Residual Gas Analyzers

XTP Series



Extorr XTP Series Residual Gas Analyzers

The Extorr XTP systems are ideal for gas analysis, leak detection and vacuum processing applications. These reliable, easy to use RGAs are available with 100, 200, and 300 amu Mass ranges and can detect partial pressures in the 10^{-15} Torr range with the optional electron multiplier. The unit includes a built-in computer which operates standalone, saving ALL spectra, configurations and outputs to its 1 TB database forever, without relying on another host computer for operation. Using the built-in web interface, the unit can be controlled from any computer with a modern browser. The included Pirani gauge allows the entire pump down process, from Atmosphere to UHV, to be monitored with a single instrument. Intelligent filament start up design keeps the filament off until the pressure is low enough for safe operation. Unlike other designs, Extorr's filament, ionizer and electron multiplier can be replaced by the user.

Compact Rugged Design

A Pirani gauge, a Bayard / Alpert (B/A) Ion gauge, and a Quadrupole mass analyzer are contained on a single 2.75" Conflat® flange. The electronics can easily be removed from the probe for high temperature bake outs.

The Best That Money Can Buy

At Extorr, we design all equipment from an engineering-first perspective. The Extorr XTP RGA is no exception and offers the best hardware available on the market. The unit was created using decades of vacuum science knowledge, and careful engineering which has allowed us to push the capabilities of the device to the limit of what is physically possible. There exists no such alternative RGA that is as stable, reliable and sensitive as an Extorr XTP RGA. Thoughtful software design accompanies the hardware, allowing for an intuitive, yet powerful user experience. The data logging capabilities of this device are ideal for constant process monitoring use cases such as semiconductor manufacturing, vacuum furnace monitoring, etc. The ability to easily keep track of historical spectra and configurations makes processes such as leak checking trivial. The logging nature of the device is also particularly useful in academia, acting as a digital notebook that keeps track of everything that has happened during an experiment.

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Extorr XTP Host Software

All Extorr XTP RGA systems come with a built-in computer that runs all the time, negating the need for a separate external computer to be running for RGA operation and process monitoring. The XTP systems come with a 1 TB NVME SSD (upgradable) to log and store everything that has ever happened while the system has been running, including the chronological order of all configurations and subsequent sweep data. With 1 TB of storage, the device has enough space to save all spectra, outputs, and configurations for 10+ years at typical scan speeds. The database allows for easy configuration management, by creating the ability to make new configurations, and view/apply old configurations that were used to make old sweep data. The database also allows for tagging sweep data, creating the ability to easily navigate to past important data. The database creates the ultimate process monitoring tool, as it allows for the ability to go back in time to see exactly what happened when, to aid in the diagnosis of any process changes. The unit has a built-in real-time clock, allowing it to keep track of the timestamp of all data collected, without being connected to the internet. All data can be exported in CSV form. The database itself can be backed up to and restored from a single file.

The unit can be controlled in two ways:

- Via the built-in web interface that can be viewed over a local ethernet or Wi-Fi connection from another computer with a modern browser.
- With an HDMI monitor, USB mouse and keyboard. This setup is ideal for users in strict IT environments, as the unit is fully functional by itself.

Software updates are available on the Extorr website, www.extorr.com, at no cost to the user.

Long-Life Dual Filaments

Dual thoria coated iridium filaments are used for electron emission. The filaments are protected from over pressure by both the Pirani gauge and the B/A Ion gauge to ensure minimum down time. If a filament does burn out, the second filament will allow for normal operation until the filaments are replaced. Extorr offers inexpensive replacement filaments and ionizers that can be changed by the user.

Ultra-Sensitive Detection

The XTP Series RGAs feature a standard Faraday cup detection system allowing partial pressure measurements from 10^{-4} Torr to 10^{-12} Torr range.
With the optional electron multiplier, the partial pressure sensitivity is extended to the 10^{-15} Torr range.
Extorr's novel electrometer measures ion currents from 10^{-5} to 10^{-15} amps in a single scan. This huge dynamic range means that very large and very small signals may be measured at the same time.

