AgroBee-L GNSS System

The GNSS (Global Navigation Satellite System) is a very low consumption radio module that is part of the AgroBee-L radio system, and that integrates a GPS-GLONASS receiver inside it to determine the geographical position of the module in question. It also allows the activation of latch solenoids and the reading of digital and analog sensors.
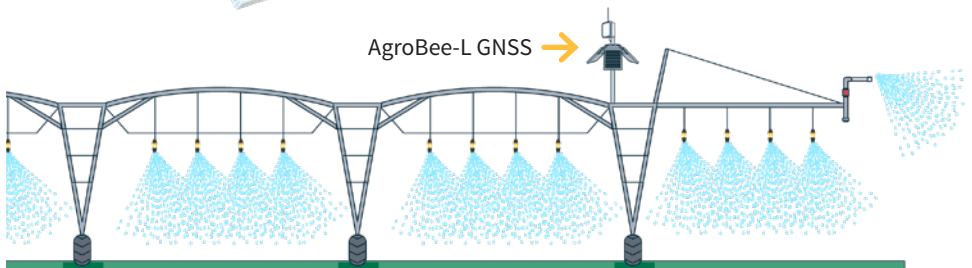

The AgroBee-L GNSS model offers the following:

Option 1
- Determination of geographic position

Option 2
- Determination of geographic position
- 2 2-wire or 3-wire latch solenoids
- 1 counter or digital input or rain gauge
- 2 4 -20mA analog sensors

AgroBee-L GNSS →

The AgroBee-L GNSS module is designed to be installed on top of a post on the last tower of the pivot, be it circular or linear. Consequently, the module allows us to locate the geographical position of the pivot on a map and its direction of movement.

When configuring an AgroBee-L GNSS module, you must enter the geographical coordinates of the centre point of the pivot and of the starting or reference point 0°, if it is circular, as parameters.

If the pivot is linear, the centre point will be the left end, and the starting point will be the right end. These coordinates are given in degrees, minutes, and seconds, and can be entered through the Module Reader or the Agrónic to which said module is linked.

Through the parameters entered and once the module has determined its geographical position, this GNSS module can provide us with the following values:

- Measures delivered:
  – Angle with respect to the starting or reference point of 0° (clockwise)
  – Angle respect to the initial point or reference point of 0° (counter-clockwise)
  – Distance from the centre point
  – Angle of the reference point 0° with respect to geographic North
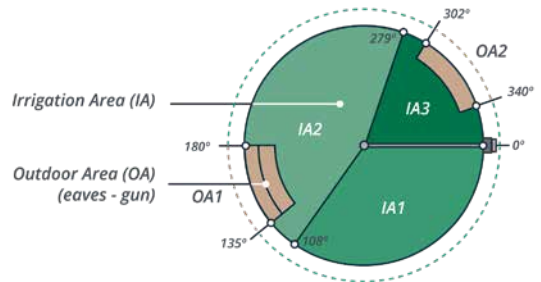
The AgroBee-L GNSS module has a 4 Ah internal battery and three 5 W solar panels that are delivered along with the module.

This module is always active and collects data from the satellites it has in view. This allows it be precise when pinpointing its position, the maximum that the system allows, about +/- 3 metres.

The navigation system's antenna is integrated inside the module.

Option 1 (GNSS function only) does not present any kind of wiring, so, in this case, it is not necessary to make any connections.

In Option 2, the wiring is logically necessary, since there are connections for the latch solenoids and analog and digital sensors.

*For 3-wire models, a diode box is required.

Technical characteristics

Power supply

Power supply:	GNSS: Solar: 3 x 5W → 3,6V	Panels plus 4000 mAh Ni-MH battery
Energy consumption: GNSS	Average consumption: 90 mW	*CAUTION!* When handling the battery pack, take the following precautions: do not short-circuit, disassemble, or deform it, do not heat or burn it, and do not place the battery pack near any open flame.

Outputs

Number	2
Type	5 Vdc or 12 Vdc (Analog sensor power supply) Maximum current: 50 mA
Number	2
Type	6 Vdc, 9 Vdc, 12 Vdc, 19 Vdc Trigger time: 80 ms Capacitor charge: 4700 μF

Inputs

Maximum distance betweeen sensor and AgroBee-L: 50m

Number	1
Type	For potential-free contacts
Number	2
Type	Analog (16 bits)

Environment

Temperature	-10 °C a +60 °C
Moisture	< 95 %
Altitude	2000 m
Pollution	Grade II

Box dimensions GNSS

Height	460 mm
Width	295 mm
Depth	590 mm
Weight (approx.)	3,35 Kg

Declaration of conformity

This system conforms with the regulations and other regulatory documents in the following list: $C\epsilon$

| Electrical safety	Low voltage directive 2014/35/EU	UNE-EN 62368-1:2014+AC:2015+AC1:2015+AC2:2015+AC:2017-03+A11:2017 Audio and video equipment, information and communication technology. Part1: Security requirements.
EMC	Directive 2014/53/EU	ETSI EN 301 489-1 Ver. 2.1.1 – *ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU.*
		ETSI EN 301 489-3 Ver. 2.1.1 – *ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU.*

This symbol indicates that electrical and electronic controller must not be disposed of along with household waste at the end of its useful life. The product must be taken to the corresponding collection point for the recycling and proper treatment of electrical and electronic controller in accordance with national legislation.

