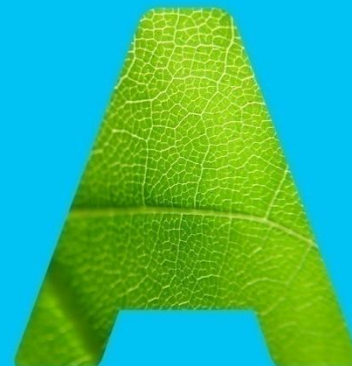
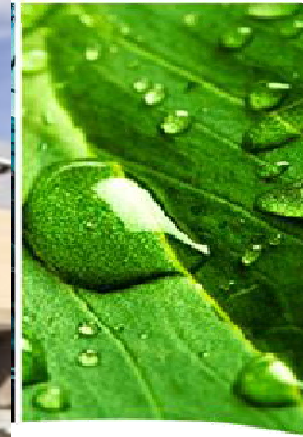


Introduction to Scroll Chillers !



DARE TO





Modular Scroll Family



Air Cooled Scroll Chillers/ Heat Pumps



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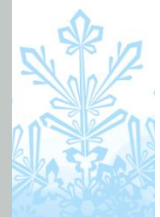
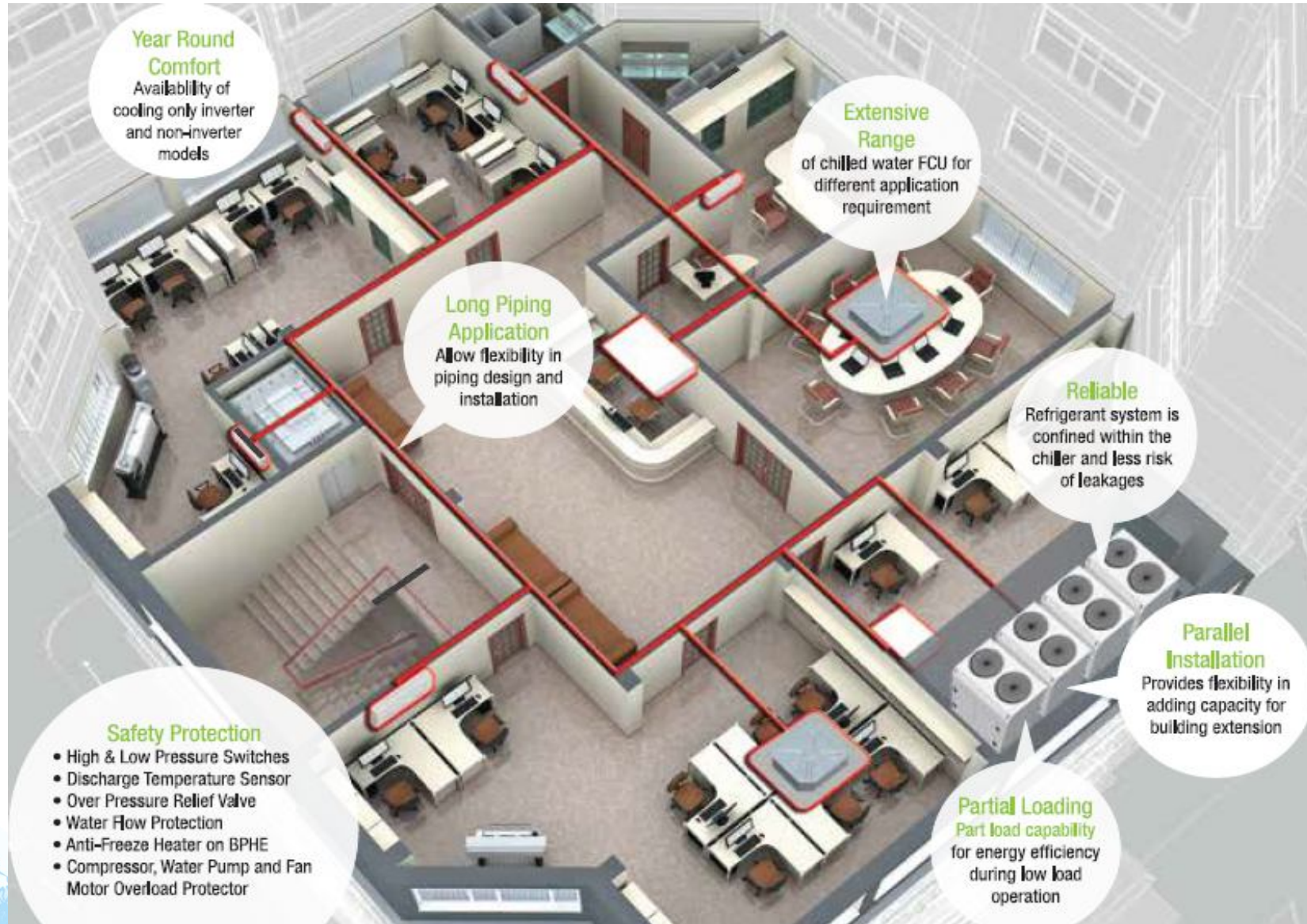
- Product Line up
- Operating Range
- Features
- Concept of Modular Chillers
- Job References



Why Scroll Chiller System ?



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Why Scroll Chiller System ?