Ionizer Degas

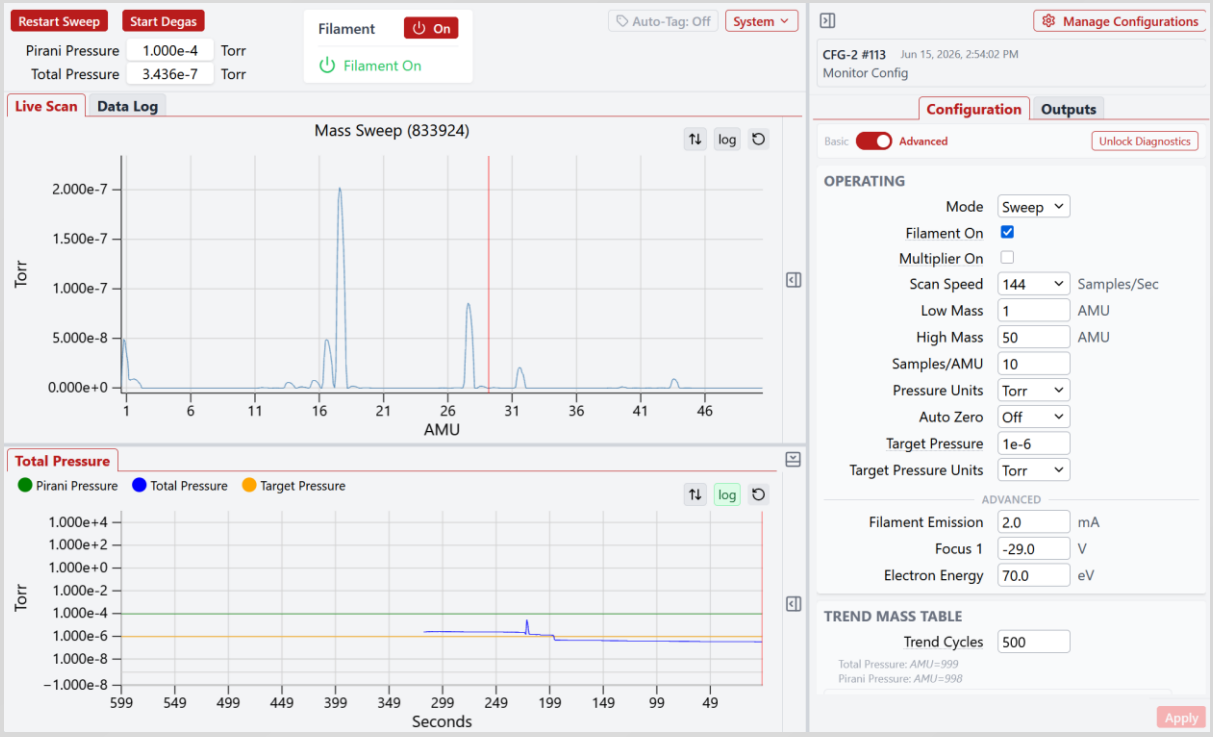
The built-in degassing function cleans the ionizer by heating its surfaces using electron bombardment. This lowers the ionizer's contribution to background chemical noise and helps to restore reduced sensitivity caused by contamination. The software has a timer that automatically ends the degas cycle after 10 minutes.

