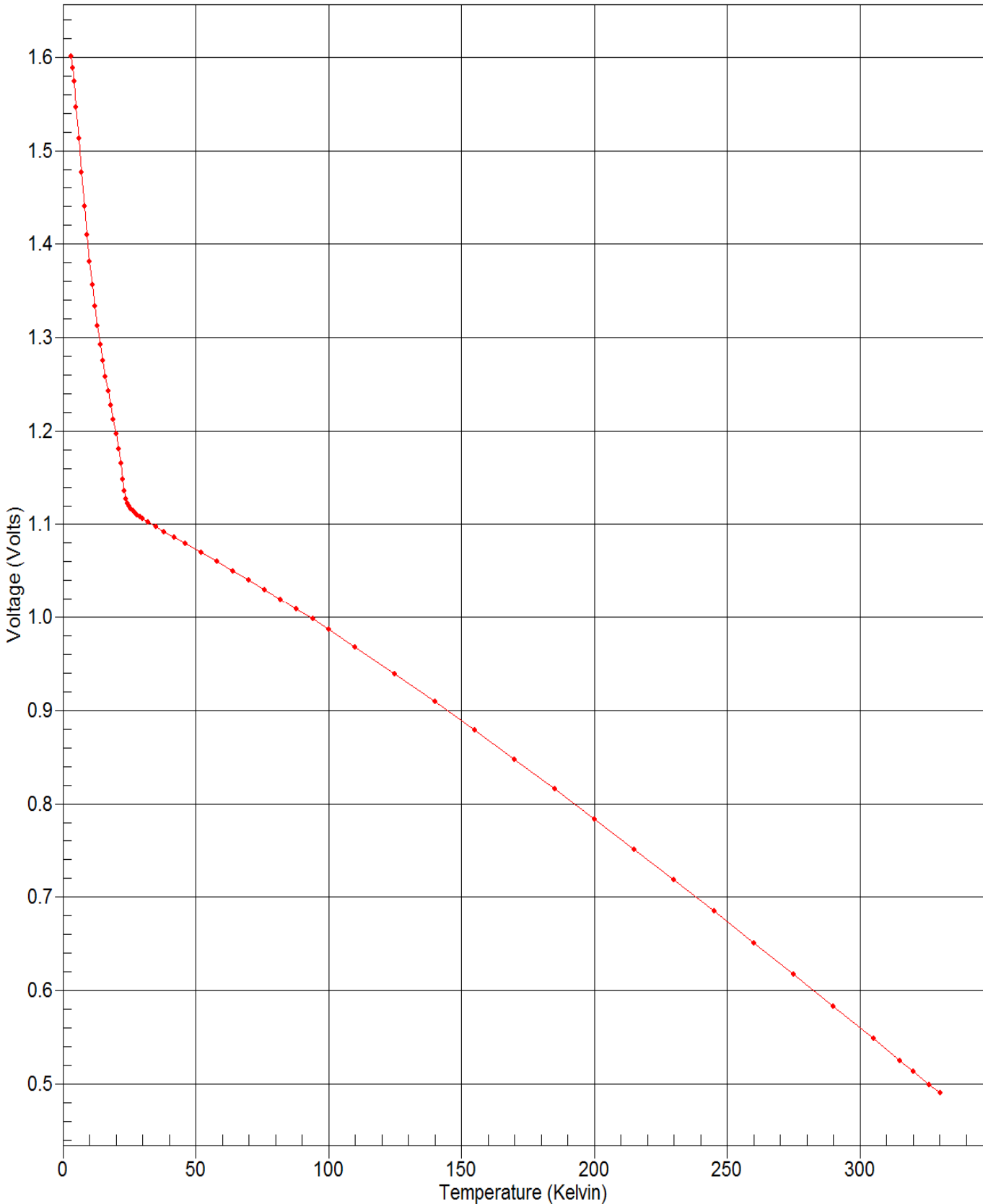


DATA PLOT

Calibration Report: 655719
Sensor Model: DT-670-SD-4L
Sensor Type: Silicon Diode

Sales Order: 70087
Serial Number: D6027365
Temperature Range: 4.00K to 325K



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TEST DATA

Calibration Report: 655719
Sensor Model: DT-670-SD-4L
Sensor Type: Silicon Diode

Sales Order: 70087
Serial Number: D6027365
Temperature Range: 4.00K to 325K

Index	Temp. (K)	Voltage (V)	Excitation	Index	Temp. (K)	Voltage (V)	Excitation
1	3.19853	1.60115	10µA±0.1%	36	42.0385	1.08578	10µA±0.1%
2	3.69767	1.58829	10µA±0.1%	37	46.0279	1.07945	10µA±0.1%
3	4.19953	1.57382	10µA±0.1%	38	52.0292	1.06983	10µA±0.1%
4	5.04420	1.54614	10µA±0.1%	39	58.0244	1.06009	10µA±0.1%
5	5.99821	1.51262	10µA±0.1%	40	64.0193	1.05020	10µA±0.1%
6	7.01032	1.47648	10µA±0.1%	41	70.0262	1.04011	10µA±0.1%
7	8.06924	1.44060	10µA±0.1%	42	76.0208	1.02985	10µA±0.1%
8	9.07947	1.40956	10µA±0.1%	43	82.0111	1.01941	10µA±0.1%
9	10.0900	1.38167	10µA±0.1%	44	88.0138	1.00875	10µA±0.1%
10	11.1062	1.35630	10µA±0.1%	45	94.0110	0.997914	10µA±0.1%
11	12.1177	1.33326	10µA±0.1%	46	100.012	0.986883	10µA±0.1%
12	13.1248	1.31220	10µA±0.1%	47	110.014	0.968116	10µA±0.1%
13	14.1275	1.29286	10µA±0.1%	48	124.994	0.939190	10µA±0.1%
14	15.1172	1.27511	10µA±0.1%	49	139.998	0.909353	10µA±0.1%
15	16.1065	1.25843	10µA±0.1%	50	154.997	0.878800	10µA±0.1%
16	17.0890	1.24263	10µA±0.1%	51	170.007	0.847599	10µA±0.1%
17	18.0741	1.22729	10µA±0.1%	52	185.011	0.815871	10µA±0.1%
18	19.0533	1.21226	10µA±0.1%	53	200.003	0.783689	10µA±0.1%
19	20.0374	1.19693	10µA±0.1%	54	215.002	0.751063	10µA±0.1%
20	21.0275	1.18062	10µA±0.1%	55	230.006	0.718032	10µA±0.1%
21	21.8208	1.16571	10µA±0.1%	56	245.002	0.684657	10µA±0.1%
22	22.6156	1.14806	10µA±0.1%	57	260.013	0.650917	10µA±0.1%
