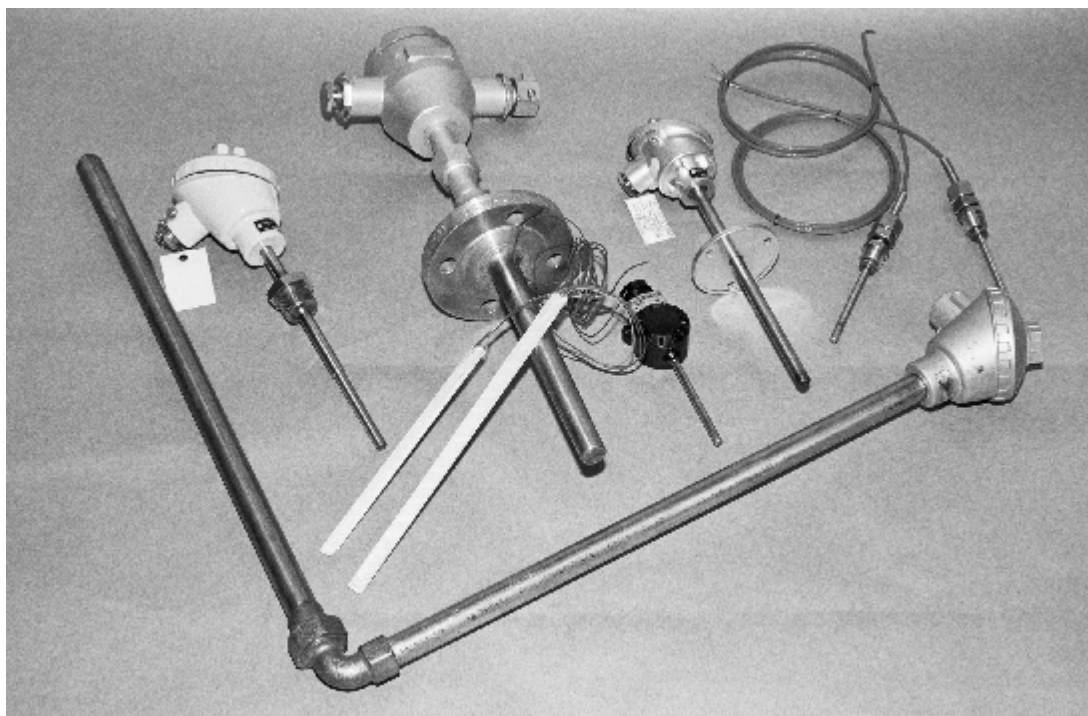


TECHNICAL THERMOCOUPLES

Thermocouples (when ordered, the abbreviation: TC" can be used) are temperature transducers that transform the temperature variation of the measured environment into voltage (.e.m.f) and afterwards, by connecting it to an indicator device or a recorder, is converted into temperature units.

Basically, a thermocouple is made out of two thermo-electrodes or wires, from different metals or alloys, welded on both ends. The local heating of the welding (measuring junction) determines a thermal voltage at both free ends of the thermal electrodes (reference junction). This value depends on the temperature difference between the measuring junction and the reference junction.



Our company adopted the following wires for the gross production:

-Material for thermal electrodes ("+"; "-") :

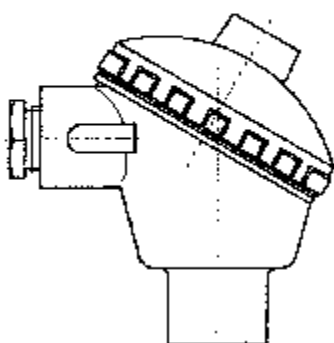
- Chromel- Alumel (K)
- Iron – Constantan (J)
- Chromel- Copper (L)
- Chromel – Constantan (E)
- PtRh 10%- Pt (S)
- PtRh30%- Pt Rh 6% (B)

On beneficiary's request, another type of wire can be used if specified in the order.

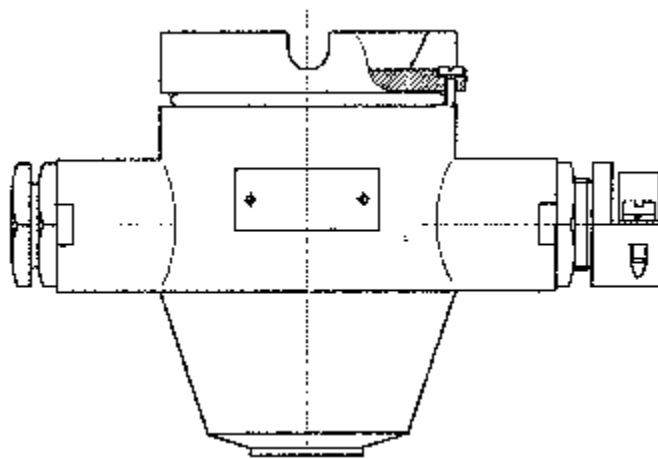
Time constant "τ" can be:

Minor
Medium
Major

In the following tables are introduced the voltage values (e.m.f.) varying with temperature as well as the allowable values for different thermocouple types calculated according to NTM 5-05-88.



terminal box – normal execution



terminal box – EX.d IIC T6

Note: On request, the thermocouples can be delivered together with 4...20mA or 20...4 mm transmitters, mounted into the terminal box and jointly calibrated.

