PRODUCT DATA SHEET

8300AU AMPLIFIER SYSTEM

THE 8300AU AMPLIFIER SYSTEM PROVIDES...

- **Programmable Gains 1 to 2048**
- **Programmable Filter 1Hz to 4KHz**
- **Display of Channel Gain and Filter Data**
- **Remote or Local Programming**
- **Microprocessor based Controller**
- **Bridge Completion with adjustable power supply (Optional)**
- **Shunt and Voltage Substitution Calibration (Optional)**
- **2nd Output 10 volts at 50mA (Optional)**
- **Wideband 100KHz (10 volts peak to peak)**
- **Full Power Bandwidth 50KHz (20 volts peak to peak)**

The 8300AU Amplifier offers unique combinations of capabilities and specifications, making it the most versatile amplifier for your most demanding instrumentation application. This amplifier may be used in a wide variety of applications including low level signal conditioning requirements in noisy and high CMV environments; high gain or low gain isolation buffer amplifier for real time process control applications; pre-amplifier for strip chart recorders/ pen drive and oscillograph galvo's. The amplifier features extremely low drift, very low noise, high accuracy, and wide dynamic range common mode rejection, while offering very fast overload recovery and on-scale settling times. The 8300AU is an outstanding DC Amplifier which meets our customers growing requirements for a superior instrumentation amplifier.

SPECIFICATIONS

INPUT *(See Figure 1):*

Impedance:	100 megohm minimum shunted by 1500 PF maximum for all gains.
Connection:	3 wires-high, low and guard.
Source:	1k ohms maximum to meet spec.
System Common Mode Rejection:	130dB DC to 60Hz with up to 1 k unbalance.
System Common Mode Voltage:	350 volts peak AC or DC.
Transducer Common Mode Rejection:	60dB plus gain or 108 dB (whichever is smaller) DC to 60Hz
Transducer Common Mode Voltage:	10 volts peak AC or DC. including signal
Bias Current:	1nA at 25 degree C, plus/ minus 0.5nA per degree C.
Protection:	20 volts maximum without damage.

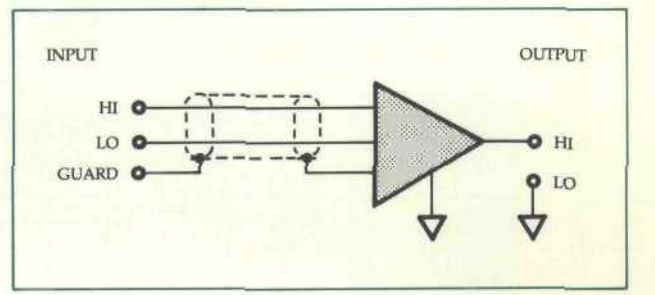

FIGURE 1

GAIN

Steps:	12 binary gain steps from 1 to 2048. 10 decimal gain steps from 1 to 1k (optional)
Accurary:	0.1% (0.01% optional)
Linearity:	.01%
Stability:	0.01% for six months.
Tempco:	0.002% per Deg C.
Trim:	Front panel control adjusts a selected gain to 0.005%.
Variable Gain Control: (Optional)	Allows amplifier to be set to any gain between fixed gain steps (included on 0.01% option.)

ZERO

Stability: 5µVRTI plus/minus lmV RTO for 30 days.

Tempco: lµV RTI plus/minus O.lmV RTO per Deg C.

