



AIR TO WATER
HEAT PUMPS
2013

HEART OF YOUR HOME

Air To Water Heat Pumps

Nowadays, people are increasingly focusing on the costs 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+, S-THERM and SANITARY WATER HEATERS!

They are air to water heat pumps created for house and room heating and for water heating.

EVI SCROLL AIR TO WATER HEAT PUMPS

S-THERM+ series air source heat pump is especially designed according to cold climate features with safety working in -20°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 65°C .

DC INVERTER AIR TO WATER HEAT PUMPS

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_2 discharge. It is an eco-friendly product, which can reflect your awareness of social responsibility to the environment.

SANITARY WATER HEATERS

SINCLAIR heat pump for water heating takes the advantage of heat pump principle with environmentally-friendly R134a refrigerant. It saves energy comparing to commonly used sources for sanitary water heating. Due to automatic antilegionella function, the water in the tank remains harmless and ready for use.



S-THERM+
EVI Scroll Air To Water
Heat Pumps

HEART OF YOUR HOME



More Advanced Technology for Water Up to 65 °C

Heat pump absorbs energy from surroundings 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.

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 sub-cooling process is compressed only from the higher interstage pressure rather than from the lower suction pressure.

EVI COMPRESSOR SYSTEM BENEFITS

EVI SCROLL COMPRESSORS HAVE THE FOLLOWING FEATURES

- Higher volume efficiency
- Low noise level
- Reliability
- Easy construction solution
- Suitability for heat pumps



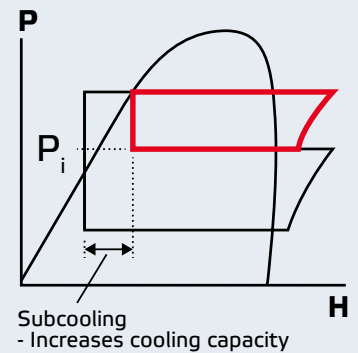
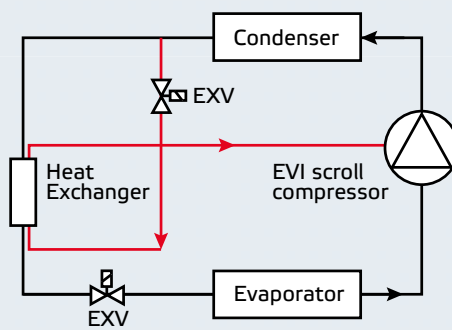
The vapour-injected scroll compressor cycle is similar to two-stage cycle with interstage cooling, but accomplished with a single compressor.

The high stage is accomplished by extracting a portion of the condenser liquid and expanding it through an expansion valve into a counter flow brazed-plate heat exchanger acting as a subcooler.

The superheated vapour is then injected into an intermediate vapour injection port in the scroll compressor.

The additional subcooling increases the evaporator capacity by reducing its inlet enthalpy.

EVI SCROLL COMPRESSOR CYCLE

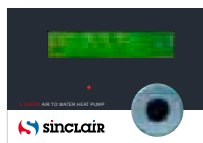


INDOOR UNITS

SHP-140IRC
SHP-180IRC



S-THERM+ heat pump was awarded the winner of Czech internet competition TOP ENERGY 2013 (Energy-Efficient Home, Alternative Sources)



CERTIFIED BY ENGINEERING TESTING INSTITUTE
Download certificate at www.nepa.cz

STANDARD UNIT COMPOSITION

- New EVI 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 EC water pump installed inside.
- Copeland compressor with R407c refrigerant.
- Flow sensor for water flow protection.
- Full sealed control box with IP60.
- Intelligent Smart Sinclair controller and adjustment by quick mind microprocessor.
- New lattice LCD display wire controller with JOG wheel.
- 3kW bivalent electric heater inside the indoor unit.
- Danfoss soft starter.
- Outflow water temperature up to 65°C.

