

DRY GAS METER

User's Manual

Part Number: 50-6162

From serial number 19172 onward



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Warranty

Research Use Only

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Hugo Sachs Elektronik (HSE) warrants the Dry Gas Meter for a period of one year from the date of purchase. At its option, HSE will repair or replace the unit if it is found to be defective as to workmanship or materials. This warranty does not extend to any instrumentation which has been (a) subjected to misuse, neglect, accident or abuse, (b) repaired or altered by anyone other than HSE without HSE express and prior approval, (c) used in violation of instructions furnished by HSE. This warranty extends only to the original customer purchaser. IN NO EVENT SHALL HSE BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. Some states and regions do not allow exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR USE, OR OF ANY OTHER NATURE. Some states or regions do not allow this limitation on an implied warranty, so the above limitation may not apply to you. Without limiting the generality of the foregoing, HSE shall not be liable for any claims of any kind whatsoever, as to the equipment delivered or for non-delivery of equipment, and whether or not based on negligence. Warranty is void if the device is changed in any way from its original factory design or if repairs are attempted without written authorization by HSE. Warranty is void if parts or connections not manufactured by HSE are used with the Dry Gas Meter. If a defect arises within the warranty period, promptly contact Hugo Sachs Elektronik, Gruenstrasse 1, D-79232 March-Hugstetten, Germany by phone at +49(0)7665/9200-0 or email sales@hugo-sachs.de. In the USA, call 800-272-2775 or 508-893-8999 or email: support@hbiosci.com). Goods will not be accepted for return unless an RMA (Returned Materials Authorization) number has been issued by our customer service department. The customer is responsible for shipping charges. Please allow a reasonable period of time for completion of repairs, replacement and return. If the unit is replaced, the replacement unit is covered only for the remainder of the original warranty period dating from the purchase of the original device. This warranty gives you specific rights, and you may also have other rights, which vary from state to state.

Warranty

Out of Warranty Service

Proceed exactly as for Warranty Service on previous page. If our service department can assist you by phone or other correspondence, we will be glad to help at no charge. Repair service will be billed on the basis of labour and materials. A complete statement of time spent and materials used will be supplied. Shipment should be prepaid. Your bill will include return shipment freight charges. Disassembly by the user is prohibited. Service should only be carried out by experienced HSE technicians.

Repair Facilities and Parts

HSE stocks replacement and repair parts. When ordering, please describe parts as completely as possible, preferably using our part numbers. If practical, enclose a sample photo or drawing.

Safety Information

Please read the following safety precautions to ensure proper use of your Dry Gas Meter. If the equipment is used in a manner not specified, the protection provided by the equipment may be impaired.

Use Proper Input Plug

Use only the specified input plug for this product and make sure Input Plug is certified for country of use

Make Proper Connections

Make sure to use the appropriate connection for your country. Attach the connectors of the Dry Gas Meter Micro-USB Power supply always correctly to the input socket at the control unit on the upper side of the Dry Gas Meter and the power socket. Never increase the connection cable length longer than 3 meters.

Observe All Terminal Ratings

Review the operating manual to learn the ratings on all connections.

Avoid Exposed Circuitry

Do not touch any electronic circuitry inside of the product.

Do Not Operate with Suspected Failures

If damage is suspected on or to the product do not operate the product. Contact qualified service personnel to perform inspection.

Orient the Equipment Properly

Do not orient the equipment so that it is difficult to manage the connection and disconnection of devices.

Place Product in Proper Environment

Review the operating manual for guidelines for proper operating environments.

Observe all Warning Labels on Product



CAUTION Refer to manual. Read all labels on product to ensure proper usage.

Caution Notice



CAUTION: FOR RESEARCH USE ONLY. NOT FOR CLINICAL USE ON PATIENTS.

The unit itself does not generate waste but may be used with samples that are hazardous. Please use appropriate PPE and ensure disposal in accordance with local regulations and practices. This product should not be used in the presence of a flammable atmosphere such as an anaesthetic mixture with air, oxygen, or nitrous oxide.

