

USER MANUAL

GP 500 - 1: 0 – 2500 Pa

GP 500 - 2: 0 – 10 000 Pa

PRESSURE GENERATOR

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1.1 General presentation

The pressure generator allows the adjustment and the calibration of the measuring instruments in laboratory or on site.

There are two versions:

- **GP 500-1:** from -2500 to +2500 Pa
- **GP 500-2:** from -10 000 to 10 000 Pa

1.2 Symbols used

For your safety and in order to avoid any damage of the device, please follow the procedure described in this user manual and read carefully the notes preceded by the following symbol:

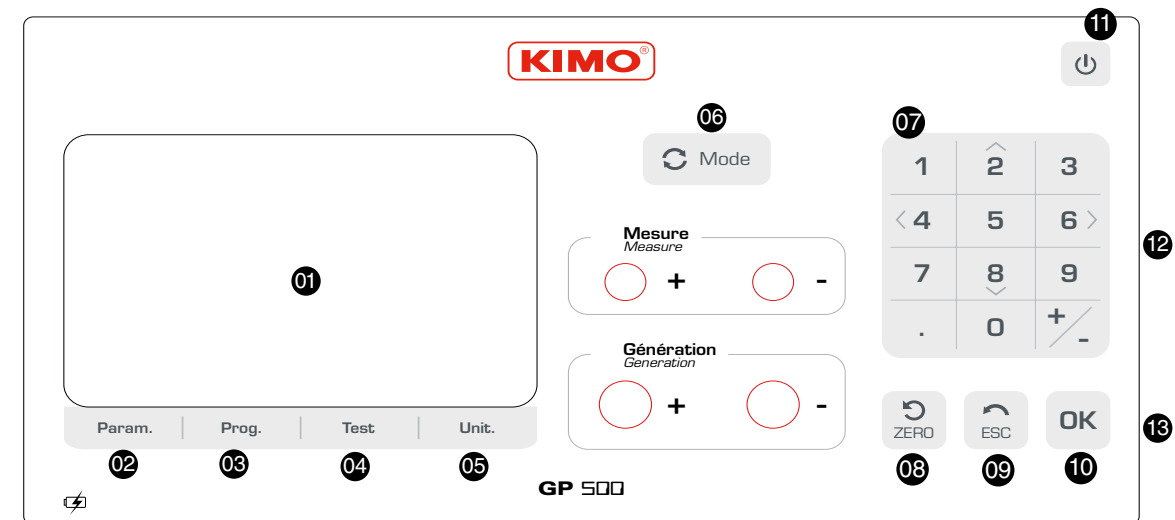


The following symbol will also be used in this user manual:

Please read carefully the information notes indicated after this symbol.



1.3 User interface



- 01. Screen
- 02. **Param:** device configuration
- 03. **Prog.** configuration of the pressure generation programs
- 04. **Test:** tightness test
- 05. **Unit.:** units modification
- 06. **Mode:** "Measurement" or "Generation" mode
- 07. **Keypad:** 12 keys with navigation arrows

- 08. **Zero:** manual autozero
- 09. **ESC:** return
- 10. **OK:** validation of the selection
- 11. **On/Off Key**
- 12. Power supply on the right side + fuse
- 13. USB digital output on the right side
- 14. Loading indicator

2.1 General specifications

Display	Backlight graphic LCD Size : 85 x 51 mm Resolution : 240 x 180 pixels
Connection measuring ports	Ribbed connectors for tubes Ø 6 x 2 mm
Connection generation ports	Quick-coupling connectors DN2.7
Power supply	110 - 240 Vac / 50-60 Hz or on battery
Consumption	19 W
Autonomy	8 hours
PC interface	USB
Operating temperature	From 0 to +50 °C
Storage temperature	From -10 to +70 °C
Environment	Air, non-aggressive gases, non-corrosive gases
Languages	French, English
Weight	4.5 kg
Conformity	2014/30/EU EMC; EN 61010-1
Fuse on the phase and on the neutral	Time delay 1 A 250 V

