

Usage Manual

AGROBEE-L

Settings and consultation for
Agrónic 2500, Agrónic 5500
and Agrónic Bit Con

INDEX

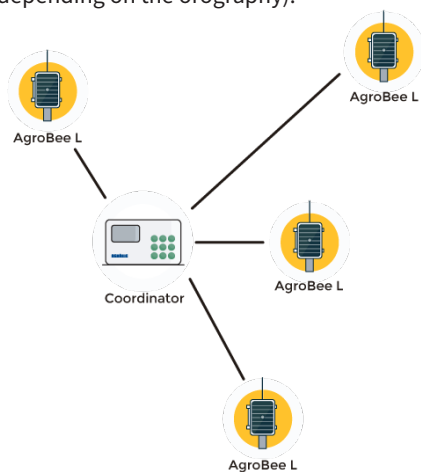
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1. Description

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 5500 and Agrónic Bit Con fertirrigation controllers.

The AgroBee-L system consists of a coordinator device (located in the Agrónic 2500, 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.

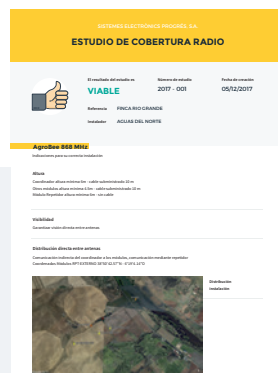
The maximum number of modules that an Agrónic controller can manage is 20 units in standard mode, which can be configured as modules of any of the available types. There is also a priority mode, which makes it possible for the modules to communicate more often: in this case, the number of modules (10)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



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.

2. Settings

The system settings can be accessed through “Parameters–Installer – Communications – AgroBee.”

In “Module,” you can configure all the operating parameters of the modules that are connected to the Agrónic.

In “Coordinator,” you can configure the radio communication parameters. The parameters of this section should only be changed if the Progrés technical staff tells you to do so.

2.1. MODULE SETTINGS

The AgroBee-L radio system allows up to 20 modules to be connected at a maximum distance of 2.5 km.

Module module number that will be configured. From 1 to 20.

Model there are different models, each with a determined function.

AGROBEE-L INSTALLER

- 1.Module
- 2.Coordinator

AGROBEE-L

- Module: 01
Model: 9SD_2ED_2EA

Model	Function
"----"	model not configured
"2SD"	2 digital outputs, 2 digital inputs
"8SD"	8 digital outputs, 2 digital inputs
"H2O"	ground moisture reader, 1 digital input
"SDI-12"	ground moisture, temperature, and EC reader, 1 digital input
"3MA"	reader with 3 analog sensors, 1 digital input
"2SD2ED1EA"	2 digital outputs, 2 digital inputs, 1 analog input
"9SD2ED2EA"	9 digital outputs, 2 digital inputs, 2 analog inputs
"6SD6ED2EA"	6 digital outputs, 6 digital inputs, 2 analog inputs
"3LV"	ultrasonic water level reader for the tank, reservoir, etc.
"DENDRO"	fruit, trunk, etc. growth meter (dendrometer)
"WATERMARK"	ground moisture reader
"PARSHALL"	open canal flow reader
"GNSS"	GPS position reader, 2 digital outputs, 2 analog inputs, 1 digital input
"NUTRI"	amount of soil nitrate and potassium, soil humidity, and soil temperature reader and 1 digital input

When a module does not have the model configured, it is automatically configured when it receives the first communication.

2.1.1. MODEL 2SD SETTINGS

The module has:

- 2 2-wire or 3-wire latch solenoids
- 2 digital counters or sensors

See section 2.1.7

2.1.2. MODEL 8SD SETTINGS

The module has:

- 8 2-wire or 3-wire latch solenoids
- 2 digital counters or sensors

See section 2.1.7

2.1.3. MODEL H2O SETTINGS

Module for reading soil water content sensors (VWC: Volumetric Water Content) or wet leaves (LWS: Leaf Wetness Sensor).

