TecPen for Welding Applications



User Manual

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1

Contents

Technical data	3
Scope of supply	3
Functional principle	3
Rating plate	3
Operational Principle	4
Specifications	4
Description of operating and display elements	5
Controls and connections	5
Display Status	6
Acclimatisation	7
Connecting TecPen to the computer	7
Loading the recipe data	7
Setting the time and date	7
Operation	0
Switching on the device	ס פ
Starting/ending measurement	U
Sating/ending measurement	٥ و
Selecting a recipe	00 8
Viewing saved readings	9
Displayed status codes.	9
	0
Maintenance procedures	9
	9
Local regulations	9 0
Calibration recommendation	9 Q
	5
Battery	10
Changing sensor spots	10
Spare Parts List	10
Support	11
Warranty	11 11
Contact Us	11

Technical data

Scope of supply



- 1 TecPen for Welding
- 2 Intake line/pneumatic hose 4 mm USB stick
- 3 Particle filter (x 2) -CM-0118 Hydrophobic Filter (0.22 micron)
- USB cable 4
- 5 Gas lance
- 6 Lance
- 7 Hose adapter
- 8 Lance adapter

Functional 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 conprinciple centration. 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.

Operation 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 TecSense. Ensure that the label remains legible.

Specifications

TS-System	TecPen Weld O2		TecPen Weld CO2
Measurement range	0-2000ppm		0-100% CO2
	Range	Accuracy	Accuracy
Resolution Responsetime at 25°C Pump flow	0-500 ppm	2% Measuring Value = ± 10 ppm	±70 ppm +/- 5% of measured value (100% Range ±300 ppm +/-5% of measured value
Max. Pressure Temp. range Min./Max Medium	500-1000 ppm 1000-2000ppm	3% Mv* = ± 30 ppm 4% Mv*	
Power supply Acculifetime Data Interface	0,05 <15s 400mL/min		0,05 <1min 400mL/min
compensation Display	-10°C/ +120°C Gas		-25°C/55°C Gas
Cleaning	5V USB and LiPo Accu > 3h USB		5V USB and LiPo Accu > 3h USB
Parts touching sample Connection Case	20 - 60°C OLED Display		25-60°C OLED Display
Protection Delivery	St.1.4404 / PTFE / glass USB/ Bluetooth 4.0 aluminum anodized		St.1.4404/ PTFE/ Glas USB/ Bluetooth 4.0 aluminum anodized
Guarantee	IP54 Sensor (calibrated)		IP54 Sensor (calibrated)

Description of operating and display elements







- (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

Display

In normal use, The TecPen for Welding 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 the manufacturer service.

Screen 1 main screen	 0.00 %2 LOG 0.00 %2 MEAS 0.00 %2 	battery level measured value Temporary: Memory/Log Indicator Indicator for current measurement
Screen 2 recipe administration	1234 Produktname 1234567891234	Consecutive / internal number product name, EAN code
Screen 3 Date & Time	²⁰¹⁸⁻⁰¹⁻⁰¹ 12:12:12	date time (24 hour clock)
Screen 4 measurement data display	Ampl.[lsb]: 0 Tau[us]: 0.00 Temp.[°C]: + 0.0	amplitude life temperature
Screen 5 info screen	Device info: TPV3DD20180 605IMTN001 Device state: 0	serial number device status code
Zero point adjustment	Recalibration 0%?	Selection options YES/NO

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	 Switch on the TecPen. Use the USB cable to connect it to a computer. IMPORTANT! Before disconnecting the USB cable, the TecPen must be eject properly to avoid damaging the file system. If it is not properly ejected, all data still on the device will be irretrievably lost. 	ed		
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. <i>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 the spreadsheet</i>			
Setting the				
time and date	 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.			
	 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.			
	5. For month, day and time, follow points 3 and 4.			
	Press SAVE for two seconds to save all the settings.			

Operation

Switching on the device	 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	 Insert the gas lance into the gas-filled space to be measured. 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. To stop the measurement, press START again.
Saving the read- ing	 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	Code	Description
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.

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.

Battery

The tecpen includes LiPo batteries which are used for the entire TecPen product 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, and the battery to overheat or become defective.

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 counter clockwise 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. ****CO2METER strongly suggests that** customers send the TecPen for Welding to the CO2Meter for changing sensor spots*

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

	Item number	Description	
Stophabic PTA	48,0005,0312	Particle filter	
	48,0005,0357	Gas lance	
	48,0005,0359	USB cable	
	48,0005,0429	USB protective ca	ıp

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 visit our website:

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

Contact Us

If the troubleshooting guide above doesn't help you solving your problem or for more information, please contact us using the information below.



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