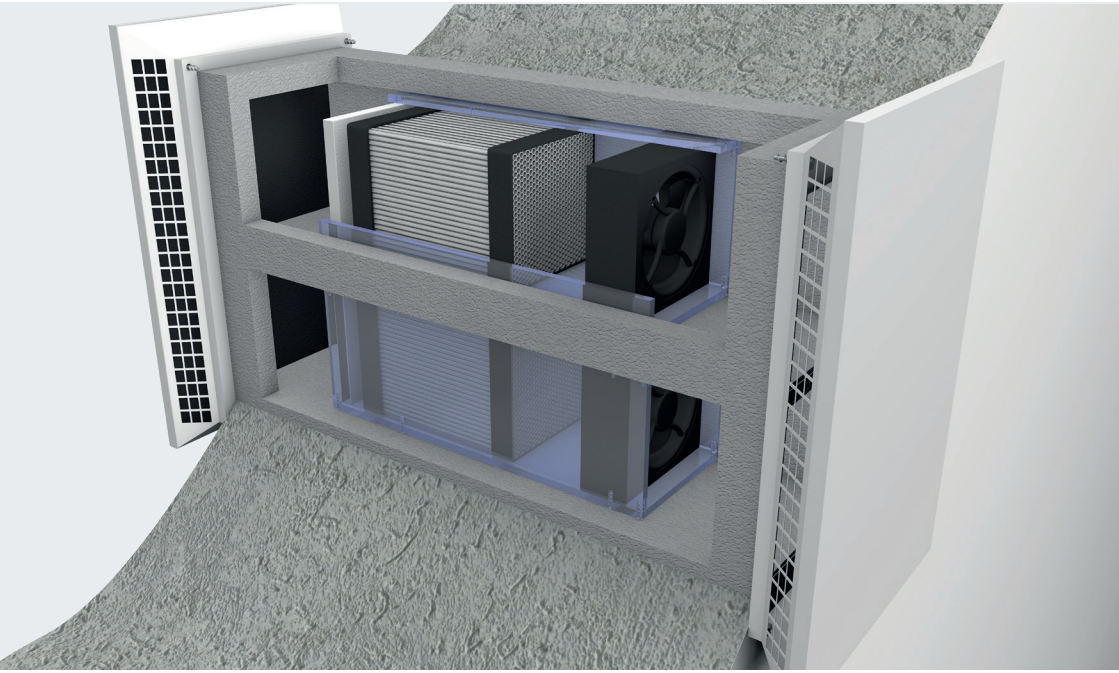
e:nergycarbon
Efficient low carbon heating systems

AIRUNIT GEMINI

Decentralised domestic ventilation



Installation instructions

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Symbols

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



General information / information



Warning information



Information: Hazard due electrical voltage



Installation / maintenance information

1. General information



The **AIRUNIT** ventilation systems and controller are designed according to the current state of the art and the recognised safety regulations.

Installation and maintenance work on the ventilation unit may only be carried out by **trained specialists** in compliance with the regulations on work safety and accident prevention.



The electrical connection must be carried out in accordance with VDE 0100. For assembly and for maintenance work, all poles must be disconnected from the mains with at least 3 mm contact opening width can be made. The mains disconnection must be secured against reconnection!

The device may only be used for its intended purpose. Improper use, poorly executed installation or maintenance work and structural changes can impair the function and safety of the ventilation unit and lead to the expiry of warranty claims.
Before starting installation/maintenance work, read these instructions carefully and observe the information given on installation and maintenance.
Before installing the unit, check the delivery for completeness and intactness and contact your supplier directly if any parts are missing or damaged.

Intended use AIRUNIT ventilation systems

AIRUNIT ventilation systems with heat recovery are designed for controlled room ventilation. The units may only be used to convey air. The delivery of aggressive, inflammable or highly dusty media is not permitted. Never operate the units without the filter installed in the unit.
The connection of ventilation lines is not permitted. **AIRUNIT ventilation system**s are not suitable for drying out buildings; the units should not be operated until the building work has been completed.
The operation of the unit in conjunction with fireplaces may require additional safety devices (FeuV). You can obtain the relevant information from the chimney sweep responsible for your region.

Device location AIRUNIT ventilation systems

AIRUNIT ventilation systems may only be installed and operated inside the building. When selecting the location of the unit, ensure that the ventilation unit is accessible for inspection and maintenance work.
It is not permitted to install the unit near flammable liquids or gases. A mains connection (230 V / 50 Hz) to the **AIRUNIT control unit** is required to operate the units.

