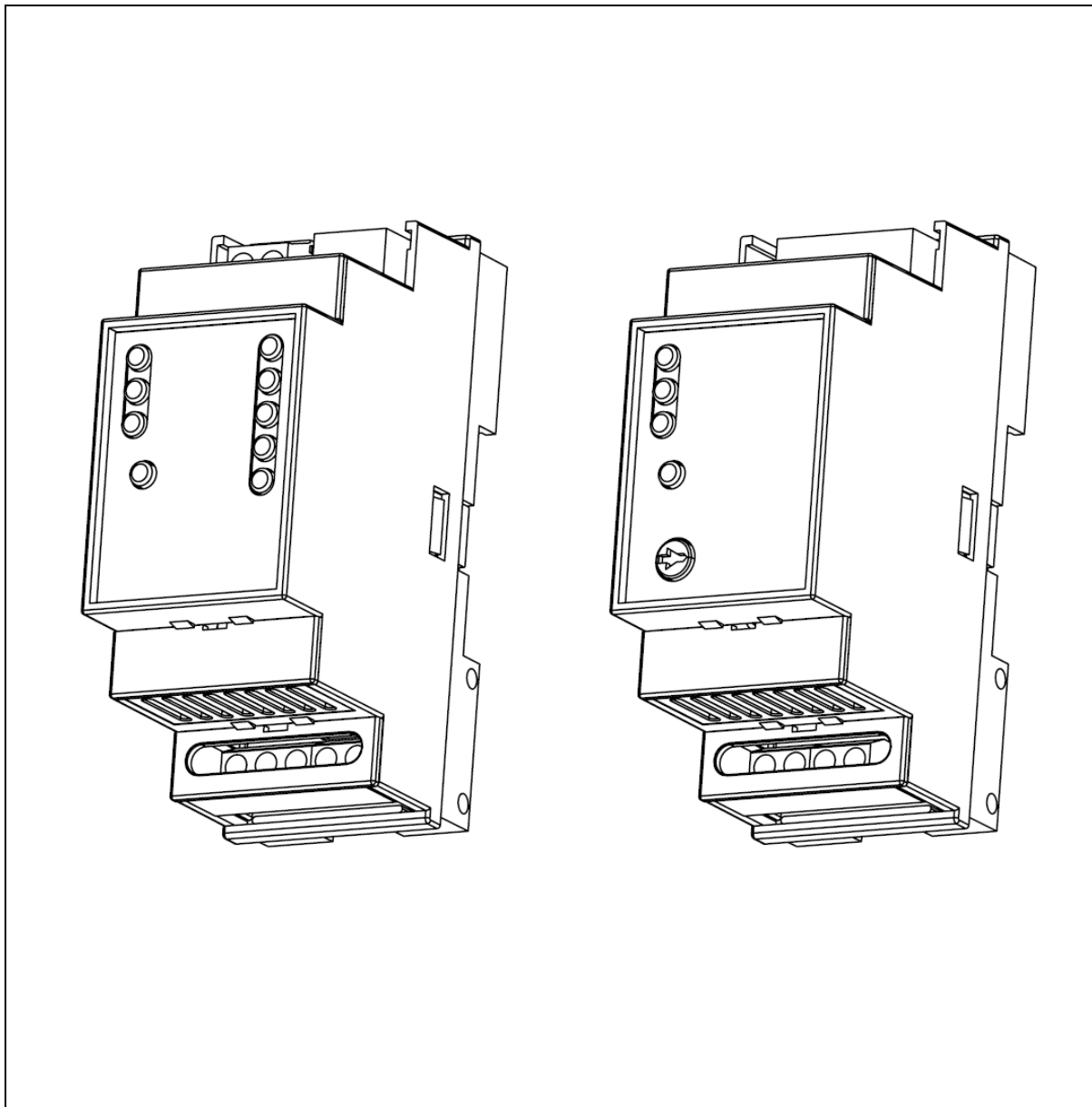
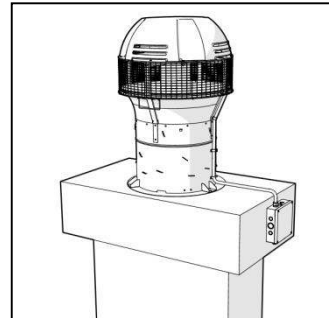


Installation and maintenanceDownload this document on www.aereco.com**ENGLISH****MS Management System****VBP+****CE**

CONTENTS

INTRODUCTION	3
SYSTEM OVERVIEW	4
GENERAL INFORMATION	4
<i>Functions of MS management system</i>	4
<i>Specific components</i>	5
SPECIFIC FUNCTIONS OF EACH SYSTEM COMPONENT	6
<i>Main module (MAIN) ref. VB21119</i>	6
<i>Fan module (FAN) ref. VB21118</i>	6
<i>Digital temperature sensor ref. AVE1146XX</i>	6
<i>Operation of the management system with wind gauge</i>	7
<i>Operation of the management system with clock</i>	7
TECHNICAL CHARACTERISTICS OF THE COMPONENTS.....	8
DIMENSIONS	9
INSTALLATION & ELECTRICAL CONNECTIONS	10
GENERAL ELECTRICAL CONNECTIONS	10
SENSOR(S) ELECTRICAL CONNECTIONS.....	12
<i>Temperature sensor connection only</i>	13
<i>Wind gauge connection only</i>	14
<i>Clock connection only</i>	15
<i>Temperature sensor + wind gauge connection</i>	16
<i>Temperature sensor + clock connection</i>	17
FAN(S) CONNECTION	18
START-UP	20
SETTING	20
<i>General operation</i>	22
<i>Reset</i>	22
<i>Initialisation</i>	24
<i>Configuration procedure</i>	25
RUNNING SYSTEM	28
DEFECTS AND FAILURES	30
<i>Default 'Temperature'</i>	30
<i>Default 'Fan'</i>	31
<i>Permanent "MAXIMUM LEVEL" mode</i>	32
TECHNICAL MAINTENANCE	33
WARRANTY	34
ENVIRONMENTAL CONCERNS	34

VBP + is marketed in France by ACTHYS company under the brand "HELYS 800".

INTRODUCTION

Warnings



PLEASE READ THE INSTRUCTION IN THIS MANUAL CAREFULLY BEFORE THE INSTALLATION.

- The manufacturer can't be responsible for damages caused by an installation that is not carried out according to good engineering practices and does not comply with the installation instructions.
- This manual describes how the management modules must be installed and used.
- The installation of the complete system must be performed by a qualified technician and in compliance with the local standards.
- Do not use these modules for any applications for which it is not intended.
- After unpacking, make sure that they are not damaged. Any functional default must be reported to your reseller.

Security



The use of electrical appliance implies the following fundamental rules:

- Do not touch the appliance with wet or damp body (hands, feet ...), even if it is connected to the ground.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. To avoid any risk, do not allow them to play with the appliance.
- The electrical installation and electrical connections must be carried out by a qualified technician according to the manufacturer's instructions and in compliance with the characteristics listed on the nameplate of the unit.
- Before carrying out any operation on the appliance, unplug or disconnect it from the power supply, and ensure it can't be accidentally restored.
- Power cable modification or replacement must only be carried out by qualified personnel or by After-sales Service in order to avoid any accident.
- Children being supervised not to play with appliance.

SYSTEM OVERVIEW

General information

The MS management system offers advanced fan control features. MS management system requires a specific configuration of the fan electronic driving box. This configuration can be modified to standard mode (without speed control = ST mode) by simply moving a jumper on the electronic driving box (please refer to the technical file of the fan for more information).

MS management system is composed of:

- 1 circuit-breaker 230 VAC - 2A
- 1 supply 230 VAC - 5 V DC
- 1 relay for alarm switching
- 1 Main module to manage from 1 up to 25 fans
- 1 Fan module per fan
- 1 or 2 digital temperature sensors (+ possibility of wind gauge or clock)

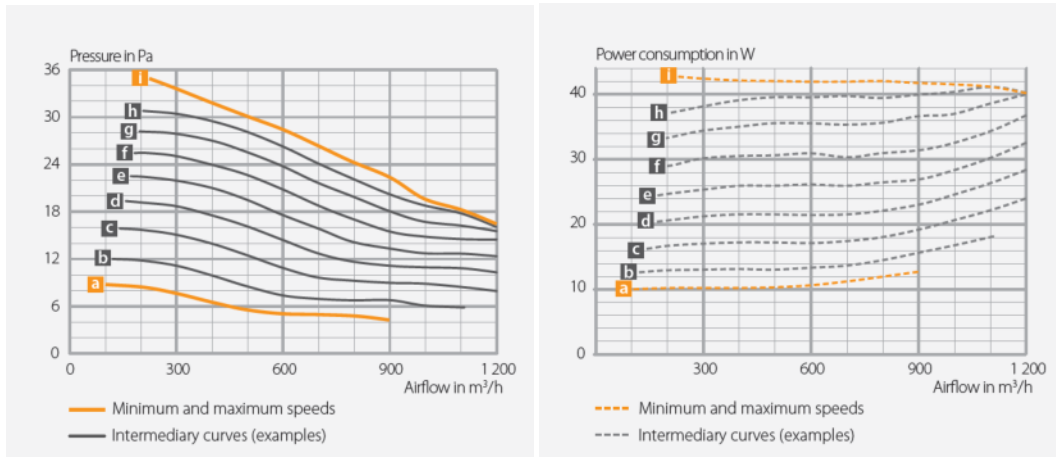
These components can be placed in an IP65 electric box (if outside) not included, and clipped on DIN rail. They are interconnected through RJ11 wires (supplied) of about 25 cm¹. The connection of Fan modules to the fans is realised by the mean of four wires standard cable.

Functions of MS management system

- Manages the simultaneous operation of inter-connected fans.
- Manages powers and operating speeds.
- Manages the hybrid operation according to the information received from the connected sensors (temperature and / or [clock or wind]).
- Reports locally defaults.
- Returns default information on distant indicator that can be used in particular in the context of BMS.

