Operation & Maintenance

AME 900 F

AIRMASTER

SAFETY INSTRUCTIONS

- This manual must be read before using the Airmaster air handling unit. Compliance with the manual ensures correct use of this product.
- When using the unit in a room with a fire or stove drawing air from the room, all applicable provisions must be observed.
- The unit should not be used in rooms with abrasive particles or flammable or corrosive gas in the air, in wet rooms or explosion-protected rooms.
- The unit should not be used without the filters specified in this manual.
- The manufacturer cannot be held liable for damage arising from use in contravention of these instructions.
- The manufacturer reserves the right to make changes without notice. All values stated are nominal values and can be affected by local conditions.
- Failure to observe the warnings indicated by a danger symbol implies a risk of personal injury or damage to property.
- This guide relates to the Airmaster unit it accompanies plus all equipment, and must be given to and saved by the unit's owner.

All necessary data and guides to network integration can be downloaded from www.airmaster-as.com

WARNINGS

The unit must be disconnected from mains electricity and precautions taken against accidental use before service covers can be opened..

The unit may not be started up until all service covers and grates on duct connections have been installed.

The installer must wear personal protective safety equipment, such as safety shoes, during the installation of the unit.

Place of installation and serial numbers:

Type	
Delivery date	
Serial number	
Place of installation	

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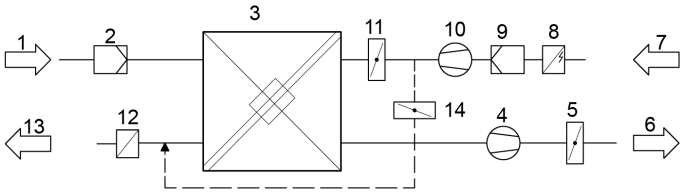
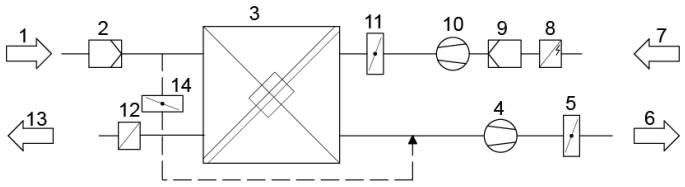
1 Function principle

The diagram below shows the basic function of an Airmaster air handling unit:

Bypass: Fresh air side



Bypass: Exhaust air side



1. Extract air (waste air from the room).
2. Extract air filter.
3. Counter-current heat exchanger(s): heat exchangers effectively transfer heat energy from the extract air to the inlet air.
4. Extract air fan.
5. Motorized exhaust air damper: shuts off the extract air path when the unit is stopped.
6. Exhaust air.
7. Supply air (fresh air form outside)
8. Preheating surface (option): supports the de-icing function.
9. Supply air filter.
10. Supply air fan.
11. Motorised supply air damper: shuts off the supply air path when the unit is stopped.
12. Comfort heater (option): equalises the minor temperature loss in the heat exchanger (pos. 3).
13. Inlet (supply of heated outside air).
14. Modulating bypass: the bypass damper is used to regulate the inlet air temperature.

The air temperature is monitored in the unit before and after the heat exchanger in the extract air path and the supply air path.

2 LED Signals

The AME 900 F is equipped with a LED in the input opening to show the operation status. The LED also shows warnings and alarms.

Individual signal types:

_ : LED is off (intervals of whole seconds).

I : LED is on (intervals of whole seconds).

Signals with priority 1 to 6:

Pri.	Signal	Off/On time	Meaning
1	_ |_ | _ | _ |_ _ _ _ _ _ |_ | _ | _|	Off 1 s and on 1 s, 4 times; pause 5 s; repeat	Buzz alarm without filter alarm
2	_ |_ |_ |_ _ _ _ _ _ |_ | _ |	Off 1 s and on 1 s, 3 times; pause 5 s; repeat	Filter alarm
3	_ | _ |_ _ _ _ _ _ |_ |	Off 1 s and on 1 s, 2 times; pause 5 s; repeat	Buzz warning without filter warning
4	_ |_ _ _ _ _ _ |	Off 1 s and on 1 s;pause 5 s; repeat	Filter warning
5	|||||||||||||||	Light constantly on	Operation without warning or alarm (Option)
6	_ _ _ _ _ _ _ _ _ _ _	LED off	Operation without warning or alarm, No operation, warning or alarm

The highest active priority is shown within the programmed period of time (default: 07:00 to 22:00). The signal for priority 5 (”Operation without warning or alarm”) can be deactivated.

2.1 Buzz warning

Buzz warning without filter warning (priority 3) includes the following warnings:

- Technical error in the temperature sensors (RT, OTV, OT, EVi, EVo or HG) or CO_2 sensor. In case of errors OT, EVi, EVo or HG, the cooling module is out of order. Certain internal control system functions are working insufficiently if faults RT and OTV occur.

→ ***Call service.***

2.2 Buzz alarm

Buzz alarm without filter alarm (priority 1) includes the following alarms:

- Low temperature alarm
- Condensate in air handling unit
- Technical fault in a temperature sensor (IT, ETV) or a fan.

→ ***Call service.***

See also section 6.7 Warnings and alarms on page 31.

3 Control functions

3.1 Timer-controlled ventilation

This function controls the AME 900 F unit fully automatically according to a timer using an integrated clock. Timer-controlled ventilation can be set using the control panel menu or Airlinq User Tool.

This function has 7 independent programs available. Day, start and stop times, air flow and inlet temperature can all be individually set for all programs.

3.2 Night time cooling

Night time cooling starts and stops the air handling unit using the integrated timer. The function starts the air handling unit even if it has not been in operation if the temperature parameters are fulfilled.

The night time cooling function is active as standard. Settings can be made using the control panel menu, Airlinq User Tool or Airlinq Service Tool.
It can be used to reduce the room temperature (RT) during the night, if the temperature has exceeded the nominal values “NC High” (if night time cooling was not active the previous night), or “NC Low” (if night time cooling was active the previous night) in the daytime.
It works with a parameter setting (high air flow and low inlet temperature) optimised to cool down the contents of the room and the building to limit room temperature during the day.

If the air handling unit has a cooling module and bypass damper, the inlet temperature (IT) can be regulated.

Standard settings:

- Start time: 00:00
- Stop time: 06:00
- Air flow: Boost
- Inlet temperature: 14°C
- Temperature upper limit “NC High”: 26°C
- Temperature lower limit ”NC Low”: 23°C
- Activation status: active

3.3 Holiday mode

Holiday mode is used as basic ventilation when the room is unused for an extended period, e.g. holidays. In holiday mode, Airlinq will run the unit with min. air flow.

The internal control function “Low Temperature” is active to protect the unit against ice formation. The control function is able to activate the heating surfaces if necessary.

The internal control function “High Temperature” is deactivated in holiday mode.

See section 4 Internal control functions on page 12.

3.4 Start and stop using external contacts

It can be necessary to start or stop the unit automatically using an external contact. The start and stop functions via external contact can also be used when the unit is running e.g. basic ventilation. This gives the user the option of switching the unit into another mode and back again.

3.4.1 Built-in smoke detector (optional)

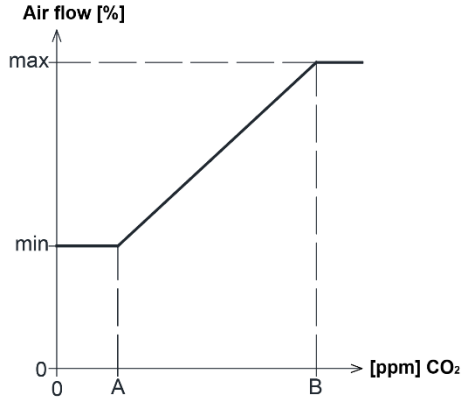
If the unit has a built-in smoke detector the smoke detector functions as an external start/stop, hence the unit will stop if the smoke detector is activated. In this case, the smoke detector must be reset before the unit can start again.

Resetting the smoke detector is described in the smoke detector manual, see the Oppermann manual which is part of the delivery.

3.5 Control using a CO_2 sensor

A CO_2 sensor is used to control the air handling unit independent of the strain on the room's indoor climate. You can choose whether to let the air flow be controlled by the sensor, see section 3.5.1, or let the system's entire operation be controlled by the sensor, see section 3.5.2.

