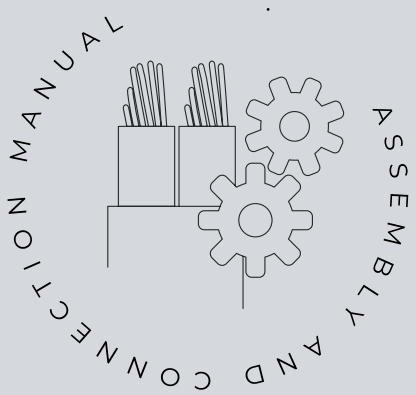
ASSEMBLY AND CONNECTION MANUAL

AGRÓNIC 2500

VERSION 3



Sections in the manual:

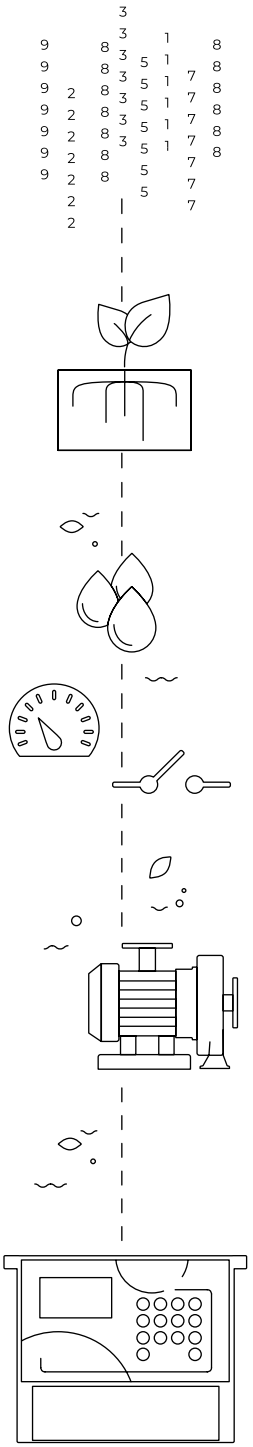
- Dimensions
- Technical specifications
- Connection locations
- Connections
- Installing the options
- Recommendations

The sections on Programming, Manual Actions and Query are detailed in the User Manual.

The input and output parameters and coding sections are detailed in the Installer's Manual.

The Communications Parameters section is detailed in the Communications Manual.

SISTEMES ELECTRÒNICS PROGRÉS



Welcome to the Agrónic 2500 manual.

We are pleased to count on your experience and skills to install the Agrónic 2500.

This document will guide you in the process of installing the Agrónic on the farm or electrical panel. It provides details on the dimensions of the controller and wiring of the different connection options.

Thank you for your work!

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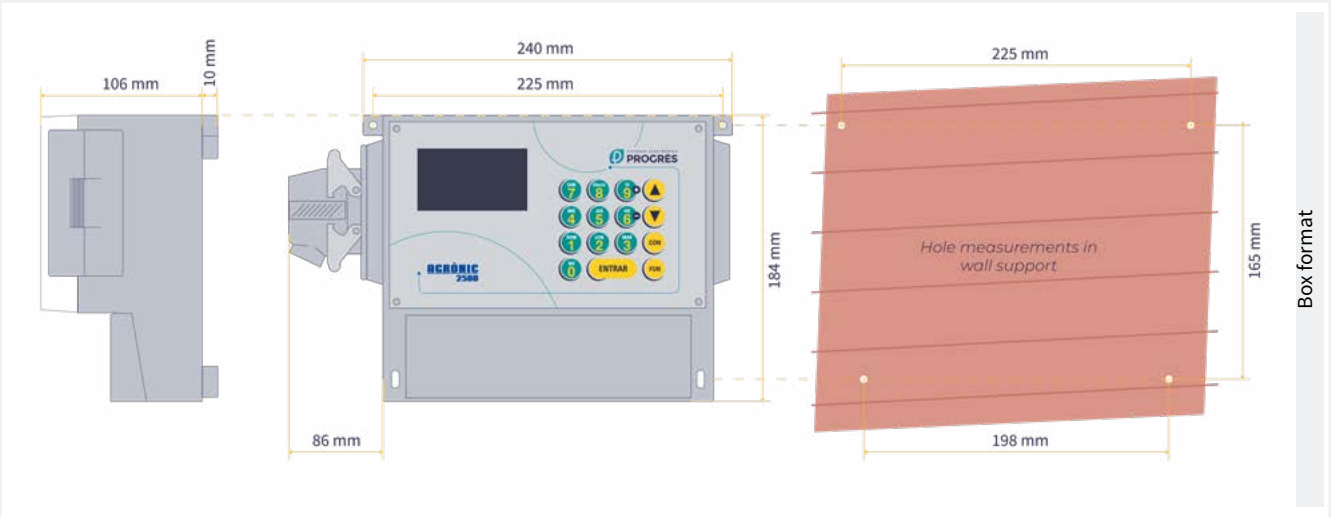
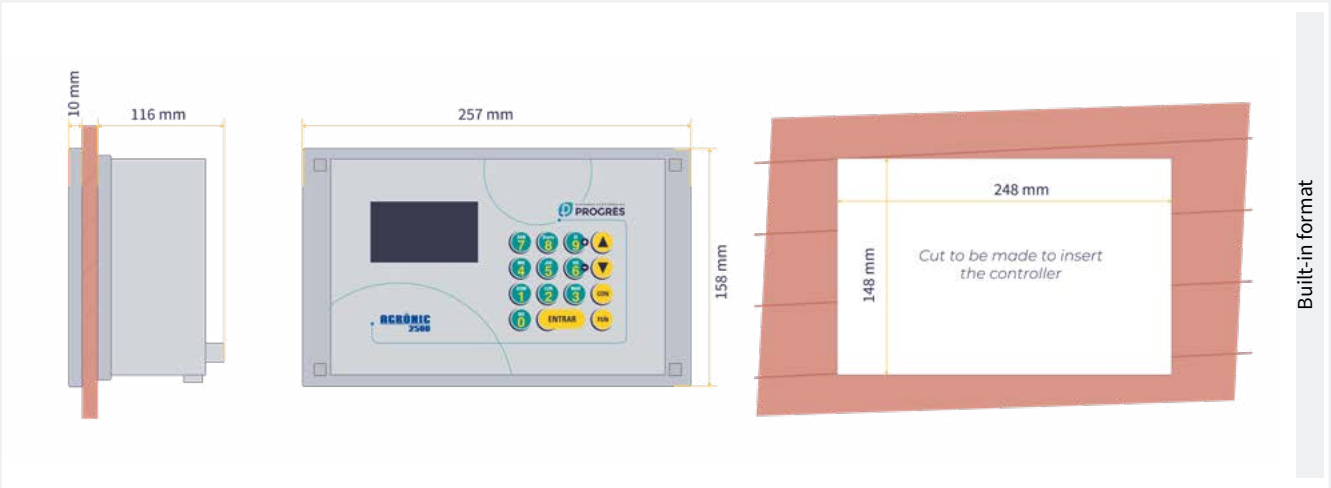
1 DIMENSIONS





Where to install the Agrónic

Install the Agrónic at the correct height and position for good handling. Avoid direct sunlight, humidity, dust and vibrations as much as possible.

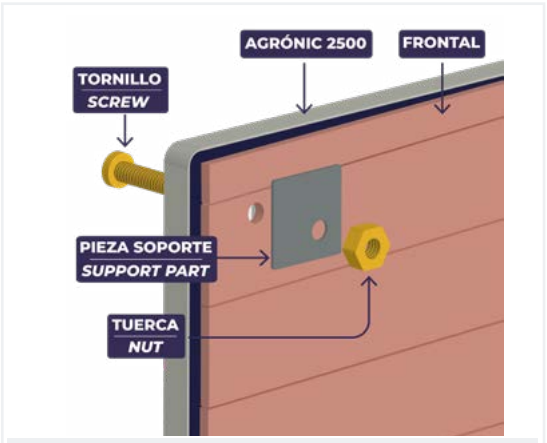
Avoid being close to elements that generate interference and may affect correct operation.

In the box format, the unit is housed in a hermetically-sealed box (IP65) with a transparent front cover for the keypad/display and an opaque cover for housing the connections. The 27-output model uses a connector attached to the left side of the box.

To maintain the seal, the covers must always be closed and the cable glands included with the unit installed in the cable outputs.

Install the unit on the wall with the two perforated pieces on the top corners and two on the bottom, removing the connection cover. The fastening elements can be 4 self-tapping screws (3.5 x 38 mm – DIN 7981) and 4 6x30 mm plugs (SX 6x30).

In the built-in format, a hole must be drilled in the front of the cabinet or desk according to the measurements indicated in the previous drawing and held in place by the screws on the corners, using the four pieces that are supplied with the unit (4 M3 x 12 mm screws (DIN 84), 4 M3 nuts (DIN 934) and 4 metal sheets of 20 x 20 x 1 mm).



Assembly

2 TECHNICAL SPECIFICATIONS

General power supply		
Voltage		12 Vdc +15% -10%
Power consumption		Less than 12.5 W (0.3 W in standby)
Fuse	Input	Thermal (PTC) 1.1 Amp. at 25°C, auto-resettable

Output power source		
Voltage		From 12 to 24 Vdc or Vac (maximum 30 V)
Fuse	Input “R+”	Thermal (PTC) 3.0 Amp. at 25°C, auto-resettable

Outputs		
Digital	Number	9, extendable to 18 and 27.
	Type	By relay contact, with 24 Vac potential (external transformer).
	Limits	30 Vac / 30 Vdc, 1 Ampere, 50-60 Hz, CAT ll (per output)
All outputs have double isolation in respect to the power output.		

