TRANE®

Trane Module Chiller
CXAV / CGAV

Industry top class efficiency and reliability

Ingersoll Rand®

Trane Module Chiller

Design registration pending

High-efficiency, high-durability and space-saving

Resin coated blue fins come as standard accessories of air heat exchangers to prevent corrosion.

Compact design with 43% reduction in size compared to our conventional models. Options offer installation site flexibility.

Best efficiency class in the industry

Rated COP

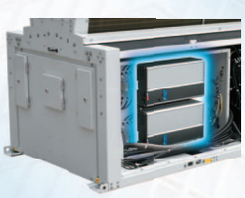
30HP Model **3.93**

50HP Model **3.20**

(cold water 14°C -> 7°C conditions)

Adopts a DC inverter motor

Adoption of the DC inverter allows for high energy efficiency at both full and partial loads.



For long-term use

Prevents corrosion

Resin coated blue fins are equipped as standard accessories to the air heat exchanger, preventing corrosion and achieving a long lifetime and excellent durability. Also effective as a salt-damage countermeasure. (Gold fins if the <optional> aspersion attachment is used.)

Operable in a range of environments

More than 150 static and dynamic operational tests are conducted in order to obtain a high level of reliability to satisfy the needs of our customers.

150 Successful criteria tests

Example of Operational Test

- Automatic operation tests in harsh conditions such as -15°C or 48°C ambient temperature
- Automatic cooling operation tests at 43°C ambient temperature and initial 43°C water temperature
- Automatic heating operation tests at -10°C ambient temperature and initial 4°C water temperature
- Cooling and heating operation tests after being shut down for several days in an environment at -10°C
- JIS and AHRI operational tests atrated conditions or partial loads
- Continuous operation tests and excessive start-stop tests
- Operational tests following rapid changes in load or water volume
- Protection functionality operation tests assuming refrigerant shortage or fan failure

COP **3.93*** high efficiency. Reliability that has passed **150** test criteria. Pursuing the best for over **100** years. Long-awaited, new appearance.

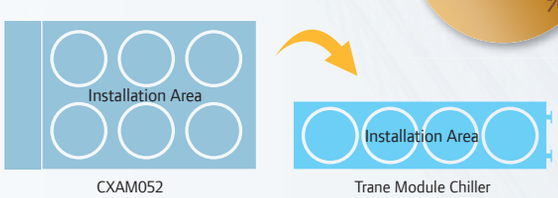
*30HP Model

Highly evolved Trane Module Chiller

Installation space is reduced to less than half

Compact design with a 43% reduction in size compared to our conventional model (CXAM052) allowing for effective use of available space.

Installation Area **-43%**



CXAM052 Trane Module Chiller

Control multiple units with a single device

Control up to 20 units with a single module controller. Fine control of each unit can be configured within the respective controller panel.

Unit controller

Great operability without needing a user manual

The module controller allows for up to 20 units to be managed from one device, and the 7-inch touch screen enables intuitive operation.

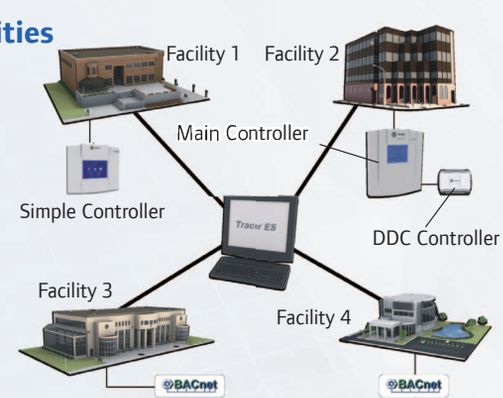
Module controller

Monitor from your computer or smart phone

The control software not only allows access from computers but also allows access to the monitoring system using mobile terminals such as smart phones and tablets. Single-touch operation, color-changing animations and other features make for an easy-to-read, easy-to-operate monitoring screen that is intuitive to change.

Simultaneous monitoring of multiple facilities

Tracer ES™ control software is especially designed for use at large scale facilities, allowing for centralized control of buildings and facilities over a range of sites and realizing improved awareness and control in real-time.