Voltage variation (mV) of the Iron- Constantan (J type) thermocouple with temperature , for the reference junction at 0° C

Table no 1

°C	0	1	2	3	4	5	6	7	8	9
-210	-8.096									
-200	-7.890	-7.912	-7.934	-7.955	-7.976	-7.996	-8.017	-8.037	-8.057	-8.076
-190	-7.659	-7.683	-7.707	-7.731	-7.755	-7.778	-7.801	-7.824	-7.846	-7.868
-180	-7.402	-7.429	-7.455	-7.482	-7.508	-7.533	-7.559	-7.584	-7.609	-7.634
-170	-7.122	-7.151	-7.180	-7.209	-7.237	-7.265	-7.293	-7.321	-7.348	-7.375
-160	-6.821	-6.852	-6.883	-6.914	-6.944	-6.974	-7.004	-7.034	-7.064	-7.093
-150	-6.499	-6.532	-6.565	-6.598	-6.630	-6.663	-6.695	-6.727	-6.758	-6.790
-140	-6.159	-6.194	-6.228	-6.263	-6.297	-6.331	-6.365	-6.399	-6.433	-6.466
-130	-5.801	-5.837	-5.874	-5.910	-5.946	-5.982	-6.018	-6.053	-6.089	-6.124
-120	-5.426	-5.464	-5.502	-5.540	-5.578	-5.615	-5.653	-5.690	-5.727	-5.764
-110	-5.036	-5.076	-5.115	-5.155	-5.194	-5.233	-5.272	-5.311	-5.349	-5.388
-100	-4.632	-4.673	-4.714	-4.755	-4.795	-4.836	-4.870	-4.916	-4.956	-4.996
-90	-4.215	-4.257	-4.299	-4.341	-4.383	-4.425	-4.467	-4.508	-4.550	-4.591
-80	-3.785	-3.829	-3.872	-3.915	-3.958	-4.001	-4.044	-4.087	-4.130	-4.172
-70	-3.344	-3.389	-3.433	-3.478	-3.522	-3.566	-3.610	-3.654	-3.698	-3.742
-60	-2.892	-2.938	-2.984	-3.029	-3.074	-3.120	-3.165	-3.210	-3.255	-3.299
-50	-2.431	-2.478	-2.524	-2.570	-2.617	-2.663	-2.709	-2.755	-2.801	-2.847
-40	-1.960	-2.008	-2.055	-2.102	-2.150	-2.197	2.244	-2.291	-2.338	-2.384
-30	-1.481	-1.530	-1.578	-1.626	-1.674	-1.722	-1.770	-1.818	-1.865	-1.913
-20	-0.995	-1.044	-1.093	-1.141	-1.190	-1.239	-1.288	-1.336	-1.385	-1.433
-10	-0.501	-0.550	-0.600	-0.650	-0.699	-0.748	-0.798	-0.847	-0.896	-0.945
0	-0.000	-0.050	-0.101	-0.151	-0.201	-0.251	-0.301	-0.351	-0.401	-0.451
0	0.000	0.050	0.101	0.151	0.202	0.253	0.303	0.354	0.405	0.456
10	0.507	0.558	0.609	0.660	0.711	0.762	0.813	0.865	0.916	0.967
20	1.019	1.070	1.122	1.174	1.225	1.277	1.329	1.381	1.432	1.484
30	1.536	1.588	1.640	1.693	1.745	1.797	1.849	1.901	1.954	2.006
40	2.058	2.111	2.163	2.216	2.268	2.321	2.374	2.426	2.479	2.532
50	2.585	2.638	2.691	2.743	2.793	2.849	2.902	2.956	3.009	3.062
60	3.115	3.168	3.221	3.275	3.328	3.381	3.435	3.488	3.542	3.595
70	3.649	3.702	3.756	3.809	3.863	3.917	3.971	4.024	4.078	4.132
80	4.186	4.239	4.293	4.347	4.401	4.455	4.509	4.563	4.617	4.671
90	4.725	4.760	4.834	4.888	4.942	4.996	5.050	5.105	5.159	5.213
100	5.268	5.322	5.376	5.431	5.485	5.540	5.594	5.649	5.701	5.758
110	5.812	5.867	5.921	5.976	6.031	6.085	6.140	6.195	6.249	6.304
120	6.359	6.414	6.468	6.523	6.578	6.633	6.688	6.742	6.797	6.852
130	6.907	6.962	7.017	7.072	7.127	7.182	7.237	7.292	7.347	7.402
140	7.457	7.512	7.567	7.622	7.677	7.732	7.787	7.843	7.898	7.953
150	8.008	8.063	8.116	8.174	8.229	8.284	8.339	8.394	8.450	8.505
160	8.560	8.616	8.671	8.726	8.781	8.837	8.892	8.947	9.003	9.058
170	9.113	9.169	9.224	9.279	9.335	9.390	9.446	9.501	9.556	9.612
180	9.667	9.723	9.778	9.834	9.889	9.944	10.000	10.055	10.111	10.166
190	10.222	10.277	10.333	10.388	10.444	10.499	10.555	10.610	10.666	10.721
200	10.777	10.832	10.888	10.943	10.999	11.054	11.110	11.165	11.221	11.276
210	11.332	11.367	11.443	11.498	11.554	11.609	11.665	11.720	11.776	11.831
220	11.887	11.943	11.998	12.054	12.109	12.165	12.220	12.276	12.331	12.387
230	12.442	12.498	12.553	12.609	12.664	12.720	12.776	12.831	12.887	12.942
240	12.998	13.053	13.109	13.164	13.220	13.275	13.331	13.386	13.442	13.497
250	13.553	13.608	13.664	13.719	13.775	13.830	13.886	13.941	13.997	14.052
260	14.108	14.163	14.219	14.274	14.330	14.385	14.441	14.496	14.552	14.607
270	14.663	14.718	14.774	14.829	14.885	14.940	14.995	15.051	15.106	15.162
280	15.217	15.273	15.328	15.383	15.439	15.494	15.550	15.605	15.661	15.716
290	15.771	15.827	15.882	15.938	15.993	16.048	16.104	16.159	16.214	16.270
300	16.325	16.380	16.436	16.491	16.547	16.602	16.657	16.713	16.768	16.823
310	16.879	16.934	16.989	17.044	17.100	17.155	17.210	17.266	17.321	17.376
320	17.432	17.487	17.542	17.597	17.653	17.708	17.763	17.818	17.874	17.929
330	17.984	18.039	18.095	18.150	18.205	18.260	18.316	18.371	18.426	18.481
340	18.537	18.592	18.647	18.702	18.757	18.813	18.868	18.923	18.978	19.033

