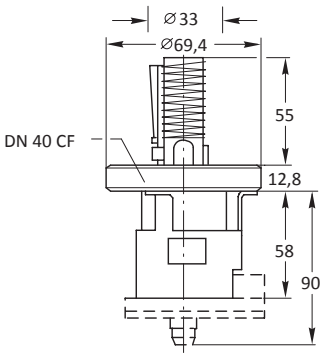
ION GAUGE SENSORS

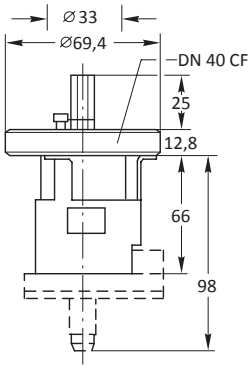
IG40 BA and IG40 EX

These passive sensors use hot cathode ionization technology.

Dimensions – mm



IG40 BA



IG40 EX

Features and benefits

- Exchangeable cathode in both the Bayard-Alpert and Extractor Gauges
- High accuracy of the measurements due to individually calibrated sensing system

Bayard-Alpert sensing system

- Measurement range from 10^{-2} to 2 x 10^{-11} mbar (1.5 x 10^{-11} Torr)
- Protection shield welded in place

Extractor sensing system

- Measurement range from 10^{-4} to 2 x 10^{-12} mbar (1.5 x 10^{-12} Torr)
- Significant reduction of X-ray and ion desorption effects

Technical data

	Units	IG40 BA	IG40 EX
Measurement range	mbar (Torr)	2 x 10^{-11} to 10^{-2} (1.5 x 10^{-11} to 10^{-2})	2x10^{-12} to 10^{-4} (1.5 x 10^{-12} to 10^{-4})
X-ray limit	mbar (Torr)	≤10^{-11} (≤10^{-11})	≤10^{-12} (≤10^{-12})
Ambient temperature during operation	°C	20 to +80	20 to +80
Maximum flange temperature with bakeable gauge cable	°C	250	250
Maximum bakeout temperature (with no cable connected)	°C	400	400
Material Cathode Anode Collector Reflector		 Iridium with yttrium oxide coating Pt/Ir 90/10 and Mo/pt wrapped wire Tungsten	 Iridium with yttrium oxide coating Mo and CoNiCr Tungsten NiFe
Vacuum connection		DN40CF	DN40CF
Operating characteristics Ion detector potential Cathode potential Anode potential Reflector potential	 V V V V	 0 80 220 -	 0 100 220 205
Emission current	mA	0.1 to 10.0	1.6
Heating current for the hot cathode	A	1.5	1.5
Heating voltage for the hot cathode	V	3.0	3.7
Sensitivity for nitrogen	$mbar^{-1}$	17.0	6.25
Bake out operation, Electron bombardment	V/mA	480/90	480/45
Compatible controllers		PGC202	PGC202

Selecting The Right Gauge for Your Application

mbar	10^{-12}	10^{-11}	10^{-10}	10^{-9}	10^{-8}	10^{-7}	10^{-6}	10^{-5}	10^{-4}	10^{-3}	10^{-2}	10^{-1}	10^{0}	10^{1}	10^{2}	10^{3}
Pirani Gauge - Thermal Conductivity																
PRG20K - NW16 AI									5×10^{-4}							1000
PRG20K - DN16CF SS									5×10^{-4}							1000
PRG20KCR - NW16 SS									5×10^{-4}							1000
Penning Gauge - Cold Cathode Ionization																
CPG35K - NW25				1×10^{-9}							1×10^{-2}					
CPG35K - NW40				1×10^{-9}							1×10^{-2}					
CPG35K - DN40CF				1×10^{-9}							1×10^{-2}					
CPG35KB - DN40CF				1×10^{-9}							1×10^{-2}					
Ion Gauge - Hot Cathode Ionization																
Ion Gauge																
IG40 BA - DN40CF		2×10^{-11}									1×10^{-2}					
IG40 EX - DN40CF	2×10^{-12}							1×10^{-4}								
mbar	10^{-12}	10^{-11}	10^{-10}	10^{-9}	10^{-8}	10^{-7}	10^{-6}	10^{-5}	10^{-4}	10^{-3}	10^{-2}	10^{-1}	10^{0}	10^{1}	10^{2}	10^{3}