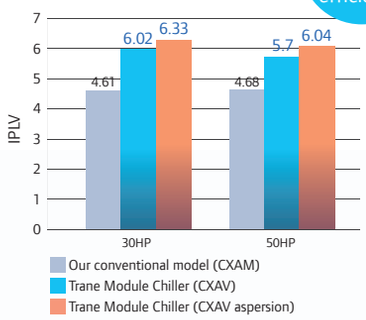
What are the
a Trane

Owner Benefits

Great cost performance

Approx.30% increase in efficiency

The refrigeration tower and water required for water-cooled type chillers is not required, which reduces initial costs, running costs and maintenance costs while simultaneously realizing high energy and power savings.



Easy to operate

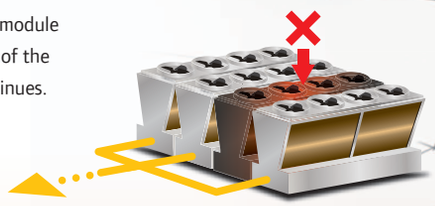
The module controller can be easily operated via touch screen where settings can be easily changed and errors rapidly detected.

No paper-trail

The legal refrigerant ton amount of each unit is less than 20 tons, eliminating the need even when connected to fill out bothersome legal paperwork under the High Pressure Gas Safety Act.

Reduced down time

Even if a unit under module control fails, control of the remaining units continues.

