

**SOUTHWEST RESEARCH INSTITUTE  
CALIBRATION LABORATORY  
MEMORANDUM**

**October 4, 2004**

**To:** BRITT HILL DIV20 B189

**From:** Walt Hill, Metrology Group Leader  
Institute Calibration Laboratory 

**Subject:** Status of Calibration Supplier

**Manufacturer/Model:** PCB PIEZOTRONICS 113A21

**Description:** PRESSURE TRANSDUCER

**Serial Number:** 10545

**Asset Number:** 009016

**Work Order Number:** 444060774

**Date Calibrated:** September 21, 2004

**Supplier:** PCB PIEZOTRONICS, DEPEW NY - A2LA - 716 684-0001

**Remarks:** Unit requested by custodian "as is". Look to WO #60771 for notes.

Supplier is on the Approved Suppliers List (ASL).

Supplier is not on the Approved Suppliers List.

Calibration is ISO 17025 accredited.

Calibration is not ISO 17025 accredited.

There is no known supplier to meet ISO 17025 accreditation at this time.

Please notify the Institute Calibration Laboratory, extension 5215, of any discrepancies with the item or calibration documentation.

Attachment(s) 2

# CALIBRATION CERTIFICATE

**Model:** 113A21  
**Serial #:** 10545  
**Description:** Pressure Sensor  
**Type:** ICP

**Date:** 9/21/2004  
**By:** Chris Schultz, Cal. Tech.   
**Station:** 907 Dyn. Med. Press. #1 (Test Procedure AT601-11)

**Sensitivity\*:** 20.14 mV/PSI  
 2922 mV/MPa

**Temp:** 74 deg F [23deg C]  
**Humidity:** 35 %

**Linearity\*:** 0.1% FS  
**Uncertainty\*\*:** +/- 1.3 %

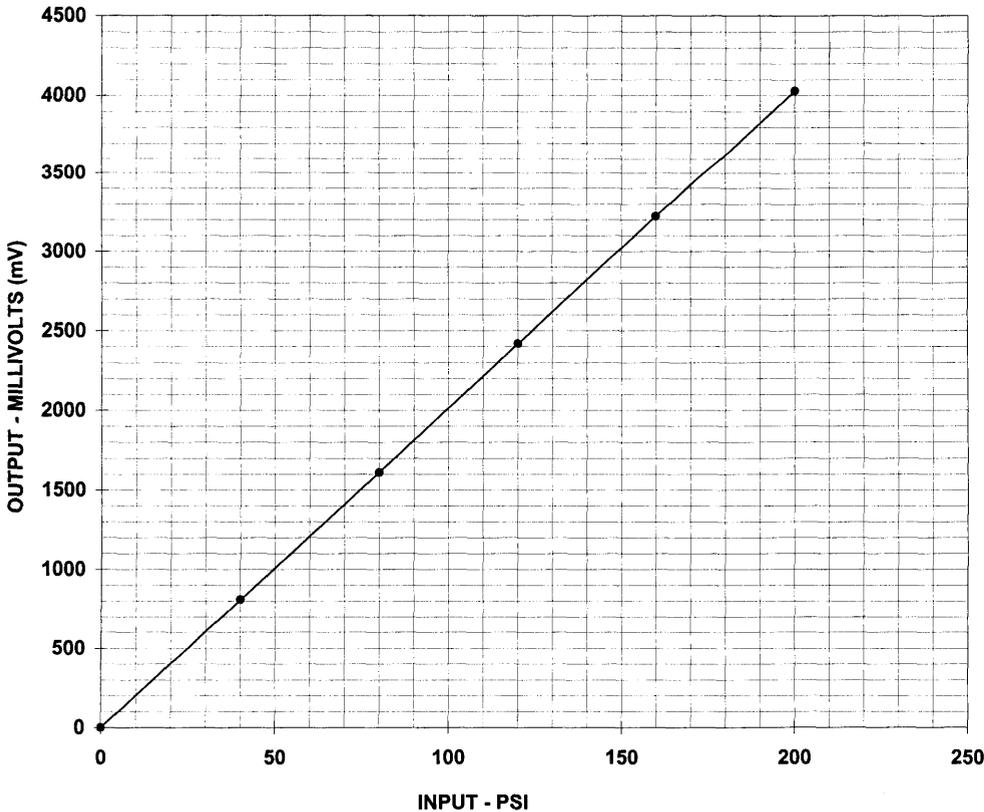
**Cert #:** 180094

**Bias:** 10.3 VDC

\* Zero based, least-squares straight line.  
 \*\* Measurement uncertainty represented using a coverage factor of k=2 which provides a level of confidence of approximately 95 %.

**Condition of Unit:**

**As Found:** Out of tolerance low sensitivity  
**As Left:** Out of tolerance, customer accepts as is



**TEST DATA**

INPUT (PSI)	OUTPUT (mV)
40.0	809
80.0	1611
120	2418
160	3222
200	4029

**Calibration Data Card  
 PRESSURE SENSOR**

MODEL # 113A21  
 SERIAL # 10545

VOLTAGE SENSITIVITY: 20.14 mV/psi  
2922 mV/MPa

OUTPUT BIAS LEVEL: 10.3 VDC

Date: 09/21/04 By: Chris Schultz

For further information, please refer to the Calibration Certificate.



