

# TecPen for Welding Applications



## User Manual

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# Technical data

## Scope of supply



- 1 TecPen for Welding
- 2 Intake line/pneumatic hose 4 mm
- 3 USB stick
- 4 Particle filter (x 2)
- 5 USB cable
- 6 Gas lance
- 7 Lance adapter
- 8 Hose adapter

### Functional 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 the lifetime – depends on the quantity of absorbed oxygen in the sensor layer and can thus be used to determine the oxygen concentration.

### Rating plate

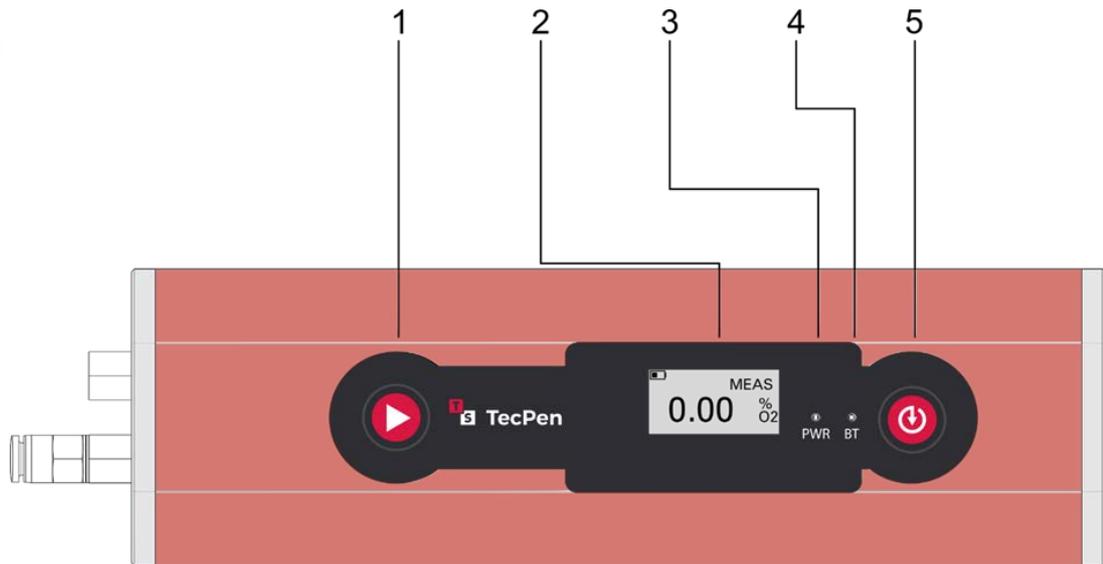
**IMPORTANT!** The rating plate must not be removed or modified without the consent of CO2Meter, Inc. - Ensure that the rating plate remains legible.

**Technical data**

Measuring range:	0-2000 ppm
<b>Accuracy:</b>	
0-300 ppm:	3% (final value of the measuring range)
300-2000 ppm:	10% (final value of the measuring range)
t90 time at 25°C:	<150 ms
Maximum pressure:	5 bar
Min./max. temperature range:	-10°C / +120°C
Medium:	gaseous, no organic solvent
Supply:	5V USB and LiPo battery
Interface:	USB
Temperature compensation:	10 to 30°C
Data output:	OLED display, USB and BT4.0
Cleaning:	no organic solvent, 70% ethanol
Wetted parts:	stainless steel 1.4404
Housing material:	powder-coated aluminium
Filter system:	micropore filter, replaceable
Protection class:	IP 54

# Description of operating and display elements

## Controls and connections



- (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 inlet/connection for 4 mm pneumatic hose**
- (9) **Gas outlet/waste gas**

# Settings prior to production start

## Acclimatisation

**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

1. Switch on the TecPen.
2. 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.

## Setting the time and date

1. Press SAVE for two seconds.  
Repeat this step until the date and time display appears.
2. Press START for two seconds.  
▶▶ The year is underlined.
3. To scroll down/decrease number: SAVE  
To scroll up/increase number: START
4. After setting the year, press START for two seconds.  
▶▶ The year is saved, and the next field is highlighted on the display.
5. For month, day and time, follow points 3 and 4.
6. Press SAVE for two seconds to save all the settings.

