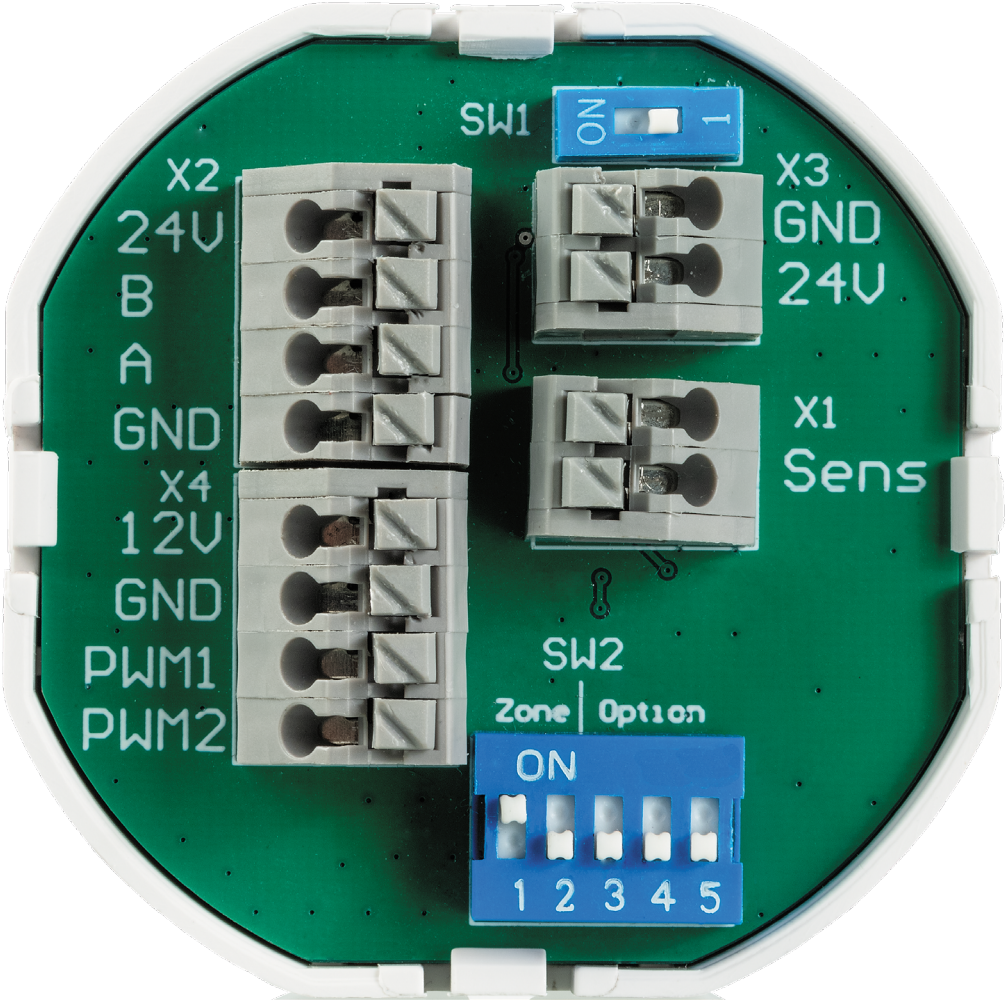


VENTO ECO CONTROL SYSTEM

CT1 Vento Eco

USER'S MANUAL

BLAUBERG

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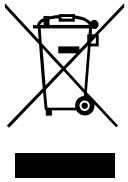
This user's manual is a main operating document intended for technical, maintenance, and operating staff.
The manual contains information about purpose, technical details, operating principle, design, and installation of the CT1 Vento Eco unit and all its modifications.
Technical and maintenance staff must have theoretical and practical training in the field of ventilation systems and should be able to work in accordance with workplace safety rules as well as construction norms and standards applicable in the territory of the country.

SAFETY REQUIREMENTS

This unit is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the unit by a person responsible for their safety. Children should be supervised to ensure that they do not play with the unit.
This appliance can 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 the appliance in a safe way and understand the hazards involved.
Cleaning and user maintenance shall not be done by children without supervision.
Children shall not play with the appliance.

Ensure that the unit is switched off from the supply mains before removing the guard.

All operations described in this manual must be performed by qualified personnel only, properly trained and qualified to install, make electrical connections and maintain ventilation units.
Do not attempt to install the product, connect it to the mains, or perform maintenance yourself. This is unsafe and impossible without special knowledge.
Disconnect the power supply prior to any operations with the unit.
All user's manual requirements as well as the provisions of all the applicable local and national construction, electrical, and technical norms and standards must be observed when installing and operating the unit.
Disconnect the unit from the power supply prior to any connection, servicing, maintenance, and repair operations.
While mounting the unit, avoid compression of the casing!
Misuse of the unit and any unauthorised modifications are not allowed.
Do not expose the unit to adverse atmospheric agents (rain, sun, etc.).
Do not use the unit in a hazardous or explosive environment containing spirits, gasoline, insecticides, etc.
Do not sit on the unit and do not put objects on it.
The information in this user's manual was correct at the time of the document's preparation. The Company reserves the right to modify the technical characteristics, design, or configuration of its products at any time in order to incorporate the latest technological developments.
Never touch the unit with wet or damp hands.
Never touch the unit when barefoot.
BEFORE INSTALLING ADDITIONAL EXTERNAL DEVICES, READ THE APPROPRIATE USER MANUALS.



THE PRODUCT MUST BE DISPOSED SEPARATELY AT THE END OF ITS SERVICE LIFE.

DO NOT DISPOSE THE UNIT AS UNSORTED DOMESTIC WASTE.

PURPOSE

The CT1 Vento Eco controller is designed to be used as a part of the **Vento Eco** domestic air handling unit control system.
CT1 Vento Eco is a component part and is not designed for stand-alone operation.
The unit is rated for continuous operation.