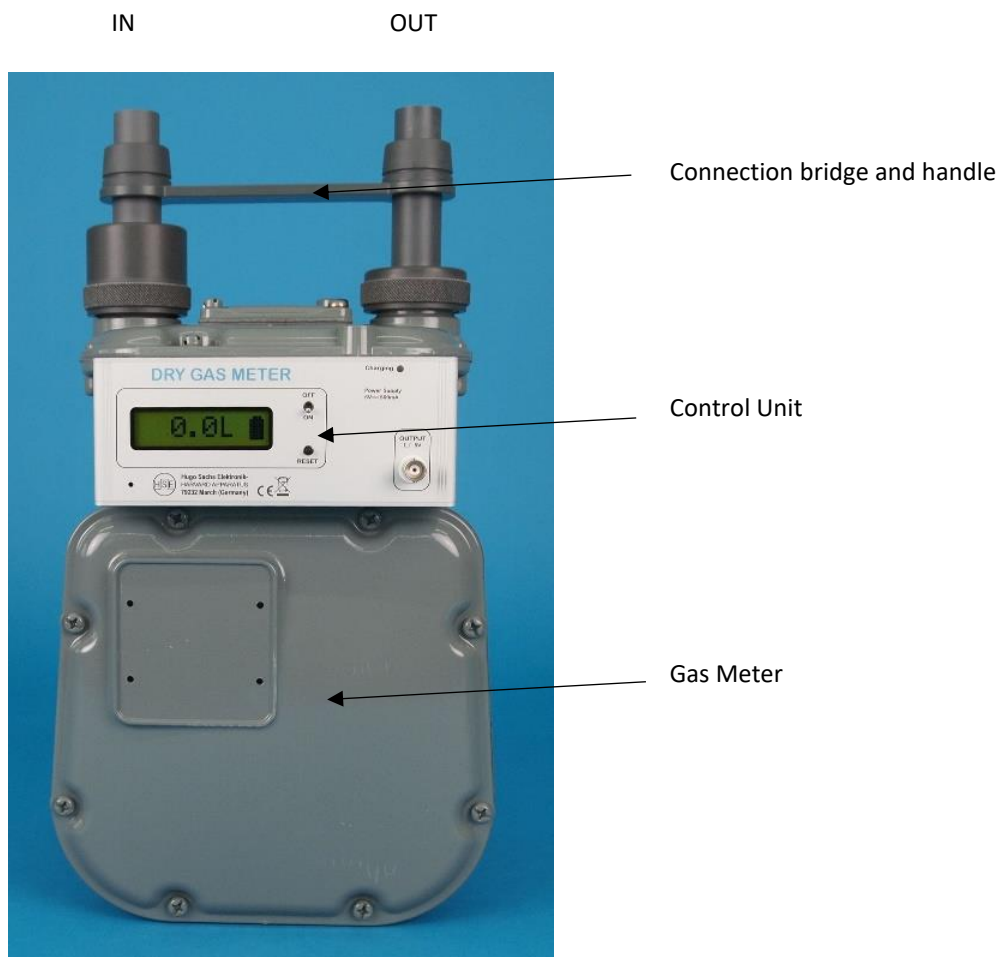
Compliance

These systems have been designed to meet the standards for electromagnetic compatibility (EMC) intended for laboratory equipment applications as well as the applicable safety requirements for electrical equipment for measurement, control, and laboratory use.

Introduction

This User's Manual explains the installation, function and use of the Dry Gas Meter. Carefully read the operating instructions as well as other materials in this manual.

This manual is not a warranty of product performance. If you need help or have questions, please contact us and we will assist you. We want you to be completely satisfied with this product.



Product Overview

This unit is primarily intended for the volumetric measurement of respiratory gases collected in Douglas bags. The use is limited to measure respiratory gases and room air only.

It comprises of the large Gas Meter, attached to this the control unit and on top the connection bridge to fit the tubing coming from the Douglas bag IN and exhaust OUT.

Key Features (All Versions)

- The digital display has a total readout of 999.9 litres
- A reset button permits the volumes of individual Douglas Bags to be measured, otherwise the volumes can be totalled on the display
- Battery powered operation using the internal LiPo 3.7V ~1100mA rechargeable battery.
- Continuous operation using the Micro-USB 5V 500mA power supply
- Charging of the rechargeable battery with the Micro-USB 5V 500mA power supply.
- LED indicates charging status
- Parallel charging and measuring operation possible
- Bright display of measurement values, adjustable contrast
- An output socket on the front panel provides a 5V TTL logic pulse.

