SISTEMES ELECTRÒNICS PROGRÉS

AGRÓNIC 7000

PC PROGRAM

Version 3

INDEX

PRESENTATION

We wish to take this opportunity to thank you for the confidence in us which you have demonstrated in expressing interest or acquiring the AGRÓNIC 7000/PC.

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 specifications of the equipment as well as its installation and use.

However, if after reading this you still have any doubts, contact us and we will be glad to answer them.

1.- INTRODUCTION

The AGRÓNIC 7000/PC is a program for Windows 95, 98 or XP which allows you to handle the irrigation controllers of AGRÓNIC 7000 from a PC, in an easy and comfortable way.

This program makes use of all the advantages offered by Windows in order to enter, in a more intuitive way, parameters and programs, modify them, carry out operations in real time, and consult the anomalies, historical, graphics, operation records and what the AGRÓNIC 7000 is doing all the time. That is means that you can do through a PC, the same operations that you would do if you were in front of the equipment, with all the commodities that this implies.

The program can communicate by cable, telephonic modem or radio-modem with one or several Agrónic 7000 which means that we can control from the office, home or any another place on the planet the irrigations that are taking place and we can also change the programming or carry out any necessary operation.

The main characteristics of the program A7000/PC are:

- Connection of up to 25 controllers to a single program by cable or by telephone with (conventional or GSM) modem or radio-modem.
- All actions which can be performed from the AGRÓNIC 7000 can be carried out from the program.
- Display of the actions carried out by the Agrónics is shown in two different ways, offering the possibility of moving from one to another by just moving the mouse:
    1. By consultation: where all the operations which take place can be seen in a similar way to the consultations of the AGRÓNIC.
    2. By diagram: with the possibility of having up to seven diagrams for each Agrónic connected to the program, drawings can be visualized representing the inputs and outputs of the equipment which will start moving when they are activated, boxes with counters to visualize the injections of fertilizers and acid, and boxes with the sensor readings. Both the background drawings of the diagrams and the icons and boxes are totally configurable by the user, being easy to adapt to any installation. The consultation by diagram gives a clear and quick idea of all the actions the controller is carrying out.
- Programming systems on a single screen.
- Convert into standard ASCII text files the totals, historical, operations, sensor readings, etc. Spreadsheets or data bases can also be used.

1.1.- INSTALLATION

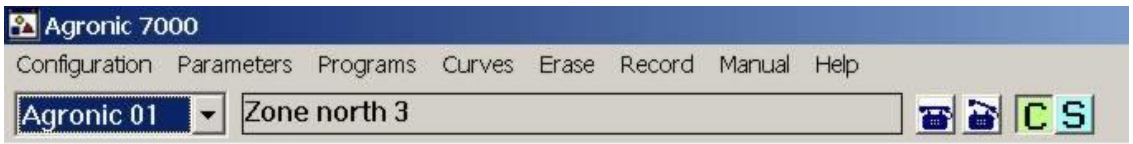
The PC has to have several characteristics to be able to run the PC program of the Agrónic 7000 like:

- Computer PC, with Windows 95 or superior installed.
- Configured screen for a minimum resolution of 800x600.
- Free serial port (RS-232).

The PC program is delivered in a CD where it is included the PC program in several languages and its manuals in *.pdf*. For install the program, insert the CD into the PC, automatically it will run the installer program. Follow the instructions.

2.- SELECTION OF AGRÓNIC

Clicking on the button “Selection of Agrónic” you can choose which of the Agrónics connected to the program you are going to work with. Working with an Agrónic means that consultations are going to show what this Agrónic is doing and that the actions carried out by the main menu of the program (parameter input, programs, manual activation, etc.) are going to be addressed to the selected Agrónic.



AGRÓNIC 01 is normally selected when the program is started up. To go to another AGRÓNIC click the button on the right of the name, a drop-down list with the name of the other Agrónics will be displayed. From this list you have to choose the Agrónic you wish to use and it will become the new selected Agrónic.

If there is an established communication with the new selected Agrónic, the consultation will appear immediately; if this is not the case, the window will remain blank.

If the new Agrónic needs telephonic communication (modem) the call is not done automatically, the user has to click on the button “Call”.

Remember to press the “Hang up” button when finishing the connection.
Next to the selection box, you can see the name which has been associated to the selected AGRÓNIC.

3.- CONSULTATION

In the program there are seven different screens of consultations: general, trays, fertilization, filters, programs, sensors/ inputs and various.

These consultations correspond to the consultation screens of the AGRÓNIC 7000 and will show the state of the Agrónic selected with the button “Selection of Agrónic” If there is no communication between the PC and the Agrónic nothing will be shown in the screens of consultation.

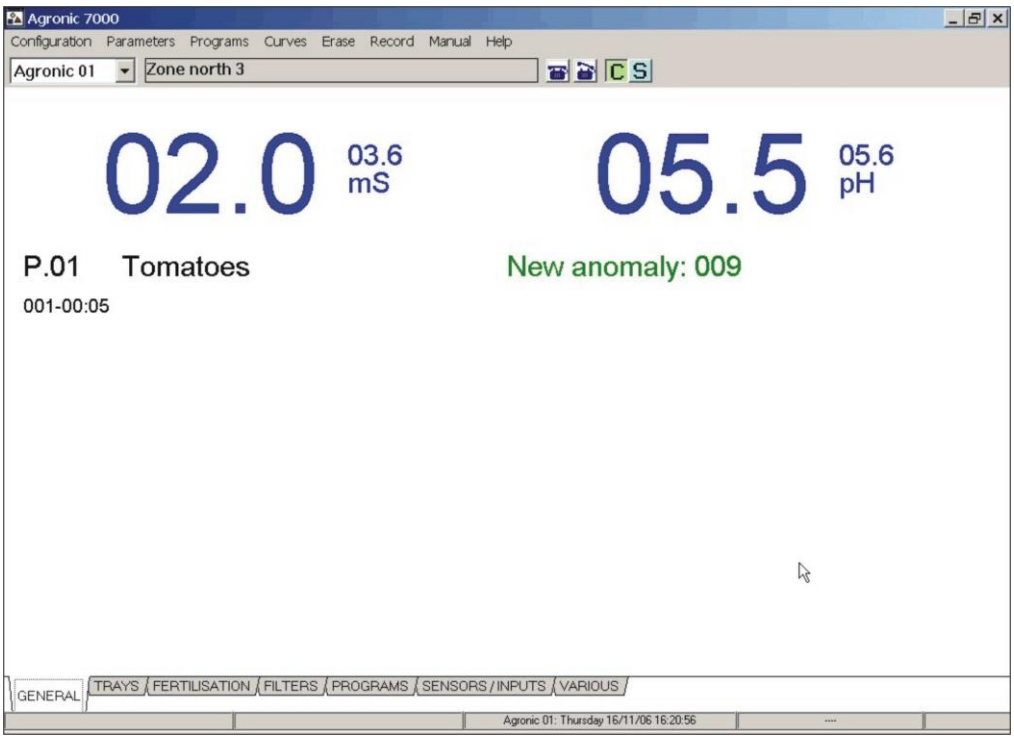
To go from one consultation to another, there are icons at the lower part of the screen. Clicking on them, the chosen consultation will be displayed.

The lower window row (state line) also gives information about the state of the communications. This row is divided into boxes where you can find (from left to right):

- The state of the connection of the modem: When the communication between the chosen Agrónic and the PC is done by telephone (modem), this box shows the state of the modem. These states can be: starting modem, calling, connected and disconnecting.
- The date and time of the selected AGRÓNIC (only if there is communication).
- The evolution of the communications: with a combination of numbers and letters it indicates how the communications between the PC and the Agrónics are. When there is no communication with any Agrónic, four dashes are shown in the box. When there is a mistake on the communication, a message of “Error on the communication” is displayed.
- The PC date and time.

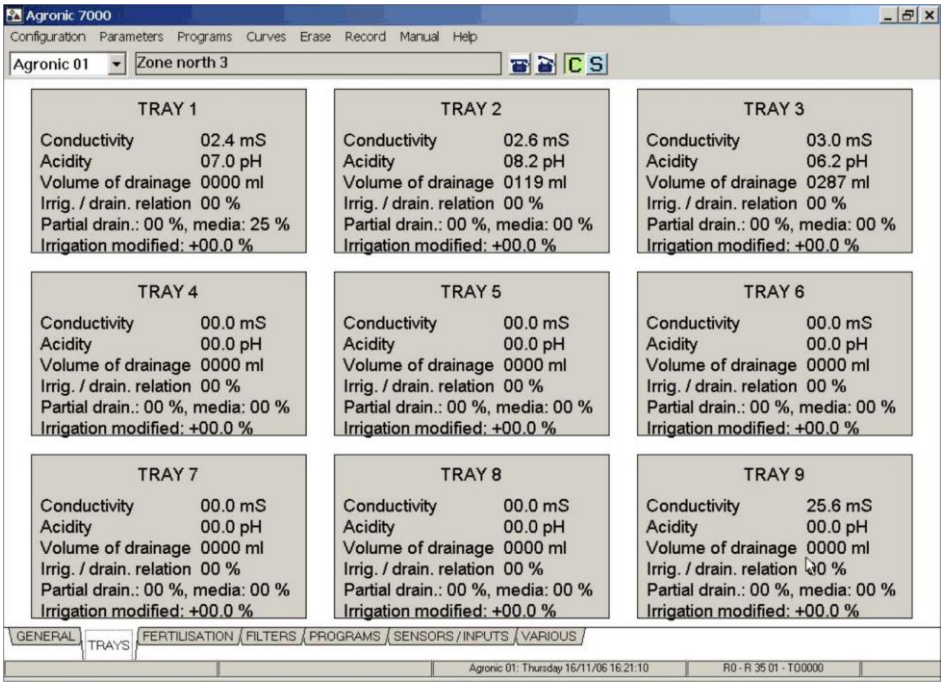
3.1.- GENERAL

It is the main screen normally displayed by the program. It displays the different values of the EC and pH sensors with the reference of the EC and pH levels of the program that is operating, the different irrigation programs that are being carried out, the active sectors of the programs which are operating, the new anomalies that take place, the alarms the unit detects, the filter cleaning if it is active, whether it is at system stop, and a wide range of data which can be displayed according to the configuration and the operating state of the system.