Installation

When installing the ventilation units, observe the recognised rules of technology (ARdT) regarding unit-installation, electrical work, fire protection, etc. as well as the specifications for ventilation of living spaces (DIN 1946-6).

2. Function

The decentralised ventilation system of the type **AIRUNIT** „GEMINI“ is a device for domestic ventilation with and without heat recovery. The ventilators in the decentralized ventilation unit type GEMINI run simultaneously in opposite directions of rotation (push-pull operation), i.e. one ventilator conveys outdoor air into the installation room of the ventilation unit, while the other ventilator conveys exhaust air from the installation room into the open air. There is no mixing of the air flows at any time.
A decentralized ventilation system of the type GEMINI thus consists of two individual ventilation units in one housing, which are equipped with a central control system. The air ducts of both units are separated and sealed from each other. It is therefore not possible to mix supply and exhaust air flows.
In the ventilation stack, the thermal energy of the exhaust air volume flow is loaded into the heat exchanger. The absorbed thermal energy is transferred back to the supply air in the ventilation stack. In this phase, a regenerative heat transfer takes place, which heats up the outside air and returns it to the installation room as supply air. In this way a heat recovery of up to 98% is achieved. The cycle time for changing the direction of rotation of the axial ventilators is approx. 70 seconds.
Via the integrated humidity sensor or alternatively via a switch, the unit can be set to pure exhaust air operation, resulting in an exhaust air volume flow of 40m³/h.

2.1 Planning information

Before installing **AIRUNIT** Gemini ventilation units, a ventilation concept should be drawn up consisting of to which the number of ventilation units, their installation location and the position / number of the associated **AIRUNIT** regulations.

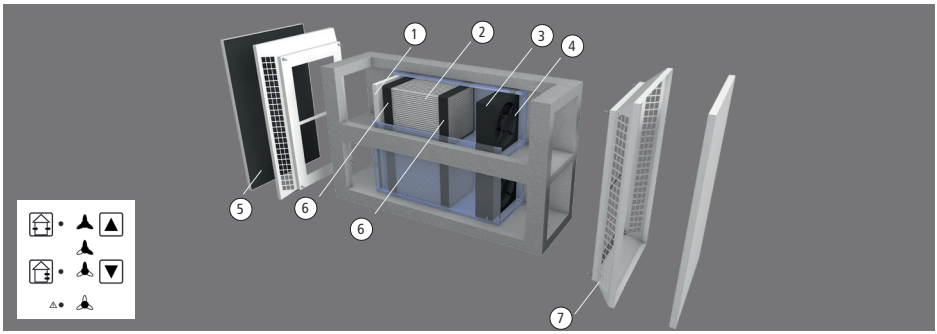
With **AIRUNIT GEMINI** ventilation units the following ventilation variants are available:

• Ventilation of a room/apartment unit with one ventilation unit, alternating supply/exhaust air operation with heat recovery, cross ventilation without heat recovery and exhaust air operation without heat recovery.

AIRUNIT GEMINI ventilation units are suitable for ventilating apartments or comparable usage units. This is made possible by the fans in the ventilation unit, which work in push-pull mode and ensure a balanced volume flow of supply and exhaust air.
The **AIRUNIT GEMINI** units must not be used in interior, **windowless** exhaust air rooms such as kitchens, bathrooms and toilets, as it is not permitted to connect the units to a shaft or pipe. Here the use of an exhaust air fan in accordance with DIN 18017 T.3 is recommended. The unit cannot be installed in cellars with light shafts either, as recirculation of the exhaust air cannot be excluded. To prevent recirculation when the units are mounted on the facade, a minimum distance of 1.0 m should be maintained between individual units. We recommend not using the unit if the building is exposed to wind (average wind speed > 5 m/s). In order to avoid drafts caused by the operation of the ventilation units If you want to avoid this, the air diffusers on the room side should not be arranged directly above seating areas or similar. Ensure that the room-side air diffuser is not impaired by furniture or curtains.

3. Delivery units / scope of delivery

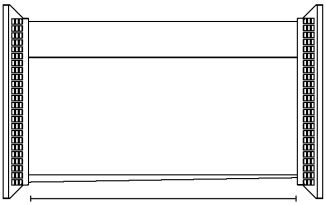
A complete **AIRUNIT GEMINI** ventilation unit consists of a square wall duct with integrated gradient and two ventilator units. The ventilator units each consist of a reversible ventilator (12 V/DC), ceramic heat accumulators for heat recovery, the unit electronics, filters (ISO Coarse 50% / G3, optional pollen filter ePM1 55%) and sealing strips, which are enclosed in a square housing. The air diffuser on the room side is provided by a lockable and sound-insulated inner panel. The fresh air is discharged via a weather protection cover. The unit is operated via the **AIRUNIT** control unit in wired design (accessory).

