4		37 x 4	
Compressor oil	Type	RB74AF		RB74AF	
	Charge (L)	2.0 x 4		2.0 x 4	
Condenser coil - air side		Plate fin coil		Plate fin coil	
Fan	Type	Propeller fan		Propeller fan	
	Air quantity (m ³ /min)	1,230 (maximum)		1,230 (maximum)	
	Type of start	Inverter starter		Inverter starter	
	Motor output x number of units (kW)	1.2 x 4		1.2 x 4	
Spray system <small>(Note 7)</small>	Water spray volume (L/min)	-		13.6 x 1	
	Supply water pressure <small>(Note 8)</small> (MPa)	-		0.2	
	Control	-		Continuous spraying when outside temperature and compressor capacity exceeds setting values	
Cooler - water side <small>(Note 9)</small>		Braze plate heat exchanger (SUS316 equivalent)		Braze plate heat exchanger (SUS316 equivalent)	
Refrigerant	Type	R32		R32	
	R32 charge (kg)	8.8 x 4		8.8 x 4	
	Control	Electric expansion valve		Electric expansion valve	
Capacity control steps <small>(Note 10)</small> (%)		0; 5-100		0; 5-100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference			
Defrost system		Distributed reverse cycle system		Distributed reverse cycle system	
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. outout, low flow rate, discharge gas overheat protection, low pressure outout, thermistor error, high water pressure error)			
Piping diameters	Cold/Hot water inlet (A)	2-1/2" flange (JIS10K)		2-1/2" flange (JIS10K)	
	Cold/Hot water outlet (A)	2-1/2" flange (JIS10K)		2-1/2" flange (JIS10K)	
	Coil drain (A)	PT1-1/2" external thread		PT1-1/2" external thread	
Sound power level dB(A)		87.4		87.4	

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

For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.

Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281.

(Note 2) Dimensions do not include projections of water pipe connections.

(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) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 5) Power factors may vary depending on site conditions.

(Note 6) Electrical data does not include inbuilt pump.

(Note 7) 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 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 9) Working pressure is below 0.7 MPa.

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

Specifications Pumpless

70HP *Series EDGE* Heat pump

		Standard type	High-EER type	
		380V /400V/ 415V	380V /400V/ 415V	
Model (A single module unit)		RUAGP561HL8	RUAGP561HLN8	
Cooling capacity (Note 1) (kW)		200	200	
Heating capacity (Note 1) (kW)		200	200	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)		
	Dimensions	Height (mm)	2,350	
		Width (Note 2) (mm)	1,000	
		Depth (Note 2) (mm)	3,300	
Shipping weight (kg)		1,296	1,308	
Operating weight (kg)		1,332	1,344	
Power supply (Note 1-3)		3-phase 4-wire 50/60Hz 380V/400V/415V		
Reference current for power supply design (Note 4) (A)		115	115	
Electrical data	Cooling	Nominal current (A)	99.7	68.9
		Nominal input (kW)	64.9	44.8
		EER	3.08	4.46
		SEER	4.72	4.89
		Power factor (Note 5) (%)	99	99
	Heating	Nominal current (A)	90.1	90.1
		Nominal input (kW)	59	59
		COP	3.39	3.39
		SCOP	4.28	4.28
		Power factor (Note 5) (%)	99	99
Compressor	Type	Hermetic rotary x 4		
	Motor output x number of units (kW)	13.3 x 4	12.5 x 4	
	Type of start	Inverter starter		
	Case heater (W)	37 x 4	37 x 4	
Compressor oil	Type	RB74AF	RB74AF	
	Charge (L)	2.0 x 4	2.0 x 4	
Condenser coil - air side		Plate fin coil	Plate fin coil	
Fan	Type	Propeller fan	Propeller fan	
	Air quantity (m ³ /min)	1,230 (maximum)	1,230 (maximum)	
	Type of start	Inverter starter	Inverter starter	
	Motor output x number of units (kW)	1.2 x 4	1.2 x 4	
Spray system (Note 7)	Water spray volume (L/min)	-	13.6 x 1	
	Supply water pressure (Note 8) (MPa)	-	0.2	
	Control	-	Continuous spraying when outside temperature and compressor capacity exceeds setting values	
Cooler - water side (Note 9)		Brazed plate heat exchanger (SUS316 equivalent)	Brazed plate heat exchanger (SUS316 equivalent)	
Refrigerant	Type	R32	R32	
	R32 charge (kg)	8.8 x 4	8.8 x 4	
	Control	Electric expansion valve		
Capacity control steps (Note 10) (%)		0; 5-100	0; 5-100	
Operation control		Microprocessor control based on leaving water temperature and temperature difference		
Defrost system		Distributed reverse cycle system	Distributed reverse cycle system	
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. outout, low flow rate, discharge gas overheat protection, low pressure outout, thermistor error, high water pressure error)		
Piping diameters	Cold/Hot water inlet (A)	3" flange (JIS10K)	3" flange (JIS10K)	
	Cold/Hot water outlet (A)	3" flange (JIS10K)	3" flange (JIS10K)	
	Coil drain (A)	PT1-1/2" external thread	PT1-1/2" external thread	
Sound power level dB(A)		90.9	90.9	

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

For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
For heating: 40°C entering water (EWT), 45°C leaving water (LWT), 7°CDB, 6°CWB outdoor air (OAT)

Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.

Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281 and (EU)No813/2013.

(Note 2) Dimensions do not include projections of water pipe connections.

(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) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 5) Power factors may vary depending on site conditions.

(Note 6) Electrical data does not include inbuilt pump.

(Note 7) 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 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 9) Working pressure is below 0.7 MPa.

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

Specifications Pumpless

70HP Series EDGE Cooling-only

		Standard type		High-EER type		
		380V /400V/ 415V		380V /400V/ 415V		
Model (A single module unit)		RUAGP561CL8		RUAGP561CLN8		
Cooling capacity (Note 1) (kW)		200		200		
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)		Silky shade (Munsell 1Y8.5/0.5)		
	Dimensions	Height (mm)	2,350		2,350	
		Width (Note 2) (mm)	1,000		1,000	
		Depth (Note 2) (mm)	3,300		3,300	
Shipping weight (kg)		1,258		1,270		
Operating weight (kg)		1,294		1,306		
Power supply (Note 1-3)		3-phase 4-wire 50/60Hz 380V/400V/415V		3-phase 4-wire 50/60Hz 380V/400V/415V		
Reference current for power supply design (Note 4) (A)		115		115		
Electrical data	Cooling	Nominal current (A)	99.1		68.1	
		Nominal input (kW)	64.5		44.3	
		EER	3.1		4.51	
		SEER	4.75		4.92	
		Power factor (Note 5) (%)	99		99	
Compressor	Type	Hermetic rotary x 4		Hermetic rotary x 4		
	Motor output x number of units (kW)	13.3 x 4		9.1 x 4		
	Type of start	Inverter starter		Inverter starter		
	Case heater (W)	37 x 4		37 x 4		
Compressor oil	Type	RB74AF		RB74AF		
	Charge (L)	2.0 x 4		2.0 x 4		
Condenser coil - air side		Plate fin coil		Plate fin coil		
Fan	Type	Propeller fan		Propeller fan		
	Air quantity (m ³ /min)	1,230 (maximum)		1,230 (maximum)		
	Type of start	Inverter starter		Inverter starter		
	Motor output x number of units (kW)	1.2 x 4		1.2 x 4		
Spray system (Note 7)	Water spray volume (L/min)	-		13.6 x 1		
	Supply water pressure (Note 8) (MPa)	-		0.2		
	Control	-		Continuous spraying when outside temperature and compressor capacity exceeds setting values		
Cooler - water side (Note 9)		Braze plate heat exchanger (SUS316 equivalent)		Braze plate heat exchanger (SUS316 equivalent)		
Refrigerant	Type	R32		R32		
	R32 charge (kg)	8.8 x 4		8.8 x 4		
	Control	Electric expansion valve		Electric expansion valve		
Capacity control steps (Note 10) (%)		0; 5-100		0; 5-100		
Operation control		Microprocessor control based on leaving water temperature and temperature difference				
Defrost system		Distributed reverse cycle system		Distributed reverse cycle system		
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)				
Piping diameters	Cold/Hot water inlet (A)	3" flange (JIS10K)		3" flange (JIS10K)		
	Cold/Hot water outlet (A)	3" flange (JIS10K)		3" flange (JIS10K)		
	Coil drain (A)	PT1-1/2" external thread		PT1-1/2" external thread		
Sound power level dB(A)		90.9		90.9		

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

For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature
Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.

Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281.

(Note 2) Dimensions do not include projections of water pipe connections.

(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) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 5) Power factors may vary depending on site conditions.

(Note 6) Electrical data does not include inbuilt pump.

(Note 7) 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 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 9) Working pressure is below 0.7 MPa.

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

Perspective on Set Specifications (Calculation Method)

