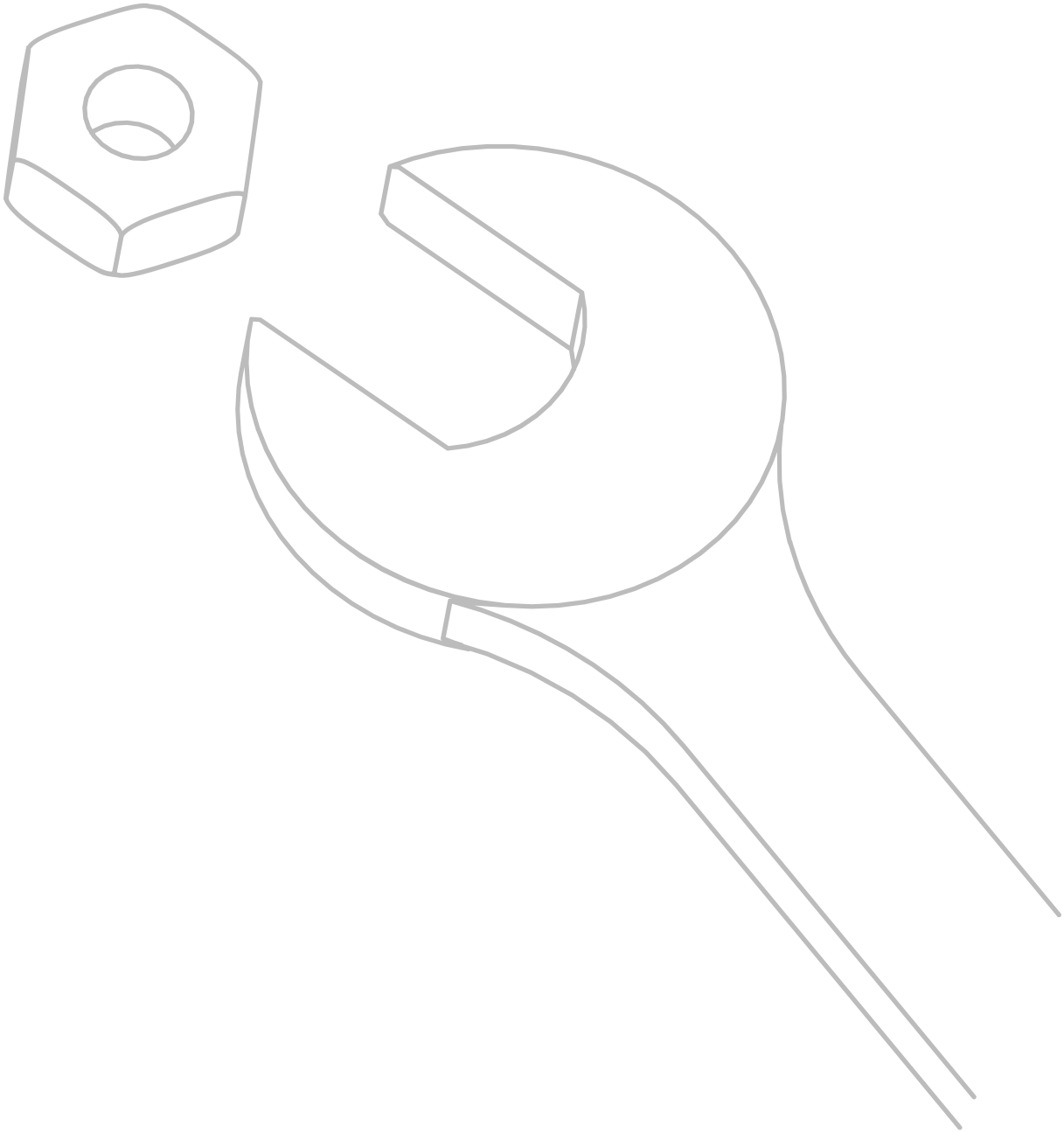
Ventilation unit
with heat and moisture recovery

FUTURA

Installation manual



ČLEN CENTRA PASIVNÍHO DOMU

International PASSIVE HOUSE Association member iPHA

JABLOTRON CREATING COMFORT

TABLE OF CONTENTS

11. Annex 11 - Dimensional drawing

Version 7.0 EN

1. Introduction

The subject of this installation manual is **Futura L$^+$ ventilation unit**, which is designed for controlled ventilation and treatment of the indoor environment of residential premises. The heat recovery unit ensures recovery of heat and moisture, filters supplied air and helps maintain optimum air humidity. In summer, it provides additional cooling in the night mode thanks to an integrated automatic bypass.

Before proceeding to the entire installation and commissioning of the heat recovery unit, read this Installation Manual carefully. It is intended for trained professionals with appropriate qualifications. The Installation Manual contains explanations concerning basic configuration of the unit, its assembly, installation, settings and maintenance.

Pay attention to all specifications and instructions included in this manual and follow them accordingly. This is the only way of ensuring proper and safe operation of the heat recovery unit.

This device complies with the Commission Regulation (EU) No 1253/2014 with regard to ecodesign requirements for ventilation units and Commission Delegated Regulation (EU) No 1254/2014 with regard to energy labelling of residential ventilation units.

ANY CHANGES RESULTING FROM TECHNICAL DEVELOPMENT ARE RESERVED. WE RESERVE THE RIGHT TO CHANGE THE CONTENTS OF THIS INSTALLATION MANUAL ANYTIME WITHOUT PRIOR NOTICE.

1.1. Symbols used

Please, pay increased attention to the symbols used. In the interest of your safety and proper operation of the heat recovery unit follow the instructions that accompany every symbol.

Symbol	Description
	**IMPORTANT WARNING**
	**CAUTION! IMMINENT DANGER!** (risk of injury of the user or the service staff; risk of ventilation unit damage or disruption of its proper function and operation).
	**CAUTION! ELECTRIC EQUIPMENT!**
	**DANGER! CAUTION! RISK OF HAND INJURY!**

2. Identification and application

The Futura L$^+$ heat recovery unit is HVAC device with heat recovery and an active control of moisture recovery, that is designed for comfortable and energy-efficient controlled ventilation of family houses. The heat recovery unit provides controlled ventilation of residential premises with required ventilation volume of: 100 – 350 m^3 (3530 - 12360 ft^3) for Futura L or 50 - 250 m^3 (1766 - 8830 ft^3) for Futura M, at the outdoor air temperature range from -19 °C to +45 °C (-2 °F to 113 °F). The unit can be used at the maximum relative indoor humidity level of 60% measured at 22 °C (72 °F).

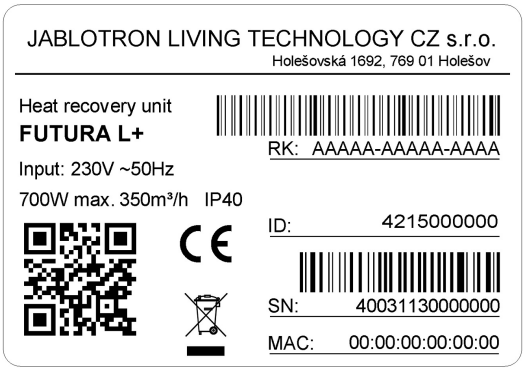


Figure 1 – Identification label

3. Safety instructions

Always follow the safety instructions that are included in this Installation Manual. Failure to observe them may result in an injury or damage to the heat recovery unit.

- The unit has been developed and manufactured to provide controlled ventilation in residential buildings.
- The unit may only be used for purposes for which it has been developed and manufactured and within its adequate technical possibilities – in line with conditions defined by its manufacturer, its design, construction and technical condition while complying with safety regulations.
- The heat recovery unit must be installed in compliance with general and local safety regulations.
- The heat recovery unit may only be installed, connected, commissioned and maintained by an authorized service technician with respective professional qualifications. A service technician is a person with adequate qualification, experience and knowledge of respective regulations and standards as well as possible risks and dangers.
- Conductors connected to the equipment must be laid in such a way so as not to be exposed to mechanical damage and harmful environmental effects and not interfere with the use of the premises where the unit will be installed.
- The unit may be operated only by physically and mentally apt persons that have thoroughly read and understood the Installation and User Manual. The manuals must be stored in an accessible place.
- Do not change or modify the heat recovery unit in any way!
- The unit cannot be used while there is still an ongoing construction work in the building. The unit must be installed and commissioned in a finished and clean building.
- The heat recovery unit is designed for joint operation with a fireplace only when the fireplace is suitable for passive buildings, has a sealed fireplace insert and its own air supply.
- Joint operation with a fireplace is possible only if relevant safety and fire regulations are followed. Such operation requires setting and using the Overpressure function (see User manual: Heat recovery unit functions).

The unit must not be operated together with an open fireplace or with any fireplace without its own air supply!

The unit must be off and disconnected from electrical mains during any maintenance including filter replacement!

Do do not reach into the filter space with your hand when replacing filters! Avoid risk of hand injury!

When using a humidifier in a building with a heat recovery unit, it is necessary to use demineralized water to fill the humidifier! Otherwise, the filters will become clogged very quickly, and the FUTURA unit may be damaged!

Only use original filters in the Futura heat recovery unit!

4. Technical specifications

See table below for all technical data concerning the heat recovery unit:

Description	Data
airflow	100-350 m^3/h (59-206 CFM)
Identification label	Futura L^+
Specific Energy Consumption (SEC) in $kWh/(m^2.a)$ for each applicable climate zone and each applicable SEC class	A+
Dimensions (height x width x depth)	835 x 995 x 522 mm (32.9 x 39.2 x 20.6 in)
Weight	47,5 kg (105 lbs)
Declared typology	bidirectional
Drive type	variable speed drive
Heat recovery system type	recuperative
Heat recovery efficiency	95%×(93,8 %××)
Reference flow	253 m^3/h××
Electric power input of the fan, including the motor control equipment at maximum flow	212 W
Maximum power input including heating/td>	670 W
Acoustic power level	52 dBa×××
Reference pressure difference	50 Pa×××
SPI	0,353 $W(m^3/h)$××××
Condesate	condensate drain, HT pipe 32mm (1.26 in), siphon
Electrical connection	230 V/50 Hz, 16 A; connection to electric mains via power socket
Operational range without preheating	-19 °C to +45 °C (-2 °F to 113 °F)
Maximum operating relative humidity of indoor air.	Max. 60% RH at 22°C
Storage temperature and relative humidity range.	-5°C to +45°C at max. 80% RH, non-condensing.
Recommended storage temperature and relative humidity range.	5°C to +30°C at 40% RH to 60% RH, non-condensing.

Description	Data
Fans	2× EBM Papst with integrated electronics and airflow regulation
Annual electricity consumption (AEC) (in kWh/m² electric energy consumption/year) „average“, „warm“, „cold“) at reference flow	2,49 / 2,04 / 7,87
Annual heat savings (AHS) (in kWh/m^2 of primary energy/year) for individual climate zones („average“, „hot“, „cold“) at reference flow	47,59 / 21,52 / 93,10
Exchanger	enthalpy counter-current exchanger with humidity recovery control
Summer function	fully automatic by-pass controlled by the temperature setpoint
Control	Integration in the MyJABLOTRON mobile application, which supports easy control of all user functions and settings. It enables remote monitoring, system administration and provides automatic alerts for error conditions and dirty filter replacement. Standard supply includes one wall-mounted control panel with an integrated CO_2 sensor.
Optional accessories	CoolBreeze heating/cooling module, CO_2 sensors (max. 8 pieces), more wall-mounted control panels (max. 3 pieces), VAC material a distribution elements

× According to PHI (Passive House Institute)

×× According to Czech norm ČSN EN 13141-7

××× According to Czech norm ČSN EN ISO 3741

×××× According to Directive of the Commission (EU) no.1253/2014

5. Installation

After receiving the heat recovery unit, please make sure that the unit has been delivered free of defects and that the delivery is complete. The delivery includes:

- The Futura L^{+},
- wall-mounted control panel,
- mounting bracket,
- 230 V connection cable,
- LAN cable,
- user manual,
- installation manual,
- siphon HL 138.

Choose a mounting location so that a sufficient handling space is available in front of the unit to ensure easy access and maintenance. Place the heat recovery unit in a room protected from frost or very high temperatures, ideally in a separate utility room. **In case of CoolBreeze installation, please allow additional 70 cm (28 in) of free space above the unit!**

The following has to be available at the installation site:

- 2 x EPP air duct connections for outdoor use and 2 x Sonotex flexi (silencer) for indoor use,
- 230 V mains power supply with separate 16A circuit breaker, B type,
- HT 32 condensate drain connection.

All doors in rooms with forced ventilation must have no threshold and a gap of at least 8mm (0.3 in)!

Do not remove the packaging from the heat recovery unit until right before the installation. In case you interrupt the installation, make sure the flanges on top of the unit are closed to prevent the dust and moisture from entering the unit's interior. The unit is mounted onto a mounting bracket, which must be fixed to the wall in 4 points (see following picture). Use a technology that is recommended and appropriate for the surface and material of the wall that the unit will be mounted on.

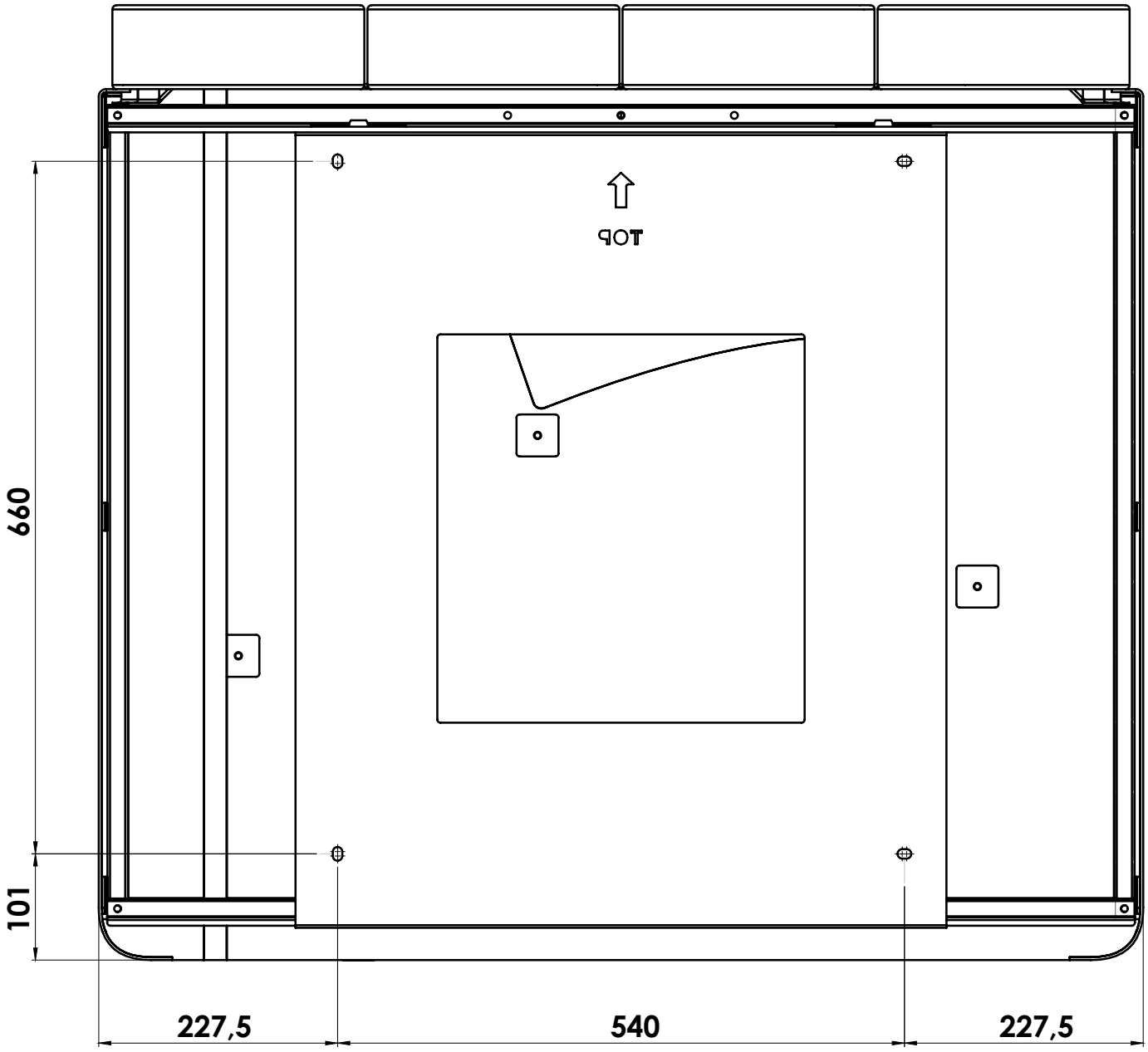


Figure 2 – Installation

5.1. Air ducts connection

The heat recovery system is equipped with 4 EPP ⌀ 150 mm (6 in) flanges. It is necessary to use (intake/exhaust) EPP pipes both at the air intake from the exterior and the air exhaust to the exterior to prevent the possibility of unwanted condensation inside the pipes. For indoor air distribution use Sonotex piping with silencer.

The air inlet and outlet openings must remain free and clear! It is necessary to install silencers at the air supply to and extract from the interior in the length of approx. 1.5 m (5 ft) equipped with end elements (125mm (5 in) diameter) specified and recommended by the producer (see Annex 2).

