

# PRODUCT CATALOGUE 2020

PROFESSIONAL HVAC SYSTEM

THIANTHONG INDUSTRY (THAILAND)

***Bison***  
FOR FUTURE BETTER TECHNOLOGY





# SOLUTIONS

## **LIGHT COMMERCIAL**

- Coffee Shop
- Restaurant
- Spa and Pool

## **COMMERCIAL**

- Hotel
- School
- Hospital
- Residence
- Building

## **INDUSTIAL**

- Automobile Factory
- Metal and Aluminum Factory
- Food and Beverage Factory
- Pharmaceutical Factory
- Automotive Parts Manufacturing Plant



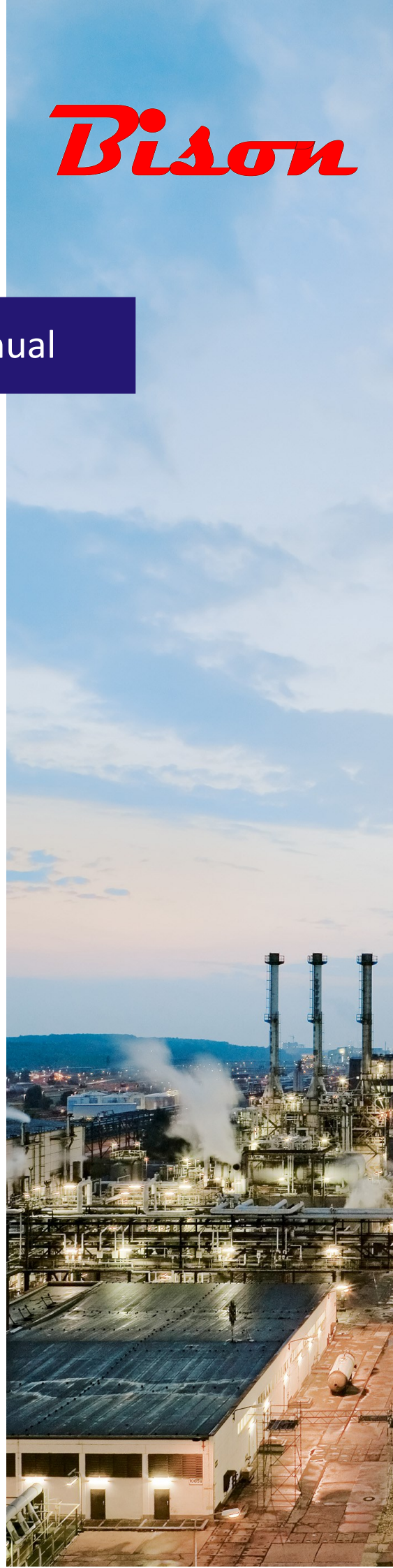
PRODUCT LINEUP : HEAT PUMP

# HEATER TECHNOLOGY

For HEAT PUMP AIR TO WATER TYPE

**Bison**

## Installation and user manual





Model	AirSep5.0kW	AirSep8.5kW	AirSep9.0kW	AirSep14kW	AirSep25kW	AirSep30kW	AirSep36kW	AirSep43kW	AirSep70kW
Power Input (kW)	1.54	2.3	2.66	3.8	6.43	8.4	9.71	11.8	19.5
Rated Output Water (C)	55 - 60								
Micro Controller	Industrial Automation Systems SIMATIC with LCD Monitor (Online Monitor Option) : Siemens								
Compressor Type	Mitsubishi - Rotary		Copeland - Scroll						
Expansion Valve	Thermostatic Expansion Valve (EEV Option)								
Condensor Heat Exchanger	Brazed Plate Heat Exchanger SS316								
Evaporator Heat Exchanger	Aluminum Fin Heat Exchanger								
Rated Output Water Quantity (L/HR)	903	1,462	1,621	2,452	4,285	5,232	6,213	7,469	12,340
Heating Capacity (kW)	5.25	8.5	9.42	14.25	24.9	30.4	36.1	43.4	71.7
Cooling Capacity (kW)	3.8	5.87	6.89	10.65	18.85	22.4	26.9	32.2	53.2
Heating COP.	3.41	3.7	3.54	3.75	3.87	3.62	3.72	3.68	3.68
Cooling COP.	2.47	2.55	2.59	2.8	2.93	2.67	2.77	2.73	2.73
Casing	Steel SS400 with Powder Coating / Aluminum Allow 1100								
Refrigerant	R134a								
Ambient Temperature (C)	5 - 45								
Dimension (W x L x H) (m)	0.40*1.00*0.65		0.65*0.85*1.55		0.85*0.85*1.5		1.0*1.0*2.0		
Inlet Pipe Diameter	DN25	DN25	DN25	DN25	DN25	DN32	DN32	DN40	DN50
Outlet Pipe Diameter	DN25	DN25	DN25	DN25	DN25	DN32	DN32	DN40	DN50
Noise (dB)	< 65								
Power Supply	220VAC/1P/50Hz			380VAC/3P/50Hz					
Weight (kg)	52	56	68	135	183	205	235	285	342
Price	59,293	63,843	70,343	132,310	144,644	159,688	177,273	195,629	270,125



PRODUCT LINEUP : HEAT PUMP

# HEATER TECHNOLOGY

For HEAT PUMP WATER TO WATER TYPE