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

		Ex.) 50HP x 1 (single unit)	Ex.) 50HP x 16 units	Calculation Method	
Model (A single module unit)		RUAGP421H1N8	RUAGP421H1N8		
Cooling capacity (Note 1) (kW)		150	2400	(Single unit value) x (number of module units in set)	
Heating capacity (Note 1) (kW)		150	2400	(Single unit value) x (number of module units in set)	
Exterior	Unit color	Silky shade (Munsell 1Y8.5/0.5)		-	
	Dimensions	Height (mm)	2,350	See General Charts	
		Width (Note 2) (mm)	1,000		
		Depth (Note 2) (mm)	3,300		
Shipping weight (kg)		1,360	21,760	(Single unit value) x (number of module units in set)	
Operating weight (kg)		1,396	22,336	(Single unit value) x (number of module units in set)	
Power supply (Note 1-3)		3-phase 4-wire 50/60Hz 380V/400V/415V	3-phase 4-wire 50/60Hz 380V/400V/415V		
Reference current for power supply design (Note 4-5) (A)		82.1	82.1 x 16	(Single unit value) x (number of module units in set)	
Electrical data	Cooling	Nominal current (A)	42.8	684.8	(Single unit value) x (number of module units in set)
		Nominal input (kW)	27.9	446.4	(Single unit value) x (number of module units in set)
		EER	5.38	5.38	-
		SEER	5.06	5.06	-
		Power factor (Note 6) (%)	99	99	-
	Heating	Nominal current (A)	63.6	1017.6	(Single unit value) x (number of module units in set)
		Nominal input (kW)	41.4	662.4	(Single unit value) x (number of module units in set)
		COP	3.62	3.62	-
		SCOP	4.26	4.26	-
(Note 7)	Power factor (Note 6) (%)	99	99	-	
Compressor	Type	Hermetic rotary		-	
	Motor output x number of units (kW)	9.0 x 4	9.0 x 64	(Single unit value) x (number of module units in set)	
	Type of start	Inverter starter	Inverter starter		
	Case heater (W)	37 x 4	37 x 64	(Single unit value) x (number of module units in set)	
Compressor oil	Type	RB74AF	RB74AF		
	Charge (L)	2.0 x 4	2.0 x 64	(Single unit value) x (number of module units in set)	
Condenser coil - air side		Plate fin coil	Plate fin coil	-	
Fan	Type	Propeller fan	Propeller fan	-	
	Air quantity (m ³ /min)	1,230 (maximum)	19,680 (maximum)	(Single unit value) x (number of module units in set)	
	Type of start	Inverter starter	Inverter starter		
	Motor output x number of units (kW)	1.2 x 4	1.2 x 64	(Single unit value) x (number of module units in set)	
Spray system	Water spray volume (L/min)	13.6 x 1	13.6 x 16	(Single unit value) x (number of module units in set)	
	Supply water pressure (Note 8) (MPa)	0.2	0.2	-	
	(Note 9) Control	Continuous spraying when outside temperature and compressor capacity exceeds setting values	Continuous spraying when outside temperature and compressor capacity exceeds setting values	-	
Pump	Motor output (kW)	1.5	1.5 x 16	(Single unit value) x (number of module units in set)	
	Type	Centrifugal pump	Centrifugal pump	-	
	Flow control	Inverter	Inverter	-	
	Maximum current (A)	3.1	3.1 x 16	(Single unit value) x (number of module units in set)	
	Minimum input (kW)	2	2.0 x 16	(Single unit value) x (number of module units in set)	
Cooler - water side (Note 10)		Brazed plate heat exchanger (SUS316 equivalent)	Brazed plate heat exchanger (SUS316 equivalent)	-	
Refrigerant	Type	R32	R32	-	
	R32 charge (kg)	8.8 x 4	8.8 x 64	(Single unit value) x (number of module units in set)	
	Control	Electric expansion valve	Electric expansion valve	-	
Capacity control steps (Note 11) (%)		0; 5~100	0; 5~100	-	
Operation control		Microprocessor control based on leaving water temperature and temperature difference		-	
Defrost system		Distributed reverse cycle system	Distributed reverse cycle system	-	
Protective device		High-pressure switch, Over current protection, Inverter overload protection (compressor, fan, pump), Crankcase heater, Open-phase protection, Microprocessor control (compressor time guards, freeze protection, high water temp. cutout, low flow rate, discharge gas overheat protection, low pressure cutout, thermistor error, high water pressure error)		-	
Piping diameters	Cold/Hot water inlet (A)	2-1/2" flange (JIS10K)	2-1/2" flange x 16 (JIS10K)	(Single unit value) x (number of module units in set) *Each module unit has one connection port	
	Cold/Hot water outlet (A)	2-1/2" flange (JIS10K)	2-1/2" flange x 16 (JIS10K)		
	Coil drain (A)	PT1-1/2" external thread	PT1-1/2" external thread x 16		
Sound power level dB(A)		83.8	-	See General Charts	

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

For cooling: 12°C entering water (EWT), 7°C leaving water (LWT), 35°C DB, 24°CWB outdoor air (OAT) and 21°C feed-water temperature

For heating: 40°C entering water (EWT), 45°C leaving water (LWT), 7°CDB, 6°CWB outdoor air (OAT)

Same capacities, outdoor air temperature, and supplied water temperature (only for High EER type) as indicated above.

Design water flow rate must be within the range of 5 to 10°C water temperature differences. Capacities and performance values are based on (EU)No2016/2281 and (EU)No813/2013.

(Note 2) Dimensions do not include projections of water pipe connections.

(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 power supply differs from pump capacity. Please refer to pump information table to design power supply correctly.

(Note 5) Always install an earth leakage circuit breaker. This machine includes an inverter, so please use a high-frequency-compatible product to prevent malfunction.

(Note 6) Power factors may vary depending on site conditions.

(Note 7) Electrical data does not include inbuilt pump.

(Note 8) 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 9) 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 10) Working pressure is below 0.7 MPa.

(Note 11) Range of capacity control sometimes can vary depending on the unit's operating condition.

General Charts for Set of Modules : Capacity, Dimensions, and Sound Level

50HP **Series EDGE** *Powerful Heating Type*

Number of modules	Cooling capacity (kW)	Heating capacity (kW) <small>(Note 1)</small>	Dimensions (mm) HxWxD <small>(Note 2)</small>	Sound Pressure Level <small>(Note 3)</small>			Sound Power Level
				Control box side	Air heat exchanger side	Water heat exchange side	
1	150	150	2,350x1,000x3,300	64.7	65.9	69.1	83.8
2	300	300	2,350x2,030x3,300	67.5	68.7	70.4	86.8
3	450	450	2,350x3,060x3,300	69.0	70.2	70.9	88.6
4	600	600	2,350x4,090x3,300	70.0	71.2	71.2	89.8
5	750	750	2,350x5,120x3,300	70.6	71.8	71.4	90.8
6	900	900	2,350x6,150x3,300	71.1	72.4	71.5	91.6
7	1050	1050	2,350x7,180x3,300	71.5	72.7	71.6	92.3
8	1200	1200	2,350x8,210x3,300	71.8	73.0	71.7	92.8
9	1350	1350	2,350x9,240x3,300	72.0	73.2	71.8	93.3
10	1500	1500	2,350x10,270x3,300	72.2	73.4	71.8	93.8
11	1650	1650	2,350x11,300x3,300	72.3	73.5	71.8	94.2
12	1800	1800	2,350x12,300x3,300	72.4	73.7	71.9	94.6
13	1950	1950	2,350x13,360x3,300	72.5	73.7	71.9	94.9
14	2100	2100	2,350x14,390x3,300	72.6	73.9	71.9	95.3
15	2250	2250	2,350x15,420x3,300	72.7	73.9	71.9	95.6
16	2400	2400	2,350x16,450x3,300	72.8	74.0	72.0	95.8

Note 1: Only for heat pump types.

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

Note 3: The on-site sound level will be higher due to the effect of back noise and sound reflection.

60HP **Series EDGE**

Number of modules	Cooling capacity (kW)	Heating capacity (kW) <small>(Note 1)</small>	Dimensions (mm) HxWxD <small>(Note 2)</small>	Sound Pressure Level <small>(Note 3)</small>			Sound Power Level
				Control box side	Air heat exchanger side	Water heat exchange side	
1	180	180	2,350x1,000x3,300	68.2	68.3	71.2	87.4
2	360	360	2,350x2,030x3,300	71.0	71.1	72.5	90.4
3	540	540	2,350x3,060x3,300	72.5	72.6	73.1	92.2
4	720	720	2,350x4,090x3,300	73.5	73.6	73.3	93.4
5	900	900	2,350x5,120x3,300	74.1	74.2	73.5	94.4
6	1080	1080	2,350x6,150x3,300	74.7	74.8	73.7	95.2
7	1260	1260	2,350x7,180x3,300	75.0	75.1	73.7	95.9
8	1440	1440	2,350x8,210x3,300	75.3	75.4	73.8	96.4
9	1620	1620	2,350x9,240x3,300	75.5	75.6	73.9	96.9
10	1800	1800	2,350x10,270x3,300	75.7	75.8	73.9	97.4
11	1980	1980	2,350x11,300x3,300	75.8	75.9	74.0	97.8
12	2160	2160	2,350x12,300x3,300	76.0	76.1	74.0	98.2
13	2340	2340	2,350x13,360x3,300	76.0	76.1	74.0	98.5
14	2520	2520	2,350x14,390x3,300	76.1	76.2	74.0	98.9
15	2700	2700	2,350x15,420x3,300	76.2	76.3	74.1	99.2
16	2880	2880	2,350x16,450x3,300	76.3	76.4	74.1	99.4

Note 1: Only for heat pump types.

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

Note 3: The on-site sound level will be higher due to the effect of back noise and sound reflection.

General Charts for Set of Modules : Capacity, Dimensions, and Sound Level

60HP *Powerful Heating Type*

Number of modules	Cooling capacity (kW)	Heating capacity (kW) <small>(Note 1)</small>	Dimensions (mm) HxWxD <small>(Note 2)</small>	Sound Pressure Level <small>(Note 3)</small>			Sound Power Level
				Control box side	Air heat exchanger side	Water heat exchange side	
1	180	200	2,350x1,000x3,300	68.2	68.3	71.2	87.4
2	360	400	2,350x2,030x3,300	71.0	71.1	72.5	90.4
3	540	600	2,350x3,060x3,300	72.5	72.6	73.1	92.2
4	720	800	2,350x4,090x3,300	73.5	73.6	73.3	93.4
5	900	1000	2,350x5,120x3,300	74.1	74.2	73.5	94.4
6	1080	1200	2,350x6,150x3,300	74.7	74.8	73.7	95.2
7	1260	1400	2,350x7,180x3,300	75.0	75.1	73.7	95.9
8	1440	1600	2,350x8,210x3,300	75.3	75.4	73.8	96.4
9	1620	1800	2,350x9,240x3,300	75.5	75.6	73.9	96.9
10	1800	2000	2,350x10,270x3,300	75.7	75.8	73.9	97.4
11	1980	2200	2,350x11,300x3,300	75.8	75.9	74.0	97.8
12	2160	2400	2,350x12,300x3,300	76.0	76.1	74.0	98.2
13	2340	2600	2,350x13,360x3,300	76.0	76.1	74.0	98.5
14	2520	2800	2,350x14,390x3,300	76.1	76.2	74.0	98.9
15	2700	3000	2,350x15,420x3,300	76.2	76.3	74.1	99.2
16	2880	3200	2,350x16,450x3,300	76.3	76.4	74.1	99.4

Note 1: Only for heat pump types.

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

Note 3: The on-site sound level will be higher due to the effect of back noise and sound reflection.