INDOOR UNIT			SHP-140IRC	SHP-180IRC
Temperature Outdoor Air/ Outflow Water (°C) *	A10/W35	Heating Capacity (kW)	15,55	17,88
		Power Input (kW)	3,28	3,90
		COP (-)	4,75	4,58
	A7/W35	Heating Capacity (kW)	14,73	16,79
		Power Input (kW)	3,28	3,94
		COP (-)	4,49	4,26
	A2/W35	Heating Capacity (kW)	11,38	13,27
		Power Input (kW)	3,06	3,77
		COP (-)	3,72	3,52
	A-7/W35	Heating Capacity (kW)	10,30	11,09
		Power Input (kW)	3,17	3,85
		COP (-)	3,25	2,88
	A-15/W45	Heating Capacity (kW)	8,81	10,43
		Power Input (kW)	4,09	4,95
		COP (-)	2,16	2,11
A20/W35	Heating capacity (kW)	18,28	22,32	
	Power input (kW)	3,28	3,83	
	COP (-)	5,58	5,82	
A35/W12	Cooling Capacity (kW)	10,90	12,50	
	Power Input (kW)	3,41	4,46	
	EER (-)	3,20	2,80	
Technical Specifications	Power Supply	V/-/Hz	400 / 3 / 50	400 / 3 / 50
	Outdoor Temperature Range	°C	-20 ~ +40	-20 ~ +40
	Temperature of Leaving Water	°C	+12 ~ +65	+12 ~ +65
	Refrigerant / Charge	-/kg	R407c / 8,0	R407c / 8,0
	Electric Heater	kW	3,0	3,0
	Compressor QTY	-	1	1
	Compressor	Type	COPELAND EVI scroll	COPELAND EVI scroll
	Refrigerant Liquid pipe	mm	12	12
	Refrigerant Gas pipe	mm	22	22
	Water Pipe Inlet / Outlet	-	DN25	DN25
	Noise Level	dB(A)	40	40
	Net Dimensions	mm	602 x 638 x 1035	602 x 638 x 1035
Net Weight	kg	159	150	

*Values were measured according to EN 14511-2:2012 / EHPA standards including defrost cycle.



OUTDOOR UNITS

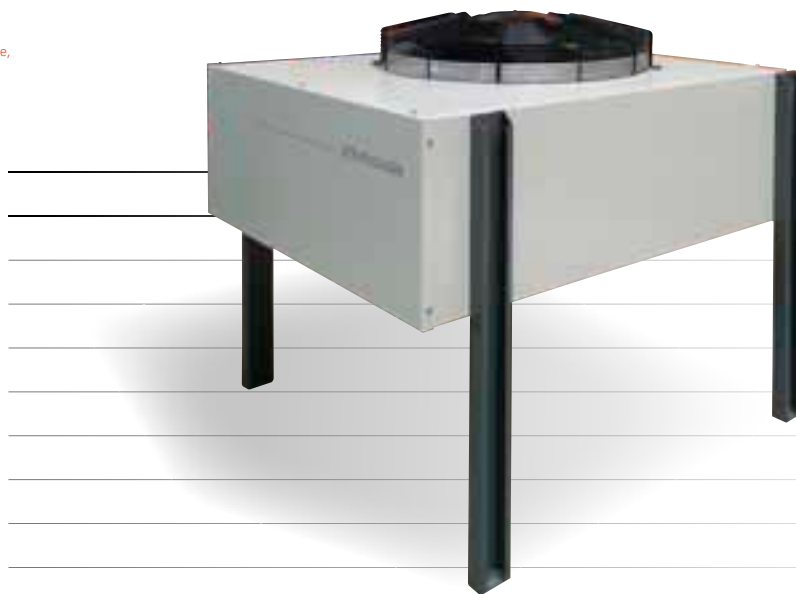
SHP-140ERC
SHP-180ERC



S-THERM+ heat pump was awarded the winner of Czech internet competition TOP ENERGY 2013 (Energy-Efficient Home, Alternative Sources)

STANDARD UNIT COMPOSITION

- Air exchanger (fins-coil) with hydrophylic coating.
- Electrical expansion valve Emerson.
- Automatic intelligent defrosting function.
- General testing and operational test carried out for every unit before package.
- Fan with EC motor.
- Anti-snow function.



OUTDOOR UNIT		SHP-140ERC	SHP-180ERC
Power supply	-		from indoor unit
Fan Quantity	pcs		1
Fan Power Input	W		182
Fan Direction	-		Vertical
Air Flow	m ³ /h		4995
Refrigeration Gas Pipe	mm		22
Refrigeration Liquid Pipe	mm		12
Noise Level 10m/1m	dB(A)		35 / 59
Unit Dimension (L*W*H)	mm		1168 x 1063 x 1102
Net Weight	kg		94



SMART SINCLAIR CONTROL SYSTEM

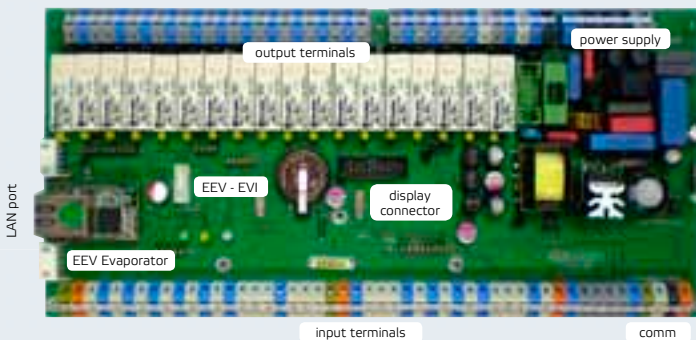


FEATURES

- Controlling of heating of two independent reservoirs (tank for sanitary water heating and heating water tank)
- Controlling of heating of two independent systems (heating system and water tank)
- Controlling of EVI system for high COP and capacity
- System is more economical by using load management
- System is monitoring power input for prevention of damage by wrong connection, overvoltage or under voltage
- Controlling of defrost mode depending on time, temperature and outdoor weather
- Automatic alarm and error reports



