

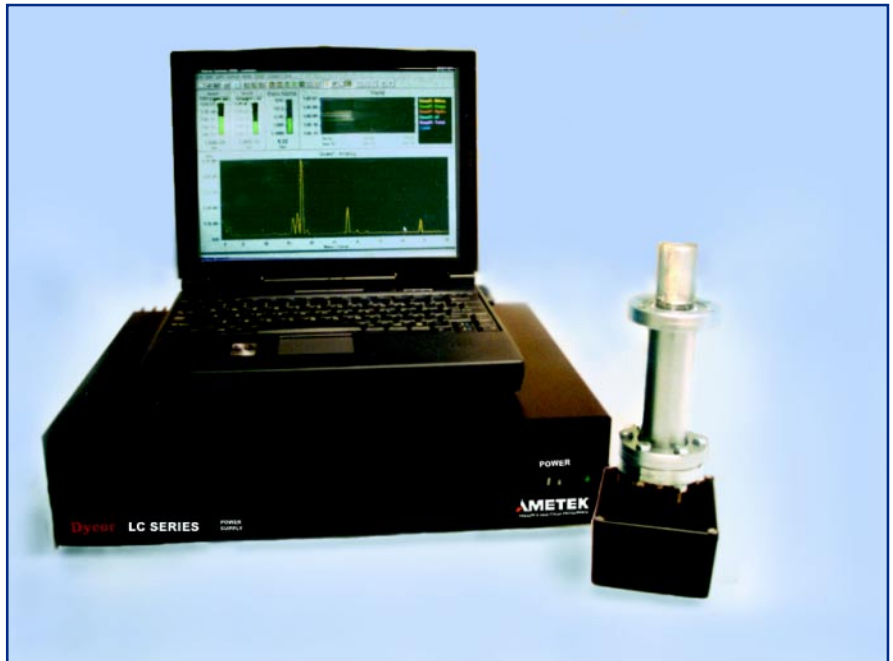
ANALYZER SOLUTIONS FOR YOUR PROCESS!

LC-Series Residual Gas Analyzer

Offering the most cost-effective solution for your application-specific, process monitoring needs.

The Dycor LC-Series Residual Gas Analyzer (RGA) offers outstanding performance, yet is priced to be the most cost-effective RGA on the market. The LC-Series instruments are constructed from materials that are compatible with Ultra High Vacuum (UHV) systems and are designed to require the very minimum in maintenance. This versatile RGA is ideally suited for use with UHV systems and equipment monitoring of semiconductor and thin film processes in the high vacuum range. Coupled with the System 200 software (which is 32-bit, multi-threaded, and designed for use with Windows 95/98, NT and XP), the LC provides advanced features that are associated with higher priced instruments. The LC-Series RGA is clearly the best performing and most affordable analyzer solution for your application.

The LC-Series RGA includes Dycor's 1-100 AMU-range open ion source analyzer head with dual filaments and Faraday cup detector, electrometer preamplifier, and RF power supply with an RS-232 port for interfacing to a PC. Options include 1-200 AMU range and channel plate electron multiplier.