3.2.- TRAYS

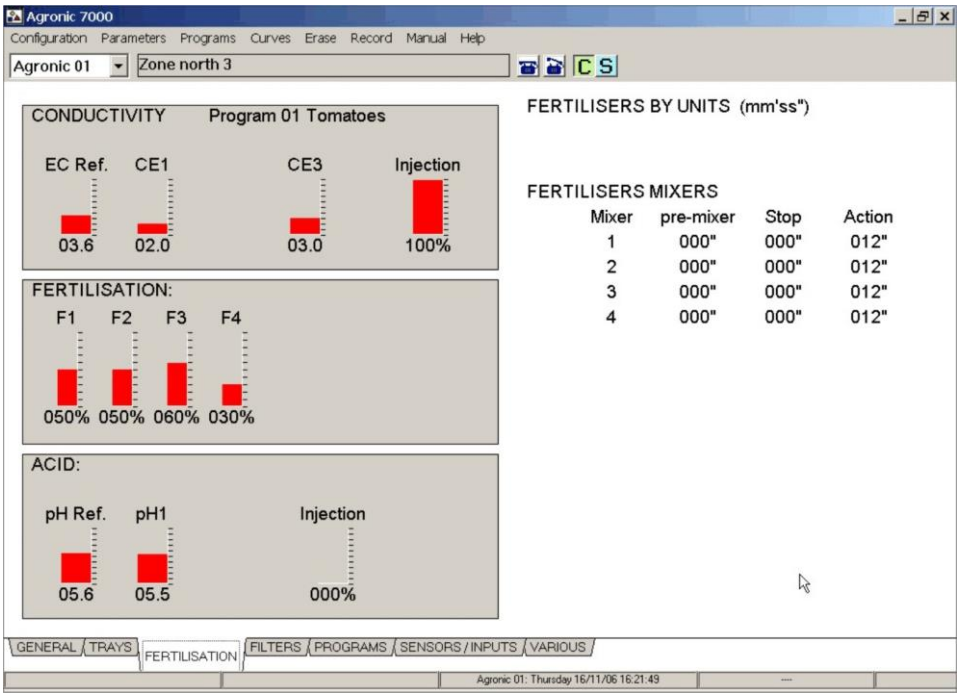
When drainage trays are installed in the hydroponics crops, this screen displays the values of electric conductivity (EC), acidity (pH), drained volume since the last irrigation, the irrigation/drainage relation and the last correction that has been carried out. The trays which have been assigned a sector are displayed, showing the different evolution of the sensors which are connected.



3.3.- FERTILIZATION

The screen will be divided into a maximum of four parts depending on the configuration.

Injection of fertilizers by electric conductivity (EC): they are displayed in columns where we can see the desired EC reference, the reading of the EC sensors that are installed (the one for EC1 regulation, the one for EC2 security and the one for EC3 water input) and the % of injection of fertilizer. % of injection between fertilizers: the % of injection of every one of the fertilizers is displayed separately in the bottom box, showing the proportions in which every one of them is being injected. Choosing the one with the highest proportion, the maximum injection and the other fertilizers, their percentage of injection will depend on the proportion set in the program.

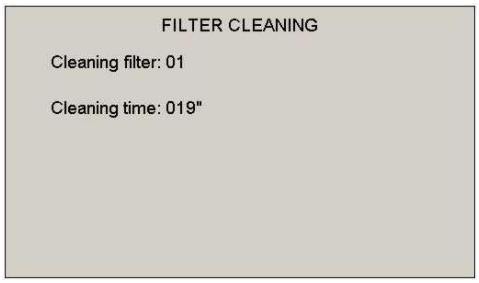


Injection of acid (pH): it displays the columns of desired acid reference, the reading of the main sensor (pH1) and the reading of the security sensor (pH2) and the % of injection of acid. It also indicates whether acid 1 or acid 2 or base is being injected.

The fertilization in units: it shows the units of fertilizers which are left to be applied or the water/fertilizer proportion in the proportional fertilization.

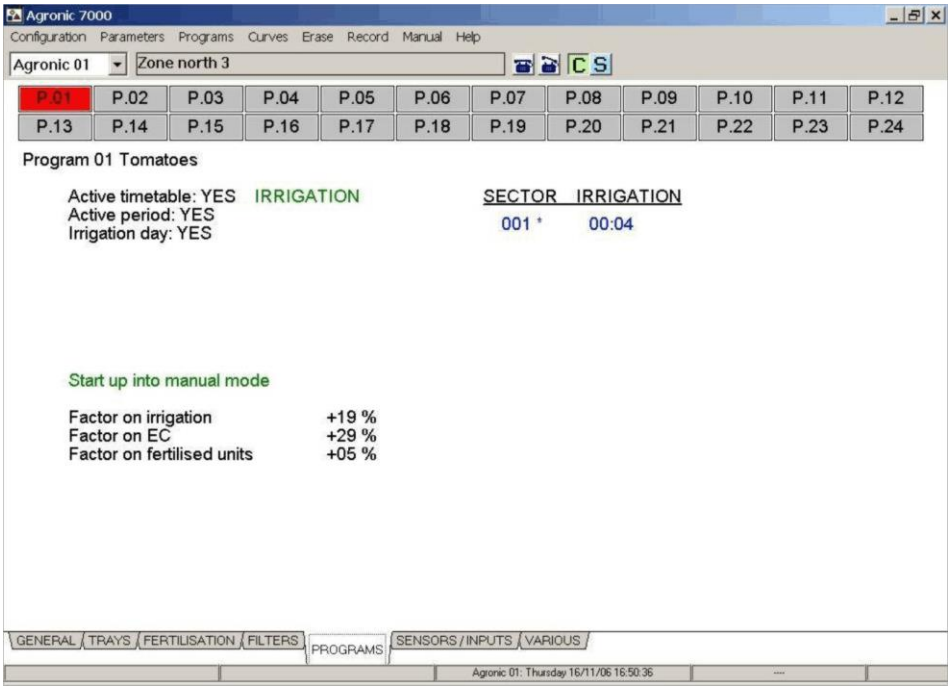
Mixers: this section shows when they are active, the start/stop delay of the mixers of fertilizers.

3.4.- FILTERS



The filter cleaning screen displays the state of the values related to the cleaning. It indicates whether the unit is between cleanings and the units left for the next cleaning. If is cleaning, it indicates which filter is operating and the time it has been cleaning. If it is at pause or at stop, it defines how it is operating in relation to the filter cleaning.

3.5.- PROGRAMS

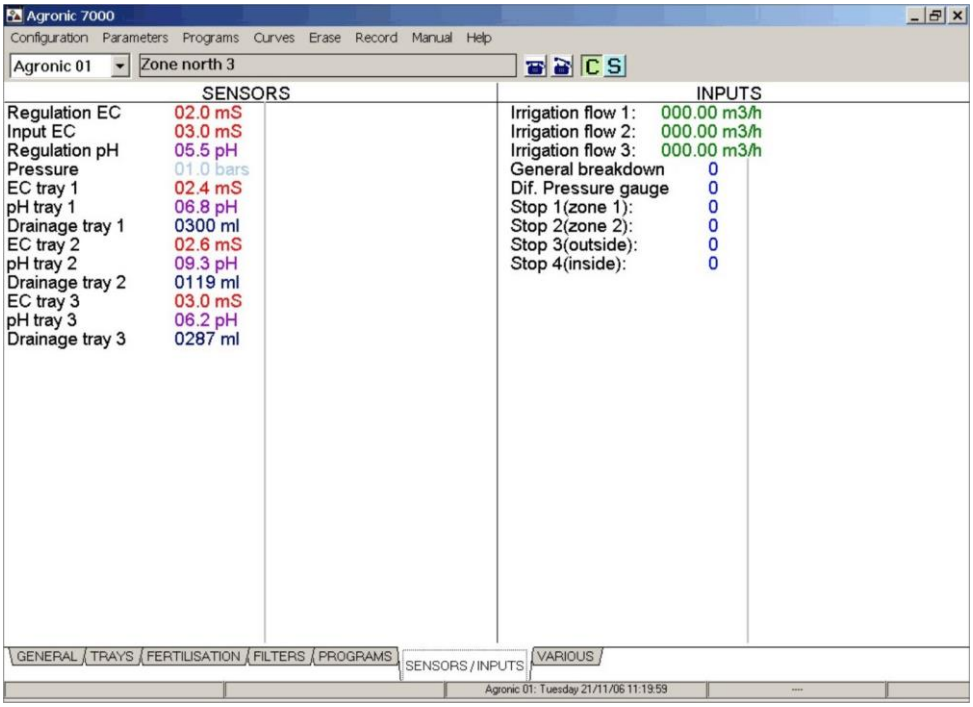


This screen shows the state of the irrigation programs. The buttons to select the program are at the upper part. These buttons are used to select the program to be consulted. The buttons that appear in blue correspond to the programs which are being carried out, the button which corresponds to the program which is being visualized appears in red.

The information about the selected program is displayed at the bottom of the screen. This information is the same which appears in the screen of consultation of the programs of the Agrónic 7000.

3.6.- SENSORS/ INPUTS

This screen shows the values of the different sensors and of the digital inputs that are connected to the unit. The different sensors will be grouped by colors according to the type of function they have In this way we can identify, in a faster way, the different sensors which give us the same reading unit, but which work assigned to different operations.

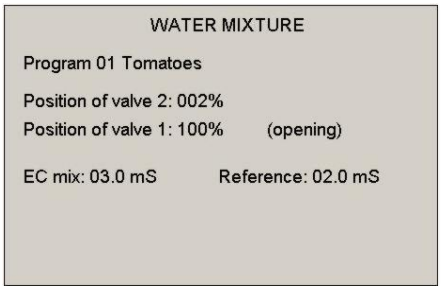


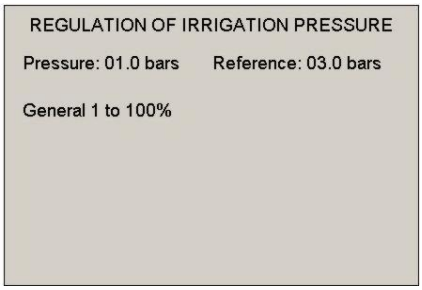
3.7.- VARIOUS

In this screen you can see the consultation of the "water mixture", of “regulation of the irrigation pressure” options.

In the option of water mixture it informs you of which program is carrying out the mixture, the state in % of the position of the motorized valves, the EC value of the water entering, the EC reference that the program requests and the possible anomalies in the mixture.

In the regulation of the irrigation pressure it shows the pressure value, the pressure reference of the program and the % of regulation of the frequency variator connected to the motor of the General 1.

