



PressureMaid



User Manual

Water Distribution Pressure Monitor

Registration

Thank you for purchasing the Pressure Maid. Please complete and return the registration form.

The internal software for the products manufactured by Maid Labs Technologies can be updated easily. By registering this software you will be able to enjoy the majority of upgrades we will make over the years in firmware, provided that your hardware is compatible. To access the updates, you must provide the following information (make a photocopy of this page) fill the form below and then return it to us via mail or fax, or simply fill out the Registration section on our website www.maidlabs.com

Our services and guarantees are only available for registered products. If you have several, please register them all.

Name:	_____
Email :	_____
Organization :	_____
Address :	_____
City :	_____
Province/State :	_____
Postal Code:	_____
Name of Product :	_____
Serial Number :	_____
Date of purchase :	_____

Warranty


Municipal And Industrial Data Labs inc. (hereinafter called "MAID Labs") states the following warranty for any new Maid Labs product, sold by our authorized representatives.



MAID Labs guarantees that this product is free under normal use and maintenance of all manufacturing defects, and is subject to the following terms and conditions:

1. To obtain warranty service:
 - (a) The product was registered within 14 (fourteen) days from the date of shipment.
 - (b) The registration form must be completed fully and returned.
 - (c) The product must be shipped to Maid Labs main office or to an approved maintenance and repair service center for maintenance. Shipping is at the customer's expense.
2. Limitations: This warranty does not apply to:
 - (a) Repair or replacement of all cabinets, batteries, connecting wires, antennas and accessories.
 - (b) Any defect or repair as a result of abuse, neglect, inadequate care and/or misuse.
 - (c) Any defect or repair due to failure to follow the recommendations in the user manual.
 - (d) Any modification, adjustment or repair to Maid Labs products by any other company other than Maid Labs authorized maintenance and repair centers.
 - (e) All Maid Labs products, whose serial number has been damaged, altered or removed.
 - (f) The maintenance, cleaning or periodic verifications.
 - (g) All Maid Labs products that are not the property of the original owner.
 - (h) Products purchased from a bankrupt, insolvent or non-approved representative.
 - (i) Any damages caused by fire, flood, lightning, power surges or other events beyond the control of Maid Labs (acts of God).
 - (j) The warranty does not cover the elimination of static or electrical interference, adjustments or costs of labor associated with removal or reinstallation of the unit for repair.
 - (k) The warranty does not cover damage caused by high humidity, water or leaking batteries.
3. If a Maid Labs product is defective under applied conditions, necessary repairs will be performed, at no additional cost, for parts and labor where Maid Labs recognizes that such defects are caused by materials or manufacturing.
4. This warranty constitutes the entire expressed warranty given by Maid Labs for Maid Labs products. No representative or service maintenance employee is authorized to extend this warranty on behalf of Maid Labs
5. Since each installation may incorporate malfunctions, preventing Maid Labs from ensuring the smooth operation of its devices in all circumstances, Maid Labs will not refund nor exchange the instruments that were caused by connections to any problematic installation.
6. The warranty period is one year on parts and labor from the date of shipment.
7. LIMITATION OF DAMAGES: To the extent permitted by applicable law, under no circumstances MAID Labs or its affiliates be liable to you, to a user or a third party for any indirect, special, consequential, or punitive damages of any kind whether in contract or civil, including but not limited to, personal injury, loss of revenue, loss of goodwill, loss of business opportunities, loss of data, whatever may have been the predictability of such damages. And in no case may the total responsibility of Maid Labs or its affiliates exceed the equipment purchase price received from you, from a user or from a third party, regardless of the laws by which the cause of action was brought. The foregoing does not affect your territory's statutory rights.

At Maid Labs Technologies, we have made every effort to write a user manual that is up to date, and easy to use. However, it is possible that errors may occur, or recent hardware or software upgrades might not be in your manual. We strongly suggest checking our website to see if a newer version of the manual is available www.maidlabs.com

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Web site : www.maidlabs.com Email : info@maidlabs.com

Product Application

Unless otherwise specified, this manual contains the information required to install, operate and maintain the PressureMaid device and its accessories.

Product Description

The PressureMaid is a small pressure monitoring and recording device, optimized for tap water. Data is transferred by USB key in an Excel compatible text format (csv) or via the Internet to the MaidMaps application, which shows the pressure for each installed device (<http://maps.maidlabs.com>).

The municipality could strategically deploy the technology in the homes of employees with Internet access, to monitor the pressure of tap water for its entire territory. When the pressure deviates from acceptable limits, the icon representing the pressure on MaidMaps changes color and an email warning is sent to the authorized operator.

The unit has a relay output that can be activated by the pressure reading. This function could be used to open or close valves.

The USB can also be used to change the device settings or to update its firmware. The backlit display allows you to view important information such as average and peak pressure.

Options / Accessories

Power supply 120V - 12 VDC 2A (MLPS2), Pressure Sensor 0-100 PSI (MLPS100) or 0-300 PSI (MLPS300). You can configure any pressure sensor through the custom sensors menu.

Use and Maintenance

Environmental Conditions

It is the user's responsibility to ensure that this product is not exposed to an environment for which it is not designed. These conditions may include a range of extreme operating temperatures, extreme humidity, vibration or abnormal shock, extended submersion or potentially explosive atmospheres.

Cleaning

If the sensor measurements are not what they should be, this can be caused by fouling of the sensor. Periodic cleaning is recommended. It is important to follow the sensor manufacturer's recommendations.

Electrical Conditions

Each Maid Labs product is designed to operate correctly in a specific range of electrical conditions. The product label identifies the main parameters of connection. All entries are designed to resist reverse polarity, as well as higher voltage to a certain extent. It is the user's responsibility to ensure that all electrical connections are made to the products in accordance with the recommendations of MAID Labs and the local electrical code. **The user should read this manual before connecting the device.**

Power and Batteries

This product works with internal rechargeable batteries, size C, and a 12 VDC power supply. **DO NOT INSTALL NON RECHARGEABLE BATTERIES INTO A DEVICE THAT CHARGES BATTERIES, AN EXPLOSION MAY RESULT.** All types of batteries may leak, and this could cause damage not covered by warranty.

Operating time on batteries

The instrument works several days on batteries, allowing the user to download its data and calibrate the instrument. Each time the device is activated by the user, whether to access the menus, transfer the data on the USB or update the internal software of the instrument, the power required can reach up to 400 times the normal power consumption. These actions decrease the life of batteries more quickly.

Installation

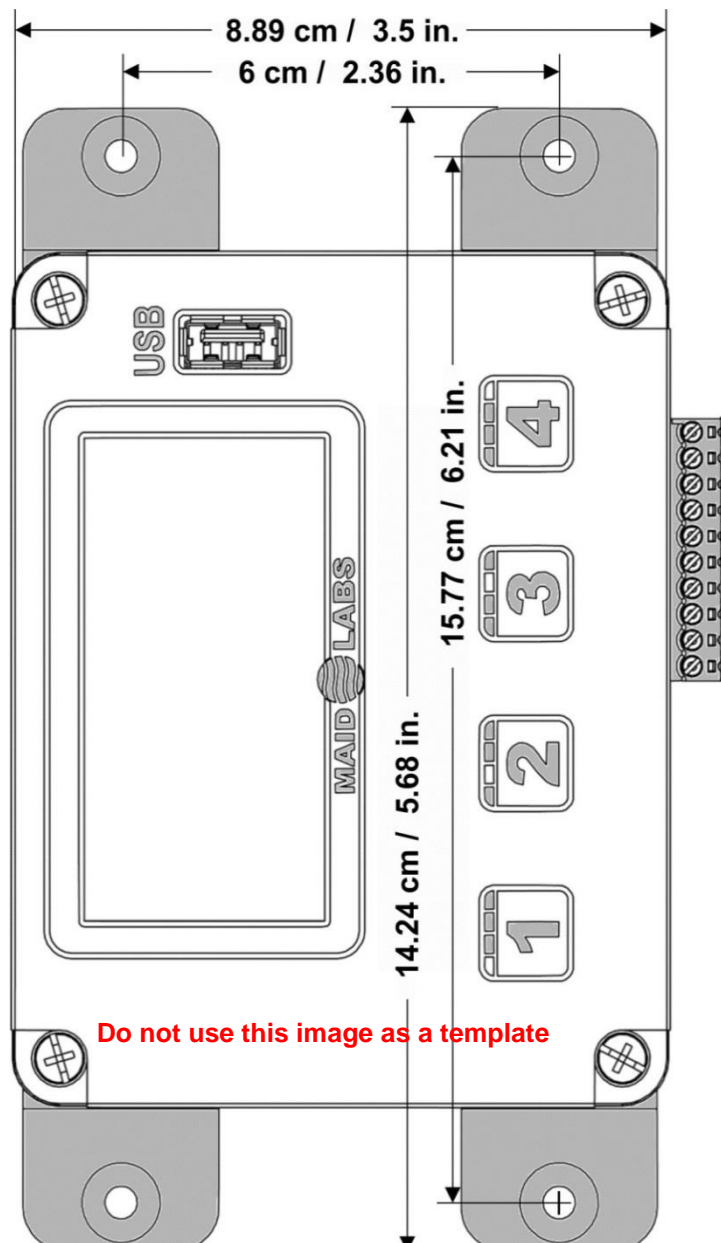
The PressureMaid is not waterproof. Avoid placing it in locations where liquids could fall on it or condensation could occur. Damage caused by water or excessive humidity voids the warranty.

