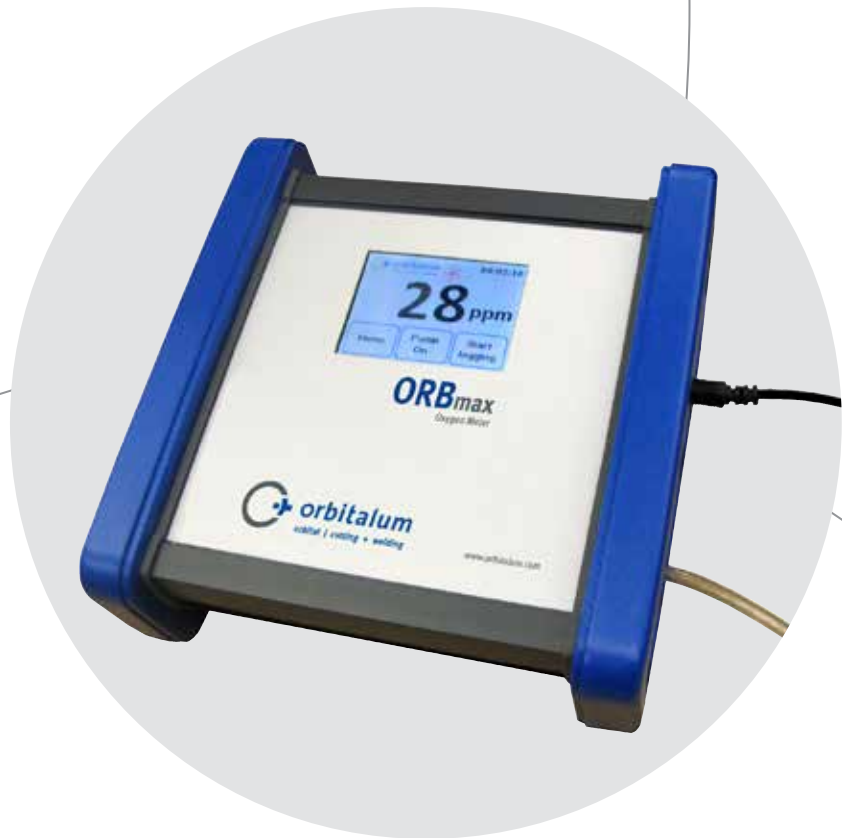# orbitalum

orbital | cutting + welding

Operating instructions

For responsible bodies and persons using the machine

Residual Oxygen Meter

ORBmax

To work safely with this device, please
read through the operating instructions
in full before initial operation.
Retain the operating instructions for
future reference.

Device No.:

TABLE OF CONTENTS

1. ABOUT THESE INSTRUCTIONS

To allow quick understanding of these instructions and safe handling of the device, all the warning messages, notes and symbols used in these instructions are presented here along with their meaning.

1.1 Warning messages

In these instructions, warning messages are used to warn you against the dangers of injury or material damage. Always read and observe these warning messages!

⚠️	This is a warning symbol. It should warn you against dangers of injury. Follow all instructions which are identified with this safety symbol in order to avoid injuries or death.

Warning symbol	Meaning
⚠️ DANGER	Direct danger! Non-observance could result in death or critical injury. ⃠ Restrictions (if applicable). ▶ Measures to prevent danger.
⚠️ WARNING	Possible danger! Non-observance could result in serious injury. ⃠ Restrictions (if applicable). ▶ Measures to prevent danger.
⚠️ ATTENTION	Dangerous situation! ▶ Non-observance could result in minor injuries.
ATTENTION	Dangerous situation! ▶ Non-observance could result in material damage.

1.2 Further symbols and displays

Symbol	Meaning
IMPORTANT NOTE	Notes: Contain particularly important information for comprehension.
🧤	Instruction: You must take notice of this symbol.
1.	Request for action in a sequence of actions: You have to do something here.
▶	Single request for action: You have to do something here.
▷	Conditional request for action: You have to do something here if the specified condition is met.

1.3 Abbreviations

Abbr.	Meaning
ORBmax	Residual Oxygen Meter

2. INFORMATION AND SAFETY INSTRUCTIONS FOR THE RESPONSIBLE BODY

2.1 Requirements for the responsible body

Workshop/outdoor/field application: The responsible body is responsible for safety in the danger zone around the device, and should allow only qualified personnel to enter the zone or operate the device in the danger zone.
Employee safety: The safety regulations described in chap. 2 must be observed and work must be carried out with safety in mind using the prescribed protective equipment.

2.2 Using the device

2.2.1 Proper use

- The device should be exclusively used for measuring the residual oxygen in forming vessels.
- Operate the device only at the voltages specified on the rating plate (Technical data, see chap. 5, p. 12).

