



Automatic water ballast meter

User manual

Version 1.00 EN

September 2015

Important Notices

This product is warranted to be free from defects in materials or workmanship for two years from the date of purchase. This warranty does not cover failures due to abuse, misuse, accident, or unauthorized alterations or repairs.

Do not leave the device in wet or rainy conditions. Do not expose the device to temperatures over 50°C. Do not open the device – if the casing has been opened the device is not warranted any more. To obtain warranty service, contact your local IMI Gliding Equipment dealer or contact IMI Gliding Equipment directly.

THE PRODUCER OR DEALER IS NOT RESPONSIBLE FOR ANY DAMAGES AND OTHER LOSSES CAUSED BY USING THE DEVICE.

Welcome!

Thank you for purchasing this IMI water meter. We designed it to make water filling simple. No more guesswork about how much water is in your wings! No more wasted water spilling out because you forgot to turn the hose or pump off when the wings were full!

Just connect to mains or water pump, set the number of litres you want to fill and press start. You will get an accurately metered dose of water, and the flow stops automatically when you reach the water you need, leaving you to spend time on other glider preparation.

Here is a short list of features and benefits which your new water ballast meter brings to you:

- Exact and quick setting of required amount of water ballast
- Easy recall of last few inserted values
- You can connect the device to water main supply or to a small external water pump
- The connected external water pump is being switched ON and OFF automatically when required amount is reached
- Easy calibration for accurate measuring even when using another measuring units than liters
- Water ballast meter can be customized to fit your preferred method of filling, using accessory kits available from IMI.

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1 Introduction

We are really pleased you have chosen our product and we believe it will serve you reliably for a long time. Using of the water meter is easy and it helps you to fill an exact amount of water ballast into your glider without need of permanent surveillance. Just set the required amount and turn on the filling.

2 Technical parameters

Dimensions	200 x 132 x 66 mm
Weight	0,95 kg
Input voltage	8 - 16V DC
Quiescent power consumption	1 W
Maximum power consumption	7 W
Water pump switch	max 24V / 10A DC – fuse
Minimum water pressure	50 kPa (0.5 bar, 7.25 psi)
Maximum water pressure	600 kPa (6 bar, 87 psi)
Minimum flow	3 liters/min
Maximum flow	25 liters/min
Measurement accuracy	+/- 3%

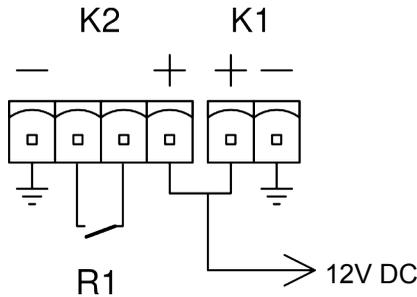
3 Installation

3.1 Water source connection

Water inlet to the device is located on its left side and outlet on the right side (see the figures below). Feeding hose is connected to the device via standard ½' thread. Using of garden hose couplers is recommended, as they provide quick and easy assemblage and dismantling of the hose.

3.2 Electrical supply connection

To connect the device to power source just about any 12V source can be used – see Technical parameters. A good candidate is for example 12V lead acid battery commonly used on board a glider, or 12V cigarette lighter socket in your car. The connection is being realized through simple connectors into which the power cord is plugged and secured with the supplied screws. The figure below shows the connectors on side of the device.



The **K1** connector is used for connecting the power supply. The left terminal represents positive pole and the right terminal is negative pole.

