e:nergycarbon
Efficient low carbon heating systems

AirUnit

Decentralised domestic ventilation

Operating manual

List of contents, Operating manual

1. General information

With your **AirUnit**, you will be able to create a healthy, pleasant and comfortable indoor climate thanks to regulated, needs-based ventilation. The devices are optimally suited for use in new constructions and renovations thanks to their uncomplicated installation and simple operation. **AirUnits** are produced according to state of the art technology and recognised safety regulations. The ventilation unit has general building inspectorate approval.

Please read this Operating manual carefully prior to use of the device and observe the information regarding commissioning and maintenance of the device. The operator of the ventilation unit is responsible for the faultless condition and operation of the device for its intended purpose under observation of the information provided. Improper use, improperly executed repairs or maintenance work and design changes can impair the function and safety of the device, and lead to termination of any warranty claims.
Installation and work on the ventilation unit may only be executed by **trained specialist personnel** in compliance with the regulations regarding occupational safety and accident prevention.

AirUnits with heat recovery are designed for the ventilation of one or several rooms. The devices may only be used exclusively for the conveyance of air. The conveyance of aggressive, flammable or extremely dusty media is not permissible. Never operate the device without the filter which is inserted in the device.
The connection of ventilation pipes or the connection to other ventilation systems is not permissible.
AirUnits are not suitable for drying constructions; operation of the device should only be implemented after completion of the construction activity. The operation of the device in connection with fireplaces may require additional safety equipment (Feuerungsverordnung FeuV - German Fire Code Ordinance). Corresponding information can be obtained from your local chimney sweep.

Prerequisites for optimum ventilation operation:

1. Doors and windows of the rooms to be ventilated are to be kept closed if possible.
2. In case of operation of several devices, overflow openings between the rooms to be ventilated are to be provided (shortening of door leaves / installation of door ventilation grids).

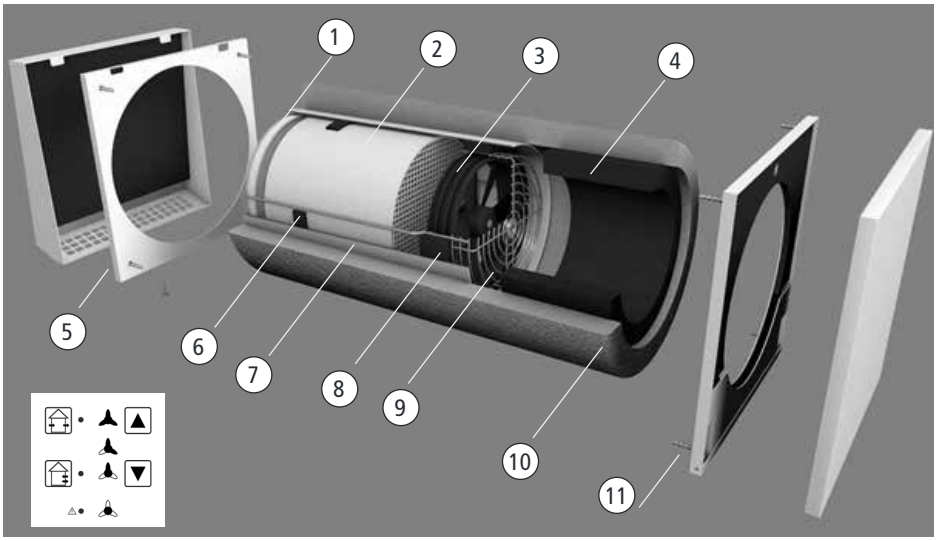
2. Device description

The **AirUnit** is a decentralised ventilation system for controlled room ventilation with heat recovery. The use of several devices in pairs enables the ventilation of complete residential units / buildings.

A complete **AirUnit** comprises of a NEOPOR® wall duct and a ventilator unit inserted into the wall duct. The ventilator unit comprises of a reversible ventilator (12 V/DC), a ceramic heat accumulator for heat recovery, a filter (G3) and sealing rings which are inserted into a wire assembly incl. protection grid and enclosed by a housing pipe. Furthermore, all ventilation units are delivered with an additional sound insulation mat.

The air flow in the room occurs via a closable and sound-insulated design screen. The exterior air flow occurs via a weather protection hood. The device is operated via the **controller** with operating panel (accessory). Up to six ventilation units (3 x feed 3 x exhaust) can be controlled via the **controller**. The installation of the **controller** occurs in a device double socket, e.g. flush-mounted, double cavity wall socket.

