CONTROLLER

EP112P - EP212J - EP412J

BaTSI®

USER MANUAL

INTRODUCTION

This user manual has been written by the equipment manufacturer and is an exclusive part of the product. The operations contained are directed to appropriately trained and qualified personnel. Its reading and conservation are recommended for future consultations.

CONDITIONS OF USE

BATSI® recommends that all devices, equipment and materials constituting the assembly should be installed in compliance with the European Directives 2006/42/EC (Machinery Directive), 2014/30/EU and subsequent modifications (low-voltage electrical equipment). For countries that are not part of the European Union, in addition to the national regulations in force and for a sufficient level of security, it is also recommended to respect the requirements contained in the aforementioned directives.

PRODUCT DISPOSAL

In accordance with EU directive 2012/19/EU on waste electrical and electronic equipment (WEEE), this electronic product cannot be disposed of together with other unsorted waste. Dispose of this equipment by returning it to a local collection drop off point for recycling.

OPERATION OF EP112P/EP212J/EP412J CONTROLLERS

EP112P: A single proportional valve can be controlled with this equipment.

EP212J: Up to two single proportional valves or one double proportional valve can be controlled with this equipment.

EP412J: Up to four single proportional valves or two double proportional valves can be controlled with this equipment.

Signal

A 0 to 5V input signal is used to control the single valves. A signal from 0 to 2.45V and from 2.55V to 5V is used to control the double proportional valves.

Outputs

With single proportional valves, the X-axis controls the PWM1 output and the Y-axis controls the PWM3 output. With dual proportional valves, the X-axis controls the PWM1 output and the PWM2 output; and the Y-axis controls the PWM3 output and the PWM4 output.

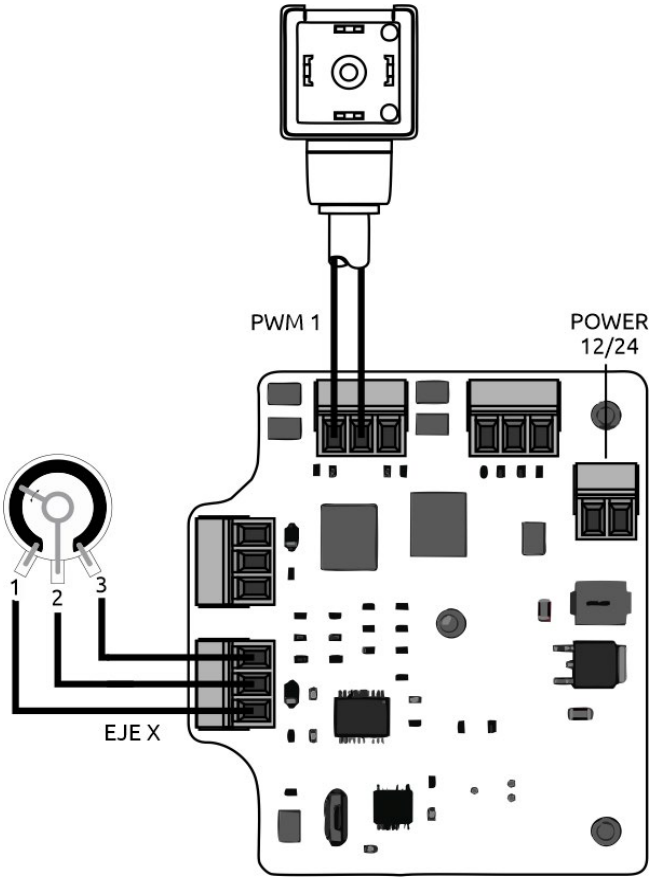
IMPORTANT NOTE

The equipment is configured to control a single proportional valve (EP112P), two single proportional valves (EP212J), or two double proportional valves (EP412J).

For an equipment to control single and double proportional valves, a special firmware reprogramming is required. Contact the manufacturer for more information.

