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Temporary

Operating Instructions

Oxygen Meter AM39

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1 Overview

The microcontroller based meter AM39 in connection with the oxygen sensor MF 41 BK realizes reliable measurement of the dissolved oxygen content and temperature in surface water, fish farming and water technology.
The application of a special designed meter AM 39 K with a oxygen/temperature profile probe and the patented automatically temperature compensation, which coat an wide temperature range, enables also the observation of the air ventilation during the rotting process in innovative composting plants.
The meter AM 39 features high accuracy, rugged waterproof plastic enclosure and easy handling with only 3 pushbuttons. In operation are the button ON, OFF (for the device) and ON/OFF for Cal (Calibration), LOG (data logger). All further adjustments can be comfortable preadjusted by the PC software program. The device has integrated an data logger with real time clock.
An integrated wake up function switched on the device (after a preadjusted interval) automatically, take in the record and goes after this procedure renewed in the condition OFF.
About 3.200 data sets with date and time can so be store about a long time period.
Immediately after switch on the device AM 39 you can measure, if the sensor was permanent connected with the AM 39 (durable polarization by means of the battery insides of the device).

2 Oxygen Meter AM39

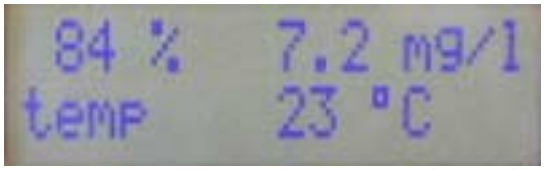
2.1 Connection Diagram and Start-up

Device connections

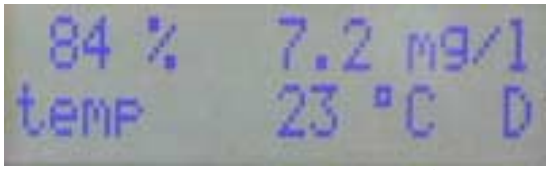
The switch on of the device is carry out by short pressing the button ON.
Switch off is carry out either after 10 minutes automatically without any pressing of button or by data communication with PC/Laptop or by long (approx. 5 sec.) pressing of the button "cal/off".
Please use by connection of the AM 39 to the PC only the delivered cable of Sensortechnik Meinsberg.
For protection of the plug connector in the presence of moisture and with it combined corrosion, the sensor should be connected every time to the device. Seal the RS232 jack with the mounted screw cap.

2.2 AM 39 Data logger function

The internal data logger of the device has an capacity of about 3,200 data sets. Date, time, oxygen value in %, solubility in mg/l and temperature in °C get saved. This is one data set.
The adjustment as well as the reading/delete is only possible by the PC. By carrying out of this procedure you have to connect the RS232 of the device to the PC with the delivered cable.
For setup of the data logger you have to adjust the interval time. This time regulate the memory interval and is adjustable from 1 minute (running time approx. 4 days) up to 999 minutes.
After the end of this time it will give up a data set in the memory.
If the device is in this moment not active, the device switched on automatically, registered the data set and switched off automatically. With the button "LOG" you can switch on or switch off the data logger. Identified will the active data logger by the "D" in the end of the second display line.
Please look to this topic also in section „3.5 Data logger reading and configuration"



Datalogger „Off“



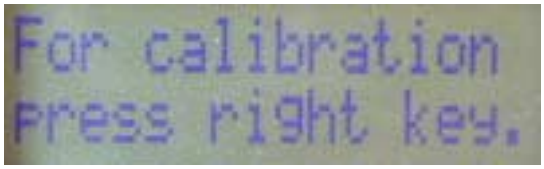
Datalogger „On“

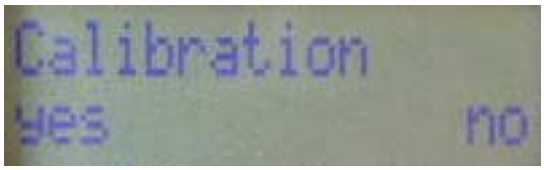
2.3 Calibration with pushbutton

The oxygen calibration is a single point calibration. For calibration medium you can use the ambient air. For calibration the sensor needs adequate time (temperature balance of oxygen probes with the measuring or calibration medium). If not it is possible that you will have a incorrect measurement result caused by wrong temperature compensation.