3.5.1 Air flow control



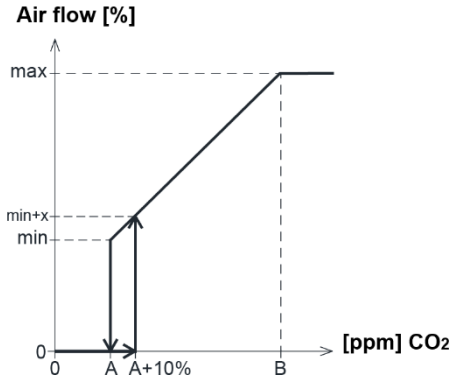
The unit can be set to run with a reduced basic air volume (min.) for basic ventilation. If the CO_2 concentration in the room exceeds the programmed lower limit value (A), the sensor will take over and increase the air handling unit's air flow.
If the CO_2 concentration in the room continues to rise, the air flow is linearly increased to the maximum air flow (max.) at the indoor climate level's upper limit value (B) and above.

For measurements between the lower and upper limit values, the air flow is fully automatically increased and reduced between the basic air flow and the maximum air flow.

If the CO_2 concentration returns to the programmed lower limit value (A) or below, the air handling unit will return to running on the basic air flow.

To use this function, the timer flow or the default flow has to be reduced. See section 6.4.5.1 Timers on page 23 and section 6.4.5.3 Default flow on page 25.

3.5.2 Start, stop and air flow control



If the air handling unit is completely controlled by the sensor, it will start at slightly above the standard air flow (min. + x) when the CO_2 concentration exceeds the programmed lower limit value plus 10 % (A+10%).

If the CO_2 concentration in the room continues to rise, the air flow is linearly increased to the maximum air f low (max.) at the indoor climate level's upper limit value (B) and above.

For measurements between the lower and upper limit values, the air flow is fully automatically increased and reduced between the basic air flow and the maximum air flow.

If the CO_2 concentration falls below the programmed lower limit value (A), the air handling unit will stop.

To use this function, the CO_2 sensor has to be programmed as a start parameter using the "Startup guide", Airlinq User Tool or Airlinq Service Tool.

Factory settings:

- Lower limit A: 500 ppm (CO_2 Min)
- Upper limit B: 900 ppm (CO_2 Max)
- min: 30 % (Standardluftmenge)
- max: 100% (Max. airflow)
- Start Priority 7: CO_2

Settings can be made using the control panel menu points "Default flow" (see page 25) and "Startup Guide" (see page 26), Airlinq User Tool or Airlinq Service Tool.

3.6 Boost

The boost function can adjust the airflow temporarily and is programmed to use some fixed control voltages for the supply air fan and the extract air fan respectively. It is possible to adjust the control voltages for the fans independently of each other if unbalanced ventilation is required.

The function is activated by an external switch that is connected to an input terminal at the main box.

The air handling unit stops the normal operation and activates the boost function when the contact closes. If the signal is disrupted, the unit will return to the previous operating mode (after-run time is factory set to 0 min). In case the air handling unit is stopped the boost function will start it.

3.7 Control using an analogue BMS

An air handling unit can be controlled using an A-BMS (analogue Building Management System), which can start and stop the unit, and regulate air flow and inlet temperature.

The A-BMS can be fitted with an alarm signal (alarm contact) from the air handling unit, when the unit registers an internal alarm. The A-BMS will start the unit using a start/stop signal and then control air flow and inlet temperature.

It is also possible to start and stop the unit using an A-BMS and then operate and set it using the control panel

4 Internal control functions

Internal control functions run automatically, and influence air flow and inlet temperature. An internal control function is shown under control panel menu point “Status”, or using the Airlinq User Tool or Airlinq Service Tool.

4.1 Low temperature (Low Temp)

The “Low Temperature” internal control function protects the heat exchanger against ice forming at low outside temperatures, and maintains the inlet temperature (IT) when the temperature conditions are too low for the standard parameters.

The control function increases the inlet temperature (IT) independently and/or protects the heat exchanger by reducing the supply air and increasing the extract air. It thus creates unbalanced ventilation. It runs regardless of whether the unit has heating surfaces or not.

If the unit is fitted with preheater and comfort heater, the control system can maintain balanced operation even at very low temperatures.

The control system function starts automatically when:

1. The inlet temperature (IT) falls 2 °C below the inlet temperature setpoint
   or
2. If there is a risk of ice forming on the heat exchanger.

4.2 Preheat

The Preheat internal control function ensures unit operation at low outside temperatures, when the unit has an electric preheater surface.
The control system switches on the heater automatically as required. The heating surface will heat up the cold supply air before it reaches the heat exchanger, preventing ice forming on the heat exchanger.

4.3 High temperature (High Temp)

“High Temperature” automatically reduces the inlet temperature (IT) or the room temperature (RT) to a limited extent if necessary. The internal control function requires that the unit is fitted with a bypass damper.

4.3.1 Inlet temperature (IT)

The control function gradually opens the bypass damper if the inlet temperature (IT) rises 2 °C above the setpoint. When the bypass damper opens, some of the air is directed past the heat exchanger. This reduces supply air heating.

4.3.2 Room temperature (RT)

High room temperature is preprogrammed at 25°C. At this temperature, the upper limit of the temperature range described as “comfort temperature” is exceeded.

When the room temperature (RT) exceeds the setpoint, the inlet temperature (IT) is reduced automatically. This means that the room temperature (RT) can be limited to an acceptable level.

Setpoint is set using the control panel menu point “High Temperature” (see page 26) or a PC running Airlinq User Tool or Airlinq Service Tool.

To ensure trouble-free operation, we recommend programming high room temperature higher than the normal room temperature.

The control function can regulate the inlet temperature (IT). Similarly, the control system can increase air flow to 100%, if the inlet temperature is at least 5°C under the room temperature. The control function is active until the room temperature (RT) falls 1 °C under the programmed limit “High temperature”.

5 Airlinq®

Airmaster focuses not only on the air handling unit, but also on the control system software and operation. Airlinq is Airmaster's own unique ventilation control system, which gives the user and service technician impressive overview and full control over the indoor climate, plus easy access to a host of functions, which ensure correct operation of Airmaster air handling units.

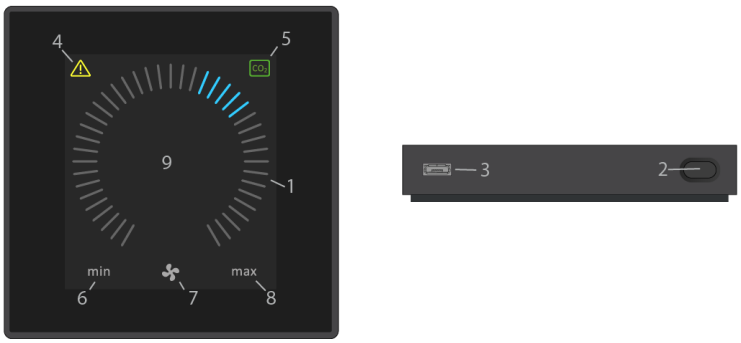
Airlinq consists of a self-explanatory, intuitive control panel Airlinq Orbit and an integrated control box (AQC L), designed to control all functions and equipment in the air handling unit supplied.

The system can be connected to a PC using Airmaster programs "Airlinq User Tool" (corresponds to operating with Airlinq Orbit) for comfortable operation, or "Airlinq Service Tool" (only for service technicians) for programming and maintenance.

Airlinq's primary functions are:

- Controlling air flow and inlet temperature.
- Manual control.
- Timer-controlled operation using a timer.
- Unrestricted night time cooling for reducing room temperature during the night.
- Programmed operation using sensors (e.g. carbon dioxide (CO_2) sensors), analogue (A-BMS) and digital Building Management System (D-BMS).
- De-icing function and control of preheating surface and comfort heater for unit operation at low outside temperatures.
- Monitoring of the unit's temperature, components and air flow.
- Alarm functions for maintenance or fault.
- Control of up to 20 individual air handling units via a single control panel in an Airlinq BMS system, with sensors connected as required.
- Continuous and timed data log, which can be transferred to PC.
- PC connection to the Airlinq Orbit control panel or to the control unit (AQC).

