M-thermal Mono
ATW Heat Pump

Quick Installation Manual
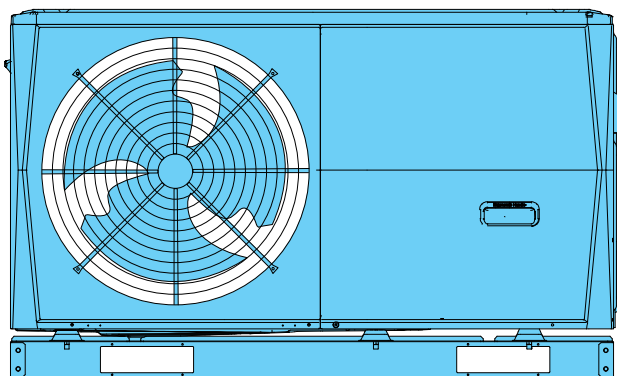
4/6 kW

8/10/12/14/16 kW

Contents

4/6 kW

Electric Control System

Terminal Block

Hydraulic System

Refrigerant System

8/10/12/14/16 kW

02380 179121 | technical@freedomhp.co.uk

Remove the coil cover

Please remove the blue
plastic before installing
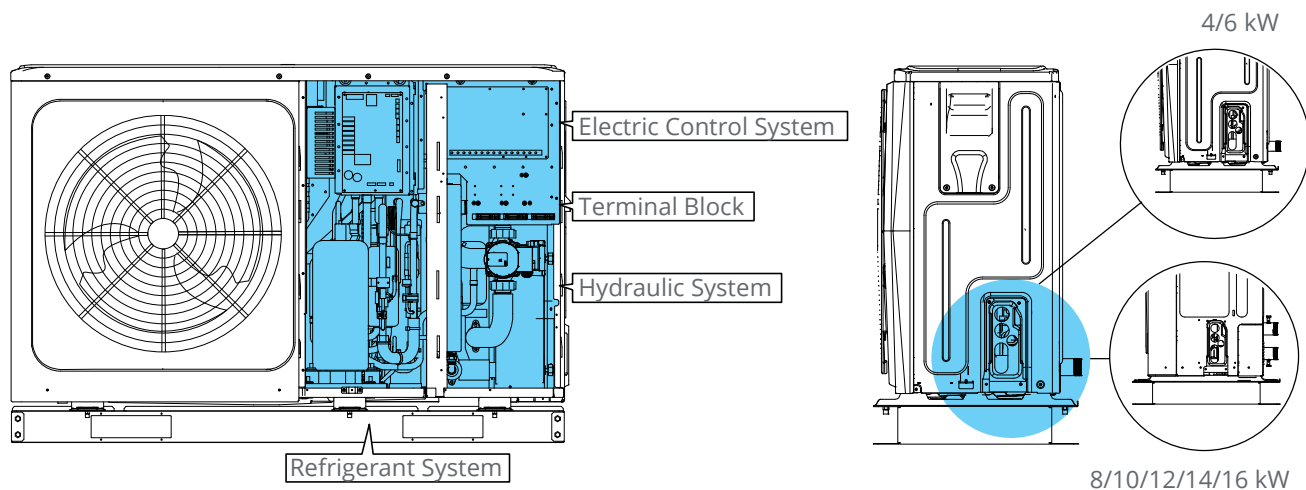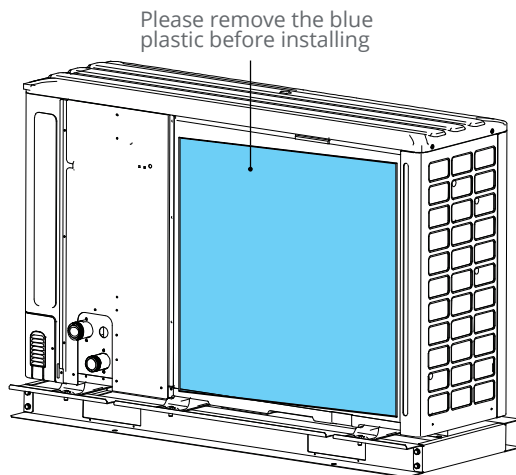
When the unit is delivered there is a blue cover over the coil, please
remove it, the remote controller is in a box at the back off the unit
Remove the right hand front cover of the unit to gain access.

To gain access to the wiring, you will need to remove the 2 x 13mm
bolts at the front to get the cover off, don't loose them they MUST go
back in.

Remove the compressor support

Remove the
transportation support

12/14/16 kW
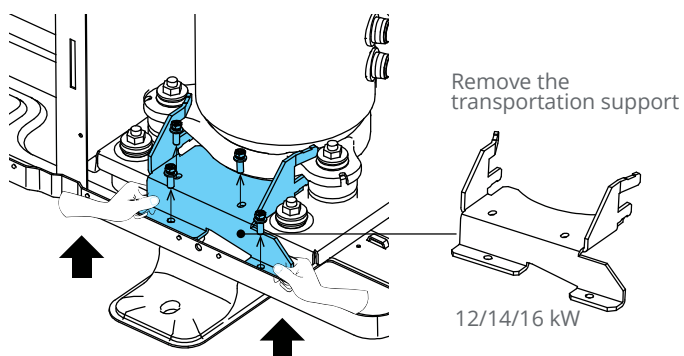
On the larger 8-12-14kw units, the compressor has a plate which has
to be removed prior to installation, see above. Do not remove the
metal frame the unit is bolted to, it is structural.

4

Unit Dimensions

4/6 kW   (unit: mm)

8/10/12/14/16 kW   (unit: mm)

