



# AirUnit

Compact controller Pro



**Installation instructions & operating manual**

## List of contents, Installation instructions

	Seite
1. General information .....	03
2. Technical Data .....	04
3. Norms fulfilled .....	04
4. Installation of AirUnit compact controller pro .....	04
5. Electrical connection .....	05
5.1 Connection AirUnit ventilation unit(s) – AirUnit compact controller pro .....	05
6. External digital input (bath ventilation operation) .....	06
7. Sensor operation .....	06
8. Settings ventilation mode .....	08
9. Operation amd display elements AirUnit compact controller pro .....	09
10. Service .....	10
11. Operating hour counter .....	11
12. Errors .....	11

## Symbols

The following symbols are used in the manual for labelling particular information:



General information / information



Warning information



Information: Hazard due to electrical voltage



Installation / maintenance information

## 1. General information

The **AirUnit** and **controller** are constructed according to state of the art technology and the recognised safety regulations.



Installation and maintenance work of the ventilation unit may only be implemented by **trained specialist personnel** under compliance with the regulations for occupational safety and accident prevention.

**The electrical connection must be implemented according to VDE 0100. For installation and maintenance work, disconnection from the mains at all poles with at least a 3 mm contact opening width must be undertaken. The mains disconnection is to be secured against re-connection!**



Use of this device is only permitted for the intended use. Incorrect usage, defectively implemented installation or maintenance work and design changes can impair the function and safety of the ventilation unit and lead to the termination of any warranty claims.

Prior to beginning installation / maintenance work, read this manual carefully and observe the information provided for installation and maintenance.

**Prior to the installation of the device**, check the delivery with regard to completeness and integrity, and in case of missing or damaged parts contact your supplier directly.

### Intended use

**AirUnit** with heat recovery are designed for controlled room ventilation. 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 ducts is not permissible. **AirUnits** are not suitable for construction drying; operation of the device should only be implemented after completion of the construction activity.

The operation of the device in connection with fireplaces possibly requires additional safety equipment (Feuerungsverordnung FeuV - German Fire Code Ordinance). Corresponding information can be obtained from the chimney sweep responsible for your region.

### Device location

**AirUnits** may only be installed and operated indoors. When selecting the location for the device, take into consideration that the ventilation unit is accessible for inspection and maintenance work. Installation of the device in close proximity to flammable liquids or gases is not permissible. A mains connection (230 V / 50 Hz) is required to the **controller** for operation of the device.

### Installation

For the installation of the **AirUnits**, the recognised rules of engineering (ARdT) are to be observed with regard to device installation, electrical work, fire protection etc. and the specifications for the ventilation of living spaces (DIN 1946-6).

## 2. Technical data

	AirUnit compact controller pro
Controller	4 performance levels
Operating modes	winter and summer mode
Power unit	up to 4 devices
Switch range	including cover frame, cannot be combined with other swith programm
Protection type	IP 20
Protection class	III
Power supply	200–250Vac, 50/60 Hz
Standby power consumption	< 0,5 W
Digital input	100-250Vac, 50/60Hz
Bus connection	RS-485, USB
Outputs	2x 12V, 0,75A   2x 0-5V PWM
Dimensions	80 x 80 x 49 mm
Operating temperature	0 – 45 °C

## 3. Norms fulfilled

The control unit conforms the safety- and health requirements of the EG guideline 2004/108/EG as well as the EG guideline low voltage in conception and design as well as in the performance, which we have manufactured. The following norms are considered, as far as they are applicable for that device.

- EN 61000-6-1:2007
- EN 61000-3-3:2008
- EN 61000-6-1:2007
- EN 61000-6-3:2007/A1:2011
- EN 60335-1

## 4. Installation AirUnit compact controller pro



The **AirUnit controller** is designed for the installation in a simple cavity wall box. It can be used for the control of up to 4 AirUnit ventilation units. The AirUnit controller is to be connected as a stationary equipment with fixed laid cables. Electrical connection diagram see **page 06**.

The supply voltage of the **AirUnit controller amounts** 230 V/50 Hz, as supply line a sheathed cable 3 x 1,5 mm<sup>2</sup> (for example NYM-J 3 x 1,5 mm<sup>2</sup>) is recommended.

The **control** of the ventilation unit is powered by **12 V voltage** (DC). The ventilation units should therefore **not** be connected with the 230 V supply voltage of the control electronics. As the terminal strip for the AirUnit ventilation units a sheathed cable of minimum 3 x 0,6 mm<sup>2</sup> is recommended.

## 5. Elektrical connection



The electrical connection must be implemented according to VDE 0100. For installation and maintenance work, disconnection from the mains on all poles with at least 3 mm contact opening width must be undertaken. The mains disconnection is to be secured against reconnection!