# Operation

## Switching on the device

1. Press the ON/OFF button to switch on the device.
  - ▶▶ The green PWR LED lights up.
  - ▶▶ The TecPen displays the battery level and an oxygen value of 0 ppm. This is a placeholder and not an actual measurement result.

**IMPORTANT!** After being switched on, the TecPen needs around two minutes to warm up to ensure flawless measuring performance. The device can only be switched on when it is not connected to the charging cable. If no buttons are pressed after five minutes, the device switches itself off.

## Starting/ending measurement

1. Insert the gas lance into the gas-filled space to be measured.
2. Press START quickly to start continuous measurement.
  - ▶▶ MEAS appears above the measured value. The measured value is continuously updated, and the final value is displayed when MEAS disappears from the display.
  - ▶▶ If ">" is displayed before the measured value, the value is outside the measuring range.
3. To stop the measurement, press START again.

## Saving the reading

1. Press SAVE.
  - ▶▶ The measured value currently on the display is saved in the TecPen's internal memory.  
A separate file is created for each day on which a measurement is taken. This contains the measured values with a time stamp.

**IMPORTANT!** Pressing SAVE for two seconds at a time switches the display between the following:

  - Measured value
  - Temperature
  - Battery state of charge
  - Amplitude
  - Phase

## Selecting a recipe

A recipe/product can also be selected as well as the time stamp. This enables a name, a sequential number and, if applicable, an EAN code to be saved for the respective measured value.

1. Press SAVE for two seconds.
  - ▶▶ A list of pre-set/marked recipes appears on the screen.
2. To scroll down: SAVE  
To scroll up: START  
To select recipe: press SAVE for two seconds
  - ▶▶ After selection, the screen automatically switches back to measurement mode.

**Viewing saved readings**

1. Use the USB cable to connect the TecPen (switched on) to a computer.
2. The TecPen appears like a USB stick on the computer; the data can be transferred to the PC.  
**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.

**Displayed status codes**

Code	Description
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.

# Maintenance procedures

- Safety** Anyone using mobile gas detection devices must receive training/information on their use and handling provided by a qualified expert who has knowledge of and experience in gas detection technology and must be documented.
- 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
- Inspection before use**
- Visual inspection of the gas detection devices for mechanical damage
  - Inspection of the gas inlet openings, check for leaks in the sample line and check correct flow for devices with sample gas supply
  - Check battery state of charge
  - Check whether the zero position is displayed correctly in clean air when the device is in operation
- Calibration recommendation** The device should be calibrated once a year by the manufacturer.

# Spare Parts List

## Original spare parts

Using spare parts and wearing parts from third-party manufacturers may pose risks.

- ▶▶ Use the specified CO2Meter original spare parts only.
- ▶▶ CO2Meter, Inc. cannot accept any liability for damage resulting from the use of spare or wearing parts or auxiliary materials from third-party manufacturers.

## Ordering details



**NOTE!** Only trained experts may change parts and may only do so after having read the installation and dismantling instructions supplied.

When ordering spare parts, you should provide the following data:

- Model name of the machine
- Serial number (shown on the rating plate)
- Exact designation of the spare part
- Corresponding item number as per Spare Parts List

### TecPen for Welding

	Item number	Description
	48,0005,0312	Particle filter
	48,0005,0357	Gas lance
	48,0005,0359	USB cable
	48,0005,0429	USB protective cap

## Support

The quickest way to obtain technical support is via email. Please include a clear, concise definition of the problem and any relevant troubleshooting information or steps taken so far, so we can duplicate the problem and quickly respond to your inquiry.

## Warranty

The Sensor comes with a ninety (90) day warranty starting from the date it was shipped to the buyer. For more information, please visit our website:

<https://www.co2meter.com/pages/terms-conditions>



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## Contact Us!

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We are here to help! For more information or technical support, please contact us:  
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