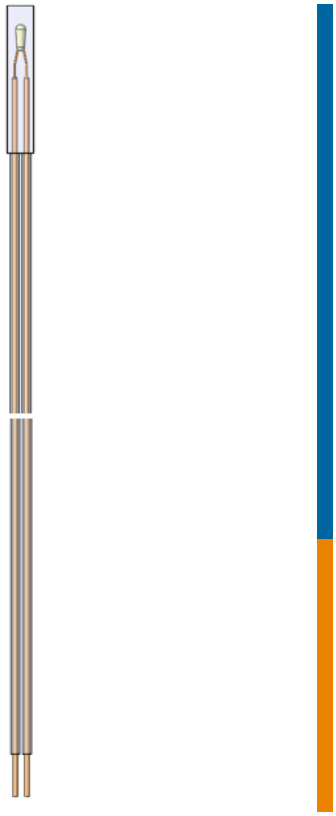


MOTOR PLATFORM TEMPERATURE SENSOR

- Shrink Tube Encapsulation
- Teflon® Insulated Lead-wire
- Wide Temperature Design

Product Description

The temperature sensor is designed to monitor the temperature of the electric motor system. The design combines a high precision and high sensitivity NTC thermistor, which is sealed and protected by Teflon® material. The design provides a rectangular or cylinder shape and smaller size, making the assembly well suited to motor stator system, industrial system or other temperature monitoring system. The sensor design to fulfill reliability requirements, including high and low temperature storage, temperature cycling testing, temperature/humidity cycling and ATF oil proof testing.

Features

- NTC
- Temperature range: -40℃~+200℃
- Insulation resistance: ≥100Mohm
- Dielectric strength: 3000VAC
- Rectangle or cylinder sensor body
- ATF oil proof

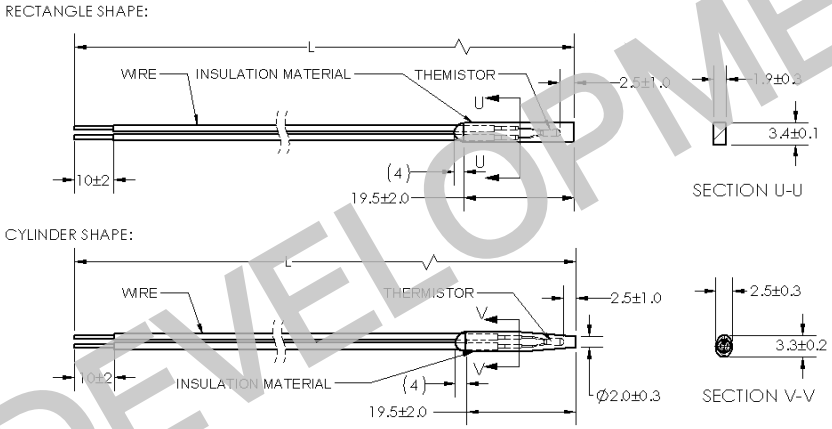
Applications

- Motor stator
- Industrial system
- Air conditioning systems
- White Goods

Sensor specifications

Sensor Dimension	Rectangle 3.5 max*1.9*19.5 mm
	Cylinder 3.5 max*19.5 mm
Resistance Accuracy	Option1: 0.913K±1%@100°C
	Option2: 1.196K±3%@150°C
Tolerance on Beta Value	Option1: B25/100: 3550 ±0.8%
	Option2: B25/85: 4390±2%
Temperature Range	-40°C~+200°C
Response Time	T63.2(25/85)<7s(Liquid)
Insulation Resistance	≥100MΩ @1000VDC, room temperature
Dielectric Strength	3000VAC, 1mA Max, room temperature