Calibration steps:

1. Sensor in contact with the ambient air. Waiting for an adequate temperature balance time. This time duration can be up to 1.5 hours. Avoid the direct sun radiation to the sensor and note a wind protected.
2. If the device in status OFF, than switch on the AM 39.
3. Press the button CAL/OFF for starting the calibration mode. Now you will see 2 dialogue fields, which you have to confirm.





4. Have you confirmed both dialogue fields, than the device calculated the new calibration factor.
5. Is the new calculated calibration factor within one for the sensor pretended tolerance field, the calibration is closed and you will receive the display message “Calibration ready”. If you will see a warning message in the display “wrong calibr.”, than the calculated calibration values are outsides of the permissible tolerance field. Maintenance or exchanging of the sensor is necessary.

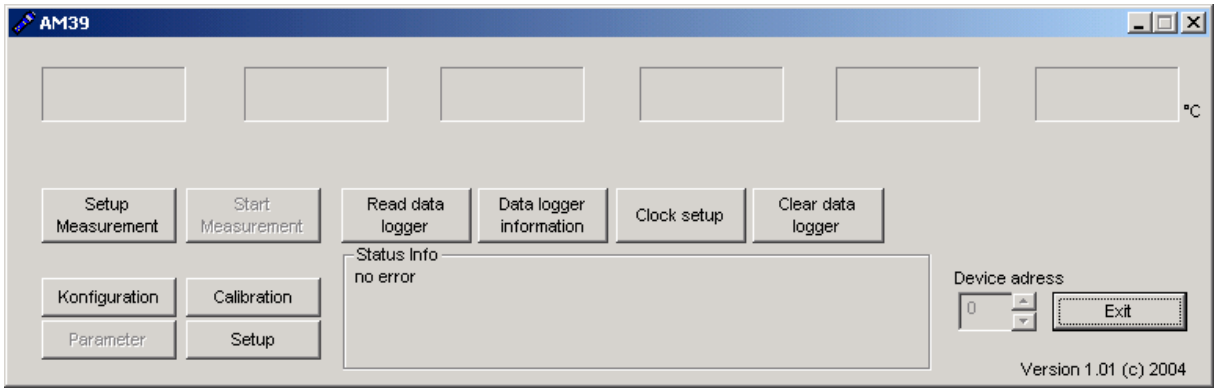
2.4 Battery exchanging

Is the battery in low condition, the device show you in the display “LOW BATTERY!”. Every time in change with the measured temperature. We recommend you to exchange the battery. An further decreasing of the battery capacity can be in result, that you can not switch on the device, till exchanging of the old battery.
Before exchanging of the battery switch off the AM 39. Please use only batteries from the type 9-V-block. Please close correct the battery compartment, so it will be avoid, that moisture will come insides in the device. After 15 minutes running time the Oxygen Meter with sensor is ready for new measurements. We recommend you a new calibration of the senor, because the probe was disconnected from the battery power and so the permanent polarisation was interrupted.

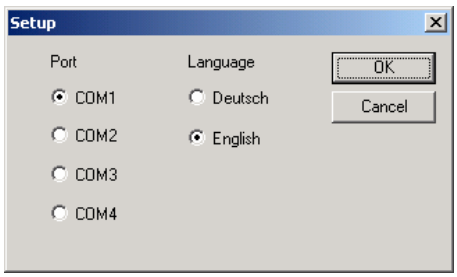
3 PC Software “AM 39”

3.1 Installation and Start up

Optional in accessories you can receive the PC software “AM 39”. It will used for configuration of the Oxygen Meter. If this software is not installed on the PC, so use for installation please the in the delivery volume contained CD Rom.
The Oxygen Meter you can connect with the PC (Win98 or higher) by using the delivered data cable. Start the software on the PC.



