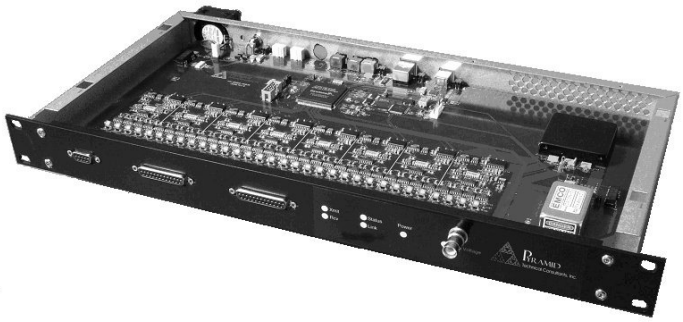
Datasheet

F3200

Thirty-two Channel 16 bit Current Digitizer

Features

- Thirty-two parallel multi-range current to voltage converter channels
- 16 bit bipolar inputs, DC to 20 kHz
- Dynamic range 100pA to 10 mA
- Optional integrated HV supply
- Integrated actuator solenoid control
- Integrated digitization and communi-cations
- Integrated precision calibration test sources
- Integrated digital filtering



Applications	• Multi-electrode ionization chambers and ionization chamber arrays • Multiwire beam profile grids • Multi-segment photodiode arrays
Options	• Auxiliary HV output for detector bias • Alternative current range options

Specifications

Operating principle	Multi-range I-V converters on every channel each with 20kHz low-pass filtering, eight successive approximation bipolar ADCs.
Input impedance	< 40 ohm (with zero ohm current limiting resistor)
Input protection	Back to back fast diode pair; optional current limiting resistor
Noise	> 0.01% of full scale rms noise for 10 mA, 1 mA, 100 µA, 10 µA ranges.
Absolute accuracy	Readings within +/- (0.1% of nominal reading + 0.1% of full scale) relative to a traceable external standard current source. Accuracy can be increased further by periodic use of the built-in calibration function.
Temperature stability	Output drift < 25 ppm / C (without calibration reference) Calibrator drift < 3 ppm / C
Current ranges	Primary I-V converters: 10 mA, 1 mA, 100 µA, 10 µA Post amplifier stage gain settings x1, x2, x5, x10 Other ranges available upon request. Current ranges can be set in groups of four channels.

Specifications (continued)

Digitization	Eight ADCs reading groups of four inputs, 16 bit bipolar, 1 MHz Effective ADC rate per channel, 250 kHz Readings over all 32 channels simultaneous to within 2 usec.
Digital filtering	Rectangular filter with software adjustable period Minimum integration period, 20 µsec
Data readout time	32 channels are converted and copied to internal memory in ≤ 10 µsec
Local data buffer	256 x 32 channels of data can be buffered in F3200 memory to enable time-resolved burst measurements.
Data rate to host	> 1 kHz typical for 32 channels, 10 kHz maximum with fiber-optic communications. Data masking allows reduced number of channels to be transmitted, thus improving data rate for the remaining active channels..
Calibration sources	Four current sources with 0.01% internal precision Used by automatic calibration routine to obtain individual gain and offset values for each range on each channel.
External gate	TTL or fiber-optic logic input
Actuator control	Relay switched 24 VDC for actuator solenoid, opto-isolated in/out limit switch sense
General I/O	Digital out (transistor switched TTL levels, active low) Digital in (3.3V or TTL levels) Relay switched 5 VDC output for general use
HV PSU (optional)	0 to 2500 V programmable, (polarity factory selectable), 1 watt max. Noise and ripple < 0.1%. Other voltages available.
Power input	+24V (+/- 2V) DC, 750 mA typ, 1200 mA max. excluding actuator
Controls	Two rotary switches for loop address and comms mode/baud rate.
Displays	Status LEDs (power, device status, comms mode, data transmission rcv/xmit). “HV on” LED.
Case	1U 19” steel chassis with Al alloy front panel
Weight	2.7 kg (6.0 lb)
Operating environment	10 to 35 C (15 to 25 C recommended to reduce drift and offset) , < 70% humidity, non-condensing, vibration < 0.1g all axes (1 to 1000 Hz)
Shipping and storage environment	-10 to 50 C, < 80% humidity, non-condensing, vibration < 2g all axes, 1 to 1000 Hz

Interfacing

Interfaces	RS-232, 8-bit ASCII. Selectable baud rate. USB, 8-bit ASCII 3 Mbit/sec Fiber-optic loop, 10 Mbit/sec serial, 9-bit asynchronous binary. Ethernet connection to host through A300 or A400 loop controllers.
Host computer	ASCII communications based on SCPI. Diagnostic host program supplied for Microsoft® .net framework. DLLs available for Microsoft® .net, National Instruments™ Labview™ and Microsoft® C++.