Diagrams and Dimensions

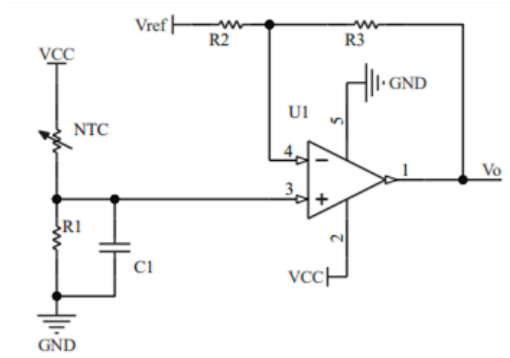


Reliability

Item	*Condition*	*Criteria*
Thermal cycling	*-55°C to +125°C, 1000cycles*	*ΔR/R≤±3%* *ΔB/B≤±3%*
Thermal shock	*-40°C to +150°C, 100cycles*	*ΔR/R≤±3%* *ΔB/B≤±3%*
Temperature and humidity test	*85RH/85°C 1000H*	*ΔR/R≤±3%* *ΔB/B≤±3%*
High temperature storage	*200°C 1000H*	*ΔR/R≤±3%* *ΔB/B≤±3%*
Low temperature storage	*-40°C 1000H*	*ΔR/R≤±3%* *ΔB/B≤±3%*
ATF oil proof	*–40°C 500H & +150°C 500H*	*ΔR/R≤±3%* *ΔB/B≤±3%*
Insulating paint proof	*145°C ±5°C, 6H*	*ΔR/R≤±3%* *ΔB/B≤±3%*
Drop fall	*1M, 3times*	*ΔR/R≤±3%* *ΔB/B≤±3%*
Pull strength	*15N, 5s*	*ΔR/R≤±3%* *ΔB/B≤±3%*
Mechincal shock	*Half-sine、peak value：100g's；duartion：6ms；velocity12.3ft/s*	*ΔR/R≤±3%* *ΔB/B≤±3%*

Vibration test	*5g's for 20min 12cycles of 3 orientations test from 10HZ~2000HZ*	*⊿R/R≤±3% ⊿B/B≤±3%*

Circuit Suggestion



Ordering Information

Total Length	Wire color	Wire size option
---- Define 'L' Length in mm	Transparency	22AWG or 26AWG
Example: 550 = 550 mm		

Description	Length	Wire size	Stocked Part Number
NTC Rectangle temperature sensor /0.913K±1%@100°C	550	22AWG	20031343-00
NTC Cylinder temperature sensor /0.913K±1%@100°C	550	22AWG	20031343-01
NTC Rectangle temperature sensor /1.196K±3%@150°C	550	22AWG	20029369-00
NTC Cylinder temperature sensor /1.196K±3%@150°C	550	22AWG	20029369-01

Recommended Storage Conditions

The recommended storage conditions.

Parameter	Symbol	Min	Typical	Max	Units
Storage Temperature Range	T_{store}	-20	+25	+85	**°C**

Installation Tips

- For the sensor assembly to accurately track temperature, it should be installed as deep as possible into a hole or holder to let the sensor head as closer as measurement point.
- Don't grip the sensor head with high pressure.

Compliance

- RoHS and REACH Compliance

R-T table

Option1 :R100=0.913K±1% B25/100=3550 ±0.8%							
Temp.(℃)	**Mini(KΩ)**	**Nom(KΩ)**	**Max (KΩ)**	**Temp.(℃)**	**Min (KΩ)**	**Nom(KΩ)**	**Max(KΩ)**
-40	201.286	212.379	224.061	-2	28.995	30.119	31.283
-39	189.785	200.149	211.058	-1	27.751	28.816	29.919
-38	179.027	188.715	198.908	0	26.568	27.578	28.624
-37	168.962	178.022	187.549	1	25.445	26.403	27.395
-36	159.538	168.015	176.924	2	24.376	25.285	26.226
-35	150.710	158.645	166.982	3	23.358	24.221	25.113
-34	142.438	149.869	157.672	4	22.388	23.207	24.054
-33	134.681	141.643	148.951	5	21.464	22.242	23.045
-32	127.404	133.930	140.777	6	20.583	21.322	22.085
-31	120.574	126.695	133.112	7	19.744	20.445	21.170
-30	114.161	119.903	125.921	8	18.943	19.609	20.297
-29	108.137	113.526	119.172	9	18.179	18.812	19.466
-28	102.474	107.534	112.833	10	17.450	18.052	18.673
-27	97.149	101.903	106.878	11	16.754	17.327	17.917
-26	92.140	96.607	101.281	12	16.090	16.634	17.195
-25	87.426	91.626	96.017	13	15.456	15.974	16.507
-24	82.987	86.937	91.065	14	14.850	15.343	15.850
-23	78.805	82.521	86.405	15	14.272	14.740	15.222
-22	74.864	78.362	82.016	16	13.718	14.164	14.623
-21	71.148	74.442	77.881	17	13.190	13.614	14.051
-20	67.643	70.746	73.984	18	12.684	13.088	13.504
-19	64.336	67.260	70.310	19	12.201	12.586	12.981
-18	61.214	63.971	66.845	20	11.739	12.105	12.481
-17	58.266	60.865	63.574	21	11.296	11.645	12.004
-16	55.480	57.932	60.487	22	10.873	11.205	11.547
-15	52.847	55.161	57.571	23	10.468	10.784	11.109
-14	50.357	52.542	54.816	24	10.080	10.381	10.691
-13	48.002	50.066	52.212	25	9.708	9.996	10.291
-12	45.774	47.723	49.750	26	9.352	9.626	9.907
-11	43.664	45.506	47.421	27	9.011	9.272	9.540
-10	41.666	43.408	45.217	28	8.684	8.933	9.189
-9	39.774	41.420	43.131	29	8.371	8.608	8.852
-8	37.980	39.537	41.155	30	8.070	8.297	8.529
-7	36.279	37.753	39.283	31	7.782	7.998	8.220
-6	34.666	36.061	37.509	32	7.506	7.712	7.923
-5	33.136	34.457	35.827	33	7.241	7.437	7.639
-4	31.684	32.935	34.232	34	6.986	7.174	7.366
-3	30.305	31.490	32.719	35	6.742	6.921	7.105

