



RIRS 400-700 V EKO 3.0

EN MOUNTING AND INSTALLATION INSTRUCTION



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2. SYMBOLS AND MARKING

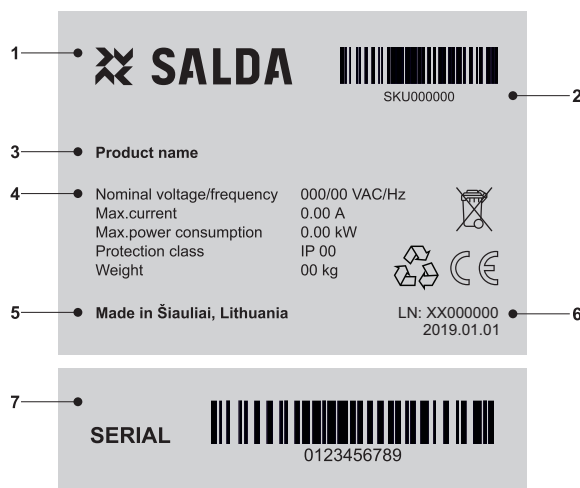


Figure 2.1. Technical label

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

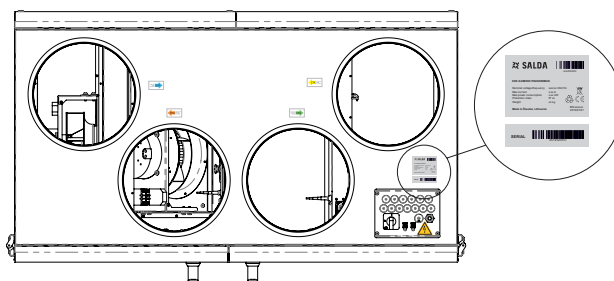


Figure 2.2. Technical label place



Figure 2.3. Indication for duct connection.

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

3. SAFETY INSTRUCTIONS AND PRECAUTIONS

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.



Warning – pay attention



Additional information

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.

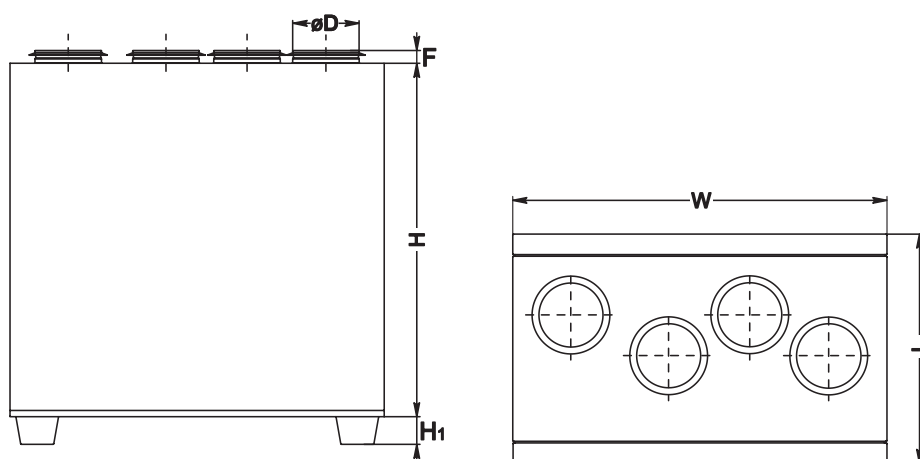


Danger: Fumes

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).



4. DIMENSIONS AND WEIGHT



	L	W	H	H1	ØD	F
RIRS V EKO 3.0	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
400	560	900	850	40	160	30,7
700	655	1100	980	40	250	41

* - depend on the unit.

RIRS EKO 3.0

m	400 VER	400 VEL	400 VWR	400 VWL	700 VER	700 VEL	700 VWR	700 VWL
[kg]	79,5	79,5	79,0	79,0	108,0	108,0	96	96

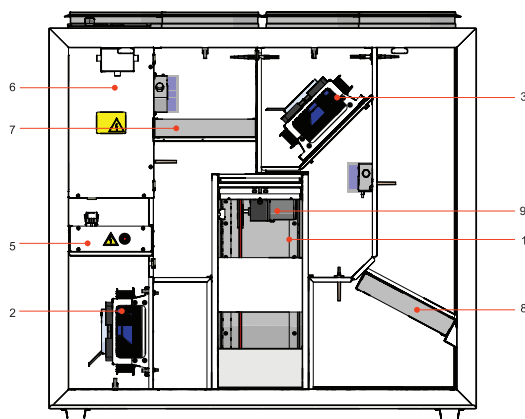
5. ELECTRICAL DATA

RIRS EKO 3.0		400 VEL		400 VER	400 VWL	400 VWR
Heater	phase/voltage	[50 Hz/VAC]		~1	~1	AVS 200
	power consumption	[kW]		1,2	1,2	AVS 200

Fans	exhaust	phase/voltage	[50 Hz/VAC]	~1	~1	~1	~1
		power/current	[kW/A]	0,085 / 0,75	0,085 / 0,75	0,085 / 0,75	0,085 / 0,75
		speed	[min ⁻¹]	3200	3200	3200	3200
	supply	power/current	[kW/A]	0,085 / 0,75	0,085 / 0,75	0,085 / 0,75	0,085 / 0,75
		speed	[min ⁻¹]	3200	3200	3200	3200
		control input	[VDC]	0-10	0-10	0-10	0-10
		protection class		IP-54	IP-54	IP-54	IP-54
Total power consumption		power/current	[kW/A]	1,38 / 5,94	1,38 / 5,94	0,18 / 1,60	0,18 / 1,60
Automatic control integrated				+	+	+	+
Thermal efficiency				75%	75%	75%	75%
Insulation of walls			[mm]	50	50	50	50
Cross-section of the power supply cable			[mm²]	3x1,5	3x1,5	3x1,5	3x1,5
Circuit breaker*			Poles	1	1	1	1
			I [A]	B10	B10	C2	C2
Filter class and dimensions		exhaust	[mm]	450x170x46	450x170x46	450x170x46	450x170x46
		supply	[mm]	450x170x46	450x170x46	450x170x46	450x170x46

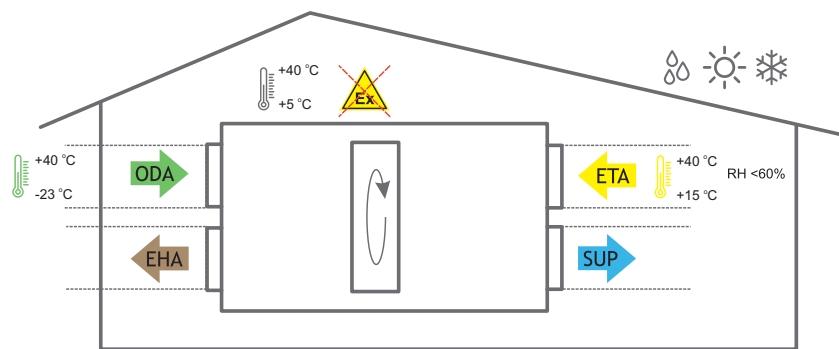
RIRS EKO 3.0			700 VEL	700 VER	700 VWL	700 VWR
Heater		phase/voltage	[50 Hz/VAC]	~1	~1	
		power consumption	[kW]	2.0	2.0	AVS 250 AVS 250
Fans	exhaust	phase/voltage	[50 Hz/VAC]	~1	~1	~1 ~1
		power/current	[kW/A]	0,222 / 1,8	0,222 / 1,8	0,217/1,88 0,217/1,88
		speed	[min ⁻¹]	3380	3380	3380 3380
	supply	power/current	[kW/A]	0,216 / 1,71	0,216 / 1,71	0,214/1,76 0,214/1,76
		speed	[min ⁻¹]	3380	3380	3380 3380
		control input	[VDC]	0-10	0-10	0-10 0-10
		protection class		IP-44	IP-44	IP-44 IP-44
	Total power consumption	power/current	[kW/A]	2,44 / 12,31	2,44 / 12,31	0,44 / 3,74 0,44 / 3,74
Automatic control integrated			+	+	+	+
Thermal efficiency			75%	75%	75%	75%
Insulation of walls			[mm]	50	50	50
Cross-section of the power supply cable			[mm²]	3x1,5	3x1,5	3x1,5
Circuit breaker*			Poles	1	1	1
			I [A]	B13	B13	C4
Filter class and dimensions	exhaust	[mm]	545x260x46	545x260x46	545x260x46	545x260x46
	supply	[mm]	545x260x46	545x260x46	545x260x46	545x260x46

6. CONSTRUCTION

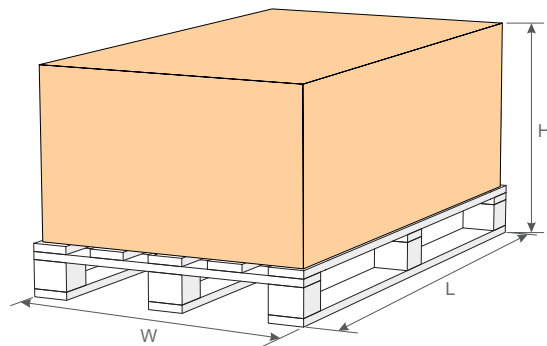


1 - Plate/rotor heat exchanger; 2 - Supply fan; 3 - Exhaust fan; 4 - Control board; 5 - Electrical/water heater/pre-heater; 6 - Extract air filters (panel/pocket); 7 - Supply air filter (panel/pocket); 8 - Rotor engine.