70HP *Series EDGE*

Number of modules	Cooling capacity (kW)	Heating capacity (kW) <small>(Note 1)</small>	Dimensions (mm) HxWxD <small>(Note 2)</small>	Sound Pressure Level <small>(Note 3)</small>			Sound Power Level
				Control box side	Air heat exchanger side	Water heat exchange side	
1	200	200	2,350x1,000x3,300	69.7	68.6	74.0	90.9
2	400	400	2,350x2,030x3,300	72.5	71.5	75.3	93.9
3	600	600	2,350x3,060x3,300	74.0	72.9	75.9	95.7
4	800	800	2,350x4,090x3,300	75.0	74.0	76.2	96.9
5	1000	1000	2,350x5,120x3,300	75.6	74.6	76.3	97.9
6	1200	1200	2,350x6,150x3,300	76.1	75.1	76.5	98.7
7	1400	1400	2,350x7,180x3,300	76.5	75.4	76.6	99.4
8	1600	1600	2,350x8,210x3,300	76.8	75.7	76.6	99.9
9	1800	1800	2,350x9,240x3,300	77.0	75.9	76.7	100.4
10	2000	2000	2,350x10,270x3,300	77.2	76.1	76.7	100.9
11	2200	2200	2,350x11,300x3,300	77.3	76.2	76.8	101.3
12	2400	2400	2,350x12,300x3,300	77.4	76.4	76.8	101.7
13	2600	2600	2,350x13,360x3,300	77.5	76.5	76.8	102.0
14	2800	2800	2,350x14,390x3,300	77.6	76.6	76.8	102.4
15	3000	3000	2,350x15,420x3,300	77.7	76.6	76.9	102.7
16	3200	3200	2,350x16,450x3,300	77.8	76.7	76.9	102.9

Note 1: Only for heat pump types.

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

Note 3: The on-site sound level will be higher due to the effect of back noise and sound reflection.

Capacity Chart

Standard Type (Leaving (LVG) / Entering (ETG) water temperature difference = 7°C)

70HP Series EDGE Heat pump

List of cooling capacities RUA-GP561H (L)

Chilled water outlet temperature (°C)	Item	Outside air temperature (°C) (DB)									
		15	20	25	30	35	40	43	48	52	
4	Cooling capacity (kW)	226	217	205	194	182	171	163	144	95.6	
	Power consumption (kW)	40.9	46.6	51.6	56.7	61.5	66.8	68.5	67.0	47.8	
	Chilled water flow rate (L/min)	463	444	420	397	374	350	334	294	196	
	Operation current (A)	59.7	67.9	75.3	82.7	89.6	97.4	99.9	97.7	69.7	
7	Cooling capacity (kW)	244	237	225	212	200	187	174	150	97.6	
	Power consumption (kW)	42.1	47.0	52.6	57.8	63.3	68.5	68.0	64.7	45.0	
	Chilled water flow rate (L/min)	500	486	461	435	410	383	357	307	200	
	Operation current (A)	61.3	68.6	76.6	84.2	92.3	99.9	99.1	94.3	65.6	
9	Cooling capacity (kW)	256	250	239	226	212	198	183	152	99.1	
	Power consumption (kW)	43.0	47.2	53.1	58.7	64.0	68.8	68.0	61.8	43.5	
	Chilled water flow rate (L/min)	523	512	489	462	435	405	375	311	203	
	Operation current (A)	62.6	68.8	77.4	85.6	93.4	100.2	99.2	90.1	63.4	
12	Cooling capacity (kW)	270	267	258	245	232	214	197	156	101	
	Power consumption (kW)	44.6	47.8	53.6	59.5	65.4	69.0	68.2	58.2	41.1	
	Chilled water flow rate (L/min)	552	548	528	502	475	438	403	319	206	
	Operation current (A)	65.1	69.8	78.2	86.7	95.3	100.6	99.4	84.9	59.9	
15	Cooling capacity (kW)	274	273	265	254	242	224	208	158	101	
	Power consumption (kW)	45.0	48.0	53.9	59.9	65.9	68.9	68.2	54.9	37.7	
	Chilled water flow rate (L/min)	561	559	542	520	497	458	426	325	208	
	Operation current (A)	65.6	70.0	78.5	87.3	96.1	100.5	99.4	80.0	54.9	
20	Cooling capacity (kW)	274	273	264	253	243	227	213	160	102	
	Power consumption (kW)	45.1	48.0	53.8	59.8	66.2	69.0	68.3	53.7	36.2	
	Chilled water flow rate (L/min)	561	559	541	519	497	465	436	328	209	
	Operation current (A)	65.7	70.0	78.4	87.2	96.5	100.6	99.5	78.3	52.7	
25	Cooling capacity (kW)	266	266	260	249	238	226	213	160	102	
	Power consumption (kW)	42.8	44.9	50.7	56.6	62.5	68.3	68.3	53.7	36.2	
	Chilled water flow rate (L/min)	545	545	532	509	487	463	436	327	209	
	Operation current (A)	62.5	65.4	78.4	82.5	91.1	99.5	99.5	78.3	52.7	
30	Cooling capacity (kW)	249	250	248	237	225	214	207	102	102	
	Power consumption (kW)	46.6	40.5	44.9	50.4	55.6	61.3	64.7	36.3	36.3	
	Chilled water flow rate (L/min)	510	511	508	485	462	437	423	209	209	
	Operation current (A)	57.3	59.1	65.5	73.5	81.0	89.4	94.3	52.9	52.9	

List of heating capacities RUA-GP561H (L)

Warm water outlet temperature (°C)	Item	Outside air temperature (°C) (DB)							
		-15	-10	-5	0	4	7	15	
25	Heating capacity (kW)	153	174	196	214	231	203	237	
	Power consumption (kW)	49.7	50.9	51.4	51.3	52.4	38.5	37.9	
	Warm water flow rate (L/min)	314	356	401	437	473	415	485	
	Operation current (A)	74	76	76	76	77	57	55	
30	Heating capacity (kW)	154	175	196	213	230	202	235	
	Power consumption (kW)	54.6	56.1	56.8	56.8	58.2	43.4	43.2	
	Warm water flow rate (L/min)	315	357	402	436	471	414	482	
	Operation current (A)	81	83	84	84	86	63	63	
35	Heating capacity (kW)	153	175	197	213	229	201	235	
	Power consumption (kW)	58.8	61.2	62.5	62.3	63.6	48.2	48.9	
	Warm water flow rate (L/min)	314	357	402	436	469	412	481	
	Operation current (A)	88	90	92	92	94	70	71	
40	Heating capacity (kW)	153	174	196	212	229	200	234	
	Power consumption (kW)	63.5	65.9	67.8	67.3	69.2	53.1	54.3	
	Warm water flow rate (L/min)	312	356	402	434	468	410	479	
	Operation current (A)	94	97	100	99	102	77	79	
45	Heating capacity (kW)	151	173	192	208	221	200	233	
	Power consumption (kW)	67.4	70.6	71.4	71.0	71.3	58.1	59.9	
	Warm water flow rate (L/min)	309	354	392	426	453	410	477	
	Operation current (A)	99	104	105	105	104	85	87	
50	Heating capacity (kW)		164	180	196	208	200	232	
	Power consumption (kW)		71.3	70.9	70.8	71.0	63.3	65.7	
	Warm water flow rate (L/min)		336	369	401	425	410	474	
	Operation current (A)		105	104	103	104	92	96	
55	Heating capacity (kW)			159	181	193	199	227	
	Power consumption (kW)			65.7	69.1	69.9	68.9	69.8	
	Warm water flow rate (L/min)			327	371	396	408	464	
	Operation current (A)			97	101	102	100	102	

- Note 1: The values shown in the table above are for an inlet / outlet chilled water temperature differential of 7°C, RH 87%
- Note 2: The cooling capacity has been measured when the module was operating at the rated frequency.
- Note 3: are displaying maximum capacities. Other values indicate performance when operating at rated frequency. * indicates maximum flow rate. Δt1 is larger than 7°C.
- Note 4: This table is subject to change without notice.

70HP Series EDGE Cooling-only

List of cooling capacities RUA-GP561C (L)

Chilled water outlet temperature (°C)	Item	Outside air temperature (°C) (DB)									
		15	20	25	30	35	40	43	48	52	
4	Cooling capacity (kW)	225	217	206	194	182	171	163	144	94.8	
	Power consumption (kW)	40.1	45.5	50.1	55.9	61.1	66.0	67.6	66.7	48.1	
	Chilled water flow rate (L/min)	462	445	422	397	374	350	333	295	194	
	Operation current (A)	58.5	66.3	73.1	81.5	89.0	96.3	98.6	97.2	70.2	
7	Cooling capacity (kW)	244	238	225	212	200	187	174	149	97.1	
	Power consumption (kW)	40.9	46.1	51.4	57.0	62.5	67.5	67.2	64.2	45.6	
	Chilled water flow rate (L/min)	500	486	461	435	410	383	356	306	199	
	Operation current (A)	59.6	67.2	74.9	83.1	91.1	98.4	98.0	93.6	66.5	
9	Cooling capacity (kW)	255	250	239	226	212	198	182	152	98.9	
	Power consumption (kW)	41.9	46.3	51.8	57.8	63.5	68.0	67.2	62.3	44.2	
	Chilled water flow rate (L/min)	522	512	490	462	434	405	373	311	202	
	Operation current (A)	61.2	67.5	75.6	84.3	92.5	99.2	97.9	90.8	64.4	
12	Cooling capacity (kW)	269	267	259	246	232	214	196	155	100	
	Power consumption (kW)	43.7	47.1	52.6	58.9	64.8	68.2	67.1	58.5	41.2	
	Chilled water flow rate (L/min)	551	547	530	503	476	437	401	318	205	
	Operation current (A)	63.8	68.7	76.8	85.8	94.5	99.4	97.9	85.3	60.0	
15	Cooling capacity (kW)	274	274	266	254	243	224	207	158	101	
	Power consumption (kW)	44.4	46.7	52.8	59.1	65.5	68.3	67.2	55.8	38.4	
	Chilled water flow rate (L/min)	561	561	545	521	497	458	424	323	208	
	Operation current (A)	64.7	68.1	77.0	86.1	95.5	99.6	98.0	81.4	56.0	
20	Cooling capacity (kW)	274	274	266	254	243	227	212	159	102	
	Power consumption (kW)	44.4	46.7	52.9	59.1	65.5	68.2	67.3	54.3	37.0	
	Chilled water flow rate (L/min)	561	561	544	521	497	465	434	326	209	
	Operation current (A)	64.7	68.1	77.1	86.1	95.5	99.4	98.1	79.1	53.9	
25	Cooling capacity (kW)	267	267	262	250	238	227	212	159	102	
	Power consumption (kW)	42.4	44.1	50.1	56.2	62.3	68.2	67.3	54.3	37.0	
	Chilled water flow rate (L/min)	547	547	536	512	488	465	434	326	209	
	Operation current (A)	61.9	64.3	77.1	81.9	90.8	99.4	98.1	79.1	53.9	
30	Cooling capacity (kW)	250	250	249	238	226	214	207	102	102	
	Power consumption (kW)	45.5	40.3	43.9	50.0	55.9	61.3	64.7	37.0	37.0	
	Chilled water flow rate (L/min)	512	512	510	486	462	439	424	208	208	
	Operation current (A)	57.3	58.7	64.0	72.9	81.6	89.4	94.3	53.9	53.9	

- Note 1: The values shown in the table above are for an inlet / outlet chilled water temperature differential of 7°C.
- Note 2: The cooling capacity has been measured when the module was operating at the rated frequency.
- Note 3: This table is subject to change without notice.

