AGRÒNIC 7000

INTRODUCTION

Complete controller for the control of irrigation, fertilization by EC and by time or volume units, acidity regulation, fertilizer mixing, pumping, filter cleaning, drainage, reading of sensors and conditioning programs by them, option for pressure control by program, management through a PC or mobile phone, plus breakdown detection and complete visualisation of data.

Basic model with 40 independent outputs plus 16 inputs for digital signals and 16 analogical inputs, which can be extended, and 8 pulses outputs for EC injection and 2 of acid and base.

IRRIGATION

It can control up to 200 irrigation sectors, governed by 24 programs, which include values of:

- 6 starting times.
- Irrigation by days of the week or pause days.
- Active timetable and period.
- Start by sensors of digital or analogical level, by solar radiation, by integration of temperature and by level of soil humidity or soil water content.
- Pulsed irrigation, automatic modification of the time between irrigation for solar radiation or solar energy and for drainage.
- Sequential irrigation of another program.
- Nine irrigation groups with priority within the group.
- Irrigation sequence of 32 sectors by program with independent irrigation and pre-irrigation units. The sectors that irrigate at the same time can be grouped from 1 to 32. Also independent post-irrigation units.
- Modification of the irrigation units by manual factor and by determining factors.
- Security irrigation due to a lack of start and control of continuous start.

FERTILIZATION

Capacity for 8 fertilizers plus 2 acids or acid and base. The fertilization can be done by conductivity (EC) and by time or volume units, choosing the number of fertilizers which will work at every moment.

We can assign a volumetric counter and an agitator to every fertilizer.

Fertilizers general output and an auxiliary one for each fertilizer; so we can work with several heads.

The injection by EC is done by pulsed outputs or, optionally, by 0-10 V outputs. It is possible to regulate the EC by difference with the input EC and proportional compensation by the variations in this input EC.

PUMPING

It has from 1 to 6 general irrigation outputs, which can be assigned to sectors, with independent activation and deactivation timings. The general nº1 can give a 0-10 V analogical output, in order to connect it to a frequency variator and maintain a pressure in the irrigation pipe independent for each program.

FLOWS

Every irrigation sector can be assigned to 1 of the six possible volumetric counters to irrigate in litres or m3. 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 litres or centilitres with 8 counters.

Alarms by excess or lack of flow.

DRAINAGE

System for the control of the quantity of drained water in crops and the measuring of drained water parameters in a maximum of nine different crops. The parameters can be: electric conductivity, acidity, tray level in millimetres, quantity of drained water, etc.

Two operation options for drainage compensation:

- "By modifying the time or volume of the irrigation application". Before starting a new irrigation cycle or during a current cycle the irrigation units shall be modified to compensate the drainage produced and to be able to carry out the cycle, according to the data gathered in the previous or current irrigation cycle.
- "By modifying the frequency between irrigation cycles". Upon starting a new irrigation cycle the time to be applied in the next one will be corrected in relation to the drainage from the previous cycle.

DETERMINING FACTORS

Some of the sensors that we can connect to the controller for reading, can condition the irrigation programs in order to adapt them to the hydric needs of each moment.

There are 5 determining factors which can affect every one of the irrigation programs and they can affect them in the following ways:

- "Start the irrigation" by solar radiation, tray level, soil moisture or water content and room temperature, etc.
- "Modify the irrigation units" by solar radiation, drainage, and rain.
- "Modify the EC reference" by solar radiation and rain.
- "Modify the fertilization units" by solar radiation and rain.
- "Modify the frequency between irrigations" by drainage and solar radiation.

CURVES

Every irrigation program has a curve in order to modify the values of the irrigation units, its frequency, EC and fertilizer units for 6 different times in one day.

TRAYS

It can control up to 9 drainage trays with a drained volume measured, the EC, the pH and the alarms. Independently, it can also control the analogical level of the trays for the start of supplementary irrigations.

FILTER CLEANING

There is no limit in the number of filters to be used.

- Cleanings can be for differential pressure gauge, time or volume.
- 3 independent cleaning times to assign to groups of filters.
- Pause time between filters.
- The cleaning can take place during irrigation or it can be done at the start of an irrigation program.
- Stop or not of the sectors to clean.
- General and counter assignation.
- Control of continuous cleaning.