Device must be connected to the protective ground



2.2 Technical specifications in measurement and pressure generation

	Measuring range	Measurement accuracy ⁽¹⁾	Generation range	Generation accuracy ⁽¹⁾	Resolution	Autozero	Units
GP 500-1	-2500 to +2500 Pa	±(0.15% [reading] +0.8) Pa	-2500 to -5 Pa and +5 to +2500 Pa	±5 to ±2500 Pa: ±1 Pa	-2500 to -1000 Pa: 1 Pa -1000 to -100 Pa: 0.1 Pa -100 to +100 Pa: 0.01 Pa +100 to +1000 Pa: 0.1 Pa +1000 to 2500 Pa: 1 Pa	Automatic	Pa, daPa, hPa, mmH ₂ O, mmHg, mbar, inWg
GP 500-2	-10,000 to +10,000 Pa	±(0.15% [reading] +6) Pa	-10,000 to -50 Pa and +50 to +10,000 Pa	-10,000 to -50 Pa: ±10 Pa +50 to +1000 Pa: 1 Pa +1000 to +10,000 Pa: 10 Pa	-10 000 to -1000 Pa: 1 Pa -1000 to -100 Pa: 0.1 Pa -100 to +100 Pa: 0.01 Pa +100 to +1000 Pa: 0.1 Pa +1000 to +10,000 Pa: 1 Pa	Manual (keypad)	Pa, daPa, hPa, mmH ₂ O, mmHg, mbar, inWg

⁽¹⁾All the accuracies indicated in this technical datasheet were stated in laboratory conditions, and can be guaranteed for measurements carried out in the same conditions, or carried out with calibration compensation.

2.3 Electrical connections



The electrical power supply of the GP 500 must be equipped with a protection system against the leakage currents adapted to the device power.



Any intervention or electrical connection must be carried out by a formed and qualified technician. The device must be turned off. Before connecting, check the type of power supply indicated on the product.

3.1 Turn on the device

To turn on the GP 500:

- Connect the GP 500.



It is not compulsory to connect the GP 500. Its internal battery has 8 hours of autonomy. However, in case of extended use, it is recommended to connect it on the mains power source.

Press "On/OFF" at the top right of the user interface.

3.2 Configure the device before a measurement or a generation

3.2.1 Activate or deactivate the automatic autozero

- Press "Param."
- Go to "Auto-zero" line and press **OK**.
- Select "ON" with the arrows to activate the automatic autozero or "OFF" to deactivate the automatic autozero.



This autozero will perform every 20 seconds for a measurement lower than 100 Pa, every minutes for measurement lower than 1000 Pa and every 5 minutes for a measurement higher than 1000 Pa.

- Press **OK** to validate.
- Press **ESC** to go back to measurement display.

3.2.2 Set the integration

The GP500 pressure measurement element is very sensitive and very reactive to pressure changes. During measurements on an unstable aeraulic network, the pressure measurement becomes illegible. The integration coefficient (from 0 to 9) then allows to smooth the pressure measurement in order to avoid the untimely variations and allow the exploitation of a more stable measurement.

- Press "Param."
- Go to "Integration" then press **OK**.
- With the arrows, select the desired integration between 0 and 9.
- Press **OK** to validate.
- Press **ESC** to go back to measurement display.

3.2.3 Select the unit

- Press "Unit."

The unit currently used displays at the top of the screen.

- With the arrows select the desired unit: Pa, daPa, hPa, mmH₂O, mmHg, mbar and inWg.
- Press **OK** to validate.

3.2.4 Perform a manual autozero

- Appuyer sur la touche  pour déclencher l'auto-zéro.

3.3 Set the customers corrections

The customers corrections allow to check that the GP 500 measures and generates correct values. The values measured and generated by the GP 500 are compared with a standard, and then can be corrected on the GP 500.

