



# Welcome to √

**HI-FLEXI**

**Water-source Inverter-driven Multi-split Heat Pump  
Central Air Conditioning System**

## Hisense **Hi** · Life

Choice, is a way of life, also an attitude of life. Base on Hisense leading technical platform, Hisense Central Air Conditioning strives to provide comfort and reliable central air conditioning system for people, creates modern, healthy and low carbon living space and life philosophy.

## Bit by Bit, Maximize Energy-saving Hisense Water-source Inverter-driven Multi-split Air Conditioning

With the gradual development of the concept of environment prot the improvement of low-carbon economy and quality of life, people put forward higher requirements in energy conservation, comfort, flexibility and other aspects of air conditioning products.

Hisense always adheres to the concept of sustainable development, and makes efforts to enlarge environmentally friendly product lines through continuous technical innovation and development and utilization of new energy. In dual consideration of environmental protection and economic effect, it takes innovation as the forerunner, views environmental protection and comfort as the goal, incorporates advanced inverter-driven technology, water source heat pump technology and renewable resources utilization technology, and introduces a water-source inverter-driven multi-split air conditioning systems. Hisense is committed to improve customers' quality of life and low-carbon economy, then greatly promotes the progress of environmental protection.

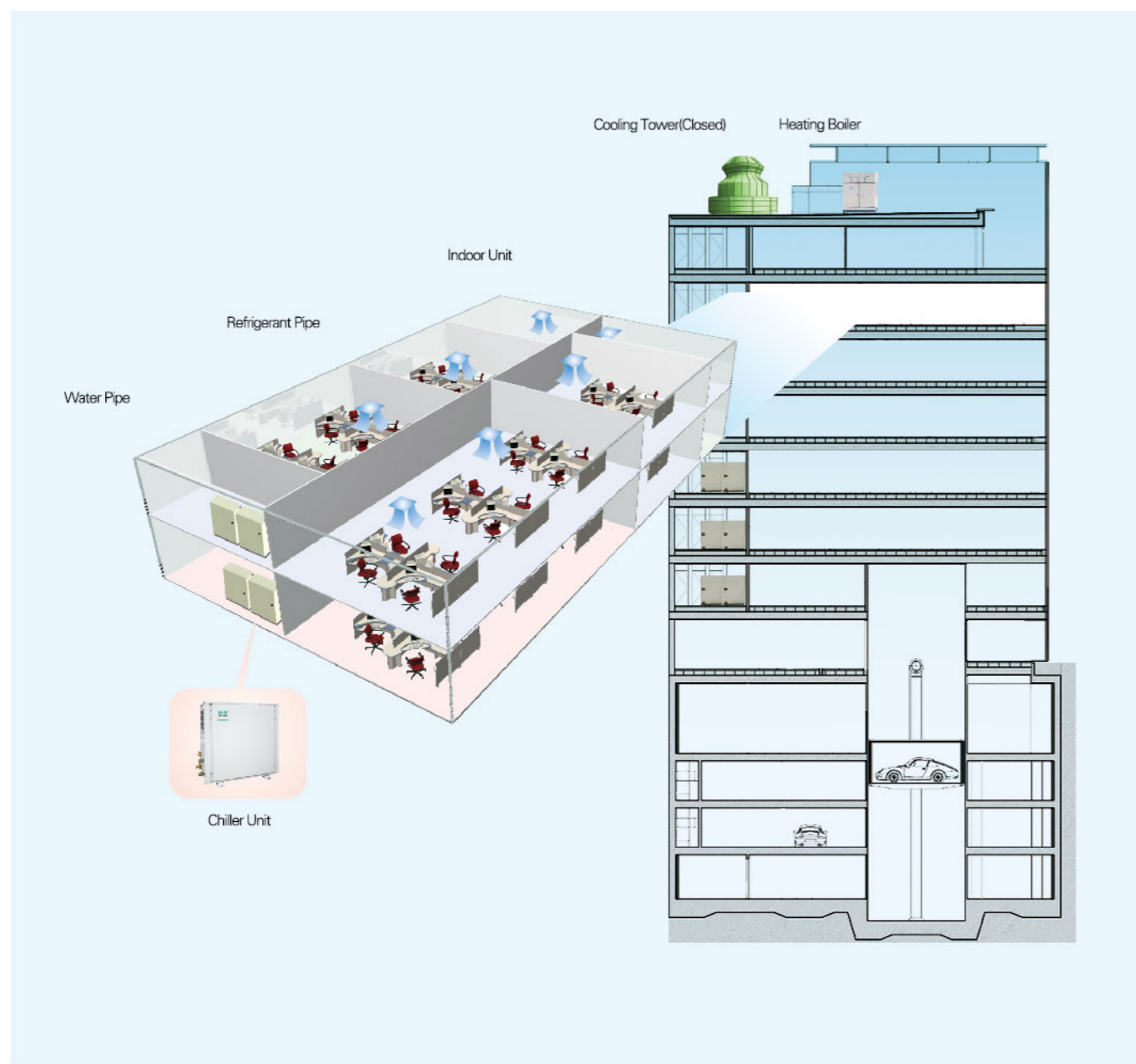
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# WATER SOURCE APPLICATION AREA

Hisense water-source multi-split air conditioning system successfully combines water-source control technology, multi-split control technology, DC inverter-driven technology and environmentally friendly R410A refrigerant, blends the technical advantages of air-cooled multi-split inverter-driven air conditioning and water-cooled chiller unit, and takes advantage of the low-grade heat such as ocean, soil, industrial waste heat and municipal wastewater to realize cooling and heating, then greatly saves energy.



