

PreAMP One Acoustic Emission (AE) Pre-Amplifier

Models 1220-5145 and 1220-5135

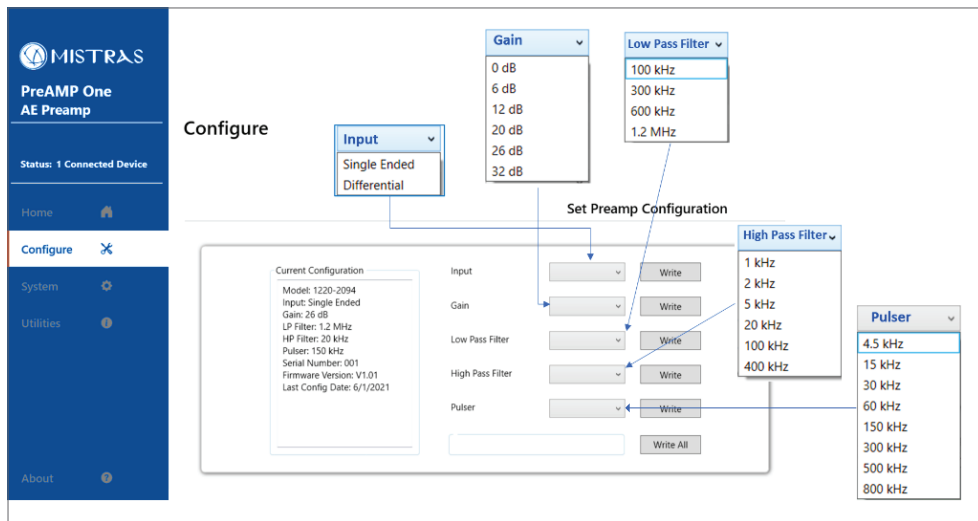
The PreAMP One is designed to be used with MISTRAS new and legacy systems. Two amplifier versions are available for sale: Model 1220-5145 for 5-8 volt operation and Model 1220-5135 for 28 volt operation.

Both PreAMP One models can be used to connect single ended sensors using a standard BNC connector or differential/dual crystal sensors using dual BNC connector.

The PreAMP One offers the user maximum flexibility with the ability to define the sensor input type (single ended or differential sensor), gain, filter settings and Automatic Sensor Test (AST) burst frequency. The amplifier configuration is defined by the user through its USB port and by using a special software running on Windows 10 provided with the amplifier. The AE Preamplifier can generate and send a 500 μ s fixed duration tone burst to the connected sensor. The tone burst can be configured for up to 8 different frequencies selected for MISTRAS most common sensors (4.5 kHz, 15kHz, 30kHz, 60kHz, 150 kHz, 300 kHz, 500 kHz, and 800 kHz).

The PreAMP One offers a user selectable gain that varies among the 5V and the 28V models. For the 28V model 0, 20, 40 and 60 dB gain is offered, and for 5 volt model a selectable gain of 0, 6, 12, 26, and 32 dB is available. Four selectable high pass filters and four selectable low pass filters are available in both amplifier models and can be set by the user using the associated windows setup software provided with the unit.

The 5 volt amplifier model can also be powered from the Micro-USB connector using a Micro-USB charger that outputs 5-8 volts. The 28 volt AE preamplifier model can also be powered from the Micro-USB connector using a Micro-USB cable connected to a 15-28 volts power supply. This allows PreAMP One to be used with MISTRAS Acoustic Emission systems, or with other Data Acquisition boards that might not supply phantom power.



The PreAMP One software and setup options

TECHNICAL SPECIFICATIONS

Dimensions

Case Size:6" L x 3.5" W x 1.2" H
(15.2cm x 8.9cm x 2.7cm)
Case w/connectors:6.0" x 2.3" x 1.2"
(165mm x 58mm x 15mm)
Weight:0.45lb (205g)

ENVIRONMENTAL SPECIFICATIONS

Temperatures

Operating:-40° - 158°F (-40° - 65°C)
Storage:-40° - 167°F (-40° - 75°C)

CONTROL

Microcontroller: ... 32 bit, ARM Cortex, ATSAMD11D
Interface: USB 2.1, 12 Mbit/sec
USB Connector: IP 4X, Micro-USB type B

ADDITIONAL TECHNICAL SPECIFICATIONS

	5v MODEL (1220-5145)	28v MODEL (1220-5135)
POWER	5-8 volt operation provided via phantom power by MISTRAS' low power systems or provided via the Micro-USB connector using a Micro-USB charger that outputs 5-8 volts.	15-28 volt operation provided via phantom power by MISTRAS' low power systems or provided via the Micro-USB connector using a Micro-USB charger that outputs 15-28 volts.
QUIESCENT POWER REQUIREMENTS	<0.1 Watts (< 0.015A @ 5-8V)	< 1.0 Watts (< 0.035A @ 28v)
MAXIMUM POWER REQUIREMENTS	< 0.3 Watts (< 0.043A @ 5-8V)	< 2.1 Watts (< 0.075A @ 28v)
DYNAMIC RANGE	3.8Vpp, 99dB AE	4vpp, 99dB AE with 20dB Gain 18Vpp, 99dB AE with 40dB Gain
INPUT IMPEDANCE	10k Ω / 15pF	10k Ω / 15pF
GAIN	0, 6, 12, 26, and 32 dB + 0.5% dB	0, 20, 40 and 60 dB +0.5% dB
FILTER RANGE	Frequency Range: 3.0 kHz to 1.2 MHz High Pass Filters: 3 kHz, 5 kHz, 20kHz, 100 kHz (2nd Order Filters Active with Butterworth) Low Pass Filters: 100 kHz, 300 kHz, 600kHz (2nd Order Filters Active with Butterworth), 1.2 MHz (4th order)	
AUTO SENSOR TEST	500 msec fixed duration tone burst at 4-5 volts Pulse frequencies: 4.5 kHz, 15 kHz, 30 kHz, 60 kHz, 150 kHz, 300 kHz, 500 kHz and 800 kHz (Other frequencies are available)	500 msec fixed duration tone burst at 8 volt Pulse frequencies: 4.5 kHz, 15 kHz, 30 kHz, 60 kHz, 150 kHz, 300 kHz, 500 kHz and 800 kHz (Other frequencies are available)

GAIN RELATED SPECIFICATIONS

	5v MODEL (1220-5145)	28v MODEL (1220-5135)		
GAIN SELECTION	0dB / 6dB / 12dB / 20dB / 26dB / 32dB	20dB	40dB	60dB
BANDWIDTH (-3dB)	1.5kHz - 1.2MHz	4kHz - 1.0MHz	4kHz - 1.0MHz	4kHz - 1.0MHz
OUTPUT VOLTAGE (50Ω LOAD)	3.8Vpp	4.7vpp	18Vpp	18Vpp
FILTER FREQUENCY RESPONSE (Hz)	26dB (Input Shorted)	40dB (Input Shorted)		
100k-300k* *Standard filter	< 3 μ V (2 uV Typical)	< 2.5 μ V (1.8uV Typical)		
1.5k - 1.2M (5v Model) 4k - 1.0M (28v Model)	< 5 μ V (4 uV Typical)	-	Typical < 7.0 μ V	Typical < 5.0 μ V