Inputs		
Digital sensors	Number	6, expandable (option) to 11 on non-Latch models.
	Type	Opto-coupled, operate at 12 or 24 Vdc or Vac
Analog (option)	Number	2
	Type	4-20 mA, 0-20 V. (on demand, with galvanized separation)
	Number	4
	Type	4-20 mA

Environment	
Temperature	-5°C to 45°C
Humidity	< 85%
Altitude	2000 m
Pollution	Grade 2

Weight	
Box model	From 1.0 kg to 1.6 kg
Built-in model	From 1.1 kg to 1.5 kg

Memory and clock safeguard	
Memory	Without maintenance, 10 years for parameters, programs and records in memory, in FRAM memory and records in FLASH memory.
Clock	48 hours without power

Statement of compliance	
Complies with Directive 89/336/EEC for Electromagnetic Compatibility and Low Voltage Directive 73/23/EEC for Product Safety Compliance. Compliance with the following specifications was demonstrated as indicated in the European Community Official Gazette.	CE

Symbols that may appear on the product							
	Protective ground terminal		Antenna		Ground terminal		Double isolation

This symbol indicates that electronic devices should not be disposed of along with household waste at the end of their useful life. The product must be taken to the corresponding collection point for electric and electronic unit recycling and correctly processed pursuant to Spanish legislation.

3 CONNECTION LOCATIONS

3.1. BOX FORMAT

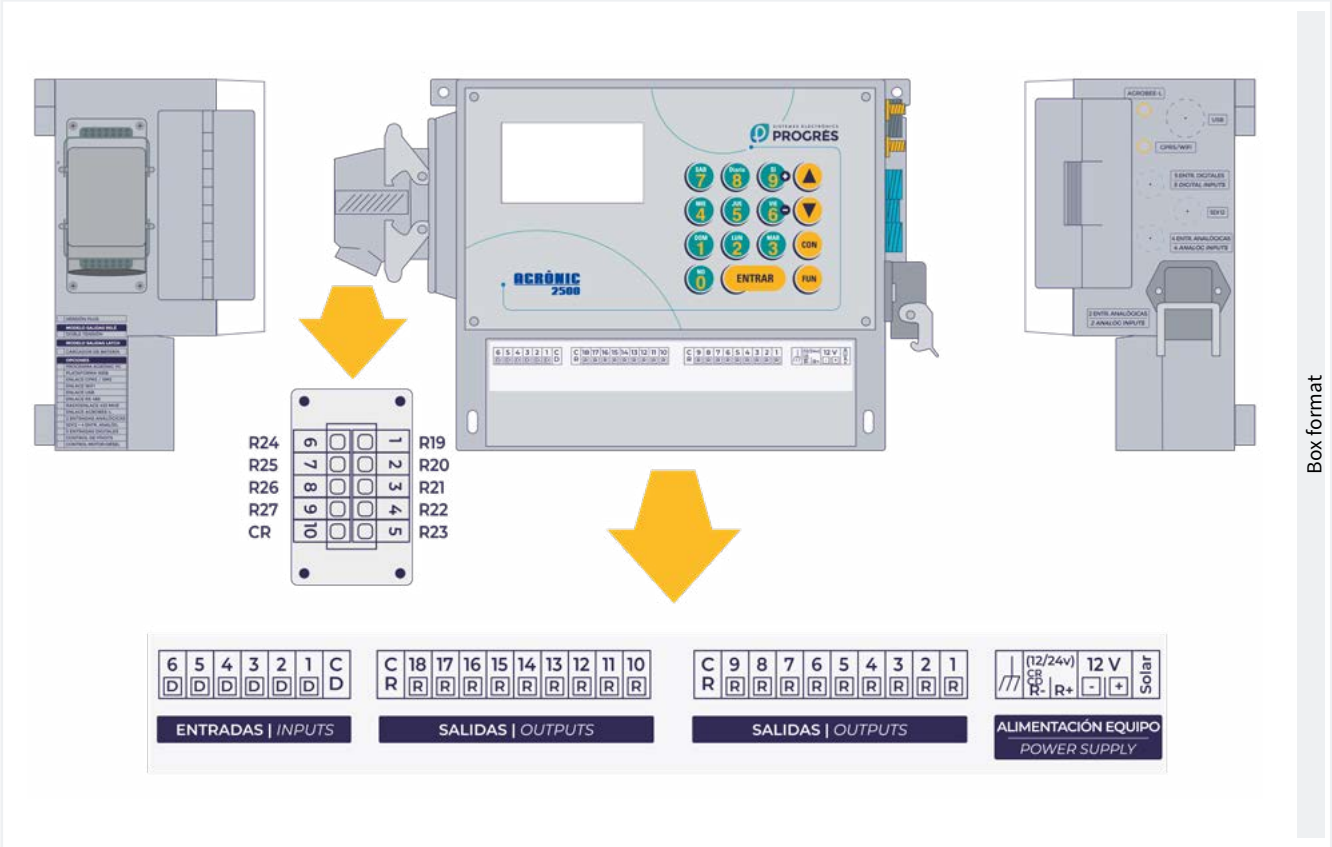
In the box format, remove the bottom cover to access the connectors.

To insert cables, the holes required must be punched out (do this with the connection cover in place and screwed in to avoid breaking it).

The 27-output model has the last nine outputs located in a connector on the left side.

The connectors and antennas from the rest of the options are located on the right side.

It is recommended to connect the wires to the terminal using the terminal connectors that come with the unit. (The terminals accept cables up to 2.5 mm^2 diameter).

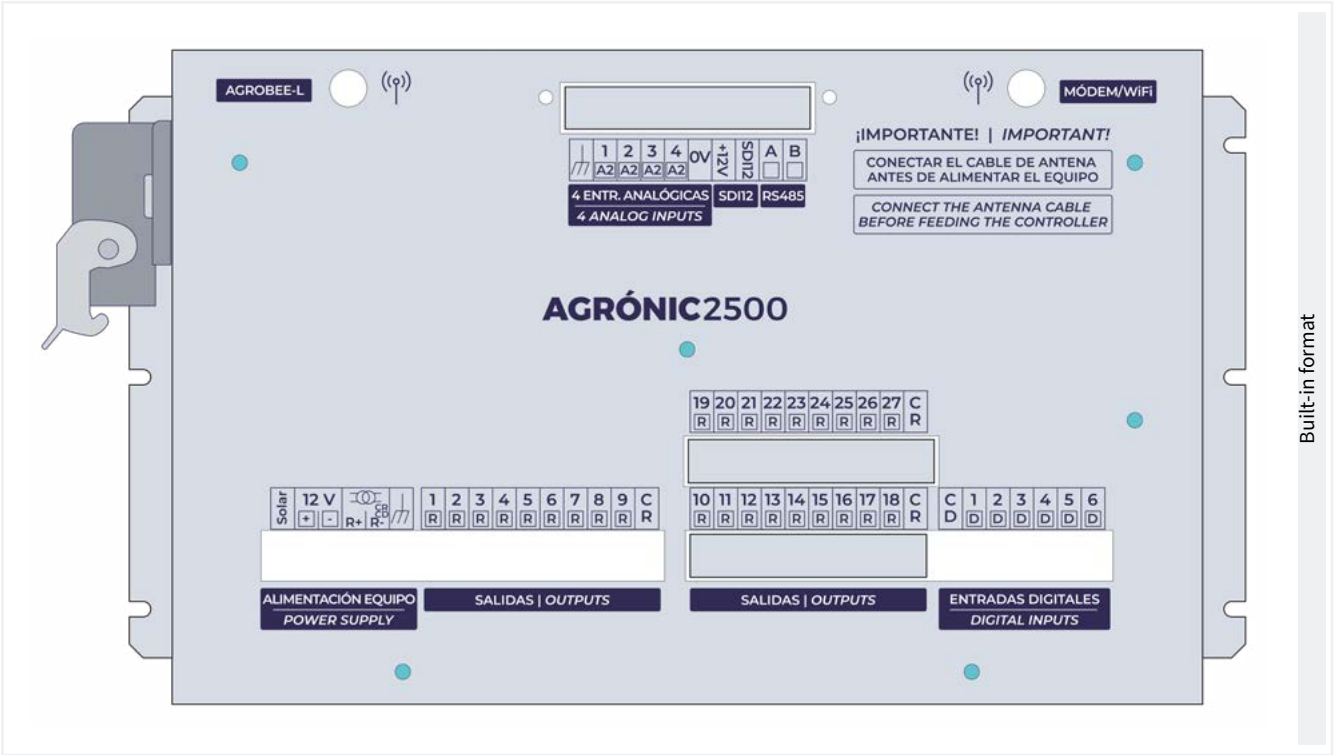


Box format

3.2. BUILT-IN FORMAT

To connect the built-in model, access the back park located inside the desk or cabinet. The connections for the power supply, inputs and outputs on the 9-, 18- or 27-input models can be found here.

When options are installed, there may also be connectors for the antennas of the AgroBee-L, the modem, WiFi or radio link option; in addition to the SDI12 expansion option and 4 analog inputs. On the sides, there may be the USB port connector, the 2 analog input and the 5 digital input options.

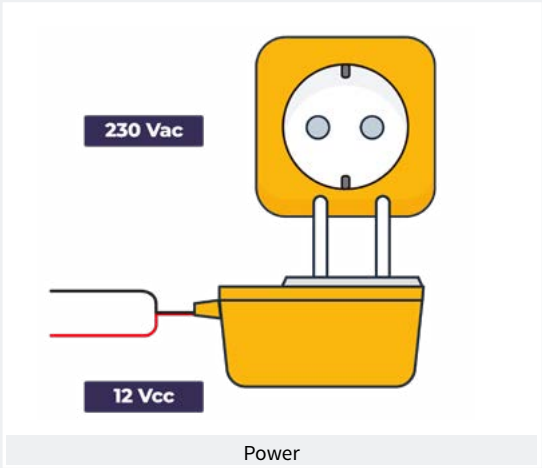


4 CONNECTIONS

The unit must be installed pursuant to the current regulations that apply to electrical installations. The unit will not be adequately protected if it is not used as specified in this manual.

The Agrónic must be installed away from interference sources such as frequency drives, pumps and power cables. Sensor and communication cables should never pass next to cables with alternating current and should preferably be shielded. All the connection terminals on the Agrónic 2500 can be plugged in, which allows for quick maintenance.

4.1. CONNECTING THE POWER SUPPLY



Power

The power supply is 12 Vdc for all models.

Installations with a solar panel, generator set or diesel pump are connected to the 12 Vdc battery.