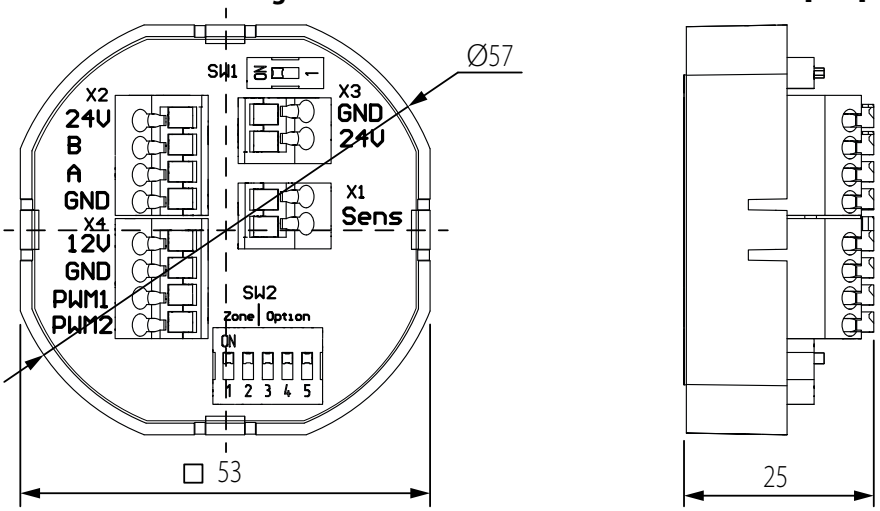
DELIVERY SET

Name	Number
CT1 Vento Eco controller	1 pc.
User's manual	1 pc.
Packing box	1 pc.

TECHNICAL DATA

Unit voltage DC [V]	24 ± 10%
Power consumption [W]	1
Maximum current (with 6 ventilators connected) per 24 V DC [A]	1.25
Ambient temp. [°C]	+10...+45
Ambient humidity range [%]	10-80 (no cond.)
Weight [g]	60
Protection class	IP20

Overall and connecting dimensions of the CT1 Vento Eco controller [mm]



INSTALLATION AND CONNECTION



CHECK THAT THE UNIT IS DISCONNECTED FROM POWER SUPPLY PRIOR TO ANY OPERATIONS!



DO NOT LAY THE CABLE IN CLOSE PROXIMITY TO THE CONTROL PANEL CABLE!
WHILE ROUTING THE CONTROL PANEL CABLE DO NOT COIL THE EXTRA LENGTH.

Overview of the control system

All elements of the control system are installed in flush-mounted boxes in wall niches and are connected to each other by fixed wiring cables laid in the walls of the building.

CT1 Vento Eco controllers and control panels SE1 Vento Eco and SE2 Vento Eco are connected to the control system via RS-485 network using the "Bus" topology. Vento Eco ventilators are connected to the controller.

The controllers and control panels can be connected in various combinations to form separate control zones for the ventilators within a single network.

A control zone consists of one or several controllers that have a common user mode of operation.

The assignment of the SE1 Vento Eco control panel and the CT1 Vento Eco controller to a particular control zone is determined using DIP switches 1 and 2 as described in the "Setting up the controller with DIP switch" paragraph in the "INSTALLATION AND CONNECTION" section of the respective manuals.

A maximum of 1 SE2 Vento Eco control panel, up to 4 SE1 Vento Eco panels, and up to 16 controllers can be connected to a single RS-485 network simultaneously.

Three examples of how to use the control panels and controllers are shown below.

- When multiple control panels and a single controller are connected to a single RS-485 network, it is possible to control one group of Vento Eco ventilators using different panels installed in different rooms.
- When one SE2 Vento Eco control panel and 4 controllers are connected to a single RS-485 network it is possible to control 4 groups of Vento Eco ventilators installed in different rooms using one control panel.
- When 4 SE1 Vento Eco control panels and 4 controllers are connected to a single RS-485 network, each of the 4 groups of Vento Eco ventilators installed in different rooms can be controlled from a separate control panel.

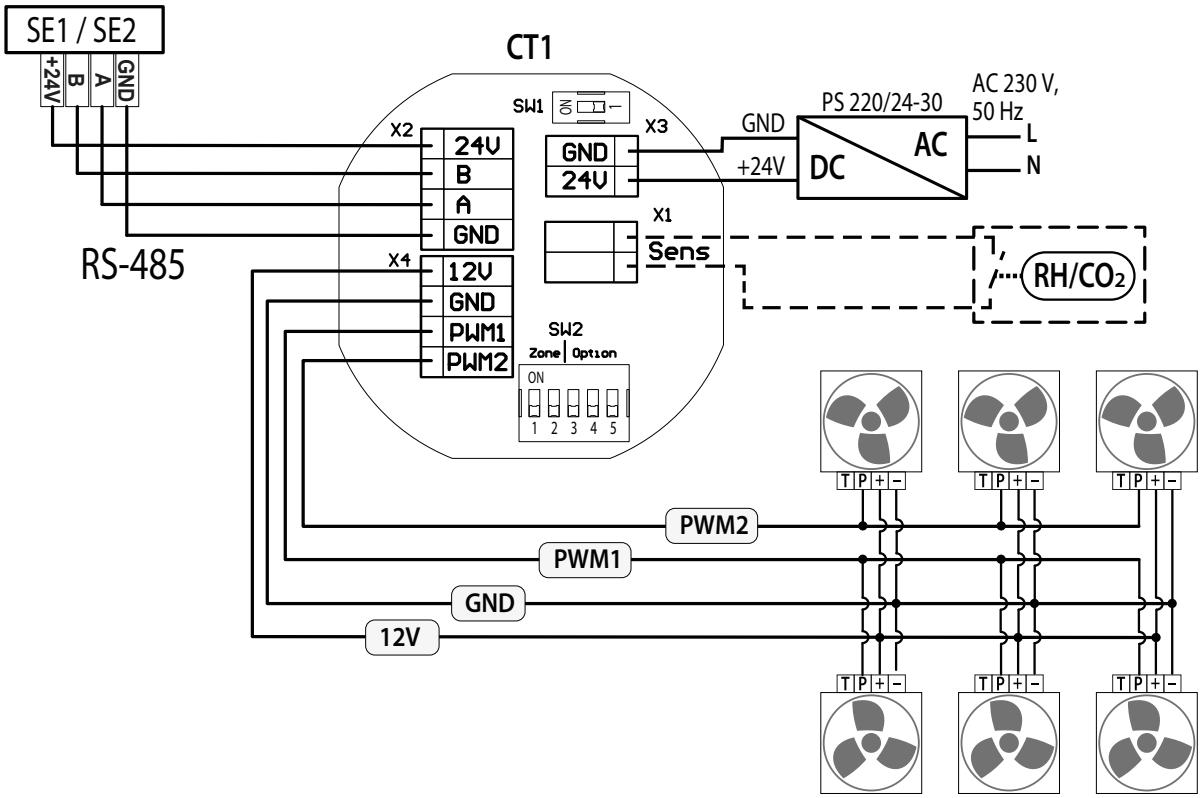
Warning!
Only one SE2 Vento Eco control panel can be connected to a control zone. Up to four control zones can be controlled using one SE2 Vento Eco panel