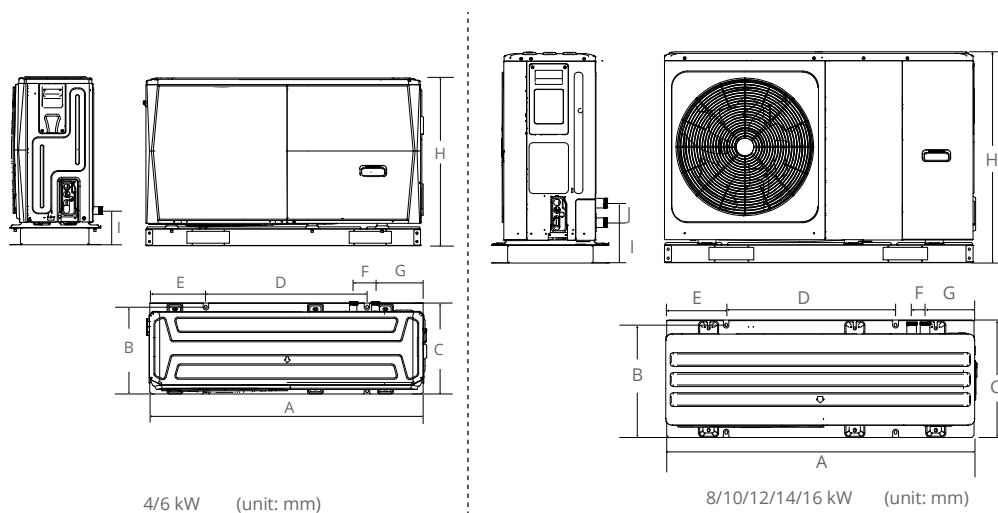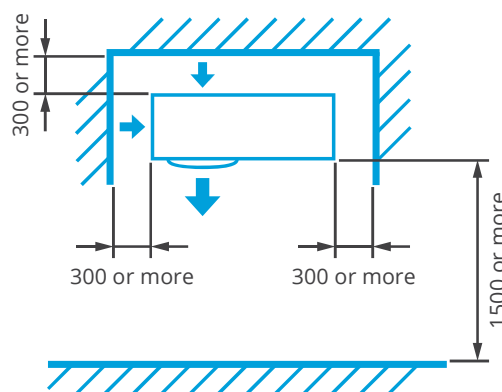| Model	A	B	C	D	E	F	G	H	I	J
4/6kW	1295	397	429	760	256	105	225	792	161	/
8/10/12/14/16kW	1385	482	526	760	270	160	221	945	182	81

Installing the Outdoor Unit (Boiler)

Position the outdoor unit so that the air flows into an open area, where there are no plants and animals. If the unit is to be installed within a mile of the sea you need to have the unit coated using Blygold, ask us for details. If you are applying for RHI and going through MCS you need to make sure the system meets MIS020.

Install the outdoor unit on a flat, stable surface, it needs to be securely mounted at least 100mm off the ground. You can use rubber feet under the unit if you want but its not essential.

The unit must have adequate drainage, it can produce up to 6 L / hour of condensate. If you are installing the unit at height you can install a drain pan under the unit but its best to let the unit drain into the ground.

The space around the unit is very important, allow:

300mm to the left hand side (facing the front of the unit),
300mm to the right of the unit,
300mm to the rear of the unit and 1500mm to the front of the unit.

300 or more

300 or more   300 or more

1500 or more

Mono: heating and hot water install pack

- Midea unit
- 2x Midea adapters ℹ
- 2x Flexi hoses
- Filter ball
- Pump
- Glycol
- Header

- 32A isolator
- Electric meter
- Immersion timer
- Cylinder
- Delivery
- Install & handover manuals
- Robotkit optional

Note: the unit comes with the remote controller and a cylinder sensor inside, it does not need feet.

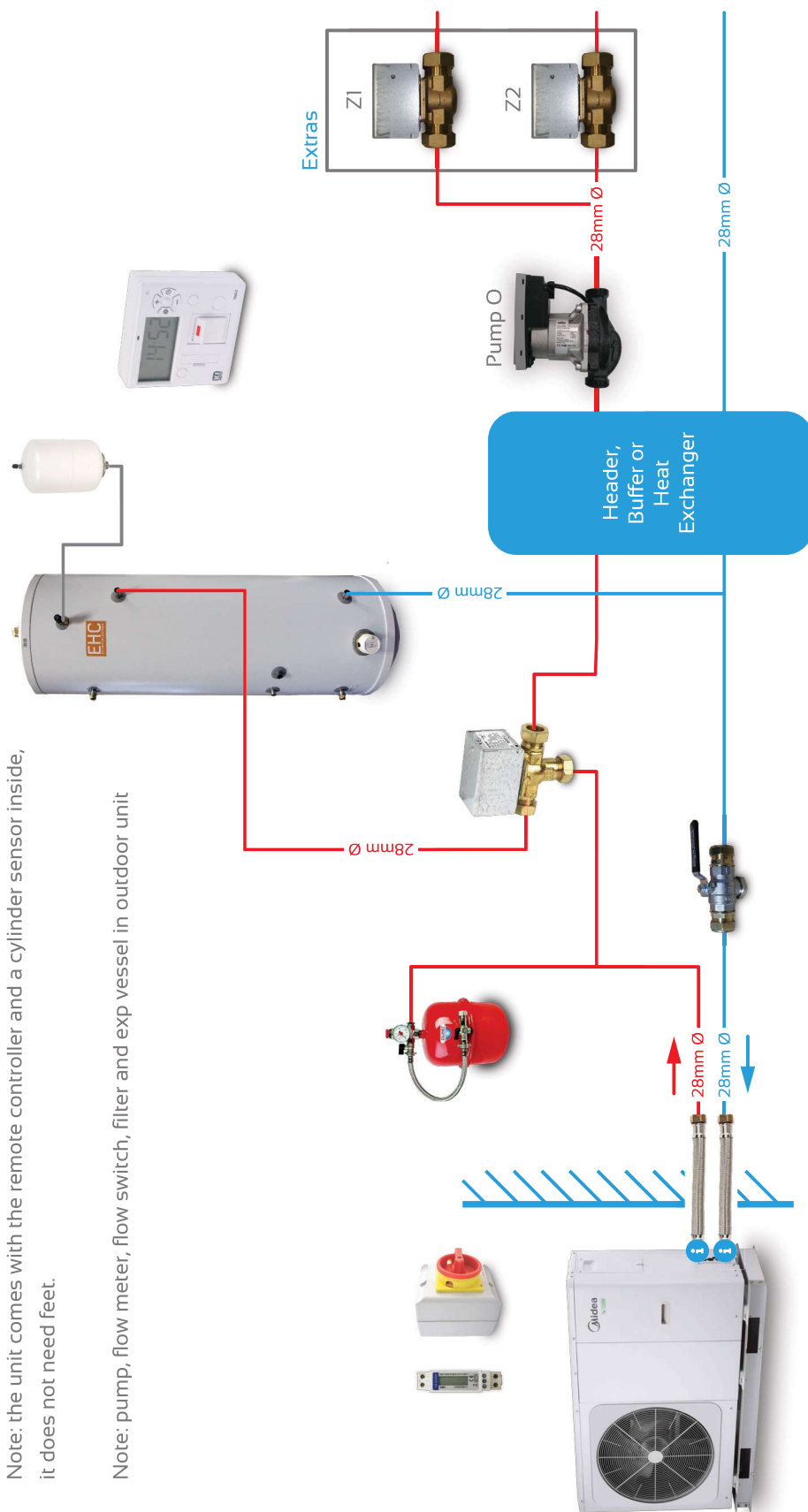Note: pump, flow meter, flow switch, filter and exp vessel in outdoor unit

The header or buffer is in the heating part of the circuit only.