Trim: Front Panel adjust to 0.5mV RTO. *(Figure 2)*

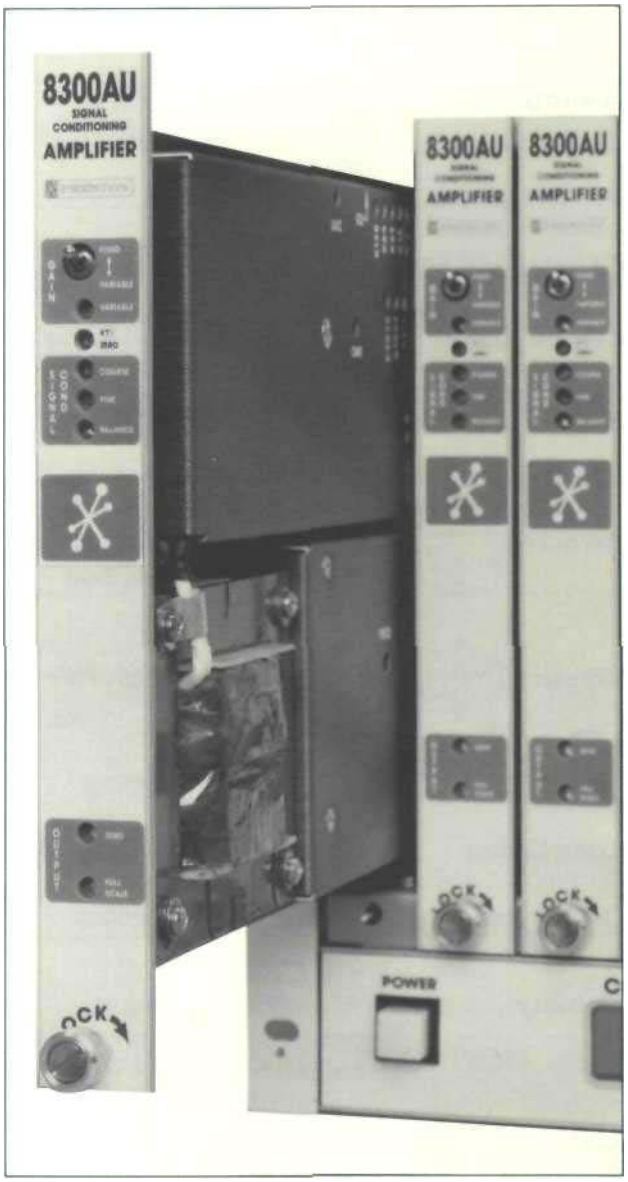

FIGURE 2

OUTPUT

Capability: 10 volts peak at 20 mA max

Impedance: Less than 1 Ohm

Protection: The output is unconditionally short circuit proof

Slew rate: 1.5 volts/µsec

Bandwidth: Less than 3dB down at l00kHz (10 volts peak to peak) Full power bandwidth 50kHz. (20 volts peak to peak)

Overload recovery time: (Wideband) 50 µsec maximum to within +/-1.5mV of final value from +/-20 volt input step at Gain = 1.

50 µsec maximum to within +/-5mV of final value from +/-l00mV input step at Gain = 1024

NOISE:

3.25µV RTI plus l00µV RTO (RMS) at wide band.

GAIN	BW	RTIµV		RTO mV	
		P-P	RMS	P-P	RMS
1	WB			.6	.1
2048	WB	19.5	3.25	.6	.1
2048	4096	3.9	.65	.6	.1
2048	256	.97	.16	.6	.1
2048	16	.29	.05	.6	.1
2048	1	.24	.04	.6	.1

Connection: Common 37 Pin D connector for 16 output in rack.

OPTIONAL FEATURES

STRAIN GAGE POWER SUPPLY

(See Figure 3)

VOLTAGE MODE

Output Voltage: Adjustable from 1.00 to 10.00 VDC. With coarse and fine front panel adjustment.

Remote Sense: Output increases less than 2V when sense lead(s) or output lead(s) are disconnected. Sense circuit requires less than 25µA at 10V.

Resolution: Better than l mV.

Line Regulation: Better than .001% of setting or 20uV for a 10% change in line voltage.

Current Limit: Factory set at greater than 100mA.

Short Circuit Current: 250mA maximum.

Output Current: 100mA.

Load Regulation: .01% of setting or 500uV (which ever is greater) no load to full load.

Noise: Less than 150µV P-P across 1k ohms grounded bridge. 10KHz measurement bandwidth. Ripple less than l00µVP-P (35.4µV RMS) at l00Hz BW.

Recovery: 10% load to full load to within 1% in less than 50µs. Full load to 10% load to within 1% in less than 50us. Shorted output to no load to within 1 % in less than 0.1 ms.

Stability: ± 0.01% of setting at constant temperature for 24 hours.

CURRENT MODE

Current Range: Adjustable over 10:1 RANGE 10-l00mA standard. (1-l0mA or 2-20mA available.)

Resolution: Better than 20µA.

Recovery: 10% Load to full load recovery to within 1% in less than l00µs.

Ripple: Less than 2uAP-P (.707µA RMS).

Tempco: -005% of setting/degree C.

Compliance: Up to 10V.

Output Resistance: Greater than 1 megohm.

Stability: ± .01% of setting at constant temperature for 24 hours.

Line Regulation: Better than .001 % of setting or 200nA for ±10% change in line voltage.