A desiccant bag is placed inside the instrument in order to minimize or delay damage related to humidity which may affect all electronic products. When you open the case to change the batteries, be sure to replace the desiccant bag. If you think it is inefficient, you can order additional ones from MAID Labs.

The instrument must be placed in a location where there is no risk of being hit or dropped.



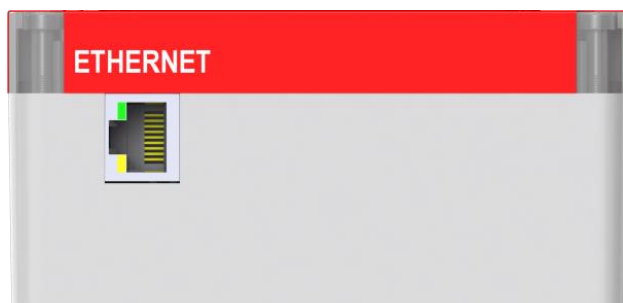
Dimensions



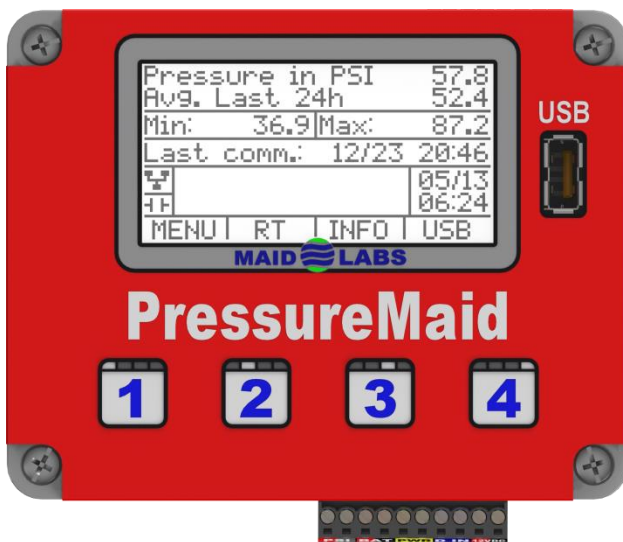
When installing the instrument, provide enough space above it if the Ethernet port is used and below it for the connector and electrical wires that will be connected.



Height 2.19 in. (5.5 cm), Width 4.52 in. (11.4 cm)



Height 2.19 in. (5.5 cm), Width 4.52 in. (11.4 cm)



Length 4.52 in. (11.4 cm), Width 3.89 in. (9.8 cm)

Connections



The pressure sensor input is read by the PressureMaid.



The analog input enables the measurement and recording of the remaining charge of an external battery to alert the user when it is time to replace it, but this input can also be used for other purposes in 4-20mA , 0-5VDC, 0-10VDC and 0-24VDC.



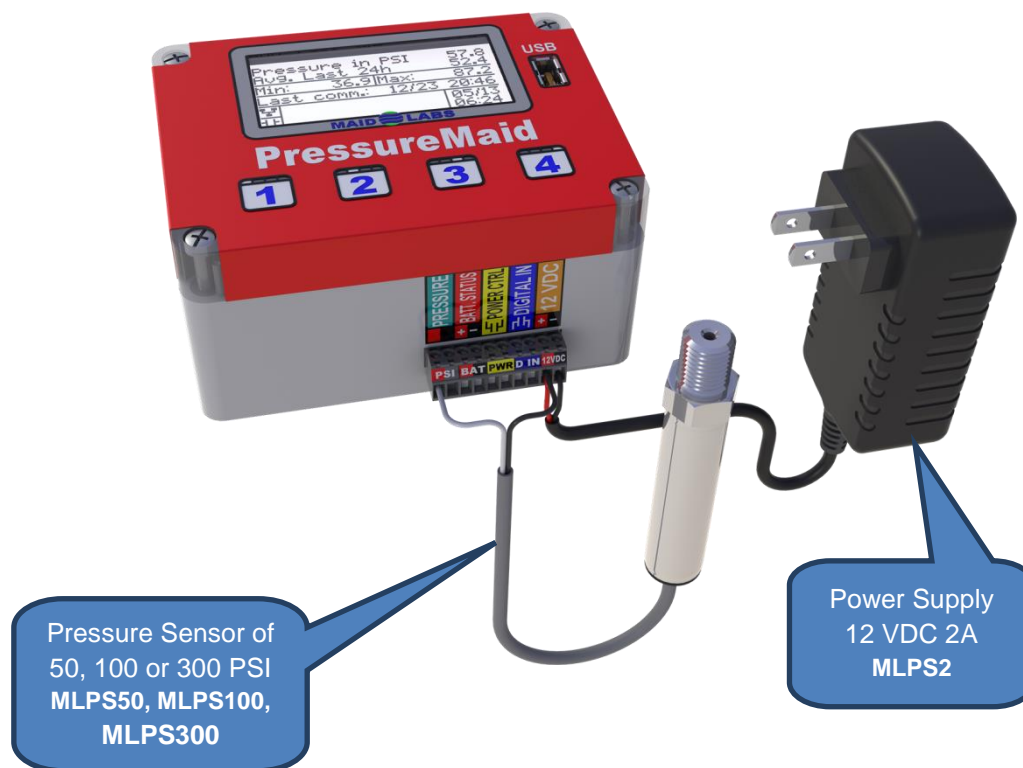
This is a dry contact relay which can be used to remove power from the external battery to maximize its useful life or operate a valve remotely via MaidMaps or generate an alarm.



The digital input is used to record state changes, such as pulses from a rain gauge.



The 12VDC power supply must come from a stable power supply that can provide 2 amps.



120VAC/12 VDC external power

The PressureMaid works with the **MLPS2** adapter (120VAC/12VDC 2A) as well as rechargeable batteries. These batteries are used only for security during power outages. Check the polarity of wires before connecting it.

Digital Input

The digital input is in a dry contact format. Meaning that the contact provided by the sensor must be closed or open, but without current, i.e. relay contacts or float switch. The instrument generates low voltage in one of the two connection wires while the other is the return. When the instrument detects its own power, the contact is closed.

Sensors can be floats, opening valve sensors, relays or any type of equipment generating a dry contact, provided that the input frequency does not exceed 10 cycles per second (10 Hz).

Communication

The devices communicate with a web server via a continuous internet connection. There is no set up to do when connecting a Maid Labs device. The device uses port 80 (standard port for all web pages) to communicate with the MaidMaps server. If a computer in the network is able to browse the Internet, then communication will work.

The devices are DHCP clients and require no special set up except for having a DHCP server in the network (present in all standard networks). For the moment, it is impossible to enter a fixed IP address to a device. You can connect the device to a WiFi connection with an external module sold by Maid Labs. A WiFi module set up is required using a computer. To know the IP address of the device or its MAC address, please refer to the section *IP Information* (see p. 16).