Pump O only runs when there is a heating demand, it is driven by the external run signal form under floor manifold or stat.

Extras

Z1

Z2

28mm Ø

Pump O

Header, Buffer or Heat Exchanger

28mm Ø

28mm Ø

28mm Ø

28mm Ø

28mm Ø

The water connections are flow at the top and the return at the top bottom, they are 1 1/4" male, we will deliver it with an adapter to 1" male and will supply flexi hoses to fit. You must use 28mm copper or plastic pipe to connect the unit .

The pump in the unit is strong enough to push the water a maximum of 12m each way to the hot water cylinder and

The low loss header. If your pipe length is more than 12m of 28mm copper please call us first
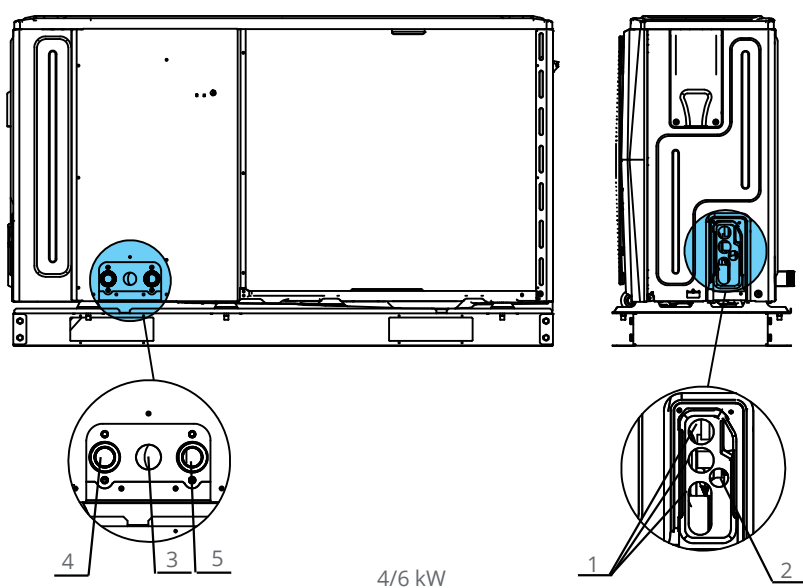
Coding	Assembly Unit
1	High voltage wire hole
2	Low voltage wire hole
3	Drainage pipe hole
4	Water outlet
5	Water inlet

4/6 kW
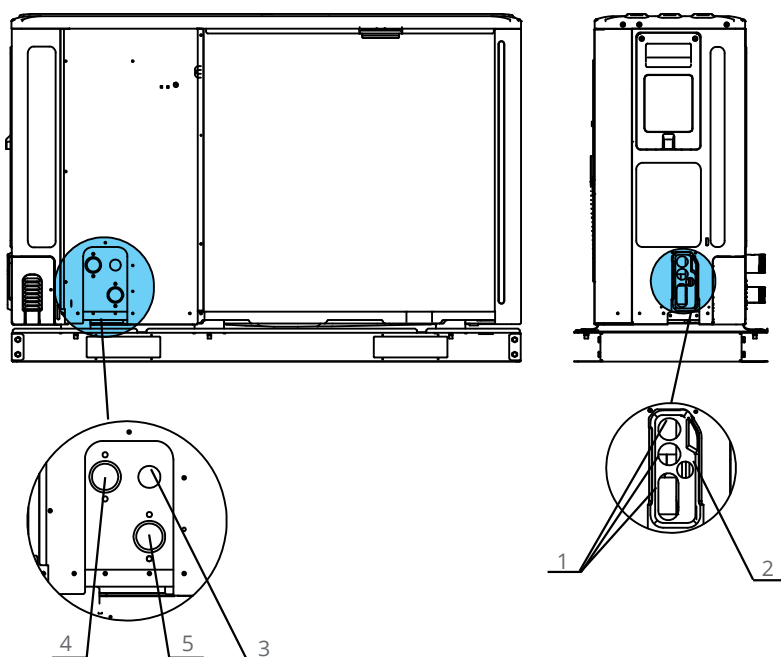
8~16 kW

Wiring Schematic

- SV1, the 3 port valve connects AB to B when there is no power. The valve must be installed with B to House and A to the cylinder.
- SV1 powers AB to A for hot water mode
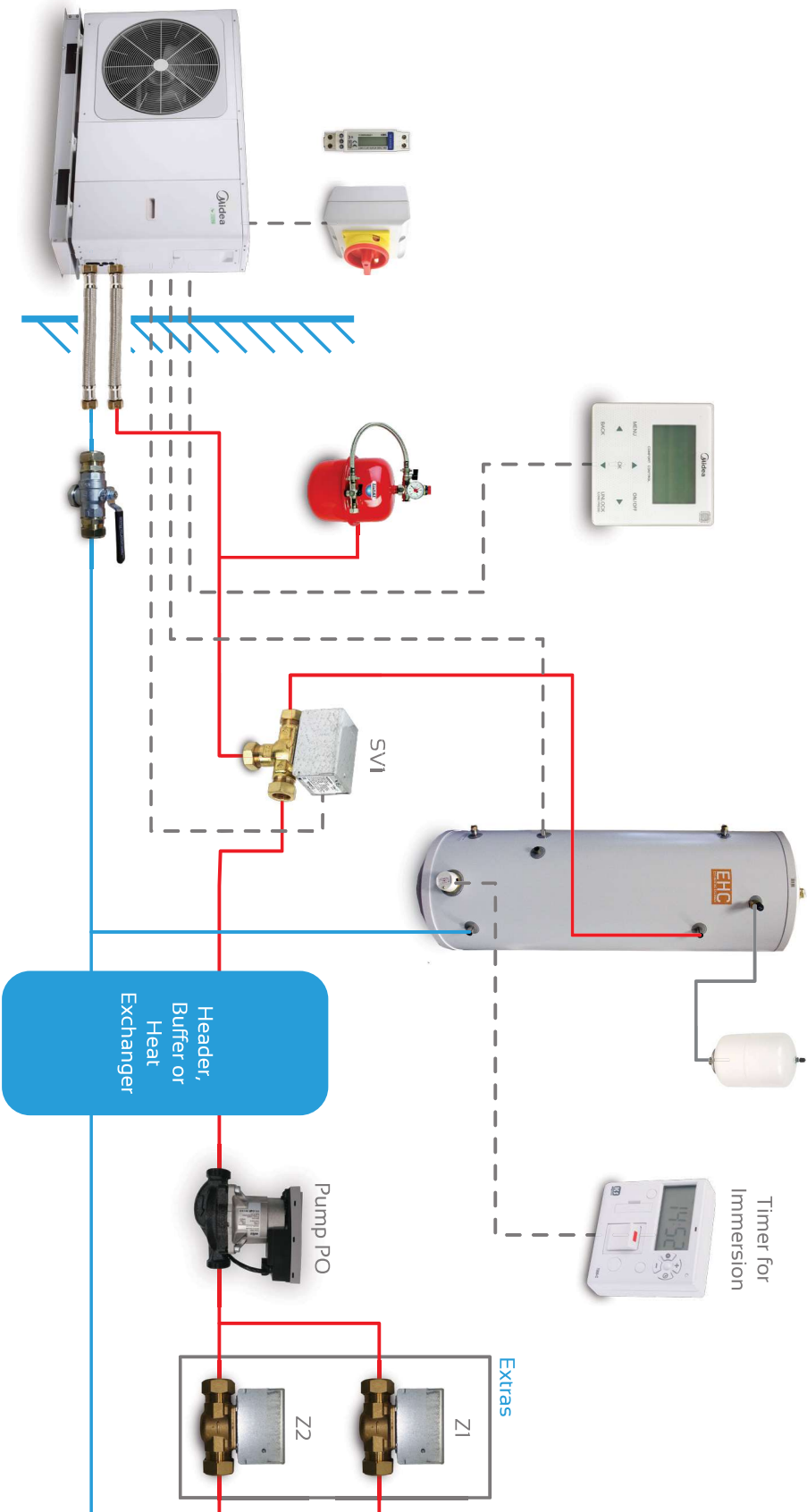
Note the immersion heater is not connected to the heat pump. You need to connect it to an externally powered time clock programmed to do a 1 hour legionella cycle every week (or day).