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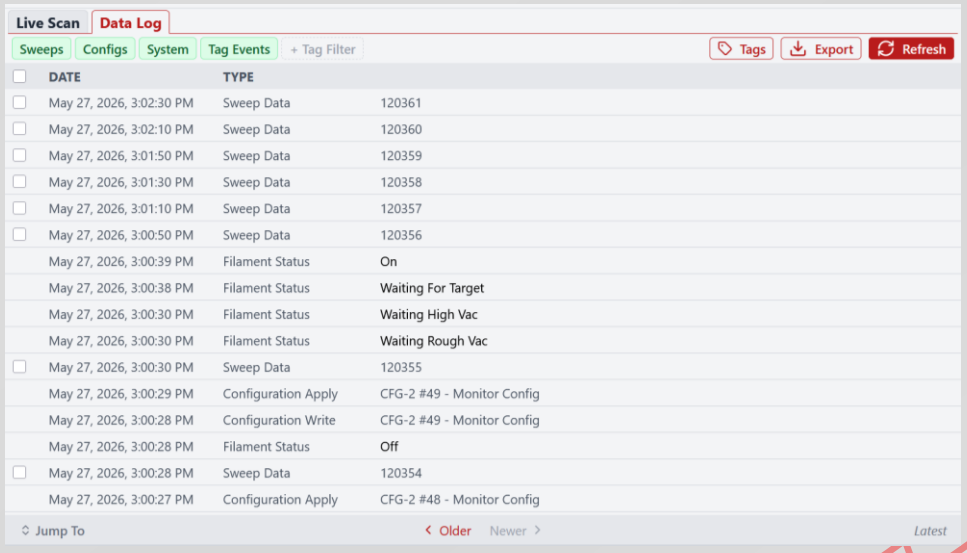
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Partial Pressure vs. Mass Graph



Data Log View

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Trend Mode

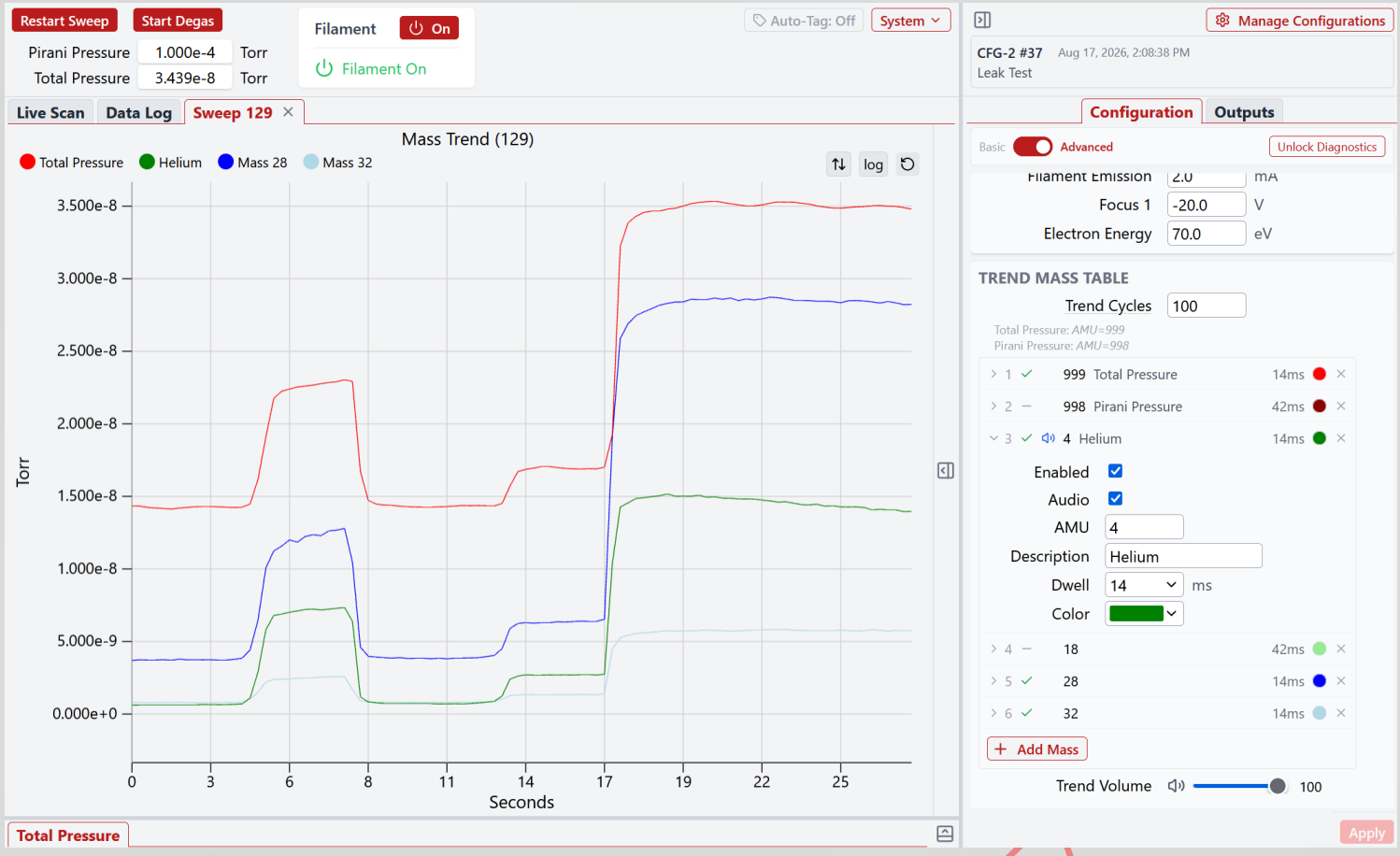
The peak intensities of up to 100 ions of interest may be followed as a function of time. This feature is useful for tracking the partial pressures of specific masses of various time periods depending on application requirements.

