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'Products mentioned in this brochure comply with RoHS regulations as per E-waste (Management & Handling) Rules, 2011 and should not be mixed with general household waste at the end of their useful life.' For more details kindly visit our website www.daikinindia.com or contact our customer care centre at 011-40319300 / 1860 180 3900.



WORLD'S LEADING AIR CONDITIONING  
COMPANY FROM JAPAN

# Scroll Chillers

Give your Business a Higher Edge



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## What Daikin stands for

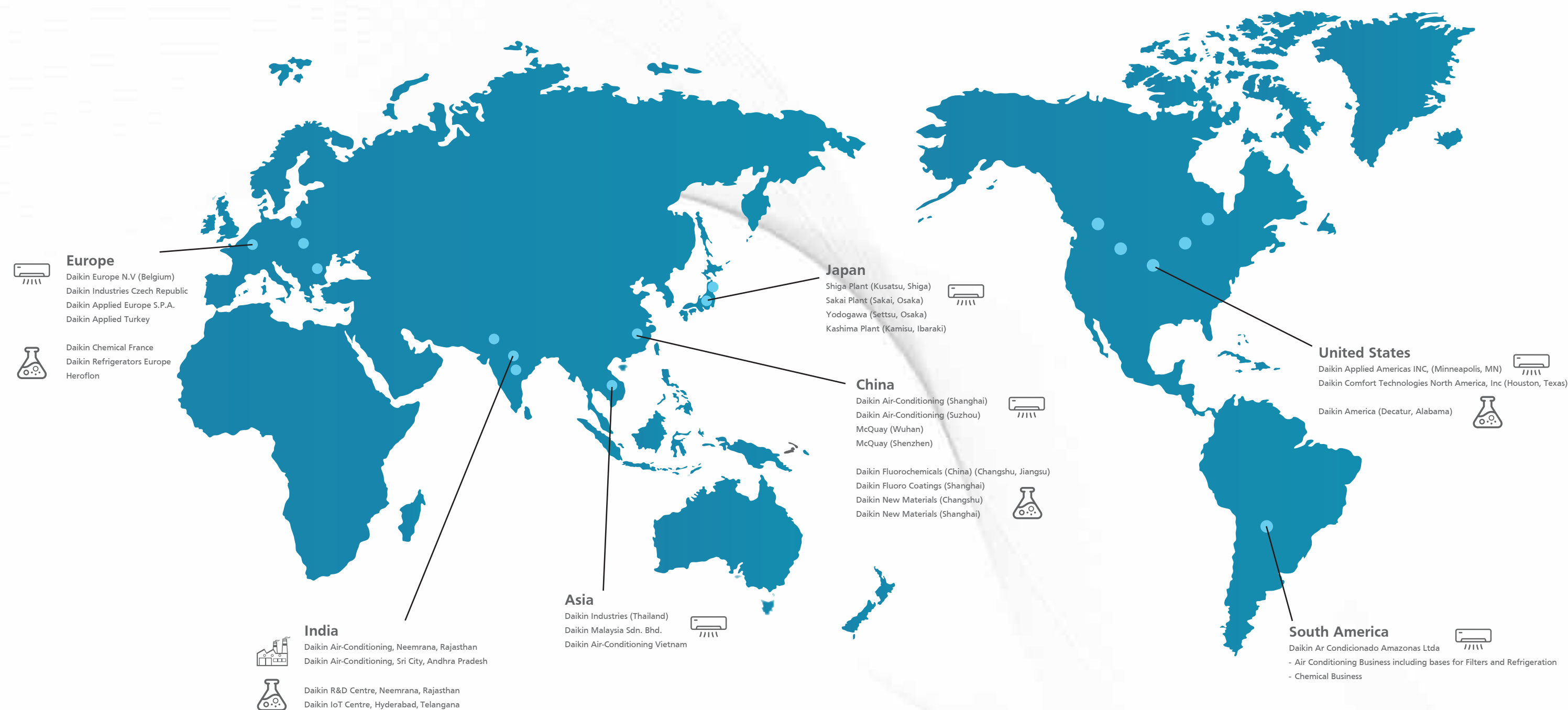
Daikin is a leading innovator and provider of advanced, high-quality air-conditioning solutions for residential, commercial and industrial applications. As World's Leading Air-Conditioning Company, Daikin is committed to delivering air-conditioning solutions that enhance the quality of life all around the world.

A diverse multinational company, Daikin Industries Ltd., active in air-conditioning, chemicals and oil hydraulics, was established in 1924. With headquarters at Osaka, Japan, the Daikin family has more than 84,870 members, working across 100+ production base units and 316 consolidated subsidiaries worldwide. As the world's sole manufacturer that develops a long line of products, from refrigerants to air-conditioners, Daikin advocates comfortable living on the strength of advanced technologies.

