HOUSE OF

DURATECH

innovative pool products

Manual

DURA+10i
DURA+13i
DURA+18i
DURA+20i
DURA+25i
DURA+28Ti

HEAT Dura+i

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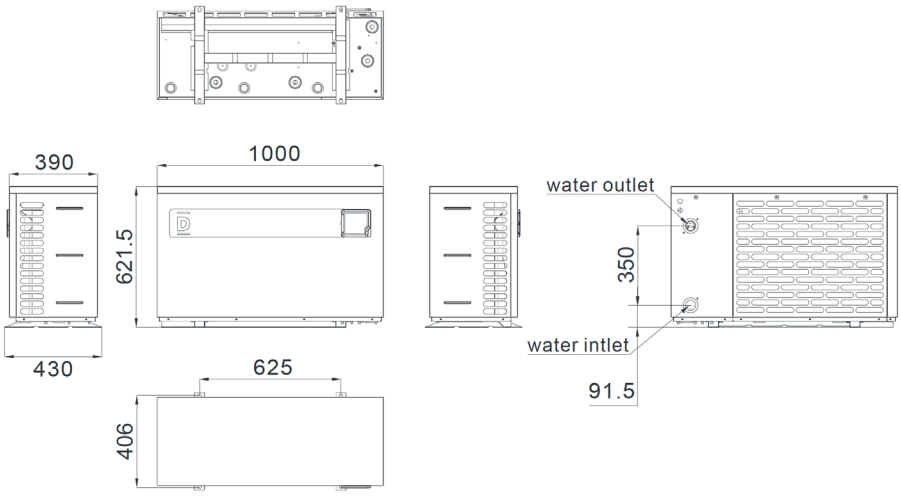
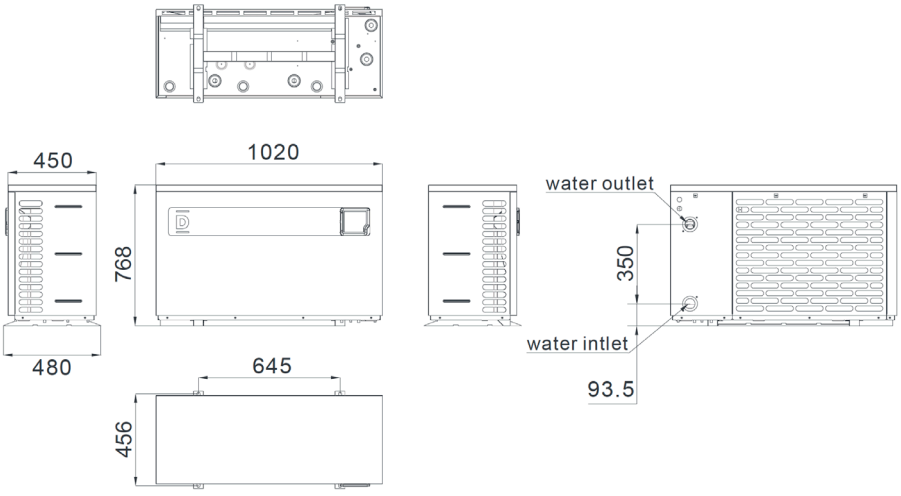
DURAHEAT

Dimensions

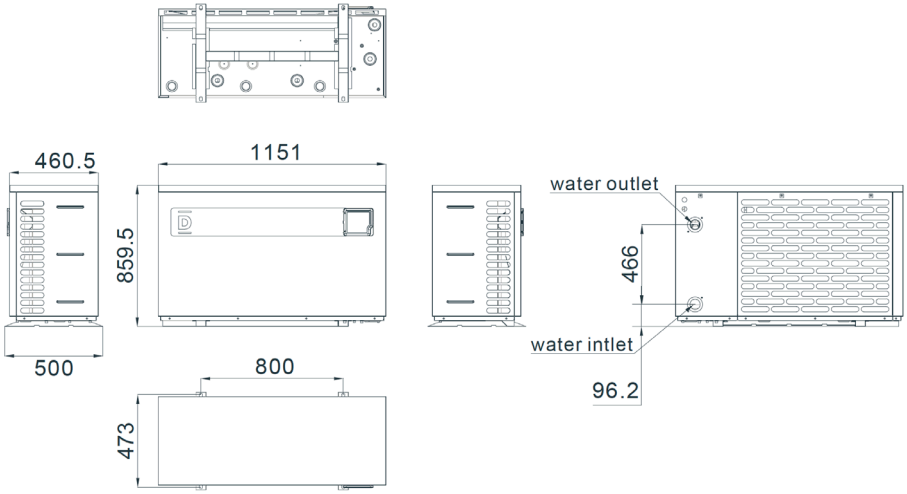
DURA+10i / DURA+13i



DURA+18i



DURA+20i / DURA+25i / DURA+28Ti



1. Specifications

1.1 Performance Data Dura+i

UNIT		DURA+10i	DURA+13i
Advised Pool Volume*	m^3	30 - 55	40 - 70
Operating Air Temperature	°C	-10 ~ 43	
Available Operation Mode		Heating & Cooling	
Air 27°C / Water 26°C / Humidity 80%			
Heating Capacity	kW	1,9 - 9,5	2,4 - 13
	Btu	6483 - 32415	8189 - 44358
Consumed Power	kW	0,118 - 1,39	0,145 - 1,96
COP		16,1 - 6,8	16,5 - 6,6
Air 15°C / Water 26°C / Humidity 70%			
Heating Capacity	kW	1,4 - 7,0	1,6 - 9,1
	Btu	4777 - 23885	5459 - 31050
Consumed Power	kW	0,205 - 1,48	0,238 - 1,89
COP		6,8 - 4,7	6,7 - 4,8
Air 10°C / Water 26°C / Humidity 64%			
Heating Capacity	kW	1,2 - 5,5	1,6 - 7,2
	Btu	4095 - 18767	5459 - 24567
Consumed Power	kW	0,27 - 1,72	0,33 - 2,18
COP		4,5 - 3,2	4,8 - 3,3
Power Supply		230V / 50Hz / 1 Phase	
Casing Type		Aluminium-alloy	
Electronic Controller		Duralink™ ready with colour LCD	
Nominal Running Current	A	6,86	7,52
Max. Current	A	9,46	9,98
Condensor		Titanium Heat Exchanger	
Compressor Quantity		1	
Compressor Type		Rotary - Mitsubishi DC Inverter	
Refrigerant		R32 (HFK-32)	
Refrigerant weight	kg	0,45	0,50
GWP		675	
CO_2 equivalent	ton	0,304	0,338
Fan Quantity		1	
Fan Motor Type		DC Brushless	
Fan Power Input	W	40	40
Fan Rotary Speed	RPM	500 - 800	500 - 800
Air Flow	m^3/h	2000 - 2300	2000 - 2300
Fan Direction		Horizontal both sides	
Noise at 10m	dB(A)	16,5 - 27	19 - 28,5
Water Connection	mm	50	
Nominal Water Flow	m^3/h	3,2	4,2
Water Pressure Drop (max):	kPa	5	6
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	

Additional information:

This product contains a fluorinated greenhouse gas. The refrigerant in the product is hermetically sealed. * Advised pool volume for an entirely insulated pool, with cover, free from wind and exposed to the sun.