The module has:

- 3 analog VWC or LWS sensors
- 1 counter or digital sensor

AGROBEE-L 01
 Sensor: 10HS Decagon
 Terrain: mineral
 Timing: 05'
 S1: yes S2: no S3: no

Sensor sensor type connected to the module.

- “10HS Decagon”
- “200SS-V Watermark”
- “SF-S10 Solfranc”
- “LWS Decagon”
- “EC-5 Decagon”
- “GS-1 Decagon”
- “Teros 10”

<i>Sensors (analog inputs)</i>		
No.	Description	Units
01	Sensor 1 reader	depends on the sensor
02	Sensor 2 reader	depends on the sensor
03	Sensor 3 reader	depends on the sensor

Terrain type of terrain. “Mineral”,

“Mulch”.

Timing how often the sensor is read. “5’”, “10’”, “20’”.

S1,S2,S3 indicates which sensors are connected.

2.1.4. MODEL SDI-12 SETTINGS

Up to 4 tri-sensor module for reading soil water content (VWC: Volumetric Water Content), temperature and EC (electrical conductivity). Use the SDI-12 bus.

The module has:

- 4 analog VWC sensors
- 1 counter or digital sensor

Sensor sensor type connected to the module.

- “5TE Decagon”
- “GS3 Decagon”
- “CS650 Campbell”
- “Hydraprobe-II”
- “AquaCheck-4”
- “AquaCheck-8”
- “Sentek D&D ht”
- “Sentek D&D tri”
- “Teros 12”
- “Apogee NDVI/PRI”
- “Teros 21”

AGROBEE-L 01
 Sensor: 5TE Decagon
 GS3 Decagon

Terrain: Mineral
 Timing: 05'
 S1: yes S2: no S3: no S4: no

Format: 0
 S1 Density: 0.00
 S2 Density: 0.00
 S3 Density: 0.00
 S4 Density: 0.00

Terrain type of terrain. Varies depending on the sensor. Do not use on the CS650 Campbell, Hydraprobe-II, Sentek, Apogee NDVI/PRI and Teros 21.

Timing how often the sensor is read. “5’”, “10’”, “20’”

S1, S2, S3 indicates which sensors are connected. Only one can be connected to the AquaCheck and Sentek type sensors.

Format the meaning varies according to the type of sensor.

- For 5TE and GS3 type sensors. From 0 to 2. For more information, see the AgroBee-L SDI-12 manual.
- For Sentek type sensors. From 0 to 1. Select which readings will be used from all the possible readings that the sensor can deliver.

Probe levels indicates probe length. “3”, “6”, “9”, “12”. Only for Sentek type sensors.

Density S1, S2, S3, S4 average apparent density. Only for 5TE and GS3 type sensors. From 0 to 2.65. For more information, see the AgroBee-L SDI-12 manual.

The numbering of the module’s sensors varies depending on the type, format, and levels of the sensor. For more information, see the AgroBee-L SDI-12 manual.

AgroBee-L 01 Sensor: CS650 Campbell Hydraprobe-II Teros 12 Apogee NVDI/PRI Teros 21 <hr/> Timing: 05' S1:yes S2: no S3: no S4:no	AgroBee-L 01 Sensor: AquaCheck-4 AquaCheck-08 <hr/> Terrain: Mineral Timing: 05' S1: yes	AgroBee-L 01 Sensor: Sentek h Sentek tri <hr/> Timing: 05' S1: yes Format: 0 Probe levels: 6
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2.1.5. MODEL 3MA SETTINGS

Module for reading analog sensors.

The module has:

- 2 analog 4-20 mA sensors
- 1 analog 4-20 mA or 0-20V sensors
- 1 counter or digital sensor

For each analog sensor

- **Activate** by entering “yes,” the module will read the sensor according to the specified parameters.
- **Sensor** type of analog sensor. It will ask sensor 1, 2, and 3 can only be 4-20 mA**
- **“4-20 mA”** sensor by current.
- **“0-20 V”** sensor by voltage.
- **Timing** each how often the sensor is read. “5’”, “10’”, “20’ “.
- **Voltage** voltage of the sensor’s power supply. “5 Vdc”, “12 Vdc”.
- **Voltage time** time the sensor needs to charge before performing the reading. “250 ms”, “500 ms”, “1 s”, “2 s”.

