



## AMBERAIR COMPACT CX V

EN MOUNTING AND INSTALLATION INSTRUCTION



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## 2. SAFETY INSTRUCTIONS AND PRECAUTIONS

Device is manufactured in compliance with the following directives:

- Machinery Directive, 2006/42/EC;
- Low Voltage Directive, EEC 2006/95;
- Electromagnetic Compatibility Directive, 2004/108/EC;
- Ecodesign Directive, No 1253/2014.

Read this instruction very carefully before installing and using this equipment. Installation, connection and maintenance should be carried out by a qualified technician and in accordance with the local rules and legal acts.

The company shall take no responsibility for the injuries suffered by the people or for the damaged property, if the safety requirements are not followed

or the device is modified without the permission of the manufacturer.

### Main safety rules

#### Danger



- Before performing any electricity or maintenance tasks make sure, that the device is disconnected from the mains, that all moving parts of the device have stopped.
- Make sure that the fans can not be entered through air ducts or branch openings.
- If you notice liquids on electric parts or connections that bear voltage, stop the operation of the appliance.
- Do not plug the device into the mains, that differs from the one indicated on the label or on the housing.
- Voltage of the mains should comply with the electrotechnical parameters indicated on the label.
- The device should be earthed in accordance with the rules of installation of electric appliances. It is forbidden to turn on and use un-earthed device. Follow the requirements of the device's labels that indicate *Danger*.

#### Warnings



- Connection of electricity and maintenance of the device should be performed only by a qualified personnel, in accordance with the manufacturer's instructions and valid safety requirements.
- In order to reduce the risk during installation and maintenance, suitable protective clothes should be worn.
- Beware of sharp angles while performing installation and maintenance tasks.
- Do not touch heating elements until they haven't cooled down.
- Some devices are heavy, thus one should be very careful while transporting and installing. Use suitable lifting equipment.
- While connecting electricity to the mains a circuit breaker of suitable size is necessary.

#### Warning!



- If the device is installed in a cold environment, make sure that all connections and tubes are properly isolated. Intake and discharge air ducts should be isolated in all cases.
- Openings of the ducts should be covered during transportation and installation.
- Make sure not to damage the heater when connecting the piping of the water heater. For tightening up, use a wrench/spanner.

#### Before starting the equipment



- make sure, that there are no strange objects inside;
- manually check whether fans are not stuck or blocked;
- if rotary heat exchanger is installed in the device, make sure that it is not stuck or blocked;
- check the grounding;
- make sure that all components and accessories are connected in accordance with the project or provided instructions.

#### Danger: Fumes



*Salda Antifrost* system uses dis-balancing of the air flow and it may cause negative pressure in premises. Great care should be taken when using at the same time in premises as another heating appliance what depend on the air in premises. Such appliances include gas, oil, wood or coal-fired boilers and heaters, fireplaces, continuous flow or other water heaters, gas hobs, cookers or ovens which draw air in from the room and duct exhaust gases out through a chimney or extraction ducting. The heating appliance can be starved of oxygen, impairing combustion. In exceptional cases harmful gases could be drawn out of the chimney or extraction ducting back into the room. In this case we strictly recommend to turn off *Salda Antifrost* and use an external preheater for heat exchanger anti-frost protection (see *Salda Antifrost* function on the Remote controller manual).

## 2.1. SYMBOLS AND MARKING



Warning – pay attention



Additional information

Stick the auxiliary label on the unit (on an easily accessible place) or on the dashed place of a technical manual in order to keep the important information about the unit.

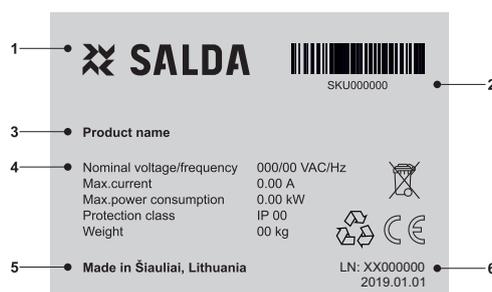




Figure 2.1 - Technical label

1 - Logo; 2 - Product code (SKU); 3 - Product name; 4 - Technical data; 5 - Production place; 6 - Batch number and production date; 7 - Serial number.



Figure 2.2 - Indication for duct connection.

ODA - outdoor air; SUP - supply air; ETA - extract air; EHA - exhaust air.



Units tested and produced according to EC directives



SALDA – associated member of the Eurovent association (Europe’s Industry Association for Indoor Climate (HVAC), Process Cooling, and Food Cold Chain Technologies)

**VDI 6022**

AmberAir Compact SD50+ units designed of the VDI 6022 Part 1 guideline (Hygiene requirements for ventilation and air-conditioning systems and units)



SALDA would like to inform you that based on the Commission Regulation (EU) No 1253/2014 for enforcing directive 2009/125/EC (hereinafter referred to as ErP directive), the operational area of certain AHU within the European Union is regulated by certain conditions. The AHU can only be used within the EU when it meets the requirements of the ErP directive. If certain AHU doesn't have CE mark on it, it is strictly forbidden to use it in the EU.

### 3. INFORMATION ABOUT THE PRODUCT

#### 3.1. DESCRIPTION

AmberAir Compact 7 RH include the following model options:

*Model:* 7RH

*Model box:* SD50+ (T2TB1), SD50 (T3 TB4), MD50+(T3 TB1), MD50(T3 TB4).

*Heating electric coil:* EL1 (low power), EL2 (medium power), EL3 (high power).

*Heating water coil:* HW1 (low power), HW2 (medium power), HW3 (high power, only for vertical), HW4 (extra high power only for vertical).

*Right or left models:* R (Right) L (Left). The side where the supply air is located when viewed from the access side.

*Fan (plastic/metal impellers):* F1 (low power), F2 (medium power), F3 (high power), F4 (extra high power).

*Rotor:* C (Condensation), E (Hygroscopic), S (Sorption).

*Cooling water coil:* HW1 (low power), HW2 (medium power). More power capacity available with accessories.

*Control type:* C1 MCB, C2 Pre-wiring.

AmberAir Compact is a compact-class ventilation unit with a heat recovery system. Its technical parameters are provided in the tables below.

PARAMETER	VALUE	VALUE	VALUE
Model size	7 RH E	7 RH W	7 RH C
Heat exchange type	Rotor	Rotor	Rotor
Installation type	Horizontal	Horizontal	Horizontal
Service side	Right/Left	Right/Left	Right/Left
Fan type	EC	EC	EC
Integrated heater/cooler	Electrical	Water	Cooler
Control type	MCB or Pre-wiring	MCB or Pre-wiring	MCB or Pre-wiring
Filter type	Bag / panel	Bag / panel	Bag / panel
Installation version	indoor/outdoor	indoor/outdoor	indoor/outdoor
Rotor drive	0-10V	0-10V	0-10V

Thank you for purchasing the devices of our company!



**Not suitable for swimming pools, saunas and other similar facilities.**

#### 3.1.1. CASING

The casing of AmberAir Compact SD50+ shows exclusive tightness and thermal characteristics. More detailed information is provided in the tables below.

##### EN 1886:2008 data

MODEL BOX	SD50+
Casing strength class	D1(M)
Casing air leakage class at - 400 Pa	L1(M)
Casing air leakage class at + 700 Pa	L1(M)
Filter bypass leakage class	F9(M)
Thermal transmittance class	T2
Thermal bridging factor class	TB1
Casing profiles options	Aluminium without thermal break
Corners	Plastic
Corners flammability (UL 94)	HB
Thickness of double skin panel	45,5 [mm]
Insulation material	Polyurethane foam
Insulation material density	45 [kg/m³]
Insulation material thermal conductivity	0,024 [W/mK]
Insulation material fire reaction class (EN 13501-1:2007)	B – s2 d0
External sheet metal thickness and coating options	0,5 [mm] Zn polyester painting RAL 7040
Internal sheet metal thickness and coating options	0,5 [mm] Zn

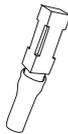
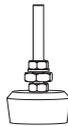
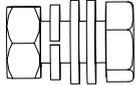
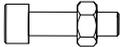
AmberAir Compact SD50+ has rounded internal corners, which prevents accumulation of dust and dirt, facilitates cleaning and makes it possible to use in a hygienic unit design.



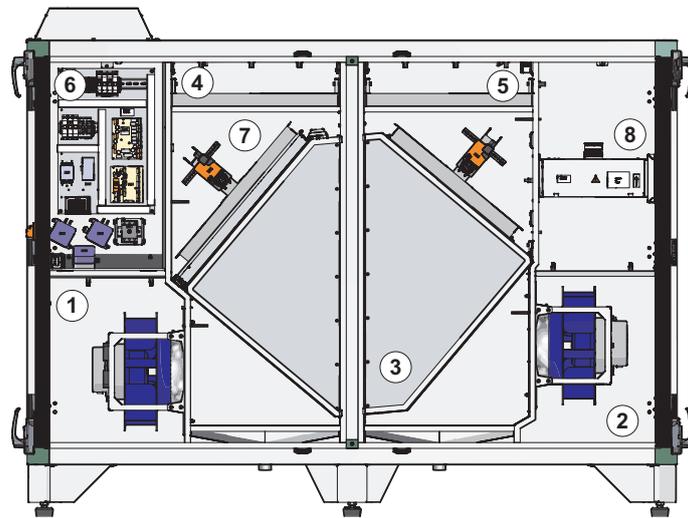


### 3.5. STANDARD PACKAGE OF COMPONENTS

Standard package (without optional accessories) includes:

				
<p>Control board protection roofing 1 pcs.</p>	<p>Self-tapping screw for roofing 7 pcs.</p>	<p>Supply air temperature sensor TJ 1 pcs.</p>	<p>Water temperature sensor for water heater TV1 1 pcs. (water version only)</p>	<p>Anti-vibration pad 6 pcs. (Compact 1-5 CX V) 14 pcs. (Compact 6-7 CX V)</p>
				
<p>Set of bolts for pad connection 8 pcs. (Compact 6-7 CX V)</p>	<p>Set of bolts and nuts for sections connection 12 pcs. (Compact 6-7 CX V)</p>			

**4. DESCRIPTION OF COMPONENTS**



1 - Exhaust air fan; 2 - Supply air fan; 3 - Heat exchanger; 4 - Supply air filter; 5 - Exhaust air filter; 6 - Control board; 7 - By-pass; 8 - Electrical/water heater.

**4.1. ACCESSORIES**



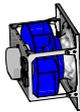
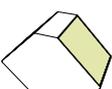
**ELECTRICAL ACCESSORIES**

CO <sub>2</sub> detector (room)	<b>S-RCO2-F2</b>	ZAKKT0048
CO <sub>2</sub> detector (duct)	<b>S-KCO2</b>	ZAKKT0049
Humidity detector (duct)	<b>S-KFF-U</b>	ZAKKT0051
Humidity detector (room)	<b>S-KFF-U-D-F2</b>	ZAKKT0050
Wireless N Nano Router	<b>TP-Link TL-WR802N</b>	PRGPU105
Remote control panel	<b>SA-Control</b>	PRGPU126
remote (with logo)	<b>S-Touch</b>	PRGPU051

Network module	<b>MB-Gateway</b>	PRGPU082
Button	<b>774451 + 774411</b>	ZEPSM001
Duct smoke detector	<b>UG-3-A4O incl VR-0,6M</b>	ZAKKT0110
Presence detector (wall)	<b>IR24-P</b>	ZAKJT019
Presence detector I(ceiling)	<b>R24-P</b>	ZAKJT020
Motion detector	<b>PATROL-701</b>	ZAKJT021
Temperature sensor	<b>TJ1TE-NTC10k3-6x6x22B-2x5.0 m PVC</b>	PJUT0069
	<b>TJ1-NTC10k3B-6x240S-2x2.0mPVC-CF</b>	PJUT0076
Actuator	<b>SSB 31 200 NM</b>	PRGP004
	<b>SSB 61 200 NM</b>	PRGP005
	<b>SSB 81 200 NM</b>	PRGP006
	<b>SSC 31 200 NM</b>	PRGP007
	<b>SSC 61 300 NM</b>	PRGP008
	<b>SSC 81 200 NM</b>	PRGP009
	<b>STA</b>	PRGP001
Damper actuator	<b>NM230A-TP</b>	ZAKP0055
Damper actuator (with spring)	<b>NFA</b>	ZAKP0051
Thermostat T <i>Anti frost</i> (spiral.)	<b>TS1C0P</b>	ZAKT0009
Thermostat T 20-90°C 16A 250V	<b>Thermostat 20-90°C 16A 250V</b>	ZAKT0013
Pressure relay	<b>PS600B</b>	ZAKJN0022
Pressure transmitter single	<b>SPS 0-2000Pa</b>	ZAKKT0047
Pressure transmitter dual	<b>SPD 0-2000Pa</b>	ZAKKT0125
<b>MECHANICAL ACCESSORIES</b>		
Damper class 2	<b>SSK 1747x967</b>	GSKSSK013_1078M
	<b>SSK 1747x516</b>	GSKSSK013_1080M
Rectangular duct silencer	<b>SSP 1753x973x1000</b>	GSOSSP216_1036
	<b>SSP 1753x522x1000</b>	GSOSSP216_1035
Compact 7RH roof	<b>RFA Compact 7RH</b>	NGGPR168_1164
Freon cooler mounting legs	<b>LRFC 1753x973</b>	NGGPR168_1299M
Freon cooler mounting frame	<b>FRFC 1753x973</b>	GPURA168_1249M
Freon cooler roof	<b>RRFC 1753x973</b>	NGGPR168_1257_0
Unit for integration of heater and/or cooler	<b>OC 1753x973</b>	NGGPR168_1250_0
	<b>OCM 1855x1020</b>	NGGPR168_1255_0
Damper class 4	<b>SER100AL32RD B 1727 x H 967, shaft 100 (MS)</b>	ZPDKA0398
	<b>SER100AL32RD B 1727 x H 516, shaft 100 (MS)</b>	ZPDKA0397
Flexible connection	<b>LJ/E 174,7x51,6</b>	GLJLJ/E052
	<b>LJ/E 174,7x96,7</b>	GLJLJ/E051
Reducer	<b>STP-C 1747x516-710</b>	GSFSTPR161_1000
	<b>STP-C 1747x967-710</b>	GSFSTPR161_1001
Silencer	<b>AKS 710- 800-10</b>	GSOAKS126
Flexible connection	<b>LSVF 710</b>	GVELSVF018
Outlet-intake cover	<b>ABV 710</b>	GFDABV0710
Damper	<b>SKG 710-M</b>	GSKSKG065
Mixing point	<b>RMG</b>	-
Valve	<b>VVP/VXP</b>	-
Electrical heater mounting legs (for bottom chanel) 78-126 kW	<b>LREHI 1755x973 78-126</b>	NGGPR168_1321M
Electrical heater mounting frame (for top chanel) 78-126kW	<b>FREHI 1755x973 78-126</b>	GPURA168_1307
Electrical heater roof 78-126kW	<b>RREHI 1755x973 78-126</b>	GPUREM168_1322M
Electrical heater mounting legs (for bottom chanel) 45-54kW	<b>LREHI 1755x973 45-54</b>	NGGPR168_1306
Electrical heater mounting frame (for top chanel) 45-54kW	<b>FREHI 1755x973 45-54</b>	NGGPR168_1323M
Electrical heater roof 45-54kW	<b>RREHI 1755x973 45-54</b>	NGGPR168_1298

Comfort Box mounting legs	<b>LCB 1747x967</b>	NGGPR168_1254M
Comfort Box mounting frame	<b>FCB 1747x967</b>	NGGPR168_1248_0
Comfort Box stogelis Comfort Box roof	<b>RCB 1747x967</b>	NGGPR168_1252_0
Water cooler	<b>RWC 1753x973 C2</b>	NGGPR168_1239_0
	<b>RWC 1753x973 C4</b>	NGGPR168_1253_0
Water cooler mounting legs (for bottom chanel)	<b>LRWC 1753x973</b>	NGGPR168_1299M
Water cooler mounting frame (for top chanel)	<b>FRWC 1753x973</b>	GPURA168_1249M
Water cooler roof	<b>RRWC 1753x973</b>	NGGPR168_1257_0
Water heater mounting legs (for bottom chanel)	<b>LSVS 1734x964</b>	NGGPR168_1300M
Water heater mounting frame (for top chanel)	<b>FSVS 1734x964</b>	GPURA168_1301M
Water heater	<b>RSVS 1734x964</b>	NGGPR168_1256M
	<b>SVS 1734x964-1</b>	NGGPR168_1246M
	<b>SVS 1734x964-2</b>	NGGPR168_1283M
	<b>SVS 1734x964-3</b>	NGGPR168_1284M
	<b>SVS 1734x964-4</b>	NGGPR168_1285M
	<b>SVS 1734x513-1</b>	NGGPR168_1286M
	<b>SVS 1734x513-2</b>	NGGPR168_1302M
	<b>SVS 1734x513-3</b>	NGGPR168_1303M
	Electrical heater	<b>REHI 1755x973-45kW-H-L</b>
<b>REHI 1755x973-45kW-H-R</b>		GPUK168_1294
<b>REHI 1755x973-54kW-H-L</b>		GPUK168_1291
<b>REHI 1755x973-54kW-H-R</b>		GPUK168_1292
<b>REHI 1755x973-78kW-H-L</b>		GPUK168_1289
<b>REHI 1755x973-78kW-H-R</b>		GPUK168_1290
<b>REHI 1755x973-126kW-H-L</b>		GPUK168_1287
<b>REHI 1755x973-126kW-H-R</b>		GPUK168_1288
<b>REHI 1753x522-45kW-V</b>		GPUK168_1297
<b>REHI 1753x522-54kW-V</b>		GPUK168_1296
<b>REHI 1753x522-78kW-V</b>		GPUK168_1295
<b>REHI 1753x522-126kW-V</b>		GPUK168_1165

## 4.2. SPARE PARTS

									
Door	Fan	100% damper	Sectional damper	Recirculation damper	Control board	Electric heater	Water heater	Heat Exchanger	Damper actuator
									
Air temperature sensor	Thermostat	Wire harness	Water temperature sensor	Panel filter MPL	Pocket filter FMK	MCB	EX1	EX2	
CO <sub>2</sub> detector (room)	<b>S-RCO2-F2</b>	ZAKKT0048							
CO <sub>2</sub> detector (duct)	<b>S-KCO2</b>	ZAKKT0049							
Humidity detector (duct)	<b>S-KFF-U</b>	ZAKKT0051							
Humidity detector (room)	<b>S-KFF-U-D-F2</b>	ZAKKT0050							
Wireless N Nano Router	<b>TP-Link TL-WR802N</b>	PRGPU105							
Remote control panel	<b>SA-Control</b>	PRGPU126							

## 5. INSTALATION

### 5.1. RECEPTION OF GOODS

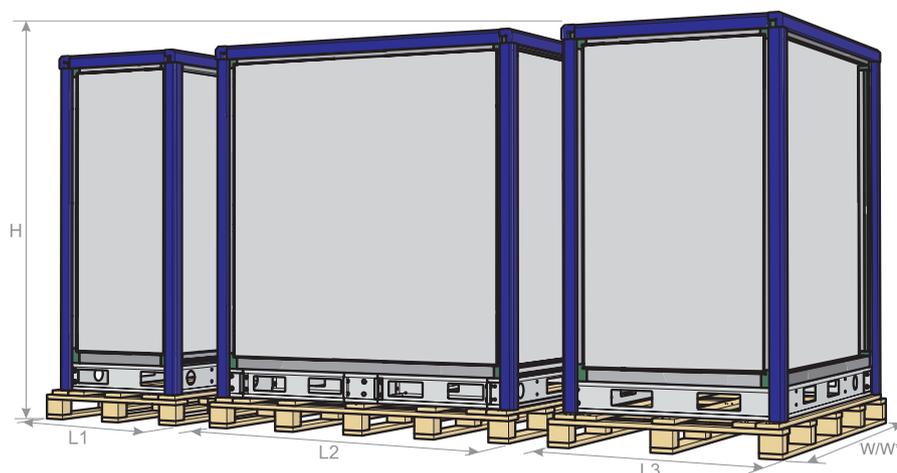
Each device is thoroughly checked before transportation. When receiving goods it is recommended to check whether devices were damaged during transportation. If damage to the device is identified, immediately inform the representatives of a transport company. Please inform a representative of the manufacturer, if any deviation from the order is noticed.

### 5.2. TRANSPORTATION AND STORAGE

- All units are packed in the factory to withstand regular conditions of transportation.
- The package is only for protection purpose!
- When unloading and storing the units, use suitable lifting equipment to avoid damage or injuries. Do not lift units by holding on power supply cables, connection boxes, air extract or exhaust flanges. Avoid impact and shock overloads. Before installation units must be stored in a dry room with the relative air humidity not exceeding 70% (at +20 °C) and with an average ambient temperature ranging between +5 °C and +30 °C. The place of storage must be protected against dirt and water.
- The units must be transported to the storage or installation site using forklifts.
- The storage is not recommended for a period longer than one year. In case of storage longer than one year, before the installation it is necessary to verify whether the bearings of fans and motor rotate easily (turn the impeller by hand) and if the electric circuit insulation is not damaged or the moisture is accumulated.
- AmberAir Compact are lifted from the pallet with a forklift or slings, which are inserted through the supporting legs (four corners).
- AmberAir Compact are lifted from the pallet with a forklift at the recesses at the supporting base, or with slings.



