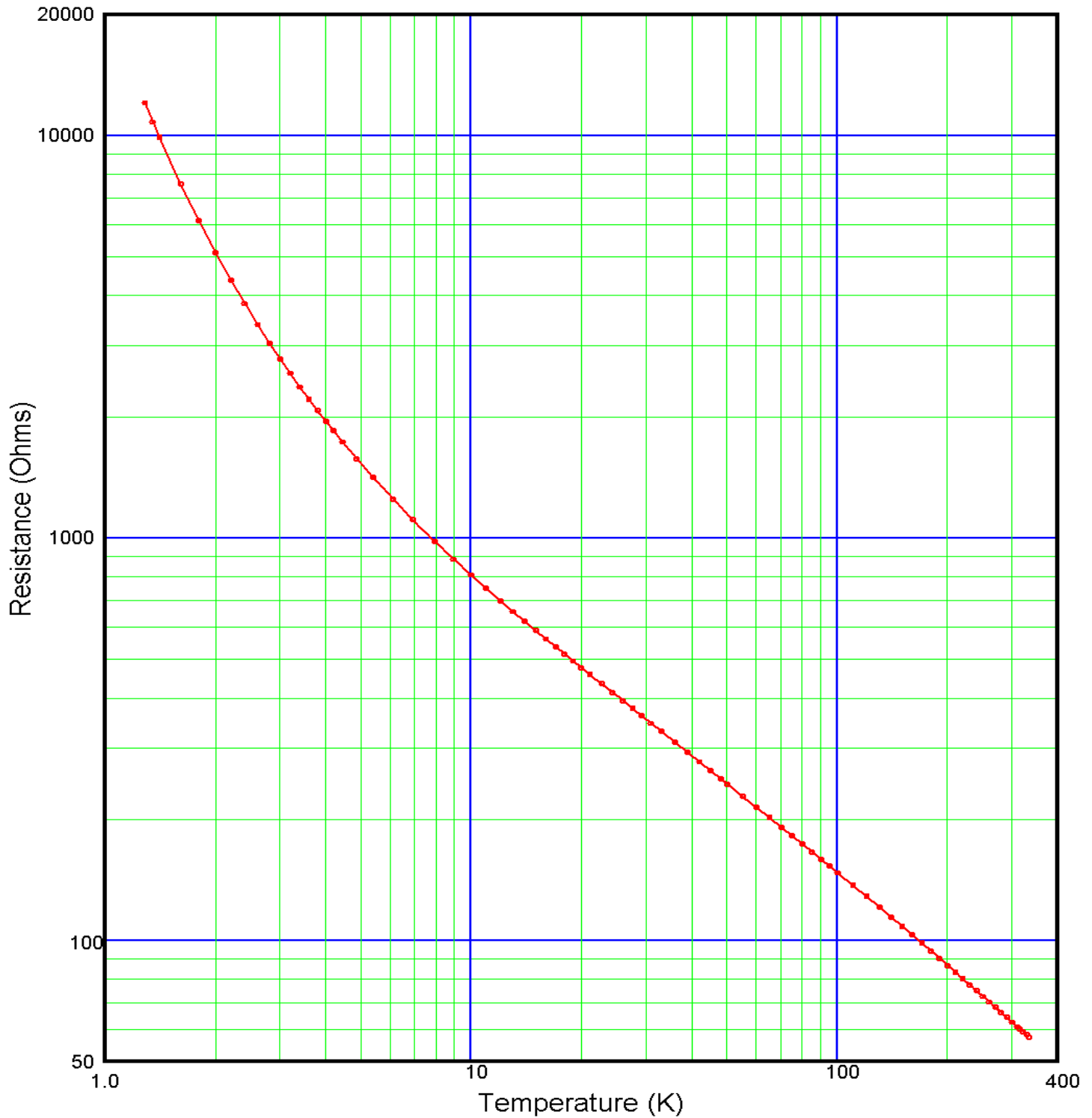


DATA PLOT

Calibration Report: 422717
Sensor Model: CX-1050-SD-1.4L
Sensor Type: Cernox Resistor
Temperature Range: 1.40K to 325K

Sales Order: 13426
Serial Number: X21238
Sensor Excitation: 2mV±50%



TEST DATA

Calibration Report: 422717
Sensor Model: CX-1050-SD-1.4L
Sensor Type: Cernox Resistor
Temperature Range: 1.40K to 325K