Warning!
The first and the last connected devices in the RS-485 network, which can be either the controller or the control panel, must have a termination resistor enabled. The connection of the termination resistor is described in the user's manual for the respective device in the section "Setting up the controller with DIP switch".

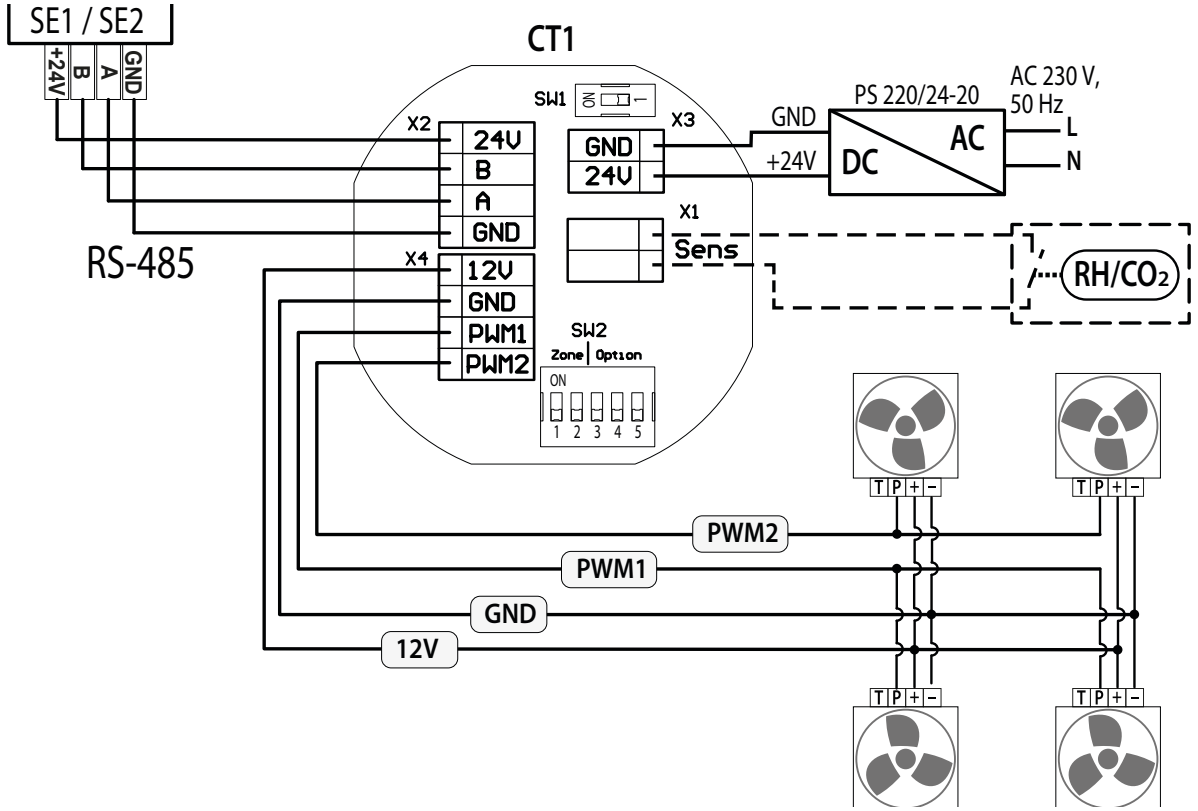
Selection of the ventilation system power supply circuit

The power supply of the control system devices can be organized in several ways.
The schematic diagrams of these power supply options are shown below.