**When lifting with a forklift, protect the condensate drainage pipes. The product is heavy. Exercise caution when transporting and installing.**

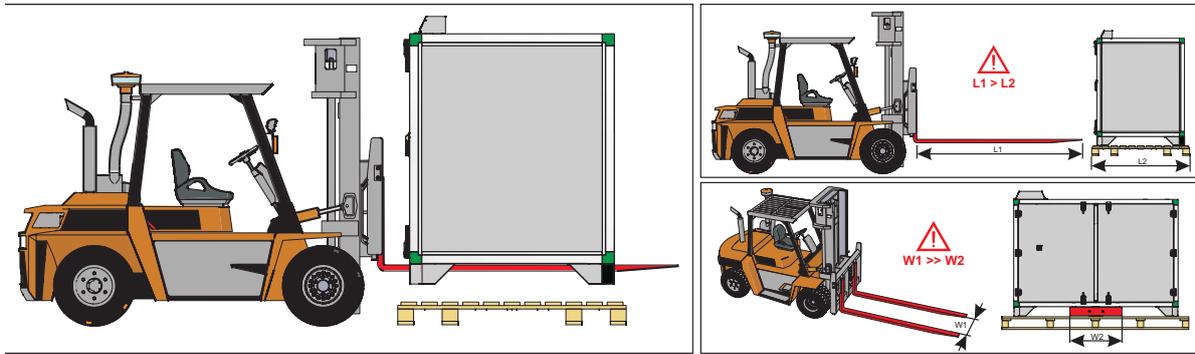


AMBERAIR COMPACT	H	W	L1	L2	L3
	[mm]	[mm]	[mm]	[mm]	[mm]
1 CX V	1685	1080	2150	-	-
2 CX V	1745	1080	2150	-	-
3 CX V	1800	1080	2150	-	-
4 CX V	1800	1400	2150	-	-
5 CX V	1845	1440	2400	-	-
6 CX V	2055	1750	800	1540	800
7 CX V	2095	2100	800	1540	800

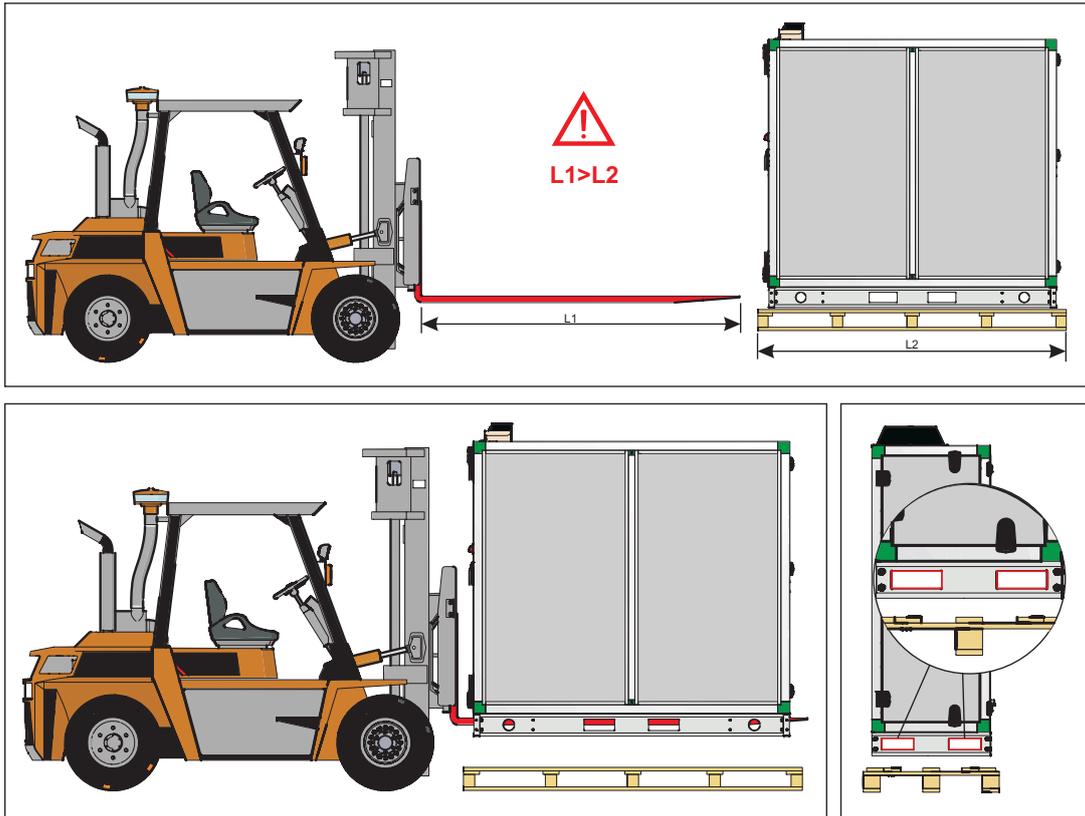
The product can be lifted with a forklift or a crane using slings.

When lifting with a forklift, the length of the fork must be greater than the length or width of the product (depending on the product version). The condensate pipes must be protected against damage.

The inner legs of the product of AmberAir Compact 1-5 CX V versions are covered with protection to prevent damage of the condensate drainage pipes. Therefore, when lifting with a forklift, the width of the fork must be greater than the condensate protection width.

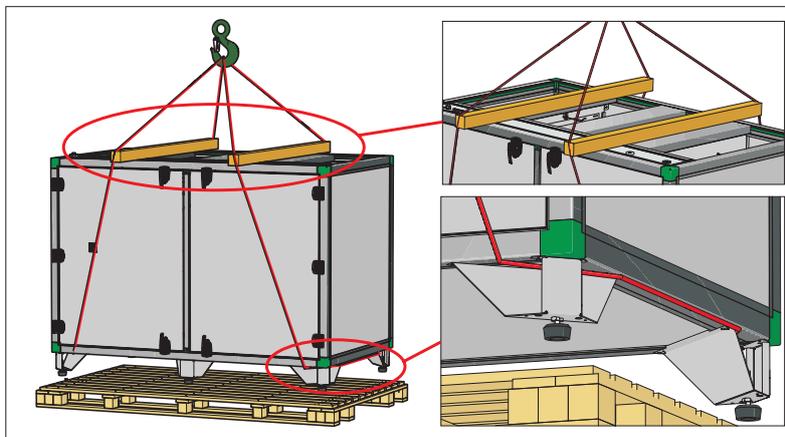


*AmberAir Compact 1-5 CX V lifting with a forklift*

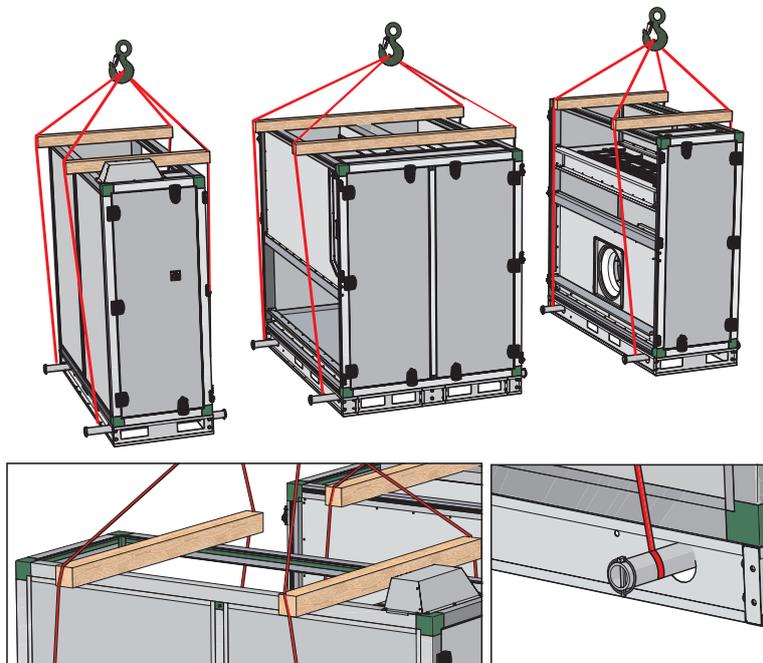


*AmberAir Compact 6-7 CX V lifting with slings*

When lifting the product with slings, it is necessary to insert spacers between them in order to prevent damage to the casing of the product.



*AmberAir Compact 1-5 CX V lifting with slings*



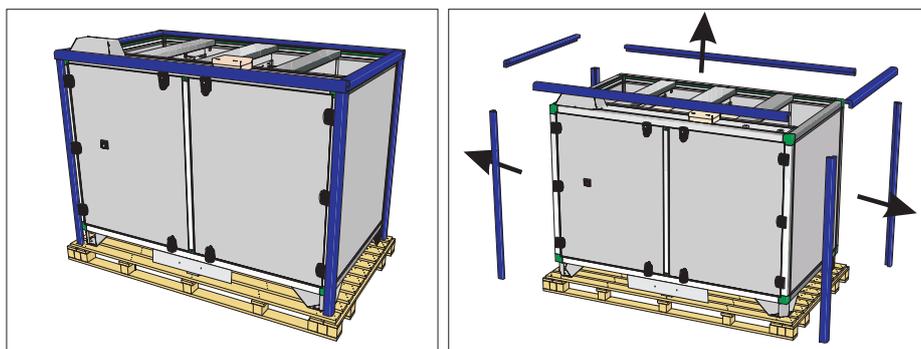
AmberAir Compact 6-7 CX V lifting with slings

### 5.3. UNPACKING

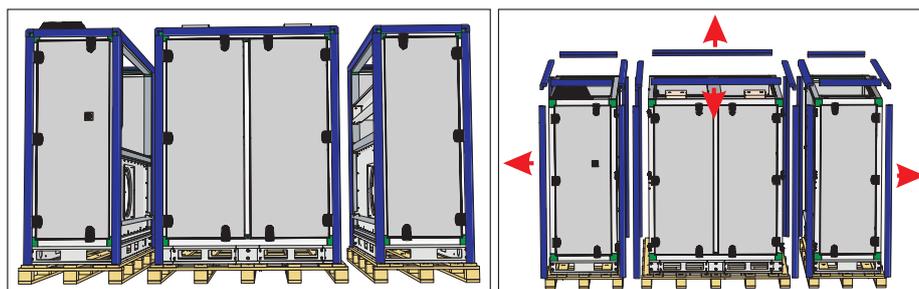
- Remove the film from the unit.
- Remove the tightening packaging tapes which keep the protective profiles.
- Remove the protective profiles.
- Unscrew the wood screws which fasten the unit legs to the pallet.
- After unpacking the unit, examine it to make sure that it has not been damaged during transportation. The installation of damaged units is prohibited!
- AmberAir Compact of sizes 1-5 CX V are lifted from the pallet with a forklift or slings, which are roved through the supporting legs (four corners).
- AmberAir Compact of sizes 6-7 CX V are lifted from the pallet with a forklift at the recesses at the supporting base, or with slings.

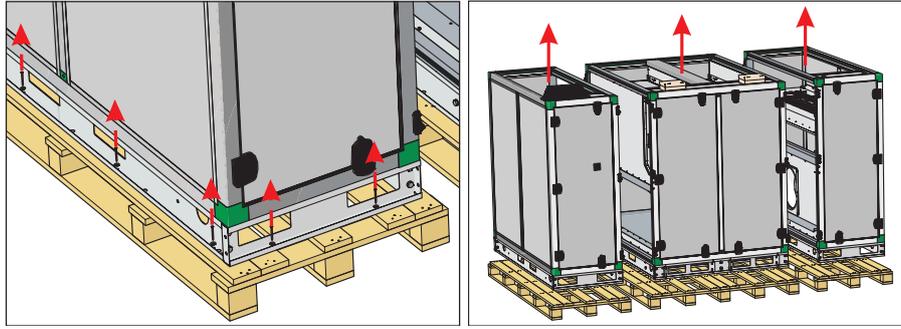


When lifting with a forklift, protect the condensate drainage pipes.



AmberAir Compact 1-5 CX V





AmberAir Compact 6-7 CX V

**5.4. MOUNTING DIAGRAM**

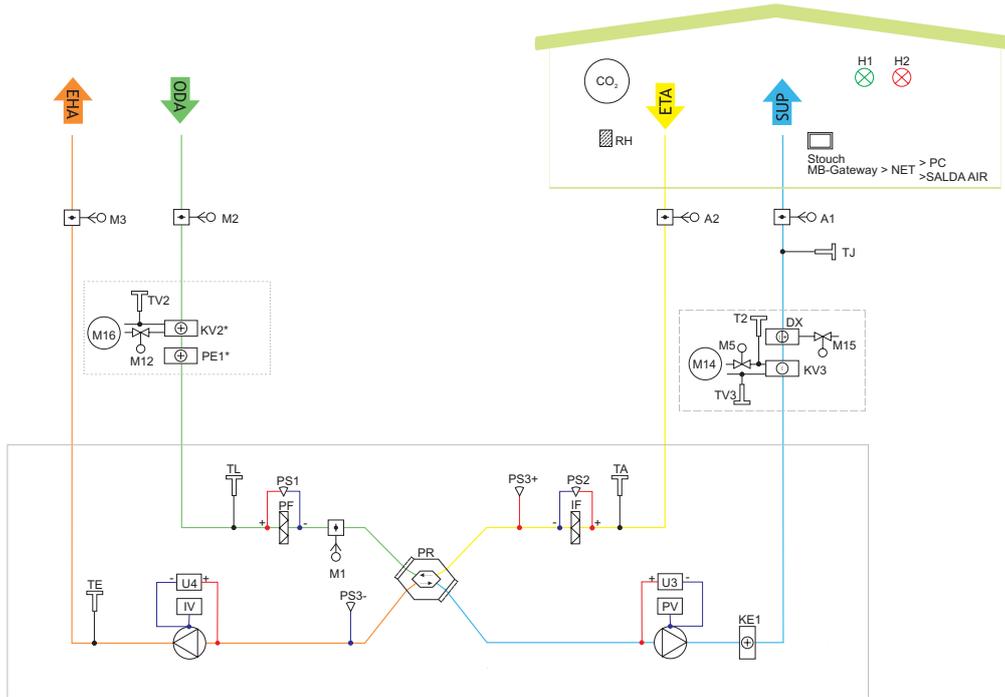


Figure 5.4.1 - Electrical version

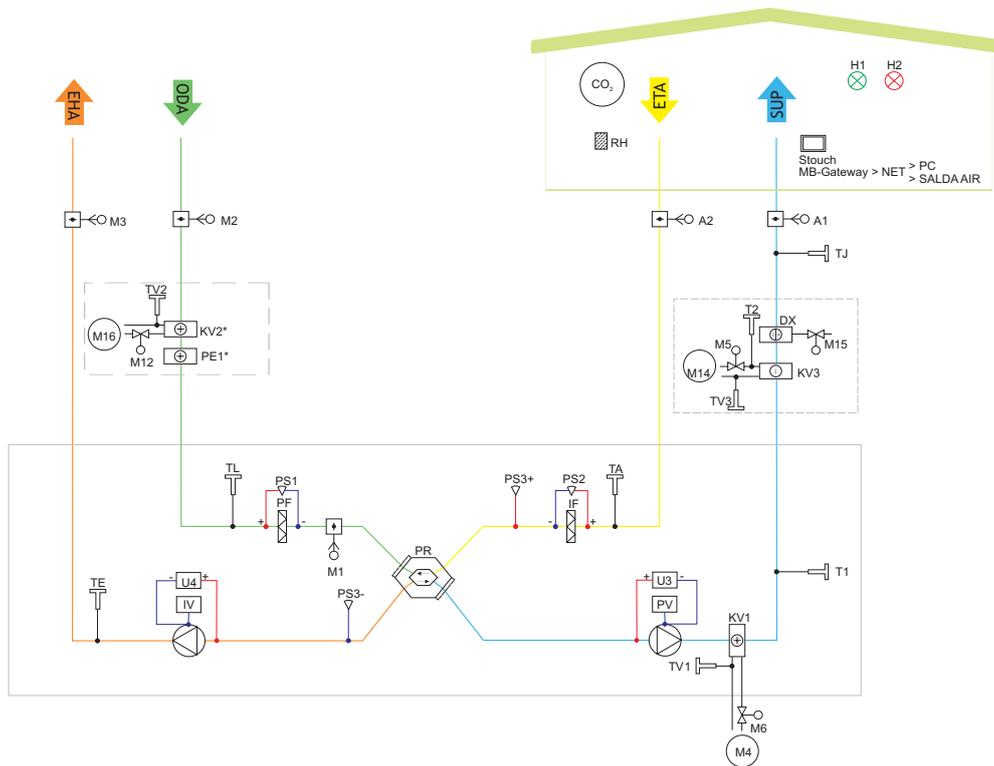


Figure 5.4.2 - Water version



Figure 5.4.5 - Indication for duct connection.



Figure 5.4.6 - Ventilated premises

ODA - outdoor air; SUP - supply air; ETA - extract air; EHA - exhaust air.

**LIST OF COMPONENTS**

<b>PR</b>	Plate heat exchanger	<b>A2</b>	Fire alarm damper actuator II
<b>PV</b>	Supply air fan	<b>TJ</b>	Supply air temperature sensor
<b>IF</b>	Extract air filter	<b>TL</b>	Outdoor air temperature sensor
<b>PF</b>	Supply air filter	<b>TE</b>	Exhaust air temperature sensor
<b>IV</b>	Exhaust fan	<b>TA</b>	Extract air temperature sensor
<b>KE1</b>	Electric heater	<b>DTJ</b>	Extract air temperature and RH sensor
<b>PE1</b>	Electric pre-heater (the electric and water pre-heaters may not be used at the same time)	<b>TV1</b>	Water heater temperature sensor
<b>KV1</b>	Water heater (the possibility of the heating switch function)	<b>TV2</b>	Water preheater temperature sensor
<b>KV2</b>	Water pre-heater (the electric and water pre-heaters may not be used at the same time)	<b>TV3</b>	Water cooler temperature sensor
<b>KV3</b>	Water/DX cooler (the water and DX coolers may not be used at the same time)	<b>T1</b>	Water heater thermostat
<b>M1</b>	Actuator by-pass damper	<b>T2</b>	Cooler switching thermostat
<b>M2</b>	Supply air damper actuator	<b>PS1</b>	Supply air filter switch (NO)
<b>M3</b>	Exhaust air damper actuator	<b>PS2</b>	Extract air filter pressure switch (NO)
<b>M4</b>	Water heater circulation pump	<b>PS3</b>	Heat converter pressure switch (NC)
<b>M5</b>	Water cooler valve motor	<b>U3</b>	Supply air fan pressure sensor
<b>M6</b>	Water heater valve motor	<b>U4</b>	Extract air fan pressure sensor
<b>M12</b>	Water pre-heater valve motor	<b>RH</b>	Relative humidity sensor
<b>M14</b>	Water cooler circulation pump	<b>CO<sub>2</sub></b>	CO <sub>2</sub> sensor
<b>M15</b>	DX cooler valve actuator	<b>MB-Gateway</b>	Network module
<b>M16</b>	Water pre-heater circulation pump	<b>NET</b>	Network
<b>A1</b>	Fire alarm damper actuator I	<b>PC</b>	Computer
<b>Stouch</b>	Remote control panel	<b>FLEX MCB</b>	Remote control panel

**POSSIBLE PCB INPUTS/OUTPUTS**

<b>FA</b>	Fire alarm	<b>H1</b>	Operation indication output
<b>FPP</b>	Fireplace protection	<b>H2</b>	Alarm indication output
System mode switch (START/STOP)		Fans speed switch (BOOST)	

**5.5. MOUNTING**

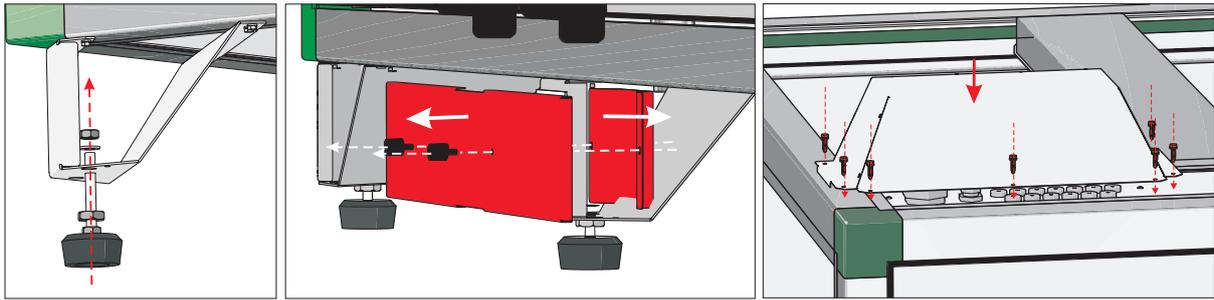
- Installation should only be performed by qualified and trained staff.
- When connecting air ducts, consider the notices indicated on the casing of the unit.
- Before connecting to the air duct system, the connection openings of ventilation unit should be closed.
- When connecting the ducts , you should pay attention to the air flow direction indicated on the device housing.
- Do not connect the bends close to connection flanges of the unit. The minimum distance of the straight air duct between the unit and the first branch of the air duct in the supply air duct must be 1xD, in air exhaust duct 3xD, where D is diameter of the air duct.
- It is recommended to use the accessories-holders. This will reduce vibration transmitted by the unit to the air duct system and environment.
- Enough space must be left for opening of the maintenance door and filter covers.
- If the installed ventilation unit is attached to a wall, it may transmit noise vibrations to the premises. Though the level of noise caused by the fans is admissible, it is recommended to mount the unit at the distance of 400 mm from the nearest wall. If it is not possible, the mounting of the unit is recommended on the wall of the room where the level of noise is not important.
- Ducts are connected to the unit in such way that they could be easily disassembled and the heater could be removed from the unit when performing service or repair works.
- Can be installed outside if weather protected. An outdoor air section, OC is available as accessory.



The protective film is intended to protect the unit during transportation. It is recommended to remove the film because oxidation signs may occur.