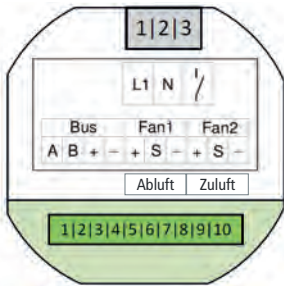
### • Connection of AirUnit compact controller pro

The connection of the devices occurs arranged in pairs at the plug connectors. In paired operation one device of a device pair operates in feed mode, the second assigned device in exhaust air mode. The air flow direction of both devices is alternated at intervals.

Maximum 4 **AirUnit ventilation units** can be operated with the **AirUnit compact controller pro**. Therefore maximum 2 **AirUnit ventilation units** are to be connected in parallel on plug-in connector **Fan 1** and maximum 2 **AirUnit ventilation units** on plug-in connector **Fan 2**.

Those **AirUnit ventilation units**, which are connected on the plug-in connector **Fan 1** serve as exhaust fan regarding to the function "summer mode". **AirUnit ventilation units** which are connected to plug-in connector **Fan 2** become supply fan in "summer mode". If several units are used, cross ventilation can be provided, e.g. to convey cool outside air into the building during the night hours in summer.

By using a single device, the AirUnit ventilation unit can be used as supply- or exhaust fan in "summer mode".



Connecting terminal	
1	RS485-A
2	RS485-B
3	12V Bus
4	GND
5	12V
6	PWM A
7	GND
8	12V
9	PWM B
10	GND

Net terminal	
1	L1
2	N
3	External Input L1' must be in phase with L1!

### 5.1 Connection AirUnit(s) – controller



The connection of the AirUnits to the connection line of the controller is implemented via a plug connector contained within the scope of delivery of the ventilation units, as depicted previously. Please observe the polarity feed / exhaust devices (see Fig. above)!

## 6. External digital input (bath fan operation)



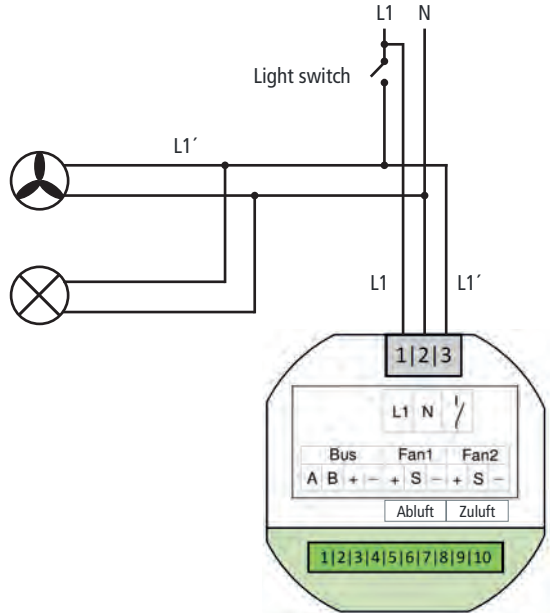
### ATTENTION

It is mandatory that the input as well as the ventilation unit are supplied electrically from the same phase, otherwise an impermissibly high voltage and therefore the destruction of the device may occur.

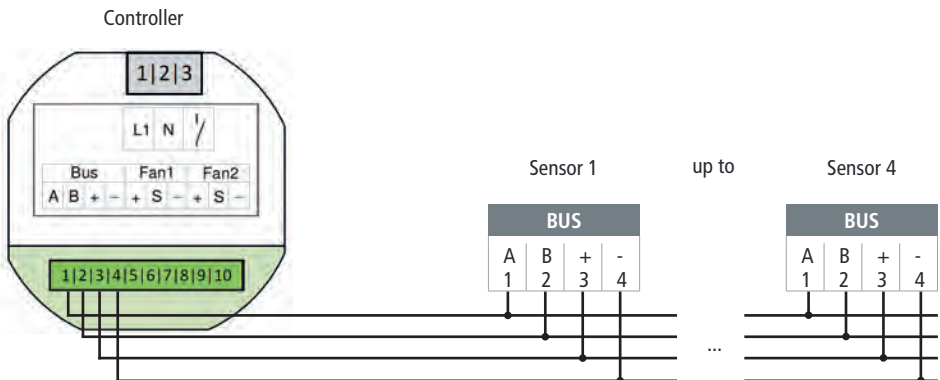
### Alternative air performances

The external digital input is a 230 Vac input and can be used as an offset of exhaust volume flows for the operation bath ventilators.

The external input is connected in parallel to the bath fan. Make sure, that bath fan and ventilation unit are switched in the same phase! While the bath fan is in use, a dysbalance of supply air power 30 m<sup>3</sup>/h and exhaust duct 15 m<sup>3</sup>/h per device is being used instead of the standard air performance, whereby the exhaust air volume flow of the bath fan can be compensated.