Ordering information

F3200	I3200 thirty-two channel electrometer with user manuals, software drivers, calibration data.
-XP25/10/5/2	Add HV supply positive 2500/1000/500/200 volts
-XN25/10/5/2	Add HV supply negative 2500/1000/500/200 volts
-IM20/5/1	Specify maximum current 20 mA, 5 mA, 1 mA. (Default is 10 mA)

Connectors

Signal inputs — Two D25 sockets. Channels 1-16, channels 17-32.

1	In 02 (In 18)	14	In 01 (In 17)
2	In 03 (In 19)	15	+5V switched
3	In 04 (In 20)	16	AGND
4	In 05 (In 21)	17	AGND
5	In 06 (In 22)	18	AGND
6	In 07 (In 23)	19	AGND
7	In 08 (In 24)	20	AGND
8	In 09 (In 25)	21	AGND
9	In 10 (In 26)	22	AGND
10	In 11 (In 27)	23	AGND
11	In 12 (In 28)	24	In 16 (In 32)
12	In 13 (In 29)	25	In 15 (In 31)
13	In 14 (In 30)		

Actuator control — D9 socket.

1	Relay switched 24V out	6	Digital out
2	PSU GND	7	Opto in B
3	Relay switched 5V out	8	Digital in
4	+24 VDC out	9	Ground
5	Opto in A		

HV out — SHV

External gate in — BNC (isolated from case) TTL levels and Avago HFBR ST bayonet

USB — USB B type female.

RS-232 — Six pin mini-DIN (“PS/2”)

1	Tx	4	n/c
2	Rx	5	n/c
3	Gnd	6	n/c

Fiber optics — Two Avago ST bayonet (compatible with 1 mm POF and 200 µm HCS fiber) for communications

Power in — 2.1mm threaded jack. Mates with Switchcraft S761K or equivalent.

Ground — M4 threaded stud

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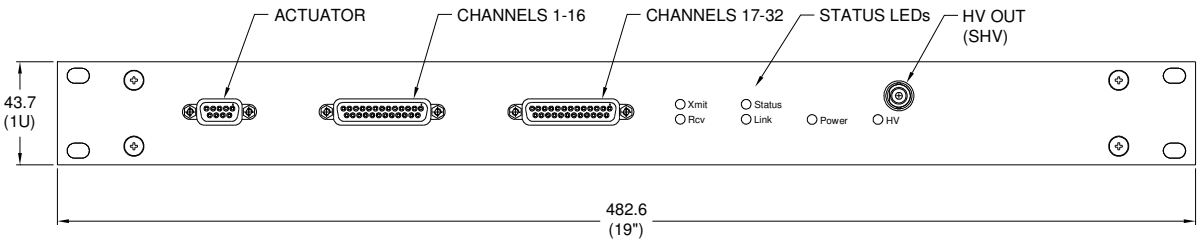