### 5.5.1. AMBERAIR COMPACT 1-5 CX V MOUNTING

The product should be slightly lifted and installed on the legs. The lifting methods are shown in the section “Transportation and Storage”. Versions 1-5 of AmberAir Compact have drainage protection, which is removed after installing the legs. The protection is a part intended for transportation only and should not be reinstalled after mounting the drainage.

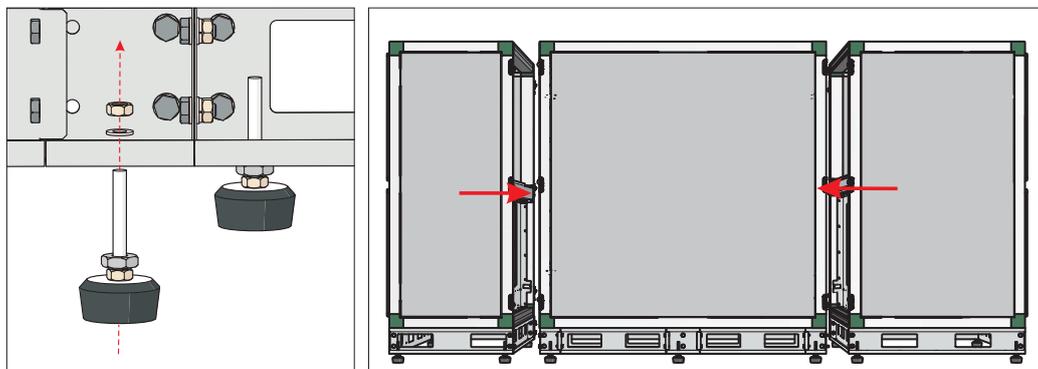
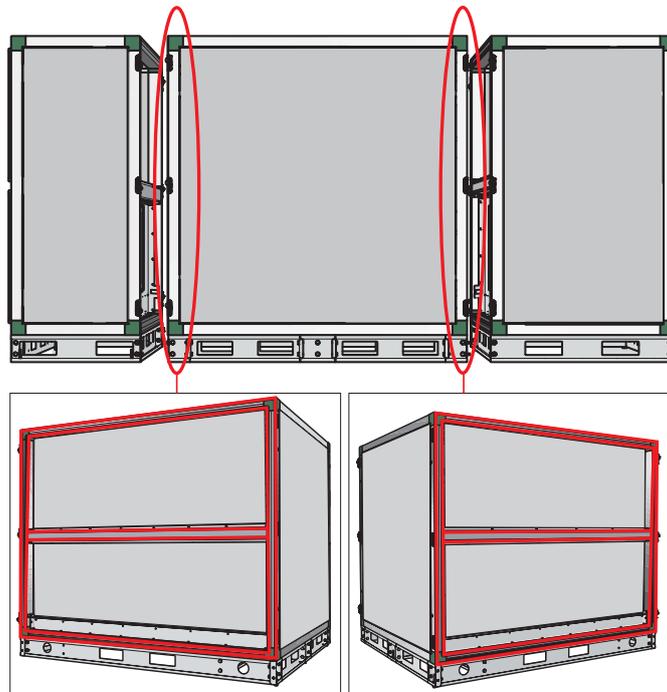


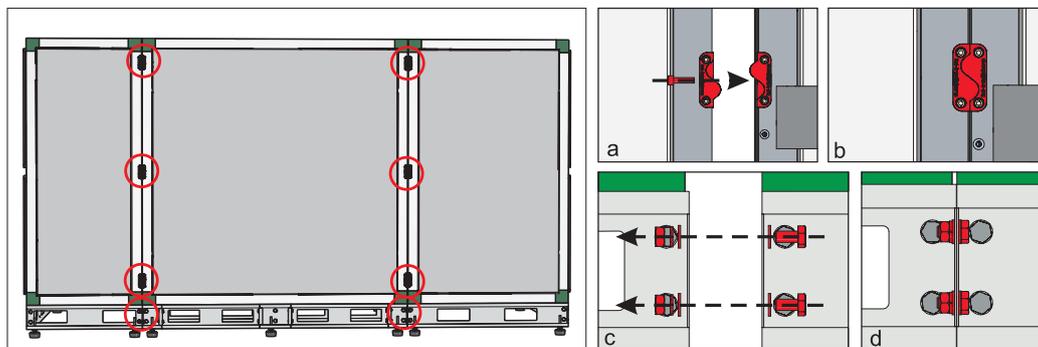
### 5.5.2. AMBERAIR COMPACT 6-7 CX V MOUNTING

The products shall be installed on the legs. In order to do so, the unit should be slightly lifted. The hoisting methods are shown in the section “Transportation and Storage”.



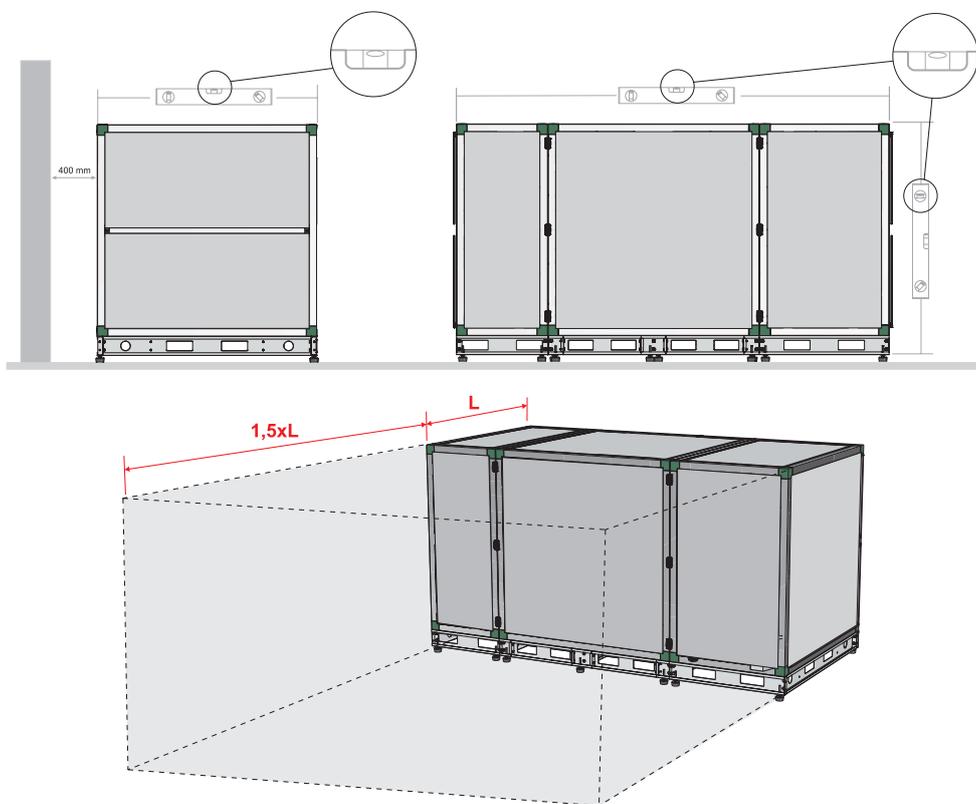
**It is recommended to connect the sections of the unit on the pallet.**





### 5.5.3. PLACE REQUIREMENTS FOR THE EQUIPMENT AND MOUNTING POSITIONS

1. The installation position only in the horizontal direction.
2. Install the supporting legs.
3. AmberAir Compact are assembled from separate sections.
4. They must be adjusted without a gradient.
5. Leave space in the front ( $1,5xL$ ) that it would be sufficient to open the doors and to remove or install a required component.



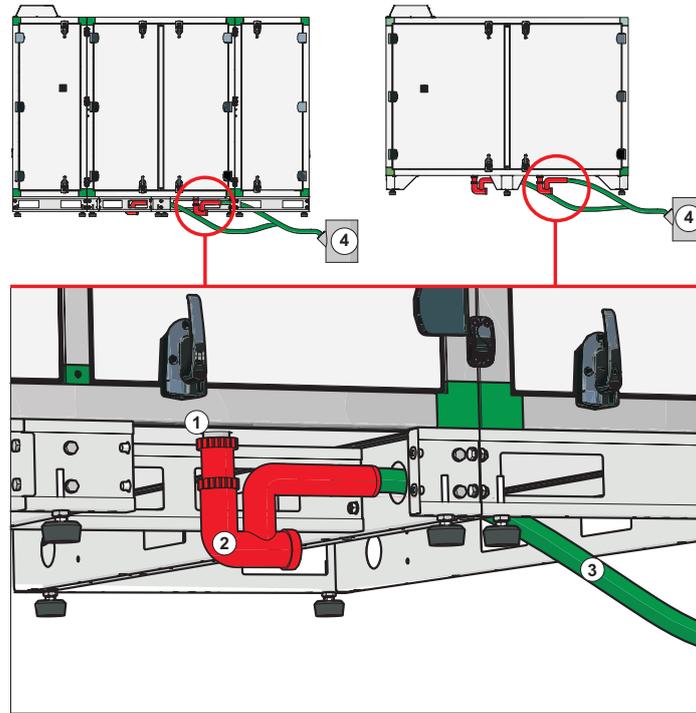
Space for door opening

L, [mm]

2000

### 5.6. DARINAGE

- After installing the air handling unit, the condensate drainage system should be connected: connect the siphon (2) (shown at the bottom of the picture) to the condensate trap (1) of the heat recovery unit.
- Two siphons are used at each AmberAir Compact CX V product because two condensate drip trays are installed at each of those units).
- The siphon (2) is connected with the sewage system via a pipe (3), which can be made either of metal, plastic or rubber. It should have a gradient of at least  $3^\circ$  (a metre of the pipe should descent by 55 mm)!
- Prior to starting the recovery unit, the system should be filled with 0.5 litre or more water (the siphon (2) should always be filled up) and make sure that water goes to the sewage system (4)! Otherwise, the room may be flooded when operating the recovery unit!
- The condensate drainage system should be operated in a room with an ambient temperature not below  $0^\circ\text{C}$ ! If it may drop below  $0^\circ\text{C}$ , the system must be protected with thermal insulation with additional installation of a heating cable and thermostat.
- The siphon (2) should not necessarily be downstream the recovery unit but below it.
- The legs of AmberAir Compact products of sizes 1-5 CX V are fitted with condensate pipe protection to prevent it from damage when lifted by a forklift. When connecting the condensate drainage system, this protection should be removed (it is a component intended for transportation only).



**Before every heating season the condensate tube shall be filled with water as indicated during the first start-up!**

## 5.7. CONNECTION OF AIR DUCTS

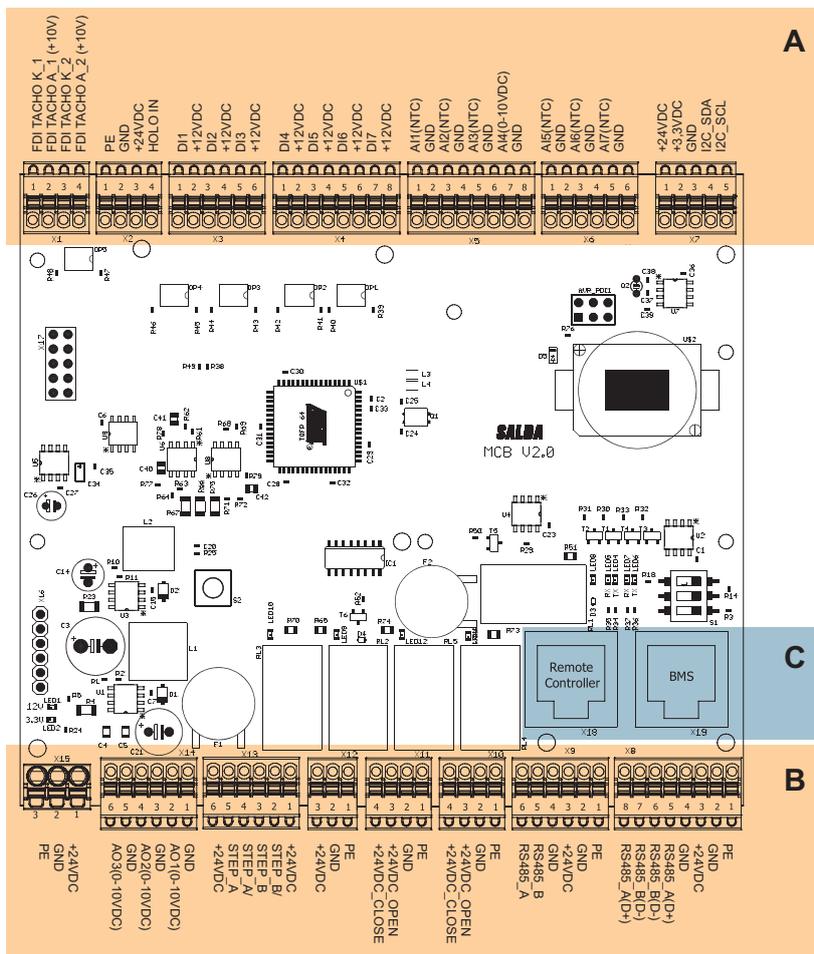
- Connected air ducts must be straight and have their own fixing.
- Make sure that the fans can not be accessed through air duct heads. If it is possible to access the fan, protective grid should be installed. You can choose it in our website.
- Do not reduce the diameter of the piping near air inlet or exhaust ducts. If you want to reduce the speed of air in the system, drop of pressure and noise level, you can increase the diameter.
- In order to reduce the level of the noise in the air supply system, install silencers (see chapter on their installation).
- In order to reduce air loss in the system, the air ducts and profile parts should be of class C and higher. Their catalog can be found in our website.
- If air handling unit is installed in heated premises, outdoor and exhaust air ducts must be insulated in order to avoid heat losses and condensing. If AHU is installed outdoors, it's recommended to insulate all the air ducts.
- It is recommended to maintain a distance of up to 8 meters between air intake and air exhaust ducts. Air supplying system should be installed further from potential air pollution sources.
- Use holders while installing air ducts next to the ventilation equipment. They suppress vibration and ensure a firm installation of various system parts.
- Necessary holders can be found in our catalog or website.
- A common mistake is that air ducts are attached to improper airflow connection. On the ventilation equipment there are signs, indicating the air duct to be connected. Before starting the system carefully check whether the work was performed properly.

## 5.8. FILTER BOX MOUNTING

### Box preparation

- Mount sealing rubbers (II) from the bottom around the flange openings.
  - Tighten up the fastening plates (IV) from the end of the box.
  - Bend the base eye plates (I) in 4 corners at the bottom of the product using pliers.
  - Lift the filter box to mount it on the top of the product using slings.
  - Tighten up to the mounting hole (III) using self-tapping screws.
- Connect the filter box to the contamination indicating pressure switches in the product.
  - Remove the hose from the end piece 1 and connect it to the end piece 2 (such reconnection is performed at external and exhaust air flanges).





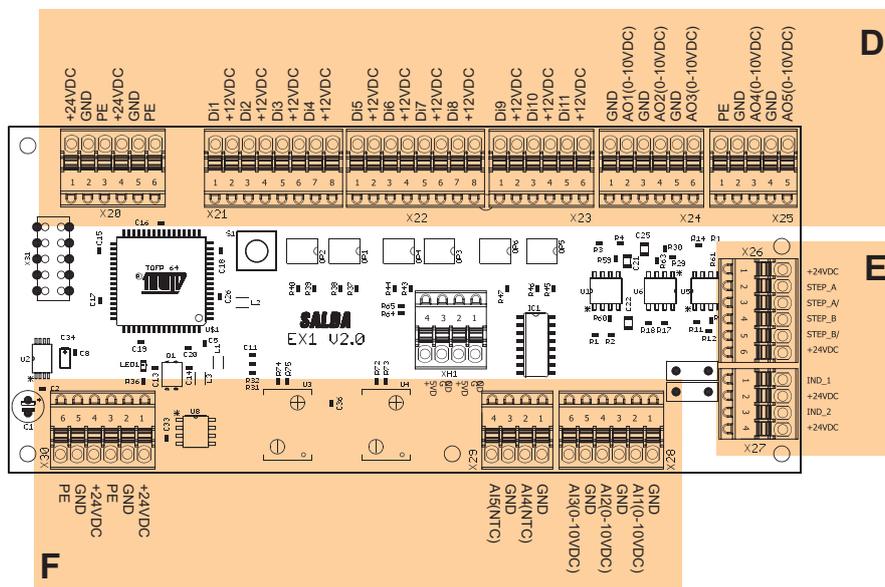
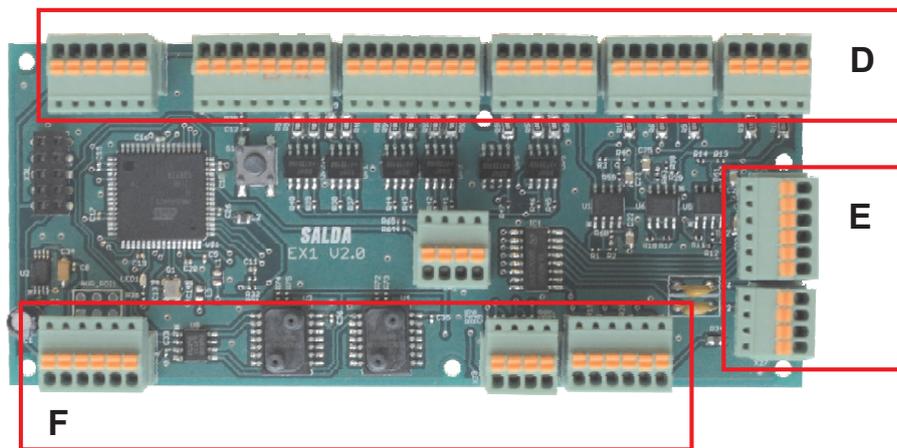
**MCB**

Connector	Contact No.	Contact name	Dunctional block name
<b>A</b>			
X1	1	MCB FDI TACHO K_1(GND)	Supply fan speed (RPM)
	2	MCB FDI TACHO A_1(+10V)	
	3	MCB FDI TACHO K_2(GND)	Extract fan speed (RPM)
	4	MCB FDI TACHO A_2(+10V)	
X2	1	PE	Rotor speed (RPM)/
	2	GND	Too high condensation (NO)
	3	+24VDC	
	4	MCB HOLO	
X3	1	MCB DI1	Supply air electrical heater automatic protection (NC)/ Supply air Hydronic cooler heating/cooling changeover thermostat (NC/NO)/Water heater circulation pump fail
	2	+12VDC	
	3	MCB DI2	Supply air electrical heater manual protection/
	4	+12VDC	Water heater protection (thermostat) (NC)
	5	MCB DI3	Supply air fan protection (NC)
	6	+12VDC	
X4	1	MCB DI4	Fire protection input (NC)
	2	+12VDC	
	3	MCB DI5	By-pass closed input (NC)
	4	+12VDC	
	5	MCB DI6	Rotor alarm (NC)/
	6	+12VDC	Heat exchanger pressure relay (NC)
	7	MCB DI7	Extract air fan failure (NC)
	8	+12VDC	

X5	1	MCB AI1 (NTC)	Supply air temperature sensor
	2	GND	
	3	MCB AI2 (NTC)	Fresh air temperature sensor
	4	GND	
	5	MCB AI3 (NTC)	Exhaust air temperature sensor
	6	GND	
	7	MCB AI4 (0-10V)	Heat exchanger pressure transmitter
	8	GND	
X6	1	MCB AI5 (NTC)	Extract air temperature sensor
	2	GND	
	3	MCB AI6 (NTC)	Reserved
	4	GND	
	5	MCB AI7 (NTC)	Hydraulic heater ret. fluid temperature sensor
	6	GND	
X7	1	+24VDC	Connection with EX2-X47
	2	+3,3VDC	
	3	GND	
	4	I2C_SDA	
	5	I2C_SCL	
<b>B</b>			
X8	1	PE	BMS connection (RS485)
	2	GND	
	3	+24VDC	
	4	GND	
	5	RS485 A (D+)	
	6	RS485 B (D-)	
	7	RS485 B (D-)	
	8	RS485 A (D+)	
X9	1	PE	Remote Control connection (RS485)
	2	GND	
	3	+24VDC	
	4	GND	
	5	RS485_B	
	6	RS485_A	
X10	1	MCB PE	Recirculation damper control 3P
	2	MCB GND	
	3	MCB RECIRC_+24VDC_OPEN (DO4)	
	4	MCB RECIRC_+24VDC_CLOSE (DO5)	
X11	1	MCB PE	By-pass damper control 3P
	2	MCB GND	
	3	MCB BYPASS_+24VDC_OPEN (DO2)	
	4	MCB BYPASS_+24VDC_CLOSE (DO3)	
X12	1	PE	24VDC Power supply for water heater actuator
	2	GND	
	3	+24VDC	
X13	1	+24VDC	By-pass step motor control
	2	STEP_B/	
	3	STEP_B	
	4	STEP_A/	
	5	STEP_A	
	6	+24VDC	

X14	1	GND	Supply air fan control output (0-10VDC)
	2	MCB AO1(0-10VDC)	
	3	GND	Extract air fan control output (0-10VDC)
	4	MCB AO2(0-10VDC)	
	5	GND	Supply air heater control output (0-10VDC)
	6	MCB AO3(0-10VDC)	
X15	1	+24VDC	MCB Power supply 24VDC
	2	GND	
	3	PE	
<b>C</b>			
X18			Remote Control connection (RS485)
X19			BMS connection (RS485, configurable via SL1)