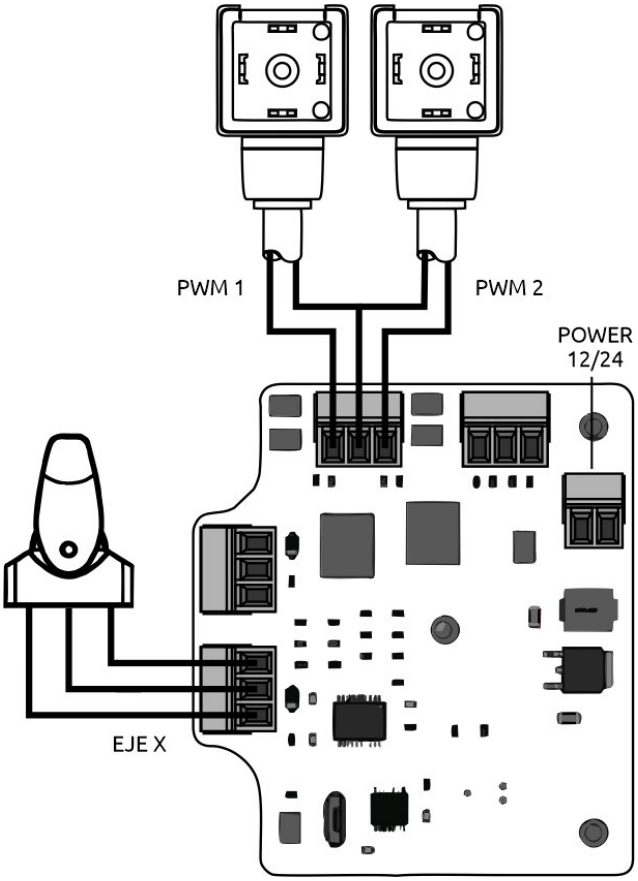
EP112P CONNECTIONS

X-axis with output 1
connection example



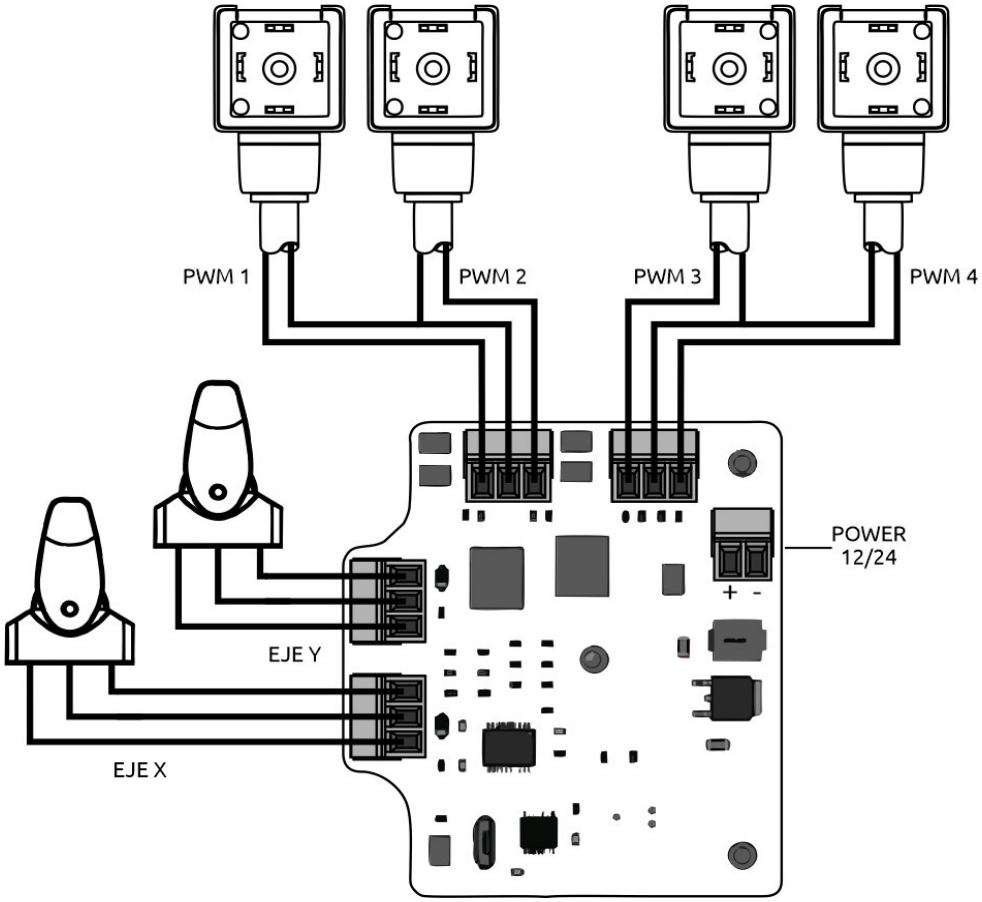
EP212J CONNECTIONS

Double X-axis with outputs 1
and 2 connection example



EP412J CONNECTIONS

Double X-axis and double Y-axis with
outuputs 1, 2, 3 and 4 connection example

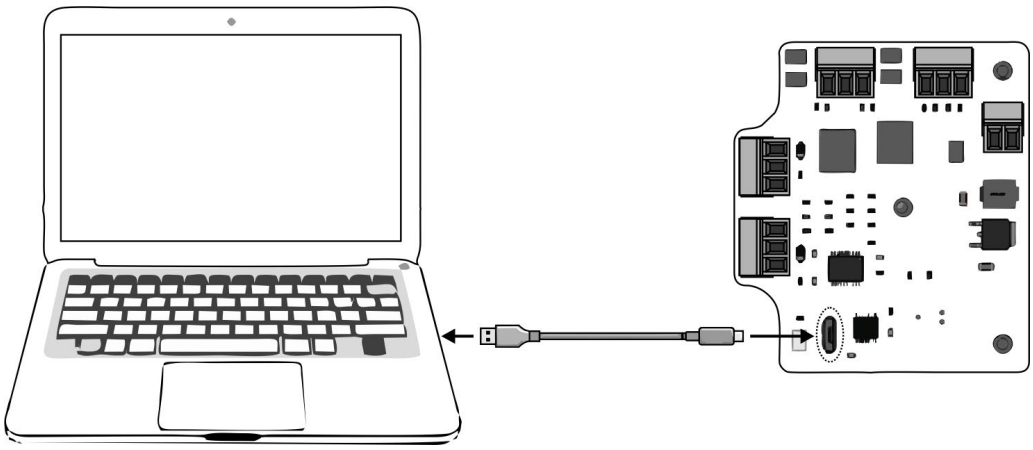


SOFTWARE CONFIGURATION

The equipment can be configured by the user by means of software. It is possible to set the minimum and maximum actuation of each valve, the axes actuation