6 Airlinq Orbit control panel



1. Air flow setting (blue stripes).
2. Function button (activate control menu, switch off unit).
3. USB mini-B port. Connection to PC using “Airlinq Service Tool”, to program the air handling unit.
   Download “Airlinq Service Tool” at: www.airlinq.eu
4. Symbol for warnings (yellow) and alarms (red).
5. CO_2 symbol.
6. Text “min” for minimal air flow.
7. Fan symbol.
8. Text “max” for maximum air flow.
9. Touch screen.

Other symbols:

	‘‘Auto‘‘
	‘‘Start‘‘
	‘‘Standby‘‘
	‘‘Switch off‘‘
	‘‘Confirm‘‘
	‘‘Back‘‘
	‘‘Cancel‘‘
	‘‘Help‘‘
	‘‘Selectable‘‘
	‘‘Selected‘‘
	Value ‘‘Increase‘‘
	Value ‘‘Reduce‘‘
	‘‘Holiday mode’’ symbol shows for holiday mode instead of fan symbol
	Padlock is displayed when the unit is operated with active automatic operating lock and active screen lock
auto	‘‘Automatic operation’’ text off when manual override or underride activated for air flow
	‘‘Status‘‘
	‘‘Timer-controlled ventilation‘‘
	‘‘Night time cooling‘‘
	‘‘Setup‘‘

Touch screen:

The Airlinq Orbit control panel is fitted with a touch screen operated in the same way as a smartphone. The control surface is 52 x 52 mm. To change the display view, scroll on either the left or right side of the control surface.

Screen displays and symbols adapt menus and functions automatically.

6.1 Automatic operating lock

The control panel is fitted with an automatic operation lock to prevent accidental operation, e.g. caused by cleaning.

The lock activates automatically after 120 seconds of no operation. The screen shows a padlock symbol with a directional arrow at the bottom if operated.

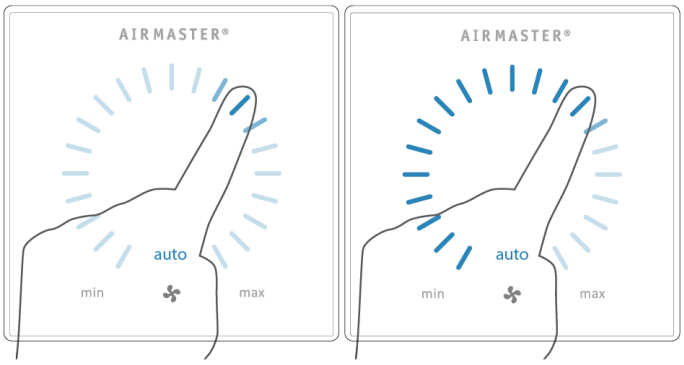
6.1.1 Activate operation

Press padlock and drag in direction of arrow.

To lock the screen against accidental operation, see section 6.4.6 Lock screen on page 27.

6.2 Air flow - manuel setting

Cancel the operation lock or screen lock (if in use) and press the current air flow until the air flow display is marked up to the current setting with blue stripes.



Drag your finger on the setting area clockwise to increase air flow or counter clockwise to reduce air flow. The light will follow your movement.

Lift your finger from the screen when the required air flow is shown. The current setting will then be shown with 5 blue stripes.

After 12 hours (time can be adjusted to 0, 1, 2, ... 255 hours using a PC running Airlinq Service Tool) the unit will return to automatic operation.

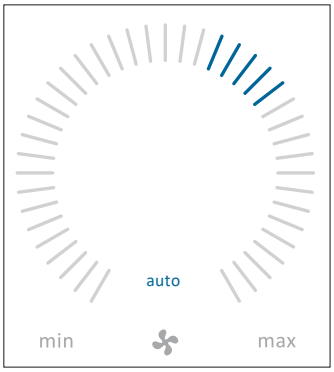
The same setting can be made by pressing the required air flow until the air flow display is marked up to the required setting with blue stripes.

Lift finger from the area when the required air flow is shown. The current setting will then be shown with 5 blue stripes.

6.3 Automatic operation

Automatic operation is started using a timer, night time cooling, sensors, external contacts or an analogue BMS system.

The current air flow and text “auto” are shown on the control panel with a blue light above the fan symbol. See also section 3 Control functions on page 8.

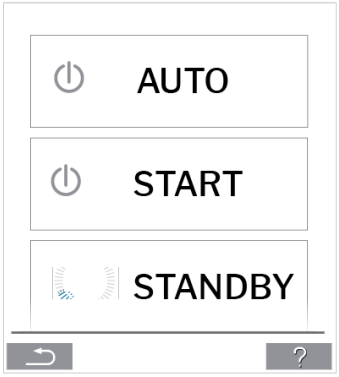


Air flow can be over- or underridden manually. Automatic operation is cancelled and the text “auto” will disappear.

6.4 Operating menu

Start the operating menu by pressing the function button (pos. 2 in section 6 Airlinq Orbit control panel on page 15).

Press a menu point to open the menu or activate/cancel a function.
Depending on the menu, related function fields will also be changed. These can include text fields such as “Confirm”, “Switch off”, “Cancel” or fields with symbols. Pop-up texts can also appear for certain menus.



For group operation, see section 6.6 Airlinq BMS on page 28.

6.4.1 Start and Standby

6.4.1.1 Start or restart automatic operation

Press menu field “AUTO“.

>> The unit will start according to its programming if a start signal is active, or automatic operation will be reactivated after manual override. The current air flow will show with 5 blue stripes. Text “auto” will show with blue light.

6.4.1.2 Start operation manually

Press menu field “START“.

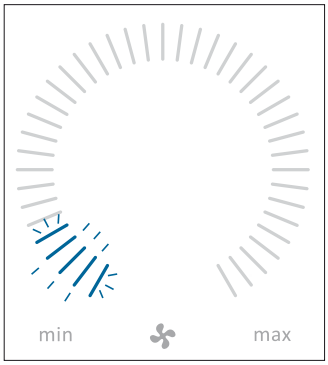
>> The unit will start with standard air flow and standard inlet air temperature (see page 19). Text “auto” will show with blue light. After 4 hours (time can be adjusted to 0, 1, 2, ... 255 hours using a PC running Airlinq Service Tool) the unit will return to automatic operation.

6.4.1.3 Standby

Press menu field “STANDBY” if the unit is in operation.

>> The unit will stop for 1 hour (time can be adjusted to 0, 1, 2, ... 255 hours using a PC running Airlinq Service Tool) and then start at the next start signal.

The air flow indicator will flash slowly alongside minimum.



The unit can be started earlier by using the operating menu.

6.4.2 Off

Press menu field “ OFF“.

>>The control panel will show “SHUTDOWN? AFTERWARDS THE SYSTEM HAS TO BE STARTED MANUALLY”.

>> Press the tick to switch off or the cross to cancel switching off.

You can also press the function button for 2 seconds (pos. 2 in section 6 Airlinq Orbit control panel on page 15).

The unit must be started according to section 6.4.1 Start and Standby on page 18.

6.4.3 Holiday Mode

In holiday mode, the air handling unit will run with min. air flow.
The internal control function “Low temperature” is active to protect the unit against ice formation. The control function is able to activate the heating surfaces if necessary. The internal control function “High temperature” is deactivated in holiday mode.

See also section 4 Internal control functions on page 12.

6.4.3.1 Activate holiday mode

Press menu field “ HOLIDAY MODE”.

>> Holiday mode will activate. The holiday mode symbol will show instead of the fan symbol.

6.4.3.2 Deactivate holiday mode

To deactivate holiday mode, the unit must be started according to section 6.4.1 Start and Standby on page 18.

6.4.4 Status

The Status menu is divided into 6 groups: Information, Flow, Filters, Operation, Hardware, and Installation Check. The menu points indicate the unit's operational status.

Press menu field "ℹ STATUS".

>> The sub-menu will activate. Press the required sub-menu.

Information	Total Operation time	The unit's operation hours since manufacture
	Panel SW	Control panel software version
	Control unit SW	Control unit software version
	Control unit Serial	Control unit serial number
	Service	Contact address for technical help and service. Can be changed using Airlinq Service Tool.