Capacity Chart

High EER Type (Leaving (LVG) / Entering (ETG) water temperature difference = 7°C)

70HP Series EDGE Heat pump

List of cooling capacities RUA-GP561HN (L)

Chilled water outlet temperature (°C)	Item	Outside air temperature (°C) (DB)					
		30	35	40	43	48	52
4	Cooling capacity (kW)	192	183	174	169	161	154
	Power consumption (kW)	37.9	42.2	45.8	47.6	51.9	55.0
	Chilled water flow rate (L/min)	393	374	357	346	329	315
	Operation current (A)	55.2	61.5	66.8	69.4	75.7	80.2
7	Cooling capacity (kW)	210	200	190	185	176	168
	Power consumption (kW)	38.7	43.3	47.1	49.2	53.5	56.6
	Chilled water flow rate (L/min)	430	410	390	379	360	345
	Operation current (A)	56.5	63.1	68.7	71.7	78.0	82.5
9	Cooling capacity (kW)	223	212	202	196	187	179
	Power consumption (kW)	39.2	44.1	48.2	50.1	54.7	57.9
	Chilled water flow rate (L/min)	457	434	414	402	382	366
	Operation current (A)	57.1	64.3	70.3	73.1	79.7	84.5
12	Cooling capacity (kW)	244	232	221	214	204	195
	Power consumption (kW)	39.7	44.8	49.6	51.4	56.4	59.6
	Chilled water flow rate (L/min)	499	476	452	439	417	399
	Operation current (A)	57.8	65.3	72.2	75.0	82.2	86.9
15	Cooling capacity (kW)	254	243	233	226	216	208
	Power consumption (kW)	39.7	45.1	50.2	52.3	57.3	60.8
	Chilled water flow rate (L/min)	520	498	476	463	442	426
	Operation current (A)	57.9	65.7	73.2	76.3	83.5	88.7
20	Cooling capacity (kW)	254	243	234	228	219	212
	Power consumption (kW)	39.7	45.1	50.2	52.5	57.5	61.1
	Chilled water flow rate (L/min)	519	498	478	467	448	435
	Operation current (A)	57.9	65.7	73.2	76.6	83.8	89.1
25	Cooling capacity (kW)	253	243	234	228	219	212
	Power consumption (kW)	39.7	45.1	50.2	52.5	57.5	61.1
	Chilled water flow rate (L/min)	519	497	478	467	449	435
	Operation current (A)	57.8	65.7	73.2	76.6	83.8	89.1
30	Cooling capacity (kW)	246	238	229	223	208	208
	Power consumption (kW)	42.2	43.0	47.9	50.1	58.8	58.8
	Chilled water flow rate (L/min)	504	487	468	457	425	425
	Operation current (A)	55.7	62.7	69.9	73.1	85.7	85.7

70HP Series EDGE Cooling-only

List of cooling capacities RUA-GP561CN (L)

Chilled water outlet temperature (°C)	Item	Outside air temperature (°C) (DB)					
		30	35	40	43	48	52
4	Cooling capacity (kW)	192	183	174	169	161	154
	Power consumption (kW)	37.4	41.6	45.2	46.8	51.3	54.4
	Chilled water flow rate (L/min)	393	374	357	347	330	316
	Operation current (A)	54.6	60.6	65.9	68.3	74.8	79.3
7	Cooling capacity (kW)	210	200	191	185	176	169
	Power consumption (kW)	38.2	42.7	46.8	48.6	52.9	56.1
	Chilled water flow rate (L/min)	430	410	391	379	361	346
	Operation current (A)	55.7	62.3	68.3	70.8	77.1	81.9
9	Cooling capacity (kW)	223	212	202	197	187	179
	Power consumption (kW)	38.6	43.4	47.5	49.9	54.0	57.2
	Chilled water flow rate (L/min)	458	435	415	403	383	367
	Operation current (A)	56.3	63.3	69.3	72.7	78.8	83.4
12	Cooling capacity (kW)	244	232	221	215	204	196
	Power consumption (kW)	39.2	44.4	48.8	51.1	55.6	59.0
	Chilled water flow rate (L/min)	499	475	453	440	418	401
	Operation current (A)	57.1	64.7	71.1	74.5	81.0	86.1
15	Cooling capacity (kW)	253	243	232	226	216	208
	Power consumption (kW)	39.2	44.6	49.4	51.8	56.7	60.1
	Chilled water flow rate (L/min)	518	497	476	463	442	426
	Operation current (A)	57.1	65.0	72.0	75.6	82.7	87.6
20	Cooling capacity (kW)	253	242	233	228	219	212
	Power consumption (kW)	39.2	44.4	49.5	52.1	56.9	60.6
	Chilled water flow rate (L/min)	518	496	477	466	448	434
	Operation current (A)	57.2	64.7	72.1	75.9	82.9	88.3
25	Cooling capacity (kW)	253	242	233	228	219	212
	Power consumption (kW)	39.3	44.5	49.5	52.1	56.9	60.6
	Chilled water flow rate (L/min)	517	496	477	466	448	434
	Operation current (A)	57.3	64.9	72.1	75.9	82.9	88.3
30	Cooling capacity (kW)	246	238	229	223	208	208
	Power consumption (kW)	41.6	43.0	47.8	49.9	58.6	58.6
	Chilled water flow rate (L/min)	505	487	468	457	425	425
	Operation current (A)	55.6	62.6	69.7	72.7	85.4	85.4

Note 1: The values shown in the table above are for an inlet / outlet chilled water temperature differential of 7°C.

Note 2: The cooling capacity has been measured when the module was operating at the rated frequency.

Note 3: This table is subject to change without notice.

Water Volume for set of modules

Standard Water Flow Rate / Water Volume Range

(Leaving (LVG)/Entering (ETG) water temperature difference = 7°C)

50HP

Series EDGE

Internal inverter pump

Powerful Heating Type

Number of modules	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)
1	307	150~600	717	36
2	614	150~1200		72
3	921	150~1800		108
4	1,229	150~2400		144
5	1,536	150~3000		180
6	1,843	150~3600		216
7	2,150	150~4200		252
8	2,457	150~4800		288
9	2,764	150~5400		324
10	3,071	150~6000		360
11	3,379	150~6600		396
12	3,686	150~7200		432
13	3,993	150~7800		468
14	4,300	150~8400		504
15	4,607	150~9000		540
16	4,914	150~9600		576

Note 1: 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 2: Within the indicated flow rate range, the flow rate automatically changes from the pump integrated into each module. (only for internal inverter pump models)

Note 3: 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 4: 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 operation.

Note 5: When operating at the rated flow capacity, even with internal inverter pump models, set the flow amount range and system retained water amount to the same value as the pumpless model.

60HP

Series EDGE

Number of modules	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)
1	369	150~600	860	36
2	737	150~1200		72
3	1,106	150~1800		108
4	1,474	150~2400		144
5	1,843	150~3000		180
6	2,211	150~3600		216
7	2,580	150~4200		252
8	2,949	150~4800		288
9	3,317	150~5400		324
10	3,686	150~6000		360
11	4,054	150~6600		396
12	4,423	150~7200		432
13	4,791	150~7800		468
14	5,160	150~8400		504
15	5,529	150~9000		540
16	5,897	150~9600		576

Note 1: 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 2: Within the indicated flow rate range, the flow rate automatically changes from the pump integrated into each module. (only for internal inverter pump models)

Note 3: 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 4: 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 operation.

Note 5: When operating at the rated flow capacity, even with internal inverter pump models, set the flow amount range and system retained water amount to the same value as the pumpless model.

Water Volume for set of modules

60HP *Powerful Heating Type*

Internal inverter pump

Number of modules	Standard flow rate (L/min) <small>(Note 1)</small>		Flow rate range (L/min) <small>(Note 4)</small>	Minimum water loop volume (L) <small>(Note 2・3・4)</small>	In-unit water volume (L)
	Cooling	Heating			
1	369	410	150~600	956	36
2	737	819	150~1200		72
3	1,106	1,229	150~1800		108
4	1,474	1,638	150~2400		144
5	1,843	2,048	150~3000		180
6	2,211	2,457	150~3600		216
7	2,580	2,867	150~4200		252
8	2,949	3,276	150~4800		288
9	3,317	3,686	150~5400		324
10	3,686	4,095	150~6000		360
11	4,054	4,505	150~6600		396
12	4,423	4,914	150~7200		432
13	4,791	5,324	150~7800		468
14	5,160	5,733	150~8400		504
15	5,529	6,143	150~9000		540
16	5,897	6,552	150~9600		576

Note 1: 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 2: Within the indicated flow rate range, the flow rate automatically changes from the pump integrated into each module. (only for internal inverter pump models)

Note 3: 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 4: 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 operation.

Note 5: When operating at the rated flow capacity, even with internal inverter pump models, set the flow amount range and system retained water amount to the same value as the pumpless model.

70HP *Series EDGE*

Number of modules	Standard flow rate (L/min) <small>(Note 2)</small>	Flow rate range (L/min) <small>(Note 3・6)</small>	Minimum water loop volume (L) <small>(Note 4・5・6)</small>	In-unit water volume (L)
1	410	150~650	956	36
2	819	150~1300		72
3	1,229	150~1950		108
4	1,638	150~2600		144
5	2,048	150~3250		180
6	2,457	150~3900		216
7	2,867	150~4550		252
8	3,276	150~5200		288
9	3,686	150~5850		324
10	4,095	150~6500		360
11	4,505	150~7150		396
12	4,914	150~7800		432
13	5,324	150~8450		468
14	5,733	150~9100		504
15	6,143	150~9750		540
16	6,552	150~10400		576

Note 1: 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 2: Within the indicated flow rate range, the flow rate automatically changes from the pump integrated into each module. (only for internal inverter pump models)

Note 3: 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 4: 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 operation.

Note 5: When operating at the rated flow capacity, even with internal inverter pump models, set the flow amount range and system retained water amount to the same value as the pumpless model.