Table no 1 – extension

°C	0	1	2	3	4	5	6	7	8	9
350	19.089	19.144	19.199	19.254	19.309	19.364	19.420	19.475	19.530	19.585
360	19.640	19.695	19.751	19.806	19.861	19.916	19.971	20.026	20.081	20.137
370	20.192	20.247	20.302	20.357	20.412	20.467	20.523	20.578	20.633	20.688
380	20.743	20.796	20.853	20.909	20.964	21.019	21.074	21.129	21.184	21.239
390	21.295	21.350	21.405	21.460	21.515	21.570	21.625	21.680	21.736	21.791
400	21.846	21.901	21.956	22.011	22.066	22.122	22.177	22.232	22.287	22.342
410	22.397	22.453	22.508	22.563	22.618	22.673	22.728	22.784	22.839	22.894
420	22.949	23.004	23.060	23.115	23.170	23.225	23.280	23.336	23.391	23.446
430	23.501	23.556	23.612	23.667	23.722	23.777	23.833	23.888	23.943	23.999
440	24.054	24.109	24.164	24.220	24.275	24.330	24.386	24.441	24.496	24.552
450	24.607	24.662	24.718	24.773	24.829	24.884	24.939	24.995	25.050	25.106
460	25.161	25.217	25.272	25.327	25.383	25.438	25.494	25.549	25.605	25.661
470	25.761	25.772	25.827	25.883	25.938	25.994	26.050	26.105	26.161	26.216
480	26.272	26.328	26.383	26.439	26.495	26.551	26.606	26.662	26.718	26.774
490	26.829	26.885	26.941	26.997	27.053	27.109	27.165	27.220	27.276	27.332
500	27.388	27.444	27.500	27.556	27.612	27.668	27.724	27.780	27.836	27.893
510	27.949	28.005	28.061	28.117	28.173	28.230	28.286	28.342	28.398	28.455
520	28.511	28.567	28.624	28.680	28.736	28.793	28.849	28.906	28.962	29.019
530	29.075	29.132	29.188	29.245	29.301	29.358	29.415	29.471	29.528	29.585
540	29.642	29.698	29.755	29.812	29.869	29.926	29.983	30.039	30.096	30.153
550	30.210	30.267	30.324	30.381	30.439	30.496	30.553	30.610	30.667	30.724
560	30.782	30.839	30.896	30.954	31.011	31.068	31.126	31.183	31.241	31.298
570	31.356	31.413	31.471	31.528	31.586	31.644	31.702	31.759	31.817	31.875
580	31.933	31.991	32.048	32.106	32.164	32.222	32.280	32.338	32.396	32.455
590	32.513	32.571	32.629	32.687	32.746	32.804	32.862	32.921	32.979	33.038
600	33.096	33.155	33.213	33.272	33.330	33.389	33.448	33.506	33.565	33.624
610	33.683	33.742	33.800	33.859	33.918	33.977	34.036	34.095	34.155	34.214
620	34.273	34.332	34.391	34.451	34.510	34.569	34.629	34.688	34.748	34.807
630	34.867	34.926	34.986	35.046	35.105	35.165	35.225	35.285	35.344	35.404
640	35.464	35.524	35.584	35.644	35.704	35.764	35.825	35.885	35.945	36.005
650	36.066	36.126	36.186	36.247	36.307	36.368	36.428	36.489	36.549	36.610
660	36.671	36.732	36.792	36.853	36.914	36.975	37.036	37.097	37.158	37.219
670	37.280	37.341	37.402	37.463	37.525	37.586	37.647	37.709	37.770	37.831
680	37.893	37.954	38.014	38.078	38.139	38.201	38.262	38.324	38.386	38.448
690	38.510	38.572	38.633	38.695	38.757	38.819	38.882	38.944	39.006	39.068
700	39.130	39.192	39.255	39.317	39.379	39.442	39.504	39.567	39.629	39.692
710	39.754	39.817	39.880	39.942	40.005	40.068	40.131	40.193	40.256	40.319
720	40.382	40.455	40.508	40.571	40.634	40.697	40.760	40.823	40.886	40.950
730	41.013	41.076	41.139	41.203	41.266	41.329	41.393	41.456	41.520	41.583
740	41.647	41.710	41.774	41.837	41.901	41.965	42.028	42.092	42.156	42.219
750	42.283	42.347	42.411	42.475	42.538	42.602	42.666	42.730	42.794	42.858
760	42.922									