Scroll Chiller Features

Centralized control

Network supports up to 16 chillers in a group

Multiple Temperature Zone Control

Operation can be managed according to zones for different comfort need

Serviceability & Error Code Troubleshooting

Easy access for servicing all components. Error code displayed on Control Panel for troubleshooting purpose

Energy Saving Programmable Timer

Customizable operation schedule of chiller and FCU based on requirement to promote energy saving

Master/Slave Option

Control based on network grouping or application

Dry Contact BMS Compatibility

Ability to be integrated with BMS

BMS & MODBUS Compatibility

Able to be integrated with BMS and MODBUS

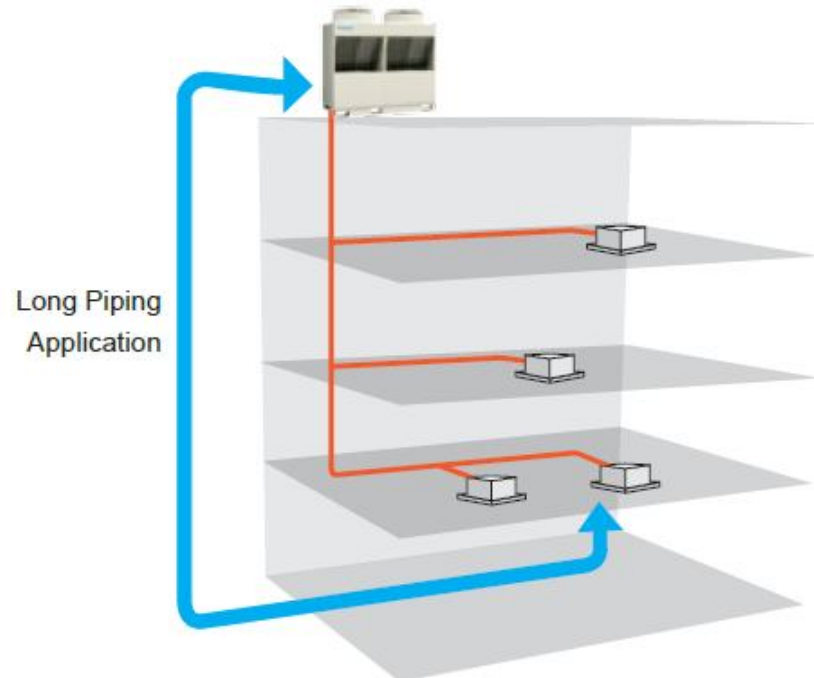
Why Scroll Chiller System ?



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Long Piping Application

- Daikin chilled-water system has no limitation in piping lengths unlike direct expansion refrigerant system.
- Chiller can be installed far away from the fan coil units.
- All refrigerant circuit is within the system making it no risk of leakage in building and no oil return issue.



Long Piping Application



Why Scroll Chiller System ?



Modular Design for Expandable Capacity

- Daikin modular chiller allows for combination of up to 16 base modules unit where each modular can be connected to form a much larger system or capacity.
- Different configurations can be made using different sized models to achieve the desired tonnage.
- With High COP and independent cooling circuits we can provide high full load performance as well as better part load performance.
- The modular design provides better redundancy and space utilization.
- Phased Investment – ease of choosing and Installing units according to future requirement.



What is Modular Design ?

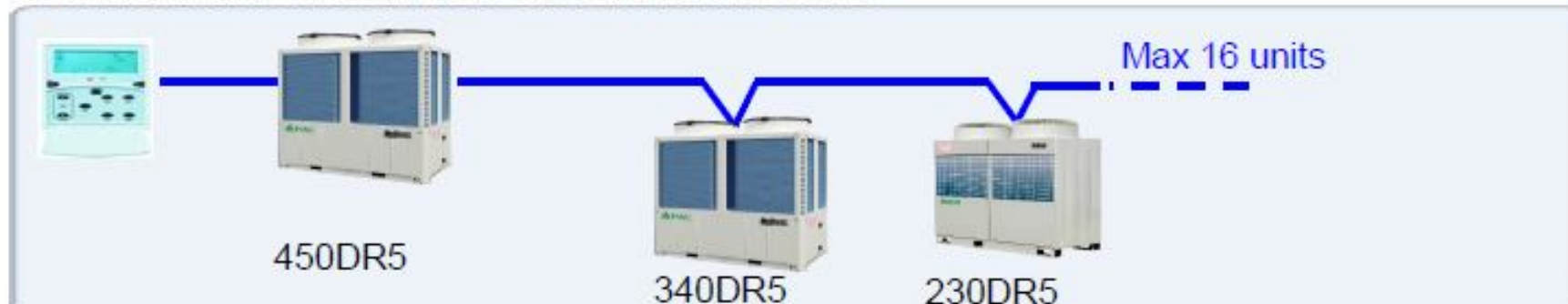


DAIKIN

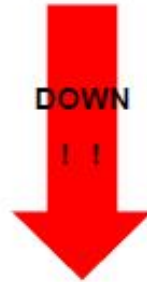
Combination between same models



Combination between different models



Modular design



Initial investment
Installation cost
Maintenance cost
.....



2080kW
.....
60kW
Capacity



- Shopping mall (200~11,000m²)
- Office Building (300~19,000m²)
- Entertainment venue (150~9,500m²)
- Hotel (150~9,500m²)
- Industrial (1000-38,000m²)

Wide application



Scroll – Modules 18 TR & 38 TR



Modular chiller combinations

- Various combinations in the models which can be offered.
- These combinations help in providing customised solution for the client.
- We can maximize the capacity by minimizing the foot print of the total system.

