


A 3D architectural rendering of a city with white houses. One house is highlighted in red and features the 'S-THERM by sinclair +' logo on its roof. A large, semi-transparent blue circular graphic with concentric rings is overlaid on the right side of the image.

**S-THERM**  
by sinclair +

# S-Therm Air to Water Heat Pumps

The Sinclair logo consists of a stylized 'S' shape formed by two curved, overlapping shapes, one red and one blue.

**SINCLAIR**  
AIR CONDITIONING



# AIR TO WATER HEAT PUMP

## **AIR TO WATER HEAT PUMP**

Nowadays, people are increasingly focusing on the cost of heating as well as on environmental issues. Traditional heating systems cost people more money and are bad for sustainable development of the environment. Thus, people are searching for new heating technology with high efficiency, low running cost and eco-friendly features. Fortunately, they find S-THERM+ and S-THERM!



### **EVI SCROLL HEAT PUMP WATER HEATER S-THERM+**

S-THERM+ series air source heat pump is especially designed according to cold climate features with safety working in -25°C outside air temperature. Its core philosophy is to solve user's home heating during winter and spring and cooling during hot summer and autumn. High temperature EVI Scroll compressors are equipped with a vapour injection connection for Economizer Operation. Effectiveness enhancement is accomplished by utilising a subcooling circuit, it also increases heating capacity. The system is readily able to reach outlet water temperature 60°C.



### **DC INVERTER HEAT PUMP WATER HEATER S-THERM**

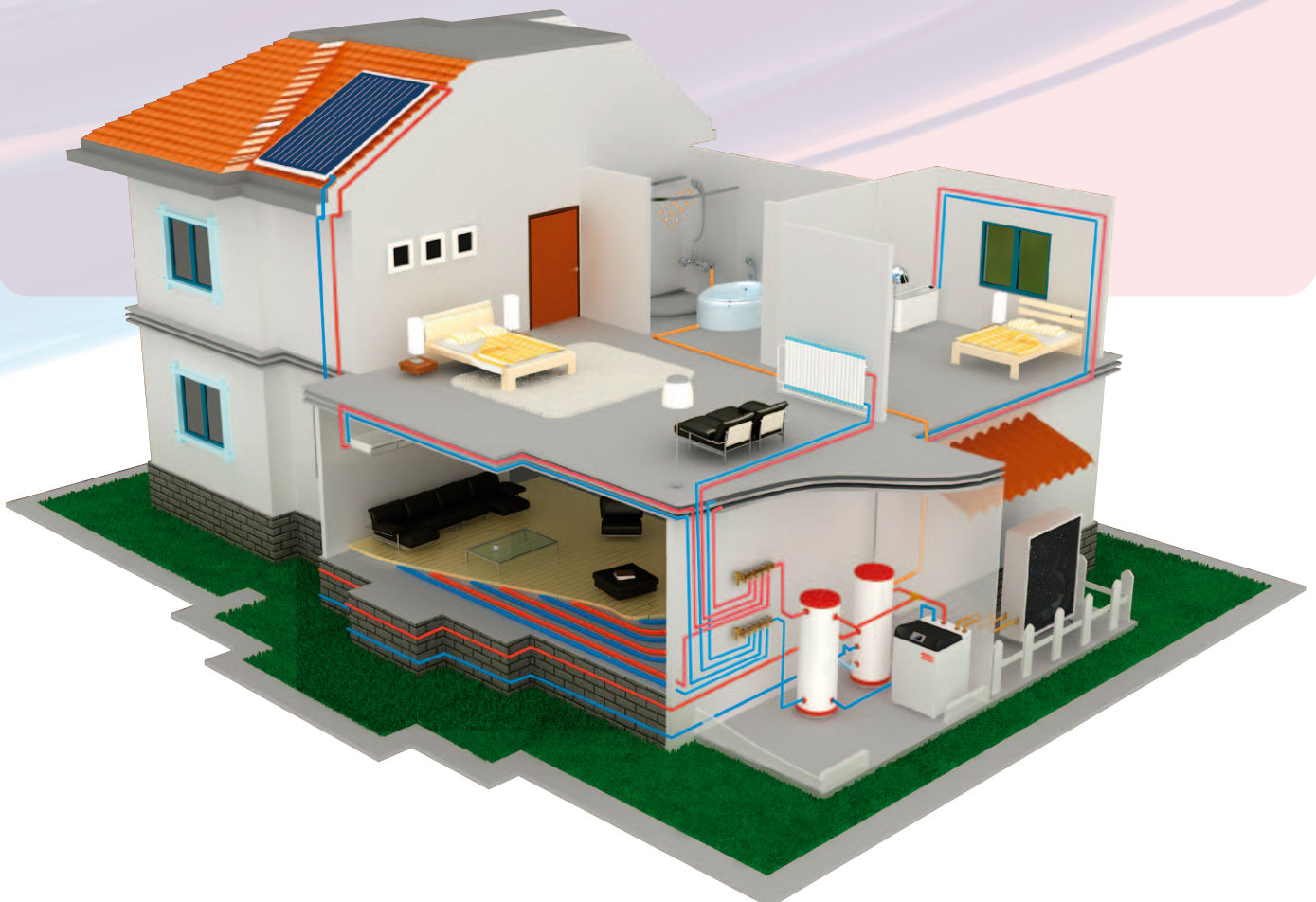
Adopting advanced heat pump technology, S-THERM air source water heater absorbs natural warmth from ambient air and reheats it for room heating. Not only it satisfies room heating requirements, it also supplies domestic hot water. Besides, S-THERM can provide you cooler environment in hot summer. If you choose S-THERM, you will enjoy comfortable environment at your home all year round. It is an all-in-one!