5.2. Condensate drain connection

In the heat exchanger, the extracted air is cooled by the supplied air causing moisture condensation. Resulting condensed water is drained towards the siphon. The condensate drain connection is found on the bottom of the heat recovery unit. A siphon, which is connected to the sewerage system, must be mounted onto the coupling of the condensate drain connection (HT 32 mm (1.26 in) drain pipe).

Condensate must be allowed to freely flow out of the heat recovery unit by gravity!

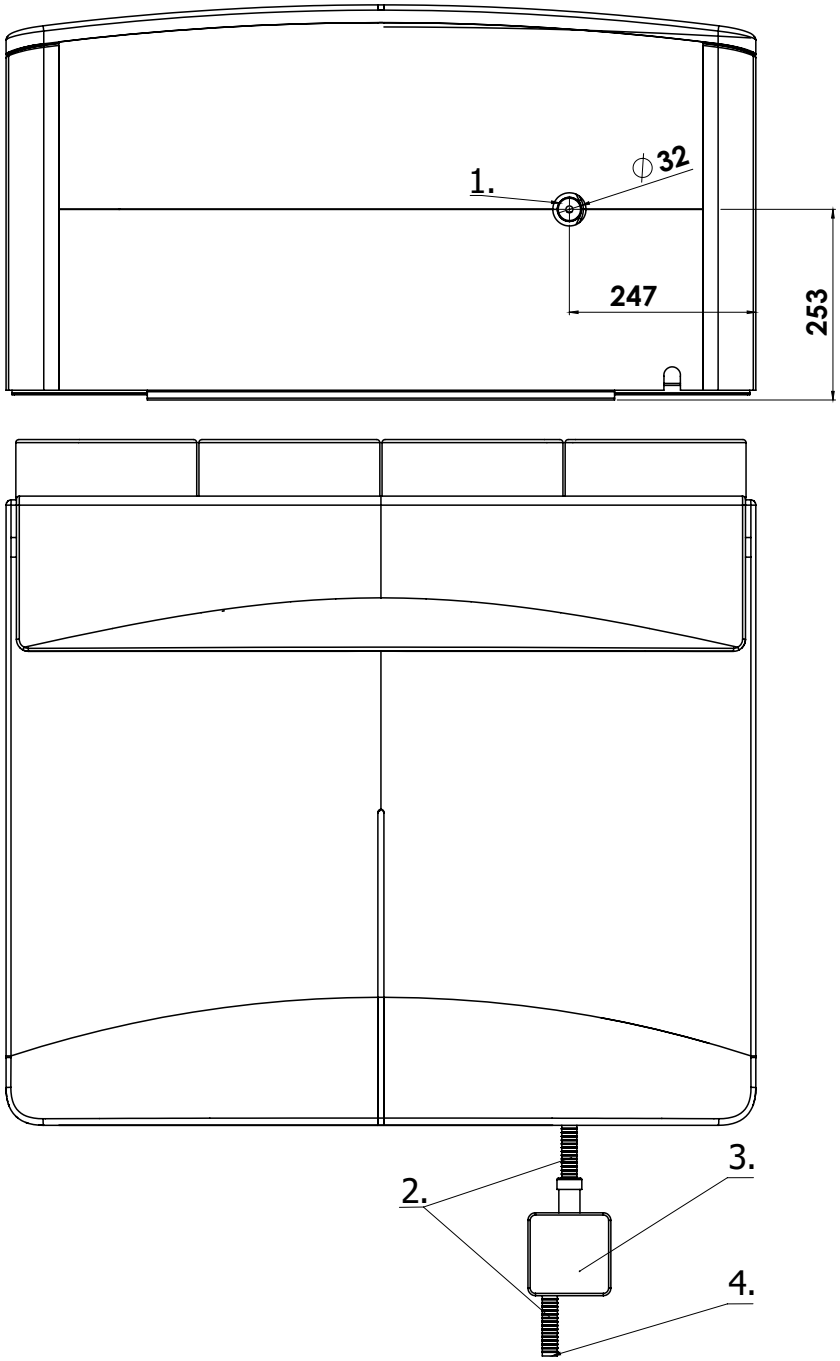


Figure 3 – Condensate drain connection

5.3. Electrical connection

Electrical connection of the heat recovery unit must be in accordance with applicable local standards and directives. Installation to the electrical mains may be carried out only by a trained electrician with appropriate electrotechnical qualification, who is familiar with the heat recovery unit to the necessary extent.

The ventilation unit requires a 230 V/50 Hz socket (16 A, type B) with a separate fuse. The unit is supplied with a 3m connection cable. The ventilation unit is connected to the internet, therefore a LAN cable with internet connection is required. To connect the peripherals of the unit use a RS-485 bus with 24 VDC supply. We recommend using a Jablotron CC-01 installation cable. Four-wire twisted-pair cable, such as LiYCY 2 × 2 × 0.34 – 0.5 mm2, 2 × 2 × 0.8 mm2, UTP or STP cables can be used too. We recommend using the same cable for boost and overpresure buttons. The cable must not run parallel to high or low voltage power lines. Occasional crossing is fine. The Jablotron JA-110Z-B RS-485 bus splitter and the JA-190PL box can be used for more convenient wiring. When installing RS-485 cables it is possible to use a bus (line) or a star topology with Futura as a central hub and multiple connected devices. The length and the type of topology depend on the type of cable used and number of connected peripherals. Using cable CC-01 with a larger cross section to supply the bus enables installation of the peripherals over longer distances. The table below states maximum lengths and topologies allowed with regard to the peripherals used. "T" variant is designed for connection of CoolBreeze and connection of VarioBreeze valves in the utility room, where the installation of a separate branch is permitted. Other variants describe permitted combinations of Alfa control panels / JB-112TP, CO2 sensors / JB-112TH and VarioBreeze buttons depending on the topology and cable length.

Topology		Maximum branch length according to cable type (m):		Maximum number of peripherals per branch:				
Var.	No. of branches	Jablotron CC-01	UTP Cat5e	Alfa	CO_2 sensor	VarioBreeze button	VarioBreeze valve	CoolBreeze
T	1	10	10	0	0	0	64	1
A	T+1	80	60	6	8	16	64	1
B	T+1	100	80	4	8	16	64	1
C	T+2	100	80	4	4	8	64	1
D	T+4	140	120	2	2	8	64	1

For further information see corresponding annex:

- Wiring diagram – see annex 3a.
- Mainboard connectors – see annex 4.
- Connecting the unit – see annex 5.
- Connecting and setting CO2 sensor addresses – see annex 6 and 7.
- Room-by-room ventilation – see chapter 8.

5.4. Connecting the CoolBreeze

Cooling device must be connected in accordance with relevant standards and guidelines and may only be carried out by a trained service technician with appropriate electrical and refrigeration qualifications, who is familiar with the device to the necessary extent. Improper handling may cause electric shock or refrigerant burn!

The CoolBreeze module **requires connection of the outdoor condensation unit to the power supply via separate 230 V/50 Hz fixed line with 16 A fuse, type B.** We recommend using additional protective connection, i.e. connection to the main ground terminal MET according to the ČSN 33 2000-5-54 norm. In case the outdoor unit is installed outside the protective range of the lightning conductor, we recommend installing SPD surge protection of a suitable type according to ČSN 33 2000-5-534. As an alternative, a preparation for later installation can be made. Recommended cable is CYKY-J 3x2,5. The connection must be carried out according to the original instructions of the unit manufacturer, which is available at: https://www.jablotronlt.com/coolbreeze -> show downloads -> Installation instructions of the outdoor unit or under direct link https://www.jablotronlt.com/files/coolbreeze/coolbreeze_navod_instalacni_venkovni_fujitsu_AOYG07LUCA_EN.pdf.

CoolBreeze is connected to the outdoor unit **by a 4 x 0.75mm² communication cable** as shown in Appendix 3b. CoolBreeze is also connected to Futura by a communication cable according to the diagram in Appendix 3b, which is included in the package. Internal evaporator of the CoolBreeze module is connected to the outdoor unit by a 6/10mm refrigerant pipe. **A minimum refrigerant piping length of 5m (16.4 ft) and not exceeding 20m (66 ft) must be guaranteed.** The unit is pre-filled to 15m (49 ft) piping. In case of longer length, 20 g/m of refrigerant should be added. The maximum height difference of the device is 15m (49ft) and must not be exceeded! Pay special attention to the cleanliness of the joints and proper insulation of the refrigerant pipe to prevent condensation!

Connect CoolBreeze module to Futura unit with included RS-485 Per (X3) cable. See Annex 4.

Condensate drain should be connected via STY-517-1 siphon to Futura drain siphon. See Annex 11.

Beware of frequent error:

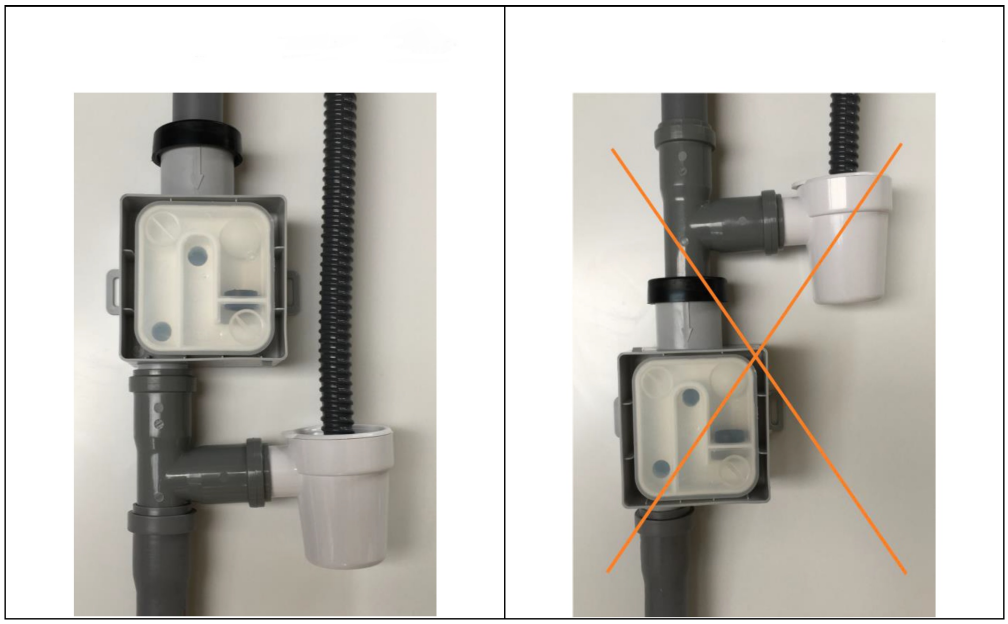


Figure 4 – Correct and incorrect condensate drain connection

Any improper handling of the wiring that could damage the heat recovery or cooling unit will void the warranty.

CoolBreeze indoor unit is pressurized with nitrogen for convenient detection of potential damage due to transport. Please remove refrigerant seal before commissioning!
It is mandatory to perform duct analysis if the CoolBreeze is installed additionally.

5.5. Commissioning

Prior to commissioning it is necessary to pay attention to completeness of the assembly, cleanliness of the equipment and throughput of air ducts, correct directional insertion of filters, condensate drain functionality, correct electrical connection and readiness for the operation of all technical components of the unit.

Any defects must be corrected before commissioning!

Before commissioning it is necessary to set:

- fan outputs for individual power levels 1 - 5,
- fan speed coefficient for overpressure and anti-radon protection,
- nominal airflow (in case of VarioBreeze installation),
- initialization of new filters.

This is carried out by the service technician in MyCOMPANY application.

6. Configuration of the unit using Bluetooth

Connecting the unit

Configuration is made using Bluetooth and the MyCOMPANY mobile application. Remove the filter cover, then press and hold the *filter reset* button on the PCB to activate Bluetooth. The button needs to be pressed until the LED backlight on the front cover turns blue. If not, repeat the procedure. Short press = filter initialization, long press = Bluetooth connection. Configuration is saved directly in the unit.

If you hold the button for at least 15 seconds, the LED backlight turns purple. After releasing the button the unit will reset into default factory settings and will have to be configured again. If you activate the reset by mistake, do NOT release the button! Hold it until the LED backlight turns green. Only then the button can be released and the unit will not be reset into factory settings.

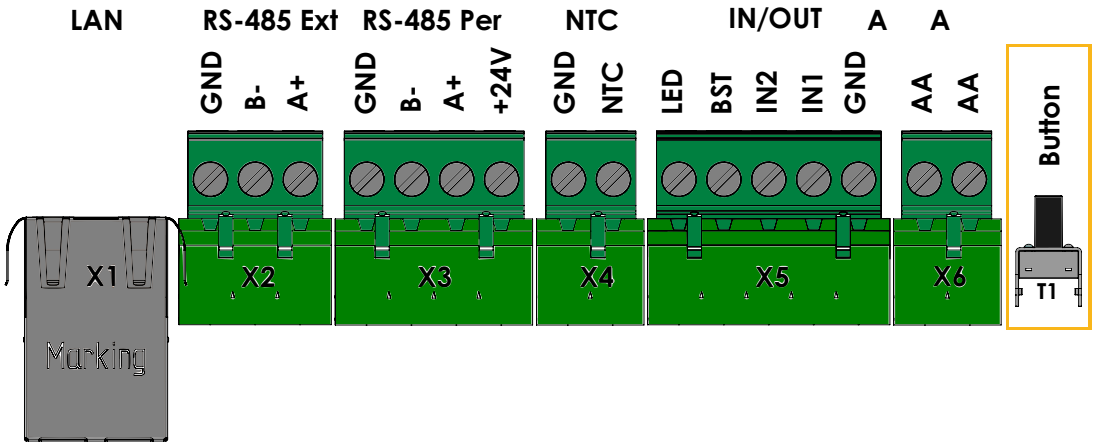


Figure 5 – Bluetooth connection button

- **Make sure there are clean new filters inserted in the unit.** You can **„Continue"** to the next step.
- Click on the upper left menu icon and choose **"Connect to device"**, click on the device **"Futura"** and the application goes on to the next step.

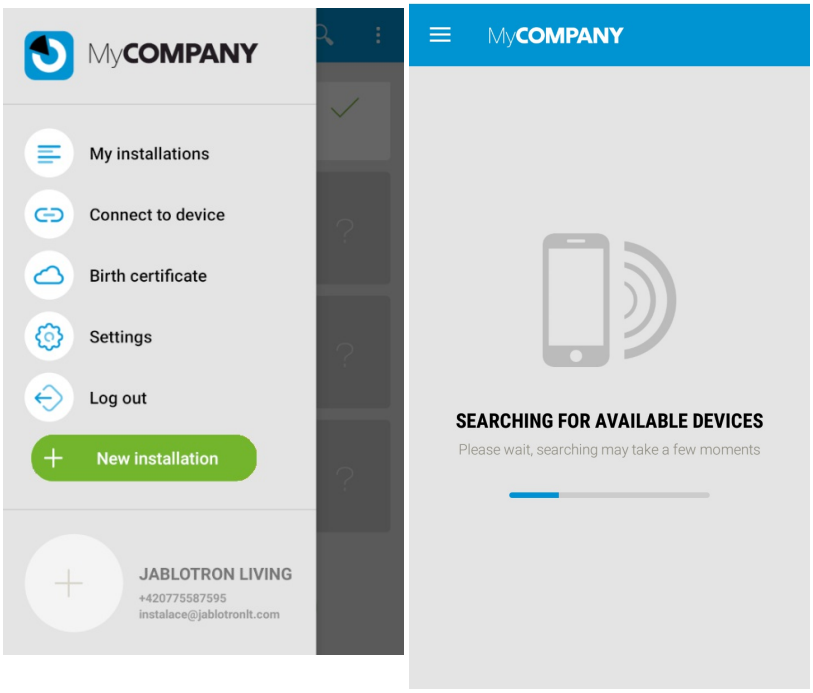


Figure 6 and 7 – Connection via Bluetooth

- A following message is displayed: **"Duct system connected"** and **"Fully opened"**, when all the ventilation valves are open, confirm the message and click **„Continue"**.

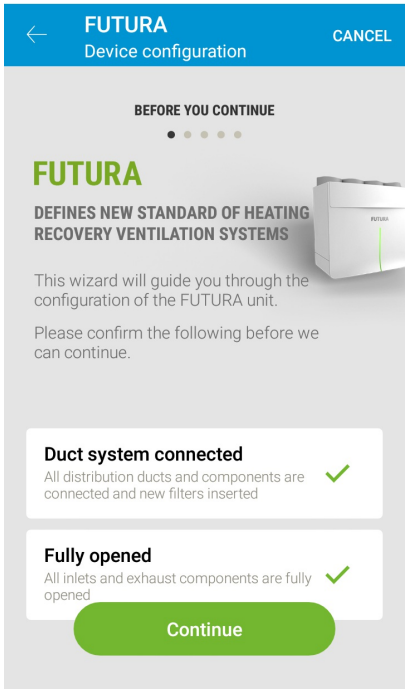


Figure 8 – Ventilation connection check

Configuring IP address

- Configuration of the IP address **is run automatically from the DHCP server**, but may be set manually as well. In order to configure the IP address manually connection parameters provided by the network administrator must be entered.