7. OPERATING CONDITIONS



8. PACKAGE



	H	W	L	QUANTITY ON THE PALLET
RIRS V EKO 3.0	[mm]	[mm]	[mm]	[units]
400	1055	785	1270	1
700	1210	795	1240	1

9. TRANSPORTATION

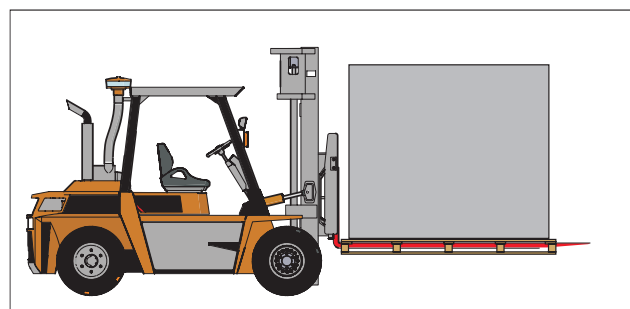
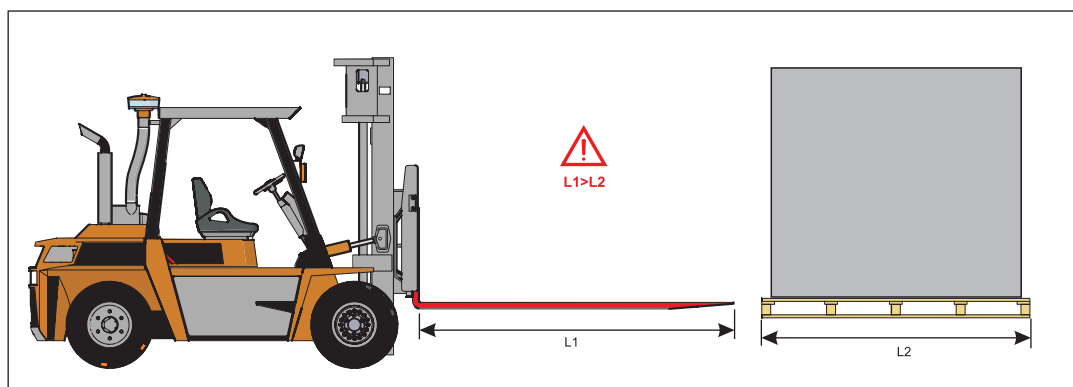


Figure. 9.1.

Lifting with forklift.



Only a product placed on a pallet may be lifted in order to prevent damage to the casing.

10. UNPACKING



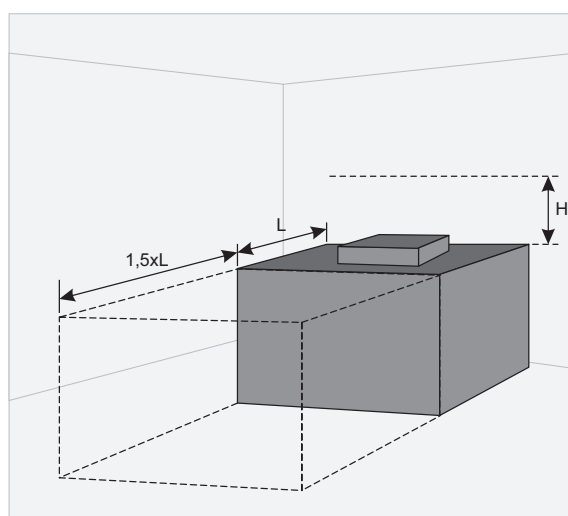
Accessories may be packed together with the product. Prior to transporting the unit, first unpack the accessories.

- Remove the film from the unit.
- Remove the bracing packaging tape which keeps the protective profiles.
- Remove the protective profiles.
- After unpacking the unit, examine it to make sure that it has not been damaged during transportation. The installation of damaged units is prohibited!
- Verify that all ordered equipment are delivered before starting the installation. Any deviation from the ordered equipment must be reported to the supplier of products.

11. STANDART PACKAGE OF COMPONENTS

	RIRS EKO 3.0							
	400 VER	400 VEL	400 VWR	400 VWL	700 VER	700 VEL	700 VWR	700 VWL
KEY 291103	1	1	1	1	1	1	1	1

12. PLACE REQUIREMENTS



Min. distance to open the door - $1,5xL$; Min. distance to open control box door - $H > 400$ mm.

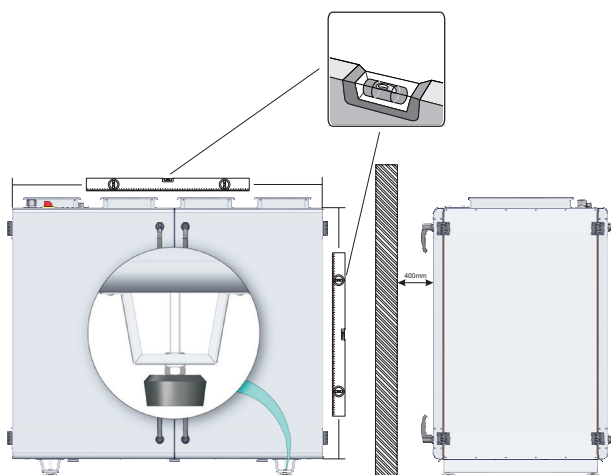
13. MOUNTING



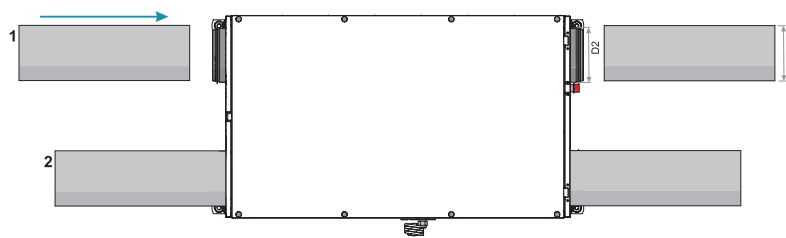
The protective film is intended to protect the unit during transportation. It is recommended to remove the film because otherwise oxidation signs may occur.



Before every heating season the condensate tube shall be filled with water as indicated during the first startup!

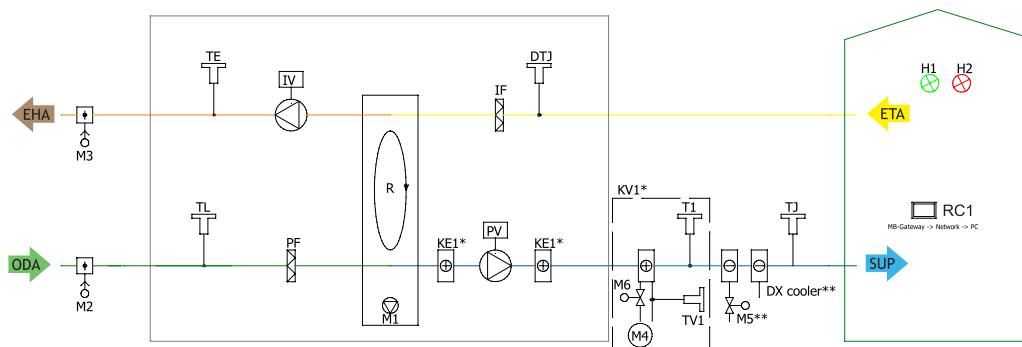


14.CONNECTION OF THE AIR DUCT



D2 dimensions depend on unit.

15.CONNECTION DIAGRAM



* KE1 - used in electrical version. In horizontal version heater is positioned before supply fan; * KV1 - used in water version. For more information please, check the manual. ** Possible to control.



Figure. 15.1.

Indication for duct connection.

Figure. 15.2.