AgroBee-L System Operation

The AgroBee-L radio modules are used for the activation of valves and other irrigation elements, as well as the reading of sensors and meters. It is very low consumption and follows the LoRa radio modulation, which operates in the 868MHz, 433 MHz and 915 MHz, free bands, obtaining radio coverage of up to 2500 m between two points (depending on the orography).

Currently, they can be incorporated into the Agrónic 2500, Agrónic 4500, Agrónic 5500 and Agrónic Bit Con ferti-rrigation controllers.

The AgroBee-L system consists of a coordinator device (located in the Agrónic 2500, Agrónic 4500, Agrónic 5500 or Agrónic Bit Con controllers) and by field elements with different functions, depending on the model in question. This system does not include the use of repeater elements, so all modules must connect directly with their coordinator. The field modules manage their consumption by activating the communication in the precise time of the exchange; the rest of the time, they are asleep or attending to irrigation control.
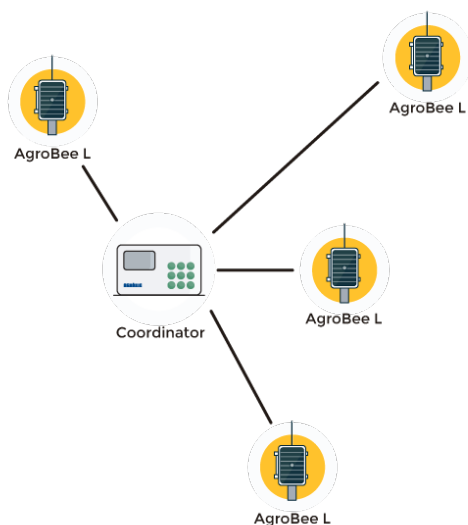
Its low consumption allows it to operate with a solar panel integrated into the module and supercapacitors or battery (depending on the model). The solar panel stores the energy in the supercapacitors/battery, offering a long operational life. It is only necessary to replace batteries in models that include batteries instead of supercapacitors.

The maximum number of modules that an Agrónic controller can manage is 20 units in standard mode, which can be configured as modules of any of the available types. There is also a priority mode, which makes it possible for the modules to communicate more often: in this case, the number of modules (10) is halved.

To use AgroBee-L modules, it is necessary to assign their outputs to the sectors or generals of the controller in question, and their inputs to the digital, analog, or counters sensors.

The AgroBee-L system has the following features, among others:

- Operation in 868 MHz, 433 MHz and 915 MHz free bands.
- Availability of 13 communication channels plus 18 transmission modes, which allow for the operation of more than one network in the same area working on the same channel.
- Availability of network code, which allows for filtering the information of several networks configured with the same parameters.
- Self-adjustable communication rate according to the chosen transmission mode and the timing mode:
  - Timing in standard mode (60 –200”). Up to 20 modules.
  - Timing in priority mode (30 –100”). Up to 10 modules.
- Distances of up to 2500 metres between any module and its coordinator (depending on the orography).
- Manual actions, consultations, and configuration of the network number, channel, transmission mode, and communication timing (standard/priority):
  - In-situ: Through the Module Reader
  - From a distance: Through the Agrónic
- Battery/charge level reading and solar panel (if any).
- Reading SNR level (signal-to-noise ratio) reception in the module and coordinator (in [%]).
- Reading the status of the last 16 communications and remaining time indicator until the next communication.

Installation

For the supply of radio controller, it is essential to have a coverage study. This study verifies the viability of the system according to the profile of the terrain, the location of the points to be controlled, and the distance between them. The study is delivered along with the controller offer.

MODULE INSTALLATION

Included material:

AgroBee-L
GNSS Module →

← 3 5W
Solar panels

4 3M connectors → • • • •

← Support for
solar panels
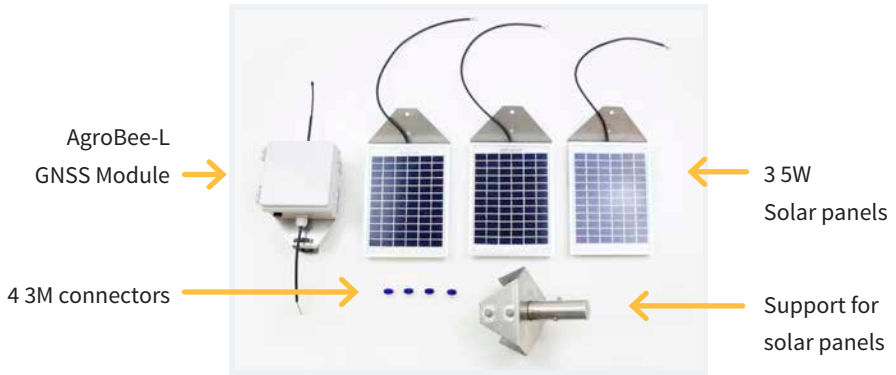
| 1 | Screw the three solar panels onto the panel support. |