In the screenshot below, Helium is being tracked over time to locate a leak. At 5 seconds, a small amount of helium is seen, indicating a small leak, and at 17 seconds, a large trace of helium is seen, indicating the primary leak spot.

Leak Detect Mode

In the vacuum leak detect mode, a particular gas is monitored over time. Helium is the most common leak detect gas, but any other gas may be used.

The intensity trace of the leak detection gas can be viewed in real time on the graph and an audio tone that changes pitch with the intensity may be enabled.



Trend Mode Pressure vs. Time with Leak Detect Audio On

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Data Exporting

Data can be exported in CSV format, able to be interpreted by common spreadsheet software such as Microsoft Excel.

CSV formatted data is also ideal for custom software interpretation for users who want to do further analysis.

	A	B	C	D	E	F	G
1	UTC Timestamp (RFC 3339 / ISO 8601)	Local Timestamp (US/Eastern)	Relative Timestamp	Mass Point	Value	Type	Details
2						Metadata	{"CurrentSoftwareVersion":"1.0.0"}
3						Metadata	{"SweepSoftwareVersion":"1.0.0"}
4						Metadata	{"SweepNumber":1022711}
5						Metadata	{"SweepTags":[{"tag_id":1,"description":"prob
6						Configurat	{"config_id":2,"version_number":266,"descrip
7	2026-08-17T17:20:17.630534594+00:00	2026-08-17T13:20:17.630534594-04:00	0	0.6	1.87E-10	Data	
8	2026-08-17T17:20:17.644423482+00:00	2026-08-17T13:20:17.644423482-04:00	0.0139	0.7	7.37E-08	Data	
9	2026-08-17T17:20:17.658312371+00:00	2026-08-17T13:20:17.658312371-04:00	0.0278	0.8	2.27E-08	Data	
10	2026-08-17T17:20:17.672201260+00:00	2026-08-17T13:20:17.672201260-04:00	0.0417	0.9	6.02E-09	Data	
11	2026-08-17T17:20:17.686090149+00:00	2026-08-17T13:20:17.686090149-04:00	0.0556	1	3.60E-09	Data	
12	2026-08-17T17:20:17.699979038+00:00	2026-08-17T13:20:17.699979038-04:00	0.0694	1.1	2.63E-09	Data	
13	2026-08-17T17:20:17.713867927+00:00	2026-08-17T13:20:17.713867927-04:00	0.0833	1.2	1.39E-09	Data	
14	2026-08-17T17:20:17.727756816+00:00	2026-08-17T13:20:17.727756816-04:00	0.0972	1.3	5.76E-10	Data	
15	2026-08-17T17:20:17.741645705+00:00	2026-08-17T13:20:17.741645705-04:00	0.1111	1.4	6.37E-10	Data	
16	2026-08-17T17:20:17.755534594+00:00	2026-08-17T13:20:17.755534594-04:00	0.125	1.5	7.20E-10	Data	
17	2026-08-17T17:20:17.769423482+00:00	2026-08-17T13:20:17.769423482-04:00	0.1389	1.6	7.17E-10	Data	