Ventilated premises

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

LIST OF COMPONENTS

C	Plate heat exchanger	A1	Fire alarm damper actuator I
PV	Supply air fan	A2	Fire alarm damper actuator II
IF	Extract air filter	TJ	Supply air temperature sensor
PF	Supply air filter	TL	Outdoor air temperature sensor
IV	Exhaust fan	TE	Exhaust air temperature sensor
KE1	Electric heater	DTJ	Extract air temperature and RH sensor
PE1	Electric pre-heater	T2	Cooler changeover thermostat
KV2	Water pre-heater	TV2	Water preheater temperature sensor
KV3	Water cooler	TV3	Water cooler temperature sensor
DX	DX cooler	U3	PV pressure transmitter
M1	By-pass damper	U4	IV pressure transmitter
M2	Outdoor air damper actuator	CO₂	CO ₂ sensor*
M3	Exhaust air damper actuator	RH	RH sensor*
M5	Water cooler valve motor	PC	Computer
M12	Water pre-heater valve actuator	RC1	Stouch or SA-Control remote control panel
M14	Water cooler circulation pump	RC2	Stouch, Flex or SA-Control remote control panel
M15	DX cooler valve actuator	MB-Gateway	Network module
M16	Water pre-heater circulation pump	NET	Network
R	Rotor heat exchanger		

POSSIBLE PCB INPUTS/OUTPUTS

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

* Component/possibility to connect it depends on model. For more information please, check the manual

16.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 decal.
- The unit's voltage, power and other technical parameters are provided in the unit's technical decal (on the unit casing). The unit must be connected to the voltage plug socket of the grounded power network in compliance with the effective requirements.
- 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, the power network plug socket must be accessible at any time and disconnection from the power network is performed through the two-pole circuit breaker (by disconnecting phase pole and neutral).
- 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 nonconformance with the provided instructions.

17.START-UP RECOMMENDATIONS

17.1. RECOMMENDATIONS BEFORE THE START OF THE UNIT (BEFORE THE FINAL USER)

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 terminal blocks,
- cable connection to 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 are proper.

17.2. 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.

18.MAINTENANCE

Unplug unit from mains first and wait for 2 minutes (till fans fully stop) before opening the covers.

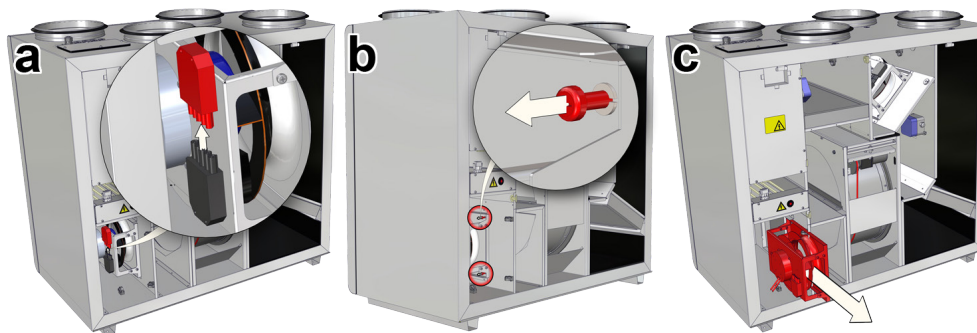
18.1. FILTERS

Dirt increases air resistance in the filter, therefore less air is supplied into the premises.

- It is advisable to change the filters every 3-4 months, or in accordance with the readings of filter contamination sensor. (Sensor PS 600 is integrated in the unit).

18.2. FAN

- Maintenance and repair should only be performed by experienced and trained staff.
- The fan should be inspected and cleaned if needed at least once a year.
- Be sure the fan is disconnected from power source before performing any maintenance or repair.
- Proceed to maintenance and repair after any rotation in the fan stopped.
- Observe staff safety regulations during maintenance and repair.
- The motor is of heavy duty ball bearing construction. The motor is completely sealed and requires no lubrication for the life of the motor.
- Detach fan from the unit (1-2-3).
- 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 impeller and inside housing with mild detergent, water and damp, soft cloth.
- Do not use high pressure cleaner, abrasives, sharp instruments or caustic solvents that may scratch or damage housing and impeller.
- Do not plunge impeller into any fluid.
- Make sure, that impeller's balance weights are not moved.
- Make sure the impeller is not hindered.
- Mount the fan back into the unit. Replace fan guards and connect the fan to power supply source (3-2-1).
- If after maintenance or repair the fan does not start either thermal protection contact activates automatically, contact the manufacturer.
- During the maintenance do not hold the fan by the impeller, it might cause disbalance of impeller or damage it. Hold the fan by the casing.



18.3. HEAT EXCHANGER

Be sure the unit is disconnected from power source before performing any maintenance or repair.

Proceed to maintenance and repair after any rotation in the fan stopped.

Clean it once a year.

The maintenance works for the rotor heat exchanger shall be carried out once a year.

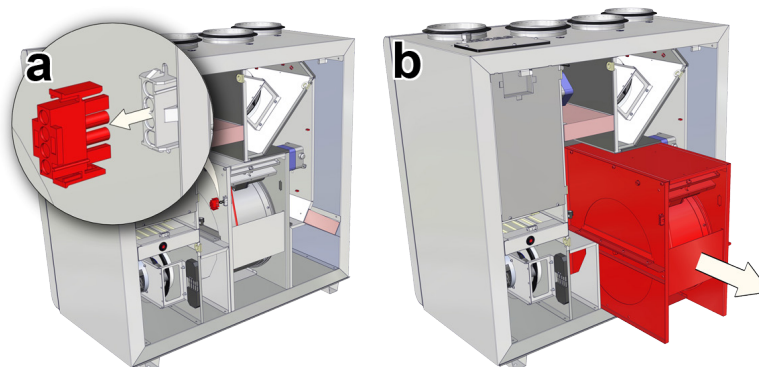
Ensure that the gaps of the heat exchanger are not contaminated, the seal brushes are not worn, the belt drive is not worn and the clamp assemblies are tight.

The rotor heat exchanger can be easily removed from the unit by disconnecting the power supply cable of the heat exchanger motor (Pic. 1-2).

The heat exchanger is cleaned using the solution of warm water and non-corrosive toward aluminum alkaline agent or the air stream. It is not recommended to apply direct stream of liquid as it can harm the heat exchanger.

It is **NECESSARY** to protect the motor of the heat exchanger from the moisture and liquid while cleaning the heat exchanger.

CAUTION! It is forbidden to use the heat exchanger if the filters are removed!

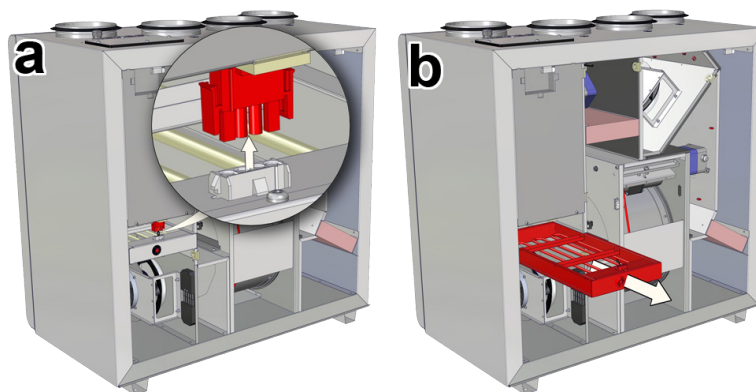


18.4. ELECTRICAL HEATER

Electrical heater does not need to be serviced additionally. It is compulsory to change filters as described above.

Heaters have 2 thermal protections: automatically self-resetting, which activates at +50°C and the manually restored, which activates at +100°C. After the activation of the manually restored protection, the unit must be disconnected from the power supply. Wait until the heating elements cool down and the fans stop rotating. After identifying and removing the reason of failure, to start the unit, press the "reset" button. **The failure can be identified only by a qualified professional.**

It's possible to take out electrical heater, if there is a need. Unplug the X6 connector from the automation box and pull the heater together with the attached wiring harnesses.



19.AUTOMATIC CONTROL

Supply air temperature can be adjusted according to the temperature measured by the supply or extracted air temperature sensor and the temperature which is set by the user on the remote control panel. User selected supply air temperature is maintained by the plate (or rotor) heat exchanger and additional electric and/or water heater (optional). When the supply air temperature is under the set temperature, by-pass valve is closed (fresh ambient air passes through the plate heat exchanger). If the device has the rotor heat exchanger, then rotation starts. In case the set temperature is not reached, the heater (electric or water) is switched on and operates (heater valve is opened/closed if water heater is used) until the set temperature is reached. When supply air temperature exceeds the set temperature, the heater is switched off in the first place. If the temperature is still greater than the set temperature, the by-pass valve is opened or rotation is stopped if the device has rotor heat exchanger.

In the remote controller, temperatures (the set and the measured) are displayed as degrees Celsius (°C).