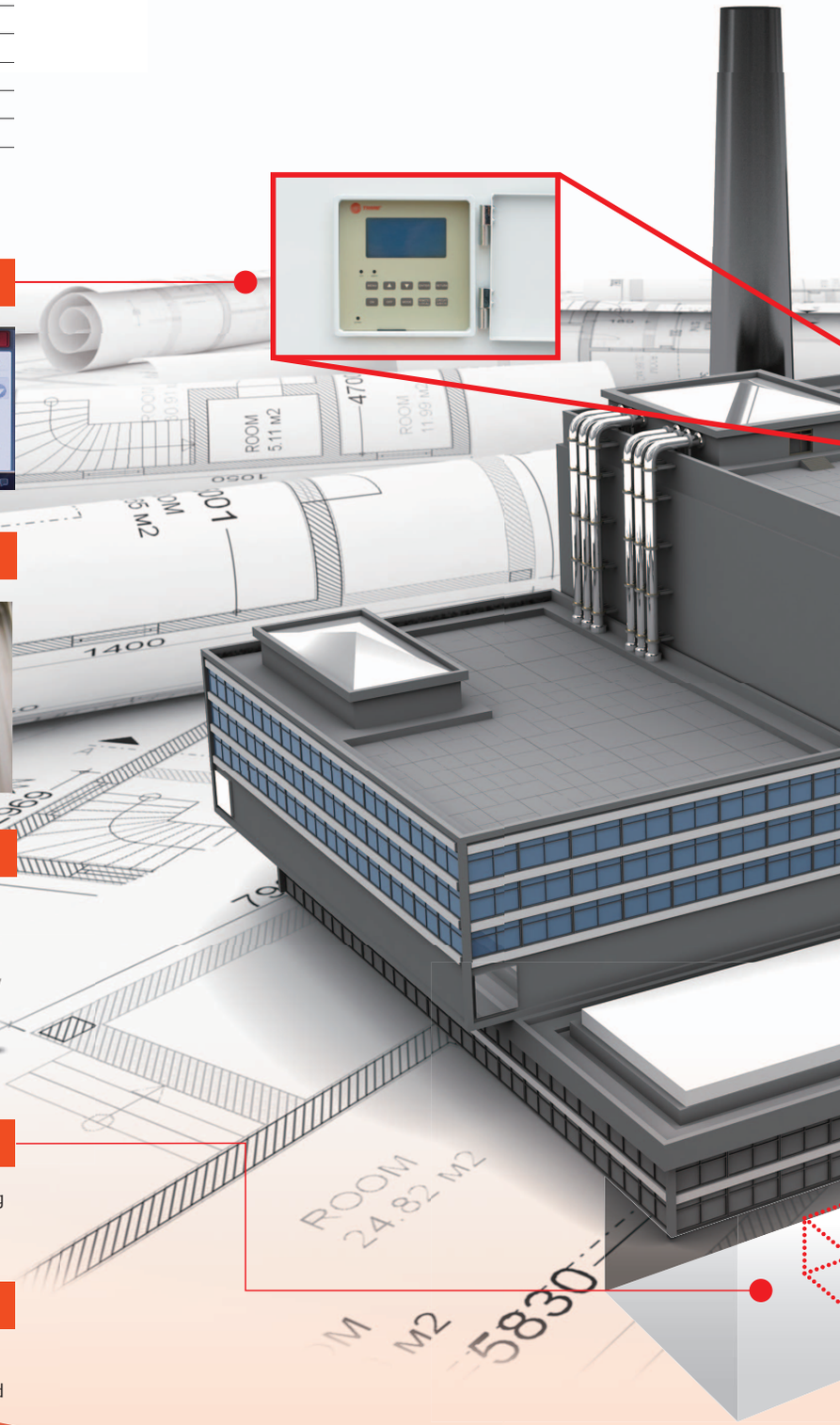


Space saving

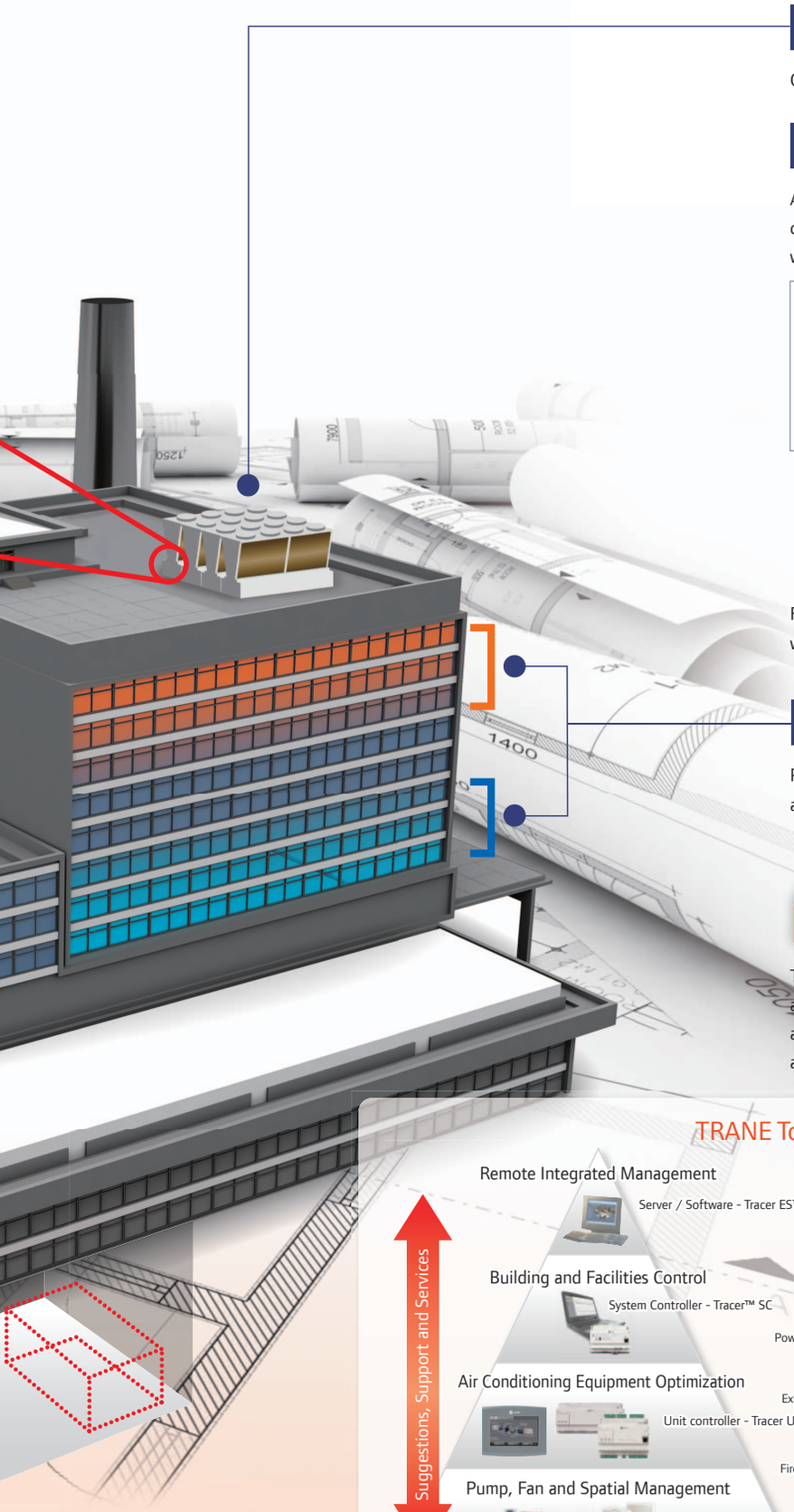
Compact design means it can be installed on rooftops or outside, allowing for more effective use of existing machinery room space.