Daikin is present in the USA, Canada, Europe, Russia, Middle East, Africa, Central Asia, Southeast Asia, Oceania and Latin America. We aim to serve our customers in each of these markets by providing optimal air-conditioning products.



# Transcending boundaries with innovation



170+

Countries & Regions

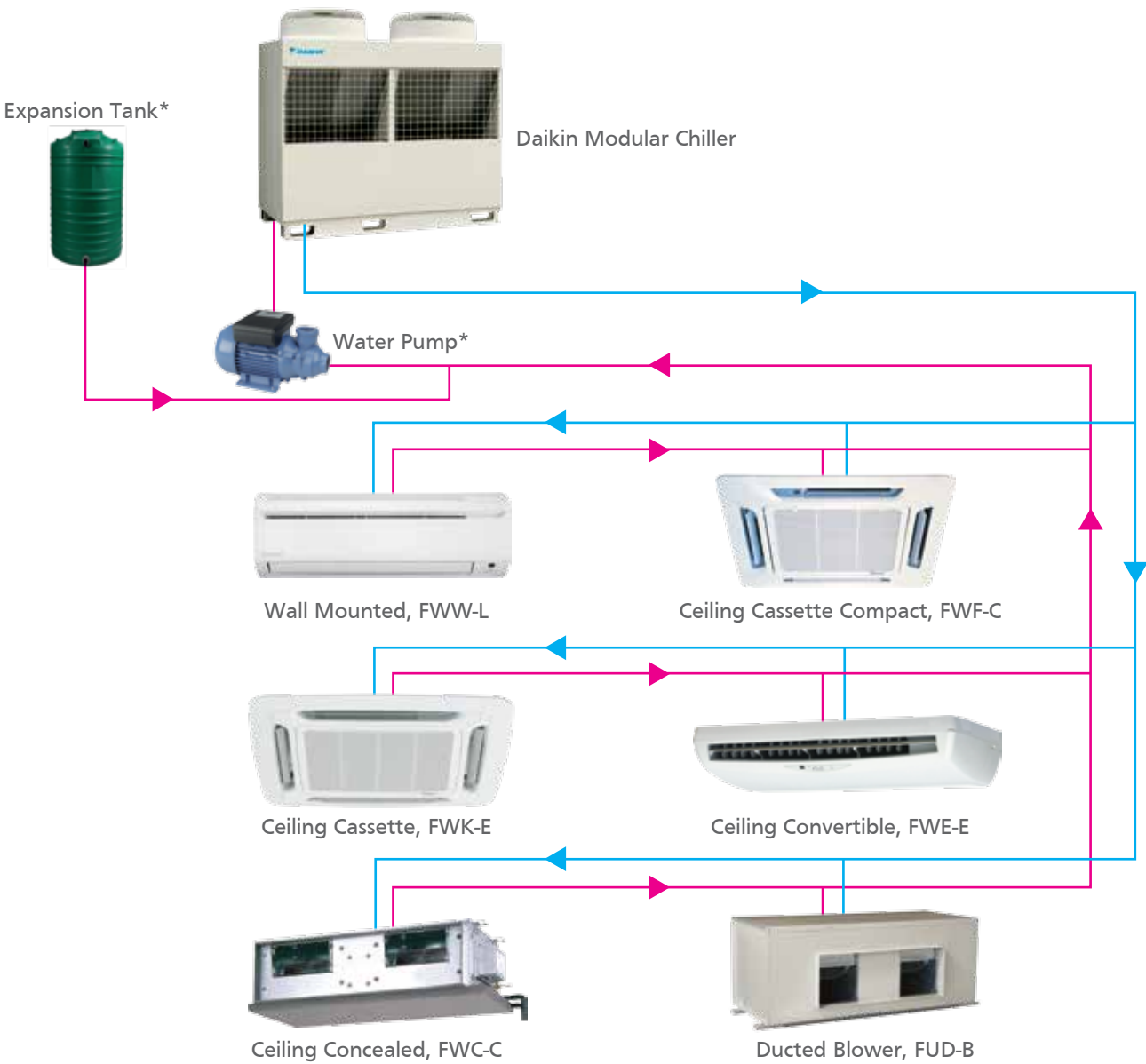
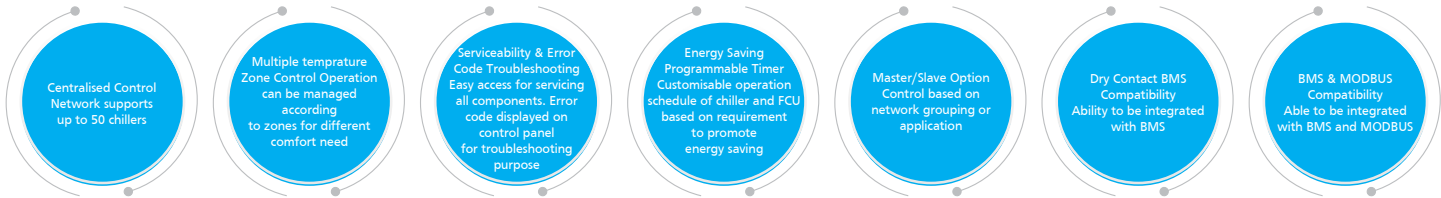
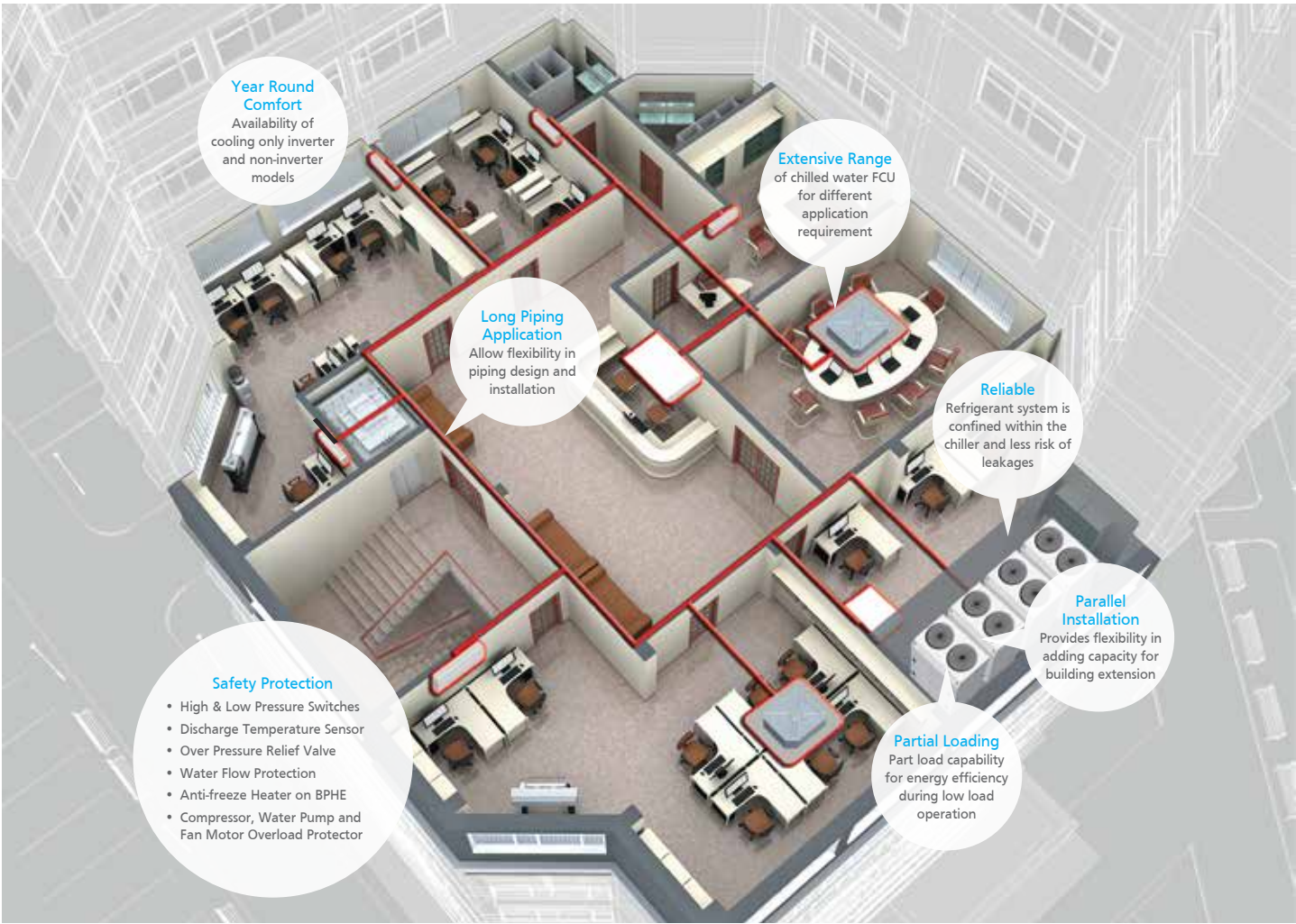
117