S-THERM adopts new eco-friendly refrigerant R410A, which is harmless to the atmosphere. Moreover, with advanced heat pump technology and powerful hardware, efficiency of S-THERM has been improved, resulting in lower CO<sub>2</sub> discharge. It is an eco-friendly product, which can reflect your awareness of social responsibility to the environment.





Heat pump absorbs energy from surrounding and transfers it into the warm water. So the house could be warmed up by pumping the warm water to underfloor heating pipe system or radiators. The indoor unit is designed for super low noise operation. All moveable parts are set in a suspended base. The pipe system also is carefully designed and organized to reduce vibration. Inside of the cabinet is fully insulated. All this ensures that the unit operates stably and quietly.



# indoor unit

**SHP-140IRC**  
**SHP-165IRC**

## STANDARD UNIT COMPOSITION

- New compressor specially designed for high water temperature.
- Base frame and external panels made of galvanized powder coated steel.
- Water exchanger equipped with EST coil in shell high efficiency exchanger.
- Wilo water pump installed inside.
- Reliable compressor with R407C refrigerant.
- Flow switch for water flow protection.
- Full sealed control box with water proof level IPX5.
- Intelligent controller and adjustment by quick mind microprocessor.
- New lattice LCD display wire controller, with touch screen display.
- Air exchanger (fins-coil) with hydrophylic coating.
- Thermostatic heating element for evaporator anti-frosting protection.
- Thermostatic expansion valve.
- Automatic defrosting function included (with reverse cycle valve inside).
- General testing and operational test carried out for every unit before package in the factory.



## CAREL CONTROL SYSTEM

- Control of the water inlet and evaporator outlet temperature;
- defrost management by time and/or by temperature or pressure;
- fan speed control;
- complete alarm management;
- connection to serial line for supervision/telemaintenance;
- elimination of the expansion vessel

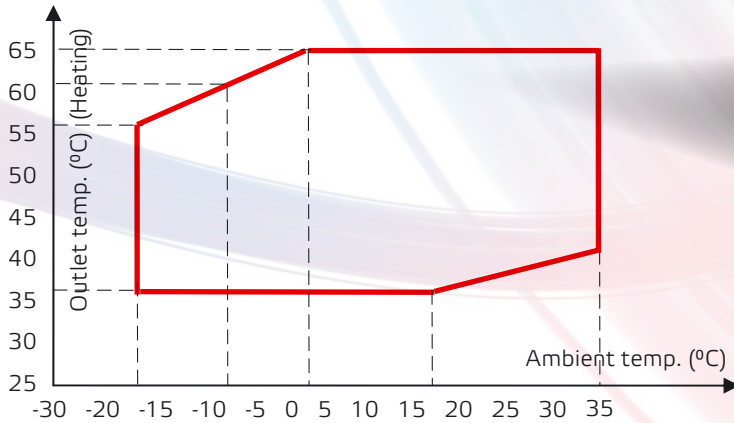
INDOOR UNIT MODEL		SHP-140IRC	SHP-165IRC
Heating Capacity	kW	14	16.5
	BTU/h	47782	56315
Cooling capacity	kW	9.5	12.5
	BTU/h	32424	42663
Heating power input	kW	4.24	4.60
Cooling power input	kW	3.65	4.50
Heating current	A	18.4	8.3
COP		3.3	3.6
Cooling current	A	15.8	8.0
EER		2.6	2.8
Power supply	V/Hz	230/50	380/50
Compressor qty.		1	1
Compressor	type	EVI	EVI
Liquid pipe	mm (inch)	12.7 (1/2)	12.7 (1/2)
Gas pipe	mm (inch)	19.0 (3/4)	19.0 (3/4)
Noise	dB(A)	40	40
Net dimentions	mm	600/640/1060	600/640/1060
Ship dimentions	mm	710/720/1180	710/720/1180
Net weight	kg	143	150