Sales Order: 13426
Serial Number: X21238
Sensor Excitation: 2mV±50%

Index	Temperature (K)	Resistance (Ω)	Index	Temperature (K)	Resistance (Ω)
1	1.28425	12062.6	46	42.0320	277.853
2	1.35062	10801.7	47	45.0394	264.255
3	1.40704	9899.27	48	48.0578	252.147
4	1.60820	7578.37	49	50.0851	244.626
5	1.80108	6146.04	50	55.1387	228.153
6	2.00405	5112.31	51	60.1859	214.076
7	2.20479	4375.39	52	65.2204	201.931
8	2.40556	3824.11	53	70.2508	191.274
9	2.60912	3391.74	54	75.2760	181.915
10	2.81323	3049.55	55	80.2931	173.531
11	3.00977	2783.04	56	85.3001	165.967
12	3.20119	2566.37	57	90.3088	159.180
13	3.40488	2373.07	58	95.3127	152.978
14	3.60091	2214.51	59	100.307	147.286
15	3.80612	2072.03	60	110.397	137.133
16	4.00798	1949.92	61	120.287	128.591
17	4.20460	1846.30	62	130.301	121.038
18	4.45176	1732.80	63	140.270	114.417
19	4.86500	1574.16	64	150.251	108.519
20	5.38529	1416.98	65	160.233	103.243
21	6.11234	1250.13	66	170.208	98.4956
22	6.92210	1111.41	67	180.187	94.1836
23	7.94030	982.631	68	190.159	90.2718
24	8.96319	885.644	69	200.154	86.6748
25	9.98129	809.817	70	210.147	83.3792
26	10.9911	749.075	71	220.143	80.3390
27	11.9977	698.860	72	230.129	77.5443
28	13.0022	656.505	73	240.147	74.9393
29	14.0027	620.314	74	250.145	72.5238
30	14.9962	588.964	75	260.150	70.2777
31	15.9930	561.264	76	270.155	68.1830
32	16.9837	536.760	77	280.140	66.2206
33	17.9766	514.681	78	290.161	64.3761
34	18.9710	494.743	79	300.071	62.6666
35	19.9677	476.560	80	310.049	61.0520
36	21.0722	458.217	81	314.997	60.2835
37	22.6857	434.330	82	321.253	59.3430
38	24.3243	412.885	83	328.736	58.2706
39	25.9649	393.859	84	333.726	57.5746
40	27.5917	376.923			
41	29.2000	361.784			
42	30.9967	346.466			
43	33.0777	330.599			
44	36.0586	310.470			
45	39.0389	293.090			



POLYNOMIAL EQUATION

Calibration Report: 422717
Sensor Model: CX-1050-SD-1.4L
Sensor Type: Cernox Resistor
Temperature Range: 1.40K to 325K

Sales Order: 13426
Serial Number: X21238
Sensor Excitation: 2mV±50%

Polynomial Type: Chebychev
Useful Range of Fit:

1.40K to 14.0K
9991. Ohms to 620.3 Ohms

Lower and Upper limits of Log(resistance) used in computing Chebychev coefficients:

ZL = 2.74916733321 ZU = 4.08144269832

Order	Coefficient	Std. Deviation of Coefficient	Ratio (Coeff./Std Dev.)
0	5.609902	2.3416E-04	23957.69
1	-6.307348	3.6727E-04	-17173.50
2	2.722537	3.2045E-04	8495.92
3	-0.974292	3.3588E-04	-2900.70
4	0.293738	3.3102E-04	887.36
5	-0.072517	3.1349E-04	-231.32
6	0.013186	2.9945E-04	44.04

$Z = \text{Log}(\text{resistance})$

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

Temp. (K) = $\sum A_i * \text{COS}(i * \text{ARCCOS}(X))$, where $0 \leq i \leq 6$
and the A_i 's are the coefficients in the table above.



POLYNOMIAL EQUATION

Calibration Report: 422717
Sensor Model: CX-1050-SD-1.4L
Sensor Type: Cernox Resistor
Temperature Range: 1.40K to 325K

Sales Order: 13426
Serial Number: X21238
Sensor Excitation: 2mV±50%

Polynomial Type: Chebychev
Temp. (K) vs. Log(resistance)

	R Meas. (Ω)	T Meas. (K)	T Eq. (K)	T diff. (mK)
1	12062.65	1.28425	1.28521	-0.96
2	10801.74	1.35062	1.34941	1.20
3	9899.270	1.40704	1.40625	0.79
4	7578.374	1.60820	1.60946	-1.26
5	6146.035	1.80108	1.80233	-1.24
6	5112.311	2.00405	2.00366	0.39
7	4375.392	2.20479	2.20379	1.00
8	3824.111	2.40556	2.40434	1.22
9	3391.738	2.60912	2.60864	0.49
10	3049.553	2.81323	2.81333	-0.10
11	2783.038	3.00977	3.00980	-0.03
12	2566.366	3.20119	3.20186	-0.67
13	2373.067	3.40488	3.40546	-0.58
14	2214.512	3.60091	3.60172	-0.81
15	2072.033	3.80612	3.80668	-0.56
16	1949.921	4.00798	4.00927	-1.29
17	1846.301	4.20460	4.20518	-0.58
18	1732.800	4.45176	4.45086	0.90
19	1574.164	4.86500	4.86410	0.90
20	1416.983	5.38529	5.38327	2.02
21	1250.128	6.11234	6.11037	1.97
22	1111.414	6.92210	6.92385	-1.75
23	982.6311	7.94030	7.94245	-2.15
24	885.6444	8.96319	8.96258	0.62
25	809.8169	9.98129	9.98128	0.02
26	749.0754	10.99112	10.99083	0.30
27	698.8604	11.99768	11.99772	-0.04
28	656.5047	13.00225	13.00252	-0.27
29	620.3136	14.00269	14.00195	0.74
30	588.9642	14.99622	14.99602	0.20
31	561.2642	15.99303	15.99352	-0.49