Instrument start up

When the instrument is powered by adequately charged batteries or external power, the instrument automatically saves its input state changes or values, even if the display is off.

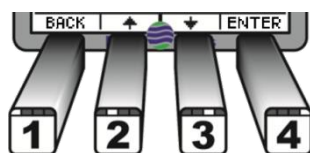
If the unit runs on batteries only, the display power downs to minimize the energy consumed by the device. The backlight turns on when the keyboard is activated and turns off after a few seconds of inactivity (see *Display* p.12), independently on whether the device is battery powered or AC powered.

To turn on the screen of a battery-operated device

If **1234** appears at the bottom of the screen, with a bare finger, press them one at a time in order to unlock the screen. If the instrument is "asleep", press any button 2 seconds to wake it up.

The menus

The contextual menu



The keys of the instrument use a capacitance sensor. You must touch it with bare fingers so that your body's capacitance can be detected. Do not press more than one key at a time and allow ½ seconds between each action, except to turn on the screen. Usage of the buttons depends on the displayed screen.

Main screen


Pressure now PSI	0.0
Avg. Last 24h	0.0
Min: 0.0	Max: 0.0
Last Comm.: 24/04 14:43	
04/05	15:33
MENU	RT INFO USB


Pressure now PSI shows the actual pressure read by the sensor, with the user's chosen unit (see p. 12). **Avg. Last 24h** is the average pressure for last the 24 hours.

Min:0.00 and **Max:0.00** indicates the minimum and the maximum readings by the pressure sensor since the last start up of the device or since the last « Reset Total Events », and returns back to zero at midnight.

Last comm. : 19/12 14:10

Shows the last date (Day/Month) and hour where communication occurred with the MaidMaps server or data transfer on USB.

 This image represents the « Ethernet » connection. When the 3 boxes are connected, the Ethernet cable is connected and the IP address is valid (communication is not necessarily functional).

 This image is the universal sign for a relay and represents the state of the PressureMaid's internal relay. It is normally open. However, when a diagonal line is in the middle, the relay is closed.

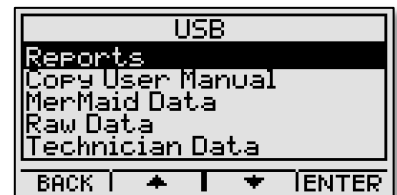
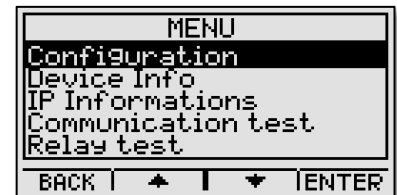
12/01 The date and time displayed should be correct when the instrument is awake. If this is not the case, 10:35 press the key **1** to access MENU / Configuration / Date & Time setup, and then follow the instructions in this section (see p.12).

The MENU **1** button provides access to a menu to configure the instrument or get information on the device. The RT key (Real Time) **2** is used to display additional data available in real time.




The INFO **3** button displays on-screen details of recorded events and alarms.

The USB **4** key allows you to create on the USB drive various files including one Excel™ compatible file in CSV format containing the monthly report.



Numbers selection screen

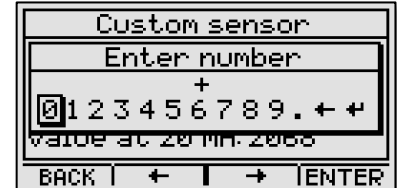
The settings of the instrument are easily done using the configuration software MaidDevices Configurator (see p. 20). However, it can be done from the screen. A scale from 0 to 9 allows you to enter the desired value by moving the **2** (to left) and **3** (to right) keys. To select the first digit, press ENTER **4**.

 To correct or delete a digit, select this arrow.

 To accept the selection and exit the sub-menu, select this sign.

When the cursor gets on +, pressing **4** changes the number to a negative.

A negative value may be necessary for certain parameters in the overflow equations. It is important to note that only acceptable values can be entered. An error message may appear below the window in such case. The user will be limited in the number of decimals as well.

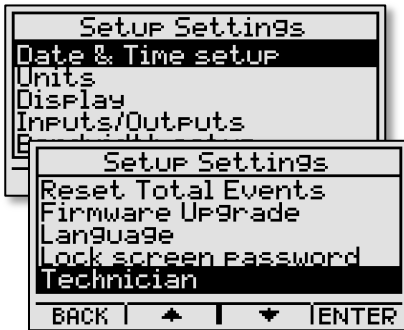


MENU **1**

The MENU **1** key displays seven options, which includes configuration of the device, display information about the hardware and the software of the instrument, revealing the IP addresses, testing communication with the instrument, testing the relay, and to display the lock screen function and the shutdown device function.



Instrument Setup

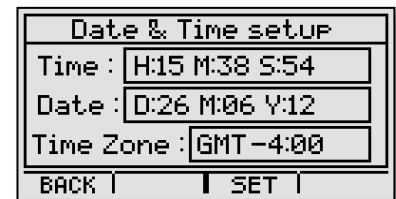


From the main screen, press the **MENU** **1** key to access the menu and then **ENTER** **4** to reach the configuration menu. This allows you to change all the items listed below. Browse the menu with keys **2** and **3** then press **ENTER** **4** to take action. Once the action is completed, press **BACK** **1** to return to the **Setup** menu. The list of submenus is longer than what is displayed on the screen.

You can use the **MaidDevices Configurator** software supplied with the instrument for configuration. It facilitates and speeds up the configuration (see *MaidDevices Configuration Software* p.20).

Date & Time

This menu displays the time, date, and the difference with Universal Time (UTC), also known as Greenwich Mean Time (GMT). The device, with an Ethernet connection, automatically updates itself every day with the internet time. It is possible to force the update by internet with the update key **SET**. When communication is disabled, time modification is possible with keys -, + and **NEXT**.



A cursor appears under the first number that can be changed. Keys **2** and **3** changes the value and / or **NEXT** **4** to move to the next variable.

The data are recorded in Greenwich Mean Time (GMT) and then adjusted to local time when displaying, creating files and reports. This prevents data loss caused by changes in daylight savings time to standard time and vice versa.

Date or time change can cause data loss when the time or date entered is turned back. When this happens, data will be lost after the change. In this case, the following message will appear **Data may be lost. Continue?** Editing (GMT) does not cause data loss.

Units

In the PressureMaid, only the pressure unit can be selected between Pounds square inch (**PSI**), kilo Pascal (**kPa**) or Bar (**Bar**). Press the **EDIT** **4** key to move from one unit to another.



Display

Besides the use of the USB key, the backlight of the screen is the largest energy consuming of the instrument. For maximum battery operation, press the **ENTER** **4** button to select the **Brightness** setting, then **2** or **3** to vary from 0% (off) to 100%, 20% increments and again **4** to accept choice.

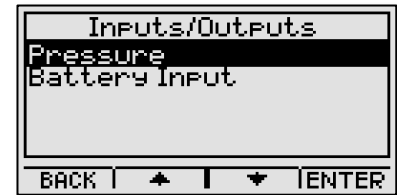
It is possible to close the backlight (brightness off) and the screen (display off) after a number of seconds specified by the user. Press the **ENTER** **4** key to accept the selection, **2** or **3** to change it, then **4** again to accept the choice.



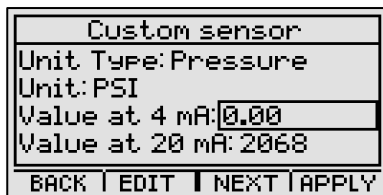
Inputs/Outputs

The PressureMaid has one digital and one analog inputs. No configuration is required for the digital input, but it is not the case for the analog input.

To use the analog input, a 4-20mA sensor has to be connected to the instrument. The *Connections* section (see p.9) indicates where to plug the wires.



Press the **ENTER** **4** key to access **Pressure tap water** and again press the **ENTER** **4** key to access the pressure sensor selection. Three choices are offered to the user : **0-100 PSI** sensor, **0-300 PSI** sensor and the **Custom sensor**. In the case of custom sensors, a choice of hardware is available: **4-20mA**, **0-5V**, **0-10V** or **0-24V**. The user can configure it by entering the settings of the following window.