**Bison**

## Installation and user manual





Model	Rocket5.0kW Rocket8.5kW Rocket9.0kW Rocket14kW Rocket25kW Rocket30kW Rocket36kW Rocket43kW Rocket70kW									
Power Input (kW)	1.54	2.3	2.66	3.8	6.43	8.4	9.71	11.8	19.5	
Rated Output Water (C)	55 - 60									
Micro Controller	Industrial Automation Systems SIMATIC with LCD Monitor (Online Monitor Option) : Siemens									
Compressor Type	Mitsubishi - Rotary		Copeland - Scroll							
Expansion Valve	Thermostatic Expansion Valve (EEV Option)									
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Casing	Steel SS400 with Powder Coating / Aluminum Allow 1100									
Refrigerant	R134a									
Ambient Temperature (C)	5 - 45									
Dimension (W x L x H) (m)	0.4*1.0*0.65		0.65*0.85*1.75							
Inlet Pipe Diameter	DN25	DN25	DN25	DN25	DN25	DN32	DN32	DN40	DN50	
Outlet Pipe Diameter	DN25	DN25	DN25	DN25	DN25	DN32	DN32	DN40	DN50	
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## 1. GENERAL WARNING

ROCKET MODEL is built in compliance with the acknowledged technical standards and safety regulations. They have been designed for heating with the production of domestic hot water (DHW). They must be intended for this use compatibly with their performance features. Any contractual or extracontractual liability of the Company is excluded for injury/ damage to persons, animals or objects owing to installation, regulation and maintenance errors or improper use. All uses not expressly indicated in this manual are prohibited.

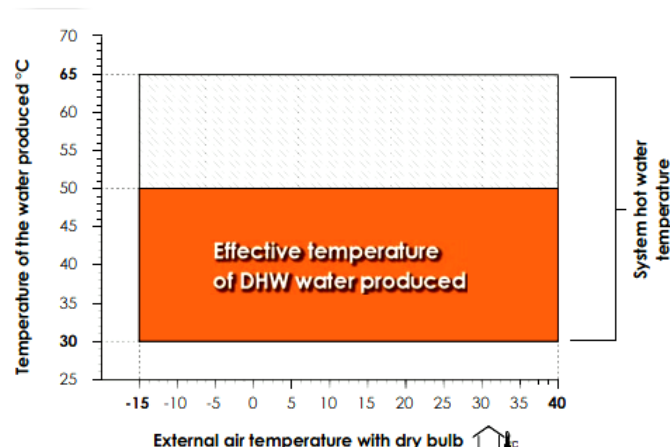
## 2. INTRODUCTION

In your hands you hold probably the most advanced and the most efficient heat pump currently available on the market. This heat pump provides warm water at lowest possible cost. The heat pump is manufactured in tightest accordance with related strict standards and norms, in order to provide high quality operation and long-term reliability. This Installation and user manual contains all the necessary information about the installation, operation and maintenance of the heat pump. Please read this Installation and user manual carefully before you start to use this product. The manufacturer is not responsible for any personal or property damage due to the improper installation, use or maintenance that is not in accordance with this User Manual.

