

Récupérateur de Calories
Calories Recover
Recuperador de Calorias

PRC 
31EV



INSTRUCTIONS FOR USE INSTALLATION

SYSTEL 
Heating mastermind

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WARNING

The longevity of this device and its performance will be optimal if its use and maintenance are ensured according to the rules of art and the prescriptions in force. It is therefore essential to carefully read the instructions contained in this manual.

Before installing the appliance, it is necessary to check that the local electrical distribution conditions are compatible with the appliance setting.

It is necessary to consult the manufacturer before replacing parts other than those specified in the leaflet.

It is the installer's responsibility, after having installed and verified that the assembly meets the requirements of this manual:

1°) to inform the user :

- that it cannot itself make changes to the design of the devices and the realization of the installation; the slightest modification (exchange, removal, etc.) safety components or parts affecting the operation of the device systematically results in the removal of the device from the CE marking and the removal of the manufacturer's warranties.
- whereas it is essential to carry out the prescribed cleaning and maintenance operations

2°) to give the user this notice

SYSTEL reserves the right to update this technical notice. Only the leaflet accompanying the product during its shipment can be considered as contractual.



WARNING: the PRC31EV is a ventilation system so subject to the rules of selectivity during its operation, it is imperative that the ventilation of the building is operational

I – DESCRIPTION EAND OPERATION

I.1. Device Description:

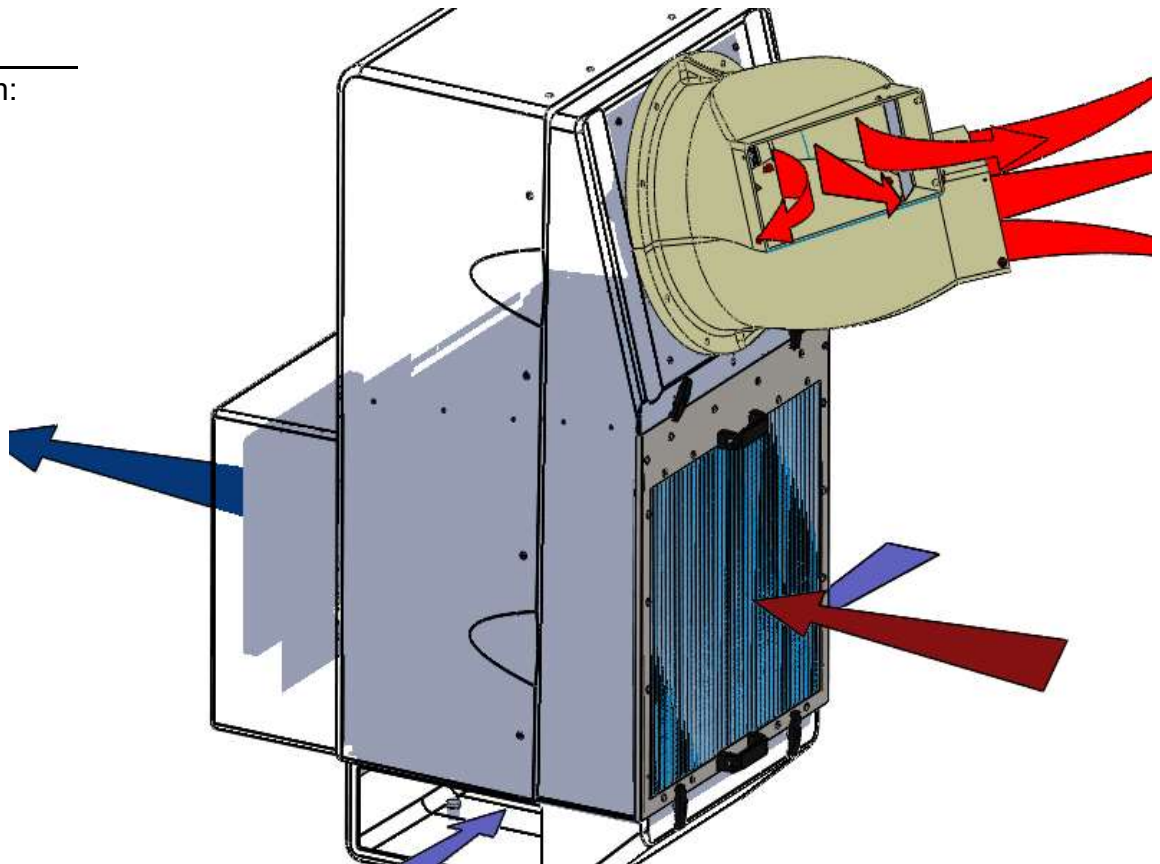
- Polyethylene shell
- Polypropylene plate exchanger block with a 31 m2 exchange surface, mounted on a stainless steel structure
- 2 single phase fans

I.2. Instruction of use :

- For the use, ordering and maintenance of this product, please read the instructions in this booklet.
- Maintenance between each strip is imperative. It is also necessary to check regularly that there is no accumulation of dust in the exchanger, in the ducts or fans
- Check that the air can circulate normally in the building and in particular that there is no obstacle in front of the aircraft's vent and that the exit flaps are not blocked in the closed position.

I.3. Operation :

- Block Diagram:



I.4. Security :

- Do not perform work on live equipment
- Do not use the unit without the exchanger block
- Do not use without the deflector

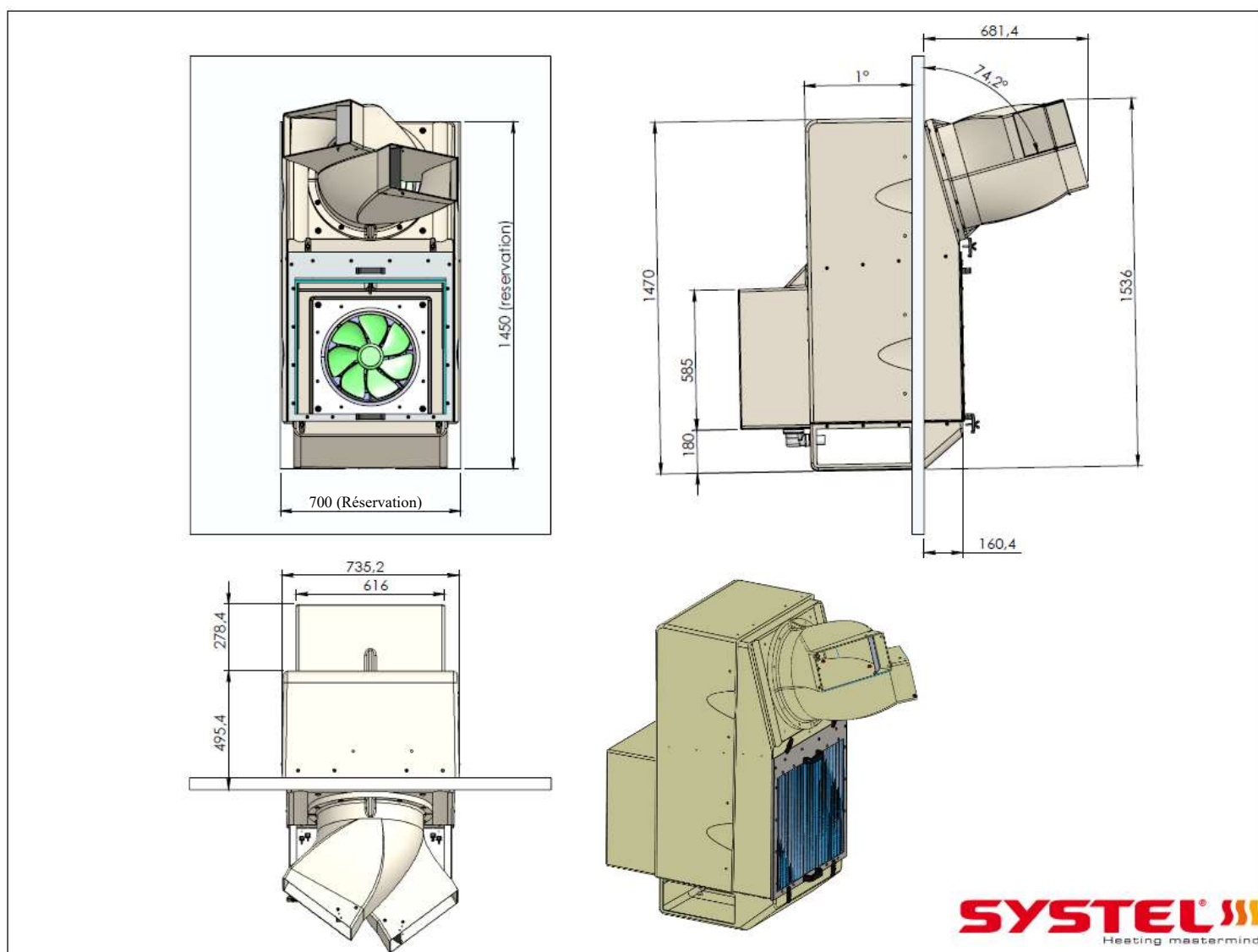
I.5. Cut-off :

- To stop the PRC31EV for a short period of time, use the building control to program a shutdown of the unit.
- For an extended shutdown, use the building control to program a shutdown of the device and then after the device has completely stopped turn off the power supply.

