

# AMBITROL 500

## environmental controller

# INSTRUCTION MANUAL

MODELS 501 AND 503

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## PRESENTATION

*We wish to take this opportunity to thank you for the confidence in us which you have shown in expressing interest or acquiring the AMBITROL 500.*

*This confidence, for our part, stimulates our efforts to meet and surpass the expectations of our clients to justify the traditional quality of our products.*

*This manual will explain the specification of the equipment as well as its installation and use.*

## 1. BASIC DESCRIPTION

**AMBITROL 500** is a complete environmental controller whose qualities and peculiarities have to be known by the installer and the user so that a maximum profit is reached, so we recommend the careful reading of this Manual.

The system has got a central processing unit with an illuminated alphanumeric screen with 80 characters, keyboard and printer (optional), plus one or more satellite processing units of inputs/outlets equipped with different cards according to their necessities, which can be placed hundreds of metres away from the central unit.

As it is "configurable", it can control a huge range of sensors of temperature, relative humidity, harmful gas, wind direction and wind speed, lightness, solar radiation, levels, counters, retromessages, etc; as well as act on numerous windows, fans, heaters, cooling systems, humidifiers, irrigations, alarms, lighting, engines, measuring vessels of water and feed etc.

### CONFIGURABLE

One of the advantages of being "configurable" is that with only one equipment you can control completely any kind of installation: even it is made up of one or more premises, breeds one or more types of animals (when talking about farms), etc.

Every one of the controls to be done is configurable in its inputs, outlets, types of working, conditioners, reference values, differential, alarms, etc.

### REFERENCES PROGRAMMING

The references can be programmed by hand (being possible to modify them personally whenever it is necessary) or following some curves prefixed by the user himself at once and which are modified automatically as time goes by, according to what was said.

The use of prefixed curves of behaving gives big nimbleness to those controls in which the references must be changed periodically.

#### REGISTERS

All the values and other information useful for the control are recorded in the memory of the system, being possible to see them on screen and print them as behaviour graphics.

For those installations that do not need such a complete system, we have got the AMBITROL 100, which is an electronic system for the control of any environmental parameter, although it has a limited number of inputs for sensors and of outlets for working.

#### WARRANTY

The equipment made by PROGRES enjoys a two year warranty against all manufacturing defects.

## 1. INTRODUCTION

**AMBITROL 500** is a complete environmental controller whose qualities and peculiarities have to be known by the installer and the user so that a maximum profit is reached, so we recommend the careful reading of this Manual.

The manual is divided in four chapters:

- Introduction (page 2)
- Installation (in a supplement of the manual)
- Configuration (pages 4-7)
- Use (Pages 16-21)

The INTRODUCTION is where you are now, and we recommend its reading to both installers and users.

The INSTALLATION is the chapter addressed to the installer who has to connect the equipment to the other elements that make up the system. This chapter is to be found in a supplement of the Manual.

The CONFIGURATION is the chapter which shows how to configure or adapt the equipment to the particular necessities of every installation. This work has to be done by an installer.

The USE is the chapter addressed to the user, as it contains all the instructions about the programming and the follow up.

The system AMBITROL 500 consists of a base equipment (which houses the control circuits, the screen, the keyboard and the printer connector) and of one or several modules of inputs/outlets (to which the sensors and other accessories which transmit data are connected, as well as the elements the system has to govern).

The modules of inputs/outlets, can be placed next to the base equipment or at hundreds of meters from it, depending on the necessities.

The base equipment has an alpha-numeric screen with eighty characters which shows the questions that the controller does to the user, his answers, the programmes and all the other stored data, the current workings, etc.

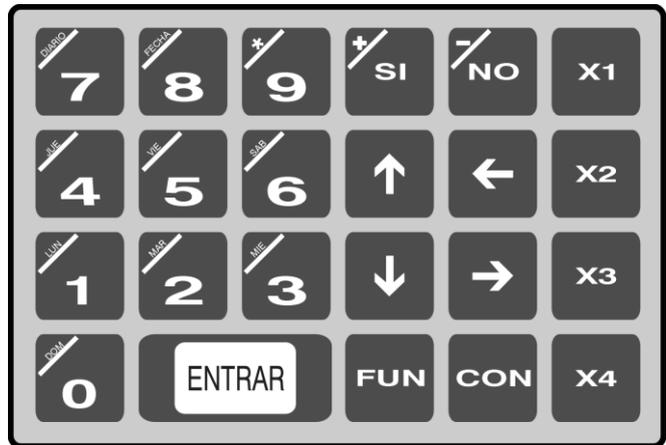
#### SCREEN



It has also got a keyboard with 23 keys which are used to access to the equipment.

#### KEYBOARD

There are keys which show numbers from 0 to 9



which will be pressed whenever it is necessary to enter a number.

The same keys also show the initials of the days of the week and they will be pressed whenever it is necessary to enter in the controller one or several days.

There are two keys with the words "Si"(yes) and "No" which will be pressed in some cases to answer yes or no to the questions on the screen.

There are some keys with the signs "\*", "+, -, x1, x2, x3 and x4" which are only used in certain cases, which will be specified later.

There are 4 keys with arrows which are used to move fast along the data on the screen.

The key "ENTER" is used to confirm the validity of the datum typed previously or shown on the screen placing the cursor below it. This key is bigger than the others as it is used constantly.

The key "CON" is used to consult the current state of the programmes which are being carried out and that of the inputs and outlets.

The key "FUN" is used for entering the six basic functions of the controller, as it is shown as follows.

## 2.1. FUNCTIONS

On pressing the key "FUN" we access to the section of FUNCTIONS of the equipment, showing the following MENU:

FUN: Programmes=1	Curves=2	Readings=3
Configuration =4	Manual =5	Printer=6

To choose a function, press its corresponding number and "ENTER".

**2.1.1. DESCRIPTION OF THE FUNCTIONS**

- 1.PROGRAMMES. With this function you acced to the most important data of every working programme.
- 2.CURVES. Here the values are given in order to form a curve to be followed by the programme.
- 3.READINGS. To visualize the record of everyone of the programmes and also the anomalies that are recorded.
- 4.CONFIGURATION. Here the equipment is configured to adapt it to the necessities of the installation to be controlled. This is normally done by the installer. It is important not to access this function without an exact knowledge of what you are going to modify.
- 5.MANUAL: To act directly on the outlets of every programme.
- 6.PRINTER: We can print all the data of every programme, with its curves and configuration, stored in the memory.

NOTE: In some screens some letters with inverted background will appear and they have got the following meaning:

WORD	MEAN
P = Programme	Programme number.
T = Type	Type of working.
C = Curve	Activated curve (1) or deactivated (0).
E = Input	Value of the sensor/s of input.
S = Outlet	State of the outlet.

**2.1.2. TYPES OF WORKING**

We call types of working to the 9 different ways of working the equipment allows.

**TYPE 1.**

Input of sensors, outlet by relay.

When the value of the sensor is lower or higher than the value of reference, taking into account a differential, the outlet is activated.

With control of general alarm of maximum and minimum.

Examples: Working all/nothing, refrigeration, drying, heating, humidification, etc.

**TYPE 2.**

Input of sensors, analogical outlet (0-10 V).

Every programme is given a reference, a proportional band and a maximum and minimum percentage of outlet. When the value of the sensor is higher or lower than the reference, the outlet increases proportionally from the minimum to the maximum, obtaining this last one when the sensor reaches the value

of reference plus/minus the programmed proportional band.

With control of general alarm of maximum and minimum.

Example: Proportional heating, forced ventilation.

**TYPE 3.**

Input of sensors, outlet by relay.

The programme is given a reference, a proportional band and a maximum and minimum percentage of outlet. When the value of the sensor is higher or lower than the reference, the outlet increases or decreases proportionally the time of working according to a prefixed time called cycle of modulation.

If, for example, the outlet has to be at 75% and the cycle of modulation is of 400 seconds, it will work for 300 seconds and it will not work for 100 seconds.

With control of general alarm of maximum and minimum.

Examples:The same examples as types 1and 2.

**TYPE 4.**

Input of sensors, outlet by relay.

When the value is higher than the reference plus the differential, or lower than the reference, the outlets are activated or deactivated.

Examples: second alarm of maximum and minimum, control of wind direction, etc.

**TYPE 5.**

Timetable programme, outlet by relay.

When the day and time programmed are reached, the outlet is activated, finishing when there is no more time of activation left. With the possibility of doing a certain number of programmed activations as well as programming the time frequency at which these activations will be repeated.

Example: lightning, feeding, irrigation, etc.

**TYPE 6.**

Input of counting, outlet by relay.

The programme is started by timetable and on the chosen days of the week, activating the outlet until there are no programmed units left.

Example: feeding (water, feed, etc.)

**TYPE 7.**

Input of sensors, outlet by two relays (open - close).

Special type to work on windows with lathe so that the natural ventilation can be made.

When the temperature is higher than the reference plus the differential, some timings are made, one of stop and another of opening; the same happens to close, when the temperature is lower than the reference.

With control of general alarm of maximum and minimum.