3425 Walden Ave • Depew, NY 14043  
 888-684-0011

**Notes:**

- 1 STATION #16
- 2 This certificate may not be reproduced, except in full without the written approval of PCB Piezotronics, Inc.
- 3 NIST traceability through PCB control # CA334.
- 4 This certificate may not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.



Cert. No. 1862.01



Tel: 716-684-0001 Fax: 716-684-0987 Email: sales@pcb.com  
 3425 Walden Avenue, Depew NY 14043

ISO 9001 CERTIFIED

# CALIBRATION CERTIFICATE

**Model:** 113A21  
**Serial #:** 10545  
**Description:** Pressure Sensor  
**Type:** ICP

**Date:** 9/21/2004  
**By:** Chris Schultz, Cal. Tech. CS  
**Station:** 907 Dyn. Med. Press. #1 (Test Procedure AT601-11)

**Sensitivity\*:** 20.29 mV/PSI  
 2.943 mV/kPa

**Temp:** 74 deg F [23deg C]  
**Humidity:** 35 %

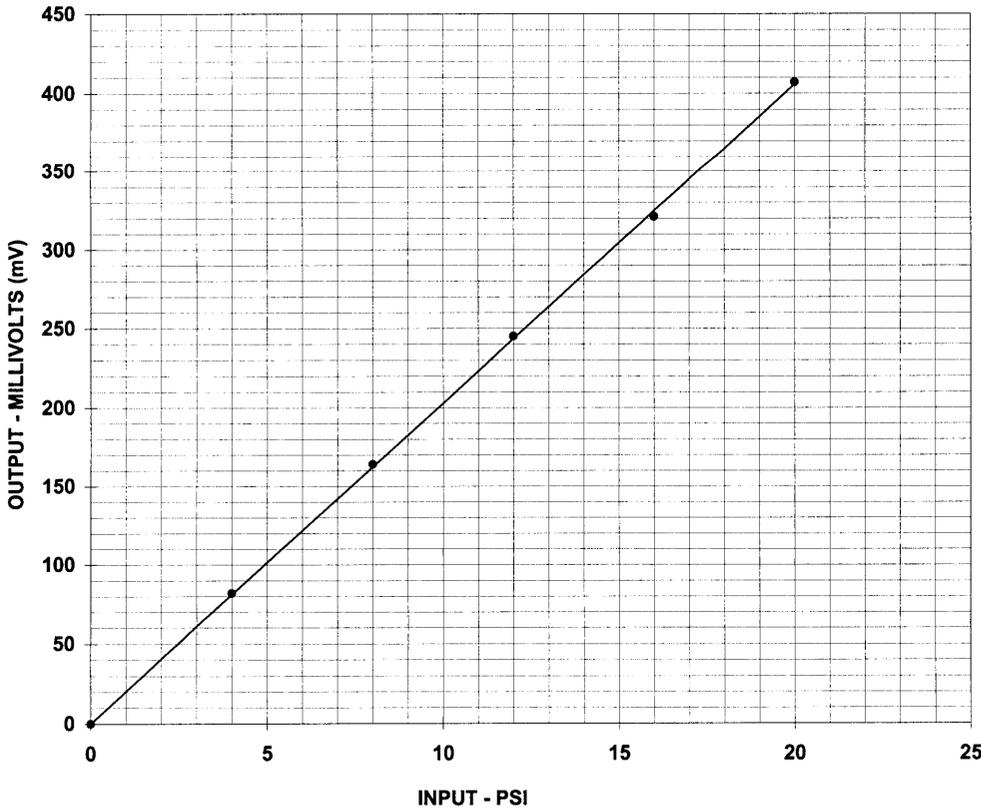
**Linearity\*:** 0.9% FS  
**Uncertainty\*\*:** +/- 1.3 %

**Cert #:** 180096

**Bias:** 10.3 VDC  
 \* Zero based, least-squares straight line.

\*\* Measurement uncertainty represented using a coverage factor of k=2 which provides a level of confidence of approximately 95 %.

**Condition of Unit:**  
**As Found:** Out of tolerance low sensitivity  
**As Left:** Out of tolerance, customer accepts as is



**TEST DATA**

INPUT (PSI)	OUTPUT (mV)
4.00	82
8.00	164
12.0	245
16.0	321
20.0	407

- Notes:**
- 1 STATION #16
  - 2 Calibration is traceable to NIST and is accredited to ISO 17025 and ANSI/NCSL Z540-1-1994.
  - 3 NIST traceability through PCB control # CA334.
  - 4 This certificate may not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.



Cert. No. 1862.01



Tel: 716-684-0001 Fax: 716-684-0987 Email: sales@pcb.com  
 3425 Walden Avenue, Depew NY 14043