HOUSE OF

DURATECH

innovative pool products

Manual

DURA-V10
DURA-V15
DURA-V20

DURA-V11i
DURA-V15i
DURA-V20i
DURA-V24i



HEAT Dura V / Vi

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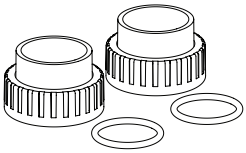
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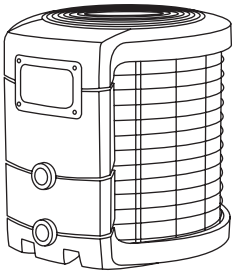
DURAHEAT

Box content

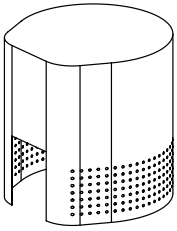
Connection clamps



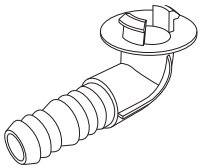
Heat pump Dura V or Vi



Wintercover



Drain pipe(Condens Flux)

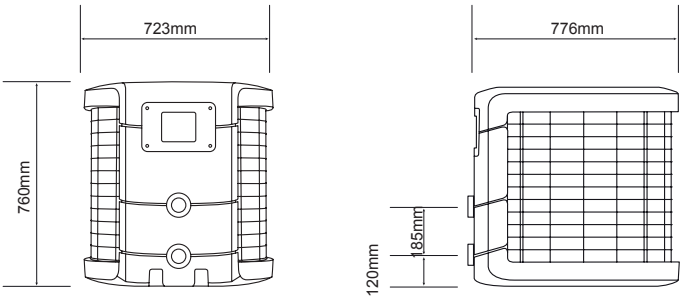


Manual

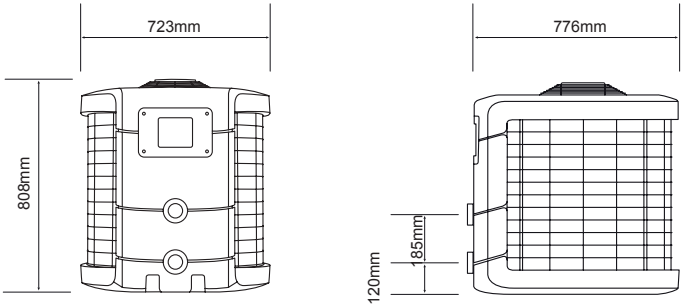


Dimensions

DURA-V10 / DURA-V15 / Dura-V20

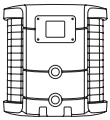


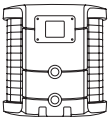
DURA-V11i / DURA-V15i / Dura-V20i / DURA-V24i



1. Specifications

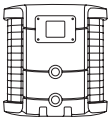
1.1 Performance data Dura V





UNIT		DURA-V10	DURA-V15
Advised Pool volume*	m^3	40	60
Operating air temperature	°C	-10 ~ 40	
Air 27°C / Water 26°C / Humidity 80%			
Heating Capacity	kW	10,6	15
	Btu	36169	51182
Consumed power	kW	1,4	2,05
COP		7,6	7,3
Air 15°C / Water 26°C / Humidity 70%			
Heating Capacity	kW	7,5	10,5
	Btu	25591	35827
Consumed power	kW	1,25	2
COP		5,5	5,3
Power supply		230V / 50Hz / 1 Phase	
Electronic Controller		Duralink ready with colour LCD	
Nominal Running current	A	6,5	9
Max Current	A	8	11
Condensor		Titanium Heat Exchanger / NoFrost	
Compressor quantity		1	1
Compressor type		Rotary	Rotary
Refrigerant		R32	
Refrigerant weight	kg	0,95	1,05
Pressure gauge		Display	
Fan quantity		1	1
Fan power input	W	120	120
Fan rotary speed	RPM	700 - 900	700 - 900
Fan direction		Vertical	
Noise at 10m	dB(A)	23 - 31	24 - 35
Water connection	mm	63	63
Water flow range	m^3/h	3 - 20	5 - 20
Unit net dimensions (L*W*H)	mm	See the drawing of the units	
Unit shipping dimensions (L*W*H)	mm	See package label	
Net weight	kg	See nameplate	
Shipping weight	kg	See package label	

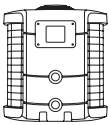
* Advised pool volume for an entirely insulated pool, with cover, free from wind and exposed to the sun.

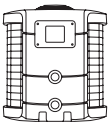


UNIT		DURA-V20
Advised Pool volume*	m^3	80
Operating air temperature	°C	-10 ~ 40
Air 27°C / Water 26°C / Humidity 80%		
Heating Capacity	kW	20
	Btu	68243
Consumed power	kW	2,85
COP		7
Air 15°C / Water 26°C / Humidity 70%		
Heating Capacity	kW	13,4
	Btu	45723
Consumed power	kW	2,5
COP		5,3
Power supply		230V / 50Hz / 1 Phase
Electronic Controller		Duralink ready with colour LCD
Nominal Running current	A	12,5
Max Current	A	15
Condensor		Titanium Heat Exchanger / NoFrost
Compressor quantity		1
Compressor type		Rotary
Refrigerant		R410
Refrigerant weight	kg	1,6
Pressure gauge		Display
Fan quantity		1
Fan power input	W	120
Fan rotary speed	RPM	700 - 900
Fan direction		Vertical
Noise at 10m	dB(A)	24 - 35
Water connection	mm	63
Water flow range	m^3/h	7 - 20
Unit net dimensions (L*W*H)	mm	See the drawing of the units
Unit shipping dimensions (L*W*H)	mm	See package label
Net weight	kg	See nameplate
Shipping weight	kg	See package label

* Advised pool volume for an entirely insulated pool, with cover, free from wind and exposed to the sun.

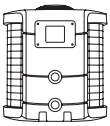
1.2 Performance data Dura Vi

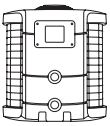




UNIT		DURA-V11i	DURA-V15i
Advised Pool volume**	m^3	30 - 60	40 - 75
Operating air temperature	°C	-10 ~ 40	
Air 27°C / Water 26°C / Humidity 80%			
Heating Capacity	kW	3,4 - 11,4	4,1 - 15,1
	Btu	11601 - 38898	13990 - 51523
Consumed power	kW	0,24 - 1,58	0,30 - 2,13
COP		13,9 - 7,2	13,7 - 7,1
Air 15°C / Water 26°C / Humidity 70%			
Heating Capacity	kW	8,8	11,8
	Btu	30027	40263
Consumed power	kW	0,21 - 1,69	0,27 - 2,40
COP		7,70 - 5,20	7,70 - 4,90
Power supply		230V / 50Hz / 1 Phase	
Electronic Controller		Duralink ready with colour LCD	
Nominal Running current	A	7,3	9,6
Max Current	A	9,5	12,5
Condensor		Titanium Heat Exchanger / NoFrost	
Compressor quantity		1	1
Compressor type		Rotary	Rotary
Refrigerant		R32	
Refrigerant weight	kg	1,90	1,1
Pressure gauge		Display	
Fan quantity		1	1
Fan power input	W	120	120
Fan rotary speed	RPM	700 - 900	700 - 900
Fan direction		Vertical	
Noise at 10m	dB(A)	22 - 30	22,5 - 31
Water connection	mm	63	63
Water flow range	m^3/h	3 - 20	4 - 20
Unit net dimensions (L*W*H)	mm	See the drawing of the units	
Unit shipping dimensions (L*W*H)	mm	See package label	
Net weight	kg	See nameplate	
Shipping weight	kg	See package label	

** Advised pool volume for an entirely insulated pool, with cover, free from wind and exposed to the sun. In case the pool volume is close to the maximum value, the inverter heatpump will nearly always run at full power





UNIT		DURA-V20i	DURA-V24i
Advised Pool volume**	m^3	50 - 95	65 - 120
Operating air temperature	°C	-10 ~ 40	
Air 27°C / Water 26°C / Humidity 80%			
Heating Capacity	kW	5,6 - 20,0	6,5 - 23,6
	Btu	19108 - 68243	22179 - 80527
Consumed power	kW	0,41 - 2,82	0,43 - 3,37
COP		13,6 - 7,1	13,5 - 6,8
Air 15°C / Water 26°C / Humidity 70%			
Heating Capacity	kW	15,8	18,2
	Btu	53912	62101
Consumed power	kW	0,34 - 3,45	0,43 - 4,15
COP		7,70 - 4,60	7,50 - 4,40
Power supply		230V / 50Hz / 1Phase	
Electronic Controller		Duralink ready with colour LCD	
Nominal Running current	A	11,9	14,2
Max Current	A	15,5	18,5
Condensor		Titanium Heat Exchanger / NoFrost	
Compressor quantity		1	1
Compressor type		Rotary	Rotary
Refrigerant		R32	
Refrigerant weight	kg	1,5	1,6
Pressure gauge		Display	
Fan quantity		1	1
Fan power input	W	120	120
Fan rotary speed	RPM	700 - 900	700 - 900
Fan direction		Vertical	
Noise at 10m	dB(A)	23 - 32	24 - 33
Water connection	mm	63	63
Water flow range	m^3/h	5 - 20	6 - 20
Unit net dimensions (L*W*H)	mm	See the drawing of the units	
Unit shipping dimensions (L*W*H)	mm	See package label	
Net weight	kg	See nameplate	
Shipping weight	kg	See package label	

** Advised pool volume for an entirely insulated pool, with cover, free from wind and exposed to the sun. In case the pool volume is close to the maximum value, the inverter heatpump will nearly always run at full power

2. Preface

In order to provide our customers with quality, reliability and versatility, this product has been made to strict production standards. This manual includes all the necessary information about installation, debugging, discharging and maintenance. Please read this manual carefully before you open or maintain the unit. The manufacture of this product will not be held responsible if someone is injured or the unit is damaged, as a result of improper installation, debugging, or unnecessary maintenance. It is vital that the instructions within this manual are adhered to at all times. The unit must be installed by qualified personnel.