Unpacking & Inspection



CAUTION: The equipment contains electrostatic sensitive components. Please observe precautions for handling the Dry Gas Meter device to prevent damage.

Please first check the contents of the shipment for completeness and note whether any damage has occurred during transport. If the contents are incomplete, or if there is damage on the Dry Gas Meter or it's accessories, notify the supplier from whom you have ordered the device or Hugo Sachs Elektronik directly.

Check to ensure that all items ordered and listed are included in the shipment. The shipment includes the following items:

- Dry Gas Meter
- Multirange USB plug power supply plus microUSB cable
- User's manual (operating instructions)

Detailed Description

Main Design Features: Front



Main Design Features: Top



Detailed Description

Setting up the system

1. Position your Dry Gas Meter on a solid, even surface
2. Plug in the power cord to the Input micro-USB connector at the top of your Dry Gas Meter
3. Connect the power supply to a wall plug if you want your device to be recharged or for continuous operation
4. Connect all tubing according to your experimental setup, like the Douglas bag to the inlet connector on the top of the Dry Gas Meter
5. Switch on the Dry Gas Meter

Starting the experiment

The HSE Dry Gas Meter is ready to start immediately after switching on the measurement. The volume is automatically set to "0" upon restart.

In case you like set the display to "0", for example for a new experimental run or new Douglas bag, press the RESET button.

Recharge the Dry Gas Meter battery.

The Dry Gas Meter is equipped with a rechargeable battery. This battery is charged every time the instrument is connected to power using the Micro-USB power cable. During the recharging the LED on the front turns on blue, it switches off when the recharging process is finished.

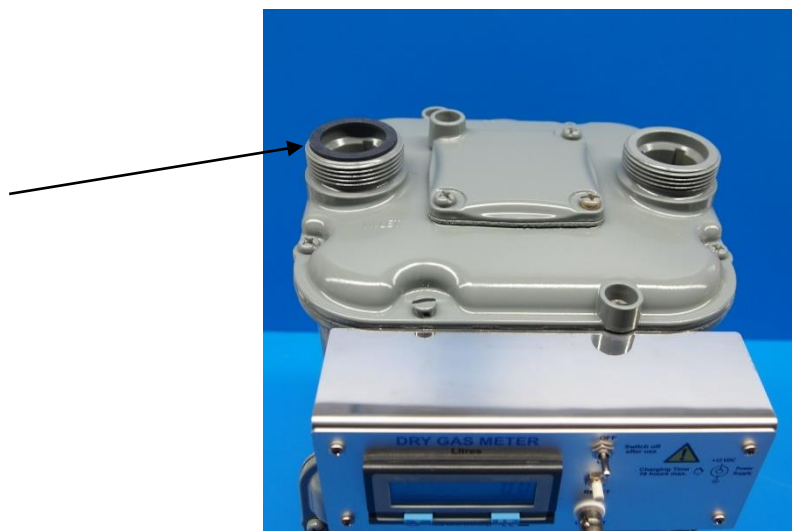
The power cable can stay connected all the time, as well during measurements. When charging during measurements the LED may turn on and off from time to time.

In case the rechargeable battery may have discharged completely, it can take up to 5 minutes before the display turns on and you can start the measurement.

The LiPo rechargeable battery has very little self-discharge but keeps the energy stored for several months.