INDOOR UNIT CONTROL PANEL



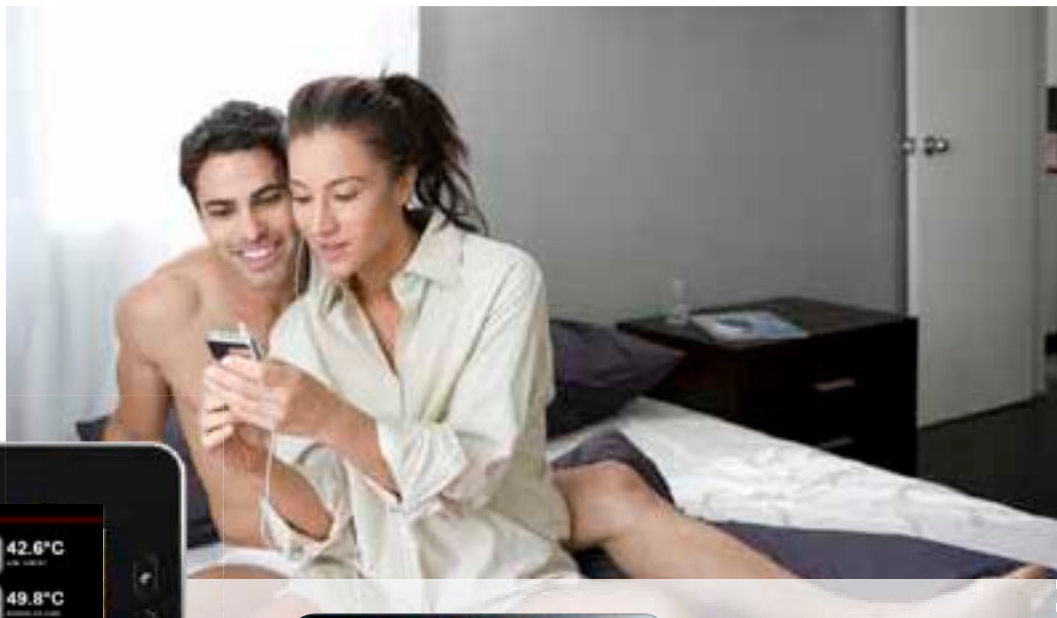
CONTROL AND COMMUNICATION OPTIONS (standard)

- Built-in LCD panel and JOG wheel
- By USB port (universal serial bus)
- Industrial communication standard line RS485
- Long-distance monitoring via internet and remote access from the service center
- Optional:
 - Using your mobile phone GSM (by calling or SMS)
 - Using your PC- ethernet connection (via LAN/WAN) - tablet, smart phone
 - XBee - wireless connection in ISM band (2,4GHz)

OPTIONAL ACCESSORIES

OPTIONAL ACCESSORIES

- Comfort controlling with help of tablet PC
- User-friendly interface
- Well-arranged display and quick orientation in menus
- Simple setup
- Quick access to basic information about the system



READY FOR YOUR
SMART PHONE
APPLICATION

BASIC INFORMATION WINDOW

- Overview of basic temperatures
- Indication of operating mode and load management
- Icon to enter the menu (home, heat pump control, temperature, settings)

COMFORTABLE SETTINGS MENU

- Adjustment of temperatures
- Priorities
- Runtime parameters
- Equitherm
- LAN, GSM
- Remote monitoring
- Language