The heat pump will always perform very well, provided the following elements are present

1. Fresh air
2. Electricity
3. Swimming pool water





3. Safety information

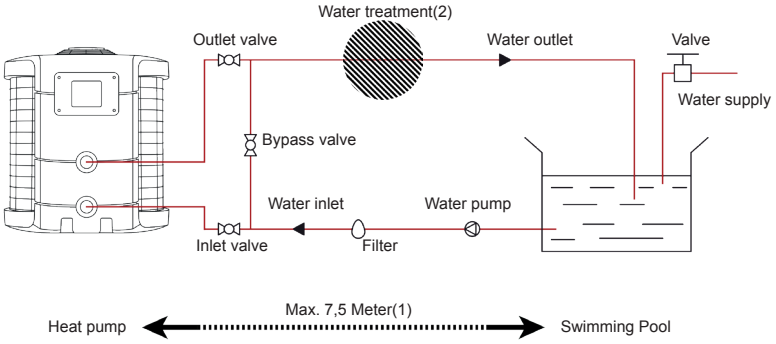
Please read these instructions carefully before using the heat pump and keep them for future reference:

1. Always keep the unit upright. If the unit has been tilted or put on its side, wait 24h before starting the heat pump.
2. Put the unit on a flat, solid base. Tilting the heat pump for max 3° is accepted.
3. Do not drop the heat pump.
4. The heat pump must always be installed outdoors.
5. Check if the voltage indicated on the heat pump corresponds to the local mains voltage before you connect the unit. Please find more information about the electrical connection in section 4.4
6. Do not pull any electrical cable, sensor or tubing with unnecessary force.
7. Do not wrap any cable around the heat pump.
8. Do not use the heat pump in combination with a transformer.
9. If the heat pump is damaged during transportation, it must be replaced, please contact your service centre or similarly qualified persons in order to avoid a hazard.
10. Always make sure the water connections of the heat pump are properly locked before you start using the machine.
11. Make sure the flow sensor is installed properly after Maintenance.
12. Never insert objects directly into the fan, as this will cause it to become blocked and damaged.
13. The evaporator fins must not be damaged.
14. This heat pump is not intended for use by persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the heat pump by a person responsible for their safety.
15. Children should always be supervised to ensure that they do not play with the heat pump.
16. Disconnect electricity when the heat pump is not in use and before cleaning.
17. This appliance should be serviced only by qualified service personnel. Contact your nearest authorized service facility for examination, repair or adjustment.
18. If the supply cord is damaged, it must be replaced by the manufacturer or your service agent or similarly qualified person in order to avoid a hazard.
19. Please contact your dealer if your swimming pool heat pump is not working properly. There might be a leakage when the heat pump does not heat the swimming pool water. The R32 refrigerant gas is safe when there is a leakage although fire can occure when a flame, heating device or stove gets in contact with the gas. Stop using your swimming pool heat pump until a qualified service technician has confirmed that the leak has been repaired.
20.Make sure that there is a circuit breaker for the unit, lack of a circuit breaker can lead to electrical shock or fire.
21. The heat pump is equipped with an over-load protection system. It does not allow for the unit to start for at least 3 minutes from a previous stoppage.
22. Condens water not suitable for potable water connection.

4. Preparing the heat pump for use

4.1 Typical set-up

The factory only provides the heat pump. Other parts, including a contingent by-pass are to be provided by the user or installer. The heat pump should be located maximum 7,5m(1) away from the swimming pool. The longer the distance from the pool, the greater the heat loss from the piping.



Put the heat pump on a flat, solid base. Tilting the heat pump for max 3° is accepted.
Install silent blocks in order to avoid vibrations and noise.

All feeding of water treatment to the pool water has to be done downstream of the heat pump(2).

It is normal for condensation to come out of the heat pump. This is not a leak or fault with the unit. If the humidity is very high, the condensation could be a number of liters a day. Please find more inforamtion about condensation in section 5.2.

Always keep the heat pump in upright position. If the unit has been tilted, wait 24h before starting the heat pump.

It is recommended to install a by-pass for easy maintenance.

4.2 Installation of a check valve

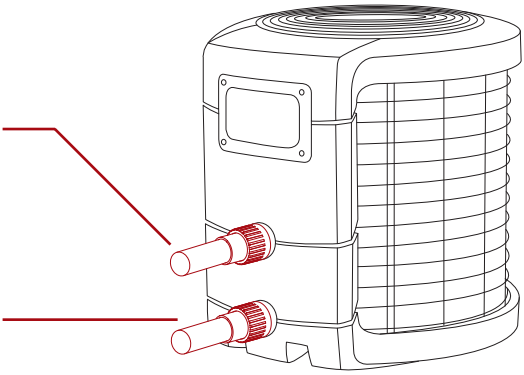
When using automatic chlorine and pH dosage systems, it is of uttermost importance to protect the heat pump from high concentrations of these chemicals that could corrode the heat exchanger after long term use. Therefore, such systems should add the chemicals in the conduits located DOWNSTREAM of the heat pump and it is recommended to install a check-valve in order to prevent backflow when there is no water circulation.
Damage to the heat pump caused by disregarding any of these recommendations will invalidate the warranty.

4.3 Installation of the tubing

The factory provides the water connecting kit. Other parts, including a contingent by-pass are to be provided by the user or installer. The heat pump should be located maximum 7,5m away from the swimming pool. The longer the distance from the pool, the greater the heat loss from the piping.

Water connection from heat pump:
Typical water pipe from heat pump to water treatment system.

Water connection to heat pump:
Typical water pipe from filter system to heat pump.



Please note the outlet flow is equiped with a flow sensor. Therefore the heat pump will only start when water flow is running in correct direction.

4.4 Electrical wiring

Check if the electrical mains voltage corresponds with the operating voltage of the heat pump prior to hooking up the unit. It is recommended to use a separate fuse as well as adequate wiring.

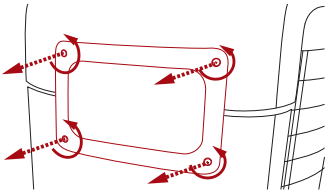
Model	Voltage (V)	Fuse (C-curve)	Max current (A)	Cable section	Max Cable lenght
DURA-V10	230V / 50Hz	20A(D-class)	8	2,5 mm²	15 meter
DURA-V15	230V / 50Hz	20A(D-class)	11	2,5 mm²	15 meter
DURA-V20	230V / 50Hz	20A(D-class)	15	2,5 mm²	15 meter
DURA-V11i	230V / 50Hz	20A(C-class)	9,5	2,5 mm²	15 meter
DURA-V15i	230V / 50Hz	20A(C-class)	12,5	2,5 mm²	15 meter
DURA-V20i	230V / 50Hz	20A(C-class)	15,5	2,5 mm²	15 meter
DURA-V24i	230V / 50Hz	20A(C-class)	18,5	2,5 mm²	15 meter

Although the heat pump is electrically isolated from the rest of the unit, this only prevents the passage of electricity to or from the pool water. Grounding the unit is still required to protect yourself from short circuits inside the unit. Provide an adequate ground connection.

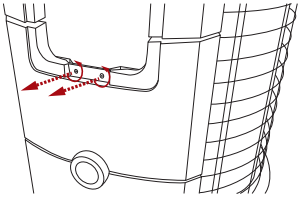
Use electrical cables suitable for 75°C.

Connect the electrical wires using the following steps

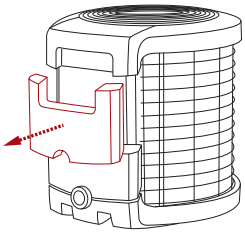
Step 1: Remove display.



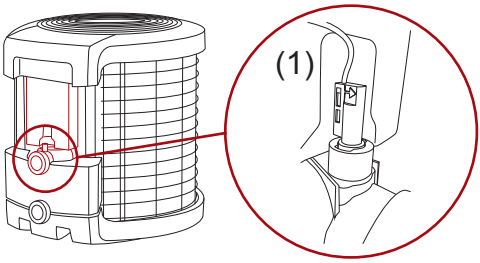
Step 2: Unscrew blue front housing.



