

GP 500 - 1 : 0 – 2500 Pa
GP 500 - 2 : 0 – 10 000 Pa



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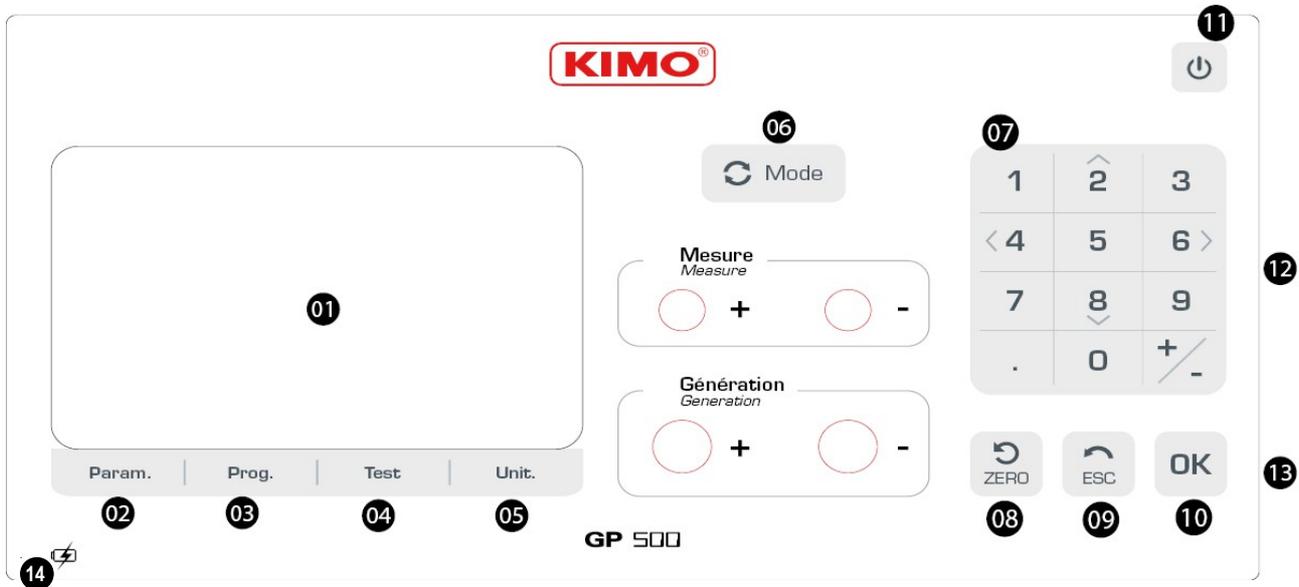
1. Introduction

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 :

- **GP500 0-2500 Pa** : from -2500 to +2500 Pa
- **GP500 0-10 000 Pa** : from -10 000 to 10 000 Pa

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 : choice of « Measurement » or « Generation » mode
07. Keypad : 12 keys integrating the 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

1.2. Technical specifications

1.2.1 General technical 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 | 230 Vac $\pm 10\%$ / 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 | Directives EMC/2004/108/CE and 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 

1.2.2 Technical specifications in measurement and pressure generation

GP 500 0-2500 Pa :

| | |
|----------------------------------|---|
| Measuring range | From -2500 to +2500 Pa |
| Precision* in measurement | $\pm 0.15\%$ of the reading ± 0.8 Pa |
| Generation range | From -2500 to -5 Pa and from +5 Pa to +2500 Pa |
| Precision* in generation | 1 Pa |
| Resolution | From -2500 to -1000 Pa : 1 Pa From -1000 to -100 Pa : 0.1 Pa From -100 to +100 Pa : 0.01 Pa From +100 to +1000 Pa : 0.1 Pa From +1000 to 2500 Pa : 1 Pa |
| Autozero | Automatic Manual (keypad) |
| Units | Pa, daPa, hPa, mmH ₂ O, mmHg, mbar, inWg |

*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

GP 500 0-10 000 Pa :

| | |
|--------------------------------|--|
| Measuring range | From -10 000 to +10 000 Pa |
| Accuracy* in measuring | ±0.15 % of the reading +6 Pa |
| Generation range | From -10 000 to -50 Pa and from +50 P to +10 000 Pa |
| Accuracy* in generation | From -10 000 to -1000 Pa : 10 Pa From -1000 to +1000 Pa : 1 Pa From +1000 to +10 000 Pa : 10 Pa |
| Resolution | From -10 000 to -1000 Pa : 1 Pa From -1000 to -100 Pa : 0.1 Pa From -100 to +100 Pa : 0.01 Pa From +100 to +1000 Pa : 0.1 Pa From +1000 to +10 000 Pa : 1 Pa |
| Autozero | Automatic Manual (keypad) |
| Units | Pa, daPa, hPa, mmH ₂ O, mmHg, mbar, inWg |

*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

1.3. Electrical connections



The electrical power supply of the GP500 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.