**5.9.2. SCHEMATIC OF CONTROLLER CONNECTIONS IN EX1**



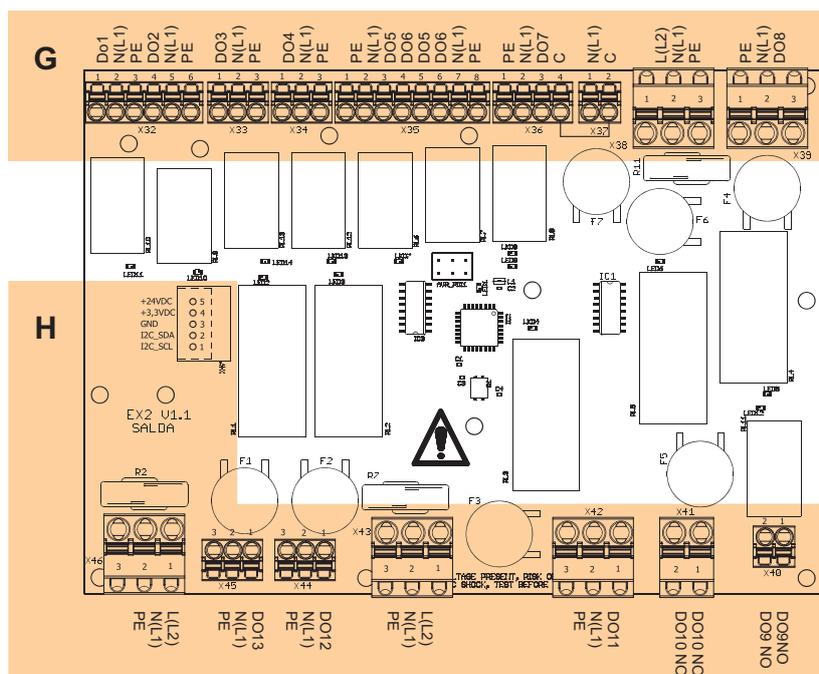
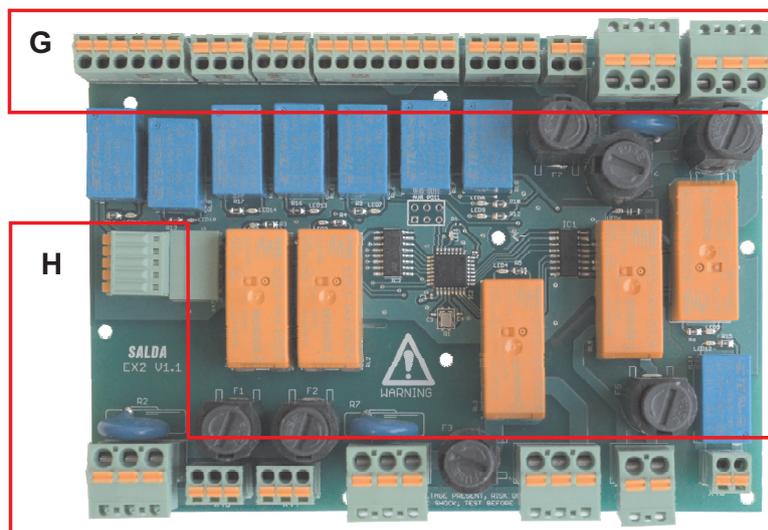
**EX1**

Connector	Contact No.	Contact name	Functional block name
X20	1	+24VDC	24VDC Power supply for water preheater actuator
	2	GND	
	3	PE	24VDC Power supply for water cooler actuator
	4	+24VDC	
	5	GND	
	6	PE	

X21	1	DI1	Outdoor air electrical preheater automatic protection (NC)/
	2	+12VDC	DX cooler defrost input/ Water pre-heater circulation pump fail
	3	DI2	Outdoor air electrical preheater manual protection (NC)
	4	+12VDC	
	5	DI3	System mode switch
	6	+12VDC	
	7	DI4	
		8	+12VDC
X22	1	DI5	DX cooler protection (NC)
	2	+12VDC	Supply air filter pressure switch (NO)
	3	DI6	
	4	+12VDC	Extract air filter pressure switch (NO)
	5	DI7	
	6	+12VDC	Fire place protection relay input (NC)
	7	DI8	
		8	+12VDC
X23	1	DI9	Fire damper opened input (NC)
	2	+12VDC	Fire damper closed input (NC)
	3	DI10	
	4	+12VDC	Recirculation damper closed input (NC)
	5	DI11	
		6	+12VDC
X24	1	GND	Outdoor air preheater control output (0-10VDC)
	2	AO1(0-10VDC)	DX cooler control output (0-10VDC)
	3	GND	
	4	AO2(0-10VDC)	Hydronic cooler control output (0-10VDC)
	5	GND	
		6	AO3(0-10VDC)
X25	1	PE	Recirculation damper control output (0-10VDC)
	2	GND	
	3	AO4(0-10VDC)	Rotor control output/ By-pass position control output (0-10VDC)
	4	GND	
	5	AO5(0-10VDC)	
<b>E</b>			
X26	1	+24VDC	Recirculation damper step motor control
	2	STEP_A	
	3	STEP_A/	
	4	STEP_B	
	5	STEP_B/	
	6	+24VDC	
X27	1	IND_1	Working indication output (24VDC; max 50mA, 1.2W)
	2	+24VDC	Alarm indication output (24VDC; max 50mA, 1.2W)
	3	IND_2	
	4	+24VDC	
<b>F</b>			
X28	1	GND	Supply/Extract air CO2/RH sensor input\
	2	AI1 (0-10V)	Supply/Extract pressure sensor input (0-10VDC)
	3	GND	Supply/Extract air CO2/RH sensor input\
	4	AI2 (0-10V)	Supply/Extract pressure sensor input (0-10VDC)
	5	GND	Reserved input (0-10VDC)
	6	AI3 (0-10V)	

X29	1	GND	Hydronic cooler ret. fluid temperature sensor
	2	AI4 (NTC)	
	3	GND	Hydronic preheater ret. fluid temperature sensor
	4	AI5 (NTC)	
X30	1	+24VDC	24VDC Power supply for Air quality sensor I
	2	GND	
	3	PE	24VDC Power supply for Air quality sensor II
	4	+24VDC	
	5	GND	
	6	PE	
XH1	1	GND	Power supply for air quality sensors, max. 20mA
	2	+5VDC	
	3	GND	
	4	+5VDC	

### 5.9.3. SCHEMATIC OF CONTROLLER CONNECTIONS IN EX2



**EX2**

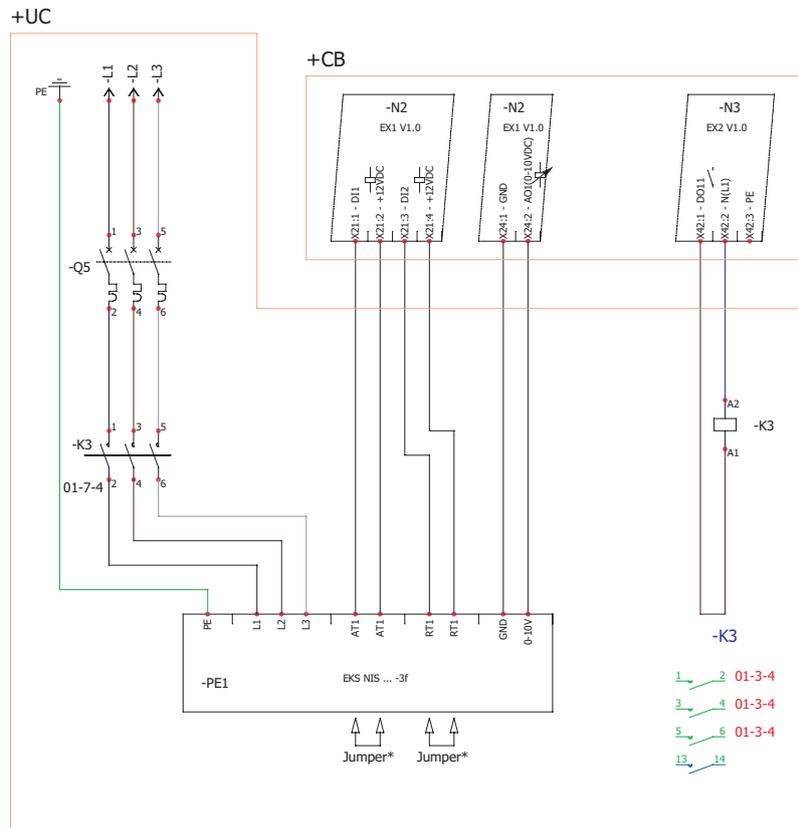
Connector	Contact No.	Contact name	Functional block name	
<b>G</b>				
X32	1	DO1		
	2	N(L1)	Power supply for Fire damper actuator 1, max 100 mA	
	3	PE		
	4	DO2		
	5	N(L1)	Power supply for Fire damper actuator 2, max 100 mA	
	6	PE		
X33	1	DO3		
	2	N(L1)	Hydronic cooler circulation pump	
	3	PE		
X34	1	DO4		
	2	N(L1)	Control cabin heater/fan control output	
	3	PE		
X35	1	PE		
	2	N(L1)		
	3	DO5		
	4	DO6	Supply/extract air damper control (Close)	DO5 (Open) DO6
	5	DO5		
	6	DO6		
	7	N(L1)		
	8	PE		
X36	1	PE	Rotor motor control/	
	2	N(L1)	Defrost indication (to EMRex)	
	3	DO7		
	4	C - capacitor		
X37	1	N(L1)		
	2	C - capacitor		
X38	1	N(L2)		
	2	N(L1)	230VAC Power supply for X32, X33, X34, X35, X36 and X39	
	3	PE		
X39	1	PE		
	2	N(L1)	Supply air heater power line/circulation pump	
	3	DO8		
<b>H</b>				
X40	1	DO9 NO	DX cooler reverse (NO-cooling; NC-heating)	
	2	DO9 NO		
X41	1	DO10 NO	DX cooler power line	
	2	DO10 NO		
X42	1	DO11		
	2	N(L1)	Outdoor air preheater power line/circulation pump	
	3	PE		
X43	1	L (L2)		
	2	N (L1)	230VAC Power supply for X42	
	3	PE		
X44	1	DO12	Extract fans power line	
	2	N(L1)	(IV vent. Max 3,5A)	
	3	PE		
X45	1	DO13	Supply fans power line	
	2	N(L1)	(PV vent. Max 3,5A)	
	3	PE		

X46	1	N(L2)	230VAC Power supply for X44 and X45
	2	N(L1)	
	3	PE	
X47	1	+24VDC	Connection with MCB-X7
	2	+3,3VDC	
	3	GND	
	4	I2C_SDA	
	5	I2C_SCL	

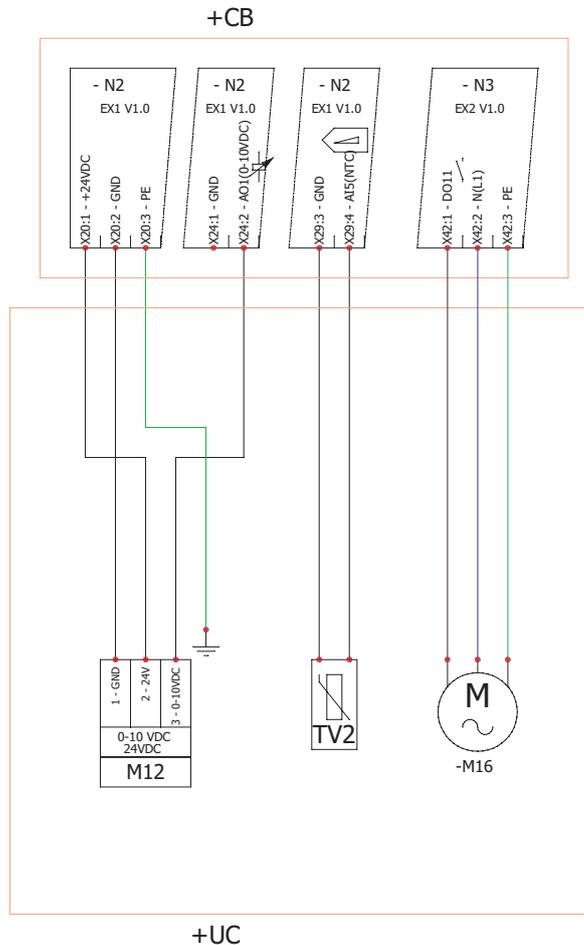
#### 5.9.4. ELECTRICAL DIAGRAMS AND ABBREVIATION IN ELECTRICAL CIRCUIT DIAGRAMS

ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
CB	Control board	System mode switch	System mode switch (START/STOP)
UC	Components to be connected by the user	Fan speed switch	Fan speed switch (BOOST)
N1	MCB control board	M4	Water heater circulation pump
N2	EX1 control board	M6	Water heating indicator output 0-10VDC
N3	EX2 control board	T1	Water heater protection thermostat
Q5	Electrical pre-heater power supply circuit breaker	T2	Cooling switching thermostat
K3	Electrical pre-heater contact	TV	Water heater temperature sensor
PE1	Electric pre-heater	M12	Water heater control output 0-10VDC
A1	Fire alarm damper actuator I (supply air)	TV2	Water heater temperature sensor
A2	Fire alarm damper actuator I (exhaust air)	M16	Water heater circulation pump
K5	Fire alarm damper I open	TV3	Water cooler temperature sensor
K6	Fire alarm damper I closed	M13	Water cooler control output 0-10VDC
K7	Fire alarm damper II open	M14	Water cooler circulation pump
K8	Fire alarm damper II closed	M15	DX cooler control output 0-10VDC
M2	Supply air damper	K4	DX cooler error
M3	Exhaust air damper	X40 [1:2]	DX cooler reserve mode (NO – cooling / NC – heating)
FA	Fire alarm	X41 [1:2]	DX cooler power supply
FPP	Fireplace protection	Transmitter1	Exhaust air RH sensor
START	Operation indicator	Transmitter2	Exhaust air CO <sub>2</sub> sensor
START	Warning indicator		