Step 3: Snap off blue front housing



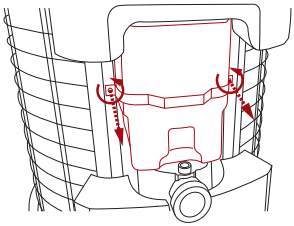
Step 4: Remove flow sensor



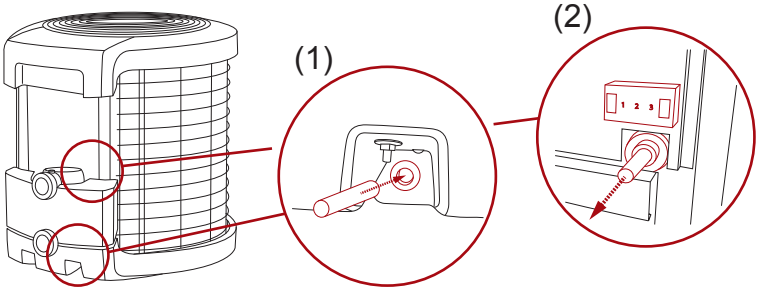
Please turn off filter pump. Flow must be stoped before disconnecting flow sensor. Drain the water out of the condensor to prevent water loss.

Make sure the arrow upon the flow sensor is pointing towards the water connection(1).

Step 5: Remove transparent cover.



Step 6: Insert the electrical cable at the bottom of the heat pump(1). Make electrical connection with heat pump's terminal block(2).



5. Be aware of

5.1 Heat loss

The pool heat pump is installed within 7.5 meters of the pool. The longer the distance from the pool, the greater the heat loss from the tubing. Therefore, the heat loss is minimal for runs of up to 7,5 meters(7,5 meters to and from the pump = 15 meters total), unless the ground is wet or the water table is high. A very rough estimate of heat loss per 15 meters is 0.3 kW-hour,(1000BTU) for every 5°C difference in temperature between the pool water and the ground surrounding the pipe, which translates to about 3% to 5% increase in run time.

Several days will be needed to bring the temperature of the swimming pool water to its desired water temperature, depending the initial water temperature, ambient and pool volume.

A good pool cover and insulation of the tubing to and from the swimming pool and heat pump can reduce the warming up time considerably.

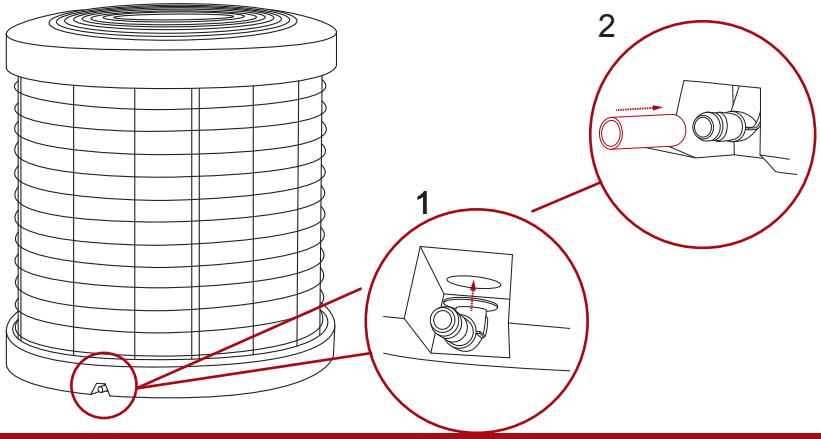
5.2 Condensation

As the heat pump cools down the air about 10°C, water may condense on the fins of the evaporator. If the relative humidity is very high, this could be as much as several liters an hour. The water will run down the fins into the base pan and drain out through the hole at the bottom of the heat pump.
An extra fitting, Condens Flux, is attached and can be mounted upon the bottom housing. This fitting is designed to accept 20mm clear vinyl tubing which can be pushed on by hand and run to a suitable drain. It is easy to mistake the condensation for a water leak inside the unit.

TIP:
A quick way to verify that the water is condensation is to shut off the unit and keep the pool pump running. If the water stops running out of the base pan, it is condensation. AN EVEN QUICKER WAY IS TO TEST THE DRAIN WATER FOR CHLORINE - if there is no chlorine present, then it's condensation.

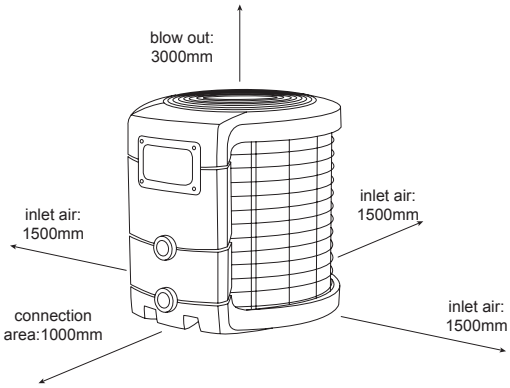
Step 1: Connect Condens flux upon bottom housing

Step 2: Connect 20mm clear vinyl tube



5.3 Unobstructed space

A free area around the heat pump has to be kept clear from **any object** to get fresh air across the evaporator. Do not obstruct the fan.



5.4 Time delay of compressor

The heat pump is equipped with a 3 minute built-in solid state restart delay once the compressor is turned off and a 1 minute buit-in solid state compressor running time. Both to protect control circuit components, to eliminate restart cycling and contactor chatter. This time delay will automatically restart the unit approximately 3 minutes after each control circuit interruption or after a compressor running period of 1 minute. Even a brief power interruption will activate the solid state 3 minute restart delay and prevent the unit from starting until the 3 minute countdown is completed. Alarms or errors during time delay have no influence. Power interruptions during the delay period will cause a restart of time delay.

6. Operation and Use

6.1 Before operation

The heat pump is set in °C. Change °C in °F using the follwing steps:
- Press the ON/OFF button to start the heat pump.
- Press the SET button to enter the parameter mode
- Select ⌴06 using the upwards and downwards button.
- Press the ON/OFF button to select ⌴06.
- Select 00 for °C or select 01 for Farenheit using the upwards and downwards button. Any change will be saved automatically.
- Press the SET button to exit the parameter mode.

Your heat pump is now set in °C or °F.

Display lock: The display shows LOC when there's no interaction for 5min. Press any button for 3 seconds to unlock the display.

6.2 General display interface

Set:
Highlights when the heat pump is unlocked. Meaning the heat pump desired temperature or parameters can be changed.

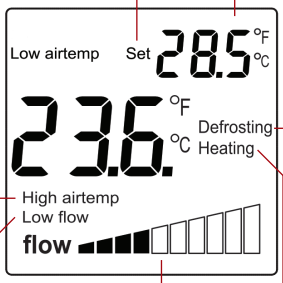
Low air temperature:
The heat pump stops working and will restart automatically when the ambient temerature is above -10°C.

Set temperature:
Shows the desired temperature of the swimming pool. Your heat pump will stop heating when desired temperature is reached.

UP:
Press to increase desired temperature. Any changes will be saved automatically.

High air temperature:
The ambient temperature is above 40°C. The heat pump keeps on working but without fan. As soon as the temperature drops below 40°C the fan restarts.

The ambient temperature is above 50°C. The heat pump will not use the compressor and fan to protect control components. As soon as the temperature drops below 50°C the compressor restarts.





Down:
Press to reduce desired temperature. Any changes will we be saved automatically.

Set:
Press to change the heat pump settings. Please find more inforamtion about the settings in section 6.3.

Flow bar:
Indicates the amount of flow going through the heat pump.

ON/OFF:
Press the ON/OFF button to start the heat pump. The current water temperature will appear and the heat pump will start automacitally. The heat pump won't start when the desired water temperature is reached. Meanwhile the current water temperature is shown on the display. The heat pump will start automatically when the water temperature drops 0,1°C below set point.

Press the ON/OFF button to stop the heat pump. OFF will appear on the display.

Low flow:
The heat pumps stops working. The amount of flow going through the heat pump is too low. The heat pump wil restart automatically when the flow is restored.

Heating:
Highlights when the heat pump is heating.

Defrosting:
Highlights when a special ice-melting program is active in the heat pump. Heating mode will continue when the amount of ice upon the evaporator is reduced.