23	23.2094	1.13577	10µA±0.1%	58	275.028	0.616866	10µA±0.1%
24	23.8025	1.12743	10µA±0.1%	59	290.038	0.582545	10µA±0.1%
25	24.3995	1.12245	10µA±0.1%	60	305.040	0.548004	10µA±0.1%
26	24.9999	1.11923	10µA±0.1%	61	315.067	0.524805	10µA±0.1%
27	25.5969	1.11686	10µA±0.1%	62	320.068	0.513202	10µA±0.1%
28	26.3989	1.11434	10µA±0.1%	63	326.069	0.499258	10µA±0.1%
29	27.2077	1.11220	10µA±0.1%	64	330.090	0.489904	10µA±0.1%
30	28.0181	1.11031	10µA±0.1%				
31	29.0252	1.10816	10µA±0.1%				
32	30.0360	1.10613	10µA±0.1%				
33	32.0541	1.10236	10µA±0.1%				
34	35.0593	1.09711	10µA±0.1%				
35	38.0507	1.09216	10µA±0.1%				



UNCERTAINTY ANALYSIS

Calibration Report: 655719
 Sensor Model: DT-670-SD-4L
 Sensor Type: Silicon Diode

Sales Order: 70087
 Serial Number: D6027365
 Temperature Range: 4.00K to 325K

Calibration Data Uncertainty

The uncertainties of the measured calibration data for Lake Shore's sensors are summarized in the table below. The values given are the combined uncertainty of the temperature measurement and the resistance or voltage measurement expressed as an equivalent temperature uncertainty in millikelvin (mK). Note that the values are the calibration uncertainty only and do not include the stability of the temperature sensor. The uncertainty analysis has followed the guidelines for determining measurement uncertainty as outlined in the ISO Guide to the Expression of Uncertainty in Measurement, NIST Technical Note 1297, and ANSI/NCSL Z540-2-1997. Since the uncertainty varies with temperature due to the variation of the sensor sensitivity and excitation, the table gives typical values at several different temperatures throughout the range of the calibration. The uncertainty is based on an approximate 95% confidence level with a coverage factor $k = 2$.