centre, choose between a linear or logarithmic action ramp, opening and frequency limiter.

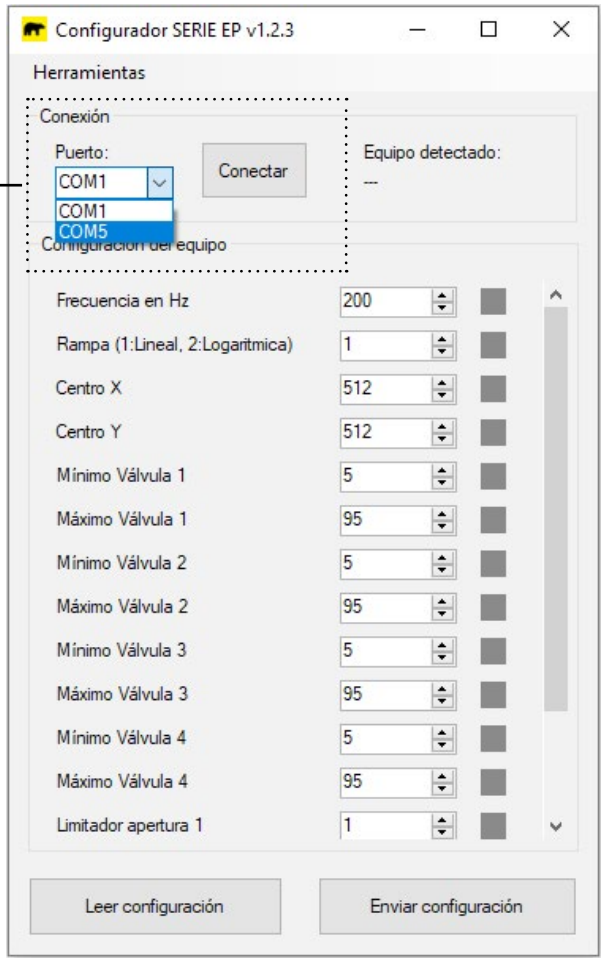
The software will be supplied after the purchase of the equipment via telematic or direct download at the following link: www.batsi.eu/batsiconfigurator

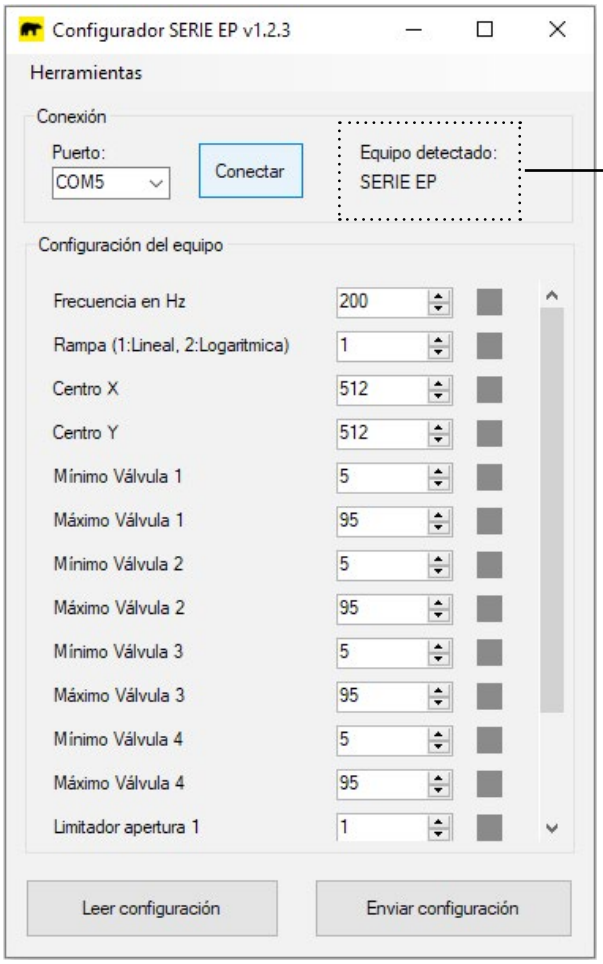
1-. Connection: connect the device to the computer using a USB to MICROUSB cable. The operating system will detect it automatically; if the connection is correct, a green LED light will be lit on the board:



Open the executable file “EP412.exe Configurator”. Once opened, select the appropriate COM port, “USB Serial Device (COM)”. In case you are not sure which port it is, try connecting to the available ports, it will be one of them:

Select the COM port and click on Connect.





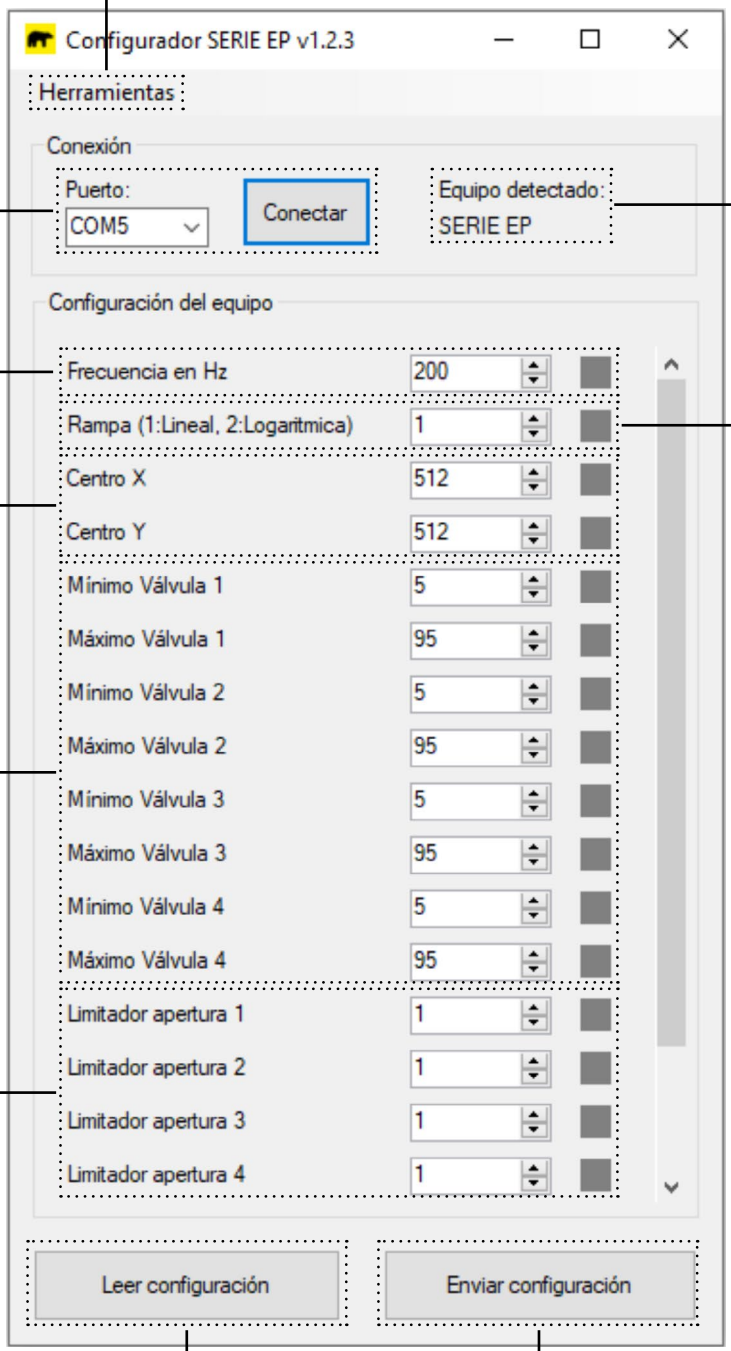
Once connected, you will see the equipment detected.

The default values with which the equipment is delivered are as follows, as shown in the following image:

- Frequency.....200Hz
- Ramp.....1
- X center.....512
- Y center.....512
- Minimum valve 1.....5
- Maximum valve 1.....95
- Minimum valve 2.....5
- Maximum valve 2.....95
- Minimum valve 3.....5
- Maximum valve 3.....95
- Minimum valve 4.....5
- Maximum valve 4.....95
- Opening limiter 1.....1
- Opening limiter 2.....1
- Opening limiter 3.....1
- Opening limiter 4.....1

Preview of the configurator window and the parameters that can be set:

Herramientas: the center point of the joystick is calibrated with this tool.