HYDRAULIC PIPING DIAGRAM

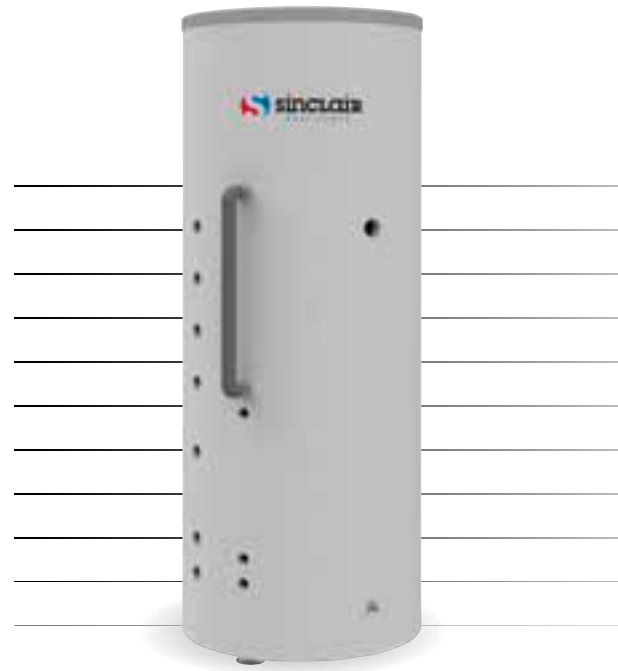
WITH COMBINED ACCUMULATION TANK

COMBINED BUFFER TANK ST-500MCS, ST-500MC

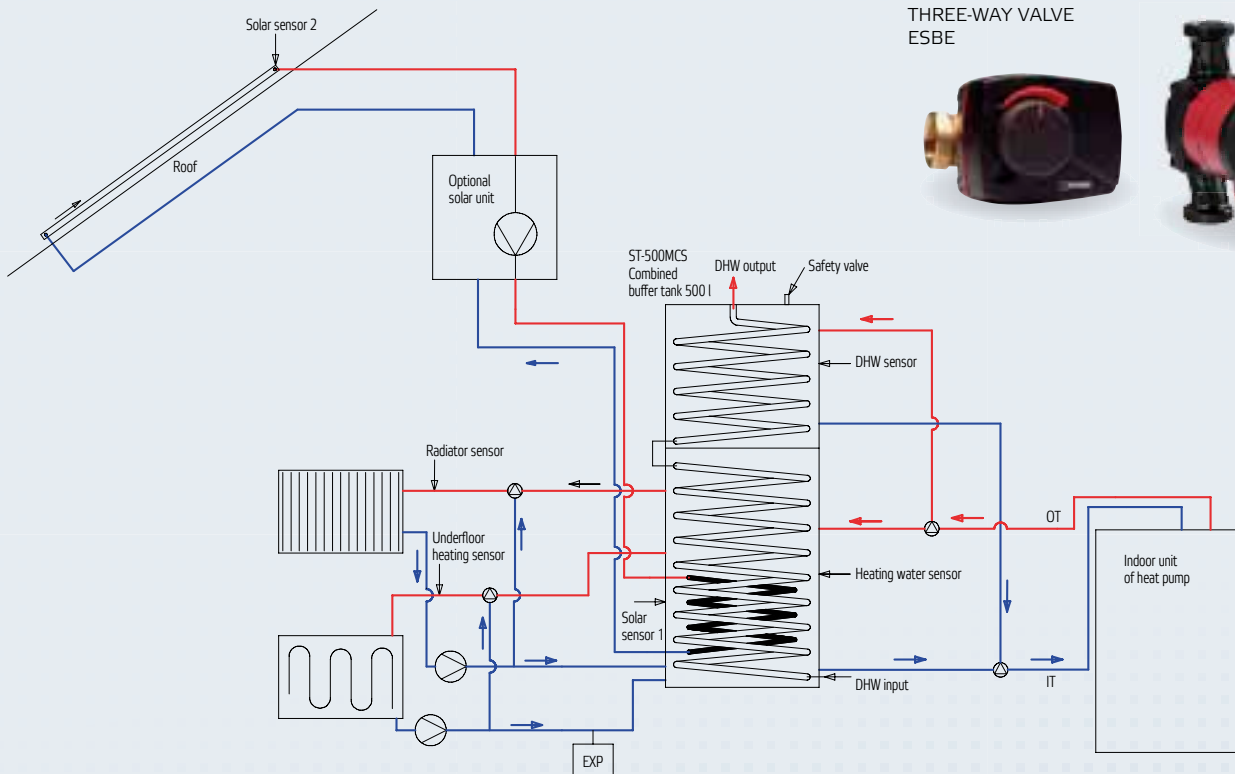
- Steel storage tank 500 liters with stainless steel heat exchanger
- DHW flow heater
- Possibility of connecting solar heating
- Compact, gray leatherette, black plastic
- Polyurethane foam insulation 50 mm

RECOMMENDED COMPONENTS

- Three-way valves for switching between the upper 1/3 tank for DHW and the lower 2/3 tanks for heating circuit ESBE series VRG 131/132 with electronic control type ESBE Series 641 (running time 30 seconds)
- Three-way valves for equithermal control of the temperature in the radiators or underfloor heating system with electronic control type ESBE Series 671 (running time 240 seconds)
- Circulator pump for water circulation in heating systems Grundfos Alpha2



ST-500MCS



THREE-WAY VALVE
ESBE



WATER PUMP
ALPHA2



Energy class **A**

COOLING CANNOT BE USED IN THIS CONNECTION

HYDRAULIC PIPING DIAGRAM

WITH SINCLAIR WATER HEATER

BUFFER TANK ST-400A, ST-500A

- Simple accumulation tank 400, 500l
- Cylindric hot water tank
- Compact, gray leatherette, black plastic
- Polyurethane foam insulation 50 mm