Manufacturing Bases

50

R&D Bases

# Application



\*Field Installed

## Air-Cooled Modular Chiller Applications

School/university, office, shopping mall, hotel, hospital, warehouse, factory and highrise building.



Factory



Hall



Shopping Mall



Office

# Why Scroll Chillers?

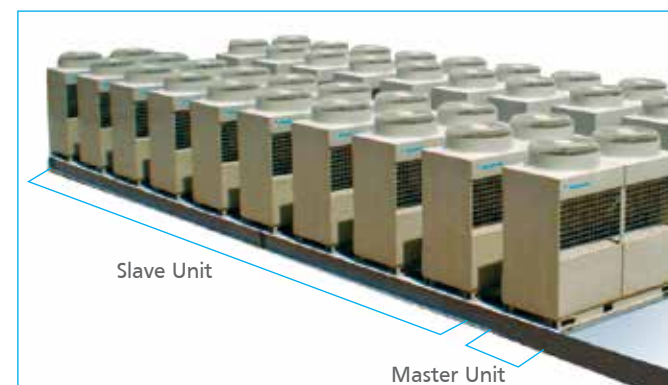
## Time and Cost Saving

Daikin modular chiller is designed to best facilitate user installation. It is fully assembled, complete with all necessary components and undergo a series of stringent testing and quality check in the factory. Customers do not need to refill refrigerant or invest more money due to refrigerant is pre-charged to achieve time and cost saving.



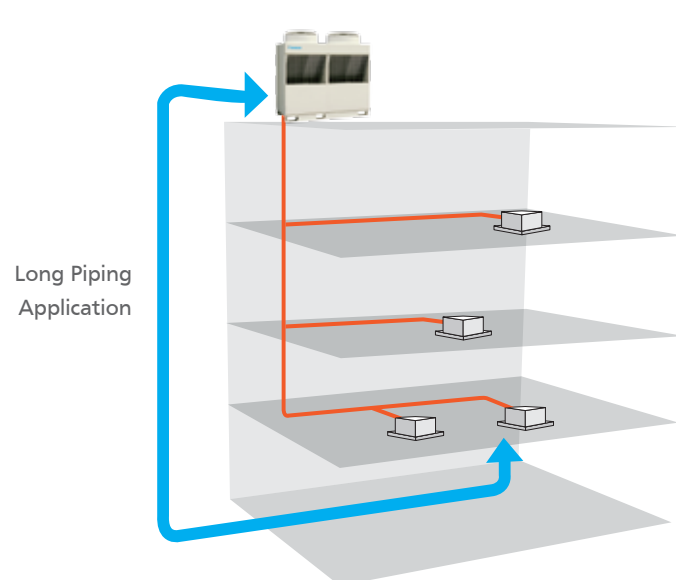
## Modular Design for Expandable Capacity

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.



## Long Piping Application

Unlike normal Direct Expansion system with constraints in piping design and installation, Daikin Chilled Water System has no limitation in piping lengths by correct pump sizing. All refrigerant circuit is within the system making it no risk of leakage in building and no oil return issue.



## Zero ODP R410A Refrigerant

With the absence of chlorine molecules, R410A refrigerant system causes no harm to the ozonosphere due to it is zero Ozone Depletion Potential (ODP).



## Investment Flexibility

As the capacity of modular chiller is expandable, so does the investment. Especially for the capacity expansion project in phases, modular chiller can be installed separately in phases to reduce high initial investment and installation cost.



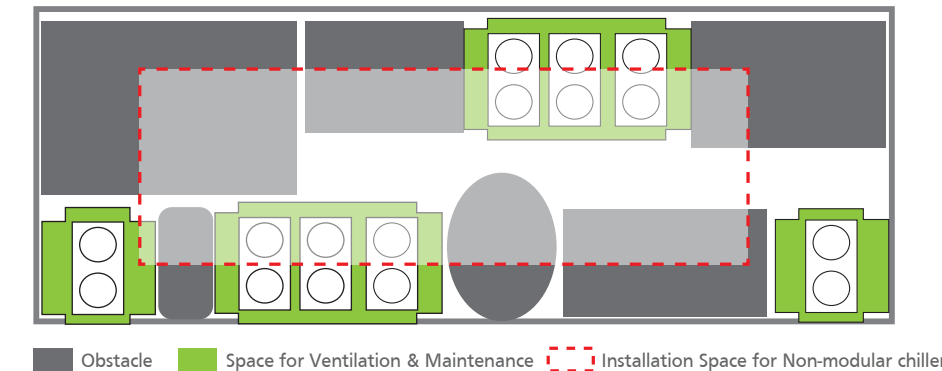
## Easy Installation

Unit designed to best facilitate user installation. Due to its compact size, its dimensions and weight are significantly reduced and hence provides highest mobility. It can be lifted without large lifting tools and located on the roof, balcony or any possible outdoor space. Space utilisation can also be maximised by installing the modular chiller separately in non-uniform compound due to building layout.