Connection: select the input port from here once the equipment is connected to the PC.

Frequency: the working frequency PWN for solenoid valves

Center: sets the center of the X and Y axes by means of an analogue-to-digital converter

Maximum and Minimum: sets the maximum and minimum oil flow. Minimum valve opening to start oil circulation. Maximum valve opening for maximum oil flow.

Opening limiter: sets a default speed and time at which the valve opens, even if the joystick is used to suddenly open the valve.

Once connected, the EP SERIES equipment is displayed

Ramp: set here the ramp type: 1 for linear and 2 for logarithmic

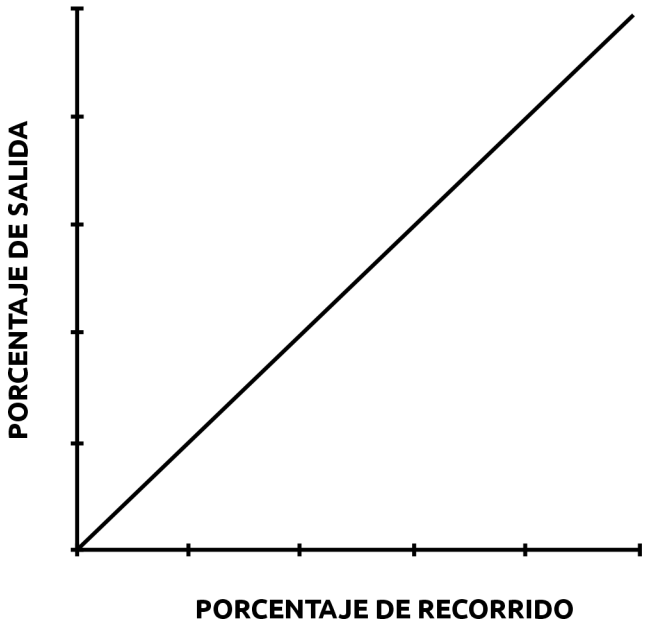
Leer configuración: click here to load the current configuration of the equipment; **current configuration of the equipment is shown in green**.

Enviar configuración: click here to save the configuration chosen; **changes not saved are displayed in orange**.

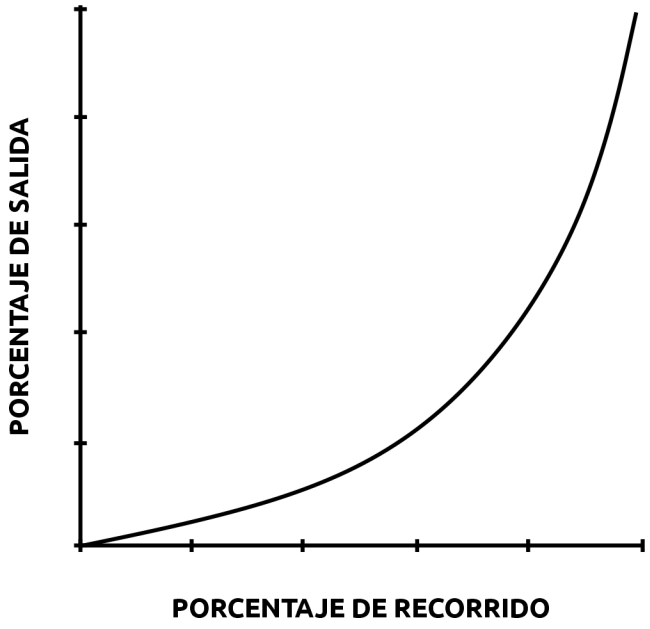
2-. Frequency: the PWM frequency delivered to the hydraulic unit for each solenoid valve; this can be adjusted from 125Hz minimum to a maximum of 1250Hz. By default, the equipment is delivered at a 200Hz frequency. To find out the PWM frequency at which the equipment should be set, refer to the technical data sheet of the hydraulic unit and its solenoid valves, as each one requires a specific working frequency.

3-. Ramp: the equipment can be programmed to have a linear or logarithmic response, which is the ratio between the control stroke and the valve opening. The control is the potentiometer or joystick, and the valve opening is the oil flow rate at the output of the hydraulic unit.
The linear or logarithmic output of the EP series equipment is generated regardless of the type of potentiometer or joystick used.

