

**Ionization Chamber Controller
with Integrated HV Supply**



Features

- Dynamic range <1 pA to 200 μ A
- Integrated digitization and filtering
- Fiber-optic, RS-232 and RS-485 interfaces.
- Integrated calibration test source
- Full control provided of integration modes
- External trigger capability
- Analog monitor output with linear and log modes.
- Frequency monitor output (VFC).
- Optional 3 kV high voltage output for ionization chamber biasing.

Applications	<ul style="list-style-type: none"> • Ionization chamber readout • Low current and charge measurement
Options	<ul style="list-style-type: none"> • Auxiliary HV output 200, 500, 1000, 2000, 3000V, positive or negative

Specifications

Operating principle	Gated integrator (charge integrating amplifier)
Integration capacitor	Dual, software selectable. Default values 100 pF and 3300 pF.
Input noise	< 200 fA rms unloaded. (1 second integration, 10 pF capacitor at \leq 25 C ambient)
Input offset	< 10 pA , 15 to 25 C, < 3 pA typical. Offset can be removed by zero subtraction.
Input impedance	< 3 kohm
Input protection	Back to back fast diodes, spark gap
Stability	Output drift < 200 fA / hour at 25 +/- 1 C ambient after stabilization
External accuracy	Better than 0.5% of full scale in use, integration time 500 μ sec to 1 sec, after calibration with built-in current source



Specifications (continued)

Pre-defined current ranges	1 nA, 8 nA, 10 nA, 100 nA, 1 μ A, 10 μ A, 100 μ A, 200 μ A
Integration time	User selectable, 100 μ sec to 10 sec.
External gate input	TTL 10 kohm impedance
Trigger modes	Internal (autorun), external_start, external_start_stop, external_start_hold.
Digitization	16 bit bipolar over +/- 10 V integrator output range
Averaging modes	Multiple conversions per integration; multiple integrations per reading to increase digital resolution up to 20 bits.
Auxiliary HV PSU	(Factory option) 0 to 3000V programmable (polarity and maximum voltage factory selectable), 1 watt max at full voltage and current. Noise and ripple < 0.01%.
Power input	+24V (+/- 2V) DC, 300mA typ, 500mA max.
Controls	Two rotary switches for loop address and comms mode/ baud rate.
Displays	Six status LEDs (power, comms mode, device status). "HV on" LED.
Case material	Stainless steel sheet
Weight	0.7 kg (1.5 lb).
Operating environment	10 to 35C (15 to 25 C recommended to reduce drift and offset) , < 70% humidity, non-condensing, vibration < 0.1g all axes (1 to 100Hz) Vibration must be as low as possible to measure at the lower limit of the dynamic range.
Shipping and storage environment	-10 to 50C, < 80% humidity, non-condensing, vibration < 2g all axes, 1 to 100Hz

Interfacing

Interfaces	RS-232 or RS-485, 8-bit ASCII. Selectable baud rate up to 115 kbos. The electrical interface can be set to be RS-232 levels, or full-duplex differential RS-485.
	Fiber-optic loop, 10 Mbit/sec serial, 9-bit asynchronous binary. Ethernet connection to host through A300 or A500 loop controllers.
Host computer	ASCII communications based on SCPI. Diagnostic host program supplied for Microsoft® Windows. IG2 interface layer to EPICS .



Monitor outputs

Number	One, analog voltage (linear or logarithmic scaling) One, frequency
Signal type	Analog voltage +/- 10 V into 10 kohm. Frequency 0 to 1 MHz TTL into 50 ohm.
Mapping	Signals map the selected nominal full scale current range. Mappings can be scaled under software control.

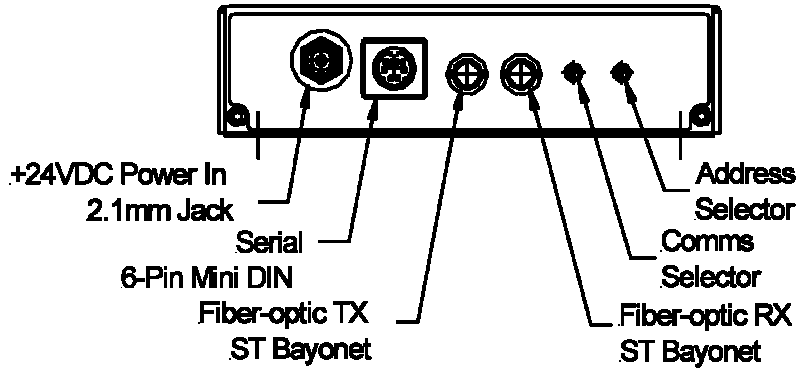
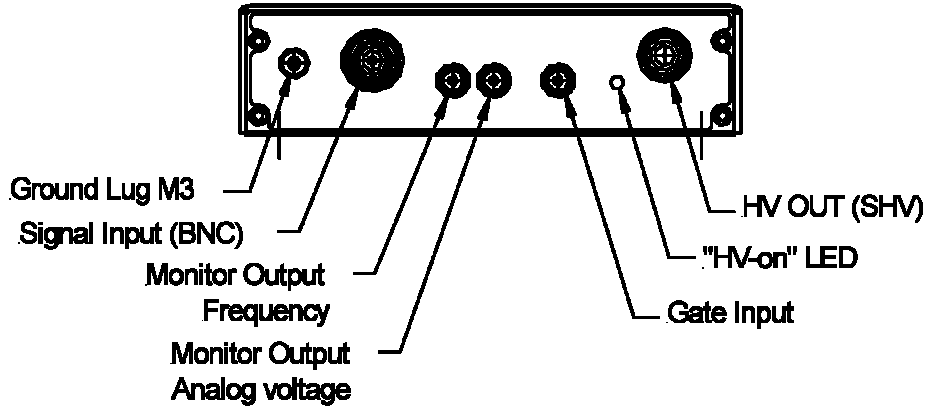
Connectors