## 3. OPERATIONAL LIMITS

The units, in standard configuration, are not suitable for installation in salty environments. The maximum and minimum limits for water flow rate to the heat exchanger are indicated by the pressure drop diagram curves. For functioning limits, please refer to the below diagrams, valid for  $\Delta t = 5\text{ }^{\circ}\text{C}$ .

If the machine is to be operated out the limits indicated in the diagram, please contact Thianthong Industry (Thailand) Co., Ltd. technical-sales dept.



## 4. SELECTION AND PLACE OF INSTALLATION

Before beginning installation consent with client and pay attention to the following recommendations:

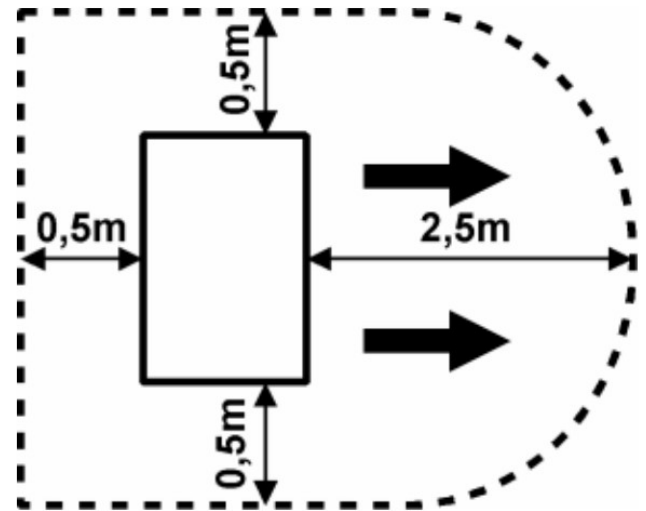
- The support surface must be capable of supporting the unit weight.
- The unit must be installed by an enabled technician in compliance with the national legislation in force in the country of destination, respecting the minimum technical spaces in order to allow maintenance.



