

APPLICATION NOTE Gasmeter™ DX-4030

Hazardous chemicals and materials (HAZMAT)

Accidents involving chemicals and other hazardous materials require fast and accurate gas measurements as part of the first response. The DX-4030 portable FTIR gas analyzer provides reliable identification and concentration measurements of hazardous gases in 60 seconds or less..

The battery powered backpack-size analyzer records infrared spectra at 10 scans/second and is capable of sub-ppm detection. The DX-4030 requires no span gas calibrations and only a short zero procedure, and it is fully operational only minutes after arriving at site. The analyzer is controlled by a rugged PDA (personal digital assistant) connected to the analyzer by either serial cable or Bluetooth wireless link. The PDA is water-tight and shockproof, and proprietary **Calcmeter Lite** software is designed so that it can be operated with a single button if necessary.

The DX-4030 performs simultaneous analysis of 25 gases with compensation for cross-interference effects. Identification of gases in addition to the 25 is possible by connecting the instrument to a computer and searching against a large library using **Calcmeter 4030 Standard** software. As the PDA automatically stores recorded spectra and the analysed concentrations, further analysis and verification is possible if required, and the results can be traced back to the original infrared spectra of the samples.



Figure 1 Gasmeter DX-4030 gas analyser is transported to site in a durable transit case.



Figure 2 Calcmeter Lite and TDS Recon rugged handheld computer provide a flexible user interface. Frequently used commands have shortcut buttons while various views provide the user with detailed information

Typical gases with detection limits and standard measuring ranges for HAZMAT / Toxic Industrial Chemical (TIC) application

1	Water	H ₂ O	7732-18-5	0 ... 3	vol-%
2	Carbon dioxide	CO ₂	124-38-9	0 ... 3	vol-%
3	Carbon monoxide	CO	630-08-0	0.25 0 ... 200	ppm
4	Nitrous oxide	N ₂ O	10024-97-2	0.02 0 ... 100	ppm
5	Sulfur dioxide	SO ₂	7446-09-5	0.03 0 ... 100	ppm
6	Nitrogen dioxide	NO ₂	10102-44-0	0.37 0 ... 200	ppm
7	Methane	CH ₄	74-82-8	0.11 0 ... 100	ppm
8	Formaldehyde	CH ₂ O	50-00-0	0.09 0 ... 100	ppm
9	Toluene	C ₆ H ₅ CH ₃	108-88-3	0.13 0 ... 200	ppm
10	Ammonia	NH ₃	7664-41-7	0.13 0 ... 100	ppm
11	Hydrogen chloride	HCl	7647-01-0	0.2 0 ... 100	ppm
12	Hydrogen fluoride	HF	7664-39-3	0.3 0 ... 100	ppm
13	Hydrogen cyanide	HCN	74-90-8	0.35 0 ... 100	ppm
14	Arsine	AsH ₃	7784-42-1	0.020 0 ... 100	ppm
15	Phosgene	COCl ₂	75-44-5	0.018 0 ... 100	ppm
16	Acrylonitrile	CH ₂ CHCN	107-13-1	0.35 0 ... 200	ppm
17	Ethylene oxide	C ₂ H ₄ O	75-21-8	0.18 0 ... 200	ppm
18	Boron trichloride	BCl ₃	10294-34-5	0.01 0 ... 50	ppm
19	Phosphine	PH ₃	7803-51-2	0.20 0 ... 200	ppm
20	Acrolein	CH ₂ =CHCHO	107-02-8	0.25 0 ... 200	ppm
21	Methylmercaptan	CH ₃ SH	74-93-1	0.41 0 ... 200	ppm
22	Carbon disulfide	CS ₂	75-15-0	0.17 0 ... 200	ppm
23	Sulfuryl fluoride	SO ₂ F ₂	2699-79-8	0.03 0 ... 100	ppm
24	Dichloromethane	CH ₂ Cl ₂	75-09-2	0.10 0 ... 200	ppm
25	Benzene	C ₆ H ₆	71-43-2	0.13 0 ... 200	ppm

* Limit of detection is calculated as 3 x standard deviation of baseline noise, 60 second averaging time

Technical data:

Weight:	11.5 kg (24.6 lbs)	Detector type:	Peltier cooled MCT
Dimensions:	383 x 348 x 145 mm	Spectral range:	4200 ... 900 cm ⁻¹
In transit case:	724 x 441 x 267 mm	Spectral resolution:	7.72 cm ⁻¹
Power supply:	Li-Ion Battery, (2.5 hours), 12 VDC, 115/230 VAC		