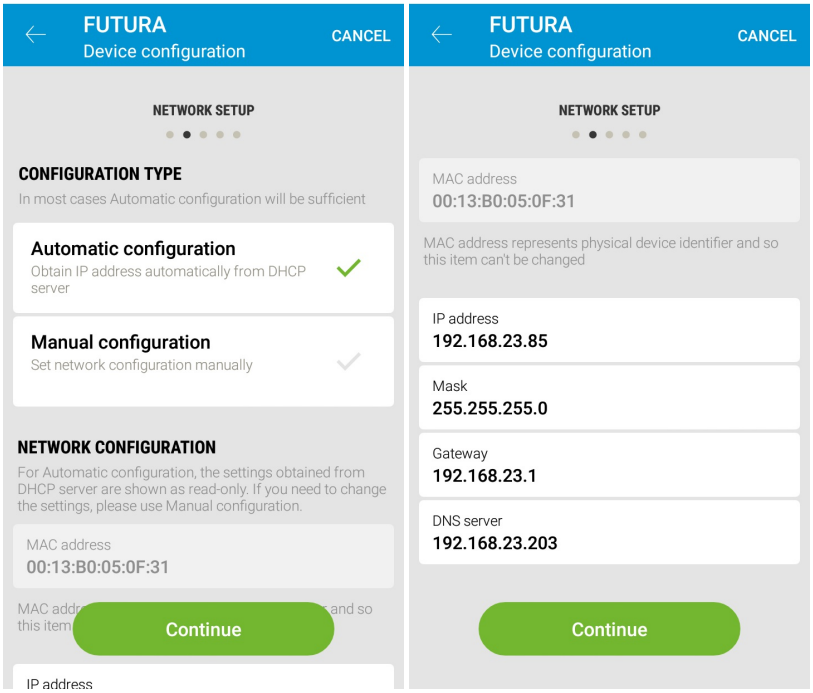


Figure 9 – Automatic configuration of the network connection, Figure 10 – Manual configuration of the network connection

Pressure loss - air distribution analysis

Each ventilation duct system has its unique thermodynamic properties, therefore MyCOMPANY application contains „Air distribution analysis" function. An algorithm calculates airflow and pressure loss for each individual ventilation level (supply and extract separately) for the given duct system.

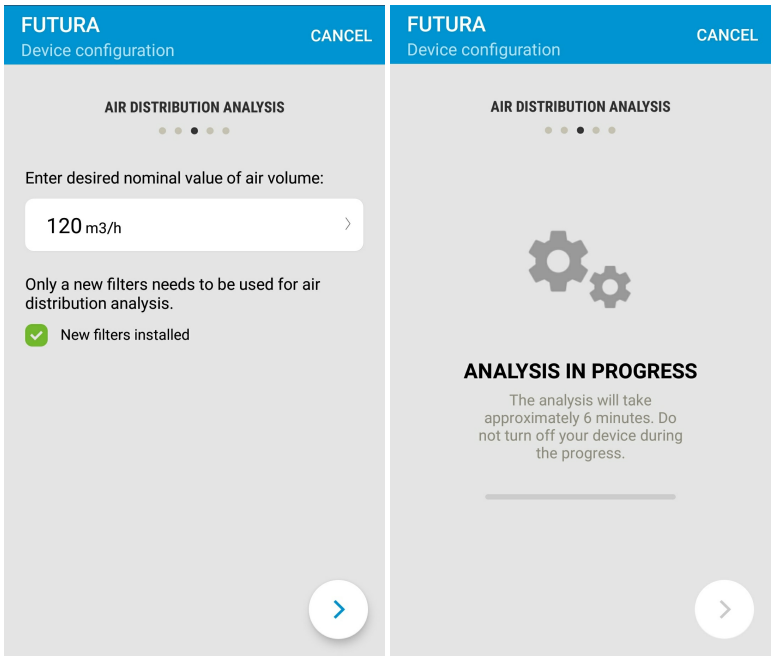


Figure 11 – Setting the nominal air volume, Figure 12 – Analysis in progress

Set the desired nominal air volume and tap the arrow in the bottom right corner to run the analysis. The function will calculate maximum available airflow for each of the five ventilation levels according to the real layout of the duct system (diameters, lengths, vents, T-pieces). The unit will also calculate the pressure loss of the duct system. This process is fully automatic.

Air distribution analysis also includes filter calibration.

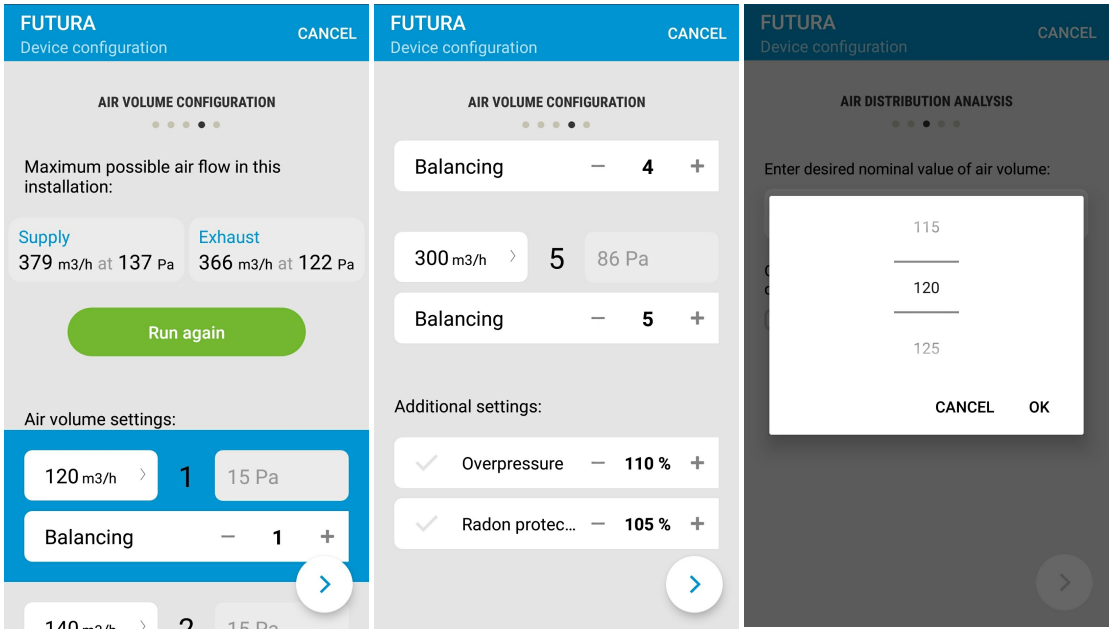


Figure 13 – Calculated maximum possible airflow, Figure 14 – Balancing of the ventilation levels, Figure 15 – Setting air volumes for individual ventilation levels

You can set and manually balance air volume for each ventilation level in this section of the menu (see Fig.13, 14, 15). Pressure

loss of each ventilation level is a read-only value. When the air volume for a ventilation level is changed, Futura recalculates the pressure loss for this ventilation level.

When the *Overpressure* or *Radon Protection* functions are activated (only one of them can be active at a time), the factor of fan power changes. The factor is set as a percentage.

Example: Overpressure is set on 120 % - this means that the supply fan runs at 120 % of the extract fan speed.

Nominal airflow of a zone When installing VarioBreeze system, it is necessary to set the nominal airflow of each zone.

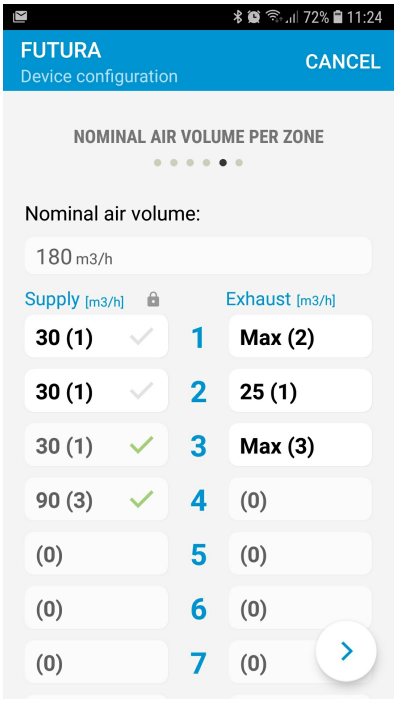


Figure 16 – Setting the nominal airflow of a zone

Use the application to set the required airflow of each supply zone in case of a nominal flow. The resulting airflow ratios among individual zones will then be applied to other airflow values too.

The application shows the list of zones and their addresses (see annex 8). The value in parentheses next to the airflow value represents the number of valves installed within the zone.

Tapping a zone opens its airflow settings. Simultaneously, LED indicators on the corresponding valves, Alfa control panel and VarioBreeze button light up.

Supply configuration

Nominal airflow needs to be allocated to individual zones. The system offers you default airflow allocation for each zone. This value can be manually adjusted. Then the entered value is saved, locked and the airflows of remaining zones are recalculated, so the total sum matches the nominal airflow. The locked zone is marked in green. If you need to reconfigure the airflow of a locked zone, tap the unlock symbol and adjust the value.

Extraction configuration

Extraction configuration allows you to reduce the extracted amount of air to the required nominal value, for example in case of a zone with low pressure loss, such as utility room. If the amount of air does not have to be limited, we recommend using the MAX setting.

7. Online registration

When registering **the unit must be connected to the internet**. When the unit is on, it logs into the preset server and maintains a permanent connection.

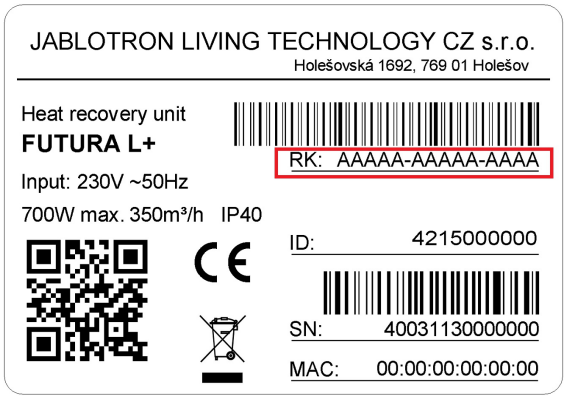


Figure 17 – Registration key

- Log in to MyCOMPANY, run device registration and enter the **unit registration key** either manually or by scanning barcode using camera in app. Next, optionally enter "Service Name", the customer's email address, and the time zone. Tap "SEND" to submit the registration and complete the process.
- Make sure **"Location services" are enabled** when installing a new unit!
- If the unit is not online, the following screen will be displayed and the following will need to be confirmed.

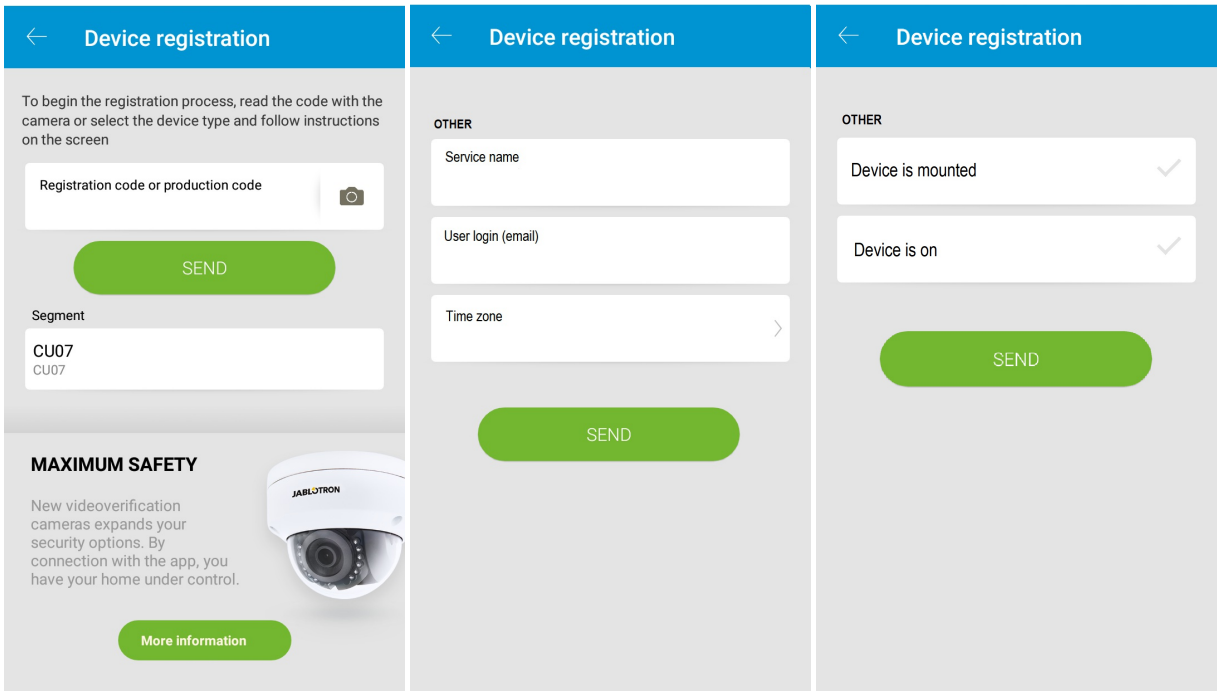


Figure 18 – Entering registration key, Figure 19 – Registration of the device, Figure 20 – Confirmation of other parameters

8. Room-by-room ventilation (zoning system)

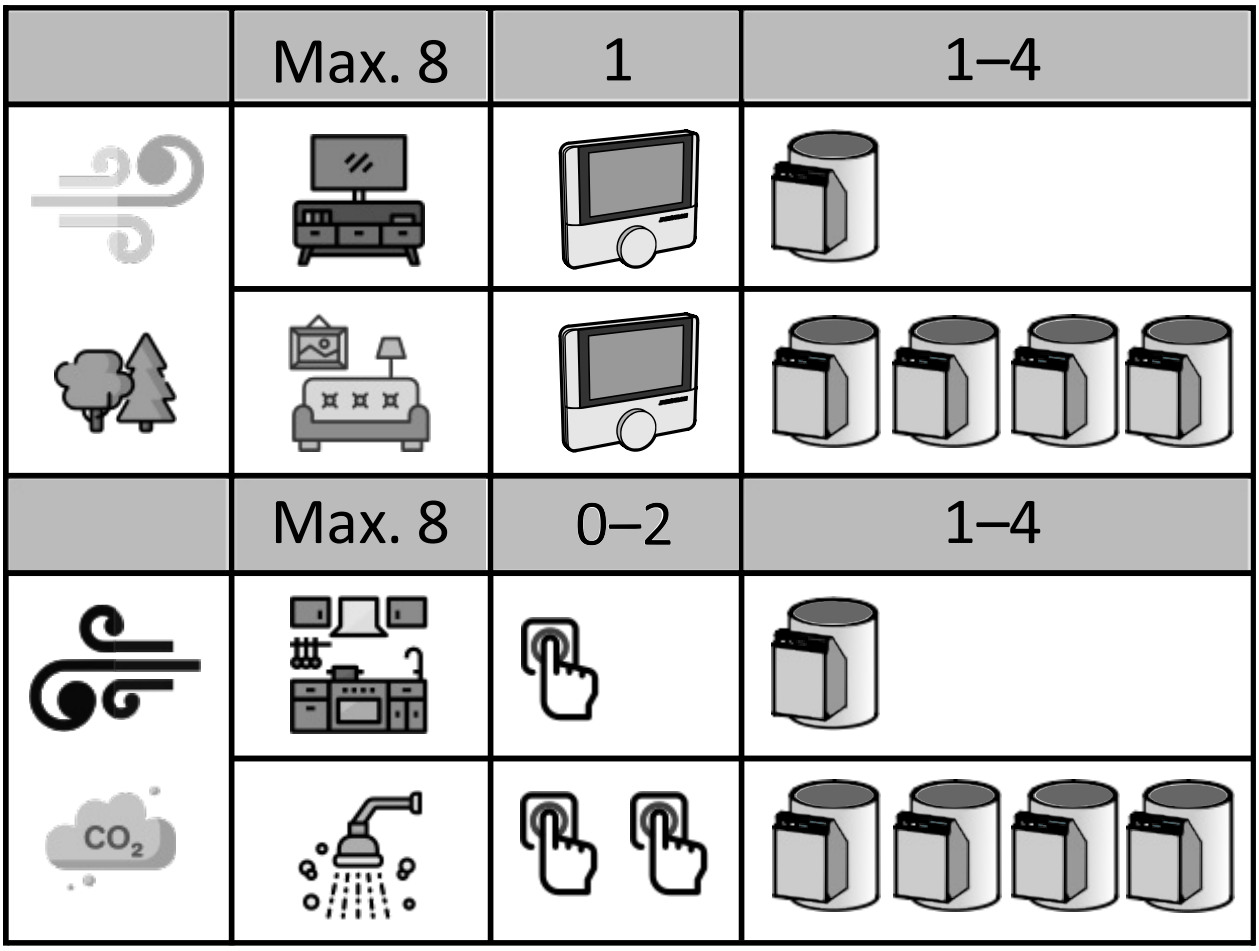


Figure 21 – Possible zone combinations

The picture above shows the number of control panels, valves and buttons that can be used for each zone.

When configuring zones each individual zone must have a control panel, a valve and a button configured using a DIP switch.

8.1. Configuration of Alfa control panel DIP switch

First, set zone number (1 - 8) on the DIP switch. Use only **the first three switches** on the DIP to set zone number! See picture below for each zone number (1 - 8) and the corresponding position of switches no. 1 - 3. Use switch no. 6 to set the use of the terminating resistor: set the switch to the ON position when you are using a terminating resistor.