2.1. Turn on the device

To turn on the GP500 :

- Connect the GP500.
It is not compulsory to connect the GP500. 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 **“On/OFF”** at the top right of the user interface.

2.2. Configure the device before a measurement or a generation

2.2.1 Activate or deactivate the automatic autozero

- Press on **“Param.”**.
- Go to the line **“AutoZ”** and press on **OK**.
- With the arrows select **“ON”** 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 on **OK** to validate.
- Press on **ESC** to return to the measurement display.

2.2.2 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 on **“Param.”**.
- Go to the line **“Integration”** then press on **OK**.
- With the arrows select the desired integration between 0 and 9.
- Press on **OK** to validate.
- Press on **ESC** to return to the measurement display.

2.2.3 Select the unit

- Press on **“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 on **OK** to validate.

2.2.4 Perform a manual autozero

- Press on  to trigger the autozero.

2.3. Set the customers corrections

The customers corrections allow to check that the GP500 measures and generates correct values. The values measured and generated by the GP500 are compared with a standard, and then can be corrected on the GP500.

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 on **“Param.”**.
- Go to the line **“Customer corrections”** then press on **OK**.
- A frame displays on screen, with the keys enter the code **0101** then press on **OK**.
The menu “Customer corrections” displays on screen.

2.3.1 Visualize the points

- Go to the line “**Show items**” then press on **OK**.
The device displays the points which have been generated and compared with the standard.

2.3.2 Perform an internal generation (correction)

The internal correction allows to launch a series of setpoints defined by the GP500. The device generates 21 setpoints.

- Connect the “**Generation**” plugs of the GP500 on a standard device.
- Go to the line “**Internal generation**” then press on **OK**.
The GP500 generates the first setpoint.
- Compare the point generated by the GP500 to the standard.
- Press on **OK**, enter the value displayed by the standard with the numeric keypad then press **OK**.
The GP500 generates the second setpoint.
- Perform the same procedure for the next points.

To cancel a generation in progress:

- Press on **Esc**.

2.3.3 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 GP500.

- 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 on **OK** to validate

2.3.4 Perform an external generation

- Connect a calibration pressure bench on the “**Measurement**” connections of the GP500.
- Also connect this calibration pressure bench to a standard device.
- Go to the line “**External generation**” then press on **OK**.
- Generate a setpoint with the calibration pressure bench.
The GP500 displays the measured value.
- Compare this value with the value measured by the standard device.
- Press on **OK**.
- Enter the value measured by the standard device then press on **OK**.
The GP500 goes to the second point.
- Generate a second setpoint with the calibration pressure bench.
The GP500 displays the measured value.
- Compare this value to the value measured by the standard device.
- Press on **OK**.
- Enter the value measured by the standard device then press on **OK**.
- Follow the same procedure for the next points.



The first point to compare must be the minimum value of the GP500 measuring range (-2499 Pa or -9999 Pa depending on the GP500 type) and the last point to compare must be the maximum value of the GP500 measuring range (+2499 or +9999 Pa depending on the GP500 type).

2.3.5 Delete the points

- Go to the line “**Erase table**” then press on **OK**.
An alert message appears : “Warning ! Erase calibration”.
- Select “**Validate**” or “**Cancel**” then press on **OK**.

2.4. Configure the measurement programs

The “**Programs**” 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 on **“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**
- In the **“Change”** part.
- 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 the line **“Change step(s)”** then press on **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 on **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 on **OK**.

To insert a stage :

- Go to **“Stage 2”** for example.
- Go to **“Insert”** then press on **OK**.
- Enter the stage value then press on **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 the line **“Clear program”** then press on **OK**.
An alert message displays on screen : “Erase all step?”.
- Select with the arrows **“Validate”** or **“Cancel”**.
- Press on **OK** to validate.

2.5. Launch a measurement program

- Press on **“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 on **OK** to launch the program.
The measurement program launches, the screen displays the data.
- Press on **ESC** to stop the measurement program.