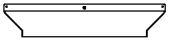


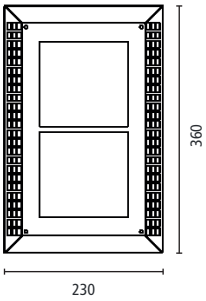
1 • **Filter ISO Coarse 50% (G3)**
2 • **Heat exchanger**
3 • **Ventilator support**
4 • **Ventilator**
5 • **Outer cover**
6 • **Sealing**
7 • **Room side air diffuser**

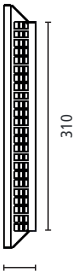
4. Dimensions

- **AIRUNIT GEMINI ventilation unit** (all dimension information in mm)

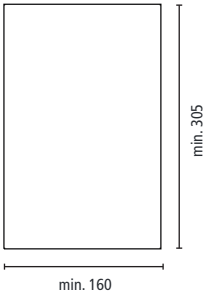








Opening dimension wall breakthrough



4.1 Technical data

	AIRUNIT Ventilator unit
Air output	5 | 10 | 21 | 30 m³/h in heat recovery mode / 40 m³/h in exhaust air mode
Sound power level	23 | 34.5 | 49 | 55 dBa / 49 dBa in exhaust air mode
Sound pressure level at a distance of 1 meter	15.2 | 26.5 | 41.0 | 47.2 dBa / 41.0 dBa in exhaust mode
Power consumption	1.0 | 1.7 | 2.7 | 4.0 Watt / 2.7 Watt in exhaust air mode
Control	4 power levels + exhaust air operation
Filter category	Filter ISO Coarse 50% (G3), regenerative
Supply voltage	230 V / 50 Hz
Heat recovery	up to 98 %
Remote control	yes
DIBt Zulassung	in preparation
Netzspannung	200-250 AC / 50-60 Hz
Ventilator	12 V / EC-, direct current
Ventilation unit	155 x 300 mm (W x H) Length 500 mm can be shortened up to 300 mm
Membrane keypad	power levels, winter & summer operation, filter level indicator
Power unit	80 x 80 x 49 mm including cover frame, cannot be combined with other switch ranges

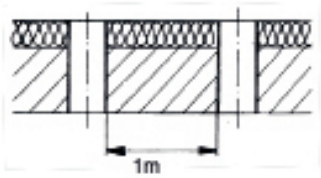
5. Selection of the installation location



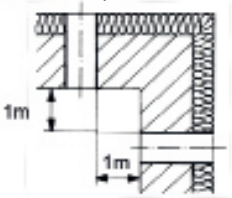
On selecting the installation location, pay attention to the exterior view of the building. To ensure that the devices blend harmoniously into the building facade, the devices should be installed at the same height / at the same distance from windows, for example.
Note the dimensions of the air diffusers on the outside or room side.
It is recommended that a **minimum distance of 200 mm be maintained around the wall duct to adjacent facade components / elements** and room corners!

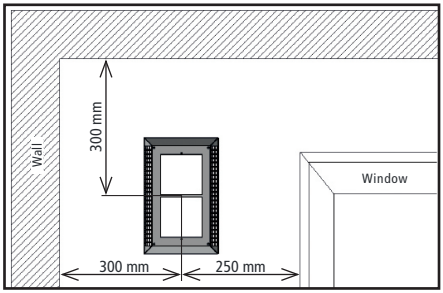
The **AIRUNIT GEMINI** devices may not be covered by furniture or curtains.

Recommended minimum distance for the installation of a device pair in a wall:



Recommended minimum distance for the installation of a device pair across a corner:





6. Installation wall duct



For the **AIRUNIT GEMINI ventilation units** wall ducts are available in two different designs:

- square (length 500 or 1000 mm)

All wall ducts are manufactured to drain condensate with an integrated slope to the outside (observe the room-side labelling, see Fig.).

6.1 Core drill hole wall duct



Prepare two core drillings in diameter ≥ **160 mm**, and remove the hatched area to obtain a wall opening of min. 160 x 305 mm (WxH). Alternatively, build the wall duct squarely into the masonry. In both cases, create a cable slot on the upper right edge for the connection cable.