Flow	Requested Flow	Air flow in %
	Supply Air Flow	Supply air flow in m^3/h
	Extract Air Flow	Extract air flow in m^3/h
	Supply Air Fan	Supply air fan RPM
	Extract Air Fan	Extract air fan RPM

Filters	Current filter state	Filter status indicator in %
	Operation since service	Number of operation hours since last filter change
	Next service	Forecast of hours to next filter change
	Approximated date	Forecast (date) of next filter change

Operation	Started By	Operation start signal: • “External”, using external contacts and relays • “Airlinq”, manual start using a control panel • “CO_2”, using a CO_2 sensor • “PIR”, using a passive infrared sensor • “BMS”, using an analogue or digital BMS system • “Timer”, using a timer • “Holiday mode”, via control panel or a digital BMS system • “Dependent”, on several start signals
	Operation State	Operation status: • “Automatic”, fully automatic operation according to programming • “Manual”, when the automatically set air flow or inlet temperature is changed by the user or a BMS system • “Night time cooling” is activated • “Holiday mode” is activated • “OFF”, the unit is switched off, and must be started using the control panel • “Standby”, the unit is temporarily stopped and will start automatically according to programming
	System Condition	Active internal control system function: • ‘‘Low temperature” • ‘‘High temperature” See section Internal control functions on page 12
	External Stop	Stop function status On/Off
	Inlet Temperature	Inlet temperature in °C
	Outside Temp. AHU	Outside temperature air handling unit in °C
	Room Temperature	Extraction temperature in °C
	Exhaust Temp. AHU	Exhaust temperature air handling unit in °C
	Requested Temp.	Setpoint Inlet temperature in °C
	Max Room Temp.	Setpoint “High room temperature” in °C
	Pre Heater	Connected in %
	Comfort Heater	Connected in %
	Main Damper	Status On/Off
	Bypass Damper	Bypass position in %. (0 = closed; 100 = fully open)
	Adaptive Airflow	Signal voltage Adaptiv Airflow® in Volts
	Supply Air Fan	Signal voltage supply air fan in Volts
	Extract Air Fan	Signal voltage extract air fan in Volts
	Cooling Module	Operation in %
	Evaporator temp.	Evaporator temperature in °C
	Condenser temp.	Condenser temperature in °C
	Setpoint Cooling Mod.	Cooling module temperature setpoint in °C
	Outside Temperature	Outside temperature cooling module in °C
	Evaporator in	Evaporator temperature “in” in °C
	Evaporator out	Evaporator temperature “out” in °C
	Hot Gas	Hot Gas temperature in °C
	Rel. humidity outside	Relative humidity (outside air) in %
	Rel. humidity inside	Relative humidity (exhaust air) in %
	AI#1	Analog input 1 in Volts
	AI#2	Analog input 2 in Volts
	AI#3	Analog input 3 in Volts

The status menu will not show any value if an option is not installed.

Hardware	The condition of the individual components are monitored and displayed in this menu. Component functional = “OK” Component with fault = “Fault” Component not programmed = “N/A” Components monitored:	
	Room temperature	Room temperature sensor
	Inlet temperature	Inlet temperature sensor
	Outside temperature	Outside temperature sensor
	General.Purp.Temp.	General purpose temperature sensor
	Condenser Temp.	Condenser temperature sensor
	Evaporator Temp.	Evaporator temperature sensor
	Exhaust Temp. AHU	Exhaust temperature sensor air handling unit
	Outside Temp. AHU	Outside temperature sensor air handling unit
	Supply Air Flow Sens. 1	Supply air flow sensor 1
	Supply Air Flow Sens. 2	Supply air flow sensor 2
	Extract Air Flow Sensor	Extract air flow sensor
	CO_2 Sensor	CO_2 Sensor
	Supply Air Fan	Supply air fan
	Extract Air Fan	Extract air fan
	Evaporator In Temp.	Evaporator inlet temperature sensor
	Evaporator Out Temp.	Evaporator outlet temperature sensor
	Hot Gas Temperature	Hot gas temperature sensor
	CC Connection	Data connection to the cooling module
	CC Stepdriver	Step driver cooling module
	CC Frequency Inverter	Frequency inverter cooling module
	Humidity Sensor (out)	Humidity Sensor (outside)
	Humidity Sensor (in)	Humidity Sensor (inside)

Installation Check	All units in the Airlinq system are identified and shown in the order it is programmed. The Installation check will show the following:	
	This Unit	Type of unit that shows the ”Installation check”; PC or ID number of the control panel
	Expected AHU’s	Number of air handling units expected in the system
	Online AHU’s(*)	Number of online air handling units

(*)Sub-menu ”Online AHU’S”	
Group ‘‘x”, ID ‘‘y”	All groups complete with air handling unit ID (ID = identification number): x = 0, 1, 2, ... or 19, y = 0, 1, 2, ... or 19. If cooling modules are installed the text “+CC ID” is shown together with the identification number of the cooling module; 100, 101, 102, ... or 119
(*)Sub-menu ”Online Control Panels”	
ID ‘‘z”	Identification number of all online control panels: z = 160, 161, 162, ... or 179
(*)Sub-menu ”Group Master N/A”	
Group ‘‘x”, ID ‘‘y”	See description above

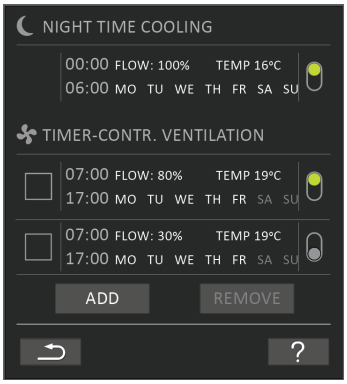
6.4.5 Setup

All operational parameters can be changed under the “setup” menu.

6.4.5.1 Timers

TIMER-CONTROLLED VENTILATION and NIGHT TIME COOLING which is set using the control panel or “Airlinq User Tool” starts and stops the air handling unit using a timer. There are up to 7 different timer programs for timer-controlled ventilation. All programs can be active concurrently, and run after each other or override each other.

Program display:



Examples of programs displayed:

Night time cooling:

- Air flow (Flow) 100%
- Inlet temperature (Temp) 16 °C
- Start: 00:00, Stop: 06:00
- Days: All days of the week (MO, TU, ..., SA, SU)
- Program active (green point).

Days for night time cooling cannot be adjusted.

Timer-controlled ventilation program, upper part:

- Air flow (Flow) 80%
- Inlet temperature (Temp) 19 °C
- Start: 07:00, Stop: 17:00
- Days: Monday to Friday (MO, TU, WE, TH, FR shown in white text); Saturday and Sunday are programmed inactive (SA and SU shown in light grey text)
- Program active (green point).

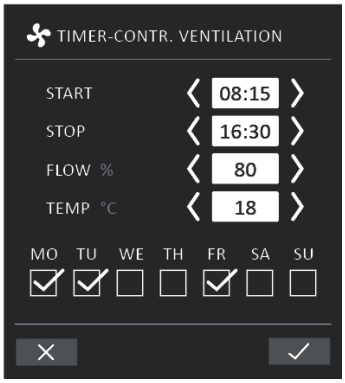
Timer-controlled ventilation program, lower part:

- Air flow (Flow) 30%
- Inlet temperature (Temp) 19 °C
- Start: 07:00, Stop: 17:00
- Days: Monday to Friday (MO, TU, WE, TH, FR shown in white text), Saturday and Sunday are programmed inactive (SA and SU shown in light grey text)
- Program inactive (grey point).

6.4.5.1.1 Adjust or add a program

Press the program to adjust it or press “Add” to add a program.

The ‘‘Setting’’ mode will start.



Increase/reduce a value:

Values can be set by pressing the right arrow (increase) or left arrow (reduce). Operation days are marked with a tick.

Make all settings and confirm by pressing the tick.

>> The program will be adjusted/added.

>> Display will return to “Program view”.

Press the cross to cancel adjustment/adding.

6.4.5.1.2 Activate a program

Press the grey point on the right side of the program.

>> The point will change position upwards and go green.

The most recently activated timer program dictates operation of the air handling unit.