Before first using of the software please adjust with the switch area “Setup” the correct data interface and the user language.

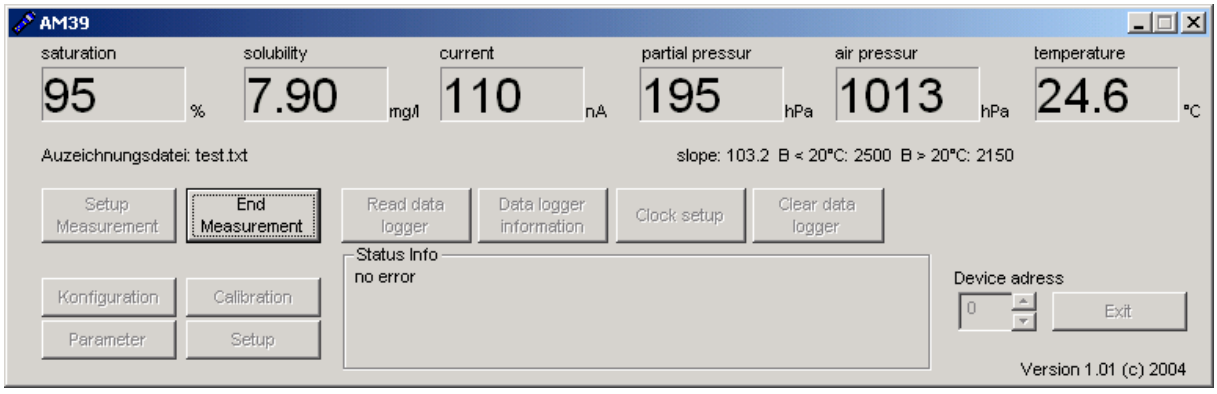


3.2 Display and store measurements

If you want to display and store actual measurement values, so you have at first to choose with the button “Setup measurement” one record file and you have to adjust an interval time. “Start measurement” will be active. The record starts after pressing of this button.

The interval time is the probe rate, with which the measuring values are write down in the selected file.
The data set is like follows:

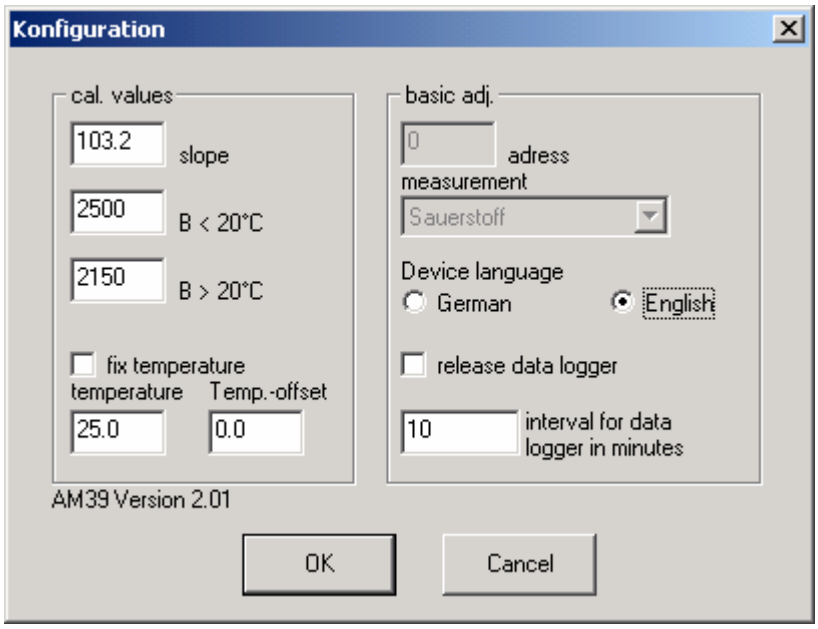
Date	time	%	°C	nA	hPa	mg/l	hPa
20.02.2004	06:45	101,9	25,6	311	209	8,32	1013



In the small display windows you see the single measuring values. So it is possible to check easy the up to date measuring values.
If all measuring tasks are carry out, you can finish the measurement by press the button "End Measurement".