II – TECHNICAL CHARACTERISTICS ...

PRC31EV			
ELECTRICAL CONNECTION		230 V – 50 Hz	
TEMPERATURE OPERATION (FAN)		-30°C / + 60°C	
SOUND PRESSURE LEVEL per fan	dB (A)	63	
POWER per fan	W	170	
INTENSITY per fan	A	0,8	
TOTAL ABSORBED POWER	W	340	
NET WEIGHT	kg	100	
AIR FLOW per fan	m3/h	2500	
CONDENSER	µF	6	
FAN SPEED	tr/min	1380	

III – DIMENSIONAL CHARACTERISTICS



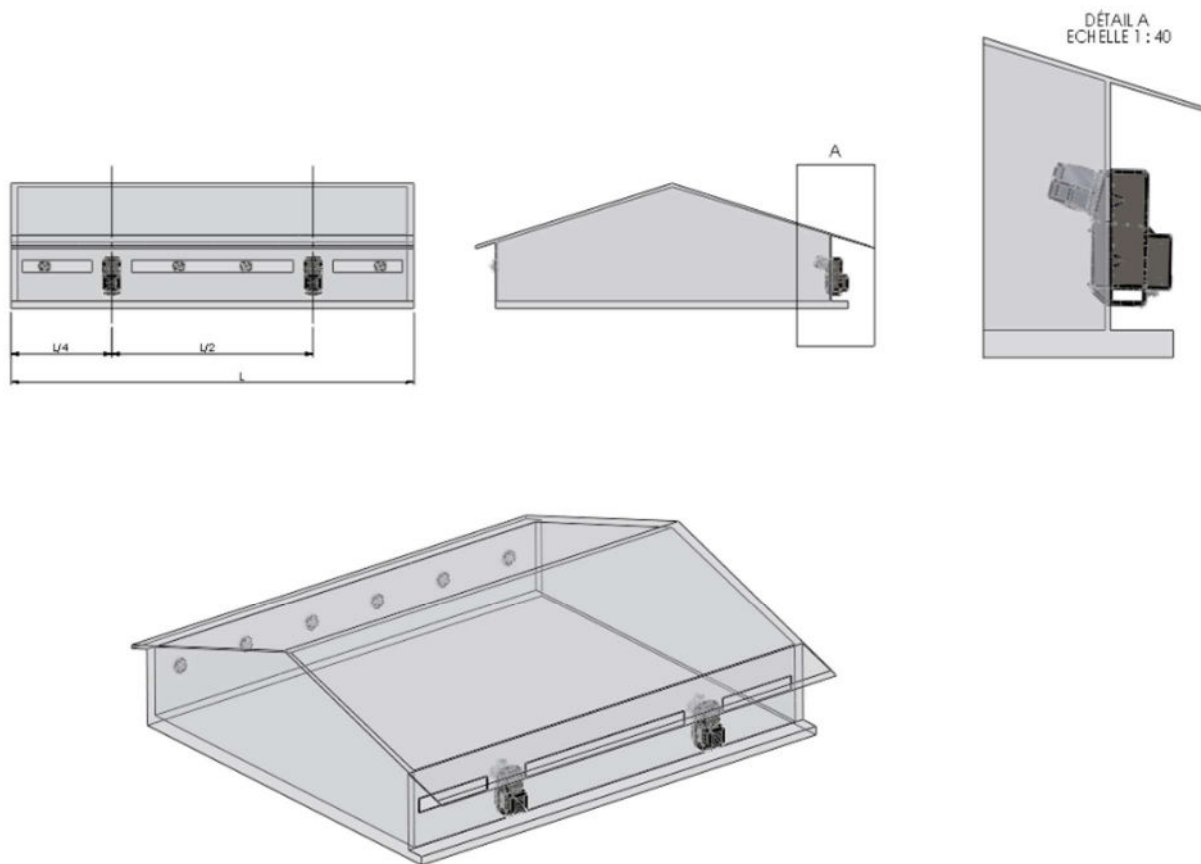
IV – INSTALLATION

IV.1. Device Position:

- The device must be mounted vertically.
- There must be no obstacles in front of the air inlet or in front of the air outlet.
- Minimum distances from the walls: a minimum clearance around the appliance will be observed to allow a good air intake, as well as for maintenance

We recommend:

- in standard poultry production: 1 apparatus per 250 m²
- in production label: 1 device for 400 m²
- for installation in a building with dynamic ventilation, position the PRC31EV on the same side as the air intakes.
- Example of installation on dynamic building:



The objective is to ensure the minimum ventilation up to 20 days in chickens, 50 to 60 days in turkeys.

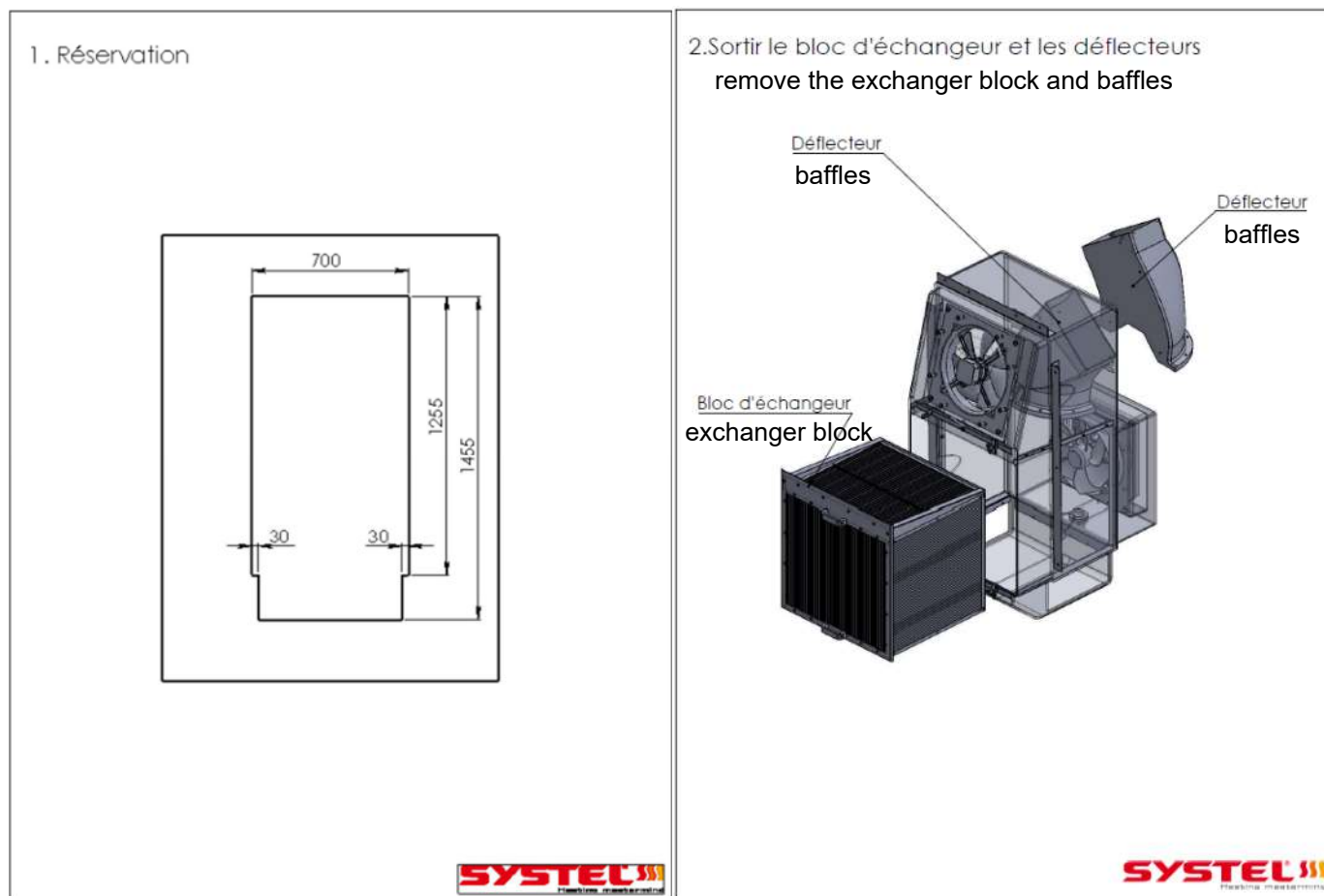
It is important to scrupulously follow the assembly instructions, in order to ensure proper operation of the devices.