6.4.5.1.3 Deactivate a program

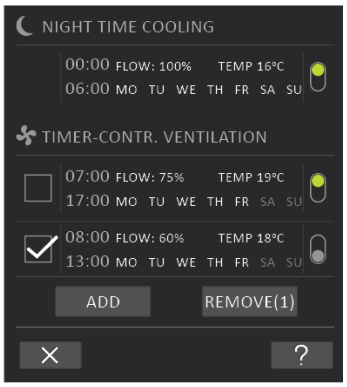
Press the green point on the right side of the program.

>> The point will change position downwards and go grey.

6.4.5.1.4 Remove a program

Programs for timer-controlled ventilation can be removed from the list.

Press the square to left side of the program to be removed.



>> The program will be marked with a tick. The function button “Remove” shows the number of programs to be removed.

Press the function button “Remove” to remove the programs selected or press the cross to cancel.

>> Programs will be removed.

>> Display will return to “Program view”.

The program “Night time cooling” cannot be removed.

6.4.5.2 Date and Time

Date and time are preprogrammed according to the calendar. Time changes automatically to summer and winter times. The summer/winter setting can be deactivated using the Airlinq Service Tool.

The control system software date and time synchronises automatically with date and time on a connected PC, but can also be set directly.

Press ‘’DATE’’ or ‘’TIME’’.

>> Set date or time.

6.4.5.3 Default flow

The standard air flow (default flow) is used by the Airlinq control system when the air handling unit is started using sensors or external contacts.

Press ‘’DEFAULT FLOW’’.

>> Set default flow in % (Default 80%).

6.4.5.4 Default temp

The standard inlet temperature (default temp) is the setpoint for the unit’s required temperature level. Standard setting is 19°C. The temperature can be set to max. the required room temperature.

Press ‘’DEFAULT TEMP’’.

>> Set inlet temperature in°C.

The Airmaster unit can not be used to heat a room by increasing inlet temperature. Room temperature regulation must be performed using a heater installed in the room.

6.4.5.5 High temperature

High temperature is programmed at 25°C. At this room temperature, the upper limit of the temperature range described as “comfort temperature” is exceeded.

If the unit detects that this limit is exceeded during operation the control system will start a cooling process to reduce the current room temperature. See section High temperature (High Temp) on page 12.

This temperature setting does not generally need to be changed.

Press ‘’HIGH TEMPERATURE’’.

>> Set high room temperature in°C.

To ensure trouble-free operation, we recommend programming high room temperature higher than the normal room temperature.

6.4.5.6 Reset service

After a regular service with filter change, the filter change timer must be reset.

Press ‘’RESET SERVICE’’.

>> Enter the code (Standard “9732”) and confirm. See section 6.4.6 Lock screen on page 27.

6.4.5.7 Data Log

Airmaster units have a continuous data log. When the memory is full, the oldest data is overwritten first. If a fault is detected on the unit, a time-limited data log can be activated.

Press ‘’DATA LOG’’.

>> Set log interval (log period is calculated automatically), or set log period (log interval is calculated automatically).

>> Activate data log - All data in the memory is deleted, and the data log started.

When the data log is completed, a pop-up text appears on the control panel:“Time-limited data log completed. Download data to a PC with Airlinq Service Tool”.

The log period depends on the logged parameters. In the event of rarely-occurring faults, the interval or period can be extended, and in the event of frequent faults, the interval can be shortened. After transfer to a PC, the data log can be automatically sent for analysis by (e.g.) your service partner.

Please contact your service partner by phone or mail to agree service provision.

6.4.5.8 Startup Guide

The startup guide starts automatically when the unit is started for the first time. The guide can also be started manually, in the ‘’Setup” menu.

The most important settings can be made using the startup guide. The guide must be run completely. When making settings, the guide jumps automatically to the appropriate menu point and back.

Startup guide menu points:

- Set Default flow, see page 25.
- Set Default temp, see page 25.
- Set High temperature, see page 26.
- Set Date and Time, see page 25.
- Set Night Time Cooling and Timer-Controlled Ventilation, see page 23.

- Set CO_2 level lower limit and upper limit and Start/Stop of the unit with CO_2 sensor, see page 9.
- Set the code for the screen lock (see below) and the service reset, see page 26.
- Set the activation of the screen lock, see below.
- Start unit (starts the unit with the current programming and terminates the startup guide).

6.4.6 Lock screen

The control panel can be locked to prevent accidental operation using the screen lock.

6.4.6.1 Activate screen lock

Press ‘‘ ‘‘LOCK SCREEN‘‘

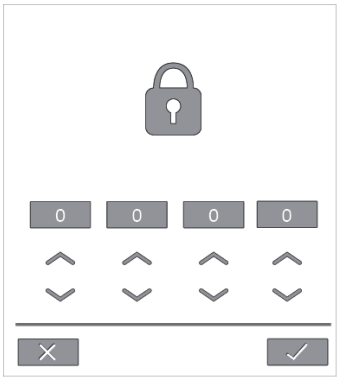
>> The screen will lock immediately. The control panel will show the main screen.

The screen lock is protected by a 4 digit code (Default: “9732”). The code can be changed and the activation of the screen lock can be changed to manual, automatic or inactive by using the Startup Guide or the programs Airlinq User Tool and Airlinq Service Tool.

6.4.6.2 Deactivate screen lock

Press padlock on the control panel main screen and drag in direction of arrow.

Set code:



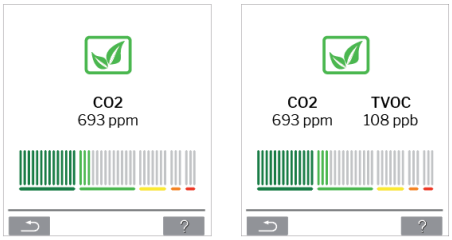
Set code by pressing the up arrow to increase the value, and down arrow to reduce it.

Press tick.

>> The screen will be unlocked.

6.5 Indoor climate level

If the air handling unit is equipped with a CO_2 sensor the room's current indoor climate level will appear on the control panel.



When the sensor sends a signal to the air handling unit, the indoor climate symbol appears on the main menu of the control panel. Depending on the level, the symbol appears as dark green, light green, yellow, orange or red.

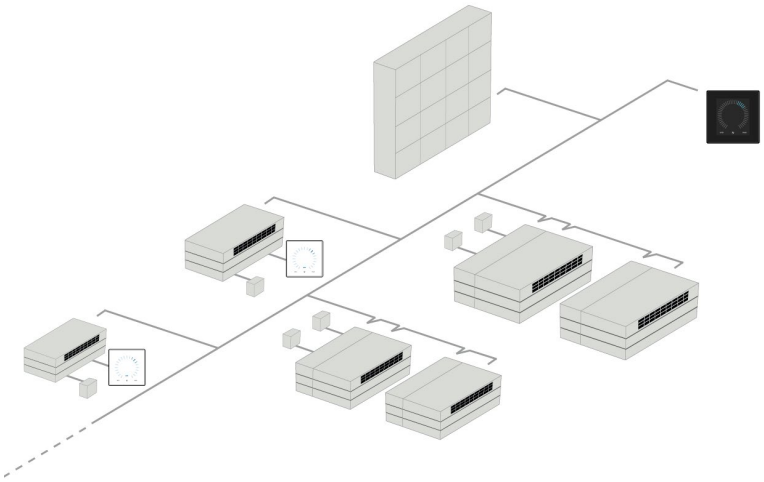
Press symbol (pos. 5 in section 6 Airlinq Orbit control panel on page 15).

>> The indoor climate status appears.

6.6 Airlinq BMS

When using Airlinq BMS with up to 20 air handling units and 20 cooling modules, the system is usually broken down into several groups (G) with at least one unit (ID) each, with all units in a group controlled uniformly.

One of the units in a group will be programmed as the "Group Master", which controls the entire group. Multiple sensors and a group control panel can be linked to each group. The units can also be equipped according to local conditions



We recommend that you create a system description, an example can be seen on the next page.