## 7. Sensor operation



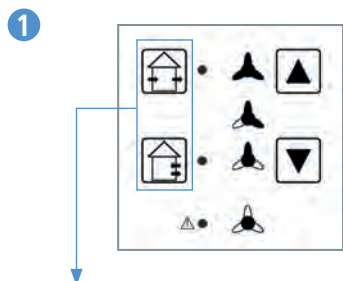
Via the integrated bus-interface of the device different air quality sensors (max. 4 sensors) of the controller can be switched off. The digital air quality sensors send their measured values to the controller. Based on these values the ventilation unit can increase or reduce the air stages, if required.

The number of connected sensors has to be established via the control element (see graph).

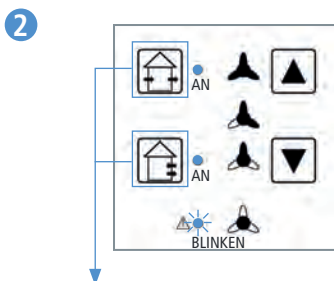
The type of the sensor will be automatically detected and then, the suitable threshold values will be used.

Depending on the air quality (e.g. air humidity) the air stages will be automatically increased or reduced. If the air stages will be reduced manually, the demand-based ventilation system will be deactivated for a period of 60 minutes.

The number of the used sensors has to be set in accordance with the following graphs.



Keep both switches pressed simultaneously for 5 seconds, to enter the configuration menu.

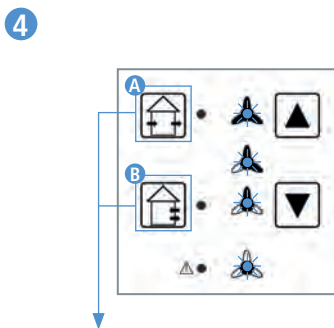


By single pressing the left button, the combination of the left LEDs must be selected as shown.

	No sensor		One sensor		Two sensors	
	OFF	<input type="radio"/>	OFF	<input type="radio"/>	OFF	<input type="radio"/>
	OFF	<input type="radio"/>	ON	<input checked="" type="radio"/>	ON	<input checked="" type="radio"/>
	ON	<input checked="" type="radio"/>	OFF	<input type="radio"/>	ON	<input checked="" type="radio"/>
	OFF	<input type="radio"/>	OFF	<input type="radio"/>	OFF	<input type="radio"/>

	Three sensors		Four sensors	
	ON	<input checked="" type="radio"/>	ON	<input checked="" type="radio"/>
	OFF	<input type="radio"/>	OFF	<input type="radio"/>
	OFF	<input type="radio"/>	ON	<input checked="" type="radio"/>
	OFF	<input type="radio"/>	OFF	<input type="radio"/>

By single pressing the right button (arrow UP / arrow DOWN) the combination of the right LEDs must be selected as shown.

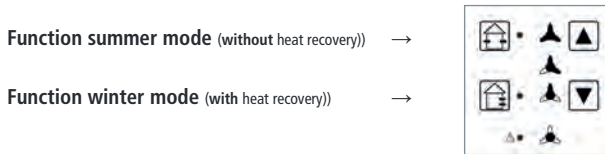


- A** Press long for saving.
- Flashes when successfully saved.
- B** Press long for leaving the configuration menu.

## 8. Einstellungen Lüftungsbetrieb



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** (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.

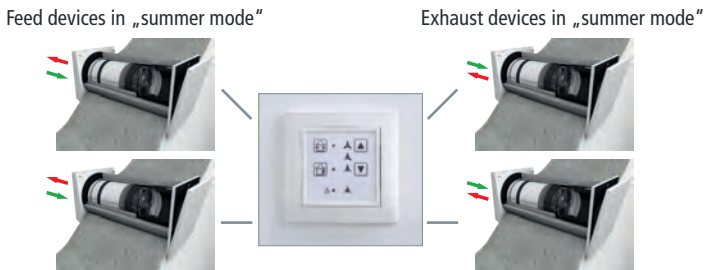
\*Der Betriebsmodus wird durch den Elektroanschluss definiert, das Gerät kann als Zu- oder Abluftgerät an der **AirUnit Regelung** angeschlossen werden (see **Electrical connection page 06**).