UNIT		DURA+18i	DURA+20i
Advised Pool Volume*	m^3	50 - 85	60 - 100
Operating Air Temperature	°C	-10 ~ 43	
Available Operation Mode		Heating & Cooling	
Air 27°C / Water 26°C / Humidity 80%			
Heating Capacity	kW	2,5 - 17,8	3,5 - 20
	Btu	8530 - 60736	11942 - 68243
Consumed Power	kW	0,151 - 2,78	0,214 - 3,07
COP		16,5 - 6,4	16,3 - 6,5
Air 15°C / Water 26°C / Humidity 70%			
Heating Capacity	kW	2,3 - 12,8	2,5 - 14,7
	Btu	7848 - 43675	8530 - 50158
Consumed Power	kW	0,353 -2,66	0,357 - 3,19
COP		6,5 - 4,8	7 - 4,6
Air 10°C / Water 26°C / Humidity 64%			
Heating Capacity	kW	2,0 - 9,8	2,6 - 11,3
	Btu	6824 - 33439	8872 - 38557
Consumed Power	kW	0,40 - 2,80	0,58 - 3,32
COP		4,9 - 3,5	4,5 - 3,4
Power Supply		230V / 50Hz / 1 Phase	
Casing Type		Aluminium-alloy	
Electronic Controller		Duralink™ ready with colour LCD	
Nominal Running Current	A	12,94	13,2
Max. Current	A	13,13	13,5
Condensor		Titanium Heat Exchanger	
Compressor Quantity		1	
Compressor Type		Rotary - Mitsubishi DC Inverter	
Refrigerant		R32 (HFK-32)	
Refrigerant weight	kg	0,65	0,80
GWP		675	
CO_2 equivalent		0,439	0,54
Fan Quantity		1	
Fan Motor Type		DC Brushless	
Fan Power Input	W	75	75
Fan Rotary Speed	RPM	500 - 750	500 - 750
Air Flow	m^3/h	2700 - 3200	4300 - 5000
Fan Direction		Horizontal both sides	
Noise at 10m	dB(A)	20 - 30	21 - 31
Water Connection	mm	50	
Nominal Water Flow	m^3/h	5,3	6,6
Water Pressure Drop (max):	kPa	3	4
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	

Additional information:
This product contains a fluorinated greenhouse gas.
The refrigerant in the product is hermetically sealed.

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

UNIT		DURA+25i	DURA+28Ti
Advised Pool Volume*	m^3	70 - 120	90 - 160
Operating Air Temperature	°C	-10 ~ 43	
Available Operation Mode		Heating & Cooling	
Air 27°C / Water 26°C / Humidity 80%			
Heating Capacity	kW	6,0 - 24	7,8 - 27,8
	Btu	20473 - 81892	26615 - 93834
Consumed Power	kW	0,375 - 3,99	0,488 - 4,71
COP		16,0 - 6,0	16,0 - 5,9
Air 15°C / Water 26°C / Humidity 70%			
Heating Capacity	kW	4,3 - 18,2	5,0 - 21,2
	Btu	14672 - 62101	17061 - 72338
Consumed Power	kW	0,661 - 4,04	0,769 - 4,81
COP		6,5 - 4,5	6,5 - 4,4
Air 10°C / Water 26°C / Humidity 64%			
Heating Capacity	kW	3,1 - 13,7	3,7 - 15,9
	Btu	10578 - 46746	12625 - 54253
Consumed Power	kW	0,69 - 3,91	0,82 - 4,68
COP		4,5 - 3,5	4,5 - 3,4
Power Supply		230V / 50Hz / 1 Phase	380V / 3N / 3Phase
Casing Type		Aluminium-alloy	
Electronic Controller		Duralink™ ready with colour LCD	
Nominal Running Current	A	13,34	8,26
Max. Current	A	15,3	10,84
Condensor		Titanium Heat Exchanger	
Compressor Quantity		1	
Compressor Type		Rotary - Panasonic DC Inverter	
Refrigerant		R32 (HFK-32)	
Refrigerant weight	kg	1,2	1,3
GWP		675	
CO_2 equivalent	ton	0,81	0,878
Fan Quantity		1	
Fan Motor Type		DC Brushless	
Fan Power Input	W	150	150
Fan Rotary Speed	RPM	500 - 600	400 - 750
Air Flow	m^3/h	4000 - 4800	4200 - 5000
Fan Direction		Horizontal	
Noise at 10m	dB(A)	23 - 33	25 - 34
Water Connection	mm	50	
Nominal Water Flow	m^3/h	7,8	9,1
Water Pressure Drop (max):	kPa	7	8
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	

Additional information:
This product contains a fluorinated greenhouse gas.
The refrigerant in the product is hermetically sealed.

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

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 manufacturer 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

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 3.5

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. Use supply wires suitable for 75°C.

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. The heat pump 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.

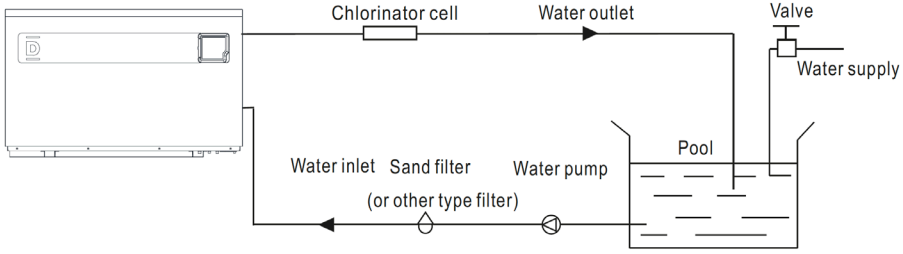
20.Make sure that there is a circuit breaker for the unit, lack of a circuit breaker can lead to electrical shock or fire.

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. The condens water is not suitable for a potable water connection.

3. Installation and Connection

3.1 Installation Illustration



Attention:
Please follow these steps when using for the first time
1.Open valve and charge water.
2.Make sure that the pump and the water-in pipe have been filled with water.
3.Close the valve and start the unit.
ATTN: It is necessary that the water-in pipe is higher than the pool surface.

Put the heat pump on a flat, solid base. Tilting the heat pump for max 3° is allowed.
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.

It is normal for condens water to come out of the heat pump. This is not a leak or fault with the unit. If the humidity is very high, the condens water could be a number of liters a day.

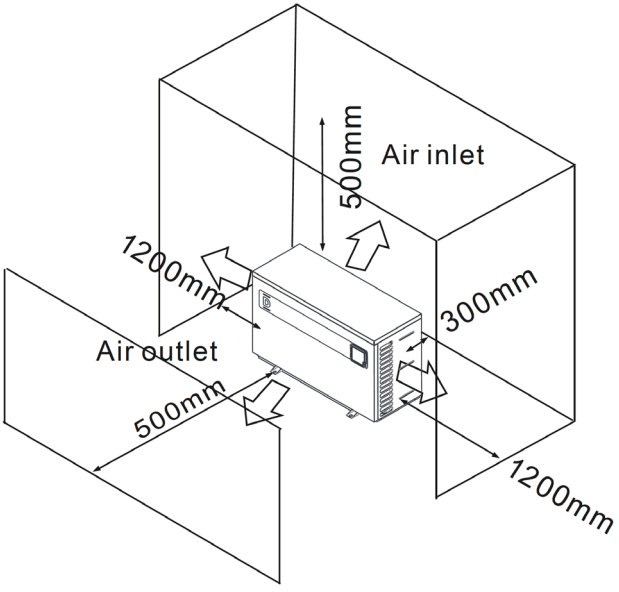
Always keep the heat pump in upright position. If the unit has been tilted, then wait 24h before starting the heat pump.

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

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.

3.2 Swimming Pool Heat Pumps Location

The unit may be installed virtually anywhere outdoors. For indoor pools please consult the supplier. DO NOT place the unit in an enclosed area with a limited air volume, where the units discharge air will be re-circulated.
DO NOT place the unit next to shrubs which can block air inlet. These locations prevent the unit of having a continuous source of fresh air which reduces its efficiency and may prevent adequate heat delivery.

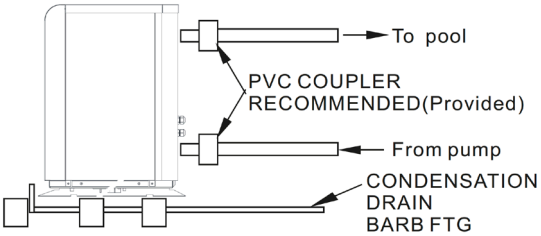


3.3 How Close To Your Pool?

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. For longer distances it is highly recommended to insulate the piping to avoid excessive heat loss.