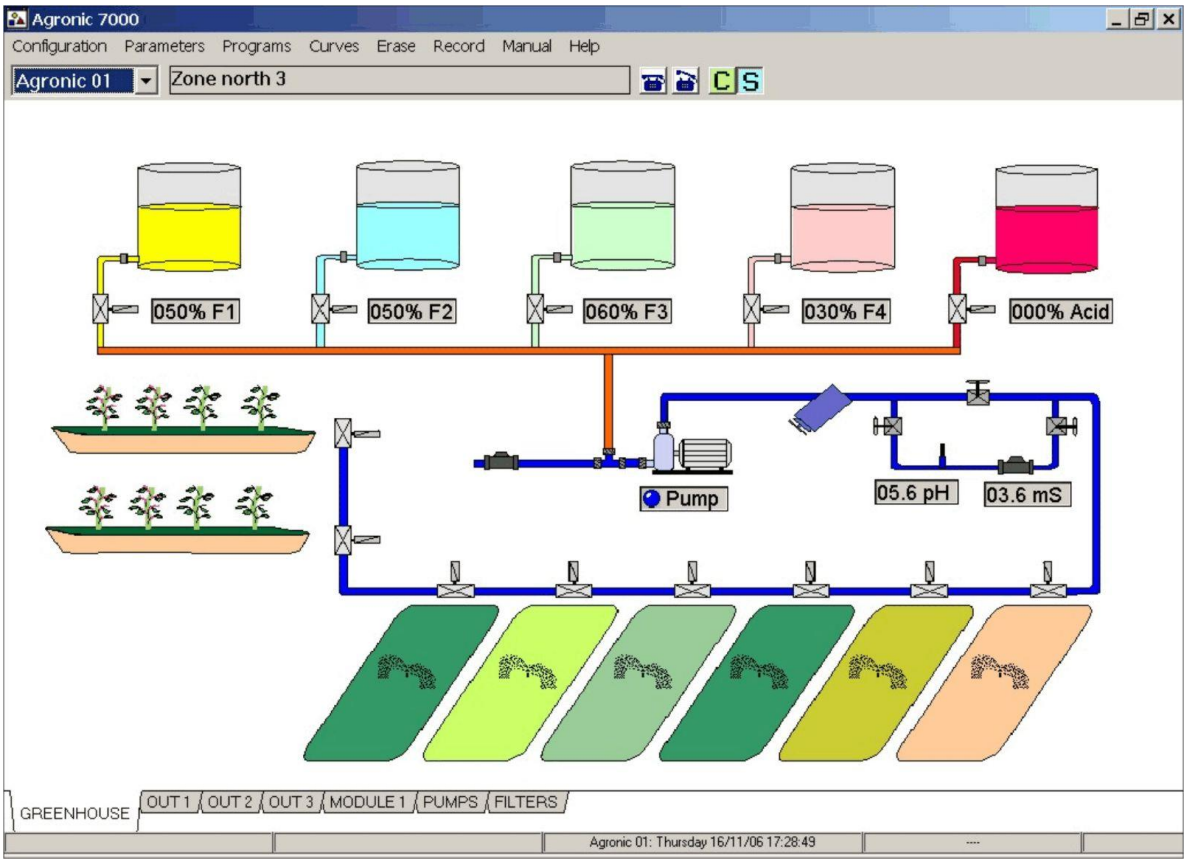




4.- SYNOPTICS

Up to seven graphic screens can be displayed in this option. Where, by means of graphic animation, illuminated indicators and value boxes, you can visualize what the unit is doing. These screens are totally configurable by the user, being able to adapt them to any installation and allowing you to see what is going on in the system in a fast and intuitive way.

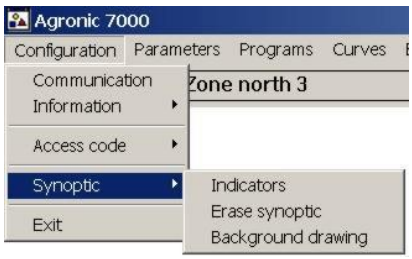
In order to go from consultation to synoptic or vice versa, the buttons "C" and "S" that are in the bar of the menu can be used.



4.1.- SYNOPTIC CONFIGURATION

In synoptic configuration you set the background drawings of every screen, the name of the lower icons, the situation and meaning of the different graphic animation, illuminated indicators and value boxes.

To configure the synoptic, first enter diagrams by means of the button "S" which can be found at the bar of the menu. Once you are in the synoptic, choose the background drawing, place the indicators and change the name of the index icon. In order to change the name of the icon, click twice, with the mouse, on the name to be changed and this will allow you to edit the name. Once it has been changed it can be clicked on any of the other icons.



4.1.1.- Background drawing

The background drawing option can be found in the main menu, within the configuration and the synoptic. Clicking on this option, the name of the file which is to be used as background of selected icon is required.

The file has to be bitmap for Windows type (with *.bmp* extension). The drawing will automatically adapt to the screen size. To change a background drawing the same operation is carried out.

4.1.2.- Erase synoptic

With this option of the menu the diagram screen which has been selected is erased. Both the background drawing as well as the indicators which are in the diagram are erased.

4.1.3.- Indicators

With this option of the menu you can choose which indicators are going to appear in the diagram, where they are going to be located and what they are going to represent. When choosing the option a floating window with six buttons is displayed.

The first button, the arrow, is used to choose an indicator which is already located in the diagram and to change its parameters (if we press the right hand button of the mouse) or change its location (if we press the left hand button).

The second button, the eraser, is used to eliminate the chosen indicator.

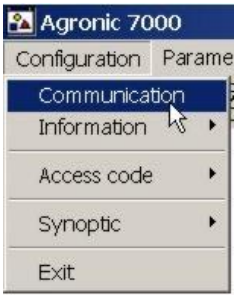
The third button is used to place illuminated indicators on the diagram. Once the illuminated indicator is placed, by means of the right hand button of the mouse you have access to its configuration. An illuminated indicator can represent a digital input or an output by relay (general output or sector).

The fourth button is used to place value boxes on the diagram. Once the value box is placed by means of the right hand button, you have access to its configuration. The box can represent a sensor input or an output that is not digital (fertilizers, acid, position of the mixing valves, etc.) or the EC or pH reference.

The fifth button is used to place the animation of the sprinkler. Once the animation has been placed by means of the right hand button of the mouse, you have access to its configuration. This one can only represent an output, sector or general. When the corresponding output is activated, the sprinkler will start moving simulating the irrigation.

The sixth button corresponds to the animation of the dropper. It works in the same way as the animation of the sprinkler.

5.- CONFIGURATION



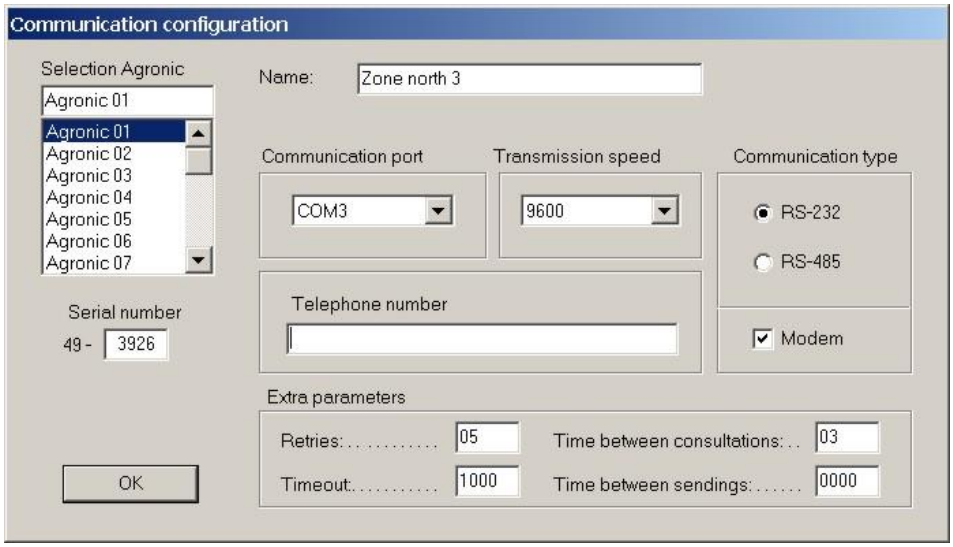
In the configuration section it is determined which units are going to be connected to the program, how they are going to be connected, the sending and reception of parameters with the selected unit, it also allows you to set access codes to different parts of the program and configure the diagrams.

5.1.- COMMUNICATION

There can be up to 25 Agrónics connected in a program. The type of communication that every one of them is going to have is configured in this section.

To configure the communication, first select in which position you wish to set the Agrónic (1,2, etc.), introduce the serial number of the unit and a identifying name. Then configure the communication.

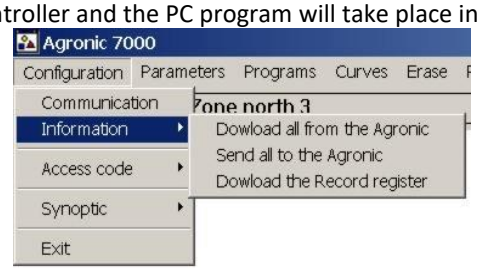
- Serial port: it is the PC serial port which is going to be used to connect with the selected unit.
- Type of communication: choose the type of communication to be used RS-232 or RS-485 (the difference between these types is explained in section 12 of this manual). Or the communication can also be established by modem, and then the telephone number to be called to establish the communication will be required.
- Transmission speed: which should be the same as the one programmed in the corresponding Agrónic.
- Extra parameters: these settings permit adjustment of communications depending on how they are, direct with cable, modem, radio-modem. They will only need to be changed if communications do not function properly.
    - Retries: number of times that the PC tries to send a data thread to the Agrónic in case of error. Normally at 5, if the communication is through modem or radio-modem it may be increased to 10.
    - Timeout: time that the PC waits between two reattempts. The units are milliseconds. Normally at 1000 ms, it may be increased if the communication is at low velocities or through radio-modem.
    - Time between consultations: time that is waited between to consultations to the Agrónic. The units are in seconds. Default is 3 seconds. If communication is through direct cable and high velocities this time may be decreased.
    - Time between sendings: time that the PC waits between two communications, of whatever type, with the Agrónic. The units are in milliseconds. Normally at 0, if the communication is through radio-modem it may be necessary to increase this time up to approximately 200 ms.



The number of Agrónic must correspond with the one entered in the unit in the section of “Parameters – Configuration – Communication”.