Order of Fit = 6 RMS error of fit = 1.01 mK
Largest absolute error = -2.15 mK at data point no. 23



POLYNOMIAL EQUATION

Calibration Report: 422717
Sensor Model: CX-1050-SD-1.4L
Sensor Type: Cernox Resistor
Temperature Range: 1.40K to 325K

Sales Order: 13426
Serial Number: X21238
Sensor Excitation: 2mV±50%

Polynomial Type: Chebychev
Useful Range of Fit:

14.0K to 80.3K
620.3 Ohms to 173.5 Ohms

Lower and Upper limits of Log(resistance) used in computing Chebychev coefficients:

ZL = 2.20188977593 ZU = 2.84439042308

Order	Coefficient	Std. Deviation of Coefficient	Ratio (Coeff./Std Dev.)
0	41.726481	1.3670E-03	30525.09
1	-37.684432	2.2348E-03	-16862.25
2	9.247408	2.0302E-03	4554.91
3	-1.458523	1.9061E-03	-765.18
4	0.182931	1.8291E-03	100.01
5	-0.010898	1.7291E-03	-6.30
6	-0.006664	1.7059E-03	-3.91

$Z = \text{Log}(\text{resistance})$

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

Temp. (K) = $\sum A_i \cdot \text{COS}(i \cdot \text{ARCCOS}(X))$, where $0 \leq i \leq 6$
and the A_i 's are the coefficients in the table above.



POLYNOMIAL EQUATION

Calibration Report: 422717
Sensor Model: CX-1050-SD-1.4L
Sensor Type: Cernox Resistor
Temperature Range: 1.40K to 325K

Sales Order: 13426
Serial Number: X21238
Sensor Excitation: 2mV±50%

Polynomial Type: Chebychev
Temp. (K) vs. Log(resistance)

	R Meas. (Ω)	T Meas. (K)	T Eq. (K)	T diff. (mK)
27	698.8604	11.99772	11.99630	1.41
28	656.5047	13.00252	13.00462	-2.11
29	620.3136	14.00195	14.00351	-1.56
30	588.9642	14.99622	14.99593	0.29
31	561.2642	15.99303	15.99139	1.65
32	536.7596	16.98368	16.98161	2.07
33	514.6814	17.97659	17.97633	0.26
34	494.7427	18.97102	18.97072	0.30
35	476.5603	19.96769	19.96809	-0.40
36	458.2165	21.07221	21.07368	-1.47
37	434.3299	22.68575	22.68576	-0.02
38	412.8855	24.32432	24.32726	-2.94
39	393.8589	25.96493	25.96520	-0.27
40	376.9235	27.59171	27.59082	0.89
41	361.7835	29.20002	29.19879	1.23
42	346.4664	30.99667	30.99686	-0.19
43	330.5992	33.07768	33.06972	7.96
44	310.4703	36.05857	36.06460	-6.03
45	293.0903	39.03893	39.04702	-8.09
46	277.8533	42.03200	42.02930	2.70
47	264.2547	45.03939	45.03867	0.72
48	252.1467	48.05780	48.04511	12.69
49	244.6264	50.08514	50.09130	-6.16
50	228.1533	55.13866	55.13822	0.44
51	214.0755	60.18588	60.18883	-2.95
52	201.9306	65.22040	65.22124	-0.84
53	191.2740	70.25078	70.26202	-11.25
54	181.9153	75.27596	75.26383	12.12
55	173.5314	80.29308	80.28201	11.07
56	165.9672	85.30007	85.31637	-16.30
57	159.1805	90.30878	90.30401	4.77

Order of Fit = 6 RMS error of fit = 5.94 mK
Largest absolute error = -16.30 mK at data point no. 56



POLYNOMIAL EQUATION

Calibration Report: 422717
Sensor Model: CX-1050-SD-1.4L
Sensor Type: Cernox Resistor
Temperature Range: 1.40K to 325K

Sales Order: 13426
Serial Number: X21238
Sensor Excitation: 2mV±50%

Polynomial Type: Chebychev
Useful Range of Fit:

80.3K to 325.K
173.5 Ohms to 58.80 Ohms

Lower and Upper limits of Log(resistance) used in computing Chebychev coefficients:

ZL = 1.7602306606 ZU = 2.28165595587

Order	Coefficient	Std. Deviation of Coefficient	Ratio (Coeff./Std Dev.)
0	179.030587	2.2992E-03	77866.84
1	-128.986801	3.5906E-03	-35922.98
2	22.533745	3.4343E-03	6561.40
3	-2.661162	3.2654E-03	-814.95
4	0.418893	3.0990E-03	135.17
5	-0.081838	3.0696E-03	-26.66
6	0.010909	3.0149E-03	3.62

$Z = \text{Log}(\text{resistance})$

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

Temp. (K) = $\sum A_i \cdot \text{COS}(i \cdot \text{ARCCOS}(X))$, where $0 \leq i \leq 6$
and the A_i 's are the coefficients in the table above.