3.4 Swimming Pool Heat Pumps Plumbing

It is recommended to install a by-pass for easy maintenance.All feeding of water treatment to the pool water has to be done downstream of the heat pump. Give serious consideration to adding a quick coupler fitting at the unit inlet and outlet to allow easy draining of unit for winterizing and to provide easier access should servicing be required.

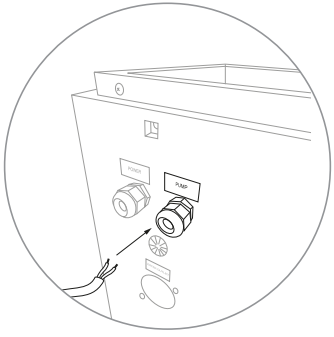


Condensation: Since the Heat pump cools down the air about 4 -5°C, water may condense on the fins of the horseshoe shaped evaporator. If the relative humidity is very high, this could be as much as several litres an hour. The water will run down the fins into the basepan and drain out through the barbed plastic condensation drain fitting on the side of the basepan. 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.

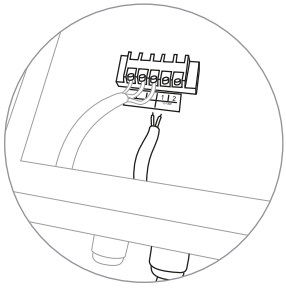
⚠ NB: A quick way to verify that the water is condensation is to shut off the unit and keep the pool pump running. If the water stops running out of the basepan, it is condensation. AN EVEN QUICKER WAY IS to TEST THE DRAIN WATER FOR CHLORINE - if the is no chlorine present, then it's condensation.

3.5 Filter Pump Connection

⚠ NOTE: Power off the heat pump and disconnect from mains (230 VAC), prior to the installation.



Before the installation, remove the top panel as shown in 3.9. Push the filter pump connection cables through the cable glant. Afterwards connect the cable to the connector clamps one and two. The filter pump will be regulated automaticly after this installation.



3.6 Swimming Pool Heat Pumps Electrical Wiring

NOTE: Although the heat pump is electrically isolated from the rest of the pool equipment, 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.

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.

The unit has a separate molded-in junction box with a standard electrical conduit nipple already in place. Just remove the screws and the front panel, feed your supply lines in through the conduit nipple and wire-nut the electric supply wires to the three connections already in the junction box. To complete electrical hookup, connect Heat Pump by electrical conduit, UF cable or other suitable means as specified (as permitted by local electrical authorities) to a dedicated AC power supply branch circuit equipped with the proper circuit breaker, disconnect or time delay fuse protection.

Disconnect - A disconnect means (circuit breaker , fused or un-fused switch) should be located within sight of and readily accessible from the unit, This is common practice on commercial and residential air conditioners and heat pumps. It prevents remotely-energizing unattended equipment and permits turning off power at the unit while the unit is being serviced.

3.7 Initial Start-up of the Unit

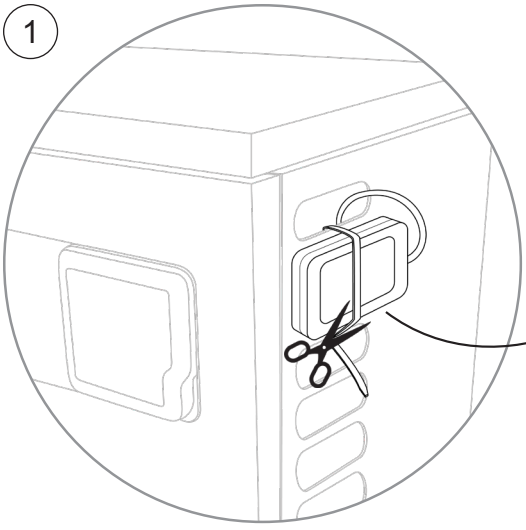
NOTE: In order for the unit to heat the pool or spa, the filter pump must be running to circulate water through the heat exchanger.

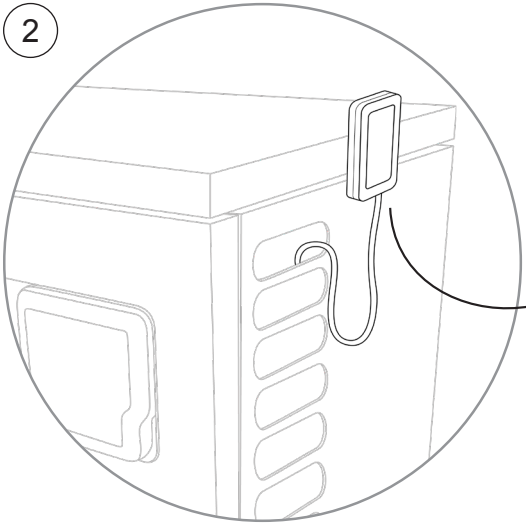
Start up Procedure - After installation is completed, you should follow these steps:
1. Turn on your filter pump. Check for water leaks and verify flow to and from the pool.
2. Turn on the electrical power supply to the unit, then press the key ON/OFF on the wire controller, It should start in several seconds.
3. After running a few minutes make sure the air leaving the side of the unit is cooler.
4. With the unit operating turn the filter pump off. The unit should also turn off automatically,
5. Allow the unit and pool pump to run 24 hours per day until desired pool water temperature is reached. When the water-in temperature reaches this setting, the unit will slow down for a period of time, if the temperature is maintained for 45 minutes the unit will turn off. The unit will now automatically restart (as long as your pool pump is running)when the pool temperature drops more than 0.2 below set temperature.

Time Delay- The unit is equipped with a 3 minute built-in solid state restart delay included to protect control circuit components and to eliminate restart cycling and contactor chatter. This time delay will automatically restart the unit approximately 3 minutes after each control circuit interruption. 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.

3.8 Commissioning the LinkDongle™

This chapter explains which steps are necessary to make the LinkDongle™ ready for use.





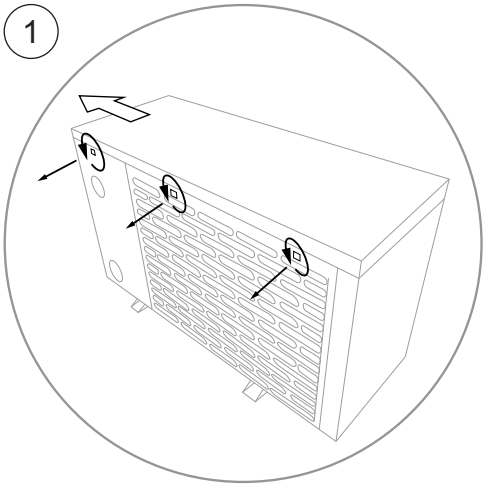
⚠ NOTE: Correct positioning of the LinkDongle™ is necessary for the LinkTouch to function properly.

3.9 Installing the Wifi module

This chapter explains which steps are necessary to instal the Wifi module.

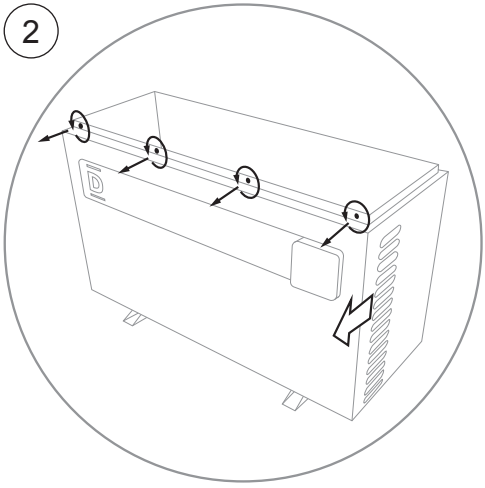
⚠ NOTE: Power off the heat pump and disconnect from mains (230 VAC), prior to the installation.

