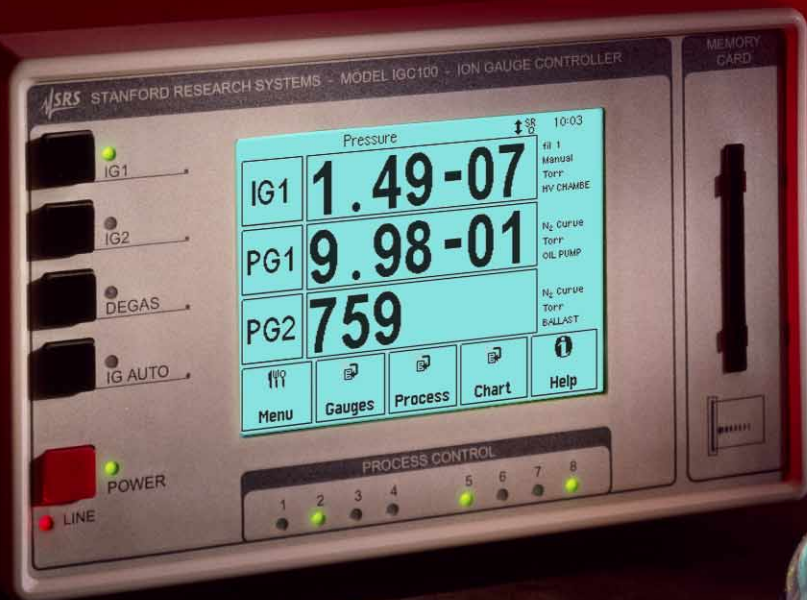


# IGC100 Ion Gauge Controller



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**\$1495** (U.S. list)

- **1000 Torr to UHV range**
- **Highly accurate, stable controller**
- **Pressure vs. time curves**
- **4 analog input/output ports**
- **RS-232 interface**
- **8 channel process control (opt.)**
- **GPB and Web interfaces (opt.)**

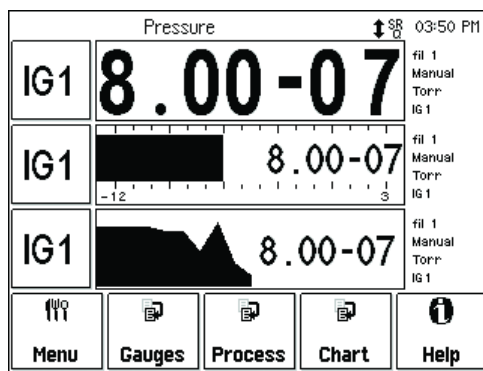
Introducing the IGC100 – a new standard in ion gauge controller design. The IGC100 is a high accuracy controller that offers pressure measurement and process automation never before available in a single instrument. It measures pressure from Bayard-Alpert ionization gauges, convection enhanced Pirani gauges and capacitance manometers providing uninterrupted pressure readings from 1000 Torr to UHV.

The IGC100 has a touchscreen display that can present data in a variety of formats including pressure versus time curves. There are built-in relays for process control and several multipurpose input/output ports. The IGC100 is also fully web-ready. Now you can monitor and control your vacuum system from the lab, your home or anywhere in the world.



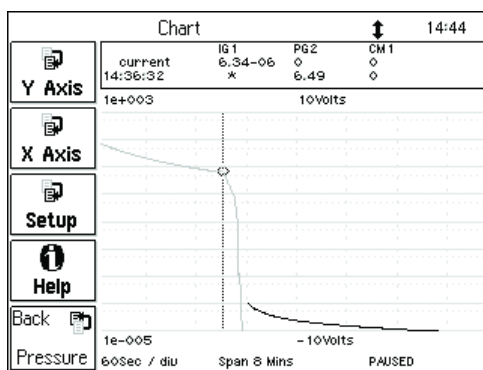
## Accurate Measurements

The IGC100 is designed to be the most accurate, stable controller on the market. Its low noise, autoranging electrometer delivers high accuracy pressure readings into the UHV range. A low noise, direct current (DC) supply powers the filament and establishes the emission current. The IGC100's precision electronics eliminate controller-to-controller variations and the measurement uncertainties (up to 15 %) associated with traditional instruments.



Large numeric readouts, bar graphs and trend plots provide flexibility in viewing the current pressure as well as trends in your data.

