



S O U T H W E S T   R E S E A R C H   I N S T I T U T E

Department of Quality Assurance  
Calibration Laboratory

Device Serial No: 115858

Calibration Date: 07/22/94

STANDARDS

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Standard No: 219	Manufacturer: AZONIX	Model: A1011
Nomenclature: RTD THERMOMETER		
Serial No: T1587-2078	Cal.Due: 02/22/95	Cal.Rec.No: 00013377
Standard No: 328	Manufacturer: AZONIX	Model: A12001
Nomenclature: RTD TEMPERATURE PROBE		
Serial No: 351477	Cal.Due: 03/10/95	Cal.Rec.No: 00013378

SOUTHWEST RESEARCH INSTITUTE  
Department of Quality Assurance  
Calibration Laboratory

CERTIFICATE OF CALIBRATION  
07/28/95

Issued to: DARRELL DUNN            DIV20            ,B57  
Manufacturer: KESSL  
Nomenclature: THERMOMETER  
Serial Number: 115858  
Notes:

Asset Number: 003242  
Model Number: ASTM IC 76MM  
SwRI/Div. I.D. #: NONE

ENVIRONMENTAL CONDITIONS

Temperature: 74.0F

Relative Humidity: 60%

CALIBRATION INFORMATION

Procedure Number: WI-9-30-TH03  
Remarks:

Accuracy: MFGR SPECS  
Received IN Tolerance

Calibration was in accordance with requirements of MIL-STD-45662A.  
Measurements are traceable to the National Institute of Standards and Technology. Inspection and test data are on file and available for inspection.

STANDARDS USED FOR CERTIFICATION

Asset #	Serial #	Mfg	Model #	Nomenclature	Cal Date	Int.	Cal Due
000219	T1587-2078	AZONI	A1011	RTD THERMOMETER	03/06/95	12	03/06/96
000328	351477	AZONI	A12001	RTD TEMPERATURE PROBE	03/06/95	12	03/06/96

Certified by : \_\_\_\_\_



Certificate#: 18124

Calibration Date: 07/28/95  
Interval: 12 months  
Next Calibration Due: 07/28/96



Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
Department of Quality Assurance  
Calibration Laboratory

# Certificate of Calibration

20 August 1996

Issued to: DARRELL DUNN                      DIV20                      B57  
Manufacturer/Model:    KESSL ASTM IC 76MM  
Description:            THERMOMETER  
Serial Number:        115858  
Asset Number:        003242

## Environmental Conditions

Temperature:    80.0    Humidity:    33%

## Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

Calibration Date:    19 Aug 96    Calibration Procedure:    WI-9-30-TH03  
Interval:            12 months    Accuracy:            MFGR SPECS  
Next Calibration Due:    19 Aug 97    Received:            In Tolerance

Remarks:

Certificate #    22384

Signed: \_\_\_\_\_

LAST PAGE OF REPORT  
Total Pages Printed:    1



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6220 Culebra Road  
San Antonio, TX 78238  
Department of Quality Assurance  
Calibration Laboratory

# Certificate of Calibration

21 February 1997

Issued to: DARRELL DUNN                      DIV20                      B57  
Manufacturer/Model:    KESSLER 76MM 1MM  
Description:            THERMOMETER  
Serial Number:        115858  
Asset Number:        003242

## Environmental Conditions

Temperature:    80.0 Deg. F                      Humidity:    36%

## Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSS Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

Calibration Date:    21 Feb 97                      Calibration Procedure:    WI-9-30-TH03  
Interval:    12 months                      Accuracy:    MFR SPECS  
Next Calibration Due:    20 Feb 98                      Received:    In Tolerance

Remarks:

## Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
000219	AZONI	A1011	RTD THERMOMETER	T1587-2078	12 Mar 97
000328	AZONI	A12001	RTD TEMPERATURE PROB	351477	12 Mar 97

Certificate # 24342

Signed: 



Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
Department of Quality Assurance  
Calibration Laboratory

# Certificate of Calibration

9 March 1998

Issued to: DARRELL DUNN                      DIV20                      B57  
Manufacturer/Model: KESSLER ASTM 76MM 1MM  
Description: THERMOMETER  
Serial Number: 115858  
Asset Number: 003242

## Environmental Conditions

Temperature: 74.00 Deg. F                      Humidity: 24 % RH

## Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NC SL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

The uncertainty of the calibration was sufficient to determine that the instrument met the manufacturer's specifications.