1

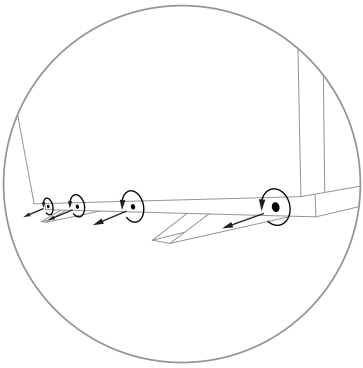


Remove the three screws on the back of the heat pump. Then remove the top lid by a sliding and pulling motion.

2



Remove the screws at the top and bottom of the front of the heat pump. Then remove the front panel.



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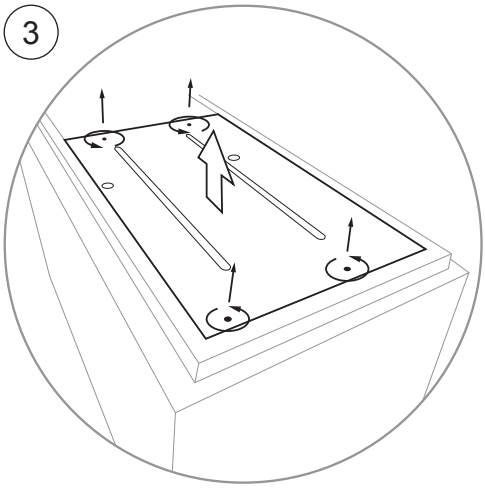
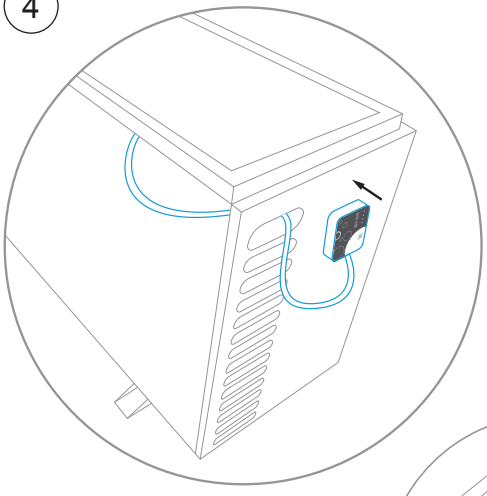
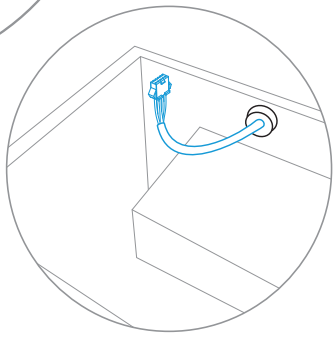


Remove the screws and open the electronics lid.

4

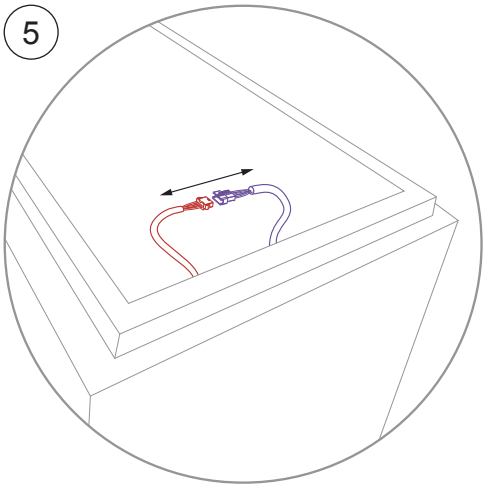


Insert the wifi module through the grill on the right side of the pump. Mount the wifi module on the outside.

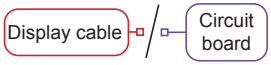


Push the connector through the plug.

5



Disconnect the display cable from the circuit board.



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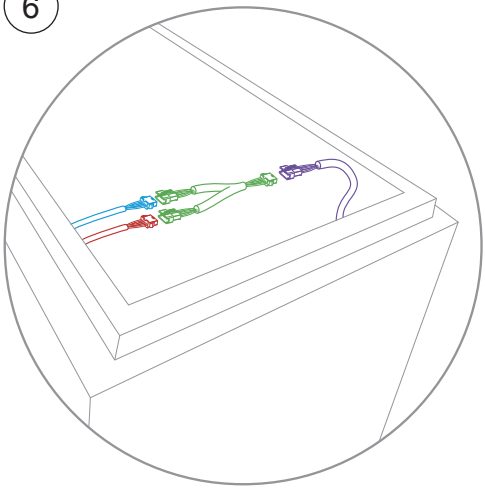
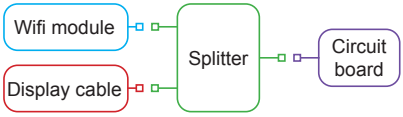


Connect the wifi module with one half of the splitter, reconnect the display cable with the other half.

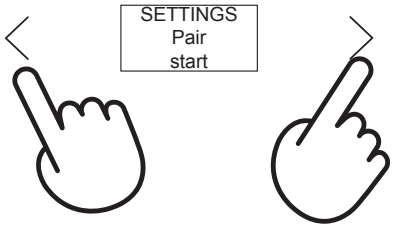


⚠ NOTE: For connecting the WiFi module to your device see Wifi module manual.

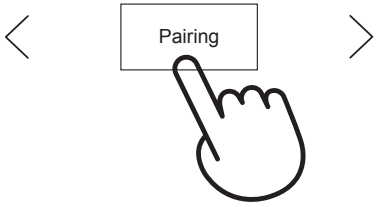
⚠ NOTE: Reconnect the heat pump to mains (230 VAC), after the installation.

3.10 Connecting the LinkTouch™

To operate the pump with the LinkTouch™, perform the following steps:



Select “Pair Start”-mode from the settings menu, on your LinkTouch™.



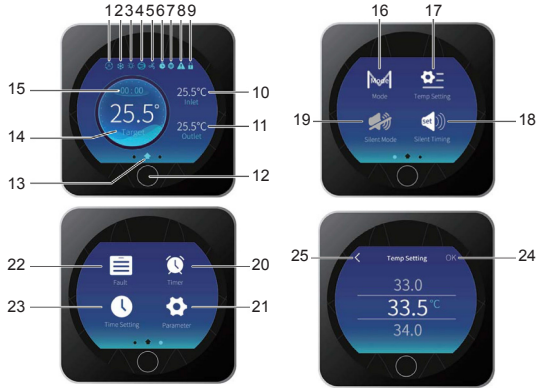
Touch the screen once to put the LinkTouch™ in pairing mode.

Make sure the LinkTouch™ is in close proximity (<2m) of the device which you would like to pair with wirelessly. Select “Pair Start” on the LinkTouch™. Power on the device.
The device will be in pairing mode for about 2 minutes after switched on.
The LinkTouch™ will now be pairing with the device.

4.Use and Operation Instruction

4.1 General presentation

The heat pump is equipped with a digital control panel with a touch screen, electronically connected and pre-set at the factory in heating mode.



Number	Function
1	Auto mode
2	Cooling mode
3	Heating mode
4	Compressor's ON indicator
5	Fan
6	Timer
7	Defrost mode
8	Alarm
9	Lock screen
10	Water input temperature
11	Water output temperature
12	On/Off/Back

13	Main screen
14	Setpoint temperature
15	System time
16	Operating mode selection
17	Adjust setpoint
18	Setting silent mode timer
19	Activate silent mode
20	Set On/Off timers
21	Parameter menu
22	Acces list of faults
23	Set data and time
24	Confirm
25	Back (changes not confirmed)

OFF mode

When the heat pump is idle (in stand by mode), OFF is displayed as shown on the screen.
The black screen indicates that the heat pump is idle; settings can be adjusted in this mode.