IGC100 data is continuously logged into memory. There is a real-time clock with date for precise time stamps. In addition to pressure readings, you can log the ADC voltages and relay activity. Data can be viewed on the IGC100 or downloaded to your computer for further analysis.



The Pressure vs. Time display allows you to monitor pump down and venting cycles and follow the time behavior of your system.

## Graphical Touchscreen Display

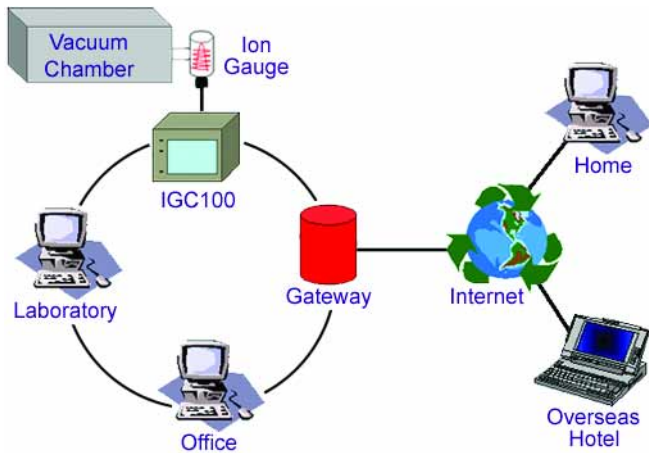
The IGC100 has a large, back-lit LCD touchscreen display – new to ion gauge controllers. The instrument shows large numeric readings from each gauge (easily read from across the room), and can also display readings in bar graph or trend format. The screen is updated twice a second and results are presented in units of Torr, mbar, bar, Pascals or microns.

The IGC100 also displays pressure versus time curves (chart recordings) allowing you to follow pump down and venting cycles and to keep track of your vacuum system's performance.

## Fully Web-Ready

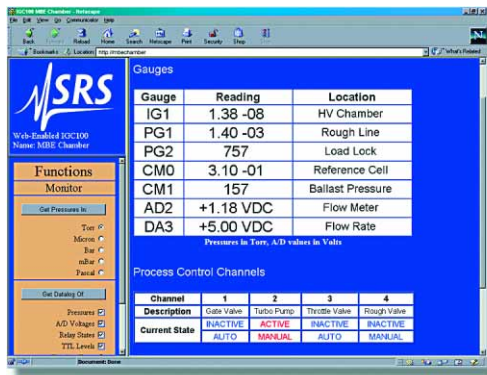
The IGC100 has an optional Ethernet interface with embedded web-server hardware that makes your controller fully web-ready. All you need is an internet connection and you can monitor and control your vacuum system from anywhere in the world. Just log on to the internet and enter the IP address of your controller - it's really that simple!





Gauges			
<b>IG1</b> 1.66-07 Torr HV CHAMBER Manual	<b>IG2</b> NO DATA HV2	<b>PG1</b> 0 Torr HV CHAMBER N <sub>2</sub> Curve	<b>PG2</b> 749 Torr OIL PUMP N <sub>2</sub> Curve
<b>AN1</b> +7.656 V LOADLOCK ADC input	<b>AN2</b> +0.009 V BALLAST ADC input	<b>AN3</b> +2.000 V INTERLOCK ADC input	<b>AN4</b> -0.005 V CONTROL IGC100 out
Pressure	History	Back	Help

The Gauge display shows the status of your ion gauges, Pirani gauges and the four analog I/O ports.



Sample of the IGC100 web page.

are eight relays, with corresponding TTL outputs, that can be used to control your vacuum system. They can be set by gauge pressure, status conditions (gauge on/off, filament on/off, etc.), the system clock, the analog I/O ports, or TTL input signals. The relays and TTL outputs can also be manually controlled from the front panel and the status of all eight channels can be displayed.

Process Control Channels			
<b>ROUGH VALVE 1</b> CLOSED Inactive Manual	Auto ----- Inactive	<b>GATE VALVE 3</b> CLOSED Inactive Auto	<b>FORE STATUS 4</b> OK Inactive Manual
<b>VENT VALVE 5</b> VENTING Active Manual	Active ----- Edit rules	<b>Channel 7 7</b> Inactive Manual	<b>Channel 8 8</b> Inactive Manual
Pressure	Edit Messages	Back	Help

Eight process control channels bring additional power and versatility to the IGC100.