Proper use also includes the following:

- observing all safety instructions and warning messages included in these operating instructions
- carrying out all inspection and maintenance work
- sole use in the original condition with original accessories, spare parts and materials

2.2.2 Improper use

- A use other than that defined under "proper use" or a use that goes beyond this or the specified constraints shall be considered improper use due to the potential risks involved.
- The responsible body shall be solely responsible for damages that arise through improper use and the manufacturer shall assume no liability whatsoever.
- Tools or accessories that have not been approved by the manufacturer for this device may not be used.
- The removal of safety equipment is not permitted.
- Do not misuse the device.
- The device is not intended for use by private consumers.
- The technical values defined for normal operation must not be exceeded.

2.2.3 Limits of the device

- Keep your working area clean. Disorder or unlit working areas can lead to accidents.
- The workplace can be in pipe preparation, in plant construction or in the plant itself.
- A radial space requirement/freedom of movement of approx. 2 m around the device is required for people.
- Work lighting: min. 300 Lux.
- Operator age: at least 14 years old and without physical impairments.
- Operated by one person.
- Climate conditions: Temperature range for device operation: 0 °C to 40 °C

2.3 Environmental protection/disposal

2.3.1 Electric tools and accessories

Discarded electric tools and accessories contain large quantities of valuable raw and synthetic materials that can be recycled. Therefore:

(as per RL 2002/96/EC)

- Electrical (electronic) devices that are marked with the symbol at the side may not be disposed of with household waste in accordance with EU regulations.
- By actively using the available return and collection systems, you actively contribute to the reuse, recycling and utilization of electrical (electronic) devices.
- Used electrical (electronic) devices contain parts that must be handled selectively according to EU regulations. Separate collection and selective treatment is the basis for environment-friendly disposal and the protection of human health.
- Appliances and products that you bought from us after August 13, 2005 will be disposed of in accordance with legal standards after they have been supplied to us at no cost.
- We may refuse to accept old appliances that pose a risk to human health or safety due to contamination produced during use.
- The end user is responsible for disposing of used appliances introduced to the market before August 13, 2005. Please contact a disposal center near you for this purpose.
- **Important for Germany**: our products may not be disposed of in municipal disposal sites as they are only used for industrial purposes.
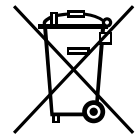
2.4 Basic safety instructions

The Residual Oxygen Meter (hereinafter referred to as ORBmax) is designed using state-of-the-art technology for safe use. The risks involved in using the machine are described in the operating instructions below. Using this machine in a way other than that described in these instructions can lead to serious physical injury and material damage.

Therefore:

- Observe warning messages at all times.
- In addition to these operating instructions the general safety precautions of the welding machines together with which ORBmax is used apply. Store all documentation near the device.
- Generally valid regulations for the prevention of accidents must be observed.
- Observe country-specific regulations, standards and guidlines.
- Use the device only in proper operating order. Observe the maintenance information (chap. 9, p. 22).
- Use the device only when it has a solid footing. Check whether the substrate is able to take sufficient loads.
- Report deviations in operating behavior of the device to the person in charge immediately.
- Use only original tools, spare parts, materials and accessories from Orbitalum Tools.
- Repair and maintenance work on the electrical equipment may only be carried out by a qualified electrician.
- Switch the device off and unplug the power plug before carrying out transportation, cleaning, maintenance and repairs.
- Do not carry the device by the cable and do not use the cable to pull the power plug out of the socket outlet (except in case of an emergency). Protect the cable against heat, oil and sharp edges (shavings).

⚠️ DANGER	**If the mains cable is damaged, live parts may cause death if touched directly!** Fatal electric shock. ⊘ Do **not** operate the device unattended. ▶ Keep the power cable away from heat, oil, sharp edges or moving device parts. ▶ During processing, always keep an eye on the position of the mains cable. ▶ Keep the device clean, always remove lubricant or other residues from the device.
⚠️ DANGER	**Damaged insulation!** Fatal electric shock. ⊘ **Do** not screw signs to the device. ▶ Use stickers.
⚠️ DANGER	**Damaged plug!** Fatal electric shock. ⊘ **Do not** use adapter plugs with ground protected electrical tools. ▶ Connecting plugs of the device must fit into the outlet.
⚠️ DANGER	**Grounded body!** Fatal electric shock. ▶ Avoid contact with grounded surfaces such as tubes, heating, cookers or refrigerators.
⚠️ DANGER	**Safety components that are contaminated, worn or broken are defective!** The failure of safety components can cause physical injury. ⊘ Do **not** misuse the cable, for example by suspending or carrying the device by the cable. ▶ Replace defective safety components immediately and check them daily to ensure proper operation. ▶ Replace defective mains cable immediately by a specialist. ▶ Clean and maintain the device after every use. ▶ Keep cables away from heat, oil, sharp edges and moving equipment parts. ▶ Check the device daily for externally visible damage and defects and have them remedied by a professional if necessary.
⚠️ WARNING	**Danger caused by vibration and unergonomic, monotonous work!** Discomfort, tiredness and disruptions to the locomotor system. Limited ability to react, and cramps. ▶ Do relaxation exercises. ▶ Ensure activity is varied. ▶ Assume an upright and relaxed posture when working.