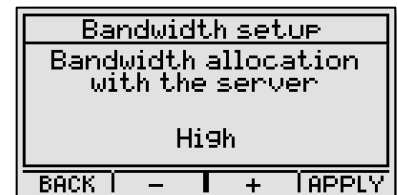


The **Unit type** is only **Pressure**. To accept the choice, go to the next field by pressing **NEXT** **3**. When the unit type is selected, the corresponding units will be displayed automatically, for example, kilo Pascal = **kPa**, Pascal = **Pa**, Pounds per Square inch = **PSI** or Bar = **Bar**, that can be selected with the **EDIT** **2** key. To enter values for the sensor selected, by pressing the **EDIT** **2** key, the Number selection screen appears. When

all parameters are properly chosen, the **APPLY** key will allow the return to the main screen of **Inputs/Outputs**.

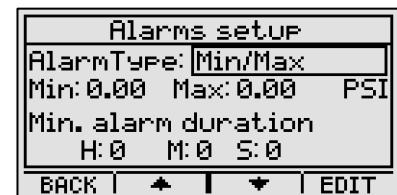
Bandwith setup

When necessary, it is possible to change the frequency of data sending to reduce the bandwidth of the device. There are four different settings that can be selected by keys **2** or **3** and then **APPLY** **4** to confirm the choice. The **Low** option takes the lowest bandwidth and communicates every 10 minutes and is transmitted with compressed data. **Medium** bandwidth allows the device to communicate with the server every 5 minutes, while for a **High** bandwidth communication, data is available immediately and allows to see the level and flow changes much faster on MaidMaps. **Disabled** means that it is possible to disable the Ethernet communication when not needed.



Alarms setup

The relay contact closes when the alarm is activated and opens when the alarm ends. Press **EDIT** **4** to select the type of alarms to be configured. There are five options for the **Alarm Type**: **Off**, **Min**, **Max**, **Min/Max** and **Remote**.



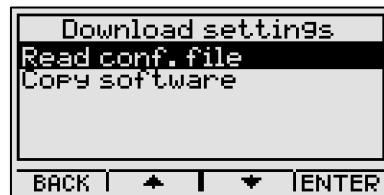
When **Off** is selected, no alarm will be generated. **Min** means that an alarm is generated below the minimum input, while an alarm is generated above the maximum value when **Max** is chosen. **Min / Max** indicates that the **Min** and **Max** alarms are activated. Note that the **Min**, **Max** or **Min / Max** values are always displayed, but are only valid if the alarm is activated. The fifth option, **Remote**, allows the MaidMaps software to manage alarms, where an Ethernet communication is previously required. However, the bandwidth options may affect the speed at which the alarm will be received by the device.

To accept the alarm type chosen and to move from field to field, press the arrow **3**. To enter or change a value, press **EDIT** **4** and the *Numbers selection screen* (see p.11) will appear.

Download Setting

To read the file created by **MaidDevices Configurator**, select **Read conf. file** and **ENTER** **4**. Follow the instructions on the screen.

Parameters can also be configured from the **MaidDevices Configurator** software. This software can be copied to a USB drive from the instrument. Simply select from the setup menu, **Download settings**, then **Copy software**, then **ENTER** **4**. You will be asked to insert USB key in the instrument.

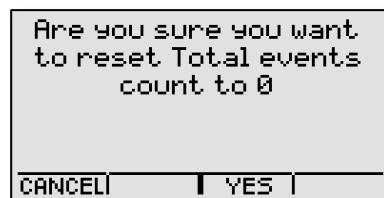


The compressed file **Config.zip** will be copied in the main directory of the USB. A double-click should decompress it. Clicking **Config.exe** runs the application. The configuration software explanation of the MaidDevices Configurator is on page 20.

Reset Total events

This function resets the total events contained in the main screen. After selecting this function, press **YES** **3** to confirm deletion of data from the main screen or **CANCEL** **1** to return to the previous screen.

To reset all the total events of the instrument, go to the *Factory Reset* operation located on page 15.



Software update

MAID Labs is constantly improving its products, especially its instruments' internal software, because improvements are suggested or bugs that are found, despite all the tests that were previously performed on the instrument.

The latest version of firmware can be obtained from the Web site www.maidlabs.com for devices that have been registered.

Make sure of the integrity of the power source before beginning the start up of the instrument. If it runs on batteries and if they have a capacity of less than 60%, replace them with new batteries before the start up.

If the unit is operating on external power, there should be no power interruption during the update. To reduce this risk, make sure that rechargeable batteries have a minimum capacity of 60%. This can be checked on the main display by disconnecting the instrument from the external source. **Never use alkaline batteries in an instrument made to work with rechargeable batteries. They could cause damage to the instrument and injuries to personnel.**

After selecting **Software Update**, insert a USB key that contains the file **pressuremaid.hex** in the root directory. As soon as this file is detected, the program begins.

The software is first copied into the permanent memory inside the instrument, then the update itself begins. A percentage indicates the progress of each of these steps. The instrument reboots when everything is finished.

Language

The instrument can operate in either English or French. Press **2** or **3** to select the language and **APPLY** **4** to accept the displayed language.



Lock screen password setup



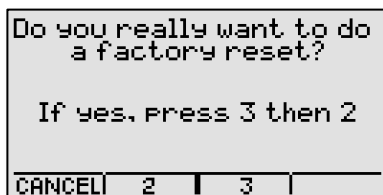
By default, if no lock screen password has been set, simply press 1-2-3-4 to have full access to the menus. To create a custom lock screen password, press **EDIT** **3** and enter a 5 digit code using numbers (keys #) between 1 and 4.

Technician

The technician menu allows to perform operations and access functions that are normally reserved for an experienced technician. In this menu, there are functions that could completely erase the memory of the instrument.



Factory Reset



This resets the device to the factory default settings. If this is what you want, press in this order the keys **3** and **2**. The memory will be empty after execution. This is equivalent to formatting the drive of a computer.

Delete File

This feature allows you to select the file to delete from MicroSD card.

Assert is a file for tracking bugs, if necessary. **Digital**, and **TempBatt** files are explained in the *Raw Data* section (see p. 19). **Pressure** is the pressure readings file and **http**, the communication bugs file. **Ethernet buffer** is the temporary file of recordings to be sent to MaidMaps when communication is not possible, while **Alarm** is the alarms file.

When the file to delete is selected, press **ENTER** **4** to access the next screen, then **OK** **2** to confirm.



SD Card Info



This function verifies the amount of memory contained in the internal memory and the available space.

With 2 GB of memory, it would be very surprising to run out of memory during the life of the instrument, which is more than 10 years.

Device Info

From the main screen, press the **MENU** **1** key to access the menu, the arrow **3** and **ENTER** **4** to display the product information.

```
Product:  PressureMaid
Serial No:  PM114018
Name:      PM114018
Hardware Version:  5
Software Version:  89
Compile Date:  May 1 2012
BACK |  |  |
```

IP Information

```
IP address: 169.254.1.1
Network Mask: 255.255.0.0
Gateway: 169.254.1.1
Primary DNS: 169.254.1.1
MAC address: 00:04:A3:16:7B:4B
DHCP: ON
BACK |  |  |
```

From the main screen, press the **MENU** **1** key to access the menu, the arrow **3** and **ENTER** **4** to display the IP information.

Communication test

From the main screen, press the **MENU** **1** key to access the menu, the arrow **3** and **ENTER** **4** to activate the communication test. The **TEST** **4** button can manually redo the test to observe the commands that are sent.

```
Successful Comm.
26/09 10 :10. 4. -1
```

The information appearing under the status "successful comm." is the date and time of the last communication, the command sent (represented by a number) and the

responses received. This information is useful to the user, and allows the technician to better diagnose a problem.

```
Cable disconnected
IP address: Invalid
169.254.1.1
04/05 15:42. 2.7
04/05 15:48. 2.7
04/05 15:48. 1.-1
BACK |  | TEST
```

Relay test

From the main screen, press the **MENU** **1** key to access the menu, press **3** and **ENTER** **4** to initiate the relay test. Key **3** allows you to open the relay while key **4** will close the relay.

```
Press on button 3 to
open and button 4 to
close the relay

Relay state:11
BACK |  | 3 | 4
```

Locking the screen

From the main menu, Locking the Screen allows a restricted access to the device. By default, if no lock screen password has been set, simply press 1234 to have full access to the menus. If the lock screen password has been configured (see *Lock screen password setup*, p. 15), you just enter this password with the device keys. The unit automatically locks the screen after 30 seconds, or as defined by the user.