Two types of generations can be performed:

Internal generation: the device generates a pressure on the standard. The number of generated points and their setpoints are not modifiable.

External generation: the device generates a pressure on the standard. The number of generated points and their setpoints are defined by the user.

- Press "Param."
- Go to "Customer corrections" then press **OK**.
- A frame displays on screen. With the keys, enter the code 0101 then press **OK**.
- "Customer corrections" displays on screen.

3.3.1 Visualize the points

- Go to "**Show items**" then press **OK**.

The device displays the points which have been generated and compared with the standard.

3.3.2 Perform an internal generation (correction)

The internal correction allows to launch a series of setpoints defined by the GP 500. The device generates 21 setpoints.

- Connect the "**Generation**" plugs of the GP 500 on a standard device.
- Go to "**Internal generation**" line then press **OK**.

The GP 500 generates the first setpoint.

- Compare the point generated by the GP 500 to the standard.
- Press **OK**, enter the value displayed by the standard with the numeric keypad then press **OK**.

The GP 500 generates the second setpoint.

- Perform the same procedure for the next points.

To cancel a generation in progress:

- Press **Esc**.

3.3.3 Define the number of external points

To perform an external correction, it is necessary to define the number of external points which will be carried out by the GP 500.

- Go to the line "**Number of external items**" then press on **OK**.
- With the high and low arrows, select the number of desired external points between 2 and 21.
- Press **OK** to validate.

3.3.4 Perform an external generation

- Connect a calibration pressure bench on the "**Measurement**" connections of the GP 500.
- Also connect this calibration pressure bench to a standard device.
- Go to "**External generation**" then press **OK**.
- Generate a setpoint with the calibration pressure bench.

The GP 500 displays the measured value.

- Compare this value with the value measured by the standard device.
- Press **OK**.
- Enter the value measured by the standard device then press **OK**.

The GP 500 goes to 2nd point.

- Generate a second setpoint with the calibration pressure bench.

The GP 500 displays the measured value.

- Compare this value to the value measured by the standard device.
- Press **OK**.
- Enter the value measured by the standard device then press **OK**.
- Follow the same procedure for the next points.



The first point to compare must be the minimum value of the GP 500 measuring range (-2499 Pa or -9999 Pa depending on the GP 500 type) and the last point to compare must be the maximum value of the GP 500 measuring range (+2499 or +9999 Pa depending on the GP 500 type).

3.3.5 Delete the points

- Go to "**Erase table**" then press **OK**.

An alert message appears: "**Warning! Erase calibration**".

- Select "**Validate**" or "**Cancel**" then press **OK**.

3.4 Configure the measurement programs

The "**Program**" function allows to define the number and the duration of the different stages to reach. It is possible to save up to 20 different programs with 20 setpoints values (stages) by program.

- Press "**Prog**".

The screen displays the different programs. The device proposes to execute or to modify a program.

- With the high and low arrows go to the desired program then with the left and right arrows select "**Change**".
- Press on **OK** to validate.
- A drop-down menu with the different parameters to configure displays on screen.

Select the unit

- Go to the line "**Unit**" then press on **OK**.
- With the arrows, select the desired unit: Pa, daPa, hPa, mmH₂O, mmHg, mbar and inWg.
- Press on **OK** to validate.
- Press on **Esc** to return to the program configuration.

Select the stage duration

- Go to the line "**Step duration**" then press on **OK**.
- With the keypad, enter the desired time of the stage (between 0 and 59 min 59 s).
- Press on **OK** to validate.

Enter the program name

- Go to the line "**Name**" then press on **OK**.
- With the keypad enter the name of the desired program.
- Press on **OK** to validate.

Modify the stages

- Go to "**Change steps**" then press **OK**.
- Go to "**Add**" then press on **OK** to add a stage to the program.
- Enter the stage value with the numeric keypad then press **OK**.

