# AgroBee-L Parshall System

Very low consumption radio modules and integrated parts of the AgroBee-L system for open canal flows based on Parshall gauges through an ultrasonic sensor that forms part of the controller.

The AgroBee-L Parshall model offers the following, according to the available format:

- 1 ultrasonic sensor:
    - 1 sensor with TTL output for measurements up to 9 metres with 1mm precision

Ultrasonic sensor

AgroBee-L Parshall
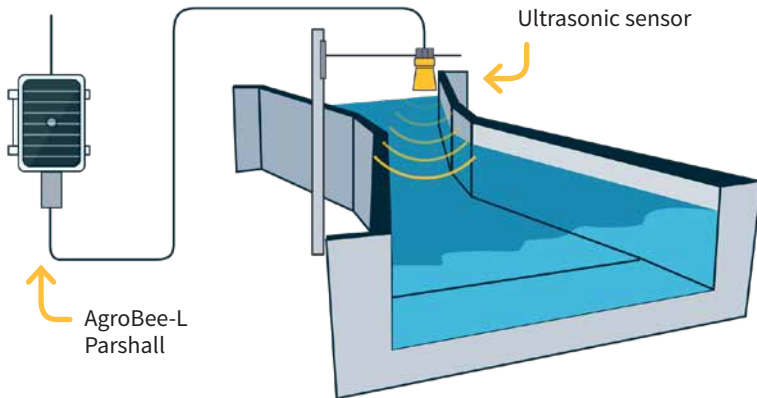
The Parshall canal is a standardized Venturi canal. Parshall gauges are calibrated instruments for measuring flows in open canals. It is technically described as a critical depth gauge. Its main advantages are that there is only a small pressure drop through the gauge, which allows for the easy passage of sediment or debris, without needing special access conditions or a buffer well or even corrections for up to 60% submergence. Consequently, it is suitable for measuring the flow in irrigation canals or natural currents with a gentle slope.

The meter consists of a section convergent with the bottom level, a funnel section with a descending slope on the bottom, and a divergent section with an ascending slope at the bottom. Thanks to this, the water drains at a critical speed through the funnel.

The meter's control section is located near the end of the converging section. The Parshall gauges are calibrated for a piezometric height ha, measured at a defined place in the converging section.

Parshall gauges are constructed in very different sizes and classified according to the width, b, in the funnel section. For each of them, a pair of constants is defined which, along with the measured water height, allow you to determine the flow of water through the gauge:

b["]	b[m]	C	n	F[m] sensor position
1	0.0254	0.001352	1.548	0.242
2	0.0508	0.002702	1.548	0.276
3	0.0762	0.003965	1.548	0.311
6	0.1524	0.006937	1.574	0.414
9	0.2286	0.013762	1.528	0.587
12	0.3048	0.69	1.519	0.914
18	0.4572	1.06	1.538	0.965
24	0.6096	1.43	1.550	1.016
30	0.7620	1.81	1.558	1.067
36	0.9144	2.18	1.566	1.118
48	1.2192	2.95	1.578	1.219
60	1.5240	3.73	1.587	1.321
72	1.8288	4.52	1.595	1.422
84	2.1336	5.31	1.601	1.524
96	2.4384	6.11	1.607	1.626
120	3.0480	7.46	1.600	1.829
144	3.6576	8.86	1.600	2.032
180	4.5720	10.96	1.600	2.337
240	6.0960	14.45	1.600	2.845
300	7.6200	17.94	1.600	3.353
360	9.1440	21.44	1.600	3.861
480	12.1920	28.43	1.600	4.877
600	15.2400	35.41	1.600	5.893

The AgroBee-L Parshall model's ultrasonic sensor directly measures the distance between the sensor and the surface of the water. The measurement of water flow through the canal in question is obtained through this process and from the configuration parameters entered into the associated controller.

The sensor must be installed at 2/3 of the total convergence section, as indicated in the following figure (distance F shown in the previous table):