| 2 | Place the module on top of the support and screw it in. |

3
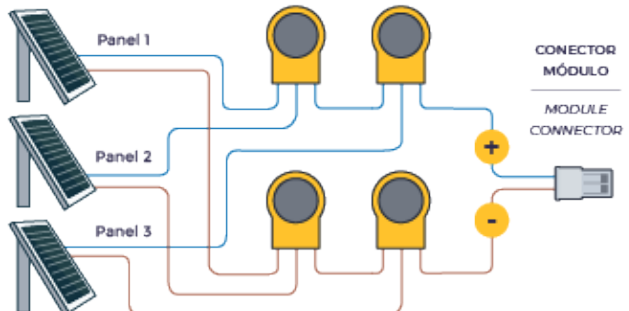
Connect the module's cables with those of the panels as shown in the figure.

IMPORTANT
Do not strip the tips of the cables.

Panel 1

Panel 2
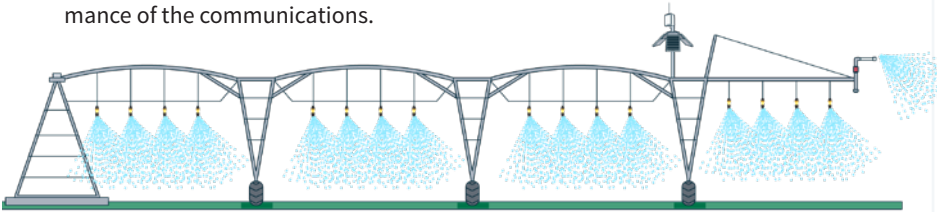
Panel 3

CONECTOR MÓDULO

MODULE CONNECTOR

+

−

| 4 | To set the cables in the connectors, press on the blue part with pliers. | 5 | Place the whole assembly on top of a post. |

6 The GNSS modules have the antenna integrated into the module and in its upper part, in order to avoid that the structure of the center does not adversely affect the performance of the communications.

For the correct operation of the system and to have good radio communication, it is very important that the GNSS module be installed on the last tower and at least 2 meters above the Pivot metal structure. With this, a correct position reading and communication between the GNSS module and the Coordinator are achieved.

IMPORTANT
In the event that the Pivot has sprinklers installed directly on top of the main pipe, the installation height of the GNSS module must be increased enough so that the module does not receive direct water from the spray.
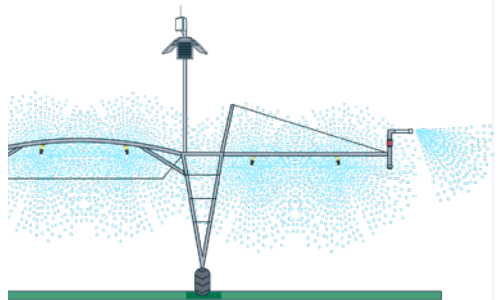
LOCATION SENSORS

The AgroBee-L GNSS module incorporates the GPS-GLONASS receiver inside it. For the correct operation of the system and for greater precision provided by the module when determining the geographical position, it is very important that the antenna installed in the module is as perpendicular as possible to the ground.

Inputs and Outputs

'Option 1' of said module does not include the possibility of having inputs and outputs.
'Option 2' includes digital outputs, digital inputs, and 4-20mA analog inputs.

DIGITAL OUTPUTS

The trigger voltage of the solenoids (digital/latch outputs) is programmable through the Reader or from the Agrónic, which may be 6, 9, 12 or 19 Vdc. The default voltage is 12 Vdc.

You can also choose the action that a GNSS module will perform with the digital outputs if the communication is lost. The options are:

- Do not perform any action
- Deactivate all outputs immediately after losing communication
- Deactivate all outputs after about 15 minutes after losing communication.

The GNSS model can work with two- and three-wire latch solenoids:

- 2/3 wire latch solenoids: these modules can drive up to 2 solenoids. The solenoids must be connected as defined in the wiring table in the next section.

DIGITAL INPUTS

There is 1 digital input in an AgroBee-L GNSS module, which can function either as a digital input or a counter/rain gauge input. When the input is connected to a counter, the minimum time between pulses must be 0.1 seconds and an anti-bounce filter may be enabled in order to avoid accumulating undesired pulses. Maximum allowed distance between AgroBee-L module and a digital sensor or meter is 50m.

The said input's connection must be set according to the following section.

ANALOG INPUTS

The module in question has up to 2 analog inputs for reading 2 4-20mA sensors. The sensors must be connected as defined in the table in the next section.