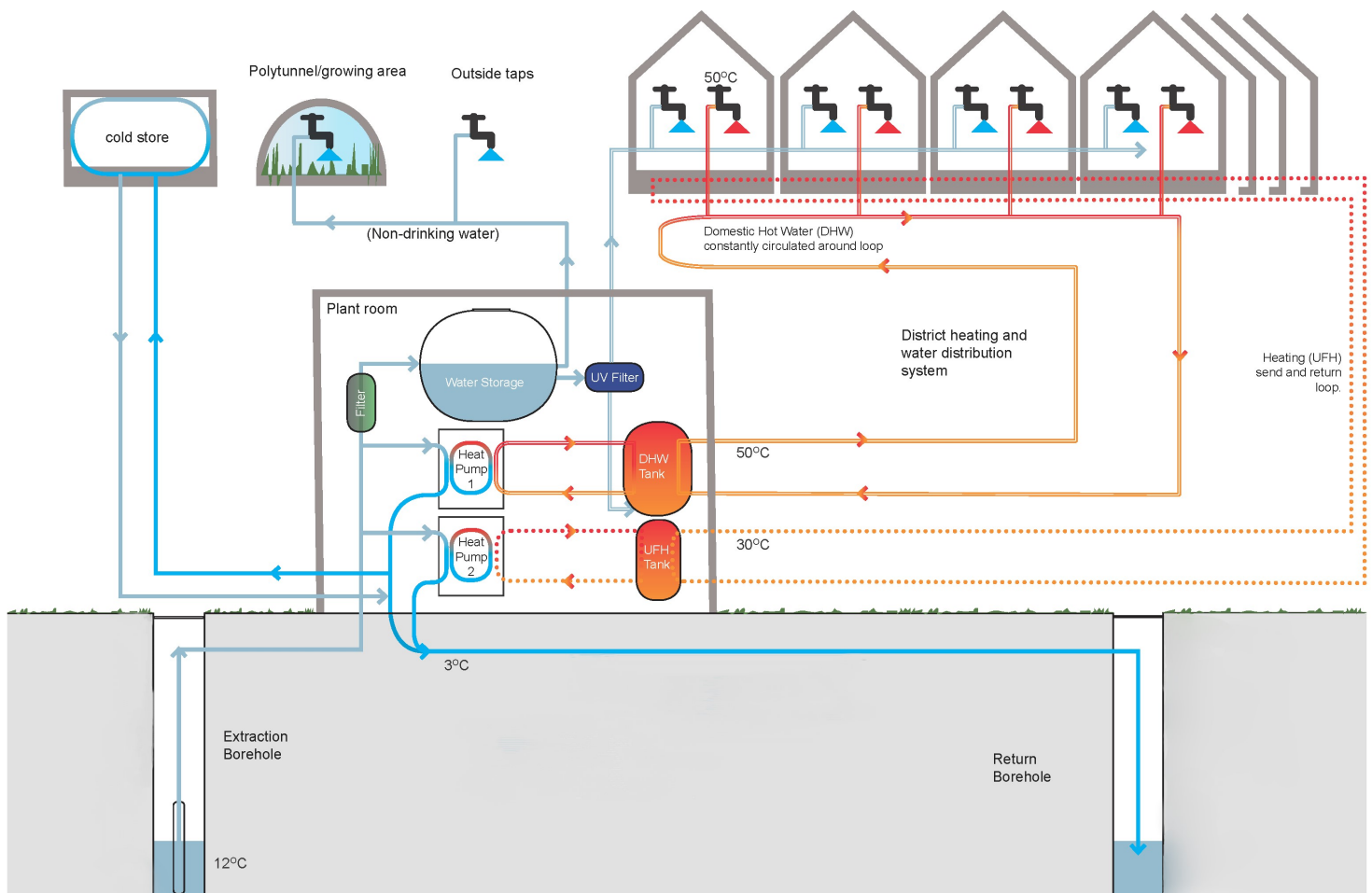
## 5. POSITIONING

Before handling the unit, verify the lifting capacity of the machines used, respecting the indications given on the packaging. To handle the machine on horizontal surfaces, use fork lift trucks or similar in the most appropriate manner, paying attention to the distribution of the unit weight. Position the unit in the place indicated by the customer, placing a rubber covering between the base and the support (min. thickness 10 mm.) or alternatively anti-vibrating feet (Accessor). **For further information, refer to the dimensional tables.**

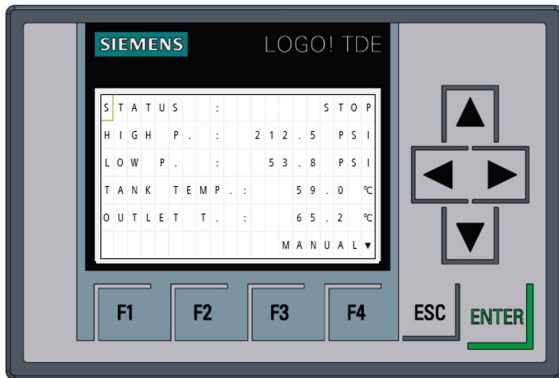
Fix the unit checking that it is level. Make sure that the hydraulic and electric part can be easily reached. In case of installation in places where gusts of wind are frequent, fix the unit suitably using tie-rods.