Calibration Date: 9 Mar 98                      Calibration Procedure: WI9-30-TH03

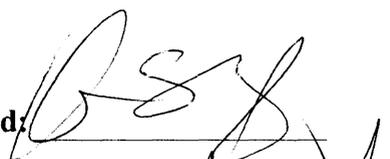
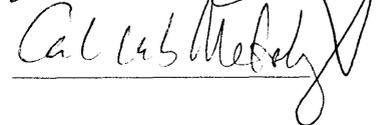
Interval: 12 months

Next Calibration Due: 9 Mar 99                      Received: In Tolerance

Remarks:

## Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
000219	AZONIX	A1011	RTD THERMOMETER	T1587-2078	24 Mar 98
000328	AZONIX	A12001	RTD TEMPERATURE PROBE	351477	3 Apr 98

Signed:   
Title: 

LAST PAGE OF REPORT  
Total Pages Printed: 1

Certificate # 28937



Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
(210) 522-5215  
Department of Quality Assurance  
Calibration Laboratory



Certificate #  
0972-01

## Certificate of Calibration

17 March 1999

**Issued to:** DARRELL DUNN DIV20 B57  
**Manufacturer/Model:** KESSLER ASTM 76MM 1MM  
**Description:** THERMOMETER  
**Serial Number:** 115858  
**Asset Number:** 003242

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and is available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results of this calibration certificate were determined in accordance with the terms of accreditation unless stated otherwise below.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

**Ambient Conditions:** Temperature: 74.0 Degrees Fahrenheit Humidity: 49 % RH

**Calibration Date:** 16 Mar 99 **Calibration Procedure:** TO33K5-4-42-1 APR97

**Condition as Received:** IN TOLERANCE

**Condition as Released:** IN TOLERANCE

**Remarks:**

**Approved by:**

Jim Patterson, Supervisor or Walt Hill, Metrologist

**Certificate # 33561**

m:\a2la.rpt Rev date 10 Mar 99

**Measurements performed by:**

Mack Wood, Technician

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# SOUTHWEST RESEARCH INSTITUTE™

6220 Culebra Road, P.O. Drawer 28510  
Institute Quality Systems  
Institute Calibration Laboratory  
Phone: 210-522-5215 Fax 210-522-3692

## Certificate of Calibration

**Submitted By:** DIV20

**Address:** B57

**Contact:** DARRELL DUNN

**Manufacturer Model:** KESSLER ASTM 76MM 1MM

**Description:** THERMOMETER

**Serial No:** 115858

**Asset No:** 003242

**Procedure:** THERMOMETERS, JAN/03

**Work Order:** 444053500

**Date Issued:** Apr 29, 2003

**Calibration Date:** Apr 29, 2003

**\*\*Calibration Due:** Apr 29, 2004

**Calibration Location:** Bldg. 64

**Environment:** Temp. 78.0°F Hum. 47 %RH

**\*As Found:** IN TOLERANCE

**\*As Left:** IN TOLERANCE

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 1999 and ANSI/NC SL Z540-1-1994 which are equivalent to relevant requirements of the ISO 9000-1994 series of standards. This certificate may not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. The results of this calibration relate only to the individual instrument described above. This certificate shall not be used to claim product endorsement by the American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government.

Uncertainty evaluation includes the item under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor of k=2 to approximate a 95% confidence level. The calibration process provides a Test Uncertainty Ratio (TUR) of less than or equal to 25% (4:1) of the test limit unless otherwise stated in remarks or an attachment.

\*The client has sole responsibility for determination of in/out of tolerance or compliance/noncompliance. An in/out of tolerance opinion is provided for your convenience based only on the Test Instrument (TI) reading(s) and limits as reported. The reported uncertainty relates only to the results at the time of calibration and does not imply any short or long term stability of the TI.

\*\*Calibration interval is determined by the client and does not assure the instrument will remain within tolerance until this date. Any number of factors may cause the instrument to be out of tolerance before the next calibration date.