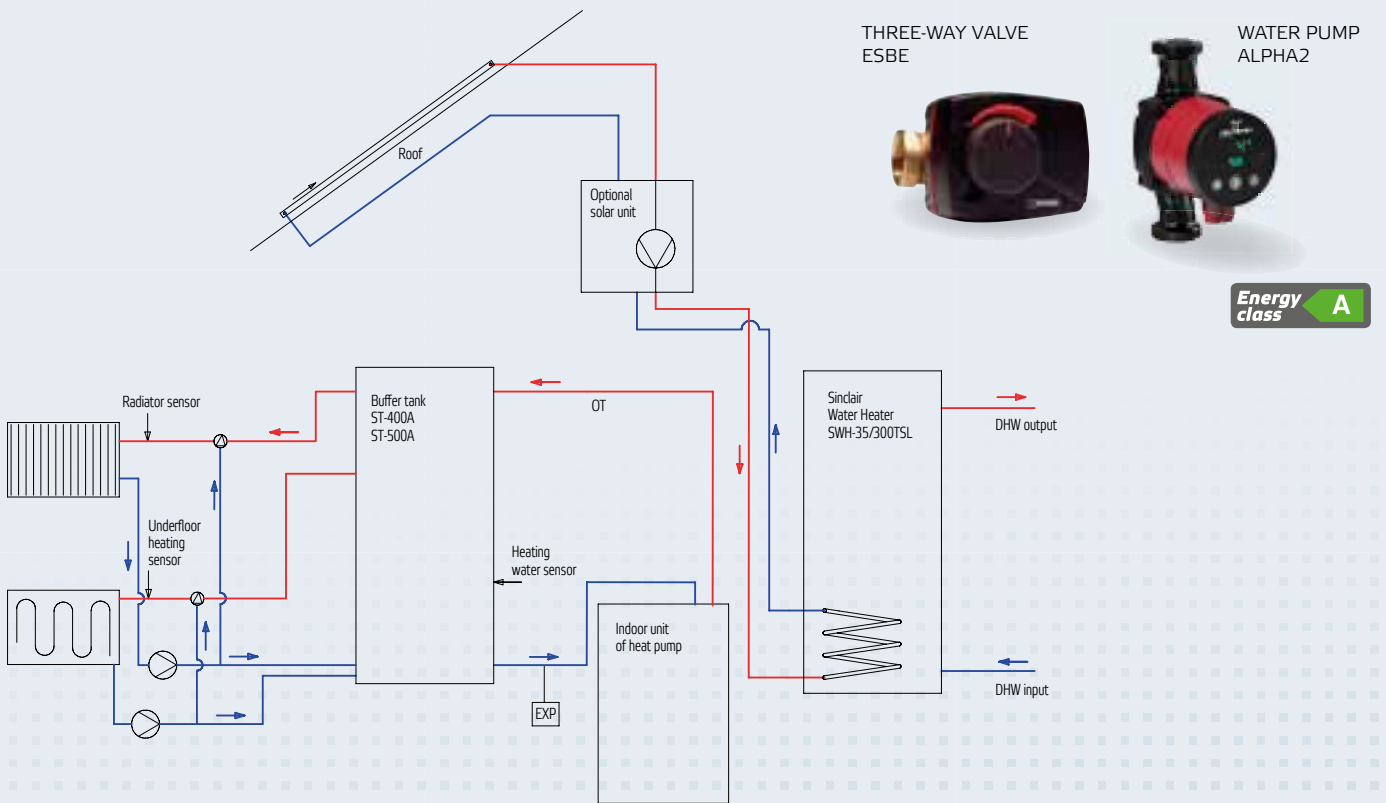
RECOMMENDED COMPONENTS

- Three-way valves for equithermal control of the temperature in the radiators or underfloor heating system with electronic control type ESBE Series 671 (running time 240 seconds)
- Circulator pump for water circulation in heating systems Grundfos Alpha2



SINCLAIR WATER HEATER
SWH-35/300TSL

ST-400A



FAN COIL UNIT MAY BE USED IN COOLING MODE IN THIS CONNECTION

HYDRAULIC PIPING DIAGRAM

INDIRECT WATER HEATERS

INDIRECT WATER HEATERS ST-200D, ST-300D

- Cylindric hot water tank
- Compact, gray leatherette, black plastic
- Polyurethane foam insulation 50 mm

RECOMMENDED COMPONENTS

- Three-way valves for switching between the upper 1/3 tank for DHW and the lower 2/3 tanks for heating circuit ESBE series VRG 131/132 with electronic control type ESBE Series 641 (running time 30 seconds)
- Three-way valves for equithermal control of the temperature in the radiators or underfloor heating system with electronic control type ESBE Series 671 (running time 240 seconds)
- Circulator pump for water circulation in heating systems Grundfos Alpha2