IMPORTANT

To obtain the reading of an analog sensor through a specific "analog input" (1 or 2), the sensor must be powered by the corresponding "sensor feed" (1 or 2). Therefore, the power supply will be independent for each sensor.

'Option 2' of the GNSS model is provided with a 7-metre cable hose that allows different connections to be made more easily without the need to access the interior of the module:

• GNSS - 12-wire tube

The cables of the different tubes will be identified by colours and numbers. Connect them according to the following table and according to their functionality.

GNSS (option 2)		
Wire colour	Function 1 (latch 2 hilos)	Function 2 (latch 3 hilos)
White	R1	
Brown	R2	
Green	Common (CR-2F)	Common Stop (CP)
Yellow	-	Common Activate (CM)
Grey	Digital Input 1 (D1)	
Pink	Common Digital Input 1 (CD)	
Blue	Analog input sensor 1 (A1)	
Red	Common Power Sensors (CA1)	
Black	Power supply sensor 1 (+V1)	
Purple	Analog input sensor 2 (A2)	
Grey-pink	Common Power Sensors (CA2)	
Red-blue	Power supply sensor 2 (+V2)	

To ensure the that the module's cable connections are watertight, it is recommended to use watertight terminals. The connection through these terminals must be made without stripping the cable's wires.

AgroBee-L GNSS Module

Watertight connection terminals

Solenoid
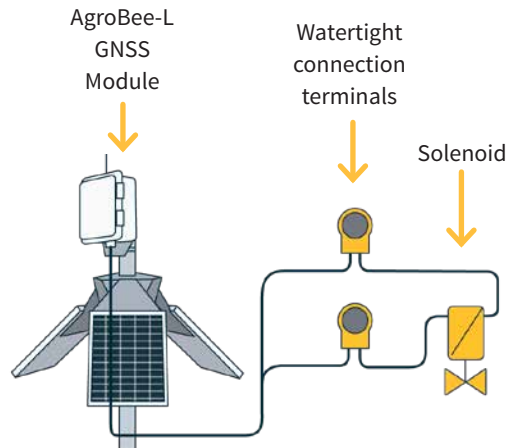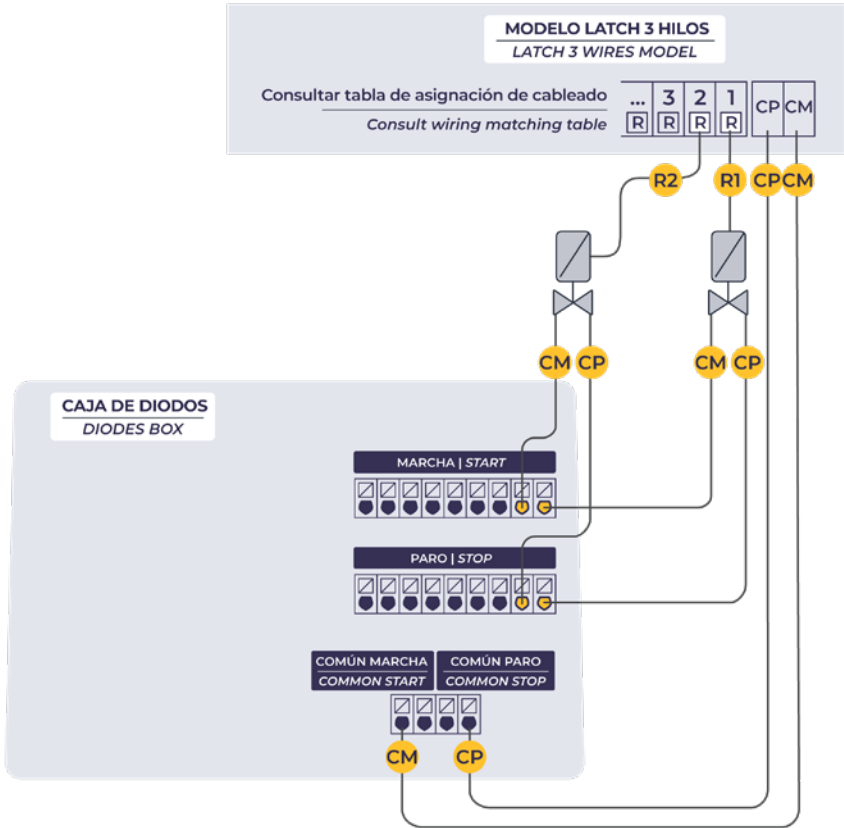
Settings

For any AgroBee-L module to enter the correct operating mode, you must have an Agrónic controller (Agrónic 2500, Agrónic 4500, Agrónic 5500 and Agrónic Bit Con) with the AgroBee-L option installed, which includes the internal coordinator and an antenna with 10 metres of cable. This can be verified by doing the following in the controller:

Consult ⟶ Communication ⟶ AgroBee-L ⟶ Status: Correct

In the same way, a module must be configured to communicate with the Agrónic with which you want to associate it. To do this (if the module is not already configured at the factory) you must use the Module Reader (or Agronic Radio Reader, LAR) consisting of a screen and four keys, that is connected to the AgroBee-L module through the only connector visible on the inside.