Room air temperature can be adjusted not only according to the supplied air temperature sensor, but also according to the extracted air sensor (see FLEX panel description II.6.5.3 for details on selecting this feature).

When control algorithm of the extracted air sensor is selected, then supply air temperature is adjusted based on estimated additional received heat (heat emitted by the sun, electric heaters, etc.). Thus the energy for excessive heating of the supply air is saved. The room is heated based on the estimated room temperature to provide the desired room temperature microclimate.

Supply air electric heater (resistance heating elements if the electric heater is used) is controlled by the ESKM controller using the PWM signal. If the water supply air heater is used, then the actuator is controlled using RG1 controller with analogous 0-10V DC signal.

“BOOST” feature

Fans are started at maximum speed and “BOOST” is displayed in the remote control panel (FLEX). “BOOST” feature is inactive if the heat exchanger protection is triggered. When triggering signal for this function disappears, the desired operation period for this feature can be selected in the control panel (FLEX) (see FLEX panel description II.6.6 for details on selecting this feature).

There is boost time setting in minutes (factory setting: Off) in the user menu item Add.Func. For example, if 5min is set, then in case the signal is lost for boost controlled with the external control signal, the boost will be active for 5 minutes. For boost controlled with the fast button (FLEX control panel), boost is activated for 5 minutes if the button is pressed once, and boost will be deactivated immediately if the button is pressed second time. Maximum setting is 255min.

START/STOP feature

The operation of the recuperator is started or stopped using the START/STOP feature. “STOP” is displayed at the remote control panel (FLEX). In START mode, the recuperator operates based on the latest settings of the panel.

FanFail and FanRun features

It provides option to connect the external fan state indication such as the indication lamp which would visualize the state of the device.

Continuous control of the heater

The new feature is installed: continuous keeping of the supply air temperature (accuracy up to 0,5 °C) by using two-way thyristor module – ESKM... (these modules are installed only in heaters connected to the three-phase mains).

Cooling by ventilation:

Two types of cooling exist: using halocarbon or water cooler. Cooling is based on the algorithm of the PI regulator and is activated when there is need for cooling. Conditions for activation and deactivation of halocarbon cooler can be set and changed using the menu of the FLEX remote control panel (see section II.6.4. of the FLEX description). Actuator position of the water cooler is set accordingly to the PI regulator in the range between 0% and 100%. The halocarbon cooler is switched on when PI regulator value exceeds the value set in the menu (see section II.6.4.2. of the FLEX description). The halocarbon cooler is switched off when PI regulator value is less than the set value (see section II.6.4.3. of the FLEX description).

Ventilation:

Three types of ventilation are possible (see section II.6.3. of the FLEX description): based on the supply air (Supply), based on the extracted air (Room) and automatic (ByOutdoor). When operation is based on the supply air, the supply air temperature is maintained as set on the PI regulator. When operation is based on the extracted air, the set extracted air temperature is maintained to keep the supplied air temperature between the minimum and the maximum set temperatures (see sections II.6.3.2. and II.6.3.3. of the FLEX description) based on the algorithm of the PI regulator. When operation is automatic (ByOutdoor), both mentioned cooling types are used (supply and extracted air): cooling based on the supply air is used when ambient air temperature is less than the set temperature (see section II.6.3.3. of the FLEX description). This is so called “winter mode”. Cooling based on the extracted air is used when ambient air temperature is greater than the set temperature (see section II.6.3.3. of the FLEX description). This is so called “summer mode”.

Using the remote control panel, the user can adjust fan motor speed as three steps (values of steps are speed set in the window of the remote control panel, see sections II.6.7 and II.6.8 of the FLEX description). Analogous 0–10 VDC control signal for motors is generated by the controller RG1. Speed of the supply and extracted air fans can be adjusted synchronously or asynchronously (see sections II.6.7 and II.6.8 of the FLEX description). If water supply air heater is used and after HVAC unit is switched on, fans are switched on after 20 seconds. During this period, water valve actuator is being opened to allow water heater to reach the optimum temperature.

Two pressure converters should be used to control both fans while maintaining constant pressure at the system.

Also, CO₂ (extract air) converter can be connected (if no pressure converters are connected).

19.1. SYSTEM PROTECTION

a) Several steps of protection are provided for protection of the water heater.

First: if during cold periods the temperature of the outward water flow drops below +10 °C (as measured by the TV sensor), then the water heater valve actuator M6 is forced to open regardless the need for heat.

Second: if the water temperature does not reach +10 °C after fully opening the hater valve and the air temperature after heating drops below +7/+10 °C (as set on the protection thermostat T1), then the air supply device is stopped. To protect water heater from freezing (when the unit is stopped), tow outputs operate: circulatory pump M4 and water heater valve actuator M6. Supply air valve actuator with the return spring is (should be) used for the protection of the water heater. During voltage loss, supply air valve is closed immediately. It does not automatically reset and should be reset (restarted) from the control panel.

b) When the device has the electric heater, then two levels of overheat protection are used. Two types of the capillary thermal protections are used for the overheat protection of the electrical heater: manual and automatic. Automatic thermal protection is activated when air temperature exceeds +50 °C and manual protection is activated when air temperature exceeds +100 °C. Automatic thermal protection +50 °C is used to disconnect the electric heater if the temperature of the heating elements exceeds +50 °C which could cause consumption of the oxygen.

Capillary thermal protections are different only with respect to construction to allow automatic thermal protection to reset to the operation state. Manual thermal protection does not reset and should be reset to the operation state by pressing RESET button on the service cover of the heater. When manual thermal protection is triggered, fans operate in maximum capacity until the manual heater protection is reset (by pressing the reset button) and the device is restarted. When heater fault is registered, manual heater protection can be restored only after estimation of the fault cause and only if it is safe to do so regardless of the temperature setting on the control panel. Also it should be inspected if other automation and installation elements are not damaged.

Antifreeze protection of the differential pressure heat exchanger (differential pressure relay PS600) is used only in more efficient devices (from 1200 m3/h).

Triggering of the automatic thermal protection mostly occur due to low fan speed (faulty fan, stuck/faulty air inlet valve/actuator).

19.2. USING THE UNIT IN BMS NETWORK

The recuperator can be connected to the BMS network by using the ModBus protocol.

The device can be controlled using FLEX panel and BMS network simultaneously: the device will work based on the latest changes of settings. As set in the factory, the device will operate (if no faults are present) based on the latest panel settings in case the panel or BMS network (or even both) is disconnected. This setting can be changed, please see Flex_meniu_montuotojas section 14 "Misc" for details.

ModBus type: RTU

RS485_2 port is used for connecting the ModBus (Fig. 3);

Settings (see section II.6.2. of the FLEX installer description):

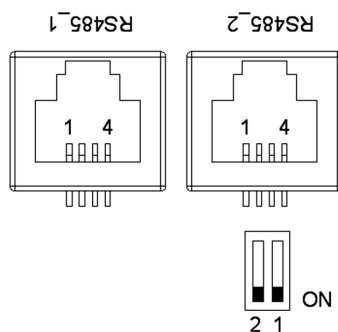


Figure. 19.1.

RS485_1 and RS485_2. RS485_1: remote control panel socked; RS485_2: ModBus port

Stouch control panel must be connected to RS485_2 (ModBus) connection

RJ10 socket contacts reference:

- 1 – COM
- 2 – A
- 3 – B
- 4 – +24V

Microswitches 1 and 2 (Fig. 4) are mounted in the control board for selecting of resistances during network adjustment. Adjustment depends on the connection method. If the ring type connection is used, up to 30 units could be connected. If other method is used, approximately 7 units could be connected. The resistance between the first and the last unit should be 120...150 Ω.