Signal input	BNC jack.												
HV out	SHV												
External gate in	Lemo coax size 00												
Monitor outputs	Lemo coax size 00 for analog voltage Lemo coax size 00 for frequency (TTL levels)												
RS-232 / RS485	Six pin mini-DIN ("PS/2") <table border="1" data-bbox="553 1045 1308 1184"> <tr> <td>1</td> <td>Tx / RS-485 Tx-</td> <td>4</td> <td>n/c</td> </tr> <tr> <td>2</td> <td>Rx / RS-485 Rx+</td> <td>5</td> <td>RS-485 Tx+</td> </tr> <tr> <td>3</td> <td>Gnd</td> <td>6</td> <td>RS-485 Rx-</td> </tr> </table>	1	Tx / RS-485 Tx-	4	n/c	2	Rx / RS-485 Rx+	5	RS-485 Tx+	3	Gnd	6	RS-485 Rx-
1	Tx / RS-485 Tx-	4	n/c										
2	Rx / RS-485 Rx+	5	RS-485 Tx+										
3	Gnd	6	RS-485 Rx-										
Fiber optics	TX & RX ST bayonet, suitable for 1mm plastic fiber or 200 µm HCS fiber.												
Power in	2.1mm threaded jack. Mates with Switchcraft S761K or equivalent.												
Ground	M3 threaded stud												

Ordering information

IC101	IC101 electrometer with user manuals, PSI Diagnostic host software for Windows PCs, calibration data.
-XP30/20/10/05/02 (-XN30/20/10/05/02)	Add auxiliary HV supply positive 3000/2000/1000/500/200 V (negative 3000/2000/1000/500/200 V)





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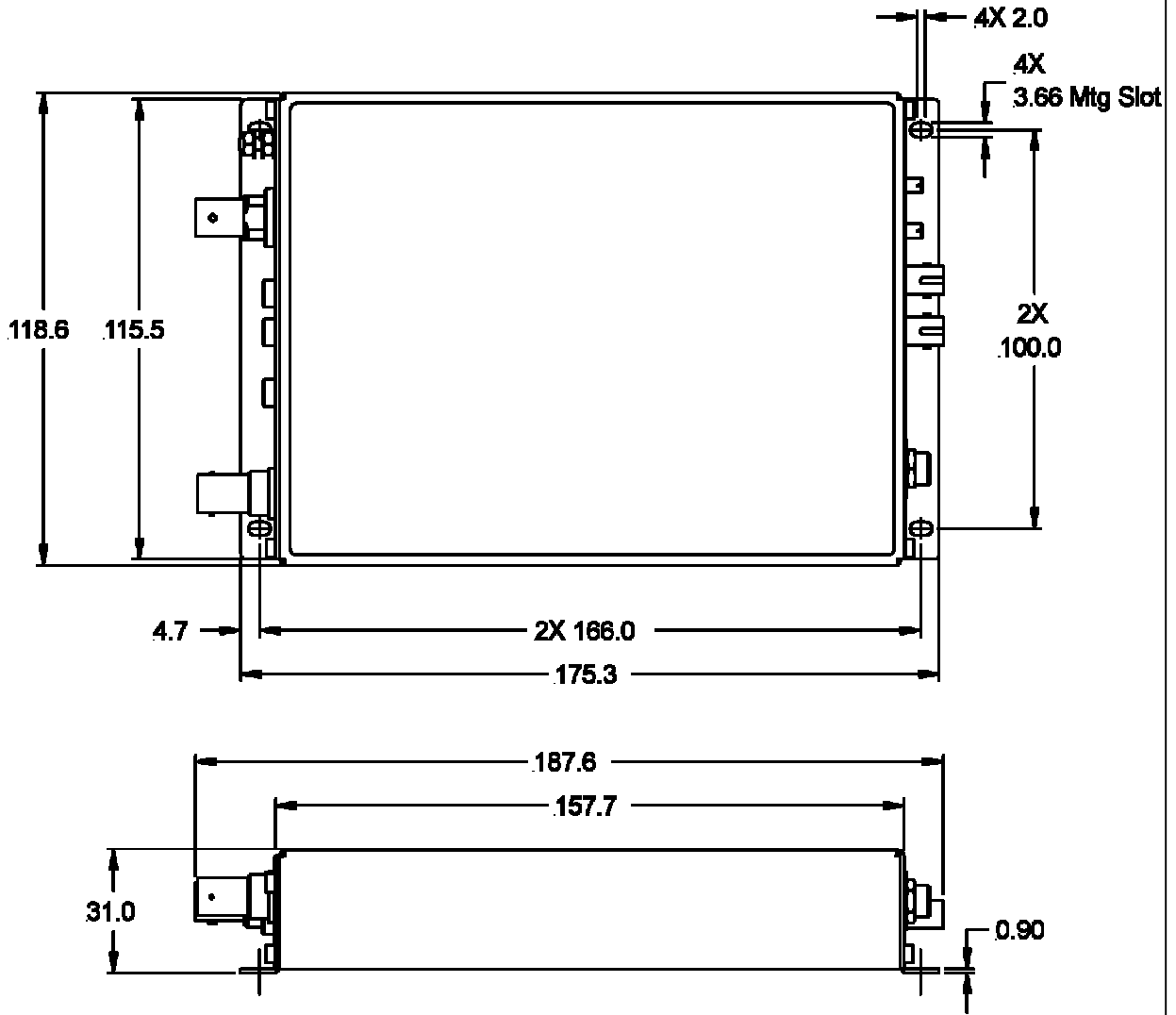
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IC101_DS_170104





Dims mm