AgroBee-L 01 Sensor 1. Activate: yes Sensor: 4-20mA Timing: 5' Voltage: 12 Vdc Voltage time: 250 ms
--

2.1.6. MODEL 2SD2ED1EA SETTINGS

The module has:

- 2 2-wire or 3-wire latch solenoids
- 2 counters or digital sensors
- 1 analog 4-20 mA or 0-20V sensor

See section 2.1.7

2.1.7. MODEL 9SD2ED2EA SETTINGS

The module has:

- 9 2-wire or 3-wire latch solenoids
- 2 counters or digital sensors
- 2 analog 4-20 mA or 0-20V sensors

AgroBee-L 01
Action error: Nothing
Module general: no
Stop sectors: no

Latch tension: 12 Vdc
Latch valve: 2 wires

Action error indicates what the module will do with the valves when communication with the Agronic fails.

- “Nothing”: the valves remain as they are.
- “Stop val.”: The valves close immediately.
- “Stop 15min.”: The valves close when the module has not communicated with them for 15 minutes.

Module general by selecting “yes,” the last output of the module becomes a general action. This output will be activated whenever any of the others in the module is activated. There is a hammer between the activation of the generals and the sector, first activating the sector, and then the general after 30”.

The sectors stop when there is module general command and the module receives the order to stop the last sector that is active. There are two options for the hammer:

- “yes”: first the general, and then the sector at 30”.
- “no”: first the sector, and then the general at 30”.

Latch tension voltage upon triggering the valves. All the module’s valves are set to the same voltage. The voltages are: “12 Vdc”, “16 Vdc”, “9 Vdc” and “6 Vdc”.

Latch valve: latch-type solenoid. All of the module’s valves are the same type.

- “2 wires”: 2-wire solenoid.
- “3 wires”: 3-wire solenoid.
- “2 h.inv”: 2-wire solenoid with inverted polarity.

For each analog sensor

Activate entering “yes,” the module will read the sensor according to the specified parameters.

Sensor type of analog sensor.

- “4-20 mA”: sensor by current.
- “0-20 V”: sensor by voltage.

Timing how often the sensor is read. “5’”, “10’”, “20’”.

Voltage voltage of the sensor’s power supply. “5 Vdc”, “12 Vdc”.

AgroBee-L 01
Sensor 1. Activar: yes
Sensor: 4-20mA
Timing: 5’
Voltage: 12 Vdc
Voltage time: 250 ms

Voltage time time the sensor needs to charge before performing the reading. “250 ms”, “500 ms”, “1 s”, “2 s”.

2.1.8. MODEL 6SD6ED2EA SETTINGS

The module has:

- 6 2-wire or 3-wire latch solenoids
 - 6 counters or digital sensors
 - 2 analog 4-20 mA or 0-20V sensors
- See section 2.1.7

2.1.9. MODEL 3LV SETTINGS

Module for reading up to 3 ultrasonic level sensors. The sensors can also calculate volumes based on height and surface area.

The module has:

- 3 analog level sensors
- 1 counter or digital sensor

Timing how often the sensor is read. "5' ", "10' ", "20' "
S1, S2, S3 indicates which sensors are connected.

```
AgroBee-L 01
Timing: 05'
S1: yes   S2: no   S3: no
```

```
Sensor 1
Total height: 00.000 m
Surface area: 0000.000
```

For each sensor that is connected, consult the following:

Total height total height of the tank or reservoir level measured. From 0 to 20,000 metres. Take into account that the maximum reading of the sensor is 9,998 metres.

Surface area surface area of the tank or reservoir level measured. It is used to calculate the remaining volume.

See the specific manual of this model for more information. From 0 to 1,000,000 m2.