The adoption of water-source multi-split air conditioning system is free from conventional low-temperature climate and geographical constraints, it can be widely used in the following water conditions and also be used in combination with other energy sources such as solar and other new energy.



### ① Building Water-cycling System

Generally, it is known as water-cycling system, in which the circulating water is heated by electrical or gas boiler in winter and dissipates the heat out of it by the use of cooling tower in summer to maintain the temperature of system, especially at the turn of the season, it can realize the maximum energy-saving in operation through heat transfer.



### ② Adoption of Underground Water

Open-well water system bears the load in water system by the use of underground water, the merits of which are the completion of relatively constant circulating water temperature ( generally within a range of 12-15°C) and the application in places where the geology and soil allow water recharge. Therefore, environmental protection and lower running costs are achieved.



### ③ Adoption of Surface Water

Place closed-cycle heat exchange pipe line in the lake or pond or other surface water near building. Heating or cooling is performed for building through exchanging heat between closed-cycle water and surface water. The depth and area of water are very important and must be approved to meet the requirement of building load.



### ④ Urban Sewage, Recycled Water, Trade Effluent

Waste water heat cycling system recycles a variety of low-grade waste heat, which is one of effective ways to solve the problem of high energy consumption for hot water in buildings. The significant reduction of temperature difference between cool and heat source not only contributes to energy conservation but also great water source saving.



### ⑤ Adoption of Soil Source

Punch holes and bury plastic composite heat exchange pipes underground (including vertical type and horizontal type). Vertical type is applicable for the place with small area and being in need of deep pipe burying while horizontal type can be used in large space. Heat exchange between underground pipes and soil helps realize air conditioning, higher Initial investment and lower running costs.



### ⑥ Adoption of Seawater Source

Through heat exchange between seawater and circulating water in water-source heat pump system, seawater-source cycling system introduces low-temperature and low-grade heat of seawater into the building space to achieve heating and cooling. The biggest advantage of this system is the effective application of resources, which contributes to none seawater consumption, none seawater pollution and high thermal efficiency.

# WATER SOURCE APPLICATION ADVANTAGES

Hisense Water-source Inverter-driven Multi-split Air Conditioning incorporates the merits of air-cooled inverter-driven multi-split system and water-soil-source heat pump system. It owns high flexibility of variable load adjustment, high partial load efficiency and high combination freedom in multi-split system, and also has the advantages of high energy efficiency and stable operation in water-soil-source heat pump system, then greatly improves the unit's overall operating performance.



## 1 High Efficiency, Superb Model

Hisense Flexi W series central air conditioning integrates inverter-driven technology with water-source heat exchange technology. Through all the aspects of optimization design, a high COP value can be maintained in a larger operating range of cooling and heating.

Compared with centralized water-source heat pump system, Hisense Multi W series is more energy-saving, the three major reasons of which are as follows:

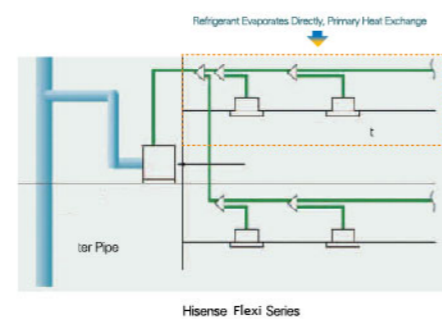
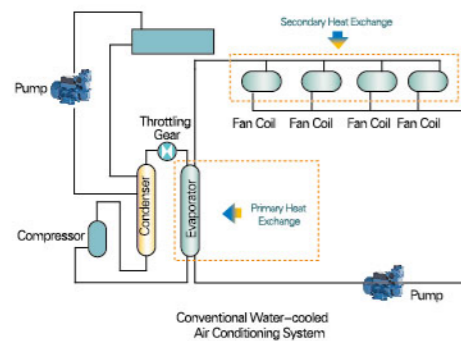
### Primary Heat Exchange, Less Energy Loss

Centralized water-source heat pump units:

It takes water that is cooled indirectly as the refrigerating medium, which leads to more energy loss in process of two times heat exchange.

Hisense Flexi W system:

Middle-and-low-temperature water (10~45 °C) is flowing in waterside pipeline, which results in less loss in intermediate links. Furthermore, a direct evaporation technology of refrigerant is applied in indoor units, which avoids heat exchange efficiency decrease caused by secondary heat exchange and greatly enhances COP value in air conditioning system.



## Inverter-driven Adjustment, More Efficient Under Partial Load

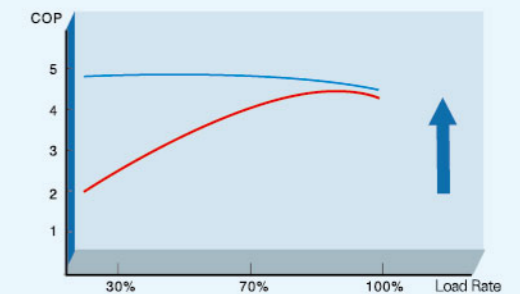
Actually, it takes very short time for central air conditioning system to operate under full load, generally accounts for only 1 to 5% of the running time of a year, most of the time units are running under partial load. Therefore, overall energy efficiency coefficient under partial load is the most important factor for energy-saving measurement of air conditioning.

