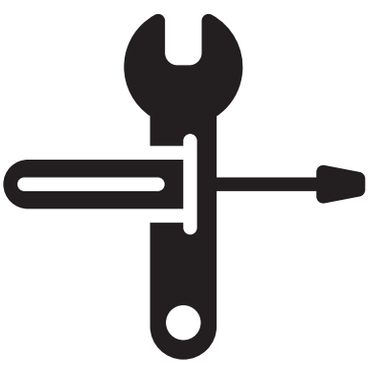
User's
Manual

EVO-MODULAR

AIR HANDLING UNITS

AERA
air innovation

Contents



2. General Information

2.1 Introduction

Thank you for choosing AERA / EVO-M Air Handling Units.

This manual applies to EVO-M series modular air handling units. Before operating EVO-M series air handling units, please carefully review and keep the user manual. Do not use any module of the units as a workbench or storage place. EVO-M units can only be operated under conditions that meet their design purpose and specification.
Repairs and modifications to be made on the product can be made by AERA Technical service personnel or expert personnel approved by AERA, unless they are marked as the user in the maintenance plans. In case of need for spare parts, please contact the after-sales service department. Any damage that may occur after the use of spare parts not provided by AERA is not covered by the warranty.

The device should be visually inspected at the time of delivery. AERA units are shipped complete and connected to all equipment, suitably packaged. If apparent damage is detected during transport, write it on the waybill and have it approved by the driver. Photograph the damage and share it with the AERA logistics department.

AERA reserves the right to make design changes without prior notice.

Images in this user manual may differ from actual devices!

2.2 Purpose of User Manual

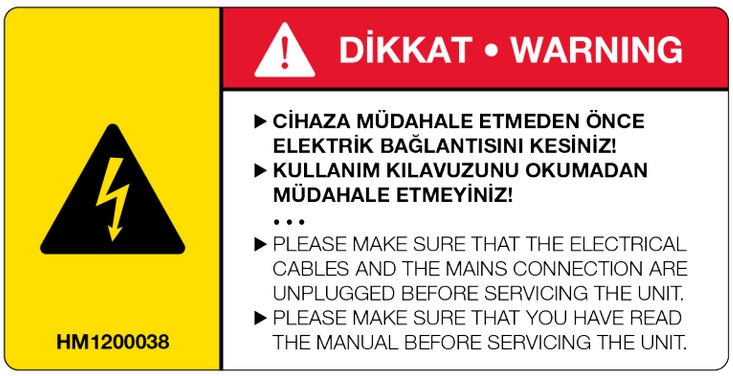
This instruction manual has been created to provide general information. The product line has many variants. The user is entirely responsible for following the instructions as required. If you have any questions regarding the content of this manual or if any information is out of scope, contact AERA technical service.

2.3 Warning and Safety Instructions

The instructions given in the manual have been created for technical personnel, trained persons, qualified electricians or air conditioning technicians. These people should read and fully understand the manual before starting any work. Safety rules must be followed and observed.

Warning and information labels are placed on the unit. (Figure.1)

DANGER ⚠ Failure to adhere to the warning labels can result in serious accidents.



DANGER ⚠ DANGER Death / serious irreversible injury

Indicates an extremely dangerous situation that will result in death or serious irreversible injury if the safety instructions are not followed.

WARNING ⚠ WARNING Death / Serious injury

Indicates an extremely dangerous situation that will result in death or serious irreversible injury if the safety instructions are not followed.

CAUTION ⚠ CAUTION Minor or moderate injury

Indicates a dangerous situation which may result in minor or moderate injury if the safety instructions are not followed.

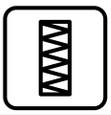
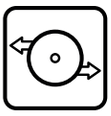
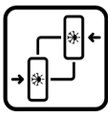
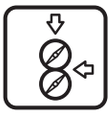
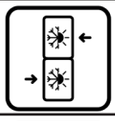
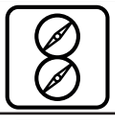
ATTENTION ⚠ CAUTION Environmental or material damage

İndicates actions that could cause damage to equipment or property.

Occupational health and safety local regulations and general safety regulations for the field of application of the air handling unit also apply.

2.4 Components

Evo-M series air handling units modules are marked with the following icons according to their features.

	Filter Module		DX Coil Module
	Fan Module		Steam Coil Module
	Plate Type Heat Exchanger Module		Electrical Heater Module
	Rotory Heat Exchanger Module		Humidifier Module
	Run Arround Heat Ex-changer Module		Mixing Damper Module
	Heat Pipe Heat Exchanger Module		Damper Module
	Water Heating Coil Module		Silencer Module
	Water Cooling Coil Module		

This user manual, which is sent with the device, is placed in the fan module or filter module with additional shipping group materials such as siphon. Please check it out!

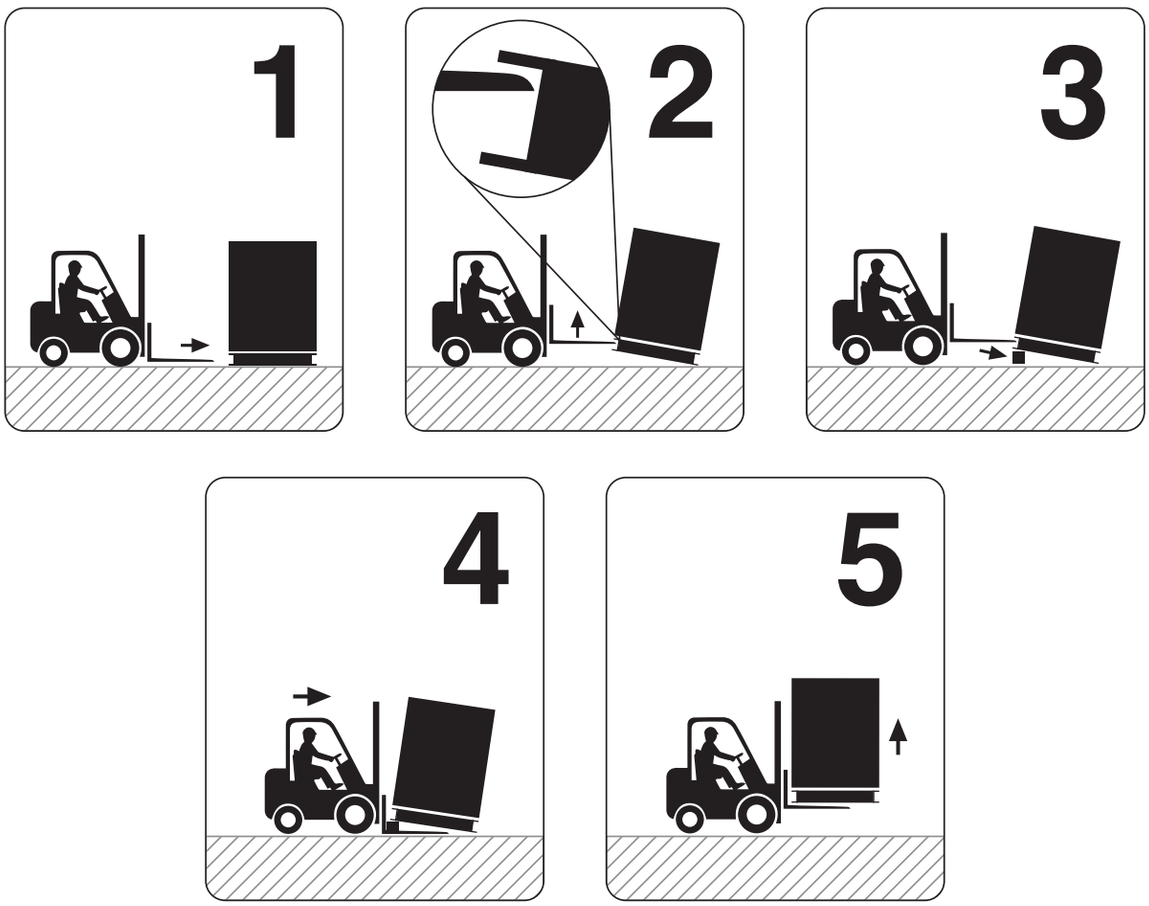
2.5 Transport and Storage

DANGER ⚠ Do not stand under/near suspended loads while transporting air handling unit modules.

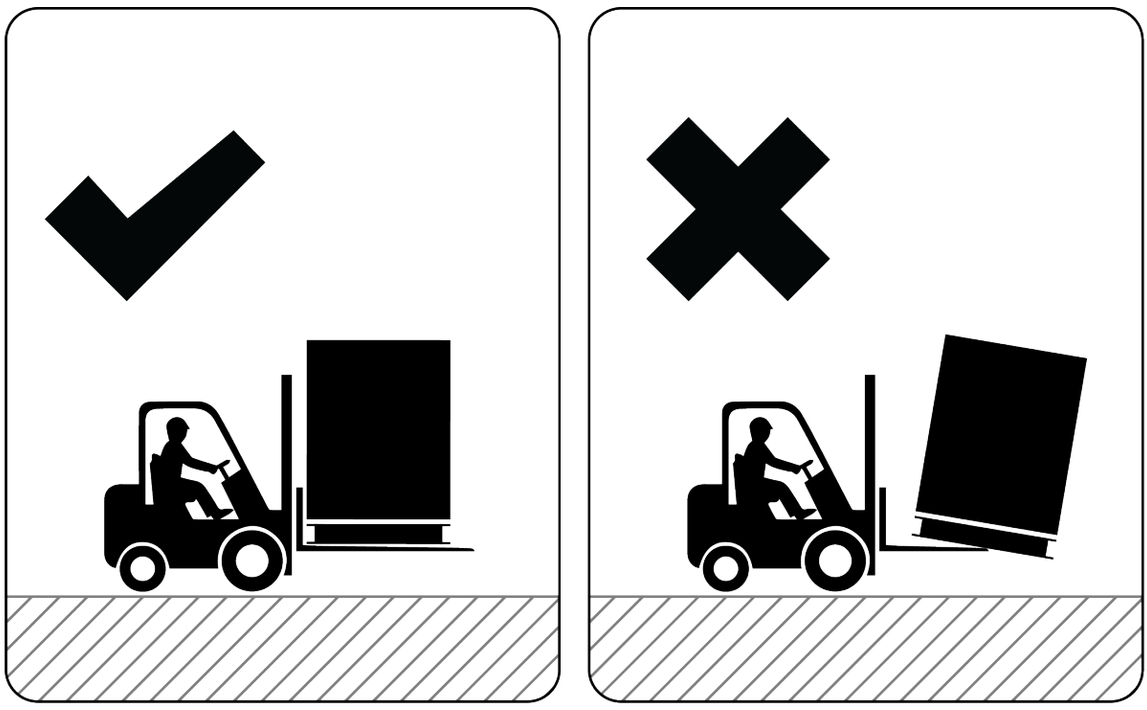
ATTENTION ⚠ The unit must never be lifted, pulled or pushed using any protruding parts other than the main frame, such as coils, dampers.

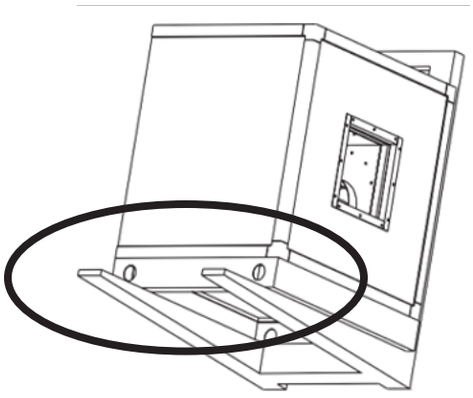
ATTENTION ⚠ The unit must not be tilted during transport or lifting.

While the units are unloaded from the vehicle, the units should be taken to the forklift by placing wedges under the pedestal as described in the pictures below.



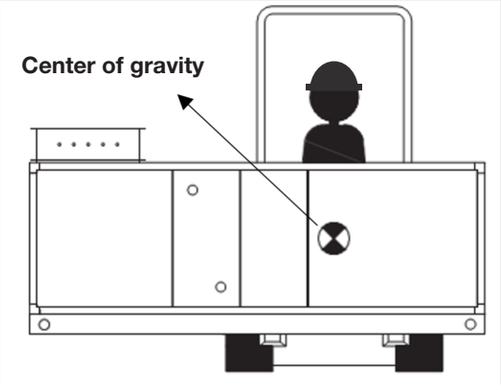
ATTENTION If a forklift is used during transportation, make sure that the forklift blades pass through the bottom of the units. Otherwise, it may damage the panels at the bottom of the units.





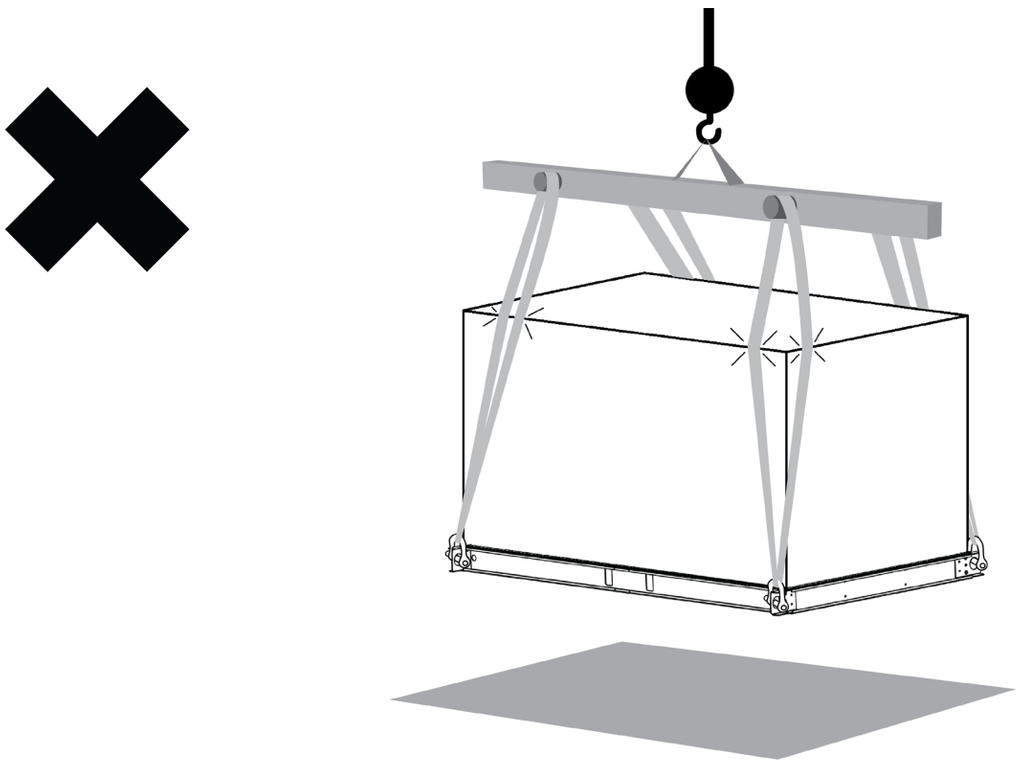
Forklift blades must be long enough to pass through the module completely!

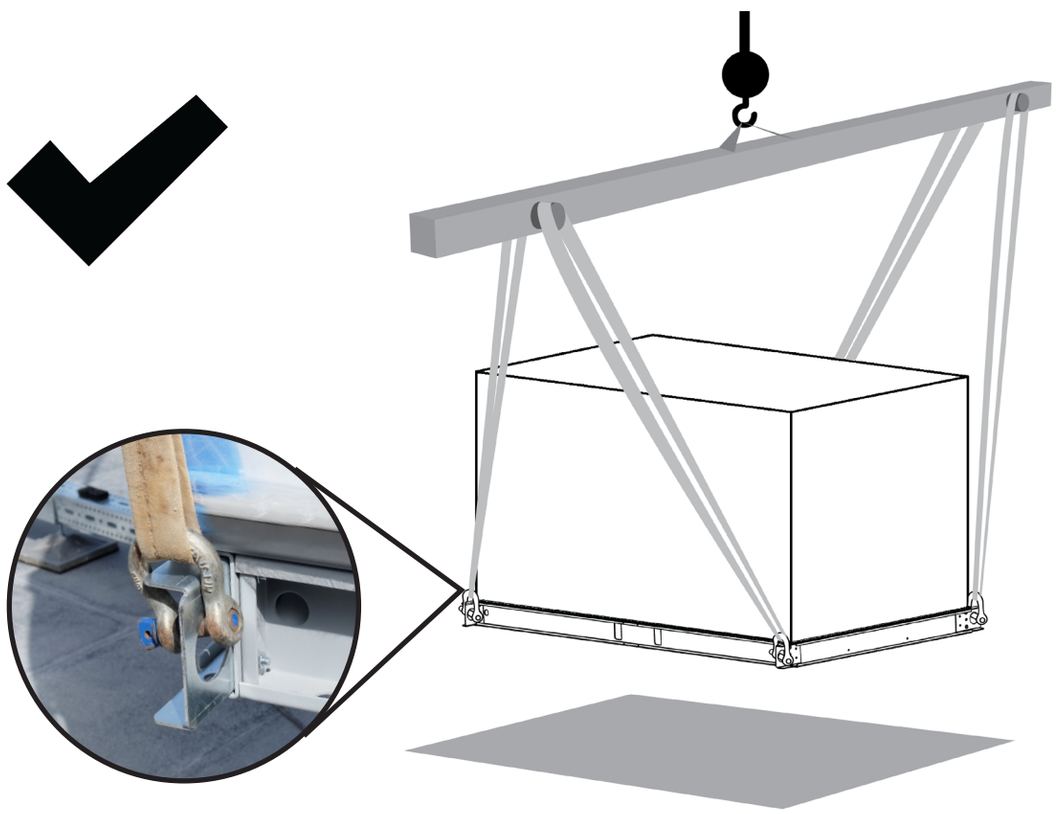
ATTENTION If the units are lifted with a forklift, the lifting operation should be carried out by considering the center of gravity of the module and making sure that the load is evenly distributed on the forklift forks. Be careful that the blades do not hit the panels and drain pan outlets.



ATTENTION ⚠ If the module is to be moved with a crane, the lifting parts can be connected to the unit through a shaft that will pass through 30mm (standard) or 60mm (optional part) diameter holes on both sides of the pedestal. In crane operations, the connection details shown below should be considered and applied completely. AERA is not responsible for any damage that may occur otherwise.