Where installed	Model	Serial number Unit/cooling module	Options/Sensors	ID	Remarks	Group	Master
Room 101	AM 1200	xxx	./.	0	Meeting room	G0	ID0
Room 102	AM 500	xxx	CO_2, Viva	1	Office 1	G1	ID1
Room 103	AM 300	xxx	PIR, Viva	2	Office 2	G2	ID2
Room 105	AM 500	xxx and xxx	Cooling module, PIR, CO_2	3/103	Training	G3	ID3
Room 105	AM 500	xxx and xxx	Cooling module	4/104	Training	G3	ID3
Room 104	AM 800	xxx and xxx	Cooling module, PIR, CO_2	5/105	Training	G4	ID5
Room 104	AM 800	xxx and xxx	Cooling module	6/106	Training	G4	ID5
Notes "Operation mode": Room 101 timer-control only starts on Wednesday and Friday. Room 102 runs Monday - Friday 07.00 to 16.00 and override depends on CO_2. Room 102 only runs if the room is in use. Rooms 104 and 105 runs during training and override depends on CO_2.							

6.6.1 Control and settings

Each group in the system is controlled and set in the same way as an individual unit. That means that all control options are available for all groups.
The status menu and alarm view are available for all individual units. A group or single unit can be selected for each screen. You can enter or leave the menu from all locations.

A “G” or “ID” number is allocated to each group or unit to identify which group/unit is being controlled. The G and ID numbers can be changed, e.g. to a room name or number using Airlinq Service Tool.

Grouping is performed when installing the system using Airlinq Service Tool.

6.6.1.1 Select a Group/Unit

The current identification for the group (G) or the unit (ID) will be shown at the bottom of the screen. E.g. G8 or ID16.

Press “G8”/”ID16”.

>> The selection screen will appear.

This screen shows all groups (G) or units (ID) linked to an Airlinq BMS. E.g. G0 to G10 and ID0 to ID16 if the system consists of 11 groups with a total of 17 units.

Press the G or ID required.

>> The screen for that G or ID will be shown.

6.6.1.2 Start

6.6.1.2.1 Start or restart automatic operation for a group/several groups

Press the function button.

>> The control menu will appear.

Select the groups to be started and press menu field ‘’ AUTO”.

>> The group selected will start according to the programming.

6.6.1.2.2 Start operation manually

Press the function button.

>> The control menu will appear.

Select the groups to be started and press menu field ‘’ START”.

>> The group will start with standard air flow and standard inlet air temperature (see page 25). The text “auto” will show with blue light. After 4 hours (time can be adjusted to OFF, 0, 1, 2, ... 255 hours using a PC running Airlinq Service Tool) or at the next stop signal from a timer program, the group will return to automatic operation.

6.6.1.3 Standby

Press the function button.

>> The control menu will appear.

Select the groups to be stopped and press menu field ’’ STANDBY‘‘.

>> The groups will stop in 1 hour (time can be adjusted to 0, 1, 2, ... 255 hours using a PC running Airlinq Service Tool) and then start at the next start signal. Otherwise, the groups can be started earlier by using the “start” menu field. The air flow indicator will flash slowly alongside minimum.

6.6.1.4 Switch Off

6.6.1.4.1 Switch off a group/several groups

Press the function button.

>> The control menu will appear.

Select the groups that should be switched off and press menu field ‘’ OFF’’.

6.6.1.4.2 Switch off system

Press the function button for min. 2 seconds, if the system or at least one group is running.

>> All units will switch off.

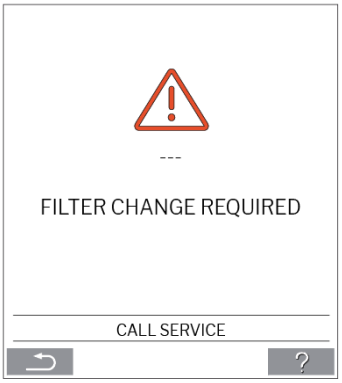
After switching off, the groups / the system must be started manually using the menu fields ”AUTO” or ”START”.

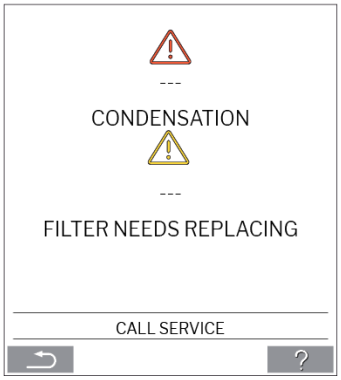
6.7 Warnings and alarms

In the event of warnings and alarms, a triangle with an exclamation mark in its centre with a yellow or red light (pos. 4 in section 6 Airlinq Orbit control panel on page 15) will show in the top left hand corner of the control panel main screen.

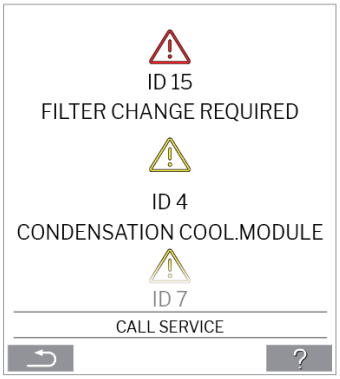
Press the symbol.

>> The control panel will show a large triangular warning/alarm text and “call SERVICE” for alarms, plus a telephone number. In the event of several warnings or alarms, they will be shown in order of priority:





Display of warnings and alarms with the unit’s ID number in an Airlinq BMS system:



An ID number can be changed to another designation in Airlinq Service Tool.

6.7.1 Warnings (yellow triangle)

The air handling unit remains in operation in the event of a warning, but operation can be limited.

- Compressor locked (stopped)
- Filter needs replacing
- Group Master Missing. (Airlinq BMS only)
- Technical fault (Temperature sensor (RT, OTV, OT, EVi, EVo or HG), flow measurement or CO_2 sensor.

6.7.2 Alarms (red triangle)

The air handling unit will stop to prevent damage in the event of an alarm.

- Low temperature
- Condensation (in the air handling unit)
- Filter change required
- Critical fault (Temperature sensor (IT, ETV), supply air fan or extract air fan.

7 Airlinq® Online

Airlinq® Online is a professional web portal for Airmaster air handling units connected to Ethernet.

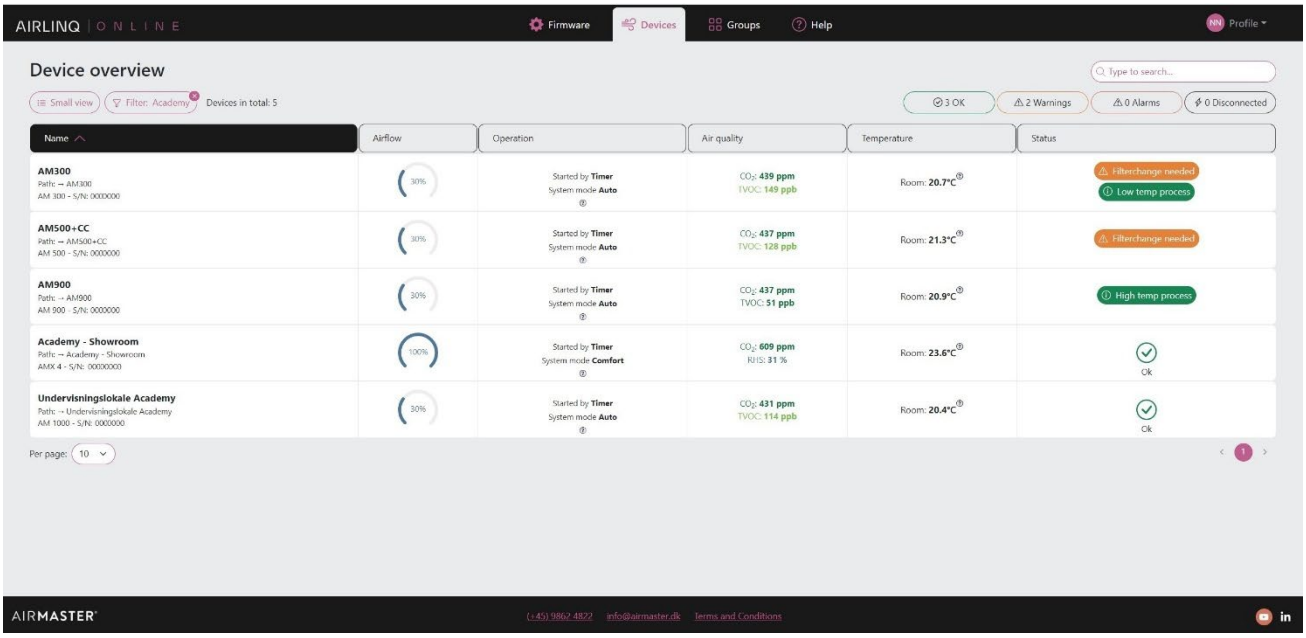
The portal is a cloud-based service, and the servers that handle communication with the systems are located in 'the cloud'. All communication is securely encrypted. Airlinq® Online is designed to control, monitor and manage ventilation solutions for one or more installations.