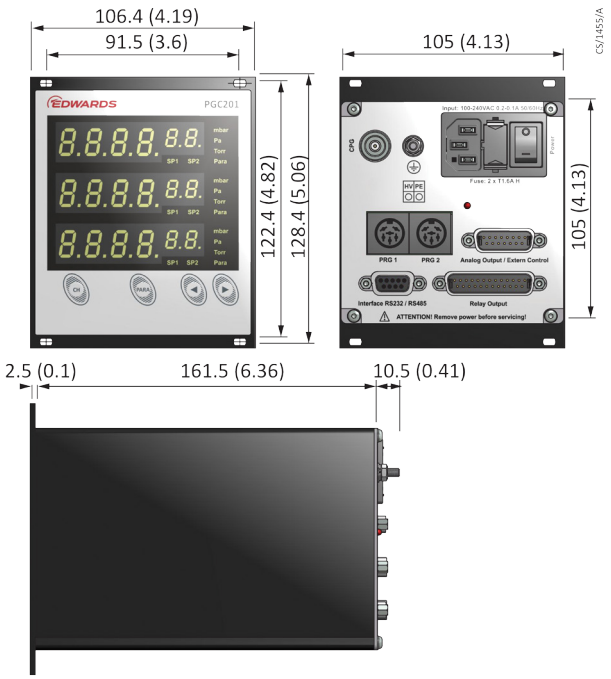
Selecting Your Controller

PGC201 Pirani and Penning Controller/PGC202 Pirani and Ion Controller

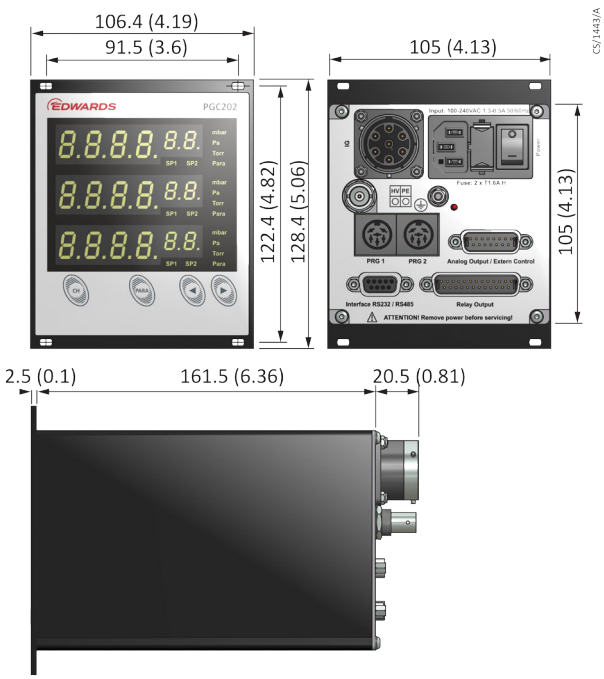
Edwards PGC201 controller covers the pressure range between 10^{-9} and 1000 mbar by combining two measurement principles from the PRG and CPG gauges. The PGC202 combines PRG gauges and IG40 BA or IG40 EX gauges for measurements of vacuum pressures in the range between 10^{-12} and 1000 mbar. Both these controllers provide monitoring and control functions for the connected gauges.

Dimensions

PGC 201



PGC 202



*Dimensions in mm

Features and benefits

- Compact 3 channel operating unit for a pressure range for passive sensors of
  - 10^{-9} to 1000 mbar PGC201
  - 10^{-12} to 1000 mbar PGC202
- Automatic switchover from PIRANI operation to
  - Penning cold cathode operation (PGC201)
  - UHV sensors either Bayard-Alpert measurement system IG40 BA or extractor measurement System IG40 EX (PGC202)
- Measurement cable lengths up to 50 meters
- Two adjustable switching thresholds with a relay contact for each measurement channel
- Logarithmic chart recorder output 0-10 V or 2-10 V
- Wide range power supply 100 - 240 V
- Unit of pressure selectable between mbar, Torr and Pascal
- Compact, rugged Penning (CPG) sensor insensitive to operation at high pressures
- Aligned and temperature compensated Pirani (PRG) sensors
- Cost-effective replacement sensors and electrodes
- Error message for each channel, for example in the case of broken filament, defective sensor line or failed plasma discharge
- Compact benchtop enclosure (1/4 19”, 3 HU) made of metal for installation in front panel cut outs and 19” racks
- Easy to operate
- RS 232 interface
- CE mark
- RoHScompliant