High scalability

Up to 20 units can be controlled with each module controller device. Furthermore, the Trane Control System can be used to expand control and monitoring capacity to up to 160 units.



benefits of using Module Chiller?



Designer / Contractor Benefits

Flexible installation sites

Compact design allows for effective use of indoor space.

Negligible effect on construction time

Air-cooled chillers don't require the following refrigeration equipment / construction and hence may even shorten construction time compared with water-coolers.

- Refrigeration tower / cool water pump installation and operational tests
- Cool water pipework construction and leak tests
- Installation of water treating devices

N/A

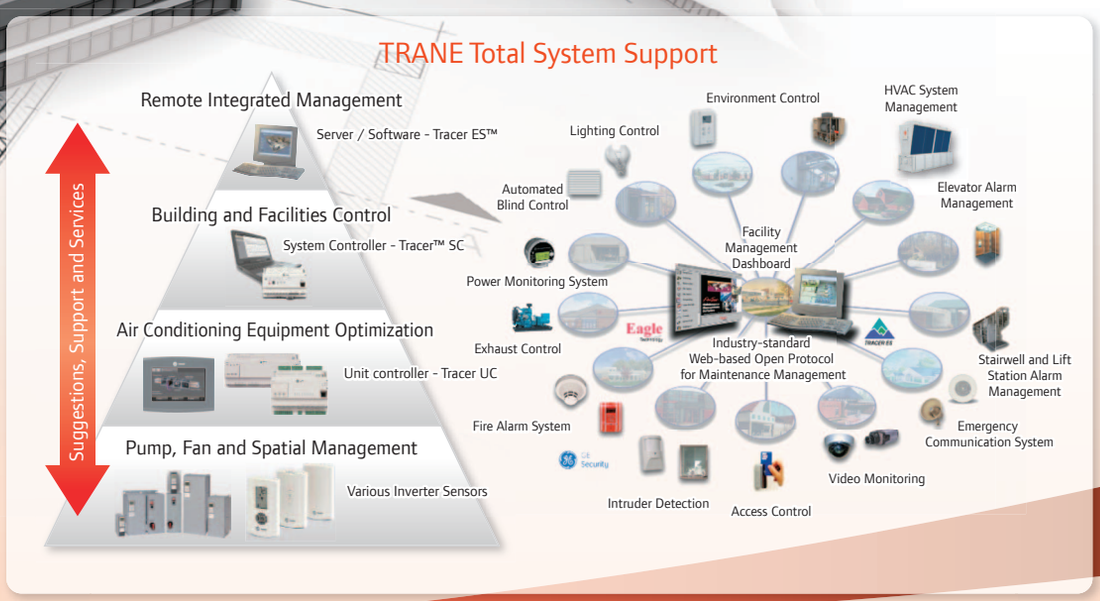
Further benefits found in terms of running costs due to the elimination of cool water treatment and supply required for water-coolers.