5.2.- INFORMATION

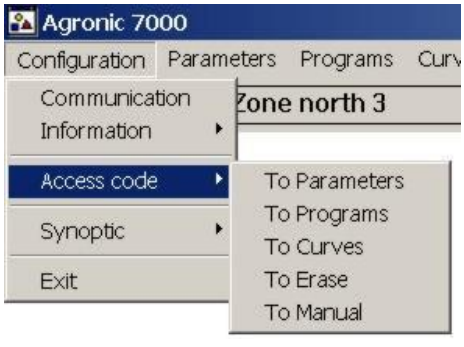
There are two options in this section: receiving everything from the Agrónic and sending everything to the Agrónic. The data received or sent from the Agrónic are the parameters, the programs and the curves. Totals, records, operations, etc. are not sent or received. These options are mainly used when the program is installed, in order to collect all the data that Agrónic has. Then the data exchange between the controller and the PC program will take place in an automatic way.



5.3.- ACCESS CODES

The access codes allow you to restrict the use of certain parts of the program to only the users who do not know the code. The parts of program that can be restricted are: Parameters, Programs, Curves, Erase and Manual. Every one of these five parts can have its own password different from the others.

The codes are made up of four characters, figures or letters. To assign an access code, just enter the desired password and press “OK”. When an access



code is already assigned and we want to change it, first enter the old password and then the new one. To erase it enter the old password and when the new one is required leave it blank and escape using “OK”.

5.4.- SYNOPTIC

See section 4 of this manual to configure the synoptics.

6.- PARAMETERS

The values of the parameters of the chosen Agrónic are entered or modified in this section. The different subsections correspond exactly to the ones which appear in "Functions - Parameters" of the Agrónic 7000.

The modified parameters will be sent automatically to the Agrónic so that the user does not have to do any special operation for this. If, when the modification takes place there is connection with the unit, it will be sent when leaving the screen of data input. If there is no connection in that moment the program will update the data when the connection is established. With this second option, the program will ask the user if he wishes to send the data before doing so.

The same would happen if the parameters of the Agrónic 7000 are modified. If there is connection with the PC the data will automatically be sent from the unit to the PC. If there is no connection, when the communication is established the program will ask the user whether he wishes to update the data in the PC.

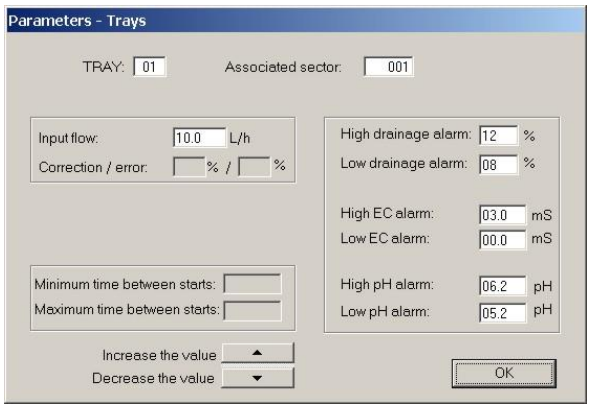
To have more information about the meaning of the different parameters that are entered in every one of the sections, consult the manual of the Agrónic 7000.

All the dialogues display some arrows which are used to increase or decrease the value by placing the cursor in any of the boxes. Pressing these keys the value will be modified.

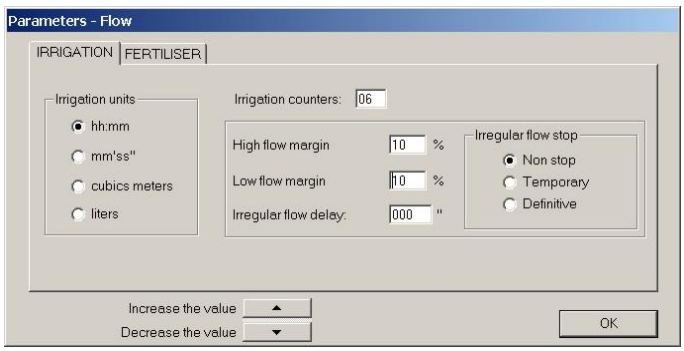
6.1.- PARAMETER SCREENS

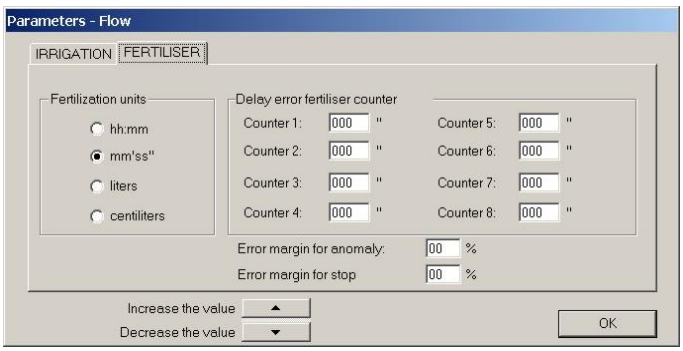
The dialogue of everyone of the parameter screens is shown next:

1.- Parameters - Trays. For the control of the drainage, the intelligent demand and of the different sensors which are in the drainage tank.

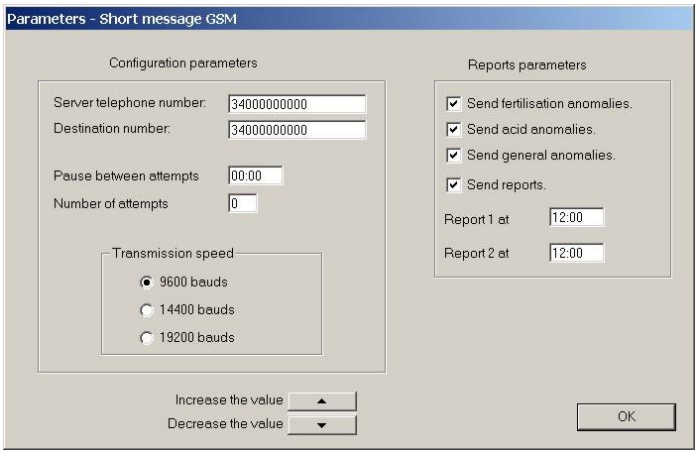


2.- Parameters - Flow. To determine the working units, both for the irrigation and the fertilization, as well as the high and low margins which an alarm will generate.

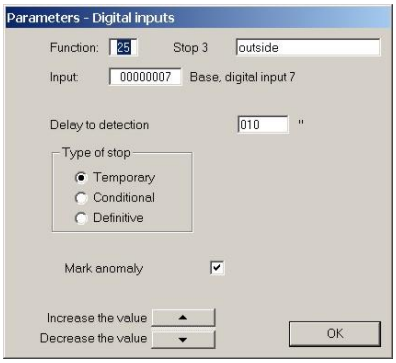




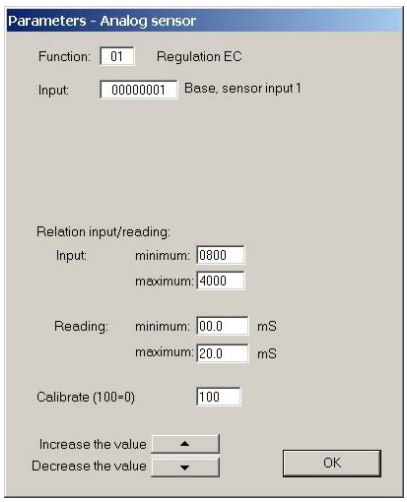
3.- Parameters - Communication. In this screen you define the telephone numbers to which the messages will be sent, the type of messages and how often they have to be received, as well as the transmission speed.



4.- Parameters - Digital inputs. In this screen you can assign the different digital inputs to the elements, alarms, and dispositions that could affect or be affected and be linked to digital inputs.

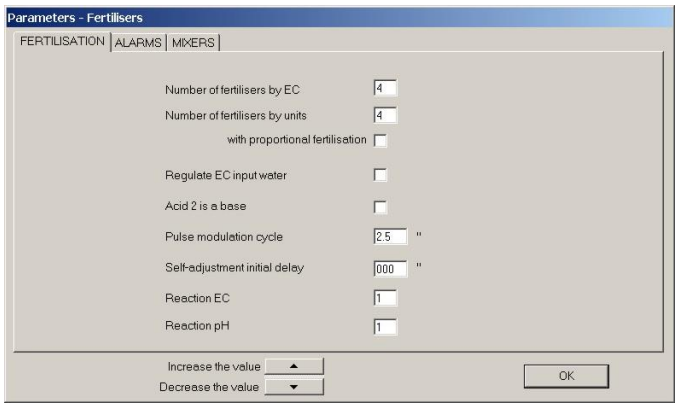


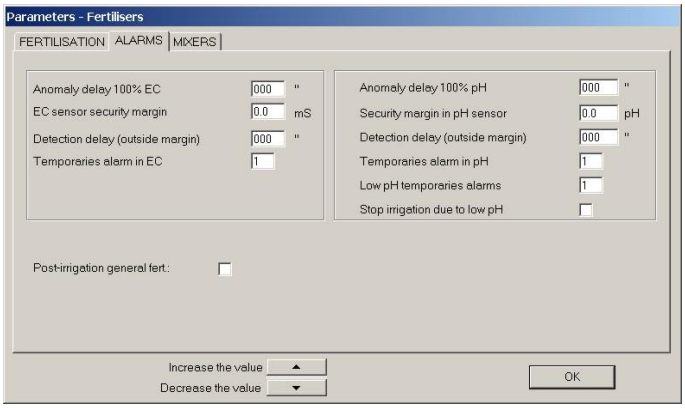
5.- Parameters - Sensor inputs. To determine the different sensors connected to the unit and define the reading that we are going to receive, being able to tare the sensor as long as it lasts.