ON mode

When the heat pump is running or priming (setpoint reached), the screen turns blue.

To switch from OFF to ON mode and vice versa, press the button.

4.2 Time setting

The date and time can be set either in ON or in OFF mode.

Swipe the main screen to the right

Press on the Time Setting icon

Swipe up or down to set the desired date, afterwards press OK

Swipe up or down to set the desired time, afterwards press OK

After you've pressed OK, press ● once to return to the main screen.

4.3 Setting the On/Off timers

Setting this function is usefull if you would like to run the heat pump for a shorter period than what is defined by the filtration clock. Therefore, you can program a deferred start and an anticipated stop or simply stop a certain timeframe from running (at night, for example).

It is possible to set one Start Timer and one Stop Timer.
The setting step is “hour to hour”.

Setting the Start timer

Swipe the main screen to the right

Press on the Timer icon

Press on the ON timer

Swipe up or down to set the desired time, afterwards activate the timer in the top right corner

Setting the Stop timer

Press on the OFF timer

Swipe up or down to set the desired time, afterwards activate the timer in the top right corner

After you have set the Start and Stop timer, you can activate or deactivate them by pressing the slider on the right next to the timers.

Blue highlighting = Activated
Grey = Deactivated

Press ⬤ twice to return to the main screen.

4.4 Adjust setpoint

The setpoint can be changed either in ON or in OFF mode with an accuracy of 0.5° C.

Swipe the main screen to the left

Press on the Temp Setting icon

Swipe up or down to set the desired temperature

Press OK

After you've pressed OK, press ● once to return to the main screen.

4.5 Mode selection

Swipe the main screen to the left

Press on the Mode icon

Swipe left or right to choose the desired mode

Press OK

After you've pressed OK, press ⬤ once to return to the main screen.

4.6 Locking and unlocking the touch screen

The screen can be locked or unlocked either in ON or in OFF mode.

Locking

Press 5 seconds on ● button

If the screen is successfully locked, you'll see a lock icon in the top right corner

Lock activated

Unlocking

Press 5 seconds on ● button

If the screen is successfully unlocked, the lock icon in the top right corner will be gone

Lock deactivated

4.7 Silent function settings

Silent mode enables the heat pump to be used in economy and very silent mode when the need for heating is low (maintaining the pool temperature or need for ultra-silent operation).

This function can be Activated/Deactivated manually or using a Timer.

Manual activation

Swipe the main screen to the left

Press the Silent Mode icon to activate the silent mode

Silent Mode is activated

The icon appears in the top right corner of the main screen

Press ● once to return to the main screen.

Manual deactivation

Swipe the main screen to the left

Press the Silent Mode icon to deactivate the silent mode

Silent Mode is deactivated

The icon appears in the top right corner of the main screen

Press ● once to return to the main screen.

Setting the Start silent mode timer

Swipe the main screen to the left

Press the Silent Timing icon

Press on the ON timer

Swipe up or down to set the desired time, afterwards press OK

Setting the Stop silent mode timer

Press on the ON timer

Swipe up or down to set the desired time, afterwards press OK

Activate the timer by pressing the slider in the middle

Press ⬤ once to return to the main screen.

⚠ NOTE: The setting step is “hour to hour”.
Once the Timer is activated, it is active for all seven days of the week.

4.8 Troubleshooting guide

If a fault occurs with the heat pump, the ⚠ icon appears in the top right corner of the screen.

Looking up the fault list

Swipe the screen to the left

Press the Fault icon

To delete the error list, press on the 🗑 icon.

Press ● twice to return to the main screen.

⚠ NOTE: Certain operations must be carried out by an authorized technician.

⚠ NOTE: When the problem is resolved, the error is automatically acknowledged I.D and the triangle disappears.

4.9 Parameter menu

Press on the parameter icon

Enter the password **22** and press OK

Entering the D - P - H parameters

Press on parameters

Group	Number	Parameter description	Value description
D - Defrost	D01	Enter defrost temperature value	Temperature in degrees celsius
	D02	Exit defrost temperature point	Temperature in degrees celsius
	D03	Defrost cycle	Time in minutes
P - Water pump	P01	Working mode of water pump	0=Normal / 1=Special / 2=Intermittent
	P02	Water pump running interval	Time in minutes
	P03	Water pump running duration	
	P04	Water pump advance compressor running time	
H - System and protection	H03	Fahrenheit to celsius conversion	0=Celcius / 1=Fahrenheit

Setting the to pump connection

Go to parameter P01, three settings will be available:

0 = Normal
- The TO PUMP is always ON

1 = Special
- The TO PUMP is only ON when heat pump needs flow for heating. Measuring the water temperature is constantly done internally in the heat pump. Water **temperature in the condenser** is used to determine if heating is required.

2 = Intermittent
- The TO PUMP is only ON when heat pump needs flow for heating. Measuring the water temperature is done by switching on the filter pump to measure the **actual water temperature**. Parameter P02 determines the interval of switching on the filter pump. (factory setting = 30 minutes) and parameter P03 determines the duration of the cycle (factory setting = 3 minutes)

Checking Unit info

Press on unit info

The following information can be found in the unit info section:

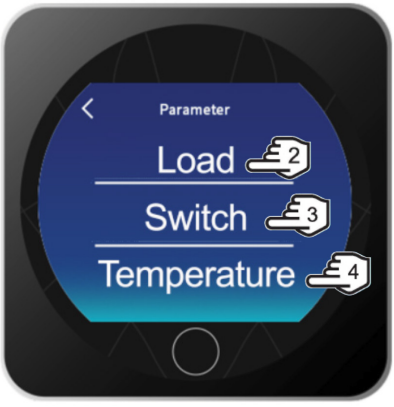
- PCB software code
- PCB software version
- Display software code
- Display software version
- DTU barcode

⚠ NOTE: Adjusting the values of the parameters has a direct effect on the operation of the pump.

Entering the State parameters

Press on unit state

Press on Load, Switch or Temperature



Section	Number	Parameter description
Load	O01	Compressor
	O02	Circulate pump
	O03	4-Way valve
	O04	High fan
	O05	Low fan
	O06	Expansion valve
	O07	Compressor output frequency
	O08	Compressor current
	O09	IPM temperature
Switch	S01	HP switch
	S02	LP switch
	S03	Flow switch
	S04	Remote switch
	S05	Mode switch
	S06	Master/slave switch
Temperature	t01	Suction temperature
	t02	Inlet water temperature
	t03	Outlet water temperature
	t04	Coil 1 temperature
	t05	Ambient temperature
	t06	Exhaust temperature
	t07	Compressor currrent detect
	t08	AC fan output
	t09	Flow rate input
	t10	Pressure input
	t11	Super heat
	t12	Target speed of fan motor
	t13	Over heat after commpen.
	t14	Inverter plate AC voltage
	t15	Antifreeze temperature
	t16	EC fan motor speed
	t17	Speed of fan motor 1
	t18	Speed of fan motor 2
	t19	Buses voltage
	t20	Limited frequency protect state
	t21	Freq. reduction protect state
	t22	Coil 2 temperature
	t23	Driver board running state 1
	t24	Driver board running state 2
	t25	Driver board running state 3
	t26	Driver board running state 4
	t27	Driver board running state 5

4.10 Fault Table

ELECTRONIC CONTROL FAULT TABLE:
Can be judged according to the remote controller failure code and troubleshooting