3. PRODUCT DESIGN

3.1 **ORBmax**

For accessories and consumables (e.g. power supply unit, measuring hose, filter, etc.), see as of chap. 3.2.

1. Touch screen (description, see chap. 8.1)
2. Gas inlet / Connection measuring hose
3. Gas outlet
4. Connection of interface cable
5. Connection of power supply unit
6. ON/OFF toggle switch
7. Protective cover
8. SD card port

3.2 **Accessories and consumables**

⚠️ WARNING	**Danger presented by using poor-quality accessories and tools not approved by Orbitalum Tools!** Diverse physical injuries and material damage. ▶ Use only original tools, spare parts, materials, and accessories from Orbitalum Tools.

3.2.1 **Measuring hose set**

Including:

• 1 hose (please specify the hose length in meters when ordering)
• 1 filter for protecting the oxygen sensor against soiling
• 2 filter inserts
• 1 test tip
• 1 hose connector

All individual parts are already included in the scope of delivery of the ORBmax.

Article	Code
Measuring hose set	**882 050 006**

3.2.2   Individual parts for measuring hose set

All individual parts are already included in the scope of delivery of the ORBmax.

Article	Code
Hose*	882 012 010
Filter	882 020 003
Filter inserts (5 piece per packing unit)	882 030 002
Test tip	882 012 011
Hose connector	882 012 012

*   *Please specify the hose length in meters when ordering.*

3.2.3   Power supply unit set

100 - 240 VAC / 12 VDC. For connecting the ORBmax to the mains network.
Including diverse country-specific AC adapters.

Article	Code
Power supply unit set	882 012 023

3.2.4   Interface cable

For connecting the ORBmax to the ORBIMAT orbital welding power sources of Orbitalum Tools.
Can be set at ORBIMAT so that welding can only be started after the oxygen value has been underpassed.

1 interface cable is already included in the scope of delivery of the ORBmax.

Article	Code
Interface cable	882 012 028

3.2.5   SD card

1 Gbyte. For measured data storage.
Evaluation software "O2_log" included.

1 SD card including evaluation software is already included in the scope of delivery of the ORBmax.

Article	Code
SD card (1 GB)	882 050 007

3.2.6 Protective cover

Practical protective cover that can be converted into a stand when rolled together on the device rear.

1 protective cover is already included in the scope of delivery of the ORBmax.

Article	Code
Protective cover	**882 001 013**

3.2.7 Transport case

Robust transport case with degree of protection IP67.

1 transport case is already included in the scope of delivery of the ORBmax.

Article	Code
Transport case	**882 050 008**

4.   FEATURES

The ORBmax residual oxygen meter is characterized by the following properties:

4.1   Properties of the sensor

- Novel optical sensor technology (patented)
- No heating period required
- High measuring precision
- Measuring of forming gas with variable hydrogen content without switching over
- Measuring of the residual oxygen value in all gas mixtures
- No uncontrolled measured value increase during the welding process through arising ozone
- Measuring of the residual oxygen value during the welding process
- Rapid reaction times
- Water-resistant
- Maintenance-free (we recommend annual calibration of the sensor)

4.2   Further properties of the ORBmax

- SD-card storage of the measured value
- User-friendly touch screen
- Alarm mode with signal (beeper) as well as change in display color (green/red)
- Degree of protection IP32
- Adjustable alarm or limit value and storage interval
- Multi-range voltage supply
- Evaluation software "O2_log" included
- Connection possibility to ORBIMAT orbital welding power sources
- Appealing and compact design
- Transport case with protection class IP67

5. TECHNICAL DATA

Dimensions (lxwxh)	[mm]	215 x 200 x 74
	[inch]	8.46 x 7.87 x 2.91
Weight, approx.	[kg]	2
	[lbs]	4.4
Protection class device	[class]	IP32
Protection class transport case	[class]	IP67
Power connection	[V, Hz]	AC 100 - 240 V, 50 - 60 Hz
Measuring range	[ppm]	1 - 999

6.   INCLUDED IN DELIVERY, STORAGE AND TRANSPORT

6.1   Included in delivery

6.1.1   Checking the parts of delivery

- Check delivery for completeness and damage caused by transport.
- Report any missing parts or damage caused by transport to your supplier immediately.

6.1.2   Included in delivery

Subject to modifications.

