joule
Manufacturing Excellence

V1

Modul-AIR

User Manual

Preface

Congratulations on the purchase of a Joule Modul-AIR! You have taken a big step to reduce or stop your gas consumption.

In this manual you can read what the Joule Modul-AIR (hereinafter referred to as Modul-AIR) can do, how it works, what maintenance is required and what to do in the event of error messages or malfunctions.

The Joule Modul-AIR complies with European directives and additional national regulations which is indicated in a CE marking. The corresponding declaration of conformity can be requested from Joule. The Modul-AIR complies with electrical protection class IPX2.

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1. Introduction

1.1 WHO IS THIS MANUAL FOR?

This manual is intended for the daily user of the Modul-AIR.

The purpose of the manual is to support you in using the Modul-AIR safely and as intended.

1.2 INTENDED & UNINTENDED USE

The Modul-AIR may only be used to use the heat from ventilation air to heat your home and optionally to heat tap water. The Modul-AIR may only be operated via the display.

Any other use is considered unintended use and may result in damage to the Modul-AIR and/or personal injury. Always follow the instructions in the accompanying manual(s) and if in doubt contact the manufacturer.

1.3 SYMBOLS USED IN THIS MANUAL

Various symbols are used in this manual:

	**Warning!** This symbol indicates that the user runs the risk of injuring himself or others (seriously) or seriously damaging the product.
	**Carefully!** This symbol indicates that damage to the product may occur.
	**Look out!** This symbol indicates a note with additional information for the installer.
	**Tip!** This symbol indicates suggestions and advice for the installer to make certain tasks easier or more convenient.

1.4 NAMEPLATE AND SYMBOLS ON THE PRODUCT

Important information about the Modul-AIR is provided on a rating plate and symbols on the product.

1.4.1 THE RATING PLATE

The type plate provides information about theModul-AIR (Figure 3). The type plate is located in two places on and in the Module-AIR, as shown in figures 1 & 2.

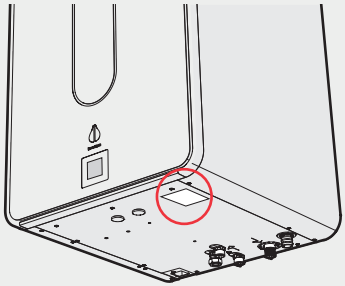


Figure 1 *Type plate on the bottom of the Modul-AIR*

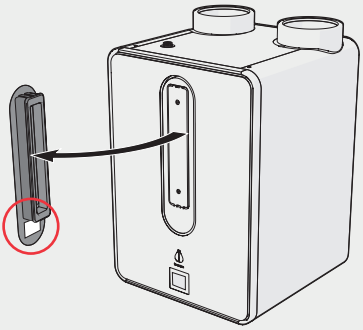


Figure 2 *Type plate on the filter cap*

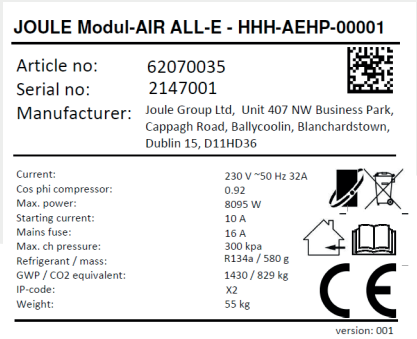


Figure 3 *The type plate of the Modul-AIR.*

Serial Number

On the type plate you will find, among other things, the serial number (figure 3). This is a unique number that can be used to identify the Modul-AIR.

1.4.2 QR CODE

A QR code is placed on the inside of the Modul-AIR. The digital warranty card can be filled in by the installer by scanning the QR code. This is then automatically sent to Joule and the Installer.

1.4.3 SYMBOLS USED

The symbols on the type plate and on the Modul-AIR mean the following:

CE MARKING
This is the CE logo with which Joule indicates that the product meets the legal requirements.

FOR INDOOR USE ONLY
This symbol indicates that the Modul-AIR may only be used indoors.

READ THE MANUAL
This symbol indicates to the user that the manual should be consulted.

WEEE MARKING
This symbol indicates that the product must not be disposed of with household waste. The product must be collected separately.

OPENTHERM®
This logo indicates that the product is OpenTherm certified and works with OpenTherm central heating boilers.

LOGO MATERIAL CODE PP
This logo is applied to the housing and indicates the use of polypropylene.

LOGO MATERIAL CODE ABS
This logo is applied to the housing and indicates the use of ABS.

2. Safety

The safety instructions in this chapter must be followed to install and maintain the ModulAIR safely. Please read this chapter carefully. Some instructions are repeated throughout this guide to remind you at the right time.

2.1 GENERAL

Warning!
Handle electrical appliances with care:
- Never touch the device with wet hands.
- Never touch the device when you are barefoot.

Warning!
The product must not be modified.

2.2 MAINTENANCE

Warning!
Only Modul-AIR service technicians specially trained by Joule are allowed to carry out maintenance work on the Modul-AIR. As a user you are only allowed to replace the filter.

Warning!
Cleaning and maintenance must not be performed without supervision by children or by persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge.

2.3 CHILDREN AND OTHER VULNERABLE USERS

Warning!
This product may be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of this product in a safe way and are aware of the the hazards of the product and/or system.