Sample Application for Lifting from Pedestal





Air handling units can wait for the time of assembly at construction sites or warehouses. In such storage situations, the warnings below should be taken into account.

- In order to avoid pollution, all gaps in the air handling unit must be covered. If stored in a wet environment, sufficient ventilation should be provided. Store components of air handling units in a dry and non-condensing place.
- Ensure that the air temperature is between -10 ° C and 40 ° C and the storage area is away from water.
- Nothing must be placed on the units. The units must not be walked on, and the materials that may damage the units must not stand on the units.
- Protruding parts of the units, such as coil connections and dampers etc, must be protected from damage.
- The product will be out of warranty if it is not stored in appropriate environments and conditions.

3. Assembly

Before starting the installation, the checklist in chapter 4 must be checked!

3.1 Assembly Area

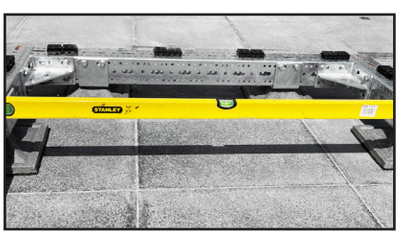
ATTENTION ⚠ Errors that occur when installing and assembling air handling units can potentially lead to fatal situations and cause serious physical damage. There is also a risk that the air handling unit may not function properly.

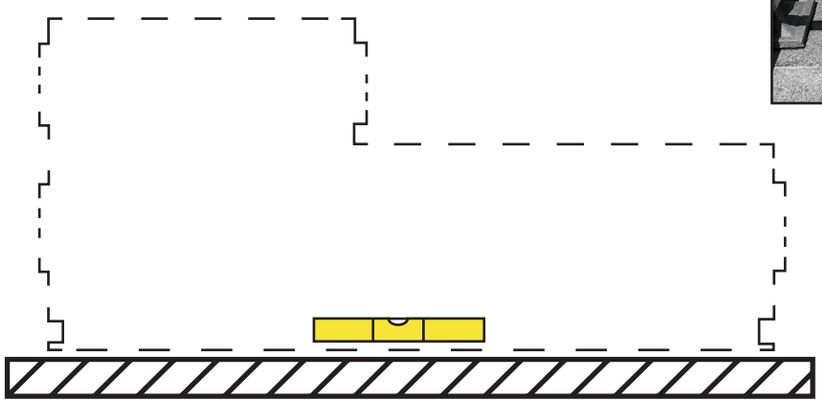
The installation place of the unit must be flat and balanced. If the floor is not stable, the air handling unit must be balanced with appropriate balancing elements. In the absence of suitable balancing elements, it is recommended to prepare the floor at least 10 cm above the ground as it will protect the device from rain and floods.

ATTENTION ⚠ As a result of assembling the air handling unit with imbalance, the air handling unit may not function properly. In this case, damages that may occur in the unit are not covered by the warranty.

Adjustable feet can be installed under the base of the unit in order to be able to adjust the balance of the unit more easily against planar irregularities that may occur at the installation place. Feet are supplied as accessories. If the unit is supplied with these feet, the balance of the unit can be adjusted with the 2 nuts on the feet.

The assembling location of the unit must be in balance!





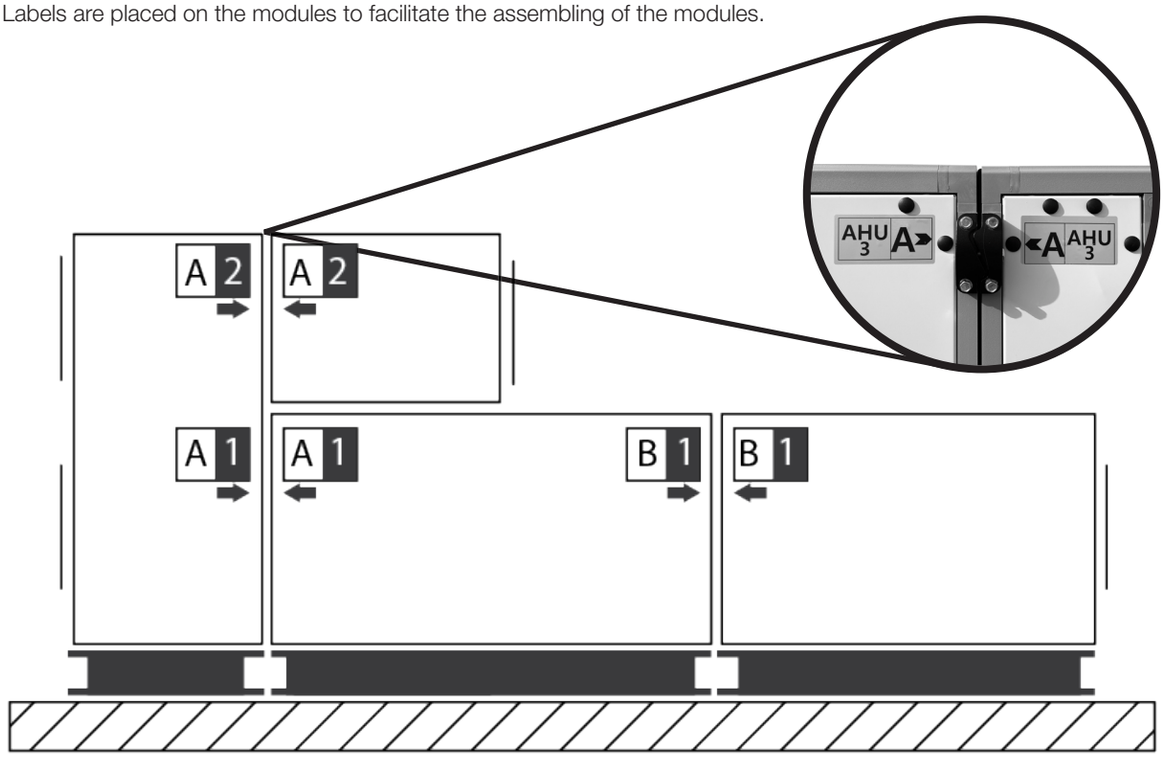
There should be enough space for the height of the siphon in the modules where the condensation pan is located. Check the “Siphon installation” chapter for further information.

In order to take out the components for reasons such as cleaning, maintenance and replacement, While locating the unit, gaps of appropriate sizes should be left around the unit. This space should be on the service side of the unit and at least 1.2 times the width of the unit.

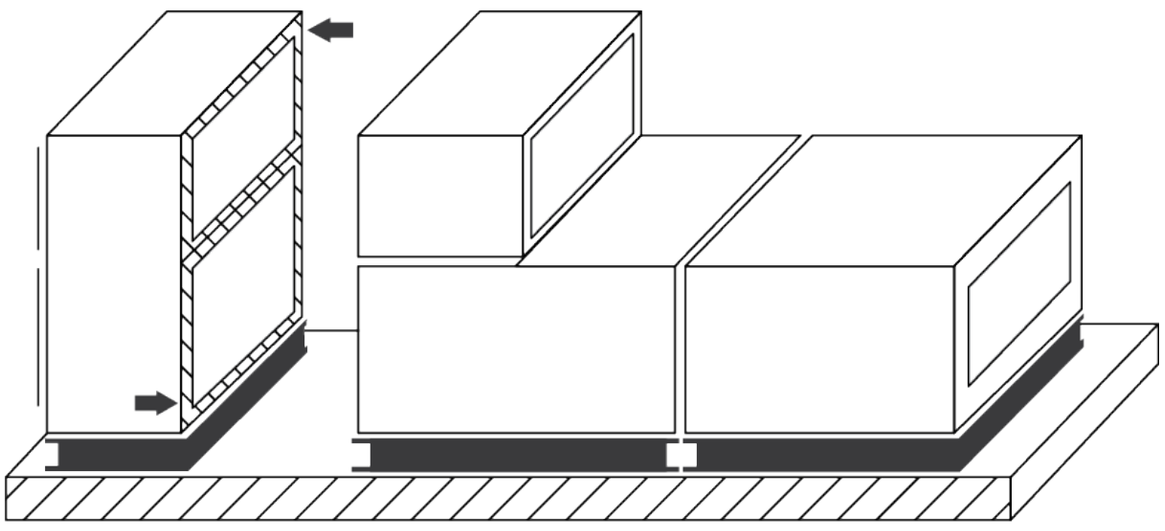
ATTENTION ⚠ If the units are to be operated in an outdoor application, they should be specified before the project selection and should be produced in accordance with the outdoor application. (weather protection sheet, high protection class component selection etc.). Otherwise, the unit should not be operated outside.

3.2 Module Combination

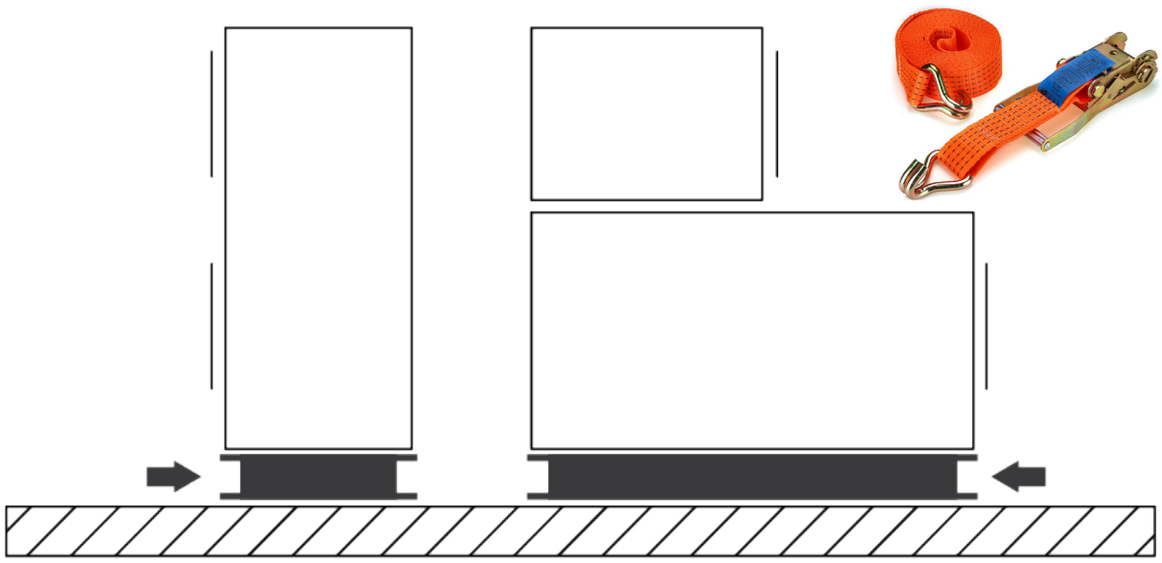
Labels are placed on the modules to facilitate the assembling of the modules.



Sealing gaskets are applied between the modules of air handling units. Before the modules are combined, the gaskets should be checked and if there is any damage, replaced with new ones.

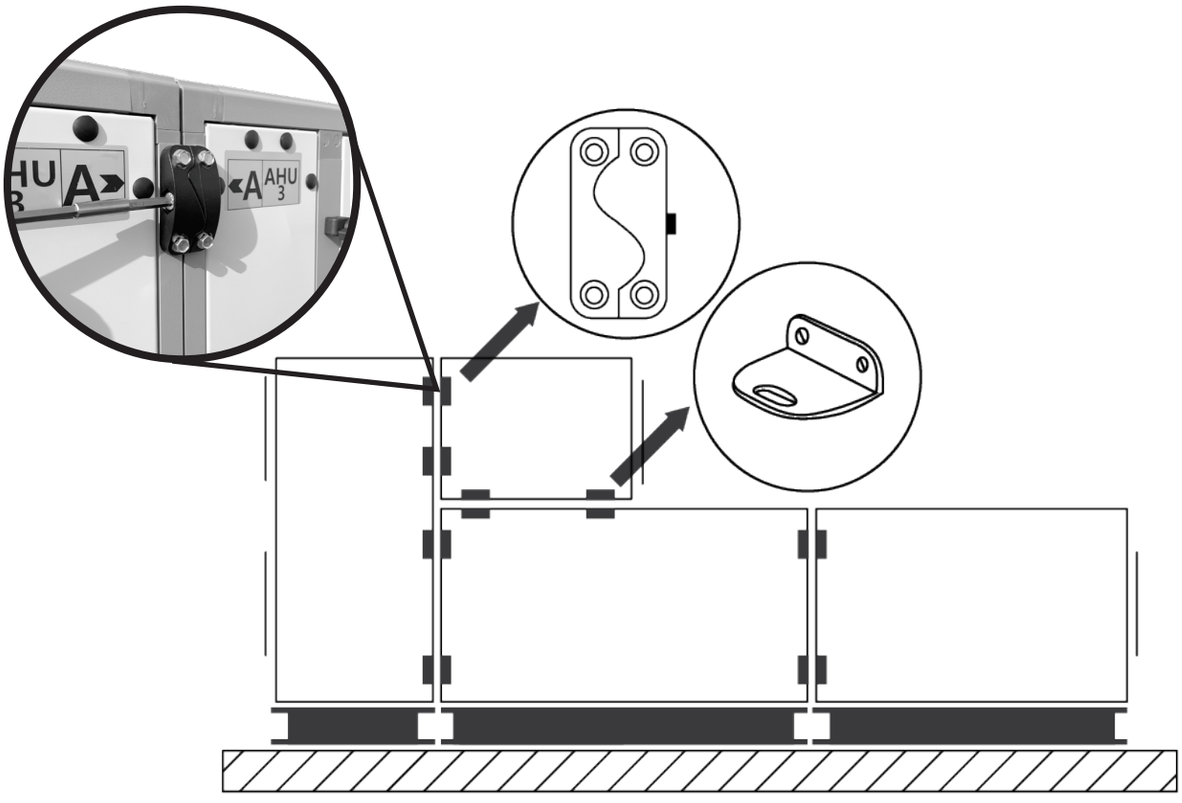


ATTENTION The pedestal under the modules must be used to bring the modules close enough to each other! Fix a suitable tensioning strap to the pedestal and tighten the tensioning strap for this task. Make sure the modules get close enough with the base.



ATTENTION Assembling with the tensioning strap should be done using only pedestal. Any protruding parts of the units (coil pipes, drain pipes, door handles, etc.) should not be used to move the modules. Otherwise, it may cause accidents and damage the air handling unit. If the units damaged during the assembly process on the panel, they will be out of warranty.

ATTENTION There are cell combination elements on the modules. The allen head bolts, on the side of the connection elements of modules shown with arrows in the picture, must be tightened sufficiently with a suitable hand tool.



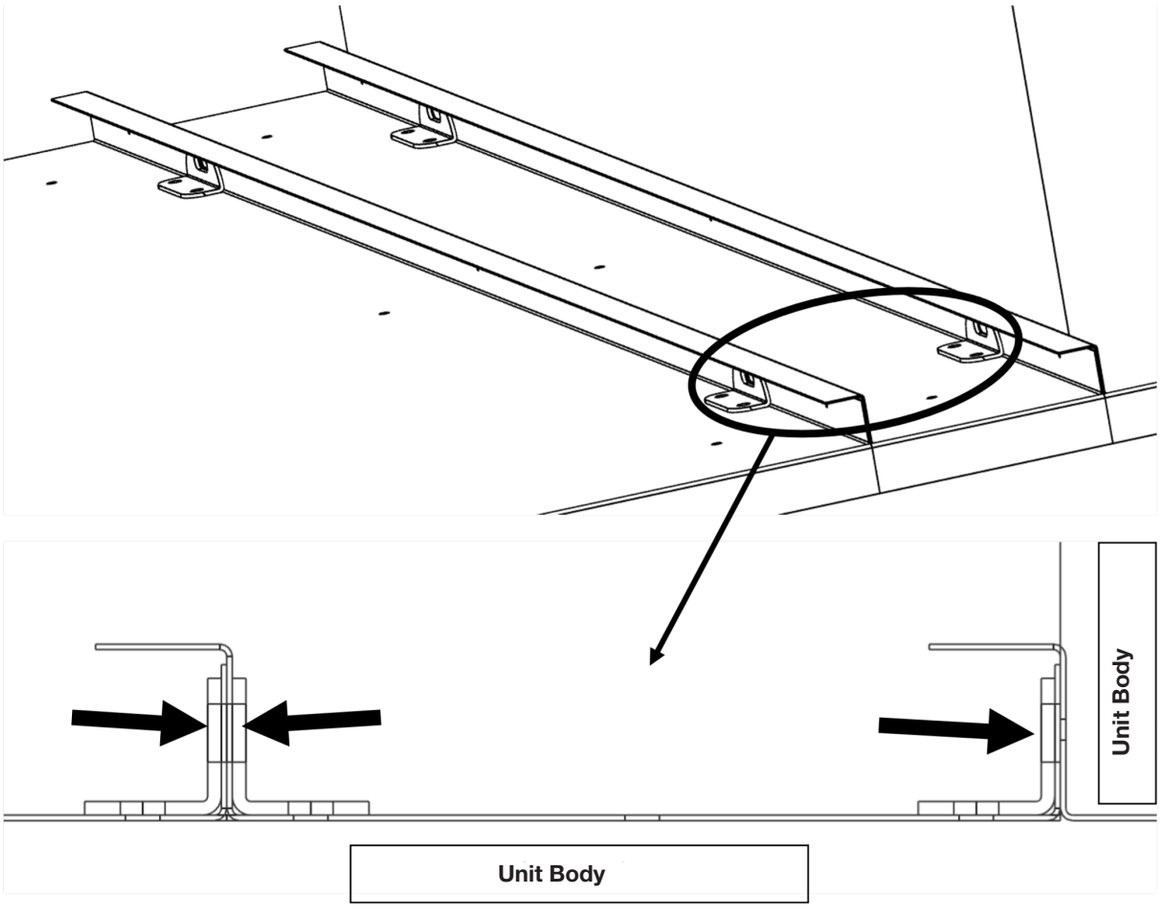
ATTENTION ⚠ Connecting elements of modules should only be used in order to tighten gaskets between modules after modules are brought close enough to each other.

ATTENTION ⚠ In air handling units produced as double-deck, the connections between the floors should be made with connection sheets.

ATTENTION ⚠ Connection elements of modules should not be used before the modules are balanced and brought close enough to each other.