Voltage variation (mV) of the Chromel – Almel (K type) thermocouple with temperature , for the reference junction at 0° C

Table no 2

°C	0	1	2	3	4	5	6	7	8	9
-270	-6.458									
-260	-6.441	-6.444	-6.446	-6.448	-6.450	-6.452	-6.453	-6.455	-6.456	-6.457
-250	-6.404	-6.408	-6.413	-6.417	-6.421	-6.425	-6.429	-6.432	-6.435	-6.438
-240	-6.344	-6.351	-6.358	-6.364	-6.371	-6.377	-6.382	-6.388	-6.394	-6.399
-230	-6.262	-6.271	-6.280	-6.289	-6.297	-6.306	-6.314	-6.322	-6.329	-6.337
-220	-6.158	-6.170	-6.181	-6.192	-6.202	-6.213	-6.223	-6.233	-6.243	-6.253
-210	-6.035	-6.048	-6.061	-6.074	-6.087	-6.099	-6.111	-6.123	-6.135	-6.147
-200	-5.891	-5.907	-5.922	-5.936	-5.951	-5.965	-5.980	-5.994	-6.007	-6.021
-190	-5.730	-5.747	-5.763	-5.780	-5.796	-5.813	-5.829	-5.845	-5.860	-5.876
-180	-5.550	-5.569	-5.587	-5.606	-5.624	-5.642	-5.660	-5.678	-5.695	-5.712
-170	-5.354	-5.374	-5.394	-5.414	-5.434	-5.454	-5.474	-5.493	-5.512	-5.531
-160	-5.141	-5.163	-5.185	-5.207	-5.228	-5.249	-5.271	-5.292	-5.313	-5.333
-150	-4.912	-4.936	-4.959	-4.983	-5.006	-5.029	-5.051	-5.074	-5.097	-5.119