Cooling: Ambient temp.(DB/WB)35°C/24°C, Water temp. (In/Out)12°C/7°C. Heating: Ambient temp. (DB/WB)7°C/6°C Water temp. (In/Out)40°C/45°C. Above information is just for your reference. Please refer to nameplate on the unit.

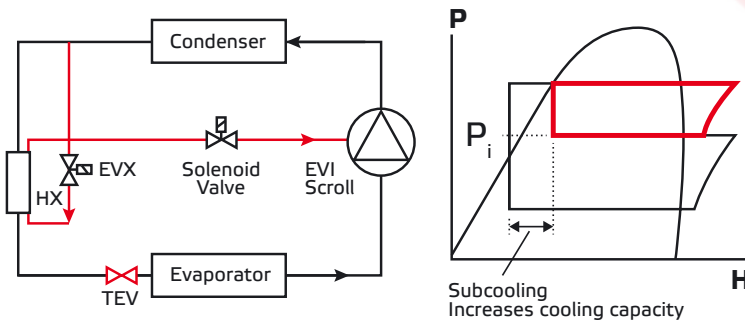
# outdoor unit

**SHP-140ERC**  
**SHP-165ERC**

## HIGH OUTLET WATER TEMPERATURE



## VAPOUR-INJECTED SCROLL COMPRESSOR CYCLE



EVI compressor systems benefit over standard refrigeration compressor systems of equivalent capacity due to the following:

**CAPACITY IMPROVEMENT**  
Since the added capacity achieved by enhanced subcooling provides higher enthalpy gain across the evaporator, the compressor displacement required can be reduced by the percentage enthalpy gain for the same evaporator capacity.

**INCREASED COP**  
The vapour-injected scroll compressor cycle efficiency is higher than the conventional single-stage delivering the same capacity, because the capacity from subcooling is achieved from less power: the incremental vapour created in the subcooling process is compressed only from the higher interstage pressure rather than from the lower suction pressure.

## TECHNICAL SPECIFICATION

OUTDOOR UNIT MODEL		SHP-140ERC	SHP-165ERC
Fan Quantity	pcs	2	2
Fan Power Input	W	120*2	120*2
Fan Direction		Horizontal	
Refrigeration Liquid/Gas Pipe	mm (inch)	12.7/19.0 (1/2, 3/4)	
Noise	dB (A)	50	52
Operating temperature range	°C	-20 ~ 43	
Unit Dimension (L×W×H)	mm	1102×430×1087	1034×415×1087
Packing Size (L×W×H)	mm	1202×480×1207	1095×440×1100
Net Weight	kg	60	60
Gross Weight	kg	65	65





S-THERM heat pump is designed for offering household hot water for family. As a part of home interior, a lot of attention is put on its pleasant and functional design. To make the whole unit small, the structure of Hydro Box indoor unit is very compact and well organized.