T (K)	Uncertainty (\pm mK)													
	GR	Cernox (CX)					RX			Platinum		RF-800	Diode	
		1010	1030	1050	1070	1080	102A	103A	202A	100 Ω	25 Ω	27 Ω		
1.4	4	4	4	4			4	4	4				5	7
4.2	4	4	4	4	4		4	6	5				5	5
10	4	5	5	4	4		10	15	12				7	6
20	8	10	9	8	8	8	35	35	28	9	10		13	9
30	9	13	11	9	9	9	76	61	46	9	9		14	31
50	11	18	14	12	12	11				10	10		13	37
100	20	29	22	17	16	14				11	12		12	32
300		78	60	46	45	36				24	24		25	35
400		124	94	74	72	60				45	45		45	49
500										51	51			54

Polynomial Fit Uncertainty

When a sensor is used to measure temperature, a polynomial fit to the measured calibration data is often used to convert the sensor resistance (R) or voltage (V) to a temperature (T). How well the polynomial represents the sensor calibration data is another source of uncertainty when using the sensor. In the polynomials provided with this set of calibration data, the standard deviation of the fit can be used as an estimate of this additional temperature uncertainty. The standard deviation of fit is determined from the following equation:

$$\sigma_{fit}^2 = \frac{\sum_{i=1}^N (T_i - T_{i,calc})^2}{N - n} = \frac{N}{N - n} (\Delta T_{RMS})^2$$

where

- σ_{fit} = standard deviation of the fit
- T_i = measured temperature for point i
- $T_{i,calc}$ = the temperature calculated from the polynomial equation for point i
- N = number of data points in fit range
- n = number of fit coefficients
- ΔT_{RMS} = root mean square deviation of fit

A value of ΔT_{RMS} is given for each range of fit.

F008-04-00_B (01/17/11)



POLYNOMIAL EQUATION

Calibration Report: 655719
Sensor Model: DT-670-SD-4L
Sensor Type: Silicon Diode

Sales Order: 70087
Serial Number: D6027365
Temperature Range: 4.00K to 325K

Polynomial Type: Chebychev
Useful Range of Fit:

4.00 K to 25.0 K
1.580 Volts to 1.119 Volts

Lower and Upper limits of Voltage used in computing Chebychev coefficients:

ZL = 1.11433568 ZU = 1.601146955

Order	Coefficient	Std. Deviation of Coefficient	Ratio (Coeff./Std Dev.)
0	12.849834	3.4379E-03	3737.70
1	-10.840025	5.1440E-03	-2107.31
2	1.589114	4.8194E-03	329.74
3	-0.207939	4.9210E-03	-42.26
4	-0.137883	4.9410E-03	-27.91
5	-0.136597	4.9260E-03	-27.73
6	0.188589	4.8067E-03	39.23
7	-0.207182	4.6522E-03	-44.53
8	0.165878	4.5525E-03	36.44
9	-0.124256	4.5264E-03	-27.45
10	0.081423	4.6134E-03	17.65
11	-0.055541	4.7678E-03	-11.65
12	0.037779	4.8421E-03	7.80
13	-0.021791	4.7815E-03	-4.56
14	0.017982	4.5275E-03	3.97

Z = Voltage

$$k = ((Z-ZL)-(ZU-Z))/(ZU-ZL)$$

Temp. (K) = $\sum A_i \cdot \text{COS}(i \cdot \text{ARCCOS}(k))$, where $0 \leq i \leq 14$
and the A_i 's are the coefficients in the table above.