3.3 Installation of Weather Protection Sheets

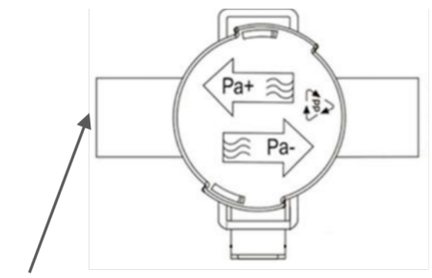
In air handling units that are specially demanded outdoor application, weather protection sheets are shipped as mounted on the unit. After the module combination process, these sheets should be fixed by using the sheets sent with air handling units.



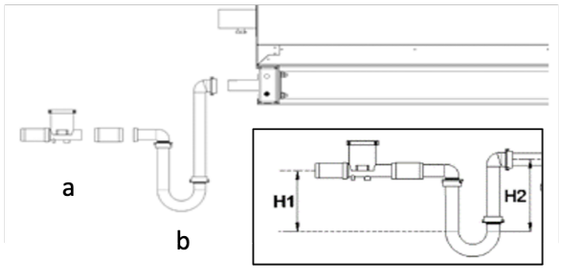
3.4 Ball Siphon Assembly

It is recommended to use a collective siphon in order to prevent undesirable substances such as dirt, sewage water, odors, etc. from entering the unit through the drain pan. There is a collective siphon in the additional shipping group of the air handling unit.

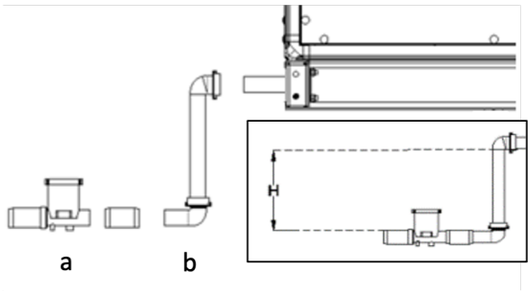
ATTENTION ⚠ Correct installation of the siphon is the responsibility of the client / contractor. AERA is not responsible for damages that may arise due to incorrect connection.



The side connected to the drain pan outlet.



Siphon Connection in Positive Pressure
a. Siphon
b. Elbow / S (Required if pressure is more than 600Pa)



Siphon Connection in Negative Pressure
a. Siphon
b. Elbow / S (Required if the pressure is less than -600Pa.)

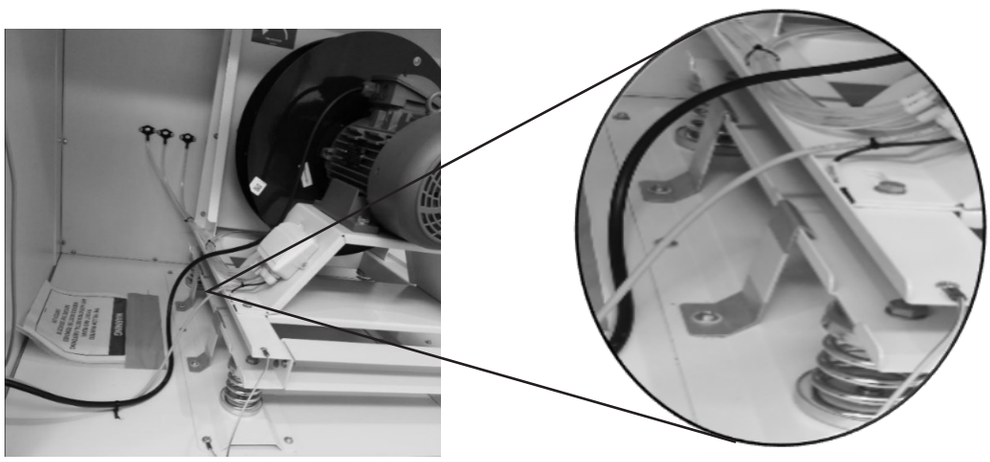
System Pressure	H1	H2
1500 Pa	150 mm	110 mm
1400 Pa	140 mm	100 mm
1300 Pa	130 mm	90 mm
1200 Pa	120 mm	80 mm
1100 Pa	110 mm	70 mm
1000 Pa	100 mm	60 mm
800 Pa	80 mm	40 mm
600 Pa	60 mm	20 mm

System Pressure	Elbow Height (H)
1500 Pa	110 mm
1400 Pa	100 mm
1300 Pa	90 mm
1200 Pa	80 mm
1100 Pa	70 mm
1000 Pa	60 mm
800 Pa	40 mm
600 Pa	20 mm
< 600 Pa	-

3.5 Removing of the Fan Fixing Parts

Fan bases are fixed to the unit frame with spring vibration insulators to prevent noise and vibration. Since this situation may cause damage to the unit by undesirable vibrations during shipment, the fan bases are fixed to the unit frame via a fixing sheet at the factory. The sheets must be removed before the fans are operated.

ATTENTION ⚠ The units may be damaged if operated without the fixing sheet of fan Insulators removed. AERA is not responsible for any damages that may occur due to the failure to remove the sheets.



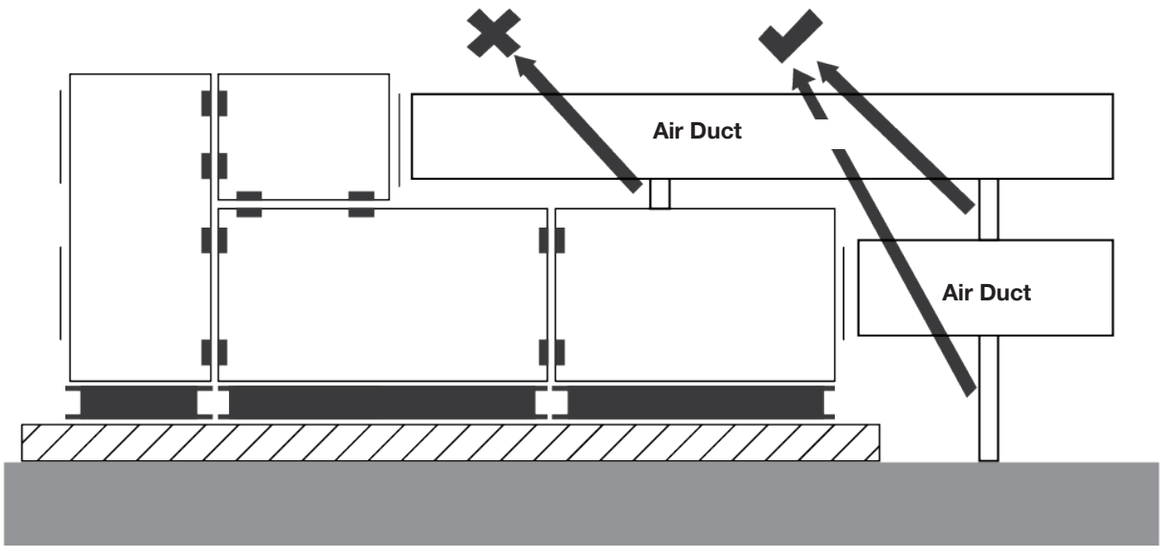
3.6 Duct Mounting

Air suction and blow nozzles on the unit should be connected to air ducts with flexible duct elements. While installing flexible duct elements, make sure that the flanges on the unit and the connection flanges of the air duct are on the same axis.

The length of the assembled flexible connector should be approximately 75% of the stretched length.

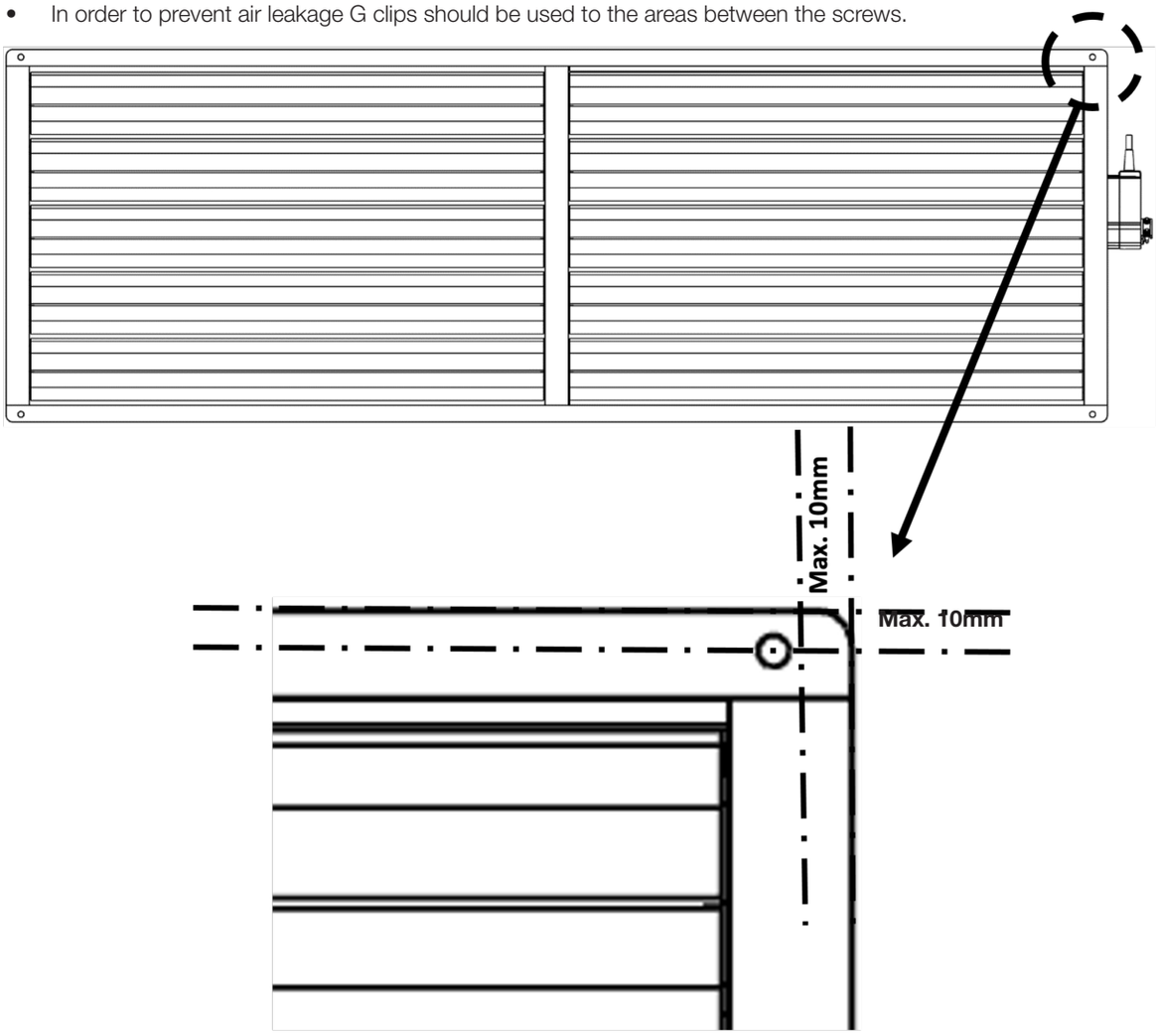
ATTENTION ⚠ Weights of ducts should never be carried to dampers and flanges. Instead, fixed headstock supports should be placed on the ceiling or the floor and carried to these holders. Otherwise, the dampers may not work properly and the unit may be damaged.

ATTENTION ⚠ Duct connection supports should not be connected to the unit frame. Using the unit frame as support equipment may cause panel damage! AERA is not responsible for any damages that may occur in such cases.

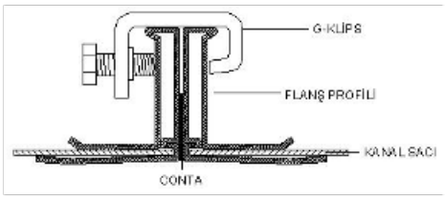


ATTENTION ⚠ Care should be taken when connecting ducts to the dampers in the openings of the device to the outside. If the screws get stuck in the gear of the damper mechanism, the damper will not work. Therefore, the following points should be considered in the duct mounting to be made on dampers.

- The duct connection of the dampers should be made via the bolt holes in the corners.
- Gaskets must be applied between dampers and duct connections.
- In places other than these holes, the screws should be tightened in a way that they are a maximum of 10mm inside from the edge.
- In order to prevent air leakage G clips should be used to the areas between the screws.



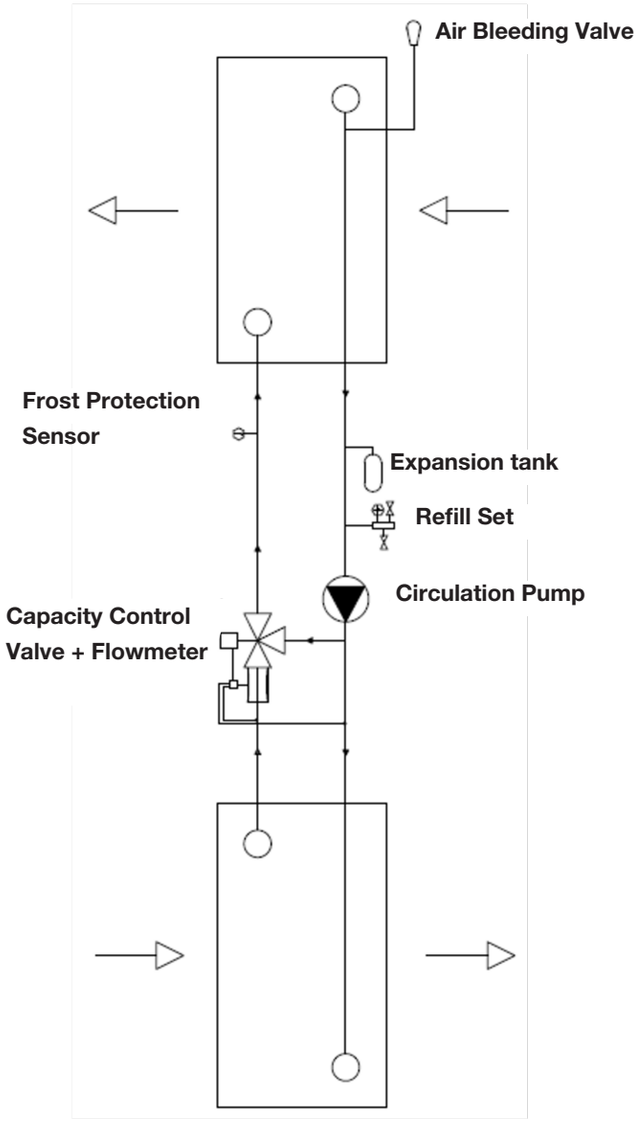
ATTENTION ⚠ Gaskets must be used between the duct and damper and flange connection surfaces. In order to tighten the gaskets properly, G-Clips should be placed on the connections at a maximum of 25 cm intervals.



Duct connections on the unit are indicated with the labels below. While making the connection, make sure that the correct duct is connected to the right place.

3.7 Connection of Run Around Heat Recovery System

In air handling units with a coil heat recovery system, the connection between the coils should be made in the construction site and in accordance with the diagram below.



3.8 Coil Connections

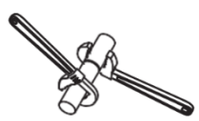
DANGER ⚠ Coils may contain extremely hot water. Care must be taken before pumping water into the system and during air removal

Depending on the project selection, the air handling unit may have water heating and / or water cooling coil.

The water inlet and outlet lines of the heater and cooler are labeled in such a way that the water inlet is on the air outlet side. The assembly should be made as per these marks. Incorrect connection causes loss of capacity in the heat exchanger.

- The coil should be carefully unpacked and cleaned if necessary.
- Before installation, caps and/or other protectors on the pipe nozzle must be removed. After this process, the product should not be exposed to open air to prevent water ingress into the pipe, as this may cause oxidation or freezing explosion.
- Inlet and outlet connections should not be fixed in a way not to allow expansion, appropriate expansion opportunities should be allowed to prevent damages caused by thermal expansion.
- When the coil is empty and cold, the hot fluid should not be suddenly given to the coil.
- During filling, the vent nozzle of the coil should be opened and ensured that the fluid is filled into the coil.
- After that, the air relief valve should be closed and the coil should be brought to operating temperature gradually.
- The coil should be pressurized gradually and watch out for leaks or other problems. At the first sign of such problems, the filling process should be stopped immediately and the unit turned off.
- The system installer is responsible for the execution of the installation process and safety precautions in accordance with current, valid standards and instructions.
- Assembly and installation should only be made by experts in one's field.
- Care should be taken not to damage the pipes and connections during the installation of the coils.
- The mounting position of the heat exchanger should be in accordance with its design.

ATTENTION ⚠ While tightening the coil connections, it must be tightened by making contra, since there is a risk of rotation/torsion of the inner part of the pipe. Torsions that will occur if it is not tightened by making contra may make the coil unusable! AERA is not responsible for any damage that may occur as a result of non-contra connections!



All pipes of installation and coil connection must be insulated.

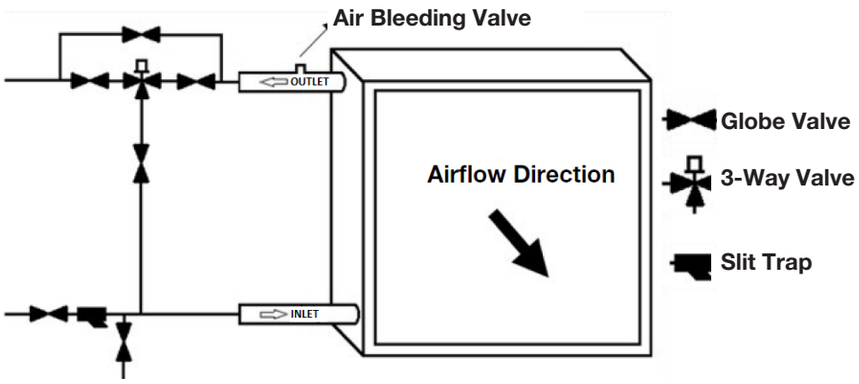
ATTENTION ⚠ A particle filter must be used when pumping water into the installation. In case of pumping water without this filter, blockages may occur in the coil.