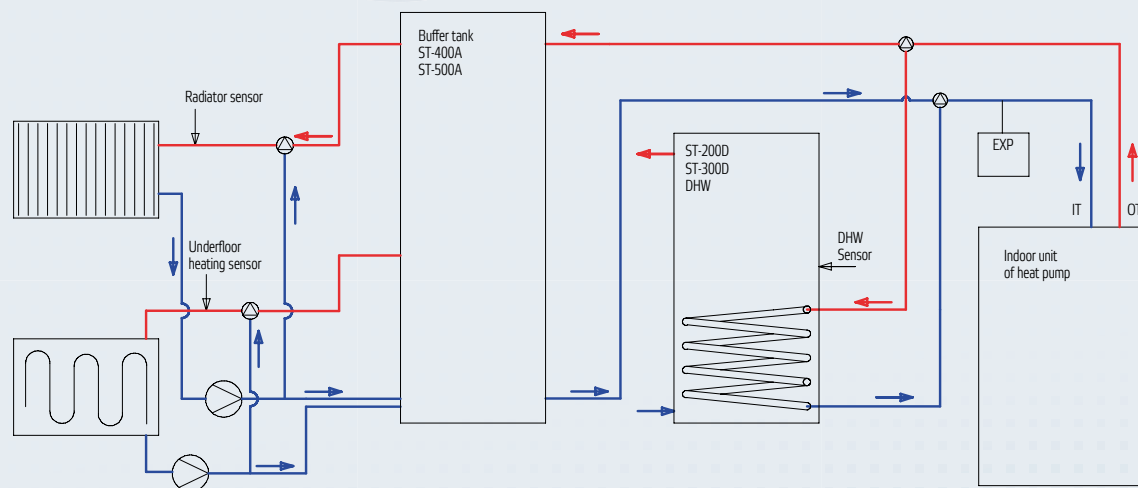
THREE-WAY VALVE
ESBE



WATER PUMP
ALPHA2



Energy class **A**



FAN COIL UNIT MAY BE USED IN COOLING MODE IN THIS CONNECTION



S-THERM DC Inverter Air To Water Heat Pumps

HEART OF YOUR HOME

Basic System Configuration

S-THERM DC INVERTER AIR TO WATER HEAT PUMPS

DC Inverter Air to Water Heat Pump is composed of outdoor unit, hydro box (indoor unit) and optional 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



COMBINATION EXAMPLES

Heating / cooling



Water heating



Heating / cooling with water heating



INDOOR UNITS (HYDROBOX)

GSH-80IRA
 GSH-100IRA
 GSH-120IRA-3
 GSH-140IRA-3
 GSH-160IRA-3



FEATURES

- Compact and deluxe design
- Adopts high efficient heat plate type exchanger
- User friendly control panel
- Easy installation and maintenance
- Safe and reliable

Model			GSH-80IRA	GSH-100IRA	GSH-120IRA-3	GSH-140IRA-3	GSH-160IRA-3	
Power supply		V/Hz	220-240/1/50		6200			
Rated input		W	6200					
Connecting pipe (refrigerant)	Gas	mm(inch)	15.9(5/8)					
	Liquid	mm(inch)	9.52(3/8)					
Connecting pipe (water)	Water inlet	inch	1"Male BSP					
	Water outlet	inch	1"Male BSP					
Safety valve		Bar	3					
Leaving water temp.	Cooling (Fan coil unit)	°C	7-25					
	Cooling (Floor cooling)	°C	18-25					
	Heating (Fan coil unit)	°C	25-55(High Temperature Cycle)					
	Heating (Floor heating)	°C	25-45(Low Temperature Cycle)					
Main components	pump	Type	Water-cooled					
		Nr. of speed	3					
		Power input	200					
		Water flow limit	7,5					
	Expansion Vessel	Volume	10					
		Water Pressure(Max)	3					
		Water Pressure(Pre)	1					
	Electric Heater	Type	Sheath					
		Material	Stainless Steel					
		Operation	Automatic					
		Steps	2		1			
		Capacity	6					
		Combination	3+3					
	Heat Exchanger	Power input	φ/V/Hz	1/230/50		3/400/50		
		Type	Brazen Plate HEX					
		Quantity	1					
Sound Pressure Level		dB(A)	31					
Dimensions	Outline (W×D×H)	mm	900×500×324					
Weight	Net	Kg	52		53			

OUTDOOR UNITS

GSH-80ERA
 GSH-100ERA
 GSH-120ERA-3
 GSH-140ERA-3
 GSH-160ERA-3



FEATURES

- Adopts high efficiency and energy saving
- Comfortable
- Intelligent control
- PFC control technology
- BLDC motor control technology