POLYNOMIAL EQUATION

Calibration Report: 422717
Sensor Model: CX-1050-SD-1.4L
Sensor Type: Cernox Resistor
Temperature Range: 1.40K to 325K

Sales Order: 13426
Serial Number: X21238
Sensor Excitation: 2mV±50%

Polynomial Type: Chebychev
Temp. (K) vs. Log(resistance)

	R Meas. (Ω)	T Meas. (K)	T Eq. (K)	T diff. (mK)
53	191.2740	70.26202	70.26433	-2.31
54	181.9153	75.26383	75.26039	3.44
55	173.5314	80.28201	80.27797	4.05
56	165.9672	85.30007	85.31313	-13.06
57	159.1805	90.30878	90.30103	7.75
58	152.9779	95.31272	95.30225	10.47
59	147.2861	100.30725	100.31195	-4.70
60	137.1325	110.39737	110.41173	-14.36
61	128.5912	120.28712	120.28550	1.62
62	121.0375	130.30085	130.29818	2.67
63	114.4174	140.27023	140.26218	8.05
64	108.5190	150.25142	150.25243	-1.01
65	103.2433	160.23339	160.23381	-0.43
66	98.49557	170.20767	170.20202	5.65
67	94.18363	180.18683	180.19368	-6.85
68	90.27185	190.15905	190.14844	10.61
69	86.67479	200.15430	200.15907	-4.77
70	83.37924	210.14670	210.15245	-5.75
71	80.33904	220.14294	220.16308	-20.14
72	77.54430	230.12887	230.12338	5.49
73	74.93930	240.14656	240.14416	2.41
74	72.52383	250.14475	250.14898	-4.22
75	70.27765	260.15013	260.14172	8.42
76	68.18303	270.15536	270.12771	27.65
77	66.22060	280.13957	280.13357	6.00
78	64.37608	290.16088	290.17402	-13.14
79	62.66656	300.07080	300.08787	-17.07
80	61.05204	310.04907	310.04312	5.95
81	60.28347	314.99735	315.00109	-3.74
82	59.34296	321.25309	321.27333	-20.24
83	58.27064	328.73614	328.71638	19.76
84	57.57456	333.72575	333.72393	1.81

Order of Fit = 6 RMS error of fit = 10.57 mK
Largest absolute error = 27.65 mK at data point no. 76



INTERPOLATION TABLE

Calibration Report: 422717
 Sensor Model: CX-1050-SD-1.4L
 Sensor Type: Cernox Resistor
 Temperature Range: 1.40K to 325K