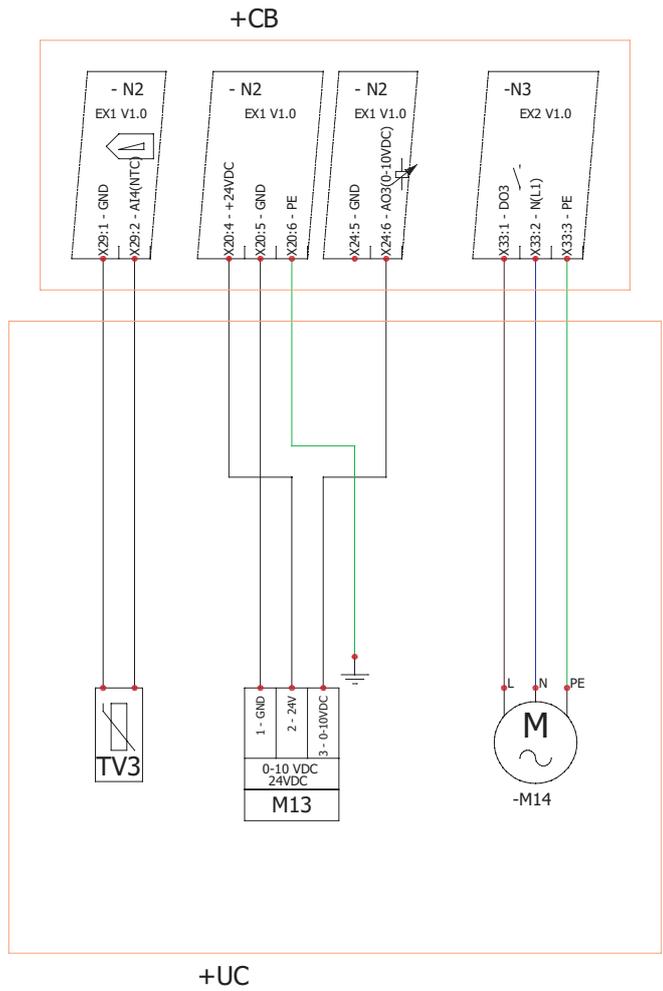
Electrical external pre-heater



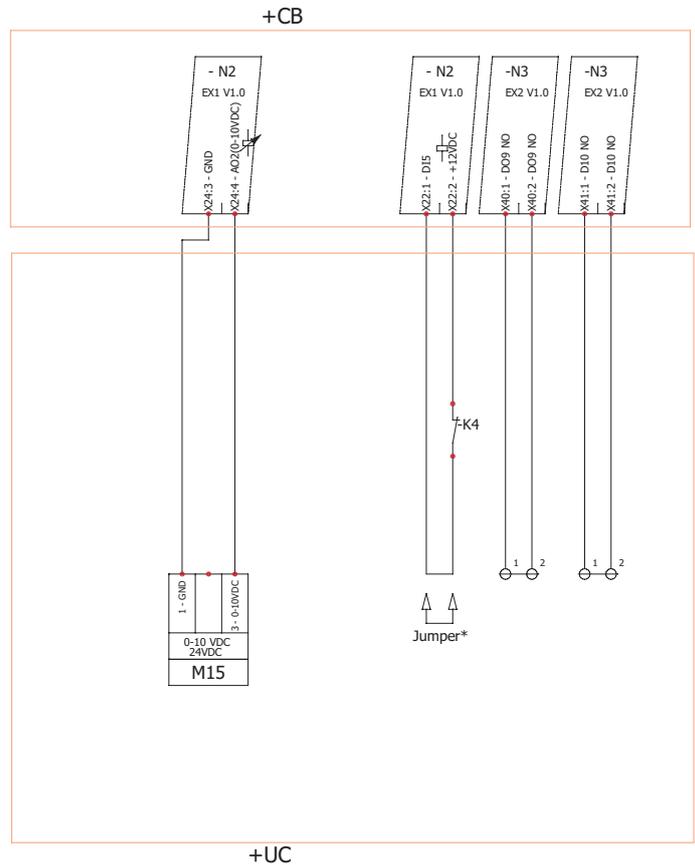
External water pre-heater



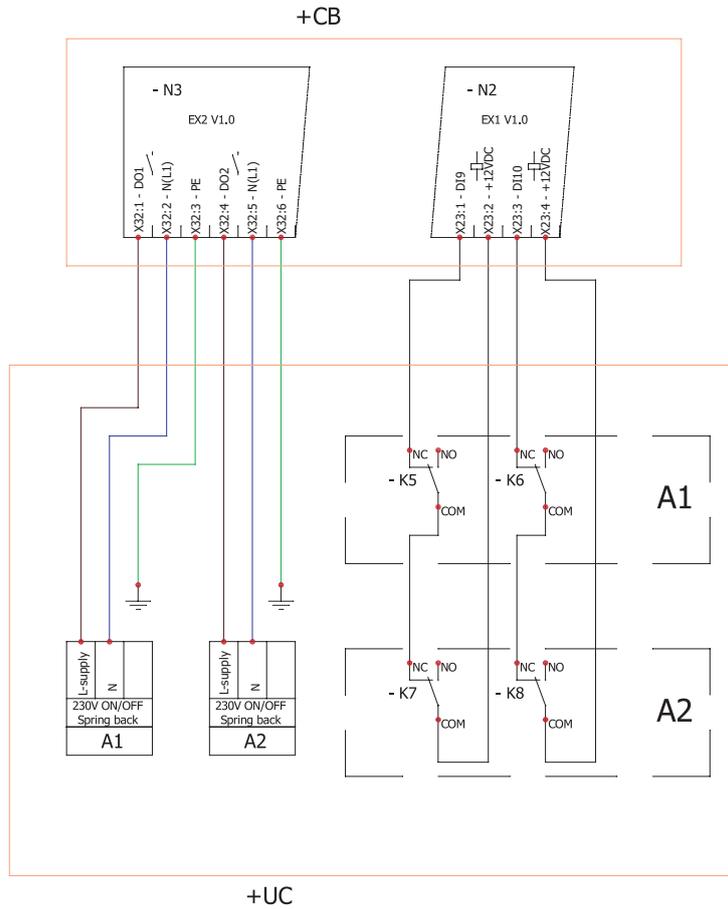
External water cooler



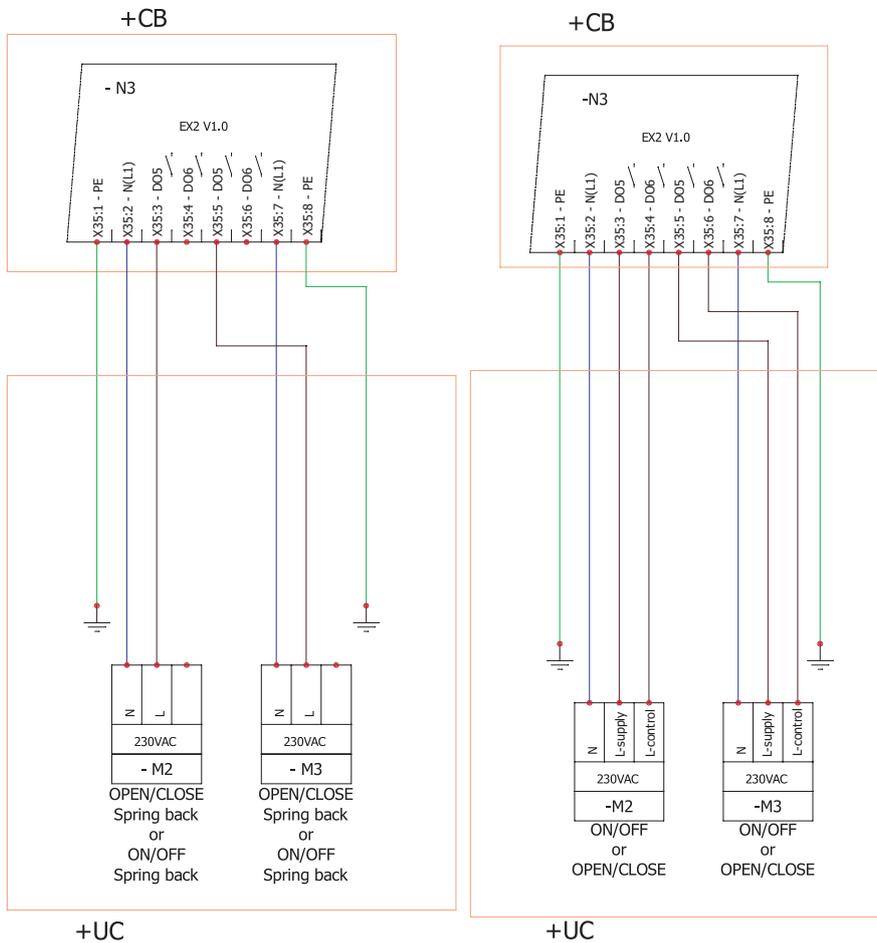
External DX cooler

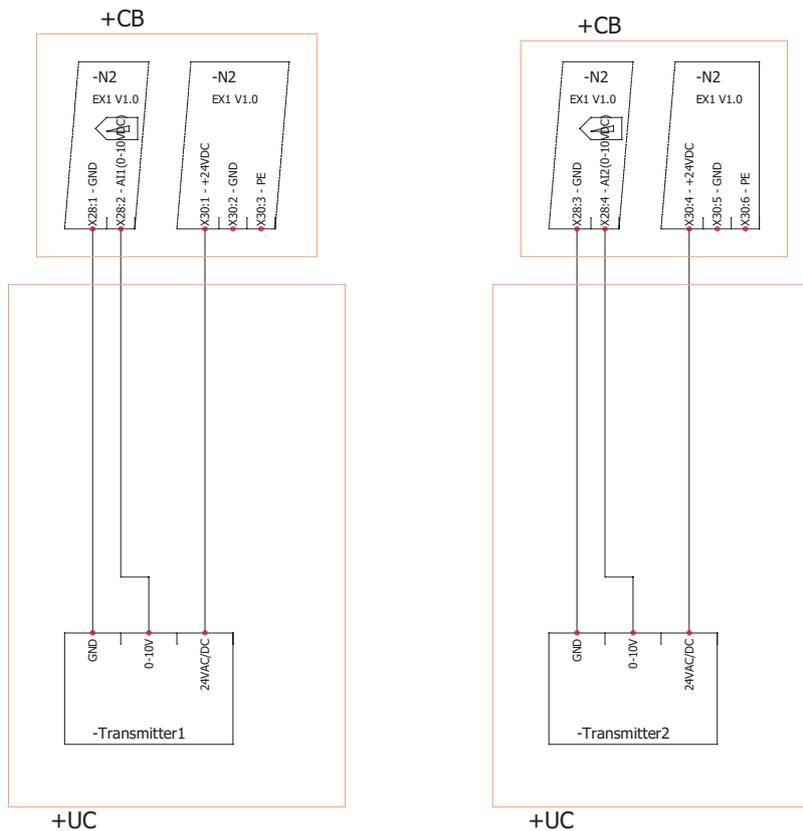


Fire protection connection

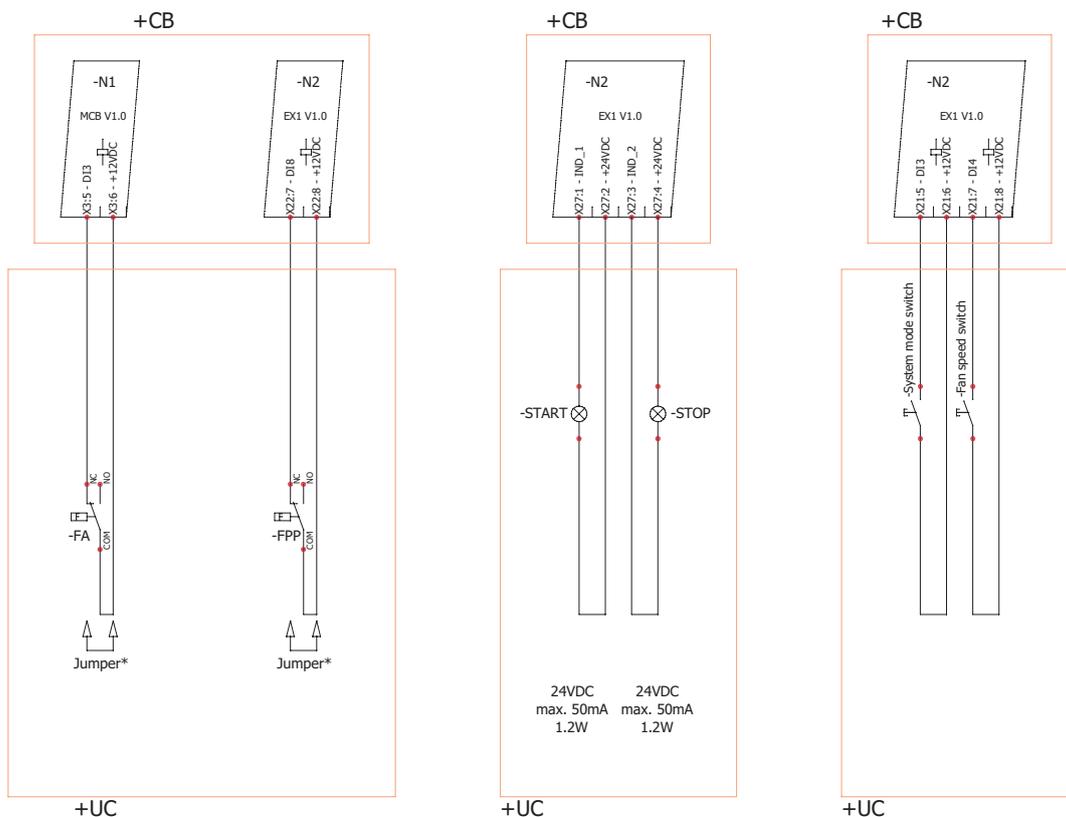


Motorised air dampers





Unit status indication / mode change / fire alarm inlet / fireplace function input



\*The jumpers are installed by the manufacturer (see on the automatics switchboard).  
 \*All the external electrical connections must be made in accordance with effective legal acts and safety requirements.  
 \*The configuration and control of accessories is presented in the section “Functions” of this Certificate.

### 5.10. CONNECTION OF THE UNIT TO ELECTRIC NETWORK

- Supply voltage to the unit must be connected by a qualified specialist following the manufacturer’s instructions and effective safety instructions.

- The unit's power network voltage must correspond to electrotechnical parameters of the unit indicated in the technical lable or in the technical manual.
- The unit's voltage, power and other technical parameters are provided in the unit's technical lable or in the technical manual. The unit must be connected to the power network in compliance with the effective requirements and following the manufacturer's instructions.
- The unit must be earthed according to the rules on installing electrical equipment.
- It is prohibited to use extension wires (cables) and power network plug socket distribution devices.
- Prior to carrying out any ventilation unit installation and connection activities (until its hand-over to the customer), the unit must be disconnected from the power network.
- After installation of the ventilation unit, disconnection from the power network is performed through the external protection device and unit main switch.
- The unit must be thoroughly checked against damages (execution, control, measurement nodes) during transportation before it is connected to the power network.
- The power cable can be replaced only by a qualified specialist upon the evaluation of the rated power and current.

 **The manufacturer does not assume any liability for personal injuries and property damage due to noncompliance with the provided instructions.**

## 5.11. START-UP RECOMMENDATIONS

### 5.11.1. SYSTEM PROTECTION

The control automatics of the unit have integrated protection against a short circuit of those assemblies. The controllers have the following protectors:

*MCB*  
F1, F2 - 1A(5x20) MCB protection;

*EX2*  
to change depending on the product

 **To ensure safe maintenance of the unit, it is necessary to turn off main switch and/or external protection device.**

### 5.11.2. PRE-STARTUP RECOMENDATIONS OF THE UNIT (IN THE PRESENCE OF THE ENDUSER)

Prior to start-up the system must be thoroughly cleaned. Check whether:

- operation systems and unit elements as well as automation and automation devices were not damaged during installation,
- all electrical devices are connected to power supply and fit for service,
- all necessary automation elements are installed and connected to power supply and MCB, EX1, EX2 terminal blocks,
- cable connection to MCB, EX1, EX2 terminal blocks comply with the existing power connection diagrams,
- all electrical equipment protection elements are properly connected (if they are additionally used),
- cables and wires correspond to all applicable safety and functional requirements, diameters, etc.,
- earthing and protection systems are properly installed,
- condition of all seals and sealing surfaces is correct.

## 6. CONTROL

### 6.1. DEVICE CONTROL

Ventilation unit can be controlled using a remote control, web interface via MB-Gateway and building management system. More information about the possibilities of controlling is provided in the table below.

MB-Gateway + WIFI + SALDA AIR app	Stouch	FLEX MCB	SA-Control	MB-Gateway	BMS
+	+	+	+	+	Modbus RTU

### 6.2. MEANING OF THE SYMBOLS USED IN THE INSTRUCTIONS AND ON THE DEVICE

 outdoor air       supply air       extract air       exhaust air

### 6.3. MAIN DEVICE FUNCTIONS

DESCRIPTIONS OF THE FUNCTIONS	MCB	
	E	W
<b>Main functions</b>		
Humidity reduction	•	•

Remote control connector	•	•
BMS connection	•	•
Date and time settings	•	•
Manual components control	•	•
System modes	•	•
BOOST function	•	•
Event register (storing up to 50 entries)	•	•
Digital input configuration	•	•
Operation indication output	•	•
Alarm indication output	•	•
System monitoring	•	•
System mode switching from the external contact	○	○
Cold/heat recovery	•	•
Winter/summer mode	•	•
Supply air temperature control and compensation	•	•
Heat exchanger frost protection	•	•
Weekly schedule	•	•
Holiday schedule	•	•
Reset to factory defaults	•	•
CO <sub>2</sub> level reduction function	○	○
Dryness protection	○	○
Fans control according to air pressure	•	•
Night cooling function	•	•
Fire place function	•	•
Fireplace protection (NC)	○	○
Fire protection from the external contact	○	○
<b>Air dampers</b>		
Supply/exhaust air valves control	•	•
<b>Fans</b>		
Supply/exhaust air fan breakdown indication (NC)	•	•
Protection by RPM	•	•
Air flow protection by pressure	•	•
<b>Sensors</b>		
Supply air temperature sensor	•	•
Outdoor air sensor	•	•
Extract air temperature sensor	•	•
Exhaust air temperature sensor	•	•
Water heater temperature sensor	•	•
Water pre-heater temperature sensor	•	•
Water cooler temperature sensor	•	•
<b>Electric heater</b>		
On/off (PWM) and 0-10V control	•	
Automatic and Manual protection (NC)	•	
<b>Electrical pre-heater</b>		
On/off (PWM) and 0-10V control	•	•*
Automatic and Manual protection (NC)	•	•*
<b>Water heater</b>		
0-10V (PWM) valve control		•
Water heater protection – thermostat (NC)		○
Water heater circulation pump control		•
<b>Water pre-heater</b>		
0-10V (PWM) valve control	•*	•
Water heater circulation pump control	•*	•
<b>Water cooler</b>		

	0-10V (PWM) valve control	•	•
	Water cooler circulation pump control	•	•
	Water cooler operation switching (cooling/heating)	○	○
<b>Filters clogging monitoring</b>			
	Air filter protection according to pressure relays	•	•
	Air filters timer	•	•
<b>Fire alarm damper</b>			
	Fire valves control (on/off)	•	•
	Fire valves testing	•	•
<b>DX cooler</b>			
	On/off (PWM) and 0-10V control	•	•
	DX cooler breakdown indication (NC)	•	•
	DX cooler operation switching (NO – cooling; NC – heating)	•	•
<b>Recirculation</b>			
	3P and 0-10V (PWM) valve control	•	•
	Recirculation stepped motor control	•	•
<b>Bypass damper</b>			
	3P and 0-10V (PWM) damper control	•	•
	Bypass damper stepped motor control	•	•
<b>Remote controllers</b>			
	S-Touch	x	x
	FLEX MCB	x	x
	MB Gateway	x	x

○ – Required additional components: CO<sub>2</sub> and moisture sensors, switches, etc.

• - standard feature (the number of features depends on the ventilation unit in which the automatics are used); to be configured through BMS network or remote control console

x - Remote control consoles

\*The possibility to connect either a water or electrical pre-heater

## 6.4. DESCRIPTION OF THE UNITS FUNCTIONS

All functions indicated in this section are installed in the software of the control board. However, operation and control of the device depends on the following:

1. Selected control panel. Full functionality and configuration possibility can be assured only by MB-Gateway web interface SA-Control, SALDA AIR app.
2. Connected external devices: external heaters, dampers, sensors and etc. (see the description of the acquired air handling system).
3. Internal components of the device: type of heat exchanger (plate or rotor), integrated dampers, sensors and etc. (see components of the chosen device).
4. Control board type.



**Air Handling Unit uses MCB board.**



**The unit can be configured only with SA-Control remote control panel, MB-Gateway web application or SALDA AIR app. The following control board functions can be fully controlled only with SA-Control remote control panel, MB-Gateway web application or SALDA AIR app. In case of Stouch remote control panel use the description of remote control panel functions for MCB control board.**

### 6.4.1. SYSTEM MODES

- Stand-by;
- Building protection;
- Economy;
- Comfort.



In Stand-by mode the system is shut down for a permissible period (based on the Stand-by mode blocking function settings).



The Building protection mode is designed to protect premises against moisture accumulation. The system operates at speed 1. Based on manufacturer's parameters (by default) this mode controls the temperature (the desirable one is indicated), but, if necessary, it can be switched off, i.e. to activate the energy saving mode. Also, if necessary, full recirculation function is activated. (ADJUSTER › USER SETTINGS › BUILDING PROTECTION MODE TEMPERATURE or USER › MENU › SETTINGS › BUILDING PROTECTION).

After activating the energy saving mode, temperature is maintained only by the heat exchanger. It will seek to maintain the current temperature in the room; however, if the supply air temperature falls below the minimal supply air temperature level, heaters will be activated and they will maintain a temperature one degree above the minimum. Also, if the supply air temperature rises above the maximal supply air temperature level, coolers will be activated and they will maintain a temperature one degree below the maximum.



Economy mode is designed to save energy when people are absent from the premises. The system operates at speed 2. Based on manufacturer's parameters this mode controls the temperature maintaining (the desirable one is indicated), but, if necessary, it can be switched off, i.e. to activate the energy saving mode. Also full recirculation function is activated. (ADJUSTER › USER SETTINGS › ECONOMY MODE TEMPERATURE or USER › MENU › SETTINGS › ECONOMY MODE).



Comfort mode is running when people are present in the premises. The system operates at speed 3. In this mode the temperature is always maintained – it is set in the main window (ADJUSTER › VENTILATION CONTROL or USER › SET POINT).

### 6.4.2. SYSTEM CONTROL

System modes are changed by the following functions (indicated in a sequential order):

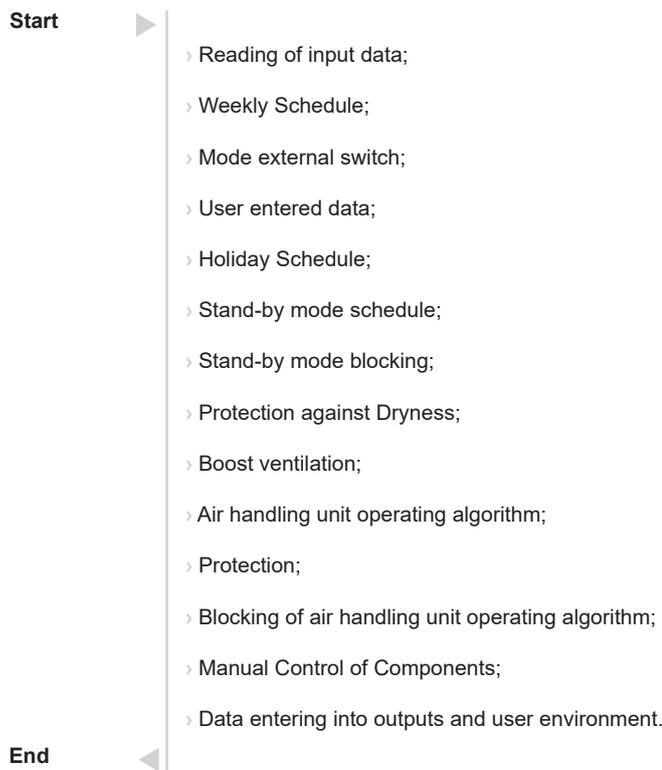
- Weekly Schedule;
- Switching on is activated from an external contactor;
- Manual mode selection;
- Holiday Schedule;
- Stand-by mode blocking.

Based on the Weekly Schedule the system decides in what mode it will be operating; however, the user may change it manually. The system informs when the next mode change is scheduled. After power loss the mode is selected based on the Weekly Schedule; however, if it is not set, the mode that was set before the power loss will be activated.

The user may change modes even when the switching on is activated from an external contactor. The only case when it is not possible – active period of Holiday Schedule of which the system informs and which must be changed to avoid blocking.

Stand-by mode can be blocked by selected parameters. If at least one of the above functions changes its mode into Stand-by mode, it must be checked whether this mode is not currently blocked. If it is blocked, the previous mode shall be activated.

The function order is provided below.



### 6.4.3. SYSTEM STATES

This field informs a user about the existing system state. It is displayed in the main window ADJUSTER › VENTILATION CONTROL or the main window of the user environment. The table below shows possible system states.

SYSTEM STATE	DESCRIPTION
Stand-by mode	System operates in Stand-by mode
Building protection mode	System operates in Building protection mode
Economy mode	System operates in Economy mode
Comfort mode	System operates in comfort mode
Emergency run	System operates in emergency mode (for details refer to alarms section)
Preparing	System is preparing for operation (pre-heating of water heaters, etc.)
Opening dampers	Dampers are opened
BOOST function activated	BOOST function is active
Cooling heaters	Electric heaters are cooled down prior to shutdown of fans
Closing dampers	Dampers are closed
Critical alarm	Critical failure, system is shut down (for details refer to alarms section)
Fire alarm	Fire protection from an external contactor is activated
Heat exchanger frost protection activated	Heat exchanger frost protection is activated
Change filters	Warning about clogged filters (pressure switches are activated or filter timer is activated)
Room RH 3 days average is lower than 30%. Limiting speed.	Reduced airflow because of too low exhaust air moisture
DX cooler defrosting	Dissolving the DX cooler / heater
Fire damper testing	Checking fire dampers

#### 6.4.4. SETTING DATE AND TIME

For smooth execution of schedules, event log and winter/summer function, it is necessary to set proper date and time in section ADJUSTER › USER SETTINGS › DATE AND TIME SET and click a button DATE AND TIME SET. It can also be indicated in user environment USER › MENU › SETTINGS › DATE AND TIME. Fast synchronization with the computer time is possible in user and adjuster environment.

#### 6.4.5. SUPPLY AIR TEMPERATURE CONTROL AND COMPENSATION

Temperature for supply air or premises temperature may be indicated. In the service environment section SERVICE › MAIN › SUPPLY AIR TEMPERATURE CONTROL you can control it based on supply or exhaust air temperature. If control by premises temperature is selected, then it is calculated what kind of air is to be supplied so that the proper room temperature is maintained. It is limited by allowable limits of supply air temperature.

The air handling unit is not designed to heat premises, therefore it is not necessary to use full capacity for low temperature differences – the compensation in percentage is provided for this purpose. This parameter indicates a percentage of the temperature difference (between the set temperature and premises temperature) to be compensated for by this function. E.g. set point is 20 °C, temperature in the premises is 16 °C, compensation is 50 %, difference between the indicated and existing temperatures is 20-16=4 °C. Since 50 % is compensated, then 4\*50 %=2 °C. When the received value is added to the set temperature we get the required supply air temperature – 2+20=22 °C. This temperature is not limited as it is within the supply air temperature protection limits. In this case the system maintains the supply air temperature at 22 °C. The closer the premises temperature is to the set temperature (20 °C), the faster the supply air temperature reaches 20 °C.

It may be too hot in the premises, therefore this function both heats and cools. Preferred (compensated) temperature is displayed in the window MONITORING (REQUIRED SUPPLY). If the displayed temperature is 0 °C, it means that temperature maintaining of supply air is switched off.

The temperature of supply air is maintained by the following components (indicated in a sequential order):

- Fans (operate slower, if it is too hot);
- Recirculation valve (if the ambient air temperature is favourable);
- Water cooler;
- DX cooler;
- Recirculation damper and CO<sub>2</sub> (in case of favorable outdoor temperature);
- Bypass damper or rotor (in case of favorable outdoor temperature);
- Recirculation damper and CO<sub>2</sub> (in case of favorable outdoor temperature);
- DX heater;
- Water heater;
- Water cooler/heater;
- Electrical heater;
- Fans (operate slower, if it is too cold).

Firstly the system tries to maintain the supply air temperature by means of a heat exchanger. In case of a plate heat exchanger, the bypass damper is controlled, and in case of a rotary heat exchanger, the rotor rotating speed or interval is changed. The heat exchanger can both heat and cool – it depends on outdoor and room air temperatures. It is controlled by a PID controller whose coefficients are indicated in the adjuster environment section ADJUSTER › PID CONTROLLERS ADJUSTING › HEAT EXCHANGER CONTROL BY SUPPLY AIR TEMPERATURE.

When the heat exchanger operates at full capacity and preferred temperature is not reached, the recirculation damper, then the heater or cooler etc. is activated (if necessary). Only the components configured for temperature maintaining are activated. It takes 10 s for the system to switch between the elements.

## 6.4.6. FAN CONTROL

The preferred air-flow can be indicated in percentage or in 4 fixed speeds where each of them is dedicated to a relevant system mode:

- Building protection;
- Economy;
- Comfort;
- Maximum power.