SV1

Header, Buffer or Heat Exchanger

Pump PO

Timer for Immersion

Extras

Z2

Z1

Freedom
Heat Pumps
SALES | SERVICE | SUCCESS
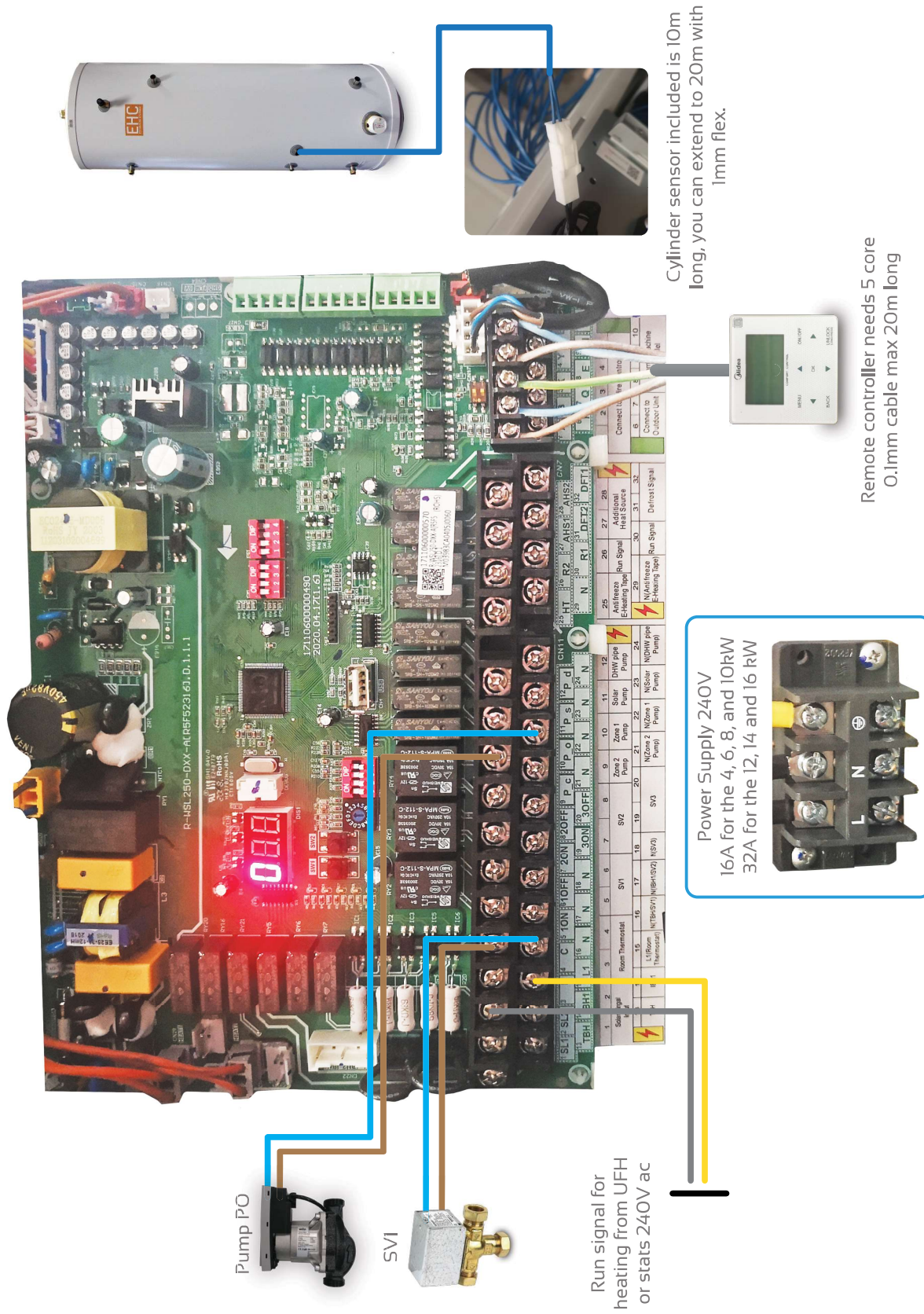
Cylinder sensor included is 10m long, you can extend to 20m with 1mm flex.

Remote controller needs 5 core 0.1mm cable max 20m long

Power Supply 240V
16A for the 4, 6, 8, and 10kW
32A for the 12, 14 and 16 kW

Pump PO

SV1

Run signal for heating from UFH or stats 240V ac

The 3 port valve SV1 wires from 5 live to 16 Neutral

If the valve is installed backwards terminal 5 and 6 are the opposite of each other swap wire from 5 to 6 and the valve will reverse.

The heating run signal wires from 3 to 15. The unit sends out 240V AC on terminal 15 when you send it back on terminal 3 the unit runs in heating mode.

Pump Po heating pump after the header is wired into 10 live and 22 Neutral.

The remote controller can be wired in Cat 5 cable up to 20m long

The blue hot water cylinder sensor is delivered 10m long, it can be extended to 20m long with 1mm 2 core flex.