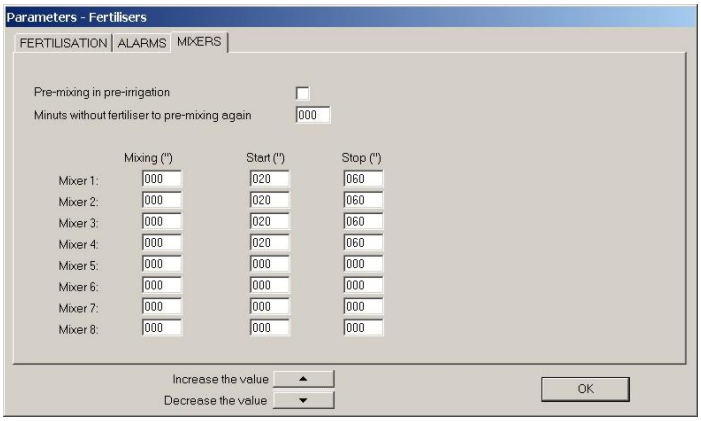


6.- Parameters - Fertilizers. You have three screens which are used to define the type of fertilizer you are working with, its operating mode, the associated alarms that

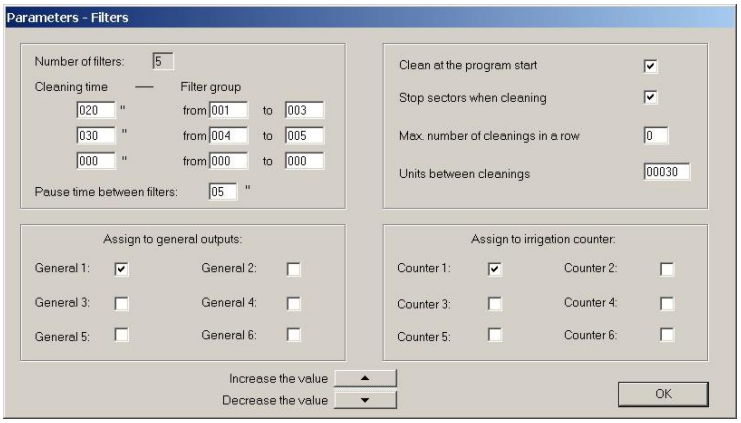
will warn us of any anomaly, and the identification and work of the different mixers to be found in the fertilizers.



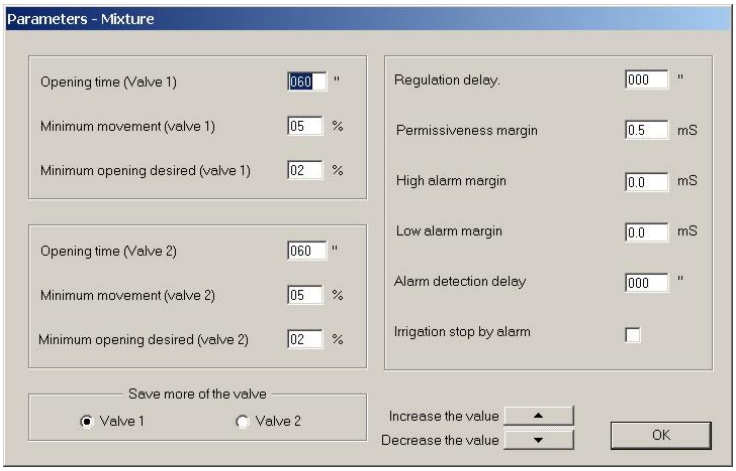




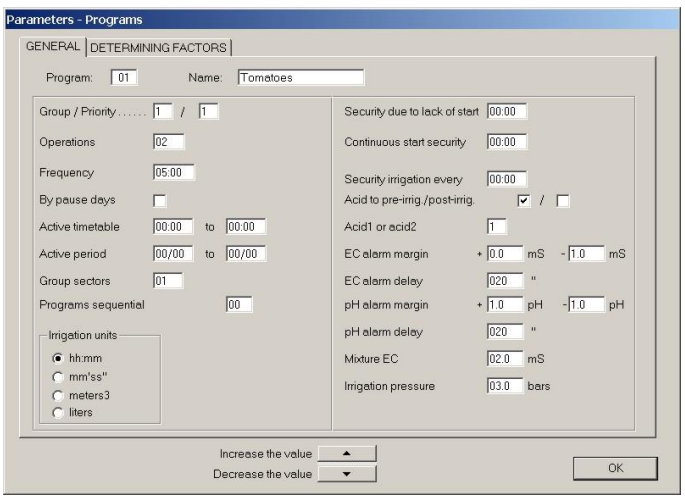
7.- Parameters - Filters. This screen is used to assign the different filters we have, the way we want them to work and to which engines and counters they are assigned. Thus, when the filters will start to clean, we will have the minimum pressure needed that it will be supplied by the general pumps assigned.

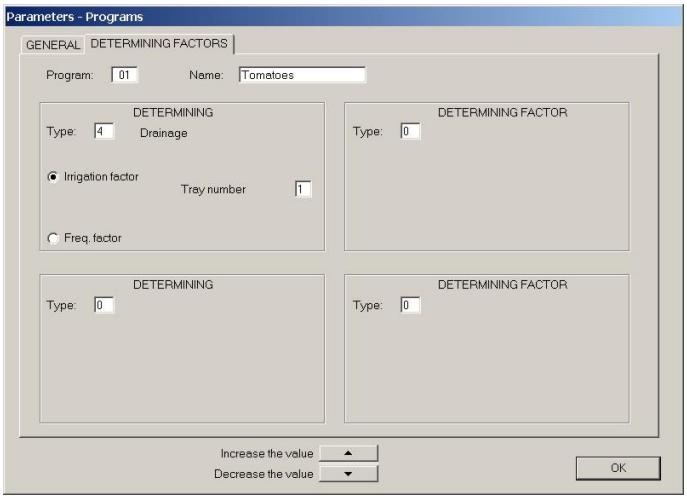


8.- Parameters - Mixture. To determine the mixing of two waters of different salinity, according to the valve opening, permissiveness margins, etc.

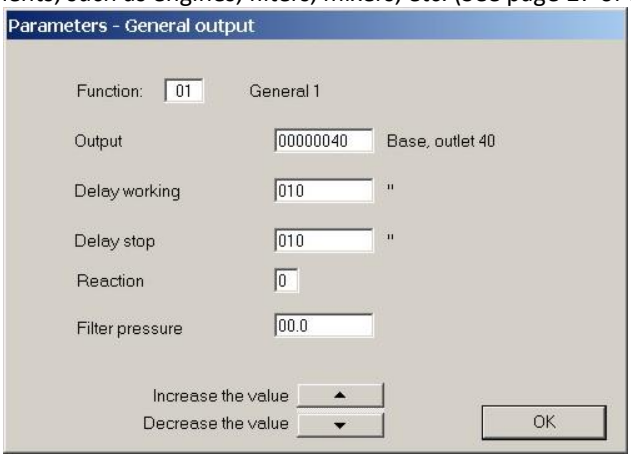


9.- Parameters - Programs. In these screens you can define how you want every program to work and which elements must affect it.

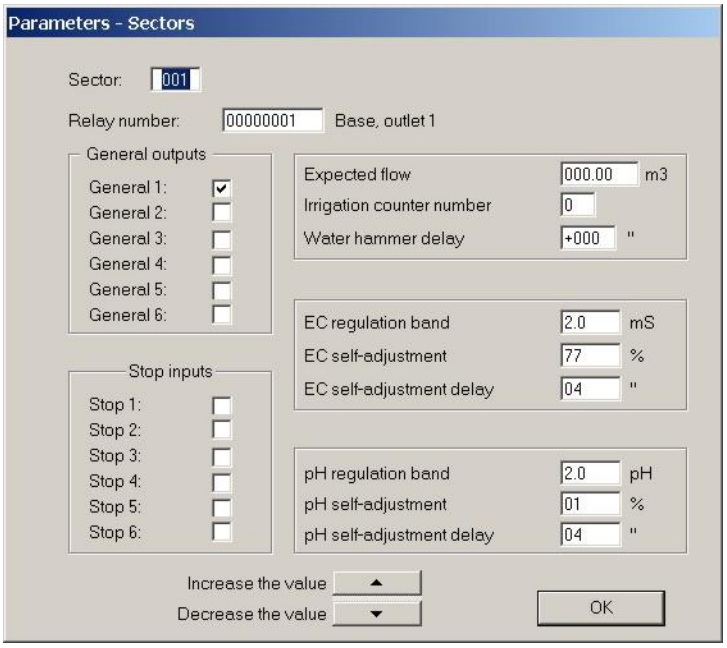




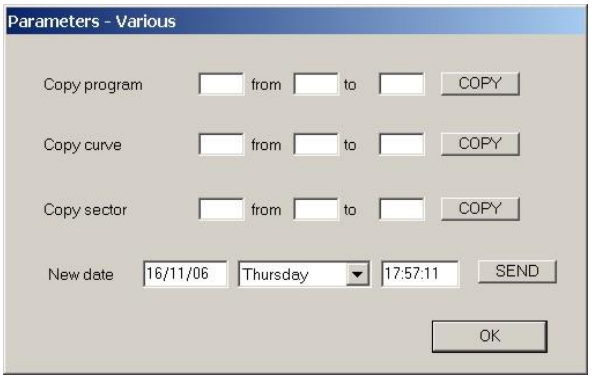
10.- Parameters - General outputs. This screen is used to define where we are going to connect and to which temporizations the different working elements, such as engines, filters, mixers, etc. (See page 27 of the manual of the unit).



11.- Parameters - Sectors. This section allows you to determine the different elements and inputs that can be assigned to every sector.



12.- Parameters - Various. This screen allows you to make the work more dynamic, allowing you to copy programs, curves and sectors.



13.- Parameters - Save as text. It appears the same screen of windows where we select the printer and the text quality.

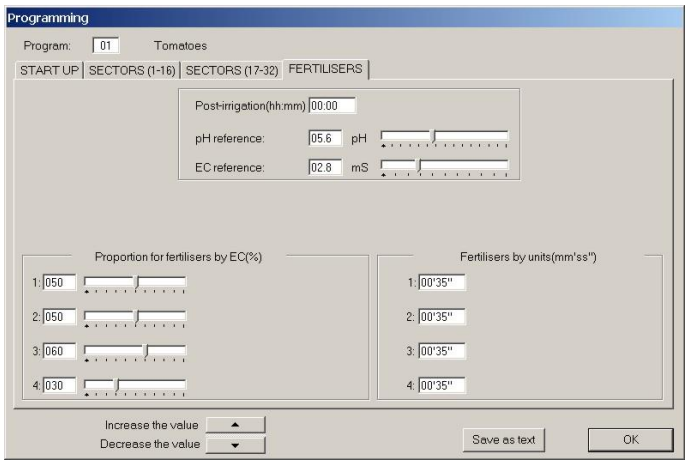
7.- PROGRAMS

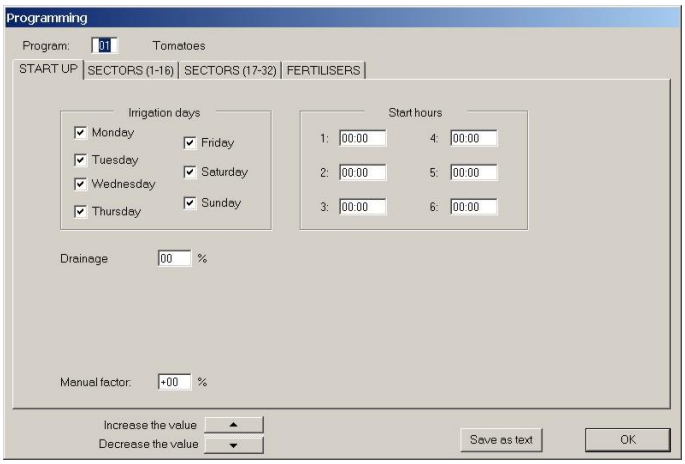
The values of the 24 possible programs of the selected Agrónic are entered in this section. The fields to be entered are the same as the ones entered in the Agrónic 7000 at "Functions - Programs." For more information about the meaning of these fields consult the manual of the Agrónic 7000.