Table no 2 - extension

°C	0	1	2	3	4	5	6	7	8	9
-140	-4.669	-4.694	-4.719	-4.743	-4.768	-4.792	-4.817	-4.841	-4.865	-4.889
-130	-4.410	-4.437	-4.463	-4.498	-4.515	-4.541	-4.567	-4.593	-4.618	-4.644
-120	-4.138	-4.166	-4.193	-4.221	-4.248	-4.276	-4.303	-4.330	-4.357	-4.384
-110	-3.852	-3.881	-3.910	-3.939	-3.968	-3.997	-4.025	-4.053	-4.082	-4.110
-100	-3.553	-3.584	-3.614	-3.644	-3.674	-3.704	-3.734	-3.764	-3.793	-3.823
-90	-3.242	-3.274	-3.305	-3.337	-3.368	-3.399	-3.430	-3.461	-3.492	-3.523
-80	-2.920	-2.953	-2.985	-3.018	-3.050	-3.082	-3.115	-3.147	-3.179	-3.211
-70	-2.586	-2.620	-2.654	-2.687	-2.721	-2.754	-2.788	-2.821	-2.854	-2.887
-60	-2.243	-2.277	-2.312	-2.347	-2.381	-2.416	-2.450	-2.484	-2.518	-2.552
-50	-1.889	-1.925	-1.961	-1.996	-2.032	-2.067	-2.102	-2.137	-2.173	-2.208
-40	-1.527	-1.563	-1.600	-1.636	-1.673	-1.709	-1.745	-1.781	-1.817	-1.853
-30	-1.156	-1.193	-1.231	-1.268	-1.305	-1.342	-1.379	-1.416	-1.453	-1.490
-20	-0.777	-0.816	-0.854	-0.892	-0.930	-0.968	-1.005	-1.043	-1.081	-1.118
-10	-0.392	-0.431	-0.469	-0.508	-0.547	-0.585	-0.624	-0.662	-0.701	-0.739
0	0.000	-0.039	-0.079	-0.118	-0.157	-0.197	-0.236	-0.275	-0.314	-0.353
0	0.000	0.039	0.079	0.119	0.158	0.198	0.238	0.277	0.317	0.357
10	0.397	0.437	0.477	0.517	0.557	0.597	0.637	0.677	0.718	0.758
20	0.798	0.838	0.879	0.919	0.960	1.000	1.041	1.081	1.122	1.162
30	1.203	1.244	1.285	1.325	1.366	1.407	1.448	1.489	1.529	1.570
40	1.611	1.652	1.693	1.734	1.776	1.817	1.858	1.899	1.940	1.981
50	2.022	2.064	2.105	2.146	2.188	2.229	2.270	2.312	2.353	2.394
60	2.436	2.477	2.519	2.560	2.601	2.643	2.684	2.726	2.767	2.809
70	2.850	2.892	2.933	2.975	3.016	3.058	3.100	3.141	3.183	3.224
80	3.266	3.307	3.349	3.390	3.432	3.473	3.515	3.556	3.598	3.639
90	3.681	3.722	3.764	3.805	3.847	3.888	3.930	3.971	4.012	4.054
100	4.095	4.137	4.178	4.219	4.261	4.302	4.343	4.384	4.426	4.467
110	4.508	4.549	4.590	4.632	4.673	4.714	4.755	4.796	4.837	4.878
120	4.919	4.960	5.001	5.042	5.083	5.124	5.164	5.205	5.246	5.287
130	5.327	5.368	5.409	5.450	5.490	5.531	5.571	5.612	5.652	5.693
140	5.733	5.774	5.814	5.855	5.895	5.936	5.976	6.016	6.057	6.097
150	6.137	6.177	6.218	6.258	6.298	6.338	6.378	6.419	6.459	6.499
160	6.539	6.579	6.619	6.659	6.699	6.739	6.779	6.819	6.859	6.899
170	6.939	6.979	7.019	7.059	7.099	7.139	7.179	7.219	7.259	7.299
180	7.338	7.378	7.418	7.458	7.498	7.538	7.578	7.618	7.658	7.697
190	7.737	7.777	7.817	7.857	7.897	7.937	7.977	8.017	8.057	8.097
200	8.137	8.177	8.216	8.256	8.296	8.336	8.376	8.416	8.456	8.497
210	8.537	8.577	8.617	8.657	8.697	8.737	8.777	8.817	8.857	8.898
220	8.938	8.978	9.018	9.058	9.099	9.139	9.179	9.220	9.260	9.300
230	9.341	9.381	9.421	9.462	9.502	9.543	9.583	9.624	9.664	9.705
240	9.745	9.786	9.826	9.867	9.907	9.948	9.989	10.029	10.070	10.111
250	10.151	10.192	10.233	10.274	10.315	10.355	10.396	10.437	10.478	10.519
260	10.560	10.600	10.641	10.682	10.723	10.764	10.805	10.846	10.887	10.928
270	10.969	11.010	11.051	11.093	11.134	11.175	11.216	11.257	11.298	11.339
280	11.318	11.422	11.463	11.504	11.546	11.587	11.628	11.669	11.711	11.752
290	11.793	11.835	11.876	11.918	11.959	12.000	12.042	12.083	12.125	12.166
300	12.207	12.249	12.290	12.332	12.373	12.415	12.456	12.498	12.539	12.581
310	12.623	12.664	12.706	12.747	12.789	12.831	12.872	12.914	12.955	12.997
320	13.039	13.080	13.122	13.164	13.205	13.247	13.289	13.331	13.372	13.414
330	13.456	13.497	13.539	13.581	13.623	13.665	13.706	13.748	13.790	13.832
340	13.874	13.915	13.957	13.999	14.041	14.083	14.125	14.167	14.208	14.250
350	14.292	14.334	14.376	14.418	14.460	14.502	14.544	14.586	14.628	14.670
360	14.712	14.754	14.796	14.838	14.880	14.922	14.964	15.006	15.048	15.090
370	15.132	15.174	15.216	15.258	15.300	15.342	15.384	15.426	15.468	15.510
380	15.552	15.594	15.636	15.679	15.721	15.763	15.805	15.847	15.889	15.931
390	15.974	16.016	16.058	16.100	16.142	16.184	16.227	16.269	16.311	16.353