As for conventional centralized water source heat pump units, the range of adjustable capacity is very limited. Besides, circulating water pumps, water treatment equipments or other auxiliary facilities with poor regulation result in more energy consumption and lower efficiency, especially under the partial load.

Hisense water-source inverter-driven multi-split air conditioning system adopts a combination design of Inverter-driven regulation and multiple compressors ON/OFF, which significantly improves the partial load COP values and overall energy efficiency coefficient IPLV value, particularly in partial load use, more power and more economical operation fees are saved.



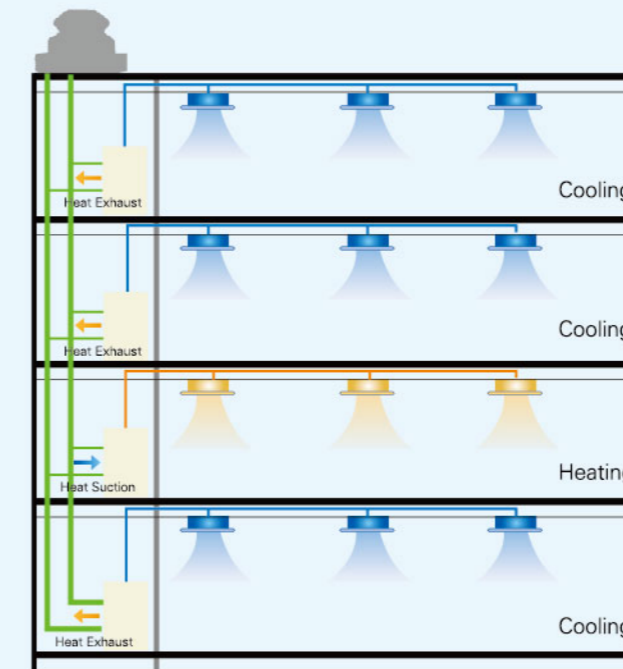
Hisense Multi W series Under Partial Load



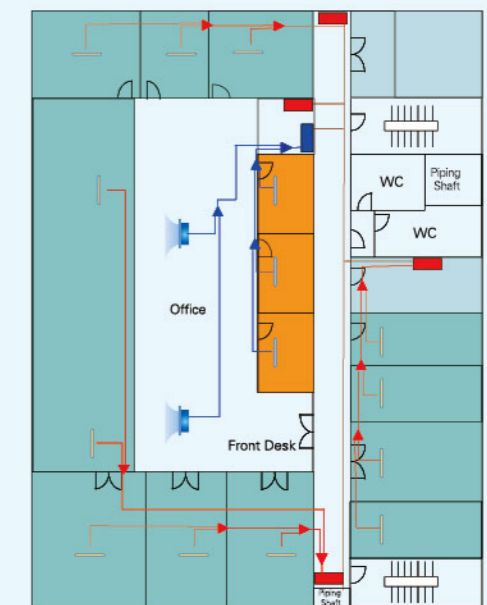
## Simultaneous Cooling and Heating, More Energy-saving in Heat Recovery System

The requirement of simultaneous cooling and heating operation has been increasing due to the large modern buildings with complex structure, function and more demand for comfort, especially at the turn of the season or in winter. Conventional central air conditioning system consumes more energy when cooling and heating coexist.

Hisense Flexi W series divides space into interior and exterior sections, easily satisfies the requirement of simultaneous cooling and heating in the same building, realizes heat recovery and maximum energy-saving.



Heat Recovery Among Different Floors



Heat Recovery on the Same Floor

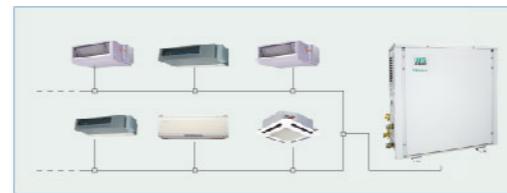
\*Heat recovery is achieved by taking water as heat carrier among multiple units connected to the same water circulation system.



## 2 Flexible Design, More Applicable

### A Wide Selection of Indoor Units, Free Combination

Free combination is allowable for both chiller units and indoor units. There are a variety of models of indoor units for users to select according to the function and interior decoration of rooms.



### Flexible Placement Greatly Improves the Utilization Rate of Space

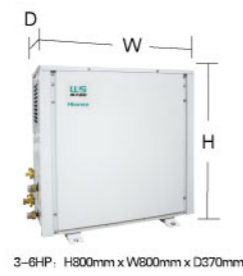
Generally, conventional centralized water source heat pump units are of large size. In addition, they need special machine room to be placed centrally. By contrast, Hisense Multi W series has the following main features in the installation:



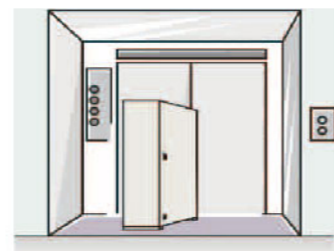
© Compact Structure, Easy Transportation .