$$Q = C \times h_a^n$$
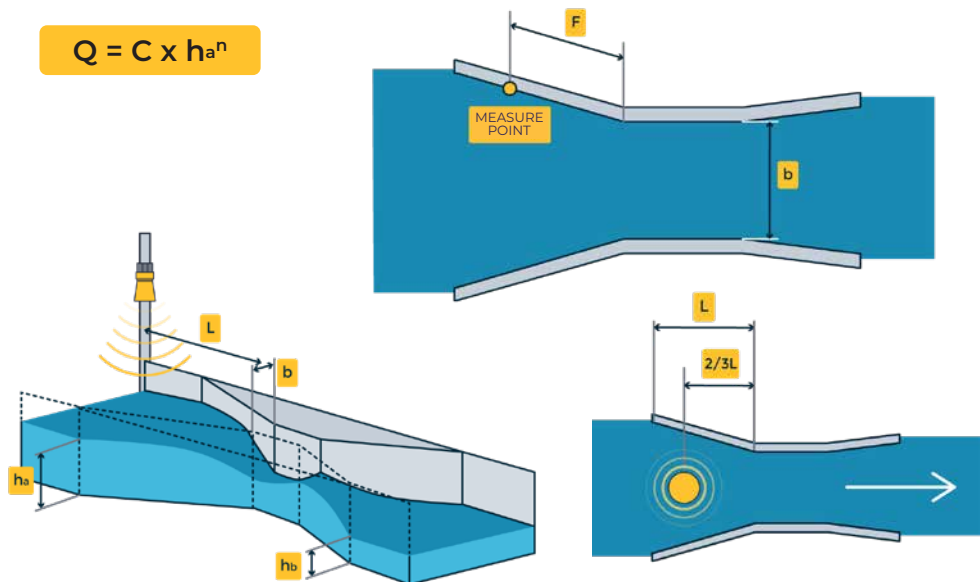
This module is powered by a 1.05 W solar panel + supercapacitors, already incorporated into the controller (no need to replace batteries).

For the sensor, the following parameters must be entered in the controller, which will let you determine the water flow of the canal in question:

- Width ["]: dimensions of the Parshall canal, in inches, and according to the previous table.
- Total height [m]: distance from the sensor at level 0.

Example: with the sensor located at the top of a canal to measure its water level, the total height will be the distance from the sensor to the bottom of the canal.

The water flow can be calculated from this information along with the measurement from the sensor.

- Format: presentation format of the measured flow data: in m3/h, m3/s, l/s, or gpm. For each of these formats, you can also choose the given resolution. You can choose one resolution or another depending on the units chosen and the maximum value of the flow to be measured in the system in question. It is important to keep the maximum possible value for the formats in mind, which is also indicated below:
  - 00000   (max. 32767)
  - 0000.0   (max. 3267.7)
  - 000.00   (max. 327.67)

These sensors' reading rates can be selected from 3 different values: 5, 10, or 20 minutes, with the default value being 5 minutes.

Material supplied along with the purchase of the AgroBee-L Parshall: Sensor, 7 metres of wiring, and support for the sensor.

Technical characteristics

Power supply		
Power supply:	Parshall: Solar: 5V / 1,05W → 3,3V	Panel plus high capacity supercapacitors
Energy consumption: Parshall	Average consumption: 0,90 mW	

Outputs	
Number	1
Type	5 Vcc (Sensor power supply) Maximum current: 50 mA

Inputs	
Maximum distance betweeen sensor and AgroBee-L: 50m	
Number	1
Type	For potential-free contacts
Number	1
Type	Digital (TTL)

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

Box dimensions Parshall	
Height	150 mm
Width	100 mm
Depth	70 mm
Weight (approx.)	0,4 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 fertirrigation 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.
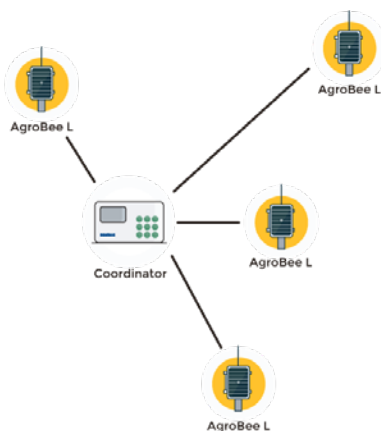
Its low consumption allows it to operate with a solar panel integrated into the module and supercapacitors or battery (depending on the model). The solar panel stores the energy in the supercapacitors/battery, offering a long operational life. It is only necessary to replace batteries in models that 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.
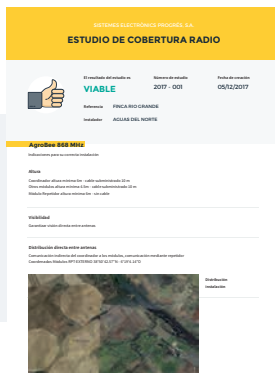
Installation

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.

INSTALLATION MÓDULOS

The AgroBee-L modules have the antenna integrated into the module, so they are installed on top of a post.

For good radio communication, it is very important to place the modules in areas free of vegetation, walls, and metal structures.

The minimum recommended height to place the module is 4.5 metres from the ground. If there are tall crops (corn, trees, …) this minimum height of the module must be increased by 2 metres above the height of the crop. In all cases, it must always have direct visibility with the controller's antenna that sends the in-formation (coordinator located in Agrónic). The 7 metres of cable supplied already include these assembly recommendations.

To increase the coverage, and if necessary, the best system is made by raising the module as high as the length of the cable allows.

The modules with solar panels must be placed orienting the panel to the South (Northern hemisphere) or North (Southern hemisphere) to obtain the best solar coverage.