ATTENTION ⚠ Since the coils that contain water are at risk of freezing during the winter months, precautions must be taken. Even if the water is drained, it may not be enough just water discharge, as some water may remain in the heating and cooling coils. Based on this;

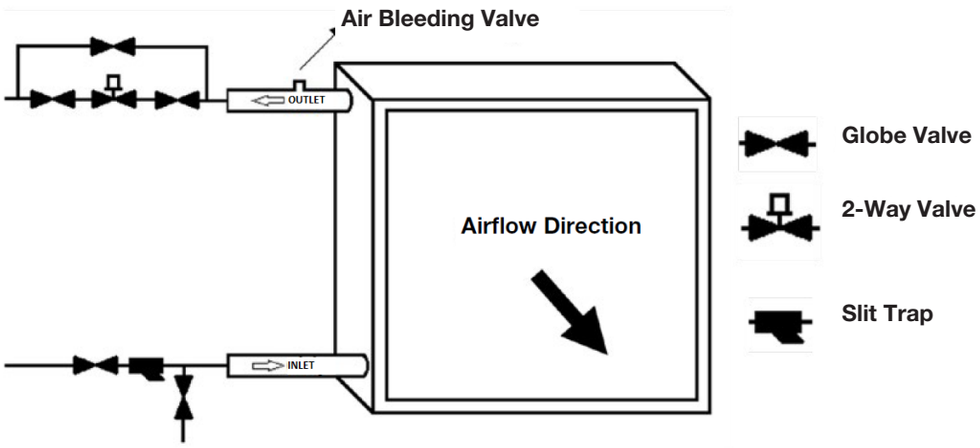
- The amount of antifreeze (glycol) recommended in the mechanical installation calculations can be added to the system,
- Circulation pumps can be operated continuously,
- It can be ensured that the water is completely drained.

ATTENTION ⚠ The weight of the supply water installation pipes must be carried in such a way that they do not affect the pipes of coils. Otherwise, leakages may occur at the coil pipe connections.

3-Way Valve Connection



2-Way Valve Connection



The refrigerant inlet and outlet lines of the direct expansion coil are labelled on the unit, it is important to pay attention to these labels during assembly.

Connection of DX coil with AHUKIT and VRF outdoor unit should be made by AERA technical service or authorized personel.

3.9 Humidifiers

3.9.1 Steam Humidifiers

Steam diffusers of steam humidifiers are shipped as mounted inside the air handling unit. However, steam generating units are sent together with the air handling unit as a package. The installation of these units should be carried out by the customer in a weather-protected area!

ATTENTION ⚠ Humidifier installation and usage instructions are sent with the humidifier. These usage and installation manuals that come out of the humidifier box must be strictly followed.

3.9.2 Direct Injection Humidifier

For direct injection humidifiers, atomizers are mounted inside the air handling unit. However, the pump group is sent together with the air handling unit. The connection between the pump group and the atomizers is the responsibility of the client.

ATTENTION ⚠ Humidifier installation and usage instructions are sent with the humidifier. These usage and installation manuals that come out of the humidifier box must be strictly followed.

3.9.3 Evaporative Humidifiers

The units are sent with the humidifiers assembled. The connection between the pump group and the humidification unit is the responsibility of the customer.

ATTENTION ⚠ Instructions for installation and use of the humidifier are available in the user manual that comes with the humidifier. This installation manual, which comes out of the humidifier box, must be strictly followed.

3.10 Electrical Heater

Electric heaters are delivered to you as mounted inside the unit and with all internal electrical connections made. Electrical supply must be ensured in accordance with the electrical schemes sent to the automation panel of units.

DANGER The electrical connection of the unit should only be made by qualified electricians.

DANGER Before all electrical assembly operations, the main supply panel must be de-energized and it must be ensured that it will not be energized accidentally.

3.11 External Sensors

If sensors such as humidity, air quality, smoke etc. are requested specifically for the project, those that will be mounted inside air handling units are assembled at the factory. However, sensors placed in the duct or air-conditioned areas are sent with the air handling unit as an additional shipping group. In this case, it is the customer's responsibility to connect the sensor to the empty terminals on the panel in accordance with the automation schemes in the unit automation panel.

DANGER Before making the sensor connections, the power should be cut off from the main supply panel and it should be ensured that it will not be energized accidentally.

3.12 Electrical Connections

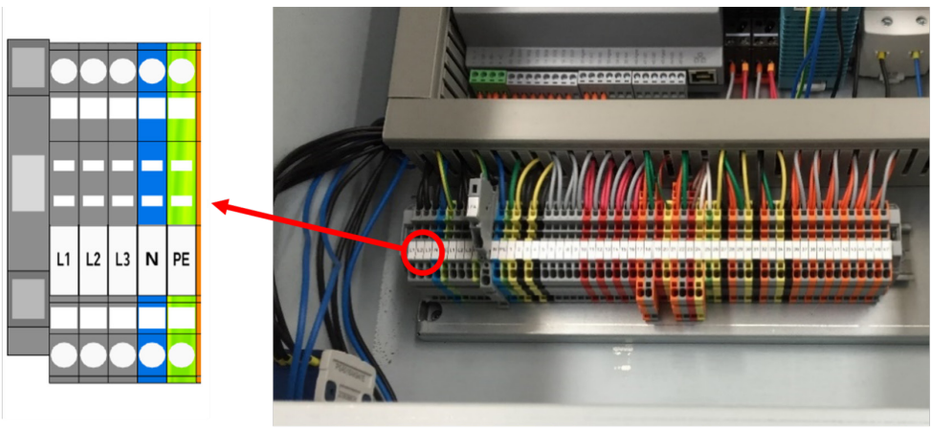
3.12.1 Air Handling Unit with Automation Equipment

CAUTION The electrical connection should only be made by an authorized electrician according to the wiring diagrams below.

CAUTION The unit must be completely isolated from the mains power supply before any maintenance and installation or before opening the device!

CAUTION The electrical connection must be completely isolated from the mains power supply till the installation is complete!

The unit is equipped with a main switch, which can be secured against unauthorized switching with a padlock. Relevant standards of local electricity supply companies, safety regulations and technical connection conditions must be complied.



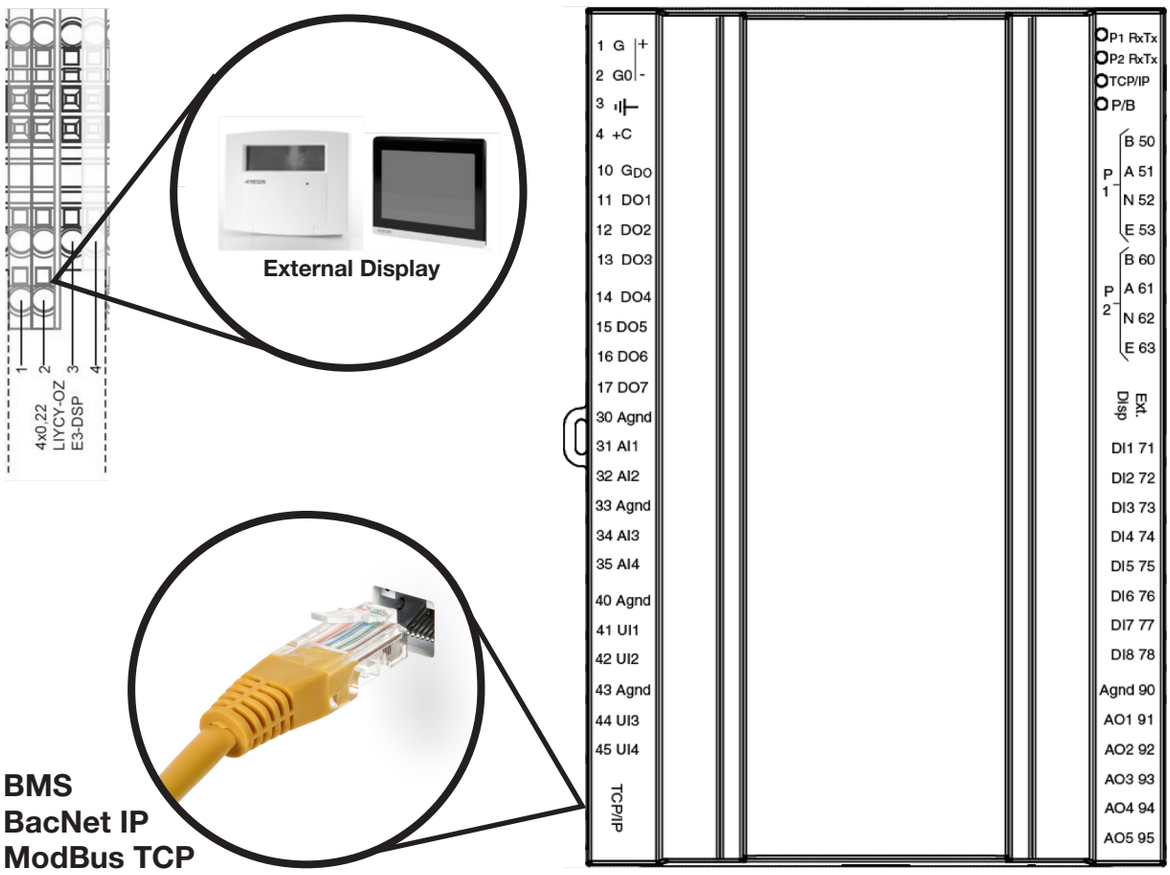
Automation Panel

- Open the cover of the panel box on the top of the unit.
- Plug your power cable into the terminal shown above.
- Turn the switch to the right so that the energy can be supplied to the system.

CAUTION ⚠ Documents containing the electrical and automation details of the air handling unit are attached to the automation panel or the module with the accessories. All electrical connections must be made according to this document.

3.12.1.1 Control Panel and BMS Connection

Air handling units that are requested with automation equipment can be integrated with the building automation system via Modbus TCP-IP / Bacnet protocols and can be monitored with these protocols. Ethernet (RJ45) port on the controller located in the unit automation panel should be used for BMS connection.



Terminals are reserved on the automation panel for external display connections (E3-DSP/ED-T7). Screen connections must be made with 4x0.50 shielded cable. The maximum wiring distance for touch panel (ED-T7) and standard display (E3-DSP) is 100 m.

3.12.2 Air Handling Unit without Automation Equipment

DANGER ⚠ The electrical connection of the unit should only be made by qualified electricians.

DANGER ⚠ Before all electrical assembly operations, the main supply panel must be de-energized and it must be ensured that it cannot be energized accidentally.

Your air handling unit can be manufactured specifically for the project with or without the automation panel. The wiring diagrams placed inside the unit must be examined against the different variations of the unit.

Depending on the project variation, the air handling unit may have different component selections. In units where there is no automation panel, electrical connections have been moved to junction boxes placed outside the device.

In order to reduce the starting current in motors above 4kW, “star-delta” motor connection is made.

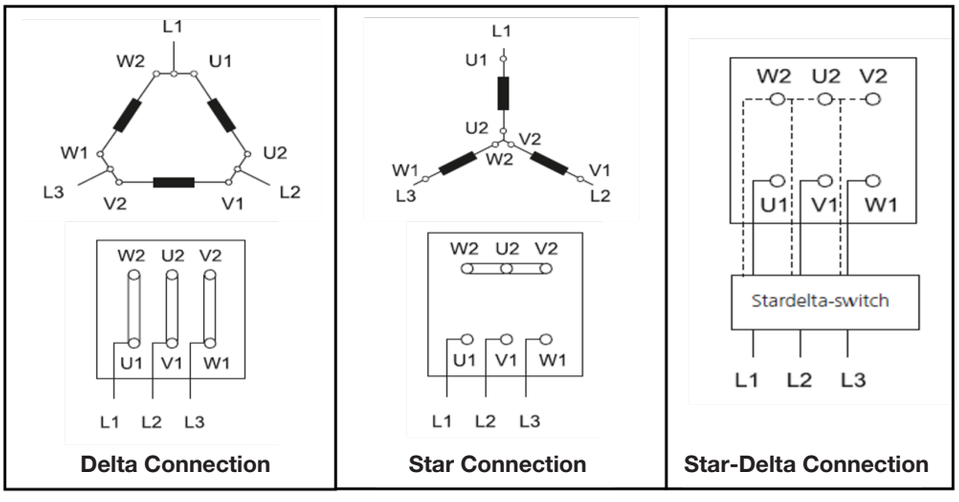
3.12.2.1 Panel Assembly

In air handling units ordered with automation, the panel may not be mounted on the device by special request. In this case, the automation panel can be fixed on a suitable wall around the air handing unit or an external frame. The distance between the device and the panel should be kept as short as possible (max. 3 m).

CAUTION ⚠ If the device will be located outdoors, the panel should be protected from weather conditions as much as possible.

3.12.2.2 3 Phase Motor Connections

WIRING DATA AND CONNECTIONS DEPENDING ON MOTOR POWER				
Motor Power (kW)	**Current (A)**	**Cable Cross-section (mm^2)**	**Cable Type**	**Connection style**
1,1	3	4x1,5	TTR	Star (unless otherwise specified)
1,5	4	4x1,5	TTR	Star (unless otherwise specified)
2,2	6	4x1,5	TTR	Star (unless otherwise specified)
3	10	4x1,5	TTR	Star (unless otherwise specified)
4	10	4x1,5	TTR	Star (unless otherwise specified)
5,5	16	4x2,5	TTR	Star/Delta
7,5	20	4x2,5	TTR	Star/Delta
11	25	4x4	TTR	Star/Delta
15	40	4x10	TTR	Star/Delta
18	40	4x10	TTR	Star/Delta
22	50	4x16	TTR	Star/Delta
30	80	4x25	TTR	Star/Delta



Motor Voltage Unbalance,

CAUTION ⚠ For the supply voltage in the proper operation of the motor, measure all phase-to-phase voltage after installation, the voltage unbalance should not exceed 2%.

For voltage unbalance;

Voltage balance =100A/2Vort
For example, if the measured voltages are 221.230 and 227, the average voltage will be 226V.

A=(226-221)+(230-226)+(227-226)

CAUTION The electrical connections of the air handling unit are carried out of the device with materials such as junction boxes, coupling, etc. Unless there is special instruction, holes, slots, etc. should not be drilled into the air handling unit. Otherwise, it may adversely affect the operating performance of the device.

ATTENTION Ensure that the grounding circuit is suitable for its function.

ATTENTION The cross-section of the supply cables should be determined by taking into account the voltage drops depending on the distance.

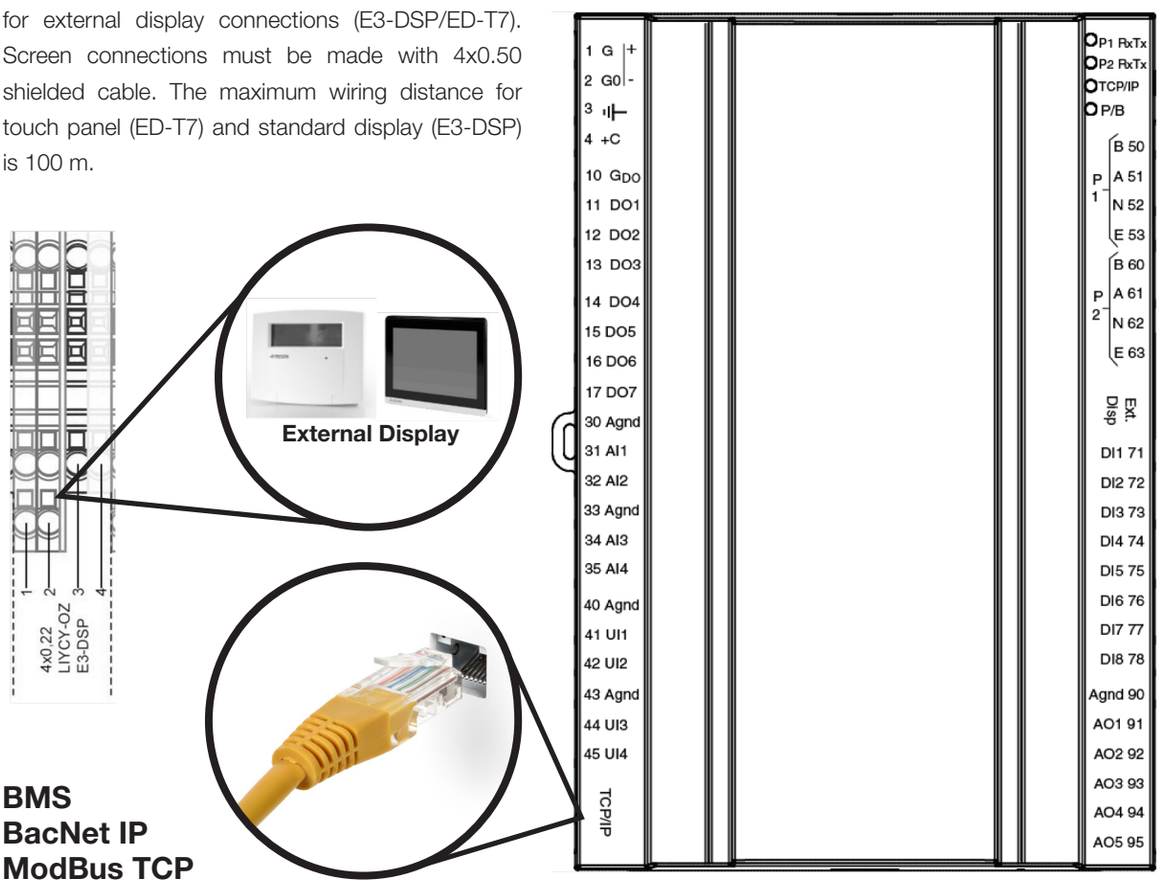
CAUTION In case of short circuit, overload or double phase, it is recommended to put a thermal phase protection relay, fuse, etc. in the electrical circuit.

Make sure that the main power supply character meets the EN 60204-1 regulation.

3.12.2.3 Control Panel and BMS Connection

Air handling units that are requested with automation equipment can be integrated with the building automation system via Modbus TCP-IP / Bacnet protocols and can be monitored with these protocols. Ethernet (RJ45) port on the controller located in the unit automation panel should be used for BMS connection.

Terminals are reserved on the automation panel for external display connections (E3-DSP/ED-T7). Screen connections must be made with 4x0.50 shielded cable. The maximum wiring distance for touch panel (ED-T7) and standard display (E3-DSP) is 100 m.



4. Commissioning

EVO-M series air handling units are set at the desired values in the project at the factory and shipped to the user as plug and play. However, before the air handling unit is commissioned, the list below should be filled in and in case of a problem, AERA Technical Service should be contacted.