Resistance Ω	Switch 1	Switch 2
180	ON	ON
470	ON	OFF
330	OFF	ON

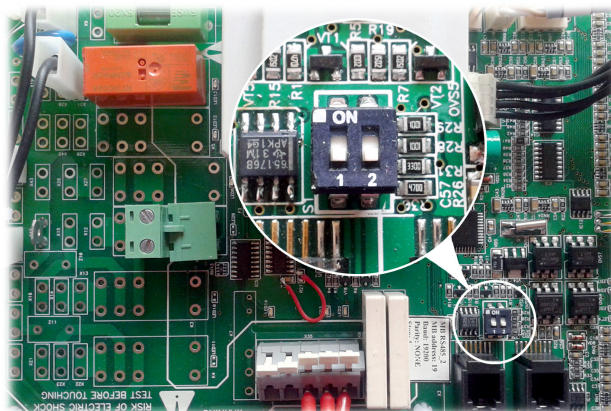


Figure 19.2.2. Microswitches 1 and 2

19.3. MODBUS ADRESSES

Nr.	Name	ModBus func.	Data address	Quantity of data	Description	Values
1	Antifrost	01h_Read_Coils	0	1	Plate heat exchanger frost protection function	1 - active , 0 - passive
2	Fire	01h_Read_Coils	1	1	Fire alarm	1 - active , 0 - passive
3	Filter	01h_Read_Coils	2	1	Dirty filter alarm	1 - active , 0 - passive
4	Fan	01h_Read_Coils	3	1	Fans alarm	1 - active , 0 - passive
5	LowPower	01h_Read_Coils	5	1	Low voltage	1 - active , 0 - passive
6	Textract	01h_Read_Coils	6	1	DTJ(100) temperature sensor alarm	1 - active , 0 - passive
7	Texhaust	01h_Read_Coils	7	1	Exhaust air temperature sensor alarm	1 - active , 0 - passive
8	Tlimit	01h_Read_Coils	8	1	Supply air temperature sensor alarm	1 - active , 0 - passive
9	RH	01h_Read_Coils	9	1	TJ(100) humidity sensor alarm (controller works in determining the moisture content of 70%)	1 - active , 0 - passive
10	ReturnWater	01h_Read_Coils	10	1	Return water temperature sensor alarm	1 - active , 0 - passive
11	ToutDoor	01h_Read_Coils	11	1	Outside air temperature sensor alarm (controller continues to work in determining ToutDoor<0C)	1 - active , 0 - passive
12	MotorActive	01h_Read_Coils	13	1	Fans ON	1 - active , 0 - passive
13	InDumpper	04h_Read_Input	14	1	Outside air damper actuator	0-90
14	Preheater	01h_Read_Coils	12	1	Preheater indication	1 - active , 0 - passive
15	Heater	01h_Read_Coils	14	1	Heater indication	1 - active , 0 - passive
16	Speed	06h_Write_Holding_Register	0	1	Fans speed settings	0, 1, 2, 3
17	TsetPoint	06h_Write_Holding_Register	1	1	Supply air temperature set	0-30
18	RH_value	04h_Read_Input	13	1	DTJ(100) humidity sensor value	0-99
19	Motor1	04h_Read_Input	15	1	Motor1 fan speed value	0-3
20	Motor2	04h_Read_Input	16	1	Motor2 fan speed value	0-3
Temperature sensor value real format (-3.3E38 - 3.3E38) example: 0h->0C, 7FFFh->3276.7C, 8000h->3276.8, FFFFh->-0.1C						
21	Tlimit	04h_Read_Input	0	1	Supply air temperature value	Hex: E0
22	Texhaust	04h_Read_Input	1	1	DTJ(100) temperature sensor value	Hex: E0
23	Textract	04h_Read_Input	2	1	Exhaust air temperature sensor value	Hex: E0

24	ToutDoor	04h_Read_Input	3	1	Outside air temperature sensor value	Hex: FFEC
25	Twater	04h_Read_Input	12	1	Return water temperature sensor value	Hex: FFEC

19.4. ELECTRICAL CONNECTION OF THE HVAC UNIT

Electrical connection can only be implemented by the qualified electrician in accordance with the applicable international and national electrical safety requirements and requirements for installation of electrical devices.

Use only power source which meets the requirements specified on the device label.

Power supply cable should be selected based on the electrical specification of the device. If the device power supply line is far from the unit, the distance and voltage drop should be considered.

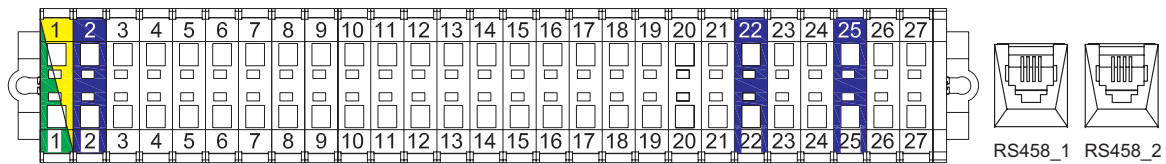
Device must be earthed.

Install the control panel at the designated place.

Install the supplied connection cable(FLEX controller) between the control panel and the HVAC unit. It is recommended to install the control panel separately from the power cables.

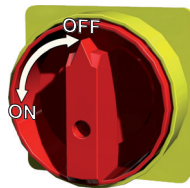
Note: If cable is used together with other power cables, shielded control panel cable with earthed shield should be used.

Connect the plug (RJ10 type) to the RS485-1 socket of the unit. Connect the other end to the control panel.



NOTE: The remote control panel can be connected and (or) disconnected only after disconnecting the power supply for the HVAC unit.

Switch on the mains voltage, switch on the blade switch Q, see **Fig. 5** (actual appearance of the blade switch can be different from the given photo based on the model of the product).



Select the desired fan rotation speed and the supply air temperature using the remote controller.

19.5. SYSTEM ADJUSTMENT GUIDELINES

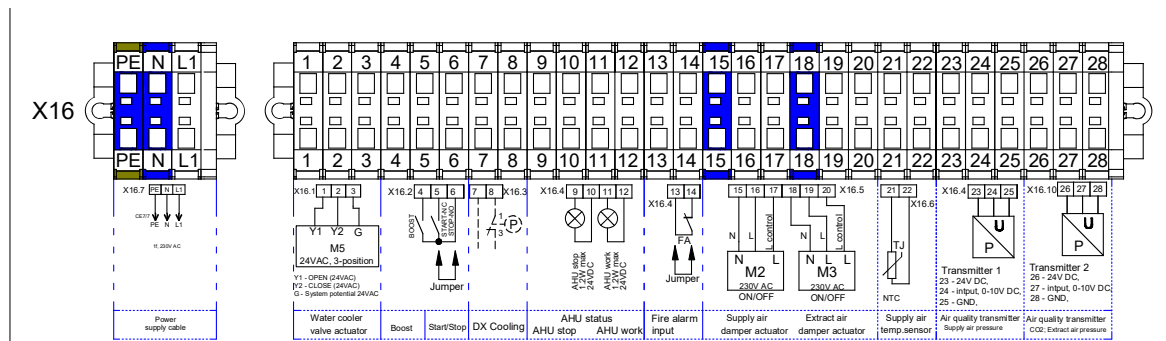


Figure 19.5.1. When the electrical heater

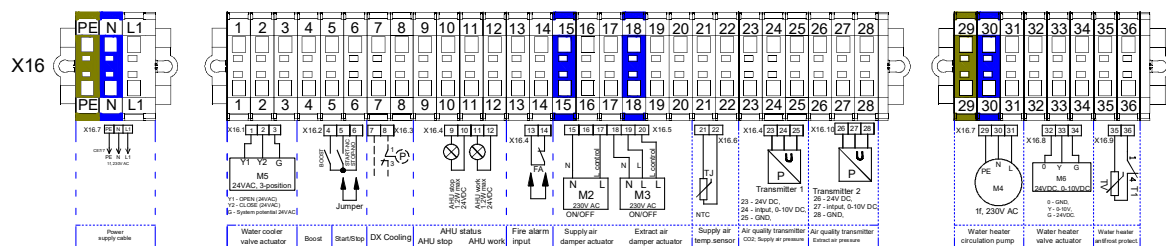
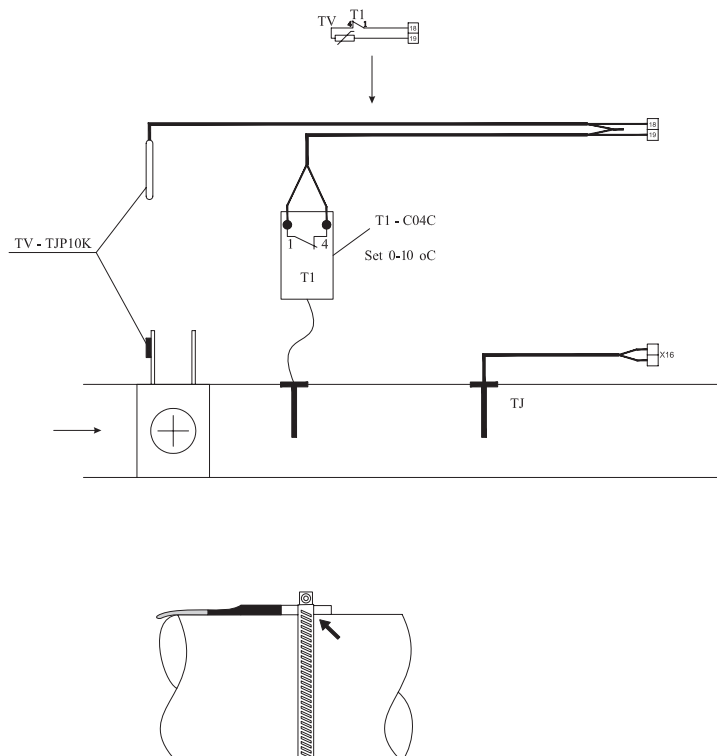


Figure 19.5.2. When the water heater

Before commissioning, device launching and adjustment works must be done only by qualified and trained personnel. Automatic control system of the ventilation unit must be properly adjusted to work adequately. Also, install measuring and operating devices in line with the provided guidelines.