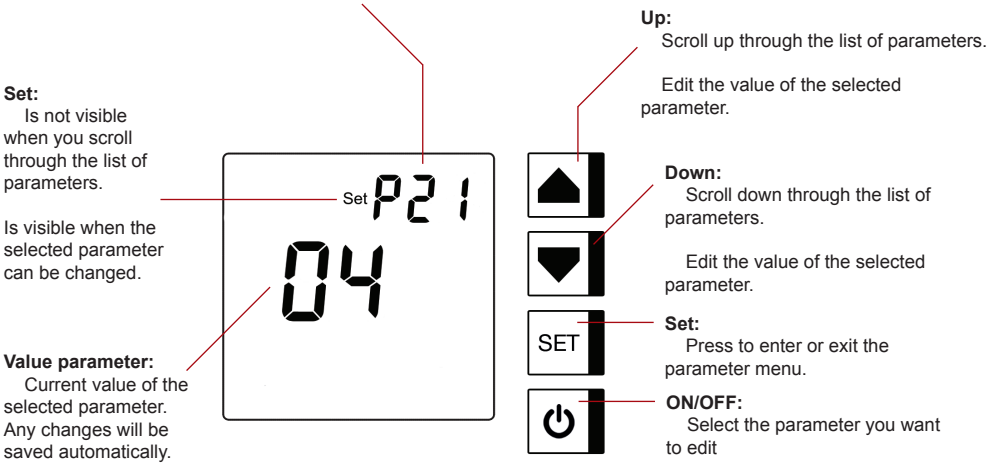
Display lock: The display shows LOC when there's no interaction for 5min. Press any button for 3 seconds to unlock the display.

6.3 Setting/parameter display interface

An installed heat pump can work more efficient according to the local pool system, environment, distance from pool and other pool equipment. A qualified person will set these parameters in order to get as much as possible performance and reliability.

Parameter name:
Name of parameter. The following can be found:

c00 to c02	Constant settings/parameter
u03 to u11	User editable settings/parameter
S12 to S21	Sensor settings/parameter
i22 to i34	Installer editable settings/parameter
P35 to P53	Factory editable settings/parameter



Set:
Is not visible when you scroll through the list of parameters.

Is visible when the selected parameter can be changed.

Value parameter:
Current value of the selected parameter. Any changes will be saved automatically.

Up:
Scroll up through the list of parameters.

Edit the value of the selected parameter.

Down:
Scroll down through the list of parameters.

Edit the value of the selected parameter.

Set:
Press to enter or exit the parameter menu.

ON/OFF:
Select the parameter you want to edit

User editable parameter may be changed by the end user.
Installer editable parameters and factory settings may only be changed in a service center or by similar qualified persons in order to avoid a hazard.

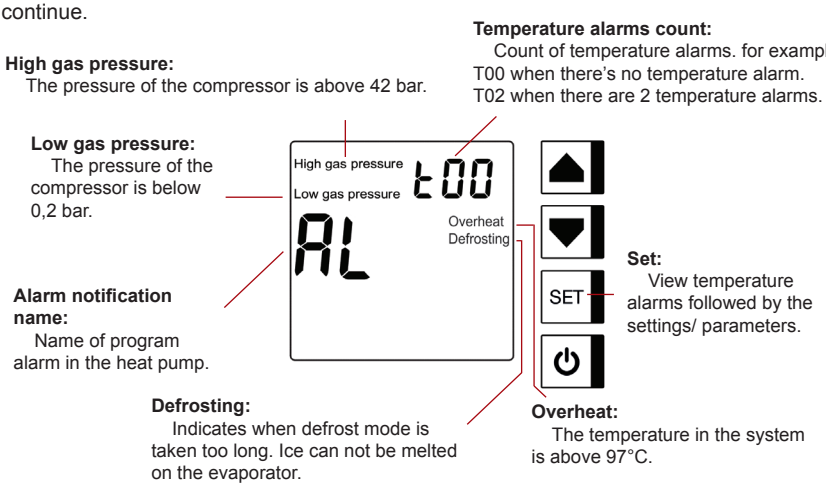
Please find a complete list and more information about each parameter in section 6.6.

Display lock: The display shows LOC when there's no interaction for 5min. Press any button for 3 seconds to unlock the display.

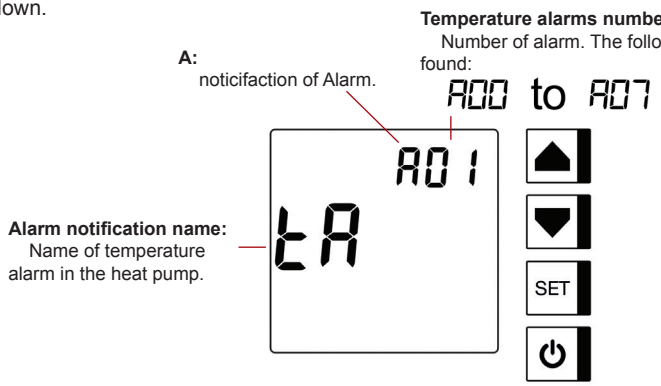
6.4 Alarm display interface

An intelligent alarm program is built into the heat pump. When an alarm occurs the heat pump will try to solve the issue by looking at several parameters, restarting components and bypassing electronics. 2 type of alarms can be found:

1) PROGRAM ALARMS can be found in the general display interface and settings/ parameter interface. A program alarm is at least 3 minutes active and at maximum 24 hours active. A normal working of the heat pump is accepted when the unit works 2 hours normal within this 24 hours countdown. When a solution is found earlier the countdown stops direcly and heating mode will continue.



2) TEMPERATURE ALARMS can be found only in the settings/ parameter interface. An error is given when 3 temperature alarms are active. A temperature alarm is not depending upon a countdown.



Please find a complete list and more information about each alarm in section 6.7.

Display lock: The display shows Loc when there's no interaction for 5min. Press any button for 3 seconds to unlock the display.

6.5 Error display interface

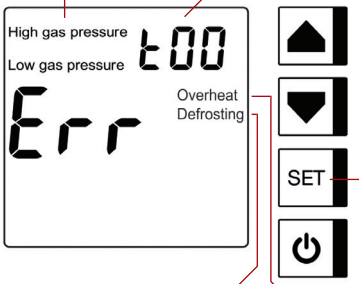
An error occurs when a program alarm can not be solved within the 24 hours alarm countdown or when 3 temperature alarms are active. Please contact your service centre or similarly qualified persons when an error is still active after deconnecting from electricity and restarting the heat pump. 2 types of errors can be found:

1) PROGRAM ERRORS can be found in the general display interface.

High gas pressure:
The pressure in the system remains 42 bar or higher in the past 24 hours.

Temperature error count:
Count of temperature errors. for example: T00 when there's no temperature error.
T03 when there are 3 temperature errors.

Low gas pressure:
The pressure in the system remains 0,2 bar or lower in the past 24 hours.



Error notification name:
Name of program error in the heat pump.

Set:
View temperature errors.

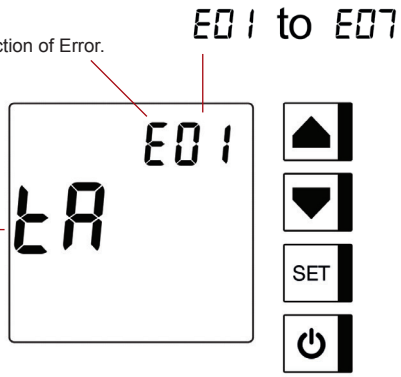
Defrosting:
Indicates when defrost mode can not melt the ice formed upon the evaporator. Always in combination with ambient temperature error.

Overheat:
The temperature in the system is remained 97°C or higher in the past 24 hours.

2) TEMPERATURE ERRORS can be found only in settings/ parameter interface.

Temperature alarms number:
Number of alarm. The following can be found:

E:
Noticifaction of Error.



Error notification name:
Name of temperature error in the heat pump.

Please find a complete list and more information about each error in section 6.8.

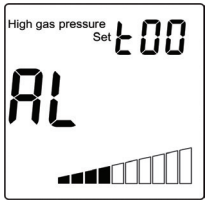
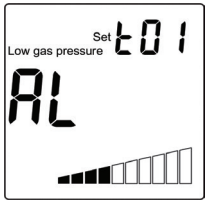
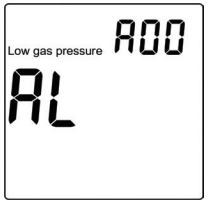
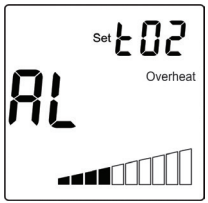
Display lock: The display shows LOC when there's no interaction for 5min. Press any button for 3 seconds to unlock the display.