- **AirUnit 500 complete**



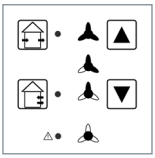
1 • **Filter (G3)**
2 • **Ceramic heat accumulators for heat recovery**
3 • **Ventilator (12 V/DC)**
4 • **Sound insulation mat**
5 • **Exterior hood** (weather protection screen in RAL 9016 or stainless steel)
6 • **Sealing ring** (heat accumulator)
7 • **Housing pipe**
8 • **Sealing ring** (ventilator)
9 • **Wire assembly incl. protection grid**
10 • **Wall duct** (495 or 1000 mm)
11 • **Interior design screen**

3. Adjustment of ventilation operation

The operating mode variants of the AirUnit ventilation units are adjusted via the operating panel of the **controller**. Two basic functions with different ventilator performance can be set:

Function summer mode (**without** heat recovery) →

Function winter mode (**with** heat recovery) →



- **Function summer mode** (feed or exhaust air mode **without** heat recovery):

The **AirUnit(s)** operate constantly in feed* **or** exhaust air mode*; in this setting, heat recovery does not take place. A change to winter operation with heat recovery occurs automatically after 8 hours.

*The operating mode is defined via the electrical connection; the device can be connected to the **controller** as a feed or exhaust air device (**see Electrical connection Page 10 | Installation manual**).

- **The winter mode function (**feed or exhaust air mode **with** heat recovery):

The **AirUnit(s)** operate alternately in 2 adjustable time intervals. In the first interval (exhaust air phase) the „used" room air is extracted outside via the ventilation unit. In the process, the air flows through the ceramic heat accumulator, which absorbs and stores the heat of the room air. In the second interval (feed phase) the „fresh" outside air is conveyed into the room via the ventilation unit. The outside air similarly flows through the heat accumulator, absorbs the previously stored heat and introduces this back into the room. In case of **AirUnit** operating in pairs, the devices of the device pair work in opposite directions, i.e. the first device in feed and the second device in exhaust air mode; in the next interval this is vice versa. In this way, a heat recovery of up to 90% occurs.

- **AirUnit ventilation system with 3 feed and 3 exhaust air units:**

Exhaust devices in „summer mode"

Feed devices in „summer mode"

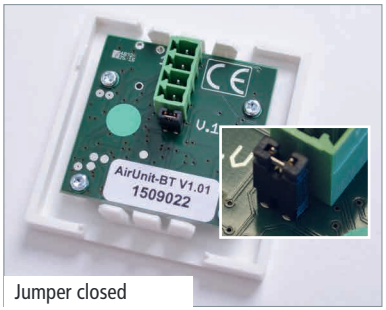
3.2 Minimum ventilation

In order to ensure a **permanent minimum ventilation**, **AirUnits** provide the possibility to set a constant ventilation operating mode at a **minimum performance level**. Here the ventilation unit(s) operate in summer or winter mode depending on the settin, **switching off the devices** via the operating panel for the control electronics **is not possible**.

Activation / deactivation of the minimum ventilation occurs by means of re-plugging a wire jumper on the **rear side of the control panel** of the **controller**. For activation of the minimum ventilation, the control panel of the **controller** must be removed (carefully pull off the control panel); the activation of the minimum ventilation occurs on the deinstalled control panel as described below:

Caution:
Prior to changing the jumper setting, the **power supply of the ventilation unit must be interrupted at all poles**. The mains disconnection must be secured against reconnection!

- Ventilation unit OFF

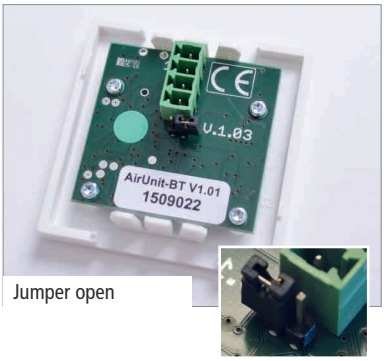


Jumper closed

If the jumper on the rear side of the control panel is **closed,** then the ventilation unit can be **switched off** by actuating the arrow key „DOWN" (**see** Fig. **Page 6**). The ventilation mode is interrupted; the signal lamp „ " (**see** Fig. **Page 6**) lights up.