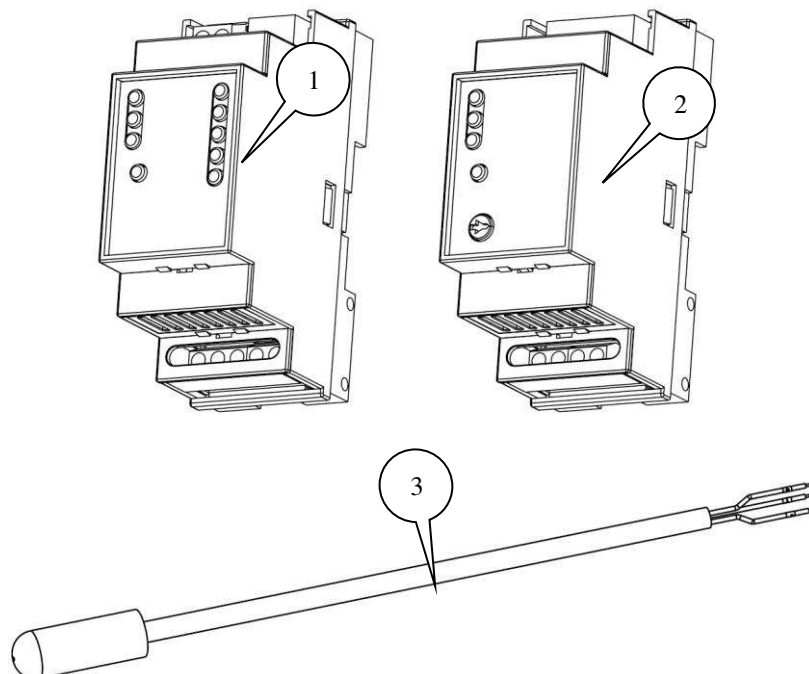
¹ This length allows to comply with the CEM and to limit the lost tension. It allows also to connect 2 modules located on two appended DIN rail.

9 speeds are available by default in MS version, corresponding to the curves shown above, and numbered from a to i.



Specific components

MS management system has 3 specific components, available exclusively at Aereco or its resellers. Other system components (circuit breaker, power, etc...) can be bought on the market as long as they respect the technical features mentioned in this document.



- 1 : Main module (« MAIN ») code VB21119
- 2 : Fan module (« FAN ») code VB21118
- 3 : Digital temperature sensor code AVE1146XX

Specific functions of each system component

Main module (MAIN) ref. VB21119

- Allows to define groups with specific numbers of fans (1 to 5 fans per group, 1 to 5 groups per Main module).
- Interprets the 'probe' input and communicates the speed range for each Fan module.
- Stops the fans of the same group in case of failure of one fan.
- Can communicate the overall working of the system (correct operation or failure) with an output for working indicator.
- Can communicate the detailed operation of the system (current range of temperature for example).

Fan module (FAN) ref. VB21118

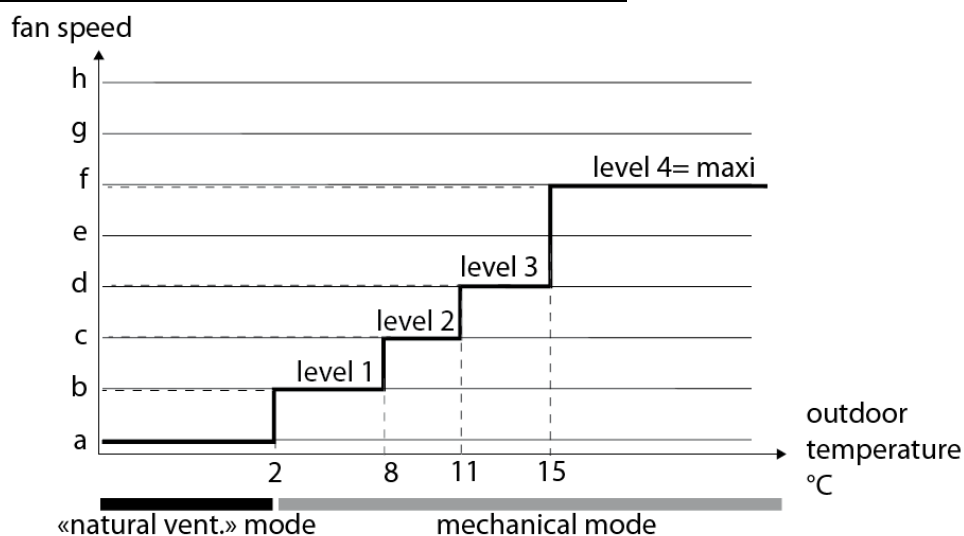
- Identifies the fan to assign to a group
- Determines its base speed according to the characteristics of the building (table provided)
- Sends the signal (PWM) for the fan speed control
- Gets information of the fan operation (Motor speed rotation)
- Communicates the fan operation (correct operation or failure) to the Main module

Digital temperature sensor ref. AVE1146XX

The digital temperature probe communicates the outside temperature to the Main module. This information is exploited to manage the operation modes of the fans. The Main module supports several levels of operation according to the information received from the temperature probe, so as to adapt the speed of the fans.

Available speeds are shown on page 5.

Example of a setting adjusting the fan speed according to temperature:



Instead or in addition of the temperature sensor, it is possible to connect the following inputs, available on the market, respecting the technical features mentioned in this document.

Operation of the management system with wind gauge

A specific wind gauge / anemometer may also be used to supplement or replace the temperature sensor. A switching wind speed "Vb" can be defined:

- If [wind speed < Vb] then operation according to the temperature (if sensor) or maximal speed setting (if no temperature sensor).
- If [wind speed ≥ Vb] then minimum speed (= "natural ventilation" mode).

Operation of the management system with clock

A clock can also be used to supplement or replace the temperature sensor. One or several time period for boost airflow can then be defined and addressed:

- During the "boost airflow" period: Maximum speed of the setting.
- Out of "boost airflow" periods: Operation according to the temperature (if sensor) or minimum speed (= "natural ventilation" mode).

Technical characteristics of the components

MS management system requires the use of the following components:

Component	Characteristics	Supplier / reference	Quantities
Differential circuit breaker	C2 type 230 VAC – 2A Rail DIN	Not specified	1 per Main module
230 VAC – 5 VDC Supply	Recommended supply models :		1 per Main module
	A) if from 1 to 12 Fan modules: Linear supply 230 VAC – 5 VDC ; 2,5 W Rail DIN	A) Comatec brand ref. TBD2/AR.0050.05/F	
	B) if from 13 to 25 Fan modules: Linear switching power supply 230 VAC – 5 VDC ; 15 W Rail DIN Remark : can also be used from one module, but then will not be optimised for sizing and cost.	B) Siemens brand ref. 6EP1311-1SH03 5V/3A 2	
Relay for side alarm	Plug relay switching 5 VDC relay, simple contact 10 A+ Rail DIN Connection to the electric circuit : 250 V~max and 10A max.	FINDER – ref : 40.519.005.0300 + FINDER – ref : 95.05	1 per Main module
Main module	Power supply in 5VDC 3 wires input for probe Output « alarm relay » 2 wires: 0-5V (max. current 200 mA), type « open collector 5VDC ». Connection through RJ11 wire (supplied) to Fan modules. Rail DIN	Aereco – ref. VB21119	1 for up to 25 fans
Fan module	Output 4 wires to send the PWM command to the fan then to get its speed information. Connection through RJ11 wire (supplied) to other Fan modules and to the Main module. Rail DIN	Aereco – ref. VB21118	1 per fan

² EMC supply certificate with the system

Component	Characteristics	Supplier / reference	Quantities
Temperature probe	Temperature range = - 55°C to +125°C Signal type = « 1 wire » (specific)	Aereco – ref. AVE1146XX	1 per Main module
Wind gauge	230 VAC supply Temperature range = -25°C to +50°C Wind switch level setting = 5 to 55 km/h, through potentiometer Reaction time after over passing the switch level = 3 to 5 seconds Contact = NO type	HAGER – ref : TG050	1 per Main module
Relay for Wind gauge	Modular switch relay, 230 VAC, SPNO type Rail DIN	FINDER - ref : 22.21.8.230.4000	1 per wind gauge
Clock	230 VAC supply Temperature range = -5°C to 50 °C Daily program with minimum step of 30 minutes Contact = NC type Rail DIN	FINDER – ref : 12.01.8.230.0000	1 per Main module

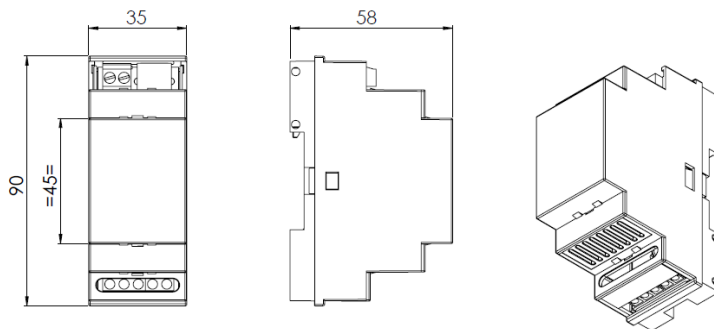
These components must be put inside a modular electric box with DIN rail, IP 65 (if outdoor installation), not supplied.

Dimensions

Main and Fan modules.

The size of a module corresponds to two standard units.