Module →

Post →

min. 4,5 m

min. 2 m
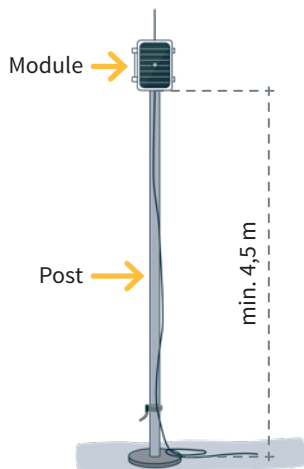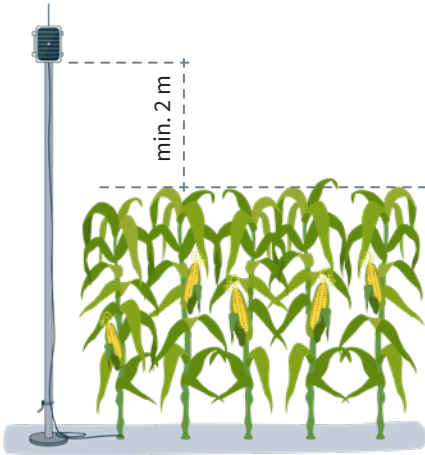
To keep it watertight, it is necessary to always leave the lid closed.

The modules can be fixed on a 35 to 45mm post by means of the support and flange, incorporated (Endless stainless steel clamp, measure 32-50mm DIN3017) in such a way that the cable output passes through the inside of the post.

It is recommended to install it on folding or extendible posts for easy access to the module.

Flange   Folding posts

INSTALLATION SENSORS DE ULTRASONIDOS

Ultrasound sensors should always be installed at a distance greater than 50 cm from the nearest surface to be measured. In the case of the Parshall canal, the sensor must be placed at least 50 cm above the maximum level at which it can be.

IMPORTANT

Do not manipulate or try to disconnect the cable conected to the sensor as it could be damaged and stop working.

The sensor must be well-fixed in its location by means of the mount provided. It is important that it be well-secured and not move at all, since this would alter the result of the measurements.

There must be no object between the sensor and the surface to be measured.

Do not place the sensor next to a wall or any other surface that is parallel to the sensor's central axis. The minimum distance that a sensor must be with respect to any surface parallel to its axis is defined by the supplied mount.

Minimum radius

min. 50 cm min. 50 cm

Level sensor

min. 50 cm

Minimum distance

Maximum level

Minimum radius

min. 50 cm
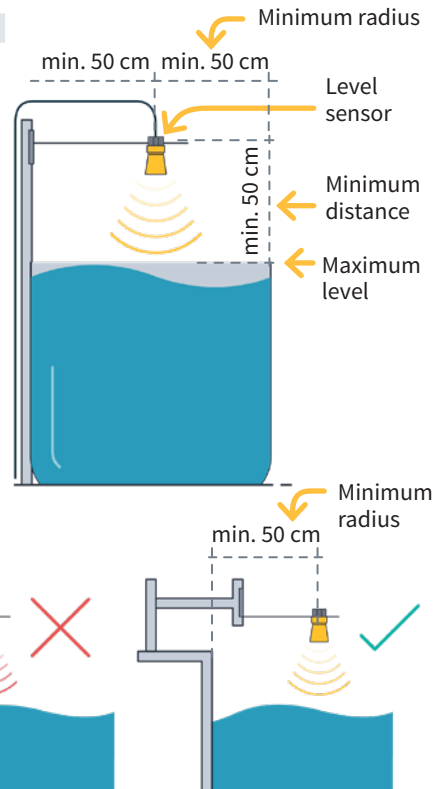
Inputs and Outputs

DIGITAL INPUTS (DIGITAL SENSOR)

There is 1 digital input in an AgroBee-L Parshall module, which can function either as a digital input or a counter/rain gauge input.

Parshall	
Wire colour	Function (digital input)
▆ Brown	Common Digital Input
▆ Blue	Digital Input 1

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 table. The digital input's wire connection is coloured Blue. The common input is the Brown wire.

DIGITAL-TTL INPUTS (ULTRASOUND SENSORS)

This model has 1 input for reading an ultrasonic sensor. The module is supplied with 1 sensor:
- 1 sensor with TTL output for measurements up to 9 metres with 1mm precision

For this module, no action must be taken to connect the inputs, since the Parshall model is already supplied with 1 connected sensor.

CONNECTED SENSOR

The sensor is supplied with a 7 metre hose that is already connected to the AgroBee-L Parshall, so it is not necessary to make any additional connection. A mount is also provided to facilitate the sensor's installation.

