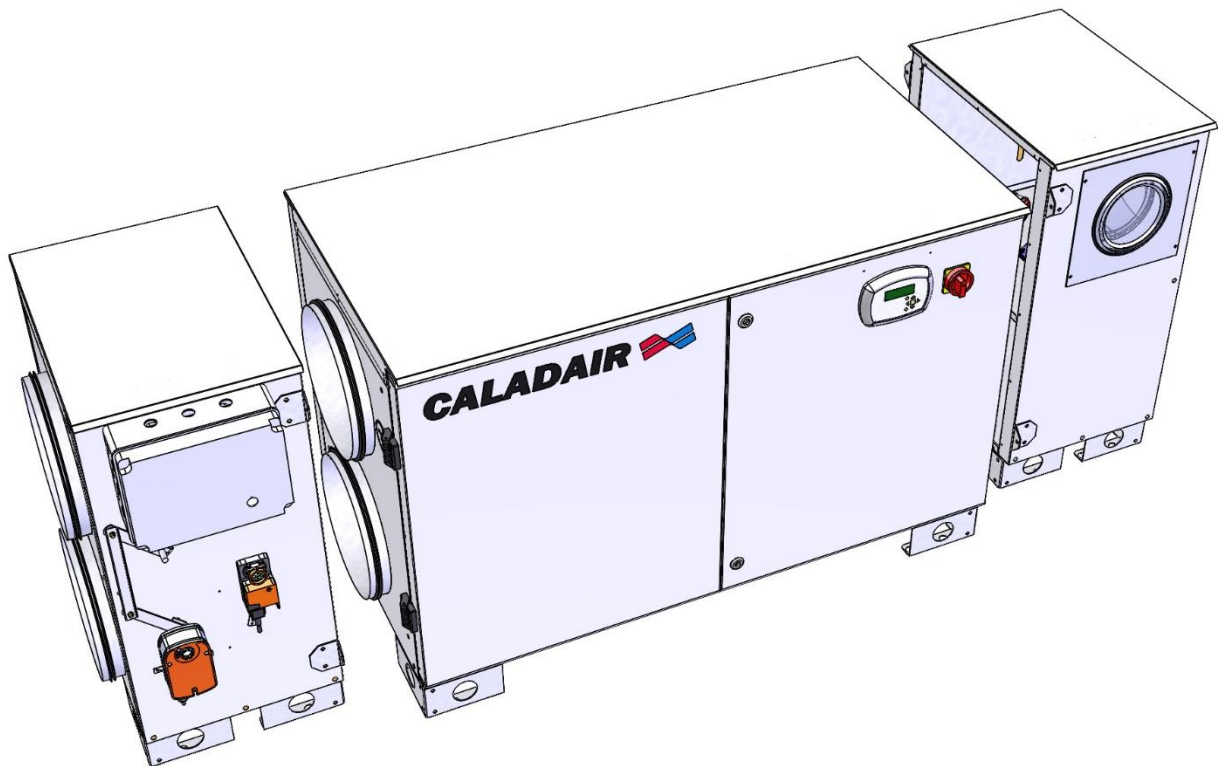


OPERATING AND COMMISSIONING INSTRUCTIONS

**Importants chapters:**

§III SETPOINT OF THE RELATIVE SECURITY OF THE CLEARMOTION MODULE

§VIII MODULE INSTALLATION

§IX CONNECTIONS OF MODULES TO THE CONTROL **PANEL**

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SETPOINT OF SECURITY AND ENVIRONNEMENTALS

In compliance with the current norms, the machine should be installed only by a technical person qualified for this type of work.

Use the Personal Protective Equipment necessary to avoid damage related to electrical, mechanical risks (injuries on contact with sheets, sharp edges, etc.), acoustics or UVC radiation.

Do not use the unit for another use which it designed. This unit can't be use for extract or supply dangerous air. Move the machine as given in chapter handling.

Grounding is carried out in compliance with current standards. Never start the device without grounding.

Before any intervention ensure that device is powered off and wait for complete stop of every rotative component before the doors' open.

During device is running inspection doors and panels must be mounted and closed.

The start or the stop of the device must be done only with the switch of proximity.

The safety and control equipment's mustn't be deleted, or short-circuited, or taken out of service.





The machine should be installed in compliance with fire norms.

Any waste generation must be treated in accordance with existing regulations.

It is the responsibility of the installer of the equipment to ensure compliance with the regulations concerning noise emissions inside the building and to adapt the installation and siting conditions.

We disclaim any responsibility for any damages resulting from wrong utilisation of the equipment, reparation, modification or non-compliance of these instructions.

REMINDER AND DEFINITION OF PICTOGRAMS USED

	<p>Danger and Caution:</p> <ul style="list-style-type: none"> - Potentially dangerous operation or situation - Caution regarding what to do
	Danger: device that emits UVC-like optical radiation that is harmful to eyes and skin.
	Reading the accompanying documentation is mandatory.
	Wearing opaque glasses is mandatory.

I. TECHNICAL SPECIFICATIONS

		Module CLEARMOTION and module FEE							
		05	08	15	20	27	35	45	60
Electrical power	The power supply is provided by the HEXAMOTION ventilation unit. No specific protective device is required.								
Electrical protection									
Power absorbed CLEARMOTION	0,3A / 24Vac			0,6A / 24Vac			1,2A / 24Vac		
Power absorbed FEE	< 20W								
Minimum/maximum operating outside temperature	Refer to the HEXAMOTION "Operating and Commissioning Instructions"								
Minimum/maximum outdoor storage temperature									
Installation	The CLEARMOTION and FEE modules are equipped as standard with a roof in accordance with HEXAMOTION and can be installed both indoors and outdoors.								
Maximum altitude	2000 m								

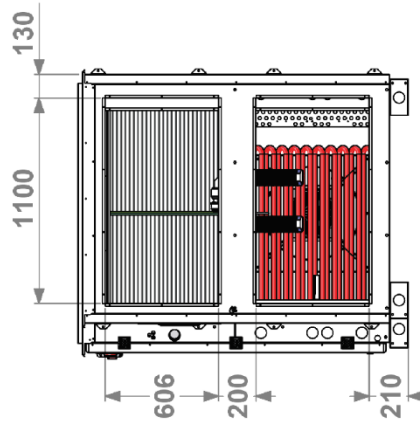
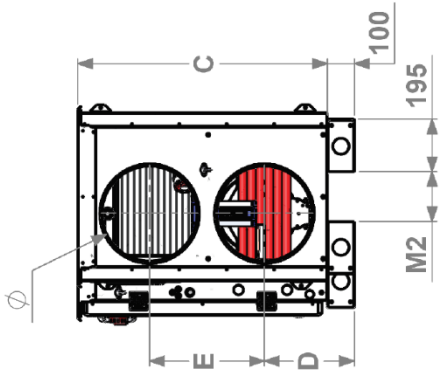
MODULE FEE MODULE CLEARMOTION HEXAMOTION*	∅	A	A3	B	B2	C	D	E	F	M2	M3	L*	Weight MODULE FEE	Weight MODULE CLEARMOTION
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg
05	200	1215	445	675	540	805	305	350	335	55	50	555	50	40
08	250	1345	465	805	670	925	335	410	400	185	70	620	60	45
15	355	1500	465	805	670	925	335	425	400	185	70	700	60	45
20	400	1525	465	885	750	1005	335	465	440	265	70	710	70	55
27	450	1730	515	975	840	1205	405	550	505	355	120	745	80	65
35	500	1730	515	1140	1005	1205	405	565	615	520	120	910	90	75
45	630	1860	575	1265	1100	1495	475	715	660	615	180	1035	120	95
60	630	2050	575	1465	1100	1495	475	715	660	615	180	1235	120	95
80	-	2260	575	1545	1380	1645	-	-	-	895	180	1315	150	120

* Minimum clearance required for maintenance

** Minimum clearance required for disassembly of peripheral parts and passage of tools.
(does not include space for accessibility for intervention)

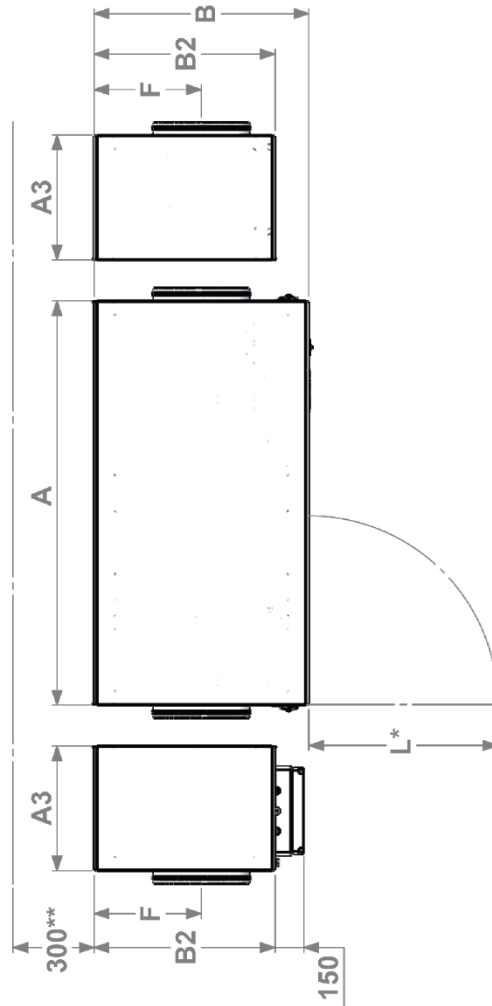
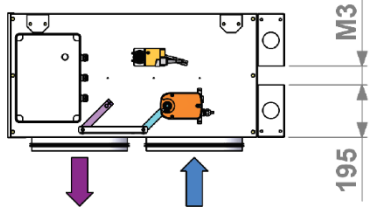
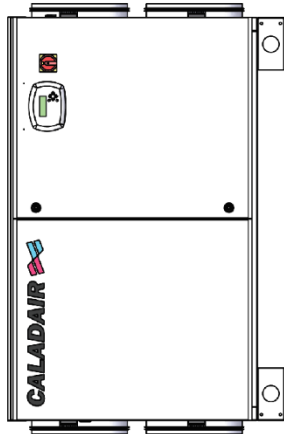
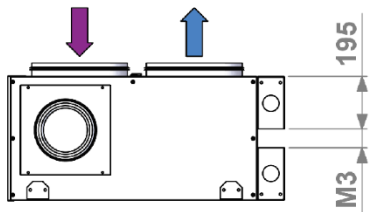
In general, it is imperative to provide the necessary space around the equipment for maintenance operations and access to the different parts.

MODULE CLEARMOTION
HEXAMOTION 05-60

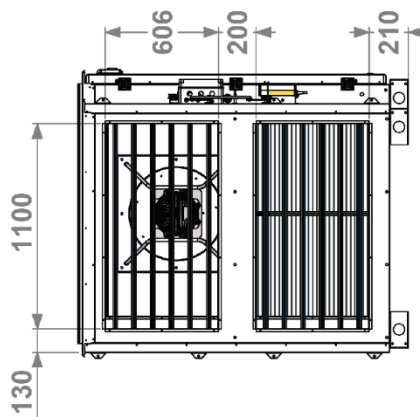
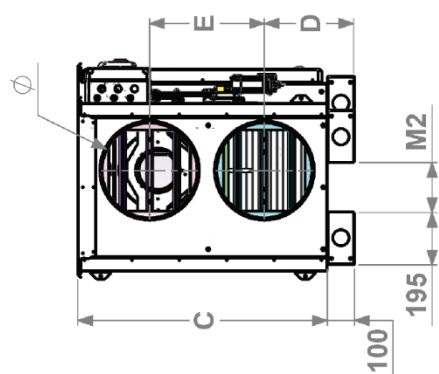


MODULE CLEARMOTION
HEXAMOTION 80

HEXAMOTION



MODULE FEE
HEXAMOTION 05-60



MODULE FEE
HEXAMOTION 80

II. Generalities

The entire range of **HEXAMOTION** rotary heat exchanger dual-flow power plants can be optionally equipped with an additional 3-way air recycling module "**FEE module**" and/or an additional air disinfection module "**CLEARMOTION module**".

The **CLEARMOTION** air disinfection module is based on an innovative technology for the production of highly reactive ions and oxidizing agents in the blown air that effectively act on the reduction of the population of bacteria, viruses, germs, VOCs (odors), and allergens that may affect the health and well-being of people in contact with them.