Water Volume for set of modules

50HP

Series EDGE Powerful Heating Type

Pumpless

Number of modules	Standard flow rate (L/min) (Note 2)	Water pressure loss (kPa) (Note 1)	Flow rate range (L/min) (Note 4)	Minimum water loop volume (L) (Note 2-3-4)	In-unit water volume (L)
1	307	29.9	150~600	717	36
2	614		300~1,200	1,434	72
3	921		450~1,800	2,150	108
4	1,229		600~2,400	2,867	144
5	1,536		750~3,000	3,584	180
6	1,843		900~3,600	4,301	216
7	2,150		1,050~4,200	5,017	252
8	2,457		1,200~4,800	5,734	288
9	2,764		1,350~5,400	6,451	324
10	3,071		1,500~6,000	7,168	360
11	3,379		1,650~6,600	7,884	396
12	3,686		1,800~7,200	8,601	432
13	3,993		1,950~7,800	9,318	468
14	4,300		2,100~8,400	10,035	504
15	4,607		2,250~9,000	10,751	540
16	4,914		2,400~9,600	11,468	576

Note 1: 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 2: Within the indicated flow rate range, the flow rate automatically changes from the pump integrated into each module. (only for internal inverter pump models)

Note 3: 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 4: 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 operation.

60HP

Series EDGE

Number of modules	Standard flow rate (L/min) (Note 2)	Water pressure loss (kPa) (Note 1)	Flow rate range (L/min) (Note 4)	Minimum water loop volume (L) (Note 2-3-4)	In-unit water volume (L)
1	369	42.1	150~600	860	36
2	737		300~1,200	1,720	72
3	1,106		450~1,800	2,580	108
4	1,474		600~2,400	3,440	144
5	1,843		750~3,000	4,301	180
6	2,211		900~3,600	5,161	216
7	2,580		1,050~4,200	6,021	252
8	2,949		1,200~4,800	6,881	288
9	3,317		1,350~5,400	7,741	324
10	3,686		1,500~6,000	8,601	360
11	4,054		1,650~6,600	9,461	396
12	4,423		1,800~7,200	10,321	432
13	4,791		1,950~7,800	11,181	468
14	5,160		2,100~8,400	12,041	504
15	5,529		2,250~9,000	12,902	540
16	5,897		2,400~9,600	13,762	576

Note 1: 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 2: Within the indicated flow rate range, the flow rate automatically changes from the pump integrated into each module. (only for internal inverter pump models)

Note 3: 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 4: 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 operation.

Water Volume for set of modules

60HP *Powerful Heating Type*

Pumpless

Number of modules	Standard flow rate (L/min) ^(Note 1)		Water pressure loss (kPa) ^(Note 1)		Flow rate range (L/min) ^(Note 4)	Minimum water loop volume (L) ^(Note 2-3-4)	In-unit water volume (L)
	Cooling	Heating	Cooling	Heating			
1	369	410	42.1	51.2	150~600	956	36
2	737	819			300~1,200	1,911	72
3	1,106	1,229			450~1,800	2,867	108
4	1,474	1,638			600~2,400	3,823	144
5	1,843	2,048			750~3,000	4,778	180
6	2,211	2,457			900~3,600	5,734	216
7	2,580	2,867			1,050~4,200	6,690	252
8	2,949	3,276			1,200~4,800	7,645	288
9	3,317	3,686			1,350~5,400	8,601	324
10	3,686	4,095			1,500~6,000	9,557	360
11	4,054	4,505			1,650~6,600	10,512	396
12	4,423	4,914			1,800~7,200	11,468	432
13	4,791	5,324			1,950~7,800	12,424	468
14	5,160	5,733			2,100~8,400	13,379	504
15	5,529	6,143			2,250~9,000	14,335	540
16	5,897	6,552			2,400~9,600	15,291	576

Note 1: 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 2: Within the indicated flow rate range, the flow rate automatically changes from the pump integrated into each module. (only for internal inverter pump models)

Note 3: 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 4: 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 operation.

70HP *Series EDGE*

Number of modules	Standard flow rate (L/min) ^(Note 1)	Water pressure loss (kPa) ^(Note 1)	Flow rate range (L/min) ^(Note 4)	Minimum water loop volume (L) ^(Note 2-3-4)	In-unit water volume (L)
1	410	51.2	150~650	956	36
2	819		300~1300	1,911	72
3	1,229		450~1950	2,867	108
4	1,638		600~2600	3,823	144
5	2,048		750~3250	4,778	180
6	2,457		900~3900	5,734	216
7	2,867		1,050~4550	6,690	252
8	3,276		1,200~5200	7,645	288
9	3,686		1,350~5850	8,601	324
10	4,095		1,500~6500	9,557	360
11	4,505		1,650~7150	10,512	396
12	4,914		1,800~7800	11,468	432
13	5,324		1,950~8450	12,424	468
14	5,733		2,100~9100	13,379	504
15	6,143		2,250~9750	14,335	540
16	6,552		2,400~10400	15,291	576

Note 1: 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 2: Within the indicated flow rate range, the flow rate automatically changes from the pump integrated into each module. (only for internal inverter pump models)

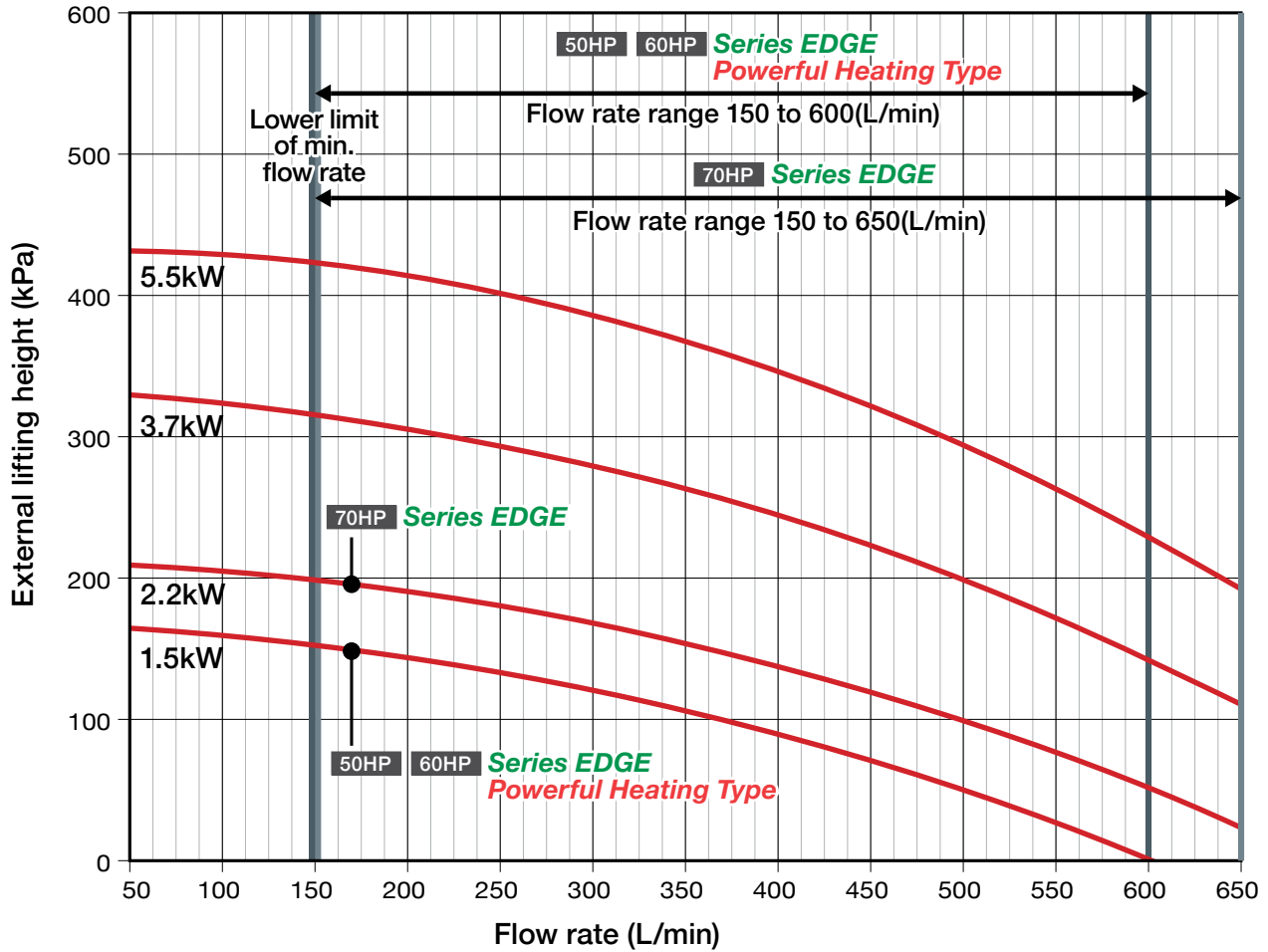
Note 3: Value indicated for retained water amount is with a standard flow amount. (Rated capacity, change in water outlet/inlet temperature difference = 7°C)

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

Note 4: 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 operation.

Pump Characteristics / Internal Inverter Pump

50HP, 60HP Series EDGE and Powerful Heating Type,
70HP Series EDGE internal pump 60Hz performance curve



Pump specification values

Pump output	50HP, 60HP model				70HP model		
	1.5	2.2	3.7	5.5	2.2	3.7	5.5
Flow rate range ⁽¹⁾ (L/min)	150~600				150~650		
External lifting height ⁽²⁾ (kPa)	43~151	92~198	190~315	284~422	64~198	158~315	247~422
Max. operation current ⁽³⁾ (A)	3.3	4.5	7.3	10.5	4.5	7.3	10.5
Max. power consumption ⁽³⁾ (kW)	2.0	2.8	4.5	6.4	2.8	4.5	6.4
Max. allowable boost pressure (MPa)	0.52	0.47	0.36	0.25	0.47	0.36	0.25
Max. suction head (water temp. 60°C or less) (kPa)	40	40	40	40	40	40	40

Note 1: Flow rate range (upper limit), max. current and max. power consumption in the table above are values for a single pump. Multiply the number of pumps (modules) 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 600L/min for the 60HP model, and at or below 650L/min for the 70HP 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.

