TecPen Weld

MANUAL

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1. Declaration of conformity

TECSENSE
unique solutions in sensor technology

EG – Conformity declaration

The producer: **TecSense GmbH**
Teslastraße 4
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Declares herewith that the following products:

Product notation: TecPen / TecWeld – Optochemical Oxygen Sensors
Type designation: TecPen / TecWeld
Serial number:
Year of manufacture: from 2017 ongoing

are in agreement with the regulations of the EG instruction (2014/30/EU) about the electromagnetic compatibility.

Following harmonised norms were applied:

ÖVE/ÖNORM EN 61326-1 Elektrische Mess-, Steuer-, Regel- und Laborgeräte – EMV-Anforderungen;
Teil 1: Allgemeine Anforderungen laut Report:
CE_Testreport_TecLab_TecPac_EN 61326_2013

ÖVE/ÖNORM EN 61326-1 Requirements on electrical measurement, steering, control and laboratory equipment
Part 1: General requirements according to the report:

CE_Testreport_TecLab_TecPac_EN 61326_2013

The electromagnetic compatibility was tested by Seibersdorf Labor GmbH.

Name of the person responsible for this document: Dr. Johannes Krottmaier
Adress: identical with the address of manufacturer

TECSENSE GmbH
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A-8074 Grambach
Tel.: +43 (0)316 40 35 80
office@tecsense.com

Grambach / 15.12.2017 / Dr. Johannes Krottmaier, CEO TecSense
Location / Date / *Person*

2. Safety and Security

2.1. General safety instructions

- Before operating this device, read the operating instructions very carefully and keep them in a safe place.
- Use the device exclusively for commercial use and the intended purpose. This device is not intended for personal use. Do not use it outdoors (unless it is intended for conditional outdoor use). Keep it away from heat, direct sunlight, moisture (never immerse in liquid) and sharp edges. Do not use the device with wet hands. If the device has become damp or wet, switch off the device immediately and, if connected, disconnect the mains plug from the power supply. Don't reach into the water.
- Always turn off the appliance and unplug the appliance from the wall outlet (pull the plug, not the cable) when not in use, attaching accessories, for cleaning or in case of malfunction.
- Check the device and cable regularly for damage. Do not put a damaged device into operation.
- Do not repair the device yourself, but visit an authorised specialist company. In order to avoid hazards, only have the defective device or power supply replaced or exchanged by the manufacturer or our customer service.
- Only use original accessories.
- The device must not be opened during operation.
- Never immerse the device in water or other liquids.
- The device must be kept out of the reach of children.
- Do not fill with solvents, alcohol or cleaning agents, you may damage the device.
- If the device is brought into a room with a large temperature difference to the environment, an acclimatization period of 1-2 hours should be observed.
- Protect the device from dirt.
- Never store the cannula without protection.
- Be careful when using the cannula. Risk of injury!
- Never drop the appliance from a great height.
- The device is designed for the invasive measurement of closed containers. The object to be measured is subsequently damaged and must not be reused.

2.2. Purpose of use

Measurement of O_2 content in gas filled containers where welding takes place.

The device may only be used for measuring the oxygen content in gas.

Under no circumstances must the instrument come into contact with liquids, organic solvents or 70% ethanol.

2.3. Modifications

2.3.1. Disclaimer

The device may not be modified, neither in terms of its construction nor with regard to the safety devices, without the express consent of CO2Meter. TesSense is not liable for damage resulting from unauthorized modifications.

The operator must obtain the opinion of the manufacturer in order to make significant modifications. As manufacturers, they have the legal responsibility for all these measures. Accordingly, the original manufacturer is released from his liability.

2.3.2. Original & Spare parts

The use of spare parts and wearing parts from other manufacturers can be a risk and considerably impair the measuring performance.

Only use original TecSense spare and wear parts.

CO2Meter does not assume any guarantee or warranty for damages caused by the use of spare and wear parts of other manufacturers than CO2Meter.