IV.2. Installation of the PRC31EV :

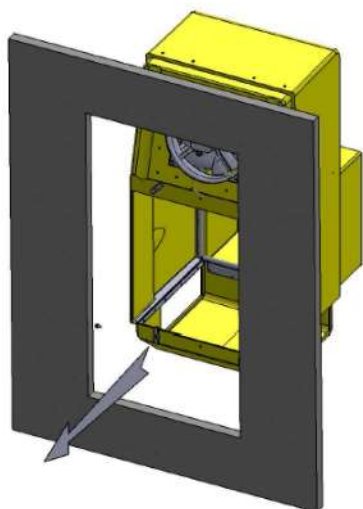
- ensure that the structural elements of the building are well adapted to support the device and accessories.
- The space provided to install the appliance must have sufficient space around it to allow maintenance and respect the safety clearances.
- The device must be placed or suspended on a rigid support to avoid stress on electrical connections.

It is recommended to protect the device from bad weather (rain, snow, frost) and to check the closure of the electric cover and the cable glands.

Follow the instructions below for mounting:



3. Poser PRC31 dans la réservation.
Put the PRC31 in the reservation



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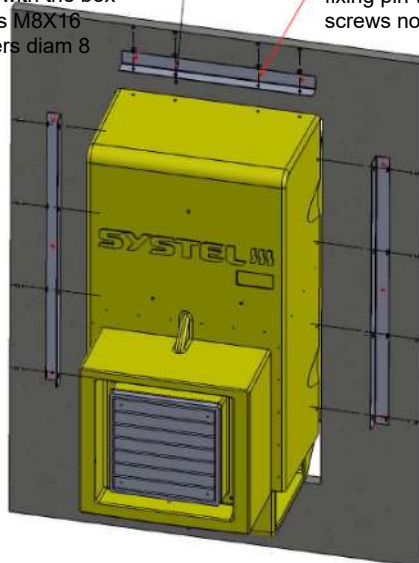
4. Fixer PRC31 avec les cornières.
fix the PRC31 with angles

axe de fixation avec le caisson
12 vis M8X16
12 rondelle Ø8

fixing pin with the box
12 screws M8X16
12 washers diam 8

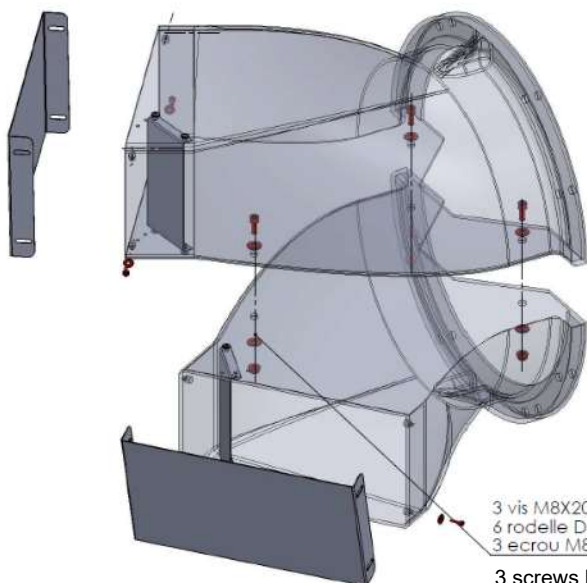
axe de fixation avec la mur
(visserie non fournie)

fixing pin with the wall
screws not provided



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5. Rassembler les déflecteurs.
gather the deflectors



3 vis M8X20
6 rondelle D8
3 écrou M8

3 screws M8X20
6 washers D8
3 nuts M8

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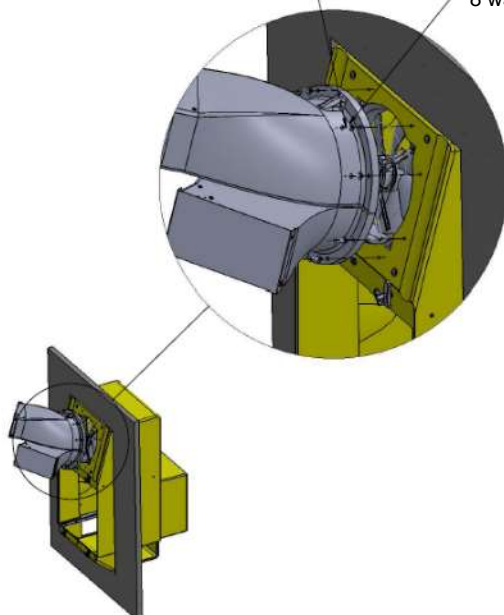
6. Monter les déflecteurs.
mount the deflectors

8 Vis M8x40

8 screws M8X40

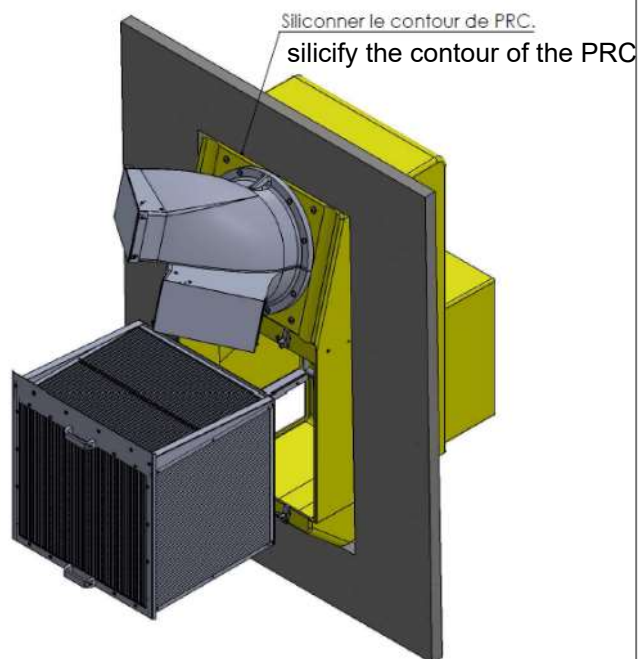
8 Rondelles Ø8

8 washers diam 8



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7. Remonter le bloc d'échangeur et le bloquer.
reassemble the exchanger block and block it

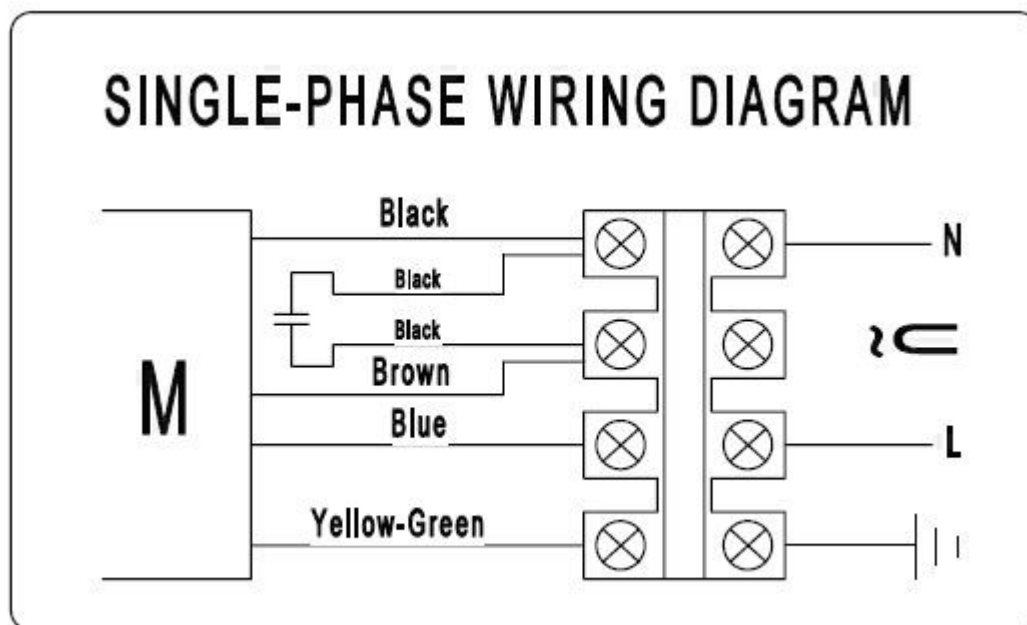


SYSTEL 
TRANSITION PROGRESSIVE

V – ELECTRIC CONNEXION

- The electrical connection must be made according to the standards in force (conductor section, ground connection, disconnector, etc.).
- The supply voltage is 230 V Mono.