Option1 :R100=0.913K±1% B25/100=3550 ±0.8%							
Temp.(℃)	Mini(KΩ)	Nom(KΩ)	Max (KΩ)	Temp.(℃)	Min (KΩ)	Nom(KΩ)	Max(KΩ)
36	6.507	6.679	6.854	78	1.694	1.720	1.746
37	6.282	6.446	6.613	79	1.644	1.669	1.693
38	6.066	6.222	6.382	80	1.596	1.619	1.643
39	5.858	6.008	6.160	81	1.549	1.572	1.594
40	5.659	5.801	5.947	82	1.504	1.526	1.547
41	5.467	5.603	5.742	83	1.461	1.481	1.502
42	5.283	5.413	5.545	84	1.419	1.438	1.458
43	5.106	5.230	5.356	85	1.378	1.396	1.415
44	4.935	5.054	5.175	86	1.338	1.356	1.374
45	4.771	4.885	5.000	87	1.300	1.317	1.335
46	4.614	4.722	4.832	88	1.264	1.280	1.296
47	4.462	4.566	4.671	89	1.228	1.243	1.259
48	4.316	4.415	4.516	90	1.194	1.208	1.223
49	4.176	4.270	4.367	91	1.160	1.174	1.188
50	4.041	4.131	4.223	92	1.128	1.141	1.155
51	3.910	3.997	4.085	93	1.097	1.109	1.122
52	3.785	3.868	3.952	94	1.066	1.079	1.091
53	3.664	3.743	3.824	95	1.037	1.049	1.060
54	3.548	3.623	3.700	96	1.009	1.020	1.031
55	3.436	3.508	3.581	97	0.981	0.992	1.002
56	3.328	3.397	3.467	98	0.955	0.965	0.975
57	3.224	3.290	3.357	99	0.929	0.938	0.948
58	3.123	3.186	3.251	100	0.904	0.913	0.922
59	3.026	3.087	3.148	101	0.879	0.888	0.897
60	2.933	2.991	3.050	102	0.855	0.864	0.873
61	2.843	2.898	2.955	103	0.832	0.841	0.850
62	2.756	2.809	2.863	104	0.809	0.818	0.827
63	2.672	2.723	2.775	105	0.788	0.797	0.805
64	2.592	2.640	2.689	106	0.767	0.775	0.784
65	2.514	2.560	2.607	107	0.746	0.755	0.764
66	2.438	2.483	2.528	108	0.726	0.735	0.744
67	2.366	2.408	2.451	109	0.707	0.716	0.724
68	2.295	2.336	2.377	110	0.689	0.697	0.706
69	2.227	2.266	2.306	111	0.671	0.679	0.688
70	2.162	2.199	2.237	112	0.653	0.662	0.670
71	2.096	2.132	2.167	113	0.636	0.645	0.653
72	2.032	2.066	2.101	114	0.620	0.628	0.636
73	1.971	2.003	2.036	115	0.604	0.612	0.620
74	1.911	1.942	1.974	116	0.589	0.597	0.605
75	1.854	1.884	1.914	117	0.574	0.582	0.590
76	1.799	1.827	1.856	118	0.559	0.567	0.575
77	1.745	1.772	1.800	119	0.545	0.553	0.561