Shutdown device

This procedure is recommended when maintenance is done on the device, for example, battery change. This avoids the possibility of recent data loss that is not yet stored in the device. This function causes a complete shutdown of the unit. To return to normal operation, simply remove the power supply including batteries and reconnect after a few seconds.

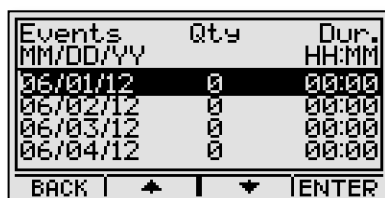
INFO 3



From the main screen, press on key **INFO 3** then choose desired report, **Events report** or **Alarms report**, and use the **ENTER 4** key to move to the next step.

The current month is automatically preselected. Press **MONTH 2** or **YEAR 3** to select the month or year to change,

and then **2** and **3** to vary among months and years for which data are recorded, and press **ENTER 4**.



The next window shows, for the desired month, the amount and duration of events each day of the month. To view details of each event of the selected month, choose a day by pressing the arrow keys **2** and **3** then press **ENTER 4** to display the detailed report.

The detailed report shows the date and time the event started, followed by the period of the event (Dur.) in Hour: Minute: Second.

If no day is selected, the first event of the month will be displayed, as well as the following events. In all cases, press **2** and **3** to scroll through all the events of the selected month.



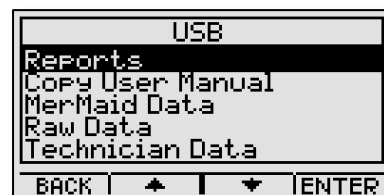
USB 4

To copy event reports, user manual, data for the MerMaid software, raw data, or technician data, on the **USB 4** key, from the main screen, press the **USB 4** button.

Use a USB key formatted in FAT16 or FAT32. The amount of files on the key influences the time to copy files. It is ideal to reserve a USB key for the downloads of Maid Labs devices.

Insert a USB key when the following message appears.

When the transfer is complete, a message that you can remove the key will be displayed.



Monthly report

The monthly report gives a summary of key elements for the pressure like the average pressure for each day, the minimum and maximum pressure for each day and the time for those pressure events.

The PressureMaid also includes the overflow recording functions (or other digital events) of the EE-400 Event Encoder. The monthly report indicates the number of times per day that the digital input has changed state, the total time in the closed state, and other event's details such as start and end time and their duration.

The monthly events reports will be on the USB, in the subdirectory *Monthly Reports*, found under the directory with the name given to the instrument or its serial number in the root directory. See *Device name* on page 20.

A file is created for each month of operation of the instrument, unless all data have been deleted deliberately using the *Technician* menu (see p. 15).

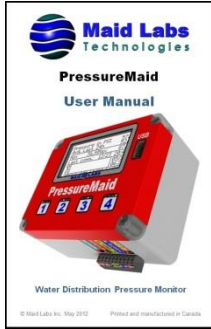
Monthly reports are compatible with Excel in CSV format. If Excel is installed on the computer, the monthly reports will load automatically. The filename is composed of an identifier or the name (see p. 20) or the serial number, year and month for which it is created.

If the device language is different from your computer, data might not be presented properly in Excel. To rectify this problem, simply select the correct separator when importing into Excel.

In the example of the monthly report on the next page, column width has been adjusted and titles in bold to facilitate the reading.

	A	B	C	D	E	F	G	H
1	PressureMaid / Central park / 04-2012 / PSI					PSI	S.S.O.	
2	Date	Average	Minimum	Time Min.	Maximum	Time Max.	Nb.	Duration
3	1	66.84	57.62	11:28:00	88.75	02:27:00		00:00
4	2	66.53	57.61	15:19:00	86.84	00:28:00		00:00
5	3	67.24	59.19	10:00:00	89.53	05:50:00		00:00
6	4	68.32	57.46	16:13:00	98.42	10:23:00		00:00
7	5	68.74	61.03	09:03:00	86.76	20:40:00		00:00
8	6	68.88	55.74	14:35:00	107.87	05:32:00		00:00
9	7	67.39	53.88	14:40:00	86.73	00:31:00		00:00
10	8	68.24	56.28	11:55:00	101.74	04:52:00		00:00
11	9	67.05	57.33	08:45:00	86.18	00:25:00		00:00
12	10	67.54	59.29	13:23:00	89.72	08:46:00		00:00
13	11	68.10	58.50	15:57:00	89.48	03:31:00		00:00
14	12	68.64	58.96	10:19:00	105.34	05:55:00	2	08:24
15	13	67.48	54.97	12:51:00	91.58	02:29:00	1	15:36
16	14	65.65	53.07	15:02:00	83.93	05:04:00		00:00
17	15	66.70	48.99	11:38:00	94.12	07:35:00		00:00
18	16	66.85	57.19	09:20:00	85.35	23:57:00		00:00
19	17	67.61	57.54	10:06:00	91.69	09:05:00		00:00
20	18	67.56	55.49	14:47:00	89.30	08:35:00		00:00
21	19	67.52	57.49	15:06:00	99.40	08:09:00		00:00
22	20	68.21	60.61	09:47:00	88.49	04:20:00		00:00
23	21	69.82	53.90	14:19:00	86.91	06:26:00		00:00
24	22	69.97	60.26	14:20:00	99.37	03:56:00		00:00
25	23	67.49	1.04	07:06:04	101.55	05:40:00		00:00
26	24	62.85	1.07	00:16:04	66.75	14:18:00		00:00
27	25	62.80	1.01	22:06:01	67.53	08:57:00		00:00
28	26	64.16	55.41	15:42:00	69.19	17:10:00		00:00
29	27	64.67	58.44	10:17:00	67.17	11:10:00		00:00
30	28	63.70	1.13	11:18:05	67.53	15:01:00		00:00
31	29	63.94	52.13	15:29:00	68.37	14:30:00		00:00
32	30	62.94	53.31	10:19:00	67.85	15:02:00		00:00
33								
34	S.S.O.							
35	Date	From	To	Duration				
36	12	15:36:13	16:36:13	01:00:00				
37	12	16:36:13	23:59:59	07:23:47				
38	13	00:00:00	15:36:13	15:36:13				

Copy User Manual



This will copy the PDF version of the user manual recorded in the internal memory of the instrument to a USB key. This may be necessary for major updates of the internal software.



MerMaid Data

These data are added to the subfolder named MLDATA. This contains the monthly files of the device (serial #-MM-YY.mldata) visible to the MerMaid software only. Files already present on the key will not be copied except the file for the current month.

Raw data

Raw data is stored in a simple format within a text file. For each selection, the entire file may be copied, the last week or the last month.

The recorded data are in Universal Time (UTC). *Date & Time* section (see p.12) explains how to see the difference with the local time (GMT).

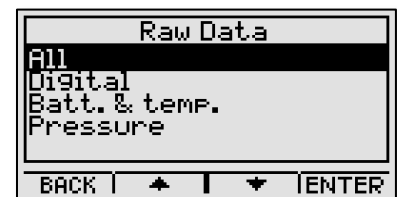
All allows to copy the digital data, battery voltage, temperature of the instrument and the analog input on the USB.

By selecting **Digital** the **Digital.txt** file will be created. This is the list of all events recorded in the following digital format: **2011-02-10 15:57:44.666 1**. The last "1" means that the contact is open and "0" as the contact is closed. You can see more than one 1 or 0 because the input state is saved when starting the instrument, as well as batteries changes.

By selecting **Batt. & temp.**, **TempBatt.txt** file is created. It contains a record of temperatures and batteries capacities stored every 2 seconds in the following format: **2011-02-10 14:36:11 26.50 2.86**. "26.50 " represents the temperature as "2.86 " represents the battery voltage in volts.