Model			GSH-80ERA	GSH-100ERA	GSH-120ERA-3	GSH-140ERA-3	GSH-160ERA-3
Capacity ¹	Heating floor heating	kW	8,5	10,0	12,0	14,0	15,0
	Cooling floor cooling	kW	9,0	10,5	14,0	15,0	15,5
Power Input ¹	Heating floor heating	kW	2,1	2,5	2,8	3,3	3,9
	Cooling floor cooling	kW	2,5	3,1	3,8	4,3	4,4
EER ¹	Cooling floor cooling	-	3,6	3,4	3,8	3,5	3,5
COP ¹	Heating floor heating	-	4,0	4,0	4,5	4,2	4,0
Capacity ²	Heating Fan coil or Radiator	kW	8,0	9,0	11,0	12,0	14,0
	Cooling for Fan coil	kW	6,5	8,0	10,0	10,5	11,0
Power Input ²	Heating Fan coil or Radiator	kW	2,7	2,9	3,4	3,8	4,2
	Cooling for Fan coil	kW	2,5	3,1	3,5	3,6	4,0
EER ²	Cooling for Fan coil	-	2,6	2,6	2,9	2,8	2,7
COP ²	Heating Fan coil or Radiator	-	3,0	3,1	3,4	3,4	3,2
Power Supply	V/Ph/Hz	-	220-240/1/50			380-415/50	
Rated input	Cooling	Kw	5,0	5,0	7,0	7,0	7,5
	Heating	Kw	4,6	4,6	6,0	6,0	6,5
Rated current	Cooling	A	21,7	21,7	14,0	14,0	15,0
	Heating	A	20,0	20,0	12,0	12,0	13,0
Refrigerant	Type	-	R410A	R410A	R410A	R410A	R410A
	Charge	g	2000	2000	3500	3500	3500
Sanitary water Temperature		°C	40-80				
Sound Pressure Level	cooling	dB(A)	57	57	57	57	60
	heating	dB(A)	59	59	59	59	62
Connecting pipe (refrigerant)	Gas	mm(inch)	15.9(5/8)	15.9(5/8)	15.9(5/8)	15.9(5/8)	15.9(5/8)
	Liquid	mm(inch)	9.52(3/8)	9.52(3/8)	9.52(3/8)	9.52(3/8)	9.52(3/8)
Dimensions	Outline (W×D×H)	mm	921×427×791	921×427×791	950×412×1253	950×412×1253	950×412×1253
Weight	Net	Kg	69	69	99	99	99

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
 Standard piping length 7.5m

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
 Standard piping length 7.5m





Sanitary Water Heaters

HEART OF YOUR HOME

Sanitary Water Heaters



ADVANTAGE OF HEAT PUMPS

SINCLAIR heat pump for water heating takes the advantage of heat pump principle with environmentally-friendly R134A refrigerant. It saves energy comparing to commonly used sources for sanitary water heating.

Due to automatic antilegionella function, the water in the tank remains harmless and ready for use.

DINING ROOM



CELLAR



STORAGE ROOM



FEATURES



SAFETY

Complete insulation between water and electricity. No potential electric shock problem. No fuel tubes and storage, no potential danger from oil leakage, fire, explosion etc.

HIGH EFFICIENCY

Adopts heat pump principle, which absorbs heat from outdoor air and produces hot water, thermal efficiency can be up to 450%.

ENERGY SAVING

Power consumption comparison under the same condition to heat 1 ton from 15 to 55 degree.

ALLWEATHER RUNNING

Ambient temp: -30 to 43°C, not affected by night, overcast sky, rain and snow.

AUTOMATIC CONTROL

Automatic start-up and shutdown, automatic defrosting without need to attend by special person.

ENVIRONMENT FRIENDLY

No discharge of poisonous gas. No pollution to atmosphere and environment.

EASILY OPERATE

User-friendly LCD display for easy interaction.

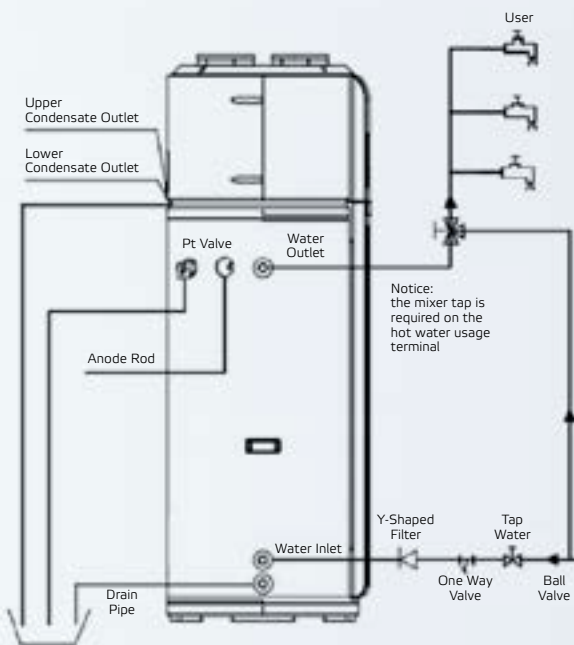
EASY FOR INSTALLATION AND MAINTENANCE

Just need to connect water pipes.