Machine Room for Conventional Central Water-source Unit



3-BHP: H800mm x W800mm x D370mm

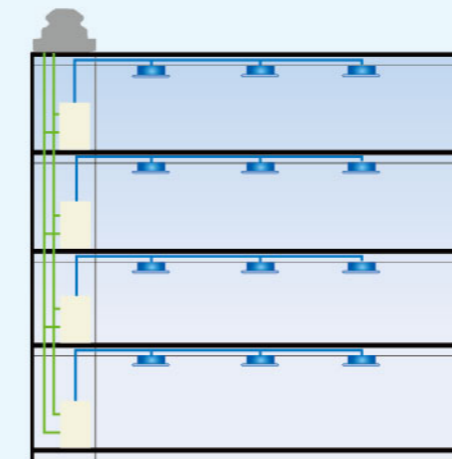


Elevator Transport



© Fine applicability and small footprint contribute to more space-saving, layered installation and less construction costs. Meanwhile, the installation of chiller units will not affect the appearance of the building facade.

Refrigerant pipes with small diameter can be laid without slope, which saves at least 200mm.



Selectable Installation Space

- Machine Room
- Closed Balcony
- Basement or Store
- Corridor
- Equipment Room
- Other airy spacial Indoor Area

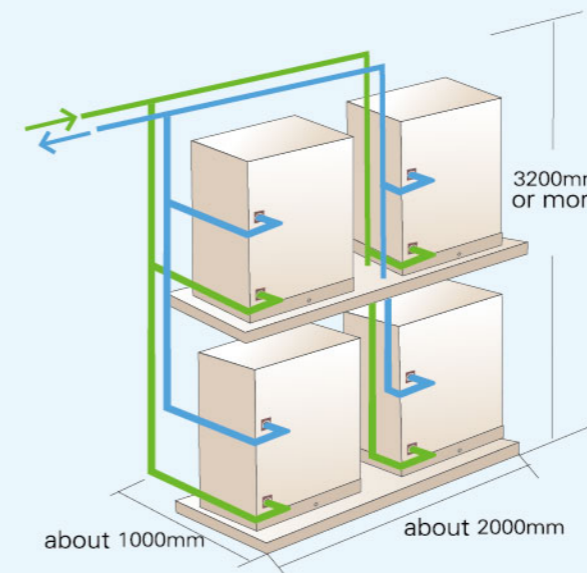
Installation Costs Comparison

Hisense Flexi W      Central Type



\*Indoor Installation is only available for Chiller Units because of Louver on side plate that will let rain water in.

### Modular Structure, Flexible Installation



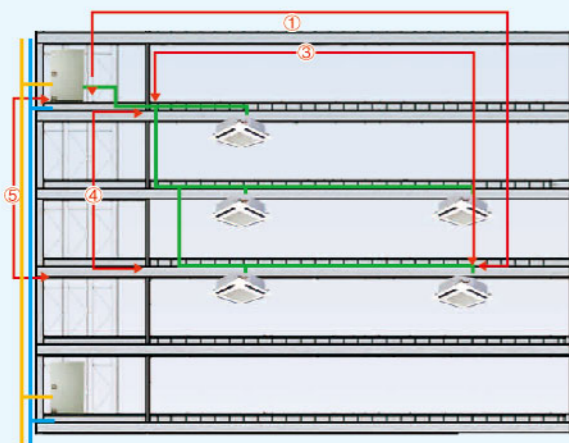
Stacked Installation on one floor

The same module size helps realize modular combination, and multiple units can be stacked centrally.

A wide selection of multi-kit can be chosen according to total capacity of indoor units connected downstream, which greatly facilitates refrigerant pipe work on site and simplifies the procedure of construction.

### Long Refrigerant Pipe Design, Suitable for High Rise

Thanks to the integration of water cycling system and refrigerant cycling system, there is no limitation for the length of water pipe-line, which easily meets the AC need of large-scale and high-rise building. Furthermore, Hisense Multi W series allows a maximum refrigerant pipe length of 75m between chiller units and indoor units, which contributes to more flexible design. In conventional centralized water source heat pump system, the chiller units provide heat (cold) source directly for indoor units, more power consumption of water pump and more energy loss of refrigerating medium will arise from long pipe-line in system.



Model	3HP	4 HP /5 HP /6HP
①Max.Equivalent Piping Length	30	75
②Total Piping Length	45	120
③Max.Distance Between 1st Branch and Indoor Unit	15	30
④Max.Height Difference Between Indoor Units	5	15
⑤Max.Height Difference Between I. U. and O. U. (O. U. is lower than I. U.)	15(15)	30 ( 30 )

\*In case of high-rise building, the water pressure limitation that the plate heat exchanger can bear must be taken into consideration.

### Adaptable for renovated and expanded projects and villas without central heating system

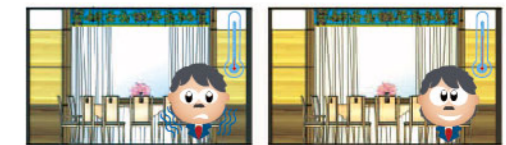
Hisense Flexi W series adopts advanced inverter-driven compressor control technology, variable refrigerant adjustment technology (with electronic expansion valve) and variable water flow control technology, which enables the units to operate in a wide range of water source condition. The original central air conditioning can be renewed to supply circulating water (10 to 45 °C) that is workable for chiller, which effectively lowers the investment for air conditioning. W series also can be used in some place without central heating system.