By selecting **Pressure** the file **Analog.txt** is created. It contains recorded measures of the analog input according to preset time (see *Input/Output* p. 13). The format is: **2011-02-10 14:36:11 16.34**. "16.34 " is the measurement of the analog input in mA.

The analog input of the device operates from 4 to 20mA. You may convert mA into meaningful units, using the formula $(x-4)/16*y$ where x is the measure in mA and y the maximum of the sensor connected to the analog input.



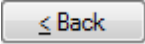
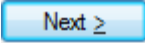
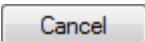
MaidDevices Configurator Software

Read the *Setting* section on page 14 to learn how to copy the configuration software to a USB key.

MaidDevices Configurator allows the setup of the following instruments:

- **EE-400** Event encoder
- **FlowMaid** level monitor and open channel flowmeter
- **PressureMaid** tap water pressure monitor
- **LevelMaid** level monitor through Internet
- **SensorMaid** standard datalogger
- **Volucalc** volumetric lift station flowmeter & energy analyzer

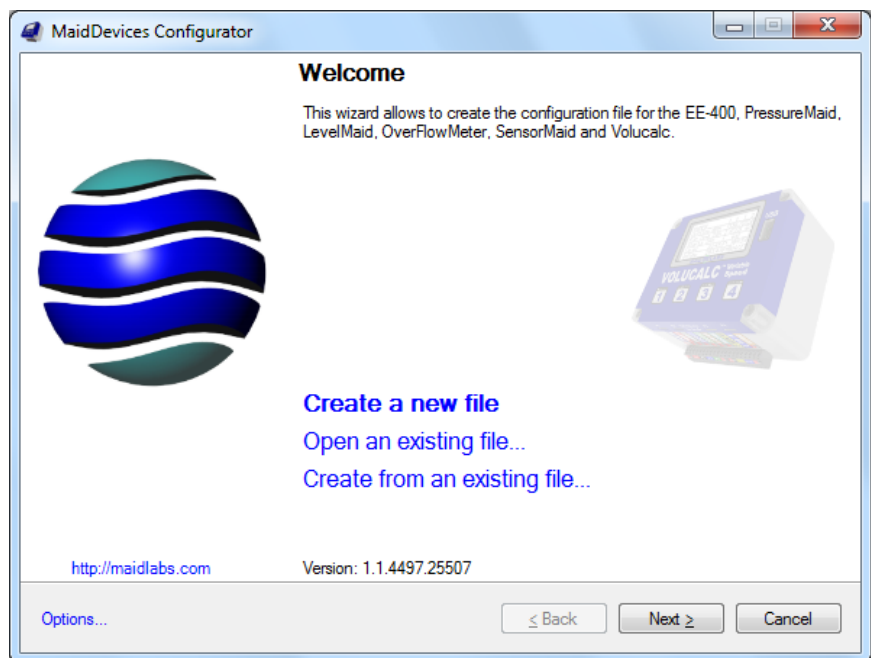
At any time, in the configuration software, three actions are permitted:

	Returns to the previous window without saving the values of the current window.
	Allows you to continue with the configuration to the next window.
	Closes the MaidDevices configuration software.

The Configurator allows **Create a new file**, **Open an existing file** if the configuration of the device has already been performed or **Create from an existing file**, which allows you to enter the parameters of a device already created. By default, the Configurator starts the process of creating a new file when the button is selected.

For a first configuration, you may select the **Options** link on the bottom left corner of the window. Two menus are available: **General** and **Units** (examples of the two windows are on the next page). By default, it will open on the **Units** menu. If you select **United States**, the standard units seen in the USA will immediately appear. However, it is possible to change them to fit your needs. Press the **Apply** button when the units selection is complete.

The General menu helps you choose the desired language. The configurator will appear in the language of your computer (**Default**) but it is possible to change to **French** or **English** at any time.



Options

General Units

Predefined setups

International United States

Length	Area	Volume
<input type="radio"/> Meters [m]	<input type="radio"/> Square meters [m ²]	<input type="radio"/> Liters [l]
<input checked="" type="radio"/> Feet [ft]	<input checked="" type="radio"/> Square feet [ft ²]	<input checked="" type="radio"/> US gallons [US gal]
<input type="radio"/> Inches [in]		<input type="radio"/> Imp. gallons [UK gal]
<input type="radio"/> Centimeters [cm]		<input type="radio"/> Cubic meters [m ³]
		<input type="radio"/> Cubic feet [ft ³]

Rain	Temperature	Flow
<input type="radio"/> Millimeters [mm]	<input type="radio"/> Celsius degrees [°C]	<input type="radio"/> Liters per second [l/s]
<input checked="" type="radio"/> Inches [in]	<input checked="" type="radio"/> Fahrenheit degrees [°F]	<input checked="" type="radio"/> US gallons per minute [GPM]
		<input type="radio"/> Million gallons per day [MGD]
		<input type="radio"/> UK gallons per minute [GPM]
		<input type="radio"/> Million UK gallons per day
		<input type="radio"/> Cubic meters per day
		<input type="radio"/> Cubic feet per second [cfs]

Pressure	Volume efficiency
<input type="radio"/> Kilo-Pascal [kPa]	<input type="radio"/> Liters per watt-hour [l / w·h]
<input checked="" type="radio"/> PSI	<input checked="" type="radio"/> US gallons per watt-hour
<input type="radio"/> Bar	<input type="radio"/> Imp. gallons per watt-hour

OK Cancel Apply

Options

General Units

Language

☐ Default

☒ English

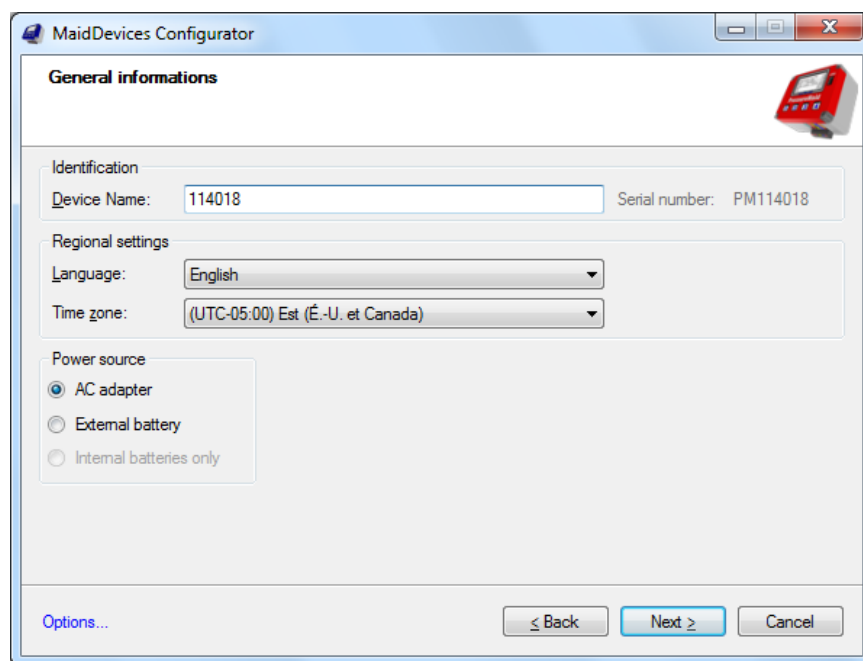
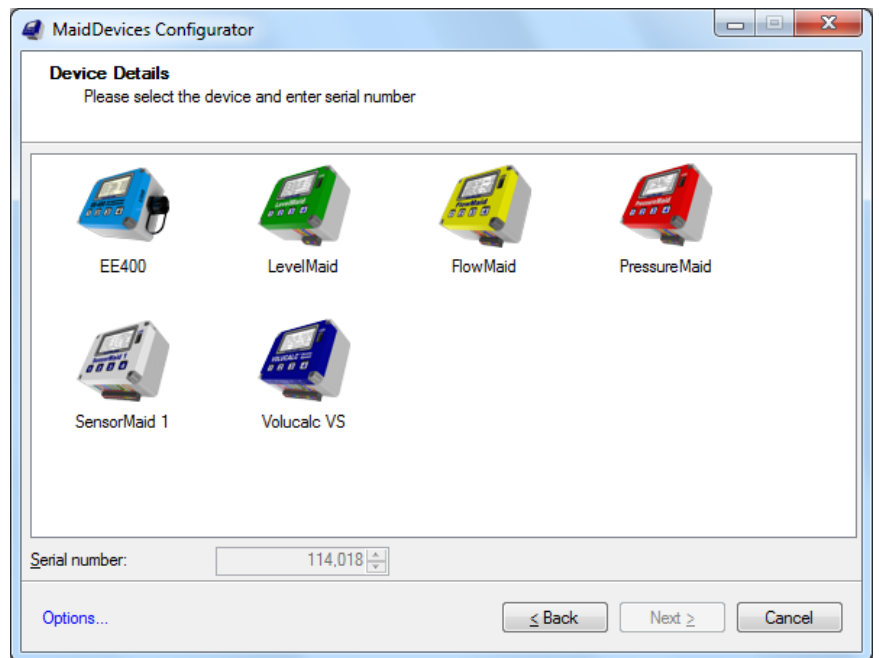
☐ Français