Option1 :R100=0.913K±1% B25/100=3550 ±0.8%							
Temp.(℃)	Mini(KΩ)	Nom(KΩ)	Max (KΩ)	Temp.(℃)	Min (KΩ)	Nom(KΩ)	Max(KΩ)
120	0.532	0.539	0.547	161	0.207	0.211	0.216
121	0.518	0.526	0.534	162	0.202	0.207	0.211
122	0.506	0.513	0.521	163	0.198	0.202	0.207
123	0.493	0.500	0.508	164	0.194	0.198	0.203
124	0.481	0.488	0.496	165	0.190	0.194	0.199
125	0.469	0.476	0.484	166	0.186	0.190	0.195
126	0.458	0.465	0.472	167	0.182	0.187	0.191
127	0.447	0.454	0.461	168	0.179	0.183	0.187
128	0.436	0.443	0.450	169	0.175	0.179	0.183
129	0.425	0.432	0.439	170	0.171	0.176	0.180
130	0.415	0.422	0.429	171	0.168	0.172	0.176
131	0.405	0.412	0.419	172	0.165	0.169	0.173
132	0.396	0.402	0.409	173	0.161	0.165	0.169
133	0.386	0.393	0.400	174	0.158	0.162	0.166
134	0.377	0.384	0.390	175	0.155	0.159	0.163
135	0.369	0.375	0.381	176	0.152	0.156	0.160
136	0.360	0.366	0.373	177	0.149	0.153	0.156
137	0.352	0.358	0.364	178	0.146	0.150	0.153
138	0.343	0.350	0.356	179	0.143	0.147	0.151
139	0.336	0.342	0.348	180	0.141	0.144	0.148
140	0.328	0.334	0.340	181	0.138	0.141	0.145
141	0.320	0.326	0.332	182	0.135	0.139	0.142
142	0.313	0.319	0.325	183	0.133	0.136	0.139
143	0.306	0.312	0.318	184	0.130	0.133	0.137
144	0.299	0.305	0.311	185	0.128	0.131	0.134
145	0.293	0.298	0.304	186	0.125	0.128	0.132
146	0.286	0.292	0.297	187	0.123	0.126	0.129
147	0.280	0.285	0.291	188	0.121	0.124	0.127
148	0.274	0.279	0.284	189	0.118	0.121	0.125
149	0.267	0.273	0.278	190	0.116	0.119	0.122
150	0.262	0.267	0.272	191	0.114	0.117	0.120
151	0.256	0.261	0.266	192	0.112	0.115	0.118
152	0.250	0.256	0.261	193	0.110	0.113	0.116
153	0.245	0.250	0.255	194	0.108	0.111	0.114
154	0.240	0.245	0.250	195	0.106	0.109	0.112
155	0.235	0.240	0.245	196	0.104	0.107	0.110
156	0.230	0.235	0.239	197	0.102	0.105	0.108
157	0.225	0.230	0.234	198	0.100	0.103	0.106
158	0.220	0.225	0.230	199	0.098	0.101	0.104
159	0.215	0.220	0.225	200	0.096	0.099	0.102
160	0.211	0.216	0.220				