Protect/fault	Fault display	Reason	Elimination methods
Inlet Temp. Sensor Fault	P01	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Outlet Temp. Sensor Fault	P02	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Ambient Temp. Sensor Fault	P04	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Coil 1 Temp. Sensor Fault	P05	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Coil 2 Temp. Sensor Fault	P15	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Suction Temp. Sensor Fault	P07	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Discharge Temp. Sensor Fault	P081	The temp. Sensor is broken or short circuit	Check or change the temp. Sensor
Exhaust Air over Temp Prot.	P082	The compressor is overload	Check whether the system of the compressor is running normally
Antifreeze Temp. Sensor Fault	P09	Antifreeze temp sensor is broken or short circuited	Check and replace this temp sensor
Pressure sensor Fault	PP	The pressure Sensor is broken	Check or change the pressure Sensor or pressure
High Pressure Prot.	E01	The high-pressure switch is broken	Check the pressure switch and cold circuit
Low Pressure Prot.	E02	Low pressure1 protection	Check the pressure switch and cold circuit
Flow Switch Prot.	E03	No water/little water in water system	Check the pipe water flow and water pump
Waterway Anti-freezing Prot.	E05	Water temp.or ambient temp. is too low	
Inlet and outlet temp. too big	E06	Water flow is not enough and low differential pressure	Check the pipe water flow and whether water system is clogged or not
Anti-freezing Prot.	E07	Water flow is not enough	Check the pipe water flow and whether water system is clogged or not
Winter Primary Anti-freezing Prot.	E19	The ambient temp. Is low in winter	
Winter SecondaryAnti-freezing Prot.	E29	The ambient temp. Is low in winter	
Comp. Overcurrent Prot	E051	The compressor is overload	Check whether the system of the compressor is running normally
Communication Fault	E08	Communication failure between wire controllerand main board	Check the wire connection between remote wire controller and main board
Communication Fault (speed control module)	E081	Speed control module and main board communication fail	Check the communication connection
Low AT Protection	TP	Ambient temp is too low	
EC fan feedback Fault	F051	There is something wrong with fan motor and fan motor stops running	Check whether fan motor is broken or locked or not

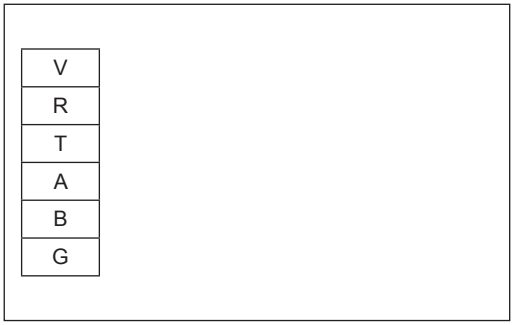
Fan Motor1 Fault	F031	1. Motor is in locked-rotor state 2.The wire connection between DC-fan motor module and fan motor is in bad contact	1.Change a new fan motor 2.Check the wire connection and make sure they are in good contact
Fan Motor2 Fault	F032	1. Motor is in locked-rotor state 2.The wire connection between DC-fan motor module and fan motor is in bad contact	1.Change a new fan motor 2.Check the wire connection and make sure they are in good contact

FREQUENCY CONVERSION BOARD FAULT TABLE:

Protection/fault	Fault display	Reason	Elimination methods
Drv1 MOP alarm	F01	MOP drive alarm	Recovery after 150 seconds
Inverter offline	F02	Frequency conversion board and main board communication failure	Check the communication connection
IPM protection	F03	IPM modular protection	Recovery after 150 seconds
Comp. Driver Failure	F04	Lack of phase,step or drive hardware damage	Check the measuring voltage check frequency conversion board hardware
DC Fan Fault	F05	Motor current feedback open circuit or shortcircuit	Check whether current return wires connected motor
IPM Overcurrent	F06	IPM Input current is large	Check and adjust the current measurement
Inv. DC Overvoltage	F07	DC bus voltage > DC bus overvoltage protection value	Check the input voltage measurement
Inv. DC Lessvoltage	F08	DC bus voltage < DC bus overvoltage protection value	Check the input voltage measurement
Inv. Input Lessvolt.	F09	The input voltage is low, causing the input current is high	Check the input voltage measurement
Inv. Input Overvolt.	F10	The input voltage is too high, more than outage protection current RMS	Check the input voltage measurement
Inv. Sampling Volt.	F11	The input voltage sampling fault	Check and adjust the current measurement
Comm. Err DSP-PFC	F12	DS Pand PFC connect fault	Check the communication connection
Input Over Cur.	F26	The equipment load is too large	
PFC fault	F27	The PFC circuit protection	Check the PFC switch tube shortcircuit or not
IPM Over heating	F15	The IPM module is overheat	Check and adjust the current measurement
Weak Magnetic Warn	F16	Compressor magnetic force is not enough	
Inv. Input Out Phase	F17	The input voltage lost phase	Check and measure the voltage adjustment
IPM Sampling Cur.	F18	PM sampling electricity is fault	Check and measure the current adjustment
Inv. Temp. Probe Fail	F19	Sensor is short circuit or open circuit	Inspect and replace the sensor
Inverter Overheating	F20	The transducer is overheat	Check and adjust the current measurement
Inv. Overheating Warn	F22	Transducer temperature is too high	Check and adjust the current measurement
Comp. OverCur. Warn	F23	Compressor electricity is large	The compressor overcu rrent protection
Input Over Cur. Warn	F24	Input current is too large	Check and adjust the current measurement
EEPROM Error Warn	F25	MCU error	Check whether the chip is damaged, replace the chip
V15V over/under voltage fault	F28	The V15V is overload or undervoltage	Check the V15V input voltage in range 13.5v~16.5v or not

4.11 Interface drawing

Wire control interface diagram and definition

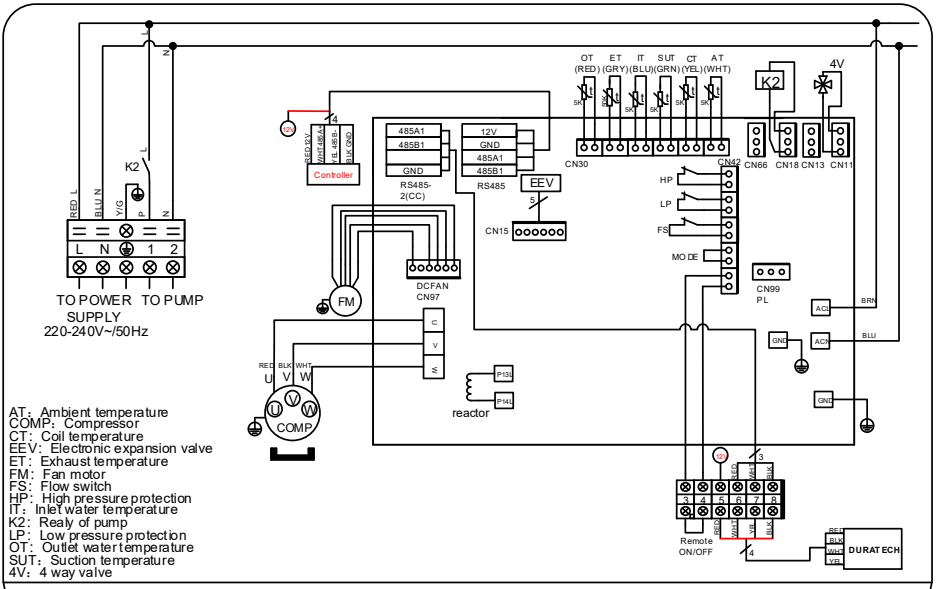


Sign	Meaning
V	12V (power +)
R	No use
T	No use
A	485A
B	485B
G	GND (power -)

