

Varian, Inc.
Vacuum Technologies

The New XGS-600
Vacuum Gauge
Controller



*Vacuum Measurement
Made Easy*

Inspiring Excellence

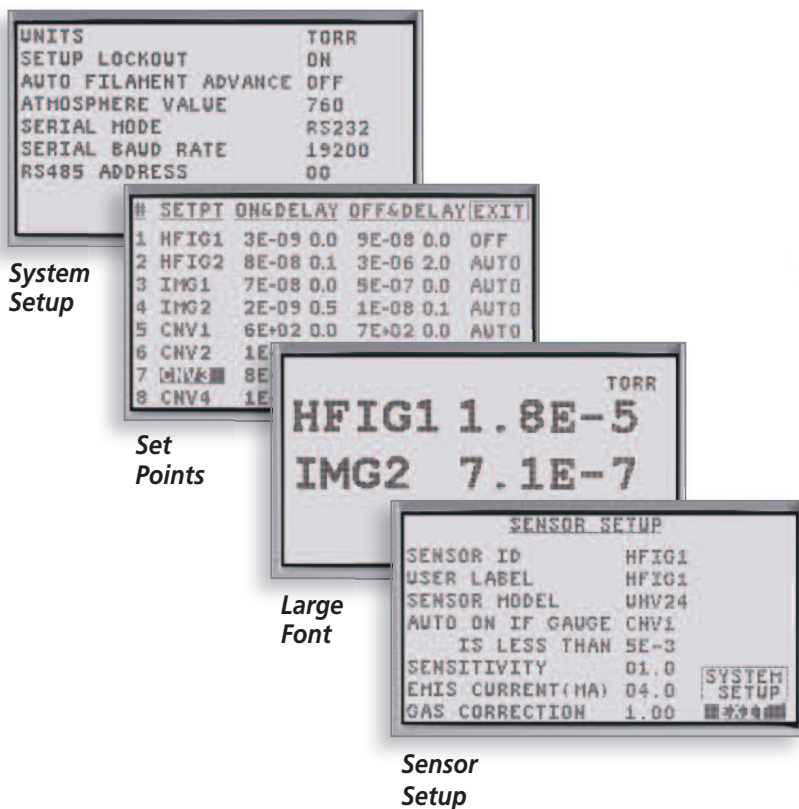


VARIAN

User Friendly Interface

With the XGS-600, the

- **User Friendly Interface** with simple navigation gives you access to...
- **Intelligent Design and Functionality...**
- unmatched gauge **Capacity, Flexibility and Expandability.**



Main Screen

Intuitive screen functions

- Displays up to 8 gauges on one screen
- Customizable gauge labels

Easy key pad navigation



Gauge cards simply snap into place to add a sensor.

Intelligent Design & Functionality

- Simultaneous operation of all gauges – up to 12
- <20 millisecond signal-to-set-point response time
- Displays up to 8 gauges at one time
- Standard features include:
 - 8 gauge set points
 - fully programmable RS-232/485 serial communications
 - E-beam degas for hot filament gauges
 - pressure unit selection: Torr, Mbar, Pascal
 - universal voltage compatibility
 - analog output



Capacity, Flexibility & Expandability

Only 3 gauge cards operate all Varian gauges:

- Add a gauge card when needed, simply and quickly
- Save the cost of additional controllers

Simultaneous operation of:

- Up to 4 hot filament gauges plus 4 convection gauges
- Up to 5 inverted magnetron gauges
- Up to 12 convection gauges



All this capacity is delivered in a compact half rack unit.