Flexibility as both cooler and heater

Performance can be optimized by using the appropriate number of cooling and heating units to meet the load requirements.

Energy Management

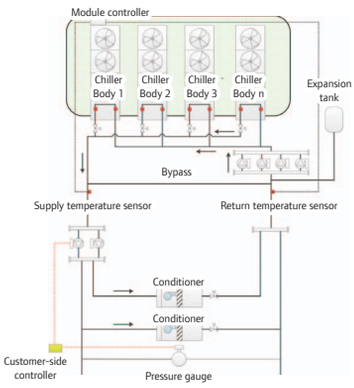
TRANE boasts a lineup of a wide range of products including air-conditioning equipment, system controllers, sensors, software and control applications, and provides comprehensive service from installation through after service.



Pump Configuration

Primary + secondary pump system

Both primary/secondary pumps prepared by customer



Scope of Responsibility

For contractors

1. Primary/secondary pump selection
2. Primary and secondary pump installation
3. Selection and installation of bi-directional valves for the outlet pipes of each module. Opens the bi-directional valve upon receipt of the operating state signal. Closes the bi-directional valve upon receipt of the shutdown state signal.
4. Selection and installation of components required for pipelines including flow switches
5. Operates the primary refrigeration pump (if stopped) upon receipt of the supercooled water state signal

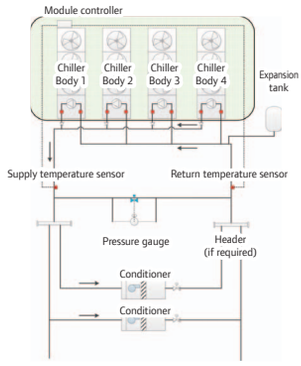
Module Chiller

● Supply Range
1. Module Chiller Body
2. Unit controller
3. Module controller
4. Modbus / BACnet Interface Board
5. Temperature Sensor (at inlets/outlets and major pipelines)
6. Minimum / Maximum Flow Capacity for each model

● Signals
1. Output of operating state and number of operating units
2. Output of supercooled water state when powered off

Primary pump system

Module Chiller with primary pump included



Scope of Responsibility

For contractors

1. Output the pump speed configuration signal to the module controller
2. Pressure sensor selection
3. Selection and installation of proportionally controlled bi-directional valves for each secondary coil
4. Selection and installation of catch valve for Module Chiller outlet
5. Selection and installation of components required for pipelines including flow switches
6. Retains required water volume to prevent supercooling upon receipt of the supercooled water state signal

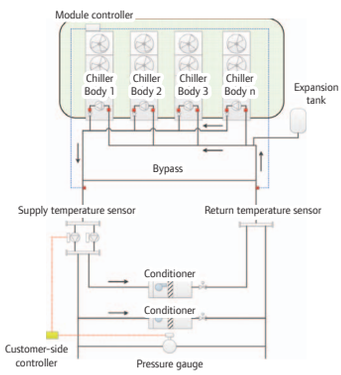
Module Chiller

● Supply Range
1. Module Chiller (Inverter) with Primary Pump
2. Unit controller
3. Module controller
4. Modbus / BACnet Interface Board
5. Temperature Sensor (at inlets/outlets and major pipelines)
6. Minimum / Maximum Flow Capacity for each model

● Signals
1. Output of operating state and number of operating units
2. Output of supercooled water state when powered off

Primary + secondary pump system

Module Chiller with primary pump included+ secondary pump prepared by customer



Scope of Responsibility

For contractors

1. Secondary pump selection
2. Primary pump and secondary pump control
3. Selection and installation of bi-directional valves for the outlet pipes of each module. Opens the bi-directional valve upon receipt of the operating state signal. Closes the bi-directional valve upon receipt of the shutdown state signal.
4. Selection and installation of components required for pipelines including flow switches
5. Operates the primary refrigeration pump (if stopped) upon receipt of the supercooled water state signal