**DC INVERTER**

CONFIGURATION SCHEME

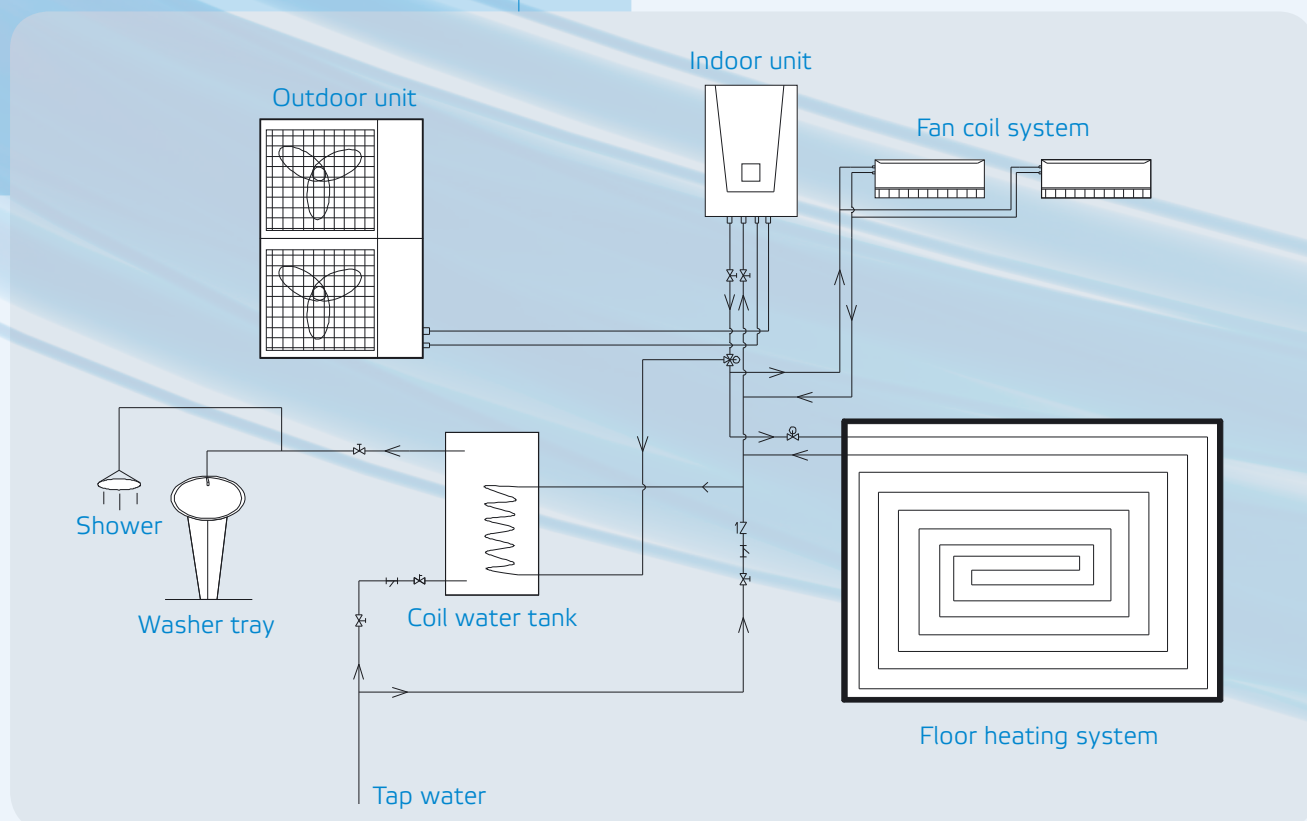
## basic system configuration

### OPERATING PRINCIPLE OF THE UNIT

DC Inverter Air to Water Heat Pump is composed of outdoor unit, hydro box (indoor unit) and internal fan coil water tank.

### OPERATION FUNCTIONS

- Cooling
- Heating
- Water heating
- Cooling + water heating
- Heating + water heating
- Emergency mode
- Quick water heating
- Holiday mode
- Forced operation mode
- Silent mode
- Disinfection mode
- Water-dependent heating mode





# indoor unit

**GSH-80IRA**  
**GSH-100IRA**  
**GSH-120IRA**  
**GSH-140IRA**  
**GSH-160IRA**



## TECHNICAL SPECIFICATION

OUTDOOR UNIT MODEL			GSH-80IRA	GSH-100IRA	GSH-120IRA	GSH-140IRA	GSH-160IRA
Nominal input (indoor only)	V/Hz	220-240/50					
Liquid side diameter	mm (inch)	9.52 (3/8)					
Gas side diameter	mm (inch)	15.9 (5/8)					
Operation Range (Outflow water temp.)	Cooling (fan coil unit)	°C	7-25				
	Cooling (floor cooling)	°C	18-25				
	Heating (fan coil unit)	°C	25-55				
	Heating (floor heating)	°C	25-55				
Pump	Type		Water-cooled				
	No. of speed		3				
	Power input	W	156	205			
	Water flow limit	LPM	8.0				
Expansion Vessel	Volume	Liter	10				
	Water Pressure (Max)	Bar	3				
	Water Pressure (Pre)	Bar	1				
Electric Heater	Type		Sheath				
	Material		Stainless Steel				
	Operation		Automatic				
	Steps		2				
	Capacity Combination	kW	1+1	3+3			
	Power input	V/Hz	230/50				
Heat Exchanger	Type		Brazen Plate HEX				
	Quantity		1				
Sound Pressure Level	dB(A)	31					
Dimensions	Outline dimension (H×W×D)	mm	900×500×323				
	Packaged dimension (H×W×D)	mm	1085×930×520				
Weight	Net weight	kg	55				
	Gross weight	kg	60				