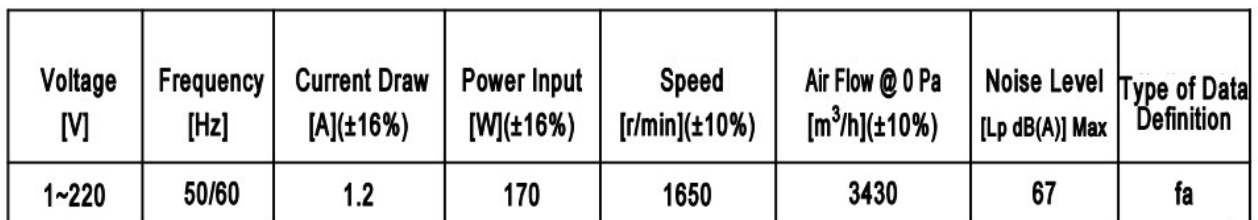
Fan Terminal Block:



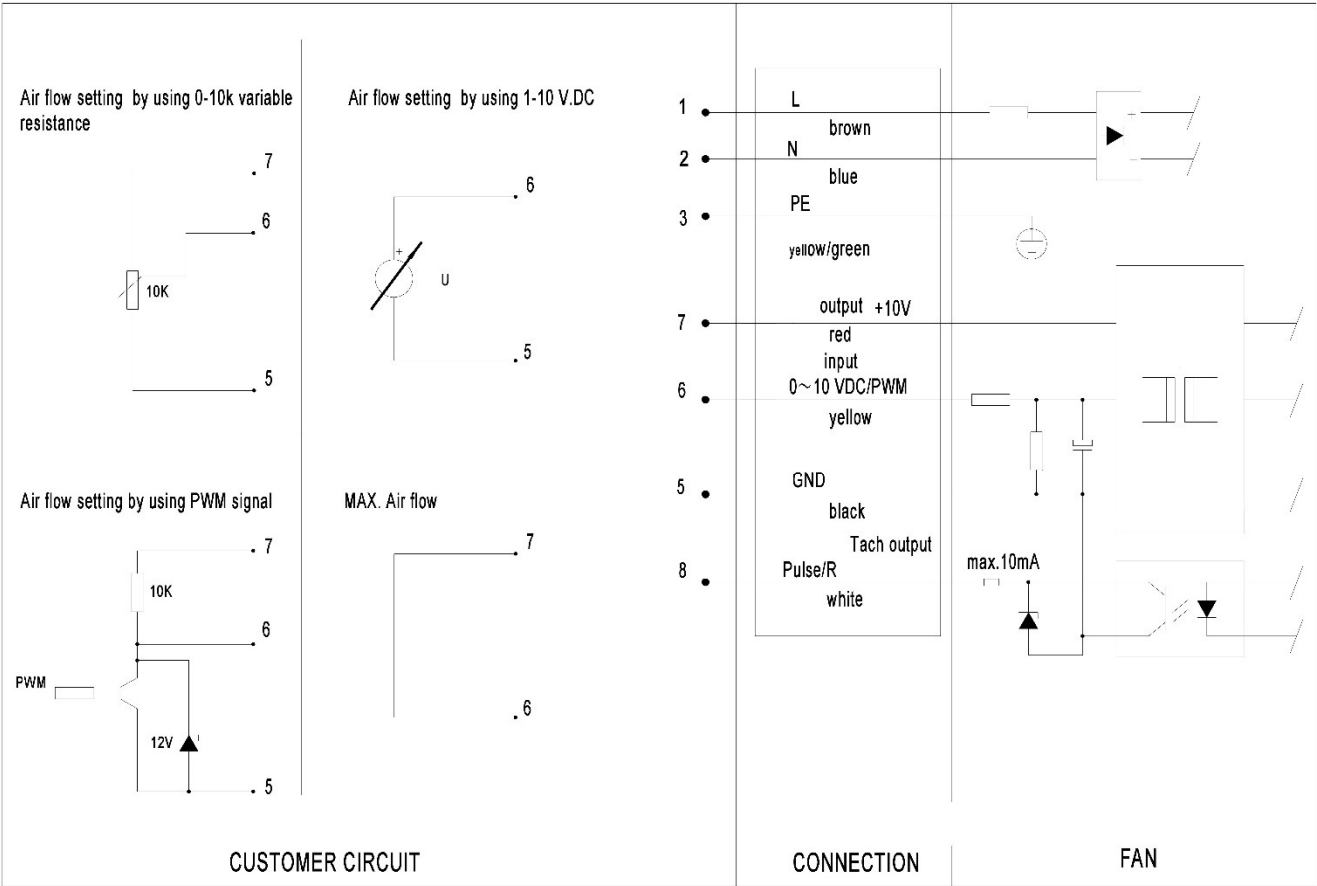
Flow voltage curve

%	0/10V	Flow m ³ /h	Tension
1	1,5	260	79 volts
10	2,8	520	99 volts
20	3,3	750	106 volts
30	4	890	116 volts
40	4,6	1080	125 volts
50	4,9	1300	130 volts
60	5,3	1560	136 volts
70	6	1820	146 volts
80	6,8	2080	158 volts
90	8	2340	176 volts
100	10	2600	226 volts