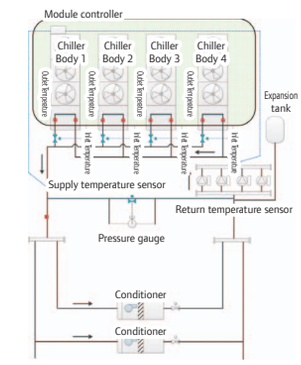
Module Chiller

● Supply Range
1. Module Chiller with Variable Flow Rate Primary Pump
2. Unit controller
3. Module controller
4. Modbus / BACnet Interface Board
5. Temperature Sensor (at inlets/outlets and major pipelines)
6. Minimum / Maximum Flow Capacity for each mode

● Signals
1. Output of operating state and number of operating units
2. Output of supercooled water state when powered off

Primary pump system

primary pump prepared by customer



Scope of Responsibility

For contractors

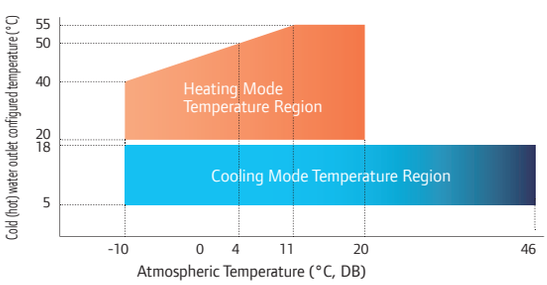
1. Pump selection
2. Pump control system selection
3. Pressure sensor selection
4. Selection and installation of proportionally controlled bi-directional valves for each secondary coil
5. Selection and installation of bi-directional valves for the outlet pipes of each module. Opens the bi-directional valve upon receipt of the operating state signal. Closes the bi-directional valve upon receipt of the shutdown state signal.
6. Selection and installation of components required for pipelines including flow switches
7. Operates the primary refrigeration pump (if stopped) upon receipt of the supercooled water state signal

Module Chiller

● Supply Range
1. Module Chiller Body
2. Unit controller
3. Module controller
4. Modbus / BACnet Interface Board
5. Temperature Sensor (at inlets/outlets and major pipelines)
6. Minimum / Maximum Flow Capacity for each model

● Signals
1. Output of operating state and number of operating units
2. Output of supercooled water state when powered off

Operating Range



Heating Mode — Temperature configuration criteria for the atmospheric and hot water outlet temperatures required to supply hot water

Cooling Mode — Temperature configuration criteria for the atmospheric and cold water outlet temperatures required to supply cold water

Options

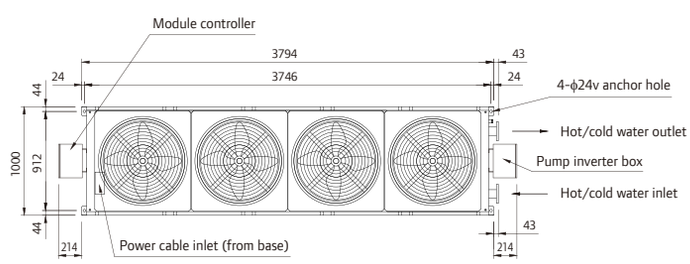
Item		Component Prepared		Mounting	
		Trane Supplied Components	Customer Prepared Components	Factory Assembled	Construction Site
Unit controller	Standard Accessories	●		●	
Module controller (with externally mounted hot/cold water temperature sensor and Modbus interface)	Essential Extra Components	●		● (Module controller)	●
BACnet Interface	Options	●			●
Harmonic Filter	Options	●			●
Differential Pressure Gauge	Options	●		●	
Coil Guard	Options	●		●	
Soundproof Compressor Cover	Options	●		●	
Aspersion Spray Kit	Options	●		●	
Vibration-Proof Rubber Pad or Spring Mount	Options	●			●
Hot/Cold Water Pump	Options	●		●	
Pump inverter	Options	●		●	
Snow-proof Hood	Options	●			●
Strainer	Recommended Accessories		●		●
Flow Switch	Recommended Accessories		●		●
Hot/Cold Water Reverse Flow Stop Valve or Solenoid	Recommended Accessories		●		●
Flow Gauge	Recommended Accessories		●		●
Power and Signal Cables	Recommended Accessories		●		●