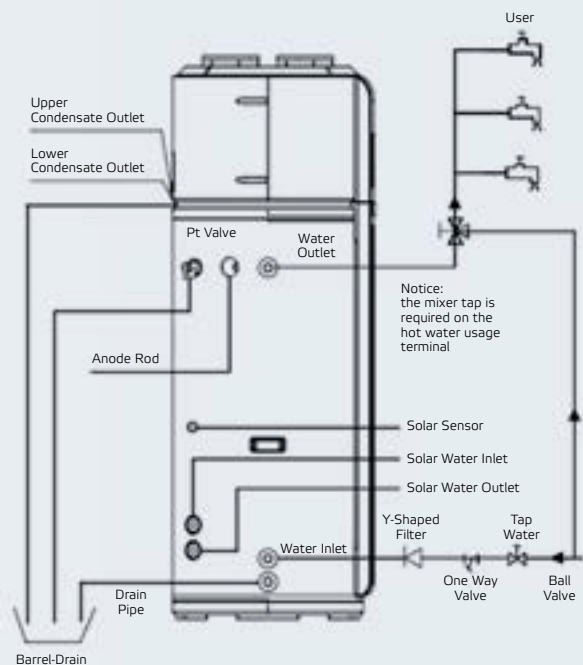
Effective Water Heating



- No cross contamination potential, coil with refrigerant is wrapped around outside the tank.
- High efficiency
- Can be installed inside also outside
- Close refrigerant circuit, easy for installation
- Automatic weekly anti-legionella function.
- Multi protection (PT valve, double high water temp. Protection switches)
- Thermal expansion valve
- Built-in heat exchanger, compatible to solar thermal or boilers (optional).
- Four way valve for automatic defrosting



SWH-15/190T



SWH-35/300TSL, SWH-35/300TL

WATER HEATERS

SWH-35/300TL
 SWH-35/300TSL
 SWH-15/190T

- Water tank volume 190 liters, 300 liters
- Environmentally friendly refrigerant R134A
- Two operation modes: economy, e-heater
- Stainless steel solar heat exchanger
- Outlet water temperature 38-60°C
- Running ambient temperature -30-43°C



Model		SWH-15/190T		SWH-35/300TSL, SWH-35/300TL	
Running mode		Economy	E-heater	Economy	E-heater
Running ambient temp.	°C	-7,43	-30-43	-7,43	-30-43
Output water Temp.	°C	Default: 55°C, 38°C~70°C		Default: 55°C, 38°C~60°C	
Power supply	Ph-V-Hz	1-220-240-50		1-220-240-50	
Storage size	L	190		300	
Water heating Capacity	kW	1,50	3,00	3,0	3,0
COP	kW/kW	3,60	1,00	3,6	1,0
Max. current	A	6,5	13,0	6,5	13,0
Ambient temp.	°C	-30-43		-30-43	
Dimension (DxH)	mm	φ568x1640		φ650x1920	
Net weight	kg	96		123	
Noise level	dB(A)	38		48	
Refrigerant type/Charged volume	kg	R134a/0,95		R134a/1,2	
Refrigerant design pressure	MPa	3,0/ 1,2		3,0/1,2	
Tank design pressure	MPa	0,15-1,0		1	
Air flow volume	m³/h	414/355/312		414/355/312	
Water inlet pipe	mm	DN20		DN20	
Water outlet pipe	mm	DN20		DN20	
Max. pressure	MPa	1,2		1,2	
Design pressure	MPa	0,15-1,0		1	
Solar water inlet pipe	mm			DN20	
Solar water outlet pipe	mm			DN20	
Solar pipe max. pressure	MPa			0,7	
E-heater	kW	3,0		3	
Hot water yield	m³/h	0,045	0,075	0,086	

1. The test conditions: outdoor temp. 15/12°C(DB/WB), inlet water temp. 15°C, outlet water temp.45°C.
 2. The specification may be changed for product improvement, please refer to the nameplate.

SUMMARY

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HEART OF YOUR HOME



SINCLAIR
HEAT PUMPS

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ASOCIACE
CZECH PRO VYUŽITÍ
HEAT PUMP TEPELNÝCH ČERPADEL
ASSOCIATION