Sensors (analog inputs)

No.	Description	Units
01	Sensor 1: direct measurement	From 0 to 9,998 metres
02	Sensor 1: water level (total height – direct measurement)	From 0 to 9,498 metres
03	Sensor 1: volume (water level x surface area)	From 0 to 65,000 m3 *
04	Sensor 2: direct measurement	From 0 to 9,998 metres
05	Sensor 2: water level (total height – direct measurement)	From 0 to 9,498 metres
06	Sensor 2: volume (water level x surface area)	From 0 to 65,000 m3 *
07	Sensor 3: direct measurement	From 0 to 9,998 metres
08	Sensor 3: water level (total height – direct measurement)	From 0 to 9,498 metres
09	Sensor 3: volume (water level x surface area)	From 0 to 65,000 m3 *

* If you want to increase the volume, modify the sensor format. It is 3 decimals by default. If you put 0 decimals as the maximum space, the volume you can read is 65000 m3.

2.1.10. MODEL DENDRO SETTINGS

Module for reading up to 2 sensors measuring the growth of stems or fruits (dendrometers).

The module has:

- 2 analog dendrometer sensors
- 1 counter or digital sensor

AgroBee-L 01
 Sensor: Plansens
 Timing: 05'
 S1: 7000 um S2: 7000um
 S1: yes S2: no

Sensor type sensor according to the maximum measurements they can make. "Plansens", "11 mm", "15 mm", "25 mm".

Timing how often the sensor is read. "5' ", "10' ", "20' ".

<i>Sensors (analog inputs)</i>		
No.	Description	Units
01	Sensor 1 reader	0 a 25,000 mm
02	Sensor 2 reader	0 a 25,000 mm

S1, S2 when a "Plansens" sensor is selected, it indicates the end of the scale in micrometres. It is 7000 um by default.

S1, S2 indicates which sensors are connected.

2.1.11. MODEL WATERMARK SETTINGS

Up to 3-sensor module for reading water potential in the soil, WATERMARK 220SS type.

The ground temperature sensor is used to compensate for the water potential reading.

The module has:

- 3 analog WATERMARK 220SS sensors
- 1 soil temperature sensor
- 1 counter or digital sensor

AgroBee-L 01
 Timing: 05'
 S1: yes S2: no S3: no

Timing how often the sensor is read. "5' ", "10' ", "20' ".

<i>Sensors (analog inputs)</i>		
No.	Description	Units
01	Sensor 1 reader	0 a 239,0 cbars
02	Sensor 2 reader	0 a 239,0 cbars
03	Sensor 3 reader	0 a 239,0 cbars
04	Temperature sensor reader	-32,7 a +32,7 °C

S1, S2, S3 indicates which sensors are connected.

2.1.12. MODEL PARSHALL SETTINGS

Module for the measurement of flows in open channels with Parshall type gauges. To measure the level of water that passes through the channel using an ultrasonic sensor.

Timing how often the sensor is read. "5' ", "10' ", "20' ".

Width of the Parshall gauge. From 0 to 600 inches.

Total height height from the sensor to the base level of the canal. From 0 to 9998 millimetres.

Format how the flow read is shown.

"000.00 m3/h" "0000.0 m3/h" "00000 m3/h"
 "000.00 m3/s" "0000.0 m3/s" "00000 m3/s"
 "000.00 l/s" "0000.0 l/s" "00000 l/s"
 "000.00 GPM" "0000.0 GPM" "00000 GPM"

AgroBee-L 01
 Timing: 01'
 Width: 1"
 Total height: 0001 mm
 Format: 000.00 m3/h

<i>Sensors (analog inputs)</i>		
No.	Description	Units
01	Flow passing through the canal	0 a 32767 the decimals and units depend on the format

2.1.13. MODEL GNSS SETTINGS

Module with GPS locator.

It is used to pinpoint the geographical position of a pivot and its movement. The module calculates the angle of the pivot (if it moves in a circular way) or the distance from the starting point (if it moves in a linear way).

The module has:

- GPS positioning sensor.
- 2 analog 4 -20 mA sensors
- 1 counter or digital sensor
- 2 2-wire or 3-wire latch solenoids

Pivot type type of pivot associated with the module.

- “circular”: the pivot rotates around a central point.
- “linear”: the pivot moves in a linear way, completely straight.

The position is entered in degrees, minutes, and seconds formats.