Applications

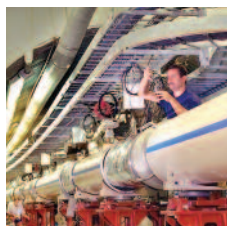


XGS-600 Controller operates *all* Varian gauges with *only* 3 gauge cards... convection, hot filament and cold cathode (inverted magnetron)



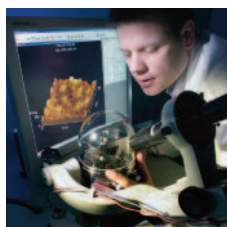
Laboratory

- **Easy to use** – can be operated without a manual; screens and menus are easy to follow
- **Easy to order** – only 3 different controller gauge cards/modules to choose from, everything else is standard
- **Easy to adapt** – only one gauge card is needed to operate any Varian gauge of a given type
- **Practical** – the XGS-600 can be easily reconfigured – it just takes a few minutes to add or remove a gauge card – any Varian gauge can be operated in one unit
- **Convenient** – view up to 8 gauges at one time or change the font to view 2 from 15 feet away – all programming is stored in flash memory so no battery backups are needed



Accelerators, Synchrotrons and Other Large Facilities

- **Signal response** – <20 milliseconds from signal to set point response – ideal for fast acting valves
- **Capacity** – operates up to 5 IMG* gauges in one controller
- **Compact** – half-rack size saves up to 50-75% of rack space from other controller options
- **Operability** – fully programmable serial communications with individual gauge labeling; choice of RS-232/485
- **Flexibility** – combine UHV/HV metrology and IMG* interlocking in one unit – ideal in beamline applications

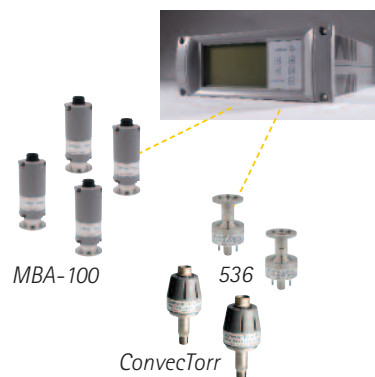
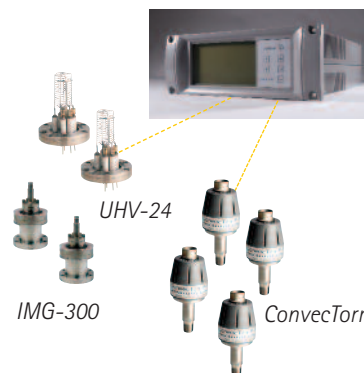
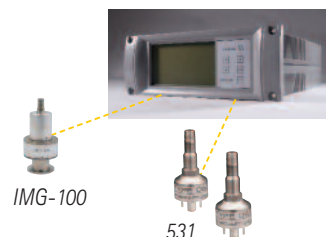


OEM Equipment

- **Reliable** – The XGS-600 controller has been qualified under demanding test standards; thermal management reduces component stress and provides consistency and durability in performance.
- **Compact** – half-rack size for up to 4 ion gauges and 4 convection gauges in one unit
- **Flexibility** – operates any Varian gauge in one controller
- **Performance** – fully programmable serial communication is standard. Serial response time <2 milliseconds. Displays up to 8 gauges in one screen, gauge labeling. All programming stored in flash memory – no batteries needed.

Possible Configurations

Below are examples of ways to configure the XGS-600, but remember, you are not limited to these configurations. The flexibility of this unit allows you to setup the controller with the gauges that suit your needs.