The **FEE** Air Recirculation Module makes it possible to constantly adjust the amount of fresh air introduced into the building according to the thermal need (temperature) and occupancy (CO2 rate) the building with the aim of reducing energy consumption while maintaining a high quality of air and comfort.

The **CLEARMOTION** and **FEE** modules are **PLUG PLAY, SET & FORGET** (delivered wired ready to be coupled to the **HEXAMOTION** control panel which is specifically adapted in the factory to accommodate these options).

Information on commissioning, use and maintenance of the **HEXAMOTION** ventilation plant can be found in the "Operating and Commissioning Instructions" for the plant.

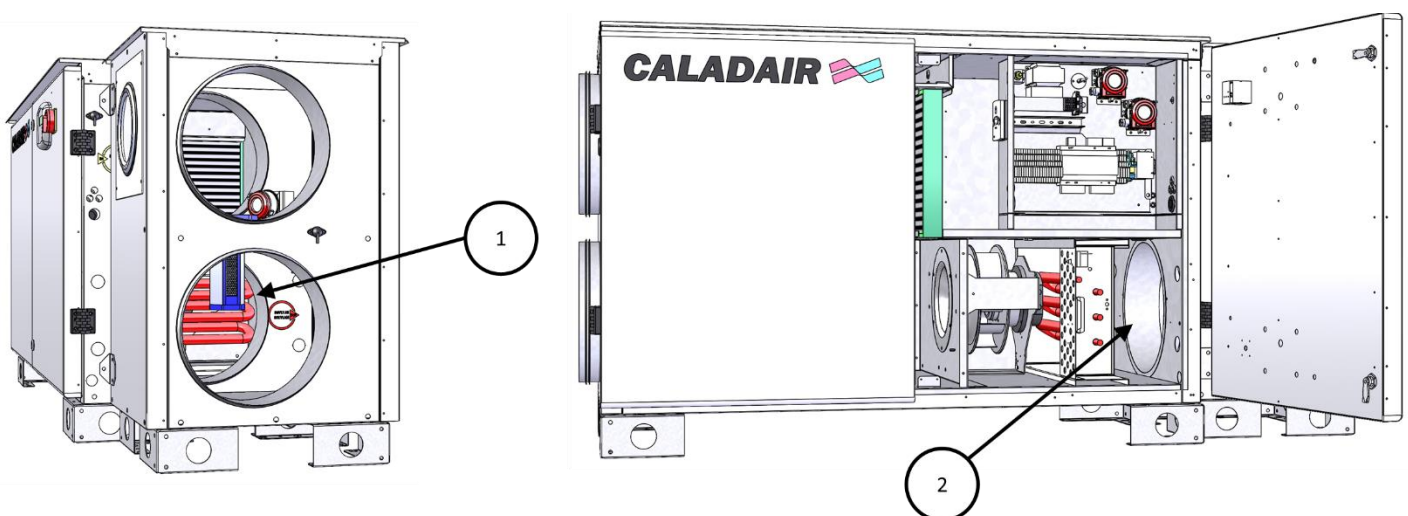
The visuals presented in this leaflet relate to a **HEXAMOTION D** ventilation system.

III. SETPOINT OF THE RELATIVE SECURITY OF THE CLEARMOTION MODULE

The **CLEARMOTION** module is equipped with a device that emits UVC radiation harmful to the eyes and skin. Contact with this radiation can cause irremediable damage. The device should never be viewed with the naked eye without eye protection. This is why **CALADAIR** recommends:

- Turn off the power to the machine during any operation that may cause contact with the eyes and skin (see picture below which indicates potentially dangerous areas)
- Wear eye protection (mask) to protect eyes and face from UVC rays.
- Cover any skin with a light-opaque garment.

Identification of potentially dangerous areas:



Life phases that may endanger stakeholders:

Life phases	Localization / area / action	Risks	Security implemented / to be implemented
Installation	Area (1): see above scheme	UVc radiation in eyes and skin	The CLEARMOTION module must not be electrically powered during installation
Commissioning	Area (1): Blow Air Injection (see diagram above)	UVc radiation in eyes and skin	The fresh air supply injection must be connected to the duct that supplies the air system. Wearing protective eyewear is mandatory
	Area (2): Door opening (see diagram above) to access the internal components of the ventilation plant (e.g., battery, fan, etc.)		A door switch cuts off the power to the flashing device when the door is open.
Maintenance	Area (2): Door opening (see diagram above) to access the internal components of the ventilation plant (e.g., battery, fan, etc.)	UVc radiation in eyes and skin	A door switch cuts off the power to the flashing device when the door is open.
	Handling the flare device	Glass break (lamp) Contact of mercury with skin	Handling the lamp with care
End of life	Removal of the flashing device	Glass break (lamp) Contact of mercury with skin	Handling the lamp with care

The CLEARMOTION module shall not be installed or operated on any machine other than the one for which it is intended. Caladair cannot be held responsible for such acts and declines all responsibility in case of injury and endangerment of others.



The UVC lamp contains a small amount of mercury which, in contact with the skin, can cause redness and/or irritation. Handle lamps carefully to prevent mercury leakage.

IV. RECEIPT OF MATERIAL

IV.1. Acceptance Controls

Upon receipt of the material, check the condition of the packaging and material. In case of damage, make precise reservations on the delivery note of the carrier and notify your distributor immediately.

IV.2. Unpacking

When unpacking the equipment, check the following:

- Presence of total number of packages
- Presence of intended accessories (electrical equipment, sleeves...)

Remove the protective film from the sheets.

After unpacking the equipment, the waste must be disposed of in accordance with the applicable standards.

No packaging shall be dispersed in the environment.

IV.3. Storage

The material must be stored in a sheltered, dry place on its support PCB feet, the packaging cannot be considered as sufficient for storage in bad weather.

IV.4. End of life

Through its membership in the eco-organization ECOLOGIC, the company CALADAIR INTERNATIONAL meets the obligations of financing the collection, removal and treatment of Waste Electrical and Electronic Equipment.

When installing or uninstalling this material, the user or installer can contact the company Ecologic which will propose a collection solution to evacuate the obsolete product in a suitable branch.

Phone : 01 30 57 79 09

Internet : www.e-dechet.com



Lamps contain small amounts of mercury.
Dispose of lamps in accordance with applicable regulations.

V. PACKAGING AND PACKING

V.1. Generalities

The FEE and CLEARMOTION modules are delivered separately from the HEXAMOTION power plant on which they are mounted.

Depending on the configurations, the delivery will consist of 2, 3 or 4 packages *:

Material	Package 1	Package 2	Package 3	Package 4
05...20	HEXAMOTION	FEE and/or CLEARMOTION		
27...60	HEXAMOTION	FEE or CLEARMOTION		
	HEXAMOTION	FEE	CLEARMOTION	
60 – 80*	HEXAMOTION #1	HEXAMOTION #2	FEE or CLEARMOTION	
	HEXAMOTION #1	HEXAMOTION #2	FEE	CLEARMOTION

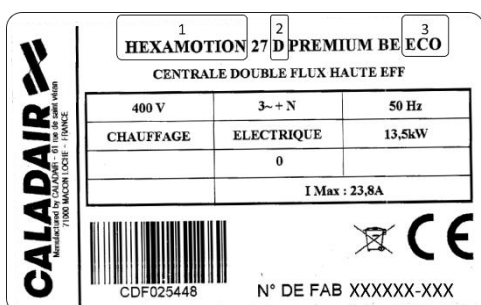
*The HEXAMOTION 60 and 80 are delivered in 2 parts.

Each module comes with mounted PCB feet.

Pay attention to the stability of the module once unpacked and depalletized.

VI. IDENTIFICATION AND LABELLING

The FEE and CLEARMOTION add-on modules are identified by the label on the HEXAMOTION host ventilation system.



1	HEXAMOTION	Module FEE	Module CLEARMOTION
HEXAMOTION	✓		
HEXA FEE	✓	✓	
HEXA CLEAR	✓		✓
HEXACLEAR FEE	✓	✓	✓

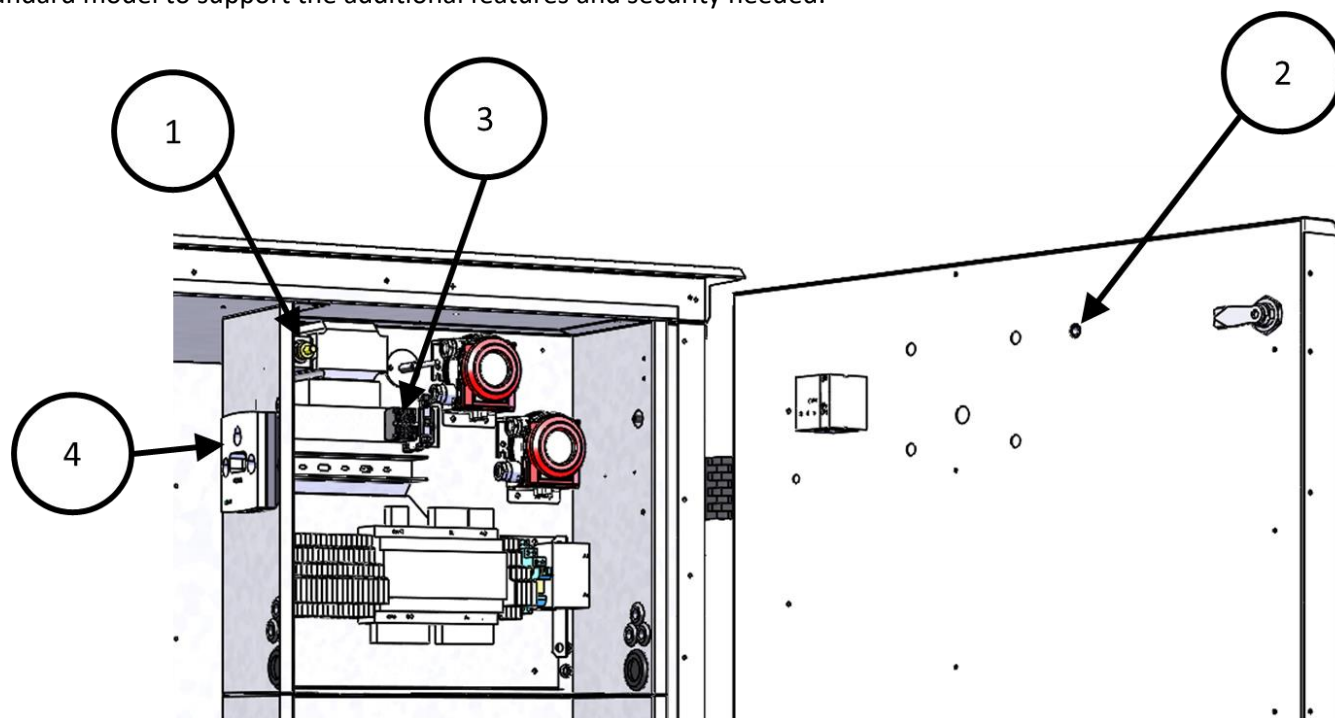
2	Aeraulic configuration
R	Access on the right in the direction of fresh air
L	Access on the left in the direction of fresh air

3	Regulation mode	Module FEE	Module CLEARMOTION
ECO	Constant fan speed	✓	✓
LOBBY	Constant pressure	✓	✓
MAC2	Constant flow rate	✓	✓
DIVA	Proportional fan speed (CO2)	Not compatible	✓
QUATTRO	Proportional flow (CO2)		✓

VII. COMPOSITION AND CONSTITUTION

VII.1. Central ventilation system HEXAMOTION

The HEXAMOTION control panel, which houses the optional FEE and CLEARMOTION modules, is a factory-adapted standard model to support the additional features and security needed.