## Useful I/O Ports

The IGC100 has four auxiliary analog input/output ports. When configured as inputs, the ports can be monitored on the front panel or read through the GPIB, RS-232 or web interfaces, and can be used for a variety of applications. For instance, they might be used to monitor the pressure of a capacitance manometer, measure pump speed, record temperature from a turbo pump controller or monitor a mass flow controller.

The ports can also be configured as analog outputs with a voltage range of  $\pm 12$  VDC, and can be used to send control voltages to other devices.

## Powerful Process Control

The IGC100 does more than simply measure pressure. It can also be an eight channel process controller. There

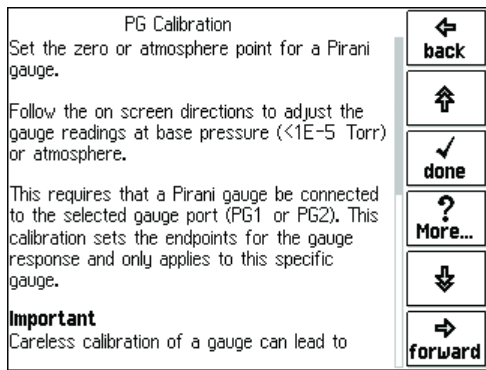
Additionally, there are twelve dedicated TTL inputs for triggering functions like gauge on/off, filament on/off, degas, ion gauge lockout, etc. All process control events are time stamped and recorded in memory and can be viewed at any time. User-programmable audible alarms and text messages can provide advance warning of potential problems.

## Gauge Auto-Start

The IGC100 can be set to automatically turn on an ion gauge once a Pirani gauge has reached a preset pressure level. If a UHV Pirani gauge is used in the same high vacuum chamber as the ion gauge, you can make uninterrupted pressure measurements from atmosphere to UHV. In the event of overpressure, the IGC100's built-in filament protection algorithm, with user programmable set point, immediately turns off your gauge filament.

## Easy Operation

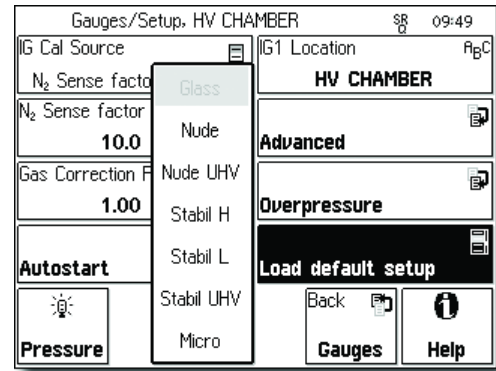
Despite its multitude of features, the IGC100 is easy to use. The menu based interface is intuitive and parameter entry is quick and simple. And of course, there is interactive help for all functions of the instrument.



Help screens provide detailed explanations of all the IGC100's capabilities.

There are dedicated front panel buttons for filament emission, degas and filament auto-start, and LEDs indicate their status. The IGC100 is compatible with virtually all Bayard-Alpert ion gauges including glass tubulated, nude, nude-UHV, STABIL\_ION® and MICRO\_ION®. You can select from a variety of standard gauge configurations or program your own.

You can also assign a location name to each gauge which is then displayed on the front panel of the unit. No more messy, confusing stickers on the face of your instrument. There are no DIP switches, trim pots or thumbwheel adjustments in the IGC100 – you'll never need to open the box.

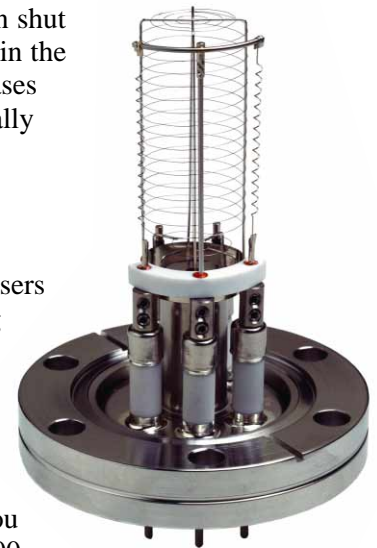


Gauge parameters are easily set from the front panel.

We have even added a sensor on/off function so you can shut down your Pirani gauges in the presence of flammable gases without having to physically disconnect them from the controller.

Password protection is provided to keep casual users from accidentally altering important parameters.

A high level command set, along with an RS-232 and optional GPIB interface, allows you to fully control the IGC100 from your computer.