To delete a stage

- Go to the stage to delete with the high and low arrows.
- Go to "**Delete**" with the left and right arrows.
- Press **OK**.

Insert a stage

- Go to "**Stage 2**" for example.
- Go to "**Insert**" then press **OK**.
- Enter the stage value then press **OK**.

The stage inserts below the stage 2 in the example.

- Press on **Esc** to return to the program configuration.

Clear the program

- Go to "**Clear the program**" then press **OK**.
- An alert message displays on screen: "**Erase all step**".
- Select with the arrows "**Validate**" or "**Cancel**".
 - Press **OK** to validate.

3.5 Launch a measurement program

- Press "**Prog**".

The screen displays the different programs. The device proposes to execute a program or to modify a program.

- With the high and low arrows go to the desired program then with the left and right arrows on "**Run**".
- Press OK to launch the program.

The measurement program launches, the screen displays the data.

- Press ESC to stop the measurement program.

3.6 Generate a pressure

In addition to "**Measurement program**" part, it is possible to generate the desired pressure in a really simple manner.

- Press "**Mode**" to be in "**Generation**".

The green led located next to "**Generation**" lights up.

- Enter the desired pressure with the numeric keypad then press on OK to validate.

The GP 500 generates the desired pressure. The green led flashes until the requested pressure is reached.

When this pressure is stabilized, the green led flashing stops.

4. Perform a leak test

The GP 500 allows to test an existing aeraulic network and thus verify if leaks are present in this network.

- Press "**Test**".

"**Leak test**" screen displays. This screen allows to configure the test then to start it.

- Go to "**Order**" to set the setpoint that the GP 500 must reach then press on OK.
- Enter a setpoint between -10,000 and +10,000 Pa or between -2500 et +2500 Pa selon le modèle de GP 500.
- Go to "**Unit**" line.
- Select required unit between Pa, daPa, mmH₂O, mmHg, mbar and inWg with the high and low arrows then press OK.
- Go to the line "**Duration**" then press on OK to adjust the duration during which the generator performs the test.
- Adjust the duration with the numeric keypad then press OK.

Once the adjustments are performed, the GP 500 must be connected to the network to test.

- Perform the connection between the network and the "**Generation**" pressure plugs of the device thanks to the provided silicone tubes and connectors DN2.7.

The test can now begin:

- Go to "**Start test**" then press OK.

The GP 500 generates the setpoint pressure then maintains it during the test duration.

At the end of the leak test, the GP500 reminds the setpoint and indicates below the drift in pressure and in percentage at the top of the screen.

It also indicates "**Leak test finished**" with the delta P at the bottom of the screen.

5. Device settings and information

5.1 Device settings

It is possible to set the following parameters of the GP 500:

1. Auto shut-off;
2. Backlight;
3. Contrast;
4. Key beep;
5. Date.

- Press "**Param.**".
- Go to "**Settings**" then press OK.

5.1.1 Set the auto shut-off

- Go to "**Auto-off**" then press OK.
- Select with the arrows the time before device auto shut-off: 15, 30, 60 minutes or OFF.
- Press OK to validate.

5.1.2 Set the backlight

- Go to "**Backlight**" then press OK.
- Select with the arrows the desired intensity of the backlight between 0 and 5.
- Press OK to validate.

5.1.3 Set the contrast

- Go to the line "**Contrast**" then press on OK.
- Select with the arrows the desired intensity of the contrast between 0 and 3.
- Press OK to validate.

5.1.4 Set the key beep

- Go to "**Key sound**" then press OK.
- With the arrows select "**ON**" to activate the key beep or "**OFF**" to deactivate it.
- Press on OK to validate.

5.1.5 Set the date and time

- Go to "**Date**" line then press OK.

The date displays at the top of the screen and the time displays at the bottom of the screen.