**Remarks:** None

### Standards Used

Asset	Manufacturer	Model	Description	Cal Due
008920	HART SCIENTIFIC, INC	17660-A-120-6-W	PLATINUM RTD	Jul 06, 03
009137	HART SCIENTIFIC, INC	1575	THERMOMETER	Jul 06, 03

Approved by: Walt Hill  
Metrology Group Leader  
m:\Nona2\1a1.rpt Rev date 15, August 02

Measurements by: Mark Romero  
Metrology Technician

Southwest Research Institute  
Calibration laboratory  
Measurement Record

Work Order:	444053500	Mfr.	Kessler	Technician	Mark Romero
Asset No.	003242	Model	ASTM 76MM 1MM	Cal Date.	29-Apr-03
Serial No.	H98-179	Type.	THERMOMETER		
Remarks:					

Function/Range	Test Point	TI Reading	Difference	+/-Limits	+/-Uncertainty	Found/Left
Temperature	Deg C	Deg C	Deg C	Deg C	Deg C	Results
-20	-19.9	-19.5	0.4	0.5	0.6	Pass
0	0.1	0.5	0.4	0.5	0.6	Pass
50	50.0	50.2	0.2	0.5	0.6	Pass
100	100.0	100.2	0.2	0.5	0.6	Pass
150	149.9	150.1	0.2	0.5	0.6	Pass

END OF REPORT



# SOUTHWEST RESEARCH INSTITUTE™

6220 Culebra Road, P.O. Drawer 28510  
Institute Quality Systems  
Institute Calibration Laboratory  
Phone: 210-522-5215 Fax 210-522-3692



## Certificate of Calibration

0972-01

**Submitted By:** DIV20

**Address:** B57

**Contact:** DARRELL DUNN

**Manufacturer Model:** KESSLER ASTM 76MM IMM

**Description:** THERMOMETER

**Serial No:** 115858

**Asset No:** 003242

**Procedure:** TEMPERATURE, JAN/04

**Work Order:** 444058712

**Date Issued:** Apr 29, 2004

**Calibration Date:** Apr 29, 2004

**\*\*Calibration Due:** Apr 29, 2005

**Calibration Location:** Bldg. 64

**Environment:** Temp. 80.0°F Hum. 38 %RH

**\*As Found:** IN TOLERANCE

**\*As Left:** IN TOLERANCE

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 1999 and ANSI/NCCL Z540-1-1994 which are equivalent to relevant requirements of the ISO 9000-1994 series of standards. This certificate may not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. The results of this calibration relate only to the individual instrument described above. This certificate shall not be used to claim product endorsement by the American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government.

Uncertainty evaluation includes the item under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor of k=2 to approximate a 95% confidence level. The calibration process provides a Test Uncertainty Ratio (TUR) of less than or equal to 25% (4:1) of the test limit unless otherwise stated in remarks or an attachment

\*The client has sole responsibility for determination of in/out of tolerance or compliance/noncompliance. An in/out of tolerance opinion is provided for your convenience based only on the Test Instrument (TI) reading(s) and limits as reported. The reported uncertainty relates only to the results at the time of calibration and does not imply any short or long term stability of the TI.

\*\*Calibration interval is determined by the client and does not assure the instrument will remain within tolerance until this date. Any number of factors may cause the instrument to be out of tolerance before the next calibration date.

**Remarks:** None

### Standards Used

Asset	Manufacturer	Model	Description	Cal Due
009137	HART SCIENTIFIC	1575	THERMOMETER	Sep 05, 04
008920	HART SCIENTIFIC	5614-17660-A-12	PLATINUM RTD	Sep 09, 04

Approved by: Walt Hill  
Metrology Group Leader  
m:\a2la1.rpt Rev date 15, August 02

Measurements by: Scott Kester  
Metrology Technician

Southwest Research Institute  
 Calibration laboratory  
 Calibration Report

Work Order:	444058712	Mfr.	Kessler	Technician	SRK
Asset No.	003242	Model	ASTM 76MM 1MM	Cal Date.	29-Apr-04
Serial No.	115858	Type.	THERMOMETER		
Remarks:					

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found/Left
Temperature	Deg C	Deg C	Deg C	Deg C	Deg C	Result
-20	-20.0	-19.5	0.5	0.5	0.58	Pass
0	0.1	0.5	0.4	0.5	0.58	Pass
50	50.0	50.5	0.5	0.5	0.58	Pass
100	100.0	100.5	0.5	0.5	0.58	Pass
150	150.1	150.5	0.4	0.5	0.58	Pass
END OF REPORT						