Space Heating

The heat pump has its own inbuilt weather compensation system, it will look for a heating run signal from an external thermostat or under floor heating system (field supplied). The unit sends out 240V AC on terminal 15 when you send it back on terminal 3 the unit runs in heating mode. This will come from your underfloor heating system or your heating zone valves after the header.

Room thermostat

- 15 is live
- 3 is heat run signal 240V AC
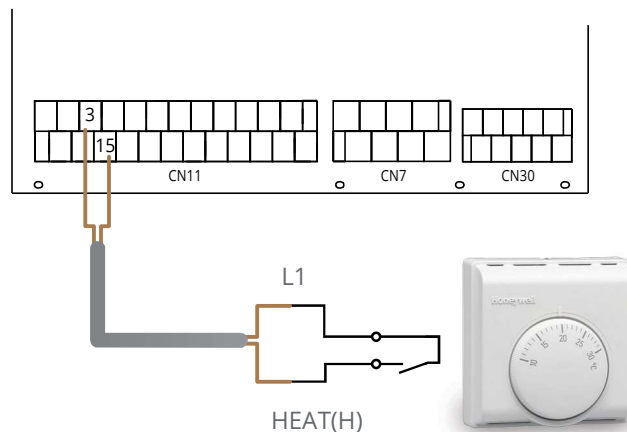
Domestic water heating

The target tank water temperature is set on the Midea remote controller. The Midea unit will decide when to go into HW mode it will stop Pump Po (heating pump) the 3 port valve SV1 will power open.

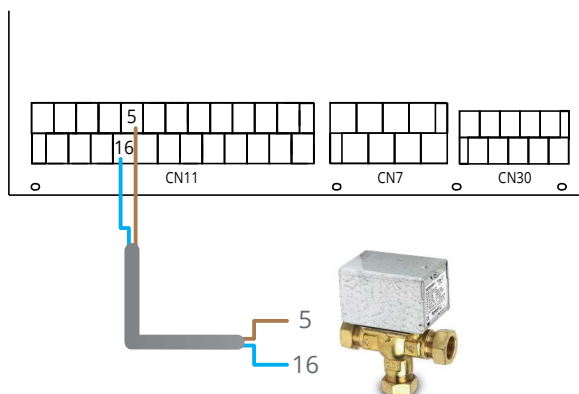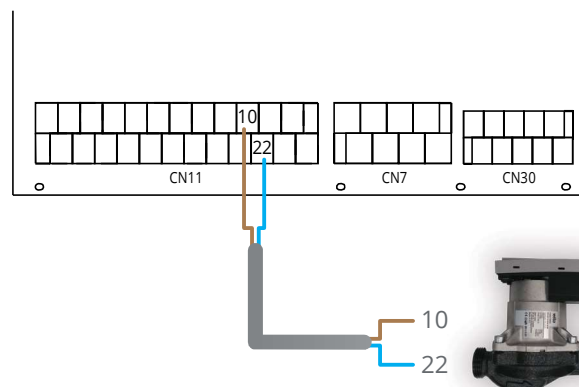## 3-way valve SV1

Secondary heating pump PO

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Before power up

Filling it with water

Connect the water supply to the fill valve and open the valve.

Make sure the automatic air vent is open, its in the outdoor unit inside a rubber cover top right hand side of the unit .

Fill with water pressure of approximately 2.0 bar. Remove air in the circuit as much as possible using the air purge valves. Air in the water circuit will cause flow errors EO and E8

The AVV is protected with a rubber cover. Make sure the AAV is open before filling the unit.

From flush pump

Back to flush pump

Turn this valve 90°
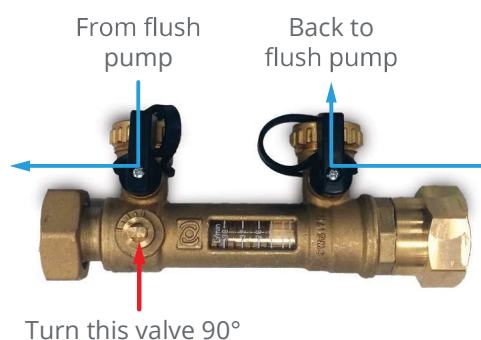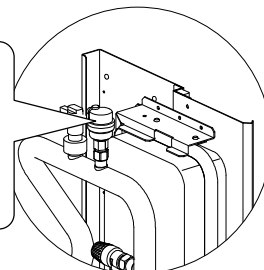
Setting up the cylinder immersion heater

To insure the unit has adequate legionella protection the immersion heater will run for 1 hour a week controlled by an external time clock. It will run the immersion heater make sure the internal thermostat on the immersion is set as high as possible 60°C.

Turn all thermostats down and underfloor heating off, before you power up the heat pump.
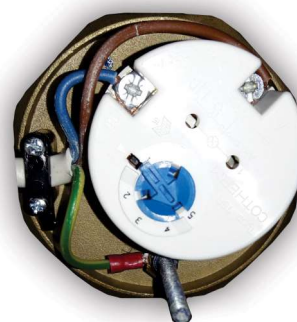
Power up the unit and look at the display on the outdoor unit PCB.

In the middle of the main PCB inside the right hand casing there is a red 3 digit display, it will light up and show the current water temperature. If nothing is displayed check the power supply to the unit. Once it is lit up check the remote controller.

On the screen of the remote controller it will count to 100, then it will ask you which language to use, select EN press OK. If you wait 60 seconds it will just select English as default.

If the error code E2 is displayed on the controller check the wiring between the remote controller and unit. Redo the wiring and reset the power.

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Initial setup

DO NOT SKIP THIS SECTION

The unit is delivered as a completely blank slate, it does not know you want to use a hot water cylinder or that you are using an external heating run signal. So if you just switch it on and leave you will be back to do the job properly.

The controller will look like the image to the right.

- Press and hold the UNLOCK button for 3 seconds
- Press MENU press ▼ 8 times to SERVICEMAN, press OK
- Enter password 234 press OK
- Go to DHW MODE setting, press OK
- IN DHW mode press ▶ then ▲ change it to YES press OK
- Go to DISINFECT press ▶ then ▼ to NON press OK (legionella is handled by an external immersion and time clock)
- Go to 1.18 DHWHPMax and set to 60 for 200L tank or 90 for 300L tank press OK
- Press BACK
- Go to Heat Mode setting press OK
- Go ▼ to 3.8 T1setH1 press right set to 55°C for Rads or 45°C for UFH press OK
- Go ▼ to 3.9 T1setH2 press ▶ set to 37°C press OK
- Go ▼ to 3.10 T4H press ▶ set to -2°C press OK
- Go ▼ to 3.11 T4H press ▶ set to 15°C press OK

This is the setting for your weather compensation for heating the water will be 55°C at -2° ambient and 37°C when its 15° ambient.