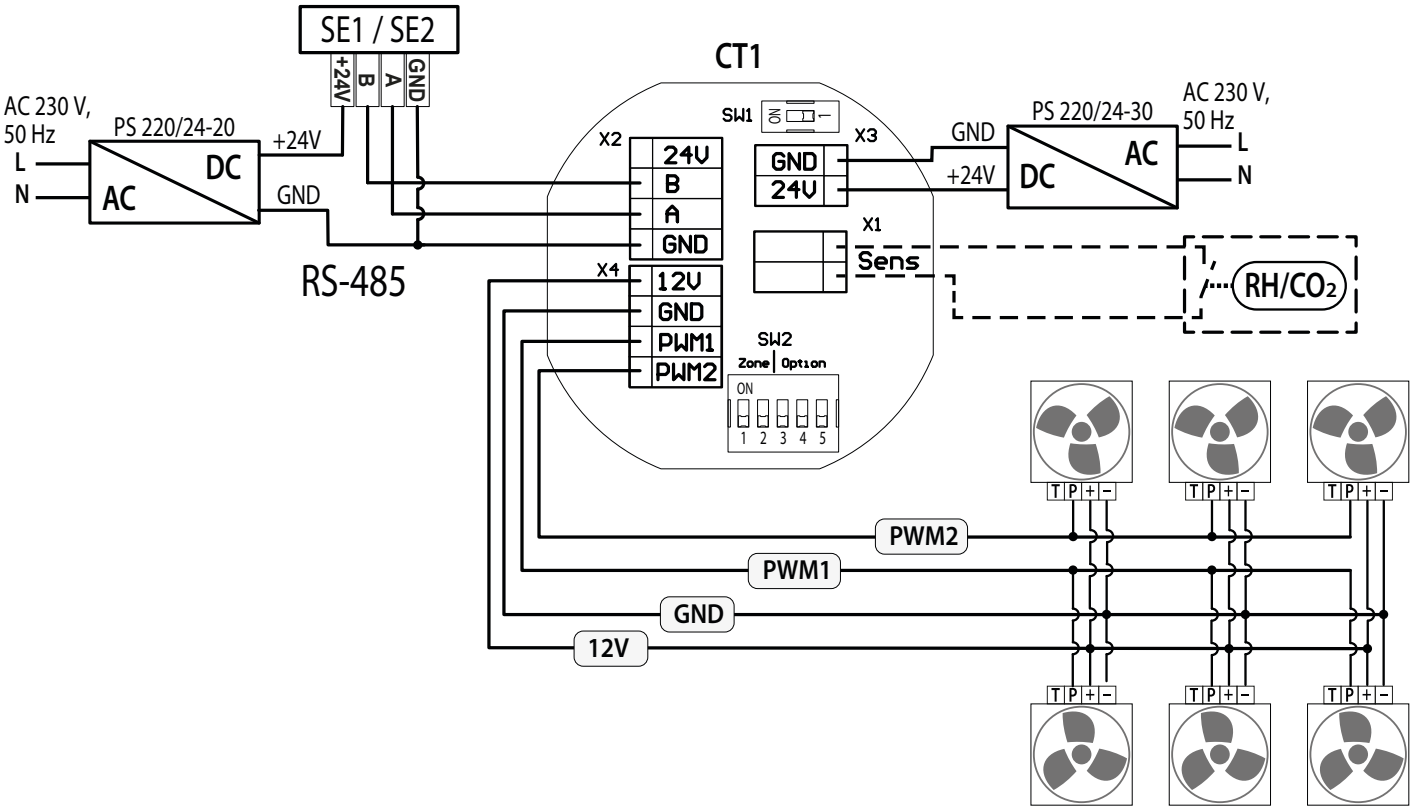
Using a PS 220/24–30 power supply unit to power one CT1 Vento Eco controller with six ventilators connected to it and a SE1 Vento Eco or SE2 Vento Eco control panel.



Using a PS 220/24–20 power supply unit to power one CT1 Vento Eco controller with four ventilators connected to it and a SE1 Vento Eco or SE2 Vento Eco control panel.



Use a single PS 220/24–30 power supply unit for the controller with six ventilators connected to it and another PS 220/24–20 power supply unit for the SE1 Vento Eco or SE2 Vento Eco control panels.



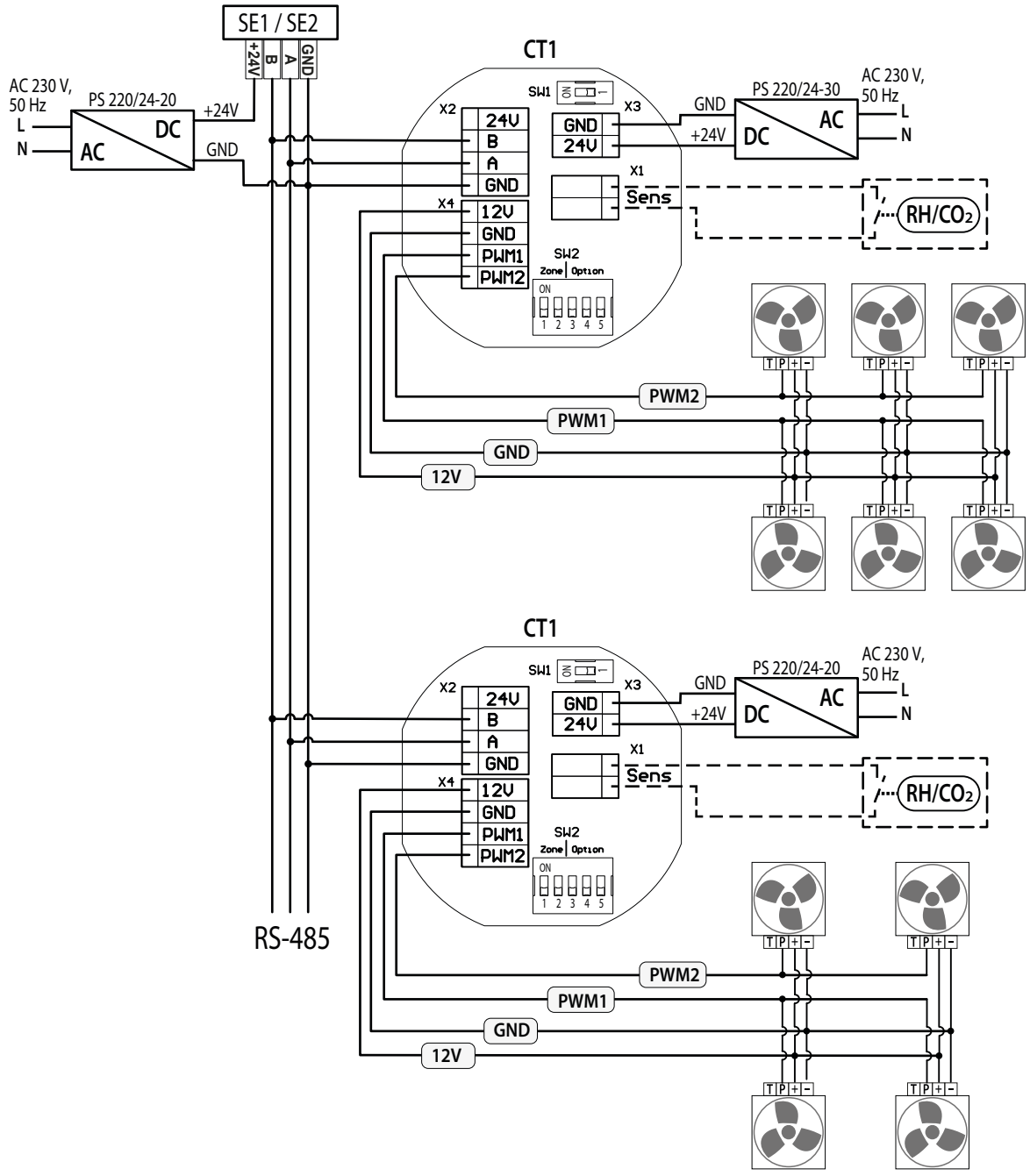
Power options for the ventilation system with several control zones.