Latitude and longitude are entered for each point.

Central point if the pivot moves in a circular way, it corresponds with the rotation axis. If the pivot is linear, it corresponds to the left end.

Initial point if the pivot moves in a circular way, it corresponds to a 0-degree angle position. If the pivot is linear, it corresponds to the extreme right. For each analog sensor.

Activate it by entering “yes,” and the module will read the sensor according to the specified parameters. Timing: how often the sensor is read. “5’”, “10’”, “20’”:

Voltage voltage of the sensor’s power supply. “5 Vdc”, “12 Vdc”.

Voltage time time the sensor needs to charge before performing the reading. “250 ms”, “500 ms”, “1 s”, “2 s”. For the following parameters, see section 1.1.7.

AgroBee-L 01
Pivot type: circular

Central point

Latitude.

041° 38’ 18.30” North

Longitude.

002° 08’ 23.40” West

Initial point

Latitude.

041° 38’ 48.27” North

Longitude.

002° 08’ 20.15” West

Sensor 1.

Activar: yes

Timing: 5’

Voltage: 12 Vdc

Voltage time: 250 ms

Action error: Nothing

General module: no

Stop sectors: no

Latch tension: 12 Vdc

Vdc Latch valve: 2 wires

Sensors (analog inputs)

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

2.1.14. MODEL NUTRI SETTINGS

Module for reading the nitrate and potassium content in the soil.

The module can also read soil moisture and temperature at four levels of depth. For nitrate and potassium readings, use the “Nutrisens” nutrient probe. You can connect up to two probes of this type to the module.

To read the moisture (VWC) and temperature of the soil, you can use the “AquaCheck” or the “Sentek-Drill&Drop (Sentek D&D ht)” probe. Both are “lance” type and communicate with the module using the SDI-12 bus.

The module has:

- 4 analog inputs for the nitrate and potassium sensors
- 1 SDI-12 bus for moisture and temperature sensors in the soil
- 1 counter or digital sensor

Timing how often the sensor is read. “5’”, “10’”, “20’”.

S1-N, S2-N, S3-S indicates which sensors are connected.

- S1-N: refers to the Nutrisens 1 sensor
- S2-N: refers to the Nutrisens 2 sensor
- S3-S: refers to the sensor connected to the SDI-12 bus

Sensor sensor type connected to the SDI-12 bus. It only asks if there is one connected (S3-S: yes).

- “AquaCheck-8”
- “Sentek h”

Terrain type of terrain. This only applies to the AquaCheck. “Mineral”, “Sandy”, “Clay”, “Sandy-loam”, “Loam”, “Loamy-clay”.

Format indicates how the Nutrisens probes deliver the Nitrate and Potassium values.

- “Direct”: Direct value provided by the probe (Nitrate or Potassium). Value between -1300 mV and +1200 mV.
- “Estimate”: Value of the estimated concentration of Nitrate or Potassium. To estimate this concentration, you must enter a series of coefficients for each parameter and sensor.

Coefficients Values used to estimate the concentration (positive or negative value). It only asks if the format is “Estimated”.

- N1-C1: Coefficient #1 to estimate the Nitrate concentration from the Nutrisens 1 sensor
- N1-C2: Coefficient #2 to estimate the Nitrate concentration from the Nutrisens 1 sensor
- K1-C1: Coefficient #1 to estimate the Potassium concentration from the Nutrisens 1 sensor

AgroBee-L 01

Timing: 05’

S1-N: yes S2-N: no S3-S: yes

Sensor: AquaCheck-8

Terrain: Mineral

Format: Direct

N1-C1: +/-0000.00

N1-C2: +/-0000.00

K1-C1: +/-0000.00

K1-C2: +/-0000.00

N2-C1: +/-0000.00

N2-C2: +/-0000.00

K2-C1: +/-0000.00

K2-C2: +/-0000.00

- K1-C2: Coefficient #2 to estimate the Potassium concentration from the Nutrisens 1 sensor
- N2-C1: Coefficient #1 to estimate the Nitrate concentration from the Nutrisens 2 sensor
- N2-C2: Coefficient #2 to estimate the Nitrate concentration from the Nutrisens 2 sensor
- K2-C1: Coefficient #1 to estimate the Potassium concentration from the Nutrisens 2 sensor
- K2-C2: Coefficient #2 to estimate the Potassium concentration from the Nutrisens 2 sensor