3. The Modul-AIR

3.1 GENERAL PRODUCT DESCRIPTION

The Modul-AIR extracts heat from the indoor air to be exhausted. This heat is then returned to the central heating system and, depending on the variant, is also used for heating a hot water tank or even for fully electrically heating a home.

The Modul-AIR can be installed as five different variants:

- Modul-AIR Solo: Hybrid Space Heating
- Modul-AIR Combi: Hybrid Space Heating & Hot Water
- Modul-AIR Flex: All-E Space Heating
- Modul-AIR All-E: All-E Space Heating & Hot Water
- Modul-AIR Aqua: Heat Pump Water Heater & DHW Tank

In the Flex and All-E variants, the Modul-AIR also has the option of electrical heating.
All variants are available with or without balanced ventilation (Green Comfort Module).

3.2 MAIN PARTS

The main subject parts of the Modul-AIR are shown in figure 4.

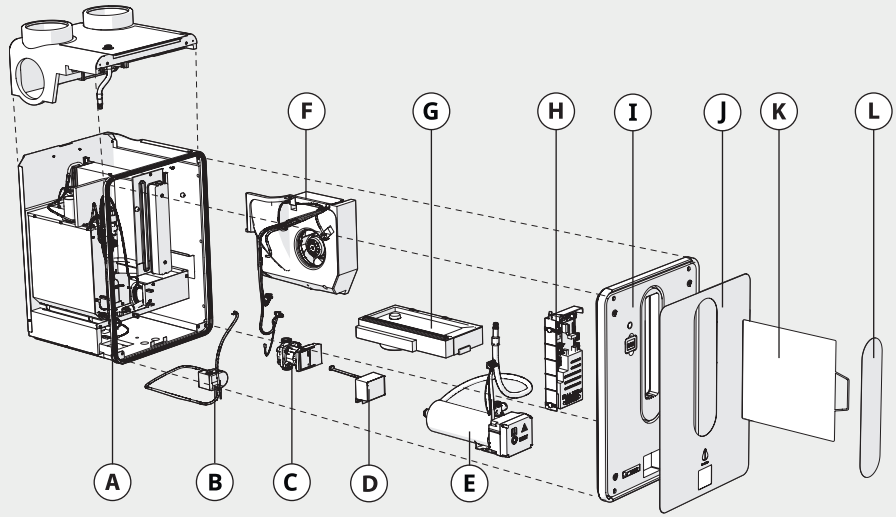


Figure 4 Main components of the Modul-AIR

A	Housing	**E**	Electric instantaneous heater*	**I**	Front
B	Three-way valve*	**F**	Fan	**J**	Front plate
C	Central Heating Pump	**G**	Drip tray	**K**	Filter
D	Display	**H**	Control Unit	**L**	Filter cap

** the presence of this part depends on the variant of your Modul-AIR*

3.3 VARIANTS

Depending on the situation, the Modul-AIR can be used as five different variants be installed (figure 5 to 8). Extensive configuration schemes of this variants can be found in the Appendices installation manual.

A	Pump	**D**	CV supply	**G**	Three-way valve
B	Condenser	**E**	CV return		
C	Check valve	**F**	Instantaneous heater		