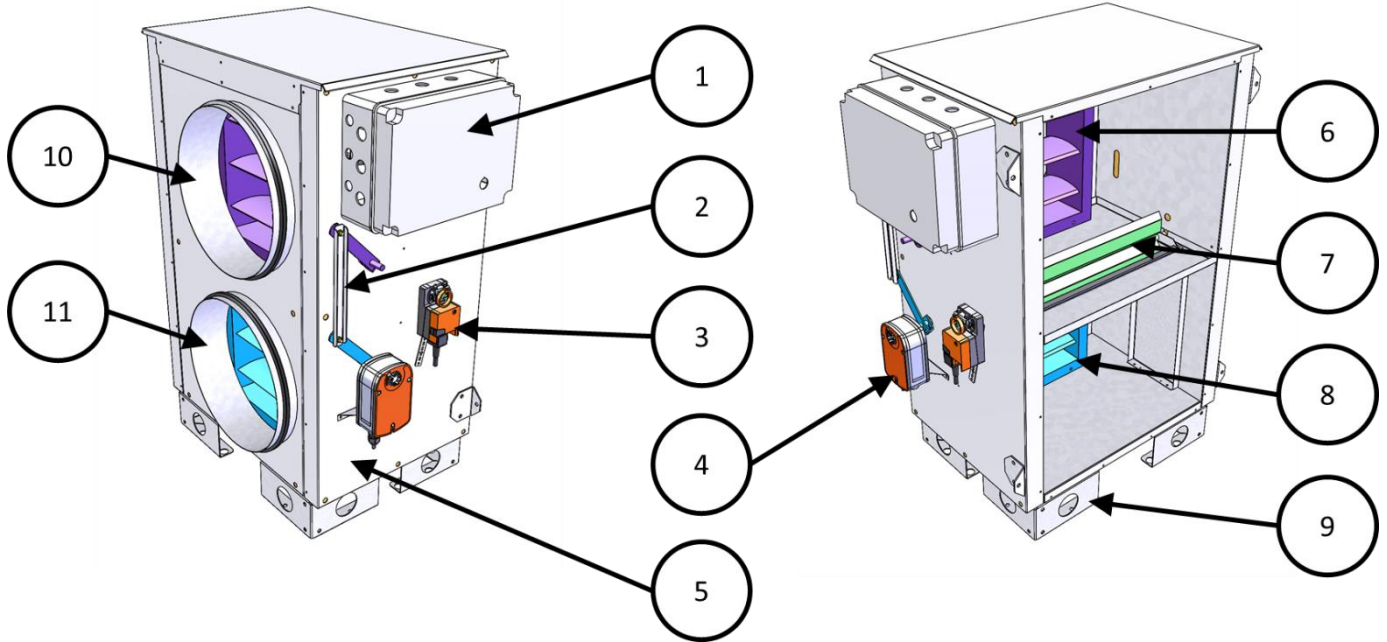


The adaptations concern in particular the electric turntable:

Mark	Element
1	Service door contactor
2	Adjustable doors stop (screws + thick washers)
3	Additional electrical stage with fuse terminal (3,15A)
4	CO2 sensor for FEE control (see electrical scheme)
-	CLEARMOTION module power supply (see electrical scheme)
-	Power supply of the FEE module (see electrical scheme)
-	Communication bus with FEE Slave Extension Controller (see electrical scheme)
-	Fresh air temperature probe offset sheath

VII.2. FEE Module

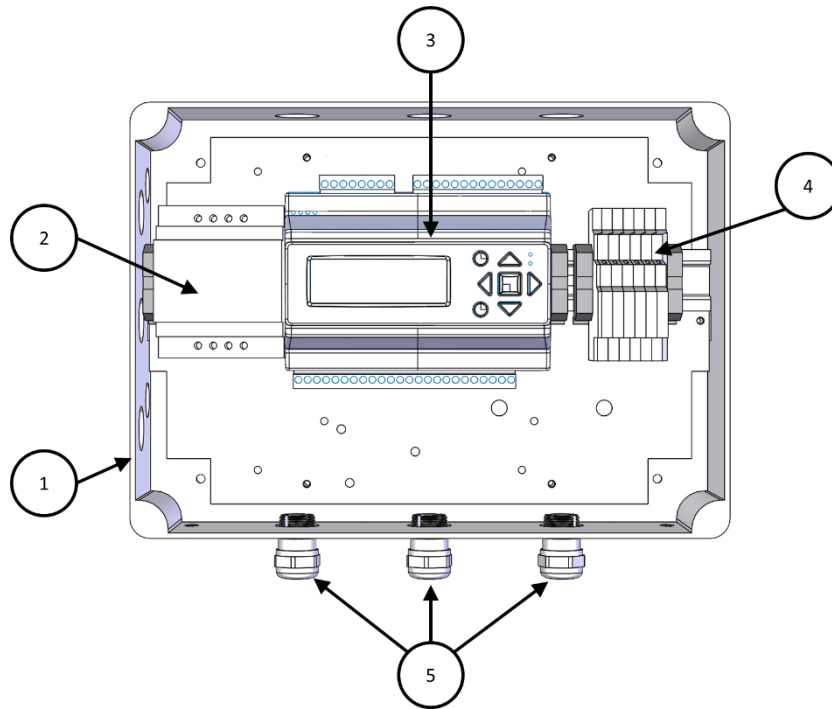
VII.2.a. General composition



Mark	Element
1	Electrical box in front
2	Linkage assembly
3	Recirculated air damper actuator with automatic return spring
4	Actuator for fresh and resumed air dampers with automatic return spring
5	Insulated envelope (thermal and acoustic) with integrated roof
6	Extracted air damper
7	Recycled air damper
8	Fresh air damper
9	PCB feet
10	Pitting of exhaust air release
11	Fresh air intake pitting

VII.2.b. Details of the control panel of the FEE module

The control box incorporates the following components:

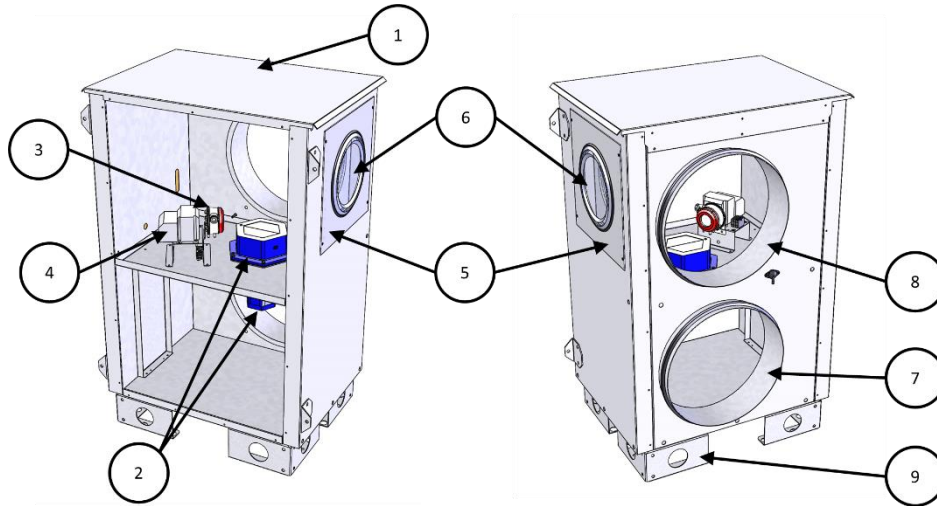


mark	Component name	Details
1	Waterproof case IP54	
2	Power Transformer	230Vac / 24Vac
3	Controller with integrated display and control keys	Managed as a slave extension by the master controller in the HEXAMOTION ventilation unit and communicates with it by bus.
4	Terminal blocks for connection	
5	Cable presses	

VII.3. Module CLEARMOTION

VII.3.a. General composition

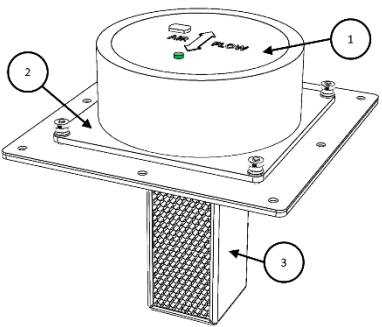
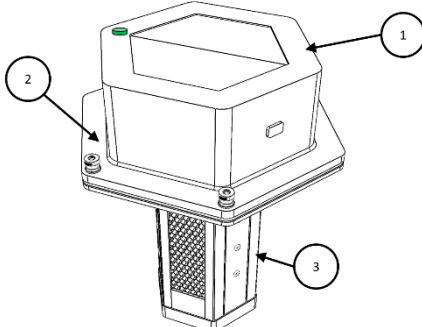
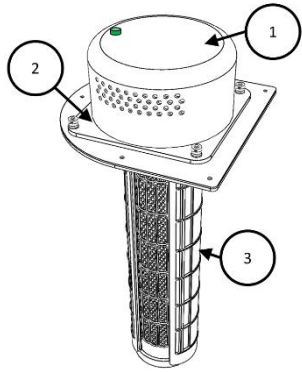
The CLEARMOTION module is equipped as standard with a control window that allows to easily check the operating status of UVc torch devices and the presence of possible defects from the outside of the machine without impacting the operation of the product.



Mark	Element
1	Insulated envelope (thermal and acoustic) with integrated roof
2	Flashing device (1 or 2 devices depending on version) removable
3	Air flow control pressure switch with transparent pressure-taking tubes (30Pa factory setting)
4	Transformer 230Vac/ 24Vac 75VA with fuse 3,15A integrated in the secondary
5	Removable access hatch
6	UVc Flashing Devices Functional Control Window
7	Air Blow Stitching
8	Return Air Dive
9	PCB Feet

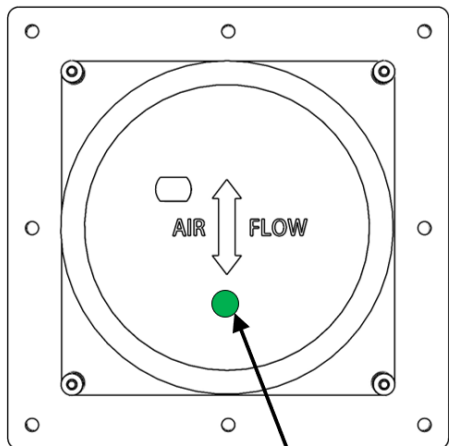
VII.3.b. UVc torch device details

The table below illustrates the torch devices that equip the CLEARMOTION module:

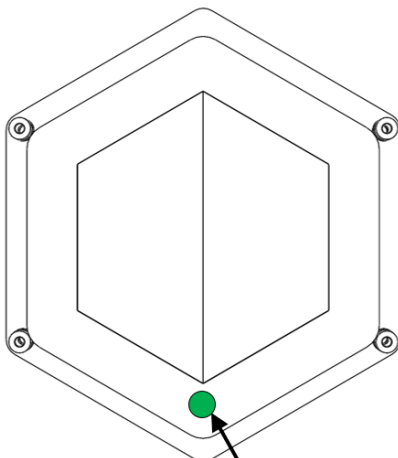
TORCH 5''	TORCH 6'' / TORCH 12''	TORCH 14''
		
<p>(1) Electronic module with green LED indicator light (see details below) (2) Mounting base with safety switch (see detail below) (3) Multi-material catalyst with integrated lamp (lamp not visible)</p>		

Detail Green LED Light Control Light

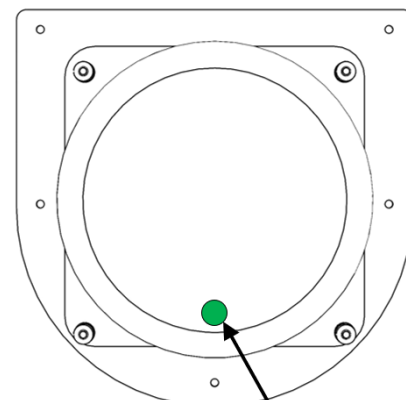
The indicator light is used to check the functioning of the flashing device.
LED on = OK / LED off = torch not working (or failing)



Green operating LED



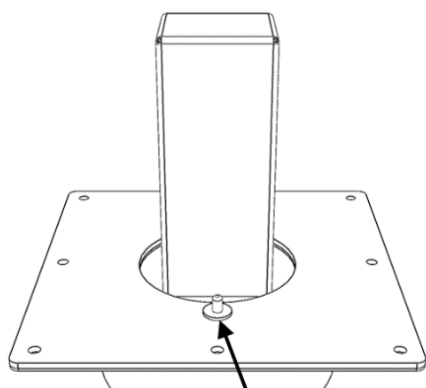
Green operating LED



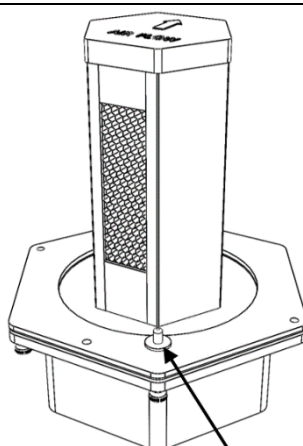
Green operating LED

Detail base safety switch

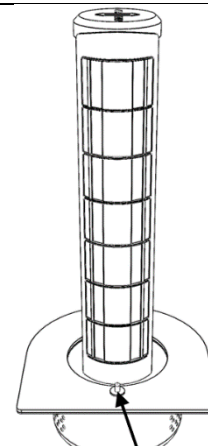
Each flashing device is equipped with a switch on its base that switches off the lamp power when the module is removed from its housing to protect the operator.