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OPTIONAL FEATURES

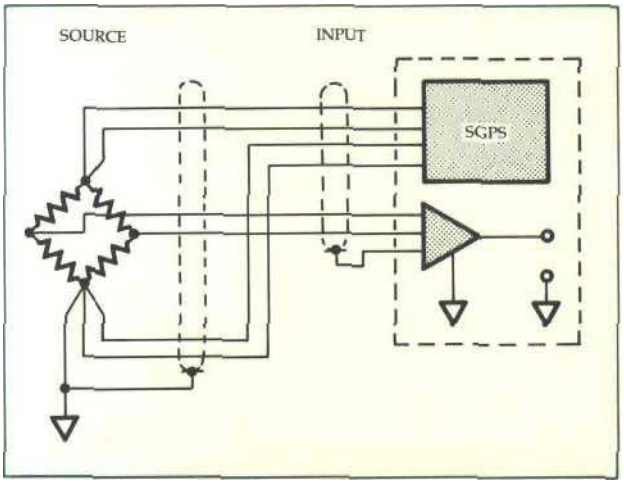

FIGURE 3

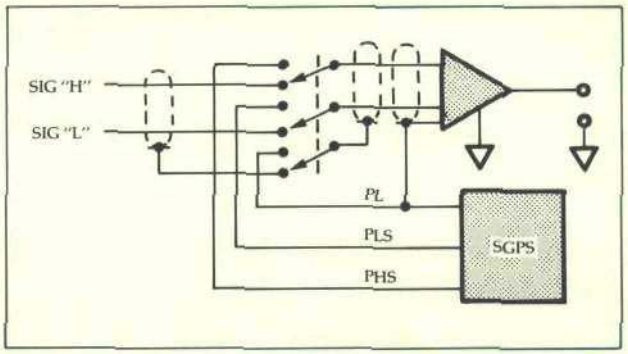

FIGURE 5

Shunt Calibration: Relay switches shunt resistor across one leg of bridge. *(See Figure 6)*

CALIBRATION

WITHOUT STRAIN GAGE PS OPTION

Voltage Substitution Calibration: Relay connects amplifier input to external cal bus. *(See Figure 4)*

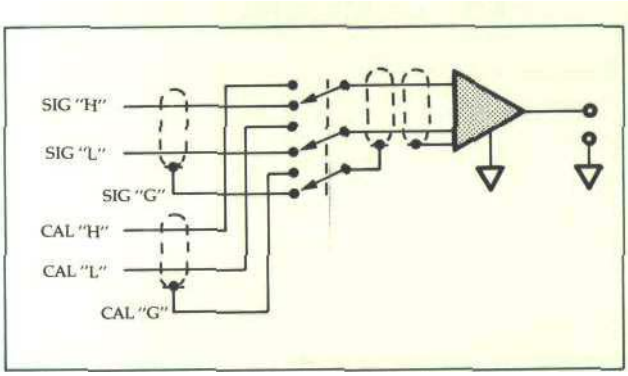

FIGURE 4

WITH STRAIN GAGE PS OPTION

Voltage Substitution Calibration: Relay connects amplifier input to output of power supply. *(See Figure 5)*

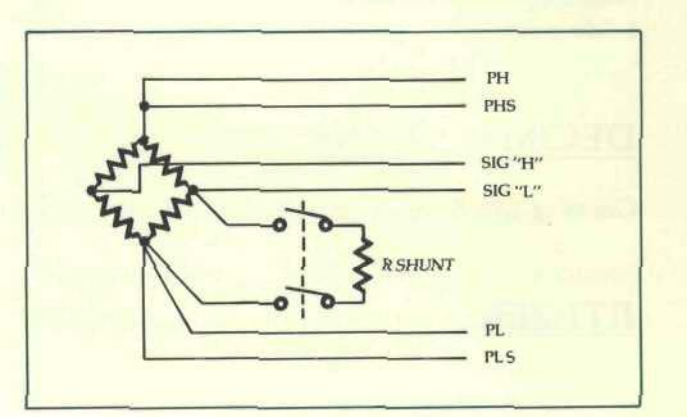

FIGURE 6

VARIABLE GAIN

Allows setting to any gain between fixed gain steps.

GAIN ACCURACY 0.01%

(Included with variable gain option).

DUAL OUTPUT (NON FILTERED)

Second output 10 volts at 50mA. Output is available on individual 3 pin Molex Connectors.

