AGRÒNIC 4000

VERSION 3

The most complete controller for conventional fertigation, totally configurable and adaptable to any need of every user.

Its multiply use and expansion possibilities offer to the owner all the work modalities available at present time.

INTRODUCTION

Electronic unit for the control of irrigation, fertilization, pH, pumping and filter cleaning, plus malfunction detection and with the possibility of telemanaging the data via PC or mobile phone.

Models with 16, 24, 32, 48, 64, 80 and 96 configurable outputs, plus 12 digital sensors at the base. Extensions for the reading of analogical sensors; both by direct connection to the unit or by external modules (Agrónic Monocable or Agrónic Radio).

Possibility of programming by time and volume, both in irrigation and fertilization as in filter cleaning, with possibility of mixed performance (independent for each sub-program).

By means of climatic or crop sensors, it can influence the start conditions or the irrigation and fertilizer units.

IRRIGATION

It can control up to 99 irrigation sectors, governed by 35 sequential programs, with 12 sub-programs in every sequence (total 420), and possibility of linking programs in order to carry out sequences of 24, 36, or more sub-programs.

Every sub-program can activate from 1 to 10 irrigation sectors simultaneously.

Every program can start its performance at a concrete time, when another program finishes, when a sensor reaches a certain value (°C, soil moisture, etc.), due to an input when a contact is closed, by mobile telephone via SMS message. It can also start its performance according to the days of the week, the irrigation frequency (irrigate every day, every 2 days, every 3 days, etc.) or irrigate every day with several performances. The period of the year when the program has to work can also be indicated. In a start by sensors, an active period and a margin of time between starts can be chosen.

Modification of irrigation and fertilization units by a manual factor or by sensors which will have an influence depending on their values from the previous irrigation, such as rain, evapotranspiration, integration of the solar radiation, etc.

When an irrigation is taking place, a program can be cancelled temporarily by sensor values such as wind, temperature, level, etc.

Grouping of programs up to 9 groups so that only one program of every group can irrigate at the same time.

Complete control of instantaneous flow of four possible irrigation meters, with programming of the expected flow in each sector and tolerance percentage both for excess or lack. Each sector can be connected to a digital flow sensor to detect the lack of irrigation.

FERTILIZATION

Capacity to configure from 0 to 8 fertilizers, in independent tanks.

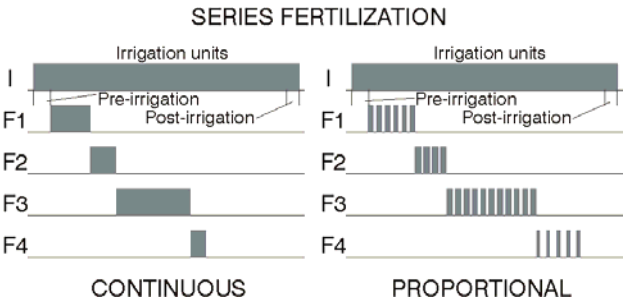
Independent pre- and post-irrigation values for every program.

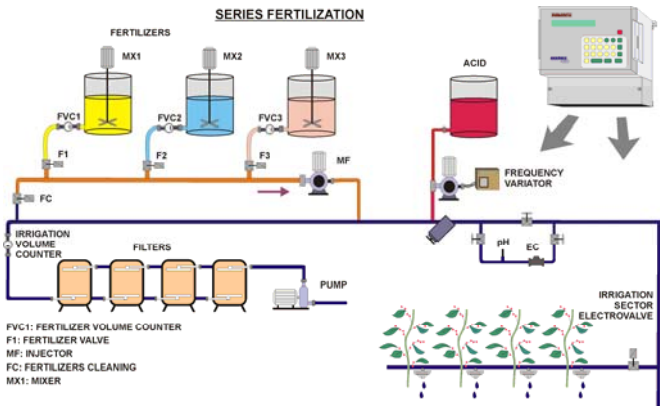
The time or volume of application of every fertilizer can be programmed independently for every sub-program.

The use of mixers can be configured, with pre-mixing and intermittent or non-stop mixing.