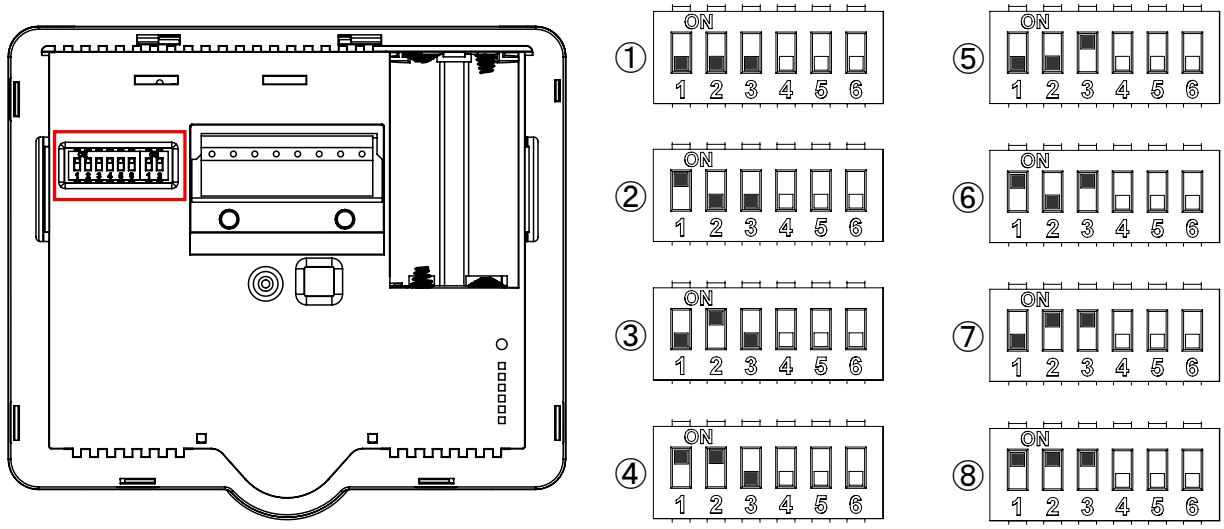


Figure 22 – Setting zone number on Alfa control panel DIP switch

8.2. Configuration of a valve DIP switch

Second, it is necessary to configure a valve DIP switch (if using multiple valves within a zone, configure DIP switch on each of the valves). Use switches no. 1 - 3 to set zone number, switches no. 4 - 5 to set valve address and switch no. 6 to set air supply/extract. For air supply, set the switch to the OFF position, for air extract, set the switch to the ON position.

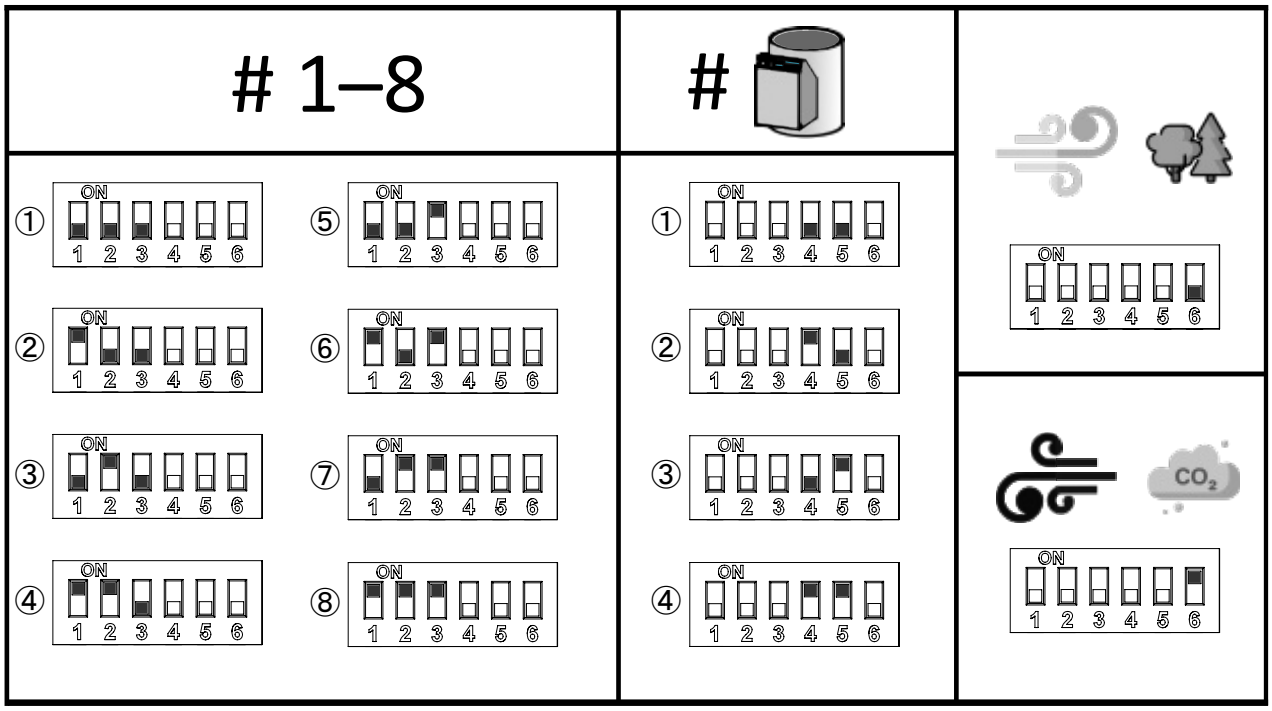


Figure 23 – Setting a valve DIP switch

8.3. Setting the address on the JB-122TP Thermostat

The JB-112TP thermostat does not contain a DIP switch for address setting; the address must be set using the control buttons only:

- there is no default address set — it must always be configured manually
- when the unit is powered on for the first time with the RS-485 bus connected, only a digit for address setting will appear on the thermostat display
- use the **+** and **-** buttons to select the desired address (the digit will blink during selection), and confirm the setting by pressing the **i** button (the blinking will stop after pressing)
- The address can be changed again only within 5 minutes of powering on by pressing **+** and **-** simultaneously for 5 seconds. After that, the address can be modified and confirmed by pressing the **i** button.
- The address can also be changed via the Connect Lite web interface. In the peripherals tab, you must select the corresponding VarioBreeze zone and enable address change by clicking the Identify button (see image 24). During identification, the address can be changed using the **+** and **-** buttons and saved by pressing the **i** button.

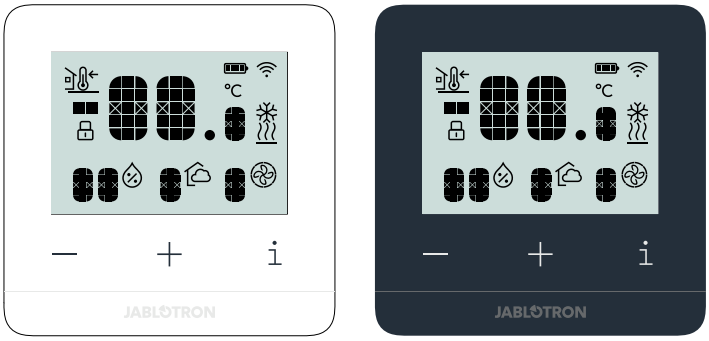


Figure 24 – Thermostat JB-112TP

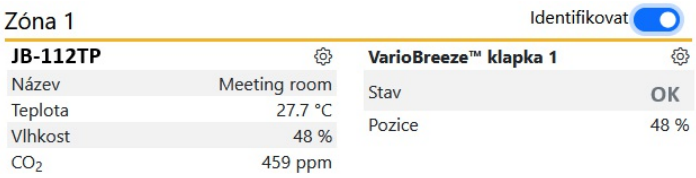


Figure 25 – Connect Lite - identification

8.4. Address setting on the JB-112TH CO_2 sensor

JB-112TH CO_2 sensor does not include a DIP switch for address configuration. The address must be set using the control button:

- no default address is preconfigured — it must always be set manually (indicated by the orange LED blinking after power-up).
- The address can only be set within 5 minutes of powering on. Pressing and holding the button for **5s** activates address setting mode
- each subsequent press of the button increments the address from 1 to 8. The selected address is indicated by the number of LED blinks
- To save the address, press and hold the button for **5s**. The LED will stop blinking to confirm the address has been saved.

Figure 26 – JB-112TH CO_2 sensor

8.5. Configuration of an extract button DIP switch

Third, it is necessary to configure the extract button DIP switch. Use switches no. 1 – 3 to set zone number, switch no. 4 to set button address (1 or 2) and switch no. 5 to set button mode (see below for detail). Switch no. 6 serves for optional use of a terminating resistor. When a resistor is used, set the switch to the ON position.

Switch no. 5 - button mode configuration: The extract button can serve either as a switch or as a button to start Boost function. When the switch is set to the OFF position, it works as a button, when set to the ON position, it works as a switch. It means that if the no.5 switch on the DIP is in the OFF position, pressing the extract button will activate the Boost function, which will run for a set amount of time and turn off automatically. This configuration can be used for example in a bathroom. If the no.5 switch on the DIP is set to the ON position, the extract button will work as a switch - when pressed the Boost will run until the extract button is pressed again for the Boost to be turned off. This configuration can be used for a kitchen hood.

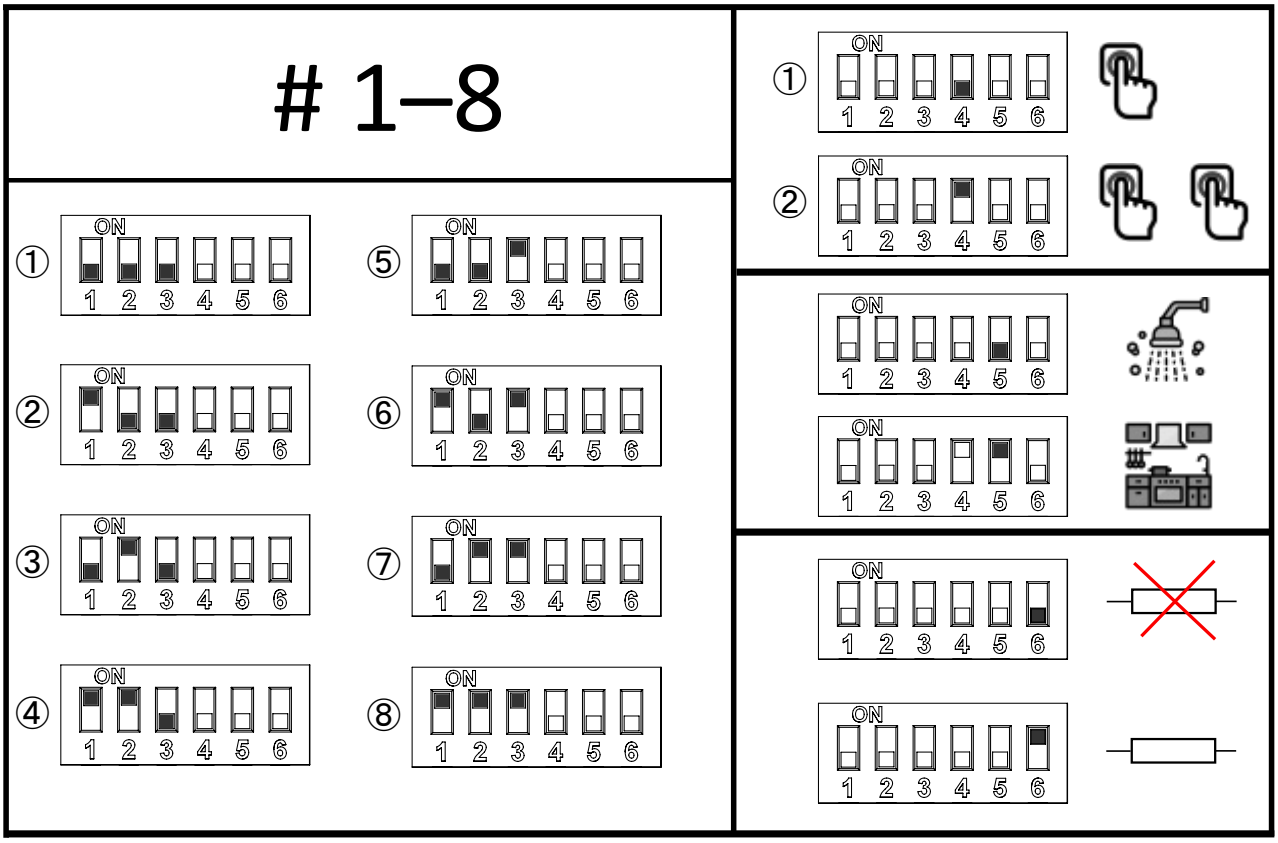


Figure 27 – Setting a button DIP switch

When configuring individual zones pay attention to correct positions of switches. For example when setting up zone no. 5, this zone (i.e. corresponding DIP switch combination) must be set on the control panel and the valve (and if applicable on the extract button). The unit then pairs all components automatically based on their identical DIP switch configuration. The extract/supply configuration is set by switch no. 6 of the DIP on a valve (see Fig. 23). If there is more than one valve within a zone, each valve must have its own unique address configured. In case of three valves per zone, their addresses can be set as 1, 2, 3 or 2, 3, 4 or 1, 3, 4 - but each address must be unique!

8.6. Supply zone configuration

- The first column shows how to set zone number on an Alfa control panel using a DIP switch (switches no. 1-3). The combination for zone 5 is shown.
- Following two columns show how to set valve addresses (switches no. 4 and 5) and supply zone (switch no. 6) on a valve DIP switch.

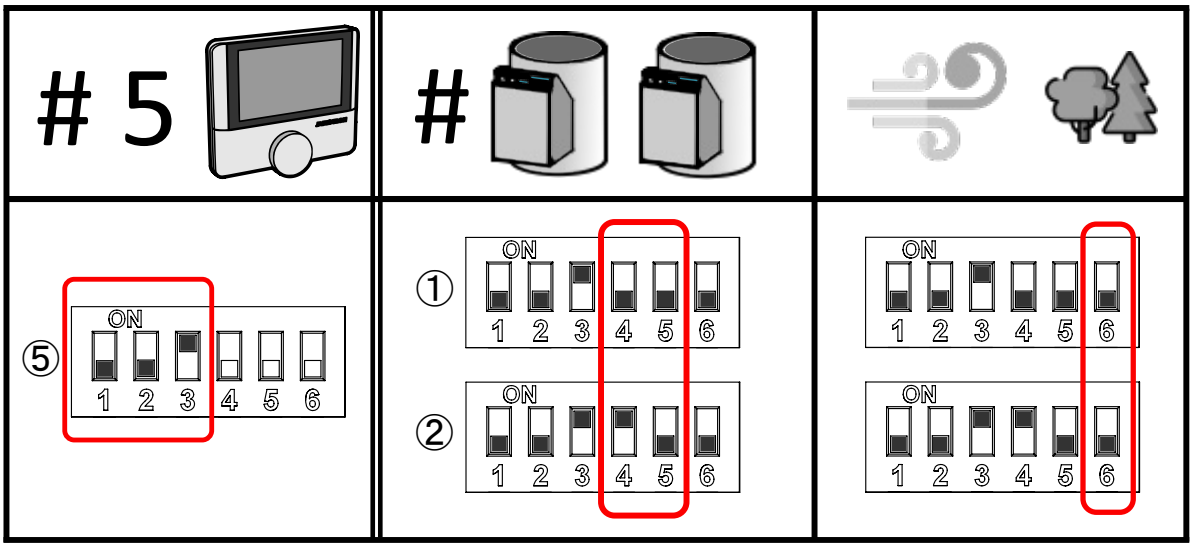


Figure 28 – Example of configuring a supply zone: zone no. 5, two valves, supply

8.7. Example of Extending the Supply Zone with Additional Dampers

- The first column shows the standard address setting 5 (switches 1 to 3) for the Alfa controller, and switch 4, which indicates that dampers with an address one number higher, i.e., address 6, are used to extend this zone. In zone 6, neither the Alfa controller nor the CO_2 sensor is connected.
- The second column includes only the damper address settings (switches 1 to 3) and the number of dampers, which are differentiated using switches 4 and 5.

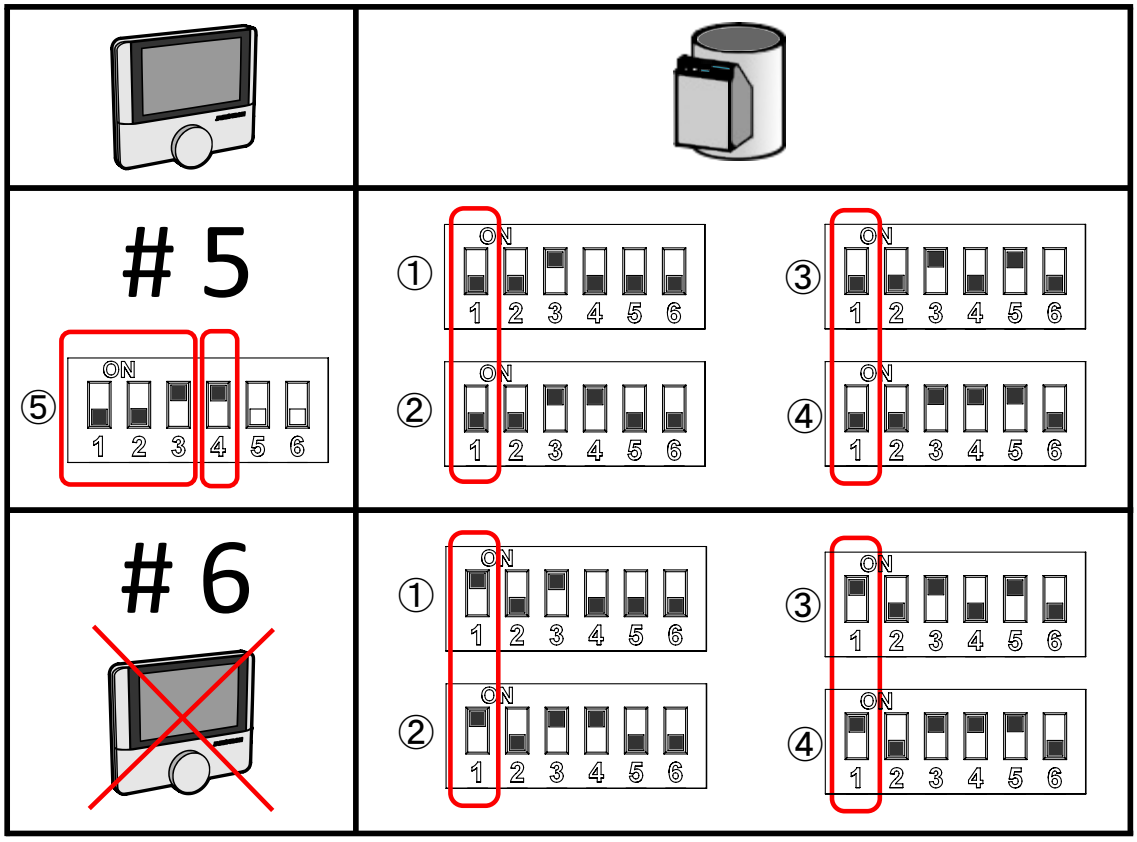


Figure 29 – Supply Example: Zone five, extended to up to 8 dampers, supply.