3.3 Configuration

With the button "Konfiguration" all up to date adjustments were read from the device and displayed. Now you can change it if necessary. Finished will this dialogue with "OK", if you want to save the modification in the device.



Calibration values

All actual device relevant values you can see. It is possible to change the values manual. But please note, that an manual changing of values can be in result a affect adversely of the device. It is better to use the calibration functions!

Fixed temperature or adjustment of the temperature probe

It is possible to work without an internal temperature probe. Necessary in this case is to input an fixed temperature and to adjust the device for fixed temperature measurement. Just as the measuring value of the temperature probe can be covered with an OFFSET (for adjustments).

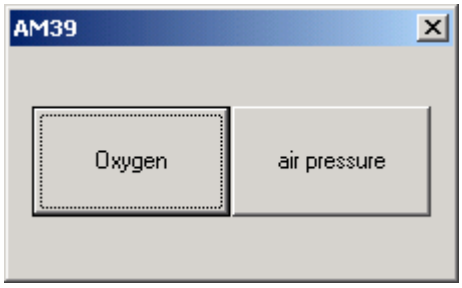
General adjustments

Here it is possible to fix the device language. All dialogues which the device offered will displayed in the selected language. This adjustment is independent from the language adjustment of this software. For this please us section "3.1 Installation and Start up".
Further in this section will fixed, if and in which time intervals the data logger write down data. The release of the data logger can be done with the button "LOG" on the device or in this dialogue field.

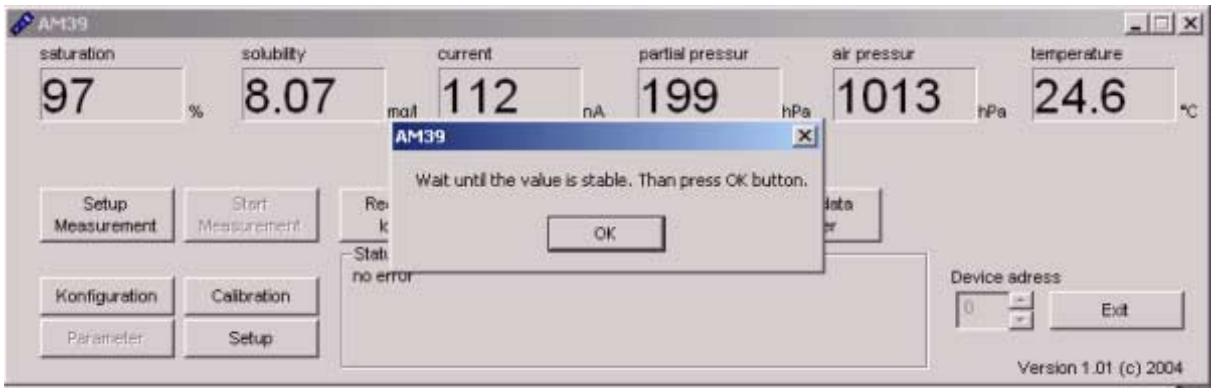
3.4 Calibration

By pressing the button "Calibration" you will get a menu supported calibration. With dialogue fields the user will guided step by step through the process.

Now you have to choose, if you will calibrate the oxygen sensor or if you will input the up to date air pressure.



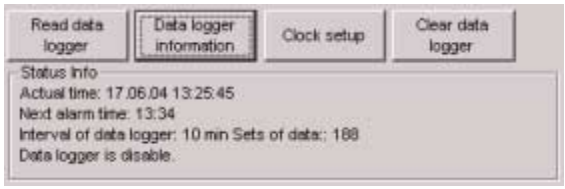
You will asked to hold the sensor in ambient air after operating with the button "Oxygen". In the same time you can find in the measuring window the up to date measured value.