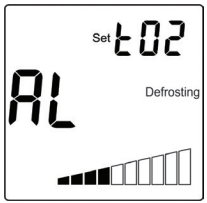
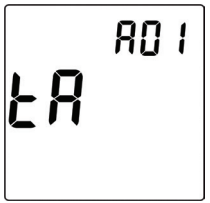
Parameter	Name	Dura V or Dura Vi	Editable?	Minimum value	Maximum Value	Units	Constant, User editable, Installer editable, Factory settings	Description	PWD
C0	SW_VERSINO_DIS	V & Vi	No				Constant	Software version display	
C1	SW_VERSION_CNTRL	V & Vi	No				Constant	Software version controller	
C2	MEM_STAT	V & Vi	No	0	1		Constant	Memory status: O=OK, 1=NOT OK	
U3	ON_OFF	V & Vi	Yes	0	1		User editable	Heat pump status: 0= OFF, 1= ON	
U4	SET_TEMP	V & Vi	Yes	8 46	40 104	°C F	User editable	Desired water temperature of the swimming pool water	
U5	SILENT_MODE	Vi	Yes	0	1		User editable	Inverter compressor frequency reduced to 60% of maximum allowed frequency: 0= OFF, 1=ON	
U6	FAHRENHEIT	V & Vi	Yes	0	1		User editable	Set heat pump in desired reading value: 0= °C, 1= Fahrenheit	
U7	NO_FROST_MODE	Vi	Yes	0	1		User editable	Inverter compressor frequency reduced to low speed. Defrost mode is hereby delayed as long as possible: 0= OFF, 1= ON	
U8	FAN_MODE	V & Vi	Yes	0	2		User editable	Fan speed mode: 0= Always full speed, 1= Always low speed, 2= Speed based on ambient temperature(High fan speed if ambient temperature is below 15°C. Low fan speed if ambient is above 17°C. Between 15°C and 17°C low fan speed or high fan speed depending upon a decending or rising ambient temperature.	
U9	PSWD_1	V & Vi	Yes	0	999		User editable	Password number 1	
U10	PSWD_2	V & Vi	Yes	0	999		User editable	Password number 2	
U11	PSWD_3	V & Vi	Yes	0	999		User editable	Password number 3	
S12	TAMB	V & Vi	No	-34 -29	125 257F	°C F	Constant	Current value of the ambient temparature sensor	
S13	TEVAP	V & Vi	No	-34 -29	125 257	°C F	Constant	Current value of the evaporator temperature sensor	
S14	TCOND	V & Vi	No	-34 -29	125 257	°C F	Constant	Current value of the water outlet temperature sensor (condensor OUT temperature)	

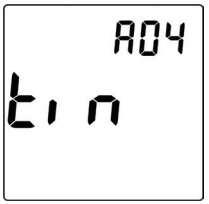
S15	TWIN	V & Vi	No	-34 -29	125 257	°C F	Constant	Current value of the water inlet temperature sensor (condensor IN temperature)	
S16	TEXHAUST	V & Vi	No	-34 -29	125 257	°C F	Constant	Current value of the compressor exhaust temperature (compressor discharged temperature)	
S17	TEMP6	V & Vi	No	-34 -29	125 257	°C F	Constant	Current value of the liquid line temperature	
S18	TEMP7	V & Vi	No	-34 -29	125 257	°C F	Constant	Current value of the suction line temperature	
S19	TOV	V & Vi	No	-999	999		Constant	Current value of the overheat calculated before every electronic expansion valvue change. (TEMP7-TEVAP)	
S20	EEV_POS	V & Vi	No	0	511	step	Constant	Current position of the electronic expansion valve	
S21	EEV_CUR_ MODE	V & Vi	No	0	7		Constant	Current electronic expansion valve mode.	
I22	EEV_MODE	V & Vi	Yes	0	4		Installer editable	Electronic expansion valve mode: 0=manual EEV mode, 1= Automatic EEV mode(the heat pump will calculate and set the EEV automatically in mode 1 till 7 starting with program 4)	333
I23	EEV_ MANUAL_POS	V & Vi	Yes	0	511	step	Installer editable	Set the electronic expansion valve value manually when manual mode is active	333
I24	SUPER_HEAT	V & Vi	Yes	-12 10	12 54	°C F	Installer editable	set the desired super heat temperature	
I25	DEFR_DELAY	V & Vi	Yes	5	255	min	Installer editable	Set the minimal time delay between 2 defrost cycles	333
I26	DEFR_STR_ TEMP_DIF	V & Vi	Yes	3 37	20 68	°C F	Installer editable	Set temperature differance between the ambient temperature(TAMB) and evaporator temperature(TEVAP) to start defrost mode.	333
I27	DEFR_MAX_ TIME	V & Vi	Yes	30	255	min	Installer editable	Maximum duration of a defrost cycle	333
I28	DEFR_TEVAP_ EXIT	V & Vi	Yes	1 34	10 50	°C F	Installer editable	Temperature of evaporator(TEVAP) in order to start last defrost block.	333
I29	DEFR_TEVAP_ EXIT_HOLD_ TIME	V & Vi	Yes	1	15	min	Installer editable	Countdown in which the temperature of the evaporator is equal or higher than DEFR_ TEVAP_EXIT in order to end defrost cycle	333

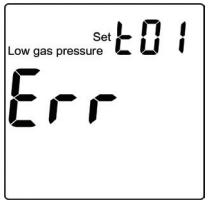
I30	DEFR_TEVAP_ICE	V & Vi	Yes	-5 23	0 32	°C F	Installer editable	Evaporator temperature to start DEFR_TEVAP_ICE_TIME when the ambient temperature(TAMB) is above 0°C(32F)	333
I31	DEFR_TEVAP_ICE_TIME	V & Vi	Yes	5 41	30 86	min	Installer editable	Countdown in which the temperature of the evaporator is equal or lower than DEFR_TEVAP_ICE in order to start defrost mode	333
r32	DEFR_TFAN_OFF	V & Vi	Yes	0,5 33	5 41	°C F	Installer editable	Ambient temperature(TAMB) at whitch the fan need to stop when defrost mode is active	333
I33	EEV_DELAY_P_CALC	V & Vi	Yes	0,5	10	min	Installer editable	Time between electronic expansion position calculation when in heating mode	333
I34	RESET_TO_FACTORY_SETTINGS	V & Vi	Yes	0	1		Installer editable	Reset all settings to factory and restart controller	333
P35	DEFR_EEV_POS	V & Vi	Yes	0	511	step	Factory settings	Posistion of electronic expansion valve when in defrost mode	***
P36	Pump_Type	V & Vi	Yes	0	7		Factory settings	Define pump type: 0= a generic pump, 1= DURA-V10 2= DURA-V15 3= DURA-V20 4= DURA-V11i 5= DURA-V15i 6= DURA-V20i 7= DURA-V24i	***
P37	REFRIGERANT	V & Vi	Yes	0	1		Factory settings	define type of refrigerant: 0= R32, 1=R410A	***
P38	TOV_AVER-AGE_TIME	V & Vi	Yes	0,1	0,5	min	Factory settings	Average time to calculate the super heat	***
P39	T_EXHAUST_HIGH	V & Vi	Yes	35 95	99,9 212	°C F	Factory settings	Set the maximum value of the exhaust compressor temperature(TEXHAUST)	***
P40	KP	V & Vi	Yes	0	5		Factory settings		***
P41	KD	V & Vi	Yes	0	5		Factory settings		***
P42	KI	V & Vi	Yes	0	5		Factory settings		***
P43	EEV_POS_MAX	V & Vi	Yes	1	500	step	Factory settings	Set the max position of the electronic expansion valve(LP protexion)	***
P44	EEV_POS_MIN	V & Vi	Yes	1	500	step	Factory settings	Set the minimum position of the electronic expansion valve(HP protection)	***

P45	NBR_STEPS_ COLDWATER	V & Vi	Yes	2	100	step	Factory settings	Set the amount of % of electronic expansion valve calculation based upon water temperature	***
P46	ERROR_RE-PAIT_TIME	V & Vi	Yes	6	48	hours	Factory settings	Set the time when an alarms becoms an error	***
P47	ERROR_RE-COVER_RUN_ TIME	V & Vi	Yes	1	8	hours	Factory settings	Set the time in which the heat pump need to run alarm free to descard previous alarm	***
P48	FIXED_EEV_ POS	V & Vi	Yes	100	500	step	Factory settings	Electronic expansion valve position used in EEV mode 7. Mode is active when certain temperature sensors fail	***
P49	T_EXHAUST_ MAX	V & Vi	Yes	40 104	99,9 212	°C F	Factory settings	EEv wordt geregld als enkel andere bere-kening bierboven faalt.	***
P50	T_EXHAUST_ MIN	V & Vi	Yes	20	70	°C F	Factory settings	EEV wordt geregeld om een minimale waarde te hebben in exhaust	***
P51	T_EXHAUST_ SET	V & Vi	Yes	0	99,9	°C	Factory settings	veiligheidsfactor op de exhaust.	***
P52	COMP_MODE	Vi	Yes	0	8		Factory settings	One of the following mode can be use	***
P53	COMP_SPEED	Vi	Yes	20	100	hrz	Factory settings	Set the speed of the inverter compressor	***