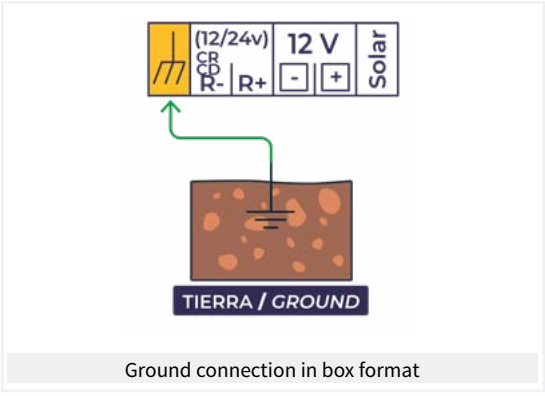
In 110 or 230 Vac systems, a 90-230 Vac / 12 Vdc (50-60 Hz) power supply is available as an accessory to connect the unit. The socket to which the power supply is connected must be easily accessible.

The power supply intake has an auto-resetting thermal fuse and is also protected against reversed polarity and power surges.

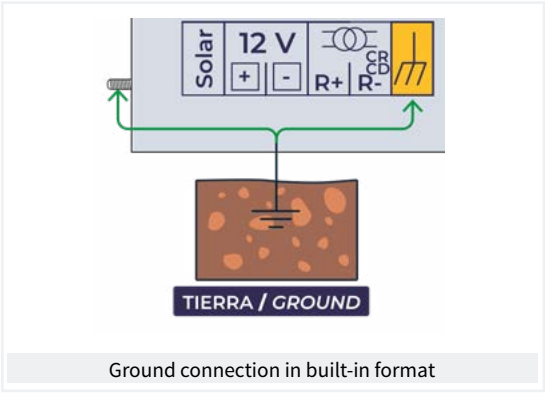
The installation must have a separate thermo-magnetic switch to protect the Agrónic 2500. Its output is connected to the general power supply and the transformer that powers the output.

When the diesel pump is running, avoid disconnecting the battery as the alternator will raise the electrical tension considerably and damage the Agrónic.

4.2. CONNECTING THE GROUND CONNECTION



Ground connection in box format



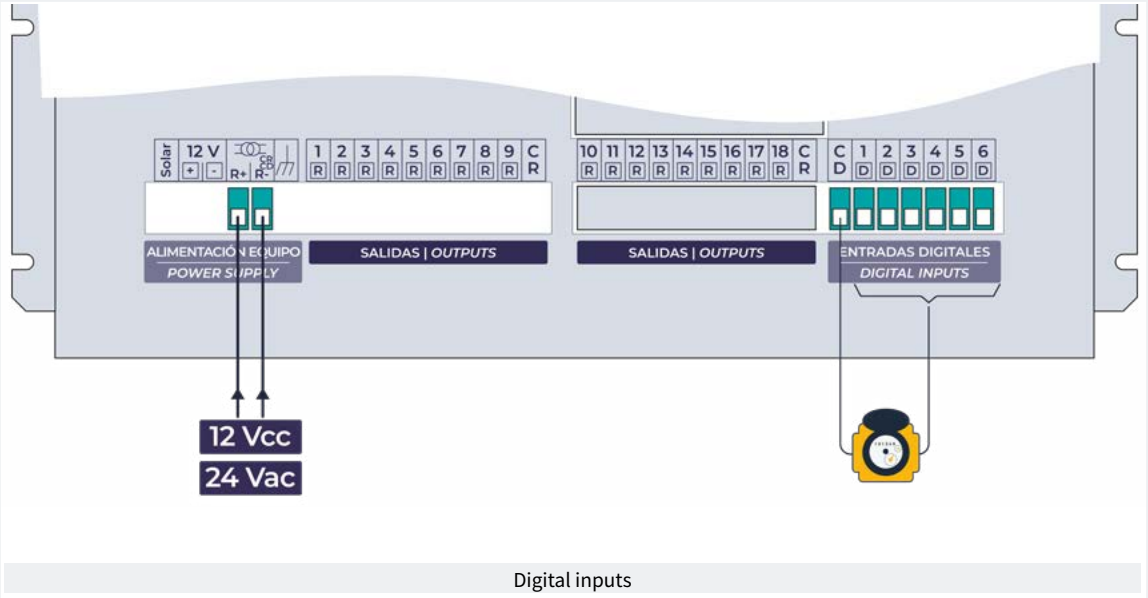
Ground connection in built-in format

The terminal used for the ground wires is located next to the power supply terminals; its function is to divert to the ground any possible electrical sparks generated by storms that can enter via the input and output cables. An arc sparkover in the internal gas discharger is produced with 90 volt or more.

It is very important to connect this output independently of the rest of the elements within the installation in order to completely safeguard the unit.

The built-in model has an additional ground connection on the side of the metal box when it needs to be diverted to the ground. The ground connection must be different and separate from the ground connection of drives or pumps.

4.3. CONNECTING DIGITAL INPUTS



Digital inputs

Both the digital inputs and the relay outputs are powered externally at 12 Vdc or 24 Vac.

The digital inputs are galvanically isolated by optocouplers from the rest of the circuit.

It is very important to know that the contacts of the units connected to the digital inputs must be voltage-free. In other words, when the input is activated, the common (CD) is internally connected to the input (Dx).

There are 6 inputs, listed from D1 to D6, plus a common marked CD.

In the Basic version

Each of the sensor inputs can take on a function or operation that is configured in the 'Function - 4. Parameters - 3. General' section of the manual '2466 Agrónic 2500 Installer's Manual Basic Version'.

List of functions:

- IM Irrigation meter
- FM Fertilizing meter
- SC Start cleaning
- TM Temporary malfunction
- DM Definitive malfunction
- CS Conditional stop
- PS Program start
- AL Alarm (Send an SMS message or notification through Agrónic APP)

In the Plus version

The inputs are assignable to digital sensors or meter sensors, see sections 'Digital sensors' and 'Meter sensors' in the manual '2468 Agrónic 2500 Plus Version Installer's Manual'.

The functionality of a back-torque filter can be applied to the meter inputs (IM and FM), in order to avoid false pulses. By default, the filter is deactivated. It can be activated from 'Function - 4. Parameters - 10. Installer - 5. Various', in the 'Digital Meter Sensor' section.

4.4. CONNECTING THE OUTPUTS

4.4.1 Relay output connection

All the outputs are operable at either 12 or 24 volt in alternating or continuous current (do not supply voltage higher than 30 volt).

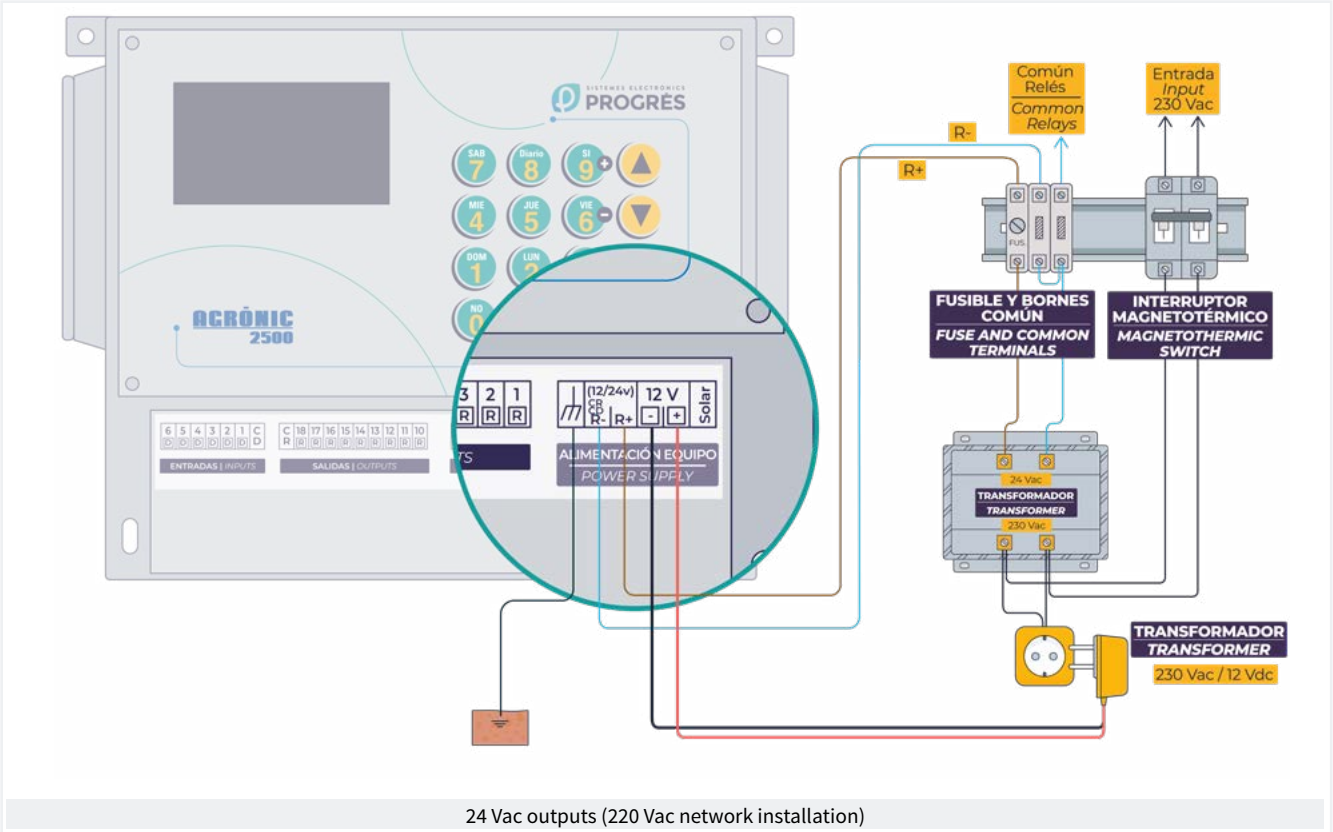
To be operative at 24 Vac, an external transformer with a double-insulated 24 Vac output must be installed pursuant to UNE EN61010 standards. There is an accessory for a 230/24 Vac 50 VA transformer to connect to the unit.