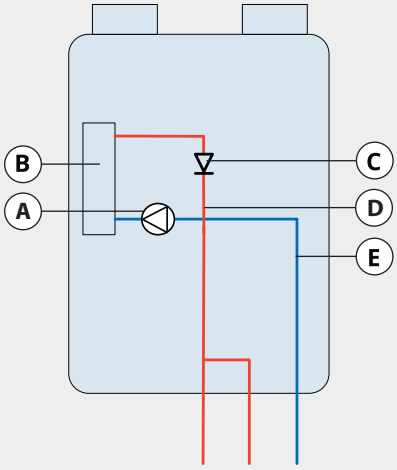


Figure 5 *Modul-AIR Solo*

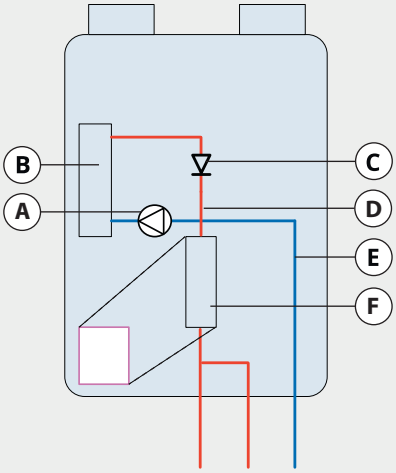


Figure 6 *Modul-AIR Flex*

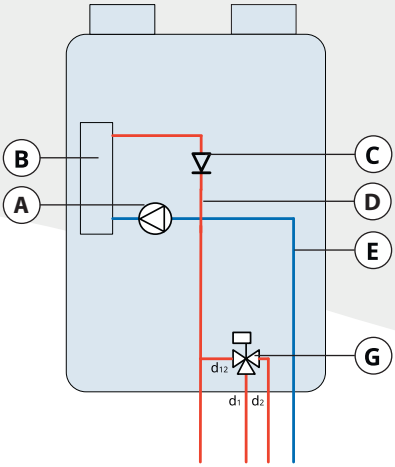


Figure 7 *Modul-AIR Combi*

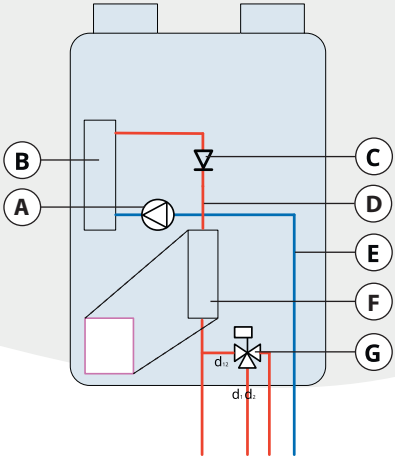


Figure 8 *Modul-AIR All-E*

Each variant of the Modul-AIR offers unique advantages:

3.3.1 MODUL-AIR SOLO

Hybrid space heating

The Modul-AIR Solo is the basic variant for (hybrid) heating up to 1.7 kW in addition to the existing (gas) heating. The Modul-AIR functions here as the primary heat generator. The central heating boiler helps to absorb peaks in heat demand.

3.3.2 MODUL-AIR FLEX

All-E space heating

Thanks to the integrated electric instantaneous water heater, the Modul-AIR Flex can provide a heating capacity of up to 1.7 kW heat pump power without a central heating boiler and an additional power of 1.5, 3 or 4.5 kW through electrical auxiliary heating. In this variant, hot water is supplied separately by another heat source (e.g. electric heating or a solar boiler). With the electric instantaneous water heater, three different additional powers can be selected at commissioning.

3.3.3 MODUL-AIR COMBI

Hybrid Space Heating & Hot Water

The Modul-AIR Combi can support the central heating boiler as well as heat the hot water. This variant differs from the Modul-AIR Solo by a integrated three-way valve. This selection allows the choice between heat supply to the Joule hot water storage tank or to the central heating system. After-heating of the hot water is done by the existing central heating boiler.

3.3.4 MODUL-AIR ALL-E

All-E Space Heating & Hot Water

The Modul-AIR All-E can heat a house fully electrically and provide it with hot water via a Joule hot water storage tank. This variant contains both an integrated electric flow heater and a threeway valve.

3.4 EXTERNAL PARTS & ACCESSORIES

Remote control of the ventilation of the Modul-AIR requires a wireless switch and receiver (Figures 9 & 10). These communicate with each other via radio frequency. The switch is powered by a button cell battery and the receiver is connected to the mains.

Figure 9 *RF switch (3 positions + auto)*

Figure 10 *RF receiver*

This wireless system can be expanded with a CO_2-sensor and a humidity sensor (Figures 11 & 12). the CO_2-sensor is connected to the mains and the humidity sensor is powered by two AA batteries.

Tip
Place the CO_2-sensor in the living room for optimum air quality. Place the humidity sensor in the bathroom for an optimal ventilation while showering.

Tip
A maximum of 20 switches or sensors can be connected to the system.

Tip
Joule strongly recommends expanding the system with at least one of the two sensors. This makes it possible to change the settings afterwards.

Figure 11 *RF-CO_2 sensor (optional)*

Figure 12 *RF-RH sensor (optional)*

Figure 13 shows the collaboration between these accessories.

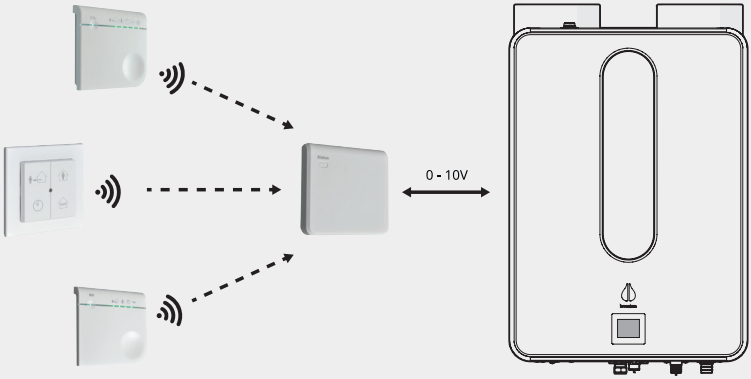


Figure 13 *The Modul-AIR wireless control network.*

The following items can be used to extend the functionality of the Modul-AIR. For more information about these parts, visit:
www.joule.ie www.jouleuk.co.uk

- **Joule Modul-AIR Unvented Cylinder**

For the supply of hot water, Joule supplies matching stainless steel tanks with an enlarged heat exchanger, specifically for use with the Modul-AIR. The tanks are lightweight, corrosion-resistant and low-maintenance. The Joule Modul-AIR unvented cylinder is available with a net volume of 150, 180 or 210 litres.

- **Balanced ventilation (Green Comfort Module)**

By adding the Green Comfort Module to the Modul-AIR, a house can also be ventilated on the basis of balanced ventilation. The GC Module draws in fresh outside air, which is first filtered and then heated. The air is then conveyed to the respective occupied areas via separate ventilation ducts. Conversely, used and polluted indoor air is discharged by the Modul-AIR. The heat from the discharged air is then returned in the form of warm central heating and hot water and via the GC Module in the form of warm supply air.