2.6. **Generate a pressure**

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

- Press on “**Mode**” to be in “**Generation**” mode.
*The green led located next to “**Generation**” lights up.*
- Enter the desired pressure with the numeric keypad then press on **OK** to validate.
*The GP500 generates the desired pressure. The green led flashes until the requested pressure is reached.
When this pressure is stabilized, the green led flashing stops.*

3. 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 on **“Test”**.
*The **“Leak test”** screen displays. This screen allows to configure the test then to start it.*
- Go to the line **“Order”** to set the setpoint that the GP500 must reach then press on **OK**.
- Enter a setpoint between -10 000 and +10 000 Pa or between -2500 and +2500 Pa depending on the GP500 type.
- Go to the line **“Unit”** then press on **OK**.
- Select the desired unit between Pa, daPa, mmH₂O, mmHg, mbar and inWg with the high and low arrows then press on **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 on **OK**.

Once the adjustments are performed, the GP500 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 the line **“Start test”** then press on **OK**.
The GP500 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.

4. Device settings and information

4.1. Device settings

It is possible to set the following parameters of the GP500 :

- The auto shut-off ;
 - The backlight ;
 - The contrast ;
 - The key beep ;
 - The date.
- Press on **“Param.”**
 - Go to the line **“Settings”** then press on **OK**.

4.1.1 Set the auto shut-off

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

4.1.2 Set the backlight

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

4.1.3 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 on **OK** to validate.

4.1.4 Set the key beep

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

4.1.5 Set the date and time

- Go to the line **“Date”** then press on **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 desired number then press on **OK** to validate.
- Perform the same procedure to adjust the time.

4.1.6 Set the language

- Press on **“Param.”**
- Got to the line **“Settings”** then press on **OK**,
- Go to the line **“Language”** then press on **OK**.
- Select with the arrows **FR** for French or **EN** for English.
- Press on **OK** to validate.

4.2. **Device information**

- Press on **“Param.”**
- Go to the line **“Informations”** then press on **OK**.
The screen displays the different information concerning the GP500 :
 - *Software version. Ex : v1.000 (b0274)*
 - *Serial number. Ex : 5F.14.01.16777215*
 - *Calibration date. Ex : 19/06/2014*
 - *After-Sales Service email.*

5. Use of the software

The GP500 is delivered with a LGP500 software allowing to perform the following actions :

- Configure the different programs
- Perform a calibration
- Configure the integration in pressure
- Update the device

5.1. Minimum configuration required

For the good functioning of the software, the following configuration is strongly recommended :

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

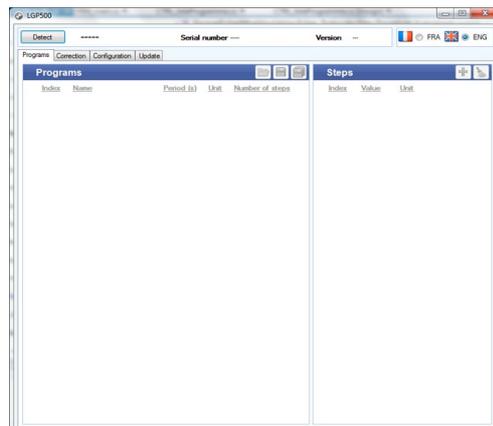
5.2. Software installation

- Insert the installation DVD in the DVD player of the computer.
The installation program starts automatically. If not, go to “Workstation”, double click on the DVD player then on the “LGP500” icon.
- Follow the installation indications.

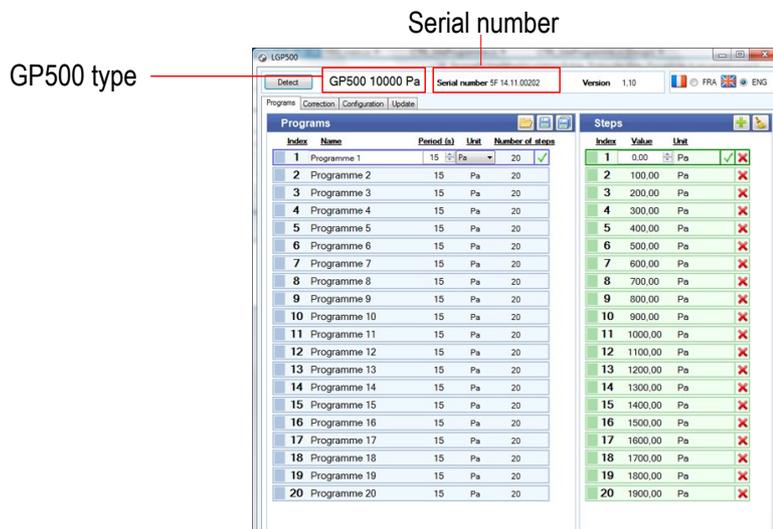
5.3. Launch the software and detect the GP500

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

The following window opens.