8.8. Extract zone configuration

Table no. 1 – valve DIP switch

- First column shows how to set valve addresses (valves 1, 2, 3) using switches no. 4 and 5.
- Second column shows how to set the extract zone using switch no. 6.

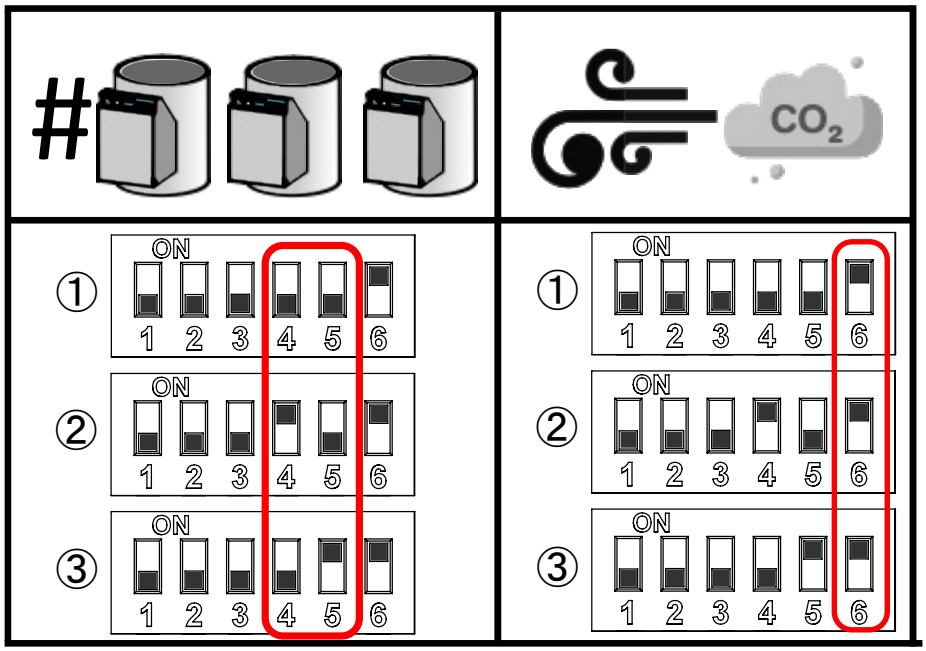


Figure 30 – Example of configuring an extract zone: zone one, three valves, extract

Table no. 2 – button DIP switch

The first three switches have to be set for the corresponding zone (shown zone no. 1, same as in Fig. 26).

- First column (switch no. 4) shows button address.
- Second column (switch no. 5) shows that the button is set as a **switch** (ON until pressed again).
- Third column (switch no. 6) enables the use of a terminating resistor.

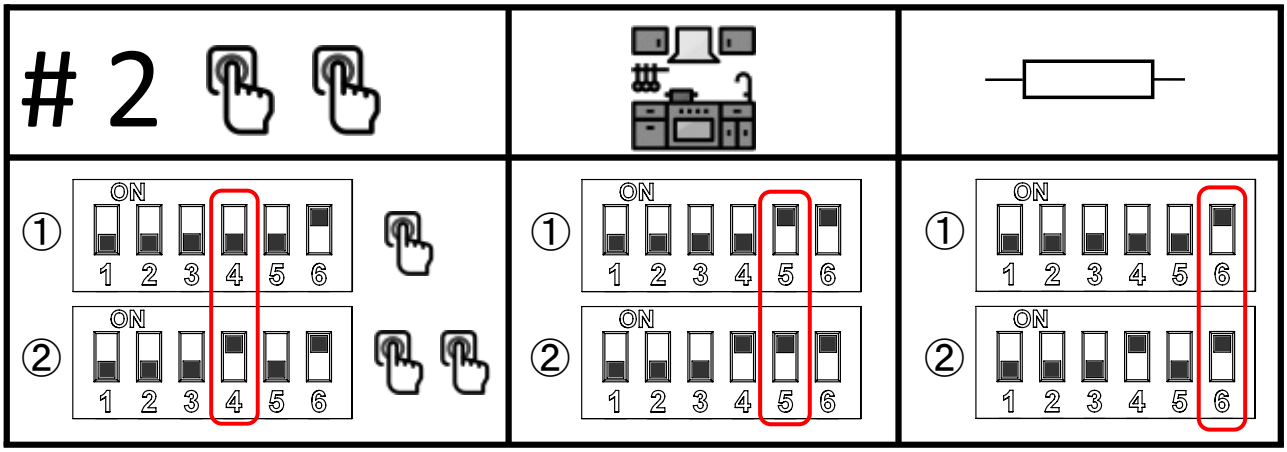


Figure 31 – Example of a button configuration: two buttons, **switch** mode, terminating resistor enabled

9. BMS connection

- **Modbus TCP** - Allows you to control the unit's performance, including enabling user functions and monitoring current status of the unit. The unit is connected to Modbus via current IP address, port 502. Detailed description of registers can be provided from the manufacturer upon request.
- **Analog input IN1 and IN2 (0 - 10 V)** - It is used to control the unit's power in Auto Mode. It is possible to set a linear dependence of the unit's output based on the input voltage. The input voltage ranges from 0 to 10 V. **Note:** Some systems are not able to supply voltage from 0 V. In this case we recommend to set the linear dependence starting at 1 V (see Fig. 29). This setting however will not stop the system entirely! The minimum power level at 0 V of input voltage corresponds to 1% of the power, which is about 65 m^3/h for size M and about 110 m^3/h for size L.

If it is necessary to integrate Futura into a superior home-control system, it can be carried out via Modbus TCP communication. In this case, JLT technical support will provide you with specification of Modbus TCP registers upon your request.

- Log into MyCOMPANY application and connect to the device you want to configure, then tap the settings icon in the top right menu.

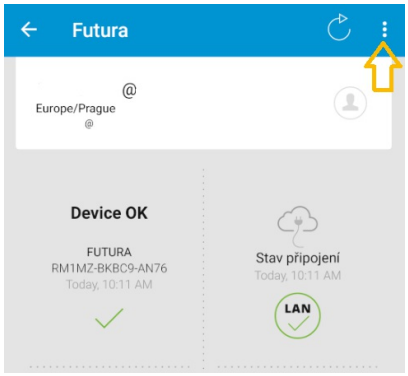


Figure 32 – Settings menu

- Select analog input control and go to **"Analog input setting"** Here you can set the desired dependency using the slider tabs on the curve. **Analog control is superior to CO_2 sensors.**

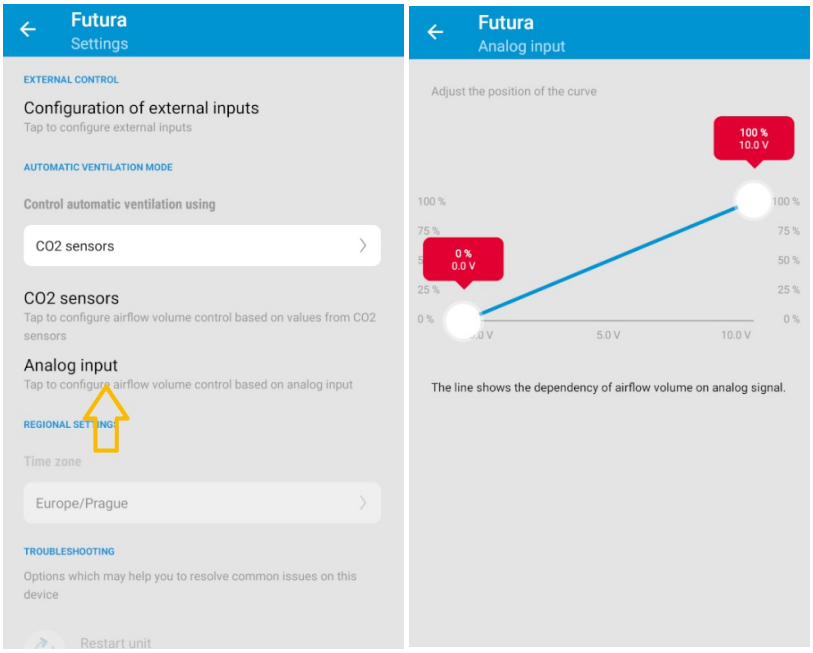


Figure 33 – Digital input configuration, Figure 34 – Analog input curve configuration

10. Emergency shutdown function

The emergency shutdown function is integrated into the unit functions. This function is used for immediate shutdown of the unit in emergency situations (fire, alarm, etc.). The emergency shutdown is assigned to external inputs as a potential-free contact and in MyCOMPANY is assigned to the selected input - see pictures below. No additional configuration is needed for the Emergency shutdown input. Activation of the function disconnects the contact. When the emergency shutdown is deactivated, the contact is connected again. There is no duration for emergency shutdown, it is directly controlled by the input.

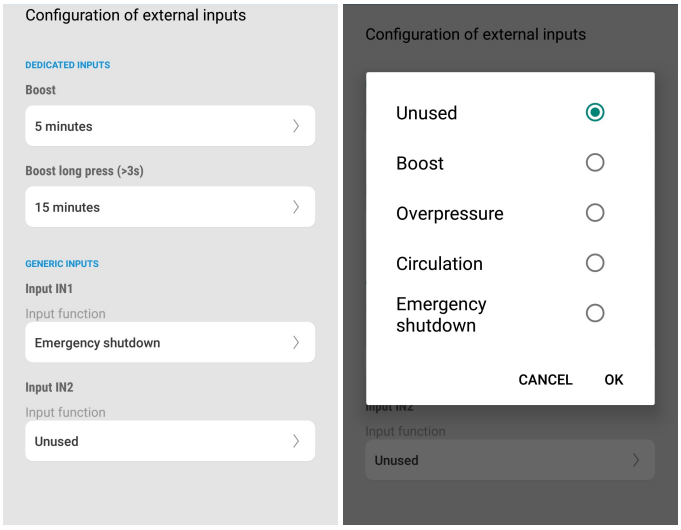


Figure 35 and 36 – Setting the input for emergency shutdown

When the unit is in an emergency shutdown state, a general fault is displayed both in the device list and on the unit's display.

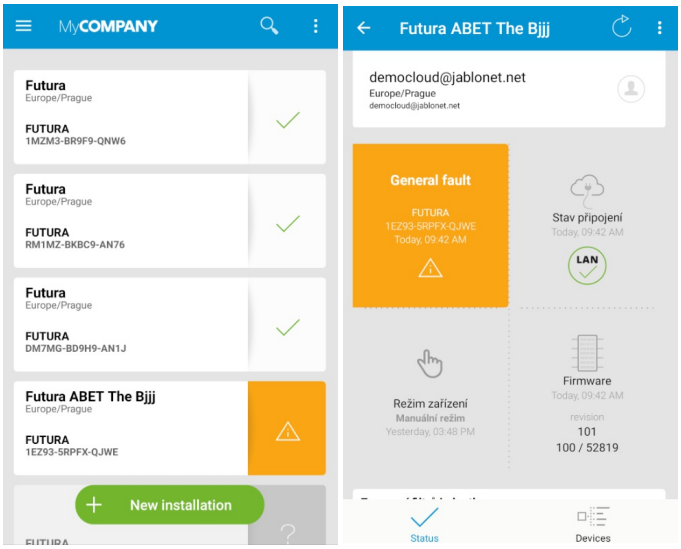


Figure 37 and 38 – Unit status after emergency shutdown

11. Error alerts and their solutions

With its technical and constructional design, the heat recovery unit is not designed for complex repairs on the premises. Not all faults can be repaired on site! In case of failure of fans or heat exchanger, please continue according to the table below. If a fault persists, contact our service department.

11.1. Alfa control panel error alerts

Error number	Error description	Solution
1	Filters not initialized	Insert new filters and run initialization
2	Filters clogged	Replace filters
3	Old filters	Replace filters
4	Low back-up battery	Replace battery on the main board
5	Too high RPM - supply fan	Check that the supply ducts are not blocked
6	Too high RPM - extract fan	Check that the extract ducts are not blocked
9	Outdoor temperature below limit	-
10	VarioBreeze not configured properly - supply	Check the configuration of VarioBreeze supply zones
11	VarioBreeze not configured properly - extract	Check the configuration of VarioBreeze extract zones
12	Emergency shutdown	Eliminate the cause of the emergency shutdown
13	Error in communication with SuperBreeze	Check RS-485 bus or change SuperBreeze communication module
14	Supebreeze error	Check the condition of the indoor and outdoor SuperBreeze units
101	Error of ambient sensor	Replace ambient sensor
102	Error of indoor sensor	Replace indoor sensor
103	Error of fresh sensor	Replace fresh sensor
104	Error of waste sensor	Replace waste sensor
105	Supply fan error	Check connection of the supply fan cable
106	Extract fan error	Check connection of the extract fan cable
107	Error in communication with the exchanger	Check connection of the exchanger cable
108	Error in position of exchanger valves	Check exchanger valves

Error number	Description of the error/warning	Solution
109	IO board error	Replace IO board
110	Supply fan blocked	Check supply fan
111	Extract fan blocked	Check extract fan
112	Coolbreeze communication error	Check RS-485 bus connection, or replace CoolBreeze control board
113	Coolbreeze outdoor unit error	Check CoolBreeze outdoor unit

11.2. Wall-mounted control panel error alerts

Error alerts are displayed on the display of the control panel with their designated symbols and respective error numbers. Error numbers are stated in the table below.

Error number	Error description	Solution
Error No. 1	Sensor error	Change sensor
Error No. 2	Fan error	Check cable connection
Error No. 3	Heat exchanger error	Check cable connection
Error No. 4	I/O board error	Change I/O board
Error No. 5-9	Unspecified	

11.3. Reset to default settings

If necessary, the heat recovery unit can be reset to the default (factory) settings. To activate reset, press and hold the filter change button for at least 15 seconds. The status is indicated by purple LED backlight. After releasing the button the following is performed:

- configuration and user settings are deleted
- default values are set
- control processor is reset

The unit needs to be reconfigured after a reset.

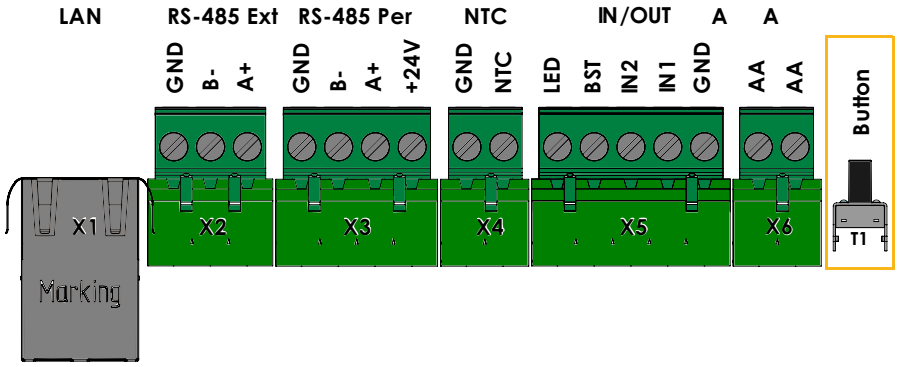


Figure 39 – Filter initialization - hold for 15 seconds, then release

12. Maintenance

The basic maintenance of the heat recovery unit consists of regular filter change and condensate drain checks. Regular filter change performed once every 2 - 6 months (depending on the local outdoor air quality) is essential for correct and trouble-free operation of the heat recovery unit. Check the condensate drain at least once a year and remove any dirt.

We recommend to check unit's supply and exhaust ducts (façade box, grid, etc.) at least once a year (or more frequently depending on the local outdoor air quality).

