

**System Comparison:
Gaset DX-4030 vs. Miran® 205B SapphIRe**

Instrument	Gaset DX-4030	MIRAN® 205B Series SapphIRe Miran Sapphire (DL, SL or XL)																								
Measurement Technologies	<ul style="list-style-type: none"> FTIR – Fourier Transform Infrared spectrometer 	<ul style="list-style-type: none"> Single beam Infrared Spectrophotometer 																								
Measurement mechanics	<ul style="list-style-type: none"> 50, 200 or 600 readings per analysis based on selectable 5,20, or 60 sec interval Scans mid-infrared region (870 – 4200 cm-1) at 10Hz/sec. 	<ul style="list-style-type: none"> 1 reading per analysis Measures a single wavelength in combination with variable filter to provide band pass of mid-IR region. 																								
Resolution	<ul style="list-style-type: none"> 473 data points /scan 	<ul style="list-style-type: none"> ~ 26 data points / scan 																								
Number of gases measured simultaneously	<ul style="list-style-type: none"> 25 with Configuration 1 PDA/DX-4030 50 with Configuration 2 Laptop/DX-4030 	<ul style="list-style-type: none"> Up to 5 gases in a background of 5 gases IF all gases are known and IF gases are not similar enough to cause cross interference 																								
Sensitivity comparisons	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">DX-4030</th> <th style="text-align: center; border-bottom: 1px solid black;">Gas</th> <th style="text-align: right; border-bottom: 1px solid black;">Sapphire</th> </tr> </thead> <tbody> <tr> <td style="text-align: right;">0.09 ppm</td> <td style="text-align: center;">Formaldehyde</td> <td style="text-align: right;">0.11 ppm</td> </tr> <tr> <td style="text-align: right;">0.134 ppm</td> <td style="text-align: center;">Benzene</td> <td style="text-align: right;">2 ppm</td> </tr> <tr> <td style="text-align: right;">0.004 ppm</td> <td style="text-align: center;">Sulphur Hexafluoride</td> <td style="text-align: right;">0.01 ppm</td> </tr> <tr> <td style="text-align: right;">0.13 ppm</td> <td style="text-align: center;">Ethylene Oxide (Eto)</td> <td style="text-align: right;">0.35 ppm</td> </tr> <tr> <td style="text-align: right;">0.13 ppm</td> <td style="text-align: center;">Ammonia (NH3)</td> <td style="text-align: right;">0.7 ppm</td> </tr> <tr> <td style="text-align: right;">0.30 ppm</td> <td style="text-align: center;">Hydrogen Fluoride (HF)</td> <td style="text-align: right;">not available</td> </tr> <tr> <td style="text-align: right;">0.01 ppm</td> <td style="text-align: center;">Freon 134a</td> <td style="text-align: right;">0.17 ppm</td> </tr> </tbody> </table>		DX-4030	Gas	Sapphire	0.09 ppm	Formaldehyde	0.11 ppm	0.134 ppm	Benzene	2 ppm	0.004 ppm	Sulphur Hexafluoride	0.01 ppm	0.13 ppm	Ethylene Oxide (Eto)	0.35 ppm	0.13 ppm	Ammonia (NH3)	0.7 ppm	0.30 ppm	Hydrogen Fluoride (HF)	not available	0.01 ppm	Freon 134a	0.17 ppm
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Identifying "unknowns"	<ul style="list-style-type: none"> Any unknown gas identified in the sample can be analyzed and identified with Calcmeter software Sample spectra is recorded and saved, a library search of over 5000 gases can be performed to identify the unknown gas. With each gas reading a QA/QC indication is provided to show user if an unknown gas is present. The library has over 250 gas spectras that can be downloaded to the instrument for real time analysis. 	<ul style="list-style-type: none"> Can't identify if an unknown gas is present if that gas is not loaded in the library on the instrument 																								

Instrument	Gasmeter DX-4030	MIRAN® 205B Series SapphIRe Miran Sapphire (DL, SL or XL)
Cross Interference	No cross interference.	<ul style="list-style-type: none"> • Cross interference - like gases have a cumulative affect on the reading
Gas cell	<ul style="list-style-type: none"> • Fixed mirror provides extreme stability, no need for annual adjustment • Can be used and calibrated in any position. • Ready for use in less than 1 minute • No in-line chemical filter needed, only a particulate filter • Unaffected by temperature, humidity, or pressure changes • Rhodium coated gold plated mirrors resist attack from corrosive gases such as Ammonia, HCl 	<ul style="list-style-type: none"> • Adjustable mirrors typically require factory service at annual calibration. • Sensitive to orientation – calibrating in one position and using in another changes the readings • Warm up time before accurate readings of 20- 30 minutes • Requires use of in-line charcoal filter, filter must be routinely changed, no way to know if there is filter breakthrough • Need to choose compensation for changes in temperature, pressure, or humidity • Corrosive chemicals degrade cell, eventually requiring costly replacement
Gas cell windows	<ul style="list-style-type: none"> • ZnSe windows - non-hygroscopic and chemically stable, safe to use in most industrial, field, and laboratory environments. 	<ul style="list-style-type: none"> • AgBr windows - Corrosive chemicals such as ammonia degrade windows, eventually requiring costly replacement
Factory Calibration	<ul style="list-style-type: none"> • Never requires a factory calibration. Internal laser is used as calibration reference with every measurement. 	<ul style="list-style-type: none"> • Annual factory calibration recommended, typically also includes adjustment of mirrors, \$ 1500-2000 per year, more for larger libraries
Configuration changes	<ul style="list-style-type: none"> • Gas calibration library can be changed by the user - (requires purchase of optional software) • New gases can be added to the library as they become available 	<ul style="list-style-type: none"> • Depending on model, can download from on-board library of up to 125 chemicals, otherwise instrument has to go back to factory
Performance specifications	<ul style="list-style-type: none"> • Accuracy : ± 2% of gas range • Precision is 0.01% of the measurement range • Zero drift stability : ± 2% smallest measuring range per zero-point calibration interval 	<ul style="list-style-type: none"> • ± 10 – 25 % of reading • Quoted accuracy is based on only a single gas, doesn't take into account cross interference issues that cause inaccurate readings.