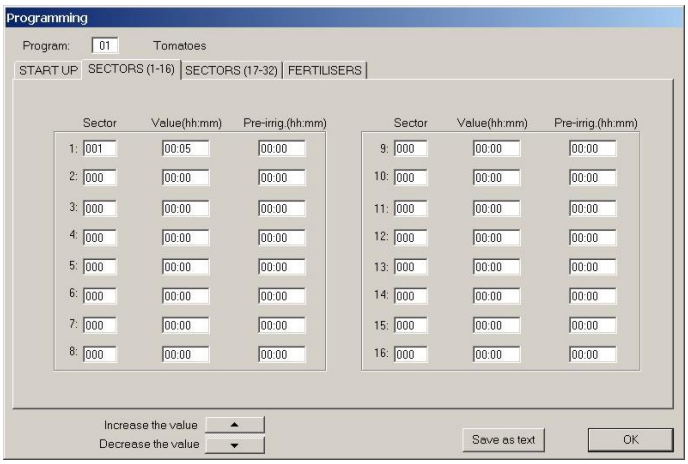
The data sending between the PC program and the Agrónic 7000 is carried out in the same ways as in the case of the parameters. If there is connection between the PC and the unit, the data will be sent on clicking on the “OK” button. If there is no connection, they will be sent when this one is established, first asking the user whether he wants to send them.

In this program dialogue there is a “Print” button. Clicking on it all the programs of the selected Agrónic will be printed.

The three screens of programs that can appear are shown here, but these can be very different depending on the working way that has been programmed at “Parameters – Programs”.



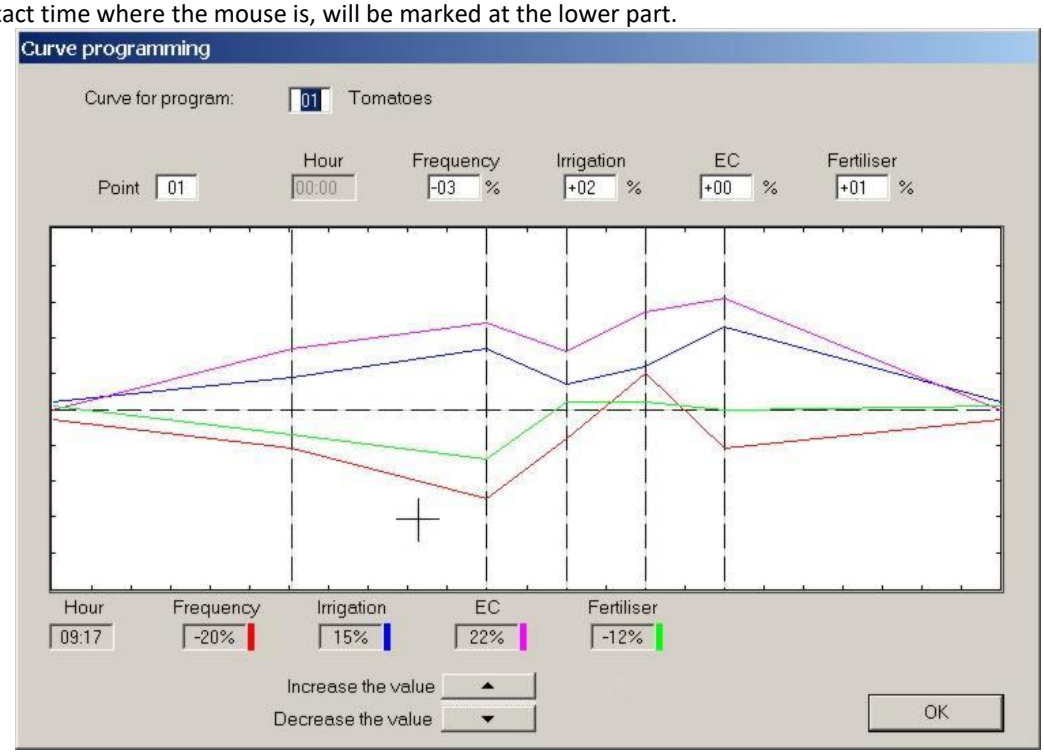




8.- CURVES

This section has to do with the section of "Functions – Curves" of the Agrónic 7000. The entering of the program curves in the PC is much better in reference to the entering in the Agrónic 7000. In the PC you can see all the curves that affect a

program at the same time, having everyone of them a different color. In the graphic, by means of discontinuous vertical bars, the different entered time points will be marked. If you enter with the mouse in the graphic, the values of the different modifiers, at the exact time where the mouse is, will be marked at the lower part.

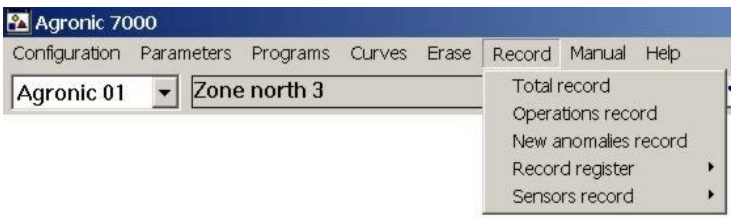


9.- ERASING

This option allows you to erase the totals and the programs. We advise you that before erasing the totals they are stored in the PC, otherwise they would be lost.

In order to enter in this option, there has to be established connection between the PC and the Agrónic.

10.- RECORD



The record section has to do with the "Functions – Record" section of the Agrónic 7000.

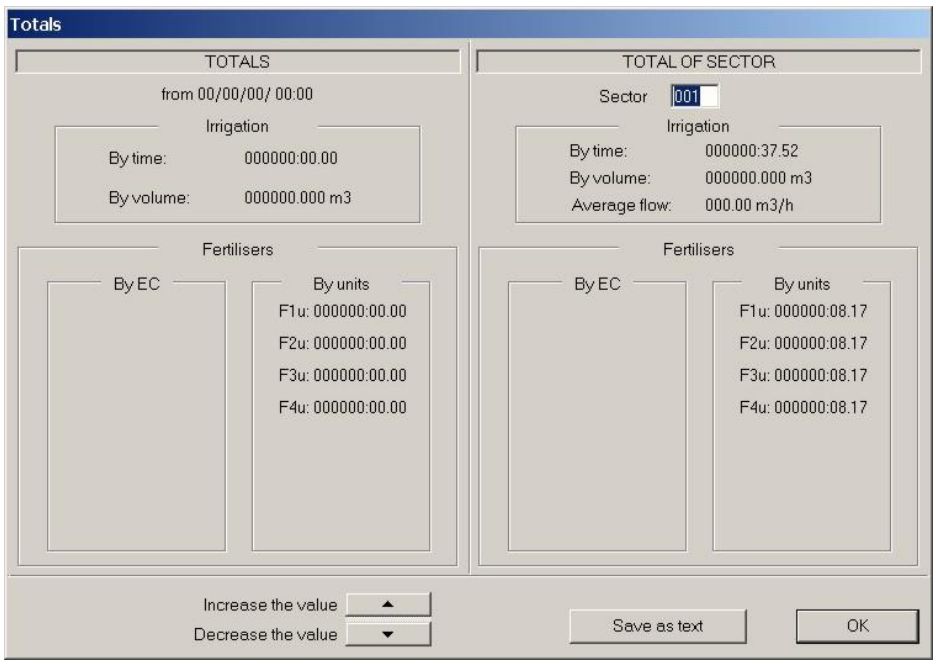
In the PC program there are certain differences concerning the same section of the Agrónic 7000. It allows you to store more days of the record and sensor graphics. It also allows you to convert into text all the collected data being able to export them to spreadsheets or data bases. There is also a better display of the graphics, etc.

The data collected from the record, operations and graphics will be stored in files. A record file is generated every month, storing the ones which correspond to the last twelve months. The names of the files would be: *RgsNNNN_MM.gra* for the sensor graphics, *RghNNNN_MM.his* for the records, *RgaNNNN_MM.act* for the operation record. NNNN corresponds to the serial number of the corresponding Agrónic and MM to the month the file corresponds to.

10.1.- TOTALS

This option displays the totals that the selected Agrónic has. If there is connection with the unit, they will be directly read from it. If there is no established connection, the last ones which have been read will be displayed.

Using the button of "Save as text", which appears at the lower part of the dialogue, all the totals can be transferred to an ASCII text file with the fields separated by tables. This file can be used in spreadsheets or data bases in order to deal with the accumulated values.



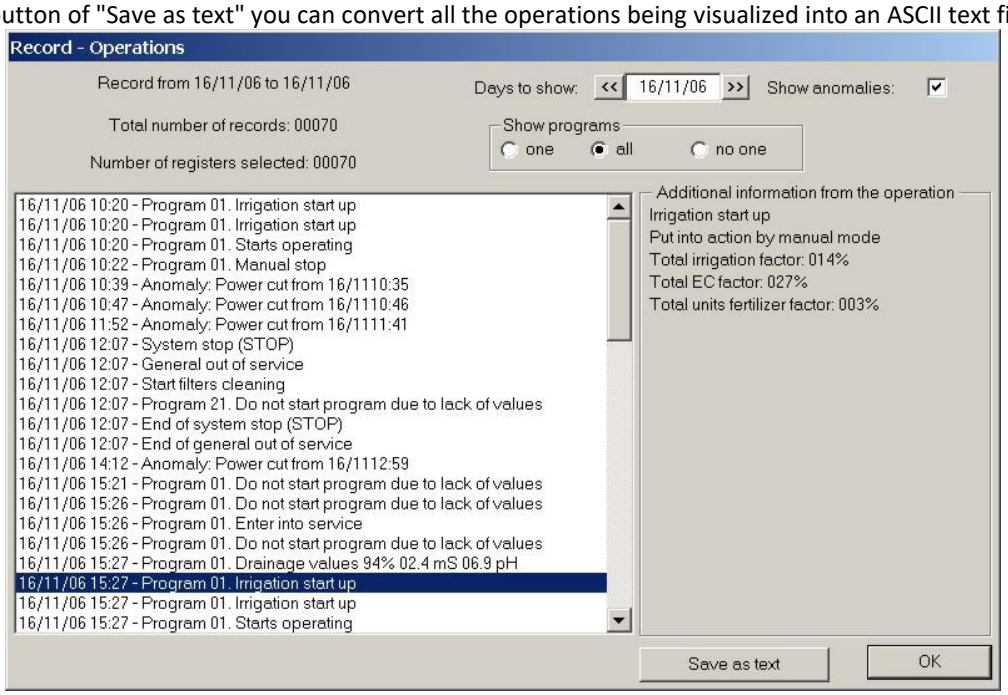
10.2.- OPERATIONS

This section displays the operation record of the selected Agrónic 7000. The records are the same ones as the ones in the Agrónic and they contain the same information.