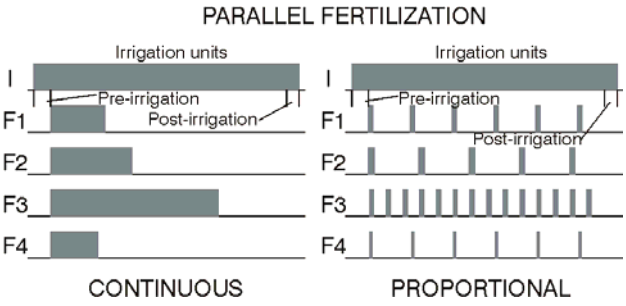
Fertilizers can be applied in three different ways:

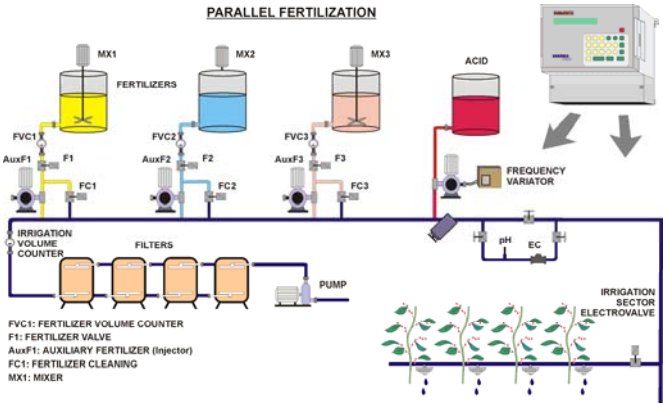
- In series: one type of fertilizer after the other, with just one injector. In proportional fertigation, independent proportions for every fertilizer.



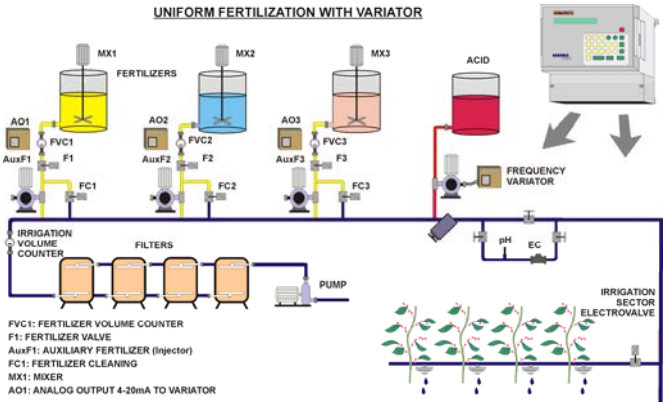


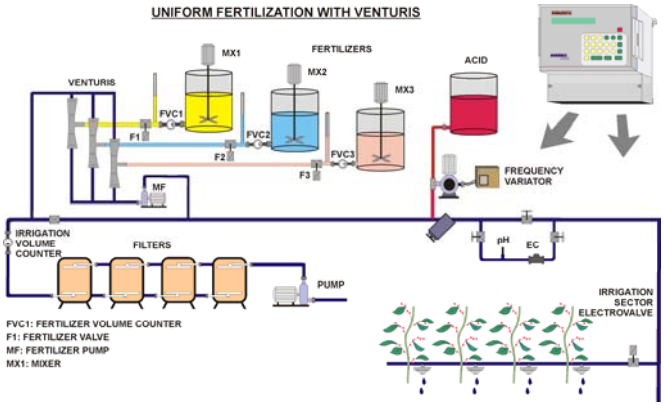
- In parallel: several fertilizers are applied simultaneously, with one injector for every one of them. In proportional fertilization, independent proportions for every type of fertilizer and sub-program.





- Uniform: Sets the each fertilizer application to be uniformly distributed between pre and post irrigation. Application in parallel. For Venturis, injectors or frequency variators.