Main board of the input and output interface instructions below

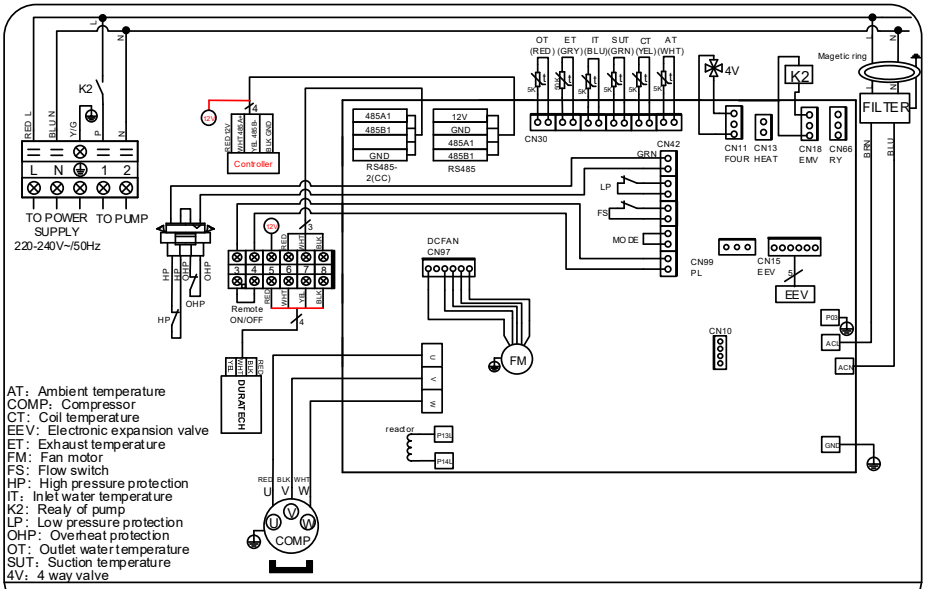
Number	Sign	Meaning
01	R01	Compressor (output 220-230VAC)
02	R02	Water pump (output 220-230VAC)
03	R03	4-way valve (output 220-230VAC)
04	R04	High speed of fan (output 220-230VAC)
05	R05	Low speed of fan (output 220-230VA)
06	L	Live wire (input 220-230VAC)
07	N	Neutral wire (input 220-230VAC)
08	AI/DI01	Emergency switch (input)
09	AI/DI02	Water flow switch (input)
10	AI/DI03	System low pressure (input)
11	AI/DI04	System high pressure (input)
12	AI/DI05	System suction temperature (input)
13	AI/DI06	Water input temperature (input)
14	AI/DI07	Water output temperature (input)
15	AI/DI08	System fan coil temperature (input)
16	AI/DI09	Ambient temperature (input)
17	AI/DI10	Mode switch (input)
18	AI/DI11	Master-slave machine switch/ Antifreeze temperature (input)
19	AI12(50K)	System Exhaust temperature (input)

20	0_5V_IN	Compressor current detection/Pressure sensor(input)
21	PWM_IN	Master-slave machine switch/ Feedback signal of EC fan (input)
22	PWM_OUT	AC fan control (output)
23	0_10V_OUT	EC fan control (output)
24	+5V	+5V (output)
25	+12V	+12V (output)
26	GND	Frequency conversion board communications
27	485_B1	
28	485_A1	
29	12V	
30	GND	Color line controller communication
31	485_B2	
32	485_A2	
33	12V	
34	CN9	Electronic expansion valve
35	GND	The port forcentralized control
36	485_B3	
37	485_A3	
38	12V	
39	CN12	Program download interface



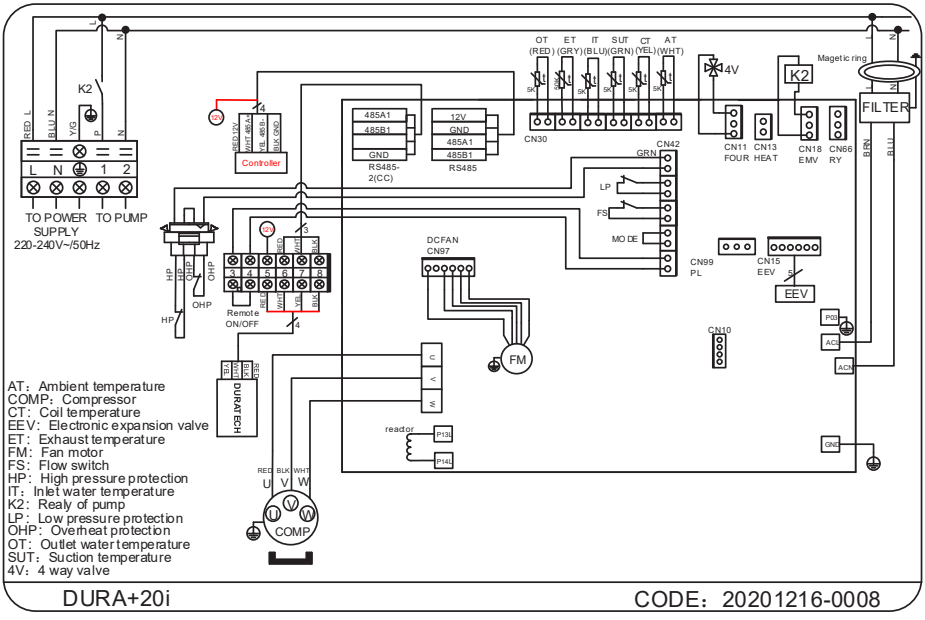
AT：Ambient temperature
COMP：Compressor
CT：Coil temperature
EEV：Electronic expansion valve
ET：Exhaust temperature
FM：Fan motor
FS：Flow switch
HP：High pressure protection
IT：Inlet water temperature
K2：Realy of pump
LP：Low pressure protection
OT：Outlet water temperature
SUT：Suction temperature
4V：4 way valve

DURA+10i and DURA+13i　　CODE:20201216-0006

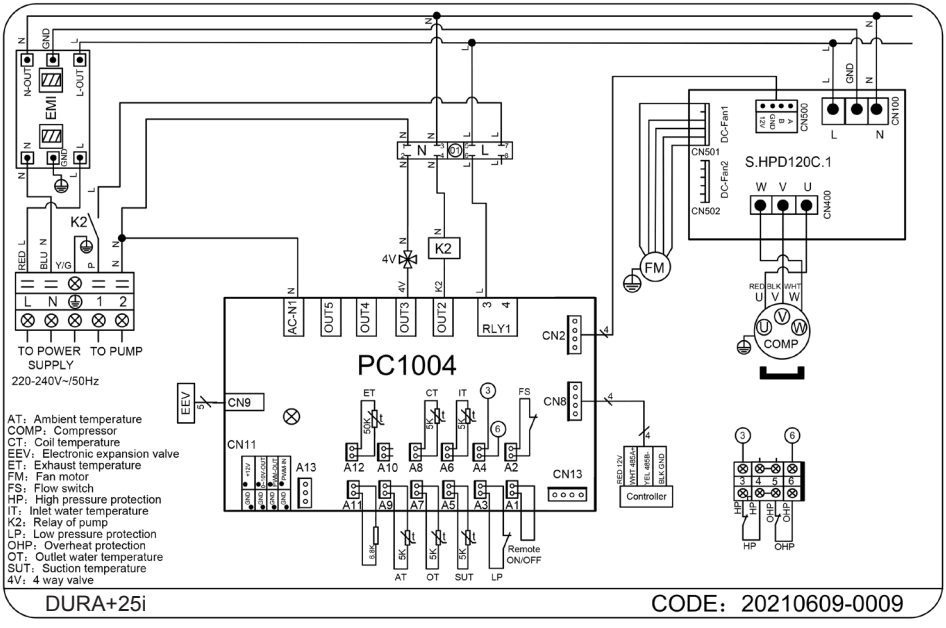


AT：Ambient temperature
COMP：Compressor
CT：Coil temperature
EEV：Electronic expansion valve
ET：Exhaust temperature
FM：Fan motor
FS：Flow switch
HP：High pressure protection
IT：Inlet water temperature
K2：Realy of pump
LP：Low pressure protection
OHP：Overheat protection
OT：Outlet water temperature
SUT：Suction temperature
4V：4 way valve