R-T table

Option2 :R150=1.196K±3% B25/85=4390 ±2%							
Temp.(℃)	Mini(KΩ)	Nom(KΩ)	Max (KΩ)	Temp.(℃)	Min (KΩ)	Nom(KΩ)	Max(KΩ)
-40	3859.095	4694.517	5705.652	-2	344.537	398.959	461.562
-39	3585.735	4355.444	5285.617	-1	325.860	376.903	435.549
-38	3334.254	4043.976	4900.353	0	308.299	356.188	411.145
-37	3102.661	3757.561	4546.601	1	291.781	336.726	388.244
-36	2889.167	3493.917	4221.448	2	276.240	318.434	366.744
-35	2692.174	3251.001	3922.294	3	261.612	301.238	346.554
-34	2510.238	3026.975	3646.797	4	247.841	285.066	327.587
-33	2342.061	2820.183	3392.857	5	234.871	269.852	309.764
-32	2186.471	2629.139	3158.584	6	222.653	255.535	293.010
-31	2042.407	2452.495	2942.272	7	211.139	242.059	277.257
-30	1908.913	2289.037	2742.386	8	200.286	229.369	262.438
-29	1785.121	2137.667	2557.534	9	190.052	217.416	248.496
-28	1670.242	1997.387	2386.459	10	180.399	206.154	235.374
-27	1563.559	1867.292	2228.020	11	171.292	195.540	223.019
-26	1464.424	1746.563	2081.184	12	162.697	185.533	211.384
-25	1372.242	1634.450	1945.009	13	154.583	176.096	200.423
-24	1286.471	1530.273	1818.641	14	146.921	167.195	190.094
-23	1206.619	1433.412	1701.301	15	139.684	158.795	180.358
-22	1132.234	1343.301	1592.279	16	132.846	150.867	171.178
-21	1062.902	1259.419	1490.926	17	126.383	143.381	162.519
-20	998.245	1181.294	1396.650	18	120.273	136.312	154.350
-19	937.917	1108.492	1308.910	19	114.495	129.633	146.640
-18	881.599	1040.616	1227.210	20	109.030	123.322	139.362
-17	828.999	977.301	1151.096	21	103.859	117.357	132.490
-16	779.848	918.210	1080.149	22	98.965	111.717	125.998
-15	733.897	863.037	1013.988	23	94.332	106.382	119.864
-14	690.921	811.499	952.261	24	89.945	101.336	114.067
-13	650.708	763.333	894.645	25	85.789	96.561	108.587
-12	613.064	718.300	840.842	26	81.815	91.999	103.357
-11	577.812	676.178	790.579	27	78.047	87.678	98.408
-10	544.785	636.764	743.602	28	74.474	83.583	93.723
-9	513.831	599.867	699.678	29	71.084	79.703	89.287
-8	484.808	565.313	658.593	30	67.867	76.024	85.085
-7	457.586	532.942	620.149	31	64.814	72.536	81.104
-6	432.043	502.603	584.160	32	61.914	69.226	77.332
-5	408.067	474.159	550.459	33	59.161	66.086	73.755
-4	385.554	447.481	518.887	34	56.544	63.105	70.364
-3	364.408	422.451	489.299	35	54.058	60.275	67.146

Option2 :R150=1.196K±3% B25/85=4390 ±2%							
Temp.(℃)	Mini(KΩ)	Nom(KΩ)	Max (KΩ)	Temp.(℃)	Min (KΩ)	Nom(KΩ)	Max(KΩ)
36	51.695	57.587	64.094	78	9.754	10.502	11.298
37	49.448	55.034	61.197	79	9.416	10.131	10.890
38	47.310	52.608	58.446	80	9.091	9.774	10.500
39	45.277	50.302	55.834	81	8.779	9.432	10.125
40	43.342	48.109	53.352	82	8.480	9.104	9.766
41	41.500	46.024	50.995	83	8.192	8.789	9.421
42	39.746	44.040	48.754	84	7.915	8.486	9.090
43	38.076	42.152	46.623	85	7.649	8.195	8.772
44	36.485	40.356	44.597	86	7.394	7.916	8.468
45	34.969	38.645	42.670	87	7.149	7.649	8.176
46	33.524	37.016	40.836	88	6.913	7.391	7.896
47	32.146	35.465	39.091	89	6.686	7.144	7.626
48	30.832	33.986	37.430	90	6.468	6.906	7.367
49	29.579	32.578	35.848	91	6.258	6.677	7.118
50	28.384	31.234	34.341	92	6.056	6.457	6.879
51	27.243	29.954	32.905	93	5.861	6.246	6.649
52	26.153	28.732	31.537	94	5.674	6.042	6.428
53	25.113	27.567	30.233	95	5.493	5.846	6.215
54	24.120	26.455	28.989	96	5.319	5.657	6.011
55	23.172	25.394	27.804	97	5.152	5.475	5.814
56	22.268	24.380	26.673	98	4.990	5.300	5.624
57	21.399	23.413	25.593	99	4.835	5.131	5.442
58	20.571	22.489	24.563	100	4.685	4.969	5.266
59	19.779	21.606	23.580	101	4.540	4.812	5.097
60	19.022	20.762	22.641	102	4.400	4.662	4.934
61	18.297	19.956	21.744	103	4.266	4.516	4.777
62	17.604	19.185	20.888	104	4.136	4.376	4.626
63	16.941	18.447	20.069	105	4.011	4.241	4.480
64	16.306	17.742	19.287	106	3.890	4.111	4.340
65	15.698	17.067	18.539	107	3.773	3.985	4.204
66	15.116	16.422	17.824	108	3.661	3.864	4.074
67	14.559	15.804	17.141	109	3.552	3.747	3.948
68	14.024	15.213	16.487	110	3.447	3.634	3.827
69	13.512	14.646	15.861	111	3.346	3.525	3.710
70	13.022	14.104	15.262	112	3.248	3.420	3.597
71	12.551	13.584	14.688	113	3.153	3.318	3.488
72	12.100	13.086	14.139	114	3.062	3.220	3.383
73	11.668	12.609	13.614	115	2.974	3.125	3.281
74	11.253	12.151	13.110	116	2.888	3.034	3.183
75	10.855	11.713	12.628	117	2.806	2.945	3.089
76	10.473	11.292	12.165	118	2.726	2.860	2.997
77	10.106	10.889	11.722	119	2.649	2.777	2.909