## 6. SYSTEM EXAMPLE



## 7. Regulation



### (1) F4 button

- Press **F4** to start the heat pump unit. the LED display shows the status on monitor "START", then shows the condition of heat pump operation and flow switch status of hot and chilled water.
- Press **F4** to stop the heat pump unit. the LED display shows the status on monitor "STOP"
- Press **F4** again to turn on/off the machine

### (2) F3 button

It will be under timer function only with other button.

### (3) F2 button

It will be under setting function only with other button.

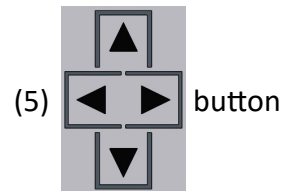
- Hot water inlet temperature
- Hot water outlet temperature
- Chilled water inlet temperature
- Chilled water outlet temperature
- High Pressure side
- Low Pressure side
- Other

### (4) F1 button

It will be under parameter operation function only with other button.

- Chilled water flow
- Hot water flow
- Hot water inlet temperature

- High Pressure side
- Low Pressure side
- Other



Press or to set the parameter directly. Then slide LED display show on monitor.

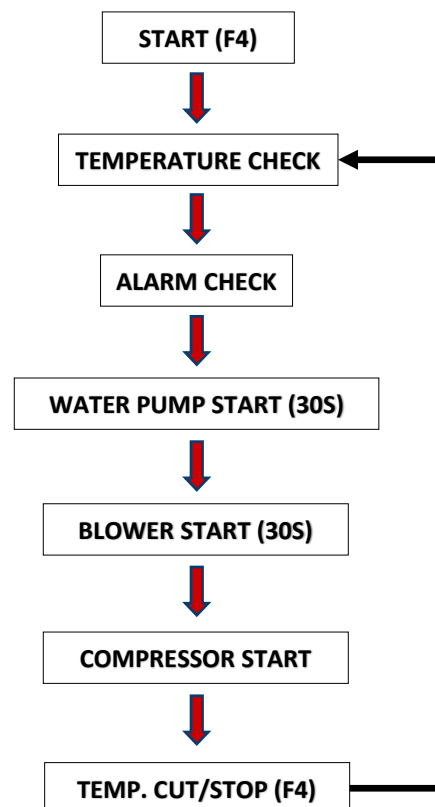
### (6) ESC button

It will be under change parameter function or cancel parameter change.

### (6) ENTER button

It will be under confirm parameter function only.

## 8. Logic Controller Operation





## 9. Parameter setting (F2)

Please find below table containing list of parameter with their explanation and suggested solution.

Parameter	Description	Factory setting	Range setting
TANK SET	Set temperature in hot water tank	60 C	0 - 200 C
RE-START	Set Difference temperature of tank	57 C	0 - 200 C
HW.CUT IN	Set outlet temperature cut-in when outlet hot water below	60 C	0 - 200 C
HW.CUT OUT	Set outlet temperature cut-out when outlet hot water over heat	70 C	0 - 200 C
HP.C.OUT	Set discharge pressure cut-out when discharge pressure over pressure	370 Psi	0 - 500 Psi
HP.C.IN	Set discharge pressure cut-in when discharge pressure below	200 Psi	0 - 500 Psi
LP.C.OUT	Set suction pressure cut-out when suction pressure below	15 Psi	0 - 500 Psi
LP.C.IN	Set suction pressure cut-in when suction pressure over pressure	60 Psi	0 - 500 Psi
COMP.RELAY	Set compressor start delay time	30 Sec	0 - 99 Sec
LOW C.OFF	Set relay time for low pressure cut-out	30 Sec	0 - 99 Sec

## 10. Failure Reports

Please find below table containing list of Failure Reports with their explanation and suggested solution.