PRE-COMMISSIONING CHECK LIST				
NO	**Control Point**	**NOPE**	**YES**	**NO**
1.	Is the personnel will commission the device qualified?			
2.	Have the device's user manual been read / understood?			
3.	Is the place the device is assembled in accordance with the user manual?			
4.	Is the device module number and type correct?			
5.	Is there any visible defect / damage on the device?			
6.	Is the device level?			
7.	Are the device modules combined correctly?			
8.	Do the unit's doors close properly?			
9.	If available , is the roof sheet installed correctly			
10.	If available, Are the siphon connections of the device in accordance with the user manual			
11.	Is the drain pan clean and able to drain water?			
12.	If available , Are the fan insulator sheets removed?			
13.	Are the fan connection equipment undamaged?			
14.	Can the fan rotate freely			
15.	Are channel connections of unit correct ?			
16.	If available , Is there any damage to the batteries of the unit?			
17.	If available , Are the battery connections of the unit correct?			
18.	If available, Is the internal mixing damper closed?			
19.	If available Are there any damage to the internal silencers?			
20.	If available , Are the humidifier connections of the unit correct?			
21.	If available , Are the external sensors of the device connected correctly?			
22.	Are electrical connections between modules made correctly?			
23.	Is the control panel connected?			
24.	If available , Is the BMS connected?			
25.	If available , Are the unit filters type, airflow direction correct, and are the filters clean?			
26.	If available, Is there any damage to the heat recovery exchanger of the unit ?			
27.	If available, Is device heat exchanger bypass damper closed			
28.	Are the unit power supplies correct?			
29.	Are there any tools or objects inside the unit?			
30.	Has the inside of the unit been cleaned after assembly?			
31.	Is there water in the batteries of the unit ?			
If there is a problem with even one of the above items, the unit should not be operated ! **If the error cannot be resolved by the user, AERA Technical Service should be contacted!**				

If all the items in the list above are suitable, the device can be powered for the first time.
The items to be checked after the first run are as follows.

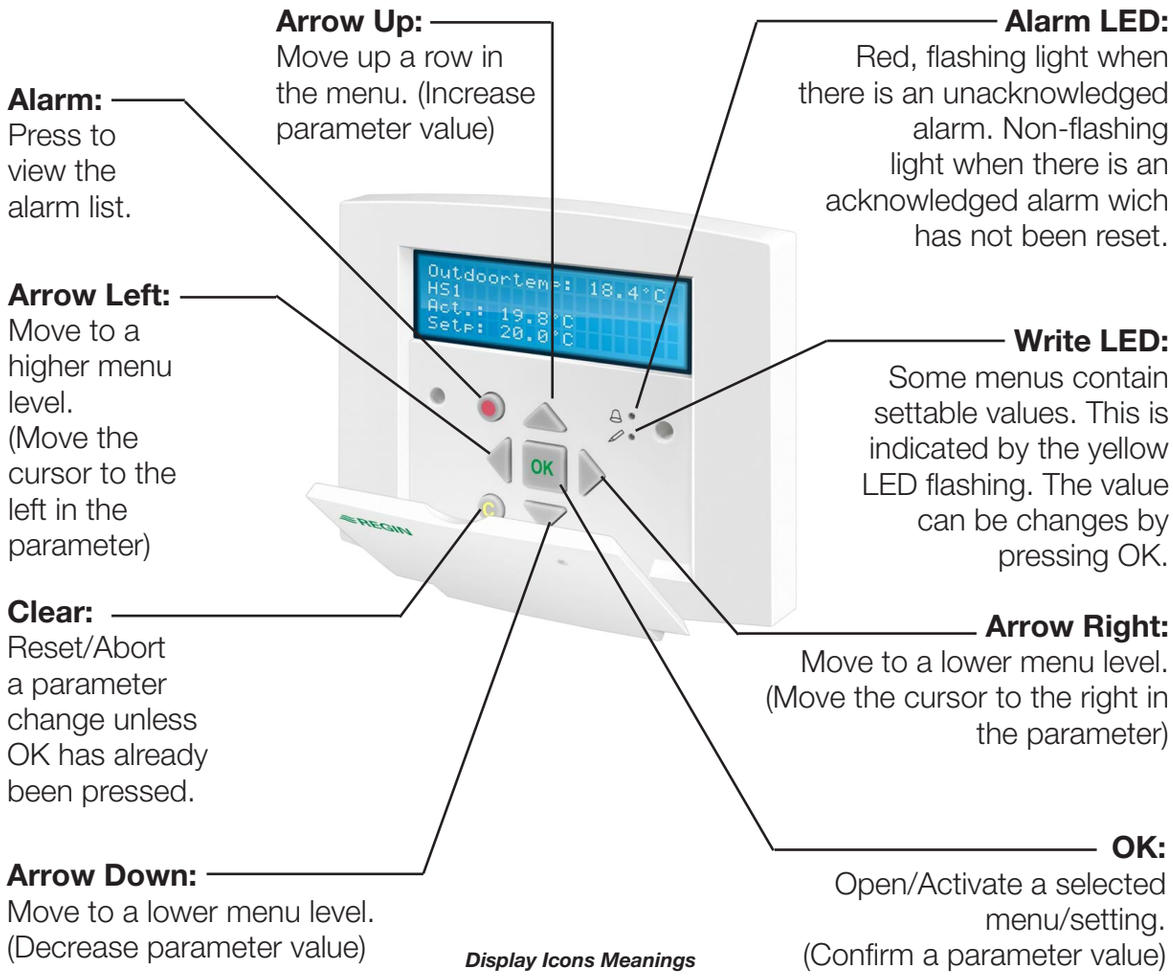
AFTER COMMISSIONING CHECK FORM				
NO	**Control Points**	**None**	**Yes**	**No**
1.	Is the fan rotation direction correct?			
2.	Is there any leak in the unit?			
3.	If available , Are the dampers that need to be opened during the relevant operation opened?			
4.	If Available , Is there any water leakage from the battery connections?			
5.	If Available , Did the watery battery make air			
6.	If Available , Is the rotor rotating at the number of revolutions it should have?			
7.	If Available , are bag filters swollen			
8.	Does the unit provide the desired flow rate			
9.	Do the power and current values drawn by the device match the unit label (+ - 5%)?			
If there is a problem in even one of the above items, the power plant should be stopped immediately and AERA Technical Service should be contacted!				

4.1 Starting Device

4.1.1 Display Control

The display has 4 rows and 20 characters. It has background illumination. The illumination is normally off but is activated as soon as a button is pressed. The illumination will be turned off again after a period of inactivity.

The meanings of the keys that appear on the screen are shown below.



Display Icons Meanings

	ARROW UP: Move up a row in the menu. (Increase parameter value)		**ALARM:** Press to view the alarm list.
	ARROW DOWN: Move down a row in the menu. (Decrease parameter value)	C	**CLEAR:** Reset/Abort a parameter change unless OK has already been pressed.
	ARROW RIGHT: Move to a lower menu level. (Move the cursor to the right in the parameter)		**ALARM LED:** Red, flashing light when there is an unacknowledged alarm. Non-flashing light when there is an acknowledged alarm which has not been reset.
	ARROW LEFT: Move to a higher menu level. (Move the cursor to the left in the parameter)		**WRITE LED:** Some menus contain settable values. This is indicated by the yellow LED flashing. The value can be changed by pressing OK.
OK	**OK:** Open/Activate a selected menu/setting. (Confirm a parameter value)		

4.1.2 Change Parameters

In some menus there are parameters that can be set. This is indicated by the yellow LED with flashing.

A quick blinking (2 times/s) indicates that the parameter can be changed using the present user access. A slower blinking (1 time/s) indicates that a higher user access is required to change the parameter.

To change a parameter, first press the OK button. If you need a higher user access than you have to change the parameter, a log on menu will be displayed, see below. Otherwise, a cursor will appear at the first settable value. If you wish to change the value, do so by pressing the ▲ and ▼ buttons.

In numbers containing several digits you can move between the digits using ◀ ▶ buttons.

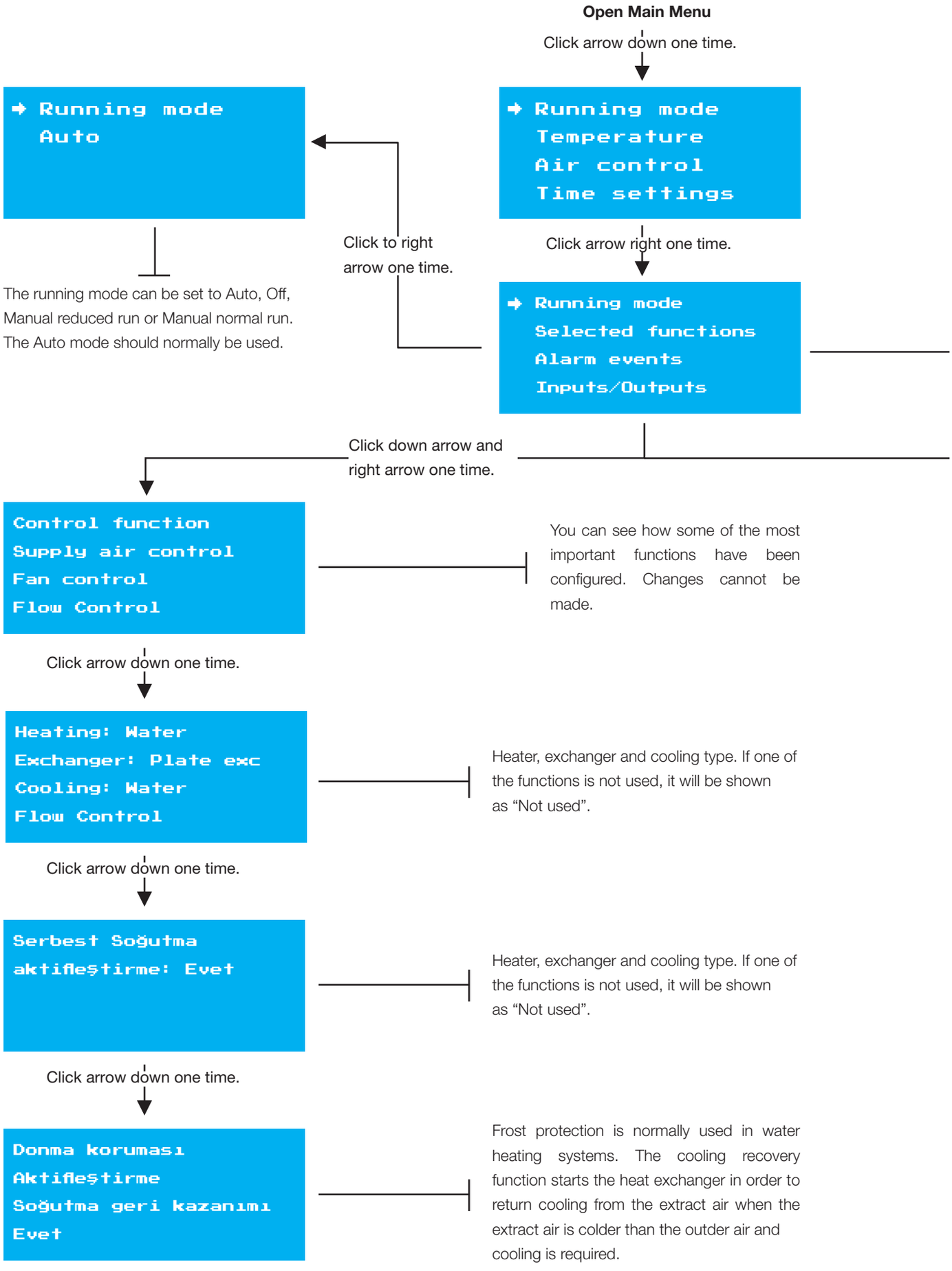
If there are further settable values displayed the cursor will automatically move to the next one.

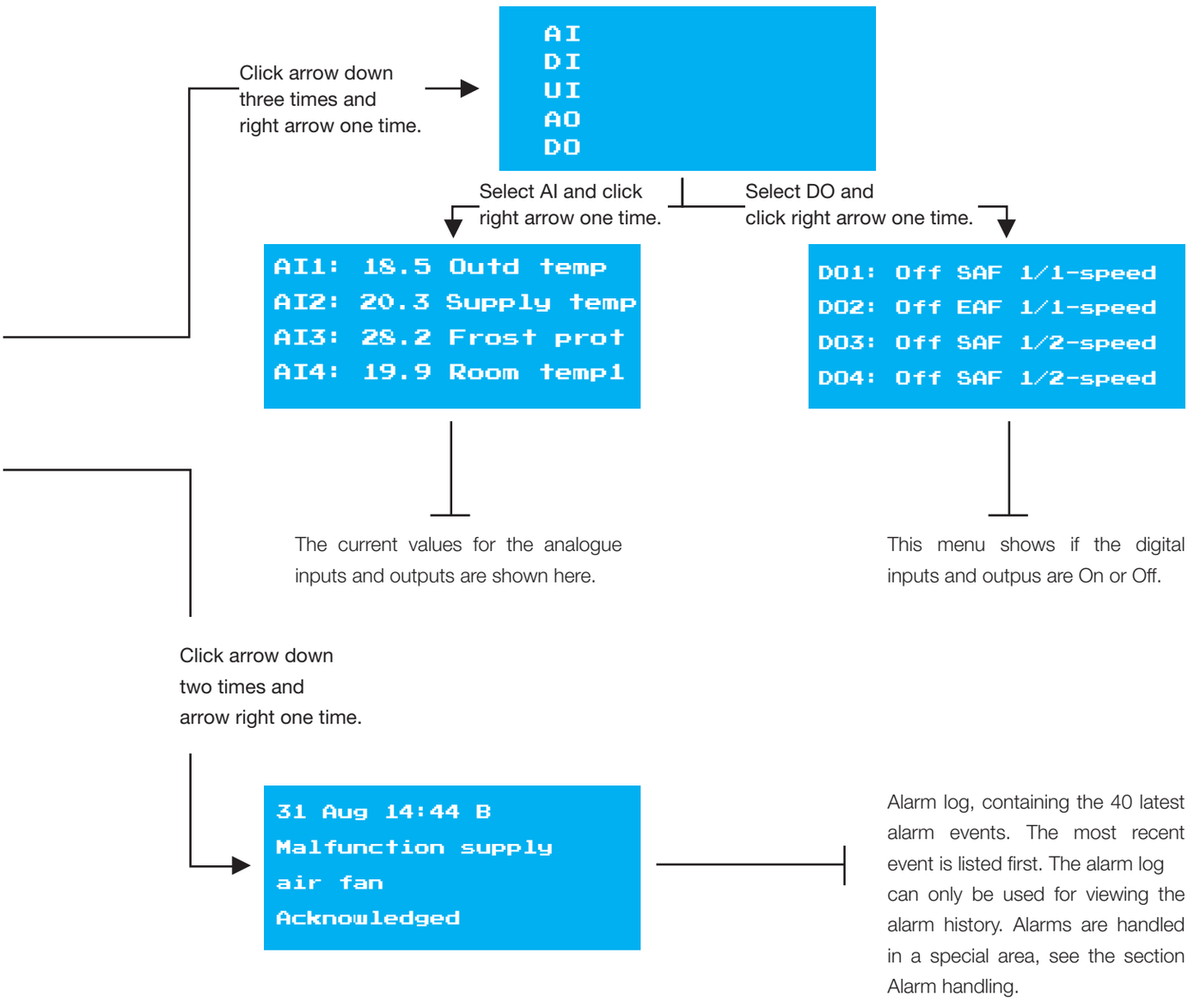
To pass a value without changing it, press ▶

To abort a change and return to the initial setting, press, and hold the C button until the cursor disappears.

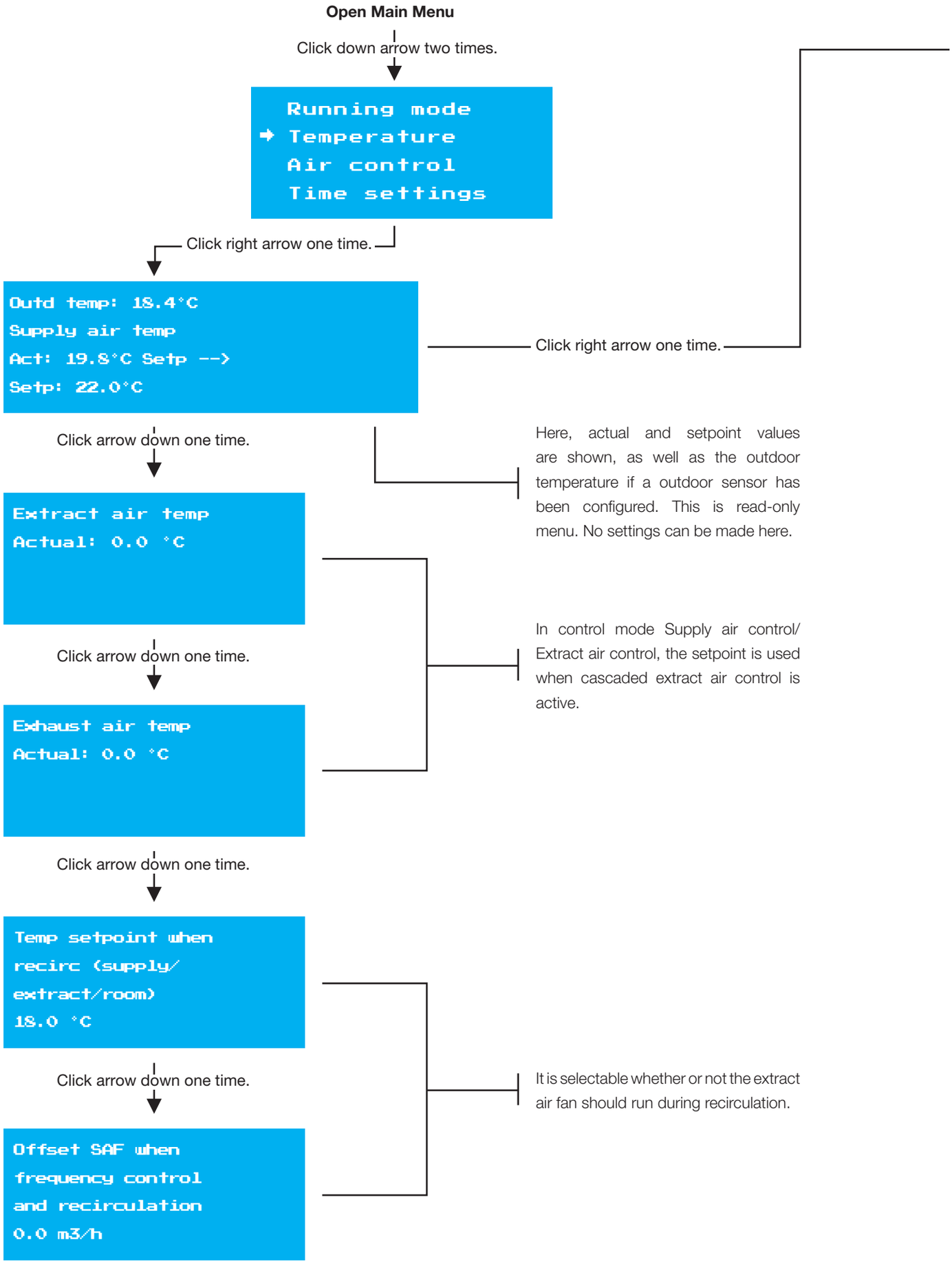
Collected here are a number of menus showing running mode, selected functions, alarm events and status of inputs and outputs.