*IMG – Inverted Magnetron Gauge

Gauge Selections Chart

Vacuum Regime	Controller Gauge Card			Gauge Type	Recommendation	Gauge characteristics
	Convection C	Hot Filament H	Cold Cathode M			
ROUGH Atm to 10 ⁻³	✓			Convectorr 	Best overall convection gauge for accuracy, repeatability, secure connection	- Stainless steel 1/8 in. NPT, KF and CFF - Locking bayonet connector
	✓			536 	Same vacuum performance as the Convectorr but without bayonet connector	- Stainless steel 1/8 in. NPT, KF and CFF
	✓			531 	Most economical rough gauge	- Lowest cost - Mild steel 1/8 in. NPT
HIGH 10 ⁻³ to 10 ⁻⁹		✓		572 (glass) 	- Most popular general purpose HV gauge (hot filament) - Dual filament	- Measures from 1 mTorr to 1 x 10⁻⁹ Torr - Tungsten filaments – more accurate and repeatable; better for hydrogen and halogen gases - Glass – can see that it is on
		✓		563 (glass) 	Best general purpose HV gauge (hot filament) for overall performance and reliability	- Measures from 10 mTorr to 1 x 10⁻⁹ Torr - Thoriated iridium filament tolerates accidental venting - Glass – can see that it is on - Platinum coating – provides higher performance in the 10⁻⁴ range and a measure of EMI shielding
		✓		571 (glass) 	Same as 563 without platinum coating	Less expensive than 563 without platinum coating
		✓		MBA-100 (one filament metal case) MBA-200 (two filaments, metal case) 	Break resistant HV gauge (hot filament)	- Measures from 5 mTorr to 1 x 10⁻⁹ Torr - General purpose hot filament with metal housing – not glass – will not break - Uses less power than glass gauges - Well shielded - Available in tungsten and thoriated iridium filament (see 572 and 563 above)
			✓	IMG-100 Inverted Magnetron 	Most durable and fastest responding HV gauge (cold cathode)	- General purpose—measures from 5 mTorr to 2 x 10⁻⁹ Torr - Small, reliable, extremely rugged – will not burn out - Very fast response – < 20 milliseconds - Less accurate and repeatable than hot filament - Longer starting in high vacuum than a hot filament - Can be cleaned
ULTRA HIGH 10 ⁻⁹ to 10 ⁻¹²			✓	IMG-300 Inverted Magnetron 	Most durable and fastest responding UHV gauge (cold cathode)	- Measures from 1 mTorr to 1 x 10⁻¹¹ Torr - Bakeable with magnet to 250°C – bakeable without magnet to 450°C - Reliable, rugged, will not burn out – can be cleaned
		✓		UHV-24 (nude) 	Most popular UHV gauge (hot filament)	- Measures from 1 mTorr to 1 x 10⁻¹⁰ Torr - Bakeable to 450°C - Thoriated iridium filaments run cooler-less outgassing - Dual tungsten filaments run hotter-more outgassing but measurements are more accurate and repeatable
		✓		UHV-24p (nude)	UHV gauge providing the highest vacuum reading	Same as UHV-24 except it measures to 2 x 10⁻¹¹ Torr

Technical Specifications

DIMENSION DRAWING



TECHNICAL SPECIFICATIONS

User Interface	LCD monochrome dot matrix, 240 x 128, white LED backlight; 5 button keypad
Display Capability	Up to eight simultaneous channels of pressure measurement, up to a 5 character user label for each; up to two channels in a large font; readable from 15 feet; display updates every 200 msec
Gauge Capability	Up to 4 Hot Filament BA gauges including metal, glass, and nude UHV types using the HFIG** cards; up to 5 IMGs* using the IMG* cards; up to 12 rough gauges using the Dual Convection Gauge Cards
Measurement Range	1 x 10 ⁻¹¹ Torr to Atm dependent upon card and gauge type selected
Setpoints	Eight normally open setpoints (open collector), with independently programmable ON and OFF delays, manual override (see detail specs for ratings)
Fast Setpoint Response	20 msec max (with delay set to 0.0 secs)
Serial Communications	RS232 and RS485 (fully programmable)
Analog Outputs	1v/dec LOG, 0 – 10V FS, on each card with 200 msec update rate
I/O Control	HFIG** card: Remote gauge ON/OFF, Fil select, DeGAS ON/OFF Inputs, Status Output IMG* card: Remote gauge ON/OFF Input, Status Output Dual Convection Card: Remote CAL inputs, Status Outputs
Other	Auto-ON capability for installed ion gauges when at least one convection card is installed Sensitivity, gas correction, emission current (BA gauges only) inputs for ion gauges E-BEAM degas, with auto turn off for BA gauges Selectable air or argon calibration for rough gauges Adjustable atmosphere value for rough gauges Text error messages All data stored in FLASH non-volatile memory requiring no batteries
Power Input/Temperature	Worldwide universal power input, 100-240VAC, 2A, 50/60HZ, IEC inlet; 5-40°C ambient
Regulatory Approvals	CE certified and RoHS compliant, CSA certified for USA and Canada