Roof top

## Modular chiller can be installed into non-uniform compound



## Partial Loading

Daikin Chilled Water System is designed with two or more separate refrigerant circuits with multiple compressors. By doing so, the unit has part load capabilities. This will improve the reliability and energy efficiency especially during low loading operations.

## Redundant Operation

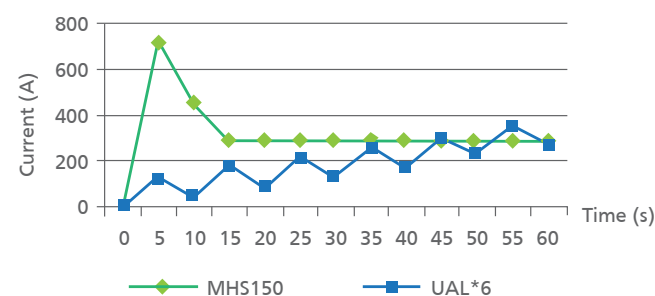
For modular chiller, if one of the systems breaks down, the others can still operate normally due to independent refrigerant system design with two compressors. Similarly, if one of the units breaks down, the others can still operate normally without affecting the whole building operation.





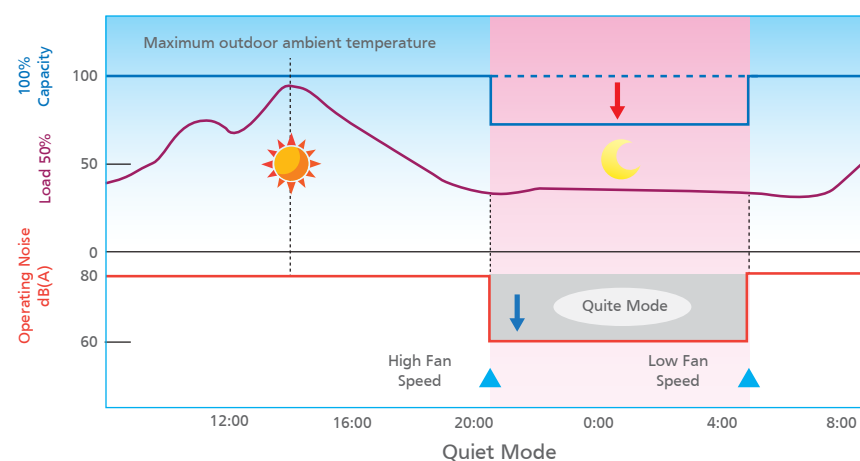
### Power Start Up In Stages

Unit adapts modular design and start one by one, reducing the impact upon the grid when starting and hence reduce initial starting power surge. Unit features 2-grade modulation which can be transformed to multi-grade modulations in modular combinations. With operation grades controlled electronically, the unit exerts less shock to the power grid and saves more energy.



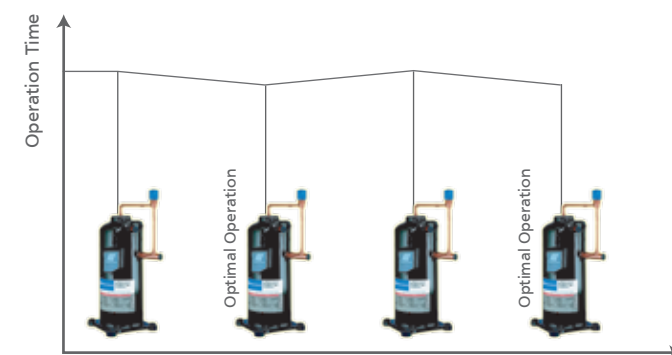
### Low Sound Level

The specially designed spiral blades ensure smooth air flow, significantly reducing the turbulence and lowering air flow sound level. On top of that, quiet mode (low fan mode) is also available to reduce the operating noise especially in night time for a much pleasant resting environment.



### Minimum Compressor Running Time

The compressor with shortest running time will always be started first to prolong compressor's life span and enhance system's reliability.



## Air Cooled Scroll Chillers & Heat Pumps: UAL

Daikin introduces in India a new range of modular scroll chillers for cooling and heating applications. These chillers ideally combine the advanced and mature chiller technology. In addition, these chillers features outstanding performance, high capacity, low sound level, easy installation, and flexible system management, helping Daikin take the lead in the global market.



Refrigerant  
R 410A

### Environment Friendly

The R410A causes no harm to the ozonosphere (ODP=0) Protects global ecosystem.

### Low Sound Levels

Newly designed spiral blades makes the air flow in outdoor units smooth, significantly reducing the turbulence and lowering the air flow sound level. Unique Night Mode brings down night noise greatly and ensures you a sound sleep.

### Flexible Module Combination

1~16 modules of different capacity can be combined as a set to meet load requirements of various applications. The modular design of the unit allows the owner to invest in phased manner. The owner can increase the investment at any time with the development.

