



Wöhler CM 220

Carbon Monoxide Meter



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The Measure of Technology

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1. Important information



Before using this instrument, carefully read and observe all notes contained in these operating instructions.



Fundamentally, skilled personnel only should use the Wöhler CM 220 for the purpose that it is intended and within the specified data range. No liability is accepted under any circumstances or guarantee given for results determined in conjunction with this instrument nor for any damage that may arise when using this instrument.

Recovering time is required when the meter was exposed to high level CO. The longer the exposure, the longer recovering time is needed.

2. Specification

2.1 Application

The Wöhler CM 220 is a digital pen type CO meter that can be used for domestic purposes to check furnaces, room heaters, central heating furnaces, water heaters etc. as well as for commercial purposes, e.g. the ventilation control of indoor parking garages.

The electrochemical sensor guarantees an exact measurement even if other gases interfere.

2.2 Technical Data

Measuring range:	0 - 999 ppm
Accuracy:	+/- 20% at 0 - 100 ppm +/- 15% at 100 - 500 ppm (at 20+/-5°C, 50+/-20% RH)
Resolution:	1 ppm
Power supply:	3 pieces AAA
Response time:	within 60 seconds
Operating humidity:	5 - 99% RH (no condensation)
Storage condition:	-20 - 60°C
Operation temperature:	0 - 45°C
Meter size:	175 x 47 x 28 mm
Scope of delivery:	Wöhler CM 220, carrying pouch, manual, 3 AAA batteries

3. Operating Elements

3.1 Display

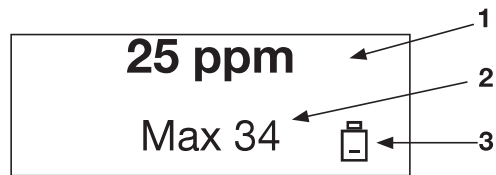


Figure 3.1: Display

1. Primary display: Current CO value
2. Secondary display: Max. CO value
3. Battery indicator: low battery

3.2 Function keys

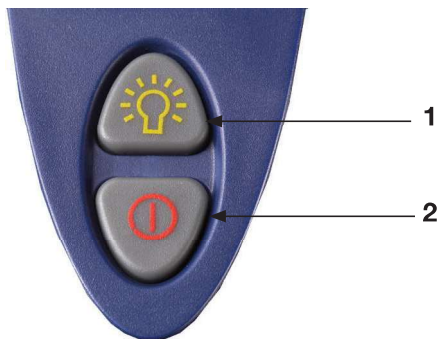


Figure.3.2: Function keys

1. Turn on and off the backlight.
Switch temperature unit C and F.
Reset the maximum CO value
 2. Turn the meter on and off. Select the alarm value
- 1 + 2 : Enter calibration mode

4. Operation Instructions

4.1 Power on/off

Press the power-key to turn on and turn off the meter (see fig 3.2, key 2). When the meter is powered on, the preset alarm value and current air temperature will be blinking on the LCD. The meter is now running a self-test and will finish in about 15 seconds with a short beep. It will then enter the measuring mode.

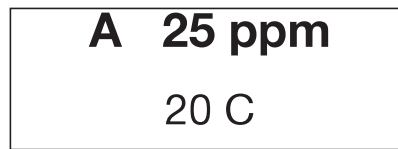


Figure. 4.1: Display during the self-test

Important: It is recommended to turn on the meter in an area free of CO since high CO level may cause failure in passing Self-Test.

4.2 Switch temperature units

Users can select °C or °F as the temperature unit by pressing the backlight key (see fig. 3.2, key 1) for more than 1 second during the self-test.

4.3 Alarm setting

The alarm value of the meter is preset at 25 ppm to give warnings of possible danger. Users can adjust the value for different needs or standard by turning off the meter, then press and hold the power-key (see fig. 3.2, key 1) until the value options appear in the display. There are 10, 25, 30, 35, 45, 50, 70 and 100 ppm displaying in cycles. Release the button to select the preferred value. Then the meter will return to Self-Test mode in some seconds.