A wireless module reader is also available that allows you to perform functions without the need for a cable. Consult the wireless AgroBee Reader manual to learn about the steps to link it to the controller.

Press the ⏎ key to enter the main menu. Use the − and + keys to change the options within the menu. Use the ⏎ key to enter the selected menu option. Use the c/c key to return to the previous hierarchy's menu.

You will see the following options in the main menu:
- Consult controller
- Consult communications
- Consult digital output
- Consult digital and analog inputs
- Communication parameters
- Input-Output parameters
- Output manual
- Sectors manual
- Various parameters

NOTE Once the AgroBee-L module is linked with an Agrónic, all the consultations and parameters are accessible through the Agrónic.

General query menu of the module, where the following parameters are displayed:

- Module and serial number:
  - Module: It refers to the module number (1 to 20) according to the established communication parameters. There can only be one same module number for each Agrónic.
  - Serial number: Information regarding the controller. It comes from the factory.
- Battery voltage and solar panel:
  - Vbat: Battery voltage:
    · Panel+Supercapacitors: Maximum value: 3.4V; Minimum value: 2.2V
    · Panel+Battery: Maximum value: 4.2V; Minimum value 3.4V
  - Vsol: Voltage of the solar panel

These same data can be viewed in the Agrónic by accessing "Consult - Communications - AgroBee," as you will see in the next section.

Communication consultation menu of the module, where the following parameters are displayed:

- Transceiver: Type of emitter installed in the module. It tells you if the module works at 868MHz/433MHz or 915MHz
  - RN2483 (868MHz/433MHz)
  - RN2903 (915MHz)
- Band and transmission mode:
  - Band: 868MHz, 433MHz, 915MHz
  - Transmission Mode: 1 to 18 (mode 5 will be set by default)
- Consult parameters of the communication type:
  - Channel: 1 to 13
  - Network code: It is usually the associated Agrónic serial number
  - BW: Bandwidth of the radio modulation (125KHz, 250KHz, 500KHz). It is set according to the transmission mode chosen in the communication parameters.
  - Radio modulation factor: SF7, SF8,…, SF12. It is set according to the transmission mode chosen in the communication parameters.
  - Communication status:
    · Status message:
      - Correct Communication
      - Network error

- Communication error
- Model error
- Does not communicate
· Signal-Noise ratio of the last received message: Reliable communication if >40%.
– Time until next radio emission: time in [s]
– Status of the last 16 communications (the previous communications appear on the right side of the screen):
· 1: It indicates that the emission has been made and the correct information received in the last communication
· 0: Indicates that the radio emission has been made, but the correct data has not been received or no data has been received

Part of this information is available through the Agrónic by accessing "Consultation | Communications | AgroBee", where you can also see the query regarding the controller and the parameters of the communication.

CONSULT COMMUNICATIONS
AgroBee-L 868
Status: Correct
Timing: 60"
Channel: 01   TX Mode: 05
Network code: 00001

CONSULT COMMUNICATIONS
M01 (ns. 236) V1.00
Status: Correct (40")
Level: 80% / 82%
Vbat: 04.0 V   Vsol: 05.8 V
1111111111111111

CONSULT THE AGROBEE-L MODULE DIGITAL OUTPUTS

Menu that shows the status of each of the outputs, one by one.
The states that can be shown for each digital latch output are the following:

• Activated
• Stopped
• Latch tension load (running)
• Latch tension load (stopped)
• Running time
• Stopped time

The status of the digital outputs (latch) can also be displayed through the Agrónic: see the next section.

Menu to check the status of digital inputs, counters, and GNSS inputs.

The information shown on the different screens is as follows:

- Consult the geographic coordinates of the GNSS module position:
  – Latitude (In xxº yy' zz.zz" N/S format) of the current position
  – Longitude (In xxº yy' zz.zz" E/W format) of the current position
  – Angle ("ANG. H") of the current position with respect to the initial (0º) and central position defined in the parameters: clockwise angle
  – Angle ("ANG-Z-N") of the initial position defined in parameters relative to geographic North
  – Distance from the current point to the point defined as the centre
  – Number of satellites currently being viewed by the GNSS receiver incorporated into the module.
  – State the measured position. If F is 'YES', the GNSS receiver is fixed and the measurement of the position is correctly displayed. If F is 'NO', it indicates that the GNSS receiver cannot determine the position.
- Consult digital inputs: For each of the digital inputs available to the module in question, its status is shown either as '0' (open contact) or '1' (closed contact)
- See accumulated counter sensors: The total number of pulses detected will be displayed for each digital input configured as a counter sensor. If this entry is not configured as a counter, the text 'N-A' (Not-Activated) will appear.
- See instant flow rate (time between pulses): The time in [ms] between the last 2 pulses detected will be displayed for each digital input that is configured as a counter sensor. If this entry is not configured as a counter, the text 'N-A' (Not-Activated) will appear.
- Consult analog inputs: For each of the available analog inputs, the value read is displayed and expressed in [mA] or [V] according to the type of input in question. Likewise, the value in the format in which the Agrónic receives it (800-4000mV) is shown in parentheses. If the analog input in question is not configured, the text 'N-A' (Not-Activated) will appear.
- Check the supply voltage of the analog sensors: The value of the supply voltage sent to the active analog sensors is displayed in [mV].