* IMG – Inverted Magnetron Gauge

** HFIG – Hot Filament Ion Gauge

Ordering Information

ORDERING INFORMATION

Description	Part Number
XGS-600 Vacuum Controller, without cards	XGS600H0M0C0

Configure your XGS-600 Controller with cards – constructing your part number:

- 1 Refer to the Gauge Selection Chart to help determine the gauge you need
- 2 Choose the number of HFIG** cards you want; place after the "H"; will be 0 to 4
- 3 Choose the number of IMG* (cold cathode) cards you want; place after the "M"; will be 0 to 5
- 4 Choose the number of Dual Convection Gauge Cards; place after the "C"; each card runs two convection type gauges, will be 0 to 6

XGS600HXM CX

Note:

- The XGS-600 has 6 gauge card slots permitting a total of 6 cards.
- Up to four slots can be used for HFIG** cards. If four of these are chosen, one IMG* card or up to two Dual Convection Gauge Cards may be selected also.
- Up to five slots can be used for IMG* cards. If five of these are chosen, no additional gauge cards may be selected.
- All six slots may be used for Dual Convection Gauge Cards.

Cables***

Cable Description	Length	Part Number						
		10 ft	25 ft	50 ft	65 ft	75 ft	90 ft	100 ft
XGS-600 I/O, with flying leads		R32493010	R32493025	R32493050	Special Order (SO)			
Convectorr Gauge, non-bakeable		L91223010	L91223025	L91223050	Special Order (SO)			L91223100
Thermocouple Gauge (531, 536)		L91313010	L91313025	L91313050	SO	L91313075	SO	L91313100
MBA-100 Gauge		R32483010	R32483025	R32483050	Special Order (SO)			
Glass BA Gauge Standard, non-bakeable		R32443010	R32443025	R32443050	Not available over 50 feet – with 10 ft. standard cable, it is possible to order extension up to 250 ft.			
UHV-24/UHV-24p Standard, non-bakeable		R32453010	R32453025	R32453050				
UHV-24/UHV-24p Teflon UHV, bakeable to 250°C		R32463010	R32463025	R32463050				
Ion Gauge Extension – all hot filament		NA	NA	NA	R32473065	SO	R32473090	SO
IMG-100 Gauge, non-bakeable – may be used with IMG-300		R03113010	R03113025	R03113050	SO	R03113075	SO	R03113100
IMG-300 Gauge, bakeable		R03413010	R03413025	SO	R03413065	SO	SO	R03413100

***Custom and longer lengths are available on request.

Other Accessories

Description	Part No.
Hot Filament Ion Gauge (HFIG) card, field Install	R3075301
Inverted Magnetron Ion Gauge (IMG) Card, field install	R3080301
Dual Convection Gauge Card, field install	R3084301
Tilt Stand Accessory	R3124301
Center Rack Mount Kit	L6423301
Off-Center Rack Mount Kit	L6422301
Dual Mount Rack Mount Kit	L6426301

*IMG – Inverted Magnetron Gauge

**HFIG – Hot Filament Ion Gauge

Power Cord Selection

One power cord included with each unit

Description	Part No.
Europe, 10A /220-230 VAC, 2.5 meter	656494220
Denmark, 10A/220-230 VAC, 2.5 meter	656494225
Switzerland, 10A/230 VAC, 2.5 meter	656494235
UK/Ireland, 13A/230 VAC, 2.5 meter	656494250
India, 10A/220-250 VAC, 2.5 meter	656494245
Israel, 10A/230 VAC, 2.5 meter	656494230
Japan, 12A/100 VAC, 2.3 meter	656494240
North America, 10A/230 VAC, 2.5 meter	656494255

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