Assembly of the tube connectors bridge

Place sealing ring on top of INLET
U40148 (D=41 d=31 t=2,5 NBR)



Place sleeve small bore down
U40148 (D=41 d=31 t=2,5 NBR)



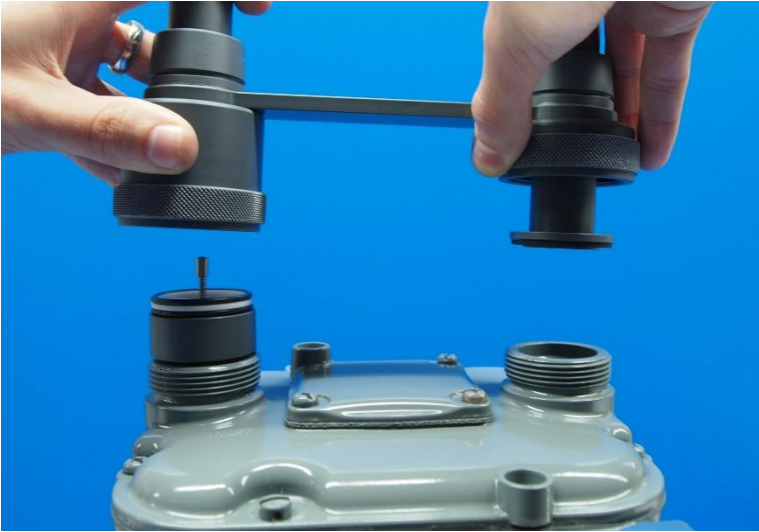
Place check valve with O-ring on BOTH
sides



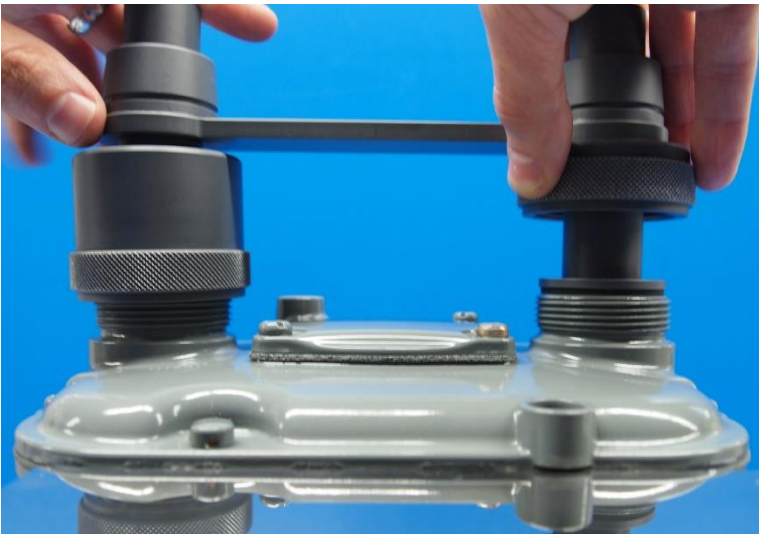
Push sealing OVER the OUTLET side tube



Hold the bridge with ferrules pushed upwards and position bridge carefully on the INLET and OUTLET connectors



Check the good fit and tighten ferrules by hand



Specifications

Width:	22cm
Hight:	42cm
Depth:	24cm
Weight:	5.7kg
Rechargeable Battery	3,7V ~1100mA
Power cable	USB 2.0 A to Micro-USB B
Wall plug	USB 5V 2A universal plug for D, CHINA, USA, GB
Operating Temperature	4°C to 40°C (40°F to 104°F)
Storage Temperature	10°C to 70°C (14°F to 158°F)
Operating and Humidity	20% to 80% RH, non-condensing
Mode of Operation	Continuous
Classification	Class II
Pollution	IP2X
Installation	Category

Servicing and Maintenance

The Dry Gas Meter series does not require any special maintenance.

For routine maintenance, it is important to carefully clean the housing and display to remove dirt and residue. Light soiling can be removed with a damp cloth without detergent. For organic residues like oil, grease or an adhesive residue, use an alcoholic cleaning agent like isopropanol. In all cases be careful that no cleaning agent enters the housing or the display.

If your cleaning process is not successful, e.g. if the inside of the control unit is contaminated with saline solution, please do not open the housing. In this case, it is necessary to send your Dry Gas Meter back to us for service and repair. Later damage due to corrosion is very expensive to repair.

Return Shipment

To send back the equipment it is essential to have very good packaging. It is best to use the supplied storage box together with an additional packaging around the plastic box.

Order Information

Part Number	Description
50-6162	DRY GAS METER, with USB 2.0 A to Micro USB B cable and universal USB 5V 2A wall plug, including plug adapters for D, CHINA, USA, GB