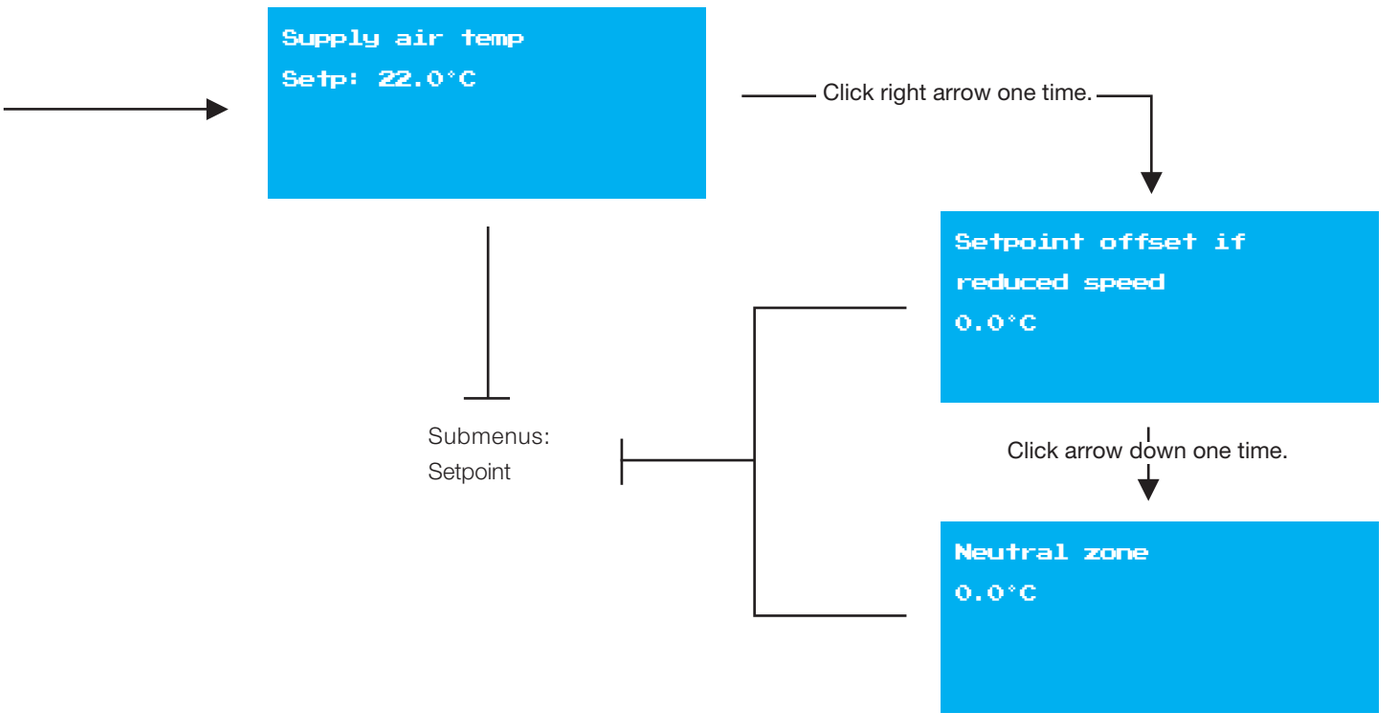
4.1.3 Running Mode



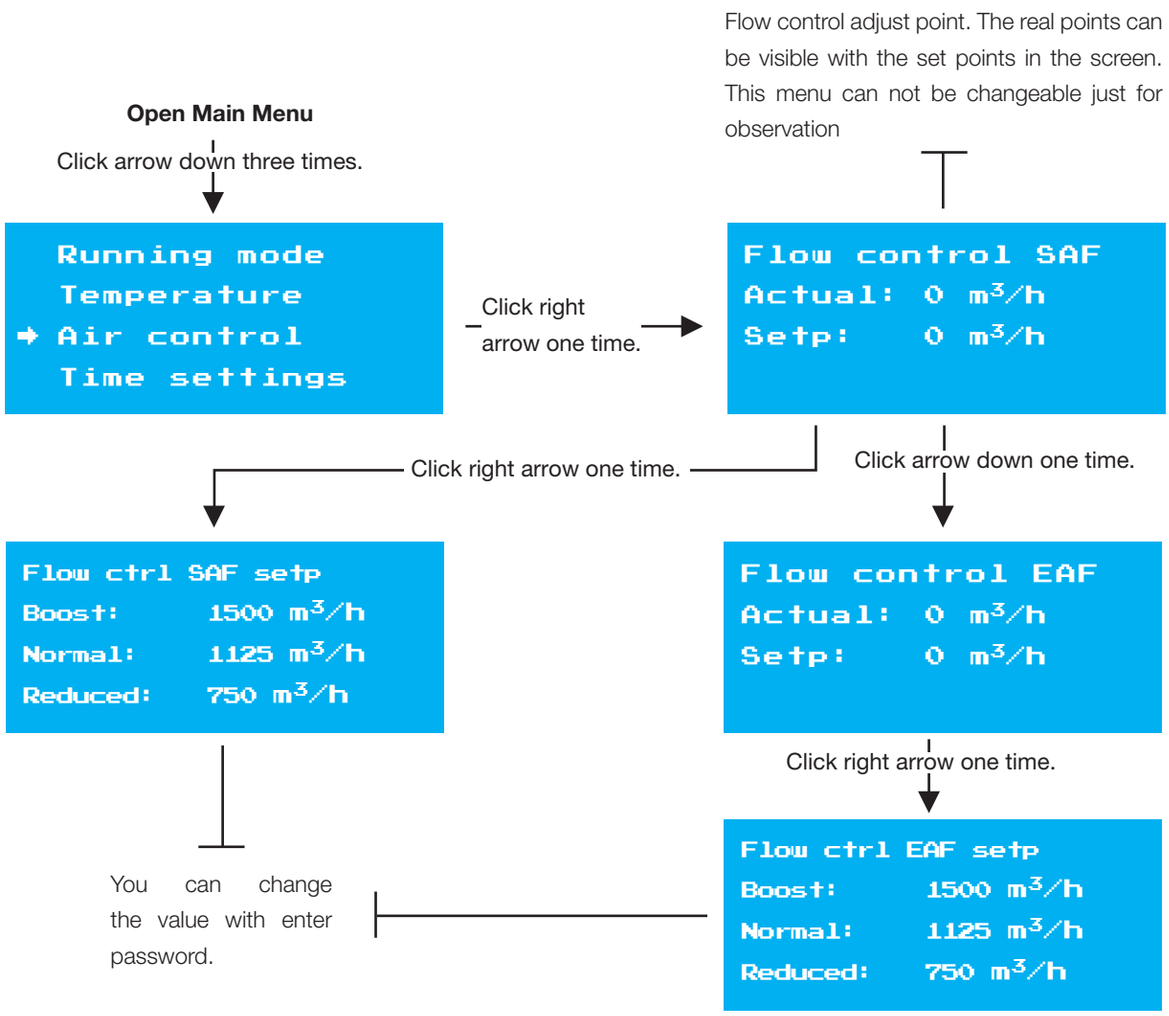

AI
DI
UI
AO
DO
Click arrow down
three times and
right arrow one time.
Select AI and click
right arrow one time.
Select DO and
click right arrow one time.
AI1: 18.5 Outd temp
AI2: 20.3 Supply temp
AI3: 28.2 Frost prot
AI4: 19.9 Room temp1
DO1: Off SAF 1/1-speed
DO2: Off EAF 1/1-speed
DO3: Off SAF 1/2-speed
DO4: Off SAF 1/2-speed
The current values for the analogue inputs and outputs are shown here.
This menu shows if the digital inputs and outpus are On or Off.
Click arrow down
two times and
arrow right one time.
31 Aug 14:44 B
Malfunction supply
air fan
Acknowledged
Alarm log, containing the 40 latest alarm events. The most recent event is listed first. The alarm log can only be used for viewing the alarm history. Alarms are handled in a special area, see the section Alarm handling.

4.1.4 Temperature

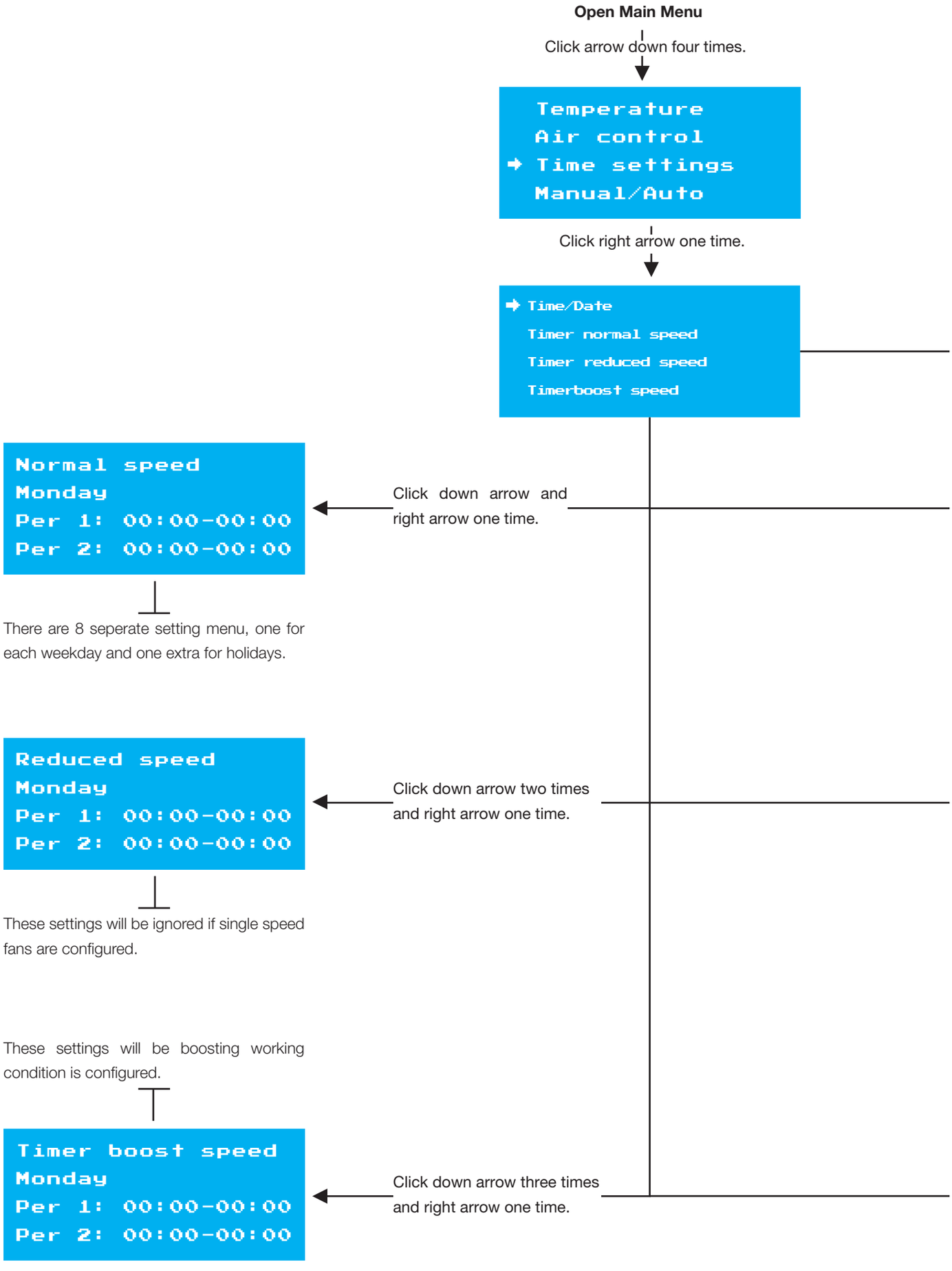




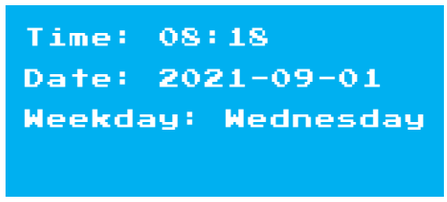
4.1.5 Air Control



4.1.6 Time Settings

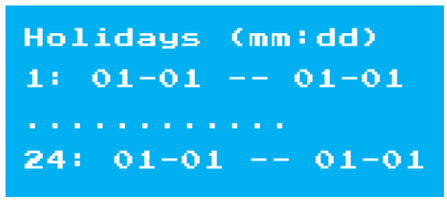


Click right arrow one time.



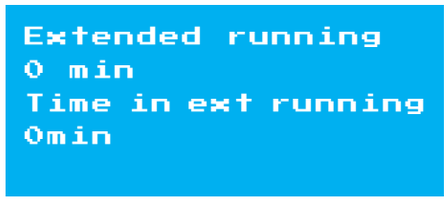
Time is shown in 24-hour format.
Date is shown in YY-MM-DD.

Click down arrow five times and right arrow one time.



Up to 24 seperate holiday periods for a full year can be set.

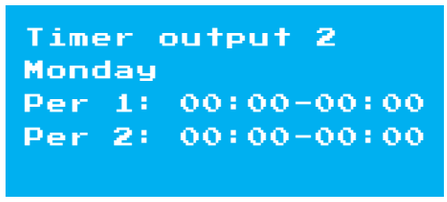
Click down arrow six times and right arrow one time.



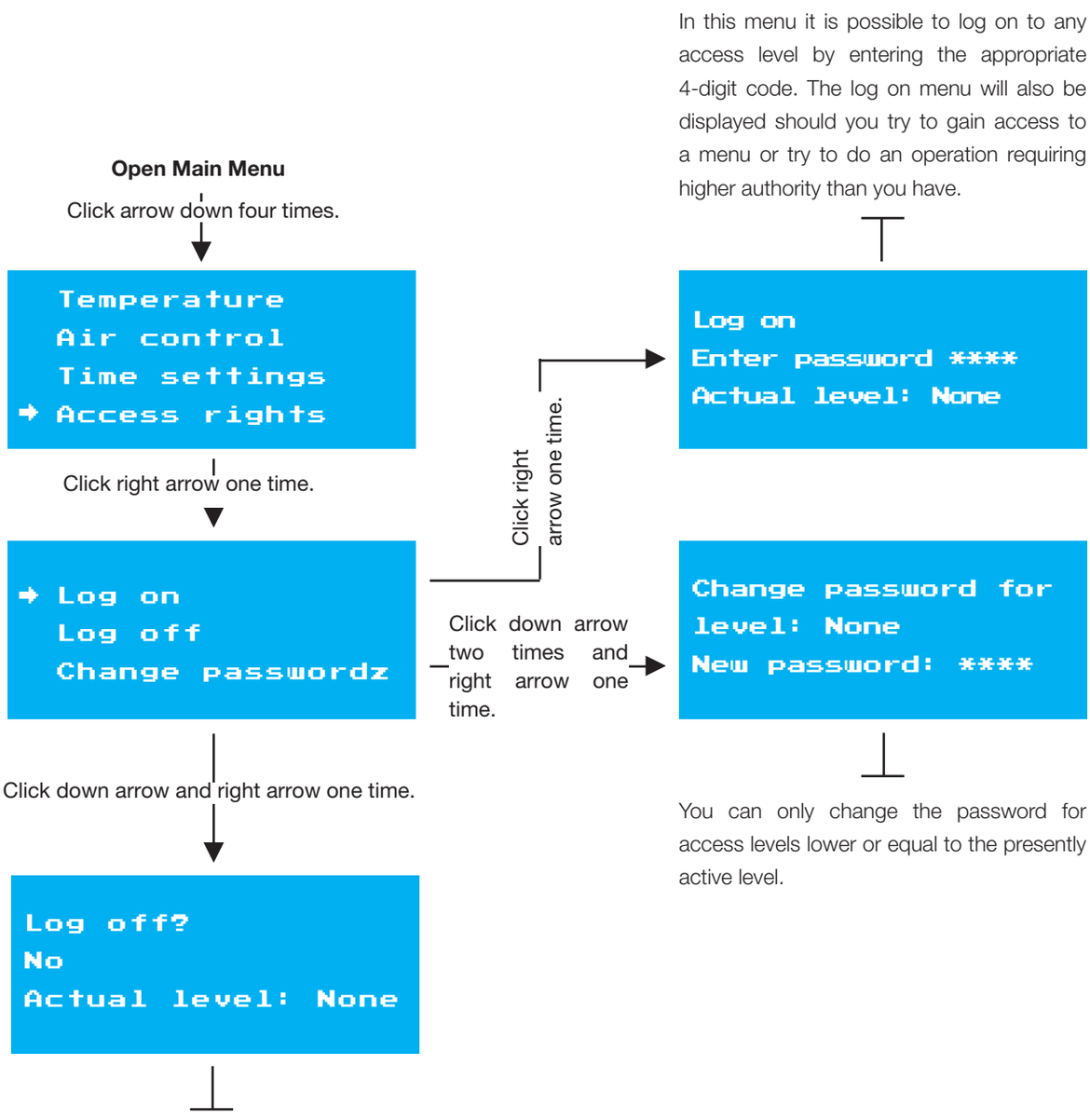
Digital inputs can be used to force the unit to start although the timer says the running mode should be “Off”.