The access to Airlinq® Online is possible from a smart phone, a tablet, or a personal computer. There is no need to install any software or application. All you need is internet access through your internet browser.

7.1 Login

When activated your access to the service through the Airmaster Airlinq® Online invitation email go to: www.online.airlinq.eu in your browser to login to Airlinq® Online.

When you log onto Airlinq® Online, you will always see an administration page first. The administration page provides a full overview of all of your air handling units.



8 Service and maintenance

Service and maintenance are vital for problem-free operation of an Airmaster unit and its equipment. The majority of servicing consists of cleaning and inspection of the condensate system and filter change. We recommend that all service is performed by authorised experts.

WARNING
The unit must be switched off, disconnected from the mains and prevented from being switched on (LOTO) before the service door is opened.

8.1 External cleaning

To remove dirt from the control panel, sensors, and air handling unit, use a soft, damp cloth and clean water, or water with a mild detergent added (e.g. washing up liquid).

Do not use aggressive substances (e.g. turpentine) or sharp objects (such as a scraper) to clean the ventilation system components.

The extract air grille and air vents must be cleaned regularly. We recommend vacuum cleaning using a soft brush nozzle.

The space between the air handling unit and ceiling can be dusted using a feather duster. A soft brush vacuum nozzle can also be used if there is sufficient room.

8.2 Internal cleaning

Internal cleaning is recommended when changing filter. If dirt gets in to an Airmaster unit, remove with a vacuum cleaner or soft brush.

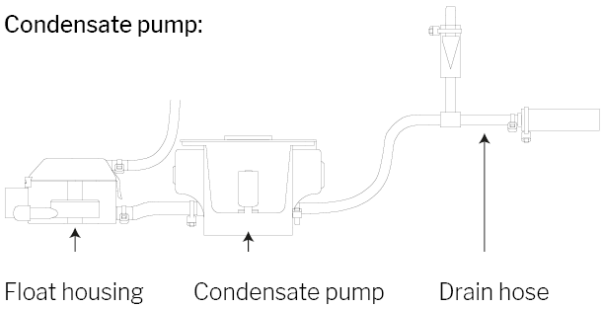
Check the cleanliness of components when performing internal cleaning. This applies in particular to the counterflow heat exchanger and fans.

8.3 Cleaning the condensate system

The condensate system must be cleaned minimum annually and must be controlled at every filter change.

A condensate tray is fitted as standard to all units. The plug, drain house and tray can all easily be removed for cleaning the drain and hose. All condensate hoses in the condensate system must be secured again with a suitable hose clip.

The condensate pump is an option hence it might not be part of your unit.



Pour approx. a half litre water into the condensate tray, switch on the power briefly and check that the water is pumped out and that there are no leaks. *We recommend cleaning the drain and hose when changing filter.*

8.4 Filter change

All filters in the air handling unit are monitored by the unit's filter monitoring system.
Replace the filters whenever the monitoring system indicates that a filter must be changed, but at least every 14 months.

Please be aware of any specific, deviating local rules.

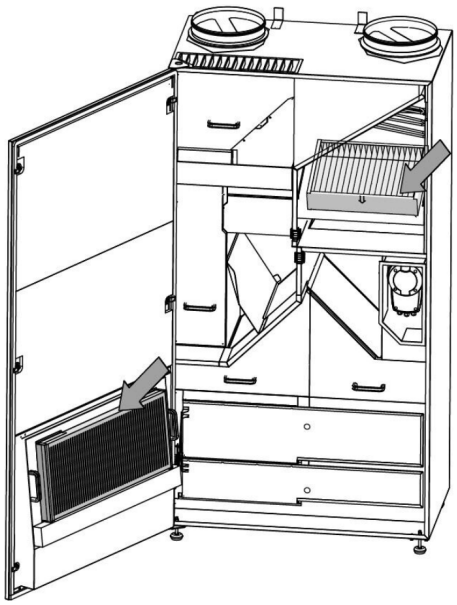
Filter monitoring can be adapted to local conditions using Airlinq Service Tool. The filters are tested automatically on a daily basis (time can be set using "Airlinq Service Tool"). The control system filter monitoring must be reset after a filter change.

NOTICE
Used filters must be disposed of according to their contamination with particles (waste code 1502), atmospheric particles (waste code 150203) or 'hazardous' substances (waste code 150202).

CAUTION
Used filters must be disposed of in a dustproof bag immediately after they have been removed from the unit.

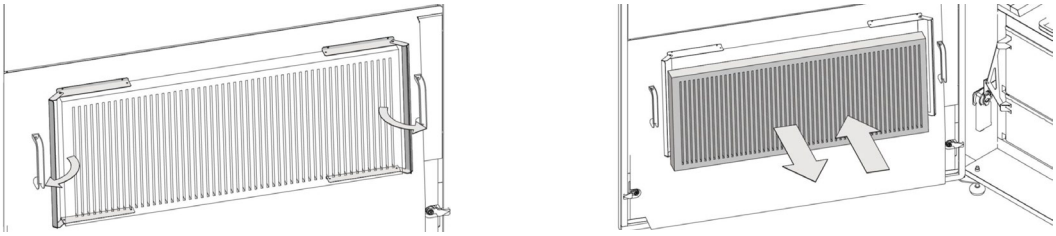
CAUTION
Use appropriate safety equipment such as safety goggles, disposable gloves, and a dust mask when changing the filters.

8.4.1 AME 900 F filter location

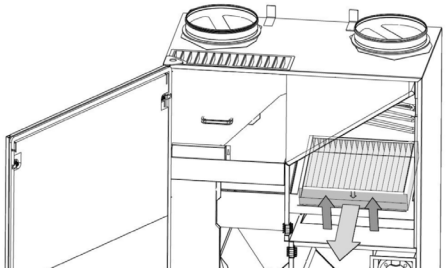


8.4.2 Filter change

1. Open the service door.
2. Open the filter retaining panels on the service door filter and pull the old filter out. Lift the inside filter up and pull it out.

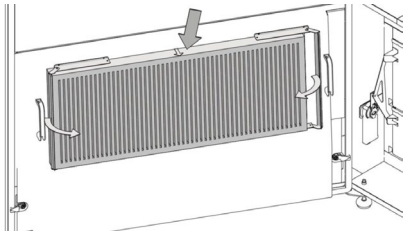


Service door filter (extract air filter)

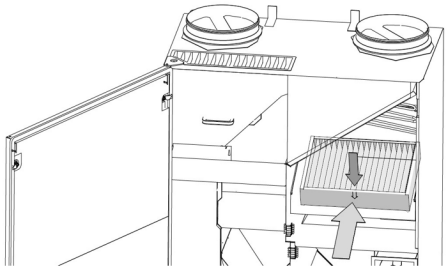


Inside filter (supply air filter)

3. Clean the inside of the unit and the supply air passages. Check the condition and cleanliness of the components, clean if necessary.
4. Insert new filters. Make sure the filters are inserted correctly: the arrow on the side of the new filters must point into the unit:



Service door filter (extract air filter)



Inside filter (supply air filter)

5. Close the filter retaining panels on the service door filter.
6. Close the service door.
7. Turn the power back on and start the unit.
8. Reset service, see description in the next section.

8.4.3 Reset service (filter change)

Reset the filter alarm under control panel menu “Settings - Reset Service” or using a PC running Airlinq Service Tool.

>> Press “Confirm” to reset service or “Cancel” to cancel the reset.

>> Enter the code (Standard “9732”) and confirm.

Units with no control panel:

The filter change alarm must be reset using a PC running Airlinq User Tool, Airlinq Service Tool or Airlinq Online.