**TYPE 8.**

The same as type 7 but the timings of opening and closing are substituted by an input of retromessage of position of the windows, placing them according to the reference and proportional band.

With control of general alarm of maximum and minimum.

TYPE 9.

Relates the inputs of two sensors, outlet by relay.

When the difference between the two values is lower or higher than a value of reference, the outlet is activated.

Examples: forced ventilation, conditioning values.

With control of general alarm of maximum and minimum.

### 3. CONFIGURATION

The first thing to be done when the equipment is installed is to configure it. This is to be done by the installer.

To do so, press the "FUN" key and choose option 4, which shows the MENU OF CONFIGURATION.

FUN: Programmes=1	Curves=2	Readings=3
Configuration=4	Manual=5	Printer=6

CONFIGURATION:	Programmes=1	Inputs=2
	Outlets=4	Various=5

#### 3.1. INPUTS

If you choose option 2 (INPUTS) of the menu of CONFIGURATION, you will see another screen that lets you choose between analogical or impulse sensors. Digital inputs are not configured.

Inputs:	sensors=1	impulses=2
---------	-----------	------------

If option 1 (SENSORS) is chosen, it will show the following screen:

Number of input (sensors) = 02
Measure units= 01    Tare= 00.0 °C

The maximum number of analogical sensors to be connected is 64.

Every sensor is given a number which corresponds to the terminal to which it is connected.

One sensor can give value to several programmes.

The number of measure units is used to give a name to the type of value which controls the sensor.

Here is a list of the measure units.

01 Temperature	°C	08 Radiation	Wm2
02 Relat. Humidity	%HR	09 Units	Uds
03 Lighting	K1x	10 Pressure	Psi
04 Relation	%	11 Flow	m3h

05 Speed	m/s	12 Flow	1/h
06 Direction Acidity	°	13 Carbon dioxide	CO2
07	pH	14 Ammonia	NH3

Every sensor has a tare (calibration) in relation to a pattern. It is important not to modify this value, unless a calibration has been done.

The maximum value of the tare is ± 120 or 12.0.

To get out of the programme, enter the sensor 00 or press "FUN" or "CON".

Choosing option 2 (IMPULSES), the inputs of impulses or counting are configured.

The maximum number of inputs is eight.

Number of input (of impulses)= 01
Value of impulse= 00.0

When the input receives an impulse, from a water counter or the weights done, the equipment needs to know to the number of units that the impulse corresponds to. (For example: an impulse=01.0 liters).

The maximum value per impulse is 20.0 Uds.

#### 3.2. OUTLETS

CONFIGURATION:	Programmes=1	Inputs=2
	Outlets=4	Various=5

If option 3 (INPUTS) is chosen from the menu of CONFIGURATION we will be able to configure the analogical outlets with the following screen. It is not necessary to configure the outlets by relay.

Number of outlet= 00 (analogical)
Tension: min 02.0V    max. 10.0V    Reverse= No

The maximum number of analogical outlets is 24.

The analogical value goes from 0 to 10 V. and it corresponds to the 0 to 100% that will be shown on the screen as value of outlet.

This outlet is normally connected to controllers of speed, lightness, powered valves, hatches controllers, etc.

It is possible that, for example, a speed controller needs to work from 2 to 10 volts, for the engine to start well at low speed; then, in the minimum tension it will be given a value of 02.0 volts (in this case the 0% corresponds to 0 volts and the 1% to 2 volts).

The equipment which receives the tension may need the inverted sign, in this case, answer "yes" to the question "reverse".

#### 3.3. VARIOUS

CONFIGURATION:	Programmes=1	Inputs=2
	Outlets=4	Various=5

If option 4 from the menu of Configuration is chosen, the following screen will be shown.

VARIOUS: Clock=1 Password=2
Alarm=3

If option 1 (CLOCK) is chosen, you can modify the time and date of the internal clock.

It does not ask for the seconds, they enter with the value 00.

Set time: Mon.11:09.00 24/07/99
---------------------------------

Option number 2 (PASSWORD) allows you to enter a private numeric code which does not allow access to the Functions or the Configuration to those who do not know the code.

Null:0 Functions:1 Configuration:2 = 0
Password number=153

With option number 3 (ALARM) you can choose whether you want the general alarm to work and the delay the alarm will have to activate itself, in minutes. The outlet of alarm corresponds to relay number 16 and it has the start closed without alarm, being free of tension.

This start also opens if there is a power cut.

Alarm (Yes/No)= No
Delay alarm activation= 00 min.

After that, it is asked the minimum aperture % that the windows can change for get the new position.

Window margin = 10 %
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### 3.4. PROGRAMMES

CONFIGURATION: Programmes=1 Inputs=2
Outlets=4 Various=5

Choosing option 1 (PROGRAMMES) from the menu of configuration you can configure programmes, but it is necessary to configure the inputs and outlets, before as they are related to the programme.

First, we can see the following screen asking for the number of PROGRAMME we want to access to, give the number and "ENTER".

The equipment has capacity for 40 programmes.

P00 (enter number of programme to configure)
--

P00	» » » » » » » » » » » » » » » »	Type= 00
-----	---------------------------------	----------

Once the number has been entered, we can see the previous screen, with the cursor placed to the right of the number. From this point with the keys that have the arrows up and down, we move to other programmes.

If we enter a number again, it will go back to the previous screen to ask for it.

If you press "ENTER" or the arrow towards right, it will ask for the text that the programme will have. With this text the user knows the function the programme is carrying out.

The cursor is placed on the first character, if the text is already correct, press "ENTER" to go to the next question.

The characters that can be shown are:  
".ABCDEFGHIJKLMNPOQRSTUVWXYZ0123456789 -\*"

To choose a character use the up and down arrows; to move along the fourteen possible characters, use the arrows towards right and left, and to end, the "ENTER" key.

In the question "type of working of the programme" we have to take into account what it is going to control, because the number of type is what conditions totally the questions and answers of the programme.

(At the end of this chapter of Configuration there is a detailed description of every TYPE).

If the value 00 is entered, it shows this screen:

P05	» » » » » » » » » » » » » » » »	Type= 00
Are you sure you want to erase the programme? (Yes/No)		

If we answer Yes, it will erase all the data from the programme (Configuration, Curve, Record).

Once the type is entered, it will ask for the inputs it will use, in the programmes that need it.

P05	» » » » » » » » » » » » » » » »	Type= 01
Inputs= 00 00 00 (sensors)		

P05	» » » » » » » » » » » » » » » »	Type= 06
Inputs= 00 (of impulses)		

In the inputs of sensors, these can go from one to three for the same programme (except type 9). If there are more than one, the equipment takes the average.

In the question of "Inputs", if you do not enter the sensor number, it will not let you go on to the following question.

All the programmes have an outlet, either by relay or analogical.

P05	» » » » » » » » » » » » » » » »	Type= 01
Outlet number= 23 (relay)		Aux.= 20

P05	.....	Type= 07
Open outlet number= 11 close= 12		

P05	.....	Type= 01
Outlet number= 04 (relay)		

P05	.....	Type= 02
Outlet number= 01 (analogical)		

In some types, it asks for the auxiliary outlet. If there are other programmes that use it, its mission is to activate itself whenever it is, at least, in a programme.

Example for auxiliary outlet: in a control of humidification or heating of several premises, the normal outlet acts on the valve of premise and the auxiliary one on the engine; so, if the valve of one or several premises is activated, the compressor or engine (aux.) will be activated, as well, to make the water circulate.

To the question "number of outlet" we can also answer with 00; in this way the programme does not act externally, but it can condition other programmes.

The outlets of "open" and "close" are for the types 7-8 which work on windows.

The outlets of relay number 15 and 16 will not be used, as they are for the general alarm.

In some programmes it will ask for "action of outlet (1) (2)" which allows the same type to act in two different ways, as for example, heating/refrigeration.

P05	.....	Type= 02
Action of outlet (1) (2) = 1		

Any programme can be conditioned when it is working or stopped by two other programmes or digital inputs, and they have got a priority effect on the outlet.

The conditioning of stop has priority to the one of start.

To differentiate that the conditioning is a digital input, we will add to its number a 50.

P05	.....	Type= 01
Conditioning programmes Start= 20 00		

P05	.....	Type= 01
Conditioning programmes Stop= 53 00		

In the programmes with proportional outlet (0-100%) only a programme is conditioned and it has an increasing or decreasing effect on the value of outlet.

If a programme has a minimum or maximum value of outlet, when conditioned the tops may be broken.

P05	.....	Type= 01
Conditioning programmes Working= 03 (+018%)		

P05	.....	Type= 00
Conditioning programmes Stop= 00 (-000%)		

The following question is for the "Curve" of every programme: configure it to work in hours or in days.

The timetable programmes types 5 and 6 only work with days.