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:

Consulta ⟶ Comunicación ⟶ 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 and analog inputs
- Communication parameters
- Input-Output parameters
- Various parameters

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

CONTROLLER QUERY OF AN AGROBEE-L MODULE

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.

CONSULT COMMUNICATIONS IN AN AGROBEE-L MODULE

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
```

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

The information shown on the different screens is as follows:
- Check 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 flow rate given by ultrasonic sensor: Measured value of the flow according to the established presentation format.
- Check the supply voltage of the analog sensors: The value of the supply voltage sent to the active analog ultrasonic 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 inputs.

Nomenclature used in these queries:
- **EA** Analog input values in millivolts. Refers to the direct value of the flow measured in the Parshall canal.
- **ED** status of digital inputs. With a '1' indicating that the contact is closed and a '0,' that it is open.
- **Vsen** value of the voltage in mV supplied to the sensors.
- **Error** sensor reading status. With a '1' indicating that there has been an error in the reading of ultrasonic sensors.

AgroBee-L 02 Parshall
EA: 963
Vsen: 5125
Error: 0
ED: 1

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:

- **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).
- **Sensors** Configuration of ultrasonic sensors. You will have the following options:

"000.00 m3/h"	"0000.0 m3/h"	"0000 m3/h"
"000.00 m3/s"	"0000.0 m3/s"	"0000 m3/s"
"000.00 l/s"	"0000.0 l/s"	"0000 l/s"
"000.00 GPM"	"0000.0 GPM"	"0000 GPM"

- Parshall: Width of the Parshall canal. From 1" to 600".
- Format for showing the flow reading:
- Total height in [mm]
- Reading rate: 5min (default), 10min, 20min

To modify a field of any of the parameters, press ↵ . The screen indicates 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 01
Timing: 05'
Width: 1"
Total height: 0001 mm
Format: 000.00 m3/h
```

- <mark>Width</mark> Width of the Parshall gauge. From 1" to 600".
- <mark>Total height</mark> height Value, in metres, of the distance between the sensor and the farthest limit of measurement. In a Parshall canal, the total height is the distance between the sensor and the bottom of the canal.
- <mark>Surface</mark> Format of the flow rate consultation reading.

These parameters are not used directly by the Parshall module. It is the Agrónic which, based on these parameters and the reading provided by the Parshall module, calculates the water height and remaining volume.

<mark>FORMATS OF THE MODULE SENSORS:</mark>

The AgroBee-L Parshall module comes with 1 physical ultrasonic sensor. Now, the value of the flow measured through a Parshall canal is obtained by means of the "width", "total height", and "format" data that are entered.

The notation of the inputs and outputs of the different Progrés controllers follows a standard format. As an example, the coding of the analog inputs corresponding to a Parshall module in an Agrónic 2500 is as follows (see section "Parameters - Analog sensors" in the User Manual with the additional A-2500 / R-1751 option):

Parshall analog inputs notation	
Input Codes	Parameter
30101	Direct measurement of the flow according to the established format

As you can see, the numbers of entries are encoded in five digits: the most significant indicates the device: in this case, AgroBee-L; the next two digits are used to identify the different AgroBee-L modules of an Agrónic; and the last ones are the entry number. In the previous table, the sensor refers to the AgroBee 1 module.

VARIOUS PARAMETERS OF AN AGROBEE-L MODULE

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)
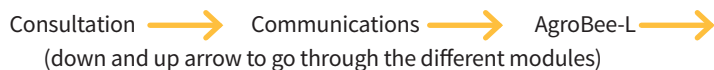
The information provided is:
- Module number, serial number, and firmware version
- Signal level received by the Agrónic and the module. It is displayed in % and indicates the level of the signal-to-noise ratio.
- Advisable/recommended value > 40%
- Vbat: Battery level in mV:
  – Module with panel + 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	Parshall
Panel + Supercapacitors[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 Parshall 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.
- 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
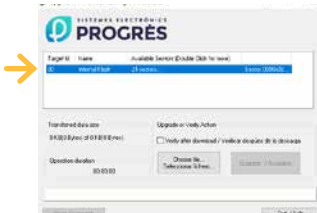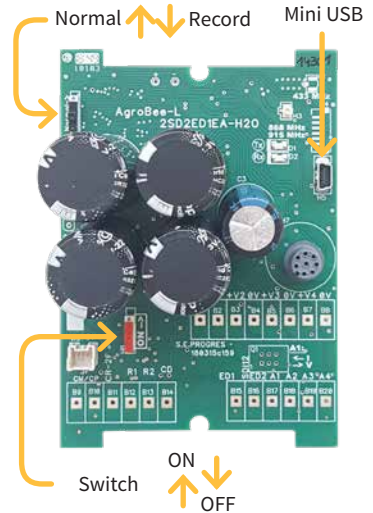
drivers. If you already have the drivers installed, skip to the next step.

- 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.