Tonnage	Combination 1	Total Tonnage
35 TR	UAL230D5 - FAAE x 2#	37.6 TR
50 TR	UAL230D5 - FAAE + UAL450D5 - FAAE	57.6 TR
75 TR	UAL230D5 - FAAE x 4#	75.2 TR
90 TR	UAL230D5 - FAAE x 1# + UAL450D5 - FAAE x 2#	96.4 TR
100 TR	UAL450D5 - FAAE x 3#	116.4 TR

Tonnage	Combination 2	Total Tonnage
35 TR	UAL450D5 - FAAE x 1#	38 TR
50 TR	UAL230D5 - FAAE x 3#	56.4 TR
75 TR	UAL230D5 - FAAE x 2# + UAL450D5 - FAAE x 1#	76.4 TR
90 TR	UAL230D5 - FAAE x 3# + UAL450D5 - FAAE x 1#	95.2 TR
100 TR	UAL230D5 - FAAE x 2# + UAL450D5 - FAAE x 2#	115.2 TR

Scroll – Modules 18 TR & 38 TR



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Configuration (60 TR - Actual Load)

- Standard Scroll (34TR x 3Nos.)
- 2W+1S (Installed TR – 102 TR)

Configuration (60 TR - Actual Load)

- MODULAR Scroll (18.5TR x 5Nos.)
- 4W+1S (Installed TR – 92.5 TR)

- We can avoid over sizing of the system using smaller modules.
- The system layout becomes more uniform, easier installation.

Air Cooled Scroll Chiller / Heat Pump



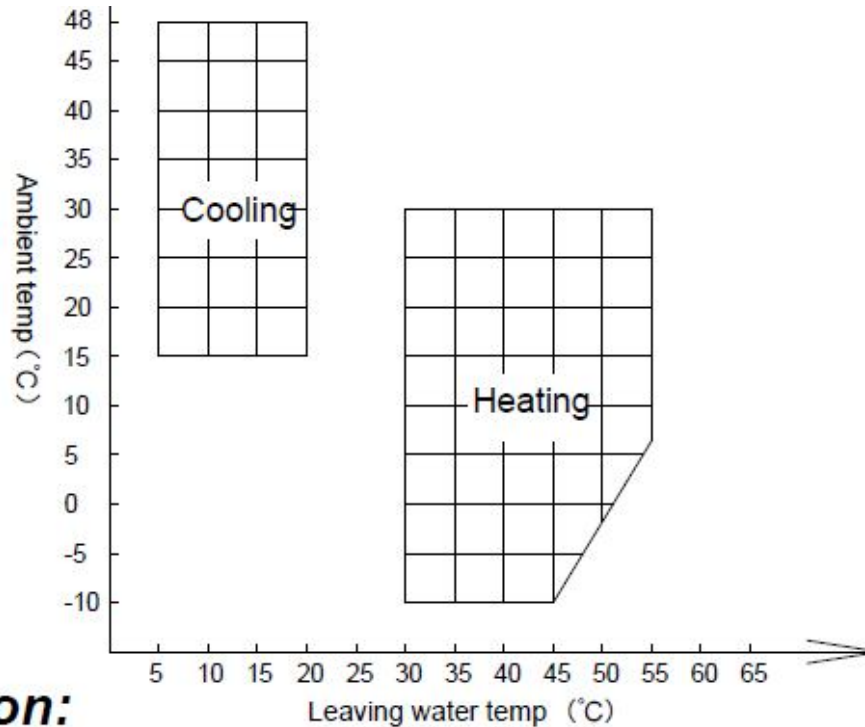
Product Line Up

Model - UAL	230D5	230DR5	230ER5	340D5	340DR5	450DR5	450D5
Type	Cooling Only	Heat Pump	INVERTER* Heat Pump	Cooling Only	Heat Pump	Heat Pump	Cooling Only
Nominal Cooling Capacity (TR)	18.5	19.1	18.8	28.3	28.3	36.8	38.4
COP (Cooling) Including Condenser Fan Power	3.39	3.38	3.38 (IPLV 4.36 GB)	3.28	3.38	3.33	3.35
Nominal Heating Capacity (kW)	--	66	64	-	100	130	--
Rated Running Current Cooling (A)	36.9	36.8	38	54.4	54.4	73.6	76.1
Rated Running Current Heating (A)	--	36.7	39.2	-	55.8	73.6	--
Power Supply V/Ph/Hz	380-415V/3N/50Hz						
Refrigerant	R410A						

Operating range- UAL Series



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Cooling Low ambient range can go to till 5 Deg C

- Machine operates perfectly at high ambient Temperature of 48 Deg C.
- Leaving water temperature can be as low as -5 deg C by using Glycol.

Easy Transportation



Modular air cooled chiller :

- Dispersed transport, easy transport, small equipment can meet the requirement.
- Small unit can enter the elevator. (UAL210/230).