Flow curve



Connection diagram



【LEAD WIRES ASS'Y ①】
WIRES:3*0.5mm²/3*AWG20

SIGNAL	COLOR	SPEC
L	BROWN	AC220V/50Hz
N	BLUE	AC220V/50Hz
PE	YELLOW/GREEN	EARTH

【LEAD WIRES ASS'Y ②】
WIRES:4*AWG24~22

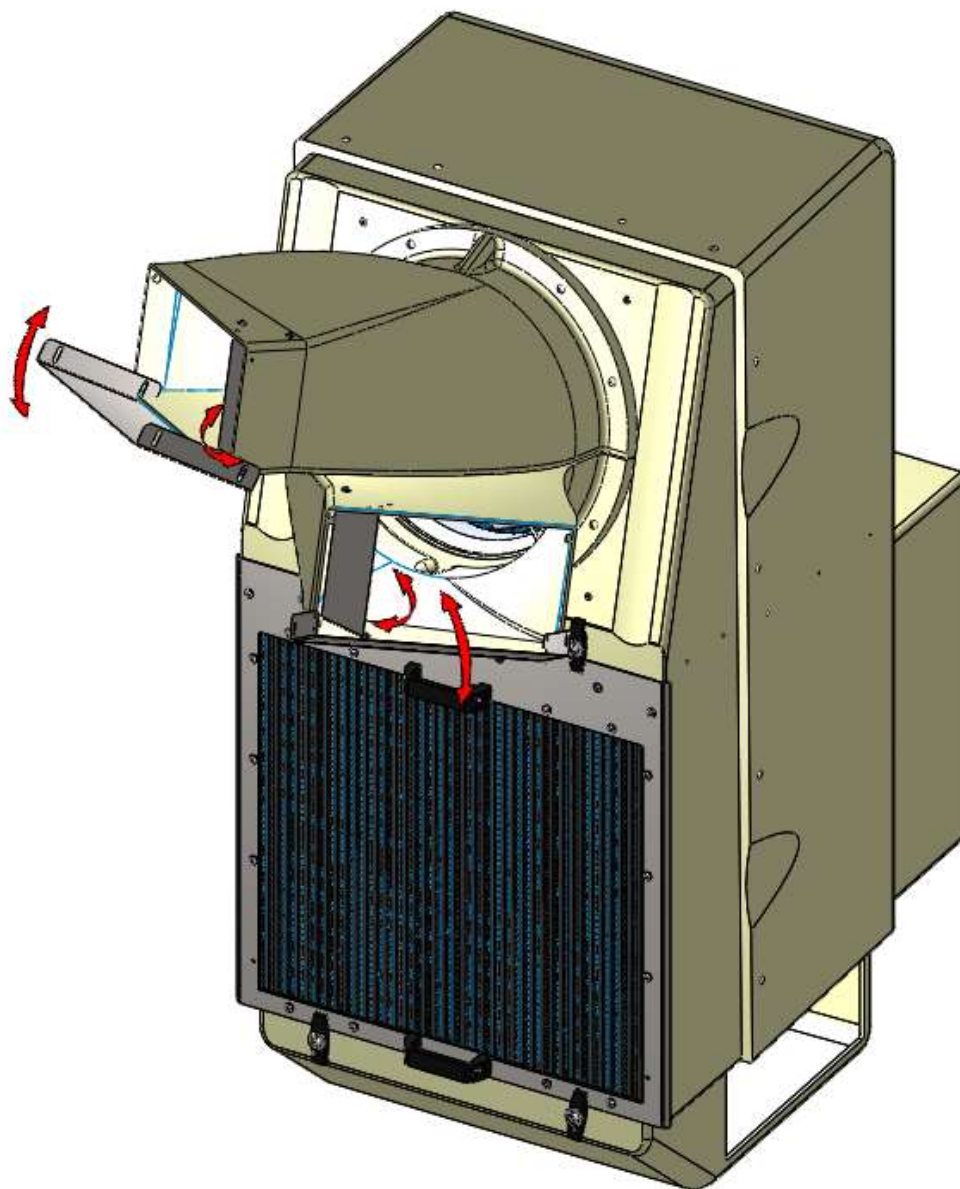
SIGNAL	COLOR	SPEC
Vcc	RED	DC10V
Vsp	YELLOW	0-10V/PWM
GND	BLACK	GND
FG	WHITE	Pulse/R

VI – COMMISSIONING - OPERATION

The PRC31EV is designed to extract the same amount of air in the building as the amount of blown air. This allows to work at a pressure very close to 0 pascal, and thus minimize the influence of building waterproofing problems.

The new air flow coming out of the mouth can be oriented vertically and horizontally, using the stainless steel plates provided for this purpose. The plates used to orient the flow in the vertical direction can also be used to close the new air intake when the device is stopped.

Icing Temperature: When installing in an area where we can have harsh winters ($-10^{\circ}\text{C}/15^{\circ}\text{C}$), it is imperative to set up an ice alarm probe. In order to cut the PRC 31, and use conventional ventilation.



VII – PERMANENT VERIFICATIONS

- Check for safety that the air outlet and inlet circuits are not obstructed.
- Check for safety, quality and strength of suspension elements.
- Check that the fan guards are not damaged or clogged.

VIII – MAINTENANCE

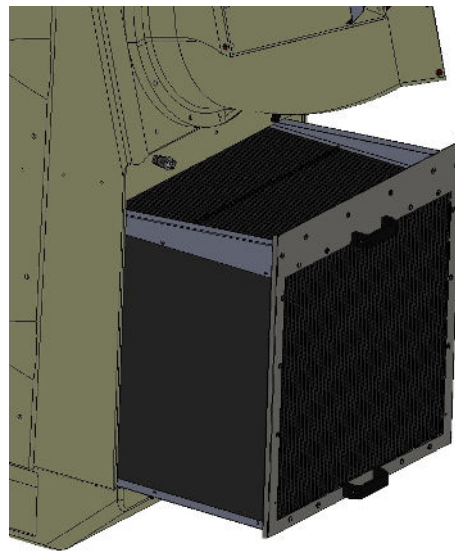
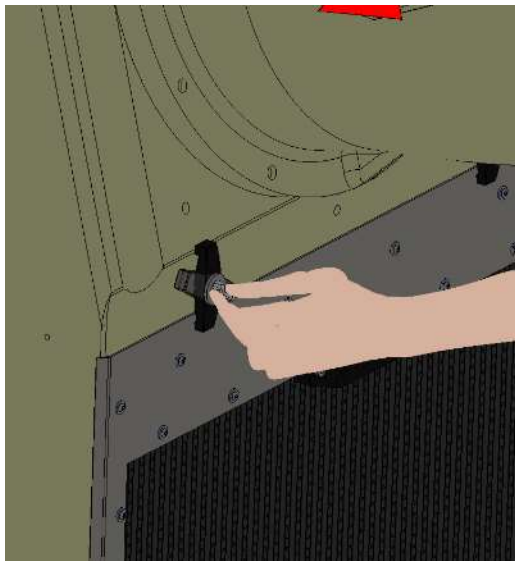
- Before starting maintenance, turn off the power supply
 - Maintenance at least once per rearing period is imperative. The frequency of maintenance depends on the environment in which the device is installed.
- A regular inspection must be carried out.

Maintenance of the exchanger block during rearing:

The user must check the soiling of it, in order to maintain a satisfactory flow rate, if necessary he must clean the exchanger block with the brush kit PRC 31 (option), or with compressed air.

Maintenance of the exchanger between batches:

1/ remove the exchanger block from its housing:



- 2/ clean the exchanger block with the 80 bar pressure washer (Do not use a rotanozzle) 3/ clean the inside of the PRC31EV in the same way
4/ the exchanger block can also be immersed in a suitable container
5/ the deflector must also be disassembled to promote its cleaning and the cleaning of the building.



CAUTION: The use of hot water is to be avoided



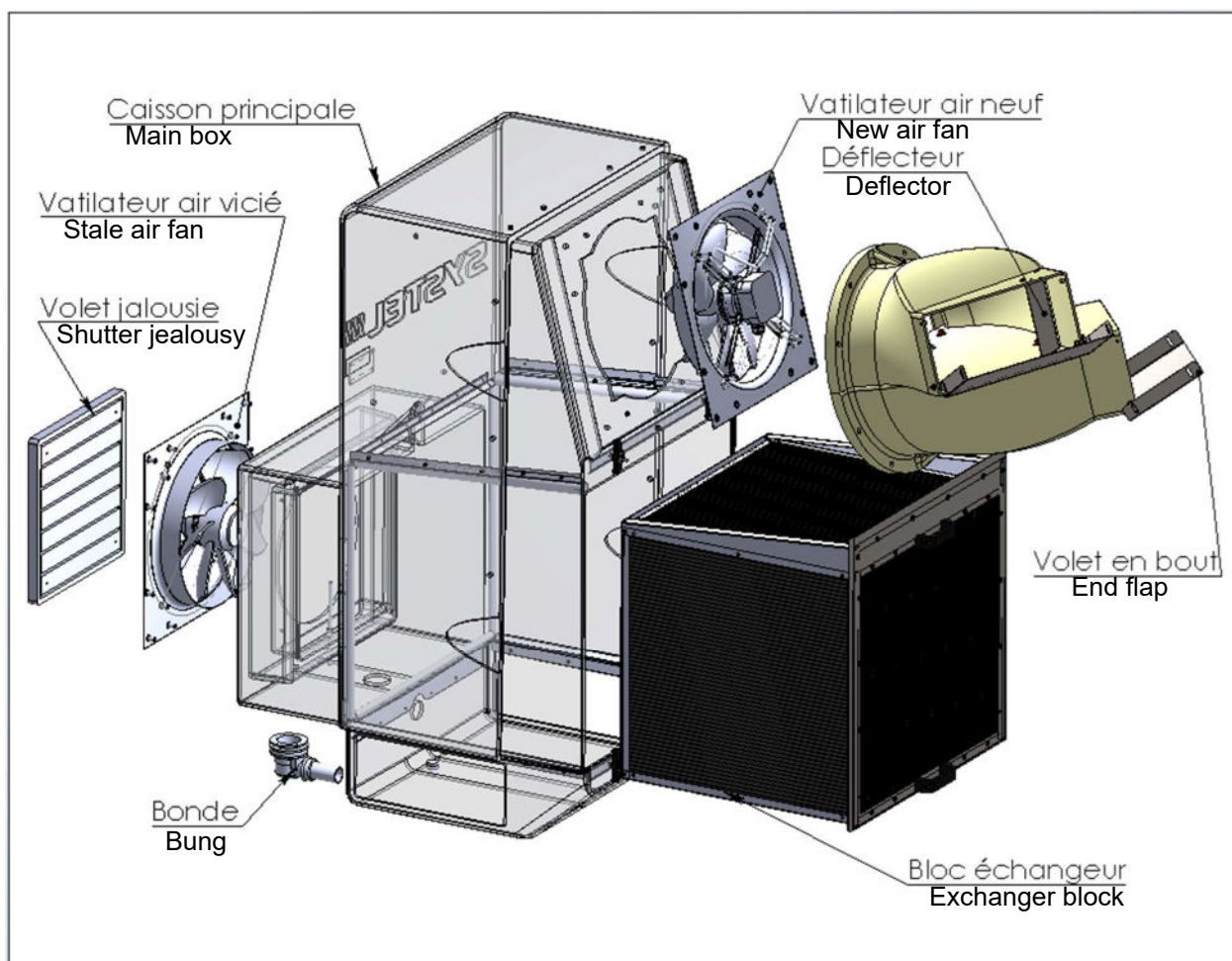
CAUTION: Do not use the pressure washer directly on the fans (IP54 fans: waterproof to non-powering water splashes)