Sales Order: 13426
 Serial Number: X21238
 Sensor Excitation: 2mV±50%

Temp (K)	Res. (Ω)	dR/dT (Ω/K)	dlogR/dlogT	Temp (K)	Res. (Ω)	dR/dT (Ω/K)	dlogR/dlogT
1.400	9991.10	-14829.	-2.0779	15.50	574.513	-27.774	-0.74932
1.500	8686.95	-11464.	-1.9795	16.00	561.039	-26.153	-0.74585
1.600	7663.96	-9137.8	-1.9077	16.50	548.334	-24.688	-0.74288
1.700	6837.85	-7456.5	-1.8538	17.00	536.330	-23.351	-0.74014
1.800	6160.30	-6148.3	-1.7965	17.50	524.964	-22.129	-0.73768
1.900	5598.74	-5124.5	-1.7391	18.00	514.183	-21.011	-0.73554
2.000	5128.07	-4321.0	-1.6853	18.50	503.938	-19.985	-0.73368
2.100	4729.03	-3682.9	-1.6354	19.00	494.184	-19.041	-0.73206
2.200	4387.36	-3169.1	-1.5891	19.50	484.885	-18.168	-0.73064
2.300	4092.01	-2751.7	-1.5466	20.00	476.006	-17.361	-0.72943
2.400	3834.53	-2409.0	-1.5078	21.00	459.386	-15.914	-0.72750
2.500	3608.24	-2125.2	-1.4725	22.00	444.114	-14.658	-0.72609
2.600	3407.96	-1887.4	-1.4399	23.00	430.018	-13.557	-0.72514
2.700	3229.52	-1686.8	-1.4102	24.00	416.956	-12.586	-0.72445
2.800	3069.62	-1515.7	-1.3826	25.00	404.809	-11.724	-0.72406
2.900	2925.56	-1369.1	-1.3571	26.00	393.477	-10.954	-0.72382
3.000	2795.15	-1242.2	-1.3333	27.00	382.875	-10.263	-0.72372
3.100	2676.56	-1132.0	-1.3111	28.00	372.929	-9.6393	-0.72373
3.200	2568.29	-1035.5	-1.2902	29.00	363.577	-9.0742	-0.72378
3.300	2469.07	-950.65	-1.2706	30.00	354.763	-8.5605	-0.72390
3.400	2377.83	-875.61	-1.2520	31.00	346.441	-8.0915	-0.72404
3.500	2293.67	-808.98	-1.2345	32.00	338.567	-7.6621	-0.72419
3.600	2215.80	-749.54	-1.2178	33.00	331.105	-7.2679	-0.72437
3.700	2143.55	-696.31	-1.2019	34.00	324.021	-6.9049	-0.72454
3.800	2076.36	-648.46	-1.1868	35.00	317.286	-6.5692	-0.72466
3.900	2013.70	-605.32	-1.1723	36.00	310.874	-6.2590	-0.72481
4.000	1955.16	-566.27	-1.1585	37.00	304.760	-5.9715	-0.72498
4.200	1848.88	-498.60	-1.1326	38.00	298.924	-5.7038	-0.72509
4.400	1754.96	-442.25	-1.1088	39.00	293.347	-5.4548	-0.72521
4.600	1671.38	-394.91	-1.0869	40.00	288.009	-5.2226	-0.72533
4.800	1596.53	-354.68	-1.0664	42.00	277.994	-4.8020	-0.72550
5.000	1529.11	-320.39	-1.0476	44.00	268.767	-4.4325	-0.72565
5.200	1468.06	-290.77	-1.0299	46.00	260.235	-4.1061	-0.72581
5.400	1412.53	-265.18	-1.0138	48.00	252.319	-3.8158	-0.72591
5.600	1361.77	-242.83	-0.99860	50.00	244.951	-3.5570	-0.72607
5.800	1315.22	-223.14	-0.98404	52.00	238.073	-3.3248	-0.72620
6.000	1272.36	-205.82	-0.97055	54.00	231.636	-3.1155	-0.72629
6.500	1178.65	-170.64	-0.94104	56.00	225.597	-2.9268	-0.72652
7.000	1100.32	-143.94	-0.91571	58.00	219.918	-2.7555	-0.72671
7.500	1033.75	-123.15	-0.89346	60.00	214.565	-2.5996	-0.72694
8.000	976.440	-106.73	-0.87445	65.00	202.431	-2.2664	-0.72774
8.500	926.491	-93.502	-0.85782	70.00	191.795	-1.9966	-0.72869
9.000	882.536	-82.684	-0.84320	75.00	182.383	-1.7762	-0.73042
9.500	843.501	-73.720	-0.83027	77.35	178.315	-1.6864	-0.73154
10.00	808.575	-66.208	-0.81882	80.00	173.973	-1.5921	-0.73212
10.50	777.102	-59.846	-0.80862	85.00	166.415	-1.4358	-0.73338
11.00	748.576	-54.402	-0.79941	90.00	159.572	-1.3048	-0.73590
11.50	722.574	-49.715	-0.79123	95.00	153.337	-1.1920	-0.73850
12.00	698.756	-45.656	-0.78407	100.0	147.627	-1.0945	-0.74141
12.50	676.836	-42.090	-0.77733	105.0	142.372	-1.0094	-0.74440
13.00	656.603	-38.904	-0.77026	110.0	137.516	-0.93444	-0.74747
13.50	637.867	-36.105	-0.76414	115.0	133.013	-0.86824	-0.75066
14.00	620.432	-33.700	-0.76043	120.0	128.822	-0.80923	-0.75382
14.50	604.123	-31.562	-0.75754	125.0	124.910	-0.75644	-0.75699
15.00	588.844	-29.581	-0.75354	130.0	121.249	-0.70894	-0.76011



INTERPOLATION TABLE

Calibration Report: 422717
 Sensor Model: CX-1050-SD-1.4L
 Sensor Type: Cernox Resistor
 Temperature Range: 1.40K to 325K