Dimensions in mm:



INSTALLATION & ELECTRICAL CONNECTIONS

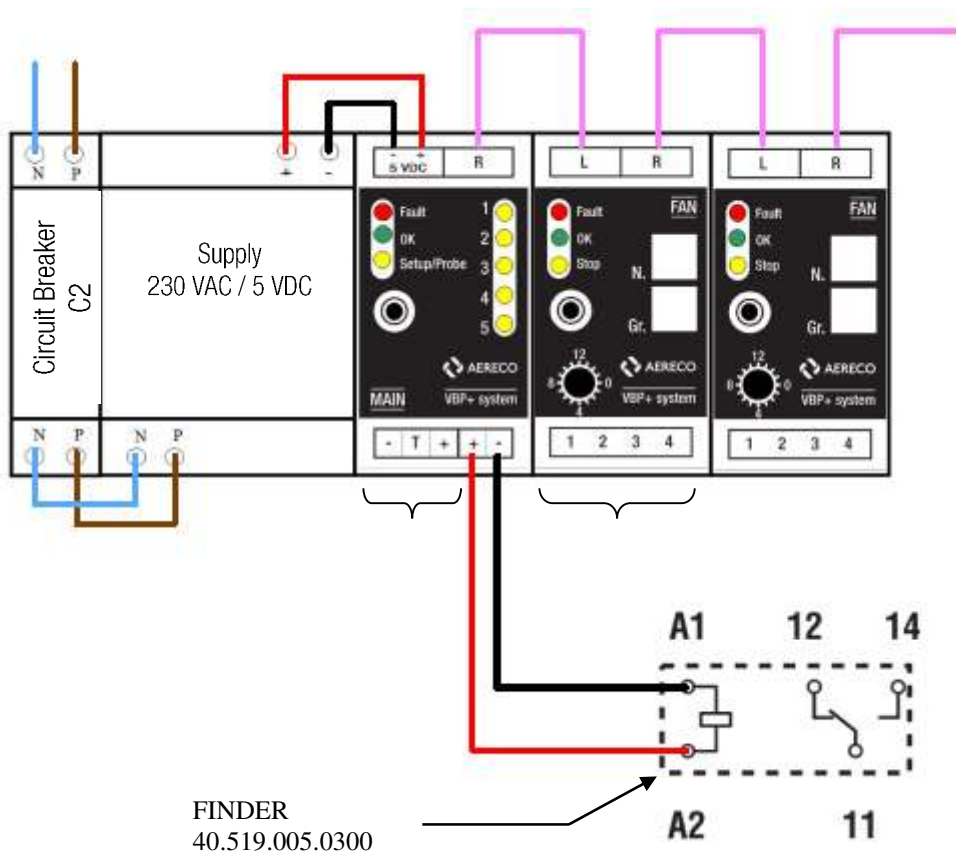


The installation and electrical connections must be carried out by a professional in compliance with applicable regulations in force in the country of installation.

General electrical connections

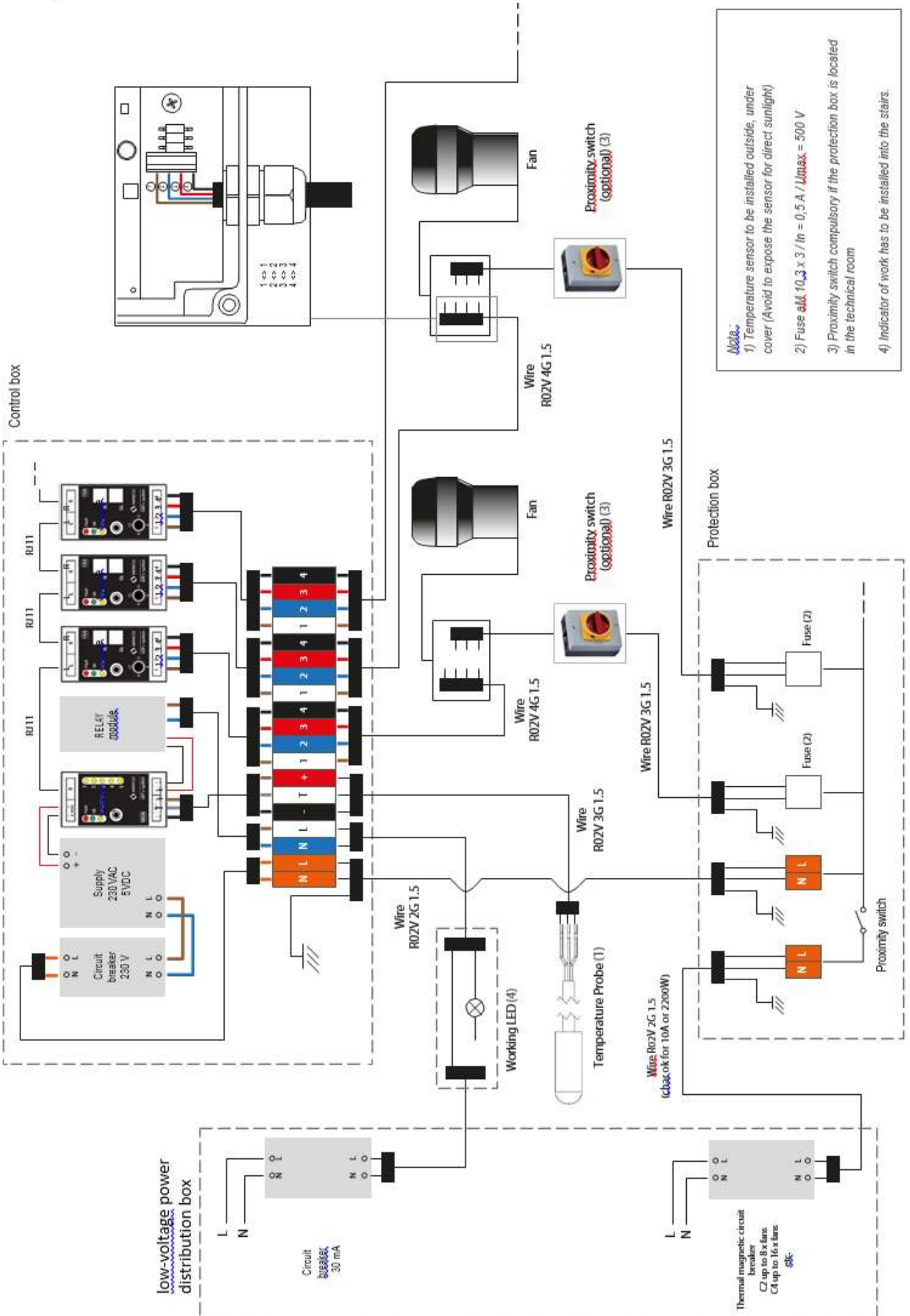
- The following components are designed to be installed in a modular electric box unit DIN rail.
- The electric box must be minimum IP65 if it is located outside.
- RJ11 cables are supplied with the Fan module (FAN) and must connect only one 'R' output to one 'L' input.

Reminder: a Main module (MAIN) can manage from 1 to 5 groups of 1 to 5 fans. A maximum of 25 Fan modules can therefore be connected to the Main module, the last 'R' output remaining without any connection



- Terminal 11-14 : Output “NO” (normally open before setting off)
- Terminal 11-12 : Output “NC” (normally closed before setting off)

The scheme next page is showing an overview of the system connections, as recommended by Aereco. Other installation are possible; please check the compliance with your local regulation.



Sensor(s) electrical connections

There are 5 possible configurations requiring a specific wiring:

- Temperature sensor only
- Wind gauge only
- Clock only
- Temperature sensor + wind gauge
- Temperature sensor + clock

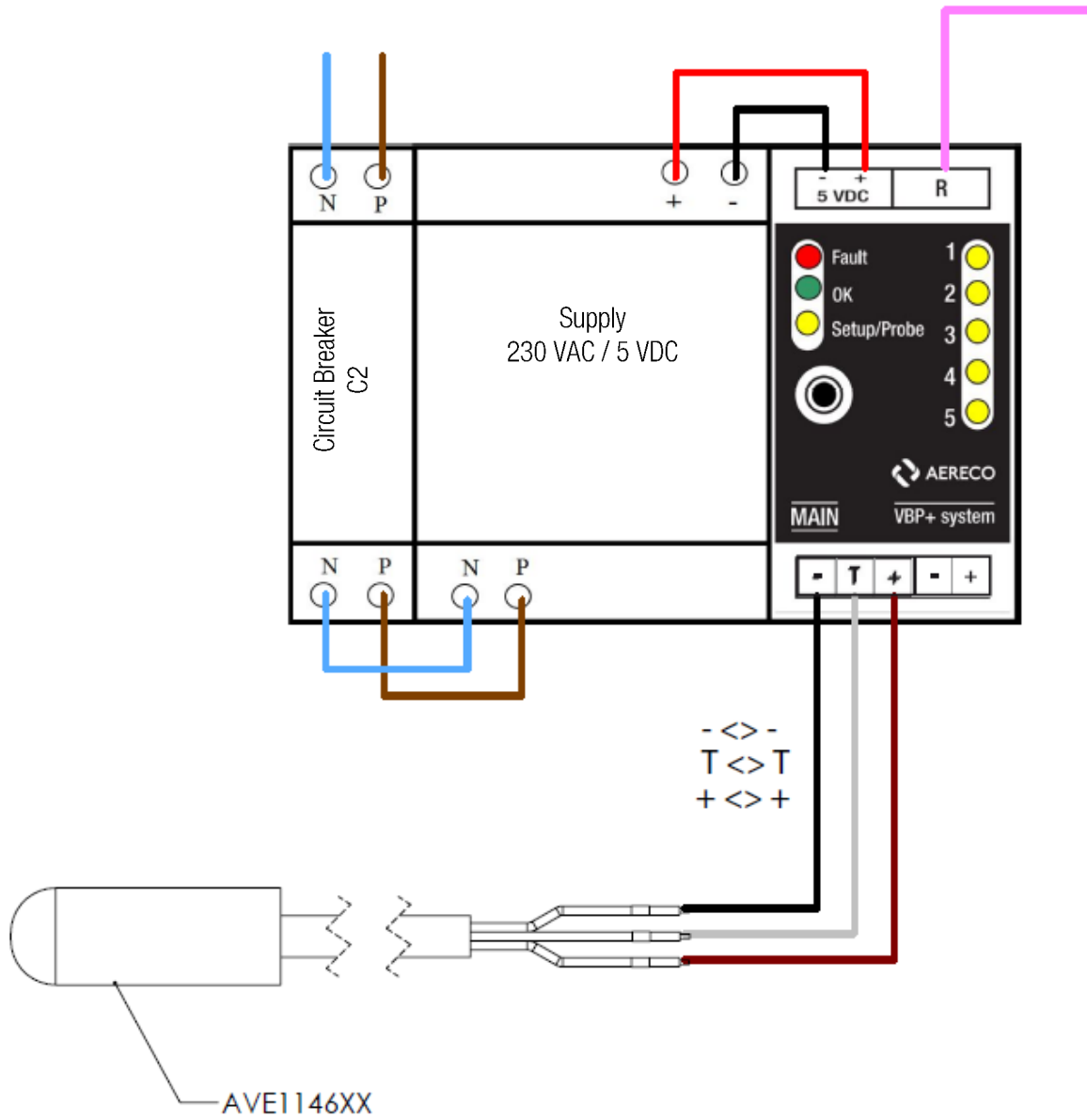
The temperature sensor has a standard length of 300 mm. It is possible to shift it by addition of a cable according to the following characteristics:

The cable is a 3 wire cable, in compliance with applicable regulations in force:

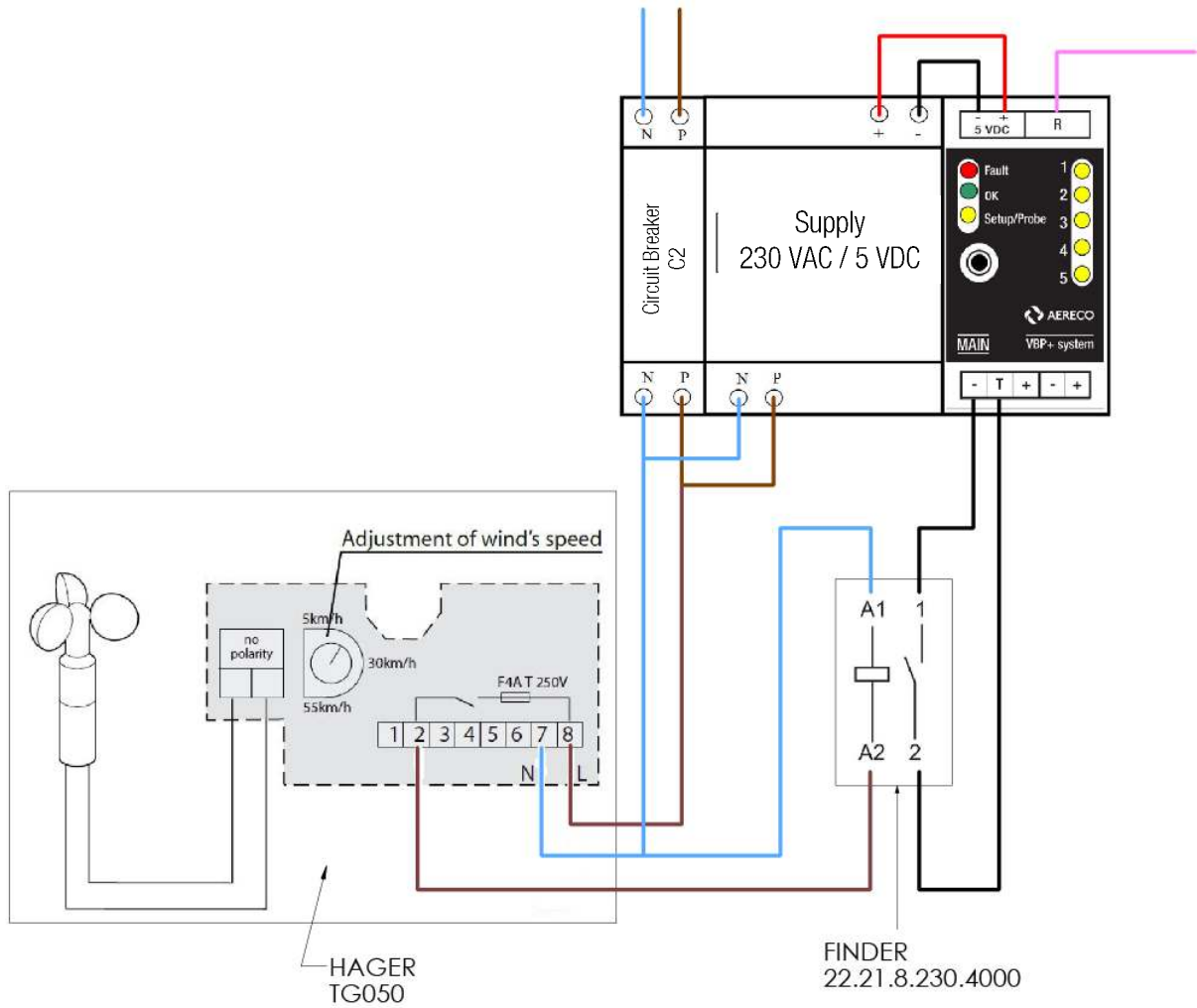
- 1,5 mm² minimum cross sectional area for each wire,
- 10 m maximum length,
- Ambient condition resistant (including UV resistance)
- The cable must not include driver colour "yellow / green", colour used for ground only.

The power in the cables **does not exceed 20 mA**.