## 3 Healthy and Comfortable Experience

### Rapid Cooling and Heating

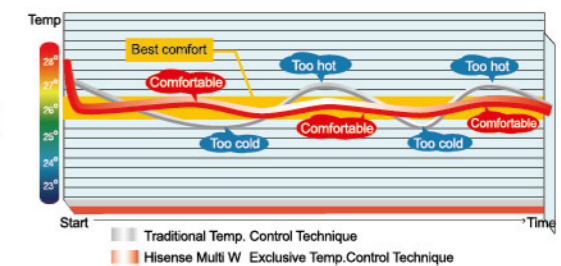
Hisense Flexi W series can achieve rapid startup and cooling / heating, which helps reach the setting temperature in a very short time. In contrast, conventional centralized water source heat pump system changes temperature more slowly because of its large-scale system.



Reach setting temperature rapidly in heating operation

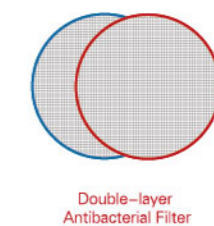
### Precise Temperature Control

Hisense Flexi W Series adjusts cooling or heating capacity output according to indoor load and realizes rapid and precise temperature regulation. Even if under decreasing load, constant airflow, even temperature distribution and fluctuation within ±0.5 °C create comfortable ambient for people.



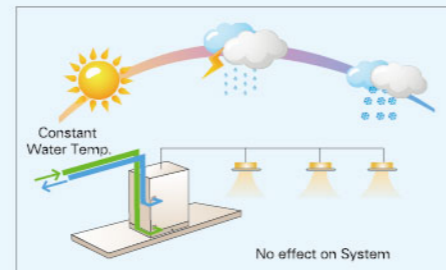
### Dehumidification and Anti-bacteria, More Healthy

Hisense Flexi W indoor unit with great dehumidification capacity keeps the indoor humidity within a comfortable range for people, and also has long-acting antibacterial filter (optional) that can restrain bacteria and mould. Even if people have been working in air conditioning room for a long time, they won't feel uncomfortable. In contrast, conventional fan coil of centralized water system has poor dehumidification capacity, which leads to a humidity range of 60-70% and poor air quality.



### Stable Performance

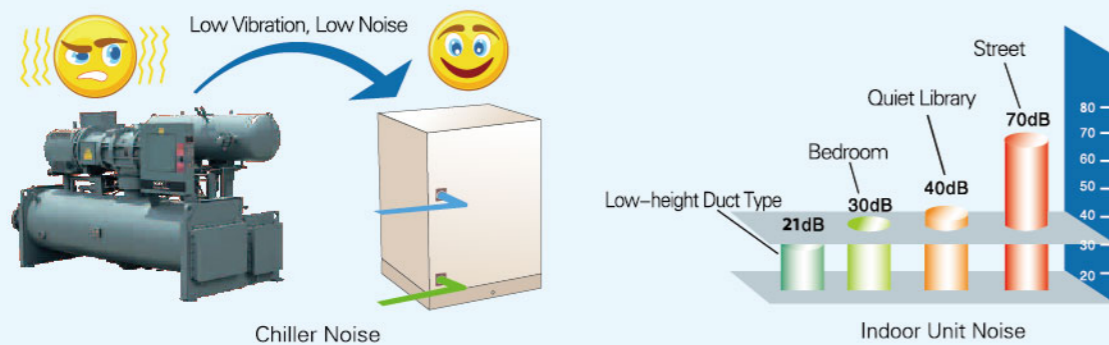
By the use of steady water source and soil source, the performance of Hisense Flexi W series will not be affected by high temperature. Even if in hot summer, its cooling capacity will not attenuate. Likewise, in heating operation, practically, the heat source temperature is higher and relatively uniform, so that the frosting and defrosting will not occur, which contributes to stable performance.



### Low Operation Noise, Less Impact on Environment

The production technology of indoor units in conventional centralized water source system is simple. The motor, fan and heat exchange tube are always exposed outside, which tends to cause scratch, damage, vibration and noise.

Hisense Flexi W series adopts high efficient adjustable speed motor with lower operating noise. The minimum noise level of indoor units is only 22dB(A). The chiller unit effectively exchanges heat between water and refrigerant by the use of plate heat exchanger, the noise level can reach to 51dB(A) (for 6HP). More over, the silent mode at night helps reduce noise by 5dB(A).



### Countermeasure for Leakage Hidden Danger

Conventional centralized water source heat pump system supplies cooling and heating capacity by transferring heat and cold water to indoor space, so there is a leakage hidden danger in pipe-line, which is likely to damage the interior decoration and office equipment. But for Hisense Multi W series, no need to worry about this danger because refrigerant evaporates directly at indoor side of system.

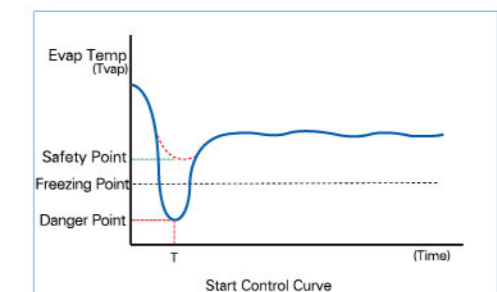


## 4 Intelligent Control, Safe and Reliable

Generally, the air handling unit in conventional centralized water source heat pump system is controlled by three-speed controller. As a result, the temperature cannot be controlled accurately and the airflow cannot be adjusted automatically, which means lower intelligent level, and if the system needs to connect to BMS, the configuration and installation work will be difficult and costly. In contrast, Hisense Multi W series has been equipped with sophisticated control system.