Sales Order: 13426
 Serial Number: X21238
 Sensor Excitation: 2mV±50%

<u>Temp (K)</u>	<u>Res. (Ω)</u>	<u>dR/dT (Ω/K)</u>	<u>dlogR/dlogT</u>	<u>Temp (K)</u>	<u>Res. (Ω)</u>	<u>dR/dT (Ω/K)</u>	<u>dlogR/dlogT</u>
135.0	117.813	-0.66604	-0.76320	235.0	76.2521	-0.26013	-0.80170
140.0	114.582	-0.62710	-0.76622	240.0	74.9754	-0.25062	-0.80226
145.0	111.536	-0.59165	-0.76917	245.0	73.7450	-0.24161	-0.80269
150.0	108.660	-0.55925	-0.77202	250.0	72.5585	-0.23306	-0.80301
155.0	105.939	-0.52955	-0.77478	255.0	71.4137	-0.22494	-0.80322
160.0	103.361	-0.50222	-0.77743	260.0	70.3084	-0.21723	-0.80331
165.0	100.913	-0.47702	-0.77997	265.0	69.2408	-0.20989	-0.80330
170.0	98.5871	-0.45372	-0.78238	270.0	68.2089	-0.20290	-0.80318
175.0	96.3732	-0.43212	-0.78467	273.15	67.5765	-0.19867	-0.80305
180.0	94.2634	-0.41205	-0.78683	275.0	67.2112	-0.19625	-0.80296
185.0	92.2504	-0.39337	-0.78886	280.0	66.2459	-0.18990	-0.80265
190.0	90.3276	-0.37593	-0.79076	285.0	65.3117	-0.18384	-0.80224
195.0	88.4891	-0.35964	-0.79252	290.0	64.4070	-0.17806	-0.80175
200.0	86.7295	-0.34437	-0.79413	295.0	63.5306	-0.17254	-0.80117
205.0	85.0438	-0.33006	-0.79562	300.0	62.6813	-0.16726	-0.80052
210.0	83.4275	-0.31661	-0.79697	305.0	61.8577	-0.16221	-0.79979
215.0	81.8764	-0.30396	-0.79818	310.0	61.0588	-0.15737	-0.79898
220.0	80.3866	-0.29204	-0.79925	315.0	60.2836	-0.15274	-0.79812
225.0	78.9548	-0.28080	-0.80020	320.0	59.5311	-0.14830	-0.79718
230.0	77.5776	-0.27018	-0.80101	325.0	58.8003	-0.14405	-0.79619



THERMAL CYCLE TESTING

Sensor Model: CX-1050-SD-1.4L
Sensor Type: Cernox Resistor

Serial Number: X21238

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

Room Temperature:	61.8 Ω
Liquid Nitrogen:	178 Ω
Liquid Helium:	1830 Ω

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

Recommended Operating Parameters:

For sensors calibrated by LSCI the current to the sensor is adjusted to maintain the sensor output voltage at the values listed below. In order to minimize possible self-heating errors, we suggest that these same guidelines be followed in using the sensor:

Above 1K:	1 to 3 mV
0.1 to 1K:	0.1 mV
Below 0.1K:	0.03 mV

Lead Identification:

NONE

To avoid possible damage to the sensor, do not exceed 1 Volt and do not exceed 100 mA current.



BREAKPOINTS 340 FORMAT

Calibration Report: 422717
Sensor Model: CX-1050-SD-1.4L
Sensor Type: Cernox Resistor
Temperature Range: 1.40K to 325K

Sales Order: 13426
Serial Number: X21238

Name: CX-1050-SD-1.4L

Serial number: X21238

Format: 4 ;Log Ohms/Kelvin

Limit: 325.