# outdoor unit

**GSH-80ERA**  
**GSH-100ERA**  
**GSH-120ERA**  
**GSH-140ERA**  
**GSH-160ERA**



## TECHNICAL SPECIFICATION

AIR TO WATER HEAT PUMP MODEL			GSH-80ERA	GSH-100ERA	GSH-120ERA	GSH-140ERA	GSH-160ERA
Capacity <sup>1</sup>	Heating (floor heating)	kW	8.5	10	12	14	16
	Cooling (floor cooling)	kW	9.0	10.5	14	15	15.5
Power Input <sup>1</sup>	Heating (floor heating)	kW	2.00	2.50	2.67	3.33	3.90
	Cooling (floor cooling)	kW	2.40	3.14	3.68	4.28	4.62
EER <sup>1</sup>	Cooling (floor cooling)		3.75	3.35	3.8	3.5	3.35
COP <sup>1</sup>	Heating (floor heating)		4.20	4.00	4.5	4.20	4.00
Capacity <sup>2</sup>	Heating (fan coil or Radiator)	kW	8.0	9.0	11.5	13	14
	Cooling (for Fan coil)	kW	6.5	8.0	10	11	11.5
Power Input <sup>2</sup>	Heating (fan coil or radiator)	kW	2.54	2.90	3.35	3.88	4.59
	Cooling (for fan coil)	kW	2.50	3.08	3.45	3.93	4.20
EER <sup>1</sup>	Cooling (for fan coil)		2.6	2.6	2.9	2.80	2.50
COP <sup>1</sup>	Heating (fan coil or radiator)		3.15	3.1	3.40	3.35	3.05
Refrigerant	Type		R410A	R410A	R410A	R410A	R410A
	Charge	g	2800	2800	3300	3300	3300
Sanitary water Temperature		°C	40-80	40-80	40-80	40-80	40-80
Sound Pressure Level	cooling	dB (A)	57	57	57	57	60
	heating	dB(A)	59	59	59	59	62
Gas Piping Connection		mm (inch)	15.90 (5/8)				
Liquid Piping Connection		mm (inch)	9.52 (3/8)				
Operating temperature range		°C	-20 ~ 48				
Outline dimension (W×H×D)		mm	950×790×360			950×1355×330	

### Standard piping length 7.5m

1 Capacities and power inputs are based on the following conditions:

#### Cooling conditions

Indoor Water Temperature 23°C/18°C;  
 Outdoor Air Temperature 35°CDB/24°CWB

#### Heating conditions

Indoor Water Temperature 30°C/35°C  
 Outdoor Air Temperature 7°CDB/6°CWB

2 Capacities and power inputs are based on the following conditions:

#### Cooling conditions

Indoor Water Temperature 12°C/7°C;  
 Outdoor Air Temperature 35°CDB/24°CWB

#### Heating conditions

Indoor Water Temperature 40°C/45°C;  
 Outdoor Air Temperature 7°CDB/6°CWB

# water tank

**GSH-200WT1, GSH-200WT2**  
**GSH-300WT1, GSH-300WT2**



Through the control of valve, the high-temperature water in the system is connected with the coil pipe of bearing water tank, and exchanges heat with the water in the water tank so that the temperature of water tank increases to the required range.

## TECHNICAL SPECIFICATION

WATER TANK MODEL			GSH-200WT1	GSH-200WT2	GSH-300WT1	GSH-300WT2
Water Tank Volume	Liter		200		300	
Electric Heater Power	W		3000			
Connection Pipe	Cool Water Inlet	Inch	G1/2			
	Hot Water Outlet	Inch	G1/2			
	Circulation Water Inlet	Inch	G3/4			
	Circulation Water Outlet	Inch	G3/4			
Outline dimension diameter (∅×H)	mm	540×1595			620×1620	
Packaged dimension	Height	mm	630		710	
	Width	mm	1620		1645	
	Depth	mm	625		705	
Net/Gross Weight	kg	68/77	71/80	82/92	87/97	

**GSH-200WT1**  
 Only an inner coil connected to master unit  
**GSH-200WT2**  
 An inner coil connected to master unit;  
 another connected to other heat source  
**GSH-300WT1**  
 Only an inner coil connected to master unit  
**GSH-300WT2**  
 An inner coil connected to master unit;  
 another connected to other heat source



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AIR CONDITIONING