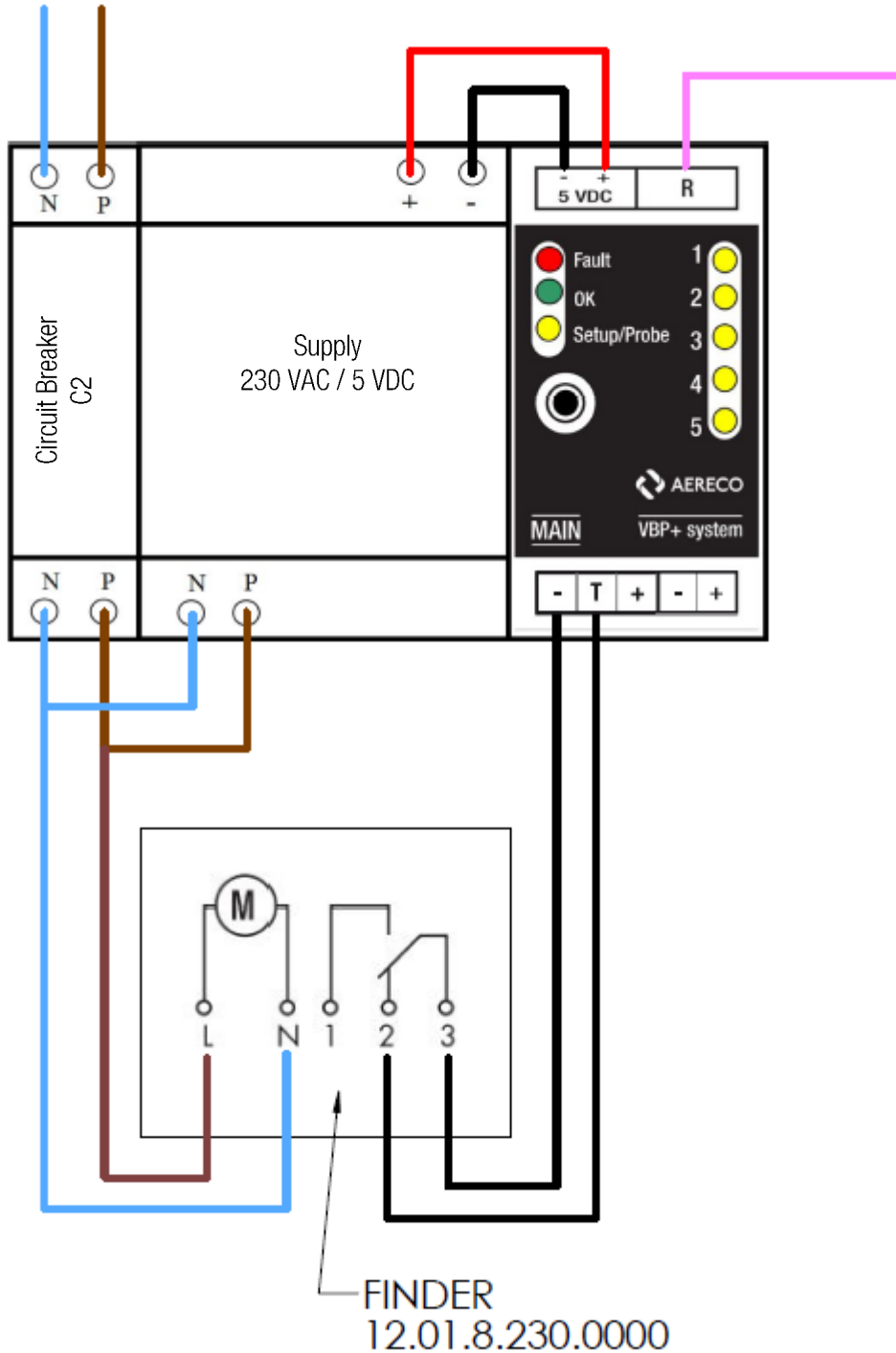
Temperature sensor connection only



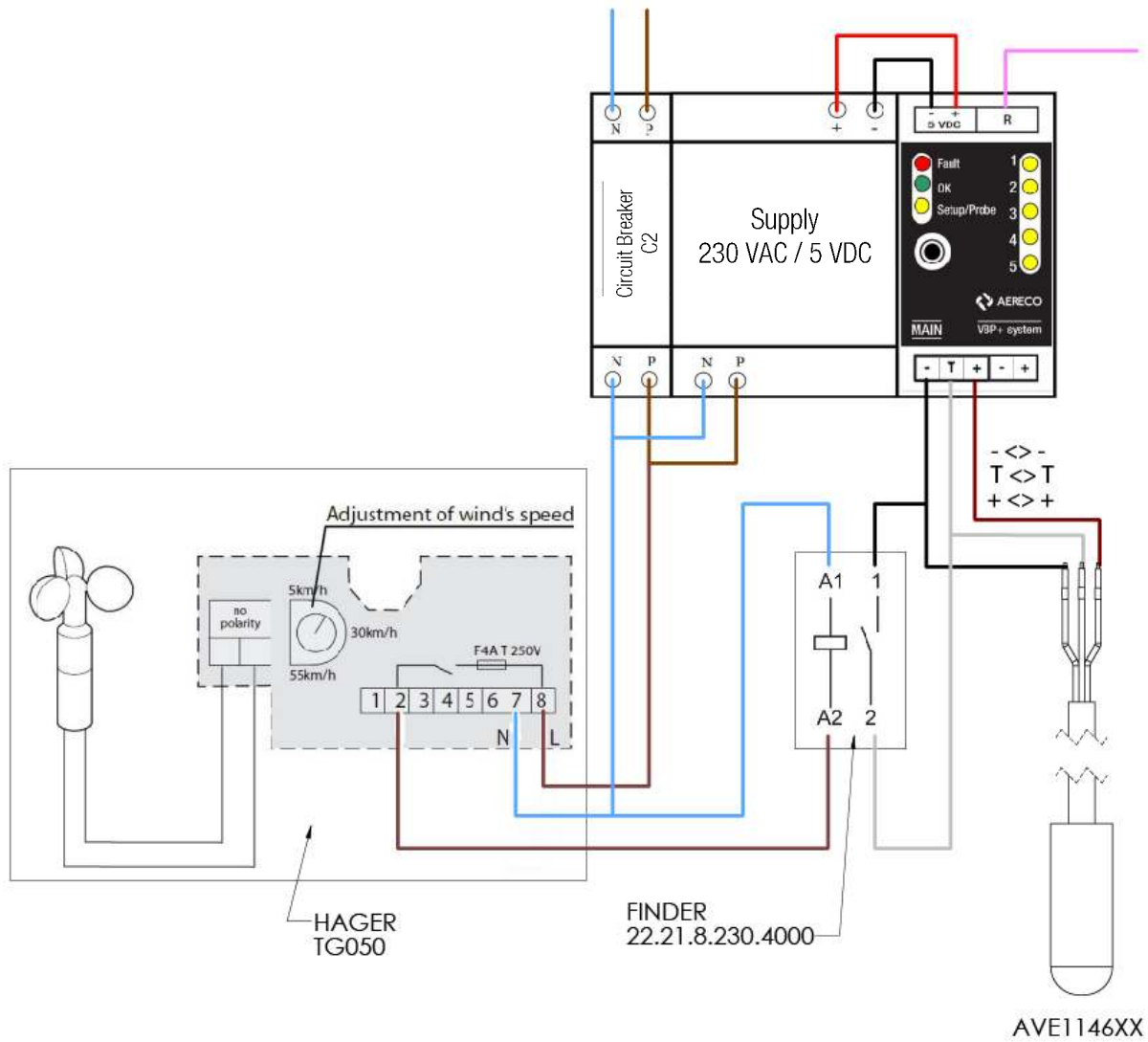
Wind gauge connection only



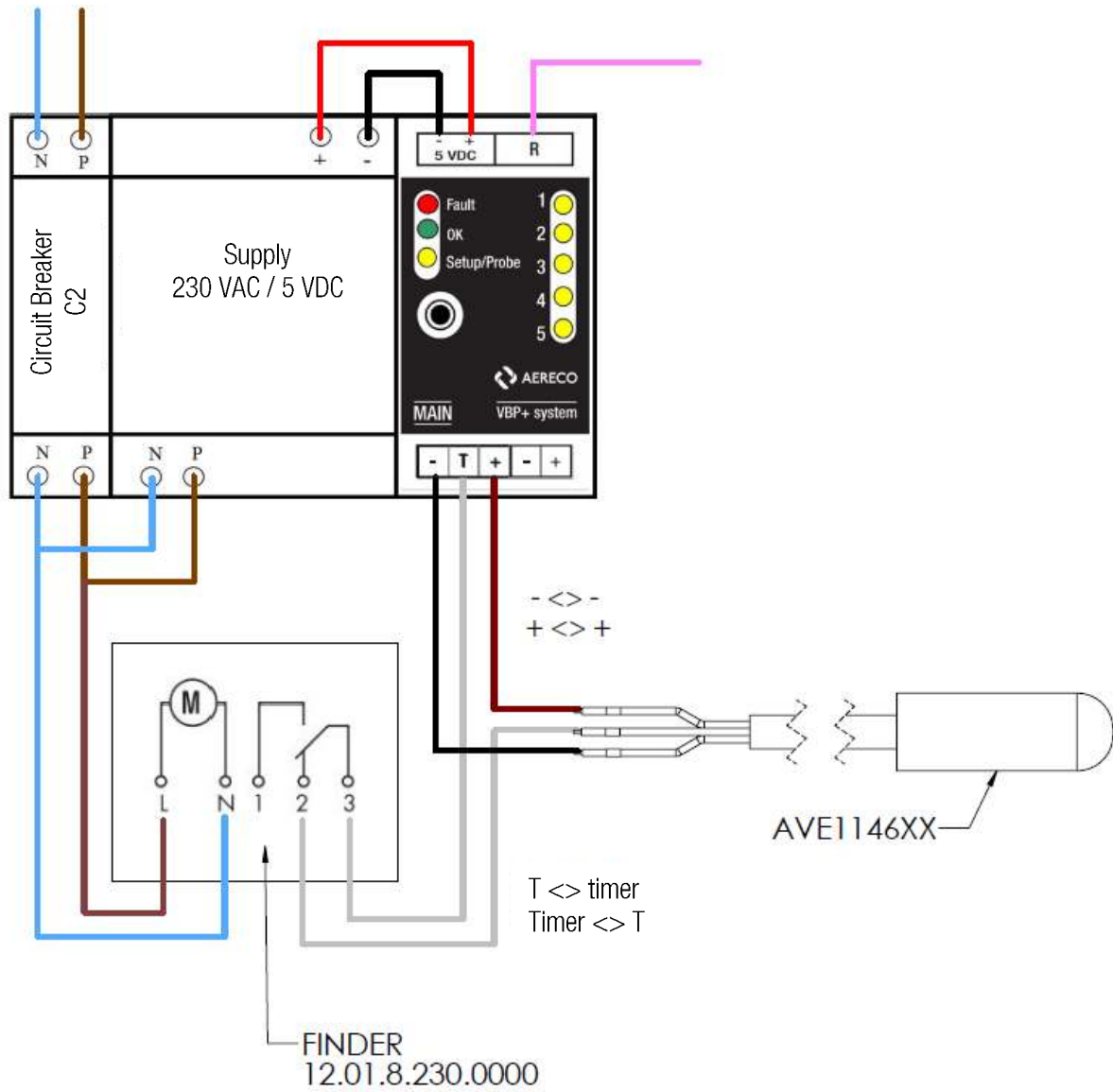
Clock connection only



Temperature sensor + wind gauge connection



Temperature sensor + clock connection



Fan(s) connection

This operation describes how to connect a fan to its modules; **it has to be done for each fan connected to the control unit.**

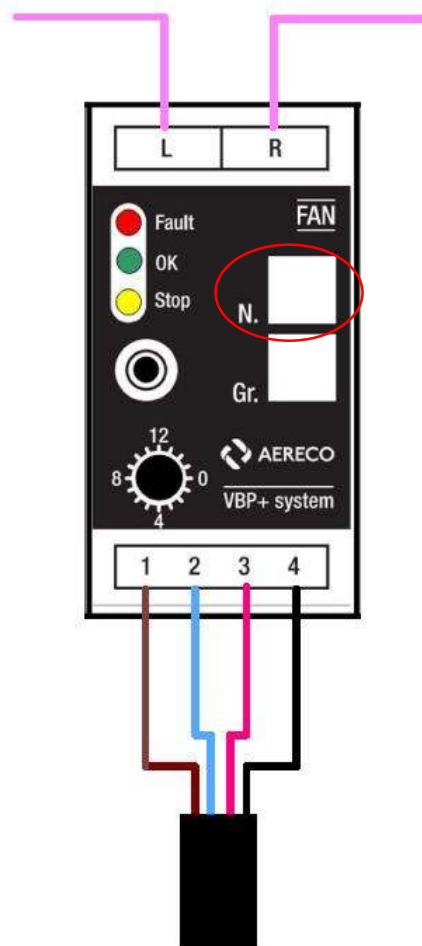


- The cable is a 4 wire cable between Ø6 and Ø12 mm diameter in compliance with applicable regulations in force: 1,5 mm² minimum cross sectional area for each wire, 25 m maximum length between the fan and its fan module, ambient condition resistant (including UV resistance).
- The power in the cables does not exceed 20 mA.
- The cable must not include driver colour "yellow / green", colour used for ground only.

1) Identify and match each fan with its Fan module

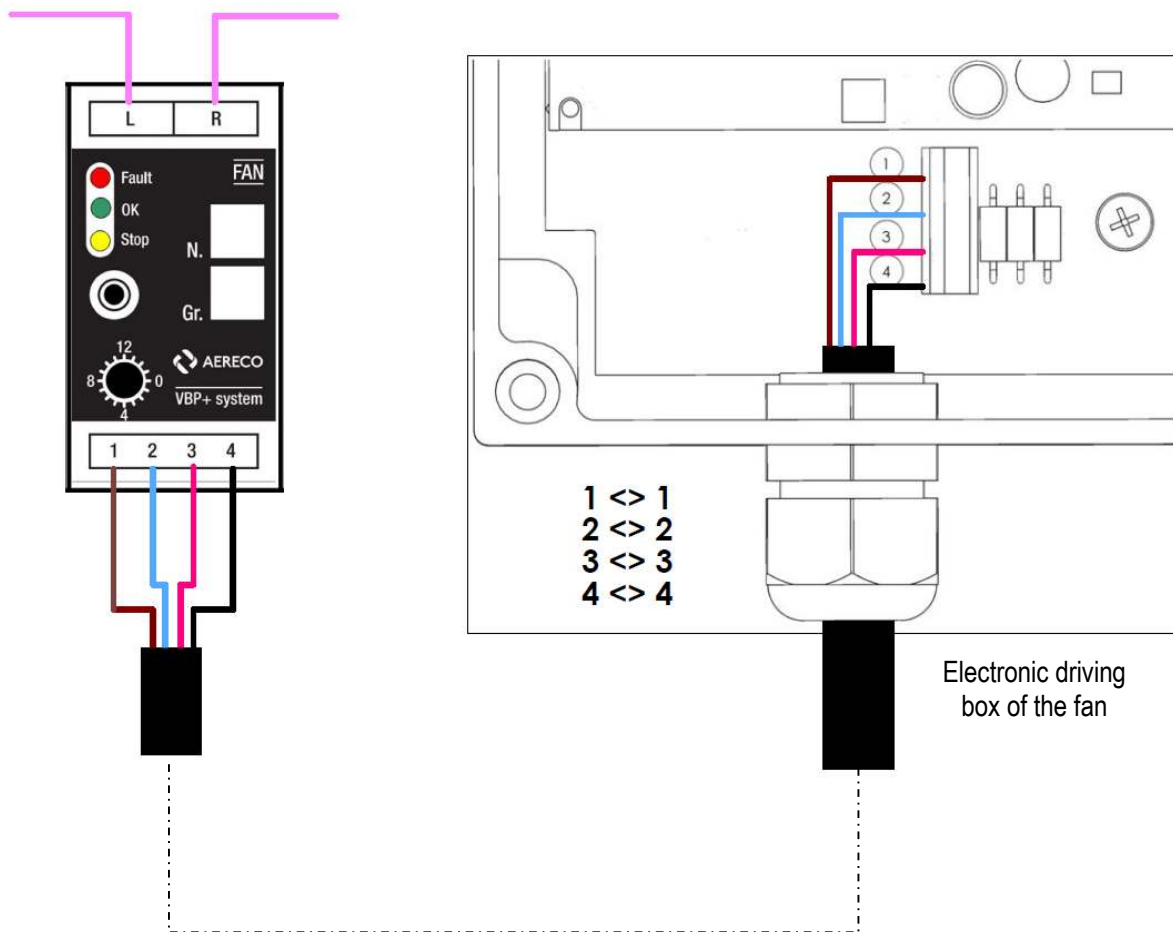
Each fan must have a number for easy installation and maintenance:

- Note a number on the label of the fan and copy it on the label of the corresponding module (insert "N. ").
- Identify both cable endings using the same number.