4.4 Measurement

The meter measures the CO concentration at the sensor and displays the reading in ppm. It also indicates the maximum value (at the lower side of the display) of all readings since it is powered on. Users can reset the maximum value by pressing the backlight-key for two seconds in the measuring mode.

4.5 Backlight

The meter features backlight function for using in dark areas. Press the backlight to activate and switch off the backlight. (Figure 3.2, key 1).

4.6 Low battery indicator

The low battery indicator appears in the display when the battery voltage gets low. The measured values may be more inexact now. In this case you have to change the batteries.

4.7 Auto power off

The meter turns itself off automatically after 15 minutes non-operation. (It will not auto power off during the calibration).

5. 0-ppm-Calibration

Calibrate the meter in an area free of CO. To enter the calibration mode, turn off the meter and press the power-key and the backlight-key simultaneously for two seconds. „ppm“ will blink in the upper display and the calibration value „0“ at the lower side. Now the meter is running the 0 ppm calibration as a default.

Now the meter calibrates automatically. The LCD is displaying a blinking ppm value and it stops blinking when the calibration is completed. This takes about 10 minutes.

Note: Do not be alarmed if high ppm or minus value shows up when entering the calibration mode. It will go down and approach to 0 in seconds.

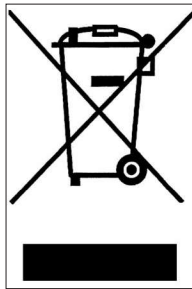
6. Troubleshooting

Problem	Solution
The meter is switched on but there is no display.	a) Make sure that the batteries are in good contact and correct polarity. b) Replace a new battery and try again.
The display disappears.	If the low battery indicator was shown before the display disappeared, replace a new battery.
Calibration failure	If the low battery indicator was shown before the calibration, replace a new battery.
E 2	The value is underflow.
E 3	The value is overflow.
E 31 und E 33	Return the meter to the dealer for repairing.
E 35	a) Self-Test failure: Turn on the meter again in other area free of CO. b) Sensor failure: Return the meter to the dealer for repairing.

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7. CO levels and its effect

ppm	Symptoms and applicable standard
0-1	Normal background levels
9	Maximum indoor air quality level
200	Mild headache, fatigue, nausea and dizziness within 2-3 hours
400	Frontal headache, life threatening after 3 hours
800	Dizziness, nausea, convulsions, life threatening after 2-3 hours
1600	Nausea within 20 minutes, death within 2-3 hours

8. Information on disposal

You may hand in any defective batteries taken out of the unit to our company as well as to recycling places of public disposal systems or to selling points of new batteries or storage batteries.

In the European Union, electronic equipment does not belong into domestic waste but - in accordance with Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on Waste Electrical and Electronic Equipment - must be disposed of in an expert manner. If you do no longer need this unit, please dispose of it in accordance with the applicable statutory provisions.

9. Declaration of conformity

The product: **Wöhler CM 220** conforms with the essential protection requirements which are set out in the directives of the European Council for to adapt the legal provisions of the Member States in respect of electromagnetic compatibility (2014/30/EU).

The following standards were availed of to evaluate the product in respect of electromagnetic compatibility:

EN 61326 : 1997 + A1 : 1998 + A2 : 2001 + A3 : 2003

EN 61000-4-2

EN 61000-4-3

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10. Guarantee and Service

10.1 Guarantee

In the case of proper usage, the guarantee period for the Wöhler CM 220 amounts to 12 months from the date of sale. Excluded here are wear-and-tear parts (e.g. batteries).

The cost for the transportation and the packing of the device in the case of repair are not covered by this guarantee.

10.2 Service

We attach great importance to **SERVICE**. Therefore, of course, we are readily available to assist you after the guarantee period ends.

- Send us the device, and we will repair it and return it to you with our package service.
- Immediate help is provided by our technical staff over the telephone.