Table no 2 - extension

°C	0	1	2	3	4	5	6	7	8	9
400	16.395	16.438	16.480	16.522	16.564	16.607	16.649	16.691	16.733	16.776
410	16.818	16.960	16.902	16.945	16.987	17.029	17.072	17.114	17.156	17.199
420	17.241	17.283	17.326	17.368	17.410	17.453	17.495	17.537	17.580	17.622
430	17.664	17.707	17.749	17.792	17.834	17.876	17.919	17.961	18.004	18.046
440	18.088	18.131	18.173	18.216	18.258	18.301	18.343	18.385	18.428	18.470
450	18.513	18.555	18.598	18.640	18.683	18.725	18.768	18.810	18.853	18.895
460	18.938	18.980	19.023	19.065	19.108	19.150	19.193	19.235	19.278	19.320
470	19.363	19.405	19.448	19.490	19.533	19.576	19.618	19.661	19.703	19.746
480	19.788	19.831	19.873	19.916	19.959	20.001	20.044	20.086	20.129	20.172
490	20.214	20.257	20.299	20.342	20.385	20.427	20.470	20.512	20.555	20.598
500	20.640	20.683	20.725	20.768	20.811	20.853	20.896	20.938	20.981	21.024
510	21.066	21.109	21.152	21.194	21.237	21.280	21.322	21.365	21.407	21.450
520	21.493	21.535	21.578	21.621	21.663	21.706	21.749	21.791	21.834	21.876
530	21.919	21.962	22.004	22.047	22.090	22.132	22.175	22.218	22.260	22.303
540	22.346	22.388	22.431	22.473	22.516	22.559	22.601	22.644	22.687	22.729
550	22.772	22.815	22.857	22.900	22.942	22.985	23.028	23.070	23.113	23.156
560	23.198	23.241	23.284	23.326	23.369	23.411	23.454	23.497	23.538	23.582
570	23.624	23.667	23.710	23.752	23.795	23.837	23.880	23.923	23.965	24.008
580	24.050	24.093	24.136	24.178	24.221	24.263	24.306	24.348	24.391	24.434
590	24.476	24.519	24.561	24.604	24.646	24.689	24.731	24.774	24.817	24.859
600	24.902	24.944	24.987	25.029	25.072	25.114	25.157	25.199	25.242	25.284
610	25.327	25.369	25.412	25.454	25.497	25.539	25.582	25.624	25.666	25.709
620	25.751	25.794	25.836	25.879	25.921	25.964	26.006	26.048	26.091	26.133
630	26.176	26.218	26.260	26.303	26.345	26.387	26.430	26.472	26.515	26.557
640	26.599	26.642	26.684	26.726	26.769	26.811	26.853	26.896	26.938	26.980
650	27.022	27.065	27.107	27.149	27.192	27.234	27.276	27.318	27.361	27.403
660	27.445	27.487	27.529	27.572	27.614	27.656	27.698	27.740	27.783	27.825
670	27.867	27.909	27.951	27.993	28.035	28.078	28.120	28.162	28.204	28.246
680	28.288	28.330	28.372	28.414	28.456	28.498	28.540	28.583	28.625	28.667
690	28.709	28.751	28.793	28.835	28.877	28.919	28.961	29.002	29.044	29.086
700	29.128	29.170	29.212	29.254	29.296	29.338	29.380	29.422	29.464	29.505
710	29.547	29.589	29.631	29.673	29.715	29.756	29.798	29.840	29.882	29.924
720	29.965	30.007	30.049	30.091	30.132	30.174	30.216	30.257	30.299	30.341
730	30.383	30.424	30.466	30.508	30.549	30.591	30.632	30.674	30.716	30.757
740	30.799	30.840	30.882	30.924	30.965	31.007	31.048	31.090	31.131	31.173
750	31.214	31.256	31.297	31.339	31.380	31.422	31.463	31.504	31.546	31.587
760	31.629	31.670	31.712	31.753	31.794	31.836	31.877	31.918	31.960	32.001
770	32.042	32.084	32.125	32.166	32.207	32.249	32.290	32.331	32.372	32.414
780	32.455	32.496	32.537	32.578	32.619	32.661	32.702	32.743	32.784	32.825
790	32.866	32.907	32.948	32.990	33.031	33.072	33.113	33.154	33.195	33.236
800	33.277	33.318	33.359	33.400	33.441	33.482	33.523	33.564	33.604	33.645
810	33.686	33.727	33.768	33.809	33.850	33.891	33.931	33.972	34.013	34.054
820	34.095	34.136	34.176	34.217	34.258	34.299	34.339	34.380	34.421	34.461
830	34.502	34.543	34.583	34.624	34.665	34.705	34.746	34.787	34.827	34.868
840	34.909	34.949	34.990	35.030	35.071	35.111	35.152	35.192	35.233	35.273
850	35.314	35.354	35.395	35.435	35.476	35.516	35.557	35.597	35.637	35.678
860	35.718	35.758	35.799	35.839	35.880	35.920	35.960	36.000	36.041	36.081
870	36.121	36.162	36.202	36.242	36.282	36.323	36.363	36.403	36.443	36.483
880	36.524	36.564	36.604	36.644	36.684	36.724	36.764	36.804	36.844	36.885
890	36.925	36.965	37.005	37.045	37.085	37.125	37.165	37.205	37.245	37.285
900	37.325	37.365	37.405	37.445	37.484	37.524	37.564	37.604	37.644	37.684
910	37.724	37.764	37.803	37.843	37.883	37.923	37.963	38.002	38.042	38.082
920	38.122	38.162	38.201	38.241	38.281	38.320	38.360	38.400	38.439	38.479
930	38.519	38.558	38.598	38.638	38.677	38.717	38.756	38.796	38.836	38.875
940	38.915	38.954	38.994	39.033	39.073	39.112	39.152	39.191	39.231	39.270