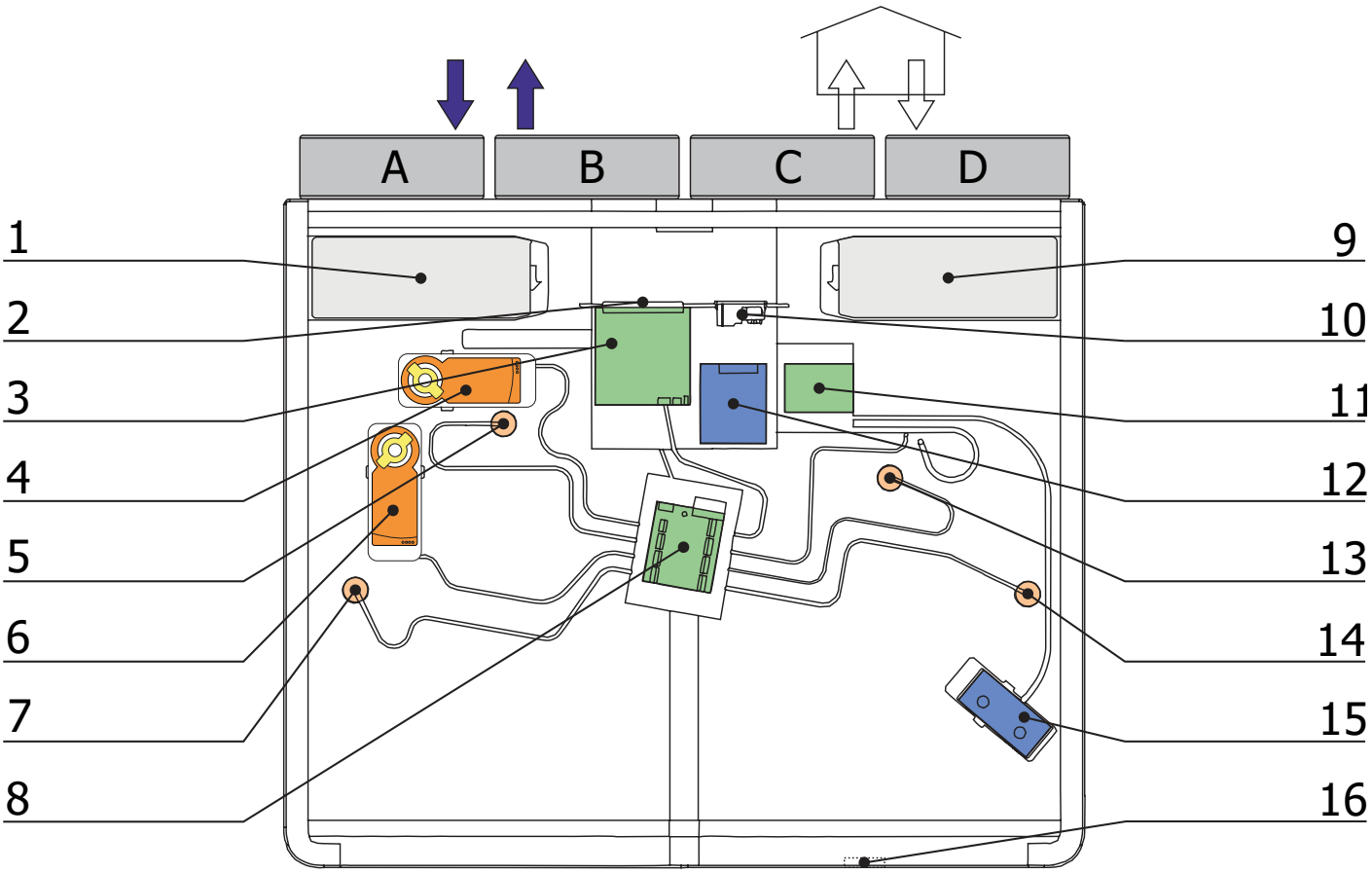
Please make sure that the unit is disconnected from the electrical mains before proceeding with maintenance.

To meet the conditions of the **five-year warranty**, it is necessary to perform a regular annual service inspection. During the inspection it is important to perform the following tasks:

Individual tasks of service inspection and their description	
Functionality before the inspection	- check that the unit is running and which mode is set - turn the unit off from the control panel or via MyJABLOTRON application - unplug from electrical mains
Heat exchanger status	- remove front cover (2 × screw) - dismount filter plugs and remove them - remove plugs A, B, C, D with a spatula of minimal width of 5 cm (2 in) - check the heat exchanger visually - clean first half of valve rails with clean, dry cloth - plug in, wait for the valves to pass, unplug again - clean second half of valve rails, plug in - check operation of the actuators and movement of all valves to their end positions - use vacuum cleaner to clean any remaining dust or dirt
Inspection of wiring	- check tightness of contacts - plug in - check connection and operation of control panels - check functionality of all buttons and other peripheries
Condensate drain	- clean the drain - if necessary, optionally rinse with clean water and fill odor trap with water
Ducts	- check that the façade box is clean - check outdoor supply and exhaust pipes - check connection of silencers to the unit and the distribution boxes - check the connection of the flexi pipe to the distribution boxes
Filter clogging	- check filter clogging in % - if necessary, change filters and run initialization - offer the client to sell them annual supply of filters
Airflow regulation	- adjustment of control valves - check the locking in the set position - check settings of the distribution elements - go through the settings with the client and in case he or she has any requirements for adjustments, adjust the settings accordingly

13. Annex

13.1. Annex 1 - Unit structure



A - Outdoor air

B - Waste air

C - Supplied air

D - Extracted air

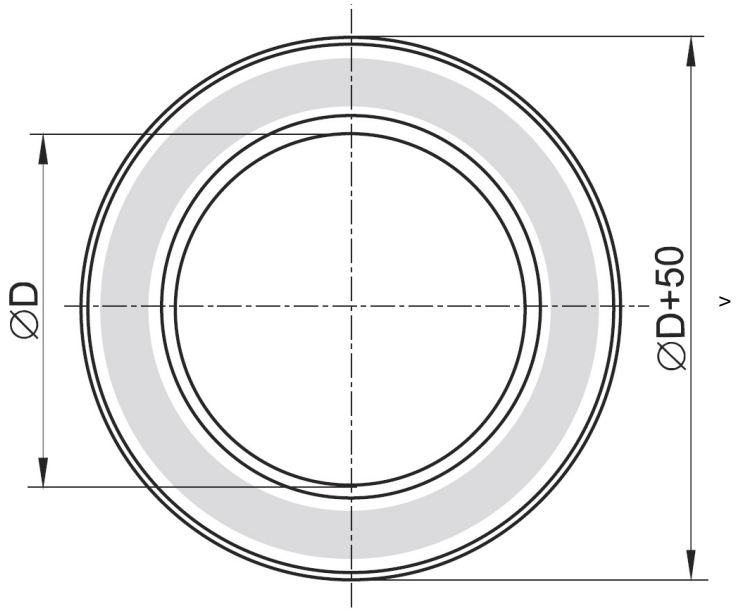
Description:

1 - Outdoor air filter
2 - Terminal
3 - Main board
4 - Servo bypass
5 - T & RH waste air sensor
6 - Circulation servo
7 - T & RH outdoor air sensor
8 - IO board
9 - Extracted air filter
10 - Mains supply and fuse
11 - Power board
12 - Power supply
13 - T & RH supply air sensor
14 - T & RH extract air sensor
15 - Comfortable post-heating
16 - Condensate drain

13.2. Annex 2 - Sonotex silencer

Characteristics

Flexible, insulated hose composed of several layers of polypropylene fabric, thermally and acoustically insulated with foil-faced glass wool. Sonotex can be connected to oval and round sockets and used in air conditioning and ventilation systems.



Technical parameters

Insulation thickness 25 mm (1 in); R = 0.65 [m²K/W]

Minimal temperature -30 °C (-22 °F)

Maximum temperature +140 °C (284 °F)

Operating pressure -188 to +2500 Pa

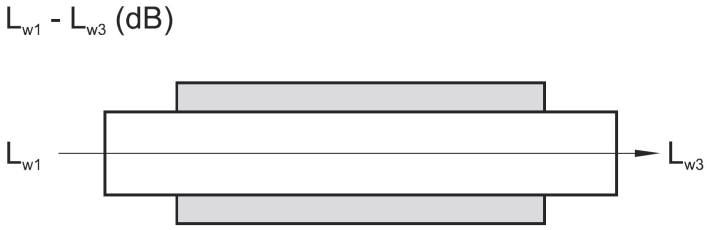
Operating speed max. 25 m/s

Bend radius 82 - 406 mm

Standard production line ⌀ D 150 mm (6 in)

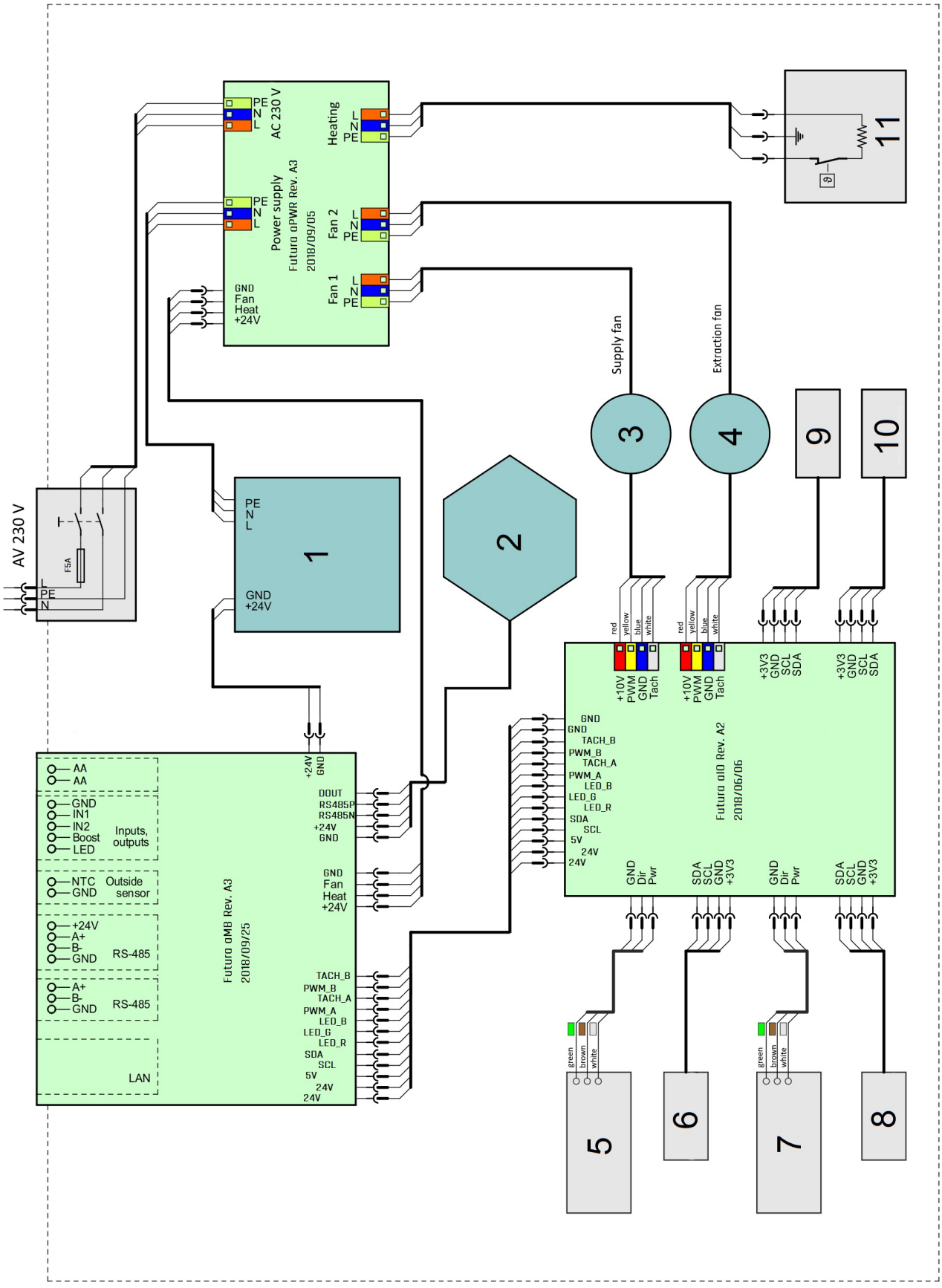
Standard length 10 m (33 ft)

Noise attenuation in piping (dB) for 1 m (3 ft) and 3 m (10 ft) pipelines. The measurement accuracy in lower octave bands is 2 dB, in higher octave bands 1 dB.



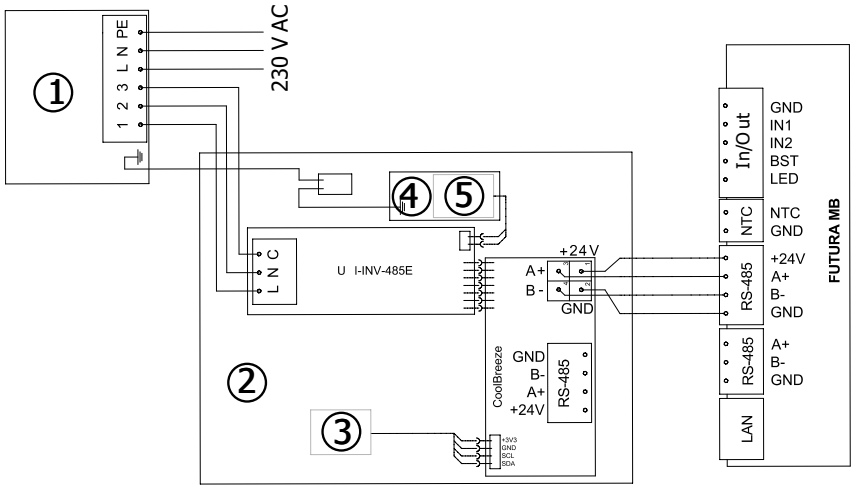
Diameter (mm)	Lenth (m)	Frequency (Hz)					
		125	250	500	1000	2000	4000
150	1	10.9	29.7	30.1	29.0	38.3	34.6
180	3	29.0	36.8	32.6	32.7	40.8	43.4

13.3. Annex 3 - Wiring diagram



3a: Internal wiring diagram of Futura

1 - Power supply 24 V 2 - Heat exchanger 3 - Supply fan 4 - Extract fan 5 - Drying servo 6 - Outdoor air sensor 7 - Bypass servo 8 - Waste air sensor 9 - Fresh air sensor 10 - Extract sensor 11 - Heating 350 W



3b: CoolBreeze wiring diagram

1 - Outdoor unit 2 - CoolBreeze 3 - T-RH extract air sensor 4 - Evaporator 5 - NTC evaporator sensor

RS-485 wire colors:

- +24V - yellow
- A+ - brown
- B- - white
- GND - green

13.4. Annex 4 - Control board connectors

Control board connectors description

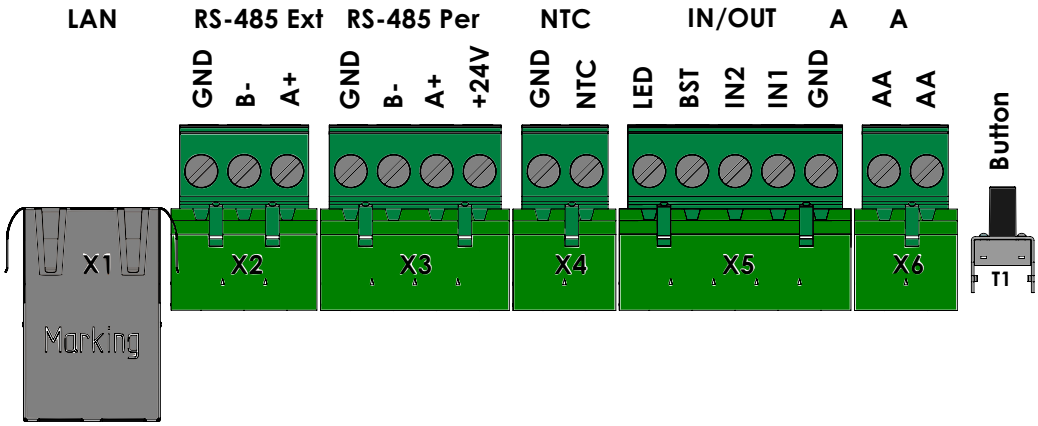
- X1 - LAN connection
- X2 - RS-485 bus, currently unused; GND: common ground; B-: data wire; A+: data wire
- X3 - RS-485 bus for connecting drivers, CO_2 sensors and CoolBreeze; GND: common ground; B-: data wire; A+: data wire; +24 V: power supply
- X4 - outdoor temperature NTC 10 k thermistor; GND: common ground; NTC: temperature sensor
- X5 - input and output connection; LED: output for LED boost indication +24 V/20 mA max.; BST: boost button; IN2, IN1: analog input 0 - 10V or digital input for potential-free contact against GND; GND: common ground
- X6 - AA bus connection
- T1 - Button