6.2 Installation wall duct









Insert the wall duct into the wall opening and, if necessary (e.g. for further plaster or insulation layers), allow the wall duct to protrude accordingly on the room and facade side. Observe the **slope to the outside** or the **marking of the wall duct on the room side.**
Seal the wall duct to the masonry inside and outside with a suitable sealing compound. For larger wall openings, the cavities between the wall opening and wall duct can be filled with non-pressing installation foam.

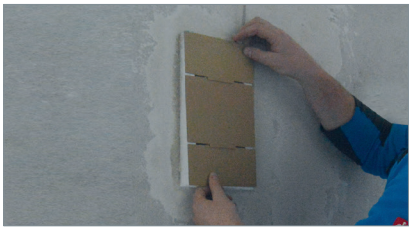
After completion of the wall, the wall duct can be shortened flush with the wall using a carpet knife.

Caution:
In order to ensure tension-free installation / removal (maintenance) of the ventilator / heat accumulator in the wall duct, deformations of the wall duct through external pressure / tension are to be avoided! Observe that the wall duct is installed with a gradient to the outside at all times.

6.3 Wall duct insertion, ventilation unit connection cable



Insert the connecting cable (min. J-Y(ST)Y 2x2x0.6 mm²) above (right / room-side view) into the wall duct. Allow the connection cable protruding in the **length of the wall duct.**



Close the wall duct on the interior and exterior side using the supplied wall covers, in order to prevent contamination of the wall duct.

7. Electrical connection

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

The **AIRUNIT control unit** must be connected as a stationary device with permanently installed lines.

The **supply voltage of the AIRUNIT control unit** is **230 V/50 Hz**, a sheathed cable 3 x 1.5 mm² (e.g. NYM-J 3 x 1.5 mm²) is recommended as a supply line.

The **ventilation units** are controlled by **12 V direct voltage (DC)**, the ventilation units may therefore **never** be connected to the 230 V mains voltage of the control electronics. As connecting cable for the **AIRUNIT GEMINI ventilation units** we recommend a cable min. J-Y(ST)Y 2x2x0.6 mm² up to a connection length of 30 metres. Information on installation and electrical connection can be found in the installation and operating instructions.

8. Completed installation



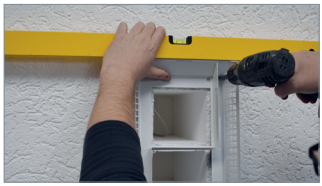
After completion of the insulation / plaster work, remove the wall covers on the interior and exterior side. Adapt the wall duct to the dimension of the finished wall by trimming the wall duct flush with the **room** or **facade side** using a carpet knife or a hot wire.



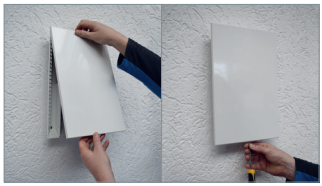
To protect against water penetration into the wall opening, the facade-side transition to the wall duct must be saled **circumferentially** using a suitable sealant!



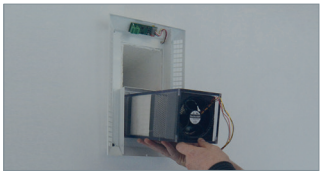
Glue the sealing tape supplied to the back of the outer wall panel all the way round.



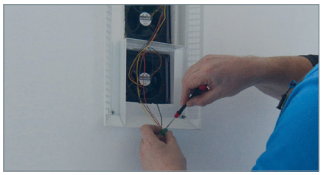
Subsequently, install the wall panel to the weather protection hood using suitable attachment elements.



Install the weather protection hood to the **AIRUNIT GEMINI ventilation unit.** The hood is mounted onto the attached lugs on the upper edge of the wall panel and fixed to the underside of the wall bracket with the supplied fixing screw.



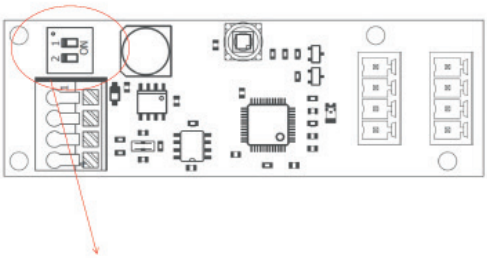
Mount the console of the design panel with suitable fastening elements with the device electronics facing upwards. Carefully push the ventilator units (ventilator points towards the room) into the wall duct. Make sure that the connecting cable of the ventilator is not bent / damaged in the process.



Then connect the connecting cables of the ventilators with the plug connections of the electronics. Fasten the connection cables in the cable holders provided.



Close the hood and secure it with the fastening screw on the top.