The power supply intake for the outputs is marked R+ and R-.

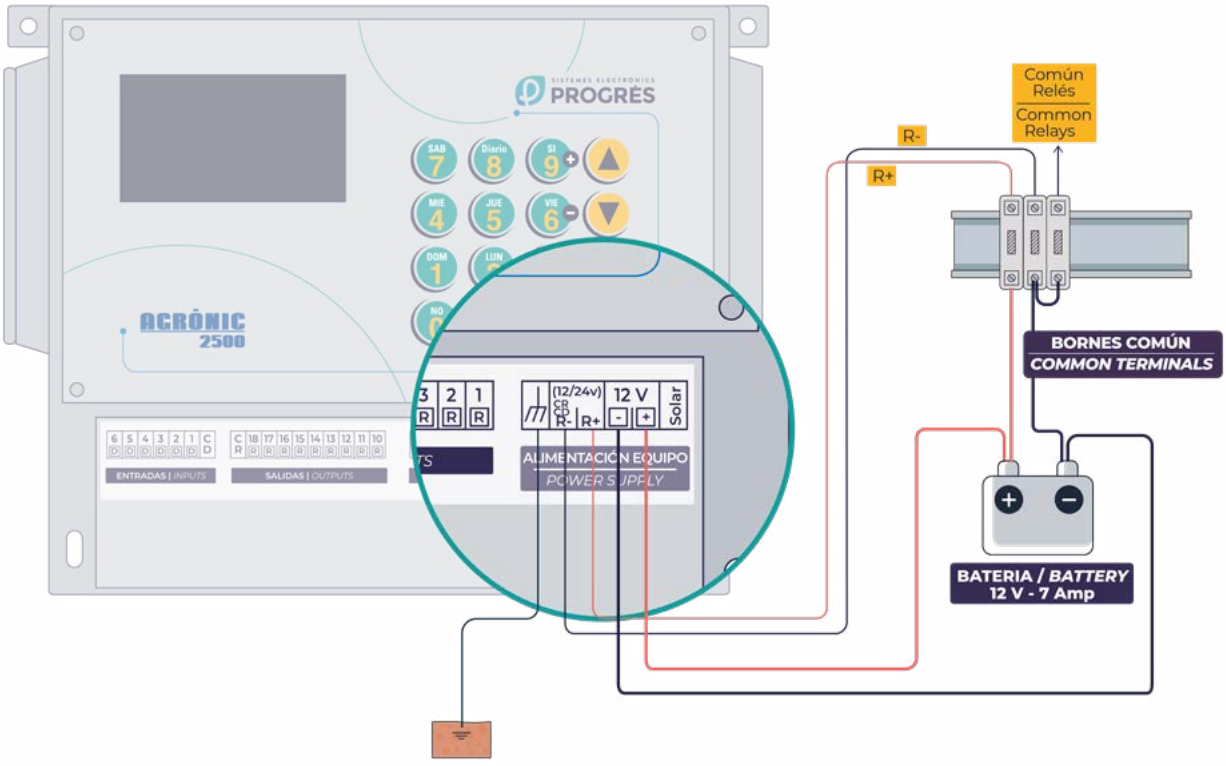
The solenoids on the solenoid valves, relays and contactors are connected between the CR output common and the corresponding output between R1 and R27.

The outputs are isolated from the internal circuitry by relays and protected by a varistor in each one.

The power supplied to the outputs and sensors is protected by an auto-resettable thermal fuse. The 'Consultation - Agrónic' section indicates whether there is voltage for the outputs or not. When there is a short circuit in one of the outputs, the fuse will automatically be tripped, limiting the output until the short circuit has terminated.



24 Vac outputs (220 Vac network installation)



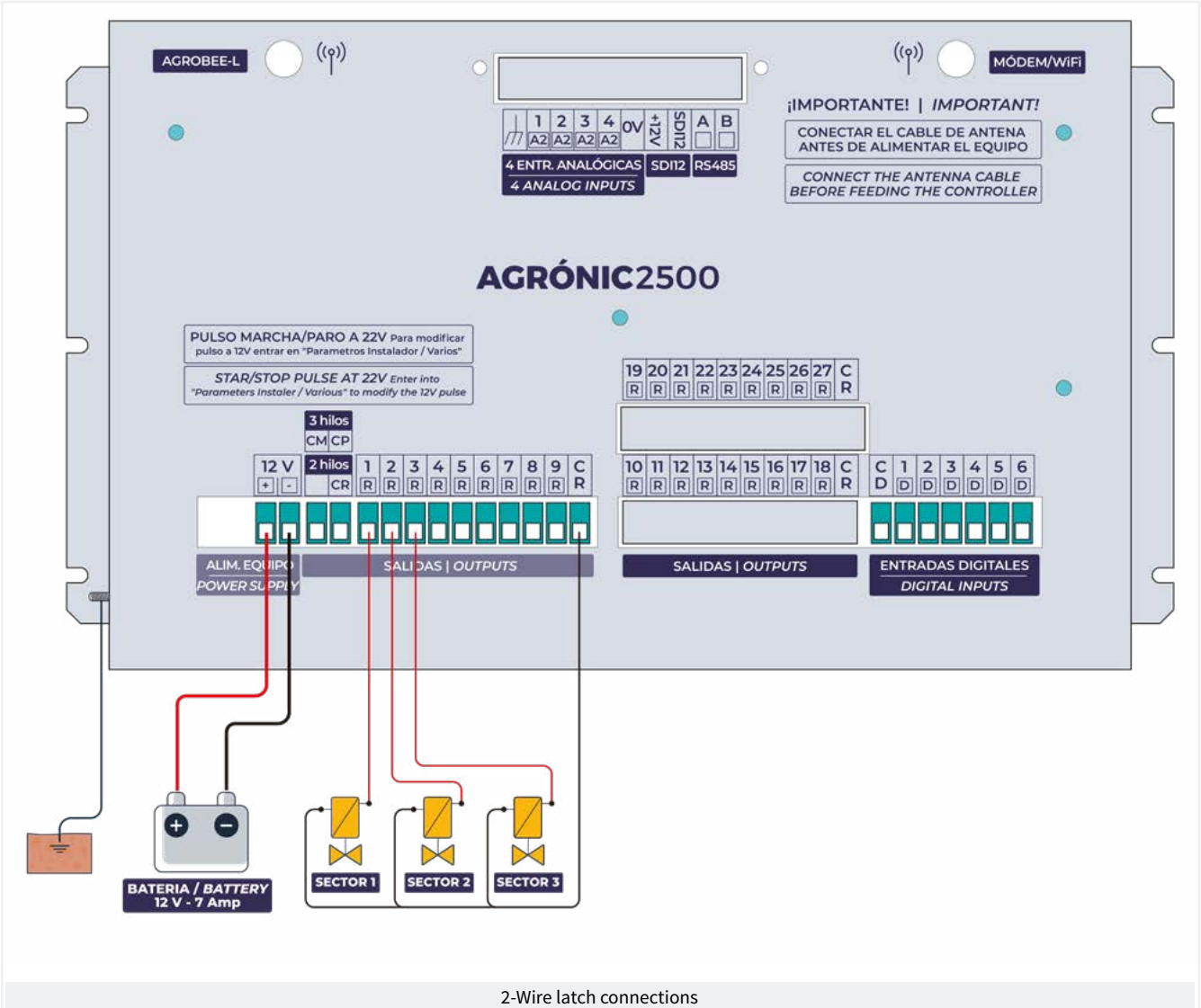
12 Vdc outputs (12 Vdc installation)

4.4.2 Connection of latch outputs

In installations where very low power consumption is needed, latch valves are usually used. The latch solenoid valve, also called from impulses, functions by hydraulically locking its open or close position, consuming power only in the moment it changes position. This allows power to be powered by a battery only or by a battery and a solar panel. The calculation is made taking the installation's options and auxiliary systems into account.

The installer can configure the unit to use latch solenoid valves in the two or three-wire format and a 12 or 22-volt trip voltage. See the section 'Function - 4. Parameters - Installer'.

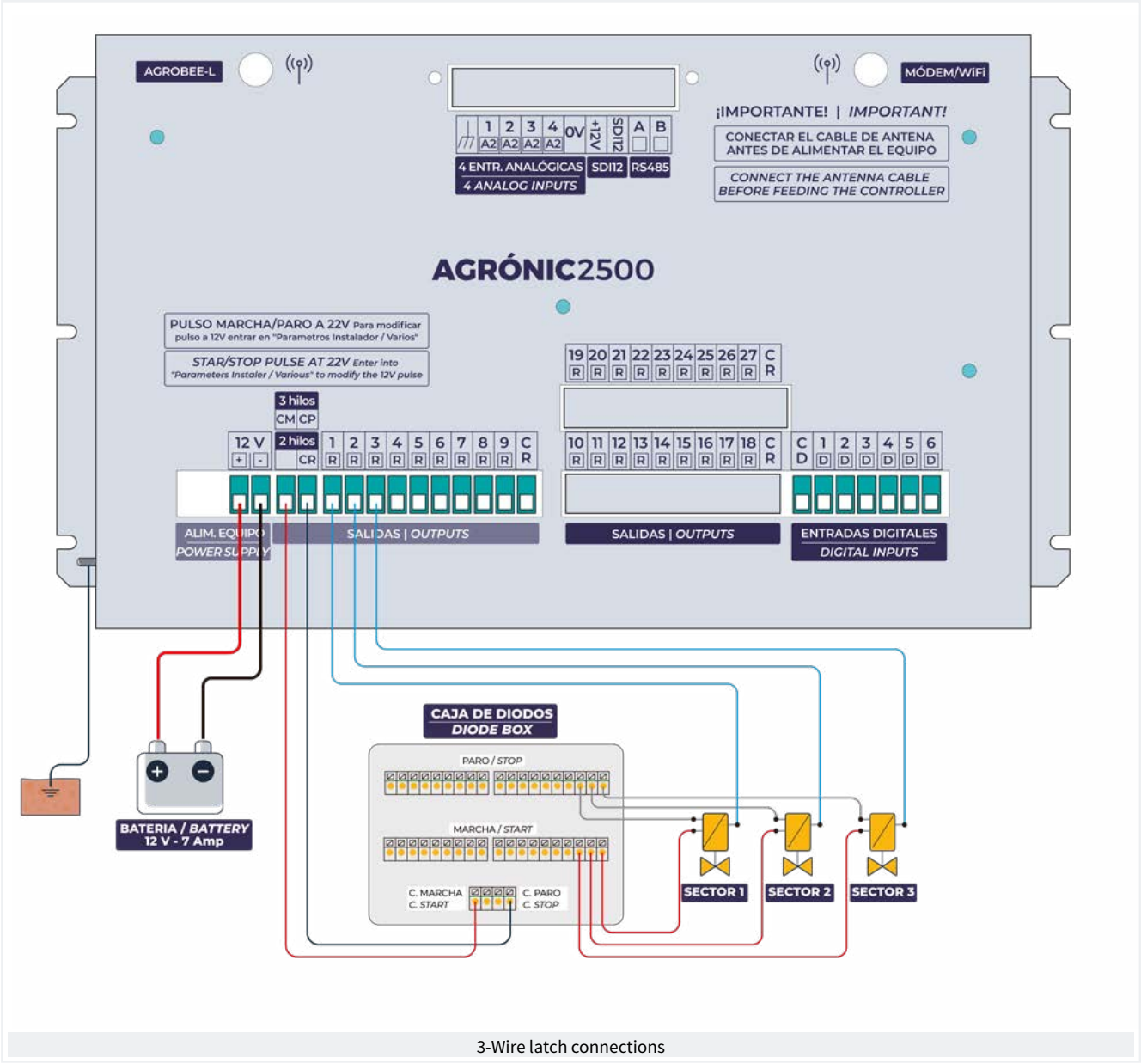
If installing 3-wire models, a diode box must be incorporated that is appropriate to the total number of the unit's outputs, to make the connection from the start and stop common outputs. This is unnecessary in 2-wire models.