Air temperature sensors and air quality converters. Supply air temperature sensors and air quality converters (if additionally used) must be mounted as far as possible from the ventilation devices (within the confines of sensor cable) up to the first branch or turn of the air transportation system. This requirement is necessary to ensure the accuracy of measurement.

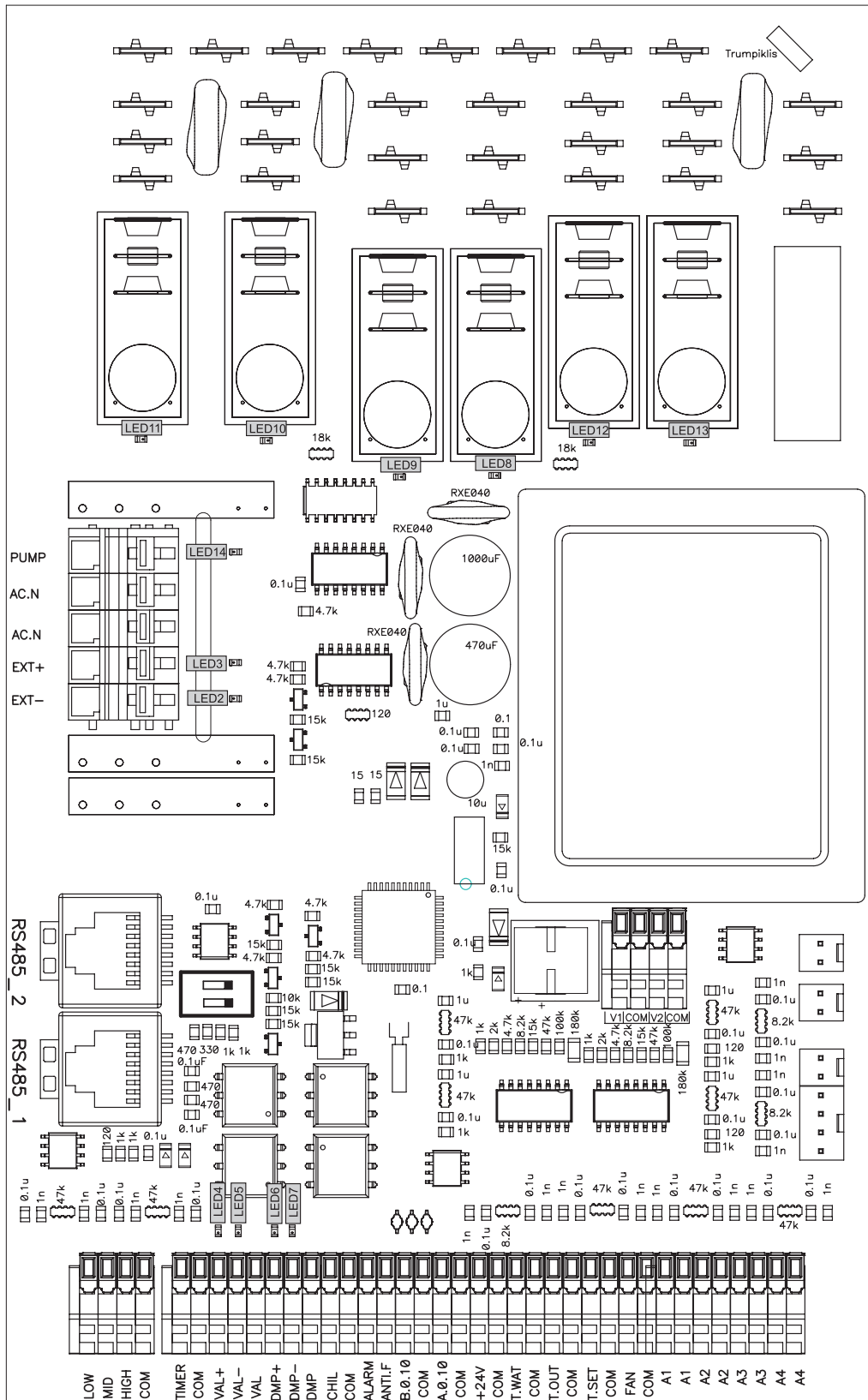
Antifreeze protection. When external supply air water heater is used, it is necessary to properly install antifreeze protection from possible freezing of heat carrier. Antifreeze temperature sensor (TV) must be mounted in clamp on return pipe of the water heater. Capillary sensor of the antifreeze thermostat (T1) must be mounted on the water heater and its adjustment knob must be set at +5 °C.



20. CONTROL BOARD RG1

LED indications of the controller Pic. 3a

LED2	Air damper close	LED9	Medium fans speed
LED2 + LED3	Air damper open	LED10	Minimal fans speed
LED4	Water valve open	LED11	Supply air fan speed reducing
LED5	Water valve close	LED12	Preheater
LED6	BYPASS open	LED13	Supply air heater
LED7	BYPASS close	LED14	Circulator pump
LED8	Maximal fans speed		



20.1. LABELING, CHARACTERISTICS OF THE CONTROLLER AND THE SYSTEM COMPONENTS

Contact	No.	Labeling	Description	I/O type	Max. load	Min. load
					[A]	[mA]
X10			L(230V/50Hz power supply)	I	-	-
X8			N(230V/50Hz power supply)	I	-	-
X31			Electric heater	O	16A	100

		X29		Electric preheater/rotor ON/OFF 230V/50Hz	O	16A	100
		X12		Voltage of Normal speed for air fans	I	-	-
		X14		Voltage of Min speed for air fans	I	-	-
IV	Extract room(s) air fan.	X15		Power to exhaust air fan IV	O	4.2A	100
PV	Supply air fan.	X23		Power to supply air fan PV	O	4.2A	100
M4	Water heater circulatory pump.	X35	1	PUMP	O	3A	100
		X35	2	AC.N	O	3A	100
		X35	3	AC.N	O	3A	100
M2	Supply/Extract air damper actuator.	X35	4	EXT+	O	3A	100
M3		X35	5	EXT-	O	3A	100
		X3		RS485_2	I/O	-	-
		X4		RS485_1	I/O	-	-
		X32	1	LOW	I	-	-
		X32	2	MID	I	-	-
		X32	3	HIGH	I	-	-
		X32	4	COM	-	-	-
		X33	1	TIMER	DI	-	-
		X33	2	COM	-	-	-
M5	Water cooler valve actuator.	X33	3	VAL+	AO	-	-
		X33	4	VAL-	AO	-	-
		X33	5	VAL	AO	-	-
M1	By-pass actuator.	X33	6	DMP+	AO	100mA	-
		X33	7	DMP-	AO	100mA	-
		X33	8	DMP	AO	100mA	-
DX	DX cooler or water heater circulatory pump control.	X33	9	CHIL	DO	0.05mA	-
		X33	10	COM	-	-	-
		X33	11	ALARM	DO	0.05mA	-
		X33	12	ANTI.F	DO	0.05mA	-
M6	Water heater valve actuator.	X33	13	B.0.10	AO	5mA	-
		X33	14	COM	-	-	-
		X33	15	A.0.10	-	-	-
		X33	16	COM	-	-	-
		X33	17	+24V	O	0.1A	-
		X33	18	COM	-	-	-
T1 + TV	Water heater antifreeze thermostat.	X33	19	T.WAT	AI	-	-
	Water heater antifreeze return heat carrier temperature sensor.	X33	20	COM	-	-	-
TL	Fresh (ambient) air temperature sensor.	X33	21	T.OUT	AI	-	-
		X33	22	COM	-	-	-
		X33	23	T.SET	AI	-	-
		X33	24	COM	-	-	-
		X33	25	FAN	AI	-	-
		X33	26	COM	-	-	-
		X34	1	A1	DI	-	-
		X34	2	A1	COM	-	-
		X34	3	A2	DI	-	-
		X34	4	A2	COM	-	-
		X34	5	A3	DI	-	-
		X34	6	A3	COM	-	-