If the ventilation system is divided into several control zones, each zone requires a separate PS 220/24–20 or PS 220/24–30 power supply unit for the corresponding CT1 Vento Eco controller.

The power of the power supply unit depends on the total power consumption of the connected devices. For the SE1 Vento Eco or SE2 Vento Eco control panel, a separate power supply unit PS 220/24–20 must be used.

First zone: PS 220/24–30 power supply unit for the CT1 Vento Eco controller with six connected fans,
power supply unit PS 220/24–20. for the SE1 Vento Eco or SE2 Vento Eco control panel.

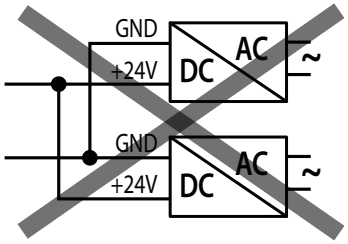
Second zone: power supply unit PS 220/24–20 for the CT1 Vento Eco controller with four connected fans,
power supply unit PS 220/24–20. for the SE1 Vento Eco or SE2 Vento Eco control panel.



Warning! Only connect the power supply to the controller via the X3 terminal.

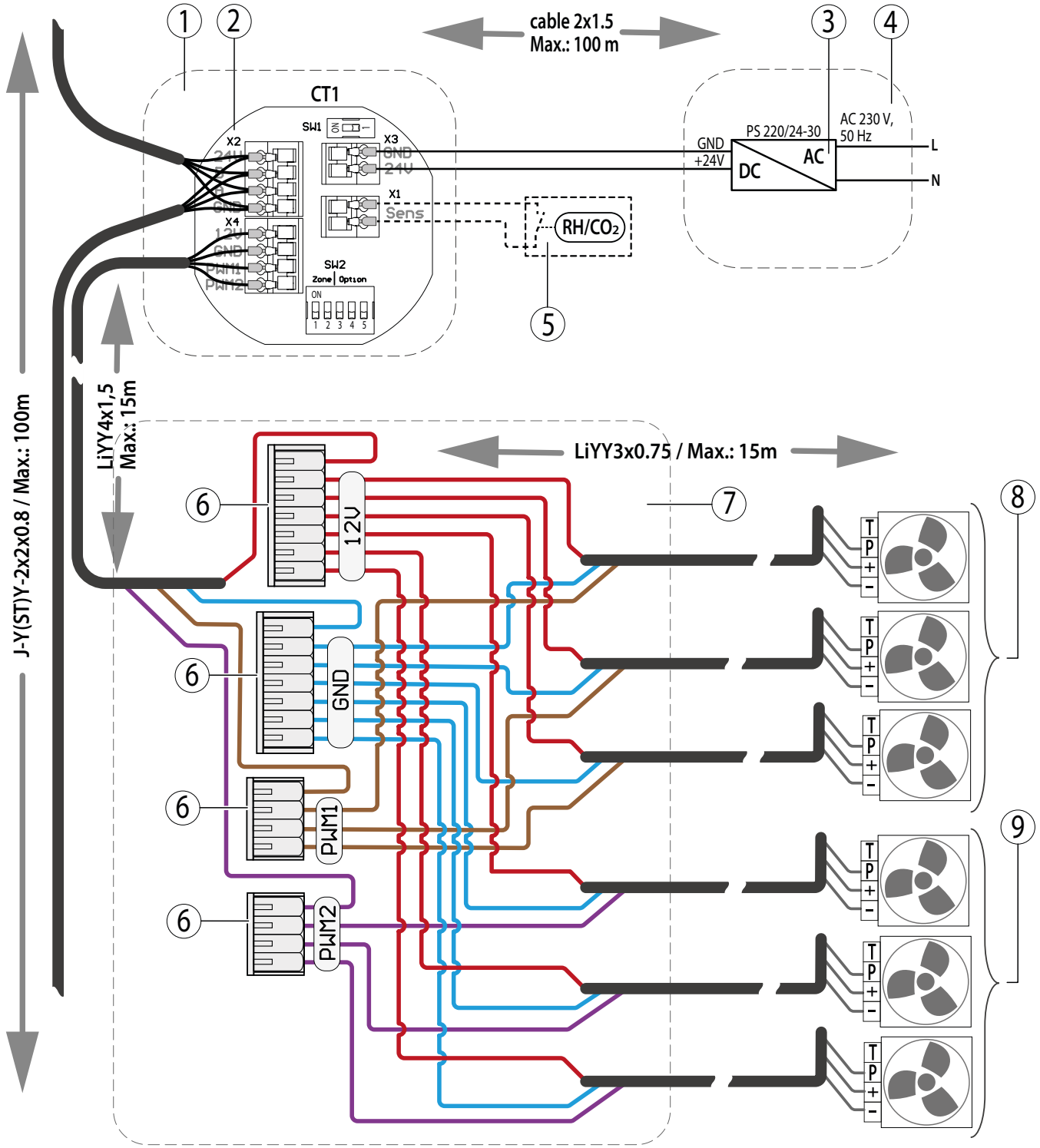
Warning! Parallel connection of power supply units is prohibited.

The power supply units can be placed in flush-mounted boxes or in a separate DIN rail box.



Connecting ventilators to the CT1 Vento Eco controller.

Vento Eco ventilators are connected to the controller according to the wiring diagram with branching for the desired number of ventilators. The connection is made through an additional junction box, in which the power and control lines are branched for each ventilator.



1 – flush-mounted junction box for the controller;
2 – CT1 Vento Eco controller board;
3 – power supply unit;
4 – flush-mounted junction box for the power supply unit;
5 – optional sensor;
6 – quick-mount terminals;
7 – flush-mounted junction box for branching;
8 – the group of ventilators simultaneously working in supply mode in the 1st half of the cycle;
9 – the group of ventilators simultaneously working in exhaust mode in the 1st half of the cycle

For coordinated ventilation, it is necessary to ensure that equal volumes of air are supplied into and exhausted from the room. To achieve this, use an even number of ventilators in the same room and connect them so that one half of them always works to supply air and the other half to extract air.
For this purpose, the ventilators of the first group (the ones that start operating in supply mode) must be connected so that the **P** terminal is connected to the controller's **PWM1** line, and the ventilators of the second group – so that their **P** terminal is connected to the **PWM2** line.