P05	.....	Type= 02
Curve position in hours(0), days(1)= 1		

Any programme that has sensors in the inputs, can store a record in memory. But there is a limitation, as there is only room for 14 records in the model 501 (32 in the model 502) so if there is any record left that has not been given to a programme, it will ask the following question:

P05	.....	Type= 02
Store record (Yes/No)= No		

If we answer yes, the equipment can store it with different details:

P05	.....	Type= 02
Record every ½hour:1, 2h:2, 6h:3 = 0		

Depending on the period of record entered, the equipment takes the average of all the readings from the two hours of the example, and stores the average of the value of input and reference.

The capacity of every record is of 2.5 days for the period of 1/2 hour, ten days for 2 hours and 30 days for 6 hours.

When these days are full, the equipment will erase the data of the oldest day to enter the data from the new one.

The record is always printed.

The keys with the up and down arrows help you to move from one question to another. To escape press "FUN" or "CON".

### 3.5. DETAILED DESCRIPTION OF TYPES

#### TYPE 1

The programmes with type 1 activate the outlet when the input value is the same or higher than the value of reference, and deactivate it when it is the same as the value of reference plus or minus the differential.

By configuring the "action of outlet (1)", the differential is deducted from the reference, to work as cooler, drier, etc. In this action the value of high alarm is added to the reference and the low alarm is deducted from the reference minus the differential.

Using the "action of outlet (2)", the differential is added to the reference, and works as heater, humidifier, etc. In this action the value of high alarm is added to the

reference plus the differential, and the low alarm is deducted from the reference.

The inputs can read from one to three analogical sensors, taking their average. In PROGRAMMES you can read the value of every one of them and in CONSULT the average.

The outlet is by relay, plus an auxiliary outlet.

This type of programme can be conditioned by two programmes in the starting and two in the stop.

The curve will move, if it is active, to modify automatically the value of reference.

CONSULT

P01 THERMOSTAT-01	E 00.0	S stop
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PROGRAMME

P01 THERMOSTAT-01	T01 Pro.activated=Yes
E 18.3 18.7 °C	S stop
C0	Reference= 00.0 Diffe.= 00.0
High alarm(+)= 00.0	low(-)= 02.0
Erase/start record	(Yes/No)= No

CURVE

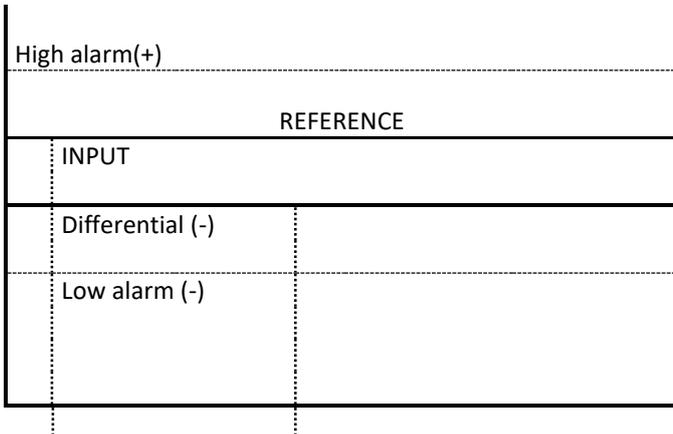
P01 THERMOSTAT-01	T01				
Points:	-1-	-2-	-3-	-4-	-5-
Posit.=	000	000	000	000	000 days
Refer.=	00.0	00.0	00.0	00.0	00.0 °C
Diffe.=	00.0	00.0	00.0	00.0	00.0 °C

CONFIGURATION

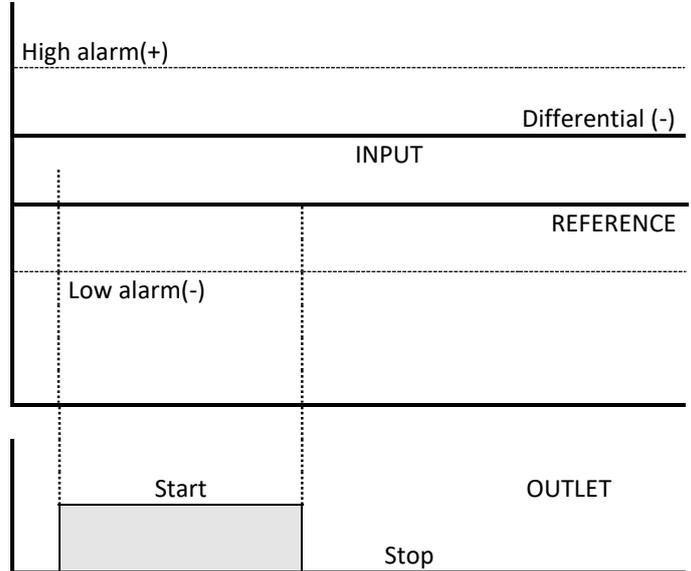
P01 THERMOSTAT-01	T01
Inputs= 02 05 00	(sensors)
Outlet number= 01	(relay) Aux.= 00
Action of outlet (1) (2) =	2
Condit. programmes	Start= 00 00
Condit. programmes	Stop= 00 00
Curve position in hours(0), days(1)=	0
Store record(Yes/No)=	Yes
Record every 1/2hour:1, 2h:2, 6h:3 =	1

GRAPHICS

Action of outlet 1



Action of outlet 2



TYPE 2

The programmes with type 2, work changing the value of analogical outlet (0-10 V) proportionally to the changes the sensors register.

Some maximum and minimum top values of outlets can be prefixed, which are related to the reference, which is the point where the outlet starts to increase from the minimum, reaching the maximum when the value of input is the same as the value of reference plus or minus the value of proportional band.

By configuring the "action of outlet (1)", the proportional band is deducted from the reference, to work as heater, etc. In this action the value of high alarm is added to the reference and the low alarm is deducted from the reference minus the proportional band.

Using the "action of outlet (2)", the proportional band is added to the reference, and works as ventilation, refrigeration, drier, etc. In this action the value of high alarm is added to the reference plus the proportional band, and the low alarm is deducted from the reference.

The inputs can read from one to three analogical sensors, taking their average. In PROGRAMMES you can read the value of every one of them and in CONSULT the average.

The outlet of 0-10 V. can be connected to variable gear of tension/frequency, powered valves, etc.

The value of "Tim" will be given so that the changes in the outlets are faster or slower.

This type of programme can be conditioned by a programme in the starting and another one in the stop: on conditioning, a value is added or deducted to the output.

The curve will move, if it is active, to modify automatically the value of reference.

CONSULT

P11 VENTILATION	E 23.0 °C	S 042 %
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PROGRAMME

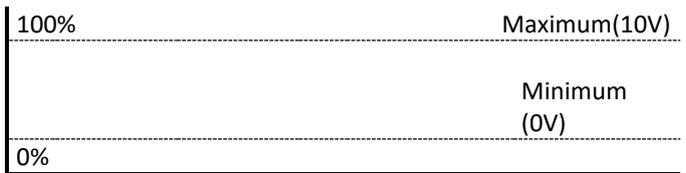
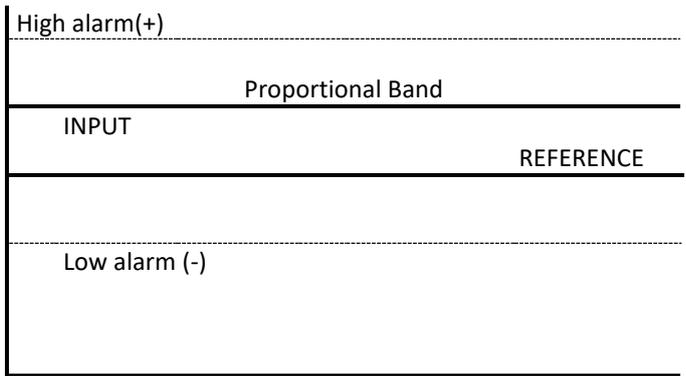
P11 VENTILATION	T02 Pro.activated=Yes
E 22.8 23.3 °C	S 042 %
C1-pos018d	Reference= 21.0 Band= 03.8
C1	Max= 094 Min= 12 ;Tim=003
High alarm(+)= 04.0 low(-)= 00.0	
Erase/Start record	(Yes/No)= No

CURVE

P01 VENTILATION	T02				
Points:	-1-	-2-	-3-	-4-	-5-
Posit.=	000	008	018	026	000 days
Refer.=	25.0	23.4	21.0	19.8	00.0 °C
Band=	02.5	03.1	03.8	04.1	00.0 °C
Maxim=	075	088	094	100	000 %
Minim=	08	12	12	14	00 %