Packaged air cooled scroll chiller :

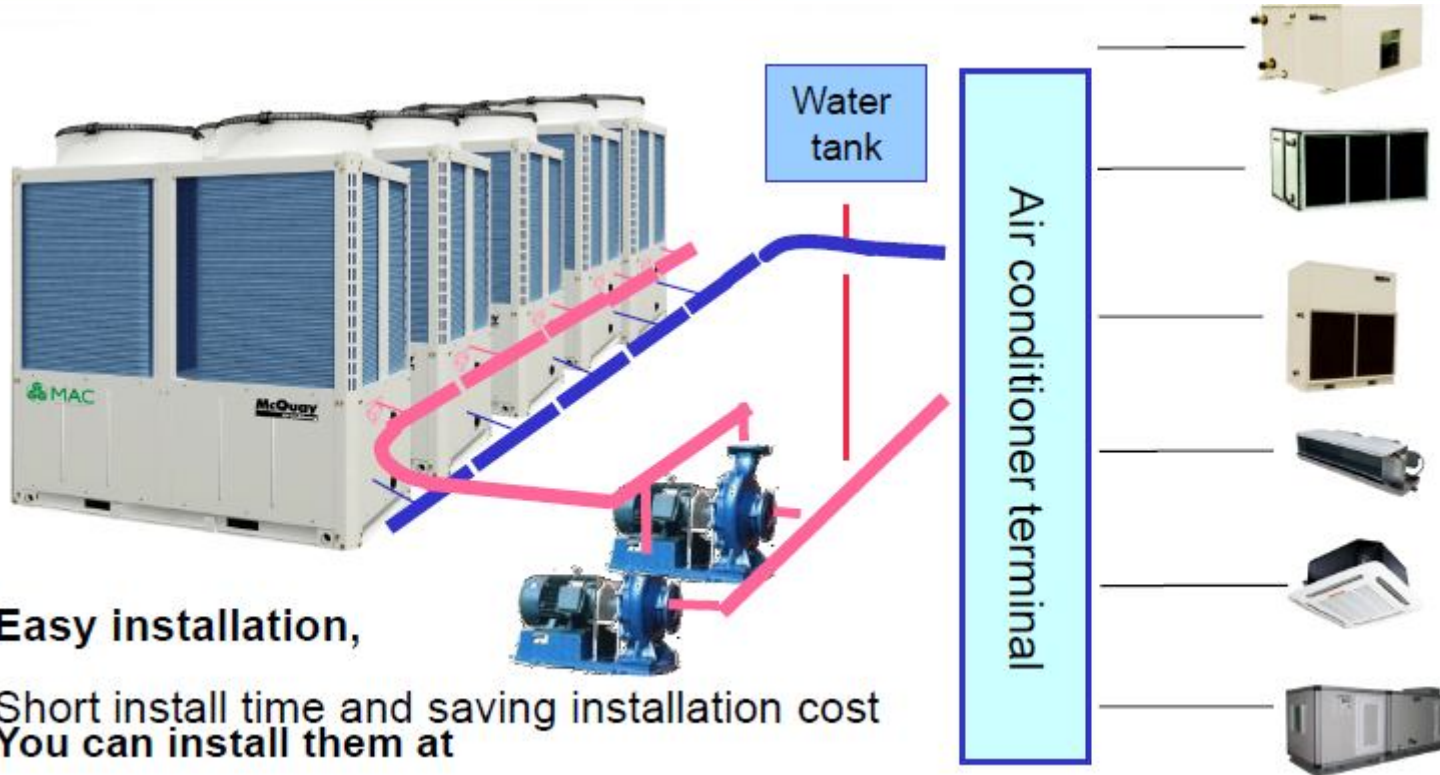
- Need the large-scale lifting equipment.



Easy installation



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Easy installation,

Short install time and saving installation cost
You can install them at

- : Rooftop
- : Balcony
- : Other outdoor place

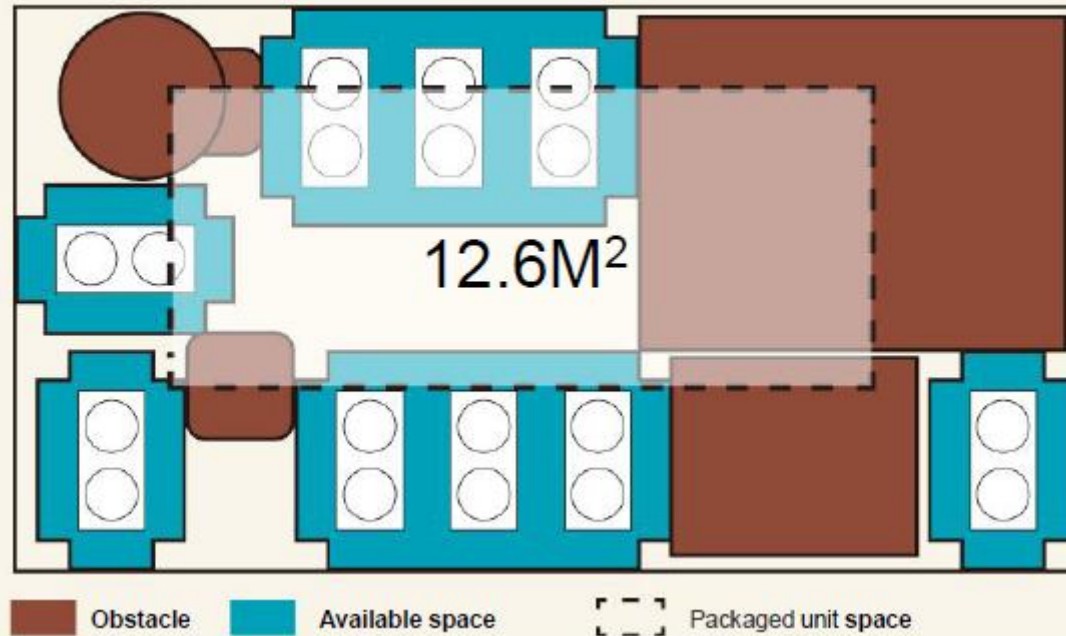


Flexible Installation



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Modular unit can adapt all kinds space flexibly (Take 585kW system for example)