Warning! The number of fans in both groups must be equal.

Connecting an external device (relay sensor).

Each controller has an option to connect an external relay sensor with a normally open contact. This can be a humidity sensor, CO_2 sensor, or other device with a normally open contact (item 5 in the figure above).

When the contact in the external device is closed, all fans connected to this controller switch to maximum speed. When the contact is opened, the fan group returns to the current mode.

When the system is under the control of an external relay sensor, fan speed cannot be controlled using the control panel buttons.

Switching to the maximum speed is followed by an increase in fan noise.

Recommendations on the use of cables between units.

- For interconnection of controllers and control panels (RS-485 bus), it is recommended to use a **J-Y(St)Y 2×2×0.8** signaling cable.
- Use one twisted pair for power lines and the other twisted pair for data lines. The total length of the connection line between the control panel and the CT1 Vento Eco controller can be no more than 100 m.
- To connect the power supplies, it is recommended to use a 2×1.5 cable with a length of no more than 30 m.
- To connect the controller to the branching junction box, it is recommended to use a **LiYY4×1.5** signal cable with a length of no more than 15 m.
- To connect the Vento Eco ventilators with the quick-mount terminals, it is recommended to use a **LiYY3×0.75** alarm cable with a length of no more than 15 m.

The location of the CT1 Vento Eco controller is determined based on the overall design of the control system for Vento Eco ventilators on a particular site. When designing the control system, take into account the cable length limitations.

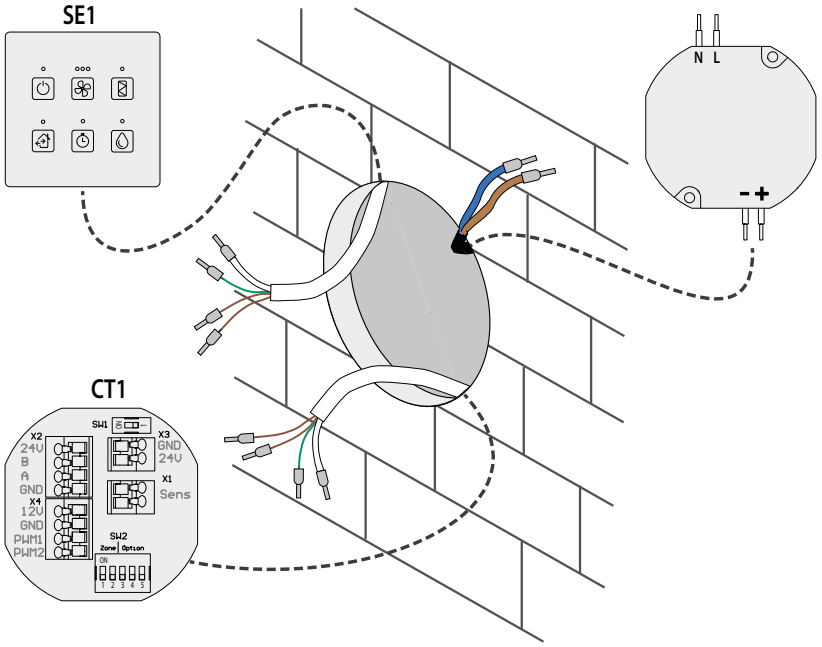
Installation sequence

Prepare niches in the wall for the flush junction boxes.

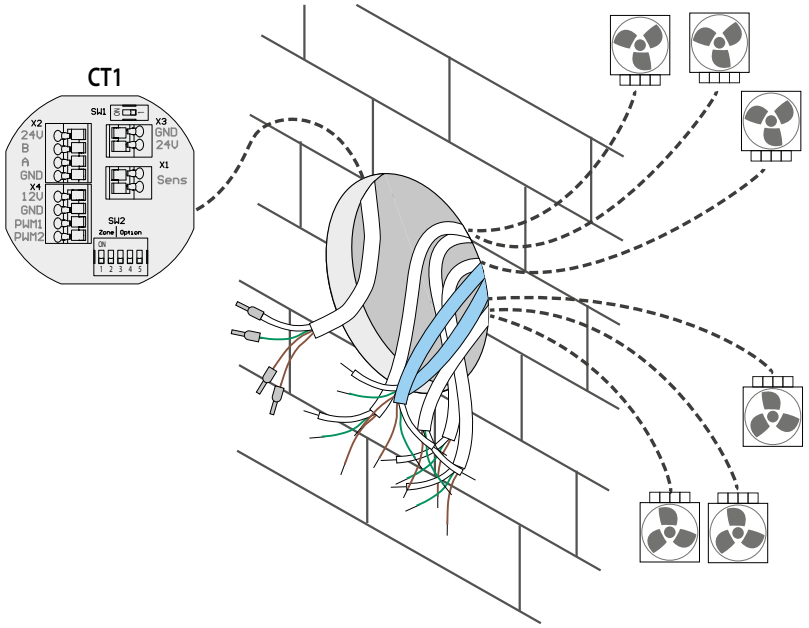
Route the wires between the niches based on your control system's wiring diagram. Fixed wiring must be routed in the building's walls. Install crimping lugs on the ends of the wires.

The overall dimensions and installation method of the control panels SE1 Vento Eco and SE2 Vento Eco are described in the respective user manuals.

1. The figure on the right shows a niche with cables for installing the CT1 Vento Eco controller when it is located between the control panel and the next controller from the RS-485 network.