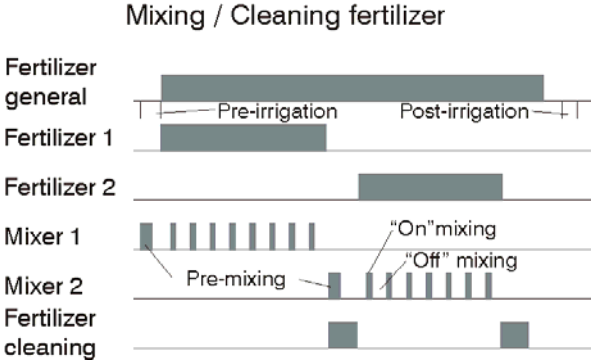


Each injection track can be cleaned automatically, with water, at the end of the fertilization.

Reading of the instantaneous flow of fertilizers, as in irrigation.

With the option of "control pH", it can be controlled by injecting acid or base with a reference value independent for every sub-program. With values of alarm by excess or lack in the reading of the pH and in the electrical conductivity (EC).

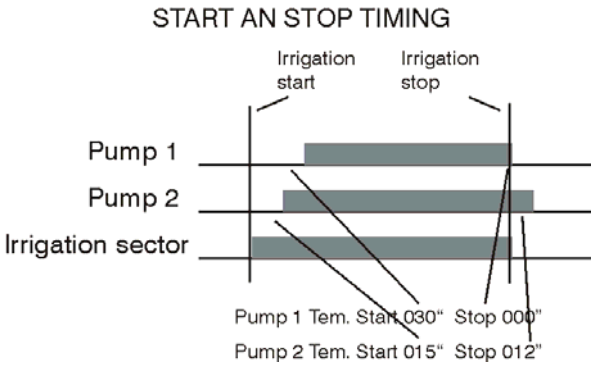
It is possible to choose the control of pH at the pre-irrigation and post-irrigation.



PUMPING

It has from 1 to 4 general irrigation outputs, which can be assigned to sectors, with independent activation and deactivation temporizations. The general number 1, by means of the "pressure regulation option", can give a 0-20 or 4-20 mA analog output, in order to connect it to a frequency variator and maintain a pressure in the irrigation pipe line independent for every sector.

Optional control of a diesel engine or generator, with outputs for start, stop, contact and pre-heating. Start and stop control of the electrical pumps.



FLOWS

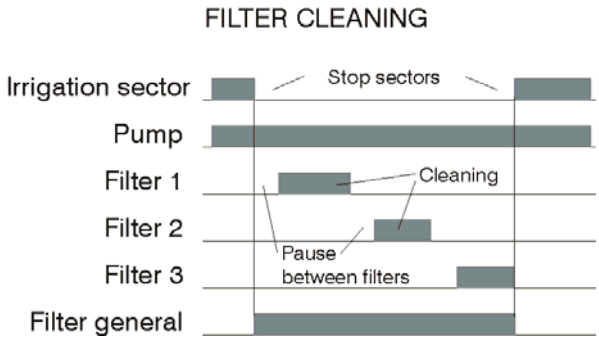
Every irrigation sector can be assigned to one of the 4 possible volumetric meters to irrigate in liters or m^3. In the totals, the volume of irrigation and fertilizer is shared in proportion to the nominal flow assigned to every sector.

The fertilizer is programmed in liters, deciliters or centiliters with 8 meters.

FILTER CLEANING

Up to four groups of independent filters, with the following values:

The number of filters to be used in every group can be configured. Two cleaning times for every filter group. Pause time between filters. The cleaning can be started by the differential pressure and/or by the time or volume of water circulation. Start or not of the sectors when cleaning. Assignation of generals and meters. Control of continuous cleanings.