IGC100 Rear Panel

## SRS Gauges

SRS supplies a wide range of hot-cathode ionization gauges including tubulated and nude designs with a variety of mounting options and a choice of Tungsten (W) or Thoriated-Iridium ( $\text{ThO}_2/\text{Ir}$ ) filaments.

We have also developed our own line of convection enhanced Pirani gauges (PG105 and PG105-UHV). PG105 gauges offer a measurement range that extends from 1000 Torr to  $10^{-4}$  Torr and can be ordered with an all-metal seal (option UHV). They are the only convection enhanced Pirani gauges that can be operated directly in UHV environments and can be baked to  $250^\circ\text{C}$  without any disassembly. The PG105 is calibrated for  $\text{N}_2$ , Ar, and air.

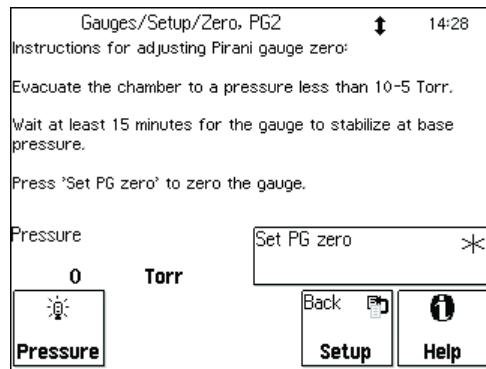


The IGC100 controller is also compatible with CONVECTRON® and HPS™ Series 317 convection-enhanced Pirani gauges.

## NIST Traceable Ion Gauge Calibration

We offer affordable NIST traceable calibration on all SRS Bayard-Alpert ion gauges. Calibrated gauges come with a memory card which contains calibration data specific to the gauge. A 6 % accuracy full range

calibration and a high precision 3 % accuracy calibration are available at very reasonable prices. Data is uploaded to the IGC100 via the front panel memory card reader. Of course the IGC100 can also be used with uncalibrated gauges. However, most applications greatly benefit from the reproducibility and accuracy of calibrated gauges.



*Pirani gauge calibration at both atmospheric and high vacuum pressures is quick and easy.*

## A New Standard

The IGC100 Ion Gauge Controller offers performance and features you can't find in any other instrument. Its graphical display, high accuracy, process control capabilities and internet accessibility make it the new standard in controller design. For more details visit our web site [www.thinkSRS.com](http://www.thinkSRS.com) or call us at (408) 744-9040.

# IGC100 Specifications

## Operation

Pressure range	1000 Torr to UHV ( $<10^{-11}$ )
Compatible gauges	Bayard-Alpert type ionization gauges, convection enhanced Pirani gauges, capacitance manometers with 0 to 10 VDC linear output.
Display	
Type	Back-lit, touchscreen LCD (4.7")
Resolution	320 × 240 pixels
Modes	Numeric, bar graph, <i>P</i> vs. <i>T</i>
Units	Torr, mbar, bar, Pa and micron
Numeric res.	3 digit mantissa plus exponent
Update rate	2 samples per second
Dual Pirani gauge	Simultaneous readout of two Pirani gauges (std.)
Dual ion gauge	Sequential readout of a second ion gauge (opt.)
Auto-Start	Use PG1 or PG2 to automatically turn IG1 or IG2 on/off when pressure goes through user-defined level.

## Electrical (20 °C to 30 °C)

Electron emission current	
Range	10 $\mu$ A to 12 mA
Stabilization	Electronically controlled
Accuracy	$\pm 1$ % of setting
Anode	
Potential	+180 VDC
Accuracy	$\pm 0.3$ % of setting
Filament	
Potential	+30 VDC
Accuracy	$\pm 0.3$ % of setting
Filament power (max.)	7 Amps DC, 7 VDC
Degas	
Mode	Electron bombardment
Power	1 to 75 W, adjustable in 1 watt steps
Time	1 to 30 min., adjustable in 1 min. steps
Anode potential	500 VDC
Emission current	2 to 150 mA
Display	Approximate pressure, degas power and remaining time
Electrometer	
Accuracy	1 % of reading
Zero drift	0.4 pA
Analog I/O	
Ports	4 configurable analog ports
Range	$\pm 12$ VDC
Resolution	14-bit (In), 12-bit (Out)
Update rate	2 Hz
Connector	BNC