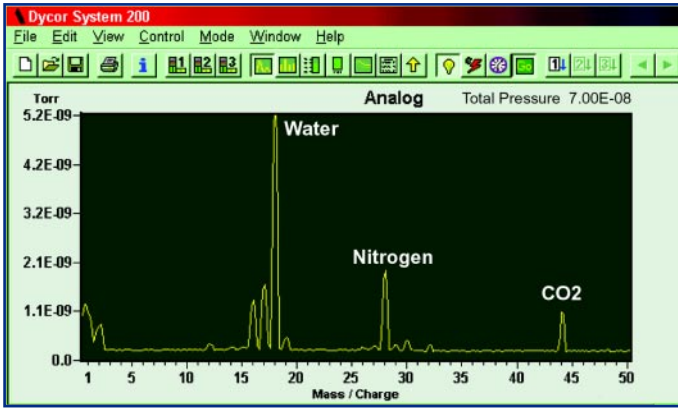
LC-Series Residual Gas Analyzer

SYSTEM 200 SOFTWARE FEATURES

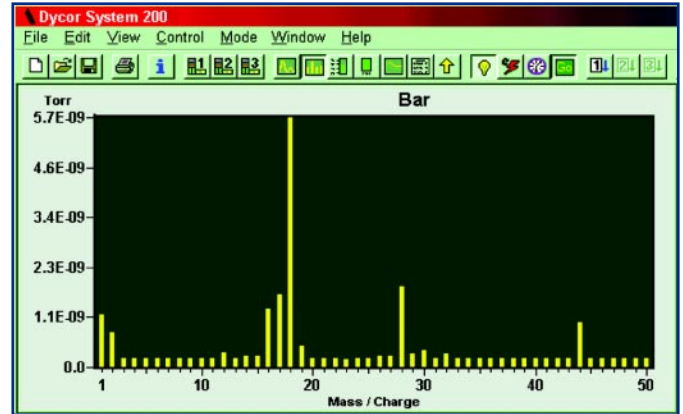
- Variety of operating modes including Analog and Bar, Meter, Annunciator, Tabular, Trend, and Leak Detection.
- Custom modes to combine display windows from other modes.
- Data that can be viewed in real time or saved to a file for later retrieval and comparison with current spectra.
- Auto-Tune capabilities to ensure high quality, repeatable data.
- Library Mode for comparison between collected sample spectra and stored library spectra. Facilitated by split-screen display.
- Dynamic Data Exchange (DDE) automation for limited control by Windows applications.
- Single or continuous scan with user-defined interval.
- Alarms: Low, Low Warning, High Warning, High.

OPERATING MODES

Analog Mode

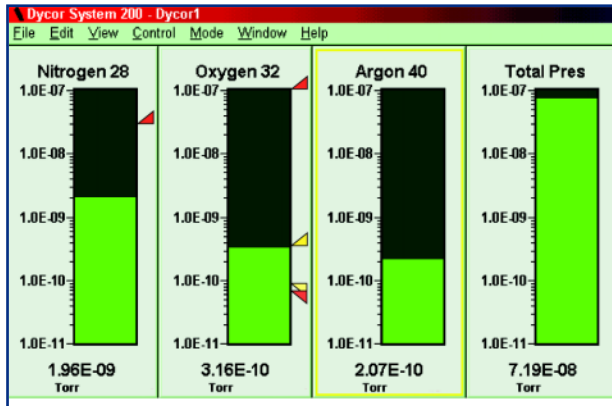


Bar Mode



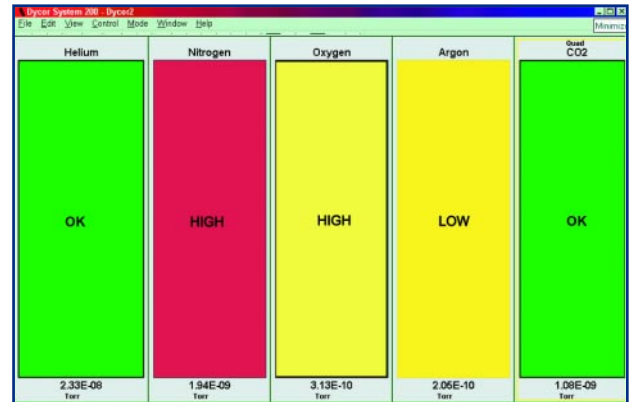
Analog and Bar Modes are a means of observing constituents in the background vacuum environment by scanning across a range of masses. Total pressure is displayed in the upper right-hand corner. User-defined labels can be placed in the plot area and the vertical cursor shows exact values and positions.

Meter Mode

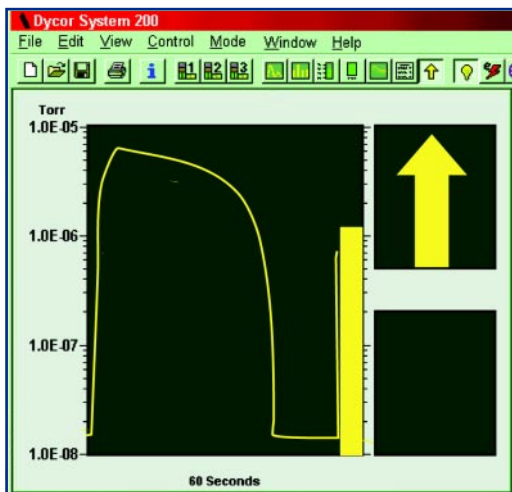


Meter Mode simultaneously monitors partial pressures or total system pressure. Displayed values can be user-defined or can come directly from a device or from another display. The mass number or gas name can be displayed.

Annunciator Mode



Annunciator Mode provides a Go/No Go visual of the instrument status using a color-coded display. Displayed values can be user-defined or come directly from a device or from another display.



Leak Detection Mode

Leak Detection Mode checks the vacuum system for leaks when a tracer gas of known mass is applied to the vacuum system. It uses a sound board to generate a tone whose pitch changes with the level of the leak. It allows for single person leak checking. Up/down arrows show the direction of the leak (increasing/decreasing).