Each timer output has 8 seperate settings menus, one for each weekday and one extra for holidays. Holiday schedules take precedence over other schedules.

Click down arrow four times and right arrow one time.



4.1.7 Access Rights



5 Service and Maintenance

5.1 Service Maintenance Information

Before contacting the technical service, make sure that you have the following information at hand so that any errors that may occur can be rectified as soon as possible:

- Unit delivery date
- AERA order number
- Product name and label information
- Brief description of the error
- Commissioning form
- Post-commissioning control form

5.2 Maintenance Plan

The air handling unit should be checked periodically within the times specified in the plan below, and the necessary actions should be taken.

Komponents	Control Points	Actions	Period		
			3 Month	6 Month	12 Month
Month	Becoming dirty	Cleaning and maintenancing		x	
	Damage and corrosion				x
	Air Leak	Repair		x	
Filter	Filter Pollution	Replace if it is dirty,	x		
	Sealing Elements Check	If it is damaged, it should be repaired / replaced.	x		
Fan	Cleaning			x	
	Check the motor and fan	If it is damaged, it should be repaired / replaced.			x
	Check vibration pads	If it is damaged, it should be repaired / replaced.			x
	Check Flexible fastener	If it is damaged, it should be repaired / replaced.			x
Exchanger	Cleaning			x	
	Damage and Corrosion	If it is damaged, it should be repaired / replaced.			x
	Sealing Elements Check	If it is damaged, it should be repaired / replaced.			x
	Check Bypass	If it is damaged, it should be repaired / replaced.			x

Battary	Cleaning			x	
	Damage and Corrosion	If it is damaged, it should be re-paired / replaced.			x
	plumbing damage / corrosion	If it is damaged, it should be re-paired / replaced.			x
Electric heater	Cleaning			x	
	Damage and Corrosion	If it is damaged, it should be re-paired / replaced.		x	
Humidity	Cleaning			x	
	Damage and Corrosion	If it is damaged, it should be re-paired / replaced.			x
	plumbing damage / corrosion	If it is damaged, it should be re-paired / replaced.			x
Suppressor	Cleaning			x	
	Damage and Corrosion	If it is damaged, it should be re-paired / replaced.			x
Condensa-tion Pan	Temizlik		x		
	Damage / corrosion	If it is damaged, it should be re-paired / replaced.	x		
Damper	Cleaning			x	
	Damage and Corrosion	If it is damaged, it should be re-paired / replaced.			x

5.3 Component Maintenance

Before performing component maintenance, it is necessary to open the doors on the unit or remove the removable panels in order to reach these components. Dismantling procedure for doors and removable panels should be as follow

Doors: The doors of EVO-M series units are protected against external interference by means of special locks. For this reason, in order to open the doors, special lock keys sent with the device are needed.

5.3.1 Filter maintenance

DANGER ⚠ Before any maintenance and installation work or opening the enclosure, the unit must be completely isolated from the mains power supply!

Filter fixing systems in EVO-M series units are offered to users in 2 types.

Replacement of Slide Filters:

- Disconnect the electricity with the switch on the device panel.
- Open the door of the filter module to be replaced with the module key.
- If there is a clamping mechanism, first loosen the mechanism.
- Hold the filter on both sides and gently pull it out
- Remove the filters in all cross sections.
- Drive new filters back, paying attention to air flow direction and size.
- Yeni filtreleri hava akış yönüne ve ölçülerine dikkat ederek geri sürün.

Replacement of Compressed Filters:

- Stop the device and disconnect it from the electricity with the switch on the panel.
- Open the door of the filter module to be replaced with the module key.
- Loosen the clamping wires at the corners of the filter case.
- Gently pull the used filter out of the case and remove it.
- Place the new filters in the case paying attention to the air flow direction and size.
- Compress the filter by using the clamping wires in the filter case completely.

CAUTION After the clamping wires are loosened, the filters may fall out of their casing. The last wire should be loosened by supporting the filters.

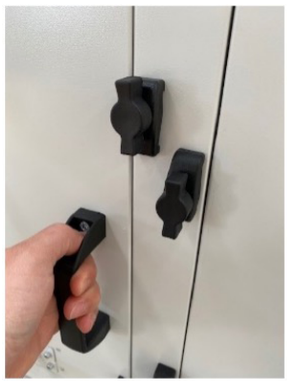
ATTENTION After the filters are removed, the sealing elements on the filter fixing mechanism should be checked. If there are any damaged ones, they should be replaced with new ones.

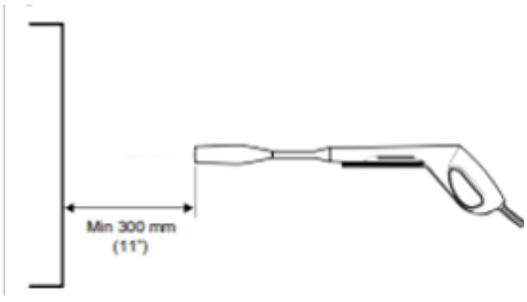
5.3.2 Heat Exchanger Maintenance and Cleaning

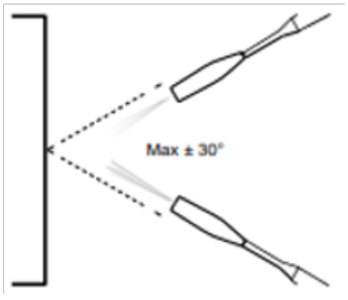
5.3.2.1 Rotary Heat Recovery Systems

The spray machine to be used for heat exchanger cleaning should be at low pressure. Cleaning with high pressure machines can damage the fins and make the heat exchanger unusable.

- Loosen wing fasteners and remove service panel.
- The heat exchanger is cleaned of dust and other contaminants with clean water and low-pressure spray.
- The cleaning of the rotary heat exchangers is done with Fairy branded dishwashing detergent with a cleaning liquid to be prepared with a maximum of 75% water-25% detergent.
- This prepared solution is filled into the low-pressure washing machine and sprayed to the heat exchanger at a maximum angle of 30 degrees and a minimum distance of 30 cm.
- The same process should be repeated until the detergent between the coverslips and clean water is completely cleared.







ATTENTION Cleaning should be done at a maximum angle of 30 degrees. Otherwise, the coverslips may be damaged!

ATTENTION Cleaning should be done from both sides of the heat exchanger. After the process is over, it should not be placed in the unit until it is completely dry!

ATTENTION Rotary heat recovery systems are motor-driven moving systems. Make sure that no liquid gets into the rotor motor and driver during cleaning!

5.3.2.2 Plate Heat Exchanger Heat Recovery Systems

ATTENTION The spray machine to be used for heat exchanger cleaning should be at low pressure. Cleaning with high pressure machines can damage the fins and make the heat exchanger unusable.

- Loosen wing fasteners and remove service panel.
- The heat exchanger is cleaned of dust and other contaminants with clean water and low-pressure spray.
- The cleaning of the rotary heat exchangers is done with Fairy branded dishwashing detergent with a cleaning liquid to be prepared with a maximum of 75% water-25% detergent.
- This prepared solution is filled into the low-pressure washing machine and sprayed to the heat exchanger at a maximum angle of 30 degrees and a minimum distance of 30 cm.
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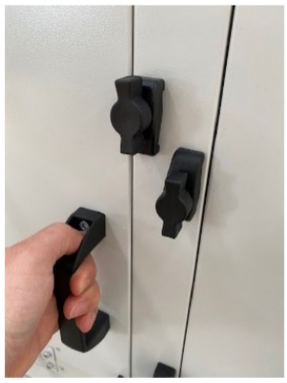
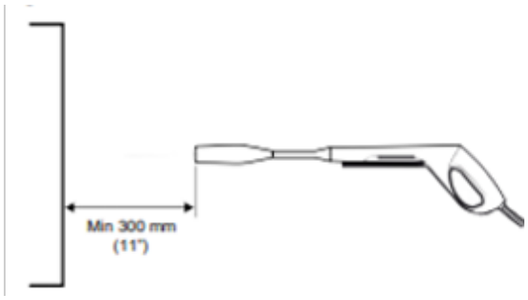
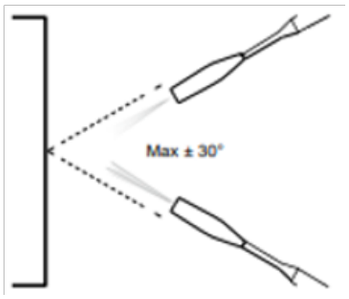






ATTENTION Cleaning should be done at a maximum angle of 30 degrees. Otherwise, the coverslips may be damaged!

Cleaning should be done from all 4 sides of the heat exchanger. After the process is over, it should not be placed in the unit until it is completely dry!

5.3.2.3 Run Around (With Coil) and Heat Pipe Heat Recovery Systems Maintenance and Cleaning

Run Arround and the heat pipe systems include coils basicly. You can find the cleaning informations in the coil cleaning and maintenance section!

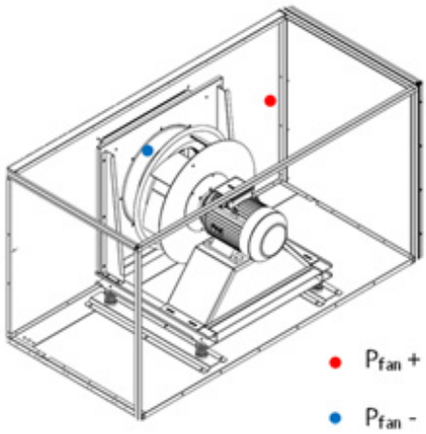
5.3.3 Fan Maintenance and Cleaning

DANGER Before any maintenance and installation work or opening the enclosure, the unit must be completely isolated from the mains power supply!

DANGER ⚠ If there is even the slightest movement on the fan, never open the fan door!

Fans are components that cannot be taken out of the unit due to their nature (Except for units with sliding fan structure produced on special request). For this reason, no intervention should be made by the user, except for general controls about the service.

- Open the fan module door.
- Check the fans for dust accumulation, corrosion, or damage.
- Turn the fan wheel by hand and check for any mechanical friction, knocking, or clicking noise.
- Check the tightness of the fasteners in general.
- If it is Plug Fan, check the vibration wedges for any damage or loosening.
- If it is a plug fan, check if there is any laceration in the flexible connections.
- Check the hose connections at the pressure measurement points.

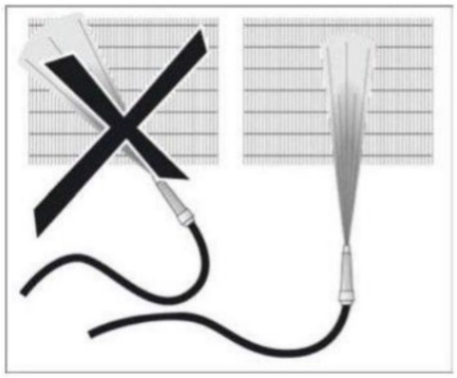


5.3.4 Coil Maintenance and Cleaning

- Because the working pressure of the heat exchanger is higher than atmospheric pressure, care should be taken against any operation that may affect the sealing or cause structural damage (Damages that are generally found at high temperatures and pressures and may cause internal fluid leakage or emission that could harm people / the product).
- All maintenance should be done when the heat exchanger is not operating. Internal fluid must be completely drained, connections that will impair the tightness must not be loosened until the internal pressure reaches atmospheric pressure. The temperature of the product components should not be higher than 35 ° C or ambient temperature.
- Before starting the system, make sure that gaskets are placed on all heat exchanger connections.
- The system should be vented regularly to prevent air from remaining in the cycle.
- When the heat exchanger is disassembled for any reason, new gaskets must be used. This process will prevent leaks from seals that become brittle over time due to dehydration.
- The heat exchanger should never be left filled with fluid while it is not operating to avoid freezing problems.
- Anti-freezing thermostats should be used.
- It should be ensured that all parts of the system are clean and in the most suitable condition for working conditions.

Cleaning

- Heat exchangers should be free of dirt and dust. Dirt/dust accumulating on the surface will cause a loss of capacity by forming a layer that will affect the heat transfer.
- The surface of the heat exchanger should be checked for dirt and dust and if necessary, cleaned with a soft brush, compressed air, pressurized hot water, or a similar method.
- Maintenance should be taken that the high air/water pressure value used during cleaning does not cause damage / bending on the coverslips.
- The washing process should be done parallel to the coverslip surface. Chemicals that can react with the materials used in the product should be avoided. When necessary, suitable chemicals that will not react with the material can be used.



5.3.5 Electric Heater Maintenance and Cleaning

DANGER ⚠ The unit must be completely isolated from the mains power supply before any maintenance and installation work or opening the enclosure!

CAUTION ⚠ Electric heater components can still be hot when the power plant is stopped! It should not be intervened before it is completely cooled!

CAUTION ⚠ The electric heater should not be operated before it is completely dry after cleaning!

Cleaning:

- The heating elements and body of the electric heater should be wiped with a damp cloth.
- The area with electrical and electronic components should be cleaned using only compressed air!

NOT: There are thermal protections on the electric heaters that SUPPLY at temperatures of 70 degrees and 90 degrees. Of these protections, it is 70 degrees with automatic reset. However, the 90 degrees must be reset manually. After the electricity is cut off, the 90-degree thermostat must be reset through the hole on the electric heater body!

5.3.6 Moisturizer Maintenance and Cleaning

Maintenance and cleaning of humidification systems should be done in accordance with the user manuals included in the humidifier.

For cleaning the stainless-steel condensation pans under the humidifiers, see section 5.3.8 “Condensation Pan Care and Cleaning”.

5.3.7 Silencer Maintenance and Cleaning

In EVO-M series air handling units, silencers are fixed to the body of the unit with trapezoidal screws. In case of need for service, the silencers can be taken out by removing these screws.

Silencers should be checked for damage and lacerations at the intervals specified in the maintenance plan.

Cleaning of the silencers should be done by wiping with a slightly damp cloth. Compressed air/pressure washers should not be used during cleaning. These units may cause the silencer lining to laceration and the silencer to become unusable!

If there is a damaged silencer, AERA Technical Service should be contacted for spare parts.

5.3.8 Condensation Pan Maintenance and Cleaning

Condensation pans are maintenance-free materials. Pans should be wiped with a damp cloth for cleaning. Light cleaning materials such as FAIRY used in heat exchanger cleaning can be used for pan cleaning.
Siphons connected to the condensation pan should be checked in the periods specified in the maintenance plan. If there is no water in it, it should be completed.

5.3.9 Damper Maintenance and Cleaning

CAUTION ⚠ During damper checks, the unit must be completely turned off, its electrical connection must be disconnected, and if damper motors are connected, they must be disassembled.

Dampers should be checked on the following issues in the periods specified in the maintenance plan. If problems are encountered after the control, the Problem-Solving section should be examined. If the problem could not be solved despite this, AERA Technical Team should be contacted.

- Can the dampers open and close smoothly?
- Is there any wear/laceration/detachment on damper seals?
- Are there any crooked/broken/cracking/crushing of damper blades?

5.3.10 Body Cleaning

The interior and exterior surfaces of the switchboard should be checked within the period specified in the maintenance plan. Regarding the negativities detected because of the control, the “Problem Solving” section should be examined first, and if the problem cannot be solved, the AERA Technical Team should be contacted. Control points are as follows.

- Are there any knocks/dents/splitting in the body of the unit?
- Is water leaking from the appliance?
- s there any visible corrosion or wear on the outside of the unit?
- Are the doors dropping?

Use a damp cloth for body cleaning.

5.4 Alarms

CAUTION ⚠ This section should be reviewed by a person with sufficient knowledge of electricity. Appropriate precautions must be taken before any intervention.

	ALARM	PRIORITY	THINGS TO DO
1	SAF Failure	B	The ventilator fan needs to be checked.
2	EAF Failure	B	The extractor fan needs to be checked.
3	P1 HEATER FAILURE	B	Heater pump failure. Check if the unit has a pump outlet. Check the pump.
4	P1 COOLER FAILURE	B	Cooler pump failure. Check if the unit has a pump outlet. Check the pump.
5	P1 EXCHANGER FAILURE	B	Heat exchanger pump failure. Check the pump.
6	FILTER ALARM 1	B	Check if the filter on the supply side is dirty.
7	FIRE ALARM	A	Check the fire status information connections.
8	EXTERNAL SWITCHING	C	External start warning.
9	EXTERNAL ALARM	B	External alarm warning.
10	SUPPLY AIR CONTROL ERROR	B	It is an alarm indicating that the difference between the supply temperature set value and the reading air temperature is too high. Whether there is hot water in the system, the valve motor opened, the status of the bypass valve, etc. do checks.
11	HIGH SUPPLY TEMPERATURE ERROR	B	The supply air is above the specified limit. Check the heating actuator or electric heater.
12	LOW SUPPLY TEMPERATURE ERROR	B	The supply air is below the specified limit. Check cooling valve or DX Unit.
13	HIGH ROOM TEMPERATURE	B	Room temperature is above the specified limit. Check the temperature control equipment. Heater valve, DX Unit, etc.
14	LOW ROOM TEMPERATURE	B	Room temperature is below the specified limit. Check refrigeration control equipment. Refrigerant valve, DX Unit, etc.