2.3.3. Other Support Information

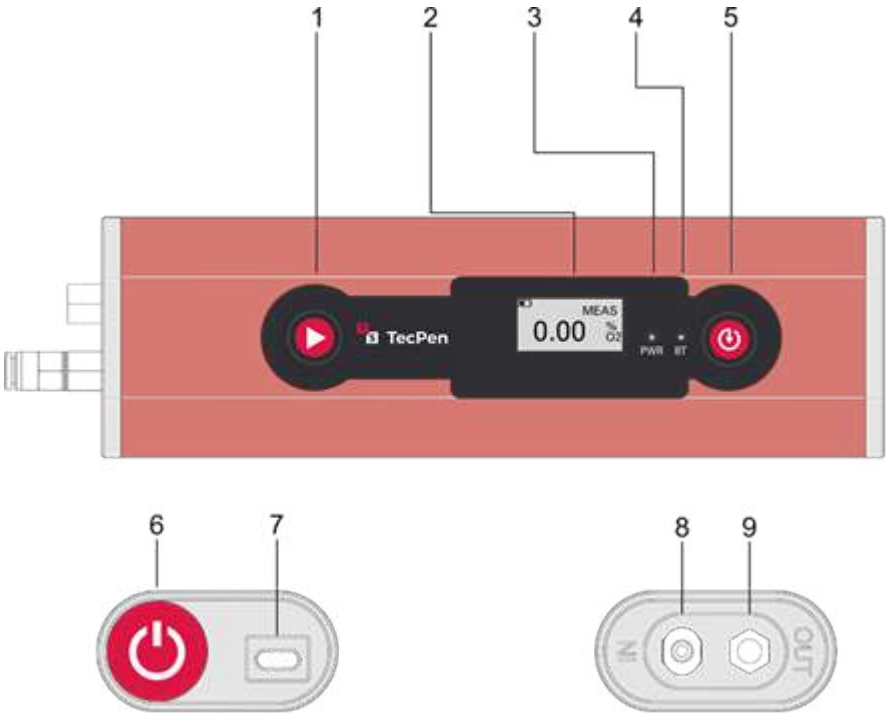
If you have any further questions about the device or spare parts, please contact us:

CO2Meter, inc.

131 Business Center Drive
Ormond Beach, FL 32174
(877) 678 - 4259
sales@co2meter.com
www.co2meter.com

3. Description

3.1. Overview



Illustrationn may differ from original

1.	**START button**	Press button: start measurement Press button again: stop measurement
2.	**Display**	
3.	**LED POWER (PWR)**	Lights up when the device is switched on
4.	**LED BLUETOOTH (BT)**	Lights up when a Bluetooth connection is established with an Android device. The LED is also used as a charging indicator.
5.	**SAVE button**	Press button: save measurement
6.	**ON/OFF button**	Press briefly: switch on device Hold down: switch off device
7.	**USB port**	
8.	**Gas outlet/waste gas**	

3.2. Operating principle

The principle of optochemical oxygen detection using the TecPen is based on the varied emission of fluorescence radiation of the fluorescent dye depending on the oxygen concentration. The dye is excited at 507 nm and the resulting fluorescence event recorded at 650 nm. The duration of this fluorescence event – known as lifetime – depends on the quantity of adsorbed oxygen in the sensor layer and can thus be used to determine the oxygen concentration.

IMPORTANT! The label of the device must not be removed or modified without the consent of CO2Meter. Ensure that the label remains legible.

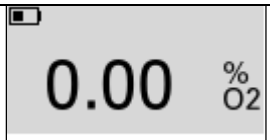
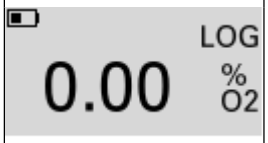
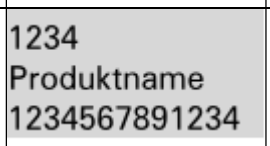
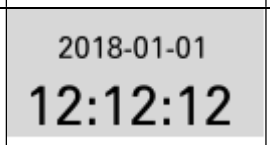
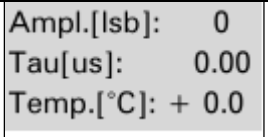
3.3. Technical data