- Press BACK
- Go ▼ to 6 Room thermostat, press OK
- Go to 6.1 Room thermostat press ▶ change to one zone
- Press OK
- Press BACK 2 times.

To activate the weather comp

- From the front screen press MENU, press ▼ once to PRESET TEMPERATURE press OK
- Go ▶ to WEATHER TEMP SET press ok
- Scroll ▼ 2 times to ZONE1 H-Mode High temp, press ON/OFF
- Scroll right to number 9 (this is the custom weather comp curve) press OK
- Press BACK 4 times to the front screen

Now you have to test to see if it is tubed up and wired up OK.

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Test Run

TEST RUN is used to check correct operation of the unit

Go to MENU ▶ FOR SERVICEMAN ▶ enter password 234 OK, go ▼ to 11.TEST RUN. Press OK. The following page will be displayed:

Select YES press OK

Select POINT CHECK press OK

Go to 3 way valve 1 press on off button the valve will move from heating to DHW

Go ▼ to Pump I (pump in the heat pump) press on off, it will start, you can see a green led on the front of the pump when its running.

Go to Pump O this is the pump after the low loss header, it will be pumping out to the heating circuits.

When you are happy all of these work OK press BACK

If you want to force the heat pump to run go to 11.5 heat mode running, the unit will show

After 6 minutes the compressor will start and it will heat up the water. Note at this point the unit does not know what the valves are doing so it will heat wherever the water is flowing. It should go to the header, if it goes to the hot water cylinder the 3 port valve is wired backwards swap the live cable from 5 to 6 (power off first).

To exit this mode press Back a few times to get to the normal front screen.

11 TEST RUN	
Active the settings and active the "TEST RUN"?	
NO	YES
OK CONFIRM	◀▶

11 TEST RUN	1/2
3-WAY VALVE 1	OFF
3-WAY VALVE 2	OFF
PUMP I	OFF
PUMP O	OFF
PUMP C	OFF
ON/OFF ON/OFF	⬍

11 TEST RUN	2/2
PUMPSOLAR	OFF
PUMPDHW	OFF
INNER BACKUP HEATER	OFF
TANK HEATER	OFF
3-WAY VALVE 3	OFF
ON/OFF ON/OFF	⬍

11 TEST RUN	
Test run is on. Heat mode is on. Leaving water temperature is 15°C.	
OK CONFIRM	

Restore Factory Settings

If you mess up the controller you can restore it to factory.

The RESTORE FACTORY SETTING is used to restore all the parameters set in the user interface to the factory setting.

Go to MENU ▶ FOR SERVICEMAN ▶ 10.RESTORE FACTORY SETTINGS. Press OK. The following page will be displayed:

```
┌─────────────────────────────────────┐
│ 10 RESTORE FACTORY SETTINGS          │
├─────────────────────────────────────┤
│ All the settings will come back to   │
│ factory default.                     │
│ Do you want to restore factory       │
│ settings?                            │
│                                      │
│                                      │
│      ████NO████         YES          │
├─────────────────────────────────────┤
│ OK CONFIRM                    ◀▶     │
└─────────────────────────────────────┘
```

Press ◀ ▶ to scroll the cursor to YES and press OK. The following page will be displayed:

```
┌─────────────────────────────────────┐
│ 10 RESTORE FACTORY SETTINGS          │
├─────────────────────────────────────┤
│ Please wait…                         │
│                                      │
│                                      │
│              5%                      │
│                                      │
│                                      │
│                                      │
└─────────────────────────────────────┘
```

14

Unlock screen

If the 🔒 icon is on the screen, the controller is locked.

The following page is displayed:

```
01-01-2018    🔒    23:59    ⌂13°
  ♨                ON        🚰
 ◊23 °C           ☼          38 °C
  ⎕
```

Press any key, the 🔒 icon will flash. Long press the "UNLOCK" key. The 🔒 icon will disappear, the interface can be controlled.

```
01-01-2018    🔒    23:59    ⌂13°
  ♨                ON        🚰
 ◊23 °C           ☼          38 °C
  ⎕
```
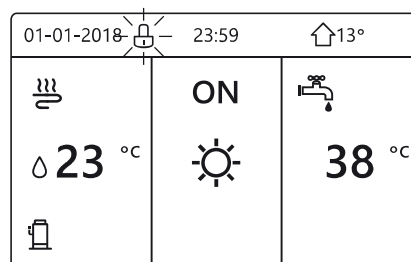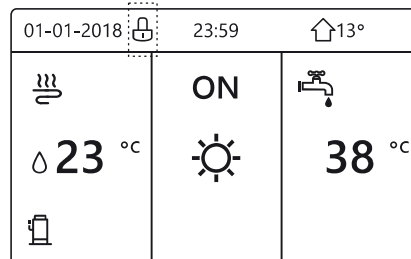
Setting the clock and date

- Press MENU, press ▼ 6 times to SERVICE INFO press OK
- Press ▶ 3 times to DISPLAY press OK
- Go to TIME press ▶ then use ▲ and ▼ to set the time hours and minutes, press OK
- Go to DATE press ▶ then use ▲ and ▼ to set the day and month, press OK
- Go to Buzzer press ON / OFF to silence the noise from the controller.
- Press back a few times to get to the front screen

Starting the unit in heating mode

Press ◀ to highlight the left hand side of the controller this is the heating side, press ON / OFF

The middle of the controller tells you what is happening now. In this case heating (the sun) is on, so the thermostats are calling. The unit will start the pump in 2 minutes and the compressor in 5 minutes.

Check the pipework is heating up and the header is getting warm. MAKE SURE there is no hot water going to the cylinder.

Note if you try to change the water temperature or turn the heating off a message shows. This unit is controlled from an external run signal and operates using the water settings for weather compensation you set earlier.

```
Midea

24-09-2020    22:25    ⌂23°
 ♨            ON        🚰
◊ 47 ℃        ☼         21 ℃
       COMFORT CONTROL

MENU          ▲         ON/OFF
        ◀     OK    ▶
BACK          ▼         UNLOCK
                      (LONG PRESS)
```

```
01-01-2018         23:59      ⌂13°

Turning on or off cooling/
heating mode is controlled by
the room thermostat.
Please turn on or off cooling/
heating mode by the room
thermostat.

OK CONFIRM
```

15
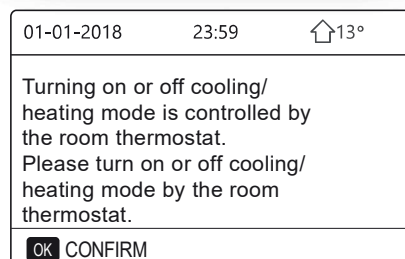
Starting the unit in hot water mode to heat the cylinder

Go back to the front screen, press ▶ to highlight the right side of the controller. This is the hot water setting.