15	ELECTRIC HEATER HIGH TEMPERATURE	A	Electric heater high-temperature failure. Check if there is air flow. Check heater wiring connections. Cut off the power and check the heater.
16	FREEZING RISK	B	Freeze alert.
17	LOW FREEZING TEMPERATURE	A	The value from the freezing temperature sensor is below the specified limit.
18	LOW EFFICIENCY	B	Check the switchboard parameters.
19	OUTDOOR TEMPERATURE SENSOR ERROR	B	Check the outdoor sensor.
20	VENTILATION MANUAL MODE	C	The unit was operated in manual mode warning.
21	MANUAL SUPPLY AIR CONTROL ERROR	C	The supply air warning in manual mode.
22	MANUAL SUPPLY FAN MODE ERROR	C	The supply fan warning in manual mode.
23	MANUAL SUPPLYING FREQUENCY CONTROL	C	The frequency converter warning in manual mode.
24	MANUAL EXCHANGER FREQUENCY CONTROL	C	The heat exchanger warning in manual mode.
25	MANUAL HEATER CONTROL ERROR	C	The heater warning in manual mode.
26	MANUAL EXCHANGER CONTROL ERROR	C	The heat exchanger warning in manual mode.
27	MANUAL COOLER CONTROL ERROR	C	The cooler warning in manual mode.
28	MANUAL P1 HEATER	C	P1 heater pump warning in manual mode.
29	MANUAL P1 HEAT EXCHANGER	C	P1 heat exchanger warning in manual mode.
30	MANUAL P1 COOLER	C	P1 cooler pump warning in manual mode.
31	SUPPLY TEMPERATURE SENSOR ERROR	B	Check the relevant sensor connections.
32	HEAT EXCHANGER SENSOR ERROR	B	Check the relevant sensor connections.
33	ROOM TEMPERATURE 1 SENSOR ERROR	B	Check the relevant sensor connections.
34	ROOM TEMPERATURE 2 SENSOR ERROR	B	Check the relevant sensor connections.
35	EXTERNAL AIR TEMPERATURE SENSOR ERROR	B	Check the relevant sensor connections.
36	EXTRA SENSOR 1 SENSOR FAILURE	B	Check the relevant sensor connections.
37	SAF PRESSURE SENSOR ERROR	B	Check the relevant sensor connections.
38	EAF PRESSURE SENSOR ERROR	B	Check the relevant sensor connections.
39	FROST PROTECT TEMPERATURE SENSOR ERROR	B	Check the relevant sensor connections.
40	FROST PROTECTION SENSOR ERROR	B	Check the relevant sensor connections.

41	CO2 SENSOR ERROR	B	Check the relevant sensor connections.
42	ROOM HUMIDITY SENSOR ERROR	B	Check the relevant sensor connections.
43	MOISTURE PIPES SENSOR ERROR	B	Check the relevant sensor connections.
44	EXTRA UNIT TEMPERATURE SENSOR ERROR	B	Check the relevant sensor connections.
45	EXTERNAL CONTROL SAF SENSOR FAILURE	B	Check the relevant sensor connections.
46	EXTERNAL CONTROL EAF SENSOR FAILURE	B	Check the relevant sensor connections.
47	SAF PRESSURE 2 SENSOR ERROR	B	Check the relevant sensor connections.
48	OUTDOOR HUMIDITY SENSOR FAILURE	B	Check the relevant sensor connections.
49	INPUT TEMPERATURE SENSOR ERROR	B	Check the relevant sensor connections.
50	EXTRA SENSOR 2 SENSOR ERROR	B	Check the relevant sensor connections.
51	EXTRA SENSOR 3 SENSOR ERROR	B	Check the relevant sensor connections.
52	EXTRA SENSOR 4 SENSOR ERROR	B	Check the relevant sensor connections.
53	EXTRA SENSOR 5 SENSOR ERROR	B	Check the relevant sensor connections.
54	SAF EXTRA PRESSURE SENSOR ERROR	B	Check the relevant sensor connections.
55	EAF EXTRA PRESSURE SENSOR ERROR	B	Check the relevant sensor connections.
56	SAF FREQUENCY CONVERTER ERROR	C	Check the frequency converter, then check the motor.
57	EAF FREQUENCY CONVERTER ERROR	C	Check the frequency converter, then check the motor.
58	SAF FREQUENCY COMMUNICATION ERROR	C	Check the communication cables.
59	EAF FREQUENCY COMMUNICATION ERROR	C	Check the communication cables.
60	EXPANSION UNIT 1 COMMUNICATION ERROR	C	Check the communication cables.
61	EXPANSION UNIT 2 COMMUNICATION ERROR	C	Check the communication cables.
62	SAF FREQUENCY CONVERTER WARNING	C	Check the frequency converter.
63	EAF FREQUENCY CONVERTER WARNING	C	Check the frequency converter.
64	SERVICE TIME	C	Service control of the unit should be provided.
65	Y4 EXTRA SEQUENCE CONTROL MANUAL	B	Manual Y4 control warning.
66	Y5 EXTRA SEQUENCE CONTROL MANUAL	C	Manual Y5 control warning.

67	FILTER PROTECTION 2 ERROR	B	Check if the filter on the return side is dirty.
68	EXTRA SENSOR HIGH TEMPERATURE 1	-	Check the place where the extra sensor is located.
69	EXTRA SENSOR LOW TEMPERATURE 1	-	Check the place where the extra sensor is located.
70	EXTRA SENSOR HIGH TEMPERATURE 2	-	Check the place where the extra sensor is located.
71	EXTRA SENSOR LOW TEMPERATURE 2	-	Check the place where the extra sensor is located.
72	EXTRA SENSOR HIGH TEMPERATURE 3	-	Check the place where the extra sensor is located.
73	EXTRA SENSOR LOW TEMPERATURE 3	-	Check the place where the extra sensor is located.
74	EXTRA SENSOR HIGH TEMPERATURE4	-	Check the place where the extra sensor is located.
75	EXTRA SENSOR LOW TEMPERATURE4	-	Check the place where the extra sensor is located.
76	EXTRA SENSOR HIGH TEMPERATURE 5	-	Check the place where the extra sensor is located.
77	EXTRA SENSOR LOW TEMPERATURE 5	-	Check the place where the extra sensor is located.
78	EXTRA ALARM 1	-	Check the extra alarm set designated as DI.
79	EXTRA ALARM 2	-	Check the extra alarm set designated as DI.
80	EXTRA ALARM 3	-	Check the extra alarm set designated as DI.
81	EXTRA ALARM 4	-	Check the extra alarm set designated as DI.
82	EXTRA ALARM 5	-	Check the extra alarm set designated as DI.
83	EXTRA ALARM 6	-	Check the extra alarm set designated as DI.
84	EXTRA ALARM 7	-	Check the extra alarm set designated as DI.
85	EXTRA ALARM 8	-	Check the extra alarm set designated as DI.
86	EXTRA ALARM 9	-	Check the extra alarm set designated as DI.
87	EXTRA ALARM 10	-	Check the extra alarm set designated as DI.
88	EXTRA UNIT MANUAL MODE ERROR	-	The function determined as an extra warning in the manual mode.
89	EXPANSION UNIT 3 COMMUNICATION ERROR	-	Check the communication cables.
90	EXPANSION UNIT 4 COMMUNICATION ERROR	-	Check the communication cables.
91	LOW OUTDOOR TEMPERATURE	-	Check the outdoor sensor.
92	HIGH OUTDOOR AIR TEMPERATURE	-	Check the outdoor sensor.
93	EXPANSION UNIT 5 COMMUNICATION ERROR	-	Check the communication cables.
94	EXPANSION UNIT 6 COMMUNICATION ERROR	-	Check the communication cables.

5.5 Solve problem

FAULT	SYMPTOM	POSSIBLE CAUSE	SOLUTION
The air handling unit is noisy.	High air velocity	Air flow too high	Check if the airflow appropriate to the project value. If not, set it to the appropriate value.
		Duct sections, small for the application	Check the duct size and revise if necessary.
		Fan too small for the application	Contact the AERA Technical Team.
		Serpentine with the insufficient front surface	Contact the AERA Technical Team.
		Small vents for application	Check if the airflow appropriate to the project value. If not, set it to the appropriate value.
	Fan-Motor Noise	Worn or damaged fan wheel	Replace the fan wheel.
		Damaged suction funnel	Remove and straighten the funnel, replace if necessary.
		Bush loose	Tighten the bushing, replace if necessary.
		Worn or damaged fan wheel	Replace the fan wheel.
		Unbalanced (Balanced) fan wheel	Contact the AERA Technical Team.
		Motor bearing damage/failure	Contact the AERA Technical Team.
		Motor cooler damage/failure	Contact the AERA Technical Team.
		The foreign item inside the unit or in the fan	Clean the inside of the unit and fan.
	Vibration	Vibrating ducts	Fasten up the ducts.
		Vibrating body parts	Fasten up or properly isolate parts that cause vibration.
		A vibration isolator is not placed between the vibrating parts and the building.	Put vibration isolator under the switchboard.
		Fan spring insulators loose / damaged	Check insulators, replace if necessary.
	Whistling	Clogging in dampers, vents	Check dampers and vents, correct/ clean if necessary.
		General leakage	Check the leak section.
		Sharp elbows	Remove sharp elbows install elbows of appropriate diameter and directional blades.
		There is a sudden widening or narrowing of the duct	Replace the expansion/contraction chambers with the appropriate angle expansion/contraction chambers.

FAULT	SYMPTOM	POSSIBLE CAUSE	SOLUTION
In the air handling units, no airflow/motor not running	There is no power supply to the motor	Power be off	Check the electrical supply line. Troubleshoot the fault.
			Check motor connections, correct if necessary.
			Check terminals and contactors, correct if necessary.
		Thermal burnout	Contact the AERA Technical Team.
		Control panel error	System connections are checked.
		Main switch off	Turn on the main switch.
	There is power supply to the motor	Incorrect connection to terminals	Fix the connections.
		Motor oils	Contact the AERA Technical Team.
		Motor burned out	Contact the AERA Technical Team.
		Damper/flaps may be closed	Check dampers and flaps, correct if necessary.
In the air handling units, no airflow/motor running	The fan wheel not turning	Fan wheel and motor shaft connection loose	Tighten the bushing, replace if necessary.
	The fan wheel is spinning	Clogging in ducts	Check/remove congestion in the duct.
		Fan rotation direction is not correct	Correct the fan rotation direction.
		Damper closed in suction or blowing	Check the damper positions, if it is closed, open it.
Low airflow in air handling units	Low airflow	Filters are dirty or clogged	Change or clean filters.
		Coils dirty or clogged	Clean the coils.
		External pressure loss higher than the rated value	Check duct pressure losses and duct design.
		Fan rotation direction is not correct	Correct the fan rotation direction.
		There is a leak in the unit	Check the leak section.
		Dampers do not clear enough	Check and correct damper positions.
		High fan k factor value (in automation units)	Correct the K-factor value (in automation units)
	Excessive leakage on the pressure side of the system	Doors do not close properly/ fallen	Check the door gaskets and replace them if necessary.
			Check the door hinges, adjust if necessary.
		Duct connections are not isolated	Make duct connections sealed.
		The fire damper may be closed.	Check and open if necessary.
		VAVs may be turned off, out of adjustment, or incorrectly selected.	Contact the mechanical installers.
		The duct outlet may be closed or clogged.	Check and remove clogging if necessary

FAULT	SYMPTOM	POSSIBLE CAUSE	SOLUTION
In air handling units, high airflow	High Airflow	Low fan k factor value (in automation units)	Correct the K-factor value (in automation units)
		External pressure loss less than the design value	Lower the fan speed.
	Excessive leakage on the suction side of the system	Doors do not close properly/ fallen	Check the door gaskets and replace if necessary.
			Check the door hinges, adjust if necessary.
	Excessive motor current	The supply voltage is low.	The voltage of the supply to the motor must be corrected.
		Doorways are not installed.	Install the doorways.
		Filters are not installed.	Install the filters.
		The filters are clean, so the initial pressure difference is low.	The operating frequency settings of the motor are made. VAV, CAV, and fire dampers are checked.
No heating/cooling in air handling units	No airflow.	See the “No airflow” section.	See the “No airflow” section.
	Incorrect temperature setting.	Heating/cooling set temperature low/high	Bring the set temperature to the project level.
	Serpentine Heater/refrigerant fluid not coming.	There is air in the system.	Bleed the serpentines.
		Two-way or three-way valves are closed/faulty.	Check valves and actuators, replace if necessary.
		The hot/cold water system is faulty.	Check the hot/cold water system, correct if necessary.
		Serpentine frozen (heating serpentine only)	Add glycol to the system.
			Determine damage, replace if necessary.
		Mechanical regulated valves are closed.	Open the valves.
		Pipe connections leaking water.	Check the pipe connections. Replace if necessary.
		Coil damaged / defective / burst	Determine damage, replace if necessary.
	Heating/cooling coil cold/hot	Boiler/chiller temperature is insufficient	Check the set setting. If it does not change, adjust the boiler/chiller temperature.
Insufficient / excessive heating / cooling in air handling units	Airflow high / low	See section high / low airflow	See section high / low airflow
	Heater / refrigerant flow high / low	Two-way or three-way valves closed / faulty	Check valves and actuators, replace if necessary.
		Pump power	Check pump power. Replace the pump if necessary.
		Pipe dimensions	Check the pipe dimensions. Replace if necessary.
		Serpentine is clogged.	Clean the strainers, replace them if necessary.
		Strainers are full	Clean the strainers, replace them if necessary.

FAULT	SYMPTOM	POSSIBLE CAUSE	SOLUTION
Electric heater - No heating	There is no power in the controller.	No electricity	Locate and repair the error.
		Contactor is faulty	Contact the AERA Technical Team.
		The safety thermostat shut down the system.	Check the safety thermostat, make sure there is airflow. Reset the thermostat.
	There is power in the controller.	The resistor is faulty	Contact the AERA Technical Team.
		Heater disconnected/wiring incorrect/low voltage	Check connections, correct if necessary.
		Temperature set point too low	Adjust the temperature set.
Electric heater - under / over Heating	Heating Element is defective	There is a leak in the element, it is grounding.	Contact the AERA Technical Team.
	Air flow high / low	See section high / low airflow	See section high / low airflow
	Set value too low	Temperature set point too low	Adjust the temperature set.
Steam humidifier - no humidification	There is no energy.	Fuse capacity low/defective	Check the fuse, remove, or replace if necessary.
		Supply connections wrong / missing	Fix the connections.
	Heater is faulty	Electrodes are defective.	Contact the AERA Technical Team.
		There is no water in the boiler.	
		The solenoid valve is faulty.	
	The humidity sensor is faulty.	Humidity sensor oxidized / damaged / cable broken / disconnected	Check the cables, replace them if necessary.
	There is no water in the cylinder.	Humidifier solenoid valve defective.	Contact the AERA Technical Team.
		Strainers full / valve closed	Check valve and strainers, replace if necessary.

FAULT	SYMPTOM	POSSIBLE CAUSE	SOLUTION
There is a water leak from the air handling unit.	The drain pan is full.	The drain pan inside the air handling unit is clogged.	Check the pan and pipe, clean if necessary.
		There may be water leakage in the water coils inside the air handling unit.	Turn off the water connections, check the coil. Contact AERA Technical Team in case of damage detection.
		The siphon is not working.	Check siphon, clean, or replace if necessary.
		The drainage pipe outside the switchboard may be clogged.	Contact your plumber.
	Coil connections are dripping/ leaking.	The unions are loose / cracked or leaking from the welds.	Contact your plumber.
	The heating coil is dripping/ leaking.	The heating coil damaged/ burst.	Contact the AERA Technical Team.
	There are water drops after the cooling coil.	Drip tray installed incorrectly / broken	Check the drip tray, correct if necessary, or request a new one.
	Water accumulation in the unit	Storage shortage	The unit got water while it was waiting at the construction site. Please clean.
		The unit is not installed correctly.	Check, install according to the manual.
		The unit is damaged	Contact the AERA Technical Team.
		Weather protection assembly does not correct	Check, install according to the manual.
		Positioning the indoor unit outdoors	Attach the appropriate weather protection to the unit.

FAULT	SYMPTOM	POSSIBLE CAUSE	SOLUTION
There is an air leak in the air handling unit.	Whistling sound from module combinations	The unit is not equilibrium.	Balance the unit.
		Module fasteners are not tightened completely.	Tighten the module joints.
		Module joint gaskets damaged/ missing	Check gaskets, replace them if necessary.
	Whistling sound at panel joints.	There is no silicone between the panels inside the unit/ damaged.	Check all joints, apply silicone if necessary.
		Panel screws are loose.	Tighten the panel screws.
	Whistling from door frames.	Door locks do not crush the gasket.	Check the locks, tighten them if necessary.
		The door has sagged/fallen	Adjust the doors.
		Door gaskets missing / damaged	Check gaskets, replace them if necessary.
	Whistling in duct connections.	Duct connection gaskets damaged/wrecked	Check duct connection gaskets, replace them if necessary.
		Duct connections are loose.	Tighten duct connections, replace them if necessary.
		Duct connections are not enough.	Tighten duct connections with G-clips.
	Leak location cannot be determined	Drain pan outlets open	Check that the drain pans have siphons, or plug them in.
		Coil collectors damaged	Contact the AERA Technical Team.
There is insulation material in the duct.	Silencer damage	The silencer is torn	Contact the AERA Technical Team.

5.6 Spare Parts and After Sales Services

I. Emergency Stop Button
II. Door Switches
III. Dampers
IV. Filters
V. Coils
VI. Electric Motors
VII. Fans
VIII. Door Lock and Door Handles
IX. Belt Pulleys

5.7 After-Sales Services

AIn the AERA EVO-M air handling units, there is no part replacement or repair work to be done by the user, except for cleaning and eye control. Users should contact the AERA company for any malfunctions detected during commissioning or maintenance. Contact the address given below for your service needs and problems.

FACTORY
3. Cadde No:13 Pancar OSB, Torbalı - İzmir
TEL +90 232 799 0 111 FAKS +90 232 799 01 14

FACTORY II
14. Cadde No: 13 Pancar OSB, Torbalı İZMİR TÜRKİYE

NOTES

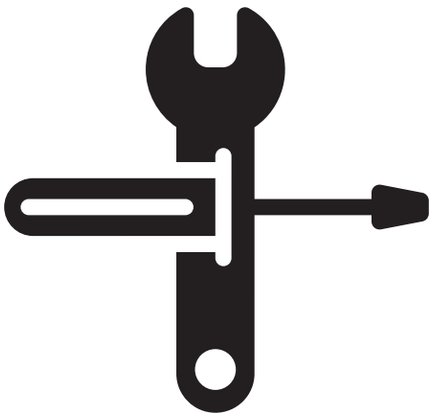
NOTES

User's
Manual

EVO-MODULAR

AIR HANDLING UNITS

KA.TA.001 • 22.11.2021 • REV 02



AERA iKLiMLENDiRME TEKNOLOJiLERi SAN. VE TiC. AŞ

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Varyap Meridian, Grand Tower A Blok No:89 Ataşehir İSTANBUL
TEL +90 216 504 76 86 FAKS +90 216 504 76 90

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3. Cadde No:13 Pancar OSB, Torbalı - İzmir
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R&D CENTER
10032 sokak No:2/1 B:210 Bilimpark ITOB, Menderes İZMİR

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