### Compact Size

Compact size modules can be lifted without large lifting tools and can be conveniently installed on the roof, balcony or any possible outdoor space.



Basic Operating Modes  
Cooling Heating (Optional)

### Reliable Operation

All units have undergone strict and long-term test, ensuring reliable operation. Modular design enables one by one start, reducing impact upon the grid when starting.

### High Static Pressure Fan (50Pa optional, only for UAL450 model)

The optional high static pressure fan makes it possible for outdoor unit to be connected to exhaust duct. This feature avoids short circuit of airflow, and ensures stable operation of the unit.

### Multi-grade Modulation

UAL series features multi-grade modulation which can be transformed to multi-grade modulations in modular combinations. With operation grades controlled electronically, the unit exerts less shock to the power grid and saves more energy.

### Intelligent Control System

UAL features user-friendly intelligent control system. Micro chip and large-scaled LCD display are employed to make the control easy.

- Group control: One single controller can control a group made up by one master unit and maximum 15 slave units.
- Centralized control: 1~8 groups unit of 1 master and 15 slaves can be combined in one control system.
- BMS: UAL-D is standard with Modbus protocol and ports for BMS, can support maximum 100 groups modular units, one group can support one master unit and maximum 15 slave units.

| Chiller Cooling Only Models         |                           |                |             |                |                |
|-------------------------------------|---------------------------|----------------|-------------|----------------|----------------|
| Model - UAL                         | UAL230RARY                | UAL340D5       | UAL450D5-FC | UAL450RARY     | UAL1000D5      |
| Cooling Capacity (TR)               | 18.8                      | 28.3           | 37          | 40             | 83.8           |
| COP (Including Condenser Fan Power) | 3.25                      | 3.28           | 3.06        | 3.25           | 3.2            |
| Rated Running Current (A)           | 36.9                      | 54.4           | 76          | 80.9           | 168.5          |
| Power Supply                        | 380 ~ 415 V/ 3 N~ / 50 Hz |                |             |                |                |
| Refrigerant                         | R410A                     |                |             |                |                |
| Unit Dimensions (L x W x H) mm      | 1994x841x1842             | 2100x1100x2300 |             | 2235x2138x1942 | 2200x2230x2360 |
| Net Weight (Kg)                     | 490                       | 860            | 865         | 1080           | 1730           |

| Heatpump Models                     |                           |                |           |              |
|-------------------------------------|---------------------------|----------------|-----------|--------------|
| Model - UAL                         | UAL230DR5                 | UAL340DR5      | UAL450DR5 | UAL450DR5-FC |
| Cooling Capacity (TR)               | 18.8                      | 28.3           | 36.8      | 37           |
| Heating Capacity (kw)               | 67                        | 100            | 130       | 132          |
| COP (Including Condenser Fan Power) | 3.2                       | 3.38           | 3.33      | 3.06         |
| Rated Running Current (A) - Cooling | 38.5                      | 54.4           | 73.6      | 76           |
| Rated Running Current (A) - Heating | 37.8                      | 55.8           | 73.2      | 73.6         |
| Power Supply                        | 380 ~ 415 V/ 3 N~ / 50 Hz |                |           |              |
| Refrigerant                         | R410A                     |                |           |              |
| Unit Dimensions (L x W x H) mm      | 1990x840x1840             | 2100x1100x2300 |           |              |
| Net Weight (Kg)                     | 471                       | 870            | 990       | 865          |

| Cooling only / Heatpump Inverter Models |                           |           |                |           |
|-----------------------------------------|---------------------------|-----------|----------------|-----------|
| Model - UAL                             | UAL230E5                  | UAL230ER5 | UAL450E5       | UAL450ER5 |
| Type                                    | Cooling                   | Heatpump  | Cooling        | Heatpump  |
| Cooling Capacity (TR)                   | 18.5                      | 18.5      | 37             | 37        |
| Heating Capacity (kw)                   | -                         | 70        | -              | 140       |
| COP (Including Condenser Fan Power)     | 3.25                      | 3.25      | 3.3            | 3.3       |
| Rated Running Current (A) - Cooling     | 32.3                      | 32.3      | 64             | 64        |
| Rated Running Current (A) - Heating     | -                         | 36.1      | -              | 68.9      |
| Power Supply                            | 380 ~ 415 V/ 3 N~ / 50 Hz |           |                |           |
| Refrigerant                             | R410A                     |           |                |           |
| Unit Dimensions (L x W x H) mm          | 1100x1045x2120            |           | 2100x1100x2300 |           |
| Net Weight (Kg)                         | 420                       | 420       | 928            | 928       |

- Notes:
1. The specifications given in the table will be subject to the modifications on product design by the manufacturer.
  2. Nominal cooling capacity condition: lwt 7°C, water flow 0.172 [m3/(h·kw)], outdoor temperature 35°C.
  3. Nominal heating capacity condition: lwt 45°C, water flow 0.172 [m3/(h·kw)], outdoor dry-bulb temperature 7°C, wet-bulb temperature 6°C.