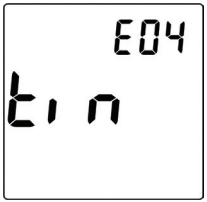
Alarm name	Shown on general display interface	Shown in settings/ parameter interface	Description	Effect / action
Program alarms: Low water temperature alarm		Not possible	- The swimming pool water temperature is below 8°C. - Set is visible on general display interface meaning the heat pump is unlocked. - 28,5°C is visible on general display interface meaning the disered pool water temperature is visible.	- The heat pump wil automaticaly restart when the swimming pool water temperature rises above 9°C.
Program alarm: High gas pressure alarm			- The pressure in the system is above 42 bar. - Set is visible in general display interface meaning the heat pump is unlocked. - T00 is visible in general display interface meaning in this case there are no temperature alarms - Flow bar is visible in general display interface. - A00, the alarm number in settings/ parameter interface.	- The electronic expansion valve opens - The compressor stops - The pressure in the system will distribute evenly and the heat pump wil automaticaly restart in 3 minutes. - A not stable system for 2 hours within a countdown of 24 hours will trigger an error.
Program alarm: Low gas pressure alarm			- The pressure in the system is below 0,2 bar. - Set is visible in general display interface meaning the heat pump is unlocked. - T01 is visible in general display interface meaning in this case there is 1 temperature alarm. -Flow bar is visible in general display interface - A00, the alarm number in settings/ parameter interface.	- The electronic expansion valve opens. - The compressor stops. - The pressure in the system will distribute evenly and the heat pump wil automaticaly restart in 3 minutes. - A not stable system for 2 hours within a countdown of 24 hours will trigger an error.
Program alarm: Overheating alarm			- The gas in the system is above 97°C. - Set is visible in general display interface meaning the heat pump is unlocked. - T02 is visible in general display interface meaning in this case there are 2 temperature alarms -Flow bar is visible in general display interface. - A00, the alarm number in settings/ parameter interface.	- The electronic expansion valve opens 100 steps, fan stops and a 5 minute countdown is started. - The heat pump will automatically restart when the discharged temperature drops 10°C within the 5 min countdown. - The electronic expansion valve opens completely when the discharge temperature didn't drop 10°C within the 5 min countdown. The heat pump will automaticaly restart after an extra 3 minutes compressor time delay. - A not stable system for 2 hours within a countdown of 24 hours will trigger an error.

Program alarm: Defrost alarm			- The defrost built-in program in not able to melt the ice formed on the evaporator. - Set is visible in general display interface meaning the heat pump is unlocked. - T02 is visible in general display interface meaning in this case there are 2 temperature alarms -Flow bar is visible in general display interface. - A00, the alarm number in settings/ parameter interface.	- The electronic expansion valve opens. - The compressor stops. - The heat pump wil automaticaly restart in 3 minutes when the ambient temperature rises above +3°C(37°F).
Temperature alarm: Ambient temperature alarm	Not possible		- The value of the ambient sensor is out of range. - The value of the ambient temperature sensor can not be read due to damaged or bad connection. - A01, the alarm number in settings/ parameter interface.	- The value of the ambient temperature sensor is replaced by a fixed value in order to keep the heat pump running. - According the fixed value the heat pump keeps running but defrost mode will run more frequenlty. - Multiple temperature alarms will trigger an error.
Temperature alarm: Evaporator temperature alarm	Not possible		- The value of the evaporator temperature sensor is out of range. - The value of the evaporator temperature sensor can not be read due to damaged or bad connection - A02, the alarm number in settings/ parameter interface.	- The value of the evaporator temperature sensor is replaced by the value of the suction temperature sensor in order to keep the heat pump running. - The electronic expansion valve continues with a fixed value. - According the fixed EEV and changed value of the ambient temperature sensor the heat pump keeps running but power output could be less. - Multiple temperature alarms will trigger an error.
Temperature alarm: Condensor water outlet temperature alarm	Not possible		- The value of the condensor water outlet temperature sensor is out of range. - The value of the condensor water outlet temperature sensor can not be read due to damaged or bad connection - A03, the alarm number in settings/ parameter interface.	- The value of the condensor water outlet temperature sensor is replaced by the condensor water inlet temperature sensor in order to keep the heat pump running. - Multiple temperature alarms will trigger an error.

Temperature alarm: Condensor water inlet temperature alarm	Not possible		- The value of the condensor water inlet temperature sensor is out of range. - The value of the condensor water intlet temperature sensor can not be read due to damaged or bad connection - A04, the alarm number in settings/ parameter interface.	- The value of the condensor water intlet temperature sensor is replaced by the condensor water outlet temperature sensor in order to keep the heat pump running. - The heat pump will have reached the disired temperature earlier because we use the condensor water outlet temperature to measure the inlet water At that point the actual swimming pool water temperature is +- 2°C colder than the desired temperature. - Multiple temperature alarms will trigger an error.
Temperature alarm: Discharged temperature alarm	Not possible		- The value of the discharged temperature sensor is out of range. - The value of the discharged temperature sensor can not be read due to damaged or bad connection - A05, the alarm number in settings/ parameter interface.	- The value of the discharged temperature sensor is replaced by the condensor water outlet temperature sensor in order to keep the heat pump running. - The electronic expansion valve continues with a fixed value. - According the fixed EEV and changed value of the ambient temperature sensor the heat pump keeps running but power output could be less. - Multiple temperature alarms will trigger an error.
Temperature alarm: Liquid line temperature alarm	Not possible		- The value of the liquid line temperature sensor is out of range. - The value of the liquid line temperature sensor can not be read due to damaged or bad connection - A06, the alarm number in settings/ parameter interface.	- The value of the liquid line temperature sensor is replaced by the condensor water inlet temperature sensor increased with +5°C. - Multiple temperature alarms will trigger an error.
Temparature alarm: Suction temperature alarm	Not possible		- The value of the suction line temperature sensor is out of range. - The value of the suction line temperature sensor can not be read due to damaged or bad connection - A07, the alarm number in settings/ parameter interface.	- The value of the suction line temperature sensor is replaced by the evaporator temperature sensor. - The electronic expansion valve continues with a fixed value. - According the fixed EEV and changed value of the ambient temperature sensor the heat pump keeps running but power output could be less. - Multiple temperature alarms will trigger an error.

Error name	Shown on general display interface	Shown by pushing the upwards or downwards arrow in general display interface	Description	Effect / action
Program error: High gas pressure error		Not possible	- The pressure in the system remained 42 bar or higher in a timelapse shorter than 2 hours within the 24 hours alarm countdown. - Set is visible in general display interface meaning the heat pump is unlocked. - T00 is visible in general display interface meaning in this case there is no temperature error.	- You need to disconnect from electricity and restart your heat pump. If the alarm remains on the display please contact your service centre or similarly qualified persons in order to avoid a hazard.
Program error: Low gas pressure error		Not possible	- The pressure in the system remained 0,2 bar or lower in a timelapse shorter than 2 hours within the 24 hours alarm countdown. - Set is visible in general display interface meaning the heat pump is unlocked. - T01 is visible in general display interface meaning in this case there is 1 temperature error.	- You need to disconnect from electricity and restart your heat pump. If the alarm remains on the display please contact your service centre or similarly qualified persons in order to avoid a hazard.
Program error: Overheating error		Not possible	- The gas in the systems raised above 97°C in a timelapse shorter than 2 hours within the 24 hours alarm countdown. - Set is visible in general display interface meaning the heat pump is unlocked. - T02 is visible in general display interface meaning in this case there are 2 temperature errors.	- You need to disconnect from electricity and restart your heat pump. If the alarm remains on the display please contact your service centre or similarly qualified persons in order to avoid a hazard.
Program error: Defrost error		Not possible	- The defrost built-in program in not able to melt the ice formed on the evaporator a timelapse shorter than 2 hours within the 24 hours alarm countdown. Error is always combined with an ambient temperature error. - Set is visible in general display interface meaning the heat pump is unlocked. - T02 is visible in general display interface meaning in this case there are 2 temperature errors.	- You need to disconnect from electricity and restart your heat pump. If the alarm remains on the display please contact your service centre or similarly qualified persons in order to avoid a hazard.