← alternative →

- Minimum ventilation

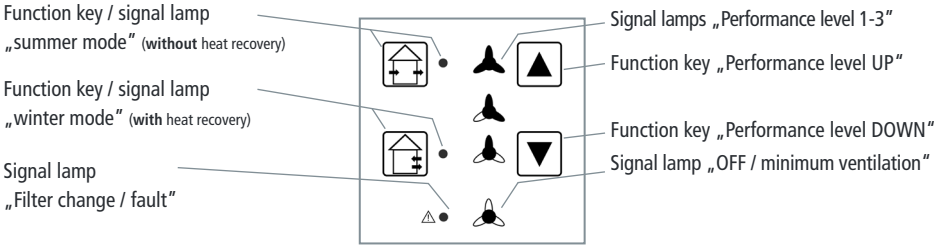


Jumper open

If the jumper on the rear side of the control panel is **open** or only plugged with one pin, then the minimum ventilation is activated.
The ventilation unit is not completely switched off by actuating the arrow key „DOWN" (**see** Fig. **Page 6**) but instead operates in **constant operation** at a minimum performance level. The activated minimum ventilation is signalised by pulsation of the signal lamp „ " (**see** Fig. **Page 6**).

If the jumper is open, the **ventilation unit** can't be switched off via **controller**. In order to switch off the **ventilation unit**, interrupt the power supply to the **controller** with a customer-installed switch.

4. Operating and display elements of the controller



The device is switched on to performance level 1 by pressing this button. By pressing the button again, the next-higher performance level is selected.

The device is reset to the next lower performance level by pressing this button. If the device is at performance level 1, then the device is switched off by pressing this button again or reset to the minimum ventilation[1].

[1] Option minimum ventilation, **see page 5.**

Sleep timer function

The **sleep timer** is activated by pressing and holding the button. This display of the performance level is maintained and the bottom LED is pulsing. After two hours, the device switches back to the last selected performance level. A touch of the upward button deletes the sleep timer and switches the device back into normal operation.

The device is set to feed or exhaust air mode[2] **without** heat recovery (= summer mode by pressing this button. The summer mode is **automatically reset to winter mode 8 hours** after activation. Summer mode is extended by a further 8 hours by actuating this button again.

[2] Is dependent on the electrical connection, **see Page 10 | Installation manual**.

The device is set to alternate feed / exhaust air mode with heat recovery (winter mode) by pressing this button. During the heating period, the device should be constantly operated in this setting.

If the adjacent symbol **lights up**, then the device is in performance level 3. Performance level 3 is **automatically** reset to performance level 2 **an hour** after its activation. If the adjacent symbol flashes, the external humidity operation[3] has been activated.

[3] External humidity operation option, **see page 7**.

If the adjacent symbol lights up, then the device is in performance level 2.

If the adjacent symbol lights up, then the device is in performance level 1.

Continued: Operating and display elements of the controller

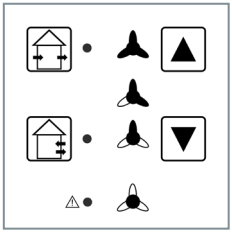
If this display **lights up**, then the device has been switched off via the arrow key „DOWN". By actuating the „UP", the ventilation mode can be switched on again. If this display **pulsates**, then the device has been switched via the arrow key „DOWN" to performance level „Minimum ventilation" (**see page 5**). By actuating the arrow key „UP", the performance level of the ventilation unit is increased. If this display **flashes**, then the device has been switched off externally. Option external off, **see page 8**.

Constant illumination of this display indicates that inspection / cleaning of the filter insert of the ventilation unit is due. The maintenance of the filter inserts is described on **page 9**. If this display **flashes**, it signalises a malfunction on the control panel of the **controller**. The control electronics or the control panel must be checked by an electrician, see Malfunction **Page 11**.

5. External control inputs

- **External input humidity control:**

For rapid humidity extraction for the ventilation of rooms with increased humidity loads, for example bathrooms and showers, the output of the **AirUnits** can be increased via an external hygrostat (= humidity-dependent switch) depending on the humidity. The switching point (= humidity value) for increasing performance is set at the hygrostat. If the set humidity value (recommended setting summer: 65-80% residual moisture; winter: 55-65% residual moisture) is exceeded, then **performance level 3** of the ventilation unit is activated via the hygrostat. The connection of the hygrostats occurs at input E1 of the connection plug „external inputs" on the **controller**, as depicted in the connection plan **on Page 11 | Installation manual**.