Safety switch



Safety switch



Safety switch



Never press the base safety switch when the device is removed from its housing and energized at risk of irremediable eye and skin injury.
Always intervene on the flashing device when the power to the machine is cut off.

The CLEARMOTION module has one or more flashing devices according to the table below:

HEXAMOTION	Model	Number	HEXAMOTION	Model	Number
05	TORCH 5''	1	35	TORCH 6''	2
08	TORCH 5''		45	TORCH 12''	
15	TORCH 6''		60	TORCH 12''	
20	TORCH 6''		80	TORCH 14''	
27	TORCH 12''		-	-	

VIII. INSTALLATION OF MODULES

VIII.1. Handling of FEE and CLEARMOTION modules

It is recommended that the modules be handled as much as possible on the pallet and removed at the last minute, as close as possible to the ventilation plant.

In the case of transport from one place to another, the modules must always be transported vertically directly on their feet or on pallets.

If the equipment is handled with a forklift, take care that the forklift supports the supporting structure. Adapt the choice of handling means to the weight of the approved equipment (refer to the weight given in the instructions).

If the device is being transported with a crane use a rudder pedal and belt the modules to hold them upright

Pay particular attention to the removal phase of the product on the ground to avoid shocks that could damage the structure and integrity of the product.

VIII.2. Implementation

To be connected to the HEXAMOTION ventilation unit, the CLEARMOTION and FEE modules must be installed on a sufficiently solid, flat surface. Since the equipment is equipped with PCB elevating feet, it is not necessary to provide additional elevations.

In order to avoid any deformation of the structure that could affect the performance of the material, use thickness wedges to make up for any slack between the feet and the support floor.

Use an anti-vibration stud system, soft sleeves and sheath acoustic attenuation if necessary.

Install the unit so that weather or room temperature cannot damage the internal parts of the equipment during installation and future use (possibly provide a cap to protect against the release of extracted air if necessary).



If the fresh air inlet is not connected to a duct, it must be equipped with a protective grid.
Grated Bevelled Nozzle (GBN) or hat (H) type if necessary (optional).

Make sure that the device cannot disengage from its support.

The CLEARMOTION and FEE modules can be positioned indoors and outdoors. They incorporate a waterproof roof as standard.

VIII.3. Aeraulics connections

VIII.3.a. Generalities

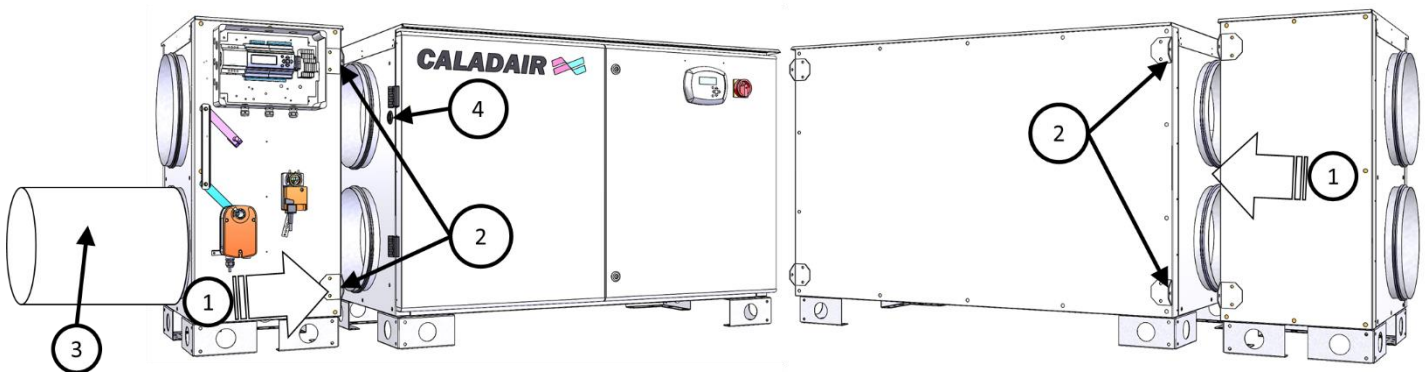
For the air connection, select the duct sections according to the size of the soft sleeves which must be properly tensioned. If necessary, the network must be insulated. The network must be carried out according to the rules of the art (no elbows at the outlet of the fan before a minimum distance of 5 times the pitch diameter, and at the suction, no elbow before a minimum distance of 2,5 times the pitch diameter).

The reader may refer to the HEXAMOTION ventilation system manual for further details.


IX. CONNECTIONS OF MODULES TO THE CONTROL PANEL

IX.1. Connecting the FEE module to the power plant

The FEE module is delivered pre-wired. Provision shall be made for the connection of the power supply and inter-module communication bus provided pending on the side wall of the HEXAMOTION Ventilation plant.



Assembly Protocol:

Mark	OPERATIONS
1	Approach the FEE module until it is in contact with the control panel, taking care not to deteriorate the sealing joint on the interface plane between the control panel and the FEE module.
2	 Check that the power supply, communication bus and temperature probe cables to be shifted into a sheath left standing on the side of the CTA were not jammed between the 2 modules. Tighten the 4 screws of the clamps delivered with the module.
3	Properly place the outside air temperature probe (left standing) into the fresh air suction duct.
4	Connect the supplied standby cables (not visible on the visual above) to the ventilation unit in the FEE module electrical box (see next chapter).

IX.1.a. Electrical connection between the HEXAMOTION ventilation unit and the FEE module

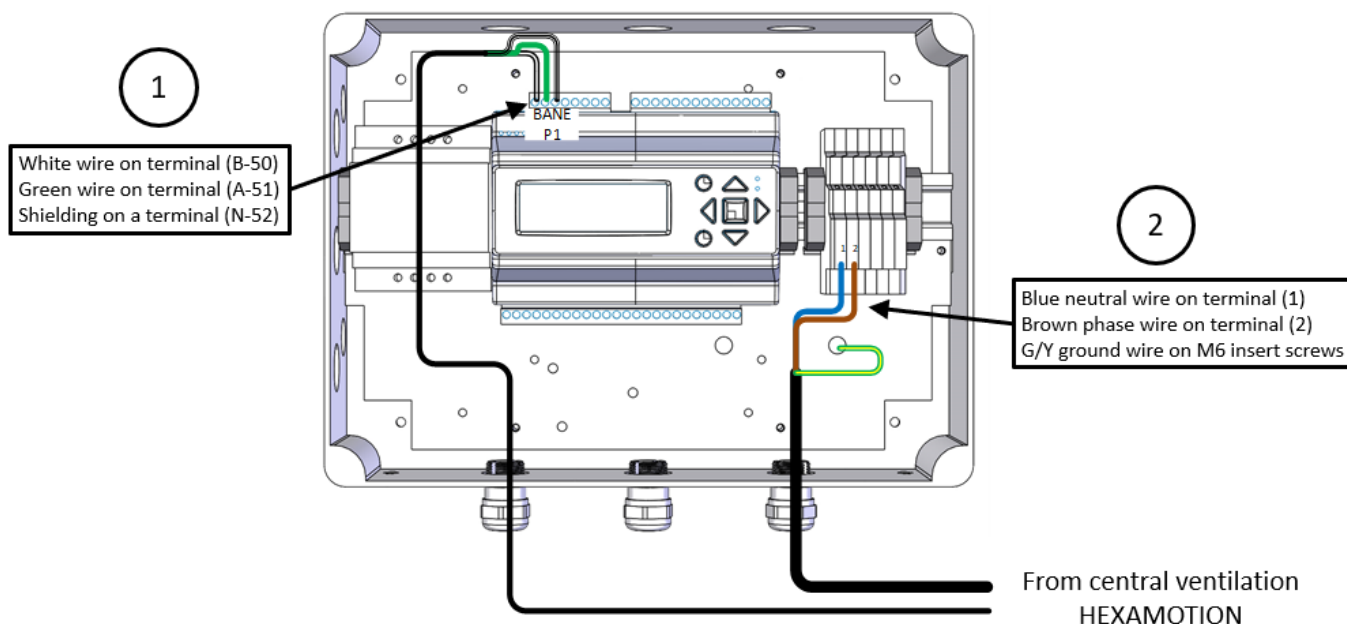
The HEXAMOTION ventilation unit provides the following pending elements which are to be connected in the electrical enclosure of the FEE module:

- FEE module 230Vac power supply
- The communication bus between master and slave controller

The temperature sensor which is also supplied pending is to be attached to the fresh air suction duct.



Electrical work must be performed without power to avoid the risk of injury.



Connection Protocol:

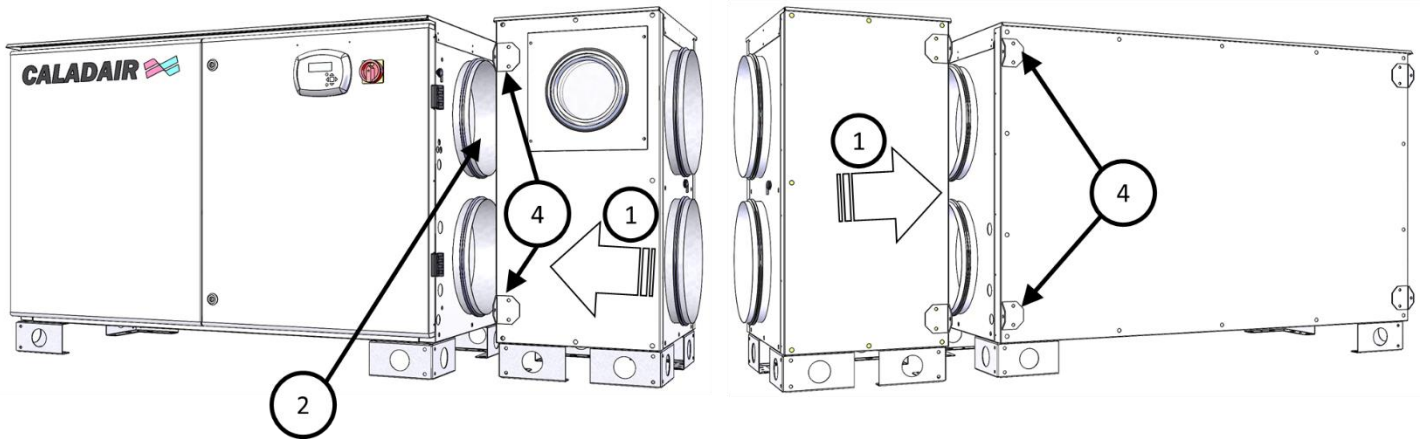
Mark	OPERATIONS
1	<p>Connect the communication bus:</p> <ul style="list-style-type: none"> - White wire on terminal (B-50) of port P1 - Green wire on terminal (A-51) of port P1 - Bollard Protection Braid (N-52) <p>The terminal (E-53) is unused.</p>
2	<p>Connect the 230Vac power supply:</p> <ul style="list-style-type: none"> - The blue (neutral) wire on the terminal (1) of the customer terminal block - The brown wire (phase) on the terminal (2) of the customer terminal block - Green/yellow wire eyelet lug (protective earth) on M6 screw available on metal plate

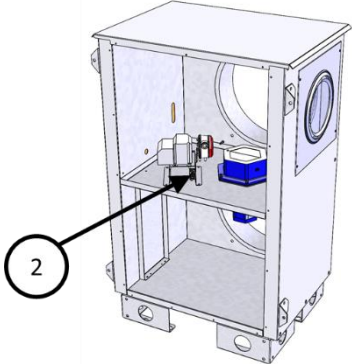
IX.2. Connecting the CLEARMOTION module to the control panel

The CLEARMOTION module is delivered wired.

A cable terminated by a connector is made available in the HEXAMOTION ventilation unit near the exhaust air return stitch and must be connected to the counterpart of the connector located in the CLEARMOTION module.