- 1 ORBmax Residual Oxygen Meter
- 1 transport case
- 1 power unit supply set 100 - 240 VAC / 12 VDC
- 1 measuring hose (with test tip and filter)
- 1 SD card incl. evaluation software "O2_log"
- 1 interface cable
- 2 reserve filter inserts
- 1 operating instructions

6.2   Storage and transport

⚠ DANGER	**Fatal electric shock!** ▶ Before each transport or change in the workplace, switch the device off and pull the power plug. ▶ Always transport and store the device in the original transport case.
⚠ ATTENTION	**Improper device storage!** Diverse physical injuries and material damage. ▶ Always transport and store the device in the original transport case.

The ORBmax is a portable device. Special resources are not required for transportation.

7.   INITIAL OPERATION

IMPORTANT   Observe the operator information and safety instructions in chap. 2, p. 5.

7.1   Setting up the device

1. Take the ORBmax out of the transport case and place it on a sufficiently stable load-bearing base.
2. Fold the protective cover upward and to the rear (see figure). The protective cover can be converted into a stand when rolled together on the device rear.

7.2   Connecting the ORBmax

1. Connect the device connection end (gas inlet) of the measuring hose (1) to the ORBmax.
    Removing the hose later: Press in the blue ring (2) lightly and pull out the measuring hose (1).

IMPORTANT   The measuring hose (1) must be inserted firmly so that it does not slip out when pulled lightly!

2. Connect the power supply unit (3) to the device and connect the other end to the mains network.
3. The ORBmax can be connected to an ORBIMAT orbital welding power source with the interface cable (4) (see chap. 8.5, p. 21). This allows the information whether the residual oxygen value exceeds or underpasses the value preset at the ORBmax to be displayed at the power source (function only possible at orbital welding power source from Orbitalum Tools).
4. Use the ON/OFF toggle switch (5) to switch the ORBmax on.

The main display or the touch screen starts up and the ORBmax is now ready to use. Measurement can now be started or the presettings carried out.

8.   OPERATION

IMPORTANT   Observe the operator information and safety instructions in chap. 2, p. 5.

▶   The ORBmax is operated solely via the **touch screen** of the **main display**.
    See chap. 8.1 for a description of the function of the **main display elements** and chap. 8.2 of the various **control and setting keys**.
▶   **Carrying out the presettings** such as language, date, time (only during initial commissioning), see chap. 8.2.3.
▶   **Carrying out the measurement**, see chap. 8.3, p. 17.
▶   **Evaluating the measurement**, see chap. 8.4, p. 17.

8.1   Touch screen (main display elements)

The **residual oxygen value** (6) is displayed on the screen in the middle in large numbers in the measuring unit "ppm" (parts per million). The number "999" is displayed as a dummy value (placeholder value) whenever the device is switched on and as long as no measurement is being carried out.

The current **time** (7) is displayed at the top right.

The 3 **control and setting keys** (8) are used to control the ORBmax or to preset specific parameters (chap. 8.2).
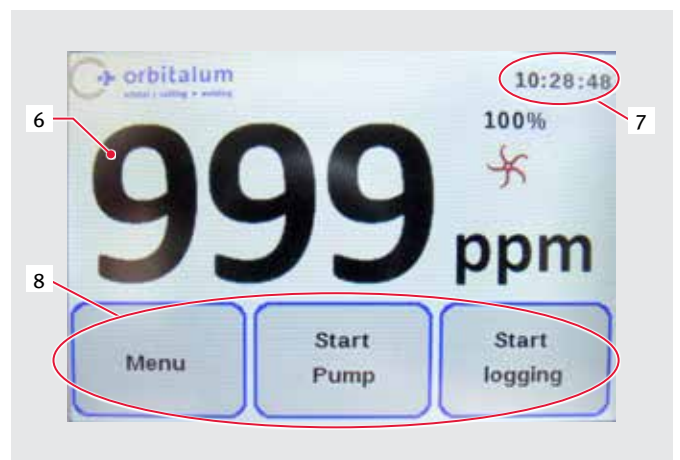
8.2   Control or setting keys

8.2.1   "Start logging" key

The "*Start logging*" key (9) is used to start a logging process.

NOTE   This process is not required when a measuring result is only to be displayed on the ORBmax and not recorded.

The measured value is subsequently stored on the SD card at a previously defined interval. The value can be read afterwards at a PC with Microsoft Excel or a text editor or be evaluated with the evaluation software "*O2_log*" (see chap. 8.4.3, p. 19).
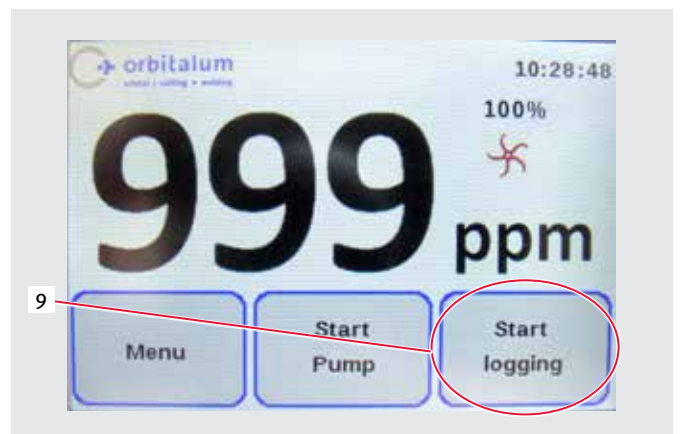
After the "*Start logging*" key (9) has been pressed, a welding seam number (max. 6 digits) under which a measurement is to be stored afterwards on the SD card has to be entered first.