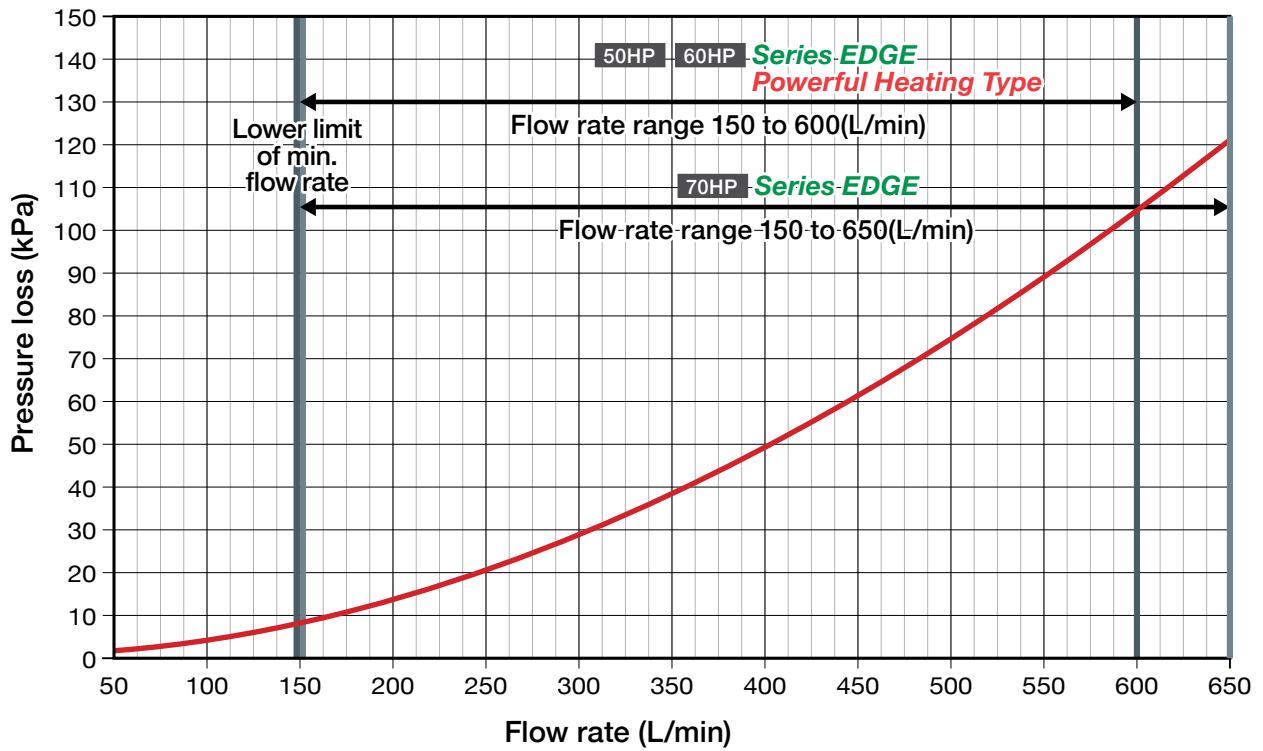
Note 6: In case the nominal current is 380V.

Note 7: Check databook for 7.5kW pump information.

■ Pump Characteristics / Internal Resistance Curve (For pumpless)

Internal resistance curve (For pumpless) 50HP, 60HP Series EDGE and Powerful Heating Type, 70HP Series EDGE

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



Power Supply Design

Displayed below are the electrical power design specifications for each module unit.

● Power supply design (380V/400V/415V specifications) (Internal inverter pump/Pumpless) (Heat pump/Cooling-only) (Standard type and High-EER type in common)

		50HP Series EDGE Powerful Heating Type				60HP Series EDGE					
Internal Pump	Power supply	50/60Hz 380V/400V/415V				50/60Hz 380V/400V/415V					
	Motor Output (kW)	Pumpless	Internal inverter pump				Pumpless	Internal inverter pump			
	Type	—	1.5	2.2	3.7	5.5	—	1.5	2.2	3.7	5.5
	Type of start	—	Centrifugal pump				—	Centrifugal pump			
	Control	—	Inverter start				—	Inverter start			
	Max. Current (A)	—	Inverter				—	Inverter			
	Max. Input (kW)	—	3.1	4.3	6.9	10	—	3.1	4.3	6.9	10
			2.0	2.8	4.5	6.4	—	2.0	2.8	4.5	6.4
Power Supply Design	No. of primary connecting parts for power supply wiring	No. of power connection terminals inside each module(M10)				No. of power connection terminals inside each module(M10)					
	Standard Current (A)	79.0	82.1	83.3	85.9	89.0	99.0	103	104	106	109
	Power Source Capacity (kVA)	54.8	56.9	57.8	59.6	61.7	68.6	70.8	71.6	73.4	75.5
	Power Supply Wiring (mm ²)	IV: Power Supply ≤ 20m (mm ²)	38				38				
		IV: Power Supply ≤ 50m (mm ²)	38				38				
		CV: Power Supply ≤ 20m (mm ²)	22				38				
		CV: Power Supply ≤ 50m (mm ²)	22				38				
	Ground	22				22					
	Switch (A)	100				100					
	Fuse (A)	100				100					
Earth Leakage Circuit Breaker (Capacity) (A)	100				100						
Earth Leakage Circuit Breaker (Sensibility) (mA)	100				100						

		60HP Powerful Heating Type				70HP Series EDGE					
Internal Pump	Power supply	50/60Hz 380V/400V/415V				50/60Hz 380V/400V/415V					
	Motor Output (kW)	Pumpless	Internal inverter pump				Pumpless	Internal inverter pump			
	Type	—	1.5	2.2	3.7	5.5	—	2.2	3.7	5.5	
	Type of start	—	Centrifugal pump				—	Centrifugal pump			
	Control	—	Inverter start				—	Inverter start			
	Max. Current (A)	—	Inverter				—	Inverter			
	Max. Input (kW)	—	3.1	4.3	6.9	10	—	4.3	6.9	10	
			2.0	2.8	4.5	6.4	—	2.8	4.5	6.4	
Power Supply Design	No. of primary connecting parts for power supply wiring	No. of power connection terminals inside each module(M10)				No. of power connection terminals inside each module(M10)					
	Standard Current (A)	110	113	114	117	120	115	119	122	125	
	Power Source Capacity (kVA)	75.9	78.1	78.9	80.7	82.8	79.4	82.4	84.2	86.3	
	Power Supply Wiring (mm ²)	IV: Power Supply ≤ 20m (mm ²)	60				60				
		IV: Power Supply ≤ 50m (mm ²)	60				60				
		CV: Power Supply ≤ 20m (mm ²)	38				38				
		CV: Power Supply ≤ 50m (mm ²)	38				38				
	Ground	38				38					
	Switch (A)	125				125					
	Fuse (A)	125				125					
Earth Leakage Circuit Breaker (Capacity) (A)	125				125						
Earth Leakage Circuit Breaker (Sensibility) (mA)	200				200						

- *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.
- *2. The pump operates at a maximum frequency of 60 Hz at the maximum flow rate (per module).
- *3. A leakage breaker must be installed. Use one that conforms to higher harmonics to prevent malfunction since this unit includes an inverter.
- *4. Standard Current is the value considering the imbalance of 2% between power supply voltages.

Note.1: The thickness of the ground lead is the value for when using IV wire shown in the table for power supply wire. Refer to IEC60204-15.2 depending on the thickness of the wire used.

Table 1 - Minimum cross-sectional area of the external protective copper conductor

Cross-sectional area of copper phase conductors supplying the equipment S mm ²	Minimum cross-sectional area of the external protective copper conductor Sp mm ²
S ≤ 16	S
16 < S ≤ 35	16
S > 35	S/2

- Fuse capacities in the tables are for B class fuses.
- Select a power supply transformer that can support values greater than those shown in the tables.
- 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)
- 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.

Note 2: Check databook for 7.5kW pump and Module controller power supply information.

Outline Drawing

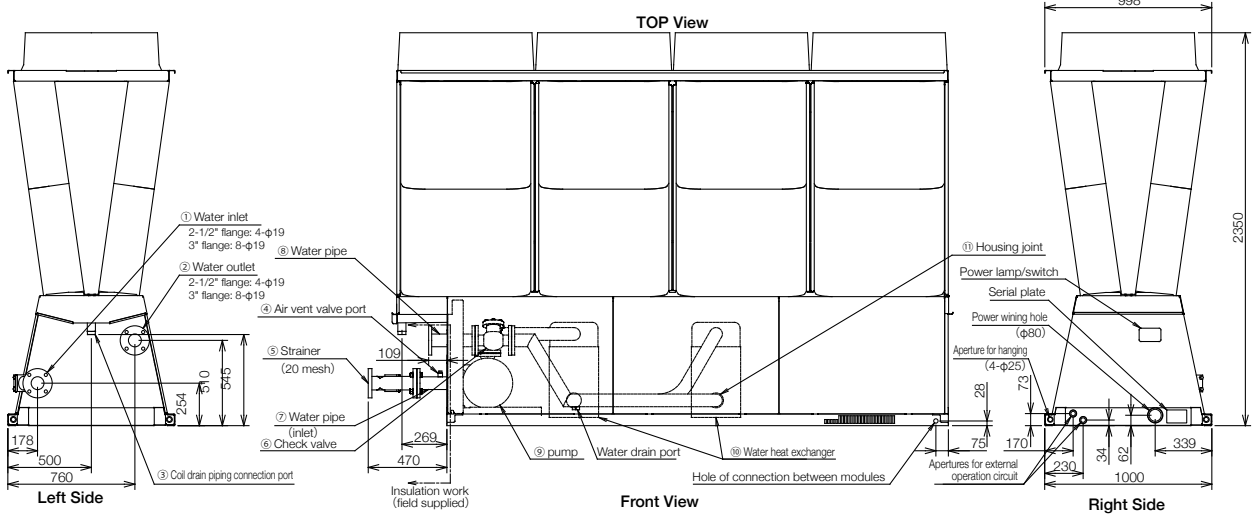
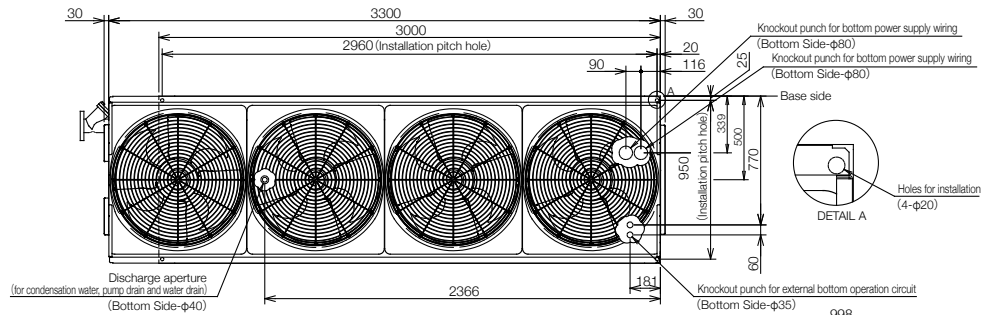
50, 60HP Series EDGE / Powerful Heating Type, 70HP Series EDGE With Pump/Pumpless