18	2026-08-17T17:20:17.783312371+00:00	2026-08-17T13:20:17.783312371-04:00	0.1528	1.7	7.05E-10	Data	
19	2026-08-17T17:20:17.797201260+00:00	2026-08-17T13:20:17.797201260-04:00	0.1667	1.8	7.78E-10	Data	
20	2026-08-17T17:20:17.811090149+00:00	2026-08-17T13:20:17.811090149-04:00	0.1806	1.9	8.25E-10	Data	
21	2026-08-17T17:20:17.824979038+00:00	2026-08-17T13:20:17.824979038-04:00	0.1944	2	8.63E-10	Data	
22	2026-08-17T17:20:17.838867927+00:00	2026-08-17T13:20:17.838867927-04:00	0.2083	2.1	7.20E-10	Data	
23	2026-08-17T17:20:17.852756816+00:00	2026-08-17T13:20:17.852756816-04:00	0.2222	2.2	1.54E-10	Data	
24	2026-08-17T17:20:17.866645705+00:00	2026-08-17T13:20:17.866645705-04:00	0.2361	2.3	-1.20E-10	Data	
25	2026-08-17T17:20:17.880534594+00:00	2026-08-17T13:20:17.880534594-04:00	0.25	2.4	2.35E-11	Data	
26	2026-08-17T17:20:17.894423482+00:00	2026-08-17T13:20:17.894423482-04:00	0.2639	2.5	1.82E-11	Data	
27	2026-08-17T17:20:17.908312371+00:00	2026-08-17T13:20:17.908312371-04:00	0.2778	2.6	-6.70E-11	Data	
28	2026-08-17T17:20:17.922201260+00:00	2026-08-17T13:20:17.922201260-04:00	0.2917	2.7	-1.15E-10	Data	
29	2026-08-17T17:20:17.936090149+00:00	2026-08-17T13:20:17.936090149-04:00	0.3056	2.8	-1.34E-10	Data	
30	2026-08-17T17:20:17.949979038+00:00	2026-08-17T13:20:17.949979038-04:00	0.3194	2.9	-1.76E-11	Data	
31	2026-08-17T17:20:17.963867927+00:00	2026-08-17T13:20:17.963867927-04:00	0.3333	3	6.53E-11	Data	
32	2026-08-17T17:20:17.977756816+00:00	2026-08-17T13:20:17.977756816-04:00	0.3472	3.1	-3.42E-11	Data	
33	2026-08-17T17:20:17.991645705+00:00	2026-08-17T13:20:17.991645705-04:00	0.3611	3.2	-4.40E-11	Data	
34	2026-08-17T17:20:18.005534594+00:00	2026-08-17T13:20:18.005534594-04:00	0.375	3.3	-1.34E-10	Data	
35	2026-08-17T17:20:18.019423482+00:00	2026-08-17T13:20:18.019423482-04:00	0.3889	3.4	-3.61E-11	Data	

CSV File Date and Time, Mass Number and Intensity Values

Configuration | **Outputs**

Pirani Pressure	1.000e-4	Torr
Total Pressure	3.653e-6	Torr
BA Current	3.653e-8	A
Quick Total Pressure	3.640e-6	Torr
Degas Current	2.379031	mA
Source1 Current	1.085165	mA
Source2 Current	0.914664	mA
Filament Voltage	2.07	V
Filament Current	3.64	A
Filament Resistance	0.57	Ohms
Filament Status	WaitingForTarget	
Pirani Status	Passed	
Filament Power	79.7852	%
Filament +Leg	-67.73	V
Pirani Temp	-0.120875	V
Pirani Corr	-0.121737	V
Pirani Volts	-0.269205	V
Electronics Temp	46.45	°C
Probe Temp	39.82	°C
Power Supply	24.07	V
Reference	2.440512	V