### Water Flow Control and Anti-freezing Outside

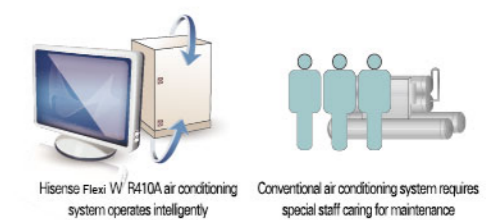
Keep the real-time communication between main PCB and water flow control system, which enables system to adjust the water flow rate in a range of 50%~150% in accordance with the load of chiller unit and ensure safe and stable operation. Furthermore, system can prevent the circulating water pipe from freezing and scaling through real-time monitor and control of many operating parameters. Especially in frigid weather, system can avoid freezing in water circuit through detecting circulating water temperature whether it is running or not, then system safety is guaranteed.



\*When install chiller unit, make sure the ambient temperature of placement is between 2°C and 40°C, and the relative humidity is no more than 80%.

### Intelligent and Unattended Operation

Hisense Flexi W series is highly intelligentized and has no requirement for machine room, therefore can achieve unattended operation and much more flexible and convenient control. When one chiller unit fails, other units turn to backup operation. Conventional centralized water system requires special management by people. The failure of one chiller unit will lead to the stoppage of whole system, which causes high maintenance costs.



## More Convenient for Electric Charge Allocation and Management

### Remote Control Switch



- Cooling/Heating/Dry/Fan/Auto
- High/Medium/Low/Swing Louver
- Set Temperature/Timer
- Filter Clean
- Check
- Alarm Code Display
- Ventilation Increase



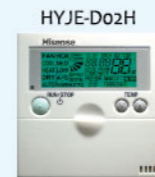
Individual Control

### 7-Day Timer



- Time Setting
- Holiday Setting
- 3 time period setting on weekday
- Two Modes of Timetable

### Central Station



- Cooling/Heating/Dry/Fan/Auto
- High/Medium/Low
- Swing Louver
- Set Temperature
- Operation monitoring
- Wireless Controller Disable
- Alarm Code Display
- Max. 160 Indoor Units Control
- Indoor Unit Selection

### Wireless Remote Control Switch

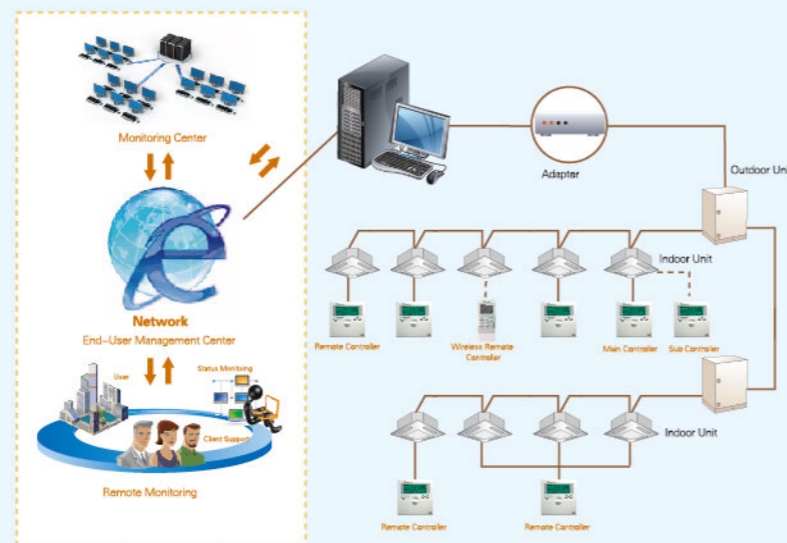


- Cooling/Heating/Dry/Fan/Auto
- High/Medium/Low
- Swing Louver
- Set Temperature
- Timer
- Filter Clean

### H-NET Management System

H-NET air conditioning management system connects indoor units and computer through net adapter and BUS connection, which can monitor and control utmost 1024 outdoor units and 2560 indoor units and realize easy operation.

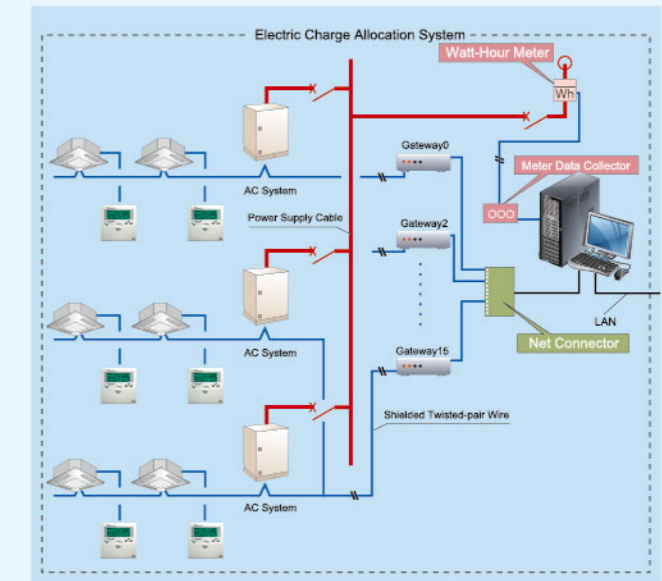
- Running-state monitoring
- Access control
- Temperature setting limit
- Auto-operating function
- Operation Record Display
- Malfunction alarm
- Controller Limit
- Service monitoring



## Air-conditioning Electric Charge Allocation System

Hisense electric charge allocation system consists of meter reading system and air conditioning management system. In accordance with the operation time and capacity output of indoor and outdoor units, the opening degree of EEV, the electric charge allocation software allocates the total power consumption to each indoor unit.

