

## MD Diagnostics CO Screen

Carbon Monoxide is a colourless and odourless gas, making its presence difficult to detect. CO Screen has been designed to enable emergency service responders to carry out a simple breath test to establish carbon monoxide levels in a subject's blood.

### Specification

Gas Detected	Carbon Monoxide
Response Time	< 30 seconds
Concentration range	0 – 60 %COHb (375 ppm)
Detection Sensor Used	Electrochemical fuel cell
Sensitivity	1% COHb
Sensor Sensitivity	1 ppm
Accuracy (repeatability)	+/- 2%
Operating Temperature	5 – 35°C
Storage Temperature	-20 - + 70°C
Storage Humidity	10% - 90% R.H.
Hydrogen Cross-Sensitivity	<12% at 20°C
Sensor Life	2 – 5 years, 2 years warranty
Sensor Drift	<2% per month
Display	128 x 64 pixel LCD
Power Supply	9V PP3 battery
Weight	160g (inc. batteries)
Dimensions	135 mm x 65 mm x 60 mm
Indicator Levels	Green 0 – 9.9 %COHb Yellow 10 – 19.9 %COHb Red 20 – 29.9 %COHb Flashing Red 30+ %COHb
Calibration required	6 months
Warranty	Sensor 2 years Monitor 5 years

## Competitors Smoke and CO Comparisons

	<b>MD Diagnostics CO Screen</b>	<b>MD Diagnostics CO Check Pro</b>	<b>Bedfont ToxCo</b>	<b>Bedfont Micro+ Smokerlyzer</b>
<b>Pricing</b>	<b>£300 approx</b>	<b>£160</b>	<b>£900 approx</b>	<b>£300</b>
Branded As	CO Poisoning	CO Screening	CO Poisoning	CO Screening
Gas Detected	Carbon Monoxide	Carbon Monoxide	Carbon Monoxide 3 sampling methods	Carbon Monoxide
Response Time	< 30 seconds		< 30 seconds	< 17 seconds
Concentration range	0 – 60 %COHb (375 ppm)	0 – 99 ppm	0 – 600 ppm	0 – 500 ppm
Detection Sensor Used	Electrochemical fuel cell	Electrochemical fuel cell	Electrochemical sensor	Electrochemical sensor
Sensitivity	1 %COHb 0.16 %COHB	1 ppm		
Sensor Sensitivity	1 ppm		1 ppm	1 ppm
Accuracy (repeatability)	+/- 2%	+/- 2%	< +/- 5%	< 3%
Operating Temperature	5 – 35°C	0 - 40°C	10 - 40°C	10 - 40°C
Storage Temperature	-20 - + 70°C			50°C
Storage Humidity	10% - 90% R.H.			0 – 95%
Hydrogen Cross-Sensitivity	<12% at 20°C	< 12%	< 6%	< 6%
Sensor Life	2 – 5 years, 2 years warranty	5 years	5 years	5 years
Sensor Drift	< 2% per month			< 10% per annum
Display	128 x 64 pixel LCD	Graphic LCD (Custom LCD on CO Check+)	Full colour touchscreen	Full colour touchscreen
Power Supply	9V PP3 battery		3 x AA (LR6 or eq) alkaline batteries	3 x AA (LR6 or eq) alkaline batteries
Weight	160g (including batteries)	160g (including batteries)	200g (including batteries)	250g (including batteries)
Dimensions	135 mm x 65 mm x 60 mm	135 x 60 x 30mm	140 x 70 x 34 mm	140 x 75 x 34 mm
Indicator Levels	Green 0 – 9.9 %COHb Yellow 10 – 19.9 %COHb Red 20 – 29.9 %COHb Flashing Red 30+ %COHb	Green – 6 ppm Yellow – 7 – 10 ppm Red 11 – 20 ppm Flashing red and audible alarm 21 ppm+	Full colour screen	Full colour screen
Monitor Construction			Polycarbonate/ABS blend SteriTouch anti-microbial additive	Polycarbonate/ABS blend SteriTouch anti-microbial additive
Calibration	6 months			
Warranty	Sensor 2 years Device 5 years	Sensor 2 years Device 5 years	Sensor 5 years	Sensor 5 years
Sampling Technique	Breath through SafeBreath adapter		Mouthpiece Facemask Ambient	Mouthpiece

### Queries

**Q: If the response time is < 30 seconds, how is their instant breath results?**

**A:** If you have any smokers that can blow into it you will see by the time they have finished blowing the result will have virtually peaked. It's a lot less than 30 seconds but we have quoted response time less than 30seconds, as per technical sheet.