<i>Sensors (analog inputs)</i>		
Nº	Description	Units
01	Nitrate sensor 1	mV or meq/L
02	Potassium sensor 1	mV or meq/L
03	Nitrate sensor 2	mV or meq/L
04	Potassium sensor 2	mV or meq/L
05	Water content in soil at 20 cm	%
06	Water content in soil at 40 cm	%
07	Water content in soil at 60 cm	%
08	Water content in soil at 80 cm	%
09	Soil temperature at 20 cm	°C
10	Soil temperature at 40 cm	°C
11	Soil temperature at 60 cm	°C
12	Soil temperature at 80 cm	°C

2.2. COORDINATOR SETTINGS

The parameters of this section should only be changed if the Progrés technical staff tells you to do so.

Channel radio communication channel. From 1 to 13.1 by default.

Network code unique code for each piece of controller used to distinguish between two nearby AgroBee-L devices. The Agrónic serial number is assigned by default.

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

Timing indicates how often the Agrónic will communicate with the modules. This time varies depending on the selected

“TX Mode”. According to the timing, the maximum number of modules with which you can communicate can be modified. “Standard” by default.

- “Standard”: maximum of 20 modules. Time between communications from 60” to 200”.
- “Priority”: maximum of 10 modules. Time between communications from 30” to 100”.

Band allows you to select which band frequency the radio station will use. It only asks if the station is 868 / 433MHz. Remember that the antenna is different for each band. The bands can be 868MHz or 433MHz. 868MHz by default.

TX mode allows you to change the radio communication features to allow for more distance or a faster communication rate. The higher the number, the greater the distance but there is also a greater communication time. From 1 to 18.5 by default.

2.3. ASSIGNING INPUTS AND OUTPUTS

When an AgroBee-L module's input or output is assigned to one of the parameters, the first digit is always a '3', the next two digits indicate the module number, and the last two digits indicate the module's input or output.

Digital outputs			
	3 00 00		Description
3: AgroBee-L	01 - 20	01 - 09	The number of outputs depends on the model

Digital inputs			
	3 00 00		Description
3: AgroBee-L	01 - 20	01 - 09	The number of outputs depends on the model

Analog inputs			
	3 00 00		Description
3: AgroBee-L	01 - 20	01 - 09	01 to 13: depends on the model 14: Battery voltage 15: Solar panel voltage 16: Radio level

3. Consultation

To see the AgroBee-L consultation, go to "Consultation - Communications - AgroBee". There is the general consultation screen and also one for each module. You can toggle screens with the up and down arrows.

<p>COMMUNICATIONS CONSULTATION AgroBee-L 868 Status: Correct Timing: 60</p>
--

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

General consultation	
AgroBee-L 868	Radio station on the 868 MHz band
AgroBee-L 433	Radio station on the 433 MHz band
AgroBee-L 915	Radio station on the 915 MHz band
Status: No communication	The radio station cannot be detected on the Agrónic.
Status: Correct	Communication with the radio station is correct.
Timing: 60"	Counter indicating how often it communicates with the modules.

Module consultation	
M01 (ns. 236) V1.00	Module number. If it has communicated with the module, it indicates its serial number in parentheses and its software version.
Status: No communication	There has not been any communication with the module since the Agrónic has been activated.
Status: Correct (40")	The module is communicating correctly. The time that has passed since the last communication is shown in parentheses. The rest of the consultations are only shown if the status of the module is correct.
Status: Error	Communication with the module has been lost.
Network error	The network codes configured in the controller and in the module are different. Reason: the module may have an incorrect network code configured, or it is communicating with a module of another installation.
Model error	The model configured in the Agrónic does not correspond to that of the module.
Level: 80% / 82%	Radio signal level The first is the one that the module receives, the second is the one that the Agrónic receives when it communicates with this module. The minimum level for proper communication is 27%.
VBat: 04.0 V VSol: 05.8 V	Battery voltage and the voltage of the module's solar panel. If the battery voltage reaches 2.4V or lower, you may have a problem with the panel.
1111111111111111	Status of the last 16 communications received by the module. With a "1" indicating that you have correctly received the information sent by the Agrónic, and a "0" indicating that it was not correctly received.