The connection of the connector must be made before the coupling of the CLEARMOTION module to the HEXAMOTION ventilation control unit, otherwise the operation will be impossible thereafter.

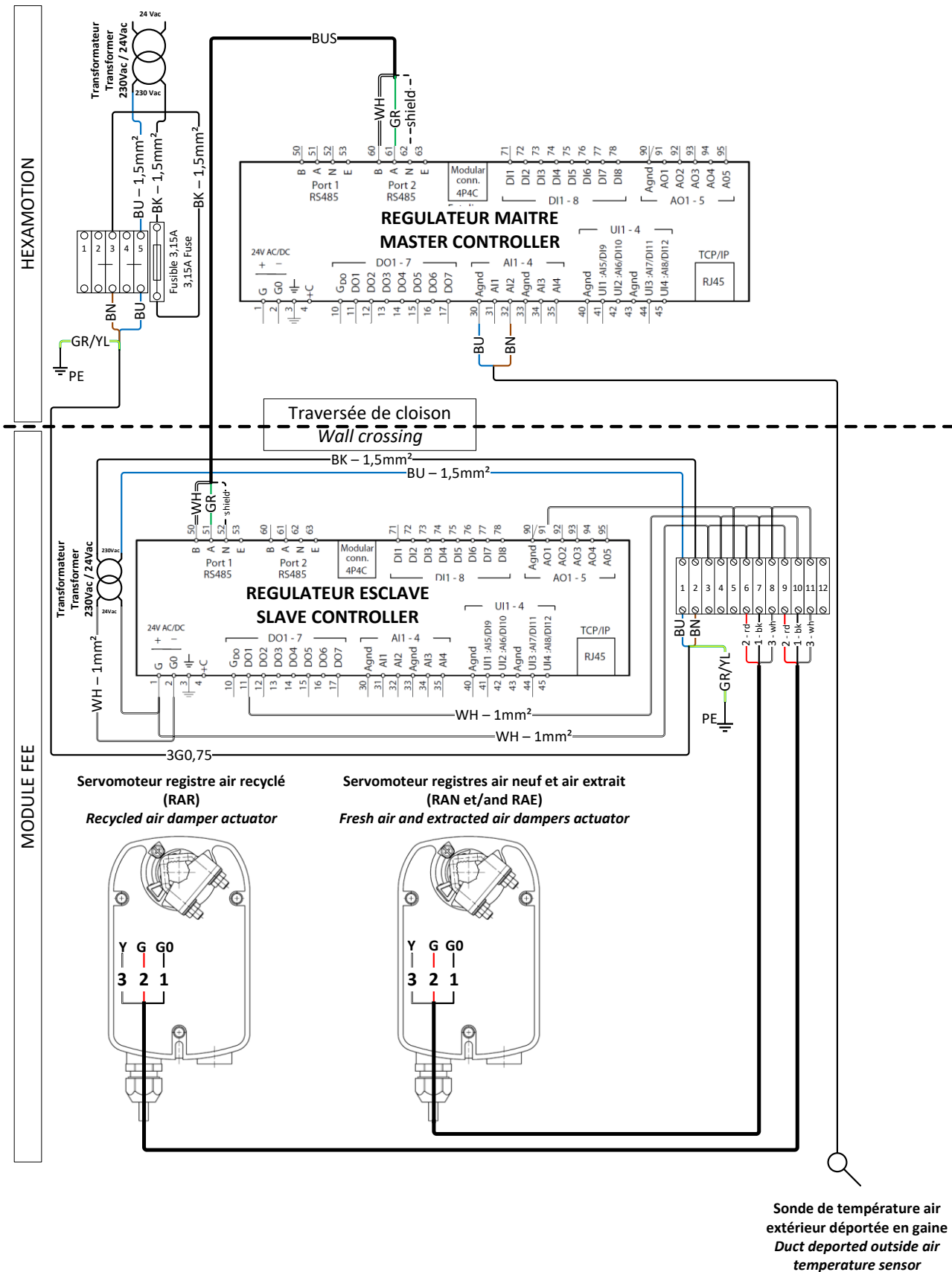


Mark	OPERATION	
1	Approach the FEE module as close as possible to the central ventilation system, leaving enough space to access the wiring and connectors left on hold.	
2	Connect the pre-wired male connector available in the HEXAMOTION ventilation unit to the standby female connector inside the CLEARMOTION module.	
3	Approach the CLEARMOTION module until it is in contact with the control panel, taking care to: <ul style="list-style-type: none"> • Do not damage the seal on the interface plane between the control panel and the CLEARMOTION module • Do not jam the power cable between the control panel and the CLEARMOTION module 	
4	Tighten the 4 screws of the clamps delivered with the module	

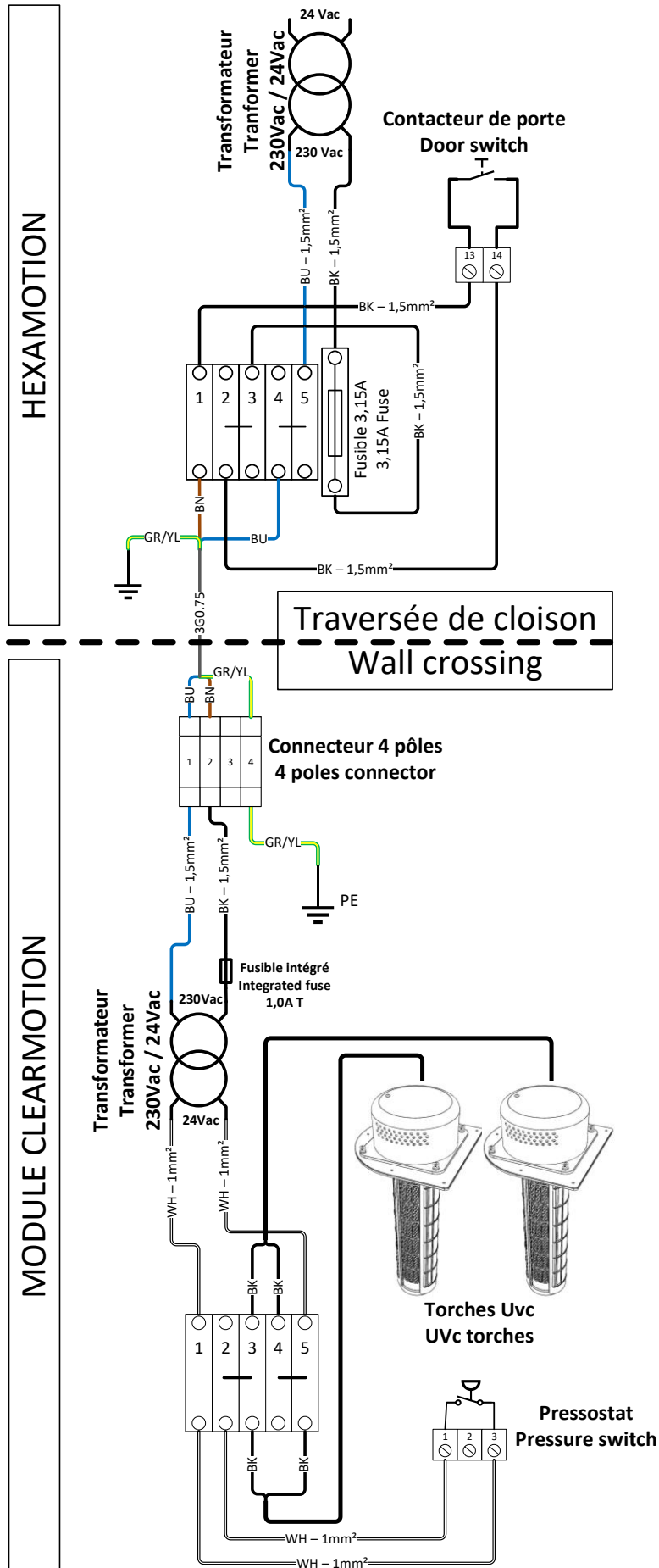
IX.3. Electrical Schematics

The FEE module option involves the use of a slave expansion regulator to increase the input/output capacities of the master controller. This results in significant changes in the electrical diagram of the HEXAMOTION ventilation plant.

IX.3.a. FEE Module Electrical scheme



IX.3.b. CLEARMOTION Module Electrical scheme



X. GENERAL OPERATION AND REGULATION

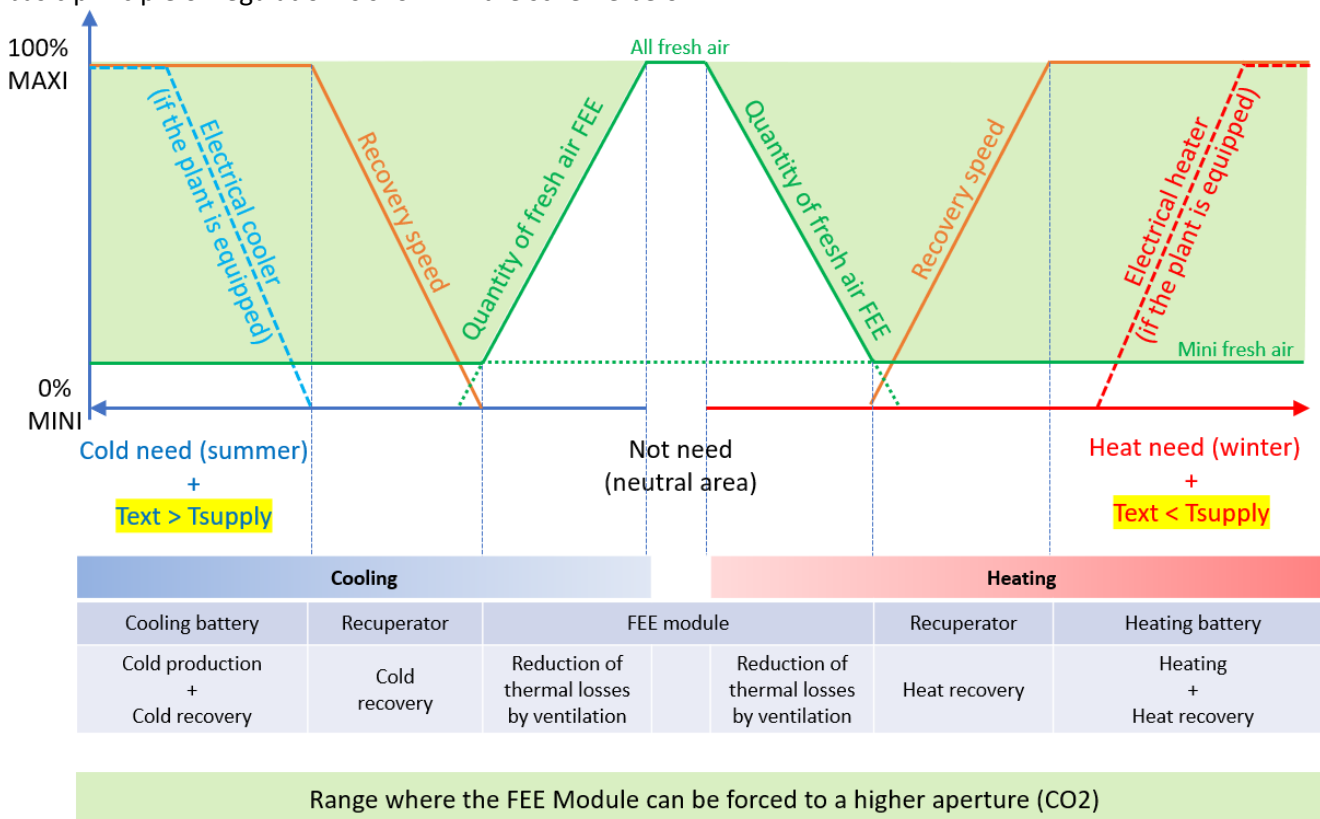
X.1. General operation and regulation of the FEE module

The FEE module saves energy by adjusting the amount of fresh air by recycling the air taken back according to the thermal need of the building and its occupancy rate (CO2): the opening instruction (amount of fresh air) is the most demanding among temperature and CO2.

When installing the FEE air recycling module, the native features of free cooling, free heating, and night cooling are retained. The total recycling function managed by a specific schedule is also available as standard.

X.1.a. Regulation principle

The basic principle of regulation is shown in the scheme below:



A minimum damper position can be set to ensure a minimum volume of fresh air required to remove moisture and volatile organic compounds from the building at all times.