Typical applications

- Universal pressure monitoring of high vacuum pump systems: turbomolecular, diffusion, cryogenic, ion etc.
- Annealing, melting, brazing and hardening furnaces
- Coating systems
- Analytical instrumentation
- Deployment in thermal radiation resistant and degassable systems is possible
- Particle accelerators

Technical data

	Units	Pirani/Penning Controller PGC201	Pirani/Ion Controller PGC202
Number of measurement channels		3	3
Measurement range Channel 1, 2 (PRG) Channel 3 (CPG) Channel 3 (IG40 BA) (IG40 EX)	 mbar (Torr) mbar (Torr) mbar (Torr) mbar (Torr)	 5×10^{-4} to 1000 (3.5×10^{-4} to 750) 10^{-9} to 10^{-2} (10^{-9} to 10^{-2}) – –	 5×10^{-4} to 1000 (3.5×10^{-4} to 750) – 2×10^{-11} to 1×10^{-2} (1.5×10^{-11} to 0.75×10^{-2}) 2×10^{-12} to 1×10^{-4} (1.5×10^{-12} to 0.75×10^{-4})
Unit of measurement (selectable)		mbar, Torr, Pa	mbar, Torr, Pa
Measurement uncertainty			
PRG		≤20% of the measured value in the range 10^{-3} to 10^{-2} mbar (± 20%) in the range 10^{-2} to 10^{2} mbar (± 15%)	≤20% of the measured value in the range 10^{-3} to 10^{-2} mbar (± 20%) in the range 10^{-2} to 10^{2} mbar (± 15%)
CPG		± 30% of the measured value in the range 10^{-8} to 10^{-4} mbar	
IG40 BA/EX			+/- 2% of the measured value
Measurement cable	m	up to 50 (application dependent)	up to 50 (application dependent)
Display for measured values		digital, 7 segment LED, 4 digit mantissa and 2 digit exponent	digital, 7 segment LED 4 digit mantissa and 2 digit exponent
Type of gas (selectable)		factor adjustable	factor adjustable
Operating mode switching thresholds		2 per channel single, interval-trigger	2 per channel single, interval-trigger
Adjustable switching thresholds PRG	mbar (Torr)	5×10^{-3} to 500 (5×10^{-3} to 375)	5×10^{-3} to 500 (5×10^{-3} to 375)
CPG	mbar (Torr)	1×10^{-8} to 9.9×10^{-3} (0.75×10^{-8} to 7.4×10^{-3})	
IG40 BA	mbar (Torr)		1×10^{-8} to 5×10^{-3} (0.75×10^{-8} to 3.75×10^{-3})
IG40 EX	mbar (Torr)		1×10^{-11} to 1×10^{-11} (0.75×10^{-11} to 0.75×10^{-11})
Switching relay hysteresis		10% of the trigger value (default), freely adjustable for PRG and CPG	10% of the trigger value (default), freely adjustable for PRG and IG40 BA or EX
Relay contact load rating		a.c./d.c., max. 30 V/1 A	a.c./d.c., max. 30 V/1 A
Chart recorder output (default) PRG		0 to 10 V, log. divisions linear: 3 decades, approximately 10.5 V in case of a failure, logarithmic: (1×10^{-3} mbar), 1.67 V/decade	0 to 10 V, log. divisions linear: 3 decades, approximately 10.5 V in case of a failure logarithmic: (1×10^{-3} mbar), 1.67 V/decade
CPG		logarithmic: (1×10^{-9} mbar), 1.43 V/ decade	
IG40 BA or EX			logarithmic: (1×10^{-12} mbar), 1.00 V/decade
Interface		RS 232, RS 485	RS 232 C, RS 485
Mains connection 50/60 Hz	V a.c.	100 - 240	100 - 240
Power consumption	W	< 10	< 60
Storage temperature range	°C	-20 to +60	-20 to +60
Nominal temperature range	°C	+5 to +50	+5 to +50
Max. rel. humidity	% n.c.	80	80
Weight	kg (lbs)	1.4 (3.09)	1.4 (3.09)
Dimension (W x H x D)	mm	106.4x128.4x174.5	106.4x128.4x184.5
Installation depth	mm	approx. 220	approx. 220
Protection class	IP	40	40