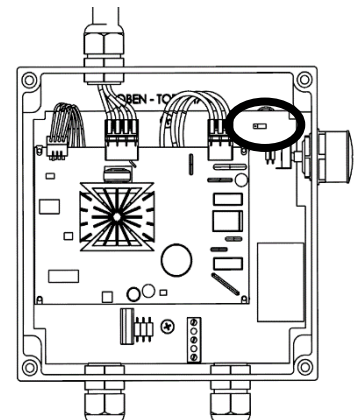


2) **Connect each fan (electronic driving box of the fan - see installation instructions of the fan) to its module respecting the terminals (observe the colour code):**

- Fan module terminal '1' on terminal '1' of the fan
- Fan module terminal '2' on terminal '2' of the fan
- Fan module terminal '3' on terminal '3' of the fan
- Fan module terminal '4' on terminal '4' of the fan



3) **Check that the jumper pin located at the top right of the electronic driving box of the fan is on pins '1' & '2' "MS mode".**



START-UP

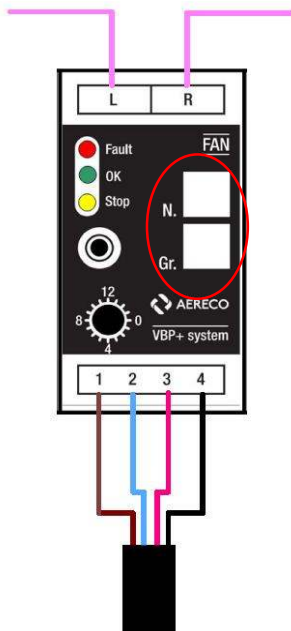


- Before starting, check the mounting of the fans on their chimney and the non-obstruction of the duct (any object inside would cause a stress on the turbine)
- Do not insert anything through them
- Never turn on the fans if the electronic driving box is open
- **All the following operations must only be carried out once the electrical box is completely finished (all the electrical connections must be completed)**

Setting



Before starting, it is necessary to identify each fan group and to set each fan (that is to say, define its operating speeds).



As a reminder, usually a fan group corresponds to a stack of dwellings.

1) **Identify each fan that you want to group together** and note the group number in the insert "Gr" on each corresponding Fan module.

Important: a maximum of 5 groups are possible having each a maximum of 5 fans.

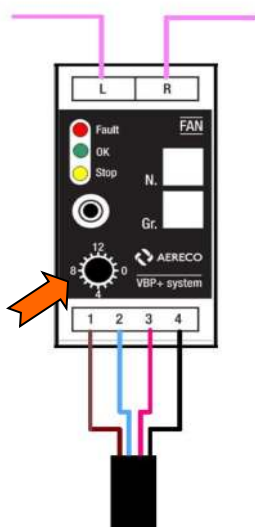
2) **Determine the setting** of each fan using the table below.

A setting corresponds to a set of speeds ("Level"), depending on the sensor information (see explanation on page 6).

Remark: This table is given as a recommendation. In the absence of contractual document such as a technical agreement, another choice of settings can be made.

Number of floors of the building	Floors connected to the fan	Maximum airflow + leakage (m ³ / h)				
		Q<150	150 <Q< 300	300 <Q< 500	500 <Q< 700	Q> 700
11 and +	All	1	3	6	8	-
	Upper floors only	1	2	4	4	8
	Lower floors only	1	2	9	9	9
9-10	All	1	3	6	8	9
	Upper floors only	1	2	3	3	8
	Lower floors only	1	2	9	9	9
7-8	All	1	3	4	7	8
5-6	All	2	3	3	3	7
4 and less	All	2	2	2	3	5

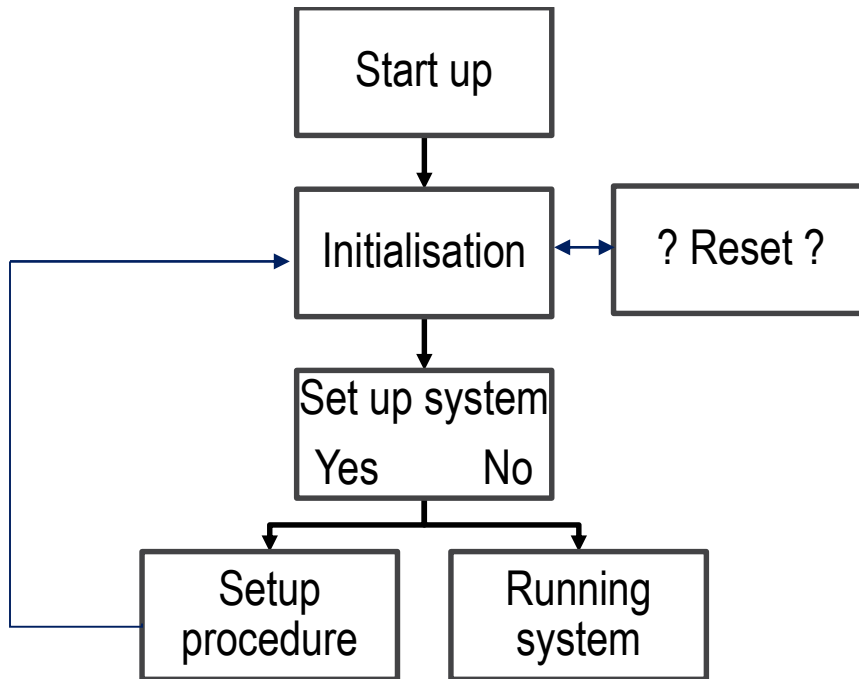
3) **Set each fan its corresponding setting** using the switch located on the bottom left of the Fan module.



The switch is a default 16-way switch. Settings 0, 10, 11, 12, 13, 14 & 15 are not used and correspond to the fan off (See § "Defects and failures")

The setting of the module can be done at every time, even when the appliance is working, the new setting will be then applied. The reset of the appliance won't erase this setting.

General operation

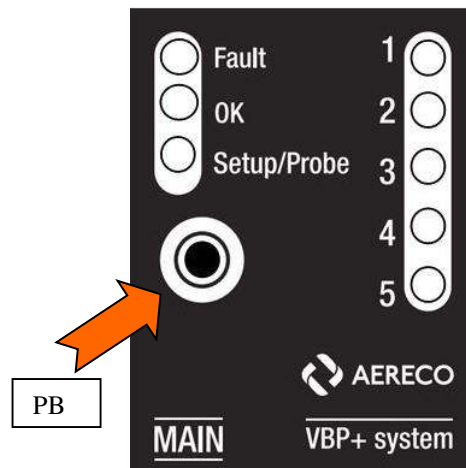


Reset

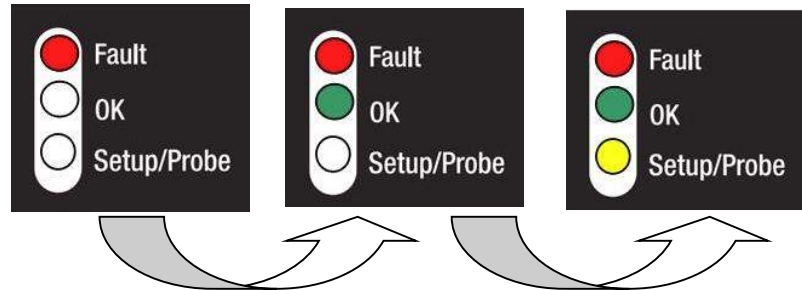


A RESET must be done during the initial start-up to ensure reset of all system components.

- 1) Push down the button (" PB ") on the Main module and then turn on the system.

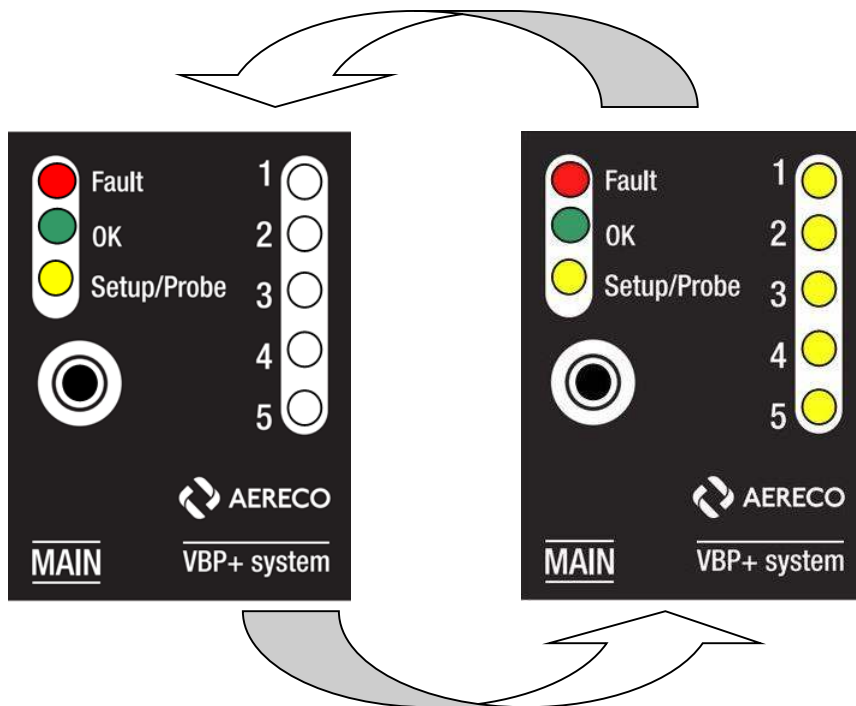


- 2) The button must remain pressed during 3 sec; this time corresponds to the loading time shown below. If the button is released before the end, the RESET operation system is not performed.