Fail Report	Description	Solution
COMP. HIGH PRESSURE CUT-OUT	Discharge pressure over pressure	<ul style="list-style-type: none"> <li>- Check strainer</li> <li>- Check water flow rate</li> <li>- Check refrigeration system</li> </ul>
COMP. LOW PRESSURE CUT	Suction pressure lower pressure	<ul style="list-style-type: none"> <li>- Check refrigeration system</li> <li>- Check air filter</li> <li>- Check air flow rate</li> </ul>
PHASE PROTECTION	Electric power supply problem	<ul style="list-style-type: none"> <li>- Check connector &amp; electric quality</li> </ul>
HOT WATER OUTLET HIGH TEMP	Outlet hot water over heat	<ul style="list-style-type: none"> <li>- Check temperature sensor</li> <li>- Check strainer</li> <li>- Check water flow rate</li> </ul>
COMPRESSOR OVERLOAD	Compressor fail	<ul style="list-style-type: none"> <li>- Check compressor condition</li> </ul>
BLOWER OVERLOAD	Blower fail	<ul style="list-style-type: none"> <li>- Check air blower condition</li> </ul>
PUMP OVERLOAD	Water pump fail	<ul style="list-style-type: none"> <li>- Check water pump condition</li> </ul>

## 11. Maintenance & Warranty

### 8.1 Maintenance

**WARNING:** The device operates at dangerous electrical current and voltage.

**DANGER:** Danger of electric shock!

**WARNING:** The device is pressurized with refrigerant R410A. The pressures can reach as high as 30bar.

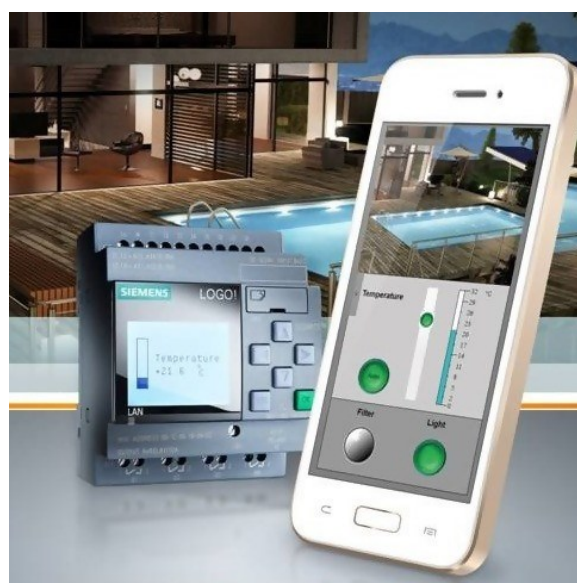


- (1) Clean the filtration on regular basis to prevent the device from damage caused by dirty or clogged filter.
- (2) Check the power supply on regular basis.
- (3) Should the device appear to operate in unusual way, turn it off immediately and contact your distributor or seller.
- (4) Check the working area of the pump on regular basis. Keep this area clean and remove all the accumulated dirt, leaves, trees or anything that can increase the risk of air circulation blockage.
- (5) If you decide not to use the heat pump, disconnect it from the mains, remove the water from the heat exchanger. It is advised then to cover the unit with a water resistant sheet.
- (6) For external washing of the heat pump, use your common cleaning agent for dishes and pure water.
- (7) Clean the external surface of the evaporator with a soft brush on regular basis to remove impurities. This is particularly important during bloom months. Please note that every single barrier of free air flow reduces the efficiency of the heat pump and may lead to heat pump's malfunction, damage or failure.
- (8) Regularly check the screws, fixing the device to the base, screws fixing the covers.
- (9) Do not clean inner parts of water heat exchanger with hot water. The heat exchanger will get damaged if water temperature inside it rises above 45°C.
- (10) All the above measures must be performed by a trained technician.
- (11) The maintenance of the refrigeration or electrical system must be performed by authorized technicians only.

### 12. Warranty

Your heat pump is covered by warranty. For particular conditions of this warranty in terms of warranty period and subject please refer to your local regulations and/or agreement with your distributor, reseller or installer. Any action resulting in damage of the heat pump, property or other damage caused by improper usage of this product or in contrary with this Installation and user manual is excluded from warranty coverage.

## 13. Web Development



Monitor and controller of heatpump, support custom Web pages with Web server integrated in each device. Both are available for immediate shipments.