- With the arrows, go to the date element to modify then press on OK.
- Enter with the keypad the required number then press OK to validate.
- Perform the same procedure to adjust the time.

5.1.6 Set the language

- Press "**Param.**".
- Go to "**Language**" line then press OK.
- With the arrows, select "**FR**" for French or "**EN**" for English.
- Press OK to validate.

5.2 Device informations

- Press "**Param.**".
- Go to "**Information**" line then press OK.

The screen displays:

- Software version. Ex: v1.000 (b0274)
- Serial number. Ex: 5F.14.01.16777215
- Calibration date. Ex: 19/06/2014
- After-Sales Service email.

6. Use of the software

The GP 500 is delivered with a LGP500 software allowing to perform the following actions:

1. Configure the different programs
2. Perform a calibration
3. Configure the integration in pressure
4. Update the device

6.1 Minimum required configuration

For the software to work properly, the following configuration is strongly recommended:

- Minimum configuration: Windows, XP, VISTA, 7
- Communication port: USB 2.0
- RAM memory: 1GO
- Free disk space: 1GO

6.2 Software installation

- Insert the USB key into the USB port.
- Open the folder of the key.
- Open the folder with the software name.
- Double click on the .exe file.

The installation program starts automatically. If not, go to "Workstation", double click on the USB key then on the "LGP500" icon.

- Follow the installation indications.

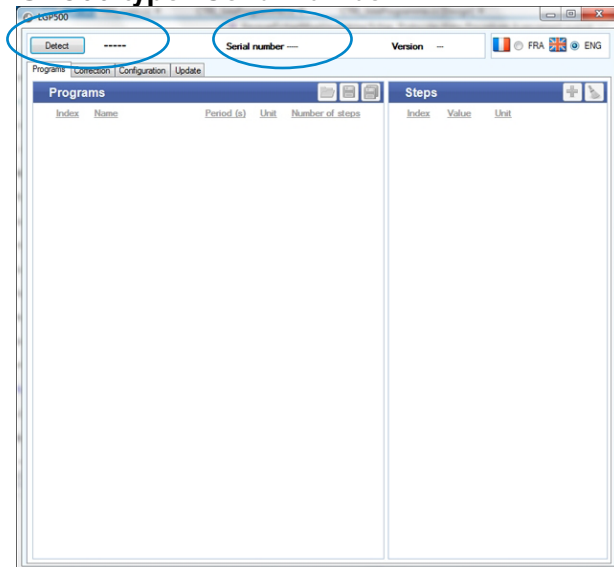
6.3 Launch the software and detect the GP 500

Once the software is installed on the computer, double click on this launch icon.

The following window opens.



GP 500 type - Serial number



- Click "Detect" at the top left of the window.







The software detects the device and opens on the programs tab saved in the GP 500. It also displays the GP 500 type (2500 Pa or 10,000 Pa), its serial number and the firmware version at the top of the window.


6.4 Configure the programs

The "Programs" tab lists the programs saved in the GP 500 as well as the stages linked to the programs. It also allows to modify them.


In "Programs" part :

- Select the required program.
- Enter the stage duration in second in the column "Period(s)".
- Select the unit in "Unit" column.
- Click  to validate the modifications and send them in the device.
- Click  to save the selected program in the computer.
- Click  to save all programs on the computer.
- Click  to open a saved program in the computer.


In "Steps part":

- Select the required program.
- The stages number corresponding to this program displays in the "Steps" part.
- Select a stage.
- Enter the stage value.
- Click  to validate the modifications and send them to the device.

To delete a stage from a program:

- Select the required program.
- Click the red cross corresponding to the stage to delete in "Steps" section.
- Click  of the corresponding program.


To delete all the stages of a program:

- Select the required program.
- Click  in "Steps" part.



The whole steps will be deleted.

To add a step to a program:

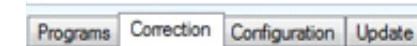
- Select the required program.
- Click  in "Steps" section.