8.2.2 "Start pump" key

The "*Start Pump*" (10) key is used to switch the pump on and off and the actual measuring process is started.

The *wheel* (11) on the main screen rotates while the pump is running. When the pump is standing still, the wheel also stands still.
The *pump output* (12) is only displayed during a measurement and can be preset in the menu under "*Pump Power*" (see chap. 8.2.3).

Presettings for a measurement/measuring series are carried out in the "*Menu*" (13) (see chap. 8.2.3).
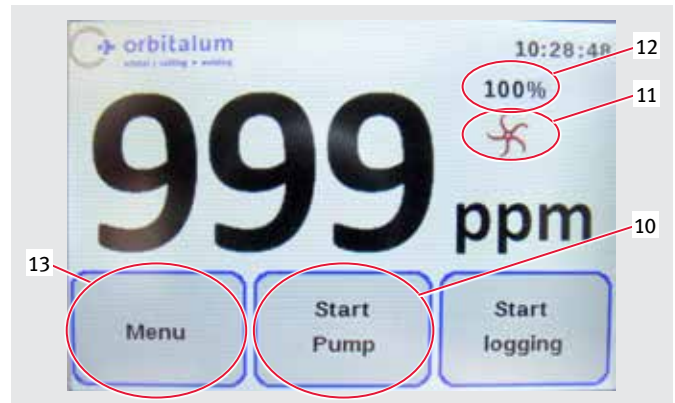

8.2.3 "Menu" key

The "*Menu*" key (13) – see figure above – is used to access the main menu.

Several setting options are available:

The menu language can be set to German or English in the "*Language*" (14) menu item.

In the case of forming applications with a low volume flow the pump power can be reduced (for example 50% pump power = approx. 1.5 l, 100% = approx. 3 l) by means of the "*Pump Power*" (15) key (selection options: 100%/80%/50%).

The software version number installed on the device is displayed under "*Version*" (16).

The alarm can be activated or deactivated by means of the "*Alarm*" (17) menu. As long as the measured value (in ppm) lies over the set alarm value, a red bar is displayed on the main screen and, if this is set, a warning sound is issued ("*Alarm On with Beeper*"). If the value drops below the alarm value, the bar turns green and the beeper stops.

The value for the "*Log interval*" (18) and the "*Alarm value*" (19) of a measuring series can be set via the respective menu items.

The "*Back*" key (20) is used to return to the main display.

The "*Date*" (21) and "*Time*" (22) can be set or changed by means of the respective keys.
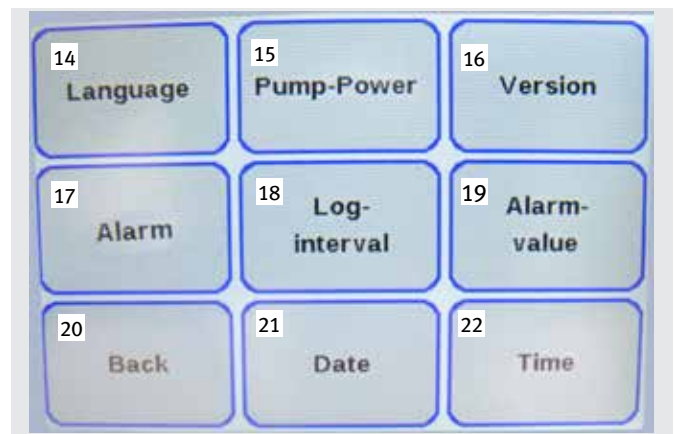
> ⓘ The current date, the time (Central European Time) as well as the menu language (German) are preset in the factory before the ORBmax is delivered.

8.3   Carrying out a measurement

1.   Connect the ORBmax and switch it on (see chap. 7.2, p. 14).
2.   Insert the measuring hose into the medium to be measured (e.g. pipe).
3.   If necessary, carry out the presettings such as "*Log Interval*" or "*Alarm value*" under "*Menu*" (see chap. 8.2.3, p. 16).
4.   Turn up the gas connection so that the gas flows into the medium to be measured.

ⓘ   Presettings in the "*Menu*" can also be carried out during a measurement!