- Accurate and timely electricity calculation
- User's electricity bill reading by the hour
- Electric charge allocation according to multi-rate of peak-valley period of time

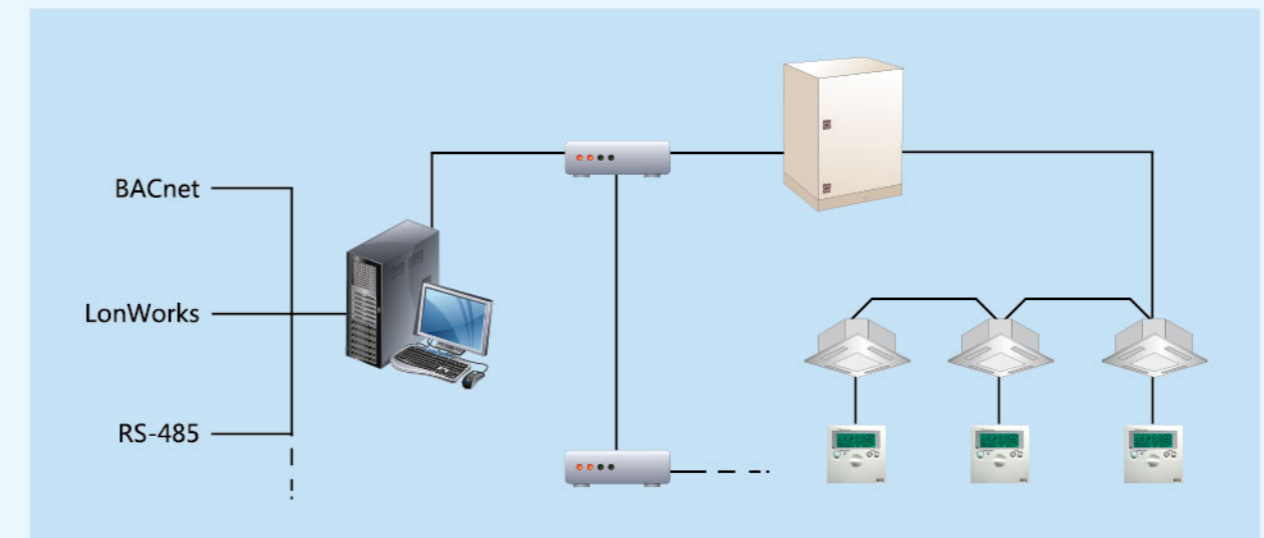


All the indoor units and outdoor units connected with one adapter comprise one communication BUS system .  
Max.64 outdoor units and 160 indoor units can be connected to a BUS system  
Max.16 adapters can be controlled by one computer  
Max.2560 indoor units and 1024 outdoor units are under control.

## Building Management System

Compatible to multiple communication protocol of Lonworks, BACnet, RS-485 etc. Connectible to BMS or Smart Home System.

- Real-time operation status monitoring for inquiry
- Operation order from monitoring center



# WATER SOURCE TECHNICAL FEATURES

Hisense adopts leading technical advantages in central air conditioning —high efficient scroll compressor, precise inverter-driven technology, multi-split control technology and so on, combines with effective usage of water resources, and introduces a brand new water-source inverter-driven multi-split system that owns a great competitive edge and shows the continuous progress in environment protection and energy saving.

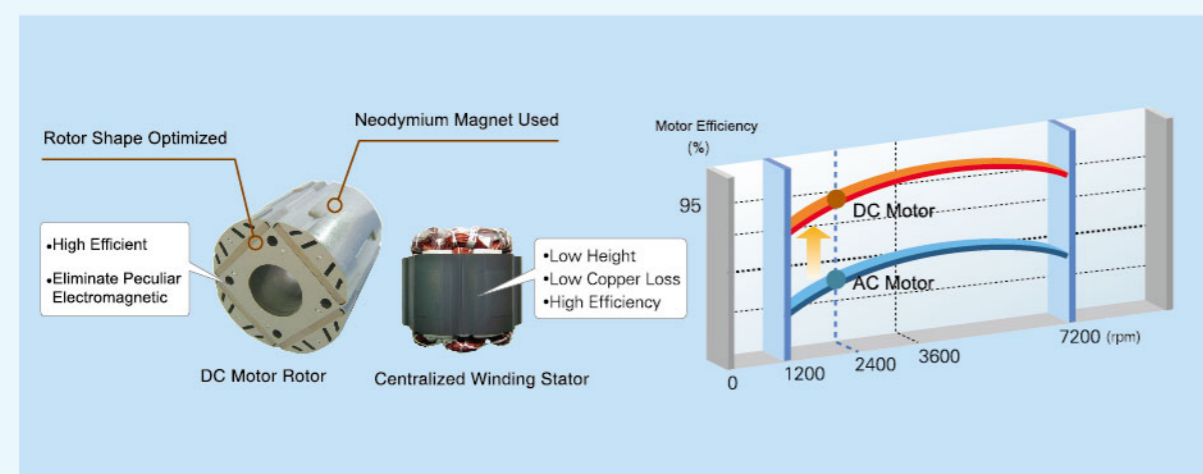
## 1 High Efficient High Pressure Scroll Compressor