## Air Source Water Heater

### New Generation Hot Water Supply Method

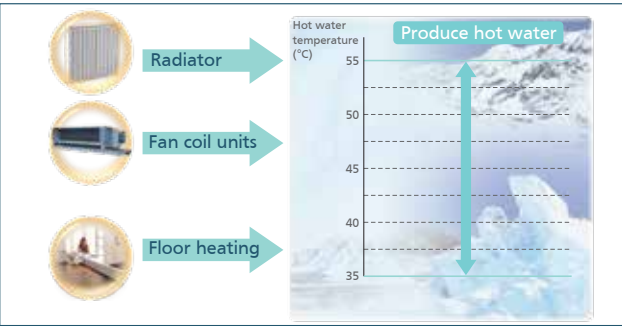
UHA air source water heater establishes the new benchmark in hot water market.

- Environmental friendly R410 refrigerant
- Wide range
- High efficiency design COP up to 4.59
- Intelligent control
- Modular design (1–16 units) for phased investment
- 40/80 kW option at 20°C DBT ambient
- Unique “Spray Liquid” Compressor Design
- Weekly Schedule Management



Expand application of hot water units

UHA series ultra-low temperature heat pump hot water units, break the traditional bound of domestic hot water, it can also be used for fan coil units, radiator, floor heating and other hot water demands, according to different customer requirements.



Key Benefits:

- Safety** Separation of water and electricity, no electric shock danger, no harmful gas emissions, safe to use.
- Comfortable** Central hot water system for buildings, bungalow, villas. Multiple water ports available for multiple users. Big water flow scouring force, for more comfortable bath.
- Energy Saving** Operation cost is 1/5 of the electric water heater.
- Environmental** Low noise, no waste heat, waste water or waste gas emissions, reduces heat Protection island effect.
- Flexibility** Small investment; can be used with existing thermal storage tanks, gas and oil-fired boilers in combination.
- Whole Year Operation** Running throughout the year; unaffected by changes of weather.

| Model - UHA                              | UHA100                            | UHA200            |
|------------------------------------------|-----------------------------------|-------------------|
| Nominal Heating Capacity (kw)            | 40                                | 80                |
| Nominal Hot Water Production Rate (LPH)  | 860                               | 1720              |
| Nominal Power Input (kw)                 | 8.71                              | 18.22             |
| Water flow Cooling (cmh)                 | 6.88                              | 13.76             |
| COP                                      | 4.59                              | 4.39              |
| Power Supply                             | 380 ~ 415 V/ 3 N~ / 50 Hz         |                   |
| Operating Range                          | -10°C to 43°C Ambient temperature |                   |
| Compressor / Throttle Type / Refrigerant | Hermetic Scroll / EEV / R410A     |                   |
| Unit Dimension (L x W x H) mm            | 1020x872x1522                     | 1990 x 840 x 1780 |
| Net Weight                               | 250                               | 500               |

Note:

- The nominal heating capacity above is measured at, standard conditions of outdoor environment DB/WB temperature 20°C/15°C, initial water tank temperature 15°C, and final water temperature 55°C.

Water Cooled Scroll Chiller



**OPERATING MODES**

Cooling Mode

Heating Mode

Modular Concept - (Up to 16 modules in a set) for Design flexibility and inbuilt Redundancy