Requires application restart to be effective

OK Cancel Apply

Click on the icon of the desired device. In this case "PressureMaid". Enter the serial number of the device. This number is on the label underneath the device and also appears on the *Device Info* screen (see p. 16). If the serial number is incorrect, the instrument will not be able to read the configuration intended for it.

The configuration file created by MaidDevices Configurator in the main directory of the USB drive is called PMxxxx, where xxxx is the serial number of the instrument.



The **Device Name**: will be used to identify data files copied to the USB drive. This is necessary when a key is used for multiple devices.

Language: is the one for the operation and the device display. French or English.

The **Time zone**: is automatically adjusted to that of the computer that is running MaidDevices Configurator.

The **Power Source** section allows to select the type of device power: AC adapter or external battery.

The **Display (backlight)** can be adjusted between 0% and 100% of brightness in increments of 20%. The default value is 20%.

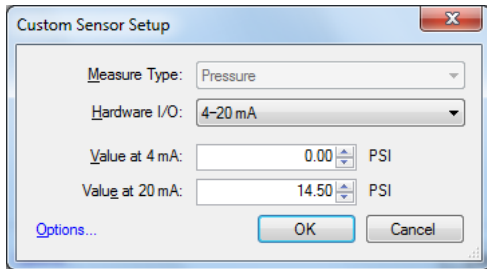
To maximize the operating time on battery, the **Time before backlight close** function can be selected: where the choices are **0**, **10** and **30** seconds, while those for the **Time before screen close** function: are **10**, **30**, **60** or **300** seconds.


Creating a lock screen password is also possible at this point in the software. Just create a code of 5 numbers between 1 and 4, as explained in the *Lock screen password setup* section (p. 15).

Hardware	Function	Sensor	Range	I/O
Pressure	→ Pressure tap	0-100 PSI	0 to 100 PSI	4-20 mA
Batt. status	Not used			Disabled
Power Ctrl	← Alarm out	Relay		Digital
Digital in	→ Digital input	Dry contact		Digital
VDC	AC	AC adapter		12-24 VDC

Pressure

Configurable analog input 4-20 mA, 0-5V, 0-10V or 0-24V can record the pump outlet pressure, the tap water pressure or pump inlet pressure. A choice of two sensors (**0-100 PSI** or **0-300 PSI**) is available or a **Custom sensor** setup to access another range of measures. In this case, the following configuration window will appear by clicking in the **Range** field:



In the side window shown, the values at 4 mA and 20 mA (or the type of input/output selected), can be selected or changed using the arrows  or directly through the device keypad. When setup is complete, press OK.

Batt. status

The most common use of the second analog input is the batteries status when operating with external batteries. However, this input can be used as a traditional analog 4-20mA, 0-5VDC, 0-10VDC or 0-24VDC input. In each case, a choice of sensors is proposed and the corresponding range must be configured.

Power Ctrl

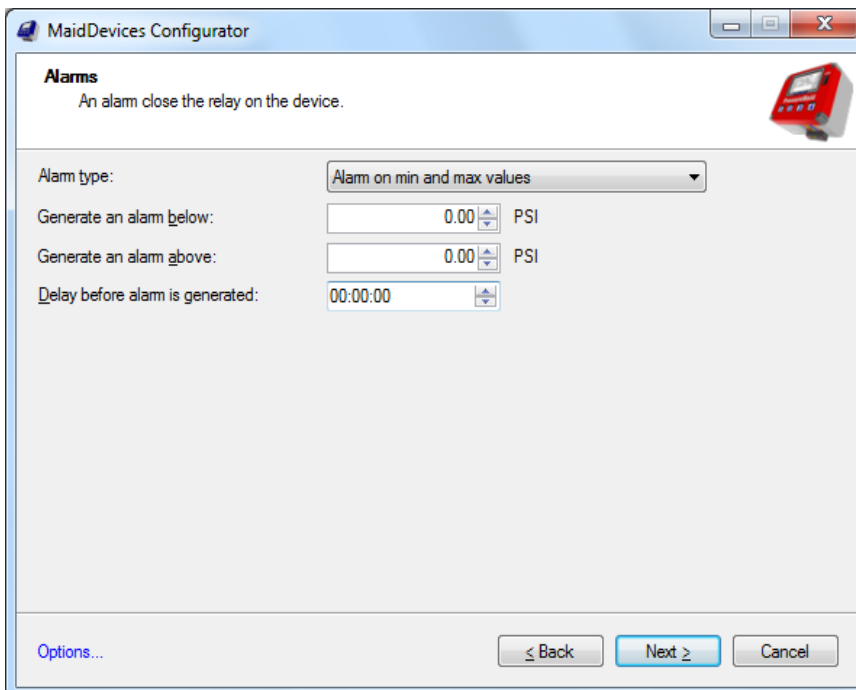
When generating an alarm this closes the relay contact, **Remote control** function means that the alarms are controlled by the MaidMaps software, where an Ethernet communication is previously required. The **Manual control** deactivates the alarms while the **Alarm output** function allows users to configure alarms on minimum and/or maximum. However, the bandwidth options may affect the speed at which the alarm will be received by the device. The alarm configuration appears at the next window.

Digital in

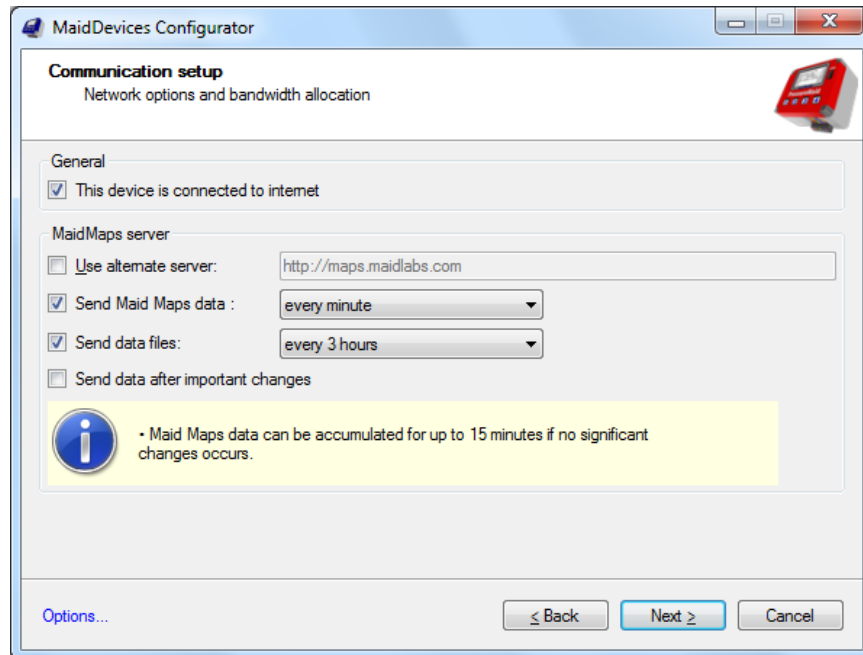
This entry may have different properties according to the choices of menus. As the case, a choice of sensors and ranges is offered.

VDC

Input for the device 12 VDC power.