When a module's consultation is on the screen, show the values of the module's inputs and outputs by pressing the "1" key.

Each model has its own consultation screen.

To return to the communication inquiry screen, press the "1" key.

Nomenclature used in consultations:

- **ED** status of digital inputs. With a '1' indicating that the contact is closed and a '0,' that it is open. The digit on the far right corresponds to input 1.
- **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.
- **EA** Analog input values in millivolts. If the sensor is 4-20mA, 4mA=800mV and 20mA=4000mV. The number that goes along with EA indicates the sensor number.
- **Vsen** sensor supply voltage at the last reading. The value is in millivolts.
- **Error** in the 3LV and Parshall models, it indicates that the sensor is correct with a '0' and an error in the sensor with a '1'. The digit on the far right corresponds to sensor 1.

GNSS and NUTRI Models

The consultations of these models have two screens. To change from one to another, press the '1' key.

For the GNSS model, the first screen shows GPS values and the second shows the inputs and outputs.

The meaning of the GNSS values are:

- Status: with a '1' indicating that the GPS is operational and that the reading is correct.
- Satellites: number of satellites detected by the GPS sensor.
- Latitude and longitude: geographic coordinates where the module is located.

For the Nutri model, the two screens show the values:

- AI1-AI2: Nutrisens sensor #1
- AI3-AI4: Nutrisens sensor #2
- AI5-AI8: VWC at 20cm, 40cm, 60cm, 80cm
- AI9-AI12: Temperature at 20cm, 40cm, 60cm, 80cm

AgroBee-L 01 ----	AgroBee-L 02 2SD ED: 01 SD: 00	AgroBee-L 03 8SD ED: 00 SD: 00010010
AgroBee-L 04 H2O EA1: 800 EA2: 2501 EA3: 3200 Vsen: 12109 ED: 0	AgroBee-L 05 SDI-12 EA1: 1502 EA2: 0 EA3: 1832 EA4: 0 EA5: 2014 EA6: 0 Vsen: 12006 ED: 0	AgroBee-L 06 3MA EA1: 800 EA2: 2501 EA3: 12109 Vsen: 12003 ED: 1
AgroBee-L 07 2SD2ED1EA EA1: 1402 ED: 00 SD: 10	AgroBee-L 08 9SD2ED2EA EA1: 963 EA2: 2033 ED: 10 SD: 100100100	AgroBee-L 09 6SD6ED2EA EA1: 963 EA2: 2033 ED: 100100 SD: 000001
AgroBee-L 10 3LV EA1: 2600 EA2: 0 EA3: 0 Vsen: 5063 Error: 110 ED: 0	AgroBee-L 11 DENDRO EA1: 12360 EA2: 5630 Vsen: 5023 ED: 0	AgroBee-L 12 WATERMARK EA1: 963 EA2: 0 EA3: 0 Vsen: 12000 ED: 0

AgroBee-L 13 PARSHALL
EA: 1450
Vsen: 5030
Error: 0
ED: 0

AgroBee-L 14 GNSS
Angle: 152.3°
Dist.: 23.5 m
Angle N: 23.1°
Status: 1
Satélites: 14
Lat.: 041° 12' 23.12" North
Lon.: 005° 3' 14.03" East

AgroBee-L 14 GNSS
EA1: 2300
EA2: 1853
ED: 0
SD: 00

AgroBee-L 15 NUTRI
EA1: 963 EA2: 963
EA3: 963 EA4: 963
Vsen: 5030
ED: 0

AgroBee-L 15 NUTRI
EA5: 963 EA6: 963
EA7: 963 EA8: 963
EA9: 963 EA10: 963
EA11: 963 EA12: 963

Sistemes Electrònics Progrés, S.A.