2-Wire latch connections

One of the two wires is connected to the CR output common and the other to the corresponding output between R1 and R27.

When the solenoid valve acts hydraulically in reverse of the order given by the unit, this command will be reversed by entering 'Function - 4. Parameters - Installer - 5. Various'.



3-Wire latch connections

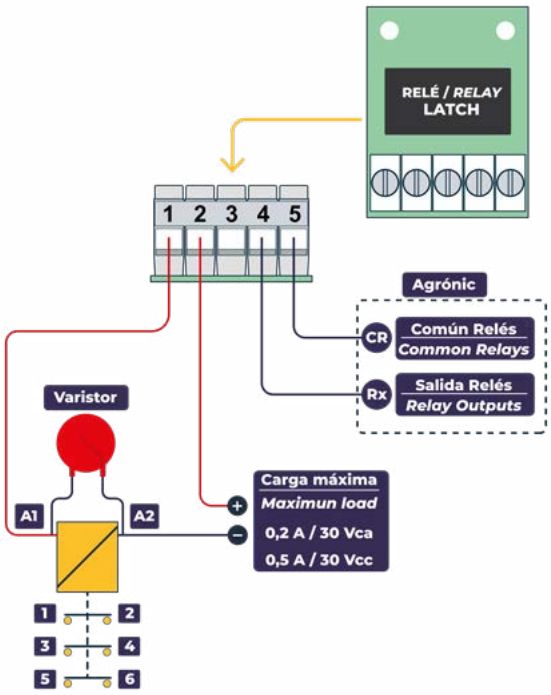
This solenoid valve model has two commons; the one for starting (normally red) will be brought to the diode box, to one of the terminals marked Start ; The stop common (normally black) is connected to a terminal marked Stop; the other cable (normally white) is connected to the corresponding output between R1 and R27 .

The CM start and the CP stop commons must also be connected on the unit and from the diode box. If the valve order is the opposite of the desired order, reverse the Common Start and Common Stop cables.

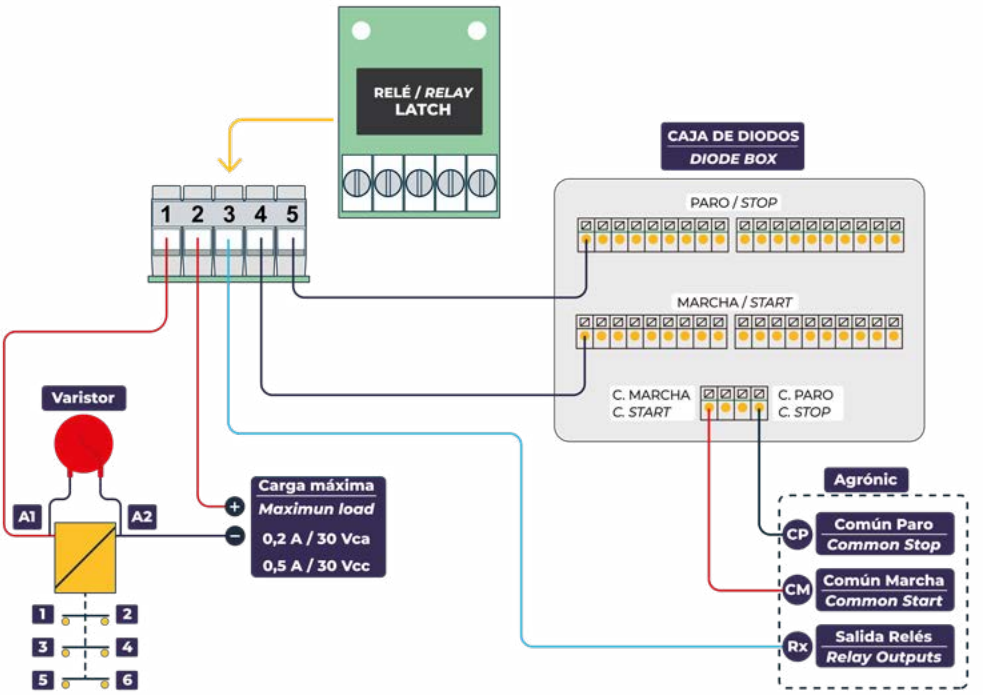
4.4.3 Latch relay connection

When there are electrical units in the installation (injectors, mixers, pumps, etc.) that must be activated by Agrónic, a 'latch relay' can be used. This unit converts the Agrónic latch output into an electrical contact.

Like latch valves, there are two types: 2-wire and 3-wire. Depending on how Agrónic is configured, it must make one connection or another. Supports trigger voltage of 12 and 22 Vdc.



2-wire latch relay connection



3-wire latch relay connection

5 OPTIONS

5.1. DIESEL PUMP CONTROL OPTION

In installations where there is a motor pump, the Agrónic can manage the start and stop maneuvers. To manage it, it uses four outputs (preheating, contact, start and stop) and a digital input (oil pressure gage).

When making the connections for the diesel pumps, the following details must be taken into account:

INPUTS

PA oil pressure gage. In the version for starting diesel pumps, the pressure gage input function is assigned to this input. The CD digital input common does not have to be connected to the pressure gage as this is done directly through the pump chassis.

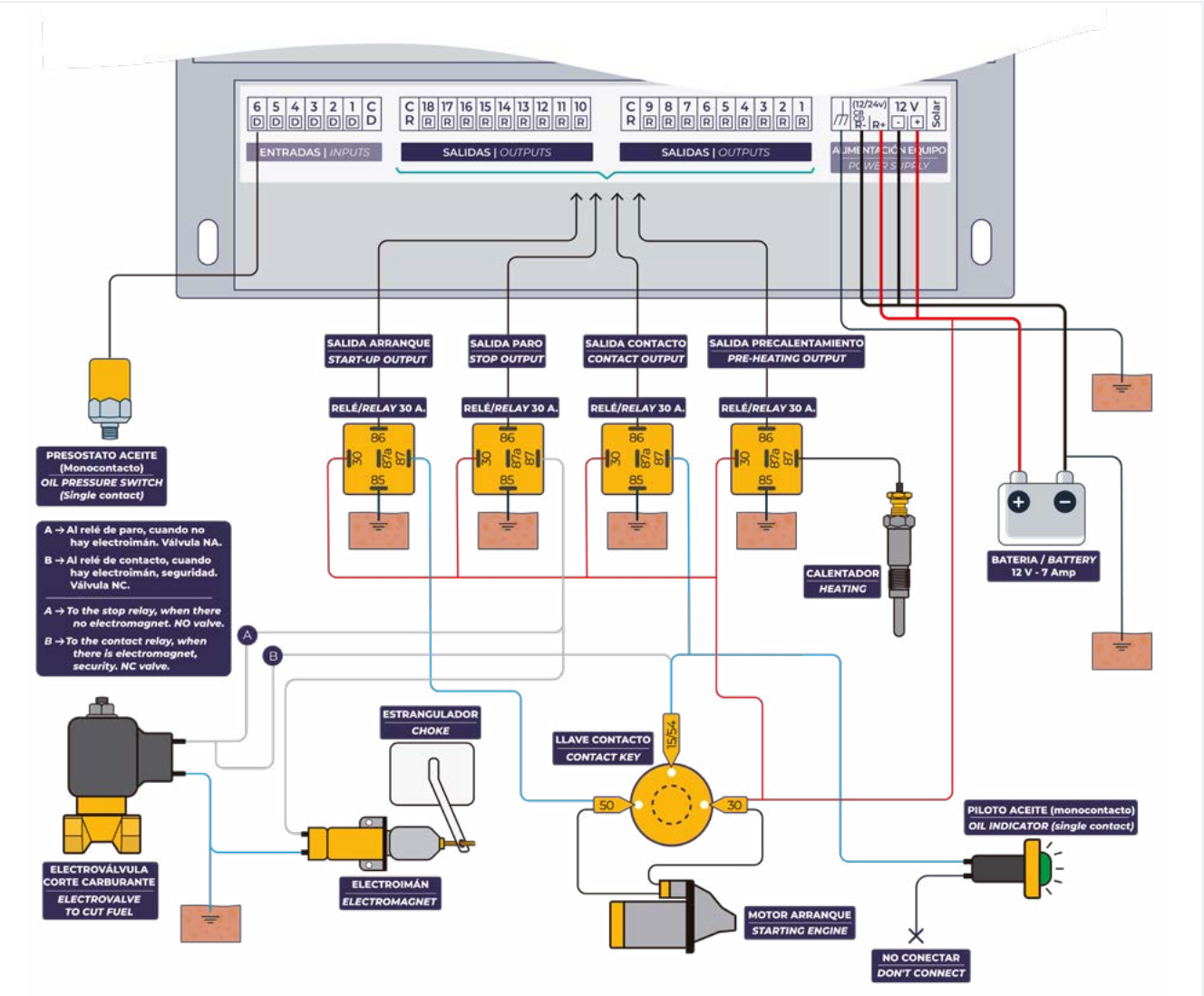
OUTPUTS

The outputs deliver the battery positive. A supplementary relay is intercalated between each to prevent damage to the internal relays.