Coefficient: 1 ;Negative

Point 1: 1.76936,325.000	Point 56: 2.25262, 77.000	Point 111: 2.92794, 9.450
Point 2: 1.77636,318.500	Point 57: 2.26097, 75.000	Point 112: 2.94364, 9.050
Point 3: 1.78295,312.500	Point 58: 2.26954, 73.000	Point 113: 2.96027, 8.650
Point 4: 1.78968,306.500	Point 59: 2.27833, 71.000	Point 114: 2.97793, 8.250
Point 5: 1.79655,300.500	Point 60: 2.28738, 69.000	Point 115: 2.99676, 7.850
Point 6: 1.80356,294.500	Point 61: 2.29668, 67.000	Point 116: 3.01434, 7.500
Point 7: 1.81073,288.500	Point 62: 2.30626, 65.000	Point 117: 3.03302, 7.150
Point 8: 1.81805,282.500	Point 63: 2.31613, 63.000	Point 118: 3.05301, 6.800
Point 9: 1.82491,277.000	Point 64: 2.32632, 61.000	Point 119: 3.07443, 6.450
Point 10: 1.83190,271.500	Point 65: 2.33684, 59.000	Point 120: 3.09753, 6.100
Point 11: 1.83904,266.000	Point 66: 2.34662, 57.200	Point 121: 3.12034, 5.780
Point 12: 1.84633,260.500	Point 67: 2.35671, 55.400	Point 122: 3.14341, 5.480
Point 13: 1.85377,255.000	Point 68: 2.36713, 53.600	Point 123: 3.16831, 5.180
Point 14: 1.86137,249.500	Point 69: 2.37790, 51.800	Point 124: 3.19536, 4.880
Point 15: 1.86915,244.000	Point 70: 2.38905, 50.000	Point 125: 3.22289, 4.600
Point 16: 1.87709,238.500	Point 71: 2.40061, 48.200	Point 126: 3.25072, 4.340
Point 17: 1.88521,233.000	Point 72: 2.41126, 46.600	Point 127: 3.28104, 4.080
Point 18: 1.89352,227.500	Point 73: 2.42226, 45.000	Point 128: 3.30650, 3.880
Point 19: 1.90203,222.000	Point 74: 2.43367, 43.400	Point 129: 3.32961, 3.710
Point 20: 1.91073,216.500	Point 75: 2.44551, 41.800	Point 130: 3.35431, 3.540
Point 21: 1.91883,211.500	Point 76: 2.45780, 40.200	Point 131: 3.38085, 3.370
Point 22: 1.92711,206.500	Point 77: 2.46978, 38.700	Point 132: 3.40775, 3.210
Point 23: 1.93557,201.500	Point 78: 2.48222, 37.200	Point 133: 3.43669, 3.050
Point 24: 1.94424,196.500	Point 79: 2.49518, 35.700	Point 134: 3.46604, 2.900
Point 25: 1.95310,191.500	Point 80: 2.50777, 34.300	Point 135: 3.49774, 2.750
Point 26: 1.96218,186.500	Point 81: 2.52088, 32.900	Point 136: 3.52990, 2.610
Point 27: 1.97149,181.500	Point 82: 2.53455, 31.500	Point 137: 3.56479, 2.470
Point 28: 1.98103,176.500	Point 83: 2.54884, 30.100	Point 138: 3.60298, 2.330
Point 29: 1.99081,171.500	Point 84: 2.56273, 28.800	Point 139: 3.64193, 2.200
Point 30: 2.00086,166.500	Point 85: 2.57724, 27.500	Point 140: 3.68132, 2.080
Point 31: 2.01014,162.000	Point 86: 2.59245, 26.200	Point 141: 3.72450, 1.960
Point 32: 2.01965,157.500	Point 87: 2.60720, 25.000	Point 142: 3.77218, 1.840
Point 33: 2.02940,153.000	Point 88: 2.62266, 23.800	Point 143: 3.82509, 1.720
Point 34: 2.03942,148.500	Point 89: 2.63895, 22.600	Point 144: 3.88396, 1.600
Point 35: 2.04970,144.000	Point 90: 2.65469, 21.500	Point 145: 3.94410, 1.490
Point 36: 2.06028,139.500	Point 91: 2.67127, 20.400	Point 146: 3.99922, 1.400
Point 37: 2.07117,135.000	Point 92: 2.68399, 19.600	
Point 38: 2.08113,131.000	Point 93: 2.69470, 18.950	
Point 39: 2.09135,127.000	Point 94: 2.70581, 18.300	
Point 40: 2.10187,123.000	Point 95: 2.71736, 17.650	
Point 41: 2.11270,119.000	Point 96: 2.72846, 17.050	
Point 42: 2.12387,115.000	Point 97: 2.73999, 16.450	
Point 43: 2.13539,111.000	Point 98: 2.75201, 15.850	
Point 44: 2.14729,107.000	Point 99: 2.76350, 15.300	
Point 45: 2.15805,103.500	Point 100: 2.77547, 14.750	
Point 46: 2.16754,100.500	Point 101: 2.78797, 14.200	
Point 47: 2.17565, 98.000	Point 102: 2.80102, 13.650	
Point 48: 2.18395, 95.500	Point 103: 2.81343, 13.150	
Point 49: 2.19245, 93.000	Point 104: 2.82641, 12.650	
Point 50: 2.20117, 90.500	Point 105: 2.84005, 12.150	
Point 51: 2.21012, 88.000	Point 106: 2.85438, 11.650	
Point 52: 2.21931, 85.500	Point 107: 2.86795, 11.200	
Point 53: 2.22875, 83.000	Point 108: 2.88218, 10.750	
Point 54: 2.23652, 81.000	Point 109: 2.89719, 10.300	
Point 55: 2.24447, 79.000	Point 110: 2.91304, 9.850	



BREAKPOINTS 91C/93C/330 FORMAT

Calibration Report: 422717
 Sensor Model: CX-1050-SD-1.4L
 Sensor Type: Cernox Resistor
 Temperature Range: 1.40K to 325K

Sales Order: 13426
 Serial Number: X21238

Interpolation Method: Lagrangian
 Limit: 325. (Kelvin)
 Format: 4 (Log Ohms/Kelvin)
 Number of Breakpoints: 55