THERMOCOUPLES

Table no 2 - extension

°C	0	1	2	3	4	5	6	7	8	9
950	39.310	39.349	39.388	39.428	39.467	39.507	39.546	39.585	39.625	39.664
960	39.703	39.743	39.782	39.821	39.861	39.900	39.939	39.979	40.018	40.057
970	40.096	40.136	40.175	40.214	40.253	40.292	40.332	40.371	40.410	40.449
980	40.488	40.527	40.566	40.605	40.645	40.684	40.723	40.762	40.801	40.840
990	40.879	40.918	40.927	40.996	41.035	41.074	41.113	41.152	41.191	41.230
1000	41.269	41.308	41.347	41.385	41.424	41.463	41.502	41.541	41.580	41.619
1010	41.657	41.696	41.735	41.774	41.813	41.851	41.890	41.929	41.968	42006
1020	42.045	42.084	42.123	42.161	42.200	42.239	42.277	42.316	42.355	42.393
1030	42.432	42.470	42.509	42.548	42.586	42.625	42.663	42.702	42.740	42.779
1040	42.817	42.856	42.894	42.933	42.971	43.010	43.048	43.087	43.125	43.164
1050	43.202	43.240	43.279	43.317	43.356	43.394	43.432	43.471	43.509	43.547
1060	43.585	43.624	43.662	43.700	43.739	43.777	43.815	43.853	43.891	43.930
1070	43.968	44.006	44.044	44.082	44.121	44.159	44.197	44.235	44.273	44.311
1080	44.349	44.387	44.425	44.463	44.501	44.539	44.577	44.615	44.653	44.691
1090	44.729	44.767	44.805	44.843	44.881	44.919	44.957	44.995	45.033	45.070
1100	45.108	45.146	45.184	45.222	45.260	45.297	45.335	45.373	45.411	45.448
1110	45.486	45.524	45.561	45.599	45.637	45.675	45.712	45.750	45.787	45.825
1120	45.863	45.900	45.938	45.975	46.013	46.051	46.088	46.126	46.163	46.201
1130	46.238	46.275	46.313	46.250	46.388	46.425	46.463	46.500	46.537	46.575
1140	46.612	46.649	46.687	46.724	46.761	46.799	46.836	46.873	46.910	46.948
1150	46.985	47.022	47.059	47.096	47.134	47.171	47.208	47.245	47.282	47.319
1160	47.356	47.393	47.430	47.468	47.505	47.542	47.579	47.616	47.653	47.689
1170	47.726	47.763	47.800	47.837	47.874	47.911	47.948	47.985	48.021	48.058
1180	48.095	48.132	48.169	48.205	48.242	48.279	48.316	48.352	48.389	48.426
1190	48.462	48.499	48.536	48.572	48.609	48.645	48.682	48.718	48.755	48.792
1200	48.828	48.865	48.901	48.937	48.974	49.010	49.047	49.083	49.120	49.156
1210	49.192	49.229	49.265	49.301	49.338	49.374	49.410	49.446	49.483	49.519
1220	49.555	49.591	49.627	49.663	49.700	49.736	49.772	49.808	49.844	49.880
1230	49.916	49.952	49.988	50.024	50.060	50.096	50.132	50.168	50.204	50.240
1240	50.276	50.311	50.347	50.383	50.419	50.455	50.491	50.526	50.562	50.598
1250	50.633	50.669	50.705	50.741	50.776	50.812	50.847	50.883	50.919	50.954
1260	50.990	51.025	51.061	51.096	51.132	51.167	51.203	51.238	51.274	51.309
1270	51.344	51.380	51.415	51.450	51.486	51.521	51.556	51.592	51.627	51.662
1280	51.697	51.733	51.768	51.803	51.838	51.973	51.908	51.943	51.979	52.014
1290	52.049	52.084	52.119	52.154	52.189	52.224	52.259	52.294	52.329	52.364
1300	52.398	52.433	52.468	52.503	52.538	52.573	52.608	52.642	52.677	52.712
1310	52.747	52.781	52.816	52.851	52.886	52.920	52.955	52.989	53.024	53.059
1320	53.093	53.128	53.162	53.197	53.232	53.266	53.301	53.335	53.370	53.404
1330	53.439	53.473	53.507	53.542	53.576	53.611	53.645	53.679	53.714	53.748
1340	53.782	53.817	53.851	53.885	53.920	53.954	53.988	54.022	54.057	54.091
1350	54.125	54.159	54.193	54.228	54.262	54.296	54.330	54.364	54.398	54.432
1360	54.466	54.501	54.535	54.569	54.603	54.637	54.671	54.705	54.739	54.773
1370	54.807	54.841	54.875							

Voltage variation (mV) of the Pt Rh 10%- Pt (S type) thermocouple with temperature , for the reference junction at 0° C