*Pumpless model does not include check valve

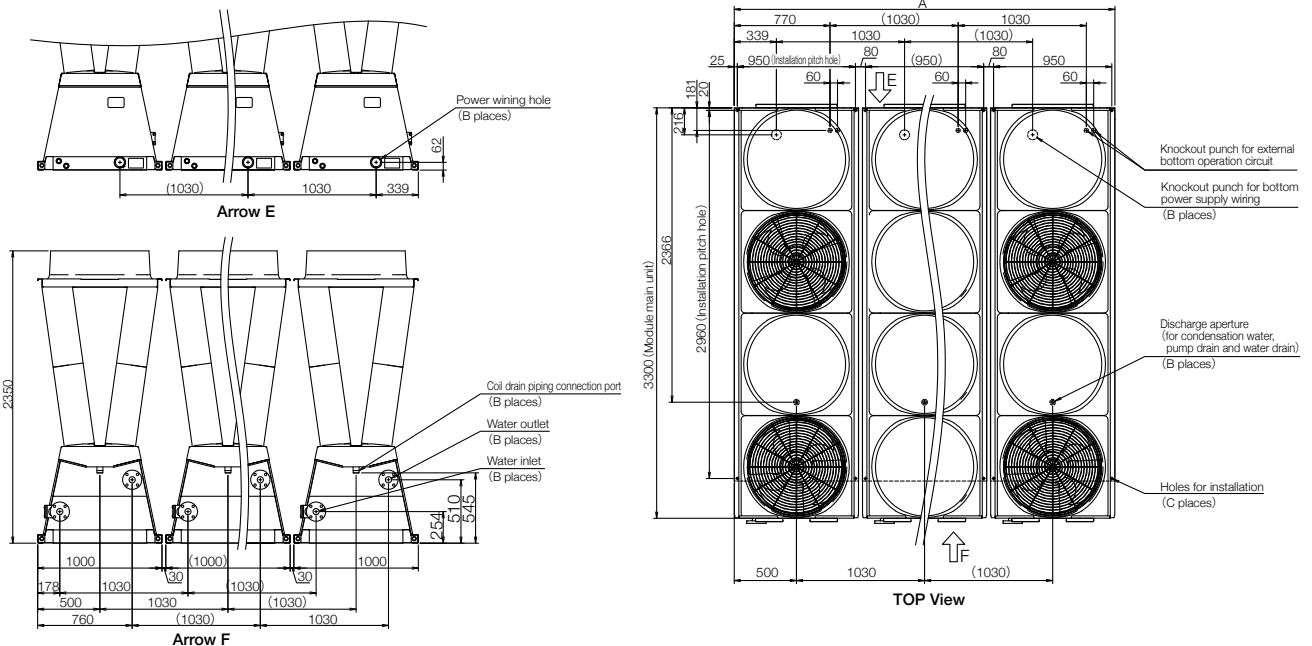
A single module unit

No.	Name	Connection
1	Water inlet	RUA-GP421* 2-1/2" flange
		RUA-GP511* 2-1/2" flange
		RUA-GP561* 3" flange
2	Water outlet	RUA-GP421* 2-1/2" flange
		RUA-GP511* 2-1/2" flange
		RUA-GP561* 3" flange
3	Coil drain piping connection port	PT1-1/2" external thread
4	Air vent valve port	PT1/2" internal thread
5	Strainer	Casing FC250-equivalent
6	Check valve	Casing FC200-equivalent
7	Water pipe (inlet)	JIS10K flange SUS304-equivalent
		Piping SUS304-equivalent
8	Water pipe (outlet)	JIS10K flange SUS304-equivalent
		Piping SUS304-equivalent
9	Pump	Casing FC200
10	Water heat exchanger	Plate/Joist SUS316-equivalent
		Brazed part Pure copper
11	Housing joint*1	Casing EPDM

*1 Water piping is shown above.



Combined installation



The number of modules	A	B	C	The number of modules	A	B	C	The number of modules	A	B	C	The number of modules	A	B	C
1 module	1000	1	4	5 module	5120	5	20	9 module	9240	9	36	13 module	13360	13	52
2 modules	2030	2	8	6 module	6150	6	24	10 modules	10270	10	40	14 modules	14390	14	56
3 modules	3060	3	12	7 module	7180	7	28	11 modules	11300	11	44	15 modules	15420	15	60
4 modules	4090	4	16	8 module	8210	8	32	12 modules	12330	12	48	16 modules	16450	16	64

Note 1: The values indicated above are applied to A through C.

Note 2: When the power supply wiring kit (optional) is not used. Regarding the dimensions when the power supply wiring kit is installed, refer to the document of consent for power supply wiring kit.

Note 3: 30mm clearance space between modules is only minimum requirement for Japanese service man. Please consider larger space for European service man.

Outline Drawing

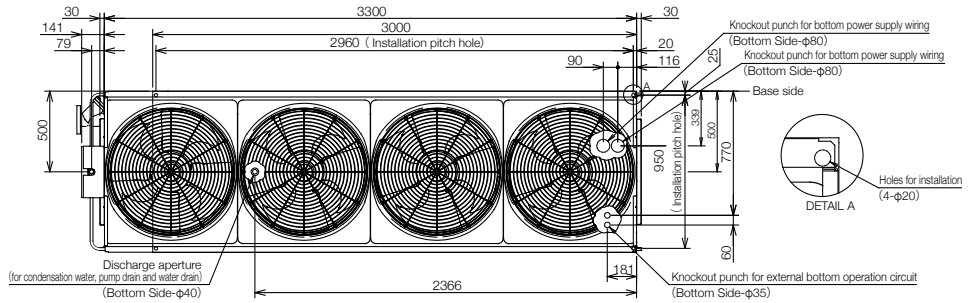
50, 60HP Series EDGE / Powerful Heating Type, 70HP Series EDGE - High EER - With Pump/Pumpless

*Pumpless model does not include check valve

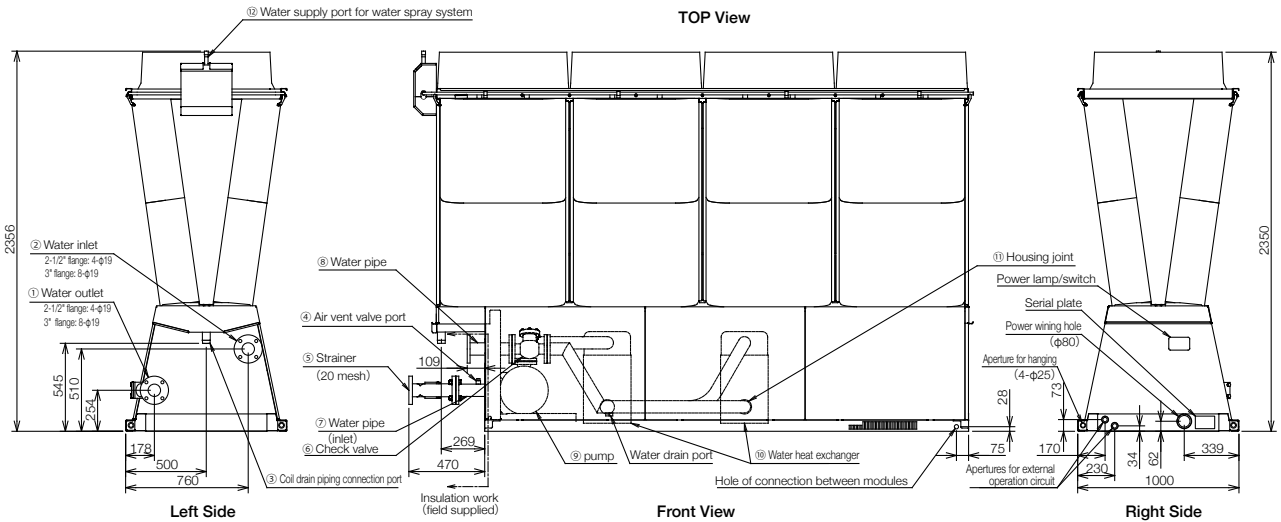
A single module unit

No	Name	Connection
1	Water inlet	RJA-GP421* 2-1/2" flange
		RJA-GP511* 2-1/2" flange
		RJA-GP561* 3" flange
2	Water outlet	RJA-GP421* 2-1/2" flange
		RJA-GP511* 2-1/2" flange
		RJA-GP561* 3" flange
3	Coil drain piping connection port	PT1/2" external thread
4	Air vent valve port	PT1/2" internal thread
5	Strainer	Casing:FC200-equivalent
6	Check valve	Casing:FC200-equivalent
7	Water pipe (inlet)	SUS304-equivalent
		Flange SUS304-equivalent
8	Water pipe (outlet)	SUS304-equivalent
		Piping SUS304-equivalent
9	Pump	Casing:FC200
10	Water heat exchanger	SUS316-equivalent
		Plate/Joist Brazed part Pump copper
11	Housing joint*1	Gasket EPDM
12	Water spray port for water spray system	PT1/2" external thread

*1 Water piping is shown above.