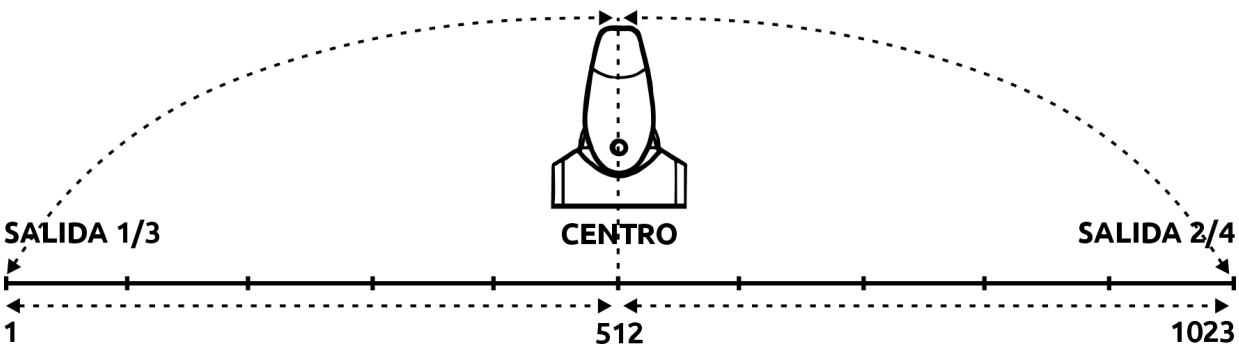
Linear response



Logarithmic response



4-. Center: can be set from 1 to 1023. It is set by default to 512 as the logical centre point, where one channel operates from 1 to 511 and its adjacent channel operates from 513 to 1023.



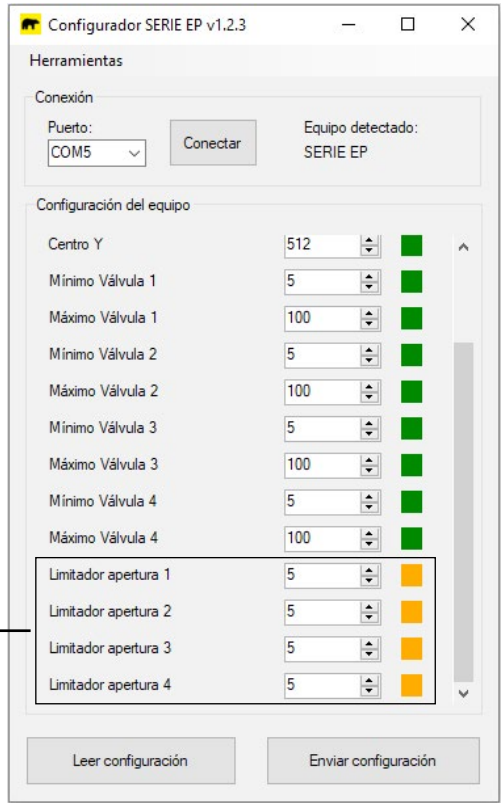
5-. Maximum and Minimum: means the movement sensitivity, where it starts and where it stops acting.

Maximum: it is the maximum opening of the valve, the point at which the valve is fully open and where it delivers the highest oil flow.

Minimum: is the minimum opening of the valve, the point at which the valve starts to release oil, where the movement starts to be executed.

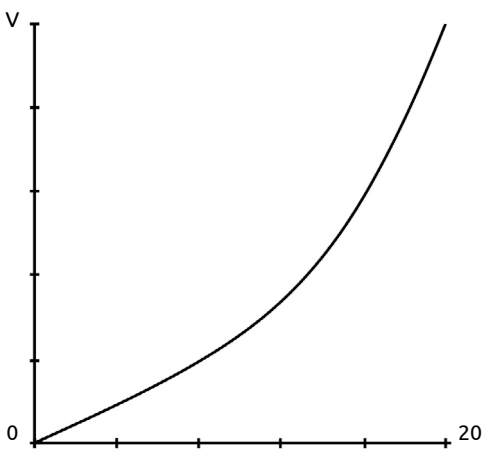
6-. Opening limiter: a fixed progressive and timed ramp (opening limiter) can be set to protect the equipment from sudden changes, e.g. changing the motor's direction of rotation.

An opening limiter can be set for each output.