Outputs Tab

Diagnostic Outputs

Although the XTP Series is designed for reliable operation, useful diagnostic information is available at the click of the mouse. The Outputs tab shows real-time measurements of the filament voltage, emission current, electronics temperature, and much more. This information will quickly tell you of a filament problem or shorted probe.

Performance and Value

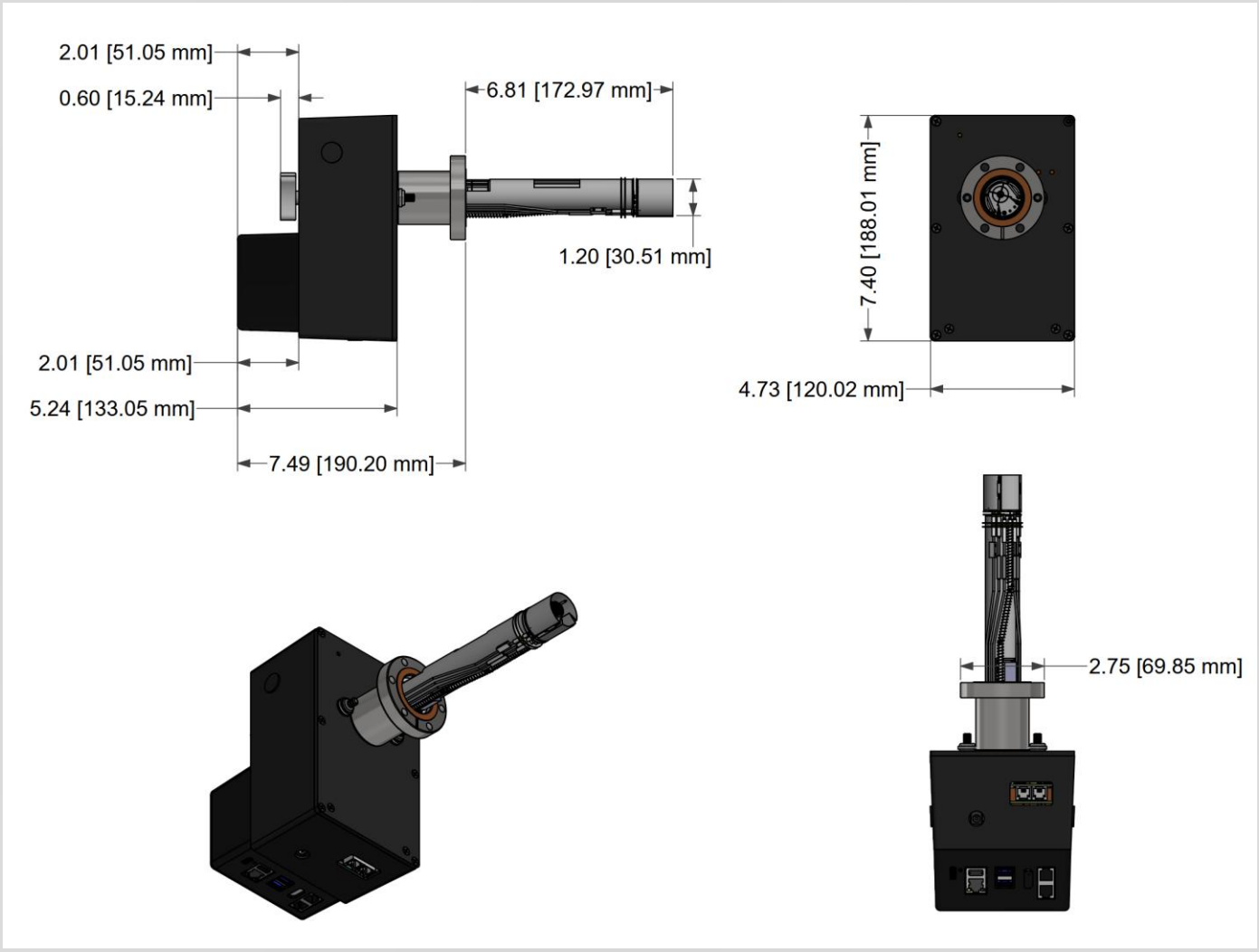
The Extorr XTP Series RGA it is the only vacuum gauge you will ever need. The combination of flexibility and competitive price make Extorr an outstanding vacuum measurement value.