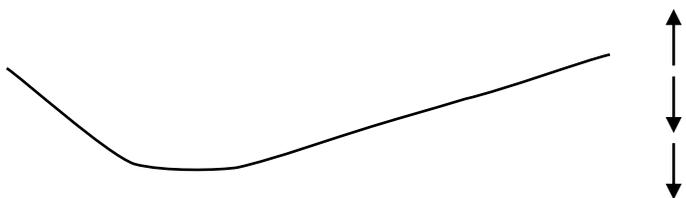
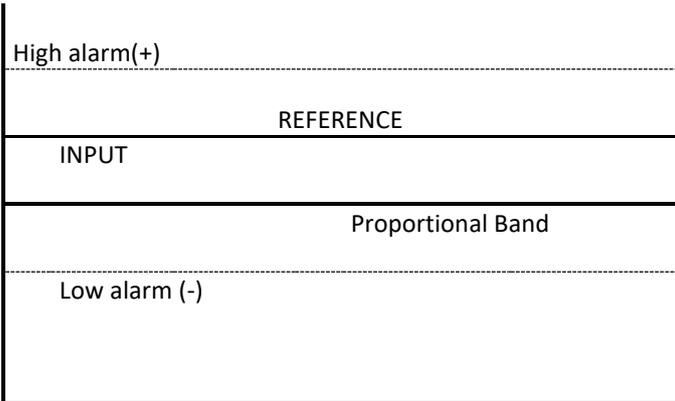
CONFIGURATION

P10 VENTILATION	T02
Inputs= 02 05 00	(sensors)
Outlet number= 01	(analogical)
Action of input	(1) (2) = 2
Condit. Programmes	Start= 00 (+000%)
Condit. Programmes	Stop= 00 (-000%)
Curve position in hours (0), days(1)=	1
Store record (Yes/No)=	Yes
Registro cada 1/2hora:1, 2h:2, 6h:3 =	1

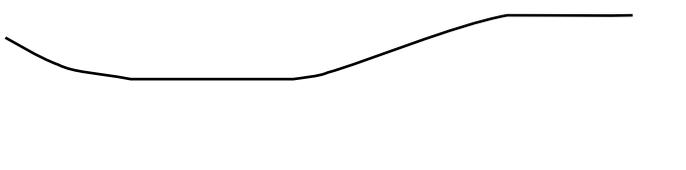


GRAPHICS

Action of outlet 1



Action of outlet 2



**TYPE 3**

The programmes with type 3, work changing the time of activation of the relay of outlet, proportionally to the changes the sensors register.

Maximum and minimum top values of outlet can be prefixed, which are related to the reference which is the point in which the outlet starts to increase from the minimum one, reaching the maximum one when the value of input is the same as the reference value plus or minus the proportional band.

By configuring the "action of outlet (1)", the proportional band is deducted of the reference, so that it works as heater, etc. In this action the value of high alarm is added to the reference and the low alarm is deducted from the reference minus the proportional band.

Using the "action of outlet (2)", the proportional band is added to the reference, and works as ventilation, refrigeration, drier, etc. In this action the value of high alarm is added to the reference plus the proportional band, and the low alarm is deducted from the reference.

The value of time, called "cycle of modulation", corresponds to the 100% of the time of activation of outlet. If the value of proportion decreases, the outlet will be activated for as long as it corresponds from the percentage of the cycle of modulation and the rest of the proportion will be deactivated. This will be repeated once the time of the cycle of modulation is finished.

The inputs can read from one to three analogical sensors, taking their average. In PROGRAMMES you can read the value of every one of them and in CONSULT the average.

This type of programme can be conditioned by a programme in the starting and another in the stop: on conditioning, a value is added or deducted to the output.

The curve will move, if it is active, to modify automatically the value of reference.

**CONSULT**

P12 HUMIDIFY	E 63.3 %HR	S 028%
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**PROGRAMME**

P12 HUMIDIFY	T03 Pro.activated=Yes
E 63.6 %HR	S 028 %
C0	Reference= 66.4 Band= 08.0
C0	Max= 080 Min= 00
Cycle of modulation (sec.)= 120	
High alarm(+)= 20.0 low(-)= 10.0	
Erase/Start record	(Sí/No)= No

**CURVE**

P01 HUMIDIFY	T03
Points: -1- -2- -3- -4- -5-	

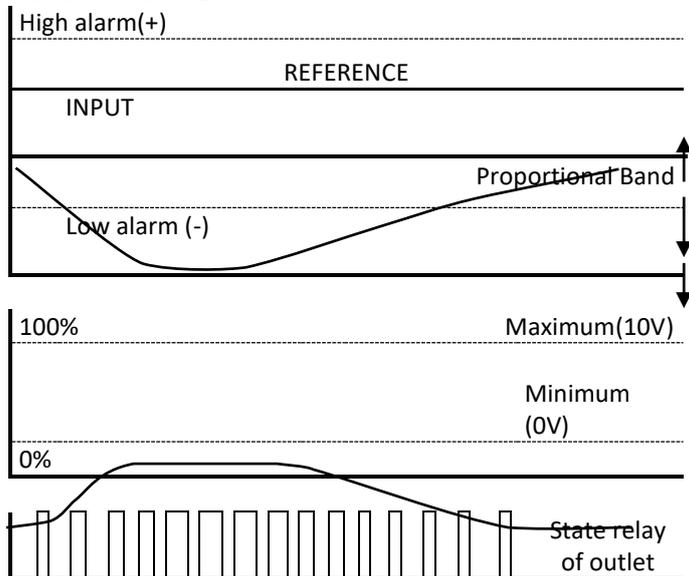
Posic.=	000	000	000	000	000 días
Refer.=	00.0	00.0	00.0	00.0	00.0%HR
Band=	00.0	00.0	00.0	00.0	00.0%HR
Max=	000	000	000	000	%
Min=	00	00	00	00	%

**CONFIGURATION**

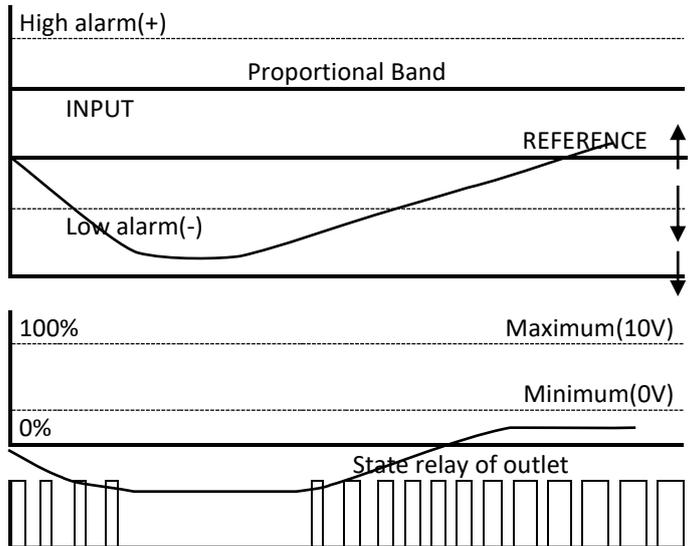
P10 HUMIDIFY	T03
Inputs=	08 00 00 (sensors)
Outlet number=	02 (relay)
Action of outlet	(1) (2) = 1
Condit. Programmes	Start= 00 (+000%)
Condit. Programmes	Stop= 00 (-000%)
Curve position in hours(0), days(1)= 1	
Store record (Yes/No)= Yes	
Record every 1/2hour:1, 2h:2, 6h:3 = 1	

**GRAPHICS**

Action of outlet 1



Action of outlet 2



**TYPE 4**

The programmes with type 4, activate the outlet whenever the value of inputs is within margins in one case, or out of margins in another case.

By configuring the "action of outlet (1)", the differential is added to the reference, to act in the margins.

If the value of input is the same or higher than the reference, and it is the same or lower than the reference plus the differential, the outlet is activated.

With the "action of outlet (2)", the differential is added to the reference, and it works out of margins. It will activate the outlet when the value of input is the same or inferior to the reference, or it is the same or superior to the reference plus the differential.

The inputs can read from one to three analogical sensors, taking their average. In PROGRAMMES you can read the value of every one of them and in CONSULT the average.

The outlet is by relay, plus an auxiliary outlet.

This type of programme can be conditioned by two programmes in the starting and two in the stop.

The curve will move, if it is active, to modify automatically the value of reference.

CONSULT

P15 WIND DIRECTION	E 176 °	S start
--------------------	---------	---------

PROGRAMME

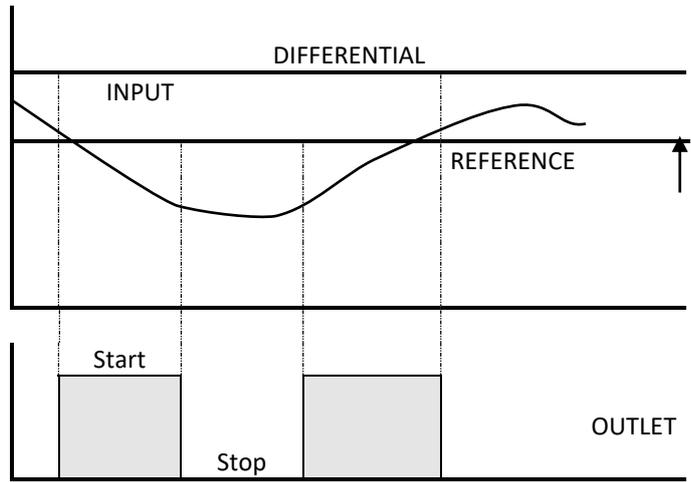
P15 WIND DIRECTION	T04 Pro.activated=Yes
E 176 °	S start
C0	Reference= 045 Diffe.= 135
Erase/Start record	(Yes/No)= No