Look out!
A separate installation and commissioning manual is available for the Green Comfort Module. Refer to this guide for more information.

4. The advantages of the Modul-AIR

4.1 A HEALTHY INDOOR CLIMATE

Everyone needs fresh air. Not just outside, but also at home. A good indoor climate keeps you healthy and fit. Homes have become much better insulated in recent years. That is nice, because it saves heating costs, but the disadvantage is that the air quality in the house is insufficient because there are no longer any cracks through which fresh air can enter. As a result, we are unsolicited exposed to germs, bacteria and allergies. This makes efficient and effective ventilation a must for our health. Your Modul-AIR ensures that your home remains well ventilated and that harmful and moist air is removed.

The advantages of a house ventilated by the Modul-AIR at a glance:

- You are less likely to get sick.
- You are less susceptible to allergies.
- You have better concentration.
- You are more productive.
- You don't waste heat.

4.2 MAKE SMART USE OF THE MODUL-AIR

With the Modul-AIR you can save on your energy bill. You do this by being smart about the ventilation settings and the heating in your home. The installer has installed at least one RF switch and RF receiver during the installation (see §3.4).

When you are at home and only have an RF switch, the Modul-AIR is in the ventilation position by default present. In addition, there are various activities in which a other position is desirable:

- While showering
- While cooking
- While sleeping
- During the day
- When you are not at home

If you also have a CO2 and/or a humidity sensor, put ventilation position on Auto. As a result, the ventilation is automatically controlled and the air quality in your home is always optimal. In the next chapter you will find instructions on how to set up the Modul-AIR especially for these situations.

5. Using the Modul-AIR

In this chapter you will find all the information you need to use the Modul-AIR safely and correctly.

5.1 USING THE DISPLAY

To operate the Modul-AIR, use the display on the front of the product. Below you will find some tips to properly operate the display.

Tip!
Use the arrows on the left and right of the display to switch screens (figure 14). Use the arrow at the top left to return to a higher menu.

Tip!
If you have changed a setting and want to exit the screen, a dialog box with the text “are you sure?” (figure 15):

- Press **Yes** to save the setting.
- Press **No** to not save the setting.

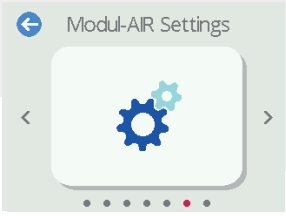


Figure 14
The navigation buttons.

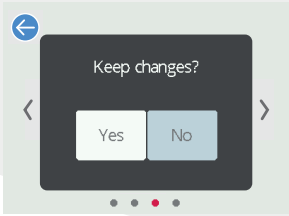


Figure 15
Confirming a new setting.

5.1.1 THE MAIN MENUS

After switching on the display, you arrive at the start screen. On this start screen you can choose from four main menus:

- Saving and Consumption
- Filter Control
- Information
- Settings

The flowchart in figure 16 shows the contents of the four main menus.

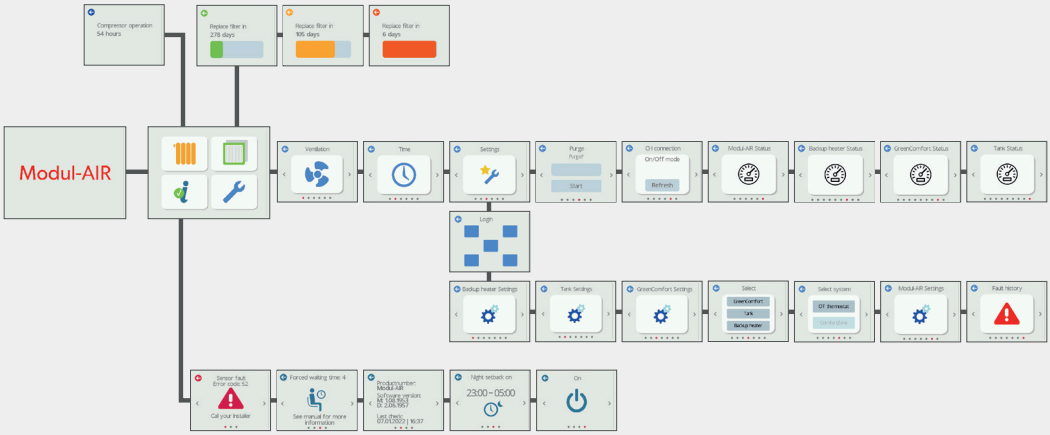


Figure 16 The contents of the four main menus.

5.2 SETTING VENTILATION VALUES

During the installation of the Modul -AIR, the installer has precisely adjusted the ventilation settings to your home. We advise you not to just change this. If you have any questions about this or if you want to adjust this, please always contact your installer first.