The contact output is connected through the relay to the cable from the '15/54' terminal of the valve. This is the unit responsible for connecting and disconnecting the contact, so the valve must be left in the inactive position.

At the start-up output, a supplementary relay is intercalated with a capacity for 20 to 30 amperes, connecting the output to the cable from the '50' terminal on the valve.

If the pump is stopped by an electromagnet, this is connected to the supplementary relay from the stop output.



Diesel pump

If the pump is stopped when the fuel supply is cut off by a solenoid valve, it is installed at the same injector input for the stop to be as quick as possible. When the solenoid valve is normally open, it is connected directly to the stop output. If the solenoid valve is normally closed, it is connected to the contact output.

When there is a preheating function, this is connected to the relay to be activated.

For greater safety, it is convenient to have a dual stopping system that uses an electromagnet for stopping quickly and effectively, plus a solenoid valve that is normally closed so as to cut off the fuel supply if there is an incident or malfunction.

5.2. DUAL VOLTAGE OPTION

The Dual Voltage option is for installations where the power comes from a diesel generator. The Agrónic will start the generator when it has to irrigate and will stop it when finished.

The Agrónic is powered by the group's 12 Vdc battery. The four outputs that give the commands to start and stop the generator go to 12 Vdc, all the others go to 24 Vac and are operational when the generator is running.

The 12 Vdc outputs are always the last 4 of the unit.

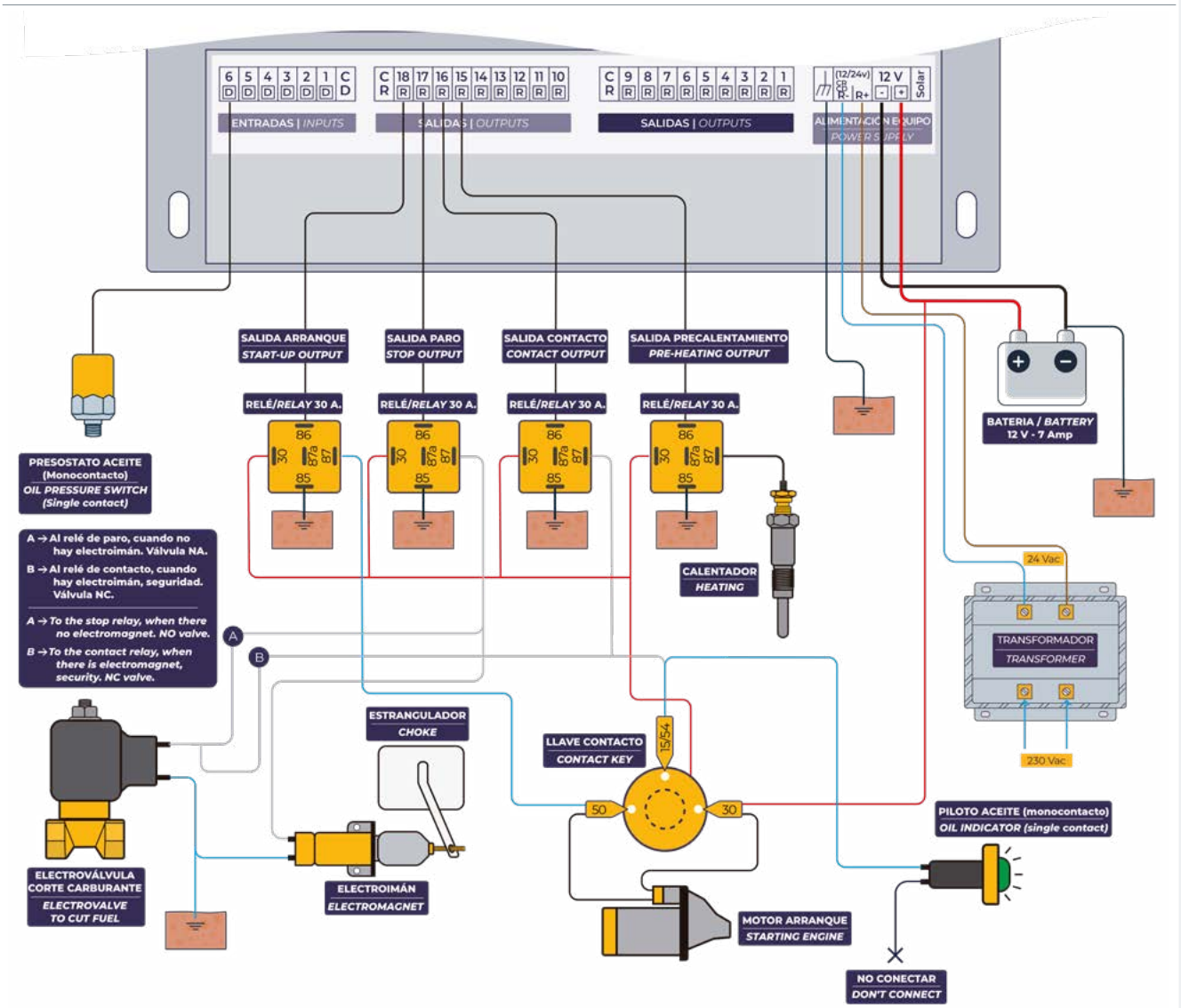
The Agrónic can have two functions:

With start and stop management of the diesel pump. In this case, the diesel pump control is used with the preheating, contact, start, stop outputs and the digital input of the oil pressure gage.

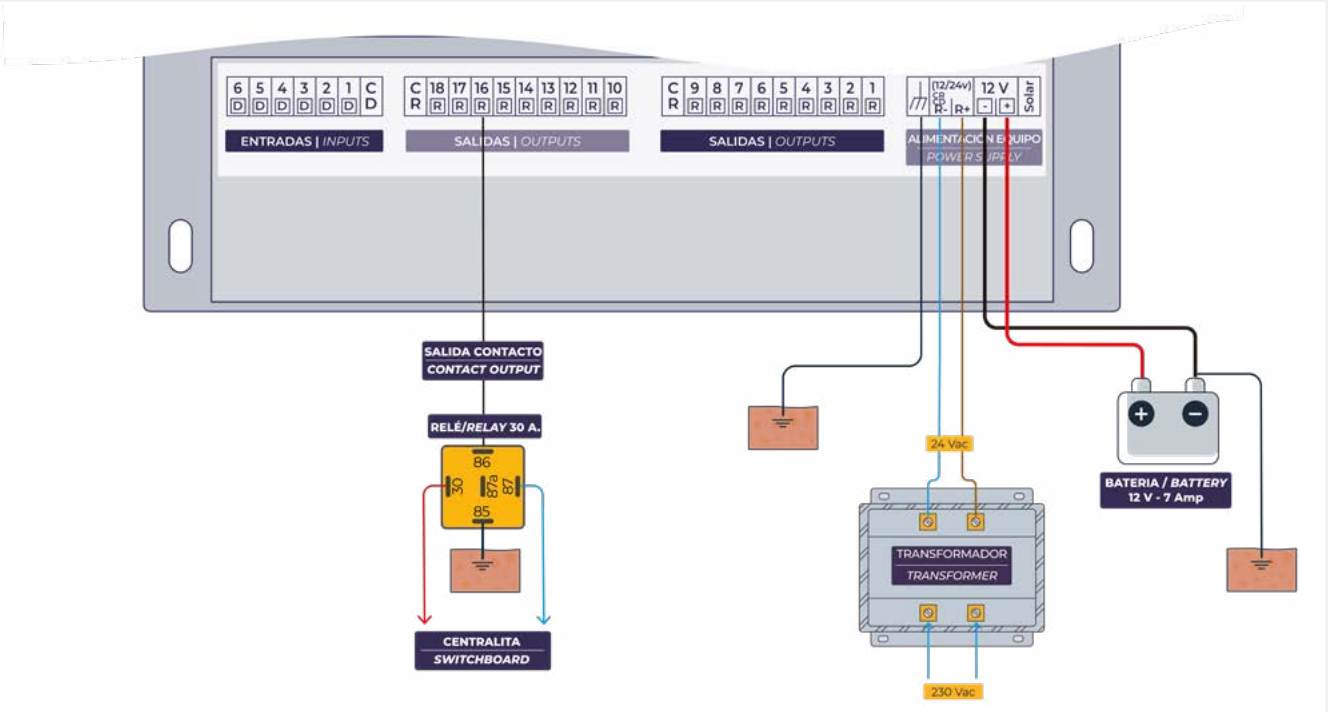
With central control start management built into the generator. In this case, only a contact signal is needed. To activate this operation, the start and stop times will be '0'.

12 Vdc outputs				
Model	Start	Stop	Contact	Preheating
Agrónic 2500 – 9 outputs	9	8	7	6
Agrónic 2500 – 18 outputs	18	17	16	15
Agrónic 2500 – 27 outputs	27	26	25	24

Outputs at 24 Vac
Electric pump (Pump output M1)



Diesel pump with generator set without control unit



Diesel pump with generator set with control unit

5.3. OPTION 2 ANALOG INPUTS

Only for the Plus version. This option allows up to two analog sensors to be connected in order to measure different magnitudes (pressure, solar radiation, soil moisture content, temperature, etc.). A record is made of the sensors every 10 minutes that can be queried from the VEGGA / Agrónic APP / Agrónic PC platforms.