- **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;

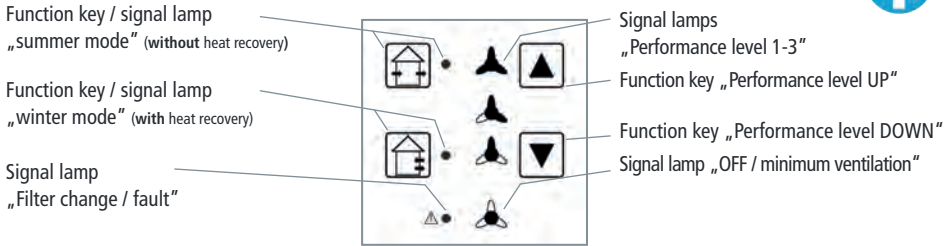
in the next interval this is vice versa. In this way, a heat recovery of up to 90% occurs/erfolgt eine Wärmerückgewinnung von bis zu 90%.

- **AirUnit ventilation system with 2 feed and 2 exhaust air units:**





## 9. Operating and display elements of the compact controller pro



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 minimum ventilation, then the device is switched off by pressing this button again.

**Sleep-Timer Funktion:** 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<sup>2</sup> **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.



<sup>2</sup> Is dependent on the electrical connection, **see page 06**

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 **pulsates**, the device is controlled in sensor operation.



If the adjacent symbol lights up, then the device is in performance level 2. If the adjacent symbol **pulsates**, the device is controlled in sensor operation.



If the adjacent symbol lights up, then the device is in performance level 1. If the adjacent symbol **pulsates**, the device is controlled in sensor operation.




If the adjacent symbol **lights up**, then the device is in performance level minimum ventilation. By actuating "DOWN", the device is switched off and the symbol pulsates quickly. If the adjacent symbol **pulsates**, the device is controlled in sensor operation.



**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 11**. If this display **flashes**, it signals 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 12**.

## 10. 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**:

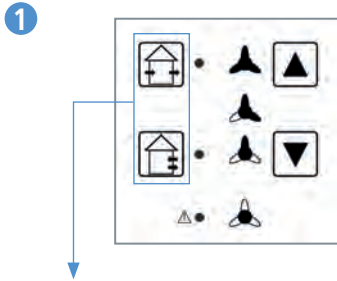


Restart of the operation time measurement occurs by **simultaneously pressing** the buttons „UP“ and „DOWN“. Hold down both buttons until the red LED „Filter change / fault“ goes off (approx. 5 seconds). The re-start of the filter monitoring can be implemented as described above, also without prior output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

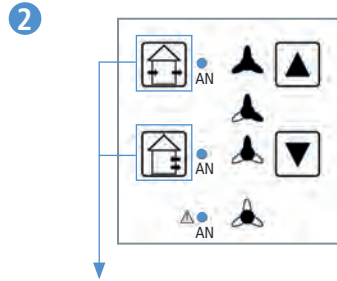
The prompt for a filter check is issued dependent on time after a **3-month operation period**; the actual contamination level of the filter is not taken into consideration. Depending on the level of contamination, an earlier filter replacement may be expedient. It is therefore recommended that you check 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.

## 11. Operating hours counter

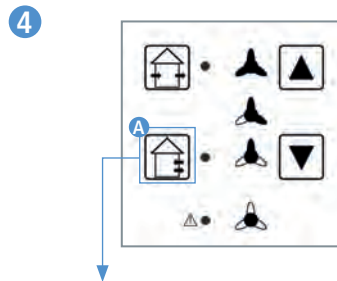
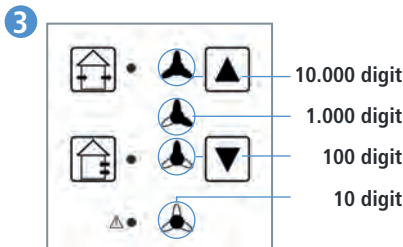
The ventilation system has an integrated operating hours counter.



Keep **both switches pressed simultaneously for 5 seconds**, to enter the configuration menu.



By single pressing the **left** button, the combination of the **left LEDs** must be selected as shown.



**A** Press and hold to exit the configuration menu.

The display of the operating hours shows the sum of the operating hours during which the device was operated in an air stage of at least the moisture protection. The display is based on the number of flashing pulses of the individual LEDs. The LED for moisture protection represents the 10th digit of the operating hours. The reduced ventilation led is the 100 digit. The led for the nominal ventilation is the 1000 digit. The led for the intensive ventilation the 10000r digit. The number of flashing pulses ranges from 0 to 9 and the LEDs flash through their flashing patterns starting from the lowest one in sequence. After one run, the display starts again with the 10 digit.

## 12. Errors

No.	Error	Blink-Code	Measure
1	Filter change necessary	Light indicates	
2	Self-test-error	2 flashes – pause	
3	Communication disturbance sensor	3 flashes – pause	
4	Temperature-error	4 flashes – pause	

o Energy Carbon Ltd

Kemp House,  
152 - 160 City Road,  
London EC1V 2NX

o Tel+44203 507 1659

o [hello@energycarbon.co.uk](mailto:hello@energycarbon.co.uk)