- Click on “**Detect**” at the top left of the window.
The software detects the device and opens on the programs tab saved in the GP500. It also displays the GP500 type (2500 Pa or 10 000 Pa), its serial number and the firmware version at the top of the window.



5.4. Configure the programs

The “**Programs**” tab lists the programs saved in the GP500 as well as the stages linked to the programs. It also allows to modify them.

| Index | Name | Period (s) | Unit | Number of steps |
|-------|--------------|------------|------|-----------------|
| 1 | Programme 1 | 15 | Pa | 20 |
| 2 | Programme 2 | 15 | Pa | 20 |
| 3 | Programme 3 | 15 | Pa | 20 |
| 4 | Programme 4 | 15 | Pa | 20 |
| 5 | Programme 5 | 15 | Pa | 20 |
| 6 | Programme 6 | 15 | Pa | 20 |
| 7 | Programme 7 | 15 | Pa | 20 |
| 8 | Programme 8 | 15 | Pa | 20 |
| 9 | Programme 9 | 15 | Pa | 20 |
| 10 | Programme 10 | 15 | Pa | 20 |
| 11 | Programme 11 | 15 | Pa | 20 |
| 12 | Programme 12 | 15 | Pa | 20 |
| 13 | Programme 13 | 15 | Pa | 20 |
| 14 | Programme 14 | 15 | Pa | 20 |
| 15 | Programme 15 | 15 | Pa | 20 |
| 16 | Programme 16 | 15 | Pa | 20 |
| 17 | Programme 17 | 15 | Pa | 20 |
| 18 | Programme 18 | 15 | Pa | 20 |
| 19 | Programme 19 | 15 | Pa | 20 |
| 20 | Programme 20 | 15 | Pa | 20 |

| Index | Value | Unit |
|-------|---------|------|
| 1 | 0,00 | Pa |
| 2 | 100,00 | Pa |
| 3 | 200,00 | Pa |
| 4 | 300,00 | Pa |
| 5 | 400,00 | Pa |
| 6 | 500,00 | Pa |
| 7 | 600,00 | Pa |
| 8 | 700,00 | Pa |
| 9 | 800,00 | Pa |
| 10 | 900,00 | Pa |
| 11 | 1000,00 | Pa |
| 12 | 1100,00 | Pa |
| 13 | 1200,00 | Pa |
| 14 | 1300,00 | Pa |
| 15 | 1400,00 | Pa |
| 16 | 1500,00 | Pa |
| 17 | 1600,00 | Pa |
| 18 | 1700,00 | Pa |
| 19 | 1800,00 | Pa |
| 20 | 1900,00 | Pa |

In the “**Programs**” part :

- Click on the desired program.
- Enter the stage duration in second in the column “**Period (s)**”.
- Select the unit in the column “**Unit**”.
- Click on  to validate the modifications and send them in the device.



- Click on  to save the selected program on the computer.
- Click on  to save all the programs on the computer.
- Click on  to open a saved program in the computer.

In “**Steps**” part:

- Click on the desired program.
*The stages number corresponding to this program displays in the “**Steps**” part.*
- Click on a stage.
- Enter the stage value.
- Click on  to validate the modifications and send them in the device.

To delete a stage of a program :

- Click on the desired program.
- Click on the red cross corresponding to the stage to delete in the “**Steps**” part.
- Click on  of the corresponding program.

To delete all the stages of a program :

- Click on the desired program.
- Click on  in the “**Steps**” part.



The whole steps will be deleted.

To add a stage to a program :