Option2 :R150=1.196K±3% B25/85=4390 ±2%							
Temp.(℃)	Mini(KΩ)	Nom(KΩ)	Max (KΩ)	Temp.(℃)	Min (KΩ)	Nom(KΩ)	Max(KΩ)
120	2.574	2.698	2.824	161	0.880	0.912	0.944
121	2.502	2.620	2.742	162	0.858	0.890	0.922
122	2.433	2.546	2.662	163	0.838	0.869	0.901
123	2.365	2.474	2.585	164	0.818	0.849	0.880
124	2.300	2.404	2.511	165	0.798	0.829	0.860
125	2.236	2.337	2.439	166	0.779	0.810	0.840
126	2.175	2.271	2.370	167	0.761	0.791	0.821
127	2.116	2.208	2.303	168	0.743	0.773	0.803
128	2.059	2.147	2.238	169	0.726	0.755	0.785
129	2.003	2.088	2.175	170	0.709	0.738	0.767
130	1.949	2.031	2.114	171	0.692	0.721	0.750
131	1.897	1.975	2.055	172	0.676	0.704	0.733
132	1.847	1.922	1.998	173	0.660	0.688	0.717
133	1.798	1.870	1.943	174	0.645	0.673	0.701
134	1.750	1.820	1.890	175	0.631	0.658	0.686
135	1.704	1.771	1.838	176	0.616	0.643	0.671
136	1.660	1.724	1.788	177	0.602	0.629	0.656
137	1.617	1.678	1.740	178	0.589	0.615	0.642
138	1.575	1.634	1.693	179	0.575	0.601	0.628
139	1.534	1.591	1.648	180	0.563	0.588	0.615
140	1.495	1.549	1.604	181	0.550	0.576	0.602
141	1.457	1.509	1.561	182	0.538	0.563	0.589
142	1.420	1.470	1.520	183	0.526	0.551	0.576
143	1.384	1.432	1.480	184	0.514	0.539	0.564
144	1.349	1.395	1.441	185	0.503	0.527	0.552
145	1.315	1.359	1.403	186	0.492	0.516	0.541
146	1.282	1.325	1.367	187	0.481	0.505	0.529
147	1.250	1.291	1.332	188	0.471	0.494	0.518
148	1.219	1.258	1.297	189	0.461	0.484	0.507
149	1.189	1.227	1.264	190	0.451	0.474	0.497
150	1.160	1.196	1.232	191	0.441	0.464	0.487
151	1.131	1.166	1.202	192	0.432	0.454	0.477
152	1.102	1.137	1.173	193	0.423	0.445	0.467
153	1.074	1.109	1.144	194	0.414	0.435	0.458
154	1.047	1.082	1.117	195	0.405	0.427	0.448
155	1.021	1.056	1.090	196	0.397	0.418	0.440
156	0.996	1.030	1.064	197	0.389	0.409	0.431
157	0.971	1.005	1.039	198	0.380	0.401	0.422
158	0.947	0.981	1.014	199	0.373	0.393	0.414
159	0.924	0.957	0.990	200	0.365	0.385	0.406
160	0.902	0.934	0.967				

Change History

Date	Version	Change Description
2023-11-10	1	Draft version
2024-03-19	2	Updated with part number
2024-04-18	3	Updated the drawing
2024-06-03	4	Updated PN, updated drawing and added R-T table
2024-08-14	5	Add response time test in liquid

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