---

5.   If necessary, press the "*Start logging*" key if a measurement is to be stored on the SD card and evaluated later (see chap. 8.2.1, p. 15).
6.   Switch on the pump with the "*Start pump*" key.

The measurement is now started. The dummy value "*999*" in the main display drops to the residual oxygen value actually measured. The fundamental rule: The lower the value, the lower the residual oxygen content.

7.   A measurement is terminated by pulling the hose out of the medium to be measured (e.g. pipe).
8.   At the end of the measurement switch the device off with the ON/OFF toggle switch.

8.4   Evaluating a measurement

The ORBmax offers the possibility to store measurements on the SD card and read them with Microsoft Excel (chap. 8.4.1, p. 17) or a text editor (see chap. 8.4.2, p. 18) and evaluate them with the supplied Windows software ("**O2_Log**", see from chap. 8.4.3, p. 19).

Per measurement one folder is created with the creation data as the folder name and the weld seam number entered before as the file name with the extension ".*CSV*" (data exchange format). You can later rename the folder and file name freely via a PC as well as delete or move files on the SD card.

The Windows software "**O2_Log.exe**" required for reading out is already stored on the SD card and can be started on the PC from the SD card.

8.4.1   Evaluating a measurement with Microsoft Excel

1.   Remove the SD card from the internal slot at the ORBmax and insert it into a suitable card reading device or if appropriate directly into the SD drive of a PC.
2.   The "*Autoplay*" window is opened. Select the "*Open folder to...*" option to open the directory with the measuring results. If the "*Autoplay*" window is not displayed automatically, the directory ("*Secure Digital Storage Device*") can also be opened in the Windows Explorer.

The content of the SD card is now displayed in the Windows Explorer.

If one or more measurements were carried out with the ORBmax, a folder with the respective creation date as the folder name is listed (the directory "*O2_Log*" contains the "*O2_Log.exe*" evaluation software developed specially by Orbitalum Tools that can be used alternatively to Microsoft Excel or a text editor for the data evaluation (see from chap. 8.4.3, p. 19)).

3.   Double-click the folder for the desired measurement to open it.
4.   Double-click the ".*CSV*" file to open it.

Microsoft Excel starts up and the file is opened. The data can now be edited individually.

Column "A"; Row "1" contains the **creation date of a measuring series**. The **measuring times** specified at a specific interval are listed below it (from Row "2") in the format "**hh mm ss**".

The **starting time of a measurement** is listed to the right of it (Column "B"; Row "1") in the format "**hh.mm.ss**". The **residual oxygen values** measured at the respective time follow below it (from Row "2") in the format "ppm".

Column "C"; Row "1" lists the **interval** in which measuring was carried out (the storage interval can be preset under "Menu", see chap. 8.2.3, p. 16).

Column "D"; Row "1" contains the **weld seam number** of a measuring series.

	A	B	C	D	E
	A1		f_x 02.04.2014		
1	02.04.2014	10.09.11	5	24	
2	10 09 16	999			
3	10 09 21	89			
4	10 09 26	16			
5	10 09 31	5			
6	10 09 36	4			
7	10 09 41	3			
8	10 09 46	2			
9	10 09 51	2			

8.4.2   Evaluating a measurement with a text editor

Opening and further editing of the measured data with a text editor is possible and is described below. However, we recommend editing the data further with Microsoft Excel or the Orbitalum evaluation software "*O2_Log*" (see from chap. 8.4.3, p. 19).

1. Remove the SD card from the internal slot at the ORBmax and insert it into a suitable card reading device or if appropriate directly into the SD drive of a PC.
2. The "*Autoplay*" window is opened. Select the "*Open folder to...*" option to open the directory with the measuring results. If the "*Autoplay*" window is not displayed automatically, the directory ("*Secure Digital Storage Device*") can also be opened in the Windows Explorer.

The content of the SD card is now displayed in the Windows Explorer.

If one or more measurements were carried out with the ORBmax, 1 folder with the creation date as the folder name is listed per measurement (the directory "*O2_Log*" contains the "*O2_Log*" evaluation software developed specially by Orbitalum Tools that can be used alternatively to Microsoft Excel or a text editor for the data evaluation (see from chap. 8.4.3, p. 19)).

3. Double-click the folder for the desired measurement to open it.
4. Right-click the ".*CSV*" file in the Windows Explorer once.
5. Then click in the "*Open with*" menu and select "*Editor*".

Or:

3. Right-click the ".*CSV*" file in the Windows Explorer once and select "*Rename*" in the menu.
4. Change the extension ".*CSV*" to ".*txt*" and then confirm with the "*Return*" key.
5. Double-click the ".*txt*" file to open it.

Microsoft Editor starts up and the file is opened. The data can now be edited individually.

8.4.3   Evaluating the measurement with the "O2_Log" evaluation software

System requirements: Operating system "Windows XP" or later.