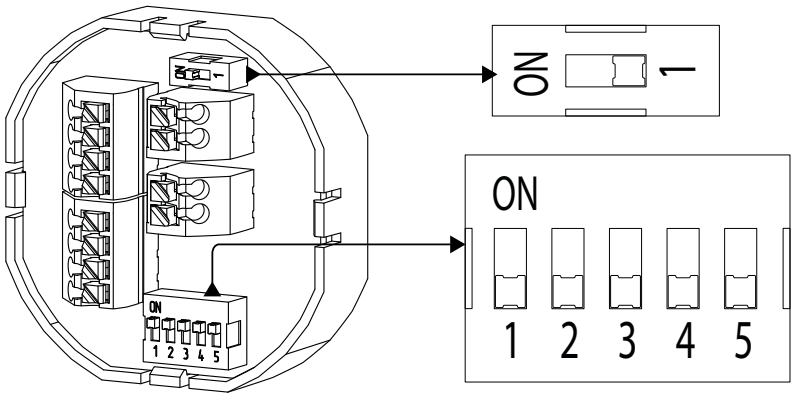


2. The figure on the right shows a niche with cables for installing the line branches between the controller and the ventilators.



3. Install the junction boxes. Use junction boxes made of non-combustible plastic.

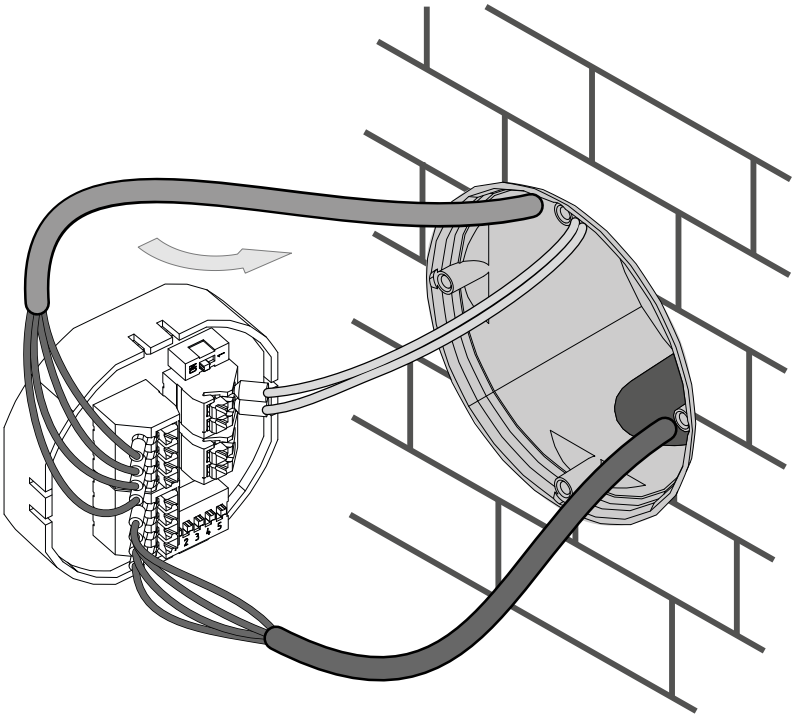
4. Set up the controller using the DIP switches (see the **section Setting up the controller via a DIP switch for a description).**



5. Connect the cables to the controller terminals according to the labels on the board.

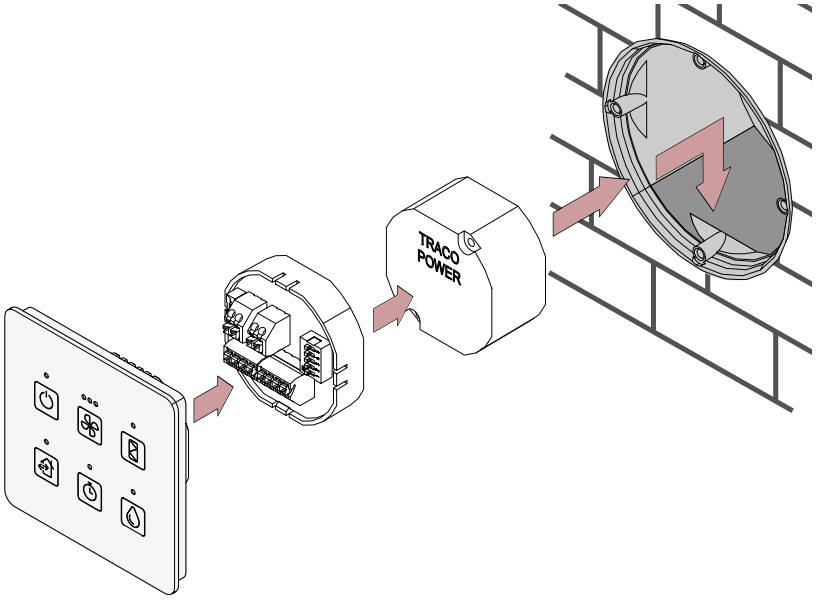
Place the cables in the junction box, then put the controller inside with the terminals facing in.

When placing the controller in the junction box, make sure that the tightly packed wires do not press on the spring-loaded terminal rods, as this can cause the wires to fall out of the terminals.

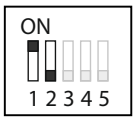
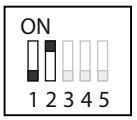
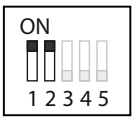


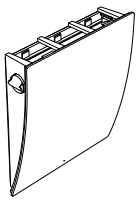
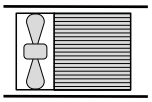
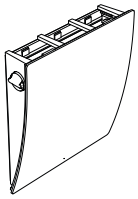
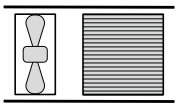
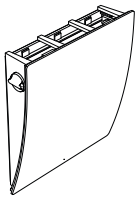
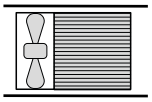
6. The PS 220/24–20 power supply unit and the CT1 Vento Eco controller can be placed in a single common junction box with extra space.

The junction box can be fitted with a cover, instead of which the SE1 Vento Eco control panel can also be installed.



Setting up the controller with DIP switch SW2

Switches 1, 2 are used to select the control zone, in which the controller is used.			
			
Control zone 1	Control zone 2	Control zone 3	Control zone 4

Switches 3 , 4, 5 are used to select the type of ventilators in a control zone.			
Nominal diameter of the air duct, mm	Indoor unit	Cartridge	Location of DIP-switches
160		 Single-block cartridge	
160		 Fan unit and heat exchanger unit	
100		 Single-block cartridge	

Switching on the terminal resistor with DIP switch SW1

The termination resister is ON*
* Turn on the termination resistor if the controller is connected first or last in the RS-485 bus.