OPTIONAL FEATURES

PROGRAMMABLE FILTER

Poles:	4
Type:	Bessel or Butterworth
Cutoff Freq. (3db point)	1, 4, 16, 64, 256, 1024, 4096 Hz + wideband (WB)
	100, 200, 500, 1k, 2k, 5k Hz +wideband (WB4)
	1k, 2k, 5k, 10k, 20k, 50k Hz +wideband (WB3)
Accuracy: (-3db point)	± 10%

DECIMAL GAINS

Gains of 1, 2, 5, 10, 20, 50, 100, 200, 500, 1k.

RTI ZERO

. 3 µV/°C

MANUAL BRIDGE MODE CARD

Provides completion for 1, 2, 3 or 4 arm bridges with provision for mounting user supplied balance resistor. Includes Shunt Cal Relay to switch user supplied resistor across one leg of bridge.

AUTO BALANCE MODE CARD

Similar to manual bridge mode card but provides automatic balance of strain gage offset upon command.

Balance Span:	Set by customer installed resistor.
Resolution:	0.05% of balance span plus 10µV RTI.
Stability:	Less than 0.025% of balance span (plus stability of customer installed resistor).
Tempco:	Less than 0.004% of balance span (plus tempco of customer installed resistor).
Auto Cal Time:	10ms.

NOTE: Customer supplied resistors should have axial leads, and not exceed .250 inches in diameter x .475 inches length on auto balance mode card (.650 length on manual mode card). Contact factory for other mode card types.

FAST PAS SOFTWARE

Our latest offering, the FAST PAS (Programmable Amplifier System) software product, is teamed with the Preston 8300AU Amplifier System to provide you with the easiest and fastest turnkey amplifier solution.

Some of the features offered are:

- Window-oriented, menu-driven
- Online help system
- Plain English translations (no bit deciphering)
- User configurations and tests stored and recalled using easy to relate names
- Supports alt amplifier options and specials

FAST PAS works with any RS-232 configured 8300AU. The Q105 software series, FAST PAS, is written in C. Being very transportable it works with most operating systems from DOS to DEC VMS. Give us a call and we will help you turn the key from A to D.

CONTROLLER DESCRIPTION

8300AU Master Controller: Provides programming of gain, bandwidth, calibration and autobalance for up to 512 Amplifier Channels. Data may be entered manually, using the front panel switches, or from a remote source through an optional RS232 or IEEE-488 interface. The data is stored in memory and may be interrogated manually, using the front panel switches and display, or read out remotely through the interface. Figure 7 shows the manual swithches and display.

Master Controller provides amplifier power, cooling and control signals for up to 16 amplifiers and up to 31 slave controllers. Power requirements 115 volts or 220 volts AC 50 to 60 Hz.

Power consumption is 58 watts plus 15.4 watts per amplifier (under full load). Typical no load is 10 watts per amplifier.

8300AU Slave Controller: Provides amplifier power, cooling and control signals for up to 16 amplifiers. Power Requirements 115 volts or 220 volts AC 50 to 60 Hz.

Power Consumption same as for master controller.

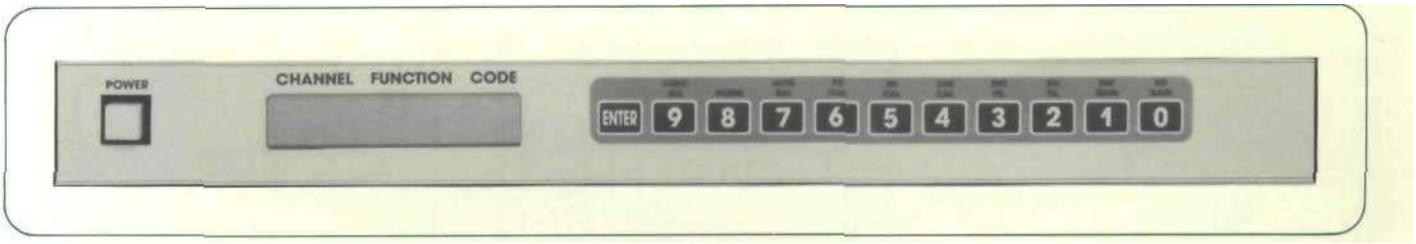

FIGURE 7

MECHANICAL & ENVIRONMENTAL

Package:	Two-piece rack mountable chassis with power supply. Accepts up to 16 amplifier channels plus controller.
Operating Temperature:	+ 15 degree C to + 40 degree C.
Relative Humidity:	**Up to 90% non-condensing**
Storage Temperature:	-10 degree C to +75 degree C.
Cooling:	Self-contained fans.
Warm-up Time:	One hour to rated accuracy.
Panel Width:	19.0 inches (48.3 cm)
Panel Height:	10.5 inches (26.7 cm)
Chassis Depth: (including mating connectors)	22.5 inches (57.2 cm)
Weight:	42 LBS (19.1 kg) nominal
Shipping Weight:	50 LBS (22.7 kg) nominal
Weight Amplifier:	4.5 LBS (2.0 kg)
Shipping Weights Amplifier:	8 LBS (3.6 kg)

NOTE: This system is designed for use in a computer room or laboratory environment.