The "*O2_Log.exe*" evaluation software developed by Orbitalum Tools can only be started if the software ".*NET Framework 4*" is installed on the PC.

---

i   ".*NET Framework 4" is a software platform developed by Microsoft for the development and execution of application programs.*

8.4.3.1   Installation of ".*NET Framework 4*" (if not already installed):

1. Remove the SD card from the internal slot at the ORBmax and insert it into a suitable card reading device or if appropriate directly into the SD drive of a PC.
2. The "*Autoplay*" window is opened. Select the "*Open folder to...*" option to open the directory with the measuring results as well as the evaluation software. If the "*Autoplay*" window is not displayed automatically, the directory ("*Secure Digital Storage Device*") can also be opened in the Windows Explorer.
3. Double-click the "*O2_Log*" folder to open it.
4. Double-click the ".*NET4 installer*" folder to open it.
5. Double-click the file "*dotNetFx40_Client_setup.exe*".

Installation of ".*NET Framework 4*" is now started. After successful installation the evaluation software "*O2_Log.exe*" can be started by double-clicking it.

8.4.3.2   Starting the evaluation software

ⓘ The evaluation software "*O2_Log*" is license-free and can be copied as often as wished. "*O2_Log*" can be started directly from the SD card or be copied to a PC and started there. If the evaluation is lost or faulty, please contact Orbitalum Tools directly or order a new SD card including software (see chap. 3.2.5, p. 9).

1. Remove the SD card from the internal slot at the ORBmax and insert it into a suitable card reading device or if appropriate directly into the SD drive of a PC.
2. In order to start the software, double-click the "*O2_Log.exe*" file in the corresponding directory in the Windows Explorer.
3. The program is started and a window called "*O2 LOG Oxygenmonitor*" is opened:
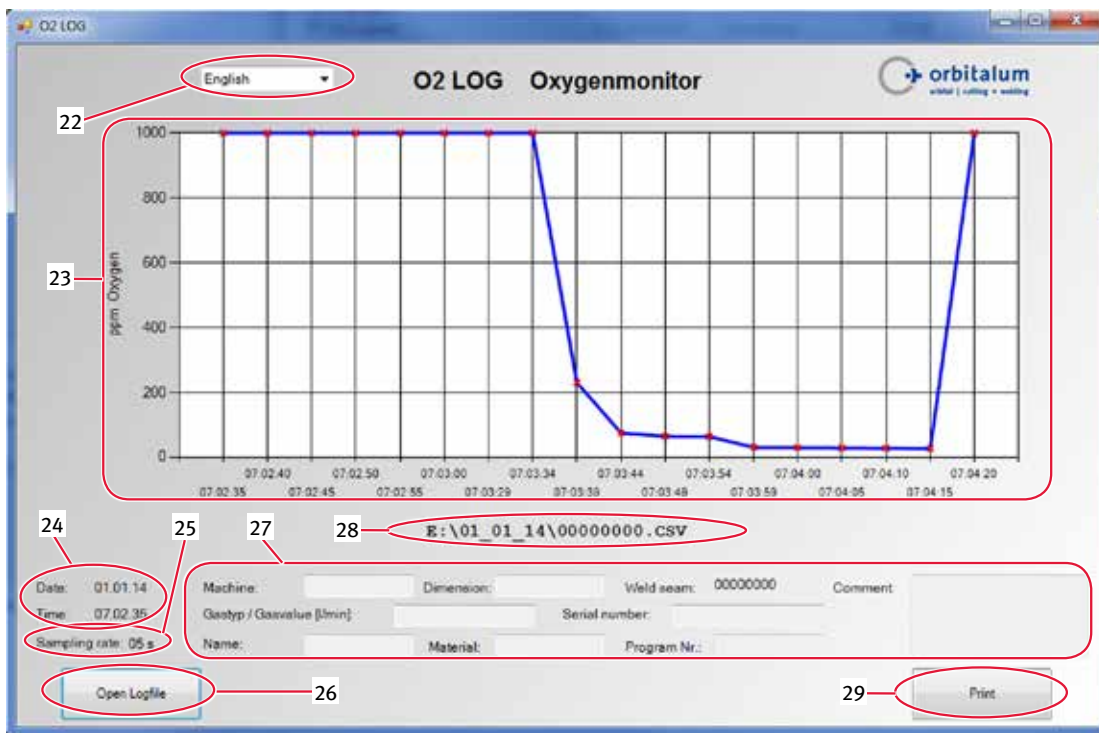
(22) Scroll-down menu for the language selection (*English/Deutsch (=German)*).

⚠ **ATTENTION**: When the language is changed, the current window is closed and a new window opened in the selected language. In the process all the entries (27) are lost and have to be re-entered!

(23) Representation of the measuring result as the relationship of "*ppm Oxygen*" (Y-axis) to "*Storage interval*" (X-axis).