1 OFF | 2 OFF (factory setting)



1 ON | 2 OFF



1 OFF | 2 ON



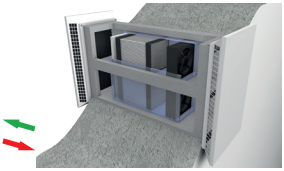
1 ON | 2 ON

Settings on the device electronics:
If several **GEMINI ventilation units** are connected, the address must be set on the device electronics.

Attention: Each address can only be assigned once. A maximum of 4 **GEMINI ventilation units** can be operated in one system.

8.1 Function check

After completion of the installation work, the device function must be checked. Before the inspection, it must be ensured that the air ducts of the ventilation unit are free of installation residues / foreign bodies and that all electrical work has been carried out and completed professionally!



After switching on the power supply (usually via the circuit breaker of the electrical installation) the **AIRUNIT GEMINI** can be put into operation via the control panel of the **AIRUNIT control unit**. When starting up, check **all** functions described in the **operating instructions of the control** unit. During the check, ensure that the ventilator motor runs smoothly and evenly.

Any malfunctions or faults detected in the **AIRUNIT ventilators** must be rectified before the unit is finally put into operation; possible causes of faults and their remedies are described in the chapter on **malfunctions (see operating instructions for control).**

Document the correctly executed installation / functional test of the ventilation unit(s) in the commissioning protocol.

Wall cover folding instructions

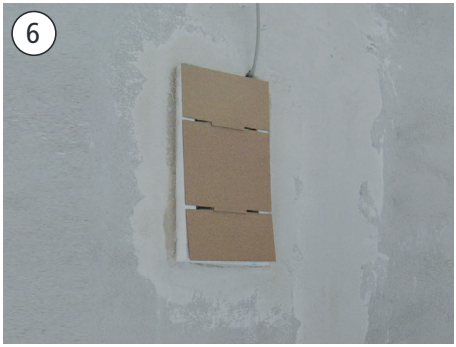












Commissioning protocol



Checklist

- ☐ Installation work completely finished
- ☐ Electrical connection properly performed / tested
- ☐ Device function checked
- ☐ Filter insert / inserts deployed
- ☐ Instruction of device operator carried out (operation, maintenance)
- ☐ Hand over device documents (installation / operating instructions)

- **Option for unit operation in connection with fireplaces:**
  - ☐ Safety devices installed / tested

Place: _____

Date: _____

Installer: _____

Owner: _____

Maintenance log



Maintenance work:	Executed by:

AIRUNIT – Decentralised domestic ventilation

ErP data sheet

	Description		Values	
a	Supplier		Energy Carbon Ltd	
b	Model identification		AIRUNIT GEMINI	
c	SEV class / Specific energy consumption	cold		-82,5
		average	A	-41,1
		warm		-17,3
d	Type of ventilation		Living space ventilation system (WLA) + two-directional Ventilation system (ZLA)	
e	Type of drive		Multi-stage drive	
f	Type of heat recovery system		Regenerativ	
g	Degree of temperature change η_t [%]		75%	
h	Highest air volume flow [m³/h]		30	
i	Electrical input power (incl. control) [W]		4	
j	Sound power level L_{wa} [dB(A)]		49	
k	Reference air volume flow [m³/h]		21	
l	Reference pressure difference [Pa]		0	
m	SEL [W/m³/h]		0,13	
n	Control factor		Control according to local demand	
o	Internal and external air leakage rate [%]		0	
p	Mixing quota [%]		0	
q	Location and description of the filter change indicator Please change / clean the filter regularly, to maintain the device properties		Control system (visual indicator)	
r	Instructions for controllable supply and exhaust air grilles on the facade (only one-way LG)		–	
s	Internet address		www.energycarbon.co.uk	
t	Pressure fluctuation sensitivity [%]		40	
u	Air tightness between inside and outside [m³/h]		3,6	
v	Annual electricity consumption [kWh/(m²a)]		0,9	
w	Annual savings in heating energy [kWh/(m²a)]	cold	84,7	
		average	43,3	
		warm	19,6	

CE

EC Declaration of Conformity

Ventilation unit

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Fax +49 (0) 54 06 | 6 99 95-90

The undersigned hereby certifies that the following device(s) complies/comply with the applicable EU directives. This certification loses its validity if the device(s) is/are modified.

Designation

Decentralised ventilation unit with heat recovery
AIRUNIT GEMINI

EC Directives

EMV-Richtlinie 2014/30/EU

Applied standards

EMC Directive 2014/30/EU

Belm, 03.01.2020

Place and Date of issue



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Notes

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