The records are collected automatically when connection takes place, being stored in the files with extension *.act*. If there is connection with the unit, before visualizing the dialogue with the operations, it reads from the unit the ones that have taken place up to that moment. If there is no connection, it shows the ones which are stored in the files.

In the dialogue that shows the operations you can select the day that you wish to see, whether the anomalies have to be displayed, whether the operations of all the programs, of a specific program or of none have to be displayed. The date of the first and last stored operation are indicated on the right. It also indicates the total number of operations which are stored and the number of operations which are in the lists of selected ones.

Using the button of "Save as text" you can convert all the operations being visualized into an ASCII text file to be stored.



10.3.- NEW ANOMALIES

You can only enter in this option if there is connection with the Agrónic 7000, and it displays the new anomalies in the unit.

Consulting the new anomalies from the PC, they are not marked as read, this only happens if they are consulted from the Agrónic, so they will continue appearing in the screen of general consultation.

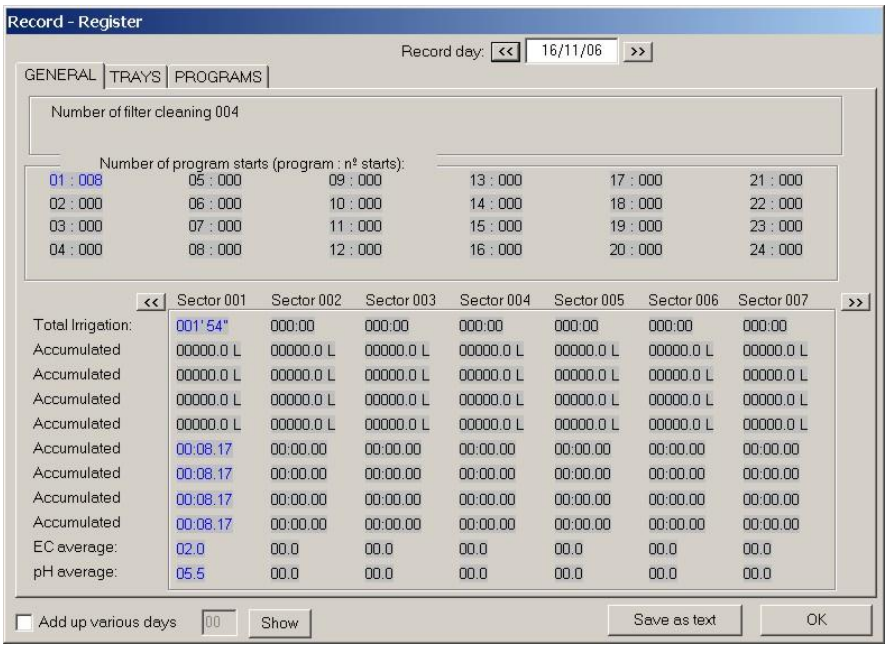
Using the button of "Save as text" you can convert all the anomalies which appear on the screen into an ASCII text file to be stored.

10.4.- HISTORICAL

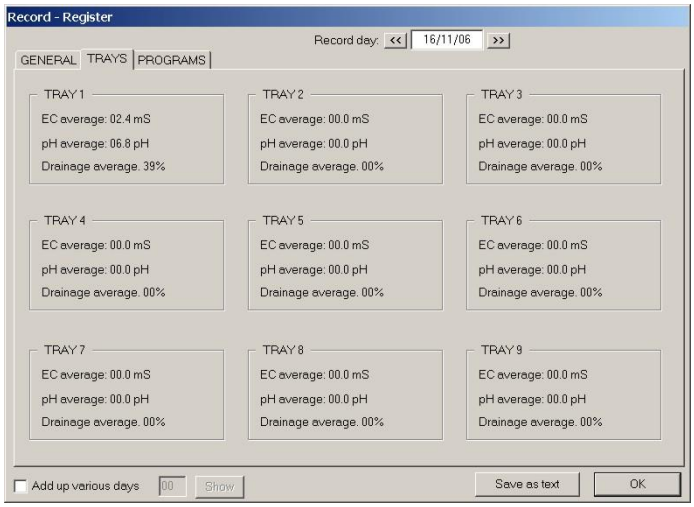
In this section you can see the record collected during the last twelve months. The record is collected when a connection takes place and the user can see it. The records are stored kept in the files with extension *.his*.

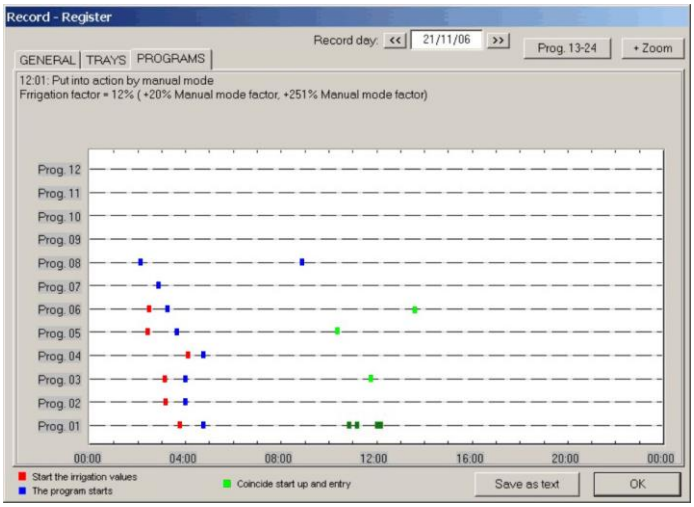
If there is connection when consulting the records, the one corresponding to the present day will be read from the Agrónic 7000. If there is no connection, the last one stored in the file will be displayed.

Using the button of "Save as text" you can convert the record corresponding to the selected day into an ASCII text file. This file can be used in a spreadsheet or data base. It can also be printed.



In the PC record there is one more field than in the Agrónic 7000, the one of "Programs" where a graphic shows what time and which programs have been started up during the day. If you place the mouse on the point which indicates the start of the irrigation values at the upper part of the dialogue, the values of program start are displayed. With the button of "+ Zoom" the graphic shows the period of time between 8 a.m. and 8 p.m. allowing you to see more accurately program starts.





10.5.- SENSORS

This section displays the graphics of the sensors connected to the Agrónic 7000.

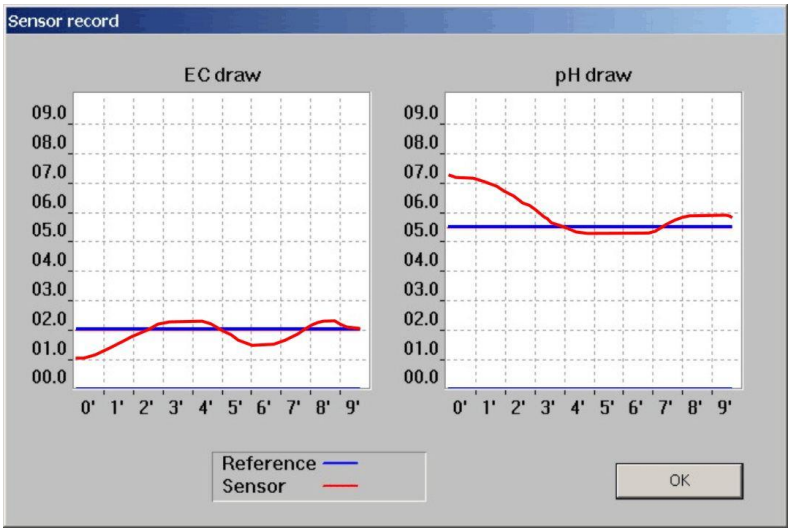
There are two types of sensor graphics: the ones which correspond to the EC and pH sensors and the ones which correspond to all the other sensors.

10.5.1.- EC and pH sensors

The EC and pH sensors can only be seen if there is connection with the Agrónic and they show the last ten minutes of the sensor. Apart from the reading of the sensor, the reference which has to follow is displayed in red. This graphic is mainly used in the adjustment of the system.

The readings are collected every 10 seconds.

The reading of the EC and pH sensors also are saved every 10 minutes displaying graphics of 24 hours.



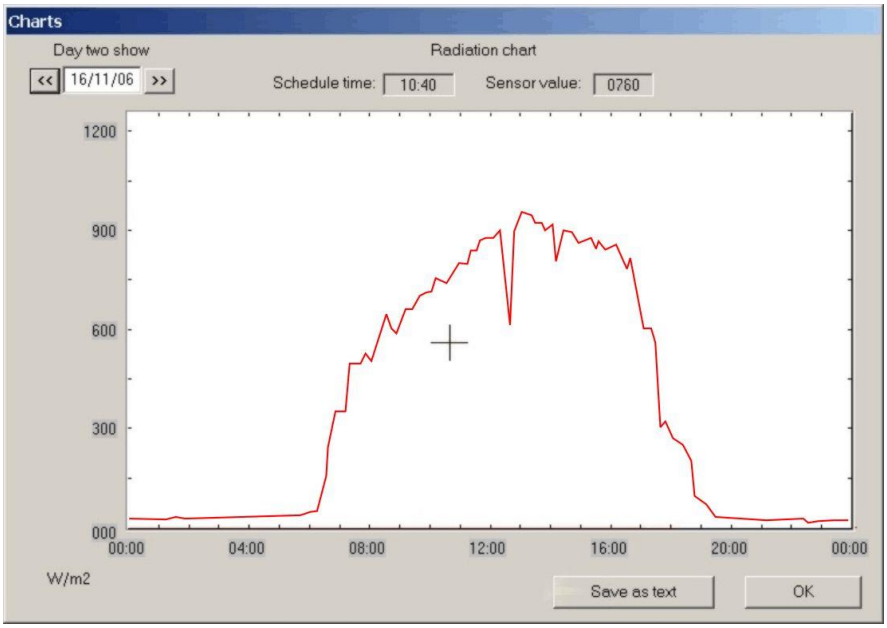
10.5.2.- Others sensors

A graphic record of all these sensors as radiation, humidity, temperature, soil moisture is carried out. This record is stored in the PC in the files with extension *.gra*.