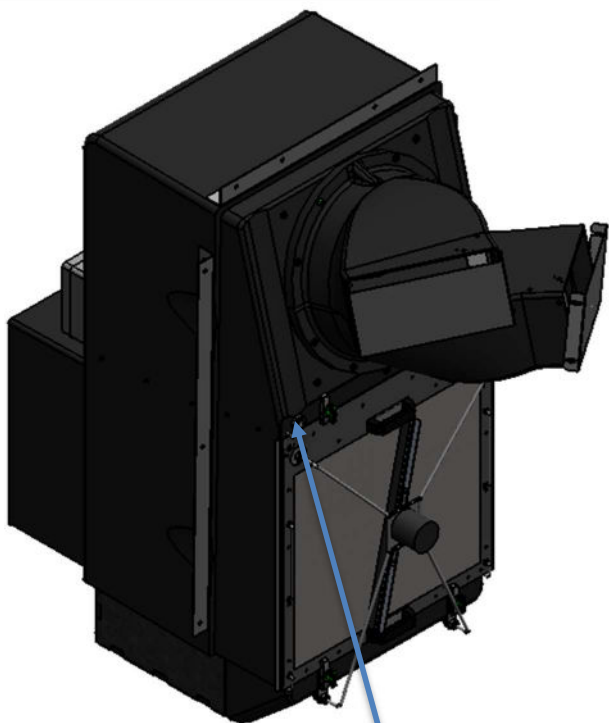
CAUTION: Do not use cleaning products that may damage the appliance

After cleaning properly replace the exchanger block and the baffle.

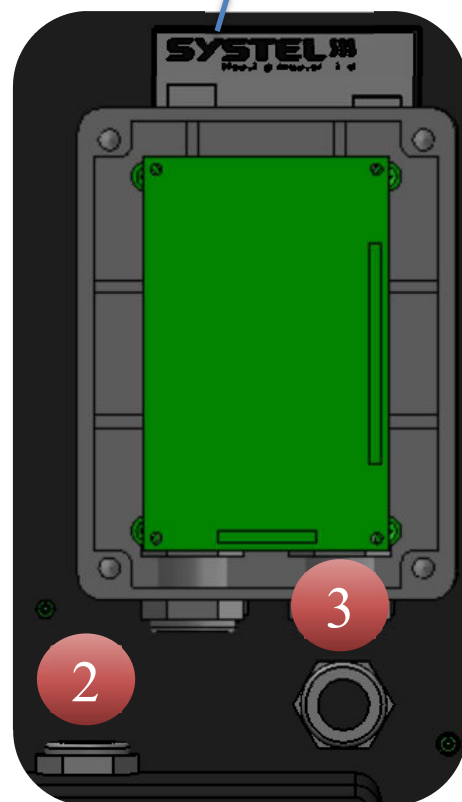
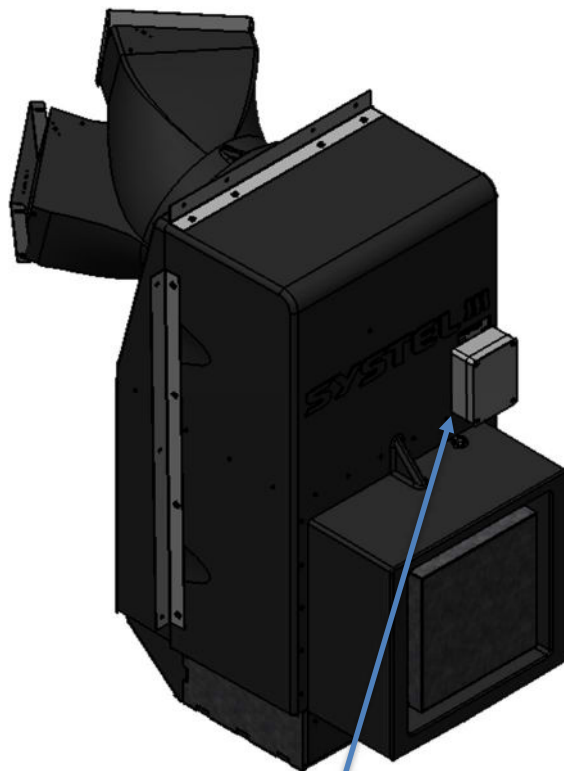
IX – DESCRIPTIVE OUTLINE



X – FILTER ASSEMBLY OPTION



PG21



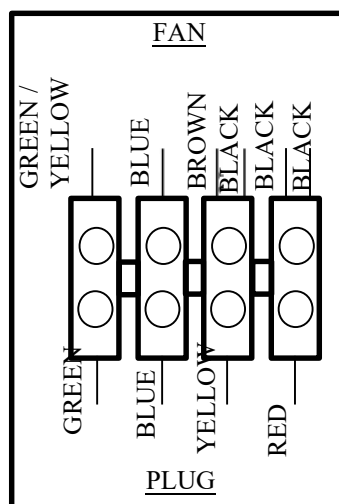
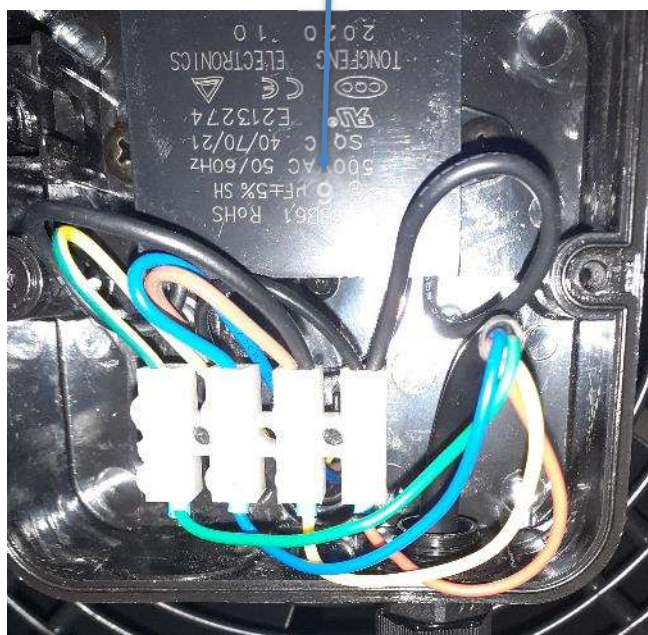
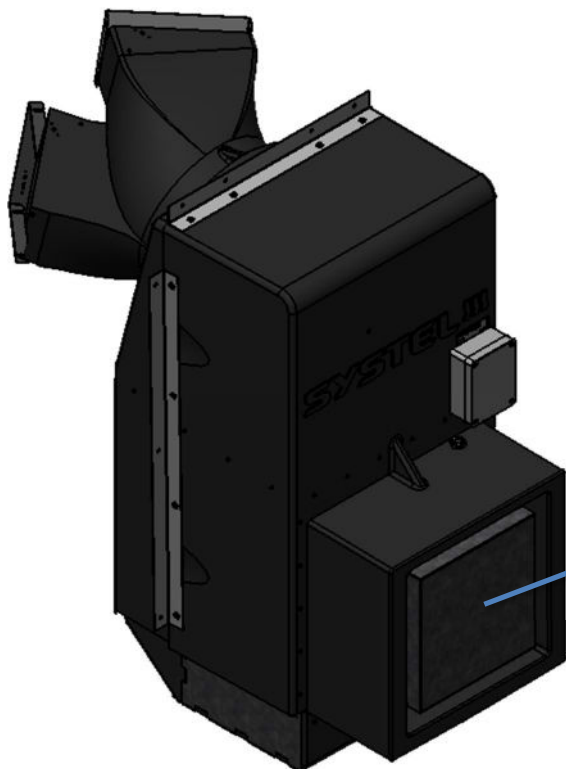
2xPG21