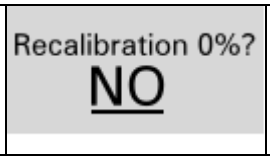
TS-System	**TecPen Weld O2**		**TecPen Weld CO2**
Measurementrange	0-2000ppm		0-100% CO2
	Range	Accuracy	Accuracy
	0-500 ppm	2% Mv* = ± 10 ppm	±70 ppm +/- 5% of measured value (100% Range ±300 ppm +/-5% of measured value
	500-1000 ppm	3% Mv* = ± 30 ppm	
	1000-2000ppm	4% Mv*	
Resolution	0,05		0,05
Responsetime at 25°C	<15s		<1min
Pump flow	400mL/min		400mL/min
Temp. range Min./Max	-10°C/ +120°C		-25°C/55°C
Medium	Gas		Gas
Power supply	5V USB and LiPo Accu		5V USB and LiPo Accu
Rechargeable battery lifetime	> 3h		> 3h
Data Interface	USB		USB
Temperature compensation	20 - 60°C		25-60°C
Display	OLED Display		OLED Display
Cleaning	no organic solvents, 70% EtOH		no organic solvents, 70% EtOH
Parts touching sample	St.1.4404 / PTFE / glass		St.1.4404/ PTFE/ Glas
Connection	USB/ Bluetooth 4.0		USB/ Bluetooth 4.0
Case	aluminum anodized		aluminum anodized
Protection	IP68		IP68
Delivery	Sensor (calibrated)		Sensor (calibrated)
Guarantee	1 Year ex works Grambach		1 Year ex works Grambach

3.4. Software description

In normal use, TecPen has 5 screens that can be viewed by pressing and holding the MEMORY button. It is not possible to switch through the screens in reverse order.

Note: Zero-point adjustment may only be carried out by CO2Meter Service.

Screen 1 Main screen	  	Battery level Measured value Temporary: Log Indicator Indicator for current measurement
Screen 2 Recipe administration		Consecutive / internal number Product name EAN code
Screen 3 Date & Time		Date Time
Screen 4 Measurement data display		Amplitude Life Temperature
Screen 5 Info screen		Serial number Device status code

Additional screen Zero point adjustment		Selection option YES / NO

4. Operation

4.1. Settings prior to start of measurement

Acclimatization	**IMPORTANT!** If the device is taken to a room with a significantly different ambient temperature, an acclimatisation period of 1-2 hours is required
Connecting TecPen to the computer	Switch on the TecPen. Use the USB cable to connect it to a computer. **IMPORTANT!** Before disconnecting the USB cable, the TecPen must be ejected properly to avoid damaging the file system. If it is not properly ejected, all data still on the device will be irretrievably lost.
Loading the recipe data	All products/recipes are saved in the Excel file provided and can be exported as a CSV file using the built-in macros. This CSV file is stored in the internal memory of the TecPen and can be opened when the device is restarted. ***NOTE:*** *we recommend that you change products/recipes in the Excel spreadsheet provided by us, as all fields that are required have already been submitted in this spreadsheet.*
Setting the time and date	Press SAVE for two seconds. Repeat this step until the date and time display appears. Press START for two seconds. ►► The year is underlined. To scroll down/decrease number: SAVE To scroll up/increase number: START After setting the year, press START for two seconds. ►► The year is saved and the next field is highlighted on the display. For month, day and time, follow points 3 and 4. Press SAVE for two seconds to save all the settings.

4.2. Performing a measurement

4.2.1. Logging onto the internal memory

Press ON/OFF to turn on the unit.	The PWR LED lights up green. TecPen Fluid indicates battery status and oxygen level with ****mg/L or ppm. After the unit has been turned on, it will take approximately 2 minutes to warm up to ensure an accurate measurement. If the instrument does not receive any input after 5 minutes, it switches off automatically.
Choosing a recipe / product	Press the SAVE button for 2 seconds. A list of preset products/recipes will appear on the display. Use the SAVE button or the START button to select the desired product/recipe. To select a product/recipe, press the SAVE button again for 2 seconds. After choosing, you will automatically return to the main screen.
Connecting the TecPen Weld lance to the site of measurement	Connect the gas inlet of the TecPen to the provided pneumatic hose. Insert the filter onto the hose and put the lance onto the filter. Insert the gas lance into the gas-filled space to be measured.
Starting the measurement	Press START immediately after connecting to the sample tap. MEAS" appears on the display, below it the O2 value, which changes continuously. If "****" appears instead of a measured value, your measured value is outside the measuring range. OR: To save your measurement from the beginning, you can start the measurement directly with the SAVE button.
Stopping the measurement	Press START to stop the measurement.
Saving the measurement	Press SAVE to save the measured values. The saving process is indicated by "LOG" on the display. The values are stored in the internal memory. A separate data file is generated for each day a measurement is started. This file contains