Short press – new filter initialization

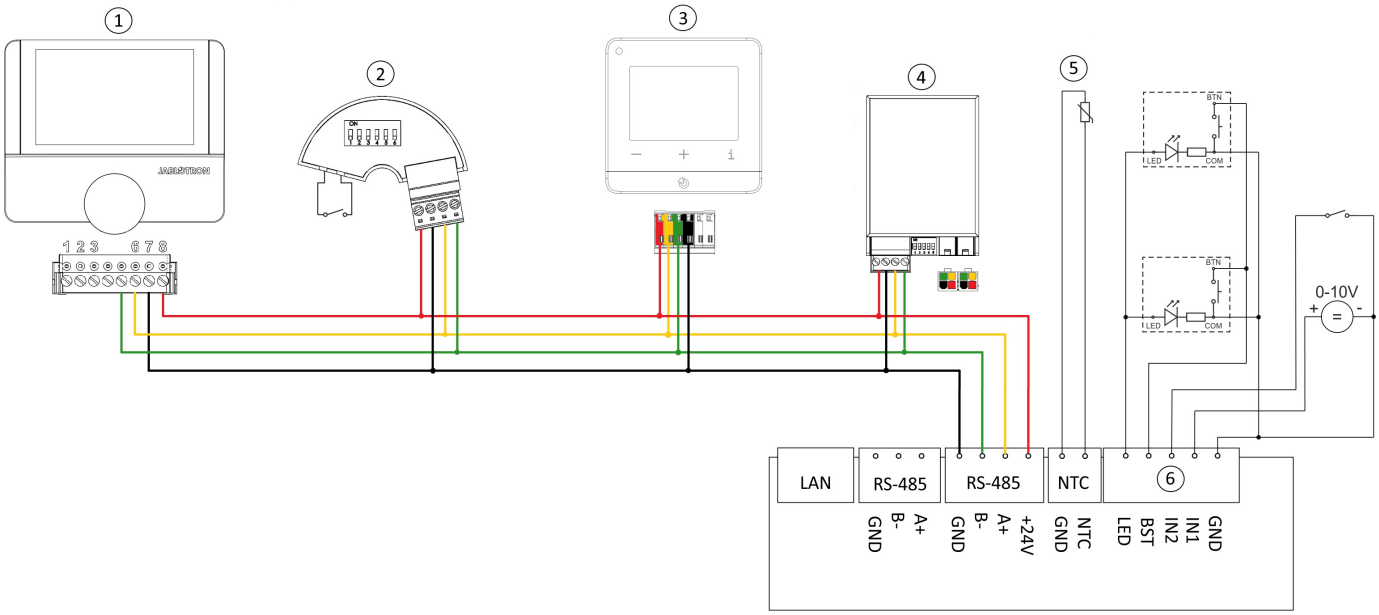
Press and hold – Bluetooth service mode activation

Connector types

- X1 – RJ45
- X2 – Phoenix Contact MSTB 2.5/3-ST-5.08
- X3 – Phoenix Contact MSTB 2.5/4-ST-5.08
- X4 – Phoenix Contact MSTB 2.5/2-ST-5.08
- X5 – Phoenix Contact MSTB 2.5/5-ST-5.08
- X6 - Phoenix Contact MSTB 2.5/2-ST-5.08



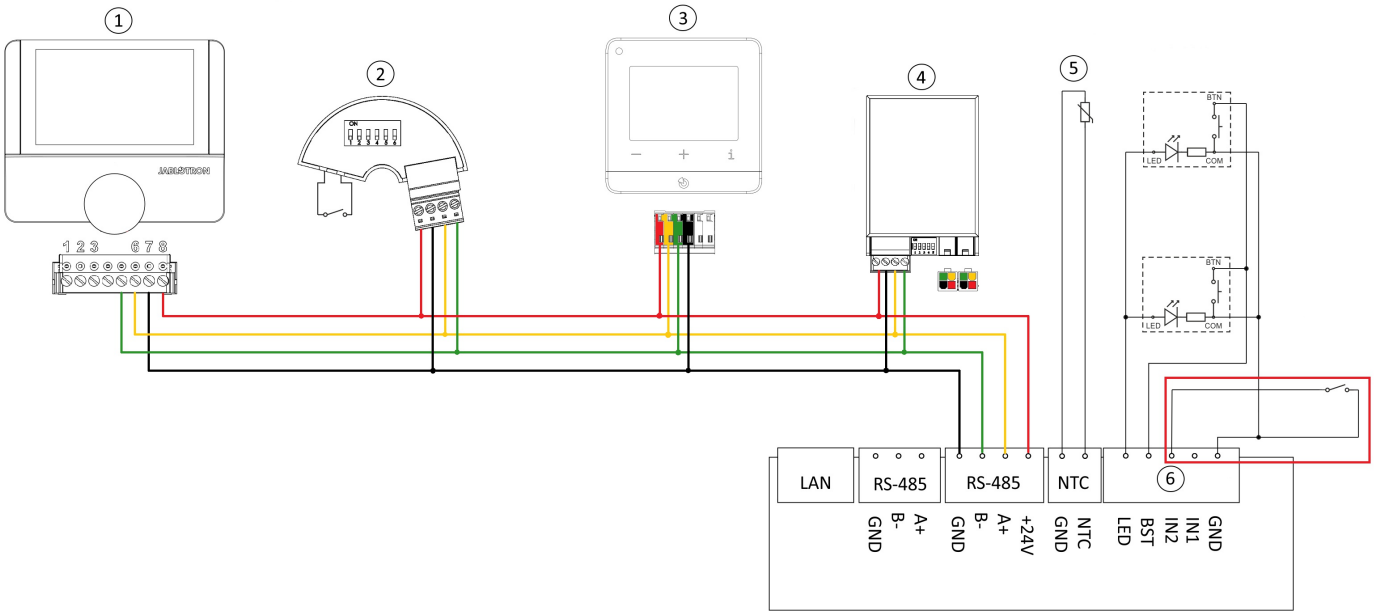
13.5. Annex 5 - Unit connection



Component connection capacity:

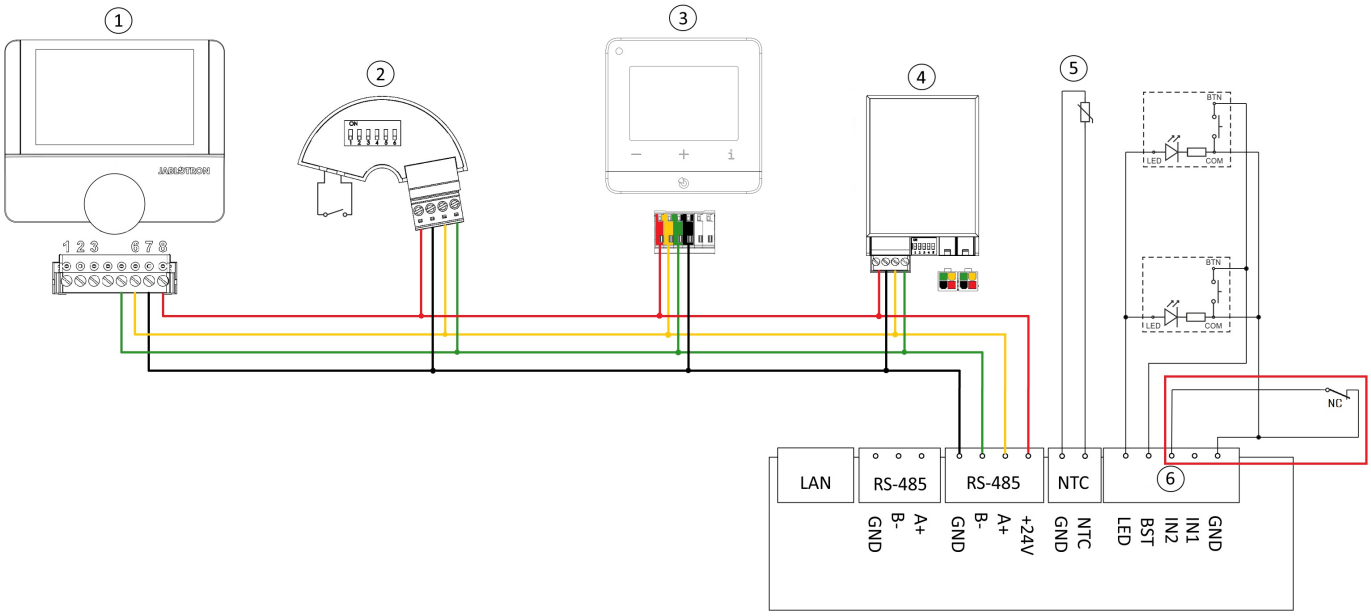
- 1. Alfa control panel, 1 - 8 pieces
- 2. VarioBreeze – room-by-room ventilation button, 1 - 16 pieces
- 3. The thermostat JB-112TP or CO_2 sensor JB-112TH, 1 to 8 pieces.
- 4. VarioBreeze – room-by-room ventilation valve, 1 - 64 pieces
- 5. NTC outdoor temperature sensor
- 6. Inputs and outputs

13.5.1. Examples of IN1 and IN2 input connection



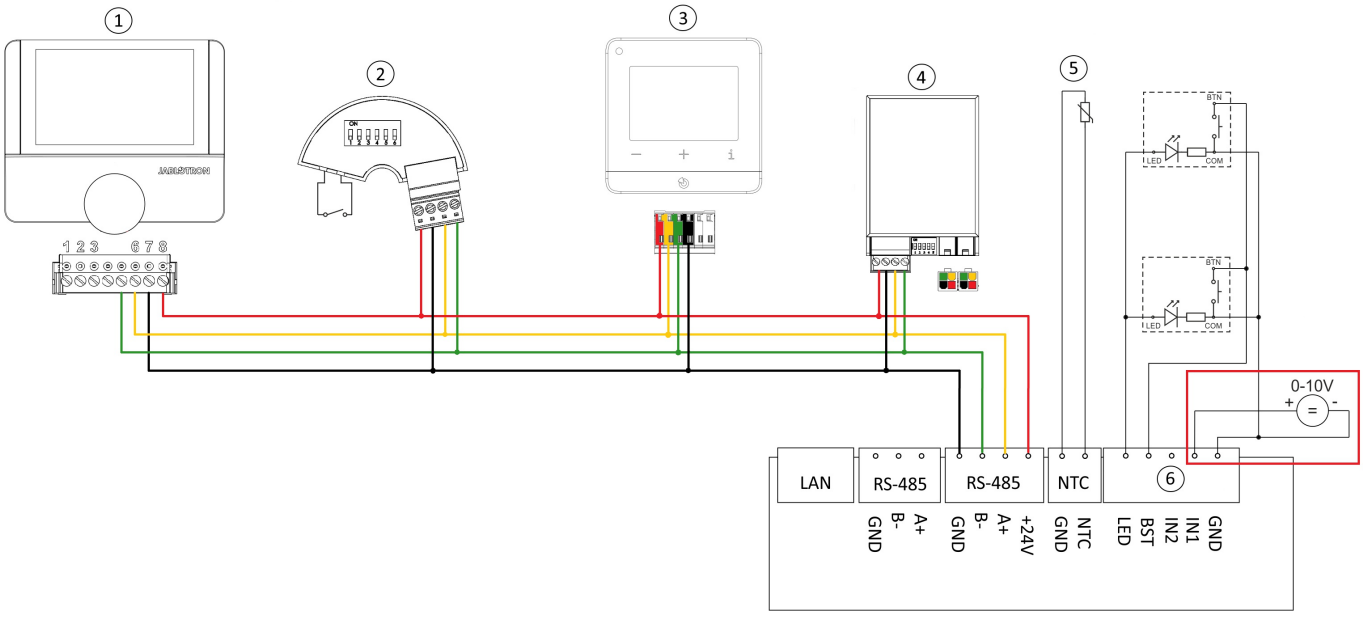
Example of analog input connection for *boost, overpressure, circulation*.

- A permanent potential-free contact is connected to the input. Modes are activated by connecting the contact.



Example of analog input connection for *emergency shutdown*.

- Mode is activated by disconnecting the contact. Connecting the contact deactivates the mode.

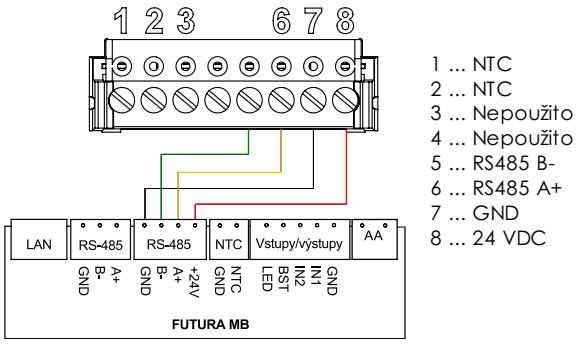


Example of 0 - 10 V analog input connection.

- It is possible to set a linear dependency of unit's output based on the input voltage (0 - 10 V). See chapter **"BMS connection"**.

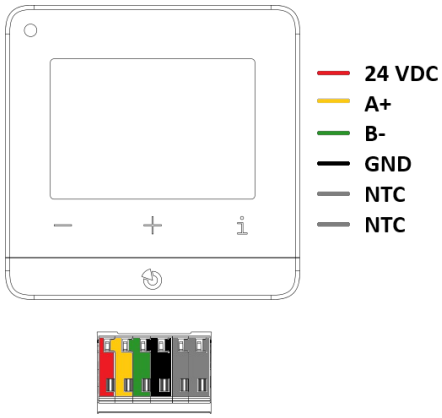
13.6. Annex 6 - Connecting control panels and CO_2 sensors

13.6.1. Connecting Alfa control panel via RS-485 bus



1 ... NTC
2 ... NTC
3 ... not used
4 ... not used
5 ... RS-485 B-
6 ... RS-485 A+
7 ... GND
8 ... 24 VDC

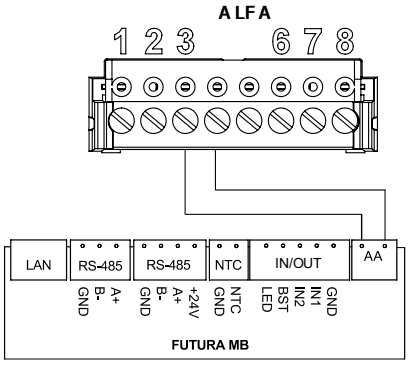
13.6.2. Connection of the thermostat JB-112TP and CO_2 sensor JB-112TH



- The NTC sensor terminals cannot be used for wiring on the thermostat JB-112TP and the CO_2 sensor JB-112TH.

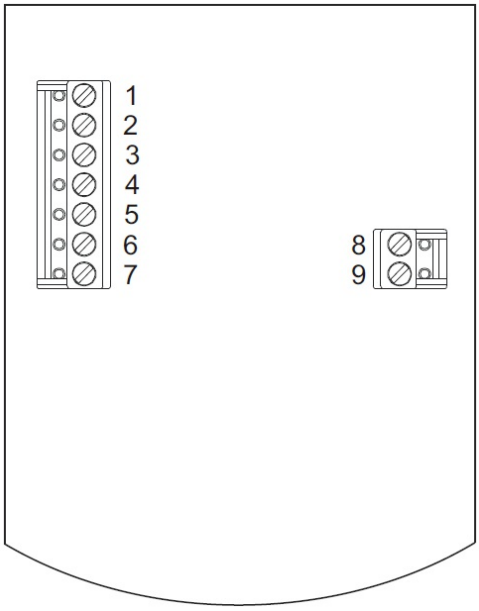
13.6.3. Connecting Alfa control panel via AA BUS

Only one control panel can be connected to AA BUS! When connected, both wires are used for data and power. Polarity does not matter.



1...NTC
2...NTC
3...AA BUS
4...AA BUS
5...not used
6...not used
7...not used
8...not used

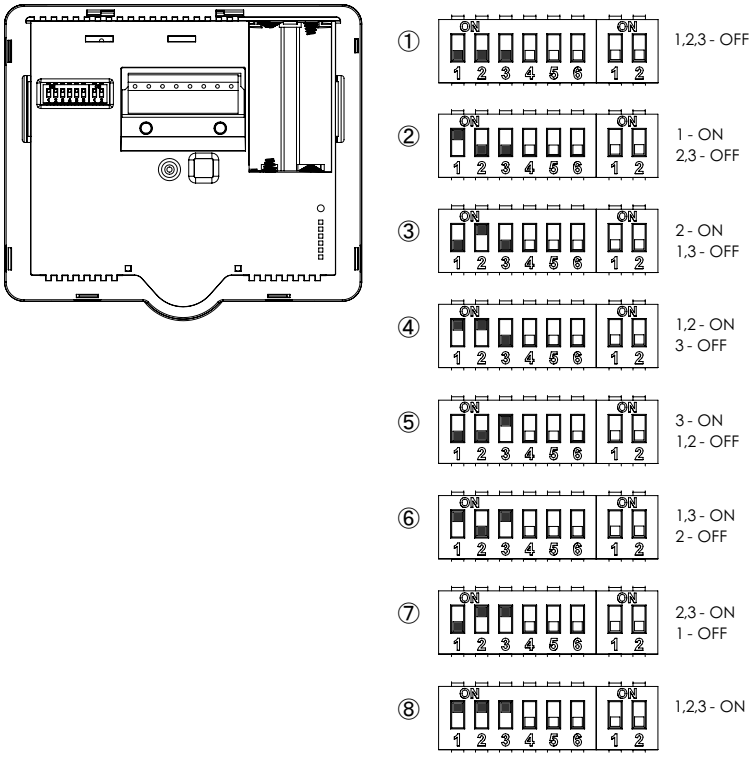
13.6.4. Connecting a wall-mounted control panel with CO_2 sensor or a separate CO_2 sensor



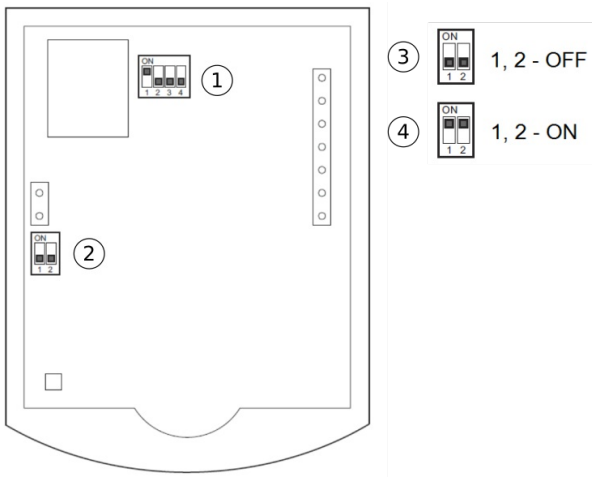

```
1...not used
2...not used
3...B-
4...A+
5...not used
6...GND
7...+24V
8...not used
9...not used
```

13.7. Annex 7 - Configuration of control panel and CO_2 sensor Modbus RTU addresses

13.7.1. Alfa control panel addresses



13.7.2. Wall-mounted control panel with CO_2 sensor or a separate CO_2 sensor

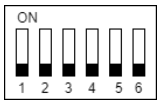
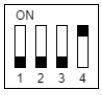
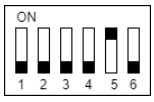
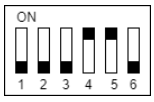
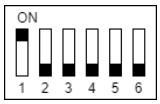
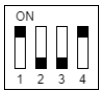
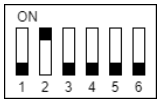
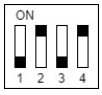
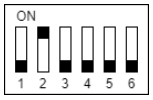
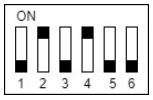
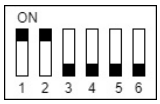
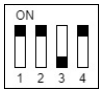
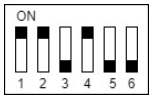
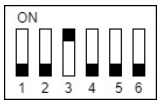
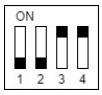
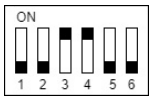
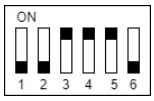
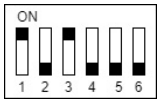
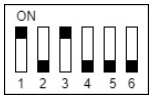
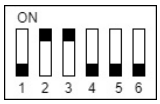
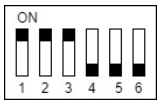
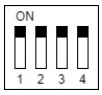
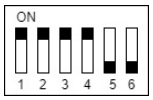


Make sure to always activate (via DIP switch) a terminating resistor to the last device (control panel or sensor) in the line! Always activate the resistor on one device only! The second terminating resistor is connected to Futura.