POLYNOMIAL EQUATION

Calibration Report: 655719
Sensor Model: DT-670-SD-4L
Sensor Type: Silicon Diode

Sales Order: 70087
Serial Number: D6027365
Temperature Range: 4.00K to 325K

Polynomial Type: Chebychev
Temp. (K) vs. Voltage

	V Meas. (V)	T Meas. (K)	T Eq. (K)	T diff. (mK)
1	1.601147	3.19853	3.19939	-0.86
2	1.588288	3.69767	3.69358	4.09
3	1.573824	4.19953	4.20614	-6.62
4	1.546139	5.04420	5.03665	7.55
5	1.512616	5.99821	6.00696	-8.75
6	1.476477	7.01032	7.00260	7.72
7	1.440603	8.06924	8.07065	-1.41
8	1.409561	9.07947	9.08700	-7.54
9	1.381670	10.08997	10.08437	5.61
10	1.356303	11.10620	11.09919	7.02
11	1.333257	12.11768	12.12209	-4.41
12	1.312195	13.12485	13.13372	-8.87
13	1.292863	14.12748	14.12811	-0.63
14	1.275110	15.11725	15.10901	8.23
15	1.258434	16.10652	16.09840	8.11
16	1.242633	17.08898	17.09101	-2.03
17	1.227288	18.07408	18.08540	-11.33
18	1.212257	19.05333	19.06043	-7.11
19	1.196932	20.03743	20.02975	7.68
20	1.180625	21.02747	21.01065	16.82
21	1.165713	21.82079	21.82971	-8.92
22	1.148058	22.61563	22.64033	-24.70
23	1.135767	23.20944	23.18368	25.76
24	1.127426	23.80254	23.78532	17.22
25	1.122446	24.39947	24.41618	-16.71
26	1.119234	24.99988	25.01714	-17.26
27	1.116865	25.59695	25.59846	-1.52
28	1.114336	26.39888	26.38605	12.83

Order of Fit = 14 RMS error of fit = 11.25 mK
Largest absolute error = 25.76 mK at data point no. 23



POLYNOMIAL EQUATION

Calibration Report: 655719
Sensor Model: DT-670-SD-4L
Sensor Type: Silicon Diode

Sales Order: 70087
Serial Number: D6027365
Temperature Range: 4.00K to 325K

Polynomial Type: Chebychev
Useful Range of Fit:

25.0 K to 88.0 K
1.119 Volts to 1.009 Volts

Lower and Upper limits of Voltage used in computing Chebychev coefficients:
ZL = 0.9868831955 ZU = 1.127426347

Order	Coefficient	Std. Deviation of Coefficient	Ratio (Coeff./Std Dev.)
0	60.085974	8.7802E-03	6843.36
1	-39.892867	1.5601E-02	-2557.09
2	1.011986	1.4685E-02	68.91
3	1.497749	1.0575E-02	141.63
4	0.847632	7.5972E-03	111.57
5	0.332664	3.4672E-03	95.95
6	0.067386	4.0005E-03	16.84
7	-0.022612	7.4919E-03	-3.02
8	-0.057641	1.0546E-02	-5.47
9	-0.018152	1.1434E-02	-1.59
10	-0.031709	1.1640E-02	-2.72
11	-0.002148	9.1036E-03	-0.24
12	-0.016676	6.3372E-03	-2.63

Z = Voltage

$$k = ((Z-ZL)-(ZU-Z))/(ZU-ZL)$$

Temp. (K) = $\sum A_i \cdot \text{COS}(i \cdot \text{ARCCOS}(k))$, where $0 \leq i \leq 12$
and the A_i 's are the coefficients in the table above.