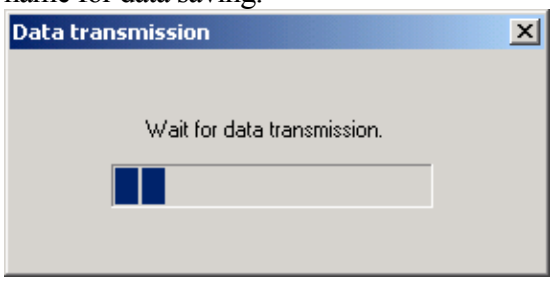
Put the sensor on a place, which is protected against direct sun radiation and against wind influence and confirm the dialogue with "OK".
Now you will receive the order to wait so long until the device displays a constant measuring value (note of the temperature balance).

3.5 Reading the data logger and configuration

The software give you support by adjustment of the data logger and by reading of the saved data. The adjustment of the interval time and the operation of the data logger we have described already in section "3.2 Configuration" and "2.2 AM 39 data logger function".



For receiving of information about up to date adjustments on the data logger, you should press the button "data logger information". You find the up to date time of the device internal clock. This time is covered the data logger. Further the next time of alarm will displayed. You receive information for the adjusted interval, the number of available data sets and you will receive an information, if the data logger is momentary active or not.
If the time is wrong, you can update the time with the button "Clock setup". The data logger use this time for the data sets time and the alarm for wake up.
For reading the saved data use the button "Read data logger". You will get a dialog to input a file name for data saving.



The data will saved in a text format, separated by tabulators. You can transmit the data in different evaluation programs.
The data protocol is like follows:

Date, time, oxygen value in %, solubility in mg/l, temperature in °C

```
19.03.04    05:16 99    8,0   26
19.03.04    05:17 98    8,0   26
19.03.04    05:18 98    8,0   26
19.03.04    05:19 98    8,0   26
19.03.04    05:20 99    8,0   26
```

The correct take out of data transmission will displayed in the dialogue field "Data transmission" and it will take any minutes by full memory (max. capacity approx. 3.200 data sets).
By reaching of the end of data transmission no further data set will written. Therefore we recommend you to delete the data logger after reading. You can delete the data logger by the button "Clear data logger". The data logger information displayed below the point "Sets of data" 0 (Zero).

4 Dissolved Oxygen Sensor

A detailed description for operation with the dissolved oxygen sensor MF 41 BK you will find in the "Operating Instruction Meinsberg Dissolved Oxygen Probes MF 41, MF 41 BK … 43". The operating instruction is content of the delivery.

5 Specification to the Oxygen Meter AM 39

Measuring ranges	0,00 … 20,00 mg O_2 /l 0,0 … 200% -saturation -5,0 … 50,00°C
Temperature compensation	automatically, 5 … 80°C adjustable
Data storage	about 3.200 data sets
Interface	RS-232 for configuration and data output
Display	LCD 2 lines , 7 mm
Power	battery 9 V, IEC 6 F22
Ambient temperature	-10 … 55°C (meter)
Enclosure/Dimension	IP 65, 200 x 90 x 40 mm (L x W x H)

Dissolved Oxygen Sensor

AM 39/Set	Dissolved Oxygen Sensor MF 41 BK with integrated temperature probe, diameter 12 mm, cable length 1.5 m -5 … 45 °C; flow influence < 5%

6 Delivery Volume

1 case
1 pc. Oxygen Meter AM 39
1 pc. Dissolved Oxygen Sensor MF 41 BK
1 pc. Accessories for MF 41 BK
1 pc. Operating Instructions Oxygen Meter AM 39
1 pc. Operating Instructions
Meinsberg Dissolved Oxygen Probes MF 41, MF 41 BK…43
1 pc. Battery
1 pc. Quality Certificate

optional:
1 pc. CD Rom AM 39 (PC software program)
1 pc. RS-232 interface cable for connection PC/AM 39