MANUAL CONTROL

With manual control, you can:

- Start, stop and leave out of service irrigation programs.
- Leave general service.
- Start or stop the filter cleaning.
- End of alarms and breakdowns.
- Direct activation of the outputs.
- Modify the internal counters of the programs such as the days between irrigations, left activations, the frequency between activations and the correction of the drainage.

RECORD

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.
- Workings, showing the date and time of every working carried out by the unit, such as anomalies, irrigation starts with their main values, the drainage done in every irrigation, workings of the filters, agitators, erased, etc. The information can be selected by date, programs and anomalies. It can record information for several weeks.
- New anomalies, with this record it shows the anomalies that have taken place since the last visualisation.
- Record of the last 15 days, where you can see the starts of every program, the filter cleanings that have taken place, the integration of the solar radiation and the room temperature. It will also show, for every sector, the irrigating units which have been carried out, the applied measures of EC and pH and the fertilizer units. As well as, for every tray, the average of drainage applied during the day and the mean proportional of pH and EC.
- Sensors, with a graphic record of the recordings spanning the last 24 hours of the conductivity (EC), acidity (pH), radiation, relative humidity, start sensors (6), air and water temperature. In the case of the EC and pH sensors, detailed recordings of the last 10 minutes are also available.

ALARMS

It can generate alarms for more than 20 different conditions, activating one of the three alarm outputs (EC, pH, general), recording the anomaly and sending a warning by GSM telephone message.

VISUALISATION

Graphic lightened screen of 240x128 pixels (16 lines of 40 characters), contrast adjustment by keyboard. Membrane keyboard with 24 keys and pulsing acoustic warning device. “STOP key”.

WATER MIXING

Optionally, it allows the mixing of two waters of different salinity, with an independent resulting conductivity in every one of the irrigation programs.

MANAGEMENT THROUGH A PC

The Agrónic 7000/PC is a program for Windows 95, 98 or 2000 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, recordings, 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:
  - By consultation: where all the operations which take place can be seen in a similar way to the consultations of the AGRÓNIC.
  - 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, records, operations, sensor readings, etc. Spreadsheets or data bases can also be used.

SMS MESSAGES

Optionally connected to a GSM modem, it can send “SMS messages” to a digital telephone, with alarms and incidences and periodical messages of pre-established values. It can also receive orders such as start or stop a program, set at “Stop”, etc., from a short message sent by a mobile phone.

EXPANSION MODULES

Capability of linking different external modules of various types to enlarge the inputs and outputs:

- Expansion modules: Up to 16 modules in which the communication and feed are performed by the 24 Vac line with a bifilar cable, with two different types:
  - Type 1: With 5 relay outputs and 2 digitals inputs.
  - Type 3: With 5 relay outputs, 2 digital inputs plus 2 analog inputs for sensor of pH, EC, level, drainage, etc. (it can be 4 if the digital inputs are invalidated).
- Agrónic Monocable: Up to 120 modules; it is possible up to 8 outputs for latch solenoids, up to 10 digital inputs and 1 analog input in each one. Encapsulated modules do not have analog inputs.
- Agrónic Radio 868 MHz: Up to 64 modules; it is possible up to 16 outputs for latch solenoids, up to 16 digital inputs and 2 analog inputs in each one.
- Agrónic Radio 2,4 GHz: Up to 120 modules; it is possible up to 16 outputs for latch solenoids, up to 16 digital inputs and 2 analog inputs in each one.

Agrónic Radio module

Agrónic Monocable encapsulated module

MODELS AND OPTIONS

- Model is available at 220 Vac, 115 Vac, 12Vcc or two voltages in electric generator.
- Extensions of 16 relay outputs.
- Extensions of 16 digital inputs.
- Option of 12 analogical outputs 0-10 V.
- Option of 2 waters mixing.
- Option SMS messages.
- Option of link to PC.
- Option of water pressure regulation.
- Option Agrónic Radio.
- Option Agrónic Monocable.
- Expansion modules by cable controlling the drainage.
- Expansion modules by cable with sensors.
- Version in Spanish, English, French and Italian.

WARRANTY

Agrónic 7000 is compliant with all the norms defined by the CE.
The products created by Progrés enjoy a 2 year warranty against all manufacturing defects.

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