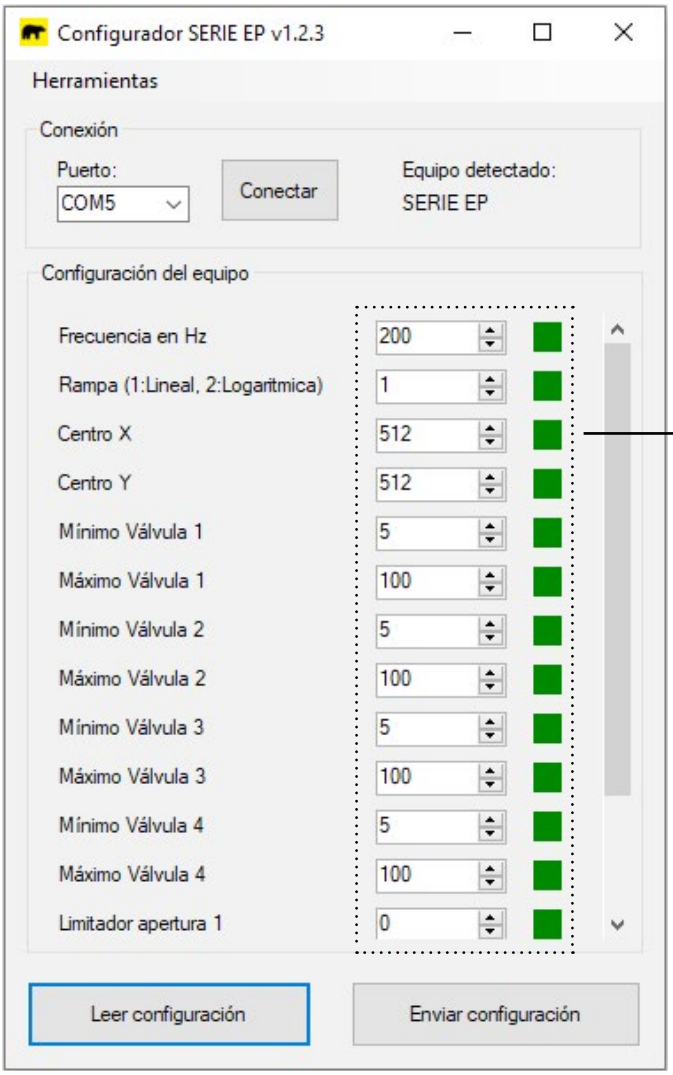


A progressive, timed ramp can be set for each output, from 1 to 20 where 1 is zero seconds and 20 is 12 seconds.

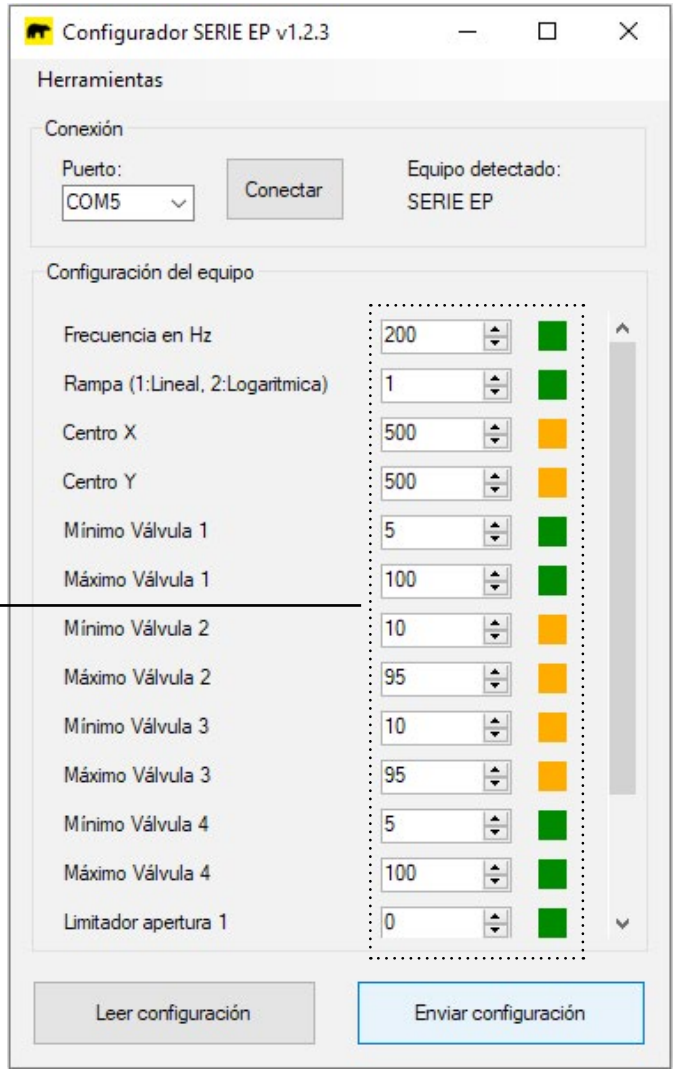
Voltage/time curve



7-. Read configuration and send configuration: the current configuration of the equipment can be read. It is also possible to create a new configuration and send it to the equipment. The current configuration is then overwritten and the new configuration is saved.