- 3) At the end of the RESET, 2 flashes show the end of the operation. The button can be released.

X 2

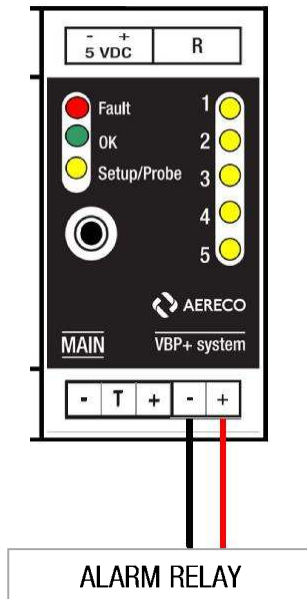


Initialisation

This operation consists of two simultaneous phases:

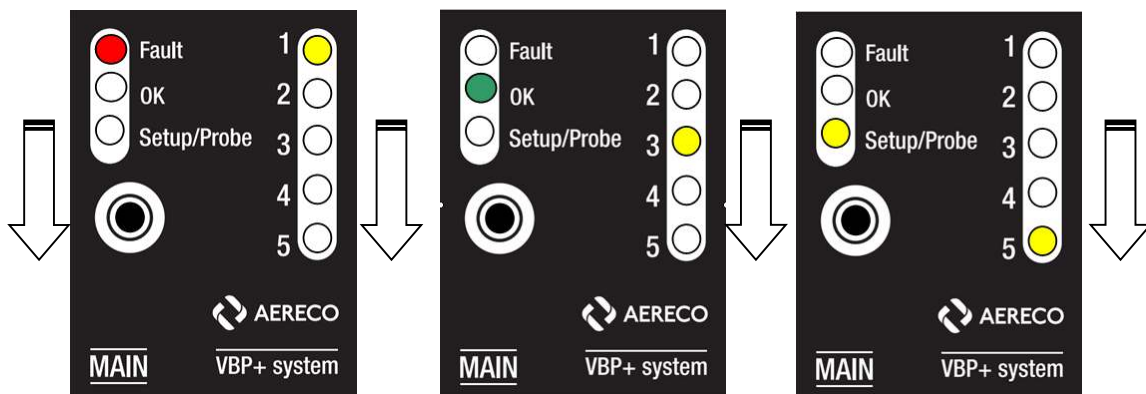
1) TEST relay output

The relay output is engaged during 3 seconds and then disengaged:



2) LOADING of the Main module

During this operation, a descending flashing light is shown on the two rows of the Main module:



At the end of the loading process:

- Either the appliance has already been set up. In that case, it will be turned into "RUNNING SYSTEM" or "Defects and failures" mode.
- Either the appliance has not been set up already. In that case, it will be turned into "SETTING PROCESS" mode.

At first use, the appliance will need to be set up. Once it is set up, either in case of power cut, the appliance will start up to be turned into "RUNNING SYSTEM" mode.

Configuration procedure

This operation is aimed to input the fan groups in the Main module.



⇔ All **Fan modules** should be displayed as "**FAULT**" (NOT configured).
If this is not the case, please make a **RESET**.



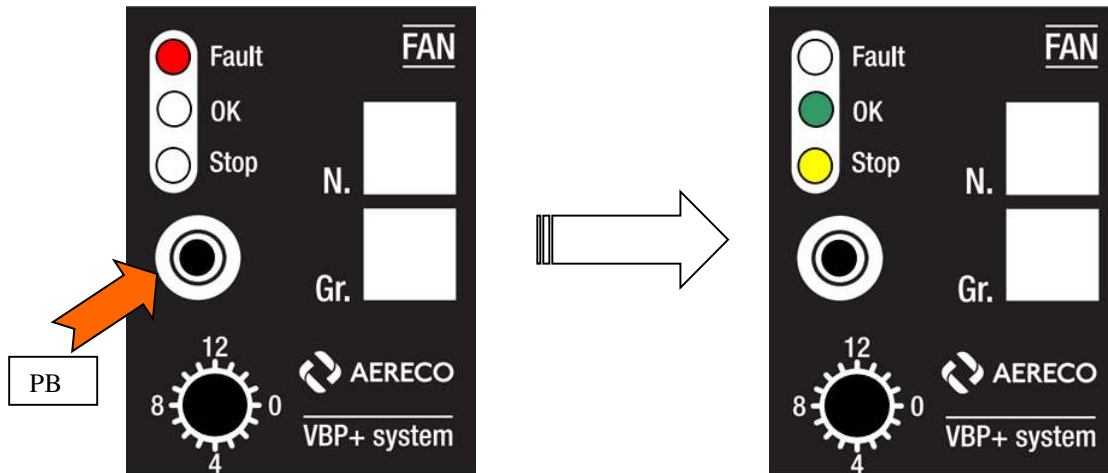
⇔ The **Main module** displays the configuration mode (SETUP mode) as well as the group being input (here, group n ° 1)

 A maximum of 5 fans can be connected to 1 group.

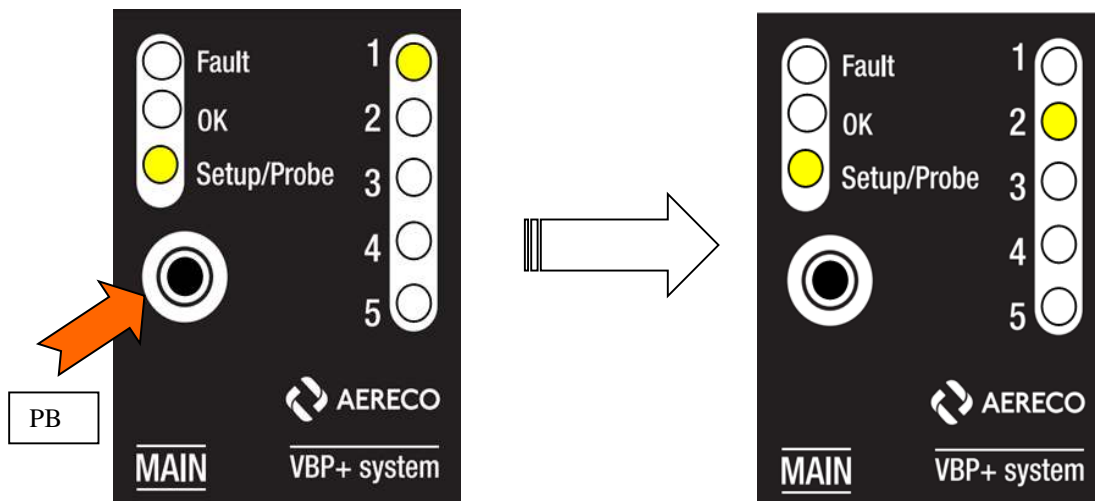
- 1) **ASSIGN every fan of the indicated fan group by pressing their push button.** The Fan modules will change from "FAULT"(Red light) to "OK"(Configured) (green light) &"STOP"(Fan off – yellow light).

Wait for at least 1 second between two successive pressings of the push button.

If the module comes back to "FAULT" mode, it means that the configuration was not registered. In that case, press again the push button (PB).



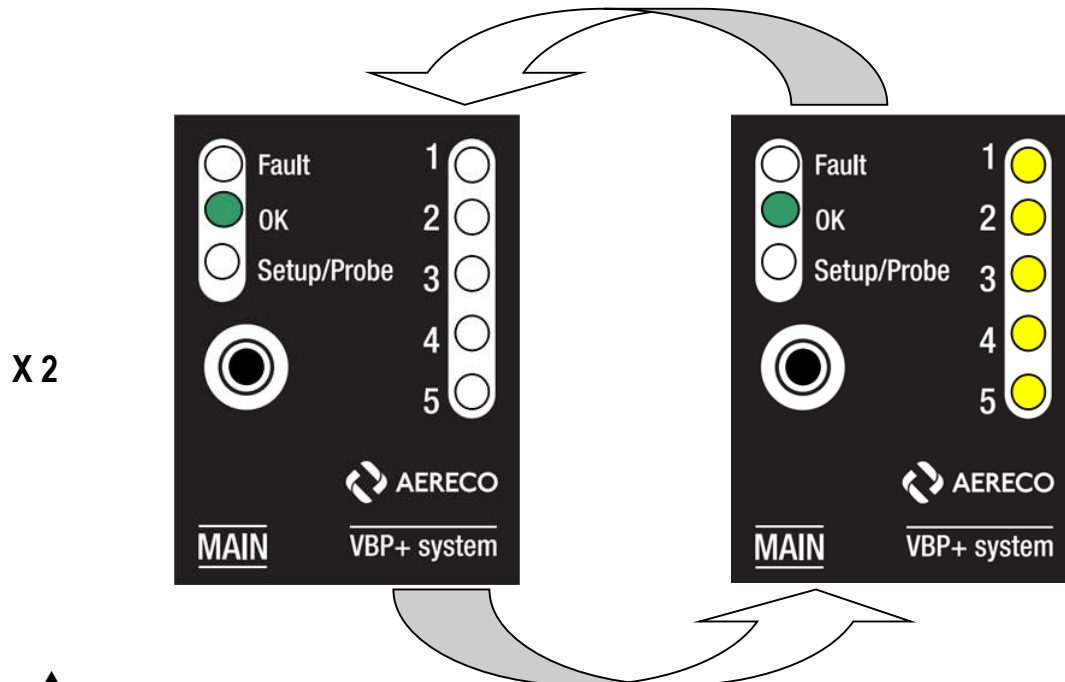
- 2) **If the group contains 5 fans, the main unit goes directly to the next group.** Otherwise press the button on the main module to reach the next group (see below: passage from group 1 to group 2)



- 3) Repeat operations '1' & '2' as many times as necessary.