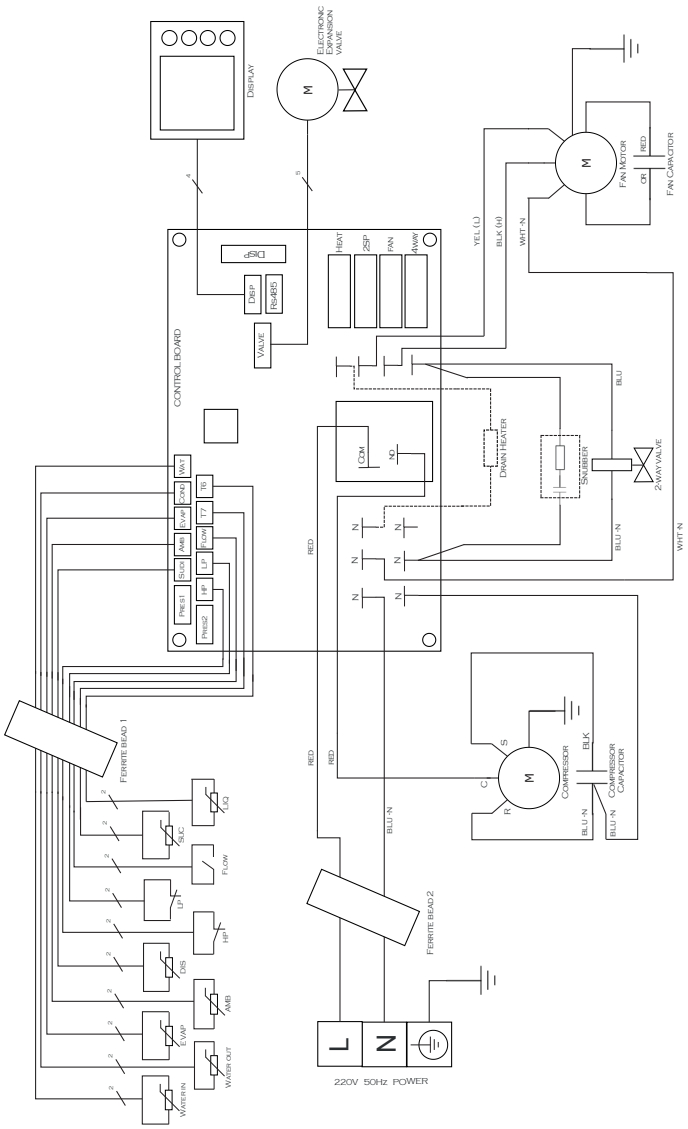
Temperature error: Ambient temperature error	Not possible		- If defrost alarm is active and ambient temperature alarm is triggered then defrost error and ambient temperature error become active. - If low gas pressure alarm is active and ambient temperature alarm is triggered then low gas pressure error and ambient temperature error become active. - If high gas pressure alarm is active and ambient temperature alarm is triggered then high gas pressure error and ambient temperature error become active. -If overheat alarm is active and ambient temperature alarm is triggered then overheat error and ambient temperature error become active. -If ambient temperature alarm and 2 other alarms are triggered then ambient temperature error becomes active. - E01, the error number in settings/ parameter interface.	- You need to disconnect from electricity and restart your heat pump. If the alarm remains on the display please contact your service centre or similarly qualified persons in order to avoid a hazard.
Temperature error: Evaporator temperature error	Not possible		- If suction temperature alarm is active and evaporator temperature alarm is triggered then suction temperature error and evaporator temperature error become active. - If low gas pressure alarm is active and evaporator temperature alarm is triggered then low gas pressure error and evaporator temperature error become active. - If high gas pressure alarm is active and evaporator temperature alarm is triggered then high gas pressure error and evaporator temperature errorbecome active. - If overheat alarm is active and evaporator temperature alarm is triggered then overheat error and evaporator temperature error become active. - If evaporator temperature alarm and 2 other alarms are triggered then ambient temperature error becomes active. - E02, the error number in settings/ parameter interface.	- You need to disconnect from electricity and restart your heat pump. If the alarm remains on the display please contact your service centre or similarly qualified persons in order to avoid a hazard.
Temperature error: Condensor water outlet temperature error	Not possible		- If condensor water inlet temperature alarm is active and condensor water oultet temperature alarm is triggered then condensor water inlet temperature error and condensor water outlet temperature error become active. - If low gas pressure alarm is active and condensor water outlet temperature alarm is triggered then low gas pressure error and condensor water outlet temperature error become active. - If high gas pressure alarm is active and condensor water outlet temperature alarm is triggered then high gas pressure error and condensor water outlet temperature error become active. - If overheat alarm is active and condensor water outlet temperature alarm is triggered then overheat error and condensor water outlet temperature error become active. - If condensor water outlet temperature alarm and 2 other alarms are triggered then condensor water outlet temperature error becomes active. - E03, the error number in settings/ parameter interface.	- You need to disconnect from electricity and restart your heat pump. If the alarm remains on the display please contact your service centre or similarly qualified persons in order to avoid a hazard.

Temperature error: Condensor water inlet temperature error	Not possible		- If condensor water outlet temperature alarm is active and condensor water intet temperature alarm is triggered then condensor water inlet temperature error and condensor water out-let temperature error become active. - If low gas pressure alarm is active and condensor water inlet temperature alarm is triggered then low gas pressure error and condensor water inlet temperature error become active. - If high gas pressure alarm is active and condensor water inlet temperature alarm is triggered then high gas pressure error and condensor water inlet temperature error become active. - If overheat alarm is active and condensor water inlet temperature alarm is triggered then overheat error and condensor water inlet temperature error become active. - If condensor water inlet temperature alarm and 2 other alarms are triggered then condensor water inlet temperature error becomes active. - E04, the error number in settings/ parameter interface.	- You need to disconnect from electricity and restart your heat pump. If the alarm remains on the display please contact your service centre or similarly qualified persons in order to avoid a hazard.
Temperature error: Discharged temperature error	Not possible		- If low gas pressure alarm is active and discharged temperature alarm is triggered then low gas pressure error and discharged temperature error become active. - If high gas pressure alarm is active and discharged temperature alarm is triggered then high gas pressure error and discharged temperature error become active. - If overheat alarm is active and discharged temperature alarm is triggered then overheat error and discharged temperature error become active. - If discharged temperature alarm and 2 other alarms are triggered then discharged temperature error becomes active. - E05, the error number in settings/ parameter interface.	- You need to disconnect from electricity and restart your heat pump. If the alarm remains on the display please contact your service centre or similarly qualified persons in order to avoid a hazard.
Temperature error: Liquid line temperature error	Not possible		- If low gas pressure alarm is active and liquid line temperature alarm is triggered then low gas pressure error and liquid line temperature error become active. - If high gas pressure alarm is active and liquid line temperature alarm is triggered then high gas pressure error and liquid line temperature error become active. - If overheat alarm is active and liquid line temperature alarm is triggered then overheat error and liquid line temperature error become active. - If liquid line temperature alarm and 2 other alarms are triggered then liquid line temperature error becomes active. - E06, the error number in settings/ parameter interface.	- You need to disconnect from electricity and restart your heat pump. If the alarm remains on the display please contact your service centre or similarly qualified persons in order to avoid a hazard.

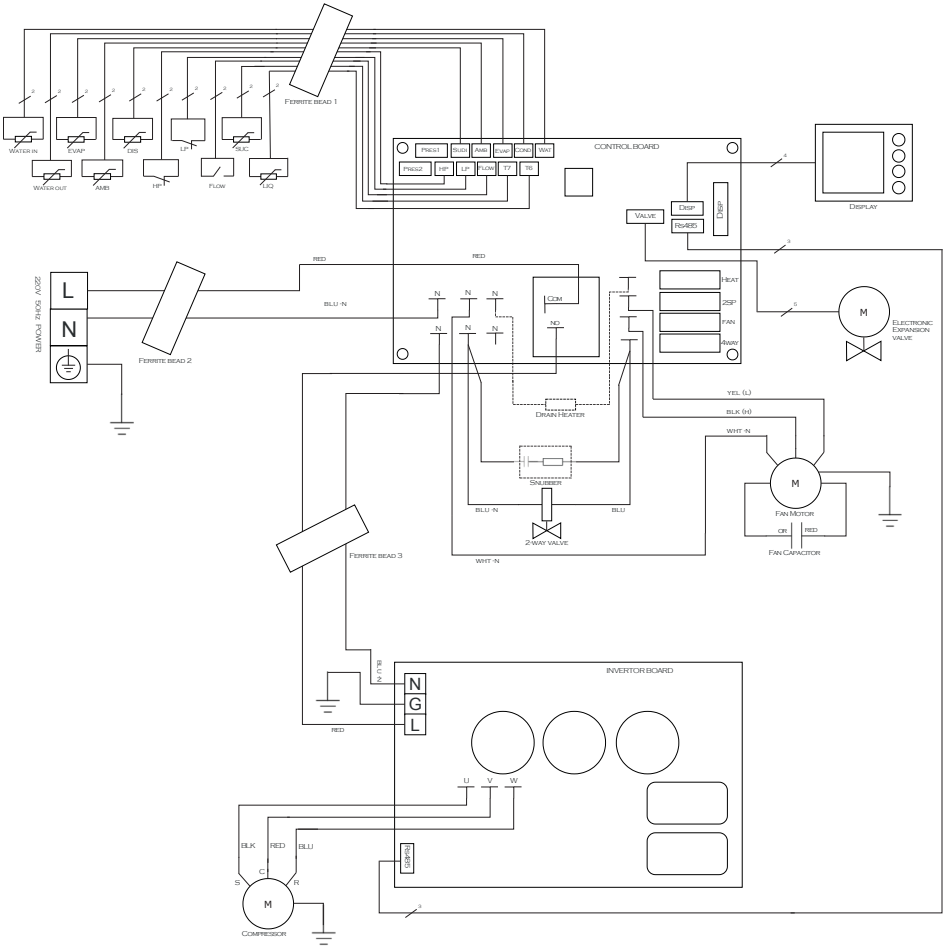
Temperature error: Suction temperature error	Not possible		- If evaporator temperature alarm is active and suction temperature alarm is triggered then evaporator temperature error and suction temperature error become active. - If low gas pressure alarm is active and suction temperature alarm is triggered then low gas pressure error and suction temperature error become active. - If high gas pressure alarm is active and suction temperature alarm is triggered then high gas pressure error and suction temperature error become active. - If overheat alarm is active and suction temperature alarm is triggered then overheat error and suction temperature error become active. - If suction temperature alarm and 2 other alarms are triggered then suction temperature error becomes active. - E07, the error number in settings/ parameter interface.	- You need to disconnect from electricity and restart your heat pump. If the alarm remains on the display please contact your service centre or similarly qualified persons in order to avoid a hazard.