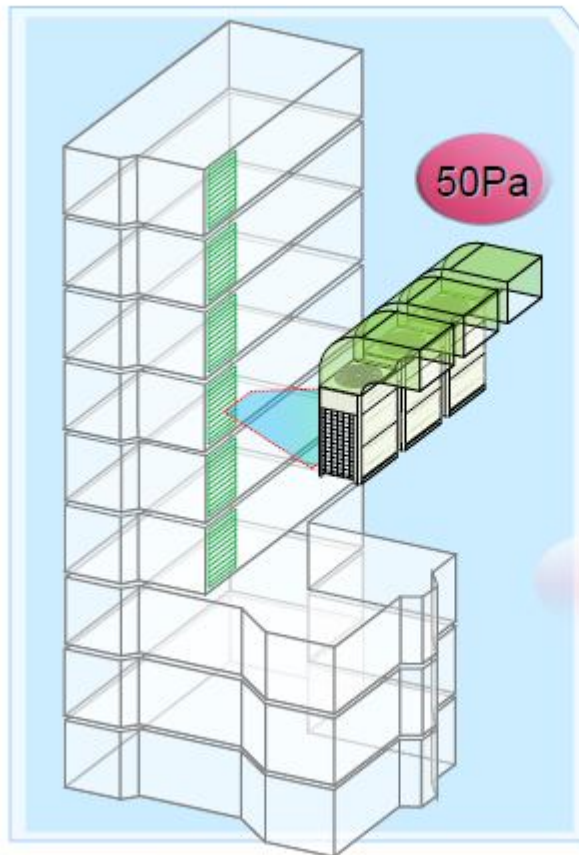
- The unit can adapt all kinds room flexibly, it can improve the space efficiency.
- In the case, the packaged scroll chiller needs 12.6 m², but the modular unit only need 1.7 m²
- Modular chiller is lighter, and lower load-bearing. (Compare the load-bearing : packaged type : about 400KG/m² , modular chiller : 320KG/m²)

Flexible Installation



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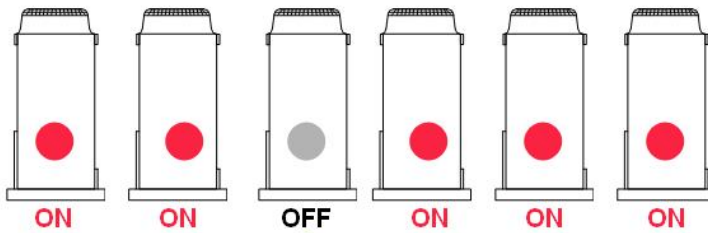
340/450 provide 50Pa ESP (option)



Reliable operation

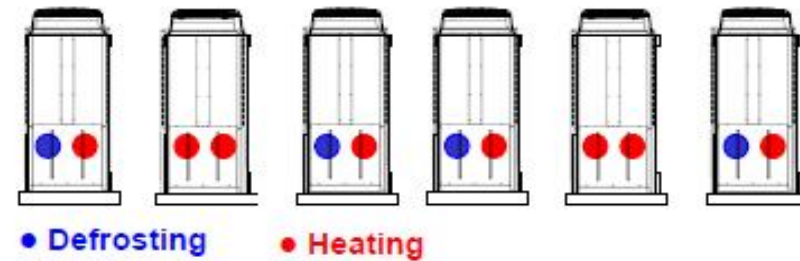
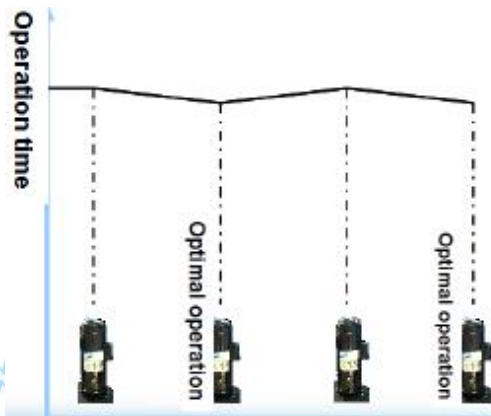


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1. Backup operation

When maintain or repair one unit, other units will not be affected.



2. Alternately defrost

Unit/ system defrost alternately, reduce fluctuation of chilled water temp.

3. Running balance function

1) When turn on the units, units will be started one by one, reduce shock to the power line.

2) Compressor with shortest running time will always be started first .

Redundant Operation



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For modular chiller, if one of the systems breaks down, the others can still operate normally due to independent refrigerant system design with two compressors. Similarly, if one of the units breaks down, the others can still operate normally without affecting the whole building operation.



Reliable operation



Dozens of protection measures

Daikin modular chiller is equipped with multiple protections to ensure a safe and reliable operation.