POLYNOMIAL EQUATION

Calibration Report: 655719
Sensor Model: DT-670-SD-4L
Sensor Type: Silicon Diode

Sales Order: 70087
Serial Number: D6027365
Temperature Range: 4.00K to 325K

Polynomial Type: Chebychev
Temp. (K) vs. Voltage

	V Meas. (V)	T Meas. (K)	T Eq. (K)	T diff. (mK)
24	1.127426	23.78532	23.80159	0.95
25	1.122446	24.41618	24.40841	-8.94
26	1.119234	25.01714	24.98626	13.62
27	1.116865	25.59695	25.59081	6.13
28	1.114336	26.39888	26.40621	-7.32
29	1.112202	27.20769	27.21917	-11.48
30	1.110310	28.01815	28.02340	-5.25
31	1.108156	29.02524	29.02211	3.13
32	1.106133	30.03599	30.02776	8.23
33	1.102357	32.05407	32.04396	10.10
34	1.097106	35.05928	35.06582	-6.54
35	1.092159	38.05071	38.06021	-9.50
36	1.085781	42.03850	42.03326	5.25
37	1.079445	46.02786	46.02173	6.13
38	1.069827	52.02916	52.03588	-6.72
39	1.060092	58.02436	58.02310	1.26
40	1.050202	64.01928	64.01610	3.18
41	1.040112	70.02618	70.03007	-3.89
42	1.029855	76.02081	76.01842	2.39
43	1.019411	82.01114	82.01206	-0.92
44	1.008752	88.01383	88.01360	0.22
45	0.9979137	94.01101	94.01105	-0.03
46	0.9868832	100.01232	100.01232	0.00

Order of Fit = 12 RMS error of fit = 6.51 mK
Largest absolute error = 13.62 mK at data point no. 26



POLYNOMIAL EQUATION

Calibration Report: 655719
Sensor Model: DT-670-SD-4L
Sensor Type: Silicon Diode

Sales Order: 70087
Serial Number: D6027365
Temperature Range: 4.00K to 325K

Polynomial Type: Chebychev
Useful Range of Fit:

88.0 K to 325. K
1.009 Volts to 0.5017 Volts

Lower and Upper limits of Voltage used in computing Chebychev coefficients:
ZL = 0.4899037159 ZU = 1.029854959

Order	Coefficient	Std. Deviation of Coefficient	Ratio (Coeff./Std Dev.)
0	207.252531	1.0761E-04	1926001.75
1	-126.057548	1.5547E-04	-810837.95
2	-3.938903	1.5212E-04	-25892.73
3	-0.895856	1.5735E-04	-5693.43
4	-0.242164	1.5657E-04	-1546.65
5	-0.079994	1.5037E-04	-531.98
6	-0.017171	1.4473E-04	-118.64
7	-0.002119	1.4459E-04	-14.66
8	0.000833	1.4653E-04	5.68
9	0.000965	1.4637E-04	6.59

Z = Voltage

$$k = ((Z-ZL)-(ZU-Z))/(ZU-ZL)$$

Temp. (K) = $\sum A_i \cdot \text{COS}(i \cdot \text{ARCCOS}(k))$, where $0 \leq i \leq 9$
and the A_i 's are the coefficients in the table above.

POLYNOMIAL EQUATION

Calibration Report: 655719
Sensor Model: DT-670-SD-4L
Sensor Type: Silicon Diode

Sales Order: 70087
Serial Number: D6027365
Temperature Range: 4.00K to 325K

Polynomial Type: Chebychev
Temp. (K) vs. Voltage

	V Meas. (V)	T Meas. (K)	T Eq. (K)	T diff. (mK)
42	1.029855	76.01842	76.02057	0.23
43	1.019411	82.01206	82.01160	-0.45
44	1.008752	88.01360	88.01390	-0.07
45	0.9979137	94.01101	94.01057	0.44
46	0.9868832	100.01232	100.01246	-0.14
47	0.9681164	110.01444	110.01441	0.03
48	0.9391898	124.99378	124.99363	0.15
49	0.9093529	139.99805	139.99856	-0.51
50	0.8788003	154.99668	154.99641	0.27
51	0.8475985	170.00729	170.00720	0.09
52	0.8158708	185.01133	185.01105	0.28
53	0.7836895	200.00270	200.00322	-0.52
54	0.7510634	215.00162	215.00156	0.06
55	0.7180318	230.00570	230.00553	0.17
56	0.6846573	245.00186	245.00178	0.08
57	0.6509169	260.01321	260.01353	-0.32
58	0.6168659	275.02813	275.02767	0.46
59	0.5825454	290.03803	290.03841	-0.38
60	0.5480042	305.03962	305.03986	-0.24
61	0.5248047	315.06737	315.06635	1.02
62	0.5132021	320.06783	320.06834	-0.50
63	0.4992581	326.06917	326.06966	-0.49
64	0.4899037	330.09000	330.08968	0.32