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series



RGA Dimensional Drawing, Inches [mm]

XTP Series Specifications

Mass range

XTP-100	1 to 100 amu Faraday cup (FC)
XTP-200	1 to 200 amu Faraday cup (FC)
XTP-300	1 to 300 amu Faraday cup (FC)
XTP-100M	1 to 100 amu Faraday cup (FC) and Electron Multiplier (EM)
XTP-200M	1 to 200 amu Faraday cup (FC) and Electron Multiplier (EM)
XTP-300M	1 to 300 amu Faraday cup (FC) and Electron Multiplier (EM)

Mass filter type Quadrupole

Detector type Faraday cup (FC), Standard
Electron Multiplier (EM), Optional

Resolution Better than 0.5 amu @ 10% peak height. Adjustable to constant peak width throughout the mass range.

Sensitivity (A/Torr) 6×10^{-4} into Faraday cup. Measured with N_2 @ 28 amu with 1 amu full peak width, 10% height, 70 eV electron energy, 6 eV ion energy and 2 mA electron emission.

Minimum detectable partial pressure

Detector	Dwell	Minimum Detectable partial Pressure
Faraday Cup	200 ms	2.4×10^{-12} Torr * 7.2×10^{-12} Torr **
	5 seconds	5×10^{-13} Torr * 1.5×10^{-12} Torr **
Electron Multiplier	200 ms	1×10^{-14} Torr * 3×10^{-14} Torr **
	5 seconds	2×10^{-15} Torr * 6×10^{-15} Torr **

* Measured by calculating one standard deviation of the baseline noise divided by the sensitivity for nitrogen.
** Measured by calculating three standard deviations of the baseline noise divided by the sensitivity for nitrogen.

Operating range UHV to Atmosphere
Pirani gauge, 10^{-4} Torr to ATM
Ion Gauge below 5×10^{-3} Torr
RGA operation below 10^{-4} Torr

Operating temperature
50 °C Electronics, 100 °C Probe

Bakeout temperature
300 °C (Probe only, CCU removed)

Total pressure measurement
10^{-4} Torr to ATM, Pirani gauge
2×10^{-10} Torr to 5×10^{-3} Torr, B/A type Ion Gauge

Probe Materials SS304, Kovar, Tungsten, Alumina, Iridium, Copper, Nickel, Thoria, Platinum

Ionizer Design Open ion source, electron impact ionization

Filament Dual thoria coated iridium with firmware protection. Built-in 1 to 30W degas ramp-up. Field replaceable.

Electron energy 11 to 150eV, programmable

Ion energy 1 to 12eV, programmable

Focus Voltage 0 to 150V, programmable

Electron emission current
0.1 to 4 mA, programmable

Probe mounting flange
2.75" CF

Minimum tube I.D. 1.375"

Warm-up time Mass stability ± 0.1 amu after 30 minutes.

Minimum PC Requirements
Any PC with a modern browser. Or standalone use with an HDMI monitor, mouse and keyboard

Software Included/embedded

Power requirement 24 VDC @ 2.5 Amps.
120/240 VAC adapter included.
5 VDC @ 5 Amps.
120/240 VAC adapter included.

Weight 9 lbs. Total, Probe and CCU.

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