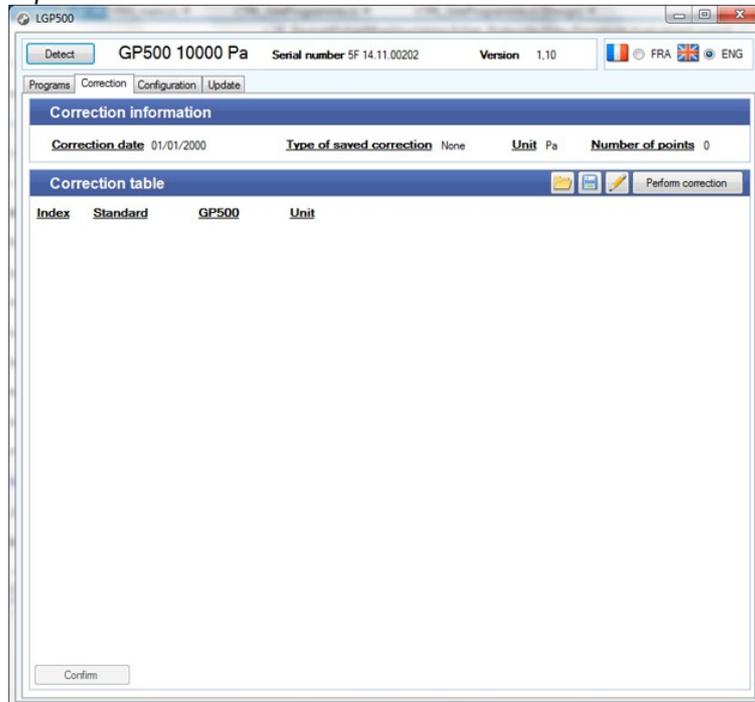
- Click on the desired program.
- Click on  in the “Steps” part.

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

5.5. Create a correction table

The correction table allows to check that the GP500 measures and generates the correct values. The values measured or generated by the GP500 are compared with a standard, and then can be corrected on the GP500.

- Click on the “Correction” tab.
- The following window opens.

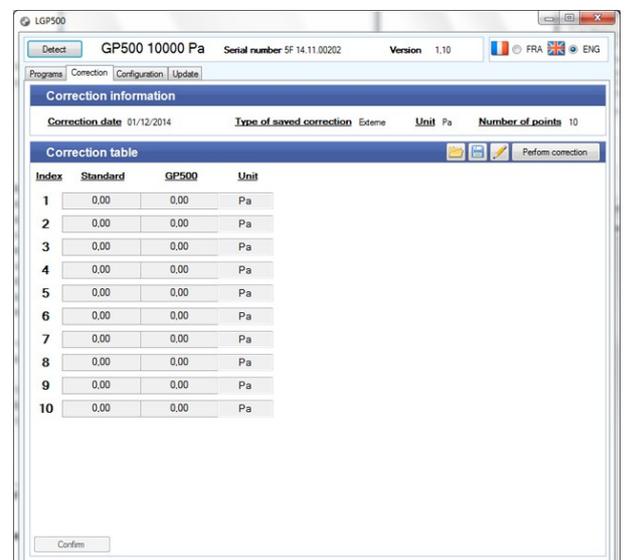


- Click on “Perform correction”.
- The following window opens.



- Enter the correction date.
 - Enter the points number.
 - Click on “Perform correction”.
- The window opposite opens.
- Launch the GP500 measurement.
 - Indicate the value indicated by the standard and by the GP500 for all the calibration points.
 - Click on “Validate” to enter the modifications in the device.

- Click on  to save the correction table in the computer.
- Click on  to open a correction table saved in the computer.
- Click on  to modify the calibration in progress.

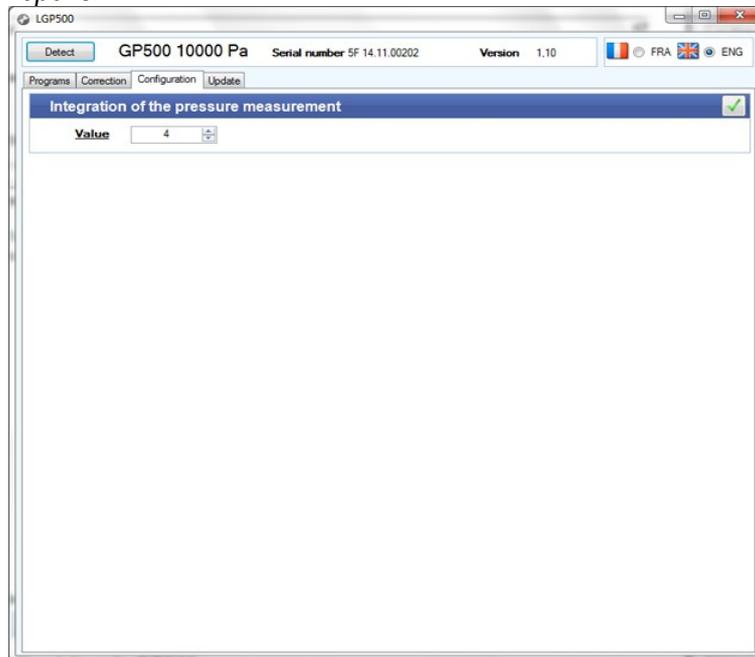


5.6. **Modify the integration of the pressure measurement**

The GP500 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 on “**Configuration**” tab.