		X34	7	A4	Fans guard	DI	-	-
		X34	8	A4	COM	-	-	-
DTJ 100	Temp. and humidity sensor for extract air.	X38	1		Extract air temperature sensor	AI	-	-
		X38	2		COM	-	-	-
		X40	1		+5V	-	-	-
		X40	2		Extract air humidity sensor	AI	-	-
		X40	3		COM	-	-	-
TJ	Supply air temperature sensor.	X39	1		Supply air temperature sensor	AI	-	-
		X39	2		COM	-	-	-
TE	Exhaust air temperature sensor	X41	1		Exhaust air temperature sensor	AI	-	-
		X41	2		COM	-	-	-
PV	Supply air fan.	X37	1	V1	Supply air fan 0-10V	AO	-	-
		X37	2	COM	COM	-	-	-
IV	Extract room(s) air fan.	X37	3	V2	Extract air fan 0-10V	AO	-	-
		X37	4	COM	COM	-	-	-

20.2. REGULAR SYSTEM CHECK-UP

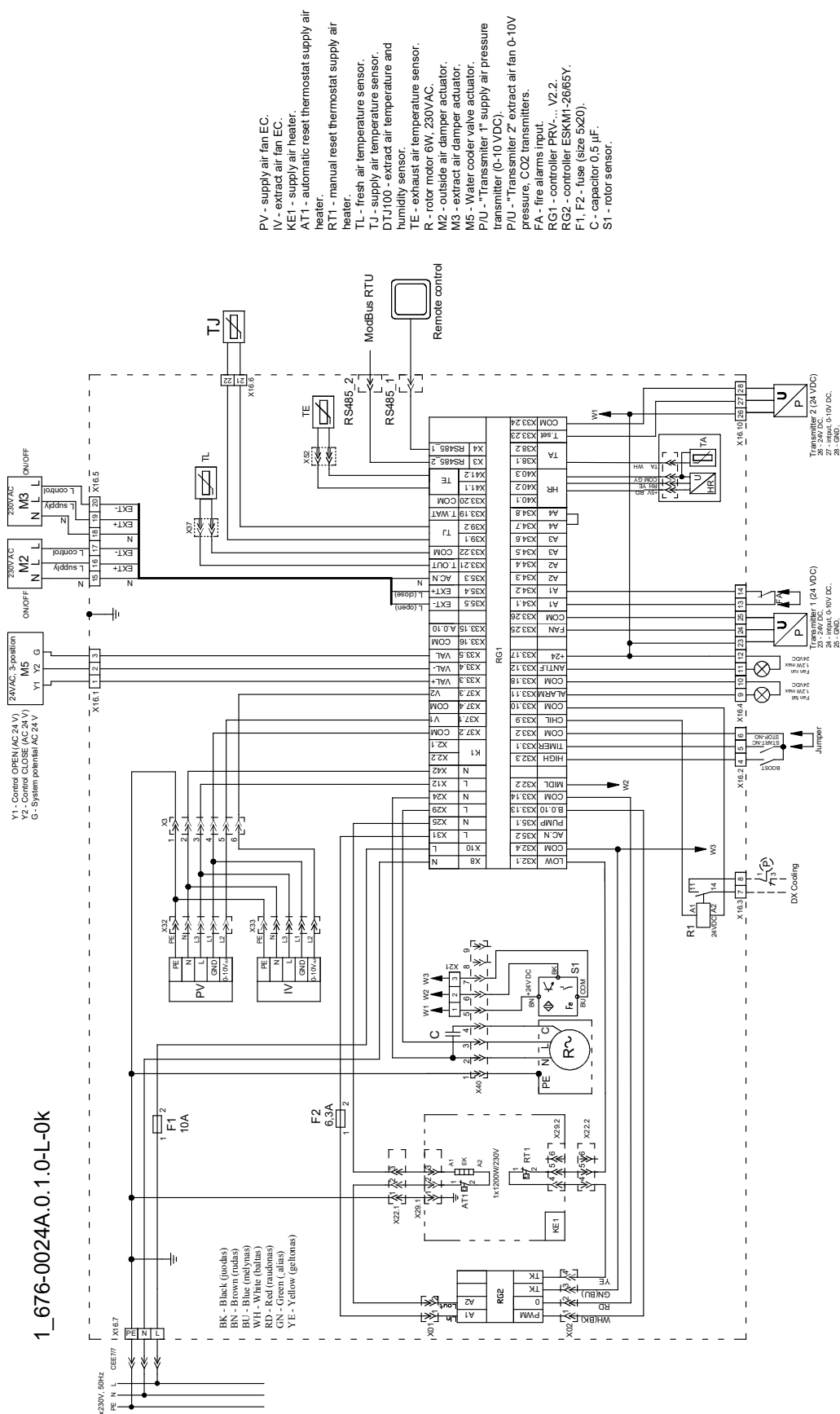
The operation of the switching device (contactor) should be visually inspected every 3–4 months (the casing cannot be melted and should have no other signs of the thermal damage, no extra sounds should be generated while switching or during impact).

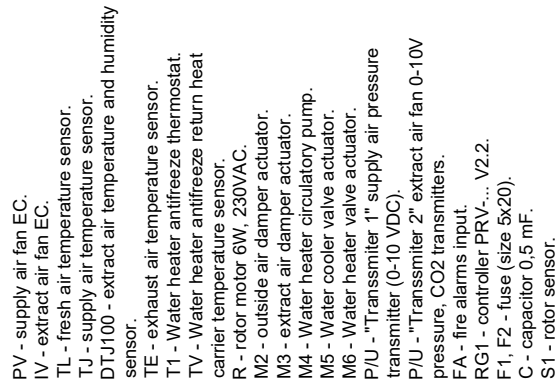
The blade switch should be disconnected during service (if installed on the device). If blade switch is not installed, disconnect the power supply from the distribution panel.