If a program contains 20 stages, the software will indicate that the maximum number of stages has been reached.

6.5 Create a correction table

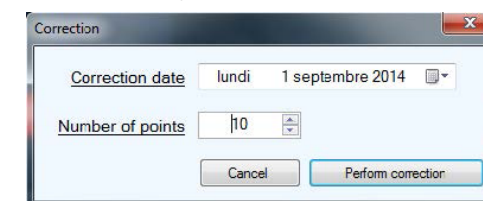
The correction table allows to check that the GP 500 measures and generates the correct values. The values measured or generated by the GP 500 are compared with a standard, and then can be corrected on the GP 500.

- Click "Correction" tab.



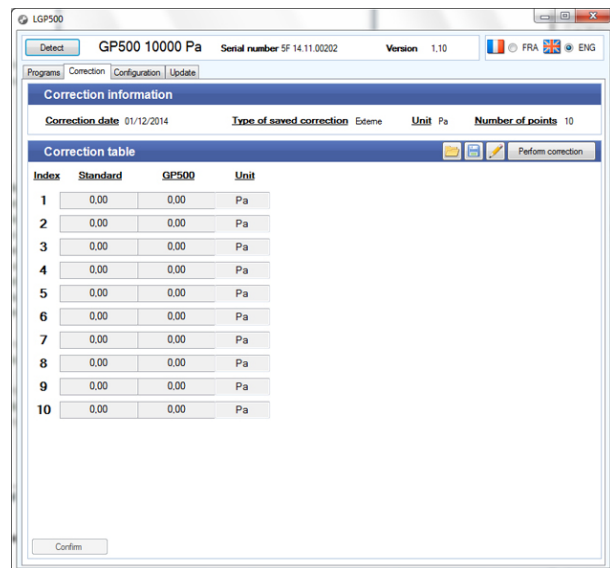
- Click "Perform correction".

The following window opens.



- Enter the correction date.
- Enter the points number.
- Click "Perform correction".

The following window opens.



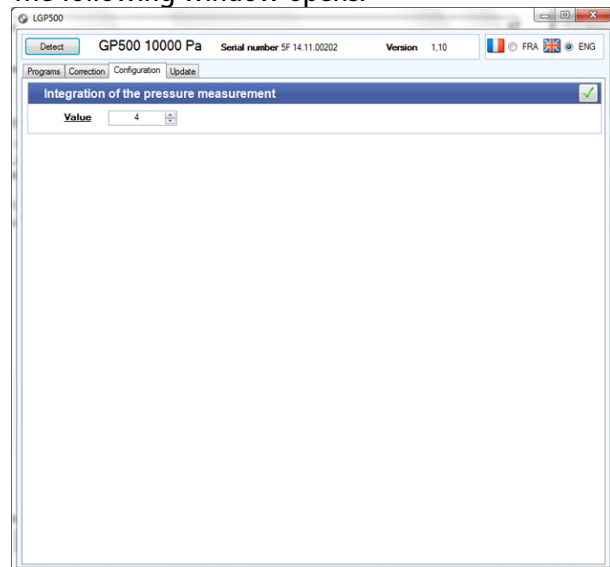
- Launch the GP 500 measurement.
- Indicate the value indicated by the standard and by the GP 500 for all the calibration points.
- Click **"Validate"** to enter the modifications in the device.
 - Click to save the correction table in the computer.
 - Click to open a correction table saved in the computer.
 - Click to modify the calibration in progress.

6.6 Modify the integration of the pressure measurement

The GP 500 pressure measurement element is very sensitive and very reactive to the pressure changes. During the measurements on an unstable aeraulic network, the pressure measurement becomes illegible. The integration coefficient (from 0 to 9) then allows to smooth the pressure measurement in order to avoid the untimely variations and allow the exploitation of a more stable measurement.

- Click **"Configuration"** tab.

The following window opens.