The following window opens.



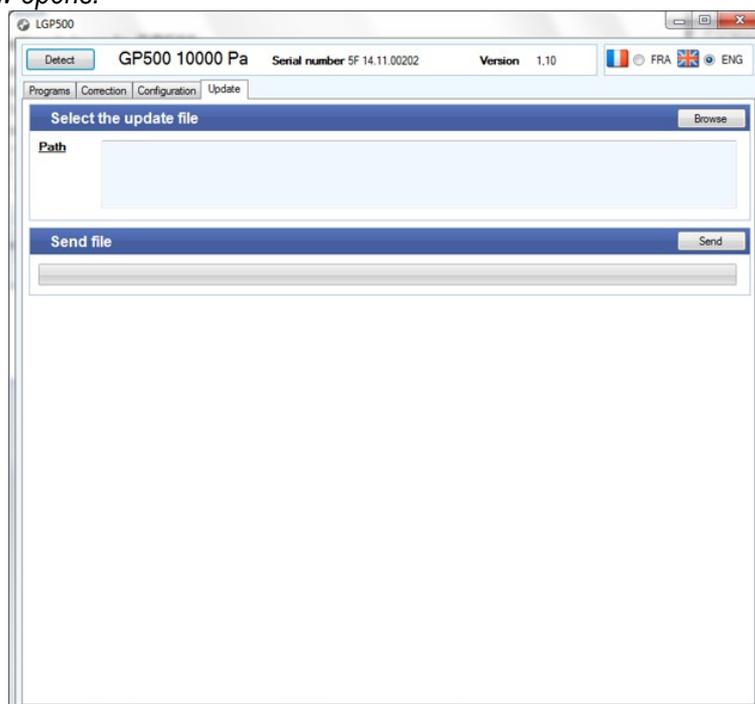
- Enter the desired value of the integration of the pressure measurement between 0 and 9.
- Click on  to validate the integration and send it in the device.

5.7. **Update the GP500**

It is possible to update the GP500 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.

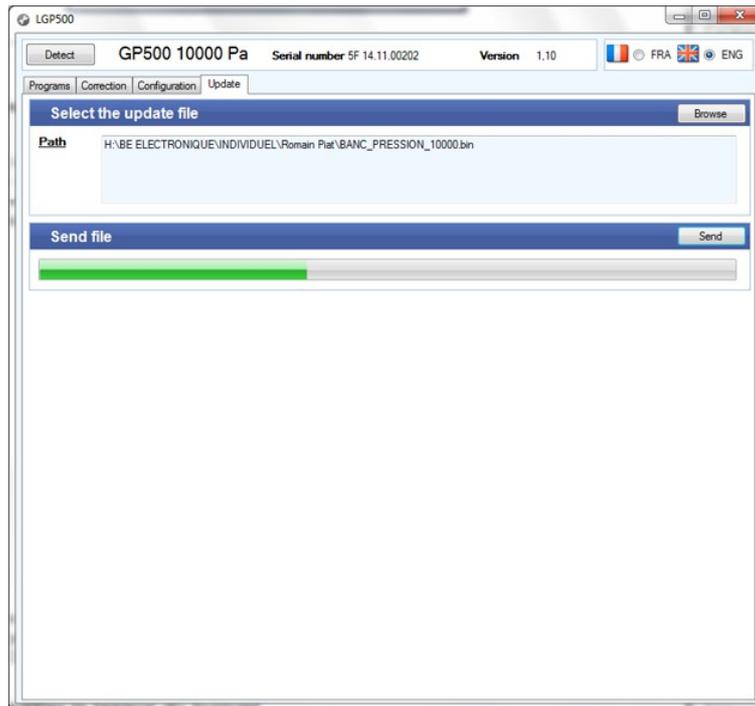
- Click on “**Update**” tab.

The following window opens.



- Click on “**Browse**”.
- Go in the file where is situated the **.bin** update file.
- Click on “**Send**”.

The following window opens :



The GP500 restarts and displays the message “**Programming flash**” during the updating. At the end of the updating, the GP500 turns off and the software indicates that the updating has succeeded.

- Click on **OK**.

5.8. **Modify the software language**

- Click on the “**FRA**” or “**ENG**” chip to select the software language.



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