- 4) To END and save the configuration procedure, press 2 times the Main module push button. If the Main module capacity is full then the configuration procedure is ended and saved automatically.

The end of the configuration procedure is indicated by 2 flashes:



In case of:

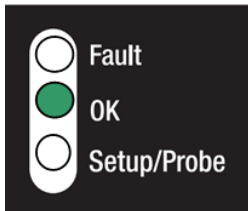
- mistake of manipulation or information,
- 1 fan stays in « FAULT » mode (red light),

Turn off the system. When it is on again, perform a RESET and repeat the configuration procedure.

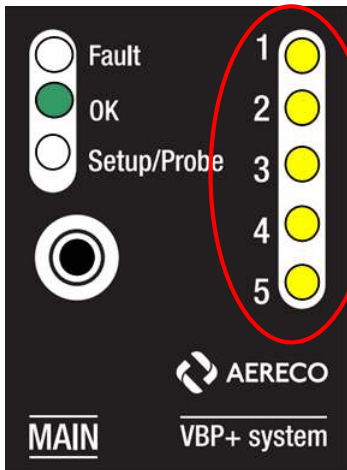
RUNNING SYSTEM

The system operates independently and adjusts the speed of each fan according to data provided by the probe(s).

INFORMATION on the Main module:



⇔ Indication of system operation (all fans or probes are OK)



⇔ **MAXIMUM LEVEL mode: every fan is at its maximum level (Active clock).** See chart on page 6.

⇔ **It is also the default mode if no input 'probe' is connected or read (see § "Defects and failures").**



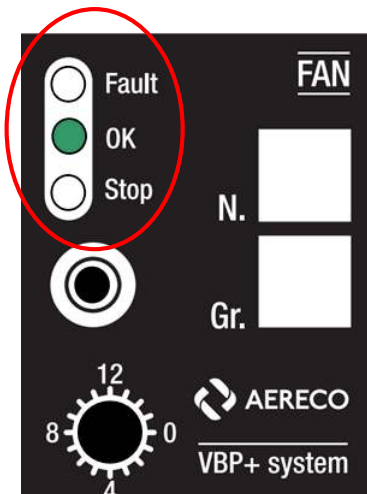
⇔ **NATURAL mode: every fan is at its minimum level (Active wind gauge).** See chart on page 6.



⇔ “Temperature” mode: every fan is on the speed level set by the temperature level (e.g.: on this view = level 2).

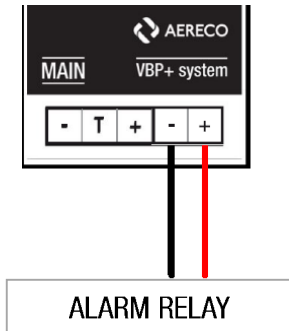
Outside temperature preset levels	
1	15°C ≤ to +125°C (maximum probe)
2	11°C ≤ to < 15°C
3	8°C ≤ to < 11°C
4	2°C ≤ to < 8°C
5	- 55°C ≤ to < 2°C (minimum probe)

INFORMATION on the Fan module:



⇔ Fan on with the good speed level (see the modes above)

DEFECTS AND FAILURES



The MAIN module is normally closed when the system is working normally. It can be connected to a light alarm using a relay.

Every defects and failures will trigger the exit “ALARM RELAY” for reporting.

2 main defects are interpreted and treated differently by the system:

- Default 'Temperature': Problem when reading the temperature.
- Default 'Fan': Communication problem, fan off or rotating at the wrong speed.

A fault is confirmed and recorded by the system after being detected for **at least 3 consecutive minutes**.

The defect corresponding to a wrong setting of the fan is registered immediately to allow a diagnosis at the start-up.

Registered default:	Actions performed by the system:
'Temperature'	Switching to mode “MAXIMUM LEVEL” for every fan.
'Fan'	STOP every fan of the group in which the fan is in default. The other groups are driven normally.

Default 'Temperature'

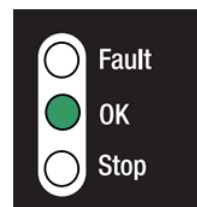
INFORMATION:



⇔ The module displays the "Fault" mode and indicates a temperature default by the light "Setup / Probe".

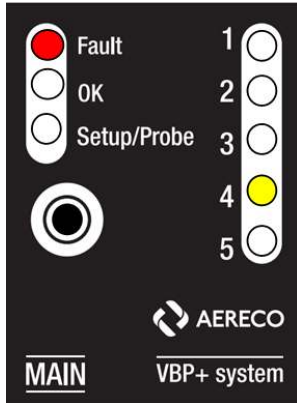
⇔ The system shows the “MAXIMUM LEVEL” mode on the row of LEDs on the right.

⇔ The Fan modules display a normal operation



Default 'Fan'





INFORMATION on the Main module:



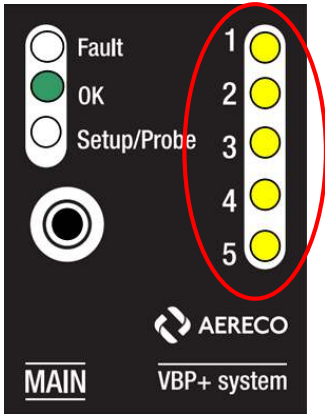
⇔ The Main module displays the "Fault" mode only.

⇔ The system indicates the GROUP(S) which was shut down on the row of LEDs on the right (in this example group 4 is off).

INFORMATION on Fan modules:

Group(s) in default			Group(s) in good operating
			
Fan turned off in default	Fan turned off but OK	Fan turned off having a wrong setting	Fans on

Permanent "MAXIMUM LEVEL" mode

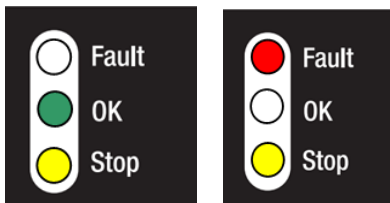


If the Main module continuously displays the "MAXIMUM LEVEL" mode while the clock is not active or is not part of the system, this means that the probe input is in default (can not be detected electronically).

➔ Check the electrical drawing and the connections of the probe input and replace the sensor AVE1146XX temperature if necessary.

If the problem persists, contact your reseller.

Fixed module into one of the 2 position below:



If a fan module is staying in this position, it can be a problem of setting ➔ proceed to a RESET and set again the appliance.

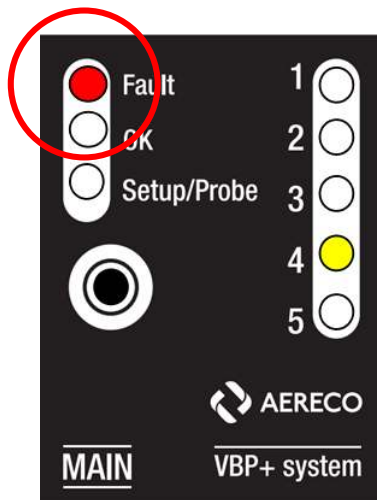
If the problem persists, contact your reseller.

TECHNICAL MAINTENANCE



Only a qualified technician can access the device. In case of failure, problems or any questions, please contact your reseller.

Procedure in case of default indicated by the system:

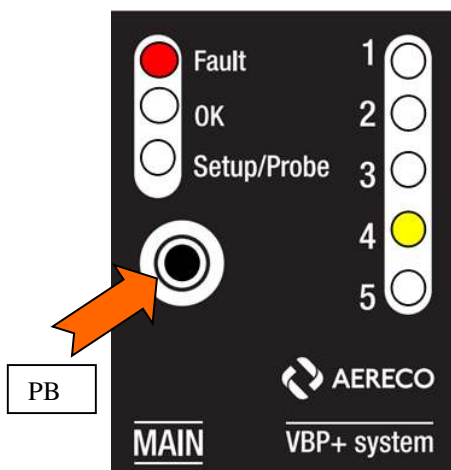


Before any operation, disconnect the 230 VAC network of the fans and disconnect the 230 VAC network of the electronic driving box.

The fans can still be charged up despite the disconnection of the 230 VAC network, implying a risk of electric shock.

➔ Wait at least 5 minutes after the disconnection before touching any fan.

- 1) Check the electrical drawing and the connections:
 - Of the input 'Probe'.
 - Of the fan(s) corresponding to the Fan modules in default.
- 2) Check the setting of the faulted fan
- 3) Check the good connection of RJ11 cables and replace the RJ11 cable connecting the input "L" of module(s) in default if necessary.
- 4) Check the connection of the 230 VAC network of the fan(s) in default.
- 5) Visually inspect that the fan in default is not damaged and that nothing is forcing its turbine.
- 6) Replace the 230 VAC network of the fan and of the electronic driving box.



Wait for the start-up of the system (descending flashing light) and the fail over in the 'FAULT' mode.

- **Press and hold the button on the Main module (the operation can last up to 20 seconds).**

The system will operate a reset of every recorded default and switch back to NORMAL mode.

- **Release the button.**



WAIT 5 minutes. If the problem has not been fixed by the previous operations then the system will fall back to the FAULT mode.

In this case, please contact your reseller.

WARRANTY

This guarantee is valid for two years from the original date of purchase of your appliance, for faults of the appliance, which have been caused by faulty construction. On these conditions, Aereco guarantee the replacement or the supply of the equipment found to be defective after inspection by its after sales service. In any case, the warranty may not cover additional costs, of labour, transport or compensation of any kind. The warranty does not cover damage due to improper installation in this manual, improper use or attempted repair by unauthorized personnel. In case of problems, please contact your installer or your reseller.

ENVIRONMENTAL CONCERNS

Recycle of electrical and electronic equipment waste at the end of its lifecycle (applicable in the countries of the European Union and other countries with special collection centre).



The symbol on the appliance indicates that this appliance should not be treated as domestic waste. It must be taken to a special collection centre for the recycling of electrical and electronic equipment. For further information on the treatment, recovery and recycling of this product, contact your competent local office, the household waste collection service or the shop where you purchased the appliance.

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