	measurement data and time stamps.
Transfer of saved data	Switch on your TecPen. Connect the TecPen to your computer using the USB cable. TecPen appears on your PC like a USB drive and can be transferred as a .txt file. IMPORTANT: Before removing your TecPen from the PC, make sure that it has been ejected correctly.

4.2.2. Logging onto the external memory

ATTENTION: In order to store your data on an external device, you need a measuring software. We recommend HTerm.

Press & hold the SAVE button while pressing ON/OFF to turn on the unit.	Press and hold the SAVE button until the unit is fully powered up to initiate the Logging to External Memory mode. The PWR LED lights green. TecPen displays battery status and oxygen level with ****mg/L or ppm. After the unit is turned on, it will take approximately 2 minutes to warm up to ensure an accurate measurement. If the instrument does not receive any input after 5 minutes, it switches off automatically.
Connecting to External Memory	Use the supplied USB cable to connect your TecPen Fluid to a computer.
Connecting the TecPen Weld lance to the site of measurement	Connect the gas inlet of the TecPen to the provided pneumatic hose. Insert the filter onto the hose and put the lance onto the filter. Insert the gas lance into the gas-filled space to be measured.
Starting the measurement	Press START immediately after connecting to the sample tap. MEAS" appears on the display, below it the O2 value, which changes continuously. If "****" appears instead of a measured value, your measured value is outside the measuring range. OR: To save your measurement from the beginning, you can start the measurement directly with the SAVE button.

Stopping the measurement	Press START to stop the measurement.
Saving the data	Press SAVE to start a measurement and continuously transfer the measurement data to the computer. **ATTENTION:** the values are not saved automatically. You must start the measurement software on your PC and connect the sensor to the software. Please read the operating instructions of your measuring software. **IMPORTANT:** Before removing your TecPen from the PC, make sure that it has been ejected correctly.

5. Warranty

CO2Meter assumes the warranty for the proper functioning of this device, provided that it is connected and used properly and in accordance with the guidelines of the operating instructions. The warranty expires if the device is opened or manipulated without authorization!

The legal warranty period is 2 years according to §922 to §933 ABGB and §8 and §9 KSchG.

Faulty parts will be repaired or replaced free of charge if there is evidence of material or manufacturing faults in the event of a fault or defect.

We grant a guarantee of 1 year on the measuring accuracy of our sensor. After one year we recommend a maintenance of the sensor with which the sensor is subjected to a new calibration.

6. Battery

LiPo batteries are used for the entire TecPen family. The duration per battery charge depends on how and under what circumstances the devices are used. Charge the battery using the supplied USB cable. Once the battery is fully charged, remove the battery from the charging cable.
Do not charge the battery longer than necessary (overnight). This may cause the charging capacity to decrease more quickly, the battery to overheat or become defective.

Should the charging capacity decrease unusually quickly within one year or with a maximum of 300 charge cycles (whichever is reached first) due to a production error, please contact CO2Meter.

7. Cleaning

Clean the device only as described in this manual. The outside of the unit can be cleaned with a fine soft cloth moistened with isopropanol. You can rinse your appliance with water or 40% ethanol.

Never immerse the device in water or other liquids. Do not expose your device to any radiation. Do not clean the appliance with an ultrasonic cleaner or dry it in a microwave oven. Do not fill with organic or other solvents, alcohol or cleaning agents, as they may damage the appliance.

8. Maintenance

8.1. Changing Sensor spot

Changing the sensor spot should be done by a qualified and trained person. Before changing the spot make sure that the device is switched off and not connected to the Computer or to a power supply.