Hot demand

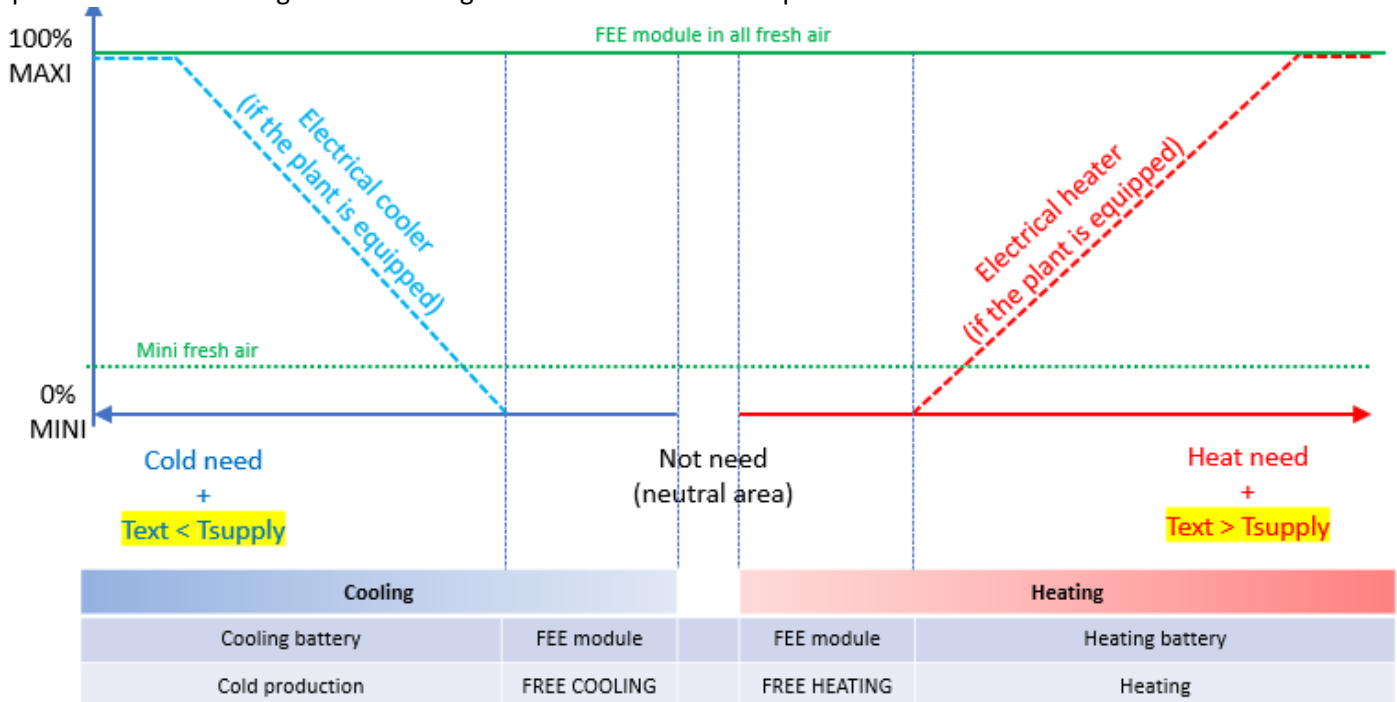
If the outside temperature (fresh air temperature) measured is lower than the inside temperature measured and hot demand is present, the FEE air recycling module closes appropriately to the minimum fresh air flow (=maximum recycling) to recover as many calories as possible. If this is not sufficient, the recuperator takes action to preheat the blown air from the energy recovered from the extracted air. Finally, if this is not enough to reach the temperature limit, the hot battery (electric battery or water or condensing battery) is activated if the HEXAMOTION ventilation unit is equipped with it.

Cold demand

If the outside temperature (fresh air temperature) measured is higher than the inside temperature measured (resumed air temperature) and the power plant is in cold demand, the FEE air recycling module closes in a suitable way until the minimum fresh air flow (=maximum recycling) so as not to allow direct entry of outside heat. If this is not sufficient to reach the temperature setting, the recuperator operates to cool the blown air from the energy recovered from the

extracted air. Finally, if this is still not enough to reach the temperature requirement, the cold battery (direct-expansion or water-operated) comes into operation if the HEXAMOTION ventilation plant is equipped with it.

Operation in free cooling or free heating does not involve the recuperator.



FREE HEATING: If the measured outside temperature (fresh air temperature) is higher than the set inside temperature (resumed air temperature) and hot demand is present, the air recycling module can be opened up to the fresh air in order to warm up the building by taking advantage of the free energy contained in the outdoor air. If this is not enough to reach the temperature guideline, the hot battery (electric or water) is activated if the HEXAMOTION ventilation system is equipped with it.

FREE COOLING: If the measured outside temperature (fresh air temperature) is less than the measured inside temperature (resumed air temperature) and cold demand is present, The FEE air recycling module opens up to the fresh air in order to cool the building by taking advantage of the free energy contained in the outdoor air. If this is not sufficient to achieve the temperature requirement, the cold battery (direct-expansion or water-operated) is activated if the HEXAMOTION ventilation system is equipped with it.

NIGHT COOLING: Depending on the outdoor and indoor temperature conditions reached during the day, the Night Cooling function can be activated at night (between 00:00 and 07:00) in order to reduce the building temperature and avoid possible overheating in the following day. It is based on the same principle as free cooling except that the ventilation flow is increased (oversold) during the whole time of activation of the function.

CONSIDERATION OF THE CO2

The concentration of CO2 in the returned air is the image of the occupancy rate of the treated room.

The FEE module is controlled in such a way as to introduce the minimum of fresh air to minimize energy consumption while guaranteeing maximum comfort.

The amount of fresh air dictated by the position of the dampers will depend on the most demanding between temperature and CO2.

Examples:

If the concentration of CO2 measured in the returned air requires a volume of fresh air of 50% and the thermal requirement requires a volume of fresh air of 20%, the regulation of the FEE module will act on the dampers in order to obtain 50% of fresh air.

If the measured CO₂ concentration in the returned air requires a volume of fresh air of 30% and the thermal requirement requires a volume of fresh air of 70%, the regulation of the FEE module will act on the dampers to obtain 70% of fresh air.

X.1.b. Recycling function

The recycling function makes it possible to operate the system in all recycled air (0% of fresh air) in order to facilitate the ascent in temperature of the building especially before the arrival of the occupants. During this time, the temperature and CO₂ have no effect on the air recycling rate, therefore it is recommended not to activate this function when the building is occupied if however a change in the time setting must be made.

The recycling function is managed by an hourly schedule (schedule 5) set from factory to the 5:00-7:00 time slot every day of the week and during the holiday period*. This time slot is changeable but must not overlap with the priority slots for normal or reduced speed (see HEXAMOTION Central Ventilation System Manual for more details on time settings).

*The holiday period is not activated when leaving the factory.

When the recycling function is active:

- the temperature setpoint (blowing, recovery, or ambient according to settings) is unchanged and remains calculated as in normal operation without offset
- the blowers of blown air and resumed air pass in normal speed (in the case of a regulation in speed type ECO) or , remain on the same pressure setpoint (for a constant pressure regulation type LOBBY) or on the same flow setpoint (for constant flow control type MAC2).

When the recycling function is active, the term "Recycling" appears on the main page of the screen. Each time the recirculation function is activated, the machine goes through a shutdown phase and a restart phase.

It is not possible to force recycling through an external input on the regulator.

X.1.c. Isolation of the plant

When the central ventilation system is shut down, the return and fresh air dampers are closed, which ensures an isolation function even in the event of a power failure (fresh and exhaust air damper actuator and recycled air actuator are equipped with automatic return spring).

X.1.d. Incompatibility with DIVA and QUATTRO control units

The regulation of the FEE module in temperature and CO₂ is not compatible with a flow regulation of HEXAMOTION ventilation unit type DIVA or QUATTRO.

X.2. General operation and regulation of the CLEARMOTION module

The CLEARMOTION module ensures the continuous disinfection of the blown air. It works on the innovative principle of producing highly reactive ions and oxidizing agents in the blown air that effectively act on the population reduction of viruses, germs, bacteria, odors, and other volatile organic compounds (VOC).

In order to ensure the protection of stakeholders and to ensure the efficiency of the torch arrangement, the CLEARMOTION module is equipped:

- An air flow control by pressure switch that switches off the power supply to the UVc lamp when the air flow is not sufficient (e.g.: central unit at standstill, defective blower, etc..)
- An electrical contactor located on the door of the HEXAMOTION ventilation plant that switches off the power supply to the UVc lamp when the door is open (e.g., during maintenance)
- A built-in electrical contactor directly on the flashing device that turns off the power to the UVc lamp when the flashing device is removed from its base

The operating status of the flashlight is visible without removal thanks to the green status LED positioned directly on the electronic module of the flashlight and visible from the window positioned on the front of the CLEARMOTION module.

The green status LED	Description
Turned on	The flashing device works
Turned off	The flashing device does not work

XI. COMMISSIONING

The commissioning of the HEXAMOTION power plant must be carried out in accordance with the "operating and commissioning instructions" for the plant.

You will find below the points to check once the connections of the FEE and/or CLEARMOTION module to the HEXAMOTION ventilation system have been made.


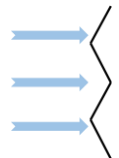

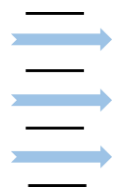

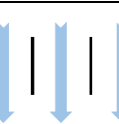
XI.1. Commissioning of the module FEE

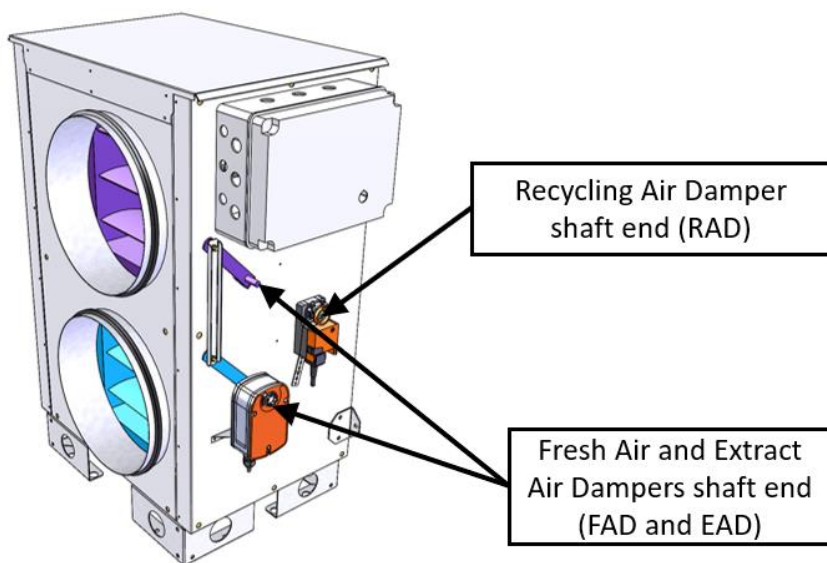
The FEE module is delivered factory preset and it is not necessary to change the setting of the controller.

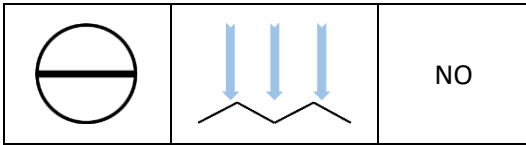
No specific action is requested after connection to the ventilation plant and ventilation network.

The operation of the FEE module can be checked by checking that the fresh and exhaust air dampers are closed when the power supply to the plant is cut off, and that the opening angle varies when the temperature and/or CO2 setting is changed.