13.8. Annex 8 - Room-by-room ventilation (zoning system) - DIP setting combinations

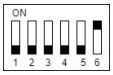
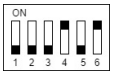
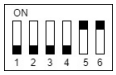
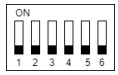
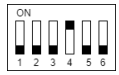
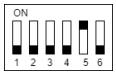
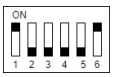
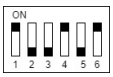
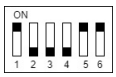
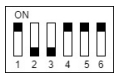
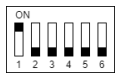
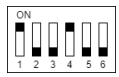
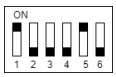
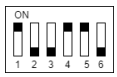
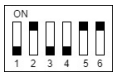
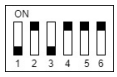
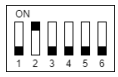
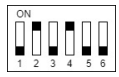
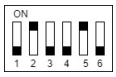
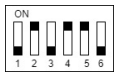
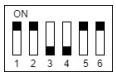
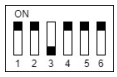
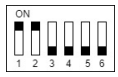
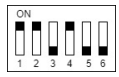
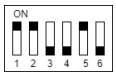
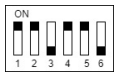
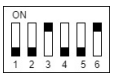
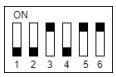
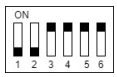
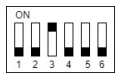
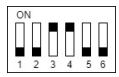
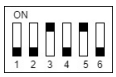
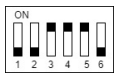
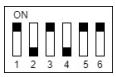
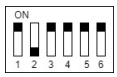
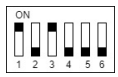
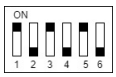
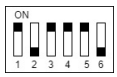
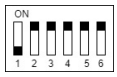
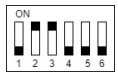
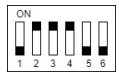
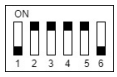
The following chart states all possible combinations of control panel DIP switches, CO_2 sensor DIP switches and valve DIP switches for max. 8 supply zones. Control panel and CO_2 DIP switch combinations are stated in columns 2-4. Valve DIP switch settings are stated in columns 5-8 according to the actual number of valves within the given zone.

Supply zones

Zone	Alfa	JB-112TP(TH)	CO_2 sensor	Valve 1	Valve 2	Valve 3	Valve 4
1		1(1x LED)					
2		2(2x LED)					
3		3(3x LED)					
4		4(4x LED)					
5		5(5x LED)					
6		6(6x LED)					
7		7(7x LED)					
8		8(8x LED)					

The following chart states all possible combinations of valve DIP switches and boost button DIP switches for max. 8 ventilation zones. Valve DIP switch combinations are stated in columns 2-5 according to the actual number of valves within the given zone. DIP switch combinations for boost buttons are stated in columns 6-7. Boost button configuration for kitchen hood is stated in columns 8-9.

Extract zones

Zone	Valve 1	Valve 2	Valve 3	Valve 4	Boost 1	Boost 2	Kitchen hood 1	Kitchen hood 2
1								
2								
3								
4								
5								
6								
7								
8								

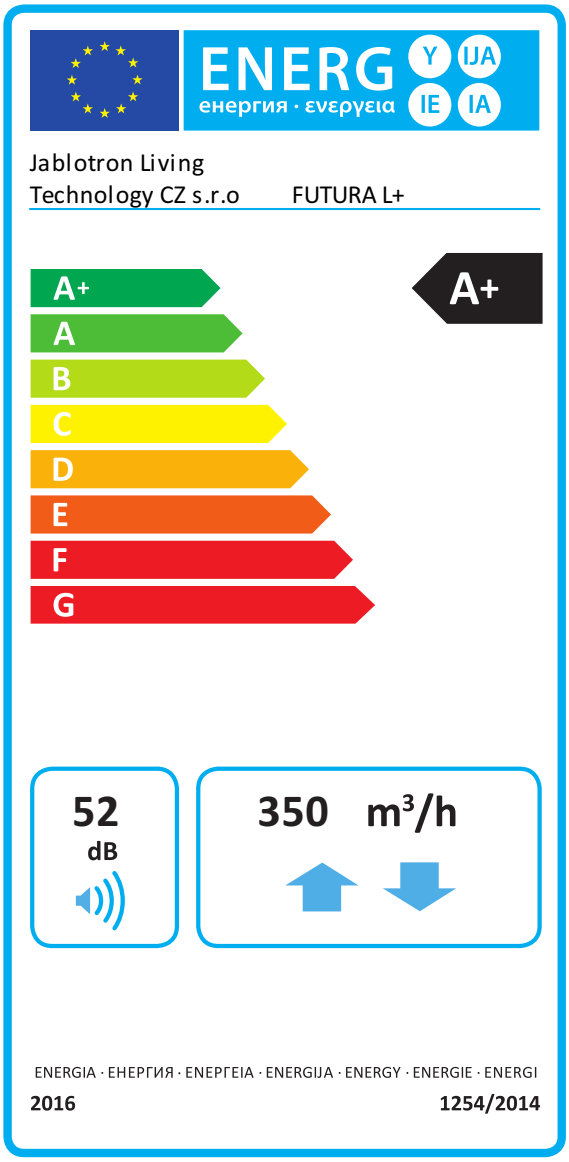
There has to be at least one zone containing boost button within the room-by-room system. A maximum of two buttons per zone is allowed!

13.9. Annex 9 - Product fiche

(according to Annex IV Commission Delegated Regulation (EU) No 1254/2014)

Name	
Supplier's model identifier	Futura L+
Specific energy consumption (SEC) in kWh/(m^2.a) for each applicable climate zone and each applicable SEC class	A+
Declared typology	bidirectional
Drive type	variable speed drive
Type of heat recovery system	recuperative
Thermal efficiency of heat recovery	93,8 %
Maximum flow rate	350 m^3
Electric power input of the fan drive including any motor control equipment at max. flow rate and max. pressure	212 W
Sound power level Lwa	52 dBa
Reference flow rate	253 m^3
Reference pressure difference	50 Pa
SPI	0,353 W(m^3/h)
Declared maximum internal and external leakage rates	2,5 %/2,5 %
Position and description of visual filter warning	User Manual Chapter 6.3: Filters and filter replacement, Installation Manual Chapter 12: Maintenance, LED indication on unit's front cover, warning on control panel display, warning in MyJABLOTRON
Internet address for pre-/dis-assembly instructions	JABLOTRONLT.COM
The annual electricity consumption (AEC) (in kWh electricity/year) („average“, „warm“, „cold “) at reference flow rate	2,49 / 2,04 / 7,87
The annual heating saved (AHS) (in kWh primary energy/year) for each type of climate („average“, „warm“, „cold “) at reference flow rate	47,59 / 21,52 / 93,10

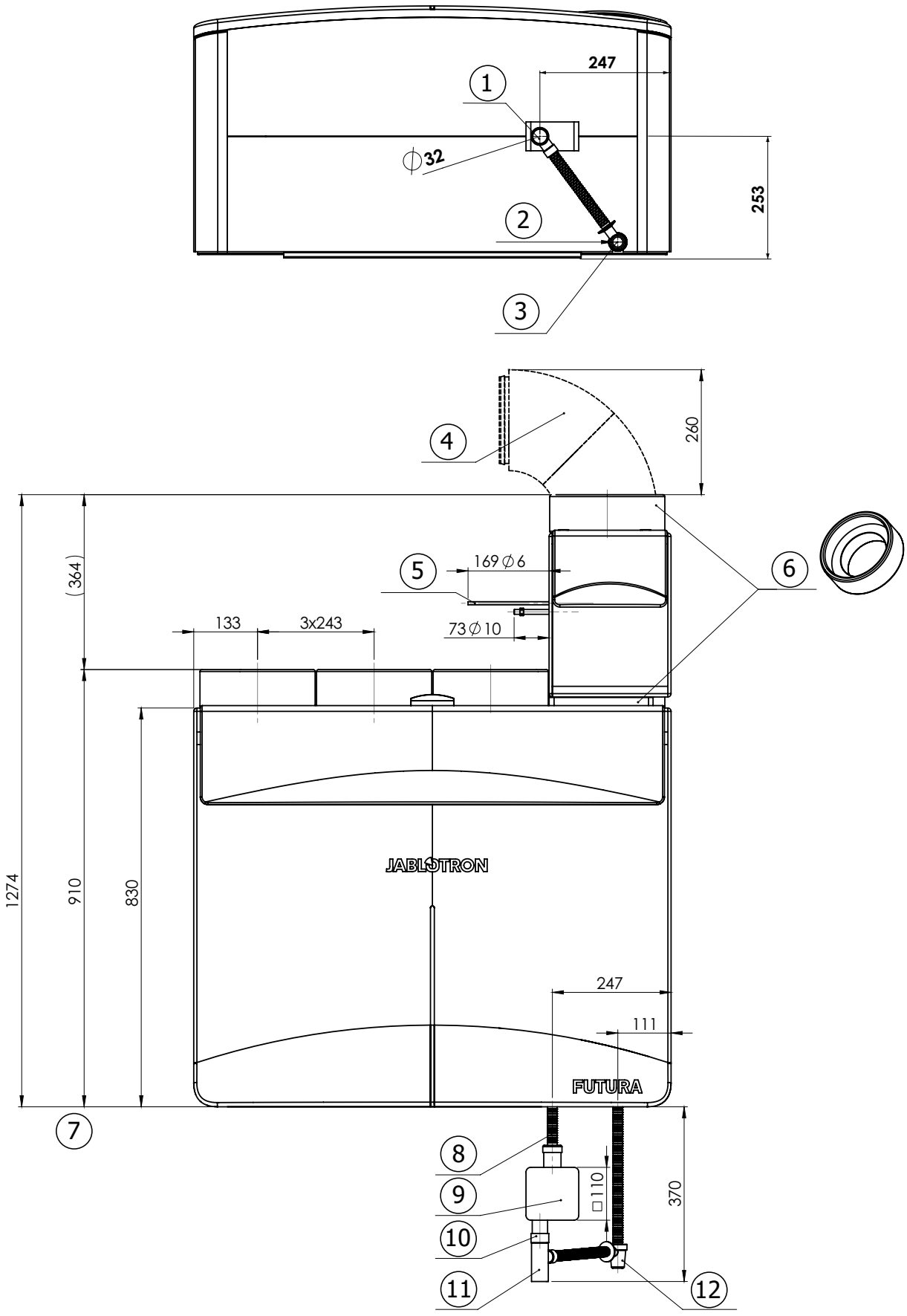
13.10. Annex 10 - Energy labels

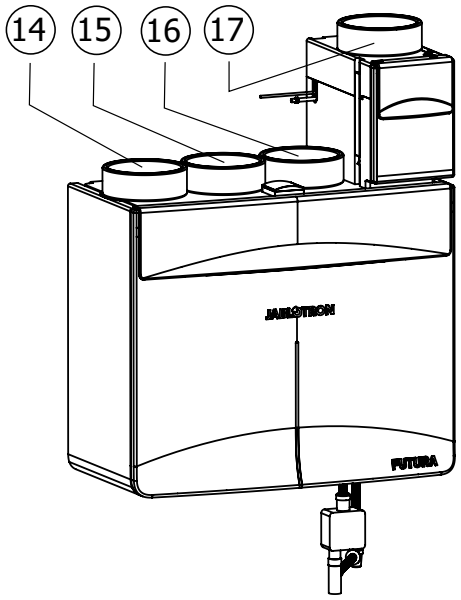


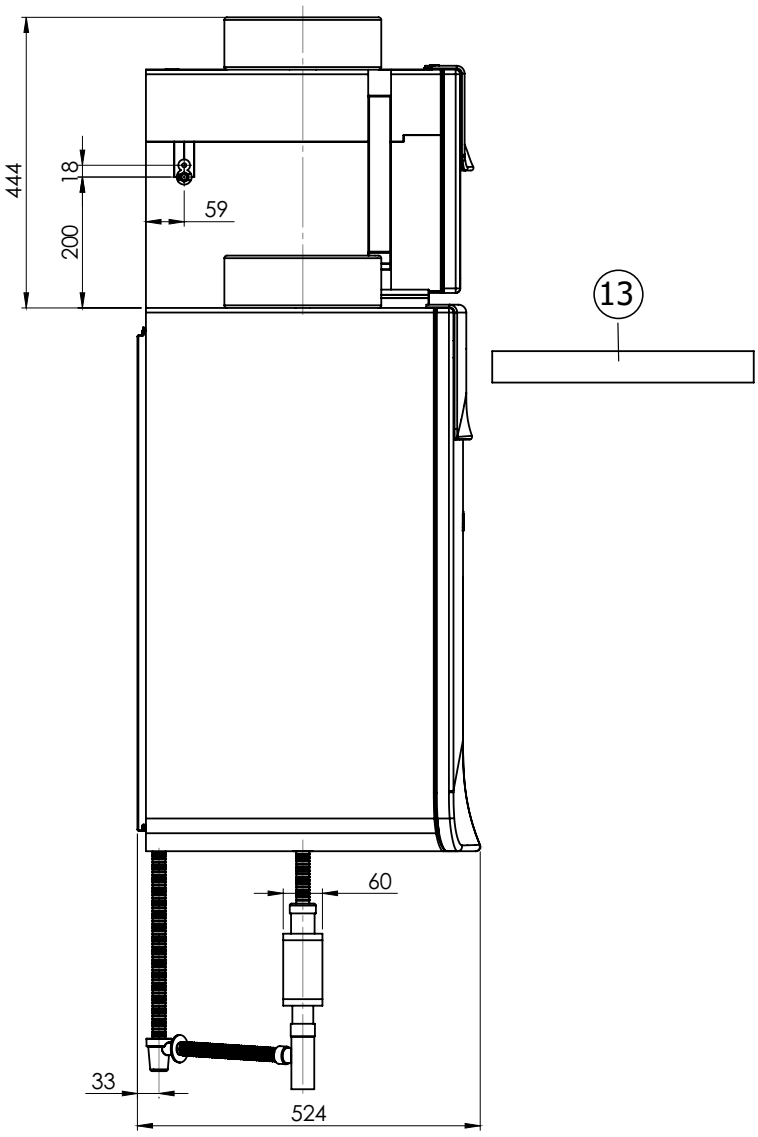
Energy Label Futura L+

13.11. Annex 11 - Dimensional drawing

Main dimensions including CoolBreeze indoor unit




14
15
16
17
JABLOTRON
FUTURA


444
18
59
200
13
60
33
524

Dimensional drawing - description

1. Condesate drain connection from Futura
2. Groove, (diameter 22 mm) for CoolBreeze condensate hose
3. Condesate drain connection from CoolBreeze
4. When installing, keep space of at least 330 mm (distance for fitting EPP elbow)
5. Refrigerant inlet / outlet for CoolBreeze
6. When installing CoolBreeze, use a flange from the Futura unit
7. When installing, keep space of at least 370 mm for condensate drain connection
8. DN 32 hose
9. HL138 siphon (Futura)
10. Sewer connection
11. T piece HT 32
12. STY-517-1 siphon (CoolBreeze)
13. When installing, keep space of at least 500 mm for filter change
14. Ambient air (outdoor)
15. Waste air (exhaust)
16. Fresh air (supply)
17. Indoor air (extract)

Your installer/distributor:

JABLOTRON LIVING TECHNOLOGY CZ s.r.o.
Holešovská 1692, 769 01 Holešov, Czech Republic
E-moil: jlt.info@jablotron.cz I Web: JABLOTRON.COM