**Q: What material is used for the casing, competitors are using SteriTouch?**

**A:** We are not using SteriTouch material yet.

**Q: What is the different between CO Screen and Bedfont versions?**

**A:** When you compare the Bedfont devices in use against the MD Diagnostics devices there is one huge difference. This is when you are using SafeBreath compared to the Bedfont plastic straw. It is quite self-explanatory. Bedfont use a “bacterial” filter only which is set very close to the device. It is not single patient use and is not able to be sterilised. A lot of people in the “smoky” world are getting quite concerned about this and we will be pushing this message very hard at the UKNSCC (UK National Smoking Cessation Conference)!

**Q: What is the difference in conversion between %COHb and ppm?**

**A:** The reason we show sensitivity in %COHb as unlike smoking cessation services the %COHb is the most critical measurement, hence that is the measurement you see first. We take the conversion of PPM to %COHb as  $1 \text{ PPM} = 0.16\% \text{COHb}$ . This equation is taken from the attached Thorax “Low cost carbon monoxide in smoking assessment”. I can explain this paper for you if need be but in short Page 887 second paragraph goes on say: “as an approximate guide, the percentage of carboxyhaemoglobin is given by dividing the expired air reading (PPM) by 6” So  $1 \text{ divided } 6 = 0.16$ .

## **MD Diagnostics**

### **CO Check Pro Baby, CO Check + Baby**

#### Specification

Gas Detected	Carbon Monoxide
Response Time	< 30 seconds
Concentration range	0 – 99 ppm
Detection Sensor Used	Electrochemical fuel cell
Sensitivity	1 ppm
Sensor Sensitivity	1 ppm
Accuracy (repeatability)	+/- 2%
Operating Temperature	0 – 40°C
Storage Temperature	-20 - + 70°C
Storage Humidity	10% - 90% R.H.
Hydrogen Cross-Sensitivity	<12% at 20°C
Sensor Life	2 - 5 years, 2 years warranty
Sensor Drift	<2% per month
Display	Graphic LCD (Custom LCD on CO Check + Baby)
Power Supply	9V PP3 battery
Weight	160g (inc. batteries)
Dimensions	135 mm x 60 mm x 30 mm
Indicator Levels (Pro Baby Only)	Green 0 - 6 ppm Yellow 7 - 10 ppm Red 11 - 20 ppm Flashing Red and Audible Alarm 21+ ppm
Calibration required	6 months
Warranty	Sensor 2 years Monitor 5 years

**Q: The literature state the CO Check Pro includes a graphic LCD, what is the difference between this display, the CO Screen and the Check +?**

A: The Pro display basically has a lot more pixels and you can create graphics on it. The CO Check + being less expensive has a custom display, hence limitations on what you can have on there, i.e. no graphics.

**Q: With the Pro Baby, the red indicator light is flashing and audible, but the next level is alarm – does this mean there is no longer a light? Is the alarm in both 11-20ppm and 21+?**

A: Yes you will have red flashing light and alarm 21 + ppm. However I wouldn't be too concerned about these yet as the end user can configure when they want the traffic lights to trigger.

Green 0 - 6

Yellow 7 - 10

Red 11 – 20

Flashing Red and Audible Alarm 21ppm and over

**Q: Is Calibration every 6 months same as CO Screen?**

A: Yes

**Q: What is the sensor drift for both these units, storage humidity, storage temperature and response time?**

A: They are the same as the CO Screen, they use the same sensor.

**Q: Please can you clarify the number of mouth pieces with the CO Pro in the hard case and the CO Check in the soft case – is it the same as the CO screen we have just discussed?**

A: Yes the same

**Q: Do the CO Check baby versions utilise the Safebreath mouthpieces?**

A: Yes

**Q: “A single breath from a pregnant woman will instantly display her results in PPM and %COHb”... “this result is displayed as %FCOHb”...**

**The specification states concentration range is 0 -99ppm, please can you clarify what the concentration range is for the %COHb and %FCOHb.**

A: The first displayed measurement will be the pregnant women's CO levels in PPM. %COHb is PPM x 1.6.

The %FCOHb is a measurement obtained from the women's %COHb. The clinical study that was carried out tested just under 1000 pregnant women just prior to birth. CO breath samples were taken and then blood core samples from the umbilical cord. There was a direct correlation between what the mother had on her breath and the CO in the babies blood. The correlation was almost double, so you can say for every one cigarette the women smokes her baby is actually smoking two!

PPM results as high as 99ppm will never be reached by a heavy smoker! I have only ever seen 97ppm in 15 years of testing! □