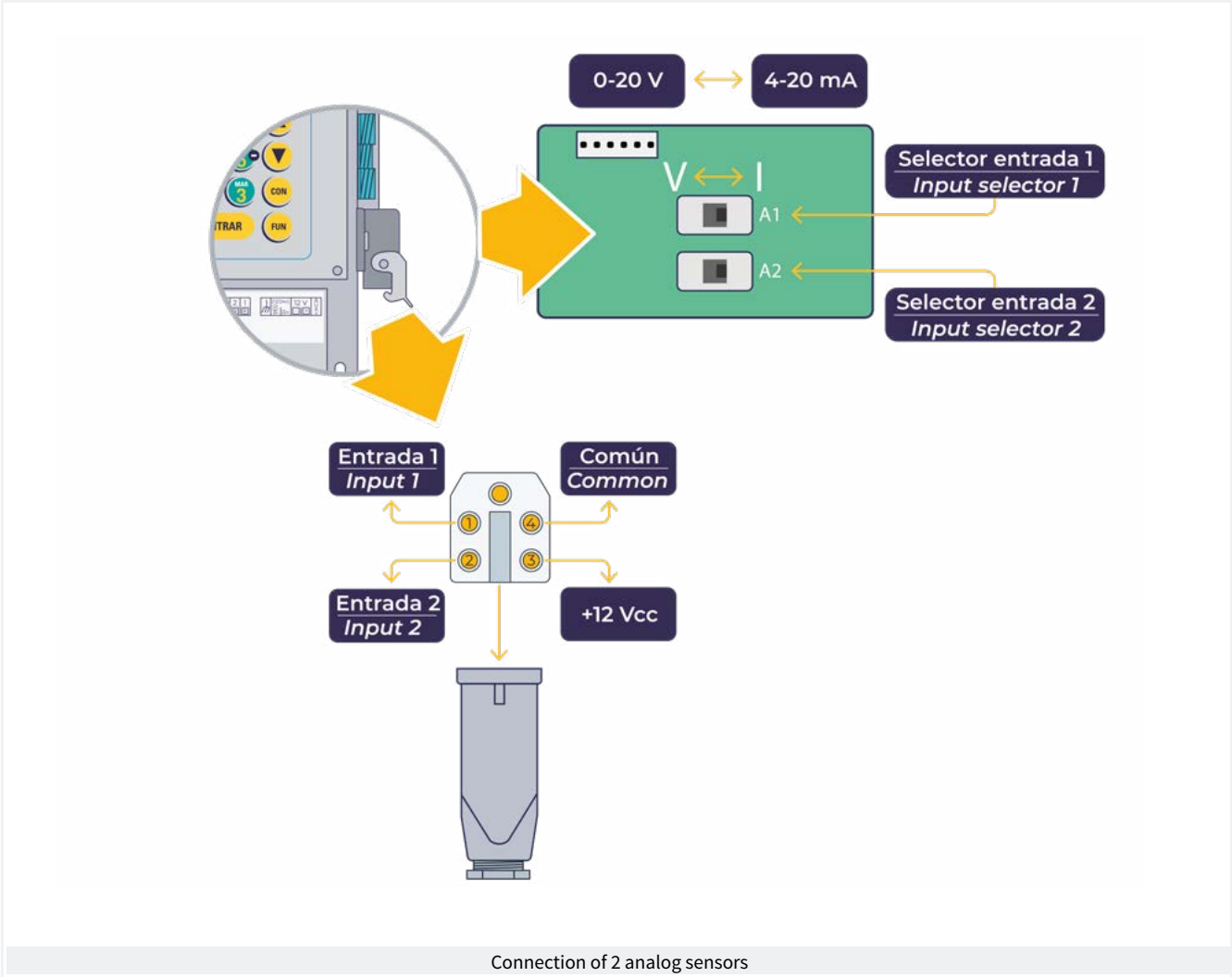
It allows the sensors to make measurements, generating electrical current from 0/4 to 20 mA or voltages between 0 and 20 volt..

The wiring in this option has one switch per sensor to select the measurement using current or voltage. The default is current, 'I' position, to select voltage, set it to the 'V' position.

The wiring is housed behind the keypad. The location to connect the sensors must be indicated in 'Function - 4. Parameters - Installer'.

Connection of 2 Agrónic 2500 analog inputs

Function	
Terminal 1	Sensor cable A1
Terminal 2	Sensor cable A2
Terminal 3	It corresponds to the output cable for powering the sensors, 12 Vdc, 200 mA.
Terminal 4	Common for the sensor inputs and common for the power supply output (0 V).

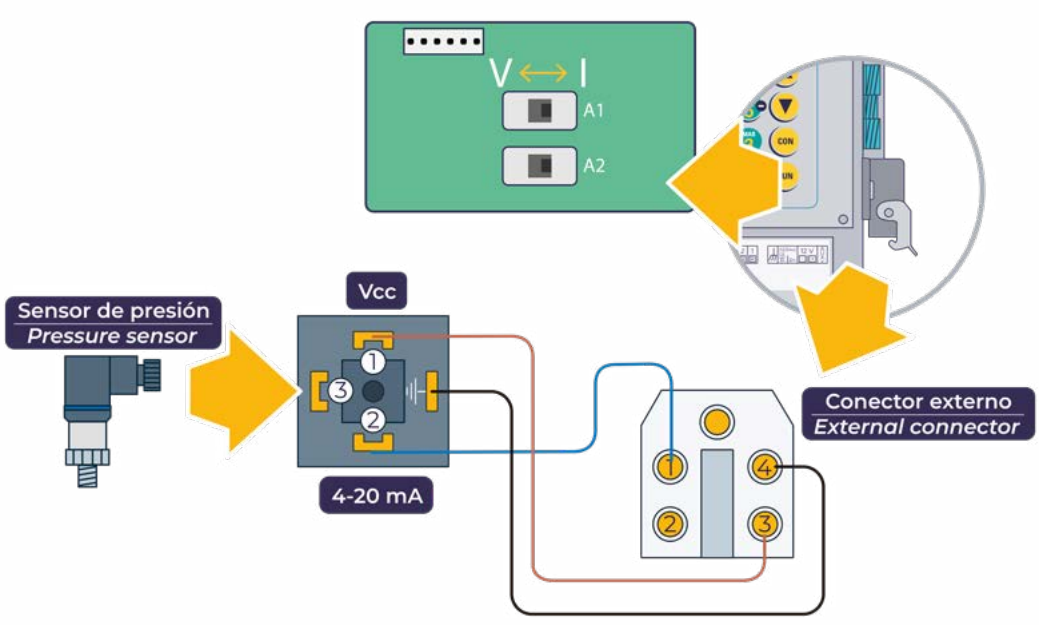


Connection of 2 analog sensors

Examples

- Independent power supply output: Connect the common from the sensor to terminal 4 and t he sensor signal to terminal 1 or 2.
- Sensor powered by the Agrónic: Connect the common from the sensor to terminal 4, the sensor signal to terminal 1 or 2 and the power supply positive to terminal 3.
- Sensor with only positive and return: Connect the positive to terminal 3 and the return to terminal 1 or 2.

IMPORTANT The sensor cables must be shielded and run separately from cables with alternating current.



Connection example

5.4. SDI-12 EXPANSION OPTION AND 4 ANALOG INPUTS

Only with the PLUS version. This option allows you to connect up to 4 4-20 mA sensors, on terminals A2-1 to A2-4 and several multi-sensors that communicate with the SDI-12 bus, on terminal SDI-12.

There is a complete list of the multi-sensors in the manual '2246 Manual Agrónic option SDI12'.

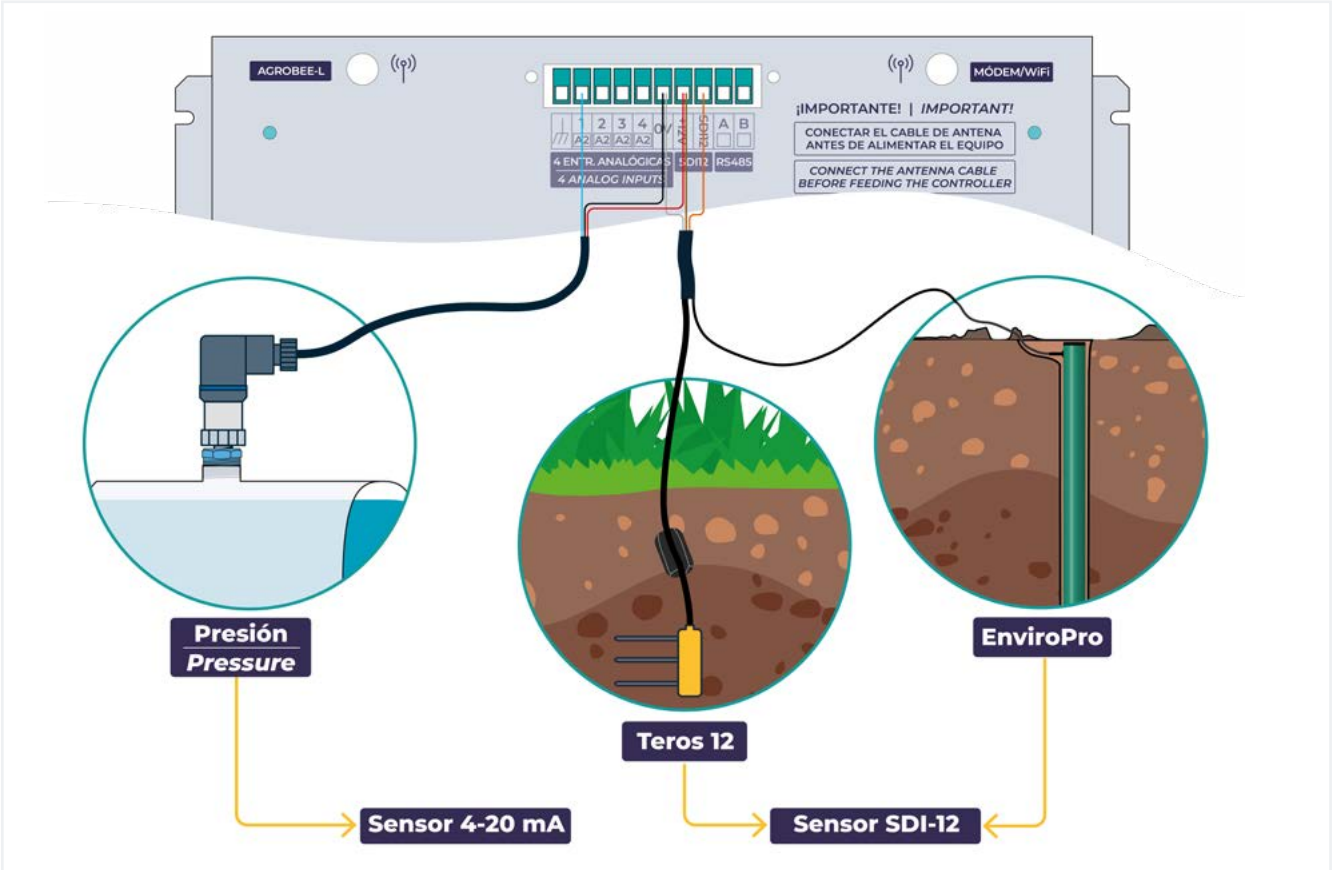
In the built-in format, the connections are located on the back and in the box format, there are two connectors on the right side of the unit.