7. Wiring diagrams

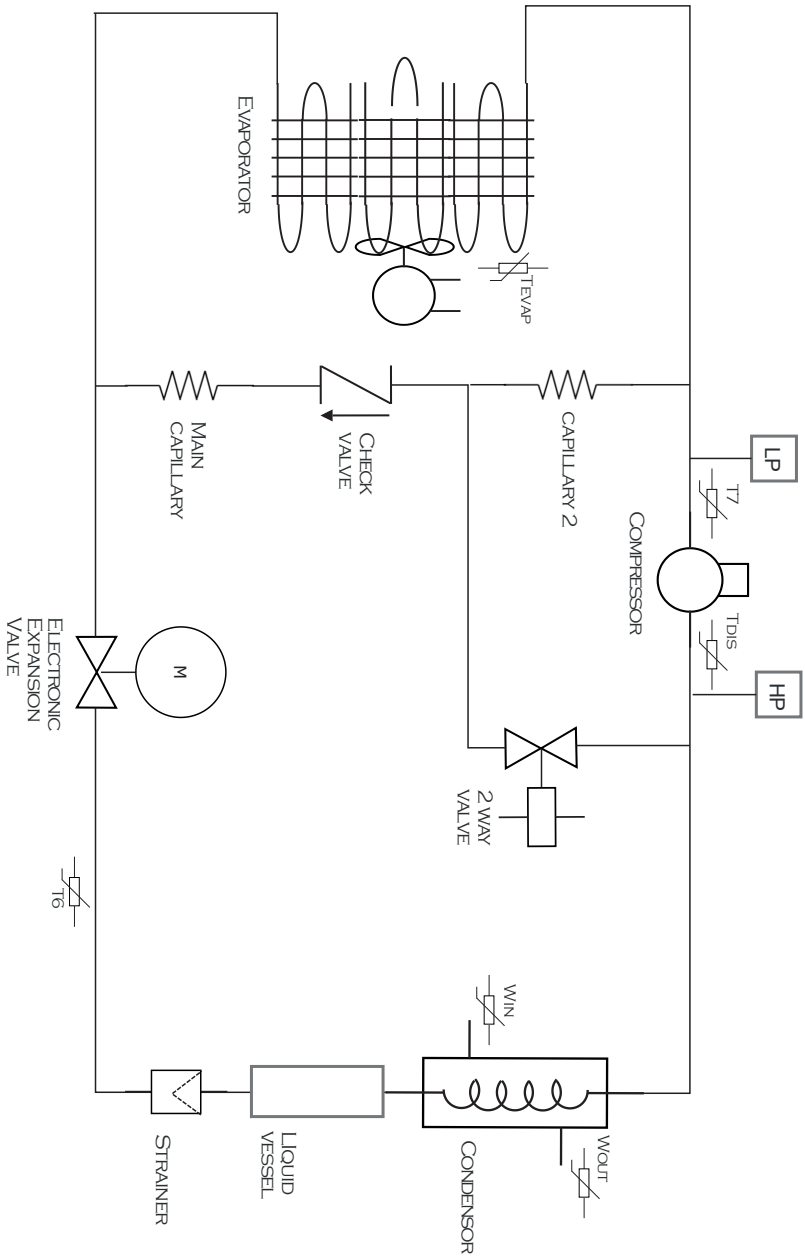
7.1 Wire control interface diagram Dura V



7.2 Wire control interface diagram Dura Vi



7.3 Piping diagram and definition Dura V and Dura Vi



8. Maintenance and Inspection

- Check the water inlet and drainage often. The water and air inflow into the system should be sufficient so that its performance and reliability does not get compromised. You should clean the pool filter regularly to avoid damage to the unit caused by clogging of the filter.
- The area around the unit should be spacious and well ventilated as shown in section 5.3. Clean the sides of the heat pump regularly to maintain good heat exchange and to save energy.
- Check if all processes in the unit are operational.
- Check the power supply and cable connections regularly. Should the unit begin to function abnormally or should you notice a smell from an electrical component, arrange for timely repair or replacement.
- You should also purge the water if the unit will not work for an extended period of time. You should check all parts of the unit thoroughly and completely fill the system with water before turning it on again afterwards.

If your heat pump has been stored for a long time, perform the following steps when re-starting the system:

1. Inspect the system for any debris or damage to the case.
2. Clean the evaporator fins with a soft cloth if necessary. Make sure the evaporator fins are clean. Blocking the air intake will cause insufficient operation and will result in lower production of heat.
3. Check the fan for blockages.
4. Connect the water inlet and outlet.
5. Turn on the pool water circulation pump to start the water flow to the heat pump.
6. Restore electrical power to the heat pump and press the recet button on the RCD.

9. Winterizing

Make sure to purge all the water from the heat pump and other systems in order to prevent frost damage. You should install the winter cover when the unit will not work for an extended period of time.

10. Environment



This heat pump should not be put into the domestic waste at the end of its useful life, but must be disposed at a central point for recycling of electrical and electronic domestic applications. By doing this you will help to preserve the environment.

11. Service

If you need service or information or if you have a problem, please contact your local dealer. If needed they will contact the manufacturer to solve your problem.

They are gladly willing to assist you!

You can find more information at www.duratech.be

12. Warranty

LIMITED WARRANTY

We warrant all parts to be free from manufacturing defects in materials and workmanship for a period of THREE years from the date of retail purchase.

This warranty is limited to the first retail purchaser, is not transferable, and does not apply to products that have been moved from their original installation sites. The liability of the manufacturer shall not exceed the repair or replacement of defective parts and does not include any costs for labour to remove and reinstall the defective part, transportation to or from the factory, and any other materials required to make the repair. This warranty does not cover failures or malfunctions resulting from the following:

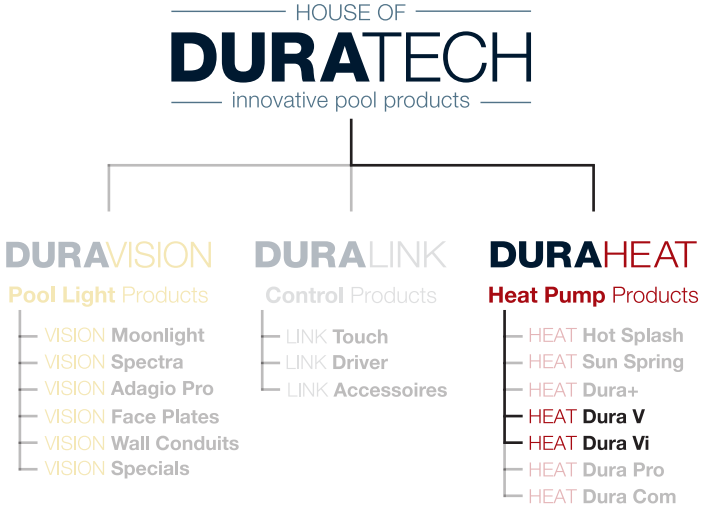
1. Failure to properly install, operate or maintain the product in accordance with our published "Installation & Instruction Manual" provided with the product.
2. The workmanship of any installer of the product.
3. Not maintaining a proper chemical balance in your pool [pH level between 7,0 and 7,8. Total Alkalinity (TA) between 80 to 150 ppm. Free Chlorine between 0,5 – 1,2mg/l. Total Dissolved Solids (TDS) less than 1200 ppm. Salt maximum 8g/l]
4. Abuse, alteration, accident, fire, flood, lightning, rodents, insects, negligence or acts of Gods.
5. Scaling, freezing or other conditions causing inadequate water circulation.
6. Operating the product at water flow rates outside the published minimum and maximum specifications.
7. Use of non-factory authorized parts or accessories in conjunction with the product.
8. Chemical contamination of combustion air or improper use of sanitizing chemicals, such as introducing sanitizing chemicals upstream of the heater and cleaner hose or through the skimmer.
9. Overheating, incorrect wire runs, improper electrical supply, collateral damage caused by failure of O-rings, DE grids or cartridge elements, or damage caused by running the pump with insufficient quantities of water.

LIMITATION OF LIABILITY

This is the only warranty given by Manufacturer. No one is authorized to make any other warranties on our behalf.
THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY. WE EXPRESSLY DISCLAIM AND EXCLUDE ANY LIABILITY FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT OR PUNITIVE DAMAGES FOR BREACH OF ANY EXPRESSED OR IMPLIED WARRANTY.
This warranty gives you specific legal rights, which may vary, by country.

WARRANTY CLAIMS

For prompt warranty consideration, contact your dealer and provide the following information: proof of purchase, model number, serial number and date of installation. The installer will contact the factory for instructions regarding the claim and to determine the location of the nearest service center.
All returned parts must have a Return Material Authorization number to be evaluated under the terms of this warranty.



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DURAHEAT

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