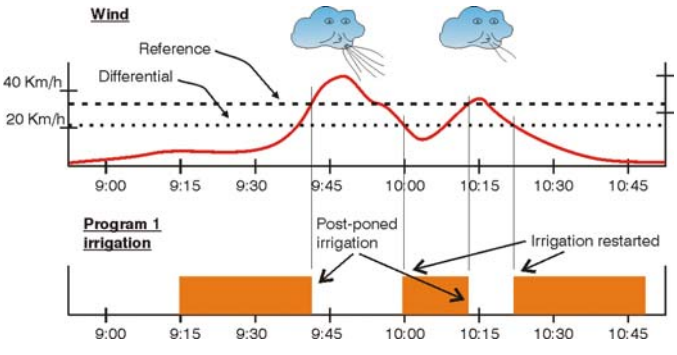


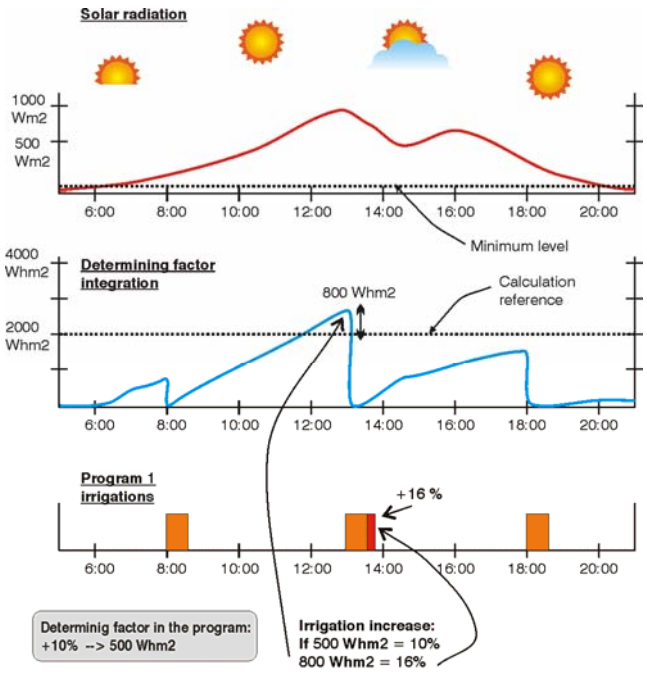
DETERMINING FACTORS

There are 4 determining factors which can affect every one of the irrigation programs ("programs determining factors" option) and they can run in the following ways:

- Start the irrigation by solar energy, humidity, soil moisture, temperature, etc.
- Stop the irrigation by wind, temperature, etc.
- Modify the irrigation units by radiation, rain, Eto, ...
- Modify the fertilization units by radiation, rain, Eto, ...

These determining factors help adapt fertigation immediately to climatic variations experienced by crops.





IRRIGATION INCREASE ACCORDING TO SOLAR RADIATION

MANUAL CONTROL

With manual control, you can start, stop and leave out of service irrigation programs; out of service or general Stop; start or stop the filter cleaning; end of alarms and malfunctions; direct activation of the outputs.

READINGS

It can have the following records which are always updated:

- Sector totals and a general one to show the irrigation units in time and volume plus the calculated flow and the applied units of every fertilizer.
- Anomalies which have taken place during a period of several weeks, such as a power cut, flow cut, filter cleaning, fertilizer without control, irrigation or fertilizer meters, too much fertilizer, proportional fertilization, lack of communication with external modules, due to sensors of general malfunction, definitive, temporary or conditional stop, intrusion alarm, pH and EC sensors, error in memory, start and pressure in diesel engine, etc. All of them go with the day and time when they took place and the most relevant data in relation to the type of anomaly.
- New anomalies: with this record, the anomalies that have taken place since the last visualization are displayed.
- History of the last days, from 20 to 50, where the starts of every program, the filter cleanings that have taken place, the integration of the solar radiation and the room temperature, the rain accumulated that day and the evapotranspiration are showed. It will also show, for every sector, the irrigating units which have been carried out in time and volume, the average of EC and pH applied and the fertilizer units. When there is a connection to a PC, the average of the readings of every 10 minutes, of every one of the 10 last days will be recorded from the first 14 sensors, and the readings of all the active life of the unit can be stored.
- Sensors: with the instantaneous value of the different sensors connected to extensions, external modules or Microisis connected to the Agrónic 4000.
- Working record: stores the day and time of every working the equipment undertakes, able to hold more than 70 different registers, each able to be configured as an anomaly that can in turn generate an alarm or SMS message. The register has a capacity of several weeks. The A4000 only displays anomalies, with the remaining activities being displayed on the connected PC.
- Communication: the communication status with External Modules and the PC.

ALARMS

There are three alarm outputs, each one able to link events or workings.
Alarm sensor for intruder detection.