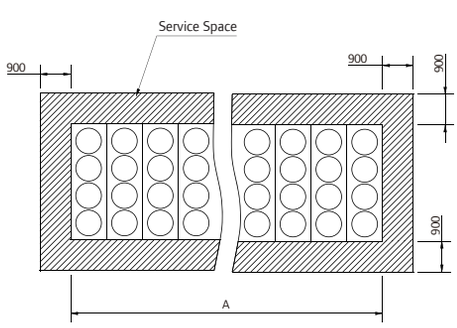
Standard Specifications

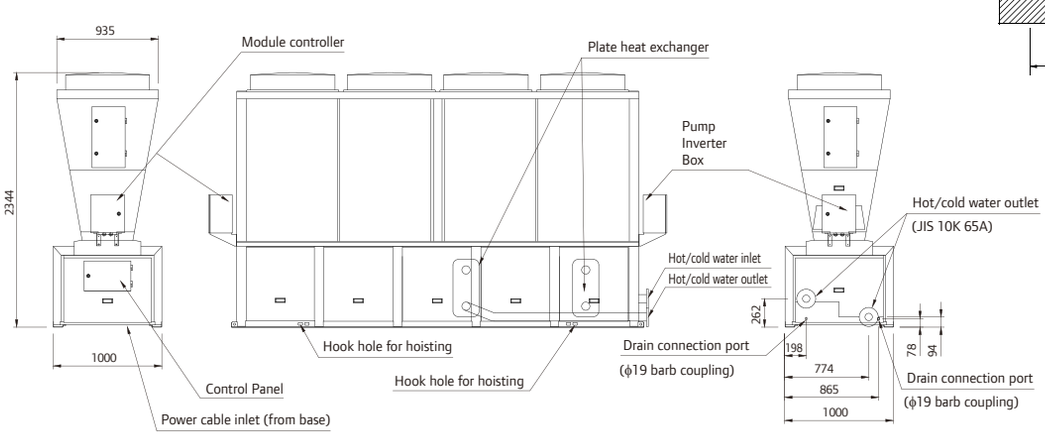
Model			Cooling Criteria: cold water inlet 12°C / cold water outlet 7°C Heating Criteria: hot water inlet 40°C / hot water outlet 45°C		Cooling Criteria: cold water inlet 14°C / cold water outlet 7°C Heating Criteria: hot water inlet 38°C / hot water outlet 45°C	
			30HP Model	50HP Model	30HP Model	50HP Model
			CXA V085	CXAV150	CXA V085	CXAV150
Maximum Connectable Units			20	20	20	20
Performance	Cooling Capacity	kW	85	150	85	150
	Heating Capacity	kW	85	150	85	150
Electrical Characteristics	Power supply		200V, 400V / 50Hz, 60Hz / 3-Phase		200V, 400V / 50Hz, 60Hz / 3-Phase	
	Rated Current (Cooling)	A	70.4	150.6	68.7	147.0
	Rated Current (Heating)	A	70.5	141.3	69.1	140.9
	Power Consumption (Cooling)	kW	22.08	48.26	21.61	46.82
	Power Consumption (Heating)	kW	22.89	45.11	22.42	44.77
	Power Factor (Cooling)	%	91	93	92	92
	Power Factor (Heating)	%	94	93	94	92
Compressor	Compressor Type		Fully Sealed Scroll		Fully Sealed Scroll	
	Motor Nominal Output	kW	9	15	9	15
	Devices		4	4	4	4
	Startup Method		Inverter		Inverter	
	Crank Case Heater	W	90	90	90	90
Air Heat Exchanger	Heat Exchanger Type		Fin & Tube Coil		Fin & Tube Coil	
	Fin Material		Resin Coated Fan		Resin Coated Fan	
	Tube Material		Copper Tube		Copper Tube	
	Number of Coil Columns		3	3	3	3
	Fan Type		Propeller Fan		Propeller Fan	
	Fan Motor Output	kW	0.35	1	0.35	1
	Number of Fans		4	4	4	4
	Rated Airflow	L/min	600	906	600	906
Water Heat Exchanger	Heat Exchanger Type		Brazed Plate Type Heat Exchanger		Brazed Plate Type Heat Exchanger	
	Material		Stainless Steel Alloy		Stainless Steel Alloy	
	Rated Flow Rate	L/min	242	420	172	305
	Pressure Loss	kPa	53	141	29	79
Volume Control	Method		Cold (Hot) Water Outlet Temperature Control		Cold (Hot) Water Outlet Temperature Control	
	Operating Range		0, 10 - 100%		0, 10 - 100%	
Refrigerant	Refrigerant		R-410A		R-410A	
	Refrigerant Circuits		4	4	4	4
	Refrigerant Volume	kg	9.1 ×4	9.1 ×4	9. 1×4	9. 1×4
	Control Method		Electronic Expansion Valve		Electronic Expansion Valve	
Oil	Oil		Polyol Ester 160SZ		Polyol Ester 160SZ	
	Oil Volume	L	3.3 ×4	3.3 ×4	3. 3×4	3. 3×4
Weight	When transporting	kg	1465	1465	1465	1465
	When operating	kg	1495	1495	1495	1495
Noise	Noise	dB(A)	64	74	64	74
	Noise (with options)	dB(A)	62	69	62	69
Aspersion Apparatus (Optional)	Rated Flow Rate	L/min	16.7	16.7	16.7	16.7
	Permissible Water Temperature Range	C	10 - 30	10 - 30	10 - 30	10 - 30
	Operable Temperature Range	C	>=20	>=20	>=20	>=20
	Control Method		Solenoid Valve On/Off Control + Fan Speed Control		Solenoid Valve On/Off Control + Fan Speed Control	
Legal Refrigerant Ton			15.6 Legal Refrigerant Ton	18.2 Legal Refrigerant Ton	15.6 Legal Refrigerant Ton	18.2 Legal Refrigerant Ton
High Pressure Gas Safety Act Procedure Classification			N/A (as long as the same water pipes are not combined with other heat source equipment)			