PG21 : Through hole Ø29.5

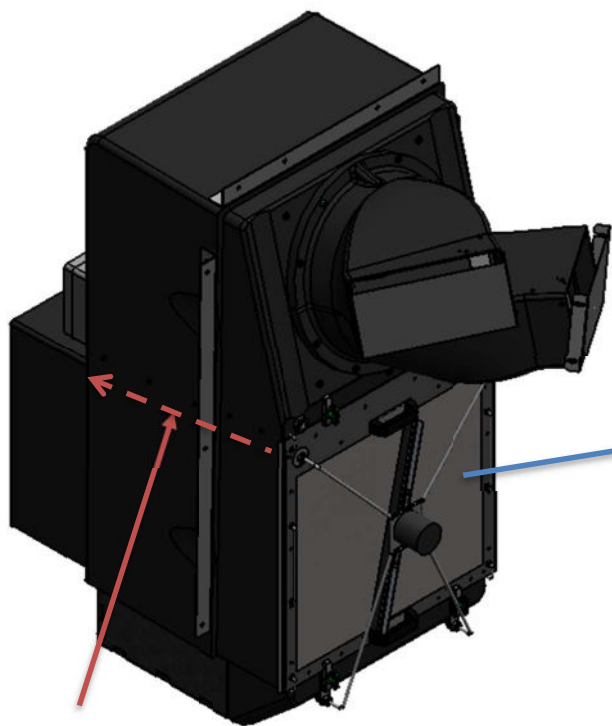
- ①-Brush filter cable passage (spidernet)
- ②-Cable passage small probe + exhaust air fan
- ③-Large probe cable passage + new air fan + brush filter (spidernet)

X.1. Electric connexion

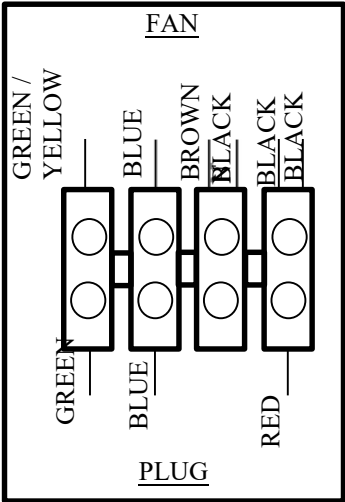
Stale air fan



New air fan



Passage
of the cable



Fan wiring

POWER

PUISSANCE

L MARRON PHASE 230 V
N BLEU NEUTRE 50 Hz
 $\perp$ V / J TERRE

CONTROL

COMMANDE

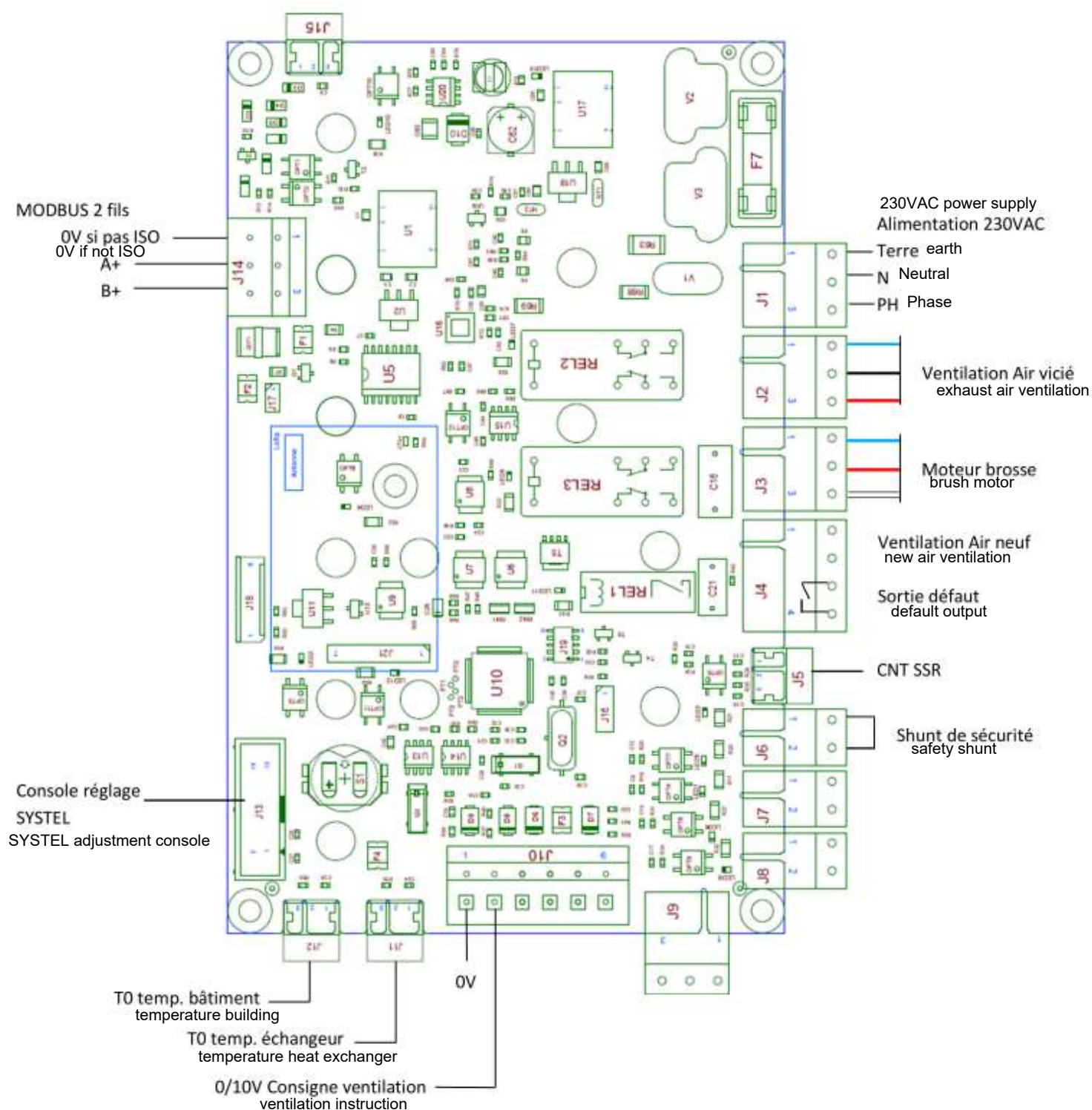
0 - GND NOIR
 $\dot{\phi}$ +10V JAUNE

EXTRACTION

SOUFFLAGE BLOWING



X.2. electronic card



1. PRESENTATION

The Undercontrol electronic box allows to manage the ventilation and energy recovery of a livestock building under the control of a GTC/ GTB (setpoint 0-10V).

An automatic cleaning system, the SPIDERNET, detects and organizes the decoding of the filter in case of contamination and/ or regularly.

Three temperature sensors are used to calculate the efficiency of the exchanger and are time-stamped and stored in the memory of the electronic board.

This data can be retrieved via the Modbus link.

Events, faults, walking modes are at their occurrence/ disappearance timestamped and recorded in memory and accessible via the Modbus link.

1.1. COMMISSIONING/DECOMMISSIONING OF THE UNIT

Commissioning is achieved by applying a instruction on the 0/10V ventilation inlet.

Decommissioning is achieved by applying a 0V instruction to the same input.

At power-up, if a setpoint is present, the system goes into operation with this setting.

1.2. DECOMMISSIONING OF THE UNIT

Two modes of operation are possible:

Steering by GTC/GTB:

The GTC/GTB sets the ventilation setpoint 0/10V.

Piloting by MODBUS:

The PCR PILOT sends by MODBUS the speed instruction.

UnderControl electronics adjusts the Air Vicié ventilation speed to the setpoint;
New air ventilation is activated at full speed.