CURVE

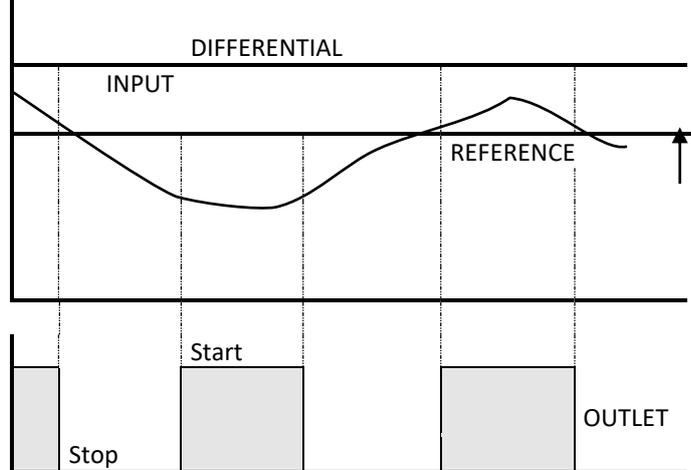
P15 WIND DIRECTION	T04				
Points=	-1-	-2-	-3-	-4-	-5-
Posit.=	000	000	000	000	000 days
Refer.=	000	000	000	000	000 °
Diffe.=	000	000	000	000	000 °

CONFIGURATION

P15 WIND DIRECTION	T04
Inputs= 18 00 00	(sensors)
Outlet number= 00	(relay) Aux.= 00
Action of outlet	(1) (2) = 1
Condit. programmes	Start= 00 00
Condit. Programmes	Stop= 00 00
Curve position in hours(0), days(1)=	1
Store record (Yes/No)=	Yes
Record every1/2hour:1, 2h:2, 6h:3 =	1



Action of outlet 2



GRAPHICS

Action of outlet 1

**TYPE 5**

The programmes with type 5 work according to a timetable, starting the activation at the hour, minute and day of the week programmed in the value of starting, finishing when the time of activation is finished.

This can be configured to work in hours and minutes or minutes and seconds (we can differentiate them because in hours and minutes, the values are separated by two points, and in minutes and seconds by one point).

It can be programmed to make a number of activations separated by a determined time which we will call value of frequency. When the programmed hour is reached, the corresponding outlet and the auxiliary one are activated.

The value that is left to discount, is shown in the value of input.

If the programme works by curve, the hour of starting and the time of activation can be changed. The value of position of the curve will be always in days.

When we enter a timetable programme and there is still value left to discount from another one, both values will be added.

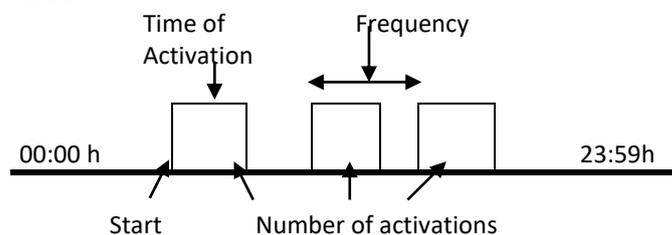
If the programme is conditioned in stop by another one, the outlet is deactivated, but only if the conditioning programme of stop is placed second of the two possible programmes of configuration, it also stops discounting time. The conditioner of starting will activate as if it was by timing, but only if it is stopped.

In the case of a power cut, it can be configured so that it discounts the time of the power cut as well, adding "10" to the value of configuration of "times in (hh:mm), (mm.ss)".

Using the MANUAL function the programme of time can be started, or stopped (finish it).

**CONFIGURATION**

P19 WATER-AREA-1 , , ,	T05
Times in (hh:mm):0,	(mm.ss):1 = 01
Outlet number= 23	(relay) Aux.= 29
Condit. programmes	Start= 00 00
Condit. Programmes	Stop = 00 (53)

**GRAPHIC****CONSULT**

P19 WATER-AREA-1 , , ,	00:08-002	S stop
------------------------	-----------	--------

**PROGRAMME**

P19 WATER-AREA-1 , , ,	T05	Pro.activated=Yes
E 00:08-000		S stop
C0	Start= 07:15	T.act.= 01:12
Number activations=	028	Frequency= 00:30
Days of the week=	, , , , ,	

**CURVE**

P19 WATER-AREA-1 , , ,					T05
Points=	-1-	-2-	-3-	-4-	-5-
Posit.=	000	000	000	000	000 días
Refer.=	00:00	00:00	00:00	00:00	00:00
Diffe.=	00:00	00:00	00:00	00:00	00:00

**TYPE 6**

The programmes with type 6 are started by a timetable starting in which we can also choose the day or days of the week to work and apply a prefixed dose of units (water, chemical products, feed, etc.)

When the prefixed time is reached the outlet is activated (as well as the auxiliary one), it takes the programmed value in the datum "units" and by means of an input of counting connected to a counter of volume, weight, etc, it discounts from this one the units that it applies until it reaches the 0, in this moment the outlet is closed.

If the programme works by curve, both the starting time and the counting units can be changed. The value of position of the curve will always be in days.

When we enter a timetable programme and there is still value left to discount from another one, both values will be added.

To cancel the units that are discounting, it is necessary to activate and deactivate the programme with the function MANUAL.

**CONSULT**

P18 FEEDING , ,	E 0037 Uds	S start
-----------------	------------	---------

**PROGRAMME**

P18 FEEDING , ,	T06 Pro.activated=Yes
E 0037 Uds	S start
C0	Start= 08:15 Units=0388
Days of the week=	, , , , ,

**CURVE**

P18 FEEDING , ,	T06				
Points=	-1-	-2-	-3-	-4-	-5-
Posit.=	000	000	000	000	000 days
Refer.=	00:00	00:00	00:00	00:00	00:00
Diffe.=	0000	0000	0000	0000	0000Uds

**CONFIGURATION**

P18 FEEDING , ,	T06
Inputs=	03 (of impulses)
Outlet number=	05 (relay) Aux.= 00
Condit. Programmes	Start= 00 00
Condit. Programmes	Stop = 00 00

**TYPE 7**

The programmes with type 7, act specifically to work windows or hatches so that the value of inputs is kept within the programmed margins.

For this reason, the user gives the equipment values of reference, differential, and timings, with which we can obtain intermittent opening and closing movements so that the value of input has time to react, in relation to the movement of the windows.

When the value of inputs is the same or lower than the reference, the timings to close will start, and when the value is the same or higher than the reference plus the differential, the opening ones will start.

The value of the timings is in seconds. The first one to enter is the pause to open or close.

In this type, the value of high alarm is added to the reference plus the differential, and the low alarm is deducted from the reference.

The inputs can read from one to three analogical sensors, taking their average. In PROGRAMMES you can read the value of every one of them and in CONSULT the average.

The outlet is by two relays, one to open, and the other one to close.

This type of programme can be conditioned by two programmes in the starting and two in the stop.

The curve will move, if it is active, to modify automatically the value of reference.

**CONSULT**

P16 WINDOWS NORTH	E 18.1 °C	S stop
-------------------	-----------	--------

**PROGRAMME**

P16 WINDOWS NORTH	T07 Pro.activated=Yes
E 18.0 18.3	S stop
C0	Reference= 19.2 Diffe.= 16.5
	Timing open, P= 060 M= 08
	Timing close, P= 045 M= 12
High alarm(+)=	00.0 low(-)= 00.0
Erase/Start record	(Yes/No)= No

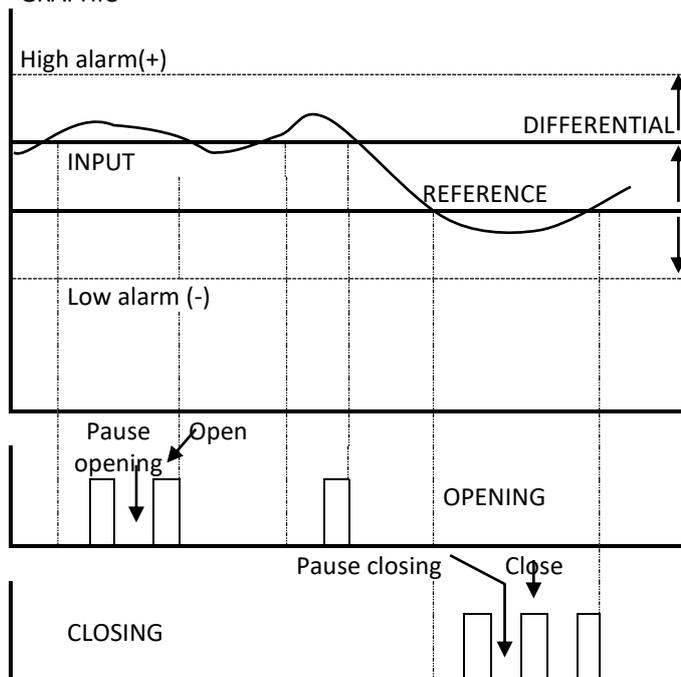
**CURVE**

P16 WINDOWS NORTH	T07				
Points:	-1-	-2-	-3-	-4-	-5-
Posit.=	000	000	000	000	000 days
Refer.=	000	000	000	000	000 °
Diffe.=	000	000	000	000	000 °

## CONFIGURATION

P16 WINDOWS NORTH	T07
Inputs= 01 02 00	(sensors)
Outlet number open= 14	close= 15
Condit. Programmes open= 00 00	
Condit. Programmes close= 15 00	
Curve position in hours(0), days(1)= 1	
Store Record (Yes/No)= Yes	
Record every 1/2hour:1, 2h:2, 6h:3 = 1	

## GRAPHIC



## TYPE 8

The programmes with type 8 act specially to work windows and hatches "with retromessage", to maintain the values of inputs within the margins of the references.