Order of Fit = 9 RMS error of fit = 0.38 mK
Largest absolute error = 1.02 mK at data point no. 61



INTERPOLATION TABLE

Calibration Report: 655719
 Sensor Model: DT-670-SD-4L
 Sensor Type: Silicon Diode

Sales Order: 70087
 Serial Number: D6027365
 Temperature Range: 4.00K to 325K

Temp (K)	Volts (V)	dV/dT (mV/K)	Temp (K)	Volts (V)	dV/dT (mV/K)
4.000	1.57977	-29.143	37.00	1.09387	-1.6417
4.200	1.57381	-30.512	38.00	1.09224	-1.6226
4.400	1.56757	-31.799	39.00	1.09063	-1.6080
4.600	1.56111	-32.850	40.00	1.08902	-1.5973
4.800	1.55445	-33.666	42.00	1.08584	-1.5872
5.000	1.54765	-34.247	44.00	1.08267	-1.5873
5.200	1.54076	-34.648	46.00	1.07949	-1.5921
5.400	1.53380	-34.997	48.00	1.07630	-1.5992
5.600	1.52677	-35.297	50.00	1.07309	-1.6061
5.800	1.51968	-35.548	52.00	1.06987	-1.6128
6.000	1.51255	-35.750	54.00	1.06664	-1.6198
6.500	1.49463	-35.833	56.00	1.06339	-1.6274
7.000	1.47684	-35.193	58.00	1.06013	-1.6358
7.500	1.45952	-34.037	60.00	1.05685	-1.6448
8.000	1.44285	-32.588	65.00	1.04857	-1.6693
8.500	1.42696	-30.964	70.00	1.04016	-1.6951
9.000	1.41188	-29.360	75.00	1.03162	-1.7216
9.500	1.39759	-27.822	77.35	1.02755	-1.7345
10.00	1.38404	-26.430	80.00	1.02294	-1.7489
10.50	1.37114	-25.174	85.00	1.01413	-1.7756
11.00	1.35884	-24.035	90.00	1.00518	-1.8020
11.50	1.34709	-22.997	95.00	0.996108	-1.8279
12.00	1.33584	-22.025	100.0	0.986906	-1.8528
12.50	1.32505	-21.116	105.0	0.977583	-1.8764
13.00	1.31471	-20.258	110.0	0.968144	-1.8991
13.50	1.30479	-19.459	115.0	0.958593	-1.9210
14.00	1.29524	-18.734	120.0	0.948936	-1.9417
14.50	1.28604	-18.079	125.0	0.939178	-1.9614
15.00	1.27715	-17.482	130.0	0.929323	-1.9801
15.50	1.26855	-16.950	135.0	0.919379	-1.9976
16.00	1.26019	-16.503	140.0	0.909349	-2.0141
16.50	1.25203	-16.136	145.0	0.899239	-2.0298
17.00	1.24404	-15.836	150.0	0.889053	-2.0447
17.50	1.23618	-15.601	155.0	0.878793	-2.0589
18.00	1.22843	-15.424	160.0	0.868465	-2.0724
18.50	1.22075	-15.332	165.0	0.858071	-2.0852
19.00	1.21308	-15.366	170.0	0.847614	-2.0974
19.50	1.20536	-15.530	175.0	0.837098	-2.1090
20.00	1.19752	-15.824	180.0	0.826524	-2.1203
21.00	1.18110	-17.283	185.0	0.815895	-2.1312
22.00	1.16189	-21.774	190.0	0.805212	-2.1417
23.00	1.13976	-20.215	195.0	0.794479	-2.1518
24.00	1.12548	-8.9834	200.0	0.783695	-2.1614
25.00	1.11923	-4.4873	205.0	0.772865	-2.1707
26.00	1.11552	-3.1332	210.0	0.761988	-2.1798
27.00	1.11272	-2.5430	215.0	0.751067	-2.1887
28.00	1.11035	-2.2328	220.0	0.740102	-2.1974
29.00	1.10821	-2.0648	225.0	0.729094	-2.2058
30.00	1.10620	-1.9517	230.0	0.718044	-2.2139
31.00	1.10429	-1.8699	235.0	0.706955	-2.2217
32.00	1.10246	-1.8113	240.0	0.695827	-2.2294
33.00	1.10067	-1.7678	245.0	0.684661	-2.2369
34.00	1.09892	-1.7290	250.0	0.673459	-2.2442
35.00	1.09721	-1.6950	255.0	0.662220	-2.2512
36.00	1.09553	-1.6658	260.0	0.650947	-2.2580