From the Agrónic, press the '1' key in the module's consultation screen on the Agrónic to view the analog/digital values of the GNSS inputs.

Nomenclature used in these consultations:

- **Angle** Angle of the current position with respect to the initial (0º) and central position defined in the parameters. Clockwise angle
- **Dist.** Distance from the current point to the point defined as the centre
- **Angle N.** Angle of the initial position defined in parameters relative to geographic North
- **Status** If it is 'YES', the GNSS receiver is fixed and the measurement of the position is correctly displayed. If it is '0', it indicates that the GNSS receiver cannot determine the position
- **Satelites** Number of satellites in the constellation currently being viewed by the GNSS receiver incorporated into the module
- **Lat** Latitude of the actual position of the module
- **Lon** Longitude of the actual position of the module
- **EA** analog input values in [mV] and 4-20mA format: 4mA=800mV and 20mA=4000mV. The number next to EA indicates the sensor number.
- **ED** status of digital input. With a '1' indicating that the contact is closed and a '0,' that it is open.
- **SD** status of digital outputs (latch valves). With a '1' indicating that the valve is open and a '0,' that it is closed. The digit on the far right corresponds to output 1.

The first screen shows an example of what we can see. And if we press '1' again, we will see the second screen.

AgroBee-L 15 GNSS
Angle: 333.2º Dist.: 248.8 m
Angle N.: 55.1º   Status: 1
Satellites: 9
Lat.: 041º 37' 46.08" North
Lon.: 001º 00' 23.81" East

AgroBee-L 15 GNSS
EA1: 963
EA2: 11963
ED: 1
SD: 01

From the controller, you can define a series of sensors, indicated in this table:

Sensors *(analog inputs)*		
No.	Description	Units
01	Angle respective to the initial point (clockwise)	From 0.0 to 359.9º
02	Distance from the starting point.	From 0.0 to 3200.0 metres
03	Angle of the initial point respective to geographic north	From 0.0 to 359.9º
04	Angle respect to the initial point (counter-clockwise)	From 0.0 to 359.9º
05	Analog sensor reader 4-20mA S1	Depending on the sensor
06	Analog sensor reader 4-20mA S2	Depending on the sensor

The following parameters are in the Communication Parameters menu of the Module Reader, which allow you to establish the communication of a certain AgroBee-L module with a controller:

- Module Module number in the network. It is used to distinguish all modules that may be associated with an Agrónic. The module number cannot be repeated in the same Agrónic:
  - 1 to 20 (timing in normal mode)
  - 1 to 10 (timing in priority mode)
- Band Frequency Band:
  - 868MHz or 915MHz (default value, depending on the model)
  - 433MHz (only available in models that also support 868MHz band)
- Channel Frequency channel number:
  - 1 to 13 (independent from the band used)
- TX Mode Transmission method. Set the radio's transmission and reception parameters.
  - 1 to 18 (mode 5 set by default):
    - · Mode 1: The shortest coverage length permitting the lowest lag time
    - · Mode 18: The greatest coverage length, but with the most lag time
- Timing 2 timing modes:
  - Normal mode (recommended): It is automatically set according to the chosen transmission mode, but always includes the communication of up to 20 modules. Value between 60" and 200".
  - Priority mode: It is automatically set according to the chosen transmission mode and includes the communication of up to 10 modules. Value between 30" and 100".
- Network code It differentiates the information from several controllers with the same communication parameters (band, channel, and transmission mode). The Agrónic serial number is assigned by default.

To modify any of the sub-menu's fields, press ⏎ . The screen will display that you are in edit mode. Use the – and + keys to set the desired value. Confirm with ⏎ or dismiss with C/c Press C/c to exit the menu and access the previous hierarchy's menu, which will change the parameters and let them take effect.

For an AgroBee-L module to establish communication with a certain Agrónic, you must set, through the reader, the parameters that have just been described, according to those established in the Agrónic in question. In the Agrónic, you can modify these parameters in 'Parameters | Installer | Communications | AgroBee | Coordinator':

AgroBee-L
Channel: 01
Network code: 00001
Timing: standard
Band: 868MHz
TX Mode: 05

In the Input-Output Parameters menu of the Module Reader, you can set the parameters of the AgroBee-L module's different inputs and outputs, available through the following sub-menu:

- Coordinates   Allows you to specify the central point coordinates and the 0° point of a pivot:
  - Lat. Central: Latitude of the central pivot point in xxº yy' zz.zz" N/S format
  - Lon. Central: Longitude of the central pivot point in xxº yy' zz.zz" E/W format
  - Lat. Initial: Latitude of the pivot's initial 0° point in xxº yy' zz.zz" N/S format
  - Lon. Initial: Longitude of the pivot's initial 0° point in xxº yy' zz.zz" E/W format
- Digital Inputs Configuration of digital sensors or counters.
  - Configuration of functions of each of the available digital inputs:
    · Digital input
    · Counter
  - Anti-bounce filter: (default 300 ms) only applicable when digital input is setup as counter. A filter time between 0.0" and 10.0" can be fixed, and it represents the minimum time that a contact must be closed to count a new pulse. Same time is considered for all the inputs of the module. This filter time can only be setup by using the Module Reader (it cannot be setup from the programmer to which this module is linked).
- Digital Outputs   Configuration of latch outputs:
  - Latch trigger voltage: 6V, 9V, 12V (default), 19V
  - Latch valve: 2 wires, 2 wires-inverted (default), 3 wires
  - Firing time: 31.25 ms, 62.5 ms, 93.75 ms (default)
  - Battery mode:
    · OFF: As it currently works. On receiving the first communication after startint up the module, the action of openint/closing all the valves is carried out.
    · ON: The module saves the current status of the valves in memory. If you do a reset, the unit recovers that state, and does not perform any action on the valves unless a different order is received from the controller.
- Analog Inputs   Configuration of the measurement of analog input parameters. You will have the following options for each of the available inputs:
  - Active / Non-Active Input
  - Reading rate: 5min (default), 10min, 20min
  - Sensor's power supply: 5V, 12V (default)
  - Timing of the sensor's power supply: 250ms default, 500ms, 1s, 2s
- General Parameters It allows you to establish the last output of the module as a general output of the module itself. This output will be activated whenever any of the other outputs of the module is activated. There is a configurable hammer, from 1" to 250", between the activation of the generals and the sector. First activate the sector, and then the generals:
  - General module YES or NO (by default, NO).
  - Stop-Sector: YES or NO (by default, NO). Action to be taken when there is a general module command and the module receives the order for the last active sector:

· YES: First for the general, and then the sector after the seconds set

· NO: First for the sector, and then the general after the seconds set

- Action Error indicates what action the module will take with the digital outputs when the radio communication between the module and Agrónic fails:

    – It does not close: the output state remains as it is

    – Close immediately: all outputs close immediately upon losing communication with the Agrónic

    – Close 15 min: all outputs close after 15 minutes of the module being unable to communicate with the Agrónic.

To modify any of the sub-menu's fields, press ⏎ . The screen will display that you are in edit mode. Use the – and + keys to set the desired value. Confirm with ⏎ or dismiss with C/c . Press C/c to exit the menu and access the previous hierarchy's menu, which will change the parameters and let them take effect.

IMPORTANT

The detailed input/output parameters can also be entered in the Agrónic. In this case, the module will receive the parameters upon communicating with it. If not, and these parameters have been changed through the Module Reader in the same module, the Agrónic will receive and update said parameters.

To modify these parameters from the Agrónic, you must access "Parameters – Installer – Communications – AgroBee – Module." Specify the module number in the Agrónic network in question, after which you will see the following screens to modify the detailed parameters (see the Agrónic manual in question for more details).

AgroBee-L 15
Pivot type: circular

AgroBee-L 15
Central point
Latitude
041 º 37 ' 39.06 " North
Longitude
001 º 00 ' 20.24 " East

AgroBee-L 15
Initial point
Latitude
041 º 37 ' 43.23 " North
Longitude
001 º 00 ' 28.24 " East

AgroBee-L 15
Sensor 1   Activate: yes
Timing: 5'
Voltage: 12 Vdc
Voltage time: 250 ms

AgroBee-L 15
Sensor 2   Activate: yes
Timing: 5'
Voltage: 12 Vdc
Voltage time: 250 ms

AgroBee-L 15
Action error: Nothing
General module: no
Stop sectors: no

AgroBee-L 15
Latch tension: 12 Vdc
Latch valve: 2 wires

In this sub-menu, you can carry out the start and stop actions of the different outputs without accounting for the timings of the sectors that may be defined. The following options are available:

- Output Test: starts/stops all of the module's outputs. It cannot be carried out if any of the outputs is active at the time of the test.
- Start/Stop each of the outputs individually. It cannot be carried out if the specific output is active at the time of the test.

From the reader, you cannot leave this menu if all of the outputs have not been stopped.
If, in this menu, the module reader is disconnected, all outputs will be deactivated immediately.

These same actions can be carried out from the corresponding Agrónic menu: in this case, it must be taken into account that said action will not be carried out until the module communicates with the Agrónic.

In the Various Parameters menu of the Module Reader, you can select the language among Spanish, Catalan, English, French, Italian, and Portuguese.
From this menu, you can also can completely erase the module's data, restoring it to factory settings, maintaining the serial number and the model.