For this reason, the user gives the equipment a value of reference and another one of proportional band and by means of a input of retromessage to which a sensor of position is connected, we can obtain that the position of the window is directly related to the proportion fixed by the value of inputs ( normally temperature).

By configuring "the action of outlet (1)", the proportional band is deducted from the reference: it will open when the value of input decreases and close when it increases. In this action, the value of high alarm is added to the reference and the low alarm is deducted from the reference minus the proportional band.

With the "action of outlet (2)", the proportional band is added to the reference: it will open when the value of input increases and close when it decreases. In this action, the value of high alarm is added to the reference plus the proportional band and the low alarm is deducted from the reference.

The values of "Max and Min" give opening and closing tops: the 0% corresponds to totally closed and the 100% to totally open.

The value of "Tim" (timing) is used so that the answers to the changes of value of inputs are slow or fast. The timing value is in seconds.

The inputs can read from one to three analogical sensors, taking their average. In PROGRAMMES you can read the value of every one of them and in CONSULT the average.

The outlet is by two relays, one to open and another one to close.

This type of programme can be conditioned by a programme in the starting and another one in the stop, on conditioning, it will increase or decrease the opening.

The curve will move, if it is active, to modify automatically the value of reference.

## CONSULT

P17 WINDOWS SOUTH	E 31.1 °C	S 100 %
-------------------	-----------	---------

## PROGRAMME

P17 WINDOWS SOUTH	T08	Pro.activated=Yes
E 31.1 °C		S 100 %
CO	Reference= 28.0	Band= 04.0
CO	Max= 100	Min= 05 ;Tim=010
High alarm(+)= 05.0	low(-)= 08.0	
Erase/Start record		(Yes/No)= No

## CURVE

P17 WINDOWS SOUTH	T08
-------------------	-----

Points:	-1-	-2-	-3-	-4-	-5-
Posit.=	003	010	018	025	032 días
Refer.=	24.5	26.0	27.0	27.5	28.0 °C
Band=	04.0	04.0	04.5	04.8	05.0 °C
Max=	100	100	100	100	100 %
Min=	05	08	12	16	18 %

## CONFIGURATION

P17 WINDOWS SOUTH	T08
Inputs=	01 02 00 (sensors)
Outlet number open=	16 Close= 17
Action of outlet	(1) (2) = 2
Retromessage input=	00 (00:null)
Condit. Programmes	Start= 00 (+000%)
Condit. Programmes	Stop = 00 (-000%)
Curve position in hours(0), days(1)=	1
Store record(Yes/No)=	Yes
Record every 1/2hour:1, 2h:2, 6h:3 =	1

## TYPE 9

The programmes with type 9, relate the values of two analogical sensors to work the outlet when there is a positive and/or negative difference between them. It can be configured so that the difference is only valid when A is superior to B, (the sign "-" is shown between both values) or in any other case (the sign "/" is shown between the two values).

The "action of outlet" works in the same way as type 1.

This type of programme can be conditioned by two programmes in the starting and two in the stop.

The curve will move, if it is active, to modify automatically the value of reference.

In "consult", the value of input is the difference and in "programme" you can see the value of the two sensors.

In the example, we compare the temperature from the inside and the outside of a premise. When the temperature from the inside is superior to the exterior one, it activates the outlet to connect, for example, a forced ventilation.

## CONSULT

P22 INS.-OUTS.TEMPE	E 08.2 °C	S start
---------------------	-----------	---------

## PROGRAMME

P22 INS.-OUTS.TEMPE	T09 Pro.activated=Yes
E 28.6 (-) 20.4 °C	S start
C0	Ref(e1-e2)= 06.5 Diffe.= 00.8
High alarm(+)= 00.0 low(-)= 00.0	
Erase/Start record	(Yes/No)= No

## CURVE

P22 INS.-OUTS.TEMPE	T09
Points:	-1- -2- -3- -4- -5-
Posit.=	000 000 000 000 000 days
Refer.=	00.0 00.0 00.0 00.0 00.0 °C
Diffe.=	00.0 00.0 00.0 00.0 00.0 °C

## CONFIGURATION

P22 INS.-OUTS.TEMPE	T09
Input A= 01 (/)	Input B= 02
List of inputs	(A-B):0 (A/B):1= 1
Outlet number= 09	(relay) Aux.= 00
Outlet action	(1) (2) = 1
Condit. programmes	Start= 00 00
Condit. Programmes	Stop = 00 00
Curve position in hours(0), days(1)=	1
Store record (Yes/No)=	Yes
Record every 1/2hour:1, 2h:2, 6h:3 =	1

## 4. USE

### 4.1. PROGRAMMES

To access to every one of the programmes, press "FUN" key, and choose option 1, other screen will ask for the programme number.

```
FUN:Programmes=1  Curves  =2  Readings  =3
Configuration    =4  Manual  =5  Printer   =6
```

```
P00      (enter programme number)
```

```
P17 PREMISE1 , , , , , , , T01 Pro.activated= Yes
E 23.8 23.2 °C                S start
```

Once we have entered the number, it shows the previous screen, with the cursor placed to the right of the number.

From this point, with the keys marked with the up and down arrows, we move to other programmes. If we enter a number again, it will go back to the previous screen to ask for it.

If you press "ENTER" or arrow towards right, it will ask whether you want the programme active or not.

If you enter No, it deactivates the outlet indefinitely, until it is activated.

This first line with the number, text, type and whether it is activated, will remain the same and only the texts from the second line will change.

If the programme is not configured, the following screen is shown.

```
P33
* Non configured programme *
```

The first data shown on the second line are the values of the inputs and the state of the outlets.

An important detail is that these values can not be modified by the user and they can only be updated if the cursor is placed at the end of this line.

```
P17 PREMISE1 , , , , , , , T01 Pro.activated=Yes
E 23.8 23.2 °C                S start
```

The values of the inputs can be very different depending on the type of programme:

There can be from one to three sensors, and they correspond to the numbers given in CONFIGURATION.

We have to take into account that, if there is more than one, it takes the average as value.

```
E 12.6 m/s
```

```
E 78.5 72.9 %HR
```

```
E 18.3 17.9 18.2 °C
```

In a programme of the Type 6, it will show the units that are left to be discounted from the input of counting.

```
E 0094 Uds
```

In a Type 5, the value of input will be the time that is left to finish the activation and the number of activations that are left.

```
E 01:08-002
```

In a Type 9, it shows the values of the two sensors whose difference is given as value of input.

```
E 26.7 (-)20.1 °C
```

In this same line of the programme that we are commenting, the state of outlet is placed on the right side.

```
E 23.8 23.2 °C                S start
```

The different texts or values that can be shown for the state of the outlet are:

S ---	Programme deactivated.
S start	Outlet activated.
S stop	Outlet stopped.
S open	Opening windows.
S close	Closing windows.
S paus.o	Pause to open.
S paus.c	Pause to close.
S 084 %	Value of proportional outlet.
S pause	Pause between activations.
S MANUAL	Manual activation of outlet.
S ALARM	Programme at alarm.

Which can also vary depending on the type and state of the conditioners:

S start	>P28	Condit. Outlet per programme
S 024 %	>P31	Condit. Analogical outlet
S stop	>E53	Condit. Outlet by input

Or that the value of a proportional outlet has reached the prefixed tops of maximum or minimum, this is indicated with up or down arrows placed before the value of outlet:

```
S^090%
```

Value of proportional outlet.

The values of this line and the next one are maybe the most important data for the user, as one of them shows the state of input and outlet, and the other one the values

of reference that make the programme work. The "reference" is the value at which the process has to stabilise.

To go to the next line, press the enter key or down arrow and it will show different values in the second line, the first one remaining fixed with the number of programme. To go back to the previous values press the up arrow key.

```
P17 PREMISE1 , , , , , , Txx Pro.activated=Yes
E 31.1 °C                      S 100 %
C0                               Reference= 19.3 Diffe.= 02.0
```

On the left side it shows the "C" of curve, which goes with a 0 or a 1.

With a "0", the curve is deactivated and the reference is entered by the user, which will remain fixed until it is changed.

With a "1", the curve is activated and it will be updated periodically. It will not do so if the programme is not active.

```
P17 PREMISE1 , , , , , , Txx Pro.activated= Yes
C1-pos012d Reference= 18.5 Diffe.= 02.5
```

With the curve at 1, a text appears to the right which tells us the position inside the curve, which can be in days or in hours, depending on how it has been configured.