When the alarm type is set to **Disabled**, no alarm will be generated and this means that the entry is in manual control, as selected in the previous step. **Alarm on the minimum value only** means that an alarm is generated below the minimum input, while an alarm is generated above the maximum value when selecting **Alarm on the maximum value only**. **Alarm on the minimum and maximum values** indicates that the minimum and maximum alarms are active.



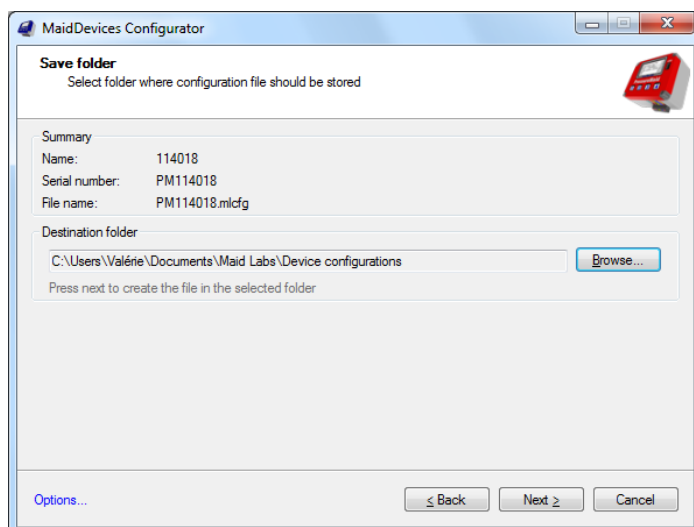
Depending on the bandwidth quality, communication with the server will be fast or slow. In the **General** section, if the checkbox **The device is connected to the Internet** is not checked, the communication is will not occur. This mode also disables the Ethernet module, which reduces consumption of the device and allows options in an "offline" mode such as manually adjust the time. By checking this box, different configuration options appear.

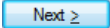
By default, the server uses the MaidMaps link <http://maps.maidlabs.com>. However, it is possible to use another server by checking the box indicating the connection and the server to use.

Send MaidMaps data can be done in **real time**, **every 1, 2, 5, 10, 15 or 30 minutes**, **every hour**, **every 3 hours**, **once per day**, **once per week**, **every 2 weeks** and **once per month**.

Send data files can be done **every 15 or 30 minutes**, **every hour** or **3 hours**, **once per day**, **once per week**, **every 2 weeks** and **once per month**.

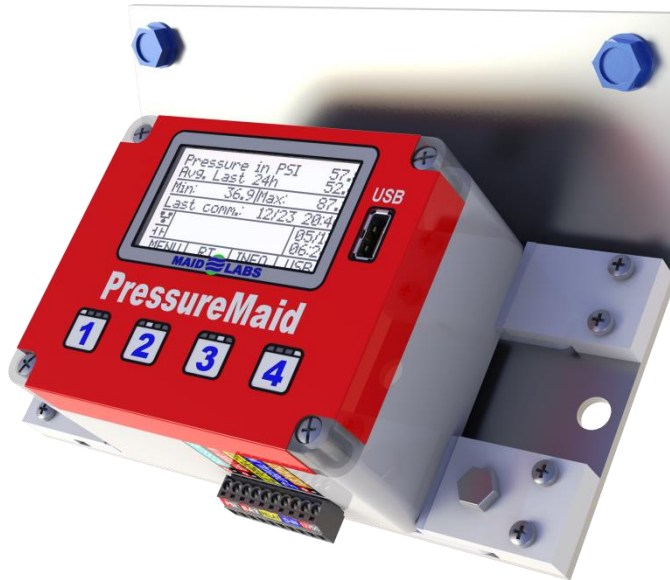
The **Send data after important changes** option can be selected if desired.



Choose a destination folder and press  to complete the configuration of the device. For the unit to read the configuration file, the .mlcfg must be in the root directory of the USB key and the file name should not change.

Accessories

Stainless steel bracket for Maid Labs Devices (45 angle) (MLSUP45)



Sometimes, it is not possible to place the instrument at eye level. The stainless steel bracket with a 45 degree angle is best used when the position of the instrument is too low to permit easy reading.

Holes on the sides of the mounting plate are used to attach the probe, without straining the sealed thread clamp.

If it becomes necessary to remove the instrument from its base, simply remove the bolts (not screwed), then slide the instrument a few inches.

Installing 45 and 90 degrees angle bracket

Since the instrument can be positioned to face toward the back or front of the bracket, the holes for inserting the bolts to lock up the instrument have not been drilled. It's up to you to do so before installing the bracket. Two stainless steel bolts 1/4" are included.

Choose a location easily accessible and secure the bracket through the two holes provided for this purpose. They are 7 inches apart from one another and have a diameter of 0.25 inch.

The sensor cable should be attached to the side of the bracket with a cable tie in order to limit the force exerted on the sealed thread clamp.

An extra length of cable between the connector and cable tie allows for the removal of the instrument from its position when changing batteries or other handling.

Pelican 1400



The submersible Pelican Case 1400 Model is a protective casing for the PressureMaid. The back support can be modified to facilitate installation on a pole.

The instrument, the battery, and the modem are optional. If PressureMaid is supplied with 110 VAC, the compartment dedicated to the batteries will be smaller. The size of the stainless steel bracket is designed to reserve the space required to open the housing and latches.

The larger battery mounted in the Pelican case has a capacity of 12Ah/20H. The lifetime of the system depends on what is connected to the battery. The instrument closes the relay "CTRL. POWER " to take the readings, and if necessary to transmit and recharge its internal batteries.

The lifespan of a 12 volt battery (12Ah/20HR) will supply up to 350 days of operation and cellular transmissions by performing one reading and communication every 10 minutes. The number of days could drop to 300 if the temperature average is close to 5 °C (41 °F).

It is possible to specify two reading intervals, one under and one above a certain value. So, when the overflow level is reached, for example, the reading frequency could go from 10 minutes to 2 minutes.

The use of an external marine battery (30 Ah to 205 Ah) is also possible. In this case, a second watertight connector is installed on the Pelican case in order to connect to the external battery.

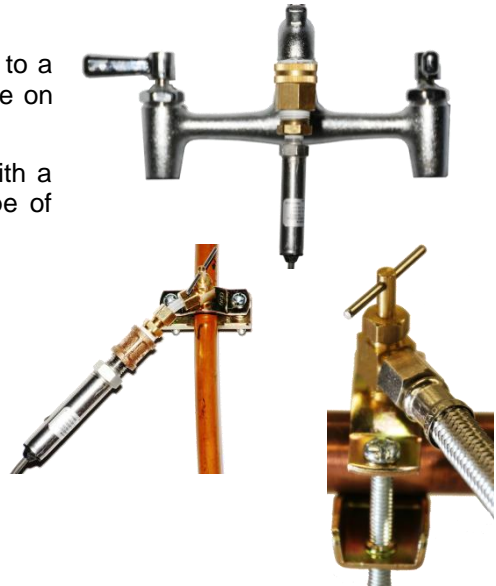
In all cases, the battery status (its voltage) is part of the parameters read and transmitted from the PressureMaid to the MaidMaps software and everything that is received by MaidMaps is to generate a warning or an alarm. So when the battery voltage becomes more critical, someone can receive an email to that effect.

Fast installation kit

The most simple and quickest way to connect the pressure sensor to a residential drinking water system is the use of adapters. In the image on the right, the pressure sensor was connected directly to a tap.

A more intrusive way, but still fast to connect is with an adapter with a valve that pierces the copper pipe. It is important to place this type of valve before a permanent valve, because sometimes this fast connection is not fully reliable. But has the advantage to plug in less than 5 minutes.

Another variation of this installation allows the use of a flexible joint of better quality.



WiFi



Using a WiFi module greatly facilitates the connection to a LAN. This is the easiest way to connect to the Internet, when a direct connection is not possible.

Cellular Modem

The GPRS cellular modem provided by Maid Labs provides both a USB and RS232 connection. A SIM card, provided by the local cellular provider, must be inserted. The acquisition cost of the modem does not include monthly fees and initiation of cellular provider.

All accessories offered for PressureMaid operate on 12 volts in order to allow the use of a single power supply when possible.



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