The position of the dampers is visible from the outside thanks to a slot made at the end of the axis of each damper:

Fresh Air and Extract Air Damper (FAD et EAD)		
Axis slot orientation	Position of damper blades	Air passage
		NO
		YES
Recycling Air Damper (RAD)		
		YES





The table below shows the position of the dampers according to the different phases of operation:

Position of central ventilation dampers shut-off (On or Off)			Position of central ventilation dampers recycling function activated		
Fresh Air (FAD)	Extract Air (EAD)	Recycling Air (RAD)	Fresh Air (FAD)	Extract Air (EAD)	Recycling Air (RAD)
Close	Close	Close	Close	Close	Open
AO1 Ext = 0V DO1 Ext = 0Vac (open)			AO1 Ext = 7V DO1 Ext = 0Vac (open)		
<p>Dampers are closed by servo return springs</p>			<p>Dampers are closed by servo return springs</p>		

Position of central ventilation dampers in normal operation		
Variable position depending on measured temperatures and CO2		
Fresh Air Position (no recycling)	Position with minimum 30% fresh air	Relationship between the tension signal on AO Ext 1 and the position of the dampers
AO1 Ext = 0V DO1 Ext = 24Vac (close)	AO1 Ext = 7V DO1 Ext = 24Vac (close)	

XI.2. Commissioning of the module CLEARMOTION

The CLEARMOTION module is delivered ready to operate.

No specific action is requested after the module is connected to the central ventilation system and the ventilation network. When the control panel is in operation, it is possible to view the UV flashlight operating green LED through the front window of the CLEARMOTION module.

XII. PARAMETERS AND SETTINGS

No specific settings or settings are required for the operation of the FEE and CLEARMOTION modules. All master regulators (CTA) and slave extension regulators (FEE) are factory configured and ready to operate.

XII.1. FEE module parameters and settings

XII.1.a. Instructions settings of the minimum air

The minimum fresh air setting is set at the factory outlet at 30%. This value must be considered as a minimum value, it is not recommended to set a lower value.

It is possible to adjust this value from the HEXAMOTION master controller with the menu: *Configuration /Lim mini damper / Lim mini: 30.0%*

XII.1.b. Instructions settings of the CO2

The CO2 setpoint is set to 1,000 ppm at the factory outlet.

It is possible to adjust this value from the master controller of the HEXAMOTION ventilation system with the menu: *Regul ventilation / CO2 / Setpoint :1000ppm.*

XII.1.c. Time settings

The hardware is delivered out of the factory with the following time settings:

Mode of operation	Menu access	Time periods		
		ECO	LOBBY	MAC2
Normal	Time setting/ Pgr Clear	Period 1: 07:00 - 22:00 Period 2: 00:00 - 00:00 Monday to Sunday + Vacation and Holidays	Period 1: 00:00 - 00:00 Period 2: 00:00 - 00:00 Monday to Sunday + Vacation and Holidays <u>These settings should not be changed to LOBBY</u>	Period 1: 07:00 - 22:00 Period 2: 00:00 - 00:00 Monday to Sunday + Vacation and Holidays
Reduces	Time setting/ Reduced speed pgr	Period 1: 00:00 - 05:00 Period 2: 22:00 - 24:00 Monday to Sunday + Vacation and Holidays	Period 1: 00:00 - 05:00 Period 2: 07:00 - 24:00 Monday to Sunday + Vacation and Holidays	Period 1: 00:00 - 05:00 Period 2: 22:00 - 24:00 Monday to Sunday + Vacation and Holidays
Oversold (Night cooling)	Configuration / Oversold / Start time / Shutdown oversold	Turned on: 0h00 Turned off: 7h00		
Retraining (Hourly Schedule 5)	Time setting/ Schedule 5	Period 1: 00:05 – 07:00 Period 2: 00:00 – 00:00		

The time settings can be modified but to avoid any hardware malfunction, it will be necessary to check that there is no overlap of the time ranges detailed in the table above.

Only Night Cooling can overlap with recycling. The Night Cooling function takes precedence over the recycling function.

XII.1.d. FEE module slave expansion regulator

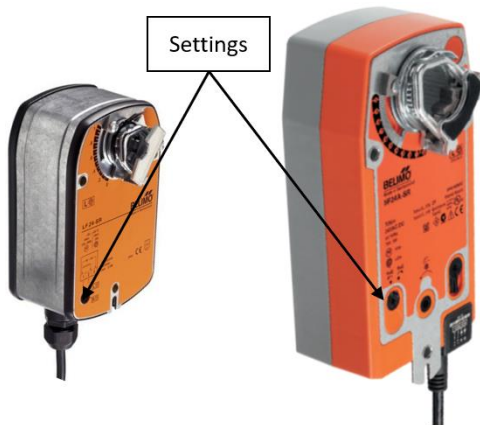
The Slave Expansion Regulator (CORRIGO E151D-3) must be declared as Expansion Unit 1 (this can be verified by writing "Expansion Unit 1 Version: 3.4 on the regulator screen"). Any other configuration will cause a malfunction of the FEE module and the ventilation unit. No setting needs to be done on this regulator.

XII.1.e. Actuator settings

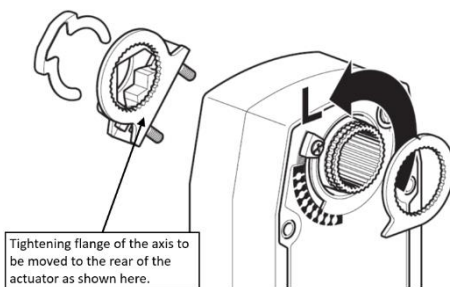
The actuators are set at the factory outlet. In case of on-site malfunction or replacement of the component, the table below indicates the setting to be observed on each of the actuators that equip the FEE module:

FEE	Actuator Recycling Air Damper (RAD)		Actuator Fresh Air – Extract Air Dampers (FAD et EAD)	
	Actuator orientation	Settings of the opening direction	Actuator orientation	Settings of the opening direction
05...80	HEXAMOTION R			
		Y = 0 		
	HEXAMOTION L			
		Y = 0 		

The settings shown in the table above are visible directly on the front of the actuator (see following images):



In case of replacement of the actuator of the fresh and extracted air dampers, it is necessary to reverse the position of the damper shaft clamp before its installation in accordance with the table of previous settings.



XII.2. Parameter and setting of the CLEARMOTION module

XII.2.a. Setting the air pressure switch

The CLEARMOTION module has no control system. It is equipped with an air pressure switch that provides the function of pressure-static air flow control to protect the flashing device.

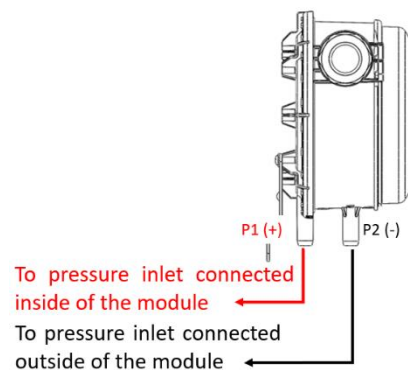
CLEARMOTION	05	08	15	20	27	35	45	60	80
Pressure switch factory setting value	30 Pa								

Shifting the pressure switch setting threshold to a higher pressure will increase the threshold for initiating the supply air flow.

The pressure switch is set at the factory exit, the offset of the factory adjustment threshold is not recommended.

XII.2.b. Positioning of transparent air pressure switch tubes

The air pressure switch verifies the presence of an air pressure at the blower sufficient to allow the operation of the flare devices. The diagram opposite shows the position of the tubes to be respected in case of removal or replacement of the organ:



XII.2.c. Service door contactor settings

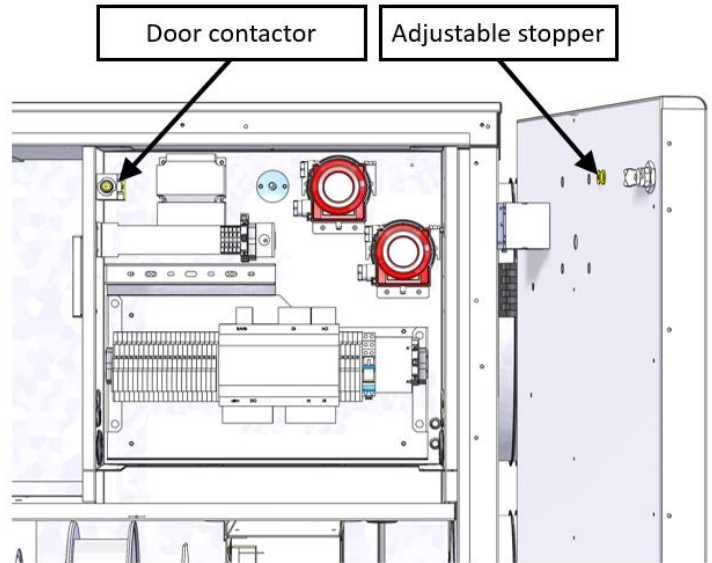
In order to guarantee a maximum level of safety, an electrical contactor placed at the door of the HEXAMOTION power plant allows to control the operation of the torches by authorizing the power supply of the CLEARMOTION module when the service door is closed.

A mechanical adjustment device is used to adjust the interlocking threshold of the contactor. The adjustment is done at the factory exit, but in case of need, it is possible to adjust the position of the pusher on site by adding or removing locking washers under the screw head as shown below:

When possible on-site adjustment, care must be taken to ensure that the pusher does not stop on the contactor in order not to damage the contactor.

The position of the contactor depends on the version of the ventilation unit. The contactor is positioned:

- On the right door for a HEXAMOTION ventilation unit in R configuration
- On the left door for a HEXAMOTION ventilation unit in L configuration



XIII. PERIODIC MAINTENANCE

The maintenance and decommissioning of the installations must be carried out under the conditions ensuring compliance with the applicable environmental regulatory requirements. Maintenance must be carried out at least once a year or according to the applicable regulatory requirements (fire safety, etc.). Depending on the installation conditions, the control interval can be reduced.

Warranty will be cancelled if maintenance instructions are not followed.

Before commencing any maintenance or repair action, it is imperative to turn off the power supply and ensure that it cannot be inadvertently restored (lock out the proximity switch in the off position for this purpose).

Maintenance and maintenance operations must be conducted by qualified personnel and equipped with the appropriate equipment (Personal Protection Equipment, etc...).

XIII.1. Periodic maintenance of the FEE module

The table below describes the maintenance operations to be performed.

Component	Action
Actuator of fresh and extracted air dampers	Check that the actuator ensures the correct opening and closing. Check the attachment of the actuator to its base.
Recycled air damper actuator	Check the tightness of the linkage axis on the actuator axis. Check the automatic recall. Check for any hard spots or blockages.
Linkage	Check for excessive play in the kinematics. Check the correct tightening of the various components.
Soft cuffs (if present)	Check that the cuffs are not perforated. Replace if necessary.
Gaines	Check the tightness. Clean ductwork and suction and discharge grids if present.

Electrical connections

Check the tightening of the screws of the different connectors and terminals.

XIII.2. Periodic maintenance of the CLEARMOTION module

XIII.2.a. Generalities

Component	Action
Device(s) torch(s)	Check the status of the green LED on the electronics module of the device. Replace the lamp if the running time is exceeded (see corresponding chapter) Replace the catalyst if the running time is exceeded (see corresponding chapter)
Pressostat	Check the pressure switch setting (see corresponding chapter)
Pressure-taking tubes	Check condition and connection to pressure switch terminals and receptacles Check for internal moisture and internal obstruction Check proper placement and routing (no bending)
Soft cuffs (if present)	Check that the cuffs are not perforated. Replace if necessary.
Gaines	Check the tightness. Clean ductwork and suction and discharge grids if present.
Electrical connections	Check the tightening of the screws of the different connectors and terminals.

XIII.2.a. Periodic maintenance intervals for torch devices

The CLEARMOTION module consists of one or more flashing devices that integrate each:

- UVc lamp
- A multi-material photocatalytic oxidation catalyst
- An electronic box for power supply and functional status control

In order to guarantee the disinfection performance of the blown air it is recommended to replace these elements according to the operating time intervals below:

	Time interval of de operation for replacement
UVc lamp	2 years*
Catalyst	4 years**

*Or if the green LED is turned off.

** Lamp replacement with each catalyst replacement

Since the efficiency of the flare and catalyst is reduced by the dust deposition, care will also be taken to check and replace the fresh and returned air filters according to the instructions of the HEXAMOTION ventilation plant.