TOP View

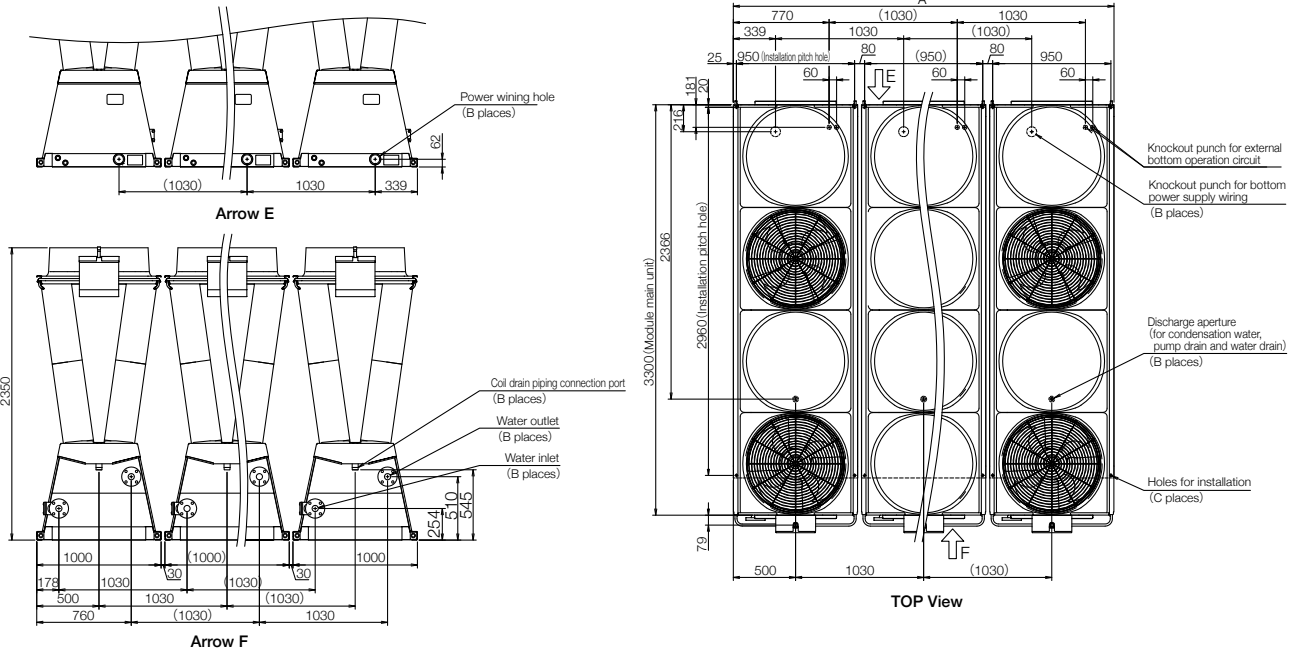


Left Side

Front View

Right Side

Combined installation



The number of modules	A	B	C	The number of modules	A	B	C	The number of modules	A	B	C	The number of modules	A	B	C
1 module	1000	1	4	5 module	5120	5	20	9 module	9240	9	36	13 module	13360	13	52
2 modules	2030	2	8	6 modules	6150	6	24	10 modules	10270	10	40	14 modules	14390	14	56
3 modules	3060	3	12	7 modules	7180	7	28	11 modules	11300	11	44	15 modules	15420	15	60
4 modules	4090	4	16	8 modules	8210	8	32	12 modules	12330	12	48	16 modules	16450	16	64

Note 1: The values indicated above are applied to A through C.

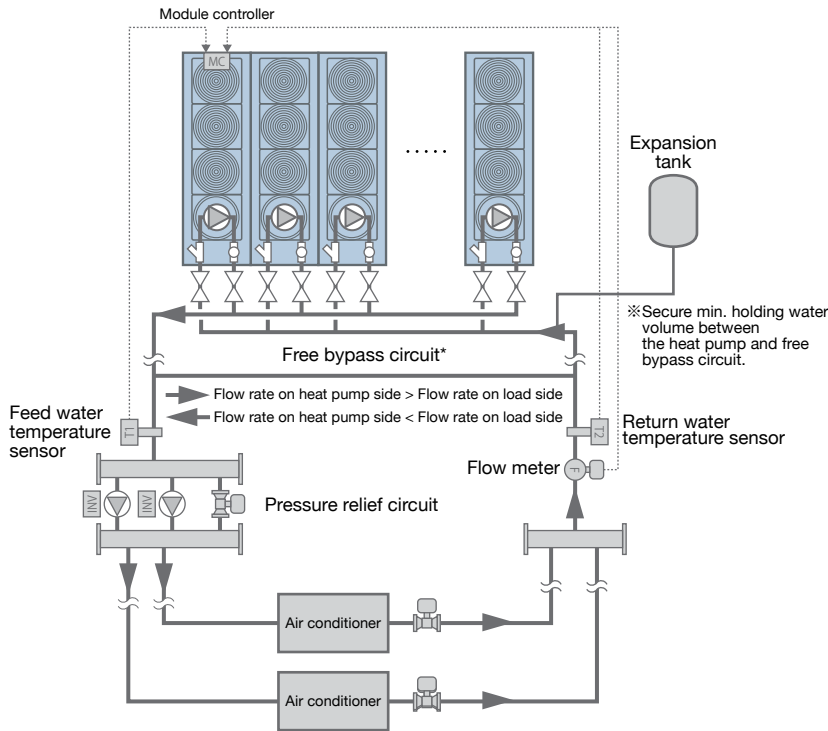
Note 2: When the power supply wiring kit (optional) is not used. Regarding the dimensions when the power supply wiring kit is installed, refer to the document of consent for power supply wiring kit.

Note 3: 30mm clearance space between modules is only minimum requirement for Japanese service man. Please consider larger space for European service man.

System Examples for Internal Inverter Pump Units

- As a cold (hot) water circulation pump is built in, test run adjustment which includes the whole piping system is 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 pumps and the operating frequency. Refer to "Pump Characteristics" and select an internal pump by considering the required max. flow rate and max. lift 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. 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 is located at the highest point in the system, install an automatic air vent valve (with a check valve function) at the inlet pipe for each module.
- Secure a sufficient holding water volume between the heat pump and the bypass circuit to ensure water temperature controllability. The water volume described in the specifications table is required to operate a module for two minutes, the minimum running time. The values in the table show the minimum holding water volume required to protect the unit. Ensure as much holding water volume as possible to minimize the variation of supply water temperature.
- Differential pressure regulating valves or flow meters may be required depending on the system. In that case, use different power supply from that of the heat pump. Follow instructions by the manufacturer for how to wire the valves or flow meters.
- For any system not listed below, please contact us.

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



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

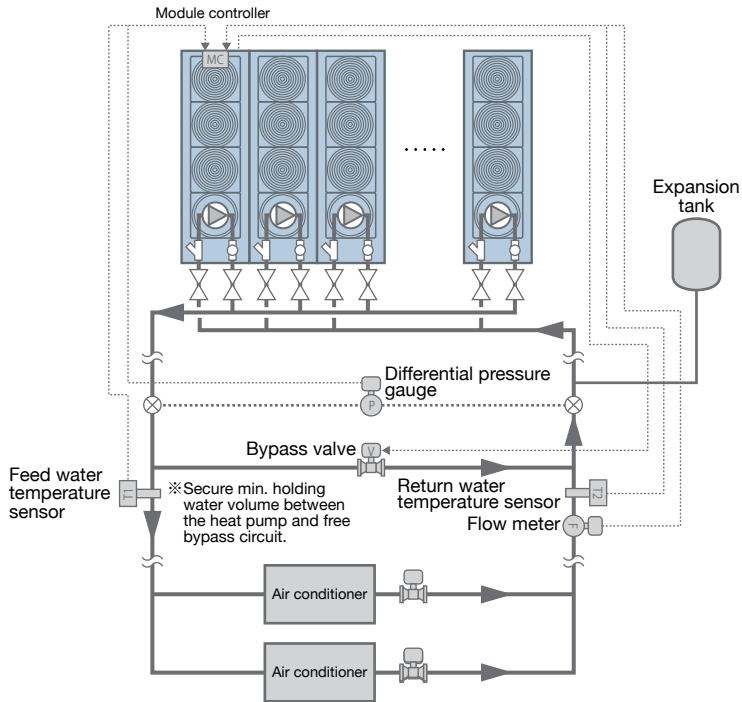
● List of equipment for control

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

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

System Examples for Internal Inverter Pump Units

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



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

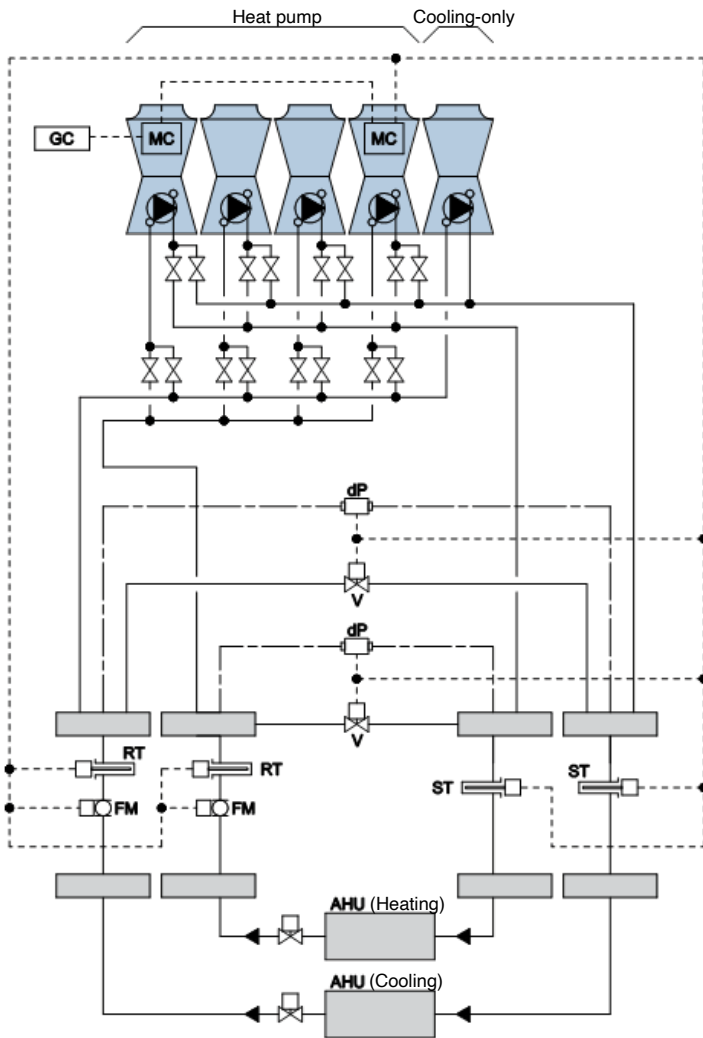
List of equipment for control

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

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

System Examples for Internal Inverter Pump Units

3. Example of Chilled/Warm Water Simultaneous Use System



1. Install a valve for switching between the inlet and outlet of heat pumps that switch between chilled and warm water. (If it is a motor-operated valve, ensure it works with the local instrumentation panel.)
2. Connect each cooling and heating component (FM, ST, RT, dP, V) to the module controller (MC).

Option List

Option Parts		Locally constructed (*Note2)	Factory assembly
Module Controller (MC)	For Standard model	Required	Available
	For Powerful Heating type	Required	Available
Group Controller (GC)		Required	n/a
Connect fitting Kit		Required	n/a
Fin Guard Kit		Required	Available
External sensor (*note1)		Required	n/a
SD card for Flash Monitor		Required	n/a
Flange kit for hood and net installtion		Required	Available

Note 1: 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 2: On-site installation work is needed. (Not included in seller's work description.)

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.

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

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



SAFETY PRECAUTIONS

Please see the technical Document for details.

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