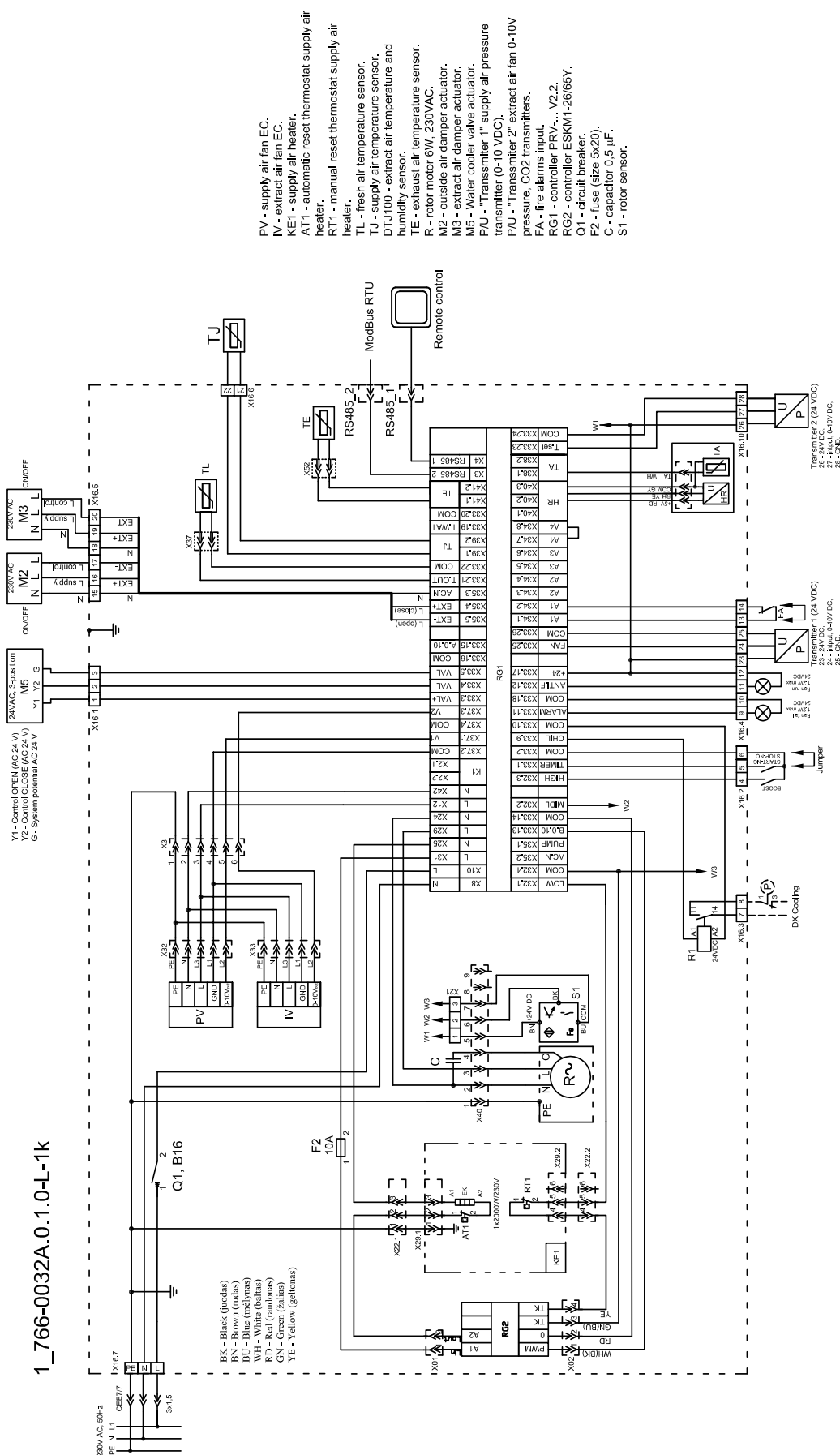
21.ELECTRICAL CONNECTION DIAGRAM

21.1. RIRS 400 VE EKO 3.0



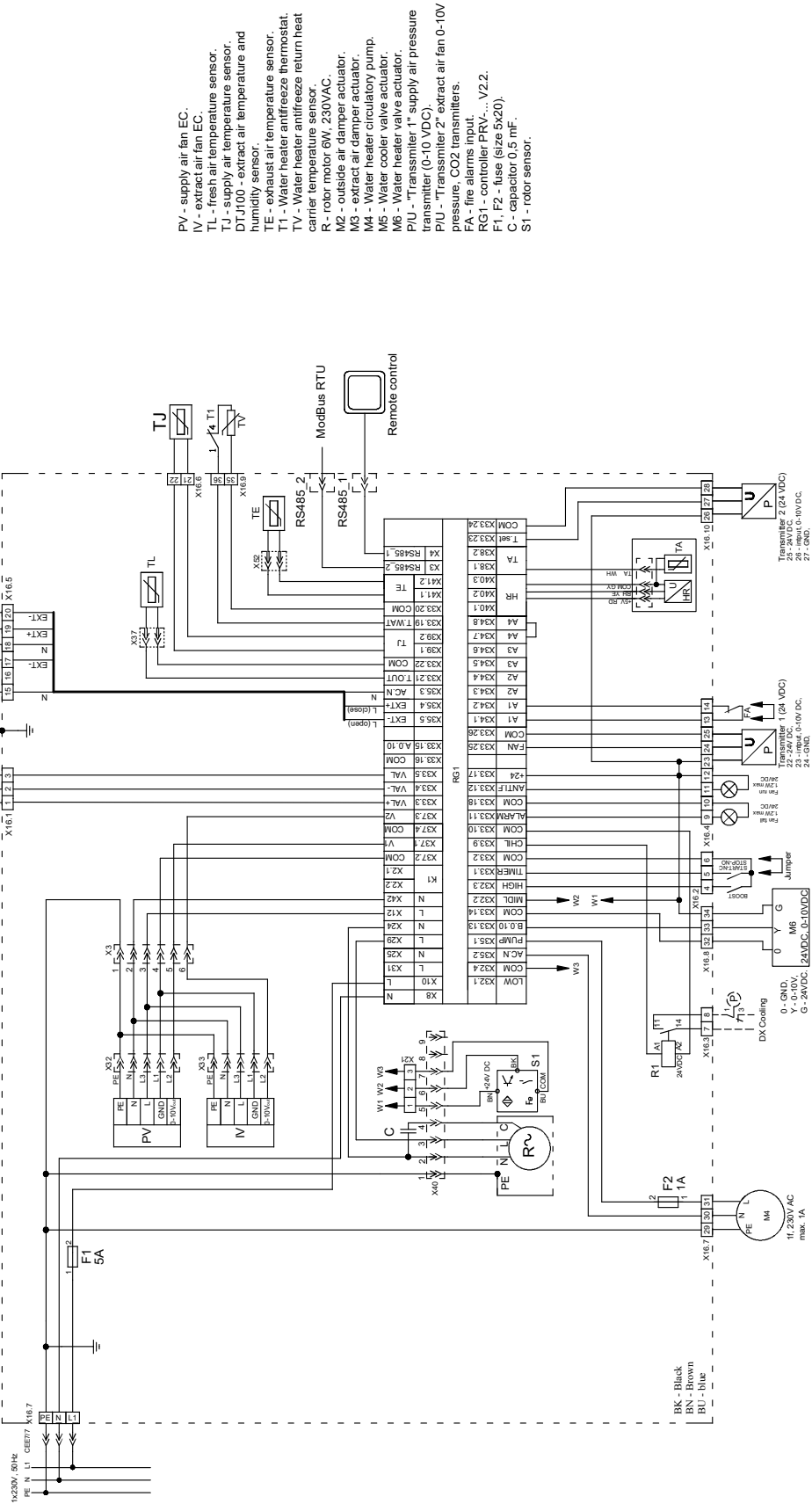


21.3. RIRS 700 VE EKO 3.0



21.4. RIRS 700 VW EKO 3.0

1_768-0034A.0.1.0-L-0k



22.ECODESIGN DATA TABLE

RIRS EKO 3.0		400 VER	400 VEL	400 VWR	400 VWL
Specific energy consumption (SEC) cold	[kWh/m ² a]	-76,1	-76,1	-76,1	-76,1
Specific energy consumption (SEC) average	[kWh/m ² a]	-35,7	-35,7	-35,7	-35,7
Specific energy consumption (SEC) warm	[kWh/m ² a]	-12,5	-12,5	-12,5	-12,5
Declared typology		bidirectional	bidirectional	bidirectional	bidirectional
Type of drive installed (fan)		Variable	Variable	Variable	Variable
Type of heat recovery system		regenerative	regenerative	regenerative	regenerative
Thermal efficiency of heat recovery	[%]	75	75	75	75
Maximum flow rate	[m ³ /s]	388	388	388	388
Electric power input of the fan drive at maximum flow rate	[W]	164	164	164	164
Sound power level (Lwa)	[dB(A)]	46	46	46	46
Reference flow	[m ³ /s]	0,08	0,08	0,08	0,08
Reference pressure difference	[Pa]	50	50	50	50
SPI	[W/(m ³ /h)]	0,29	0,29	0,29	0,29
Control factor and control typology		0,85	0,85	0,85	0,85
Declared maximum internal leakage rates	[%]	5	5	5	5
Declared maximum external leakage rates	[%]	3	3	3	3
Position and description of visual filter warning for RVU's		Timer	Timer	Timer	Timer
AEC average	[kWh]	262	262	262	262
AEC cold	[kWh]	262	262	262	262
AEC warm	[kWh]	262	262	262	262
AHS Average	[kWh/a]	4224	4224	4224	4224
AHS Cold	[kWh/a]	8262	8262	8262	8262
AHS Warm	[kWh/a]	1910	1910	1910	1910
ErP Compliance		2018	2018	2018	2018
Internet address for disassembly instructions					www.salda.it

RIRS EKO 3.0		700 VER	700 VEL	700 VWR	700 VWL
Specific energy consumption (SEC) cold	[kWh/m ² a]	-74,1	-74,1	-74,1	-74,1
Specific energy consumption (SEC) average	[kWh/m ² a]	-34,2	-34,2	-34,2	-34,2
Specific energy consumption (SEC) warm	[kWh/m ² a]	-11,4	-11,4	-11,4	-11,4
Declared typology		bidirectional	bidirectional	bidirectional	bidirectional
Type of drive installed (fan)		Variable	Variable	Variable	Variable
Type of heat recovery system		regenerative	regenerative	regenerative	regenerative
Thermal efficiency of heat recovery	[%]	73	73	73	73
Maximum flow rate	[m ³ /s]	751	751	751	751
Electric power input of the fan drive at maximum flow rate	[W]	343	343	343	343
Sound power level (Lwa)	[dB(A)]	47	47	47	47
Reference flow	[m ³ /s]	0,15	0,15	0,15	0,15
Reference pressure difference	[Pa]	50	50	50	50
SPI	[W/(m ³ /h)]	0,33	0,33	0,33	0,33
Control factor and control typology		0,85	0,85	0,85	0,85
Declared maximum internal leakage rates	[%]	5	5	5	5
Declared maximum external leakage rates	[%]	3	3	3	3
Position and description of visual filter warning for RVU's		Timer	Timer	Timer	Timer
AEC average	[kWh]	299	299	299	299
AEC cold	[kWh]	299	299	299	299
AEC warm	[kWh]	299	299	299	299
AHS Average	[kWh/a]	4169	4169	4169	4169
AHS Cold	[kWh/a]	8156	8156	8156	8156

AHS Warm	[kWh/a]	1885	1885	1885	1885
ErP Compliance		2018	2018	2018	2018
Internet address for disassembly instructions					www.salda.it

23.DECLARATION OF CONFIMITY

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:

RIRS V EKO 3.0*

(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

24. 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.

24.1. 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.

PRODUCT MAINTENANCE TABLE

Product name*		
LOT number*		
Instalation	Interval	Datum
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".