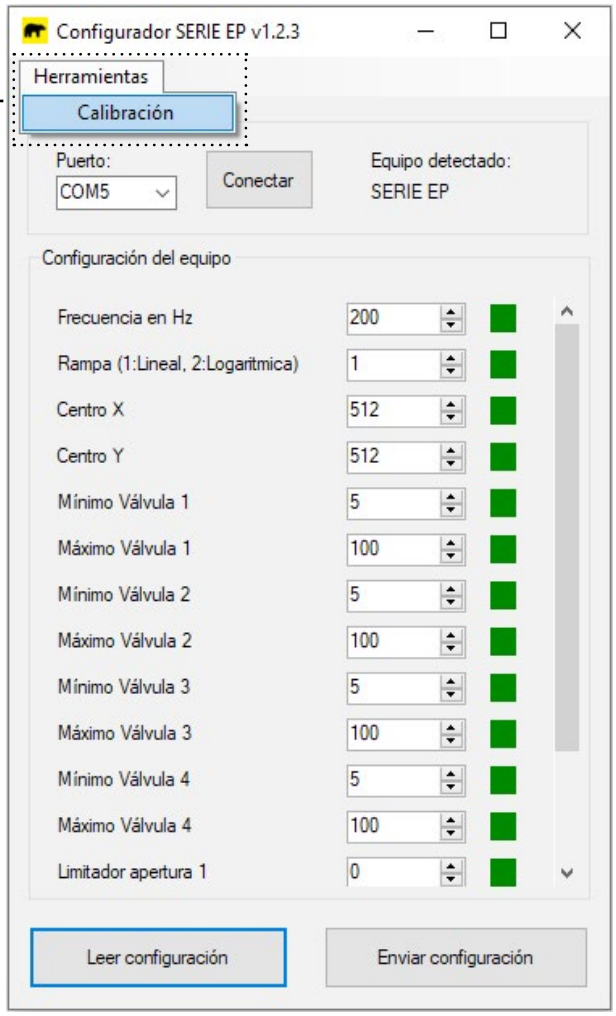
To read the configuration stored in the equipment, click on "**Read configuration**", and the configuration will be loaded into the cells. Cells marked in green indicate the current configuration of the equipment.

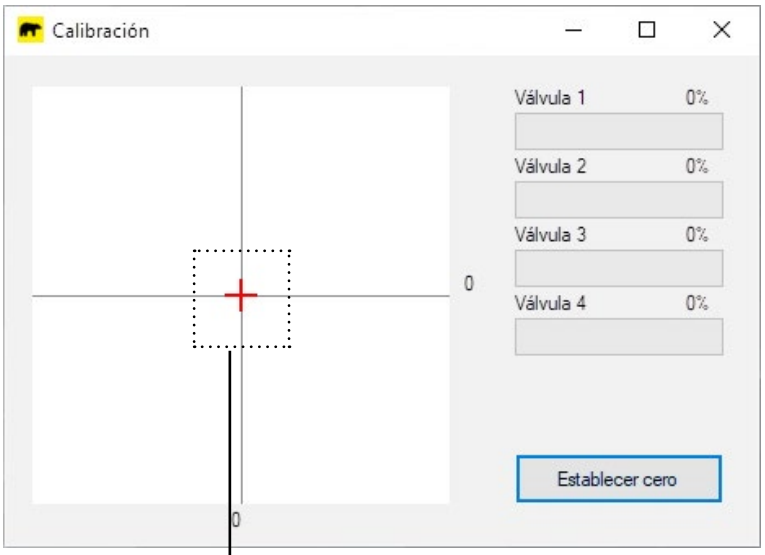


To change the configuration, fill in the cells with the configuration to be applied and click on "**Send configuration**". Cells with unsaved configuration will be marked in orange

8-. Calibration: it is important to calibrate the equipment for a correct operation, as this is the equipment's resting point.

Click on the '**Herramientas**' menu and then on '**Calibración**' to open a window where the centre point of the joystick can be calibrated if it is offset.





To set the default zero point, simply leave the joystick in idle mode (no actuation) and click on "**Establecer cero**"

9-. To finish, simply close the configuration application and disconnect the equipment from the computer.

DECLARATION OF CONFORMITY

CE

EiD Electrònics, SL

Camí les comes, 23. Polígono Industrial

25123 Torrefarrera (Lleida) SPAIN

Hereby declares that the product:

Electronic controller EP112P, EP212J and EP412J

Conforms with the provisions of the following EU Directives:

EMC Directive 2014/30/EU

According to following harmonized standards:

EMC EN 61000-4-2:2009, EN 61000-4-3:2006, EN 61000-4-4:2012, EN 61000-4-5:2014, EN 61000-4-6:2014, EN 61000-4-8:2010, EN 55016-1-2:2014, EN 55016-2-1:2014, EN 55016-2-3:2010, EN 55025:2008

This product compiles with **RoHS2 Directive 2011/65/EU** Restriction on Hazardous Substances according to the standard:

EN 50581:2012

Additional standards:

This product does comply with the standards:

ISO 10605:2008 Road vehicles – Test methods for electrical disturbances from electrostatic discharge

ISO 7637-2:2011 Road vehicles – Electrical disturbances from conduction and coupling – Part 2: Electrical transient conduction along supply lines only

Torrefarrera, 2019/01/14

EiD Electrònics SL

Andreu Farran Rey

Certification and Regulatory Affairs