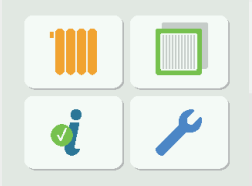
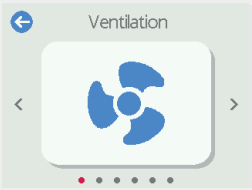
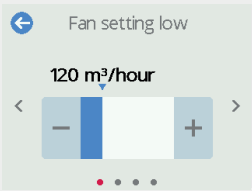
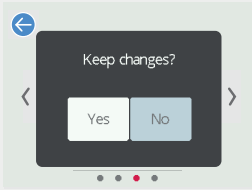
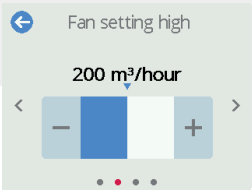
Look out!

Do not adjust the value of the ventilation high and low settings. This state namely set to the maximum and minimum capacity of the system in your home.

Tip!

Adjustments can be made in the settings menu of the display of the Modul-AIR. In this menu you can also set the Timer: the time after which the Modul-AIR returns to the default settings.

To adjust the values of the ventilation positions, do the following:

1. Tap the Settings icon in the main menu.	
2. Press the Ventilation icon.	
3. Set the value of the low setting. Use the minus and plus buttons for this. **4.** Press the right arrow. The confirmation screen appears.	
5. Press **Yes** to save the value.	
6. Enter the value of the high in the same way.	

5.3 MAKE SMART USE OF THE MODUL-AIR

You can set the Modul-AIR to preset ventilation positions. You do this with the wireless RF switch that the installer has placed in your home (figure 17). The switch has the following four positions:

A **Absent**
In this position the Modul-AIR ventilates at a low setting.

B **Timer**
In this position the Modul-AIR ventilates at the high setting for a certain period.

C **Present**
In this position the Modul-AIR ventilates moderately.

D **Auto**
In this mode, the Modul-AIR will automatically ventilate based on a CO_2- or RH sensor.

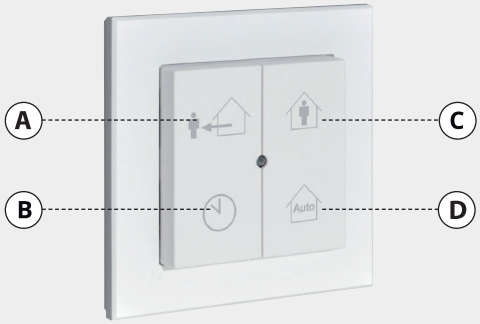


Figure 17 *The RF Switch Options*

Tip!
Do you want an RF switch in multiple places in your home? Then contact the installer.

Tip!
When you add a CO2 and a humidity sensor to your system you can always leave the ventilation position on Auto. The sensors ensure optimum air quality.

5.3.1 DURING A SHOWER

When you shower, a lot of heat is released. The Modul-AIR can make good use of this heat. Set up your Modul-AIR like this:

- Set the RF switch in the bathroom to the ventilation position **timer.** After the timer expires, the switch automatically returns to the previously set position.

Tip!
If a humidity sensor is installed, the system will automatically set the fan to the highest setting. You don't have to do anything while showering.

5.3.2 DURING COOKING

Heat is also released during cooking, which the Modul-AIR can put to good use. Set up your Modul-AIR like this:

- Leave the switch in the position **Present** if there is a recirculation hood or an extractor hood with a passage to the outside in the kitchen.
- Set the mode to **timer** if you have a motorless extractor hood.

5.3.3 WHILE SLEEPING

The Modul-AIR performs best if you let your home heat up evenly. You set this via the room thermostat.

Look out!
Make sure that the night reduction does not exceed 1°C.

5.3.4 DAYTIME

Fresh air in your home is important. Opening your windows every now and then is fine, but not for too long. This means that the air in your home loses heat that the Modul-AIR could have used well.

So open your windows for a shorter time and set the ventilation to the highest setting more often (**timer).** In general, keep the ventilation position on **present.**

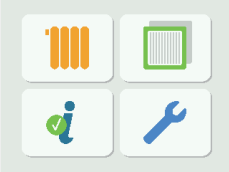
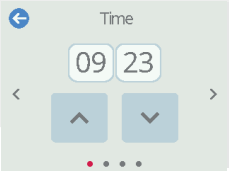
5.3.5 WHEN YOU'RE NOT HOME

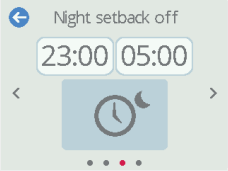
To prevent the Modul-AIR from using energy that you do not need, do the following:

• Set the RF switch to the ventilation position **Absent.**

5.4 DATE AND TIME

Several functions of the Modul-AIR are affected by the date and time.
So set it correctly. This is how you do this:

1. Tap the Settings icon in the main menu.	
2. Navigate to Time and press the icon.	
3. Set the hours and minutes on the first screen. Use the up and down arrows to do this. **4.** Press the arrow right. The confirmation screen appears.	
5. Press **Yes** to save the setting.	
6. Set the date on the second screen.	

7. On the third screen, set the night clock.	

Look out!

In most cases, the Modul-AIR delivers a lower efficiency if you switch on the night clock. Joule therefore advises not to set the night clock when in doubt.

6. Replace the filter

The filter should be replaced every 12 months.

Warning!
Only Modul-AIR service technicians specially trained by Joule are allowed to carry out maintenance work on the Modul-AIR. As a user you are only allowed to replace the filter.