No.	Units	Temperature (K)	No.	Units	Temperature (K)
1	1.76938	325.0	31	2.80720	13.4
2	1.77045	324.0	32	2.85888	11.5
3	1.78020	315.0	33	2.90772	10.0
4	1.79714	300.0	34	2.95821	8.7
5	1.81499	285.0	35	3.00929	7.6
6	1.83384	270.0	36	3.05907	6.7
7	1.85378	255.0	37	3.11172	5.9
8	1.87492	240.0	38	3.15826	5.3
9	1.89738	225.0	39	3.21297	4.7
10	1.92131	210.0	40	3.25540	4.3
11	1.94689	195.0	41	3.30400	3.9
12	1.97434	180.0	42	3.34553	3.6
13	2.00395	165.0	43	3.39253	3.3
14	2.03607	150.0	44	3.44640	3.0
15	2.07119	135.0	45	3.48708	2.8
16	2.10999	120.0	46	3.53249	2.6
17	2.15342	105.0	47	3.58371	2.4
18	2.20296	90.0	48	3.61194	2.3
19	2.26098	75.0	49	3.67477	2.1
20	2.31867	62.5	50	3.70995	2.0
21	2.35053	56.5	51	3.74809	1.9
22	2.38908	50.0	52	3.78960	1.8
23	2.42229	45.0	53	3.83492	1.7
24	2.45941	40.0	54	3.93887	1.5
25	2.50145	35.0	55	3.99961	1.4
26	2.54994	30.0			
27	2.60350	25.3			
28	2.65475	21.5			
29	2.70584	18.3			
30	2.75721	15.6			

Temperature for Resistance Decades:

Res. (Ohms)	Temp. (K)
100	166.934
1000	7.785



BREAKPOINTS 234 FORMAT

Calibration Report: 422717
 Sensor Model: CX-1050-SD-1.4L
 Sensor Type: Cernox Resistor
 Temperature Range: 1.40K to 325K

Sales Order: 13426
 Serial Number: X21238

Maximum Temperature Error:

1.4 - 10K: 0.011K
 10 - 20K: 0.006K
 20 - 40K: 0.012K
 40 - 100K: 0.028K
 > 100K: 0.078K

BP #	Temp. (K)	Res. (Ω)	Log10 Res.	BP #	Temp. (K)	Res. (Ω)	Log10 Res.
1	315.181	60.25596	1.780	46	19.850	478.6301	2.680
2	297.537	63.09573	1.800	47	18.638	501.1872	2.700
3	280.932	66.06934	1.820	48	17.507	524.8075	2.720
4	265.278	69.18310	1.840	49	16.452	549.5409	2.740
5	250.494	72.44360	1.860	50	15.467	575.4399	2.760
6	236.528	75.85776	1.880	51	14.549	602.5596	2.780
7	223.307	79.43282	1.900	52	13.694	630.9573	2.800
8	210.796	83.17638	1.920	53	12.896	660.6934	2.820
9	198.939	87.09636	1.940	54	12.154	691.8310	2.840
10	187.702	91.20108	1.960	55	11.463	724.4360	2.860
11	177.040	95.49926	1.980	56	10.819	758.5776	2.880
12	166.936	100.0000	2.000	57	10.220	794.3282	2.900
13	157.343	104.7129	2.020	58	9.662	831.7638	2.920
14	148.251	109.6478	2.040	59	9.142	870.9636	2.940
15	139.628	114.8154	2.060	60	8.658	912.0108	2.960
16	131.455	120.2264	2.080	61	8.207	954.9926	2.980
17	123.713	125.8925	2.100	62	7.785	1000.000	3.000
18	116.381	131.8257	2.120	63	7.027	1096.478	3.040
19	109.442	138.0384	2.140	64	6.365	1202.264	3.080
20	102.880	144.5440	2.160	65	5.787	1318.257	3.120
21	96.687	151.3561	2.180	66	5.279	1445.440	3.160
22	90.838	158.4893	2.200	67	4.833	1584.893	3.200
23	85.319	165.9587	2.220	68	4.439	1737.801	3.240
24	80.122	173.7801	2.240	69	4.090	1905.461	3.280
25	75.233	181.9701	2.260	70	3.780	2089.296	3.320
26	70.630	190.5461	2.280	71	3.503	2290.868	3.360
27	66.303	199.5262	2.300	72	3.256	2511.886	3.400
28	62.238	208.9296	2.320	73	3.033	2754.229	3.440
29	58.417	218.7762	2.340	74	2.833	3019.952	3.480
30	54.829	229.0868	2.360	75	2.653	3311.311	3.520
31	51.454	239.8833	2.380	76	2.490	3630.781	3.560
32	48.299	251.1886	2.400	77	2.342	3981.072	3.600
33	45.329	263.0268	2.420	78	2.207	4365.158	3.640
34	42.541	275.4229	2.440	79	2.085	4786.301	3.680
35	39.925	288.4032	2.460	80	1.973	5248.075	3.720
36	37.465	301.9952	2.480	81	1.870	5754.399	3.760
37	35.163	316.2278	2.500	82	1.776	6309.573	3.800
38	32.997	331.1311	2.520	83	1.689	6918.310	3.840
39	30.963	346.7369	2.540	84	1.609	7585.776	3.880
40	29.055	363.0781	2.560	85	1.533	8317.638	3.920
41	27.264	380.1894	2.580	86	1.464	9120.108	3.960
42	25.583	398.1072	2.600	87	1.399	10000.00	4.000
43	24.007	416.8694	2.620				
44	22.530	436.5158	2.640				
45	21.145	457.0882	2.660				