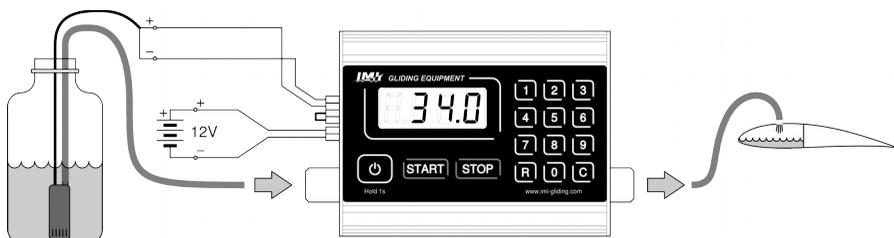
The **K2** connector is used for switching the external water pump through the **R1** relay contact. The connector is designed to allow easy power connection of the pump either using the same power supply as for the device itself or via an independent source. In both cases water filling from barrels is considered using submersible pump with a supply voltage of 12V (see figures below).

3.3 Water main supply connection



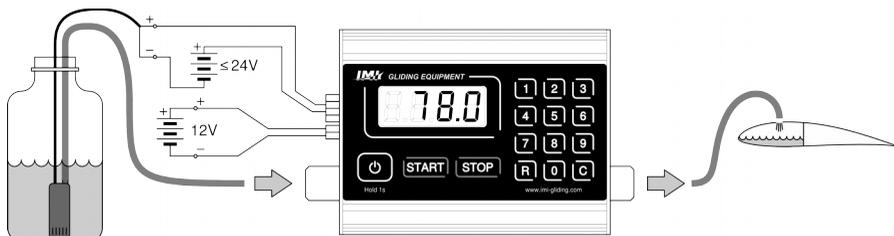
3.4 Water pump connection – using the same power supply

To ensure the proper function it is necessary to connect two left terminals of the K2 connector as shown in the figure below.



3.5 Water pump connection – using two independent power supplies

For using an external water pump with a power supply of a different voltage than 12V (up to 24V).



4 Emplacement of the device

The best emplacement of the device is via the special mat with suction cups on the upper side of the wing. There could be a short hose element at the outlet of the device which goes directly into the filling hole of the wing.

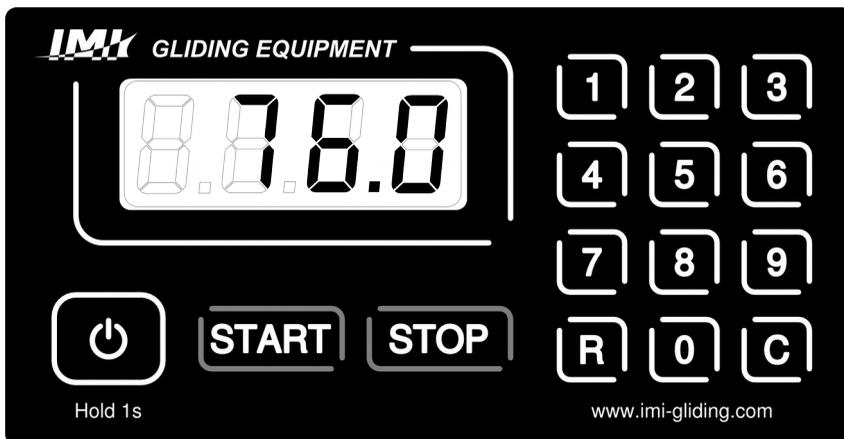
If the filling holes of your glider are not on the upper side of wings you can place the water meter wherever close to the glider, eventually on the upper side of the wing again, this time using longer hose. For accurate measuring use a short hose leading from the device to glider and use the same water source which was used for calibration – see 7 Calibration .

5 Operation

IMPORTANT NOTICE: When filling the integral water tanks there must be some space left for ventilation and drainage of excess water in case of complete fulfill of the tank. Because of that **NEVER** tighten the hose in the filling hole! When filling the sacs always use a funnel to avoid an overpressure in the sac. Water pressure, especially when the device is connected to water main supply, can damage the wing framework!