DIGITAL AND ANALOG INPUTS

It has 12 digital inputs (expandable) to operate with 48 digital functions as temporary / conditional / definitive stop, irrigation/ fertilizer impulses meter, general malfunction, intrusion alarm, rain gauge, start of irrigation programs, diesel oil pressure gauge or engine stop.

Up to 40 sensors (analog inputs) can be connected to extensions, external modules or SMS, to do the instantaneous reading, to condition irrigation / fertilization of different sectors, and make a record in history of the first 14 sensors.

VISUALIZATION

Lightened screen of 2 lines of 40 characters, with internal contrast adjustment. Membrane keyboard with 23 keys and pulsing acoustic warning device. “STOP” key. It includes languages Spanish, French, English, Italian, Portuguese and Catalan.

MANAGEMENT THROUGH A PC

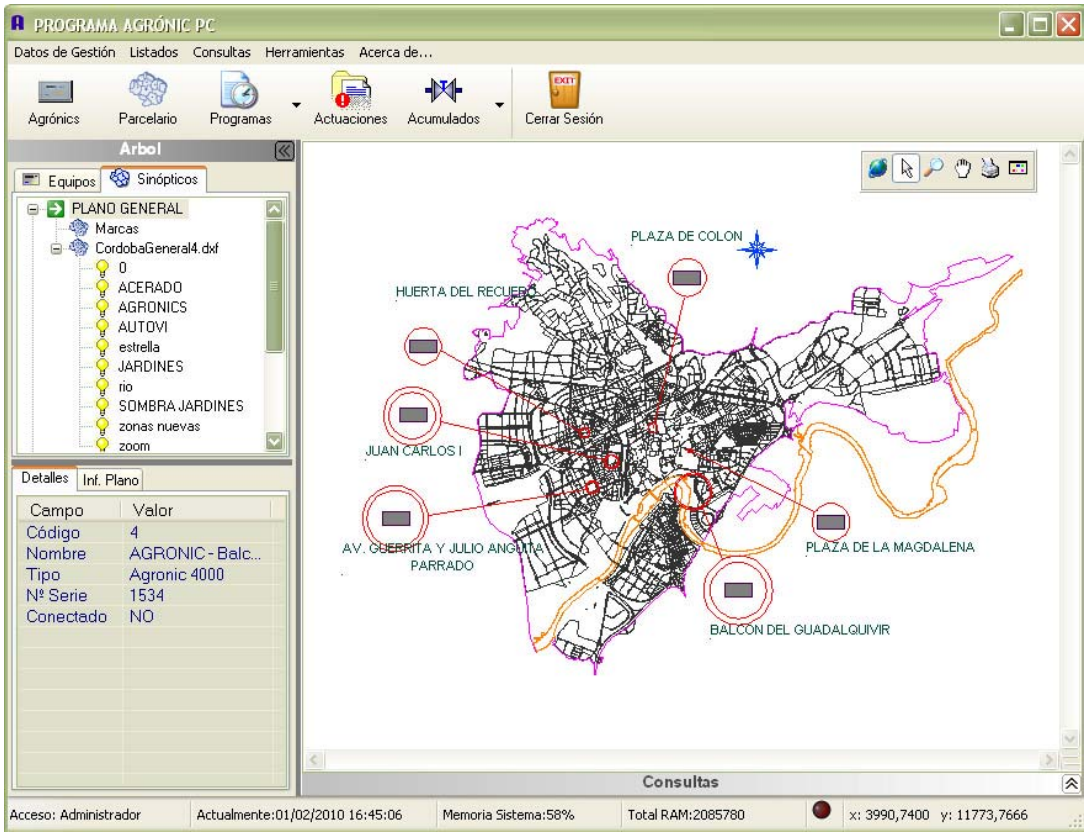
Agrónic PC is a software for Windows which lets you manage the controllers Agrónic 4000 and 2000 from a PC, in a comfortable and easy way.

This software makes use of all the advantages offered by the Windows environment in order to enter parameters and programs intuitively, to modify these, work in real time, as well as to consult anomalies, totals, working record and what the Agrónic 4000 is doing at any given moment.