Look out!
In the case of new construction, the filter must be replaced 6 months after delivery. After that, the standard frequency of 12 months applies.

Look out!
The application of an extractor hood in the kitchen to the system means that the filter has to be replaced much more often.

Look out!
Always use a Modul-AIR filter.

Tip!
Check the filter menu on the display to see when the filter needs to be replaced.

This is how you replace a filter (figure 18):

1. Remove the filter cap (A)

Look out!
The cap can jam. To prevent damage or bending of the filter cap, carefully loosen the cap from the sides.

Tip!
The cap is clamped, so you don't have to unscrew anything.

2. Pull the filter out of the Modul-AIR (B)
3. Install a new filter panel. Replace the filter cap and valve.

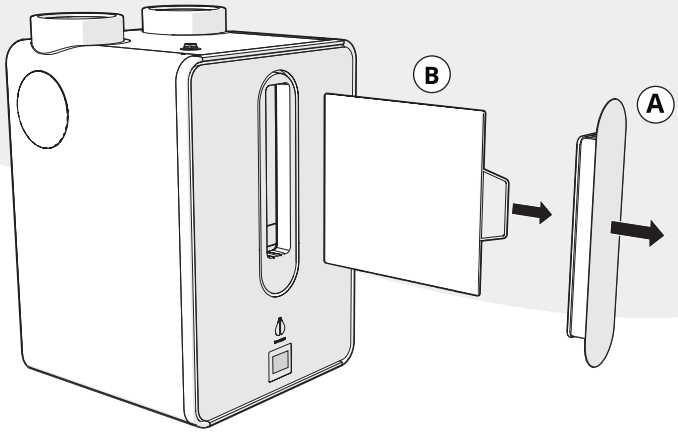


Figure 18 *Removing the filter.*

4. Set the counter on the display to '0'.
5. Reset the instantaneous water heater.
6. Reset the temperature protection.

7. Error messages on the display

In the event of a malfunction, always contact the installer for support. The installer may need the serial number. So keep this handy. You will find this on the type plate. See §1.4.1 of this manual for more information.

Look out!
Always reset the date and time after a power failure. You also do this during the summer and winter time. See §5.4 of this manual for instructions.

Look out!
The ventilation is always on, but this is not visible from the outside. You can check this by going to settings on the screen of your Modul-AIR and scrolling to the on/off icon. It will then read "HP off – Fan Active" or "HP on – Fan Inactive". We recommend that you NEVER turn the Modul-AIR off.

The Modul-AIR shows a message on the display when a situation occurs that requires attention. These error messages are displayed in the info menu (Figure 19).

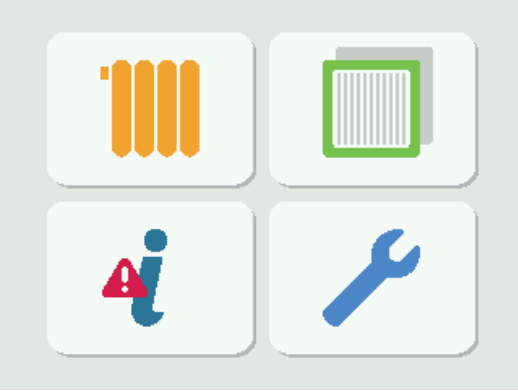
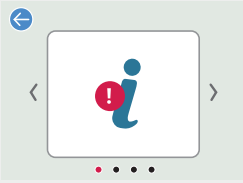
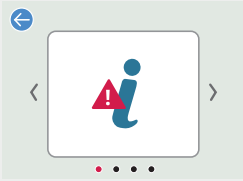


Figure 19 *The information menu.*

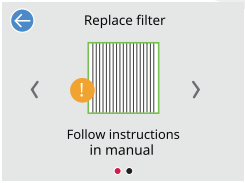
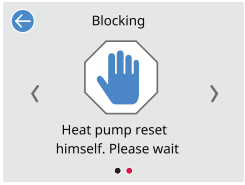
There are two types of error messages:

	**Filter Maintenance or Blocking** This icon means that the Modul-AIR is working, but may be less efficient due to a malfunction.
	**Sensor Error or Lockout** This icon means that the Modul-AIR is locked out due to a fault and is out of order. You can only manually undo this lock.

Look out!
In the event of a latched error, the Modul-AIR will sound a buzzer to alert you that the unit is not working. You can turn off the buzzer manually, but this does not solve the problem. Therefore, always call your installer when the buzzer goes off.

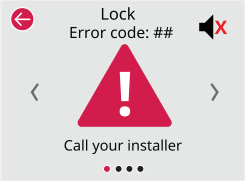
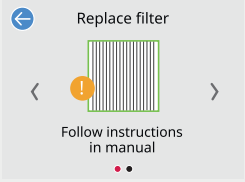
7.1 FILTER MAINTENANCE OR BLOCKING

When you press the first icon, you will see one of the following screens:

SCREEN	REF.NO.	MEANING
	10 20	Low water pressure (< 0.8 bar) Replace the filter!
	80 81	Temporary blocking of the Modul-AIR, you don't have to do anything unless the room thermostat shows otherwise. No temperature difference across the condenser No temperature difference across the evaporator

7.2 SENSOR ERROR OR LOCKOUT

When you press the second icon, you will see one of the following screens:

SCREEN	REF.NO.	MEANING
	12 13 30 31 32 33 34 35 36 37 51 52 53 54 55 56 60 70 71	No communication with the room thermostat No communication with the boiler Top tank temperature sensor error Bottom tank temperature sensor error Instantaneous water heater temperature sensor error Air-In sensor error- GC Module Air-Out sensor error- GC Module Airflow sensor error- GC Module Frost protection active- GC Module Lost connection with GC Module Air-In sensor error Air-Out sensor error Evaporator sensor error HP Return sensor error HP Supply sensor error Hot Gas sensor error Airflow sensor error Water pressure sensor error Instantaneous water heater protection active
	90 94 95	Compressor locked (repeated error 80) Compressor locked (repeated error 81) Water pressure is critically low (< 0.3 bar). Is becoming automatically canceled when the water pressure increases.

7.2.1 ANTI-CYCLING NOTIFICATIONS

The following anti-commuting messages may occur. These are informational notifications; action is not necessary. The device will reboot within 35 minutes.

NOTIFICATION	MEANING
AP2	The average central heating temperature is higher than 60°C.
AP3	The freeze protection is active.
AP4	Pause mode - the compressor must not be started yet.

8. Guarantee

The Modul-AIR is manufactured with great care. When using parts that do not original from Joule Modul-AIR devices, the warranty is void. Also proper functioning of the Modul-AIR cannot be guaranteed in this case.

8.1 WARRANTY EXTENSION

The responsibility for the implementation of the guarantee rests in the first instance with the installer or supplier from whom the Modul-AIR was purchased. Always consult the installer or supplier first.

8.2 WARRANTY PERIOD

• 2 year* full warranty on parts and labour.

**calculated from the date on the proof of purchase*

8.3 WARRANTY CONDITIONS

• In the event of a warranty claim, the type and serial number of the Modul-AIR must be stated (these information can be found on the type plate of the ModulAIR);

• The purchase invoice stating the purchase date must be submitted.

The warranty only applies if:

• There are material and construction errors (this is at the discretion of the manufacturer);
• The Modul-AIR has been installed, used and maintained according to the installation and operating manual;
• The filter of the Modul-AIR has been replaced annually;
• The Modul-AIR has been installed by a recognized installation company;
• The Modul-AIR has been commissioned by Joule or by a Joule recognized installation company;
• The first diagnosis has been carried out by a recognized installer;
• The Modul-AIR has not undergone any structural changes or adjustments;
• The defect is not the result of drinking water that is too hard or too aggressive, aggressive (liquid) substances, vapors or gases and internal or external corrosion or limescale;
• The defect is not the result of your own fault, negligence or injudicious use.

8.4 WARRANTY EXCLUSION

- Call-out costs;
- Shipping costs;
- Transport damage;
- Administration costs;
- Secondary damage such as fire damage, business damage, water damage or personal injury.

8.5 SERVICE

Always report to the local installer or point of sale if there are any problems with the installation and/or operation of the Modul-AIR. You can also go there to order parts.

NB

The defect of one or more parts in no way justifies the replacement or return of the entire device. All relevant parts are available at short notice.

Joule or the supplier accepts no liability for damage or personal injury of any kind caused by:

- failure to follow the instructions in this manual;
- carelessness during the installation, use, maintenance and repair of this ventilation heat pump;
- do not use in accordance with the application;
- the use of parts not supplied by the manufacturer;
- consequential damage due to leakage.

8.6 LIABILITY

Joule, the installer or the supplier do not accept liability for damage or personal injury of any kind, caused by:

- Failure to follow the (safety) instructions in this manual.
- Carelessness during the installation, use, maintenance and repair of this heat pump.
- Unintended use of the Modul-AIR.
- Using parts not supplied by the manufacturer.
- Consequential damage due to leakage.

9. Technical specifications

9.1 TECHNICAL SPECIFICATIONS

Modul-AIR – Technical Specifications					
		CONFIGURATION			
SPECIFICATIONS	UNIT	SOLO	FLEX	COMBI	ALL-E
Mains connection		P+N 230V ~50Hz +10% -6%"	P+N 230V ~50Hz +10% -6%"	P+N 230V ~50Hz +10% -6%"	P+N 230V ~50Hz +10% -6%"
Fuse	a	16	32	16	32
Max. power consumption	W	620	5795	620	6370
Max. absorbed electrical power heat pump	W	620	620	620	620
Max. power consumption instantaneous	W	N/A	5175	N/A	3450
Max. absorbed power excl. DHW Tank element	W	N/A	N/A	N/A	2300
Average electrical consumption power heat pump part	W	300	300	300	300
IP Class		X2	X2	X2	X2
Max. working pressure HP	kPa	300	300	300	300
Cord type		3 core cable flex (1m)	3 core cable flex (1m)	3 core cable flex (1m)	3 core cable flex (1m)
PERFORMANCE					
Max. supply temperature	C	60	60	60	60
Max. delivered thermal power	kWth	1.71	1.71	1.71	1.71
COP (20˚C - 45˚C)		5.0	5.0	5.0	5.0
Reheater power	kW	N/A	max 4.5 kW + 15%	N/A	max 4.5 kW + 15%
REFRIGERANT					
Refrigerant	Type	R134a	R134a	R134a	R134a
Refrigerant content	g	580	580	580	580
GWP value		1430	1430	1430	1430
CO_2 equivalent	kg	830	830	830	830
DIMENSIONS AND WEIGHT					
Height	mm	700	700	700	700
Width	mm	500	500	500	500
Depth	mm	500	500	500	500
Weight	kg	55	58	56	60