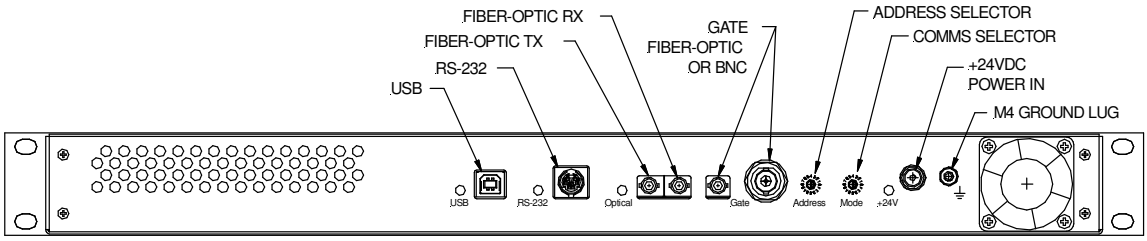

Dims mm

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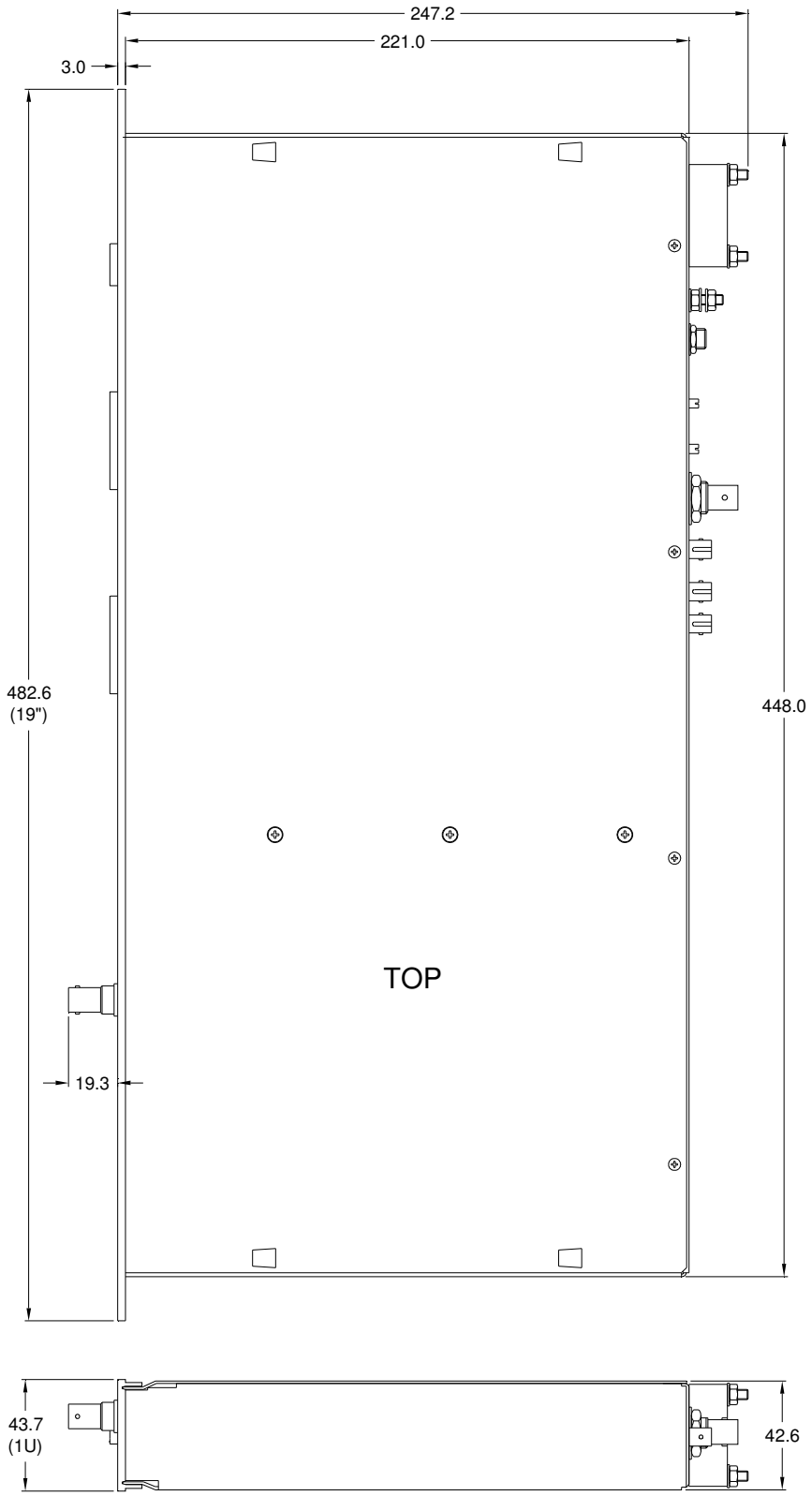

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