Hi-Flexi adopts large capacity high-pressure chamber scroll compressor with an interior oil separating section, which maintains most of lubricating oil in compressor by the use of the interior oil mist separator and oil-returning pipe design. Only much less oil is discharged from compressor along with refrigerant, which avoids cooling capacity decrease due to redundant oil in refrigeration cycle, further improves efficiency.



### DC Inverter-driven Compressor

By the use of DC motor, the performance is improved at around 20~40Hz where the operation time of the inverter compressor is longest. Meanwhile, the rotor of compressor's motor is divided into two parts to suppress electromagnetic interference (EMI) which achieves low noise.



## 2 DC Inverter-Driven Technique

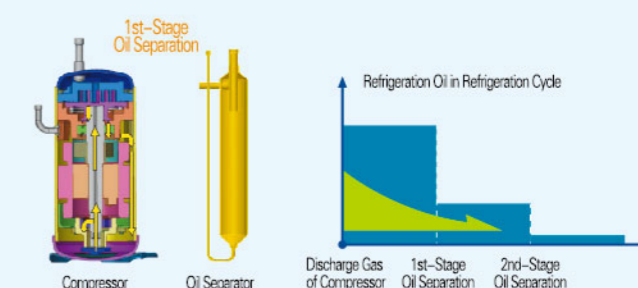
The operating speed of DC motor in compressor can be adjusted continuously and freely relating to the variability of system capacity. This technique integrated with auto-adaptive control technique automatically adjusts capacity output according to actual air conditioning load in order to achieve a smoother curve of temperature fluctuation to satisfy higher requirements of coziness.



## 3 Oil Control Technique, Improve the Reliability

### High Efficient Oil Separating Technique

The system can operate safely and reliably by the use of interior oil-separating section and exterior oil separator. Much less oil enters refrigerating circulation, accordingly enough oil can be guaranteed for lubricating compressor.



## 4 The Advocate and Practicer of Low Carbon Life

### RoHS Reaction

Actively respond to Europe RoHS directive, control the use of hazardous substance strictly. RoHS stands for Restriction of Hazardous Substance Directive, which specifies six substances (Lead (Pb), Mercury(Hg),Cadmium(Cd), Hexavalent chromium(Cr),PBDE orPBB) banned from using in electrical and electronic equipment. Hisense actively responded to RoHS directive and implemented a series of programs and measures, which aims to preserve human health and ensure that the recycling and treatment of waste electronic and electrical equipment meet the environmental standard.



### R410A Refrigerant, Protect Ozone Layer

Hi-Flexi adopts non-toxic and harmless environmentally friendly refrigerant R410A which has been worldwide affirmed and applied.





## Hisense Flexi W Chiller Unit



Model Power Supply	AC1Φ 220~240V/50Hz	AVWW-28UCSA	AVWW-38UCSA	AVWW-48UCSA	AVWW-54UCSA
	AC1Φ 220V/60Hz	AVWW-28U2SA	AVWW-38U2SA	AVWW-48U2SA	AVWW-54U2SA
Nominal Cooling Capacity*1	kW	8.00	11.20	14.00	15.50
	Btu/h	27,300	38,200	47,800	52,900
Nominal Heating Capacity*1	kW	9.00	12.50	16.00	18.00
	Btu/h	30,700	42,700	54,600	61,400
Outer Dimensions	Height	mm	800	800	800
	Width	mm	800	800	800
	Depth	mm	370	370	370
	Area	m <sup>2</sup>	0.30	0.30	0.30
Net Weight	kg	70	80	80	80
Water-side Heat Exchanger	Water temperature*3	℃	10~45	10~45	10~45
	Water Flow Rate	l/min	30	38	48
	Water Pressure Drop	kPa	30	30	35
Sound Pressure Level*2	Cooling/Heating	dB(A)	49	51	51
Piping	Refrigerant Liquid Pipe	mm	Φ9.53	Φ9.53	Φ9.53
	Refrigerant Gas Pipe	mm	Φ15.88	Φ15.88	Φ15.88
	Water Pipe		DN25	DN25	DN25
	Thread of Connector		G1B	G1B	G1B
	Drain Pipe	mm	Φ18mm	Φ18mm	Φ18mm
Water-side Bearing Pressure Ability	kgf/cm	20	20	20	
Max.Connectable Indoor Units		4	5	6	

**NOTES:**

\*1. Operation Condition:

Cooling: Indoor Temperature 27℃ DB/19℃ WB, Outdoor Temperature 27℃ DB, Water Inlet/Outlet 30/35℃.  
Heating: Indoor Temperature 20℃ DB/15℃ WB, Outdoor Temperature 20℃ DB, Water Inlet 20℃.

\*2. The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration in the field.

\*3. When unit is operating out of the allowable water temperature range, it won't start normally and will alarm.