WATER QUALITY REQUIREMENTS					
SPECIFICATIONS	**UNIT**	**SOLO**	**FLEX**	**COMBI**	**ALL-E**
Permissible acidity of central heating water	pH	6.5-8.0	6.5-8.0	6.5-8.0	6.5-8.0
Chloride	mg/l	< 150	< 150	< 150	< 150
Total hardness ($CaCO_3$)	F	< 5	< 5	< 5	< 5
iron	mg/l	< 50	< 50	< 50	< 50
copper	mg/l	< 3	< 3	< 3	< 3
Aluminium	mg/l	< 3	< 3	< 3	< 3
Langelier's index	mg/l	0 ±0.01	0 ±0.01	0 ±0.01	0 ±0.01
Additions	-	not Allowed	not Allowed	not Allowed	not Allowed
HARMFUL ADDITIVES					
Active Chlorine	mg/l	< 0.2	< 0.2	< 0.2	< 0.2
Fluorides	-	not Allowed	not Allowed	not Allowed	not Allowed
INSTALLATION ROOM					
Max. permissible air humidity installation room	rH	85%	85%	85%	85%
Max. allowed temperature	C	40	40	40	40
Min. allowed temperature	C	10	10	10	10
CONNECTIONS					
Air inlet (1x)	mm	150	150	150	150
Air outlet (1x)	mm	150	150	150	150
HP connections (2x)		15mm / G "	15mm / G "	15mm / G "	15mm / G "
DHW tank connection	(return to resume return with t-piece)	15mm / G "	15mm / G "	15mm / G "	15mm / G "
GC Module connection		15mm / G "	15mm / G "	15mm / G "	15mm / G "
Condensate drain	mm	32	32	32	32
VENTILATION					
HP Air Flow Rate	m^3/h	100-250	100-250	100-250	100-250
(depending on house floor area)					
High setting (set value)	m^3/h	50-350	50-350	50-350	50-350
Low setting (set value)	m^3/h	50-350	50-350	50-350	50-350
SOUND					
Noise Level Bandwidth	dBa NEN-EN ISO 3744	41.5	41.5	41.5	41.5
CERTIFICATES/PROOF MARKS					
CE		Yes	Yes	Yes	Yes
OpenTherm		Yes	Yes	Yes	Yes

9.2 DIMENSIONS

The dimensions of the Modul-AIR are shown in Figure 20.

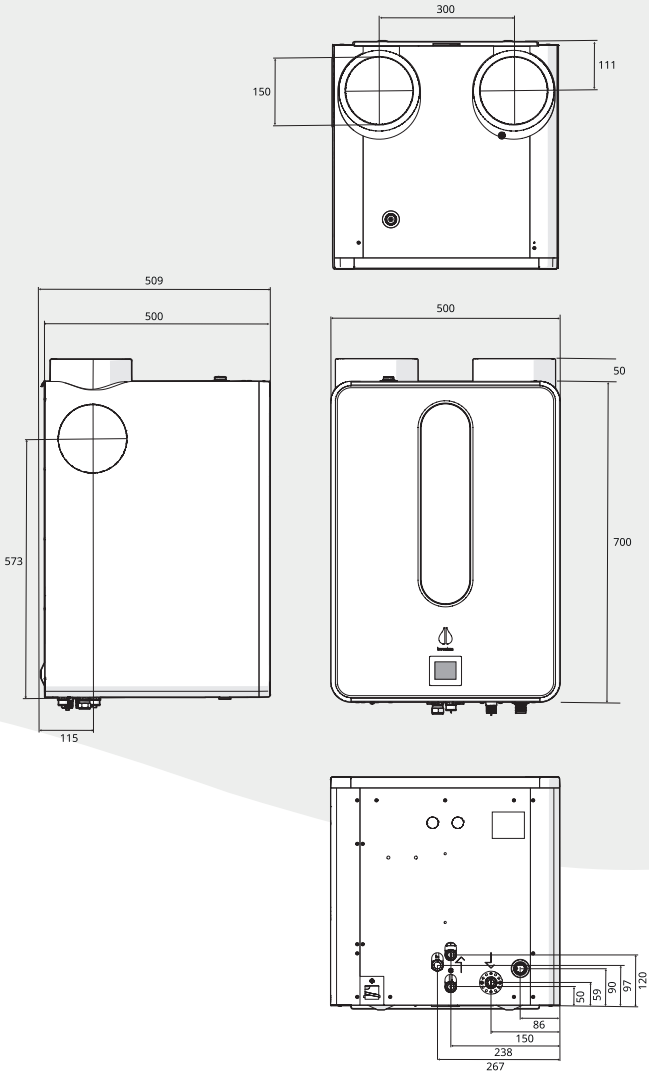


Figure 20 The dimensions of the Modul-AIR.

NOTES