



USBPIA-S1 USB Programmable Single Channel Instrumentation Amplifier

Software selectable gain of 1, 2X, 5X, 10X, 20X, 50X, 100X, 200X, 500X, 1000X, 2000X, 5000X, 10000X
Compatible with any 12-, 16, or 24-bit A/D converter device
Differential or single ended input
 $\pm 10V_{max}$ Signal Input and Output with input protection up to $\pm 40V$
Selectable AC or DC coupling for input offset nulling
Use multiple USBPIA-S1 units for multi-channel applications
USB 2.0 compatible communication for setup and control
Non-volatile configuration retains all settings through power cycles
Does not need to be attached to a PC to operate
AC/DC converter included for 115VAC or 220VAC power
Optional 9 to 12V battery operation
All Windows OS compatible menu setup software and SDK



Adaptable to most applications in the field, on the factory floor, or in the lab

The USBPIA-S1 stand alone USB controllable module is a single channel high-quality instrumentation amplifier with optional AC coupling, for front-end signal conditioning. It is compatible with all popular A/D converter devices.

The USBPIA-S1 is powered with 9 to 12VDC so it can be connected to a battery voltage source or the supplied 115-220VAC adapter may be used for operation with wall power anywhere in the world.

When programmed from the USB port, the USBPIA-S1 will remember all of the programmed properties between power cycles. Program once and operate as a stand-alone signal conditioner without having to reprogram for every use. This is perfect for turn-key applications.

It's easy to connect the USBPIA-S1 into the data collection system. Input and output signals can be routed through BNC connection or using the detachable screw terminal connectors. Optional SMA type adapters are also available.

Protection from high input voltages

The USBPIA-S1 provides strong input protection and can withstand up to $\pm 40V$ at the analog signal input.

Amplify single-ended or differential signals

The USBPIA-S1 high-quality instrumentation amplifier provides software-selectable gain as well as differential inputs with high-common mode rejection.

Gain can be set at 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, 2000, 5000, or 10000.

AC couple at any time

The USBPIA-S1 can AC couple or DC couple the input signal under software control. This feature is useful in applications where the input signal is riding on a large DC offset. AC coupling will remove the DC offset.

All Software is Included

The USBPIA-S1 comes with complete easy-to-use menu-driven software and SDK tools to custom build control. **SystemViewUSBPxx** is a ready-made application compatible with all versions of Windows. Use a few simple mouse clicks to program the parameters of each USBPIA-S1 connected to the PC. Once selected, the desired parameters are set and saved to non-volatile memory in the USBPIA-S1 so that they are reapplied after every subsequent power up.

An ActiveX/COM control is provided for custom software development. The COM interface of the ActiveX control can be integrated into any high level language application. Example code is provided in a variety of software languages.

Alligator Technologies

240 W Main St Suite 100, Charlottesville, VA 22902 USA • Tel: 949-515-1400 • sales@alligatortech.com • www.alligatortech.com

Instrumentation Amplifier

Software selectable steps	max mV Offset	max gain error	-3dB bandwidth
1	0.350	0.06%	10MHz
2	1.100	0.10%	10MHz
5	2.150	0.19%	10MHz
10	1.250	0.06%	4MHz
20	2.900	0.10%	4MHz
50	6.650	0.19%	4MHz
100	2.150	0.06%	550kHz
200	4.700	0.10%	550kHz
500	11.150	0.19%	550kHz
1000	3.050	0.07%	60kHz
2000	6.500	0.12%	60kHz
5000	15.650	0.24%	60kHz
10000	29.900	0.44%	60kHz

CMRR to 60Hz.....80dBmin, 100dB typ. at gain of 1
Common Mode Voltage +/-10V max
Input Voltage +/-10V max at gain of 1
Input Protection +/-40V max, with power off or on
Input Impedance.....20M Ω differential (10M Ω each side to analog ground)

DC offset vs. temperature..... ± 2 μ V/ $^{\circ}$ C

Output impedance.....<0.01 Ω

AC/DC Couple

AC Couple Frequency 0.03 Hz
AC/DC Coupling Software Selectable

Physical

Number of channels 1
Size 108mm(4.25")x83mm(3.25")x28mm(1.125")
Power consumption 500mA at +9VDC
Operating temperature.....0 $^{\circ}$ C to 70 $^{\circ}$ C

Software

GUI, API, and SDK Included for all versions of the Windows OS

System Accessories

Connectors

USBPIA-S1/STA Screw terminal adapter kit(one 2-lead STA and one 3-lead STA)

USBPxx-S1/SMAM two BNC to SMA Male adapters

USBPxx-S1/SMAF two BNC to SMA Female adapters

Power Adapters

P9V500MA Universal to 9V DC 500mA
PAP-NA Power Adapter Plug North America
PAP-EU Power Adapter Plug Europe
PAP-AS Power Adapter Plug Australia
PAP-UK Power Adapter Plug United Kingdom
USBPxx-S1/DCR DC regulator for 9 to 30VDC sources

Multi-channel Accessories

USBDR-8 19" rack, DIN rail, and wall mountable 8-channel Power and USB distribution rack.