Suction Temperature
Overheat Protection



High Pressure
Protection



Low Pressure
Protection



Self Diagnosis



Ambient Temperature
Protection



Water Flow Protection
Access Valve



Motor Overload
Protection



Discharge Temperature
Overheat Protection

Other than that, there are also High Leaving & Entering Water Temperature Protection, BPHE Anti-Freeze Protection, Power Protection, Refrigerant Leakage Alarm, High/Low Ambient Temperature Protection and many more.



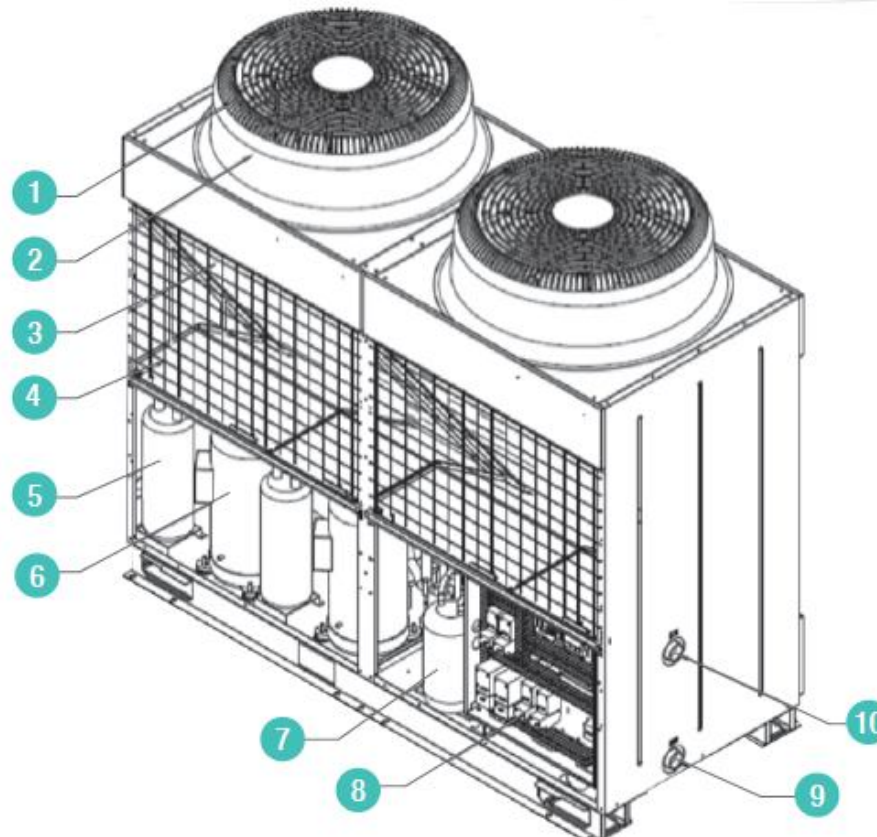
High Efficiency



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- Unit features leading-edge scroll technology and name-brand accessories which are strictly tested for high compatibility and reliability.
- Equipped with efficient scroll compressors and precise electronic expansion valves, these units feature high EER and COP, especially at partial load.

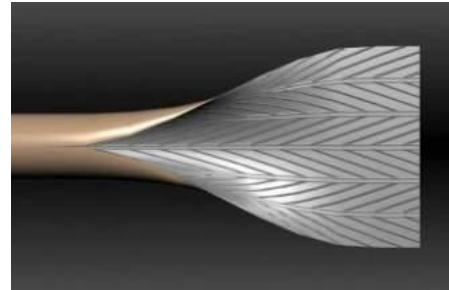
- 1 Fan & motor
- 2 Outlet air deflector
- 3 Fin tube heat exchanger
- 4 Protective screen at the front
- 5 Accumulator
- 6 Scroll compressor
- 7 Liquid receiver
- 8 Electrical components
- 9 Water outlet pipe
- 10 Water inlet pipe



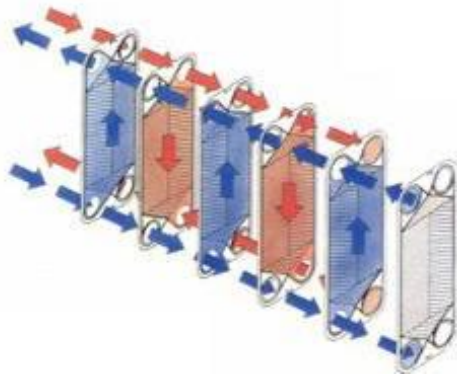
High Efficiency



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1. Inner groove tube for air side heat exchanger



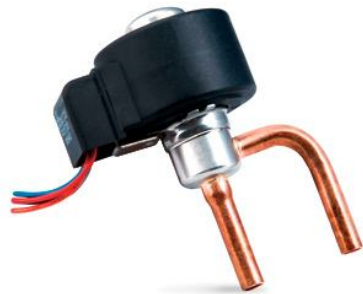
2. High efficiency brazed Plate Heat Exchanger



High Efficiency



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3. Electronic expansion valve, quick feedback and precise flow control .