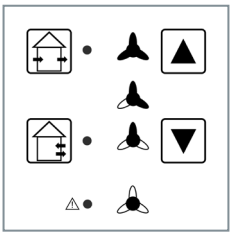
External humidity operation is displayed on the control panel of the control electronics of the ventilation unit when the signal lamp „**Performance level 3" flashes**. If the ventilation level is not changed manually at the control panel, the device operation is continued at the last active ventilation level after the renewed switch-off of the external contact. Performance level 3 of the externally-activated humidity operation can be reduced to performance level 2 or 1 via the control panel of the **controller**.
In order to ensure the reduction of the increased air humidity, switching the devices off or resetting them to performance level „Minimum ventilation" is not possible.

→ External input „Device OFF", see following page

Continued: External control inputs

- **External input „Device OFF“:**

In order to prevent humidity damage in your premises, the **AirUnits** are designed for constant ventilation operation. Should the ventilation operation need to be interrupted at certain times, however, then it is possible to switch off the ventilation unit via an external switch / time switch.
The switch / time switch is connected at input E2 of the connection plug „External inputs“ at the **controller**, as depicted in the connection diagram on **Page 11 | Installation manual**.



An externally switched off* **AirUnit** is displayed on the control panel of the **controller** when the signal lamp „ ” **flashes**.
If the ventilation level is not manually changed on the control panel, then the device operation is continued at the last active ventilation level after switching the external contact on again.
An externally switched off* **AirUnit** can be switched on again by pressing the button „Performance level UP“ at the control panel of the **controller**.

* The external switch-off of the ventilation unit is dependent on the jumper setting „Minimum ventilation“ (see **page 5**). If the minimum ventilation is activated, the system operation is not interrupted in case of external switch-off; instead it is reduced to minimum ventilation. The minimum ventilation is displayed on the remote control by a pulsating illumination of the signal lamp „ ”.

6. Cleaning / maintenance

The mechanical and electrical components of the **AirUnits** are maintenance-free. However, over the course of time, airborne oils, particle matter or similar lead to contamination of the filter inserted into the device and to fine deposition on the lamellae of the heat accumulator and the blades of the ventilator. In order to ensure fault-free operation of the ventilation unit, the filter insert, heat accumulator and ventilator must be checked and cleaned at certain intervals, as described below. Contamination of the room and facade-side air passages (see components ventilation unit **page 3**) can be removed using a slightly damp cloth. **Under no circumstances** may cleaning agents continaing solvents be used!

6.1 Maintenance filter insert

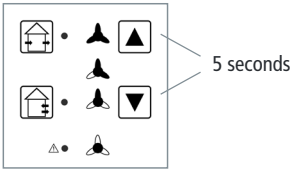
The filter inserted into the ventilation unit is monitored in the control electronics by means of an operation time measurement. After the expiry of 3 months continuous operation (2190 operation hours), the required inspection of the filter insert is indicated on the control panel of the **controller** when the signal lamp „Filter change / fault" ⚠● is **continuously lit up**. Checking / cleaning of the filter insert is described below.

Caution:
Prior to all maintenance work, the power supply of the **ventilation unit must be interrupted at all poles**. The mains disconnection must be secured against reconnection!

To check the filter, the inner screen of the ventilation unit must be pulled off in an upward direction. The plug connection of the connection line is to be disconnected and the sound insulation mat removed. Subsequently, the ventilator unit can be removed from the wall duct. Pull the wire assembly backwards out of the housing pipe and remove the filter for any cleaning work due.

- **Filter insert removal**

In case of slight contamination (no or little dust deposition), the filter insert can be vacuumed or beaten clean. In case of heavy contamination, the filter insert can be washed using warm water (approx. 40° C) and a conventional household mild detergent. In the process, the filter should not be tumbled if possible. Allow the cleaned filter insert to **dry completely** prior to reinsertion into the ventilation unit; dust deposits will occur immediately on a damp filter! In order to ensure continued good filtration, a filter replacement is necessary at the latest with the destruction of the fibre structure. Insert the dried filter insert into the ventilator unit again and assemble the AirUnit ventilation unit in the reverse order. After the inspection / cleaning of the filter insert and switch-on of the power supply for the **AirUnit**, the operation time measurement must be restarted for monitoring the filter insert.
Restart occurs via the control panel of the **controller**:



Restart of the operation time measurement occurs by **simultaneously pressing** the buttons **„UP"** and **„DOWN"**. Hold down both buttons until the red LED „Filter change / fault" goes off (approx. 5 seconds). The re-start of the filter monitoring can be implemented as described above, also without prior output from the filter change display, e.g. within the scope of a scheduled inspection.

