IGC5 Ion Gauge Controller

The VACGEN IGC5 ion gauge-based process vacuum controller combines the functionality of several vacuum system controllers into a single easy to use unit, reducing hardware, wiring and cost.

Ion Gauge	
Ion Gauge	1x Dual filament UHV. Thoria- or Yttria-coated Iridium filaments
Filament Drive	Constant current dc (4A/10V)
Emission Control	processor controlled precision PID control
Manual Emission	User selections: 0.05, 0.1, 0.15, 0.25, 0.4, 0.6, 1, 1.5, 2.5, 4, 6, 10mA
Auto-emission	Emission is automatically adjusted for optimum performance at measured pressure

Ion Gauge Controller	
Emission features	Soft-start. Optional “new filament” setting to permit gentle heating. User-definable min & max emission
Degas	Ramped low/mid/high power
Degas Features	User-defined ramp/soak periods. User-defined pressure suspend to allow vacuum recovery
Degas Pressure	Continuous measurement during degas
Degas on/off	No interruption to pressure measurement during degas start/stop
Electrometer	Effective Range: 0.1pA to 1mA; equates to $1x10^{-13}$ to 1 mbar (gauge dependent). High thermal stability, low drift
Sensitivity	1.0 to 99.9 (resolution 0.1)
Pump-down	User-defined auto pump-down: backing gauge dependent ion gauge start-up pressure; trip allocation for external events (valves...), delay time, restart time etc

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Secondary Gauge Pirani	
Built in	Supports ZPVG521
Number of Modules	1 module - with optional second module

Bake-out control	
Built in	Type K thermocouple. Standard mini-thermocouple connector
Range	Room temperature to 500°C (16 bit resolution)
Bake-out Functions	Precision CJC
	Reproducibility <±0.2°C. Absolute <±2°C. User calibration available
	6x ramp/soak steps, each up to 99.9 hours duration
	Individual trip allocation for power switching
	User-defined pressure interlocking (ramp suspend/time suspend/abort)
	User-defined temperature hysteresis
	Optional auto-degas at end of bake-out

Interlock Hub	
Trips	7 (4x SPCO relays 1A24Vdc/ 0.5A125Vac + 3x NPN open collector 100mA/12Vdc)
Trip assignments	Individually assignable: external interlock to any ion or backing gauge, ion gauge status (on, off, degas), bake-out power switching, pump down external drive
Digital Inputs	2x opto-isolated inputs. 3-30Vdc; 2.4kΩ input resistance
Digital Input assignment	External interlock as trip for ion gauge; control over ion gauge on/off and degas either via input state or toggle state, bake-out trip, pump-down trip, backing gauge operation
Interlock Response times	0.2 sec max. Typically <0.1sec

Analogue Output	
Output	Full scale range: -0.2V to 10.2V (12 bit resolution). User-definable min and max
Accuracy and reproducibility	Precision reference-based: <±0.2%
Assignment	Ion gauge (emission and sensitivity corrected), any secondary gauge, gauge combinations, bake-out temperature
Functionality	User-defined voltage range, assigned pressure/temperature range, lin or log relationship

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General	
Dimensions	19” rack mounting: WxHxD: 484x44x260mm
Weight	5.5kg
Electrical	115/230Vac. Live and Neutral fused: 2A for 230Vac, 3.15A for 115V
Power Consumption	4W (ion gauge off); max: 40W (high degas); typical: 4-10W (ion gauge on)
Display	Dual gold OLED display:
	Display 1: Graphical 100x16
	Display 2: 2x 16 character
Data Resolution	Ion gauge
	Pressure: 1 or 2 decimal place resolution; Current: 4 significant digits (mA/μA/nA/pA)
	Secondary/Tertiary gauges: 1 decimal place resolution
	Temperature: <0.1°C measurement resolution, 1°C display resolution
Manual input	Intuitive menu-driven via 5 front panel touch buttons
Comms ports	Multi-drop RS232 (up to 8 units (port dependent)) and RS485-3 wire (up to 16 units)
	TCP/IP option
Comms Settings	4800, 9600, 19200, 38400, 57600 & 115200(RS485 only) baud
	Parity: N, O or E. 8 bit + 1 start + 1 stop
Comms Protocols	MODBUS protocol. Simultaneous multiple parameter read/write; floating point resolution
	QUICKComm protocol: ASCII-based with frequent parameter dump
Comms connection	2x RJ45 for simple daisy-chaining

IGC5 Controllers - Leads and Gauges		
Product	Attributes	Order Code
1 m Ion Gauge Lead	Fully Bakeable	ZIPGB1
2 m Ion Gauge Lead	Fully Bakeable	ZIPGB2
3 m Ion Gauge Lead	Fully Bakeable	ZIPGB3
5 m Ion Gauge Lead	Fully Bakeable	ZIPGB5
10 m Ion Gauge Lead	Fully Bakeable	ZIPGB10
Ion Gauge	Closed Grid / Tungsten Filament	ZVIG17
Ion Gauge	Closed Grid / Iridium Filament	ZVIG18
Ion Gauge	Open Grid / Tungsten Filament	ZVIG22
Ion Gauge	Open Grid / Iridium Filament	ZVIG24
Pirani Gauge	KF10 Flange Bakeable to 50°C (ZIGC5 only)	ZPVG521

Spares and Accessories		
Item	Notes	Order Code
Accessory Pack: Connectors and Fusese	One set supplied with ZIGC5	ZIGMACC
Spare filaments for Ion Gauges	Thoria Coated 1 Set for ZVIG18 and 24	ZTIR23
Spare filaments for Ion Gauges	Tungsten 2 Sets for ZVIG17 and 22	ZWW17