When you highlight the DHW it tells you the DHW set temperature, when it's not highlighted it shows the current DHW tank temperature. With it highlighted press ON / OFF the unit will start heating the cylinder

Note how the middle of the controller is now showing the tap to indicate its actually heating the tank.

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Freedom
Heat Pumps
SALES | SERVICE | SUCCESS

MENU | Enter the menu structure from the home page

◀ ▲ ▼ ▶ | Navigate the cursor on the display/navigate in the menu structure/adjust the settings

BACK | Come back to the up level

ON/OFF | Turn on or off the space operation mode or DHW mode turn on or off the function in the menu structure

UNLOCK (LONG PRESS) | Long press for unlocking /locking the controller

COMFORT CONTROL

MENU   ▲   ON/OFF
◀   OK   ▶
BACK   ▼   UNLOCK (LONG PRESS)

OK | Go to the next step when programming a schedule in the menu structure/ confirm a selection/enter a submenu in the menu structure

Lock icon
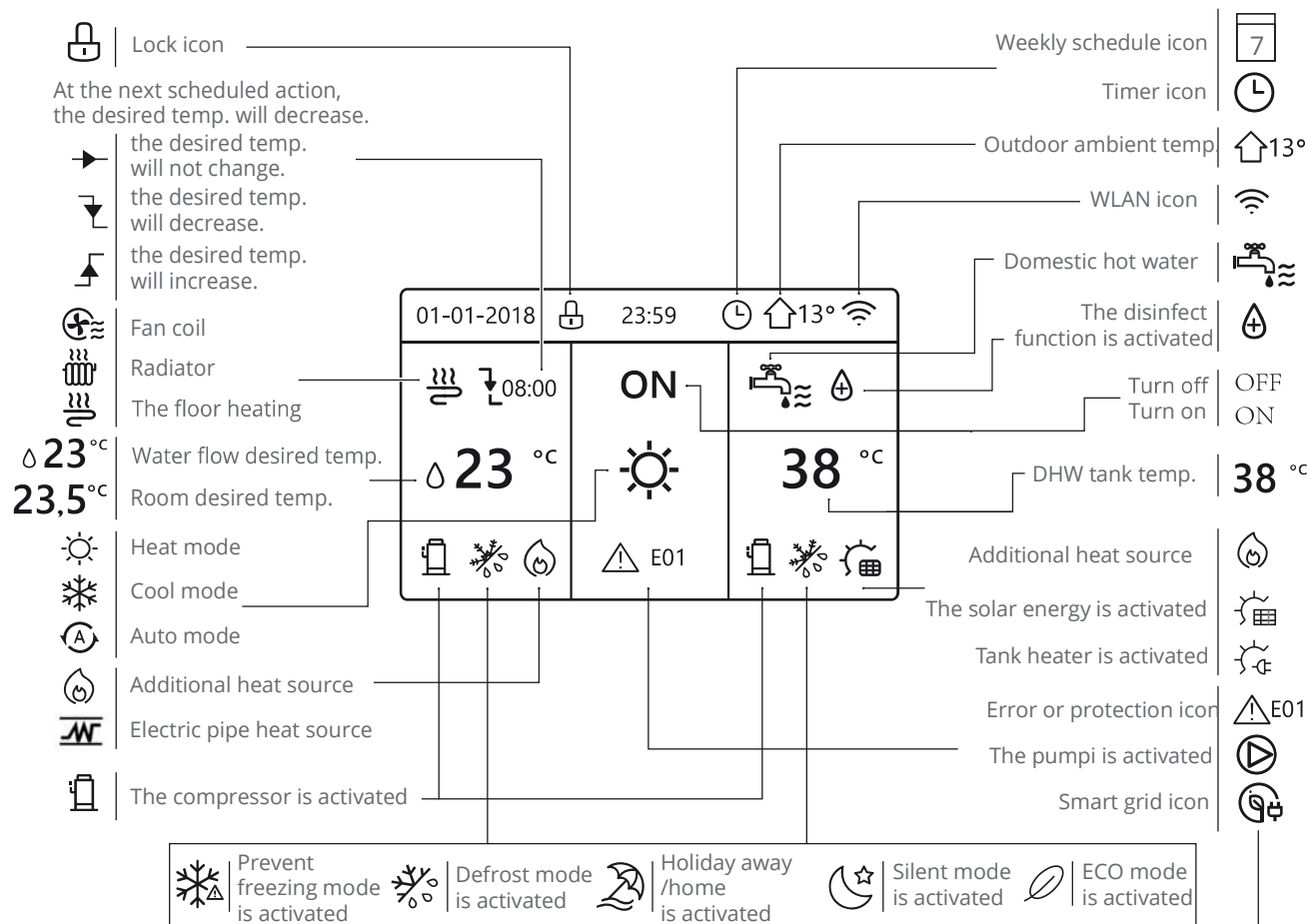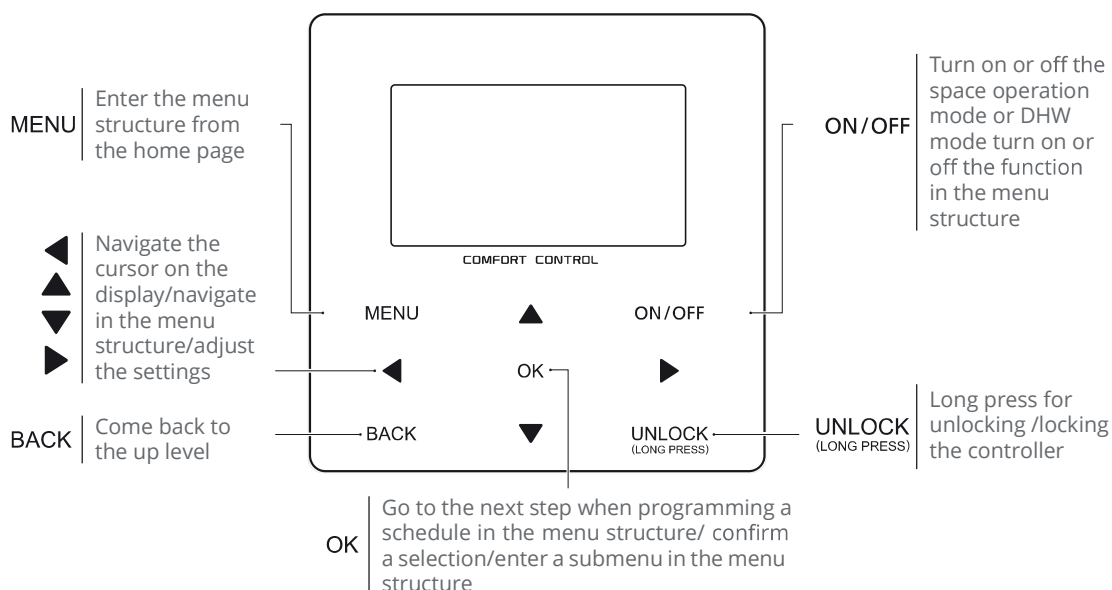
At the next scheduled action, the desired temp. will decrease.