2. OPERATING PARTICULARITY

2.1. CLEANING

The filter cleaning sequence engages according to two criteria:

- Regular cleaning sequence every 6 hours (parameters)
- Cleaning sequence triggered by a clogging detection exceeded compared to the set threshold (parameters).

The cleaning sequence is broken down as follows:

- Ventilation Stop New Air and Stale Air
- Reverse direction of rotation Stale air and activation at full speed
- Rotating the brush for 1 turn (see Scarab Mode)
- Invert brush rotation and brush rotation for X seconds (parameters).
- Resumption of normal operation.

The number of rotation-inversion is configurable (parameters).

2.2. DEFROSTING

The defrost sequence is automatically triggered if the exchanger temperature (Air Injected) is below 0°C.

The defrost sequence is broken down as follows:

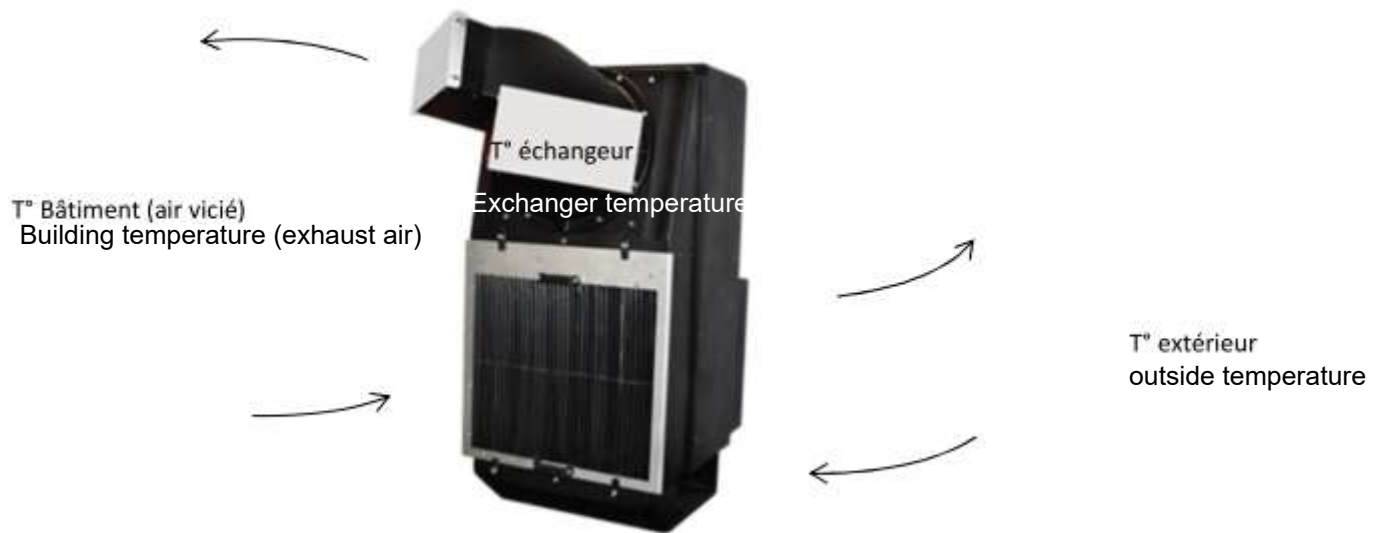
- Air Neuf ventilation shutdown for X minutes (parameters)
- Return to normal operation
- Repeat every X hours (parameters)

The defrost function is disabled if the Defrost time setting = 0.

2.3. YIELD

A yield calculation is performed every hour (parameters) and stored in memory.

$$\eta = \frac{T^{\circ} \text{ Exchanger} - T^{\circ} \text{ outside}}{\text{Building air} - T^{\circ} \text{ outside}}$$



The output can be viewed via the SYSTEL console or the PCR PILOT via Modbus.

2.4. COOLING OF POWER COMPONENTS

A temperature sensor located near the static contactors controls the cooling of the heatsink. If this temperature reaches 80°C, Stale Air and New Air Vents are disabled, fault 4 is indicated.

IN CASE OF DEFAULT:

Use the **TEST MODE**. It tells you in most cases where the failure is.

Before looking for the cause of a malfunction of the device, check whether all the supply voltages of the device are correct.

If not:

- Turn off the power.
- Disconnect the cable cables that connect the CPU Power Board/ Keyboard Relay.
- Power up the boards one after the other to locate which part of the circuit is disturbing.

4.1. CPU OVERHEAT (DEFAULT 1)

A temperature sensor located on the CPU board monitors the temperature of components if it exceeds 65°C, the exchanger is stopped.

Check:

- No heat source near the exchanger.
- Water supply. (FSM)
- Operation of the rear cooling fan.

4.2. THERMOSTAT SAFETY (DEFAULT 2)

(This defect may appear in case of loss of 12V voltage)

Check:

- The temperature of the machine
- The thermostat for safety.
- The feeding of the machine.

4.3. T0 ROOM (DEFAULT 11):

4.4. T1 ROOM (DEFAULT 12):

4.5. T2 CORE PROBE (DEFAULT 13):

4.6. T3 RESERVE (DEFAULT 14):

4.7. T4 RESERVE (DEFAULT 15):

4.8. T5 RESERVE (DEFAULT 16):

4.9. T6 RESERVE (DEFAULT 17):

4.10. T7 RESERVE (DEFAULT 18):

T0 to T7: probe disconnected or disconnected

Check: probes individually

With the optional remote control

4.11. GROUND PROBE (DEFAULT 19):

One of the probes is grounded

Check: probes individually

4.12. OVERHEATING POWER COMPONENTS (DEFAULT 4):

A temperature sensor located near the static contactors controls the temperature of the radiator. If this temperature reaches **80°C**, the exchanger is stopped.

4.13. DEFAULT CTN1 NOT FITTINGS (DEFAULT 26)

4.14. DEFAULT CTN2 NOT FITTINGS (DEFAULT 27)

4.15. DEFAULT CTN3 NOT FITTINGS (DEFAULT 28)

4.16. DEFAULT CTN4 NOT FITTINGS (DEFAULT 29)

4.17. DEFAULT KEYBOARD

No action possible on the keyboard, the display is frozen.
The CPU goes into self-protection because the keyboard is no longer present.

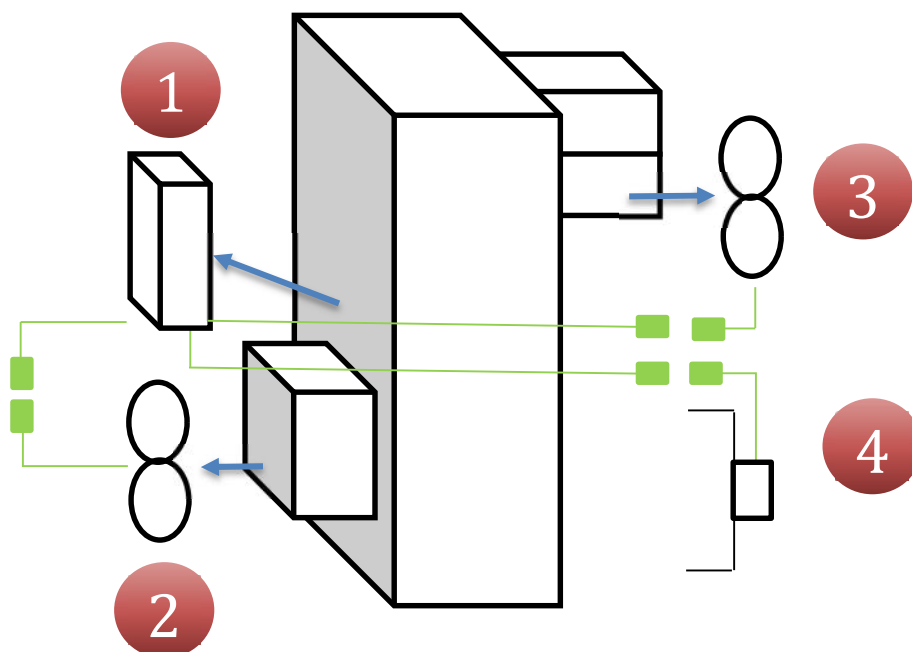
Check:

- The connector and cable connecting the CPU and the KEYBOARD board.

After the fault has been resolved, turn off the power to the CPU and put it back on to confirm the fault.

5. SCHEMA

- ①-Electrical box
- ②-Exhaust air fan
- ③-New air fan
- ④-Spidernet Filter Brush



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