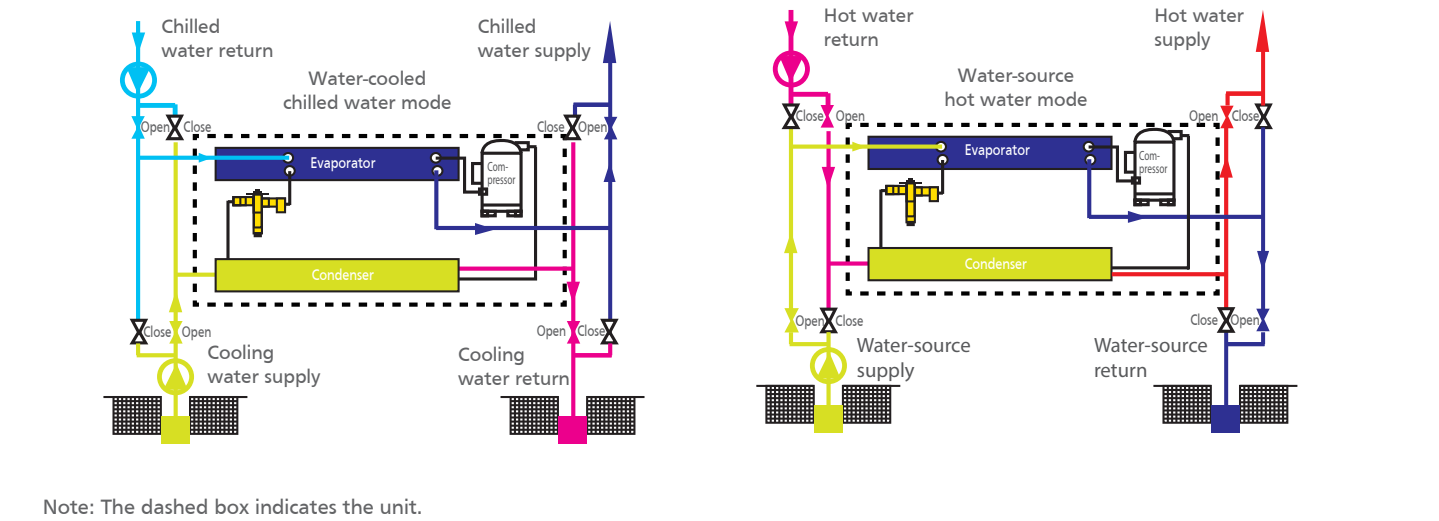
High COP - for Energy Efficient operation

Environment Friendly - R 410A refrigerant (ODP = 0)

Shell and Tube Heat Exchangers - Maintenance Friendly Design

Dual Mode Switchover

The switchover between water-cooled chilled water and water-source hot water modes can be achieved easily by the opening and closing of valves in the water system to meet the annual demand for cooling or heating. The operation is more efficient and more eco-friendly.



## Double backup operation makes double improvement of reliability

There are 2 to 4 sets of compressors in every single unit; failure of a single compressor does not affect operation of the unit, failure of unit module does not affect operation of the combination system. Double backup operation can make double increase in reliability of the air conditioning system; the air conditioning system may continue to run before maintenance personnel arrive, which can make maintenance and repair easy in remote areas.

## Self-protection and self-diagnosis function

The unit has water over-temperature protection, low water flow protection, protection for compressor frequent start-stop, refrigerant high/low pressure protection, etc.; when the water temperature is too low in winter, the unit enter anti-freezing operation protection automatic by starting up water pump. When failure occurs, self-diagnosis function can rapidly and accurately show the cause of the problem; error code display can assist rapid troubleshooting.

## Rain proof body avoids investment in machine rooms

The rain proof shell can meet the requirement of outdoor installation, which can make investment in machine rooms unnecessary.

## Compact and flexible air conditioning solution

The compact modular body can be moved via good elevator without large hoisting equipment, so that it can be easily moved into the existing water cooling machine room, and can enter the basement for replacement of old machine without dismantling the existing construction during reform of some old projects.

| Model - UWL                    | UWL020B5-FB    | UWL030B5-FB | UWL030B5-FA | UWL040B5-FB | UWL040B5-FA | UWL060B5-FB   |
|--------------------------------|----------------|-------------|-------------|-------------|-------------|---------------|
| Cooling Capacity (TR)          | 20             | 29          | 31          | 40          | 41          | 61            |
| Cooling Power Consumption (kw) | 15.5           | 23.7        | 23.9        | 31.5        | 31.1        | 44.5          |
| Nominal Heating Capacity (kw)  | 91             | 135         | 150         | 200         | 200         | 290           |
| Heating Power Consumption (kw) | 19.9           | 30.1        | 30          | 44          | 40          | 56            |
| Refrigerant                    | R410A          |             |             |             |             |               |
| COP                            | 4.5            | 4.3         | 4.6         | 4.4         | 4.7         | 4.83          |
| Unit Dimensions (L x W x H) mm | 1800x650x1600  |             |             |             |             | 1800x740x1600 |
| Evaporator Type                | Shell and Tube |             |             |             |             |               |
| Condenser Type                 | Shell and Tube |             |             |             |             |               |

Notes:

- Nominal cooling capacity is tested under the following condition: LWT of evaporator: 7°C, water flow factor: 0.172[m<sup>3</sup>/(h·kW)]; EWT of condenser: 30°C, water flow factor: 0.215[m<sup>3</sup>/(h·kW)].
- Nominal heating capacity is tested under the following condition; LWT of evaporator: 45°C water flow factor: 0.172[m<sup>3</sup>/(h·kW)]; EWT of condenser : 20°C, water flow factor: 0.134[m<sup>3</sup>/(h·kW)].
- The switch of cooling/heating mode is realized by the valve of the hydraulic system. Factory doesn't offer it. It needs to be installed at site.
- WPD of evaporator and condenser don't include the external piping and components pressure drop.
- The parameters will change by design improvement without prior notice.



## NOTES