▶ the desired temp. will not change.
the desired temp. will decrease.
the desired temp. will increase.

Fan coil
Radiator
The floor heating

23 °C Water flow desired temp.
23,5 °C Room desired temp.

Heat mode
Cool mode
Auto mode
Additional heat source
Electric pipe heat source
The compressor is activated

Weekly schedule icon 7
Timer icon
Outdoor ambient temp. 13°
WLAN icon
Domestic hot water
The disinfect function is activated
Turn off Turn on OFF ON
DHW tank temp. 38 °C
Additional heat source
The solar energy is activated
Tank heater is activated
Error or protection icon E01
The pumpi is activated
Smart grid icon

01-01-2018   23:59   13°

08:00   ON   38 °C
23 °C   E01

| | Prevent freezing mode is activated | | Defrost mode is activated | | Holiday away /home is activated | | Silent mode is activated | | ECO mode is activated |

	Fan coil	Radiator	The floor heating	Domestic hot water
ON				
OFF				

	Free electricity	Valley electricity	Peak electricity
Smart grid			

17

Operational data for testing the unit

This menu is for installer or service engineer reviewing the operation parameters. Here you can see everything the unit is doing with tools.

- At the home page, go to MENU ▶ OPERATION PARAMETER.
- Press OK. There are six pages for the operating parameter as following. Use ▲ and ▼ to scroll.

OPERATION PARAMETER	#01
ONLINE UNITS NUMBER	1
OPERATE MODE	COOL
SV1 STATE	ON
SV2 STATE	OFF
SV3 STATE	OFF
PUMP_I	ON
◀▶ ADDRESS	1/9 ⬍

OPERATION PARAMETER	#01
PUMP-O	OFF
PUMP-C	OFF
PUMP-S	OFF
PUMP-D	OFF
PIPE BACKUP HEATER	OFF
TANK BACKUP HEATER	ON
◀▶ ADDRESS	2/9 ⬍

OPERATION PARAMETER	#01
GAS BOILER	OFF
T1 LEAVING WATER TEMP.	35°C
WATER FLOW	1.72m3/h
HEAT PUMP CAPACTIY	11.52kW
POWER CONSUM.	1000kWh
Ta ROOM TEMP	25°C
◀▶ ADDRESS	3/9 ⬍

OPERATION PARAMETER	#01
T5 WATER TANK TEMP.	53°C
Tw2 CIRCUIT2 WATER TEMP.	35°C
TIS' C1 CLIMATE CURVE TEMP.	35°C
TIS2' C2 CLIMATE CURVE TEMP.	35°C
TW_O PLATE W-OUTLET TEMP.	35°C
TW_I PLATE W-OUTLET TEMP.	30°C
◀▶ ADDRESS	4/9 ⬍

OPERATION PARAMETER	#01
Tbt1 BUFFERTANK_UP TEMP.	35°C
Tbt2 BUFFERTANK_LOW TEMP.	35°C
Tsolar	25°C
IDU SOFTWARE	01-09-2019V01
◀▶ ADDRESS	5/9 ⬍

OPERATION PARAMETER	#01
ODU MODEL	6kW
COMP.CURRENT	12A
COMP.FREQENCY	24Hz
COMP.RUN TIME	54 MIN
COMP.TOTAL RUN TIME	1000Hrs
EXPANSION VALVE	200P
◀▶ ADDRESS	6/9 ⬍

OPERATION PARAMETER	#01
FAN SPEED	600R/MIN
IDU TARGET FREQUENCY	46Hz
FREQUENCY LIMITED TYPE	5
SUPPLY VOLTAGE	230V
DC GENERATRIX VOLTAGE	420V
DC GENERATRIX CURRENT	18A
◀▶ ADDRESS	7/9 ⬍

OPERATION PARAMETER	#01
TW_O PLATE W-OUTLET TEMP.	35°C
TW_I PLATE W-INLET TEMP.	30°C
T2 PLATE F-OUT TEMP.	35°C
T2B PLATE F-IN TEMP.	35°C
Th COMP. SUCTION TEMP.	5°C
Tp COMP. DISCHARGE TEMP.	75°C
◀▶ ADDRESS	8/9 ⬍

OPERATION PARAMETER	#01
T3 OUTDOOR EXCHARGE TEMP.	5°C
T4 OUTDOOR AIR TEMP.	5°C
TF MODULE TEMP.	55°C
P1 COMP. PRESSURE	2300kPa
ODU SOFTWARE	01-09-2018V01
HMI SOFTWARE	01-09-2018V01
◀▶ ADDRESS	9/9 ⬍

Trouble shooting

All error codes are listed in the installation and owners manual at the back pages 70-76.

If the remote controller shows "E8" or "E0" as an error code, there is a possibility that there is air in the system, or the water level in the system is less than the required minimum.

Who are Freedom Heat Pumps?

Freedom Heat Pumps is a wholesale distribution company for air source heat pumps and underfloor heating systems.

We offer technical support, training, design and consultancy services Freedom Heat Pumps was founded in 2010 and have been market leaders in this sector with over 7500 units out in the field.

How we work

Our approach is very straightforward. If you have a set of plans or an outline of the requirements for a project, send them to **sales@freedomhp.co.uk.** From there, we will produce a heat loss calculation in line with today's standards, and put together a list of the kit required at your cost price.

Alternatively, if you don't currently have a heat pump project, but would like to become a heat pump installer, and don't know where to start, contact us on **02380 274833** or email us at **sales@freedomhp.co.uk** and we can set you on the correct course.

@freedomheatpumps

@freedomheatpump

Freedom Heat Pumps Ltd.

freedomheatpumps

www.freedomhp.co.uk

Freedom
Heat Pumps
SALES | SERVICE | SUCCESS

Freedom Heat Pumps Ltd

Head Office

Unit 2 Warrior Park,
Eagle Close
Chandlers Ford,
Hampshire
SO53 4NF

Northern Office

Unit 5, Roundhouse Court,
Buckshaw Village,
Chorley,
Lancashire
PR7 7JN

Tel: 02380 274 833
Email: sales@freedomhp.co.uk
www.freedomhp.co.uk