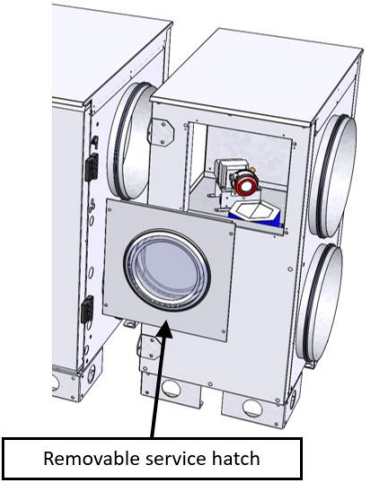
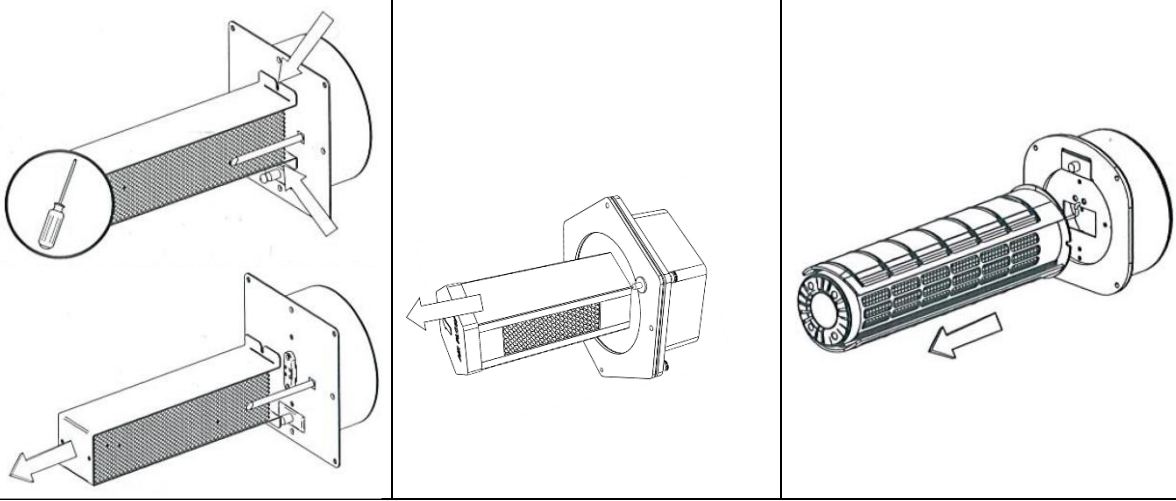
XIII.2.b. Catalyst replacement procedure (every 4 years)


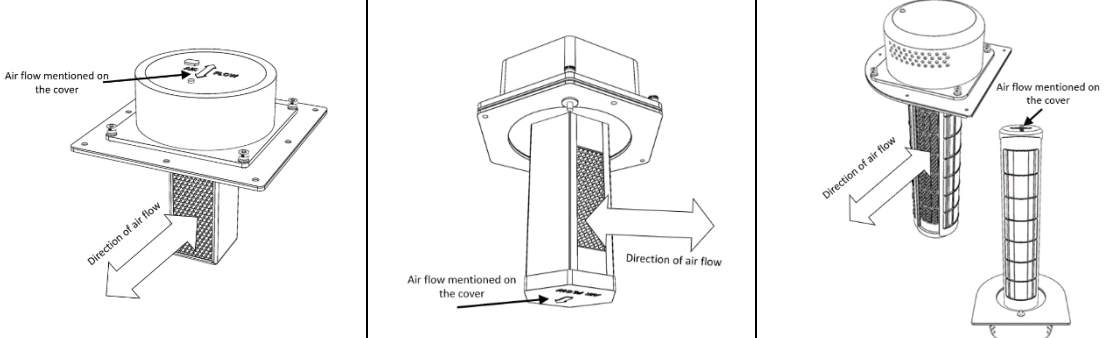

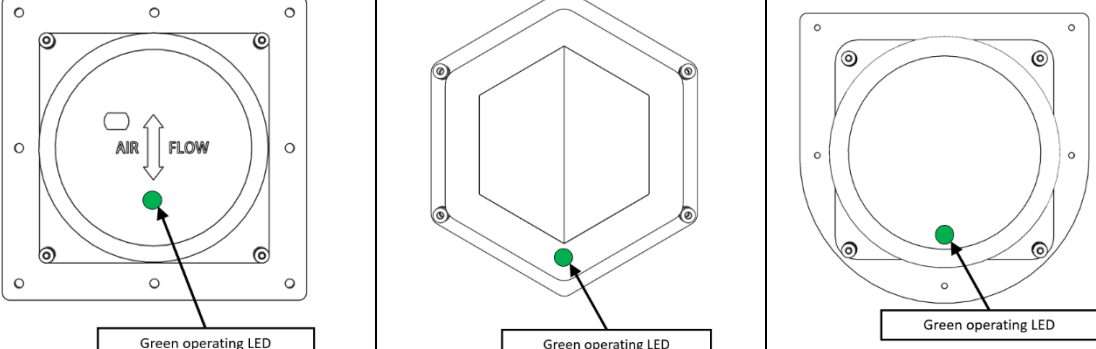
Replacement of the catalyst requires removal of the flashing device. The lamp will be replaced simultaneously with each replacement of the catalyst.

Refer to the lamp replacement procedure to proceed with the catalyst replacement.

XIII.2.c. Lamp replacement procedure (every 2 years)

Replacement of the flashlight requires removal of the flashlight. The lamp replacement operation will be used to clean the catalyst with a jet of air or water, taking care not to damage the active surface.

OPERATION	DESCRIPTION		
	VERSION CLEARMOTION		
	05 - 08	15/20/27/35/45/60	80
Removal	R.1	<p>Switch off the power supply via the proximity switch located on the front of the HEXAMOTION ventilation unit to prevent serious injury.</p> <p>Remove the service hatch that supports the front window of the CLEARMOTION module.</p>	
			
	R.2	Disconnect the electrical power to the electronic module from the flashing device directly on it.	
	R.3	Loosen the screws/nuts securing the torch base.	
	R.4	Remove the flashing device from its housing and the CLEARMOTION module.	
	R.5	Remove the torch catalyst after unscrewing the securing screws/nuts	
			
R.6	Unscrew the UV lamp and replace it with the new one.		
R.7	Dispose of the lamp in accordance with applicable regulations.		
Installation	I.1	Proceed in reverse order of removal.	

	I.2	 <p>Scrupulously respect the orientation to the airflow and position of the green LED so that it is visible through the control window. A mechanical correction is present according to the version.</p>
	I.3	
	I.3	 <p>Tighten the mounting screws and nuts moderately.</p>
Control	C.1	Close all machine doors and service doors.
	C.2	Replace the power supply to the machine via the proximity switch located on the front of the ventilation unit.
	C.3	After the ventilation plant has started and passed its start-up sequence (up to 5 minutes), the airflow is normally sufficient to allow the flare devices to operate.
	C.4	The operation of the torch devices can be identified by the green LED on the electronic module visible from the front window of the module.
	C.5	

XIV. REPAIR

XIV.1. FEE module repair

In case of malfunction of the FEE Air Recycling Module, it is recommended to refer to the “Operating and Commissioning Instructions” of the HEXAMOTION Ventilation Control Panel before starting any fault diagnosis on the FEE Module.

Below you will find the defects that concern the FEE module only, their probable causes and possible solutions. First of all, check that the electrical connectors between the FEE module and the HEXAMOTION ventilation unit are properly connected and that this operation was not omitted during the installation phase of the hardware. Also check the tightening of the screw connectors.

Nature of the defect	Probable(s) cause(s)	Solutions
Actuator for fresh and exhaust air dampers not working	Defective wiring / wiring	Replace/Repair
	Defective actuator	Replace the actuator
Recycled Air Damper Actuator Not Working	Defective wiring/ wiring/ connections	Repair/replace defective item
	Defective actuator	Replace the defective item
No actuator work	Defective actuators	Replace defective items
	Defective slave extension regulator	Replace the slave expansion regulator.
	Defective wiring/ wiring/ connections	Repair/replace defective item
The direction of rotation of the dampers is not compliant	Improperly regulated or deregulated actuators	Check the direction of rotation adjustment directly on the Actuator (see corresponding chapter) and bring it back into compliance
Slave expansion regulator does not turn on (P/B LED is reached and screen does not turn on)	Defective transformer	Check the transformer and replace if necessary.
	Defective wiring/ wiring/ connections	Check the transformer fuse and replace if necessary.
	Defective slave extension regulator	Check extension regulator feed wire, repair/replace if necessary.
	Defective starter fuse in HEXAMOTION cabinet	Defective regulator, replace if necessary.
Slave Extension Regulator does not communicate with Control Panel Master Controller (green LED P1 RxTx does not flash)	Faulty communication bus wiring/ wiring/ connections	Replace fuse (D5x20 – 3.15A)
	Modification of the setting of the master and/or slave controller	Repair/replace defective item

Defective parts must be replaced exclusively with original components in order to comply with product regulations. Replacement of defective parts with non-original parts results in loss of manufacturer's warranty on all hardware.

XIV.1. CLEARMOTION module repair

First of all, check that the electrical connectors between the FEE module and the HEXAMOTION ventilation unit are properly connected and that this operation was not omitted during the installation phase of the hardware. Also check the tightening of the screw connectors.

The table below presents the potential defects encountered and their probable causes.

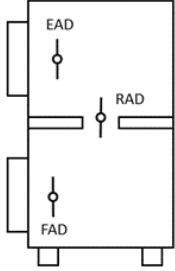
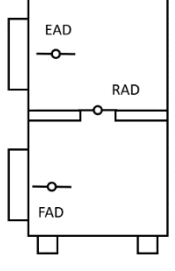
Nature of the defect	Probable(s) cause(s)	Solutions
Green LED is off while power plant is in operation	There is not enough air flow at the blower to engage the flow control pressure switch	Change Flow Setpoint If the airflow is much too low, the device does not engage, which is normal.
	The air pressure at the blower is less than the pressure setting of the air flow control pressure switch	Check the air pressure at the blower. Check the setting of the air flow control pressure switch (30Pa).
	UVc lamp	Replace the UVc lamp
	Power supply 24Vac	Check continuity of electrical wiring, tightening of terminals Verify proper operation of the 230Vac/24Vac transformer Check the status of the 3.15A fuse on the secondary of the 230Vac/24Vac transformer (if the fuse is faulty check for short circuit) Check fuse status on transformer power primary circuit in HEXAMOTION central cabinet
	Plant service door open	Close and lock service door
	Flow control pressure switch	Check pressure switch setting and adjust if necessary. Check operation of pressure switch and replace if necessary. Check the electrical wiring and connection of the pressure switch. Check connection and condition of clear pressure-taking tubes, replace if necessary.
	Service Door Switch	Check door switch assembly and operation and adjust or replace if necessary. The adjustment is done by adding washers $\varnothing 6\text{mm}$ under the screw head.
	Torch Electronic Module	As a last resort, replace the entire flashing device if a supply voltage of 24Vac is measured at the input terminals of the electronic module.
Fuse 3.15A of the fuse terminal (in the central ventilation)	Short circuit on circuit downstream of fuse	Check status and absence of short circuit between phase and neutral, between phase and ground, and between neutral and ground. Repair the wire if necessary.

«grid» regularly	Transformer	Check resistance of primary and secondary windings, replace transformer if necessary.
The fuse 3,15A at output of transformer 230Vac/24Vac «grid» regularly	Short circuit between secondary transformer and torch	Replace/repair the wire.
	Internal short circuit electronic module of the torch device.	Replace the flashing device assembly. The electronic module of the device is not repairable.

Defective parts must be replaced exclusively with original components in order to comply with product regulations. Replacement of defective parts with non-original parts results in the loss of the manufacturer's warranty on all equipment.

XV. COMMISSIONING REPORT

Information on the HEXAMOTION ventilation plant can be found in the "operating instructions and commissioning instructions" for the ventilation plant.

Installation address			
Date/...../.....	Technician / Company	
Installation	Exterior (roof)		
	Interior (technical room)		
Material	FEE module		
Material reference			
Manufacture number			
Position of dampers	Conditions	Expected result	
	Power on and off power plant		
	Power plant in operation, CO2 set to 0. (consider setting the setpoint after the test, factory value = 1000ppm)		
	CLEARMOTION module (warning, the functioning of the torch is only checked by the state of the green LED visible from the window positioned on the front of the CLEARMOTION module). The luminous part of the torch must not be viewed without adequate eye protection under penalty of irremediable serious eye injuries.		
Material reference			
Manufacture number			
	Conditions	Expected result	
Status of the green LED	Air control unit stopped and under tension (fans stopped)	Green LED turned off	
Status of the green LED	Plant in operation with air flow 40% of nominal air flow	Green LED turned on	

NOTES

Date	Intervener	Observations