Battery levels and radio signal/quality

You have already seen how to consult the different parameters of an AgroBee-L module through the Module Reader. In the Agronic to which the AgroBee-L module is associated, it also shows the battery information and radio link performance of said module.

Consultation ⟶ Communications ⟶ AgroBee-L ⟶
(down and up arrow to go through the different modules)
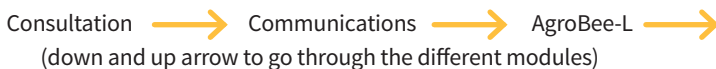
The information provided is:

- Module number, serial number, and firmware version
- Signal level received by the Agrónic and the module. It is displayed in % and indicates the level of the signal-to-noise ratio.
- Advisable/recommended value > 40%
- Vbat: Battery level in mV:
  – Module with panel + supercapacitors: VBat max = 3.4 V; VBat min = 2.2 V.
- VSol: Voltage level delivered by the solar panel.

Estimated battery life

Battery life with standard communication rate mode 5: 60 seconds	
Type	GNSS
Panel + Battery 4000mAh Ni-MH[1]	< 3 days

(1): The duration of the battery with its maximum charge and without recharging. This case can occur when the solar panel does not recharge the battery (with clouds or fog).

Battery life is approximate since there are several factors that can affect consumption. Frequent reading of digital sensors (when counters are configured) shortens the duration. Likewise, if a priority mode rate is set, the battery life will decrease.

Conversely, for the H2O model, if a higher sensor reading rate is selected, the battery life will increase.

Battery replacement you do not need to replace any battery in any case, since the power supply of the modules is based on a system of supercapacitors.

TURNING OFF THE CONTROLLER

If a module does not find the Agronic with which it communicates, said module will follow its own course, and will send data every certain time, according to the established timing. However, in order to avoid possible collisions and/or interferences, the module will slightly offset the pre-established communication time. The consumption of an AgroBee-L module is practically unchanged due to the fact that it is not connected to any Agrónic.

Updating the AgroBee-L module software

Whenever there is a new software version for an AgroBee-L module, the user can update it. To do this, you must perform the following steps:

- Have a computer with an Internet connection and a USB to miniUSB cable.
- Download the program "AgronicUpg" + "drivers" + update file (dfu) by typing this address bit. ly/actualizaragronic into the computer's browser.
- Select and download the AgroBee-L folder.
- Go to the module and turn it off using the switch.
- Place the other switch inside the module in the recording position (by default, it is in the 'Normal' position).
- Connect the USB to the computer and the miniUSB to the module.
- Start up the module using the ON/OFF switch.

- Mini USB
- Normal
- Record
- Switch
- ON
- OFF
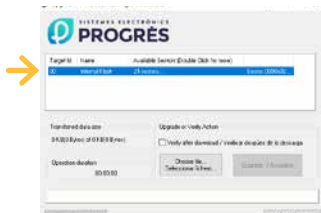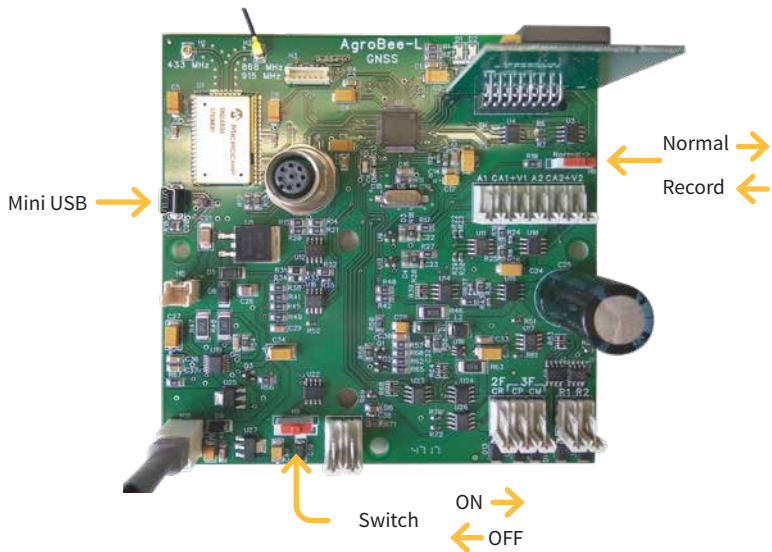
- On the computer, run the program "AgronicUpg". If you do not see the "Internal Flash" line on the screen as seen in the image, you must install the drivers. If you already have the drivers installed, skip to the next step.
- To install the drivers, go to the files you have downloaded and select the folder that corresponds to your Windows version. Run the file "dpinst_" and follow the steps. If you use Windows XP, call Progrés to help you with the installation.
- Press the "Choose file" button and select the file "xxx.dfu". Once loaded, press the "Update" button and wait for the process to finish.
- Once the process is finished, the module is updated.
- To finish, turn off the module, disconnect the miniUSB cable, and place the second switch in the 'Normal' position.
- Finally, the module can be started up again.

PERSONAL NOTES

PERSONAL NOTES

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