## Ionization Gauge

Gauge type	Bayard-Alpert type ionization gauges including glass tubulated (std. and broad-range), nude, nude-UHV, STABIL_ION <sup>®</sup> , MICRO_ION <sup>®</sup> . Supports Tungsten and Thoriated-Iridium filaments.
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Pressure range	10 <sup>-11</sup> Torr to 10 <sup>-1</sup> Torr
Lower limit	X-ray limit of Bayard-Alpert gauge
Upper limit	Maximum operating pressure specified by manufacturer
Pressure calculation	From sensitivity constant or full range calibration curve
Sensitivity constant	0.1/Torr to 100/Torr
Filament selection	Fil 1, Fil 2, or both
Overpressure protection	Programmable trip points, auto-start protection
Analog output	Log, 1 V/decade, 1 to 10 V w/ fault and off indication

## Convection Enhanced Pirani Gauge

Gauge type	PG105 & PG105-UHV convection enhanced Pirani gauges, CONVECTRON <sup>®</sup> and HPS <sup>™</sup> Series 317 convection-enhanced Pirani gauges.
Pressure range	999 to 10 <sup>-3</sup> Torr. Lower pressure limit to 10 <sup>-4</sup> Torr w/ zero adjustment.
Gas type calibration	Direct readings for air, N <sub>2</sub> and Ar. Menu driven zero and atmospheric adjustments.
Analog output	Log, 1V/decade, 1 to 8 V

## Capacitance Manometer

Number of gauges	Simultaneous readout of up to four capacitance manometers using the auxiliary inputs.
Auxiliary power output	$\pm 15$ VDC, 100 mA (for CM power)

## Process Control (opt.)

Number of channels	8 channels with programmable setpoint, polarity, hysteresis, delay, audio signal and text messages. All channels can be manually operated from front panel.
Process variables	Pressure (any gauge), voltage (I/O ports), time (internal clock), TTL inputs and gauge status.
Relays	8 relays, SPDT, form C, 5A/250VAC/30VDC, resistive load
TTL control	8 TTL inputs and 8 TTL outputs (active low, opto-isolated) corresponding to relays
Additional inputs	12 opto-isolated TTL inputs corresponding to: Remote Enable, IG1 on/off, IG2 on/off, Degas on/off, Fil 1/Fil 2 select, both Fil select, IG lockout, IG Control keypad lockout, PG1 on/off, PG2 on/off, data logging time reset, touchscreen enable/disable

## General

Interfaces	RS-232 (std.), GPIB and Ethernet interface with embedded web-server hardware (opt.)
Power	90 to 264 VAC, 47 to 63 Hz, 240 W
Operating temperature	0 °C to 40 °C, non-condensing
Weight / dimensions	15 lbs. / 8.5"×5.25"×16" (WHD)
Warranty	One year parts and labor



## More on Process Control

One of the best ways to improve process yield and minimize failure is through automation. This is most important in complex systems or in installations operated by inexperienced personnel. An IGC100 controller fitted with the Process Control option becomes a powerful and very versatile vacuum system controller with built-in features that cannot be found in any other instrument of its kind.

A variety of input sources can be linked to the eight independent channels which provide a relay closure and associated opto-isolated TTL output. The output of a channel can be linked to any pressure gauge or analog input, the system clock, any gauge status condition or a TTL level input signal. The output status of all eight channels can be displayed on the instrument's front panel. Programmable audio alarms and on-screen text messaging are available to broadcast process control events.

Manual Override is also available for all channels making it possible to operate the relays and TTL outputs directly from the front panel. Manual output control allows you to use the IGC100 as a stand-alone instrument capable of controlling the operation of any standard vacuum system.

All process control events are automatically time-stamped and recorded in memory. Data can be viewed and downloaded to a computer for further analysis. This is very useful for failure diagnosis.

The combination of the Web Interface option with Process Control further expands the capabilities of the IGC100. It is possible to control a vacuum system remotely through the Internet and even set up automatic email notifications to warn operators about potential system problems.

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## Ordering Information *(U.S. list)*

IGC100 Ion Gauge Controller	\$1495
Opt. 01 GPIB Computer Interface	\$295
Opt. 02 Web Interface	\$295
Opt. 03 8 Channel Process Control	\$295

Gauges, cables and other accessories also available. Contact us for details.

## Contact Information

Phone: (408) 744-9040  
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[www.thinkSRS.com](http://www.thinkSRS.com)



Affordable NIST traceable ion gauge calibration is available at SRS.