Fan speed can be controlled by:

- Percentage - speed in percentage is indicated in the adjuster environment window ADJUSTER › AIR FLOWS ADJUSTING: 0 % corresponds to 0, and 100 % – 10 V control signal voltage;
- Pressure - the maximum system pressure is indicated, which based on speed settings in the adjuster environment ADJUSTER › AIR FLOWS ADJUSTING means 100 % air-flow;
- Air-flow (m<sup>3</sup>/h) - K factors of supply and exhaust air and the maximum system air-flow (m<sup>3</sup>/h) are displayed, which based on speed settings in the adjuster environment ADJUSTER › AIR FLOWS ADJUSTING means 100 %.

Fans based on air-flow and pressure are controlled by PID controller and its coefficients are indicated in the adjuster environment section ADJUSTER › PID CONTROLLERS ADJUSTING › FANS SPEED CONTROL BY AIR FLOW OR PRESSURE. Each fan is controlled individually.

In the service environment window SERVICE › FANS › FANS SPEED CONTROL you can limit the minimum and maximum fan control signal voltage. Based on manufacturer set parameters, the minimum 2V voltage is indicated, which means that 0V voltage signal is sent when fans are off, and 2V voltage signal is immediately switched on when rotation is required.

It is possible to specify the nominal flows of supply and exhaust air. Then, the maximal air flow is calculated automatically.

## 6.4.7. “BOOST” FUNCTION

Boost ventilation function is used for fast ventilation of premises. It activates the maximum air-flow (speed 4). Boost ventilation has to be temporary, i.e. it must be a final condition (e.g. CO<sub>2</sub> limit, time). The reason for this limitation – protection against dryness. High air flow reduces humidity, and dry air is harmful for health.

The function is activated by pressing ON and deactivated by pressing OFF button in the BOOST section, or by means of an external contactor (FANS SPEED SWITCH), which is configured in the service environment (SERVICE › MAIN › FANS SPEED SWITCH) section.

The function is inactive when Stand-by mode is on. Time limit is indicated (ADJUSTER › USER SETTINGS › BOOST TIMER or USER › MENU › SETTINGS › BOOST TIMER). Once the function is activated, the time is set by the timer and the time is counted till its deactivation. It may be adjusted in real-time, i.e. when the function is on, in ADJUSTER › VENTILATION CONTROL or in the user environment main window.

## 6.4.8. WEEKLY SCHEDULE

A weekly schedule consists of 10 weekly events. They can be added, deleted, activated and deactivated. One event indicates time, mode/BOOST function, days of the week. Also it is possible to indicate the change of settable mode temperature.

The system changes modes according to the Weekly Schedule only at the indicated times, therefore a user can always change the existing mode manually. This schedule notifies of the upcoming mode change by indicating the time remaining till the next event.

The schedule is edited in user environment USER › MENU › SCHEDULE.

## 6.4.9. HOLIDAY SCHEDULE

This schedule is used when the unit has to operate in uniform mode during holidays. The user interface shows when the schedule period is active as nobody can change the mode activated by this function (except for protection). In order to control the system in a normal manner, the Holiday Schedule period must be deactivated, i. e. zero values must be indicated or dates must be changed. Up to five holiday periods can be set.

The schedule is edited in the user environment USER › MENU › HOLIDAY.

## 6.4.10. WINTER/SUMMER MODE

The winter/summer function is set during the cold periods, because some parts of the system have to be protected against cold outdoor air. During winter it is recommended to leave the unit switched on, therefore it is possible to set blocking of switch-off. Water heaters must always be switched on during the entire winter.

The winter mode may be indicated

- Manually;
- By date;
- Based on 3-day mean outdoor temperature, to be calculated only when the fresh air (outdoor) pre-heater is off.

## 6.4.11. DRYNESS PROTECTION

This function is designed to protect premises against dryness. If the function is active, it calculates the 3-day mean humidity of extract air from the premises. If the mean drops below set limit (30%), fans start operating in speed 2 in comfort mode. A user is notified of the activated protection and limited air flow.

If the humidity mean exceeds set limit (30%) or the function is switched off manually, fans start operating in speed 3 in comfort mode.

The function is switched on/off in the section ADJUSTER › USER SETTINGS › DRYNESS PROTECTION or in the window USER › MENU › SETTINGS › OTHER.

## 6.4.12. NIGHT COOLING FUNCTION

This function is designed to save energy in the morning, when a fresh night air is used to cool down the building. The function is active only in

summer. If it is switched on but not active yet, activation conditions are checked:

- System time from function start to the end (hours/minutes);
- Time is exactly every hour from the start;
- If STAND-BY mode is set, the unit operates in BUILDING PROTECTION mode for 5 minutes so that the actual temperature data is available. The temperature is checked after purging. If it is not suitable, the unit returns to STAND-BY mode;
- Outdoor temperature is higher than the set outdoor temperature;
- Exhaust air temperature is higher than the set temperature;
- Exhaust air temperature is higher than the outdoor temperature by at least 2 °C;
- Summer.

If all conditions are met the unit starts operating in COMFORT mode (without temperature maintaining). The main window shows that the Night cooling function is active. When it is active continuously, the deactivation conditions are checked:

- Time does not correspond to the start/end interval;
- Exhaust air temperature drops below the set temperature;
- Outdoor temperature drops below the set temperature;
- Mode other than COMFORT was switched or the unit has been shut down.

If at least one condition is met, the unit switches off the Night cooling function and it switches to the mode that was on prior to activating the function.

The function is configured in the section ADJUSTER › USER SETTINGS › NIGHT COOLING FUNCTION or in the window USER › MENU › SETTINGS › NIGHT COOLINGS.

### 6.4.13. CO<sub>2</sub> REDUCTION FUNCTION

This function is designed to maintain a proper quality of room air. To activate it the exhaust air CO<sub>2</sub> sensor must be connected and properly configured in the service environment window SERVICE › SENSORS. When completed, the exhaust air CO<sub>2</sub> value is displayed in the section MONITORING.

In the service environment window SERVICE › MAIN › CO<sub>2</sub> REDUCTION FUNCTION you can switch on/off the function, indicate preferred CO<sub>2</sub> level and allowable limit; when it is exceeded (CO<sub>2</sub> set + allowable excess) CO<sub>2</sub> is reduced, information is displayed and air-flow is increased. When CO<sub>2</sub> reaches the set point, reduction is switched off.

CO<sub>2</sub> protection is inactive in the stand-by and building protection modes.

### 6.4.14. FILTER PROTECTIONS

#### Filter Timer Settings

The filter timer limit is set in the service environment window SERVICE › MAIN › AIR FILTERS PROTECTIONS. The maximum setting is 1 year.

### 6.4.15. SYSTEM MODE COMMUNICATION WITH EXTERNAL CONTACTOR

This function activates the preferred system switching on by means of external contactor; it indicates what signal will be sent to input. Possible types of signals:

- Not used;
- Upon pressing a button the selected system mode is activated. After receipt of the first impulse the function is activated, and after second impulse – deactivated;
- On/off; selected system mode is activated. The mode is active while the contactor is on;
- PIR sensor. When the sensor is activated, the selected system mode is activated. If the signal is not received for 30 minutes, the mode is activated.

Function is set in the service environment section SERVICE › MAIN › SYSTEM MODE SWITCH.

### 6.4.16. FAN SPEEDS FROM AN EXTERNAL SYSTEM CONTACTOR

This function is designed to activate/deactivate the boost ventilation function or preferred combination of fan speeds by means of an external contactor.

The function indicates a type of a signal to be sent to the input and components controlled by it. Possible combinations of signal types and functions:

- *Not used*;
- *On/off* – selected fan speed combination is activated. Function is on when contactor is on;
- Button click – selected fan speed combination is activated. Function is activated when it receives an impulse. It is deactivated when it receives the impulse again;
- *On/off* – Boost ventilation function is controlled. Function is on when contactor is on. If the boost ventilation function is not terminated by means of this function within the boost ventilation time limit, force shutdown is used after the time expires;
- Button click – Boost ventilation function is controlled. Function is activated when it receives an impulse. It is deactivated when it receives the impulse again;
- If the boost ventilation function is not terminated by means of this function within the boost ventilation time limit, force shutdown is used after the time expires.

It is also indicated whether boost ventilation will be activated or combination of fan speeds is preferred, i.e. it is possible to indicate preferred supply and extract air fan speeds individually.

## 6.4.17. HEAT EXCHANGER CONTROL

### Cold - Heat Recuperation

Cold-heat recovery function is designed to control a heat exchanger. Its power is controlled by:

- Using plate heat exchanger - bypass damper. When it is closed, the heat exchanger is operating at full capacity. Its power is reduced by opening the damper.
- Rotary heat exchanger power is controlled by changing its rotating speed or interval. When the rotor rotates at full speed, the heat exchanger is used at full capacity. The power is reduced by slowing down the rotating speed or increasing the interval.

The heat exchanger can both heat and cool – it depends on air temperature. If it is colder outside than in the premises, the heat exchanger pre-heats the outdoor air by using the room heat. If it is colder in the premises than outside, the heat exchanger cools down the outdoor air temperature by room air. Its power is reduced to the minimum when the target supply air temperature is the same as outdoor one. The higher the difference between the preferred and supply air temperatures, the higher heat exchanger power is used. When it is operating at maximum capacity, it is allowed to activate other heating/cooling components.

For this function suitable heat exchanger type is indicated in the window SERVICE › HEAT EXCHANGER and PID controller coefficients – in the window ADJUSTER › PID CONTROLLERS ADJUSTING.

PID controller output limits are set for rotor or bypass damper, at which their operation starts.

- If rotor is controlled by 0..10 V signal, at low voltages it does not rotate, the motor heats up, thus the minimum control signal output is limited. If On/Off rotary heat exchanger is used, PID percentage for activating the rotor is indicated in the window SERVICE › HEAT EXCHANGER.
- If the bypass damper opens only a few percent, noise can occur, thus minimum opening is limited, which also applies when coming to the full opening. If the plate heat exchanger with a 3-way bypass damper is used, the opening time of the bypass damper is indicated in the window SERVICE › HEAT EXCHANGER.
- If a plate heat exchanger with segment valves is controlled by an external controller is used, then the type of the bypass damper “REMOTE CONTROLLER” is shown in the window “SERVICE › HEAT EXCHANGER”.
- If a plate heat exchanger with segment valves connected to a controller is used, then the type of the bypass damper is shown in the window “SERVICE › HEAT EXCHANGER” as either “2 SEGMENTS” or “3 SEGMENTS”. In the case of heat recovery control, segments are closed in sequence, i.e. if heat recovery is not required, then all the segments are closed and the bypass damper is opened.

When the fans are switched on during the heating season, the heat exchanger runs for 10 minutes at full power, until the system stabilizes.

## 6.4.18. SYSTEM MONITORING

The service and adjuster environment have the window MONITORING where you can monitor operation of the entire system, i.e. see controller input and output, CO<sub>2</sub> values, versions of connected modules, date and time, speed of fans, temperatures, pressure, etc. The amount of information depends on the system configuration. This tool is designed for preventive maintenance of the system.

## 6.4.19. STAND-BY MODE BLOCKING

This function is designed to protect the system against the impermissible unit shutdown and it is recommended to limit the unit shutdown up to 1 hour within 12 hours during the winter season. Possible function modes:

- Always allow shutdown;
- Block shutdown;
- Block shutdown in winter;
- Block shutdown in summer.

It must be indicated for how long the shutdown is permissible within 12 hours. If it is blocked and the system is shut down, the system counts and informs the user on the remaining time. This function is configured in the service environment (SERVICE › MAIN › SYSTEM BLOCKING).

If the time has expired and Stand-by mode is blocked, the user is informed by the function indication.

## 6.4.20. AIR FLOW ADJUSTMENT

Air-flows are adjusted in the adjuster environment window ADJUSTER › AIR FLOWS ADJUSTING. There are 4 of them in the system and they are dedicated to specific modes:

- Building protection;
- Economy;
- Comfort;
- Maximum power (BOOST function).

Air-flows are arranged in an ascending order, i.e. upon setting lower air-flow in COMFORT mode then in ECONOMY mode, the air-flow of the latter is reduced automatically. With respect to the system configuration, air-flows are indicated in percentage, pressure or amounts of air. 100 % value of air-flow is indicated in service environment window SERVICE › FANS › FAN SPEED CONTROL.

## 6.4.21. MANUAL CONTROL OF COMPONENTS

This function manually activates/deactivates the components controlled by digital and analogue outputs. The latter ones are controlled in percentage, and digital ones – by ON/OFF. Based on manufacturer’s parameters (by default) the status of all components is AUTO, which means that control is based on air handling unit operating algorithm. Components are displayed by the system configuration. Settings must be saved so they remain active after power loss.

The lowest power consumption is when the Stand-by mode is on, and position of components – AUTO.

Prior to using the manual control function, it is recommended to activate the force shutdown function, which blocks the air handling unit operating algorithm.

This can be useful, if you need to check if everything is properly connected. Moreover, in the event of failure, certain components can be activated so that the unit operates irrespective of sensors and protections. Of course, this method should be applied in exceptional cases until the failure is rectified.

If the service environment window SERVICE › SENSORS displays an external (REMOTE) type of a temperature sensor, its temperature may be indicated manually. The values may be indicated via the Modbus interface.

### 6.4.22. CHANGING PASSWORDS

In the service environment section SERVICE › MAIN › PASSWORD › PASSWORD CHANGING MODE › ON you can change login passwords. For this it is necessary to activate the change and after entering a preferred password (4 digits), click a button SET. To review and change the parameters without a password, just set 0.

### 6.4.23. RESTORING FACTORY DEFAULTS

If set parameters result in incorrect operation of the system, you can always restore the factory defaults in the service environment window SERVICE › MAIN › FACTORY SETTINGS.

### 6.4.24. INDICATIONS OF FUNCTIONS, ALARMS AND WARNINGS

User about active functions, warnings or alarms is notified in the window ADJUSTER › ALARMS or USER › ALERT. Functions are displayed in the main window ADJUSTER › VENTILATION CONTROL or in the user environment window. The table below provides indications and their descriptions.

	FUNCTIONS	DESCRIPTION
	Working indication output	Working indication output is activated
	Alarm indication output	Failure indication output is activated
	System mode switch	Switching on from an external contactor is activated
	Custom fans speed switch	Selected fans speed from an external contactor is activated
	Winter	Winter mode is active
	Stand-by mode blocking activated	Stand-by mode blocking is activated
	Slowing down fans	Fans are slowed down
	Slowing down fans by temperature	Fans are slowed down depending on supply air temperature
	Night cooling function activated	Night cooling function is activated
	Hydronic pump exercise activated	Preventive maintenance of circulation pumps is activated
	Service stop function	Blocking of air handling unit operating algorithm; Service activities are carried out
	Holidays	Holiday Schedule interval is active. System mode can be changed only upon changing the Holiday Schedule interval
	Reducing CO <sub>2</sub> level	CO <sub>2</sub> reduction function is activated
	Full recirculation	Full recirculation function is activated

### 6.4.25. DISPLAY AND CONCELLATION OF ALARMS AND WARNINGS

The system notifies the user about the system failures by warnings that are canceled automatically and by alarms that have to be canceled manually. The latter are recommended to be canceled by a specialist prior to finding out the causes of the alarm. Information on alarms and warnings is also displayed

in the main window ADJUSTER › VENTILATION CONTROL. If at least one alarm is active, the system is shut down and external failure indication is activated. Alarms and warnings can be reviewed and canceled in the window ADJUSTER › ALARMS or USER › ALERT. All possible alarms and warnings are provided in the table below.

INDICATION	ALARMS LIST	INDICATION	ALARMS LIST
..01	Warning! Rotor broken belt alarm	R.31	Alarm! Controller cabinet temperature sensor failure. System stopped
R.02	Alarm! Fireplace protection activated	..32	Fire damper test OK
..03	Warning! Dryness protection activated	..33	Warning! Fire damper test failed
..04	Warning! Plate heat exchanger frost protection activated	R.34	Alarm! Heater manual protection. System stopped!
R.05	Alarm! Plate heat exchanger frost protection system stopped	..35	Warning! Heater automatic protection
..06	Warning! Plate heat exchanger frost protection (pressure relay)	R.36	Alarm! Pre-heater manual protection. System stopped!
R.07	Alarm! Hydronic heater frost protection. System stopped	..37	Warning! Pre-heater automatic protection
..08	Warning! Too low supply temperature	R.38	Alarm! Supply fan failure
..09	Warning! Too high supply temperature	R.39	Alarm! Extract fan failure
R.10	Alarm! Too low supply temperature. System stopped	..40	Warning! DX cooler failure
R.11	Alarm! Too high supply temperature. System stopped	R.41	Alarm! Fire
..12	Warning! Change supply air filter (pressure relay)	R.42	Alarm! Supply fan pressure protection. System stopped
..13	Warning! Change extract air filter (pressure relay)	R.43	Alarm! Extract fan pressure protection. System stopped.
..14	Warning! Change supply and extract filters (time-out)	R.44	Alarm! Internal system error.
R.15	Alarm! Power supply failure. Please, check F1 fuse	R.45	Alarm! Heater manual protection. Boosting.
..16	Warning! Supply air temperature sensor failure. Emergency run	R.46	Alarm! Pre-heater manual protection. Boosting.
..17	Warning! Extract air temperature sensor failure. Emergency run	R.47	Alarm! Internal communication error
..18	Warning! Exhaust air temperature sensor failure. Emergency run	..48	Warning! DX cooler defrosting
..19	Warning! Outdoor air temperature sensor failure. Emergency run	..49	Warning! Too high 3 days extract humidity. Increasing air flow.
..20	Warning! Hydronic heater water temperature sensor failure. Emergency run	..50	Warning! Too high extract humidity. Boosting.
..21	Warning! Hydronic pre-heater water temperature sensor failure. Emergency run	R.51	Alarm! Rotor broken belt alarm. System stopped.
..22	Warning! Hydronic cooler water temperature sensor failure. Emergency run	..52	Warning! Gas heater failure
..23	Warning! Controller cabinet temperature sensor failure. Emergency run	..53	Warning! Gas pre-heater failure
R.24	Alarm! Supply air temperature sensor failure. System stopped	..54	Warning! Too high condensation level
R.25	Alarm! Extract air temperature sensor failure. System stopped	..55	Warning! Supply fan failure. Emergency run
R.26	Alarm! Exhaust air temperature sensor failure. System stopped	..56	Warning! Extract fan failure. Emergency run
R.27	Alarm! Outdoor air temperature sensor failure. System stopped	..57	Warning! Too low supply air flow for DX cooler
R.28	Alarm! Hydronic heater water temperature sensor failure. System stopped	R.58	Alarm! Bypass damper failure. System stopped.
R.29	Alarm! Hydronic pre-heater water temperature sensor failure. System stopped	R.59	Alarm! Hydronic heater/pre-heater circ. pump failure. System stopped.
R.30	Alarm! Hydronic cooler water temperature sensor failure. System stopped	..60	Warning! Hydronic heater/pre-heater circ. pump failure.

### 6.4.26. EVENT LOG (HISTORY)

The system records 50 recent events (failures, alarms, fire damper testing results, etc.). The log stores the description of events and time. The event log may be reviewed in the window ADJUSTER > HISTORY or USER > MENU > HISTORY.

### 6.4.27. SYSTEM VERSIONS AND RUNNING TIME

In the section ADJUSTER > USER SETTINGS > ABOUT you may see software and configuration versions that are saved in the production line namely to every unit. Next to them the running time since the unit has been manufactured is also displayed. It is calculated when the fans are rotating.

## 7. MAINTENANCE

### 7.1. SAFETY INSTRUCTION

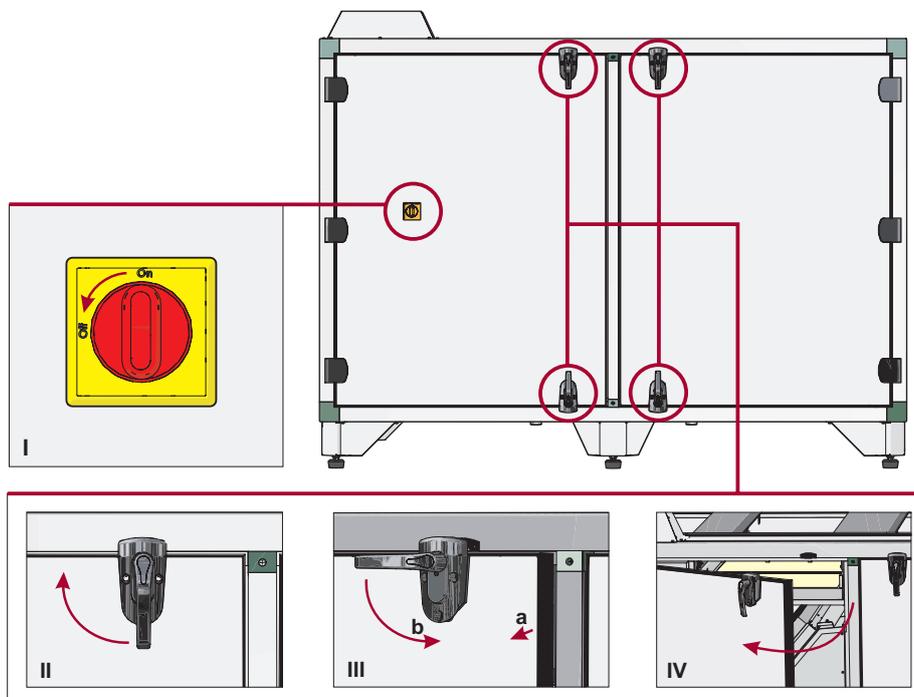


It's necessary to stop the unit before opening it's doors. Disconnect the main switch and open doors after fans stop completely (approximately 2 min.). It necessary to assure, that the main switch cannot be turned on by the third parties.