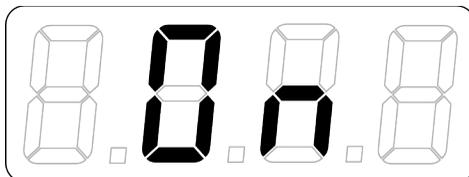
In case you are using water mains as the water source use a garden hose coupler with valve so you can regulate flow of water. Avoid bubbles in the inlet hose as they can cause short time overflow in the watermeter and the watermeter will stop the filling process – see 6 Flow sensor overload protection

Using of the water meter is very easy. The control panel is shown in the figure below.



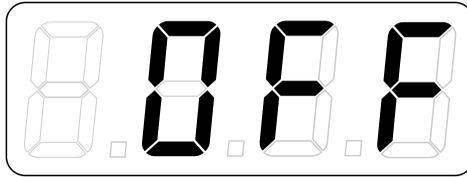
5.1 How to switch the device on

To switch on the device press the  button and hold it for 1 second. As the water meter turns on, the display shows **On** and then a value used during the last measurement.



5.2 How to switch the device off

To switch off the device press the  button and hold it for 1 second. As the water meter turns off, the display shows **OFF** for a short while.



5.3 How to set the amount of water ballast

Type on the keyboard required quantity of water ballast. The display shows the value immediately. To clear the input use the **C** button.

5.4 How to set one of the last used amounts

The device allows to recall some last used values. To quick recall of previously used value press **R** button. You can recall up to five last values by pressing the **R** button repeatedly.

5.5 Start of filling

As you have chosen amount of water ballast you want to use, simply press **START** button to begin filling. At this point the solenoid valve opens and the device starts measuring the amount of water flowing through. At the same time, the display shows the amount of water that has been already filled in the wing.

5.6 Interruption and restart of filling

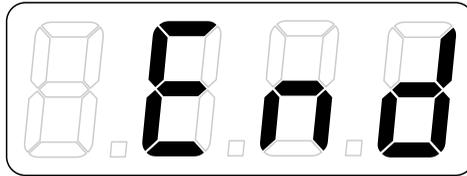
If you need to interrupt the filling process, press **STOP** button. There will be alternately flashing the amount of water which has already flown through and the originally entered value. If you want to proceed the filling process again just press **START** button.

To terminate the filling process completely press **R** button.

5.7 Automatic filling termination

When the amount of water that has flown through becomes equal to the value set by user, the valve close, the pump switches off and the device beeps to

signal the end of filling process. There will be alternately flashing **End** and final reading on the display.

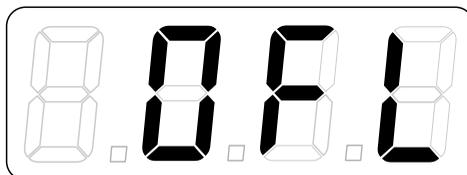


5.8 After usage

When you finish with filling disconnect the electric and water source and let the Watermeter dry out. Store at dry place.

6 Flow sensor overload protection

The flow sensor is a very sensitive device that must not be overloaded by excessive flow. Maximum allowed flow is 25 liters per minute which is equivalent to filling 100 liters of water ballast in 4 minutes. If the maximum flow in the device is exceeded, the display shows **OFL**, the filling process is interrupted as if you pressed **STOP** button and an acoustic signal starts. In such case limit the inflow so it falls below the maximum permitted flow. To continue filling process press **START** button.



Short time overloading can be also caused by bubbles in the inlet hose from water mains in combination with hose connector with valve. In such situation avoid the bubbles in the hose otherwise the Watermeter will pause the filling process.

WARNING: Overloading of the device is recorded in its internal memory and can be subsequently read. Repeated overloading of the flow sensor will invalidate warranty.

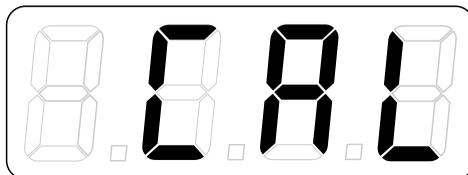
7 Calibration

The device is set to measure the water ballast in liters. This setting may not be always wanted and therefore it is possible to calibrate the device for any other units.