In days, the value of reference is updated every hour, and in hours it is updated every minute. The change of hour or day takes place at 00 hours at night.

A power cut shorter than 24 hours updates the position of the curve.

When the user activates the curve or modifies the position, the following message is shown:

```
P17 PREMISE1 , , , , , , Txx Pro.activated=Yes
C1-pos010d (-updating references-)
```

And, after about two seconds, it will show the new value of reference, with the cursor placed at the right side of the screen. From here, pressing the arrow towards the left, the values of curve or position can be modified again.

The value of position of the curve can be modified whenever it is necessary.

Working by curve, the value of reference can not be modified directly.

In some types of working, the curve can be activated for four different values as, for example, those which have proportional outlet:

In this example only the curve in the first line is activated.

```
P17 PREMISE1, , , , , , Txx Pro.activated=Yes
C1-pos019d Reference= 21.7 Band= 03.1
C0                               Max= 100 Min= 05
```

In this one, only the second one.

```
P17 PREMISE1 , , , , , , Txx Pro.activated=Yes
C0                               Reference= 21.0 Band= 03.0
C1-pos019h Max= 093 Min= 12
```

And now in both of them. Take into account that the question of position is only done in the first line, and that, when we modify it, the four values are updated.

```
P17 PREMISE1 , , , , , , Txx Pro.activated=Yes
C1-pos019d Reference= 21.7 Diffe.= 03.1
C1                               Max= 093 Min= 12
```

In all the programmes that do not belong to types of working 4-5-6, the values of alarm will be asked, and if the value of sensor was higher, it would activate the general alarm of the equipment.

```
P17 PREMISE1 , , , , , , Txx Pro.activated=Yes
E 31.1 °C                      S 100 %
C0                               Reference= 19.3 Diffe.= 02.0
C0                               Max= 100 Min= 05 ;Tim=010
High alarm(+)= 05.0 low(-)= 08.0
Erase/Start record (Yes/No)= No
```

```
P17 PREMISE1 , , , , , , Txx Pro.activated=Yes
High alarm(+)= 02.8 low(-)= 03.0
```

We have to take into account that the value of high alarm is added to the reference in the "action of outlet (1)" and to the reference plus the differential or proportional band in the "action of outlet (2)". And the value of low alarm, is deducted, in the first case, from the reference minus the differential or proportional, and in the second case it is deducted from the reference.

If the values of reference, differential or proportional band evolve by curve, the alarms will also do so, because these ones are added or deducted from them.

So that one or two alarms do not work, just give the value 00.0.

In the timetable programmes Types 5 and 6, it will ask for the days of the week on which the programme has to work to include them or not.

Every numeric key is marked with the initial of the day. Pressing the corresponding key it will work that day, if you press again, it will stop working.

There is a key "daily" which does the same, but with all the days of the week at the same time.

```
P17 PREMISE1 , , , , , , Txx Pro.activated=Yes
Days of the week= SMTWTFS
```

If the programme has been configured to store the record of the input and reference, it will show a line with the following question:

```
P17 PREMISE 1 , , , , , , , Txx Pro.activated=Yes
Erase/start record (Yes/No)= No
```

If you answer yes, all the data stored in that programme will be set at 0.

Using the keys with arrows, you can move towards any direction in the different lines of data.

For more details about the programmes, consult, in this Manual, the detailed description of every Type.

### 4.2. CURVES

The curves of every programme are important features that the programme has and that can be very useful in applications such as the automatic increase and/or decrease of temperature, the automatic modification of the time of lighting, progressive increase of minimum ventilation, etc.

To enter the curves of every one of the programmes, press the key "FUN" and choose option 2, and it will ask for the number of programme.

```
FUN:Programmes=1 Curves=2 Readings=3
Configuration=4 Manual=5 Printer=6
```

```
P00 (enter number of programme for
Curves).
```

When entering the number, the following screen is shown, showing the text of programme and type. The cursor is placed to the right of the number of programme. From this point, with the arrows, we can move to the curve of another programme and with the key "ENTER" or arrow towards the right, to the data of the curve.

If a programme has no curve or it is not configured, this will be shown in the second line.

```
P22 HEATING-2 T01
Points: -1- -2- -3- -4- -5-
```

In the data of the curves, different lines of questions can appear, depending on the type of working of the programme.

To move along the values of every line, use the arrows towards the left, right or ENTER.

To move among the different lines use the up and down keys. To end press "FUN" or "CON".

All the curves have five points in order to be made, every point has a value of situation in the time, hours or days, depending on how it has been configured, and some values of reference according to the type of working.

The curves can be compared with patterns which are used by the programmes in order to do a variable and automatic control.

Here we can see a simple example.

P22 HEATING-2	T01				
Points:	-1-	-2-	-3-	-4-	-5-
Posit. =	003	008	020	032	045 days
Refer. =	29.8	27.5	25.0	21.6	20.0 °C
Diffe. =	01.5	02.0	02.0	02.5	02.5 °C

This curve would follow the temperature as the animal grows, for example.

Every point corresponds to days of growth and the reference of temperature will change in the values that correspond within these points.

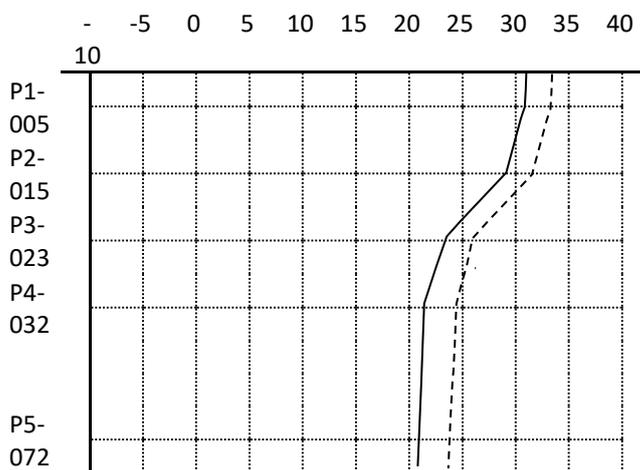
The maximum value of "position" is 250 days or hours.

We have to say that if point 1 does not correspond to 0 days, the value of reference that the programme will take, will be fix, until reaching the position of point 1; in the example, the first three days, the reference will be 29.8 °C.

The same happens from the fifth point; in the example after 45 days the value will stay at 20.0°C.

The values of the curves can be printed graphically.

```
CURVE P01 VENTILATION-1
21/02/00 (—)Reference (---)Prop. Band
Divisions time Axis of 1 hour Value in Uds of Temperature (°C)
```



### 4.3. READINGS

To access to the readings, press the key "FUN" and choose option 3.

```
FUN:Programmes=1 Curves=2 Readings=3
Configuration=4 Manual=5 Printer=6
```



CURVE

P16 WINDOWS NORTH					T07
Points:	-1-	-2-	-3-	-4-	-5-
Posit. =	000	004	018	030	045 days
Refer. =	28.5	27.0	25.2	23.8	21.0 °
Diffe. =	02.0	02.5	03.0	03.5	03.5 °

CONFIGURATION

P16 WINDOWS NORTH					T07
Inputs =	01 02 00				(sensors)
Outlet number open =	14	Close =	15		
Condit. Programmes	Open =		00 00		
Condit. Programmes	Close =		00 00		
Curve position in hours(0), days(1) =	1				
Store record (Yes/No) =	Yes				
Record every 1/2hour:1, 2h:2, 6h:3 =	2				

In "CONSULT", it will print all the data of the screens of consult.

Example:

```

Wed.10:25.07 29/07/92      *ALARM*
Record of anomalies: 06
P01 HEATING-01 E 18.0 °C S stop
P02 HEATING-02 E 18.3 °C S stop
P03 HEATING-03 E 17.7 °C S start
P04 VENTILATION-01 E 18.0 °C S 010 %
P05 VENTILATION-02 E 18.3 °C S 012 %
P06 VENTILATION-03 E 17.7 °C S 010 %
P07 HUMIDIFICATOR1 E 72.0 %HR S start
P08 HUMIDIFICATOR2 E 78.6 %HR S stop
P09 HUMIDIFICATOR3 E 75.3 %HR S stop
P10 WATER E 00.34-005 S start
P11 LIGHTNING E 00:00-000 S stop
    
```

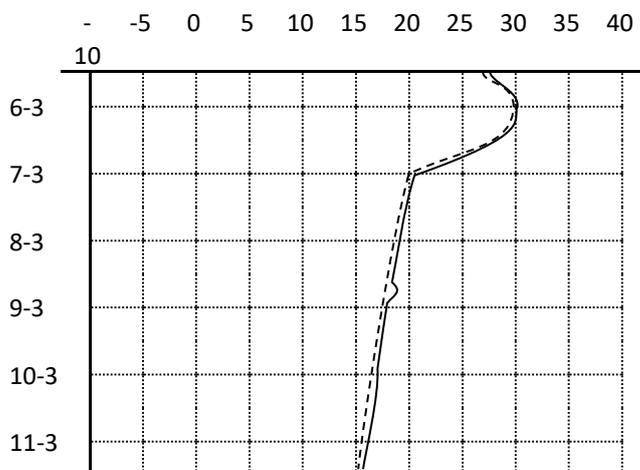
The "record" prints the values of the sensors and references graphically; the same occurs with "curve".