*Cooling criteria: cold water inlet 12(14)°C / outlet 7°C, atmospheric temperature 35°C DB, voltage 200 V/400 V *Heating: hot water inlet 38(40)°C / outlet 45°C, atmospheric temperature 7°C DB/6°C WB, voltage 200 V/400 V

External Appearance







Connected Devices	A (min. value)	Connected Devices	A (min. value)
1	1000	11	12600
2	2160	12	13760
3	3320	13	14920
4	4480	14	16080
5	5640	15	17240
6	6800	16	18400
7	7960	17	19560
8	9120	18	20720
9	10280	19	21880
10	11440	20	23040

*Unit interval: Min. 160 mm
Recommended value 250 mm

Maintenance Menu

Menu / Plan		Standard Plan	Long-term Guarantee Plan	Peace-of-mind Precautionary Plan
		1-year plan for supporting safe operation.	5-year free-of-charge repair plan.	Robust plan for prevention of unforeseen catastrophic failure.
Contract period	Consultation available.	1 Year	5 Years	Consultation
Annual maintenance contract	Maintenance prior to summer and winter seasons	●	●	●
Periodic maintenance inspections (three times per year)	Cleaning and calibration of equipment based on operating conditions and collected data	●	●	●
Annual maintenance inspections (once per year)	Comprehensive maintenance including shutting down of the equipment, diagnosis of operating conditions, adjustments, replacements of consumables and more	●	●	●
Repair and parts free of charge	Repair and parts free of charge for failures that occur during the contract period		●	●
Heat exchanger equipment cleaning	Fin/coil cleaning and water heat exchanger cleaning			●

Other options than those listed are also available. Please contact your nearest service center or branch office for details.

Ingersoll Rand

Ingersoll Rand (NYSE:IR) advances the quality of life by creating comfortable, sustainable and efficient environments. Our people and our family of brands — including Club Car®, Ingersoll Rand®, Thermo King® and Trane® — work together to enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; and increase industrial productivity and efficiency. We are a $13 billion global business committed to a world of sustainable progress and enduring results.

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CG-SLB024-EN
March 16, 2015