Producer of the flow sensor guarantees excellent measuring accuracy only if the same water source is used during usage of the device as during the calibration. The device is calibrated by manufacturer for using a small external water pump which is part of some of available IMI water meter sets. If you are using a different water source (water main supply or your own external pump), testing this calibration for your chosen water source type is recommended. If the calibration is outside limits it can be re-calibrated as follows:

Before you start the calibration process connect the device to water supply and get a container of known volume into which you will draw water through the device. It is generally recommended to use a container with a volume comparable to the usual filling volume. The larger the container is, the more accurate is the calibration result. A good candidate is for instance a 50 liter tank.

To enter the calibration mode press **C** button and **START** button at the same time and hold them for 5 seconds. Due to that **CAL** starts flashing on the display and the device is in the calibration mode now.



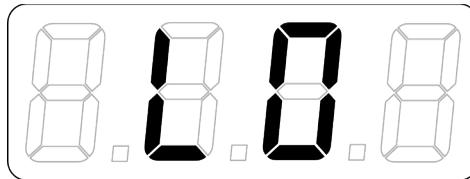
After pressing **START** button the valve opens and the calibration process starts. There is the amount of water drawing through flashing on the display in

originally set units. As the measuring container is filled up, finish the calibrating process by pressing **STOP** button. The display still shows flashing amount of water flowed through in the original units. Now type in the real amount of water in the measuring container in required units. You can use the **C** button to erase and overwrite the values you just have entered. To save the new calibration setting press **START** button – a triple beep signal appears as a confirmation.

If something goes wrong during the calibration process, you can cancel all changes made so far at any time during the calibration by pressing **R** button.

8 Battery voltage level

In case of low battery of the power supply there appears **LO** flashing on the display. It is not recommended to use the device at low battery, because it may not work properly.



9 Maintenance

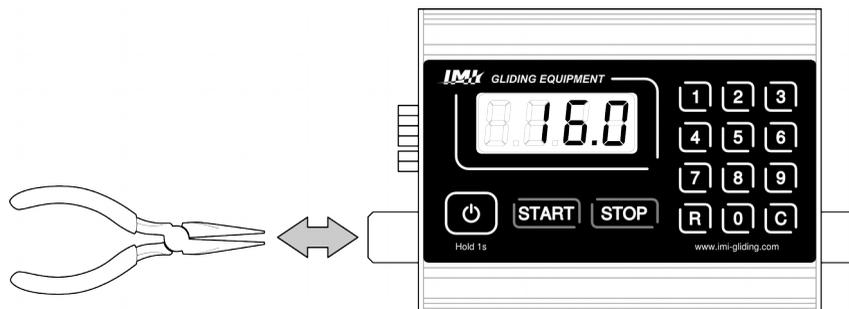
9.1 Input filter

The main valve in the device is sensitive to purity of the water and it can misbehave or be damaged in case of some mechanical particles in the water. For this reason a small filter took a place in the inlet of the valve. Usually there is no problem when water main is used but the filter might get clogged when water from water tanks is used.

To clean the filter use a small long-nose pliers like in the picture below and pull the filter out of the inlet of the valve. Be careful because the filter is very

fine and easy to damage. When the filter is out wash it in clean water and put it back at the same place.

Never use the device without filter. It can lead to damage off the device and will invalidate warranty.



10 Storage

Keep the device in a dry place with temperature between 0°C and 50°C. Before any long-term break in usage always disconnect the hose(s) and drain all the water from the device.

Do not leave it exposed to rain.

NEVER leave the device in temperatures below 0°C if there still remain some water in it! It can lead to damage of the device.

11 Accessories

All the current accessories available are always listed on our website www.imi-gliding.com.

Information contained in this document is subject to change without notice.
This document replaces all the previous revisions of the document.

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