4. Scroll compressor provides high efficiency .



Efficiency 12% higher

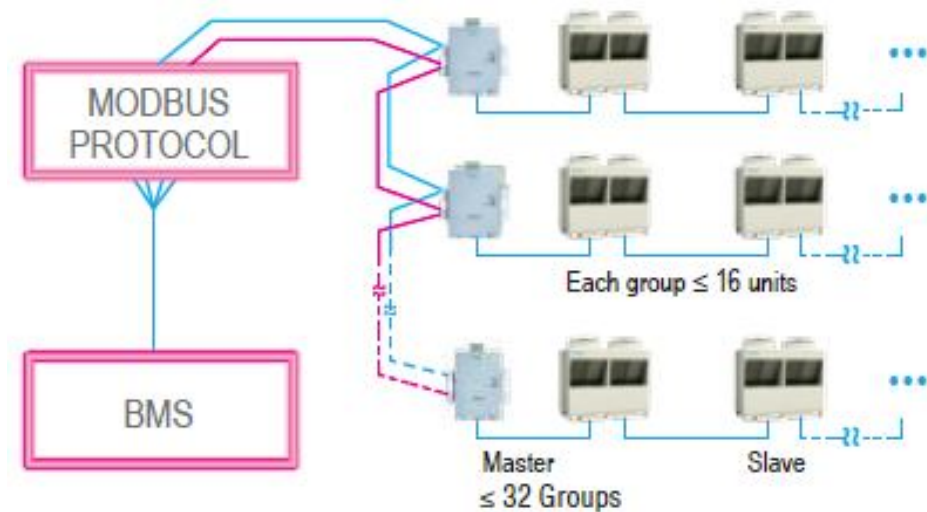


Intelligent control



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- Micro chip large-scaled LCD display remote controller .
- Group Control : 1 master, 15 slave units.
- MODBUS Gateway
- Basic operating mode
- Parameter setting
- Parameter display
- Fault alarm and protection
- Memory function
- 7 days programmable timer
- Self diagnosis



LCD control panel



Can control up to 16 units

Parameter setting

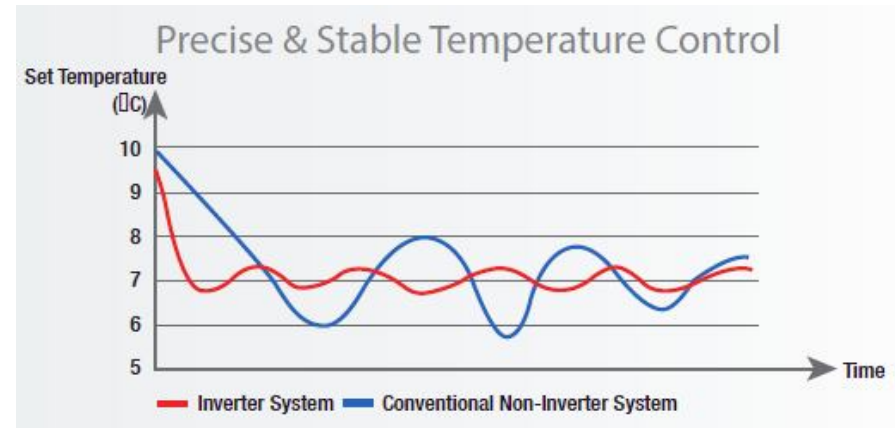
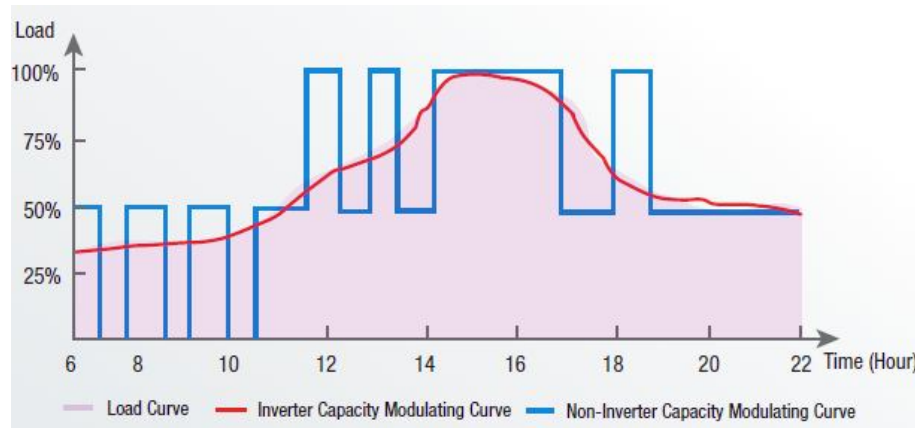
Humanized design, simple to use

Schedule management

Stepless capacity control – Inverter Scroll



- Common constant-speed modular unit can adjust energy at grades 2 (0, 50%, 100%).
- In contrast, UAL-E series modular inverter unit adopts 15%~100% stepless capacity control with precise low-load .



UAL-E inverter unit can match the building load dynamically and precisely.