INTERPOLATION TABLE

Calibration Report: 655719

Sensor Model: DT-670-SD-4L

Sensor Type: Silicon Diode

Sales Order: 70087

Serial Number: D6027365

Temperature Range: 4.00K to 325K

<u>Temp (K)</u>	<u>Volts (V)</u>	<u>dV/dT (mV/K)</u>	<u>Temp (K)</u>	<u>Volts (V)</u>	<u>dV/dT (mV/K)</u>
265.0	0.639640	-2.2646	285.0	0.594094	-2.2895
270.0	0.628301	-2.2710	290.0	0.582633	-2.2951
273.15	0.621141	-2.2751	295.0	0.571144	-2.3002
275.0	0.616930	-2.2774	300.0	0.559631	-2.3049
280.0	0.605527	-2.2836	305.0	0.548096	-2.3091
			310.0	0.536540	-2.3134
			315.0	0.524961	-2.3182
			320.0	0.513360	-2.3219
			325.0	0.501744	-2.3245



THERMAL CYCLE TESTING

Sensor Model: DT-670-SD-4L

Serial Number: D6027365

Sensor Type: Silicon Diode

This sensor was tested for repeatability through rapid thermal cycles from room temperature into liquid helium. During this test, the following four lead voltage values were recorded:

Approximately 305 K:	0.547 V
Liquid Nitrogen:	1.027 V
Liquid Helium:	1.574 V

The nitrogen and helium values were recorded in OPEN dewars, so precision comparisons with calibration values or other thermal cycle test values should not be made.

Recommended Operating Parameters:

For diode sensors calibrated by LSCI, the current is maintained at the constant values listed on the Test Data page. In order to minimize calibration offsets due to the nonlinear voltage-current relationship in the diode sensor, these same guidelines should be followed in using the sensor.