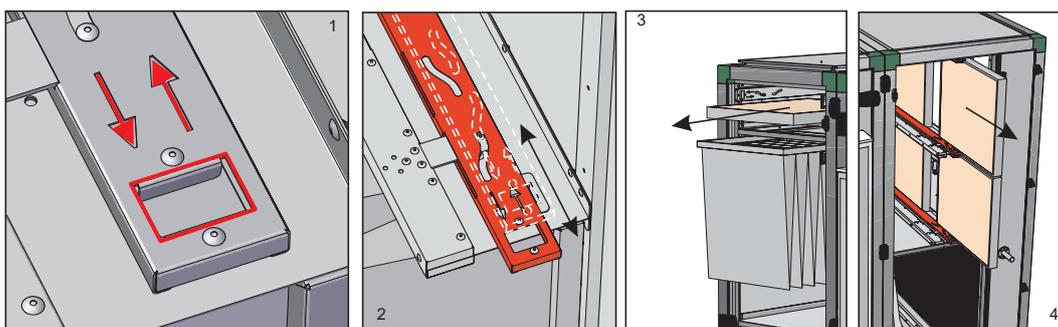
### 7.2. COVER OPENING

(I) Make sure that the circuit breaker handle of the unit is in the off position.

Turn both door handles to a degree of 90o (II). By slightly pulling the doors (III - a), the handles are returned to the initial position (III - b). The doors open (IV). The doors of all AmberAir Compact versions open identically.



### 7.3. FILTERS AND PREFILTER MAINTENANCE



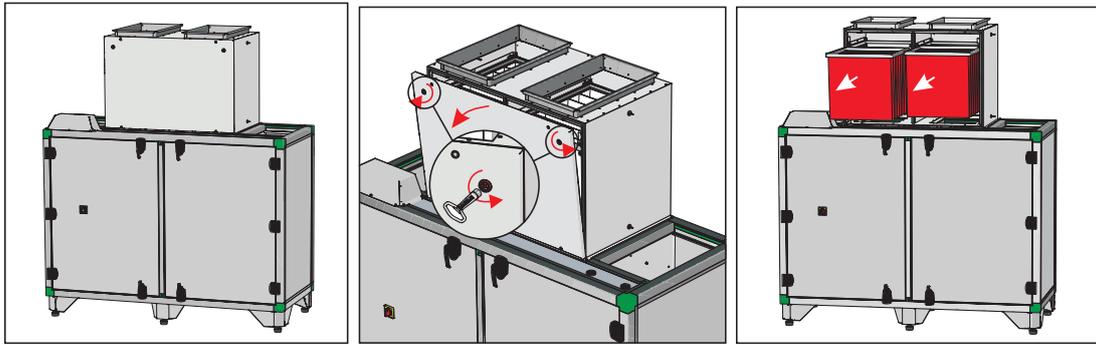
After filter changing, reset filters timer if used filter timer. Strictly prohibited to operate the unit without filters!



It is recommended to change the filters every 3 - 4 months, or according to filter timer, or filter pressure relay or pressure transmitter indication in remote control panel or BMS.

### 7.4. FILTER BOX MAINTENANCE

- The cover is unscrewed and removed using a key.
- The filters are removed.

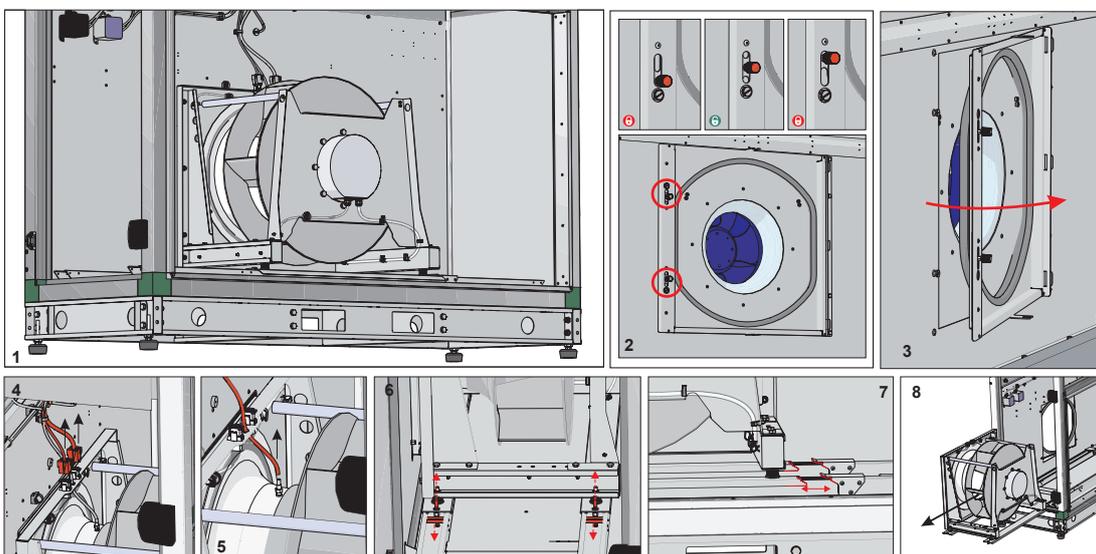


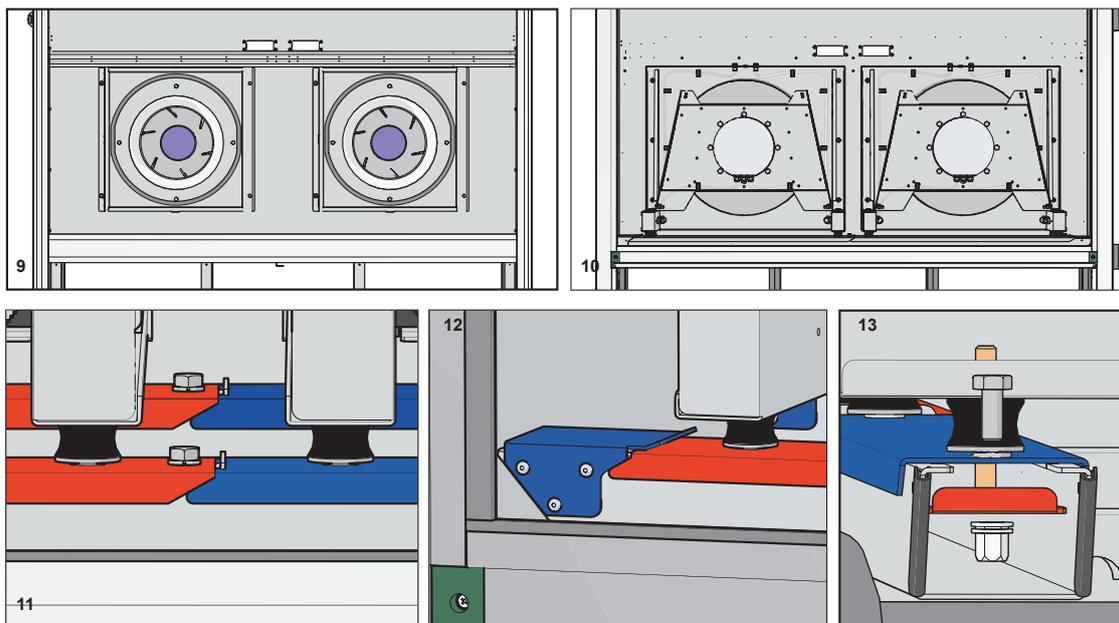
 he filter box can be purchased as an accessory.

## 7.5. FANS MAINTENANCE

 Before starting maintenance or repair work, make sure that the unit is disconnected from the electrical network and main switch is turned off.

- Maintenance should be performed only by experienced and trained staff.
- The fan should be inspected and cleaned at least once a year.
- Be sure the fan is disconnected from power source before performing any maintenance or repair.
- Begin maintenance works only after a full stop of the fan.
- When performing technical maintenance work, follow all work safety rules.
- The structure of the motor includes high-performance bearings. They are pressurised and, therefore, do not require lubrication throughout the motor service life.
- Detach fan connections from the unit.
- Disconnect fan air pressure hose.
- Impeller should be specially checked for built-up material or dirt which may cause an imbalance. Excessive imbalance can lead to accelerated wear on motor bearings and vibration.
- Clean the impellers and the inside of the casing with a soft, non-soluble and non-corrosive detergent and water, with pH (6-8).
- Do not use high pressure cleaner, abrasives, sharp instruments or caustic solvents that may scratch or damage housing and impeller.
- Do not plunge the motor into any fluid while cleaning impeller.
- Make sure, that impeller's balance weights are not moved.
- Make sure the impeller is not hindered.
- Mount the fan back into the unit. Connect the fan to power supply source. Connect air pressure hose.
- If after maintenance the fan does not start or stop itself, contact the manufacturer. Malfunction of the fan can be identified according to the pressure in the system (when pressure transmitter are connected). When there is a fault in fans' motor, any separate notice is shown on the control panel.
- Before starting the unit, make sure that no tools or other foreign items are left.
- Open the door of the rotor compartment and unscrew the fan ceiling frame bolts, pull the frame away from the fan unit to prevent damage to the fan seal when removing the unit;
- Open the door of the section from which the fan unit will be removed;
- Disconnect the electrical connections and the pressure hose from the diuzé (?) nipple;
- Unscrew the fan locking screws and release the retainers;
- The fan unit is pulled out through the slide rails.
- It is recommended to use a lifting hook for lifting the fan unit from the product. Use the provided lifting holes
- If there is a fan wall in the section, unscrew the 2nd (further from the door) sealing frame screws through the access through the inlet of the first fan. The next steps in the removal of the fan unit are similar.





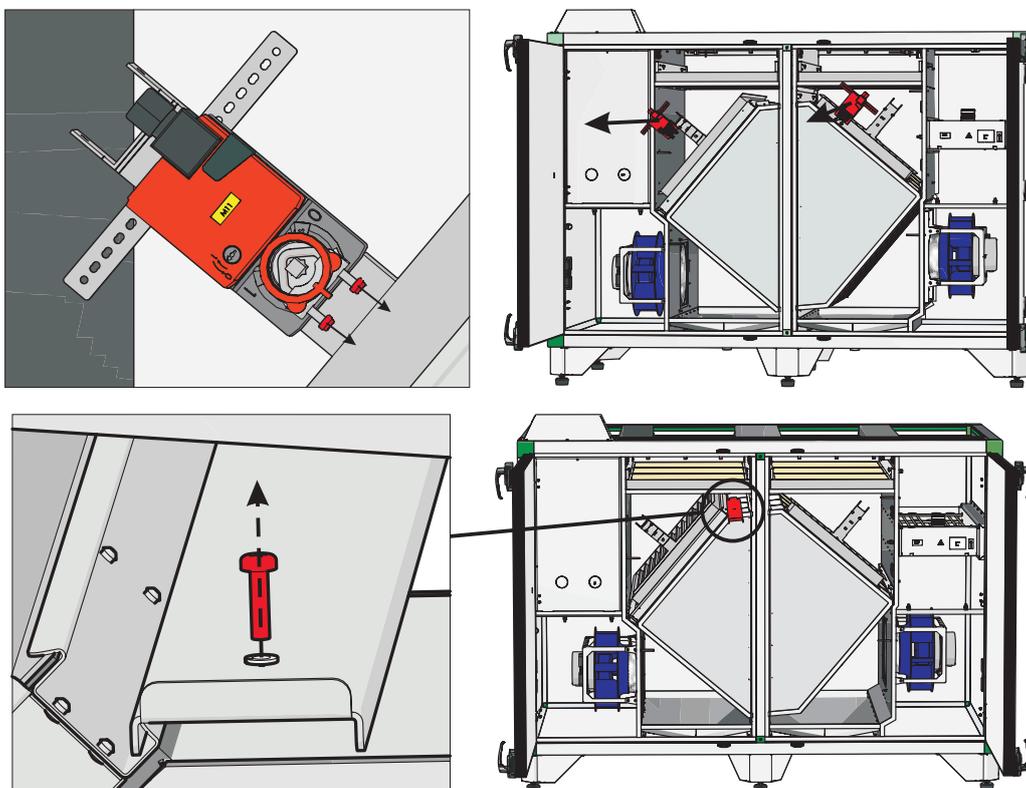
## 7.6. AIR DAMPER MAINTENANCE

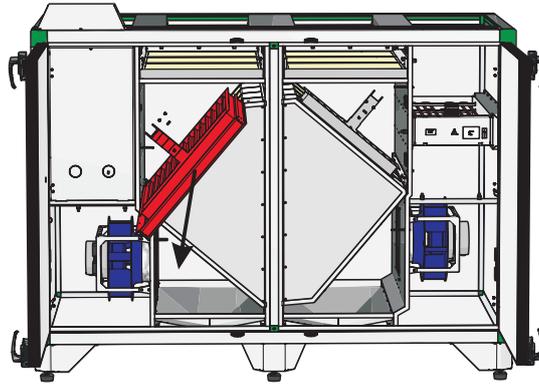
### 7.6.1. AIR DAMPER MAINTENANCE AMBERTAIR COMPACT 1-5 CX V

- Open the doors.
- Disconnect the damper wires from the automatics.
- Unscrew the drive and remove it from the axle.
- Unscrew the screw and remove the clamp.
- Remove the damper.

#### **Removal of the recirculation valve:**

- Perform the above actions for disconnecting the drive;
- Remove the damper together with the bypass assembly (follow the Heat Exchanger Maintenance Description).





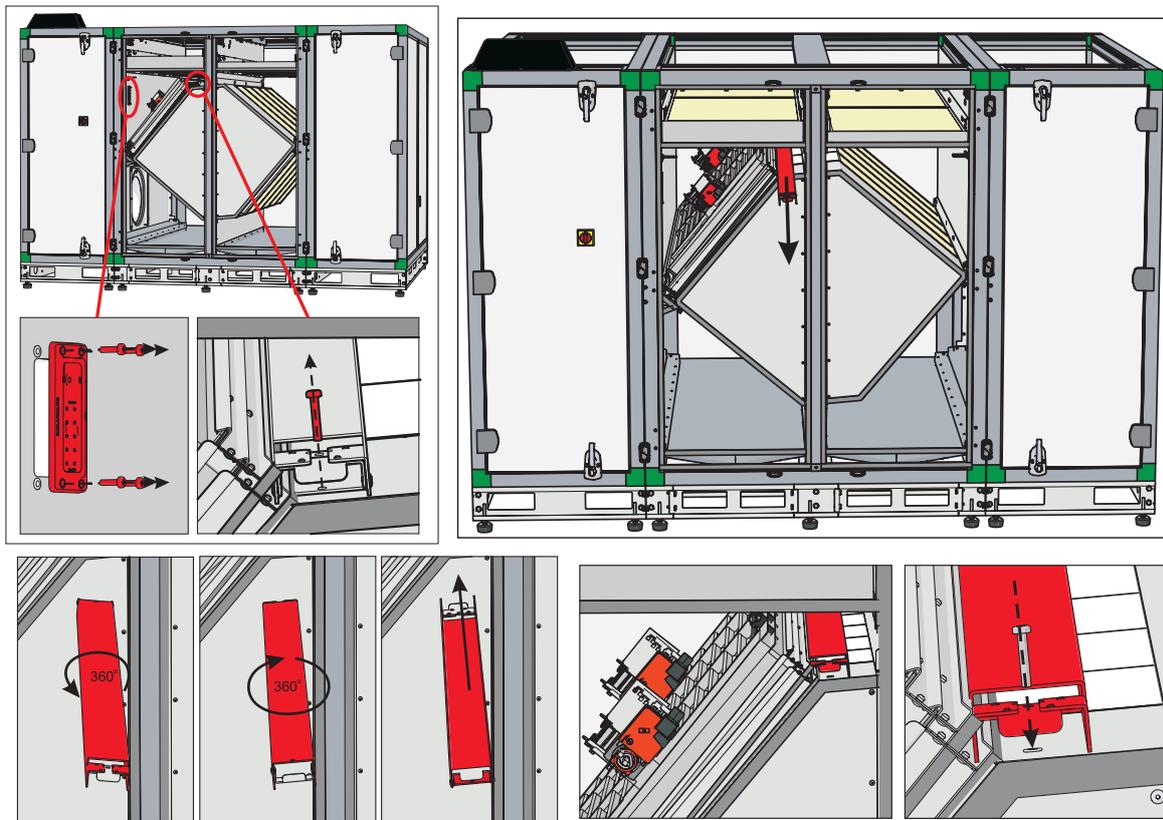
## 7.6.2. AIR DAMPER MAINTENANCE AMBERTAIR COMPACT 6-7 CX V

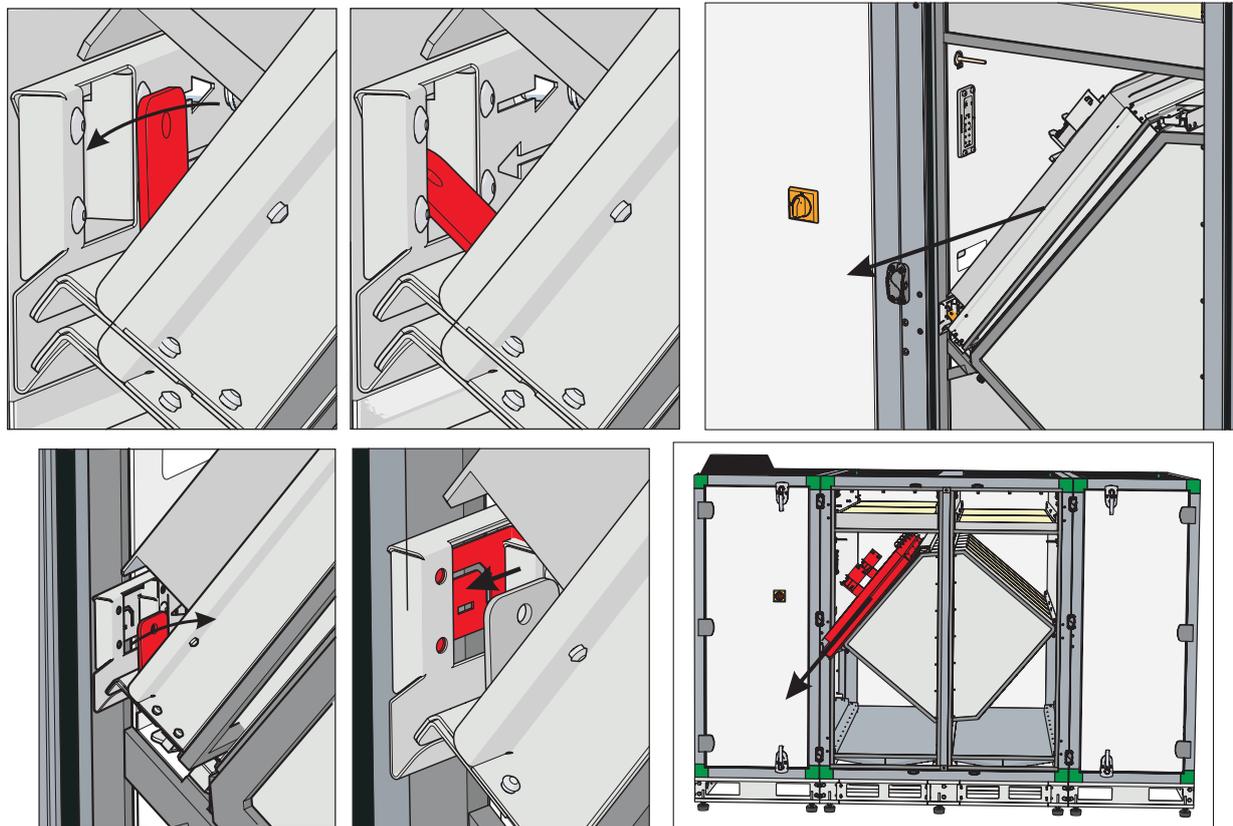
### Removal of the damper

- Disconnect the damper wires from the automatics. Unscrew the screws holding the sealing blocks (there are 2 sealing blocks, from both sides of the partition). Remove the wires together with the sealing blocks.
- Remove the filter above the damper (see Filters Maintenance).
- Unscrew the screw holding the damper clamping part. Remove the clamping part.
- Open the damper top and install the damper clamping part turned around and turned over (screw up the screw). Fold out the valve fixing part.
- Take the damper with both hands and pull it. It lifts slightly and is drawn out from the product as far as the slide allows. Fold back the damper fixing part 1. Fold down the slide fixing part 2.
- Carefully remove the damper. Unscrew the screw and remove the fixing part (if the heat exchangers should also be removed).

### Installation of the damper

- Screw up the damper clamping part 1 (shown on the figure). Shift the slide 2 and fold down the slide fixing part 3. The damper bottom rests onto the slide, and the damper top rests onto the damper clamping part. Carefully push out the damper.
- Fold back the slide fixing part 2. Push in the slide and the damper against stop. When pushing the slide, protect your fingers!!! The damper together with the slide moves down. Unscrew the screw and remove the damper clamping part. Turn around, turn over and screw up the damper clamping part. Put the wires with the sealing blocks through the hole in the partition. Screw up the wire sealing blocks (from both sides of the partition). Connect the wires to the automatics according to the connection diagram.