While the record or curve is being printed, it shows a screen where it indicates the number of programme, the text, the number of record that is being printed an a note that says that if you want to end the printing you must press the key "NO" for two seconds.

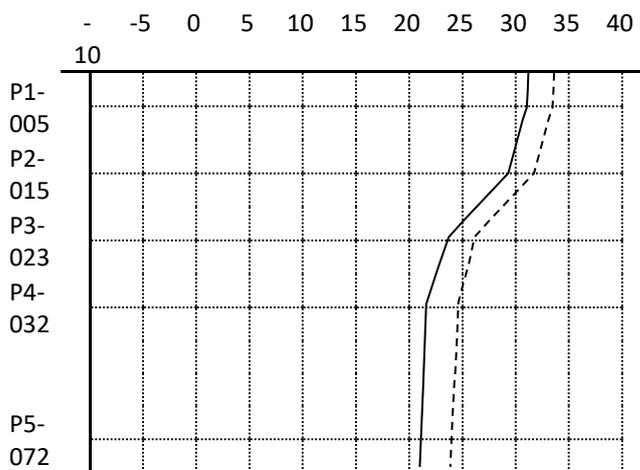
P14 HUMIDIFICATOR	T07
183	Key "NO" (2 sec.) stops

Examples of "record" and "curve"

RECORD P03 HEATING  
 11/03/00 (—)Real Value (----)Reference  
 Divisions time Axis of 3 hour Value in Uds of Temperature (°C)



CURVA P01 VENTILACION-1  
 21/02/00 (—)Reference (----)Prop. Band  
 Divisions Time Axis of 1 hour Value in Uds of Temperature (°C)



4.5. MANUAL

To access to the function "MANUAL", press the key "FUN" and choose option 5.

FUN:Programmes=1	Curves=2	Readings=3
Configuration=4	Manual=5	Printer=6

P00	(enter number of programme For manual)
-----	---

Once the number of programme has been entered, it will ask whether you want the programme at manual function, answer YES or NO.

If you answer yes, it will ask for the value of outlet of the programme, depending on the "type" of working.

P11 HUMIDIFICATOR Manual (Yes/No)=Yes
Value = 1 (0:Stop,1:Start)
Value = 2 (0:Stop,1:Open,2:Close)
Value = 024 (from 0 to 100 %)

We have to take into account that while it is at MANUAL, the alarm will not work for this programme.

In the types of working "5" and "6", when we start MANUAL, the programme will start, and if there was a manual stop, the values of application would be cancelled.

Both at CONSULT and PROGRAMMES, it will be noticed that the programme is at manual function.

#### 4.6. CONSULT

The option of CONSULT is used to examine, in a simple way, the state of the inputs and outlets of every programme.

To enter this section, press the key "CON". From now onwards the key with up and down arrows move the programmes on the screen.

To have direct access to a programme, enter its number.

The first screen that is displayed when we press the key "CON", informs about the time and date. Besides, if any of the programmes is at ALARM, it is also indicated in this screen. In the lower line, it shows the number of recorded anomalies.

Mon.09:59:46 26/07/99	*ALARM*
Record of anomalies: 05	

In the consult of programmes, every screen shows two. On the left side, the number followed by the text; next to it the value of input (which is the average, if the programme has more than a sensor) and the state of the input.

In a timetable programme or programme of units, at the input it will show the time or units that are left to finish the working.

If the outlet is conditioned by another programme, it only shows the sign (>) before the state of outlet, or also in the case of a proportional outlet, when the value of outlet reaches the maximum or minimum top, in this case it will be indicated by an up or down arrow before the value of outlet.

Example:

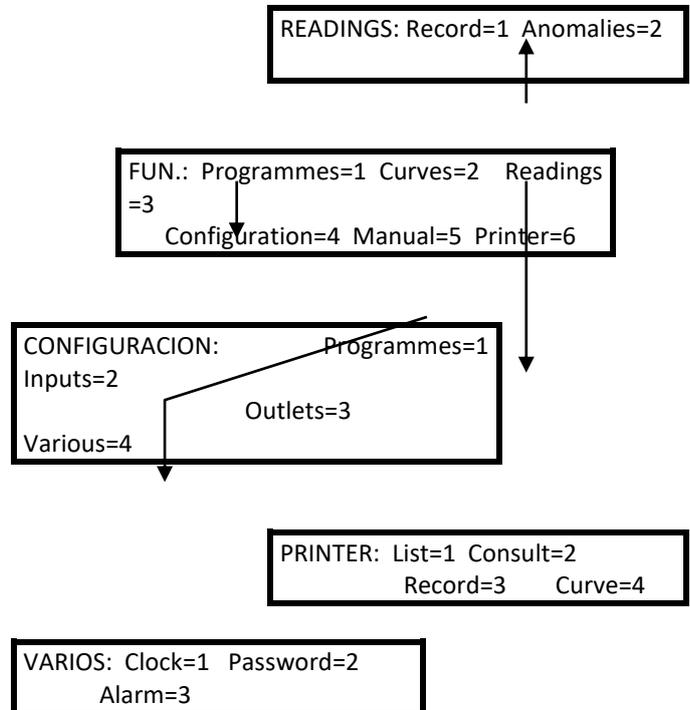
P05 VENTILATION-1 E 24.5 °C	S ^ 090 %
P06 VENTILATION-2 E 23.8 °C	S > 073 %

It takes between four and eight seconds to update the values of the (analogical or counting) inputs.

The different texts or values that can be shown for the state of the outlet are:

S - - -	Programme deactivated
S start	Outlet activated.
S stop	Outlet stopped.
S open	Opening windows.
S close	Closing windows.
S paus.o	Pause to open.
S paus.c	Pause to close.
S 084 %	Value of proportional outlet.
S pause	Pause between activations.
S MANUAL	Manual activation of outlet.
S ALARM	Programme at alarm.

### 5. DETAIL OF BASIC MENU



## 6. MODEL 503

This model is derived from the standard AMBITROL 501, with the following modifications :

- It does not print the graphic of curves.
- It does not print the reference in the graphic record.
- It extends the number of record to 25.
- It allows you to work with daytime /night references.

To work with daytime / night references, at Parameters-Variou-Clock it will ask for the interval of timetable of daytime in which the references will not be modified. Example:

Daytime timetable (it does not modify Ref.)
08:00 to 20:00

For a programme to modify the reference in the night timetable, we have to give the value "2" to the curve it asks for in the programme and enter the value (in brackets) that will add to or deduct from the reference.

With "C0" the reference will not be modified and with "C1" the programme will work by curve. Example:

P01 HEATING-01	T01 Pro.activated=Yes
C2 (-035)	Reference= 240 Diffe.= 02.5

(In the example, the heating during the daytime timetable will be activated at 24.0 and at night at 20.5).

It modifies the action of the conditioning programmes that affect programmes with working type 2 - 3 - 8. In these cases, four programmes can condition, affecting a code and a value. On the screen, it will ask for them in the programme configuration section in the following way:

P12 VENTILATION-03	T02
Con.pro:P09= 03 val: 050 P01= 08 val: 000	

P12 VENTILATION-03	T02
Con. Pro:P00= 00 val: 000 P00= 00 val: 000	

In this example, programme 12 will be conditioned by programme 9 and 1. The conditioning programme will work when its outlet is working or when, if its outlet is proportional (%), it is superior to the minimum programmed.

Each programme can affect a series of different codes, and this is the figure it asks for after the number of the programme.

Relation of "affects code":

Code 01: when the programme conditions the outlet ,it will be fixed with the programmed units in "val".

Code 02: on conditioning the outlet, it will stay at the minimum if val = 000, and at the maximum if val = 001.

Code 03: the outlet value will be increased with the programmed units in "val",plus the ones the programme already needs, without exceeding the maximum programmed.

Code 04: the outlet value will be decreased with the units programmed at "val", minus the ones the programme already needs, without decreasing the programmed value of minimum.

Code 05: The outlet value will be fixed with the percentage programmed at "val" of the outlet value of the programme that conditions.

Code 06: The outlet value will be fixed with the percentage programmed at "val" of the outlet value of the programme that conditions, plus 5%.

Code 07: The outlet value will be fixed with the percentage programmed at "val" of the outlet value of the programme that conditions, plus 10%.

Code 08: the programme that conditions must be of window or hatch with retromessage and, while this one is not closed, it will not allow the outlet of the conditioned programme.

Code 09: The outlet value will be deducted with the percentage (%) of the "val" from the outlet value of the programme that conditions.

NOTES.

A programme with type 2-3-8 that has the reading at the input, outside the margins of the alarm values, can not be conditioned.

The margin of working of the windows with type 8 can be modified in Parameters-Variou-Alarms.

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