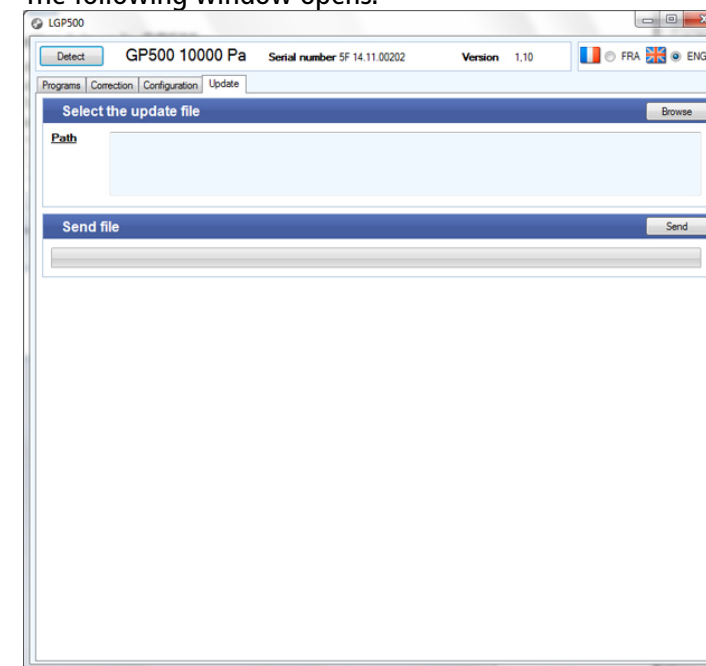


- Enter the desired value of the integration of the pressure measurement between 0 and 9.
- Click to validate the integration and send it in the device.

6.7 Update GP 500

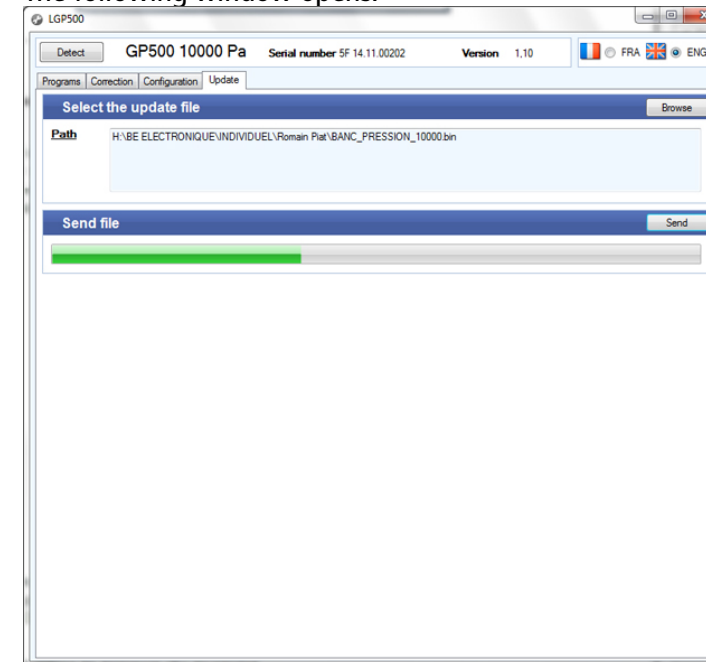
It is possible to update the GP 500 firmware, that is the internal software which allows the device to operate. For that, you should contact the company in order to obtain a .bin update file.

- Click **"Update"** tab.
- The following window opens.



- Click **"Browse"**.
- Reach the file where the .bin update file is located.
- Click **"Send"**.

The following window opens.



The GP 500 restarts and displays the message **"Programming flash"** during the updating. At the end of the updating, the GP 500 turns off and the software indicates that the updating has succeeded.

- Click OK.

6.8 Modify the software language

- Tick **"FRA"** or **"ENG"** to select the software language.



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