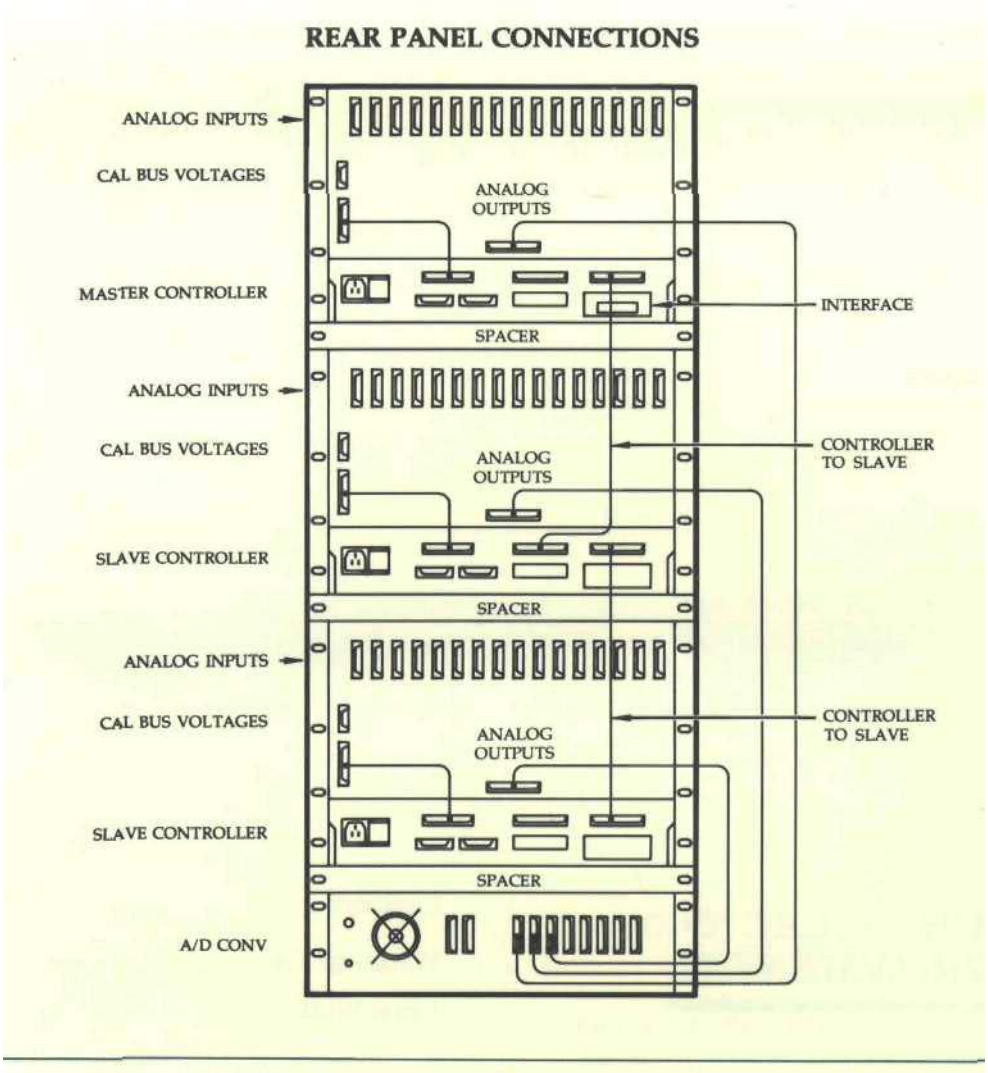

FIGURE 8

ILLUSTRATES THE EASE OF CONNECTING A TYPICAL SYSTEM OF 48 AMPLIFIERS, WITH A MASTER AND TWO SLAVE CONTROLLERS, TO THE PRESTON GMAD ADC CONVERTER.