BREAKPOINTS 340 FORMAT

Calibration Report: 655719

Sensor Model: DT-670-SD-4L

Sensor Type: Silicon Diode

Sales Order: 70087

Serial Number: D6027365

Temperature Range: 4.00K to 325K

Name: DT-670-SD-4L

Serial number: D6027365

Format: 2 ;Volts/Kelvin

Limit: 325.0

Coefficient: 1 ;Negative

Point 1: 9.06000e-02,500.000	Point 56: 1.12122, 24.600
Point 2: .110239,491.000	Point 57: 1.12309, 24.300
Point 3: .136555,479.500	Point 58: 1.12462, 24.100
Point 4: .179181,461.500	Point 59: 1.12641, 23.900
Point 5: .265393,425.500	Point 60: 1.12857, 23.700
Point 6: .349522,390.000	Point 61: 1.13114, 23.500
Point 7: .452797,346.000	Point 62: 1.13419, 23.300
Point 8: .501766,325.000	Point 63: 1.13969, 23.000
Point 9: .544654,306.500	Point 64: 1.15284, 22.400
Point 10: .583802,289.500	Point 65: 1.16415, 21.900
Point 11: .618090,274.500	Point 66: 1.17405, 21.400
Point 12: .650969,260.000	Point 67: 1.18457, 20.800
Point 13: .682446,246.000	Point 68: 1.19598, 20.100
Point 14: .711416,233.000	Point 69: 1.21003, 19.200
Point 15: .739023,220.500	Point 70: 1.23072, 17.850
Point 16: .765276,208.500	Point 71: 1.24480, 16.950
Point 17: .790190,197.000	Point 72: 1.25687, 16.200
Point 18: .813782,186.000	Point 73: 1.26767, 15.550
Point 19: .836062,175.500	Point 74: 1.27800, 14.950
Point 20: .857046,165.500	Point 75: 1.28873, 14.350
Point 21: .876752,156.000	Point 76: 1.29899, 13.800
Point 22: .895192,147.000	Point 77: 1.30966, 13.250
Point 23: .912384,138.500	Point 78: 1.32083, 12.700
Point 24: .928350,130.500	Point 79: 1.33251, 12.150
Point 25: .943109,123.000	Point 80: 1.34475, 11.600
Point 26: .957651,115.500	Point 81: 1.35642, 11.100
Point 27: .971003,108.500	Point 82: 1.36859, 10.600
Point 28: .984140,101.500	Point 83: 1.38136, 10.100
Point 29: .994286, 96.000	Point 84: 1.39477, 9.600
Point 30: 1.00248, 91.500	Point 85: 1.40747, 9.150
Point 31: 1.01057, 87.000	Point 86: 1.42079, 8.700
Point 32: 1.01856, 82.500	Point 87: 1.43476, 8.250
Point 33: 1.02643, 78.000	Point 88: 1.45103, 7.750
Point 34: 1.03420, 73.500	Point 89: 1.46979, 7.200
Point 35: 1.04186, 69.000	Point 90: 1.49814, 6.400
Point 36: 1.04941, 64.500	Point 91: 1.52472, 5.660
Point 37: 1.05785, 59.400	Point 92: 1.54840, 4.980
Point 38: 1.06568, 54.600	Point 93: 1.56312, 4.540
Point 39: 1.07406, 49.400	Point 94: 1.57386, 4.200
Point 40: 1.08268, 44.000	Point 95: 1.57978, 4.000
Point 41: 1.08918, 39.900	Point 96: 1.59690, 3.580
Point 42: 1.09337, 37.300	Point 97: 1.60756, 3.180
Point 43: 1.09669, 35.300	Point 98: 1.62125, 2.620
Point 44: 1.09961, 33.600	Point 99: 1.62945, 2.260
Point 45: 1.10245, 32.000	Point 100: 1.63516, 1.980
Point 46: 1.10485, 30.700	Point 101: 1.63943, 1.740
Point 47: 1.10698, 29.600	Point 102: 1.64261, 1.530
Point 48: 1.10903, 28.600	Point 103: 1.64430, 1.400
Point 49: 1.11079, 27.800	
Point 50: 1.11246, 27.100	
Point 51: 1.11404, 26.500	
Point 52: 1.11551, 26.000	
Point 53: 1.11684, 25.600	
Point 54: 1.11836, 25.200	
Point 55: 1.11968, 24.900	

Note: Breakpoints outside of the calibration range were added from the standard curve. These extra points conform to reduced accuracy specifications and are added as a convenience to the customer.



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F010-04-00_B 06/21/2011

BREAKPOINTS 91C/93C/330 FORMAT

Calibration Report: 655719
Sensor Model: DT-670-SD-4L
Sensor Type: Silicon Diode

Sales Order: 70087
Serial Number: D6027365
Temperature Range: 4.00K to 325K

Interpolation Method: Straight Line
Limit: 325.0 (Kelvin)
Format: 2 (Volts/Kelvin)
Number of Breakpoints: 37

No.	Units	Temperature (K)	No.	Units	Temperature (K)
1	0.147030	475.0	21	1.10817	29.0
2	0.218700	445.0	22	1.11268	27.0
3	0.326000	400.0	23	1.11552	26.0
4	0.490260	330.0	24	1.11923	25.0
5	0.501840	325.0	25	1.12548	24.0
6	0.571180	295.0	26	1.13976	23.0
7	0.639730	265.0	27	1.16189	22.0
8	0.707040	235.0	28	1.18110	21.0
9	0.762050	210.0	29	1.27630	15.0
10	0.815980	185.0	30	1.33483	12.0
11	0.858120	165.0	31	1.39664	9.5
12	0.899320	145.0	32	1.47547	7.0
13	0.939260	125.0	33	1.56909	4.4
14	0.968190	110.0	34	1.57952	4.0
15	0.996170	95.0	35	1.59237	3.8
16	1.02301	80.0	36	1.63785	1.9
17	1.04863	65.0	37	1.64411	1.4
18	1.07316	50.0			
19	1.09382	37.0			
20	1.10240	32.0			

Note: Breakpoints outside of the calibration range were added from the standard curve. These extra points conform to reduced accuracy specifications and are added as a convenience to the customer.