OPERATING MODES

Trend Mode



Trend Mode tracks partial pressures or total pressures over time. Vertical cursor is used to display recorded values at any position in time.

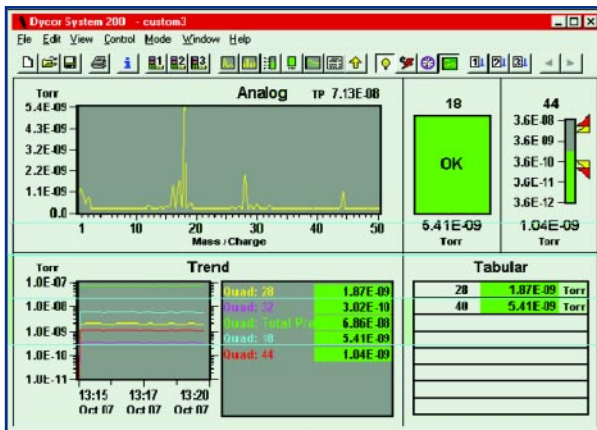
Tabular Mode

Tabular 1		Tabular 2	
28	1.82E-09 Torr	Nitrogen 28	1.82E-09 Torr
Oxygen 32	2.93E-10 Torr	Oxygen 32	2.93E-10 Torr
Water 18	5.25E-09 Torr	Helium 4	6.39E-08 Torr
Carbon Dioxide 44	1.01E-09 Torr	Hydrogen 2	7.17E-10 Torr
Argon 20	1.52E-10 Torr		

Tabular 3		Tabular 4	
Nitrogen 28	1.82E-09 Torr		

Tabular Mode displays partial pressures or total pressure in tabular format. There is no limit to the number of channels that can be displayed.

Custom Mode



Custom Mode allows the user to create and save custom screens using a combination of the other display modes. An unlimited number of custom modes can be created and saved by the user.

Device Status and Event Log Display

Device	Filament	Multiplier	Status
Quad	ON	OFF	DEMO Online

Type	Time	Source	Message
▲	8/20/98 11:27:12 AM	Quad : 4 LW	
▲	8/20/98 11:27:14 AM	Quad : Oxygen HW	
▲	8/20/98 11:27:15 AM	Quad : Nitrogen HL	
▲	8/20/98 11:29:28 AM	Trend	
▲	8/20/98 11:31:26 AM	Trend	
▲	8/20/98 11:35:43 AM	Quad : Tabular	
▲	8/20/98 11:36:17 AM	Quad : Tabular	

The **Device Status** window lists the quadrupole, filament, and multiplier status. It indicates whether the device is offline or has had communications errors.

The **Log window** shows a scrolling event log. Events logged include program start, scan on/off, filament on/off, alarm triggers. The log is saved to a file and a new file is started each time the program starts or at midnight of each day.

MISCELLANEOUS

Alarms

Every data channel has low, low warning, high warning, and high alarms.

Calibration and Auto Tune

Automatically sets RF-tune, mass position and resolution.

Printing

Print one, some, or all data displays.
Supports color printers.

Analog Output

One analog output and two TTL output signals are provided.

PERFORMANCE SPECIFICATIONS

Mass Range:

1 - 100 AMU standard; 1 - 200 AMU optional

Operating Pressure Range:

10^{-4} Torr to ultrahigh vacuum

Minimum Detectable Partial Pressure:

5×10^{-12} Torr (5×10^{-14} Torr for electron multiplier units)

Resolution:

Adjustable to constant peak width (0.5 AMU at 10% height)

Emission Current:

0.1 to 10 mA; 50 mA to degas

Electron Energy:

30 to 150 volts to operate; 200 volts to degas

Ion Energy:

1 to 10 volts

Source Sensitivity (Faraday Cup):

2×10^{-4} amps per Torr at detector (measured with nitrogen at mass 28) with peak width = 0.5 at 10% height and 1×10^{-3} amps emission current

Power Requirements:

110 VAC 1 Amp or 220 VAC 0.5 Amp

Stability:

Mass Stability: ± 0.1 AMU after 30-minute warm-up
Peak Height: $\pm 2\%$ after 30-minute warm-up

Minimum PC Requirements:

Pentium, 60 MHz processor, 16 MB RAM with Windows® 95/98, NT or XP

RS-232 Serial Communications Interface:

38,400 baud rate, 9-pin, female D-connector

Physical Dimensions:

Weight	14 lb	(6.3 kg)
Width	16 in.	(40.6 cm)
Length	15 in.	(38.1 cm)
Height	3.5 in.	(8.9 cm)