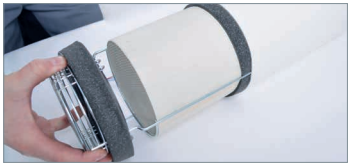
The prompt for a filter check is issued dependent on time after a **3-month operation period**; the actual contamination level of the filter is not taken into consideration. Depending on the level of contamination, an earlier filter replacement may be expedient. It is therefore recommended that you check the filter insert at **three-month intervals** in the **first year** after commissioning the **AirUnit**, and in case of recognisable heavy contamination of the filters, that you reduce the inspection / cleaning intervals.

6.2 Maintenance heat accumulator / ventilator

The inspection / cleaning of the heat accumulator and ventilator should only be performed with the appropriate specialist knowledge. It is therefore recommended to have the **AirUnit** inspected annually by a specialist. In the course of this inspection, the ventilator unit of the device should be deinstalled and checked with regard to contamination / damage.
If damage is determined, the affected components are to be replaced prior to further operation of the **AirUnit**. Contact our suppliers for the procurement of spare parts.

The dismantling of device components may **only be executed by an electrician with a voltage-free** (contact opening width min. 3 mm) **AirUnit**.

When checking the heat accumulator and ventilator, the inner screen of the **AirUnit** must be pulled off in an upwards direction. The plug connection of the connection line is to be disconnected and the sound insulation mat removed. Subsequently, the ventilator unit can be removed from the wall duct.



Pull the wire assembly forwards out of the housing pipe, remove the heat accumulator and remove the seal ring for any cleaning work due. The ventilator can also be removed from the wire assembly after the removal of the ventilator sealing ring.

In case of slight contamination of the heat accumulator / ventilator, both components can be vacuumed using a vacuum cleaner. Heavy contamination of the ventilator can be removed using a small brush or paintbrush. In case of heavy contamination, the removed heat accumulator can be rinsed with water (max. 70° C).

In case of heavy contamination / oil deposits, the heat accumulator can be cleaned using water with a detergent (degreaser). Residual detergent must subsequently be completely rinsed with clear water. The heat accumulator must be **completely dried** after cleaning – dust deposits will occur immediately on a damp heat accumulator! Replace the cleaned components in the ventilator unit again and assemble the **AirUnit**t in the reverse order (ventilator type plate must face in the direction of the room / protection grid). In order to ensure the correct device function, a complete function test of the **AirUnit** is to be performed after the assembly of all components and switch-on of the power supply on (**see page 6**).

7. Error messages

Besides a required filter check, the signal lamp „ ⚠● " (**see page 7**) on the **controller** also displays a communication fault between the control panel and control electronics.

⚠● The communication fault is reported through repetitive **triple flashing** of the LED „Filter change / fault". On issue of this message, the plug connection between the control panel and control electronics must be checked by an **electrician**.

Caution:
Prior to all maintenance work, the **power supply must be interrupted at all poles**. The mains disconnection must be secured against reconnection!

When checking the plug connection between the control panel and control electronics, the control panel must be removed from the control electronics. Subsequently, check the contacts of the plug connection with regard to damages / foreign objects / humidity penetration.
Foreign objects must be carefully removed from the plug connection; mechanically damaged or components damaged by humidity are to be replaced. Contact our suppliers for spare part procurement. In order to ensure correct device function, a complete function test of the **AirUnit** is to be performed after the repair of components (**see page 6**).

7.1 Malfunctions

In the following table, possible malfunctions and their rectification are described. As faults are mainly caused through errors in the area of the power supply / electrical connections, the error detection / rectification must be implemented by an electrician. In case of such errors, please contact the **installation technician** for your ventilation system or your supplier.

Fault	Cause	Rectification
Ventilator does not operate	Power failure / interruption	Check the power supply (fuse)
	Connection error	Check all line connections for the correct connection, connection plug for correct positioning (**see Page 10 | Installation manual**)
	Ventilator blocked	Check ventilator, remove blockage / foreign object
	Ventilator defective	Check ventilator, replace if necessary
	Control panel / -electronics defective	Check control panel / control electronics, replace if necessary
Noise generation from the ventilator	Ventilator scraping due to contamination / foreign object	Remove contamination / foreign objects
	Motor bearing of ventilator defective	Replace ventilator
Air passage too narrow	Filter insert soiled	Check / clean filter insert (**see page 9**)
	Heat exchanger soiled	Check / clean heat exchanger (**see page 10**)
	Wall duct / weather protection hood soiled / blocked	Check wall duct / air passages weather protection hood, remove contamination / foreign objects if necessary

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