Low noise – Inverter Scroll



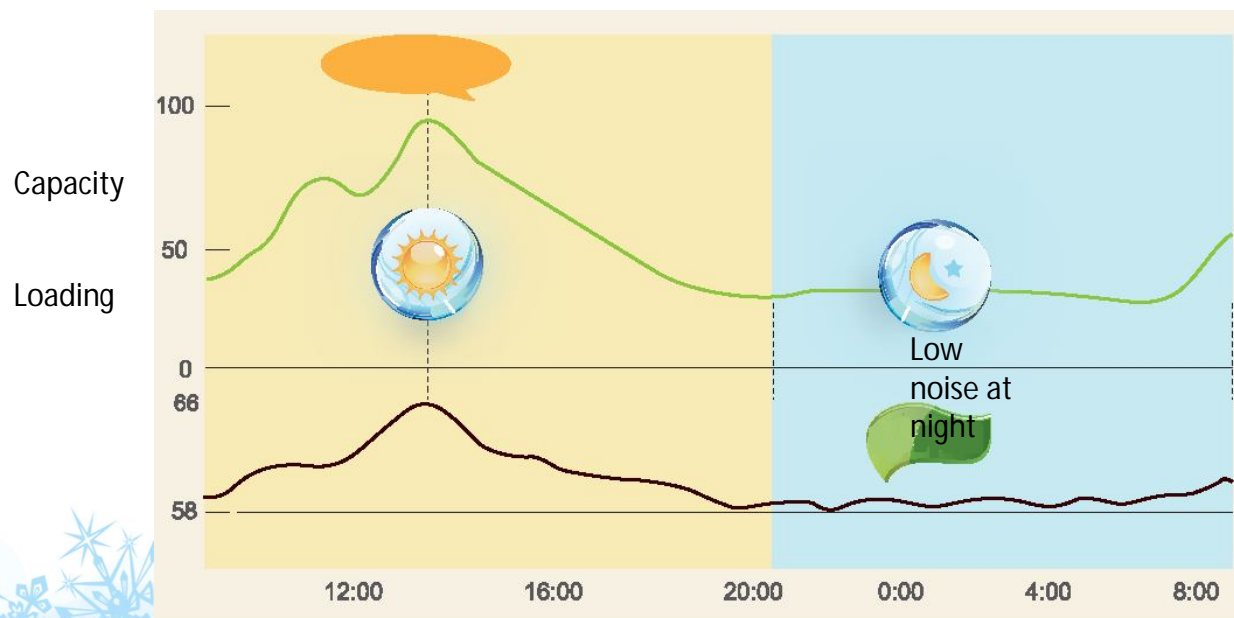
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- **Multiple low noise design**

- Installed compressor, fan, motor undergo precise noise test and analysis.
- Structure and pipelines are designed with noise reduction consideration.
- The sealed cabinet design reduces the noise levels.

- **Stepless variable-speed fan**

- In the case of low-load running, the fan rotate speed will reduce automatically and the noise of unit operation can be as low as 58 dB(A).



Scroll Chillers



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INDUSTRIAL APPLICATIONS



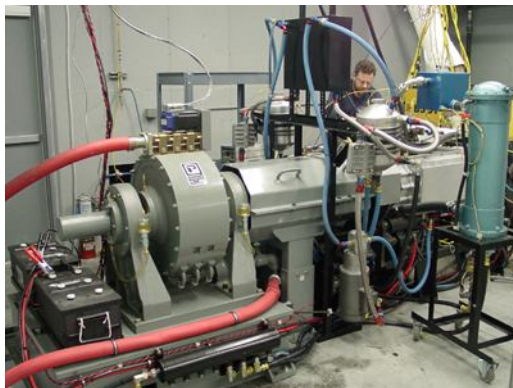
Pharmaceutical



Printing presses



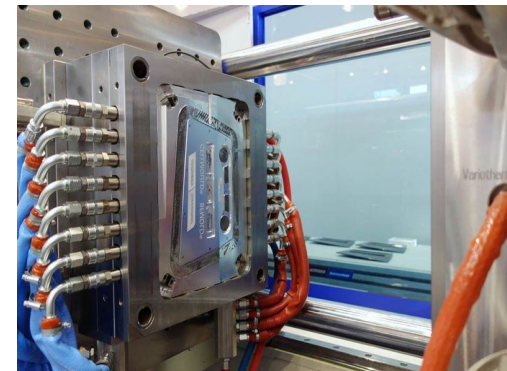
Packaging Industry



Engine Testing labs



Server Rooms



Injection Moulding

Other Applications



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- Hotels / Resorts
- Operation theatres (Dedicated unit)
- MRI/CT/PET scanning machine (Process cooling)
- High end residential complexes



Scroll Chillers



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JOB REFERENCES



JOB REFERENCES



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Project – Any Graphics
Location- Noida
7 units- UAL 230D5



JOB REFERENCES



DAIKIN



Project – Ericsson Building Cyber city
Location- Cyber city Gurgaon
5 units- UAL 210D5

JOB REFERENCES



DAIKIN



**Project – IIT Hyderabad
Location - Hyderabad
12 units- UAL 230D5**

JOB REFERENCES



DAIKIN



Project – Koyo Bearings
Location - Bawal
3 units



Project – German Embassy
Location – New Delhi
1 unit



JOB REFERENCES



DAIKIN



**Project – MES Administrative
Building
Location – Meerut
10 units – UAL 210 D5**

**Project – Woco Motherson
PROCESS COOLING
Location - Noida
2 units – UAL 210 D5**



JOB REFERENCES



DAIKIN



**Project – Ford Factory
Location - Sanand
2 units**

JOB REFERENCES



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Project – Inbisco
Location - Sanand
3 units



Project – Toto
Location – Gujarat
2 units – UAL 210DR5



JOB REFERENCES



DAIKIN



Project – Plastic Omnium
Location – Gurgaon
3 units – UAL 450D5



Project – Balmer Lawrie
Location – Chennai
1 units – UAL 450D5



Scroll Chillers



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