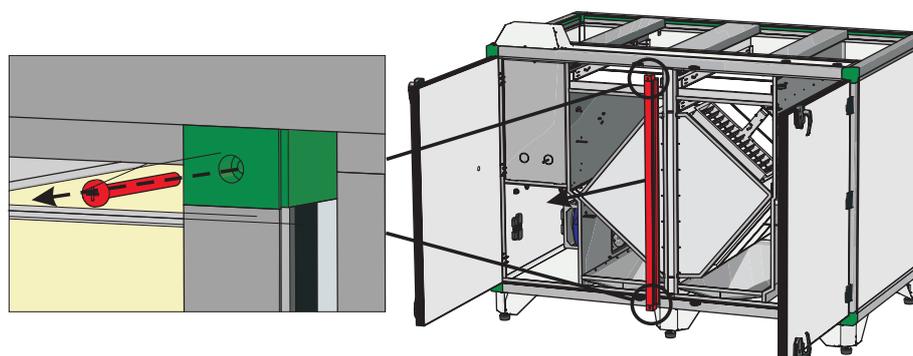
## 7.7. HEAT EXCHANGER MAINTENANCE

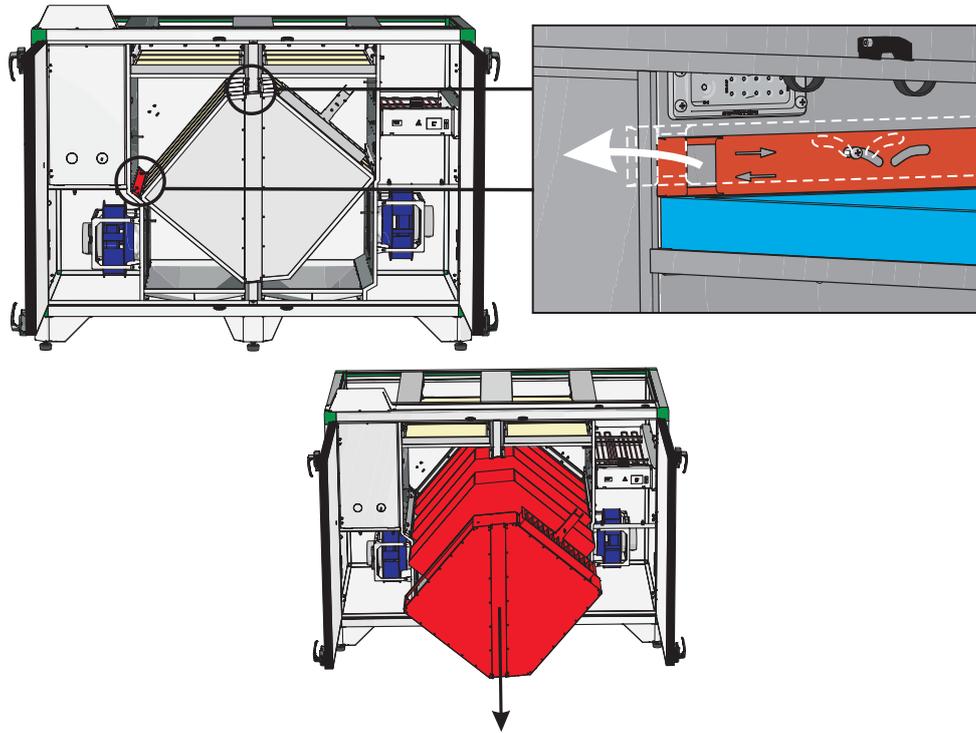
- Maintenance works may only be started after a full stop of the fans.
- Clean the heat exchanger once a year.
- Carefully remove the heat exchanger cartridge and immerse it in a container with soapy water (do not use soda). Then wash the cartridge with a weak hot water flow (excessively strong water flow may bend its plates). The heat exchanger may be installed into the unit only when it is completely dry.



The heat exchanger cartridge may not be removed after removing the bypass valves.

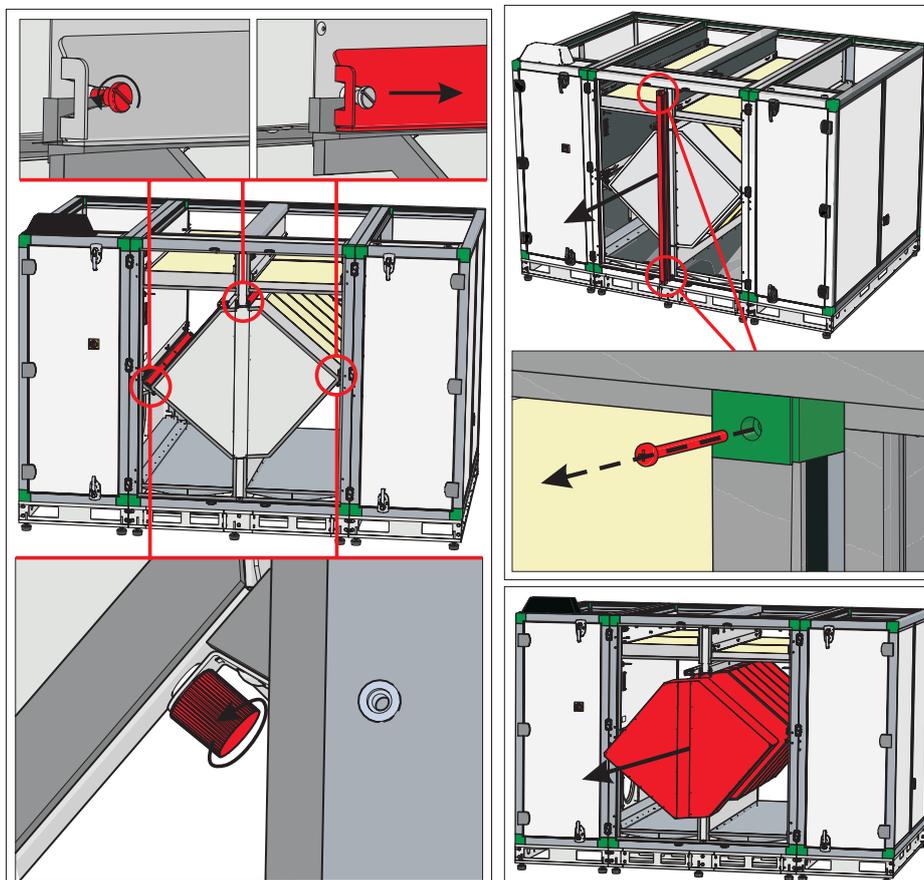
### 7.7.1. HEAT EXCHANGER MAINTENANCE AMBERAIR COMPACT 1-5 CX V





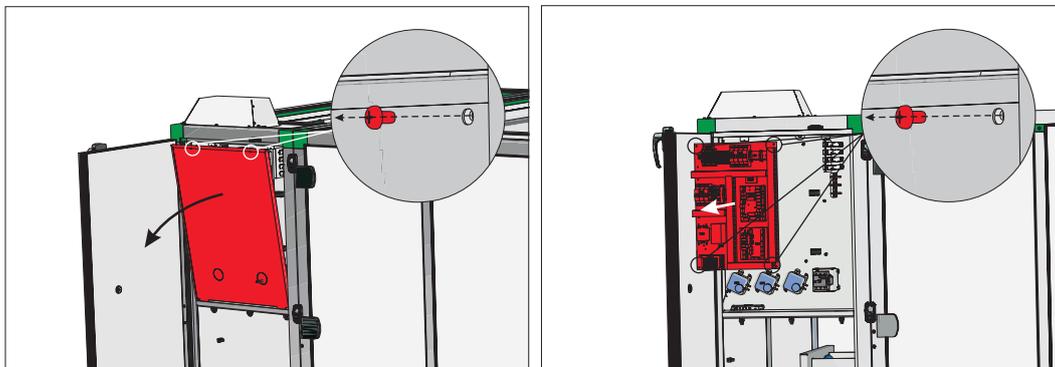
### 7.7.2. HEAT EXCHANGER MAINTENANCE AMBERAIR COMPACT 6-7 CX V

- Remove the by-pass damper only after removing from the product the upper damper (information provided above). Unscrew the screws and remove the front vertical beam. Unscrew the screws holding the bypass valve (with fingers).
- Unscrew the screws holding the heat exchangers and the parts sealing the by-pass damper (4 pcs). It can be done using a broad flat screwdriver or a 2-eurocent coin.
- Slightly lift (direction 1) the part sealing the heat exchangers and withdraw it from the partition (direction 2), and it will unbind from the screw situated father. Remove (direction 3) the part sealing the heat exchangers. Remove all the four parts sealing the heat exchangers in a similar manner. Then the by-pass damper and the heat exchangers can be removed from the product.
- The installation of the by-pass damper and the heat exchanger in the reverse order.

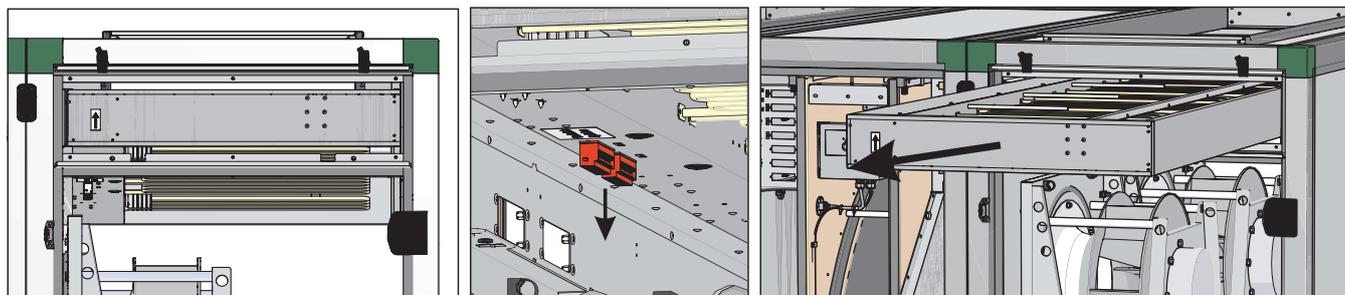


## 7.8. CONTROL BOARD MAINTENANCE

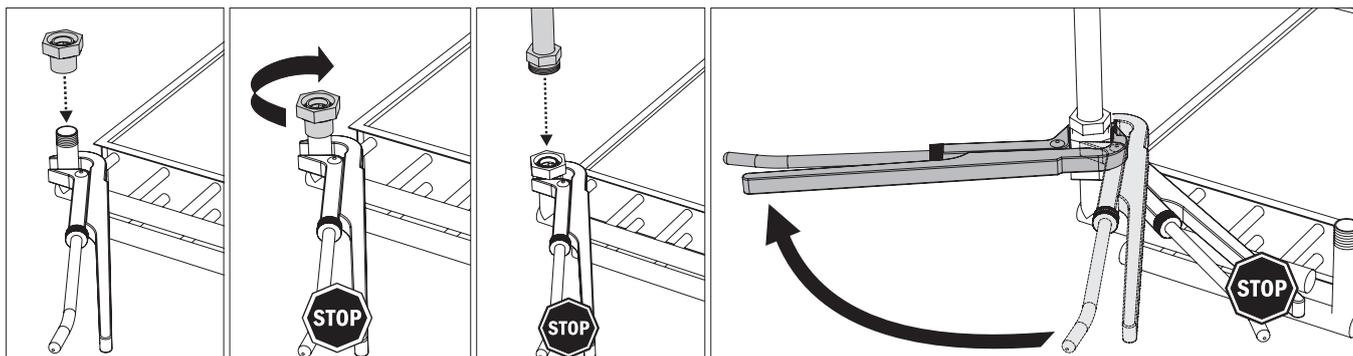
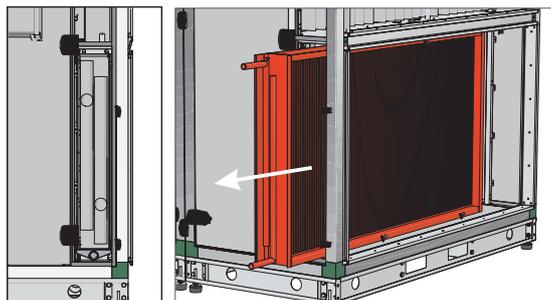
- Turn off the main circuit breaker of the product.
- Open the doors of the product.
- Unscrew the switchboard from the automatics section.
- Disconnect the connections from the controller. When using tools for disconnection of connectors take care in order not to withdraw the wires or not to brake connector.
- Remove the controller.
- To reassemble, repeat the actions in the reverse order. When connecting connectors back pay attention to the connectors' markings – they must match.



## 7.9. ELECTRIC, WATER HEATER AND COOLER MAINTENANCE



- Turn off the main switch of the product.
- Open the doors of the product.
- Disconnect the supply and return water pipelines.
- Remove the heater.



## 8. GENERAL RECOMMENDATIONS FOR THE MAINTENANCE OF VENTILATION SYSTEM

In order to ensure proper functioning of the system, maintenance requirements and its periods should be followed. Otherwise the warranty shall not be valid. Some recommendations are provided in the table below, but they are just advisory, as the need of system maintenance depends on the place of the device installation, the pollution of the atmosphere, the population, the working hours and etc.

COMPONENT	DURING START-UP	AT LEAST EVERY 6 MONTHS
Filters	Check the cleanliness of the filters	Replace filters every 3 to 4 months or according to the console indications.
		Make sure that the pressure relay/transmitter is clean and clean it if necessary.
Fans	Check the connections and the direction of rotation	Check for any damaged filter fastening parts.
		Check cleanliness. Clean, if necessary
		Make sure that the impellers are not unbalanced.
		Make sure that the impellers do not cause noise when rotated by hand.
		Make sure that the fastening screws are not loose and free of mechanical damage.
Rotor Heat exchanger	Check the direction of rotation	Check electrical connections and make sure that these are secured properly and are free of signs of corrosion.
		Check cleanliness and clean, if necessary
Plate Heat exchanger	Check the cleanliness of the heat exchanger	Check the tension of a belt
		Check cleanliness and clean, if necessary
Control panel	Check the connections	Check the connections
Electric heater	Check the connections	Clean off dust, and check the electrical components and connections of the heater
Water heater	Check the tightness	Check cleanliness and clean, if necessary
		Check the tightness and seal the connections, if necessary
Condensate discharge trap		Clean
Pressure sensor	Check electrical connections	Check the operation
Temperature sensor	Check electrical connections	Check the operation and tune up, if necessary
Air intake and discharge system	Check the connections	Clean
Air duct system	Check the tightness	Clean
Dampers, diffusers, grid	Check the tightness of connections	Clean
Switching unit (contactor)		Every 3 to 4 months, visually assess the functioning of the switching unit (contactor), i.e. make sure that its casing has no signs of melting or is not thermally damaged otherwise and does not produce any unusual sounds. All the contactors in the product or in its accessories must be checked.
Condensate discharge assembly	Check the condensate discharge assembly and make sure that water runs from the bath properly.	Clean

## 9. POSSIBLE FAULTS AND TROUBLESHOOTING

FAILURE	CAUSE	EXPLANATION / CORRECTIVE ACTIONS
Unit is not operating	No supply voltage	Check whether the device is connected to the power network
	Protection device is off or a current leakage relay is active (if installed by the installer)	Switch on only if the unit condition has been evaluated by a qualified electrician. If the system failed, the failure MUST BE rectified prior to switching it on.
Air supply heater or pre-heater is not operating or malfunctioning (if installed)	Too low air flow in air ducts activates automatic protection	Check if air filters are not clogged Check if fans are rotating
	Manual protection is activated	Possible heater or unit failure. MUST contact the servicing staff for failure detection and its elimination.
Too low air flow at rated fan speed	Clogged supply and/or extract air filter(s)	Filter replacement needed
Filters are clogged and no message is shown on the remote control	Wrong time in filter timers or their switch is broken, or its pressure is set improperly.	Shorten filter timer time till the message of clogged filters or replace the pressure switch of the filters, or set their proper pressure.

## 10. ECODESIGN DATA TABLE

Specific energy consumption (SEC) cold	[kWh/m <sup>2</sup> a]
Specific energy consumption (SEC) average	[kWh/m <sup>2</sup> a]
Specific energy consumption (SEC) warm	[kWh/m <sup>2</sup> a]
Declared typology	
Type of drive installed (fan)	
Type of heat recovery system	
Thermal efficiency of heat recovery	[%]
Maximum flow rate	[m <sup>3</sup> /h]
Electric power input of the fan drive at maximum flow rate	[W]
Sound power level (Lwa)	[dB(A)]
Reference flow	[m <sup>3</sup> /s ]
Reference pressure difference	[Pa]
SPI	[W/(m <sup>3</sup> /h)]
Control factor and control typology	
Declared maximum internal leakage rates	[%]
Declared maximum external leakage rates	[%]
Position and description of visual filter warning for RVU's	
AEC average	[kWh]
AEC cold	[kWh]
AEC warm	[kWh]
AHS Average	[kWh/a]
AHS Cold	[kWh/a]
AHS Warm	[kWh/a]
ErP Compliance	
Internet address for disassembly instructions	

## 11. DECLARATION OF CONFORMITY

Manufacturer

**SALDA, UAB**  
Ragainės g. 100  
LT-78109 Šiauliai, Lithuania  
Tel.: +370 41 540415  
www.salda.lt

Hereby confirms that the following products - Air handling units:

**AmberAir Compact\***

(where by "\*" indicates possible unit installation type and modification)

Provided it was delivered and installed in the facility in accordance with the included installation instructions, comply with all applicable requirements in the following directives:

**Machinery Directive 2006/42/EC**  
**EMC Directive 2014/30/EU**  
**Ecodesign Directive 2009/125/EC**

The following harmonized standards are applied in applicable parts:

LST EN ISO 12100:2011 - Safety of machinery - General principles for design - Risk assessment and risk reduction.  
LST EN 60204-1:2006 - Safety of machinery - Electrical equipment of machines - Part 1: General requirements.  
LST EN 60335-1:2012 - Household and similar electrical appliances. Safety. Part 1: General requirements.  
LST EN 60529:1999 - Degrees of protection provided by enclosures (IP code).  
LST EN 61000-6-2:2005 - Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments.  
LST EN 61000-6-3:2007 - Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments.

Should any alterations be made in the products, this declaration will no longer apply.

**Notified body:** VšĮ Technikos priežiūros tarnyba, Naugarduko g. 41, LT – 03227 Vilnius, Lithuania, identification number 1399.

**Quality:** Salda UAB activities are in line with the international quality management system standard **ISO 9001:2015**.

Date 2019-02-01



Giedrius Taujenis  
Director product development

## 12. WARRANTY

1. All equipment manufactured in our factory is checked in operating conditions and tested before delivery. Test protocol is supplied together with the unit. The equipment is shipped in good working order and condition to the direct client. The unit is warranted for the period of two years from the invoice date.
2. If equipment is found to have been damaged during transportation, a claim should be made against carrier, as we assume no responsibility for such damage.
3. This warranty does not apply:
  - 3.1. when transportation, storage, installation and maintenance instructions of the unit are violated;
  - 3.2. when the equipment is improperly maintained, mounted - inadequate maintenance;
  - 3.3. when the equipment without our knowledge and permission has been upgraded or unskilled repairs were made;
  - 3.4. when the unit was used not for its original purpose.
  - 3.5. Company SALDA UAB is not responsible for potential loss of property or personal injury in cases where AHU is manufactured without a control system and the control system will be installed by the client or third parties. The manufacturer's warranty does not cover devices that will be damaged by installing the control system.
4. This warranty does not apply at these malfunction cases:
  - 4.1. mechanical damage;
  - 4.2. damage caused by entering outside objects, materials, liquids;
  - 4.3. damage caused by natural disaster, accident (voltage change in the electricity network, lightning, etc..).
5. The company assumes no liability for its products either directly or indirectly damage, if the damage is caused by failure to comply with installation and mounting regulations, deliberate or careless users or third-party behavior.

These conditions are readily discernable when the equipment is returned to our factory for inspection.

If the direct client determines that equipment is found to be faulty, or a breakdown occurred, he should inform the manufacturer within five working days and deliver the equipment to manufacturer. Delivery costs should be covered by customer.



**Manufacturer reserves the right to change this technical passport any time without prior notice, if some typographic errors or inaccurate information is found, as well as after improving the apps and/or the devices. Such changes will be included in the new issues of the technical passport. All illustrations are just for information and thus may differ from the original device.**

### 12.1. LIMITED WARRANTY COUPON

Warranty term

**24 months\***

I received complete package and technical manual of the product ready for usage. I have read warranty terms and conditions and agree with them:

.....  
Customer's signature

\*refer to WARRANTY CONDITIONS

*Dear User, we appreciate your choice and do hereby guarantee that all ventilation equipment manufactured by our Company is inspected and thoroughly tested. An operational and high-quality product is sold to the direct buyer and shipped from the territory of the factory. It is provided with a 24-month warranty since invoice issue date.*

*Your opinion is important to us, thus we always look forward to hearing your comments, feedback, or suggestions regarding technical and operational characteristics of the Products.*

*In order to avoid any misunderstandings, please read the instructions for installation and operation of the product as well as other technical documents of the product carefully. The number of the Limited Warranty Coupon and serial number of the product specified on the silver identification sticker attached to the housing must match.*

*The Limited Warranty Coupon shall be valid provided that the seller's stamps and records are clear. It is prohibited to change, delete, or rewrite the data specified on it in any manner – such a coupon shall be invalid.*

*With this Limited Warranty Coupon the manufacturer confirms one's obligations to implement the imperative requirements established by effective laws on protection of consumer rights in the event of identification of any defects of the products.*

*The manufacturer reserves the right to refuse provision of free warranty servicing in cases when the warranty conditions listed below are disregarded.*





# UNIT'S MAINTENANCE TABLE

Product name*		
LOT number*		
Instalation	Interval	Date
Fan cleaning	Once a year**	_____
Heat exchanger cleaning	Once a year**	_____
		_____
		_____
		_____
Filter replacement	Every 3-4 months**	_____
		_____
		_____
		_____
		_____

\* - Look at the product label.  
\*\* - At least.

**NOTE.** The purchaser is required to fill in the "Product maintenance table".