8.4.4 Filters

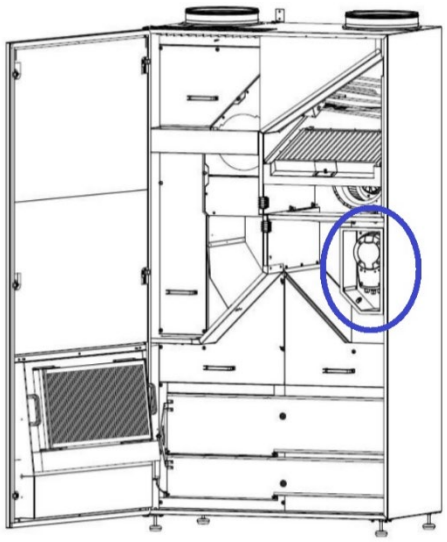
Supply air filter: Glas fiber filter ePM_{10} 50% or ePM_1 55%.

Extract air filter: Glas fiber filter ePM_{10} 50%.

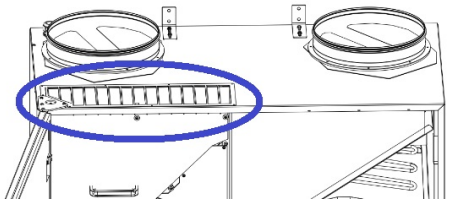
8.5 Smoke detector (optional built-in)

Please refer to the Oppermann manual for service and maintenance. The manual is part of the delivery.

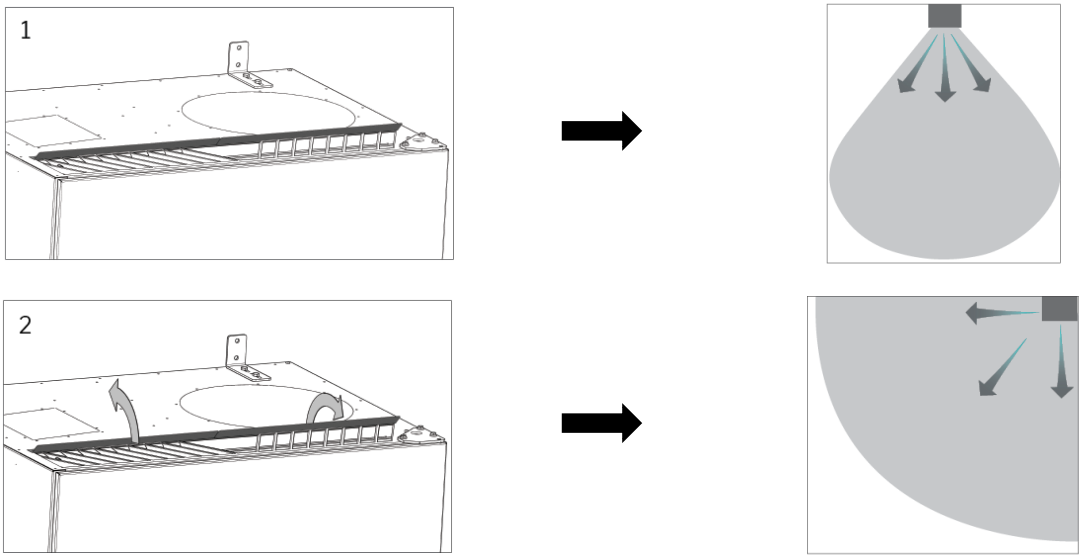
The smoke detector is located in the front section of the unit:

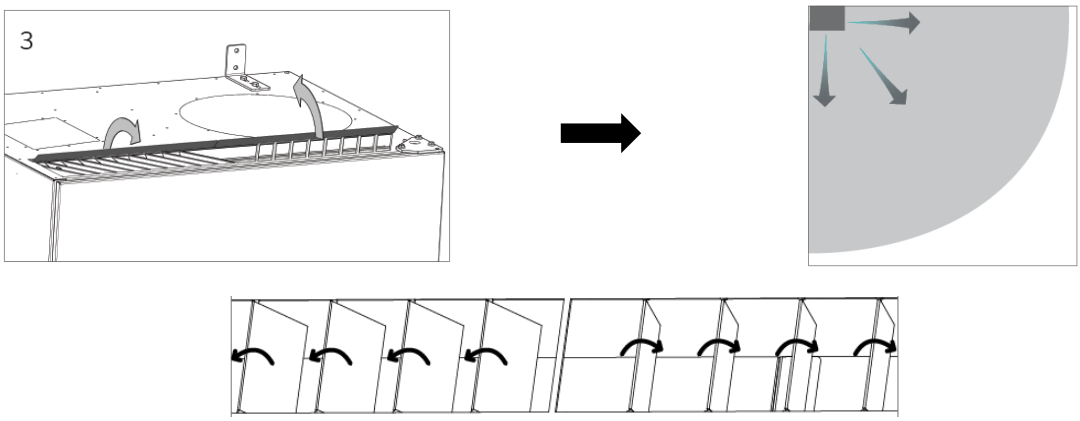


8.6 Setting the inlet air grille



The inlet air grille slats can be bent slightly using longnosed pliers to adjust the inlet direction. Please see general description below:





The following label is located directly below the air inlet. It will help you adjust the slats:

NOTICE: *It is only possible to bend the slats a few times, otherwise they can break off.*

.

9 Error description

Error: Control panel blank.

1. The unit is switched off.
   Start the unit manually. See page 18.
2. No electricity supply.
   Switch on mains electricity.
3. Control panel or data cable defective.
   CALL SERVICE.

Error: Unit cannot be operated.

The control panel is operating in automatic mode, child or screen lock active.
Deactivate lock. See pages 16 or 27.

Error: Control panel air indicator flashing.

Data connection from control panel to unit broken.
CALL SERVICE.

Error: Unit blowing too cold air.

1. The inlet temperature is set too low.
   Check setting. See page 25.
2. Room heater set too low.

Error: Draft from the unit, the room feels cold.

1. Inlet temperature set too low.
   Check setting. See page 25.
2. Air flow too low. Increase air flow.
3. Room heater set too low.
4. The inlet opening slats are not set correctly. See page 38.

10 Repairs and improvements

All repairs and improvements must be performed by authorised experts.

The AQC-L control box contains a varistor that protects against overvoltage. In the case of a defective control box, this glass fuse must be checked. Replace if faulty.

Please contact your service partner by phone or mail to agree service provision.

11 Dismounting

Should the unit need to be dismounted, follow the installation in reverse.

WARNING
The unit must be switched off, disconnected from the mains and prevented from being switched on (LOTO) before the service door is opened.

1. The ventilation unit is dismounted.
2. Electricity connection is disconnected.
3. The internal part is dismounted.
4. The outside part is dismounted.
5. The hole in the wall is closed.

12 Disassembly

Product information according to ”Commission Regulation (EU) No 1253/2014, annex IV – Information requirements for RVUs as referred to in Article 4(1)” and product information according to ”Commission Regulation (EU) No 1254/2014, annex IV – Product finche as referred to in Article 3(1)(a)” can be found on our website.

Go to: Downloads, choose ’Disassembly’.

It contains a description of the required tools and procedures for manual disassembly for the effective recycling of materials.

13 Disposal

NOTICE
Electrical and electronic equipment (EEE) contains materials, components, and substances that may be hazardous and present a risk to human health and the environment when waste electrical and electronic equipment (WEEE) is not handled correctly.
Disposal must be carried out by authorized professionals following local applicable legislation and rules.
The unit must not be disposed of as domestic waste.

Air handling units and cooling modules contains among other things electric and electronic equipment that must be disposed and recycled according to local rules and by-laws. The unit must not be disposed of as domestic waste.

Cooling modules must be drained of coolant and oil according to local rules and by-laws before disposal.

Appendix A EU Declaration of Conformity

AIRMASTER

EU Declaration of Conformity

Manufacturer

Airmaster A/S
Industrivej 59
9600 Aars
Denmark

herewith declare that the following air handling unit series and type (serial numbers)

Product

AME 900 F (8200001-8299999)

is in conformity with provisions of the following EC directives

Directives

- DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 of machinery
- DIRECTIVE 2014/30/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility
- DIRECTIVE 2009/125/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products
- DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Reservation

This declaration is not valid if modifications are made to the product without approval by Airmaster A/S.

Place

Aars

Date

2024-05-15

Signature

Jesper Mogensen
CTO

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AIRMASTER

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