The readings are collected every 10 minutes.

If there is no established connection with the Agrónic, they readings stored in the file will be shown. If there are readings, the last ones stored by the unit will be displayed.

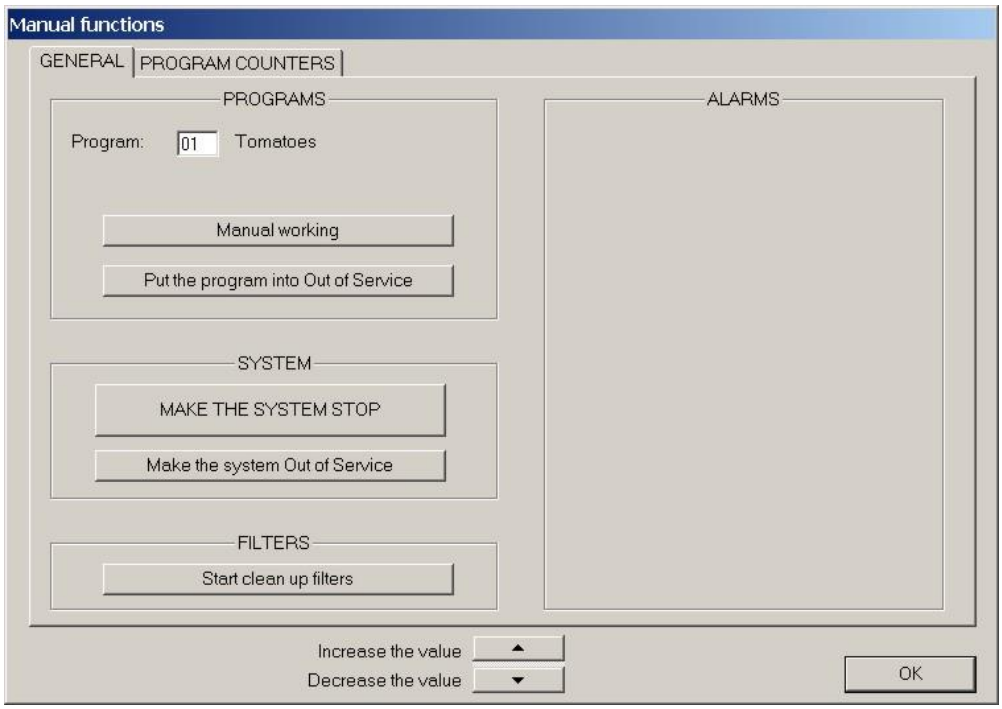
If you move the mouse along the graphic, it displays, at the bottom part of the dialogue, the exact value of the sensor in the point where the mouse is.



11.- MANUAL MODE

You can only enter in this option if there is connection with the Agrónic 7000. It allows you to start up and stop programs, deactivate alarms, start filter cleanings, modify the program counters, etc.

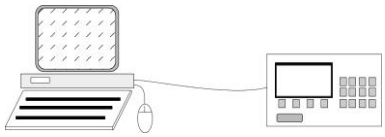
In order to carry out any operation with a program, first select the program and then press the button which corresponds to the desired operation or modify the counter.



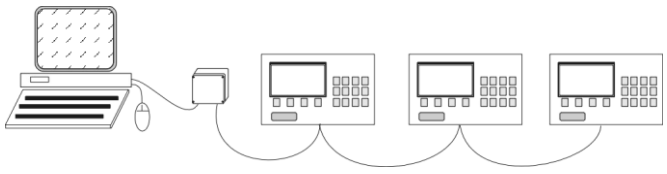
12.- TYPES DE COMMUNICATION

The AGRÓNIC 7000 has 4 different options of communication. They are explained in this section so that the installer can choose the most suitable for your installation.

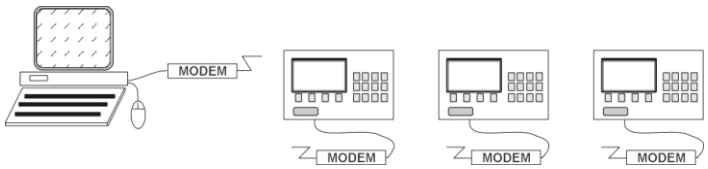
Option A: For equipment where only one Agrónic is connected and this one is placed at less than 30 meters from the PC. Select the type of communication RS-232.



Option B: For equipment with cable connection, distances between 30 and 3000 meters and one or several Agrónics. Select the type of communication RS-485 two wires. For this type of communication we need a supplementary RS-485 link box which is connected to the PC serial port. From this module we take out a two-wire cable which is connected to the other Agrónics. It is possible to connect different equipment of the PROGRÉS range (AGRÓNIC 7000, AGRÓNIC 4000, MicroIsis) to the line where the Agrónics are connected. In order to interconnect several modules with RS-485 communication, a bus system must be used, as illustrated in the diagram, with only one start and one end, and not a star typology.

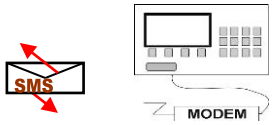


Option C: For equipment where the connection of the PC with the Agrónic is done by telephone (conventional modem or GSM) and every Agrónic has its own telephone line. Select the type of communication RS-232 and modem. For this type of communication we need a modem for the PC and a modem for every Agrónic to be connected.

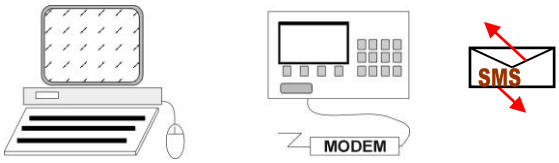


Option D: For equipment where the option short messages to GSM mobile phone for advise to any anomaly and to work with to Agrónic 7000 is on, there are this three other types of communication:

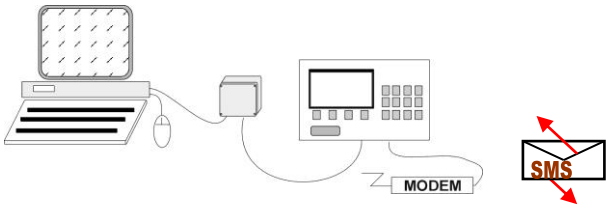
1.- When only the short messages option in activated. The modem should be connected to the serial port RS-232 by means of the communication cable included.



2.- For installations where the option short messages and PC are activated and will work by modem. Only one modem is needed and it has to be connected to the serial port RS-232 for send the short messages and the communication with the PC.



3.- In installations where the PC is in the same place as the Agrónic 7000 linked by cable and also have the short message option. The modem for the short message should be connected to the serial port RS-232 and the PC will be connected by means of communication box to serial port RS-485. It means that in this option a communication box RS-485 2 wires it has to be demanded.

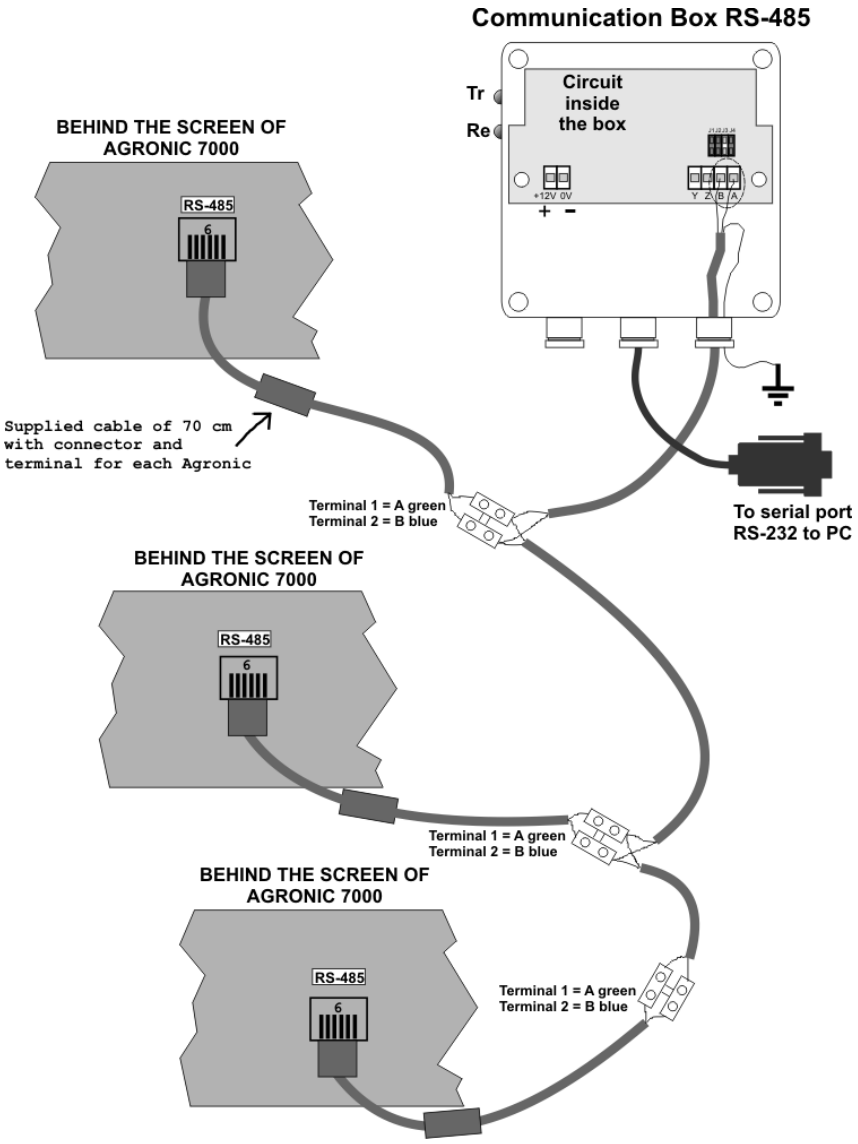


13.- CONNECTING THE RS-485

The “Communication box RS-485” will be installed next to the PC computer and it will be joined to this one by means of the connector cable. Connecting the communication box to 12Vdc respecting the polarity indicated. On the left side there are two indicators which indicate if there is data transmission or reception.

The connection between the different units is done with only one screened cable with two braided yarns, with a cross section, which can go between 0.5 and 1.0 mm. The maximum length of the cables is limited between 1000 and 3000 meters.

Every cable has to have its mesh connected to an earth terminal at one of its ends.



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