TROUBLESHOOTING

Trouble	Possible reasons	Troubleshooting
The system does not run.	Power supply units are offline.	Make sure the power supply units are connected correctly, otherwise troubleshoot a connection error.
	There is no constant voltage of +24V at the outputs of the power supply units.	Disconnect the system from power supply. Replace the power supply units. Restart the system.
Automatic circuit breaker tripping after the system start-up.	Overcurrent as a result of short circuit in the system's elements.	Turn off the system. Contact the Seller.
The fans are not rotating after the control panels are turned on.	Inconsistent settings for assigning control panels and controllers to the appropriate control zones	Turn off the system. Reconfigure the settings correctly
	The fan or casing screw connection is loose.	Tighten the screw connection of the fan or the casing against stop.
	Connection errors of the system elements	Disconnect the system from power supply. Troubleshoot the connection errors. Restart the system.
The system's operation is unstable.	Wrong wire cross-section is selected	Connect the elements following the recommendations on the use of cables between units
	The connection cables are not routed correctly	

If troubleshooting steps have failed, or if the fault is not described in the table, contact the Seller of the product.

STORAGE AND TRANSPORTATION REGULATIONS

- Store the unit in the manufacturer's original packaging box in a dry closed ventilated premise with temperature range from +5 °C to + 40 °C and relative humidity up to 70 %.
- Storage environment must not contain aggressive vapors and chemical mixtures provoking corrosion, insulation, and sealing deformation.
- Use suitable hoist machinery for handling and storage operations to prevent possible damage to the unit.
- Follow the handling requirements applicable for the particular type of cargo.
- The unit can be carried in the original packaging by any mode of transport provided proper protection against precipitation and mechanical damage. The unit must be transported only in the working position.
- Avoid sharp blows, scratches, or rough handling during loading and unloading.
- Prior to the initial power-up after transportation at low temperatures, allow the unit to warm up at operating temperature for at least 3-4 hours.

MANUFACTURER'S WARRANTY

The product is in compliance with EU norms and standards on low voltage guidelines and electromagnetic compatibility. We hereby declare that the product complies with the provisions of Electromagnetic Compatibility (EMC) Directive 2014/30/EU of the European Parliament and of the Council, Low Voltage Directive (LVD) 2014/35/EU of the European Parliament and of the Council and CE-marking Council Directive 93/68/EEC. This certificate is issued following test carried out on samples of the product referred to above.
The manufacturer hereby warrants normal operation of the unit for 36 months after the retail sale date provided the user's observance of the transportation, storage, installation, and operation regulations. Should any malfunctions occur in the course of the unit operation through the Manufacturer's fault during the guaranteed period of operation, the user is entitled to get all the faults eliminated by the manufacturer by means of warranty repair at the factory free of charge. The warranty repair includes work specific to elimination of faults in the unit operation to ensure its intended use by the user within the guaranteed period of operation. The faults are eliminated by means of replacement or repair of the unit components or a specific part of such unit component.

The warranty repair does not include:

- routine technical maintenance
- unit installation/dismantling
- unit setup

To benefit from warranty repair, the user must provide the unit, the user's manual with the purchase date stamp, and the payment paperwork certifying the purchase. The unit model must comply with the one stated in the user's manual. Contact the Seller for warranty service.

The manufacturer's warranty does not apply to the following cases:

- User's failure to submit the unit with the entire delivery package as stated in the user's manual including submission with missing component parts previously dismounted by the user.
- Mismatch of the unit model and the brand name with the information stated on the unit packaging and in the user's manual.
- User's failure to ensure timely technical maintenance of the unit.
- Damage to the unit casing and internal components caused by the user.
- Redesign or engineering changes to the unit.
- Replacement and use of any assemblies, parts and components not approved by the manufacturer.
- Unit misuse.
- Violation of the unit installation regulations by the user.
- Violation of the unit control regulations by the user.
- Unit connection to power mains with a voltage different from the one stated in the user's manual.
- Unit breakdown due to voltage surges in power mains.
- Discretionary repair of the unit by the user.
- Unit repair by any persons without the manufacturer's authorization.
- Expiration of the unit warranty period.
- Violation of the unit transportation regulations by the user.
- Violation of the unit storage regulations by the user.
- Wrongful actions against the unit committed by third parties.
- Unit breakdown due to circumstances of insuperable force (fire, flood, earthquake, war, hostilities of any kind, blockades).
- Missing seals if provided by the user's manual.
- Failure to submit the user's manual with the unit purchase date stamp.
- Missing payment paperwork certifying the unit purchase.



FOLLOWING THE REGULATIONS STIPULATED HEREIN WILL ENSURE A LONG AND TROUBLE-FREE OPERATION OF THE UNIT



USER'S WARRANTY CLAIMS SHALL BE SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE PURCHASE DATE STAMP

CERTIFICATE OF ACCEPTANCE

Unit Type	Vento Eco control system
Model	
Serial Number	
Manufacture Date	
Quality Inspector's Stamp	

SELLER INFORMATION

Seller	
Address	
Phone Number	
E-mail	
Purchase Date	
This is to certify acceptance of the complete unit delivery with the user's manual. The warranty terms are acknowledged and accepted.	
Customer's Signature	

Seller's Stamp

INSTALLATION CERTIFICATE

The _____ unit is installed pursuant to the requirements stated in the present user's manual.		
Company name		
Address		
Phone Number		
Installation Technician's Full Name		
Installation Date:	**Signature:**	
The unit has been installed in accordance with the provisions of all the applicable local and national construction, electrical and technical codes and standards. The unit operates normally as intended by the manufacturer.		
Signature:		

Installation Stamp

WARRANTY CARD

Unit Type	Vento Eco control system
Model	
Serial Number	
Manufacture Date	
Purchase Date	
Warranty Period	
Seller	

Seller's Stamp

BLAUBERG

Manufacturer: Ventilation Systems LLC,
Ukraine, Kyiv, 1 M. Kotsyubynskoho Street
Address of production facilities:
Ukraine, Kyiv Region, Fastiv District, Boyarka, 36 Sobornosti Street

https://blaubergventilatoren.net/
B127-6EN-01