(24) Date and time when the measurement has taken place.

(25) Storage interval ("*Sampling rate*") under which the measurement has taken place (e.g. "05 s" = measurement every 5 seconds).

(26) (26) "*Open Logfile*" to open a measurement or a measurement series.

(27) Individual fields that can be filled by the operator with additional information about the measurement series (e.g. which gas type was used, pipe dimension that was measured, operator name, etc.).

(28) File path or directory in which the current measurement series is stored.

(29) Print the measurement result with the "*Print*" key.

8.5   Connecting the ORBmax to the power source

The ORBmax can be connected to an ORBIMAT orbital welding power source with the supplied interface cable (4).

This allows the information whether the residual oxygen value exceeds or underpasses the value preset at the ORBmax to be displayed at the power source (display only possible at orbital welding power source from Orbitalum Tools). The power source cannot be started as long as the residual oxygen value lies above the set limit value. If the limit value is exceeded, the process is canceled and a note is entered in the log.

Connection of interface cable   *ORBIMAT CA series*

For information on operating the ORBmax in combination with the power source please read the operating instructions of the respective orbital welding power source from Orbitalum Tools.

9.   SERVICING, MAINTENANCE, TROUBLESHOOTING

NOTE	Some of the tasks named are heavily dependent on use and ambient conditions. The stated cycles are minimum values. In individual cases, different maintenance cycles are possible. To ensure the device safety, have the calibration performed annually by authorized service points with VDE testing. Should the device not function as described above, it must also be sent to an authorized service point.

⚠️ DANGER	**Danger of death by electric shock!** Non-observance could result in death or critical injury. ▶ Switch the device off and unplug the power plug before carrying out transportation, cleaning, maintenance and repairs.

⚠️ DANGER	**Risk of electric shock due to poor electrics!** Fatal electric shock. ▶ Switch the device off and unplug the power plug before carrying out transportation, cleaning, maintenance and repairs. ▶ Repair and maintenance work on the electrical equipment may only be carried out by a qualified electrician.

9.1   Maintenance

Interval	Activity
Depending on the degree of soiling	Replacing the filter insert: ▶ Open the filter at the measuring hose. ▶ Replace the filter insert. ▶ Close the filter again.
Annually	▶ The oxygen sensor is maintenance-free. However, annual calibration is recommended, as for all devices. Please send the device directly to the branch responsible for you.

9.2   What to do if? – General trouble-shooting

Problem	Possible cause	Remedy
Device cannot be switched on.	Power plug not plugged in correctly.	▶ Check whether the device or the power adapter is plugged in correctly.
	Plug power supply unit defective.	▶ Replace the plug power supply unit.
Oxygen value does not drop during measuring, but remains at the dummy value of "999".	Hose connections not plugged correctly.	▶ Check hose connections. If necessary, replug.
	Measuring hose is damaged and leaks.	▶ Check the measuring hose for damage. If necessary replace the hose.

9.3   Service, customer service & spare parts

For troubleshooting, please contact the branch responsible directly.

Please indicate the following details:

- Device type: **ORBmax** Residual Oxygen Meter
- Device No.: *(see type plate)*

For information on ordering accessories or consumables please refer to chap. 3.2, p. 8.
Please send the device directly to the branch responsible for you in order to replace spare parts at the electronic equipment.

10. EU DECLARATION OF CONFORMITY

$$C\,\epsilon$$

EG-Konformitätserklärung
Declaration of conformity
Dichiarazione di conformità
Déclaration de conformité
Declaración de conformidad

Orbitalum Tools GmbH
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as per EC Low-Voltage Directive (2006/95/EC) and EMC Directive 2004/108/EC.

Die Bauart der Maschine: The following product: Il seguente prodotto: Le produit suivant: El producto siguiente:	**ORBmax** Residual Oxygen Meter
Seriennummer: Series number: Numero di serie: Nombre de série: Número de serie:	
Baujahr / Year / Anno / Année / Año:	
ist entwickelt, konstruiert und gefertigt in Übereinstimmung mit folgenden EG-Richtlinien: was designed, constructed and manufactured in accordance with the following EC guidelines: è stata progettato costruito e commercializzato in osservanza delle seguenti Direttive: a été dessiné, produit et commercialisé selon les Directives suivantes: ha sido proyectado construido y comercializado bajo observación de las siguientes Directivas:	EMC Directive (2004/108/EC) Low-Voltage Directive (2006/95/EC)
Folgende harmonisierte Normen sind angewandt: The following harmonized norms have been applied: Le seguenti norme armonizzate ove applicabili: Les normes suivantes harmonisées où applicables: Las siguientes normas armonizadas han sido aplicadas:	**EN 55011** **EN 61000** **EN 61010-1**

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Singen, 22.01.2014

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We value your opinion! Please send us your comments and queries.

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