The software can communicate with one or more Agrónic 4000. This way, irrigation that is taking place at any moment can be controlled from the office or from home and the programming can be changed or any necessary operation carried out. In GPRS, the communication is continuous and simultaneous with several Agronics. Each Agrónic 4000 manages the communication to three different Agrónic PC programs, for example owner, farm manager and installer.

The main characteristics of the software Agrónic PC are

- Connecting multiple controllers to a single program by cable (RS232, RS232 or Ethernet), by telephone (modem, GSM, GPRS), or by radio (radio modem, Wifi or Wimax).
- All the operations which can be made from the Agrónic 4000 are carried out from the software.
- Consultations of operations carried out by the Agronics in 2 different ways, being able to pass from one to the other by a simple movement of the mouse:
  - By units: with different screens. It is a replica of the consultation that is in the controller, but with the commodity that provides the displays on a computer screen.
  - By synoptics: implementing planes or photographs of the farms, parcels or parts of the installation, and illuminated indicators. With all this, it allows to see in a clear and fast way the actions that are carried out by the controller, for example illuminating the parcels on irrigation, marking what engines, fertilizers or filters are acting and showing the flow, pressure, soil humidity, etc.
- Programming system on one single screen, on which a name can be put to each one of the programs.
- Records of all the operations that the Agrónic carries out, saving them in the text files.
- Possibility to save in text files the configuration, programming, totals and records which can be dealt with from other programs (spreadsheets, data bases, etc.).



SMS MESSAGES

With a GSM/GPRS modem connection, "SMS messages" displaying alarms and events can be sent to two mobile phones, and one of them can be sent two reports per day related to the irrigation taken place. It can also receive orders such as start or stop a program, set at “Stop”, modify the manual factor of a program, give the value of a virtual sensor such as the evapotranspiration, etc.

Once a program has been started up or shut down, an SMS can be sent to other equipment (A4000/A2000/...) to synchronize actions among them. The text message is prepared by the user. There is maximum number of 6 for these types of messages.

EXPANSION MODULES

Capacity to connect with external modules of different types:

- Agrónic Radio 868 and 868-16: up to 64 modules, it is possible up to 16 latch solenoid outputs, and up to 16 digital sensors, and 2 analog sensors for each one of them.
- Agrónic Radio 2,4: up to 120 modules, it is possible up to 16 latch solenoid outputs, and up to 16 digital sensors, and 2 analog sensors for each one of them.
- Agrónic Radio 433: up to 60 modules, it is possible up to 16 latch solenoid outputs, and up to 16 digital sensors, and 2 analog sensors for each one of them.
- Agrónic Monocable 64 and 120: up to 120 modules, it is possible up to 8 latch solenoid outputs, and up to 10 digital sensors and 1 analog sensor at every one.
- MicroIsis: up to 4 MicroIsis with 8 analog sensors every one.
- Expansion modules: up to 16 modules with 5 relay outputs, 2 digital inputs and 2 analog sensors every one

Agrónic Radio module

Agrónic Monocable encapsulated module

MODELS AND OPTIONS

- Model to “to built-in” a frame or “box” in a wall.
- Model with power supply at 230 Vac (115 Vac) or at 12Vdc.
- Option for latch outputs (pulses) for two or three wires.
- Option double voltage in electric generator.
- Option analog inputs and outputs with galvanized isolation on one or two circuits, each one with 6 4-20mA sensors and 5 4-20mA outputs (or pulsed outputs by photo-relay).
- Option serial port RS232.
- Option serial port RS485.
- Options of serial port 3 (RS232) and serial port 4 (RS485) and link.
- Option Ethernet port.
- Option internal gsm/gprs modem
- Option of modem for connection to expansion modules.
- Option diesel engine control.
- Option of regulation of the pressure of the irrigation water.
- Option pH regulation and reading EC with alarm.
- Option determining factors of programs.
- Option software Agrónic PC
- Option of sending and receiving SMS messages.
- Option Agrónic Monocable.
- Option Agrónic Radio.
- Option MicroIsis.

WARRANTY

The irrigation controller Agrónic 4000 meets all the norms set by the CE.

The products created by PROGRÉS enjoy a two-year warranty against all manufacturing defects.

R-1760