IMPORTANT The sensor cables and the SDI-12 must be shielded and routed separately from AC cables.

SDI-12 BUS	Built-in model terminals	Box model cable colors
Common, 0 V	0 V	Brown
Multi-sensor power supply, +12 Vdc	+ 12 Vdc	Blue
Multi-sensor digital output	SDI-12	Yellow / Green

ANALOG SENSORS	Built-in model terminals	Box model cable colors
Common, 0 V	0 V	White
Sensor supply, +12 Vdc	+ 12 Vdc	Brown
Sensor A2-1	A2-1	Green
Sensor A2-2	A2-2	Yellow
Sensor A2-3	A2-3	Grey
Sensor A2-4	A2-4	Pink

This option has an installation manual '2196 SDI12 option installation + 4 Agrónic 2500 analog inputs'.



Example of 4-20 mA and SDI-12 sensors

5.5. EXPANSION OPTION FIVE DIGITAL INPUTS

In models with relay outputs, the option to add 5 digital sensors can be installed. These are located in a connector with cable termination with the following colors:

The common CD digital sensor is located next to inputs 1 to 6. See the section 'Location of connections' for the location of the connector and 'Digital sensor connection' for assembly instructions.

Connecting 5 digital inputs in Agrónic 2500

Input No.	Cable color
7	White
8	Pink
9	Grey
10	Yellow
11	Brown

5.6. BATTERY CHARGER OPTION

The Agrónic 2500 has a battery charger as an option on the relay output model (internal charger) and as standard on the latch model (external charger).

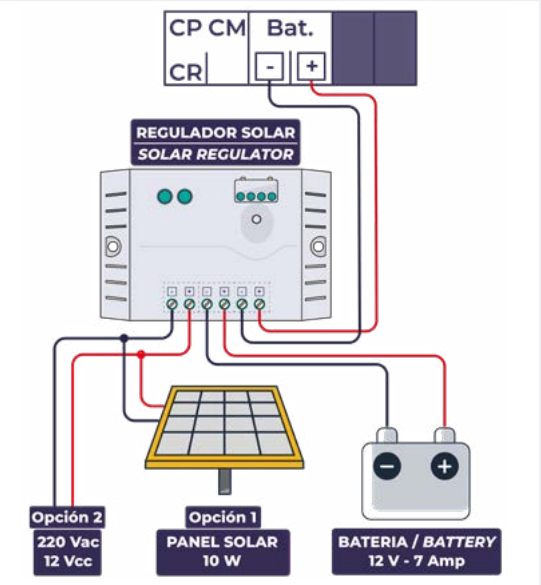
The battery must be 12 Vdc and have a minimum capacity of 7 Ah.

In the latch model, an external charger is supplied to which a 12 Vdc battery and a solar panel (Option 1) will be connected depending on the installation. A 220 Vac to 12 Vdc power supply can also be powered (Option 2).

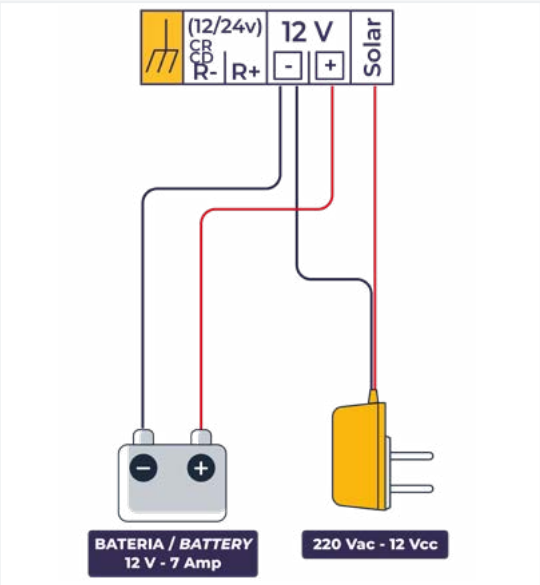
In the relay output model, a solar panel will never be connected; in these models, a 12 V ±5% power supply (90-230 Vac / 12 Vdc) will be connected. Useful in installations with electricity in which a notification must be sent by SMS when there is none (only with Plus version and GPRS modem).

Technical specifications in relay output model:

- Input voltage on the solar terminal: 9 to 22 Vac.



Agrónic 2500 with latch output option



Agrónic 2500 with battery charger option

6 RECOMMENDATIONS

Controller location

- Install the controller at the correct height and position for good handling.
- Avoid direct sunlight, humidity, dust and vibrations as much as possible.
- Avoid being close to elements that generate interference and may affect correct operation.
- To maintain the tightness of the box format, always keep the lid closed and install cable glands on the cable outputs.

Installation with frequency drive

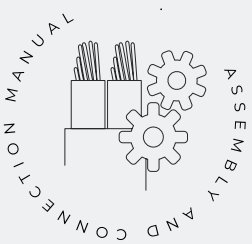
- The Agrónic ground must be independent and separate the ground spike from the drive and the pump.
- Sensor cables must be shielded and installed separately from cables with alternating current.
- It is highly advisable to install the Agrónic and the drive in different and separate cabinets.
- It is advisable to place a filter between the drive and the pump to reduce the harmonics of the output signal and thus comply with the CE marking regulations. The filter must be located near the converter, as well as using shielded cable (EMC).
- In installations that have a pressure transducer, it must be galvanically isolated from the pressure pipe, since interference can propagate through it. The transducer can be secured to the wall by means of an insulating support and connected to the pressure pipe by means of a microtube.
- In the Agrónic 2500, the consequences of incorrectly installing the drive can be random output activation, screen changes without touching the keypad and incorrect probe readings, among others.
- See the manual '1623 Installations with Agrónics and frequency drives' available on the Progrés website.

Sensor and meter wiring

- Sensor and meter cables should never pass next to or parallel to cables with alternating current. There must be a minimum distance of 0.5 meters between them.

7 TECHNICAL SUPPORT

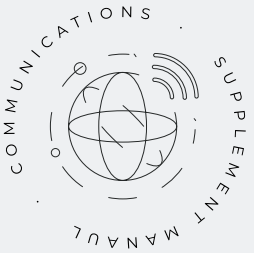
Apart from this manual, the Agrónic 2500 has other manuals, instruction videos, tips and frequently asked questions on the Progrés website, Technical Support section.



Assembly and connection manual *r2465*

Intended for those who physically install the Agrónic on the farm or in the electrical panel. Shows the dimensions and how the different connection options must be wired.

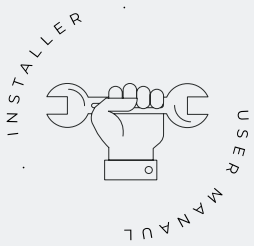
See manual



Communications manual *r1850*

Intended for installers who configure communications with the cloud for VEGGA and Agrónic APP or with the Agrónic PC Windows program. There is the explanation of the different communication systems.

See manual



Installer's manual

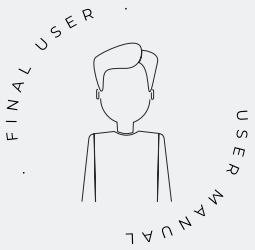
r2466 r2468

Intended for installers who configure the Agrónic irrigation system. It details all the parameters related to irrigation: general, sectors, programs, fertilization, etc.

There is one manual for the BASIC version and another for the Plus version.

Basic manual

Plus manual



End user manual

r2467 r2469

Intended for the Agrónic end user. It details the most common use of programming, manual actions and queries. The parameters are not explained in this manual.

There is one manual for the BASIC version and another for the Plus version.

Basic manual

Plus manual

Pivot manual

r2485

For the installer and end user who uses the unit for pivot control.

See manual

Solar irrigation manual *r2006*

Intended for the installer and user who uses hybrid solar irrigation systems (panels + generator set).

See manual

Installing the options

Installation Option GPRS

Installation Option USB (r1933)

Installation Option WiFi

Installation Option AgroBee

Installation Option AgroBee-L (r2367)

Installation Option 2 analog inputs (r2366)

Installation Option SDI-12 and 4 in. Ana. (r2369)

Installation Option 5 digital inputs (r2370)

Installation Power limiting resistor

Ver Manuales

Video tutorials

There are instruction videos on the Progrés website explaining the most frequently asked questions step-by-step. Please consult them if you have any questions or problems, you may find the solution there.

Watch video tutorials

SPACE RESERVED FOR THE USER

Use this space to record information such as the parameters entered into the controller, drawings, program information, determining factors, alarms, etc.

Warranty

The Agrónic 2500 complies with the CE marking directives.
Products manufactured by Progrés have a two-year warranty against any manufacturing defect.
Compensation for direct and indirect damage caused by the use of the unit is excluded from the guarantee.

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