Turn around your device and you will see on the rear a black circular unit with a diameter of around 8mm and a slot. This unit contains the sensor spot. Take out this unit by turning it counterclockwise with a suitable screwdriver.

Take the new unit with gloves and DO NOT TOUCH THE FRONT SIDE of the unit.

Place the unit into the device and make sure it is inserted straight. Afterwards turn the unit clockwise with a suitable screwdriver into the device until the sealing ring is under a light pressure. Do not keep on turning with all your might, you will destroy the thread.

8.2. Saftey

Anyone using mobile gas detection equipment must receive training / information on their use by a qualified person with knowledge and experience in gas detection technology. Furthermore, such training/information must be documented.

CO2Meter does not assume any warranty or guarantee whatsoever if the device has been used for a purpose other than that for which it was intended or if it has not been used in accordance with this manual.

8.3. Local regulations

The machine operator must find out about and heed country-specific statutory regulations on gas detection devices, and their operation and maintenance, which are not stipulated in the Operating Instructions.

This relates primarily to regulations concerning:

- Accident prevention
- Product safety
- Protection of personnel (protective equipment)
- Environmental protection
- Electrical systems

8.4. Inspection before each use

Before putting the device into operation, check the TecPen Fluid for visible defects.

Check both valve openings.

Periodically check for any leaks in the fluid path using sample gases.

Check the status of the battery.

8.5. Recommended calibration

CO2Meter recommends maintenance with included calibration once a year. There is also the possibility of a maintenance contract. For further information please contact CO2Meter.

8.6. Order details

When ordering spare and wear parts, please indicate the following parameters in your order form:

- Model name of your device

- Serial number (in your manufacturer certificate or on the device, by pressing the SAVE button for 2 seconds)

- Exact designation of the spare or wear part

9. Displayed status codes

Status codes	0	Normal operation
	1	UART buffer overrun
	2	Temperature sensor fault
	4	SD card not recognised

IMPORTANT! If error codes 1, 2 or 4 appear, switch off the device, wait a few moments and then switch it back on.

If the same error message appears after switching it back on, contact the manufacturer immediately

10. Scope of delivery

Amount	Name	Spare part number
1	TecPen Weld	
1	USB-cable	TS R1 HH 003
1	USB-Drive	TS R1 HH 004
1	User Guide	
1	Certificate of calibration	
1	Intake line/pneumatic hose 4 m	TS R1 HH 5

2	Particle filter	TS R1 HH 1
1	Gas lance	TS R1 HH 2
1	Lance adapter	
1	Hose adapter	

11. Problem finder List

	Problem	What to do
1	The Display shows **** after measurement	Value is above calibration range
2	The PWR lights do not light up after switching on	Does the display show the main screen? Yes: The LED light might be broken. No: Battery is empty? Display has an error.
3	The Display shows BATT	Battery is empty
4	The Display remains black after switching on	Charge the device and try to switch it on again
5		Did you disconnect your device properly from the Computer the last time? Yes: The battery might be empty. No/ I don't know: Please contact CO2Meter.
6	The device is connected to the power supply but the BT light do not light up	If the device is switched off during connected to a power outlet, the BT light do not light up but the device is charged.
7	The device is connected to the Computer but I cannot find it	You have to switch on the device before connecting to the computer. (Manual) If the device is switched on you cannot find it eiter, please contact CO2Meter.
8	The measured value is not saved	Did you press the LOG button (Chapter 4.2) Did you observe the LOG sign on the display? Yes: Please contact CO2Meter No: Read chapter 4.2
9	The log file shows a wrong date	Check screen 3, of the date and time on the device is

	The log file shows a wrong time	set.
10	The measured value varies between two measurements	Was the measurement in a room with a different temperature and did the device has time to acclimatize?
11	The device is not measuring	Is the pump working? Yes: Did you connect to No: Contact CO2Meter Is the display showing ***** (see 1. In Problem Finder List) Is the display showing MEAS? Yes: Check screen 4 if there is a value of amplitude (higher 0) No: Contact CO2Meter

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