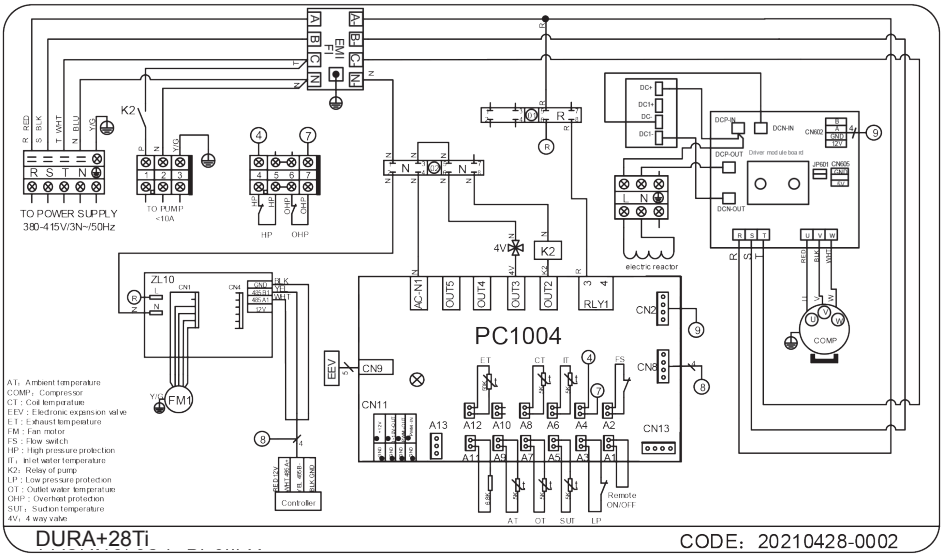
DURA+18i　　CODE：20201216-0007



DURA+20i CODE：20201216-0008



DURA+25i CODE：20210609-0009



5. Maintenance and Inspection

- Check the water supply device and the release often. You should avoid the condition of no water or air entering into system, as this will influence unit's performance and reliability. You should clear the pool/spa filter regularly to avoid damage to the unit as a result of the dirty of clogged filter.

- The area around the unit should be dry, clean and well ventilated. Clean the side heating exchanger regularly to maintain good heat exchange as conserve energy.

- The operation pressure of the refrigerant system should only be serviced by a certified technician.

- Check the power supply and cable connection often. Should the unit begin to operate abnormally, switch it off and contact the qualified technician.

- Discharge all water in the water pump and water system ,so that freezing of the water in the pump or water system does not occur. You should discharge the water at the bottom of water pump if the unit will not be used for an extended period of time. You should check the unit thoroughly and fill the system with water fully before using it for the first time after a prolonged period of no usage.

- Checks to the area
Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

- Work procedure
Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.

- General work area
All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

- Checking for presence of refrigerant
The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

- Presence of fire extinguisher
If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

- No ignition sources
No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, disposal, during which flammable refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

- Ventilated area
Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere. prolonged period of no usage.

- Checks to the refrigeration equipment
Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt consult the manufacturer’s technical department for assistance.
The following checks shall be applied to installations using flammable refrigerants:
The charge size is in accordance with the room size within which the refrigerant containing parts are installed;
The ventilation machinery and outlets are operating adequately and are not obstructed;
If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

- Checks to electrical devices
Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.
Initial safety checks shall include:
That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
That there no live electrical components and wiring are exposed while charging, recovering or purging the system;
That there is continuity of earth bonding.

- Repairs to sealed components
1) During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it isabsolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
2) Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc. Ensure that apparatus is mounted securely. Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer’s specifications. removing and

⚠ NOTE: The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated

- Repair to intrinsically safe components
Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating. Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

- Cabling
Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

- Detection of flammable refrigerants
Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

- Leak detection methods
The following leak detection methods are deemed acceptable for systems containing flammable refrigerants.
Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerantfree area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed.
Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
If a leak is suspected, all naked flames shall be removed/ extinguished.
If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

Removal and evacuation
When breaking into the refrigerant circuit to make repairs or for any other purpose conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:
. Remove refrigerant;
. Purge the circuit with inert gas;
. Evacuate;
. Purge again with inert gas;
. Open the circuit by cutting or brazing.
The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be “flushed” with OFN to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system.
When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place.
Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available. Working on them.

Labelling
Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

Recovery
When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure relief valve and associated shutoff valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

- Decommissioning
Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.
a) Become familiar with the equipment and its operation.
b) Isolate system electrically.
c) Before attempting the procedure ensure that:
- Mechanical handling equipment is available, if required, for handling refrigerant cylinders;

- All personal protective equipment is available and being used correctly;
- The recovery process is supervised at all times by a competent person;
- Recovery equipment and cylinders conform to the appropriate standards.
d) Pump down refrigerant system, if possible.
e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
f) Make sure that cylinder is situated on the scales before recovery takes place.
g) Start the recovery machine and operate in accordance with manufacturer's instructions.
h) Do not overfill cylinders. (No more than 80 % volume liquid charge).
i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

- Charging procedures
In addition to conventional charging procedures, the following requirements shall be followed.
- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Cylinders shall be kept upright.
- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigeration system.
Prior to recharging the system it shall be pressure tested with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

- The safety wire model is 5*20_5A/250VAC,And must meet the explosion-proof requirements

6. Appendix

6.1 Caution & Warning

1. The unit can only be repaired by qualified installer centre personnel or an authorised dealer. (for Europe market)

2. This appliance is not intended for use by persons (including children) 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 appliance by a person responsible for their safety. (for Europe market)
Children should be supervised to ensure that they do not play with the appliance.

3. Please make sure that the unit and power connection have good earthing, otherwise may cause electrical shock.

4. If the supply cord is damaged, it must be replaced by the manufacturer or our service agent or similarly qualified person in order to avoid a hazard.

5. Directive 2002/96/EC (WEEE):
The symbol depicting a crossed-out waste bin that is underneath the appliance indicates that this product, at the end of its useful life, must be handled separately from domestic waste, must be taken to a recycling centre for electric and electronic devices or handed back to the dealer when purchasing an equivalent appliance.

6. Directive 2002/95/EC (RoHs): This product is compliant with directive 2002/95/EC (RoHs) concerning restrictions for the use of harmful substances in electric and electronic devices.

7. The unit CANNOT be installed near the flammable gas. Once there is any leakage of the gas, fire can occur.

8. Make sure that there is circuit breaker for the unit, lack of circuit breaker can lead to electrical shock or fire.

9. The unit 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.

10. USE SUPPLY WIRES SUITABLE FOR 75°C.

11. Caution: Single wall heat exchanger, not suitable for potable water connection.

6.2 Cable Specification

1) Single phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	2×1.5mm2	1.5mm2	16A	30mA less than 0.1 sec	n×0.5mm2
10~16A	2×2.5mm2	2.5mm2	20A	30mA less than 0.1 sec	
16~22A	2×4mm2	4mm2	25A	30mA less than 0.1 sec	
22~32A	2×6mm2	6mm2	40A	30mA less than 0.1 sec	
32~40A	2×10mm2	10mm2	63A	30mA less than 0.1 sec	

2) Three phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	3×1.5mm2	1.5mm2	16A	30mA less than 0.1 sec	n×0.5mm2
10~16A	3×2.5mm2	2.5mm2	20A	30mA less than 0.1 sec	
16~22A	3×4mm2	4mm2	25A	30mA less than 0.1 sec	
22~32A	3×6mm2	6mm2	40A	30mA less than 0.1 sec	
32~40A	3×10mm2	10mm2	63A	30mA less than 0.1 sec	

⚠ NOTE: When the unit will be installed outdoors, please use a UV resistand cable.

⚠ NOTE: Check whether the values match the rules or guidelines that apply in your country or region.

⚠ NOTE: The installation must be performed by a qualified person.

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- HEAT **Dura +i**
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- COVER **Cable Duct**
- COVER **Hanging System**

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- LINK **Touch**
- LINK **Controller**
- LINK **Cover**
- LINK **Master**
- LINK **Accessoires**

Declaraction of Conformity

Declarations of conformity covering this product are available for download from the House of Duratech website: www.duratech.be

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