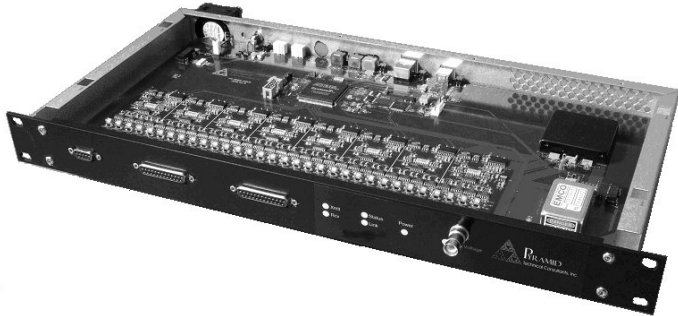


## Thirty-two Channel 16 bit Current Digitizer

**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 communications
- 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 $\mu$ A, 10 $\mu$ A 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 $\mu$ A, 10 $\mu$ A 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 fibre-optic logic level input
Actuator control	Switched 24 VDC for actuator solenoid, opto-isolated in/out limit switch sense
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 n/o	6	+24 VDC out
2	PSU GND	7	Opto in B
3	Screen	8	Screen
4	+24 VDC out	9	Screen
5	Opto in A		

HV out

SHV

External gate in

BNC (isolated from case) TTL levels and Avago Versatile Link 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 Versatile Link HFBR ST bayonet (compatible with 1 mm POF and 200 μm HCS fiber) for communications

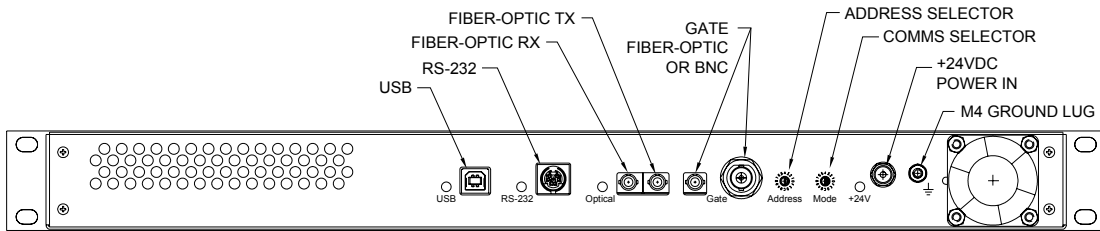
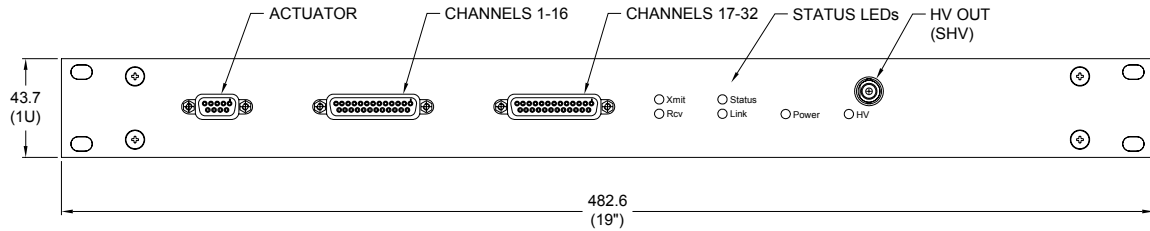
Power in

2.1mm threaded jack. Mates with Switchcraft S761K or equivalent.

Ground

M4 threaded stud





Dims mm

Pyramid Technical Consultants, Inc.,  
1050 Waltham Street Suite 200  
Lexington MA 02421 USA  
Tel: +1 781 402 1700 (USA),  
+44 1273 493590 (UK)

Email: support@ptcusa.com

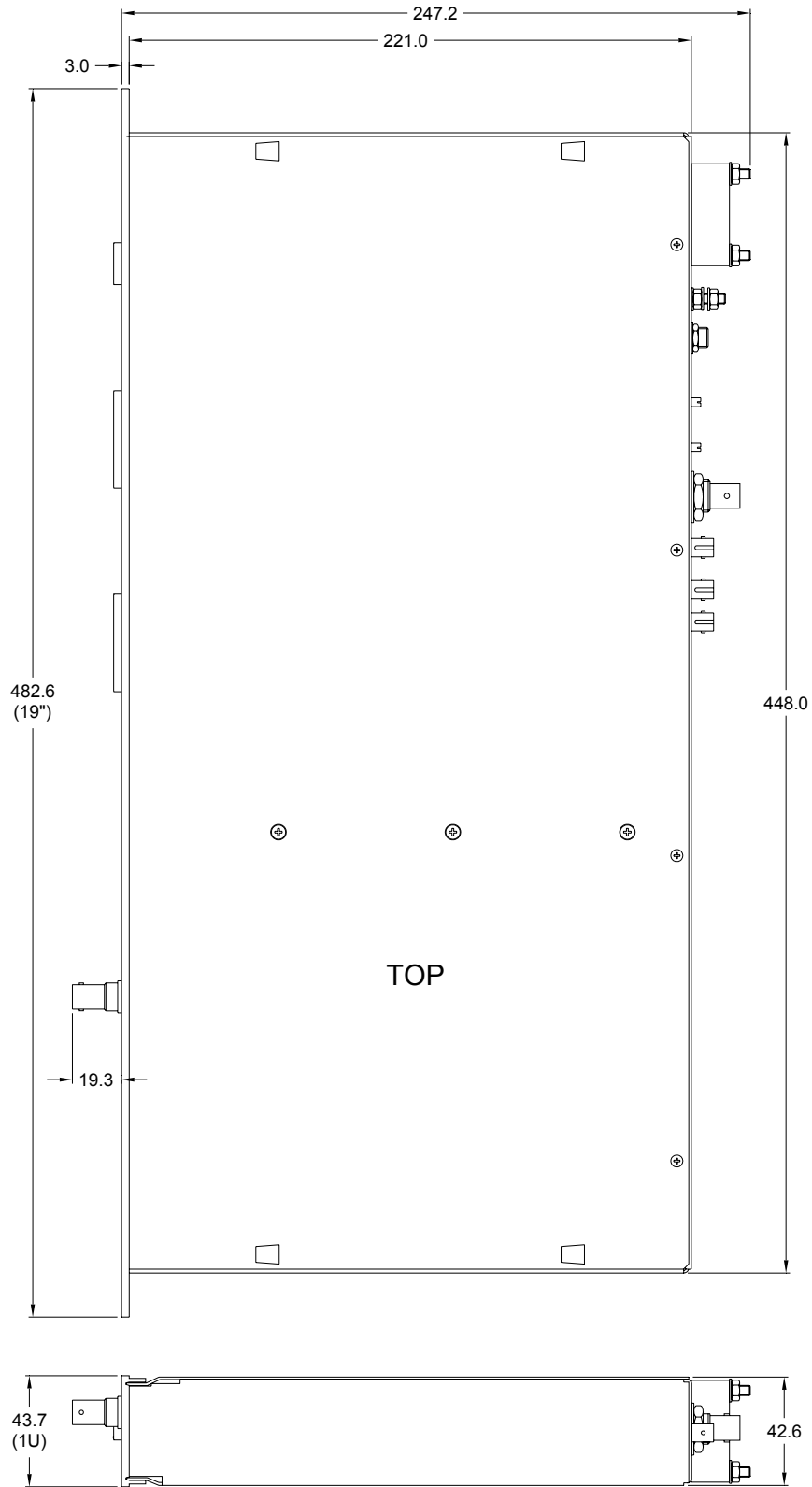
www.ptcusa.com

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Dims mm