Table no 3

C	0	1	2	3	4	5	6	7	8	9
0	0.000	0.005	0.011	0.016	0.022	0.027	0.033	0.038	0.044	0.050
10	0.055	0.061	0.067	0.072	0.078	0.084	0.090	0.095	0.101	0.107
20	0.113	0.119	0.125	0.131	0.137	0.142	0.148	0.154	0.161	0.167
30	0.173	0.179	0.185	0.191	0.197	0.203	0.210	0.216	0.222	0.228
40	0.235	0.241	0.247	0.254	0.260	0.266	0.273	0.279	0.286	0.292
50	0.299	0.305	0.312	0.318	0.325	0.331	0.338	0.345	0.351	0.358
60	0.365	0.371	0.378	0.385	0.391	0.398	0.405	0.412	0.419	0.425
70	0.432	0.439	0.446	0.453	0.460	0.467	0.474	0.481	0.488	0.495
80	0.502	0.509	0.516	0.523	0.530	0.537	0.544	0.551	0.558	0.566
90	0.573	0.580	0.587	0.594	0.602	0.609	0.616	0.623	0.631	0.638

Table no 3 - extension

°C	0	1	2	3	4	5	6	7	8	9
100	0.645	0.653	0.660	0.667	0.675	0.682	0.690	0.697	0.704	0.712
110	0.719	0.727	0.734	0.742	0.749	0.757	0.764	0.772	0.780	0.787
120	0.795	0.802	0.810	0.818	0.825	0.833	0.841	0.848	0.856	0.864
130	0.872	0.879	0.887	0.895	0.903	0.910	0.918	0.926	0.934	0.942
140	0.950	0.957	0.965	0.973	0.981	0.989	0.997	1.005	1.013	1.021
150	1.029	1.037	1.045	1.053	1.061	1.069	1.077	1.085	1.093	1.101
160	1.109	1.117	1.125	1.133	1.141	1.149	1.158	1.166	1.174	1.182
170	1.190	1.198	1.207	1.215	1.223	1.231	1.240	1.248	1.256	1.264
180	1.273	1.281	1.289	1.297	1.306	1.314	1.322	1.331	1.339	1.347
190	1.356	1.364	1.373	1.381	1.389	1.398	1.406	1.415	1.423	1.432
200	1.440	1.448	1.457	1.465	1.474	1.482	1.491	1.499	1.508	1.516
210	1.525	1.534	1.542	1.551	1.559	1.568	1.576	1.585	1.594	1.602
220	1.611	1.620	1.628	1.637	1.645	1.654	1.663	1.671	1.680	1.689
230	1.698	1.706	1.715	1.724	1.732	1.741	1.750	1.759	1.767	1.776
240	1.785	1.794	1.802	1.811	1.820	1.829	1.838	1.846	1.855	1.864
250	1.873	1.882	1.891	1.899	1.908	1.917	1.926	1.935	1.944	1.953
260	1.962	1.971	1.979	1.988	1.997	2.006	2.015	2.024	2.033	2.042
270	2.051	2.060	2.069	2.078	2.087	2.096	2.105	2.114	2.123	2.132
280	2.141	2.150	2.159	2.168	2.177	2.186	2.195	2.204	2.213	2.222
290	2.232	2.241	2.250	2.259	2.268	2.277	2.286	2.295	2.304	2.314
300	2.323	2.332	2.341	2.350	2.359	2.368	2.378	2.387	2.396	2.405
310	2.414	2.424	2.433	2.442	2.451	2.460	2.470	2.479	2.488	2.497
320	2.506	2.516	2.525	2.534	2.543	2.553	2.562	2.571	2.581	2.590
330	2.599	2.608	2.618	2.627	2.636	2.646	2.655	2.664	2.674	2.683
340	2.692	2.702	2.711	2.720	2.730	2.739	2.748	2.758	2.767	2.776
350	2.786	2.795	2.805	2.814	2.823	2.833	2.842	2.852	2.861	2.870
360	2.880	2.889	2.899	2.908	2.917	2.927	2.936	2.946	2.955	2.965
370	2.974	2.984	2.993	3.003	3.012	3.022	3.031	3.041	3.050	3.059
380	3.069	3.078	3.088	3.097	3.107	3.117	3.126	3.136	3.145	3.155
390	3.164	3.174	3.183	3.193	3.202	3.212	3.221	3.231	3.241	3.250
400	3.260	3.269	3.279	3.288	3.298	3.308	3.317	3.327	3.336	3.346
410	3.356	3.365	3.375	3.384	3.394	3.404	3.413	3.423	3.433	3.442
420	3.452	3.462	3.471	3.481	3.491	3.500	3.510	3.520	3.529	3.539
430	3.549	3.558	3.568	3.578	3.587	3.597	3.607	3.616	3.626	3.636
440	3.645	3.655	3.665	3.675	3.684	3.694	3.704	3.714	3.723	3.733
450	3.743	3.742	3.762	3.772	3.782	3.791	3.801	3.811	3.821	3.831
460	3.840	3.850	3.860	3.870	3.879	3.889	3.899	3.909	3.919	3.928
470	3.938	3.948	3.958	3.968	3.977	3.987	3.997	4.007	4.017	4.027
480	4.036	4.046	4.056	4.066	4.076	4.086	4.095	4.105	4.115	4.125
490	4.135	4.145	4.155	4.164	4.174	4.184	4.194	4.204	4.214	4.224
500	4.234	4.243	4.253	4.263	4.273	4.283	4.293	4.303	4.313	4.323
510	4.333	4.343	4.352	4.362	4.372	4.382	4.392	4.402	4.412	4.422
520	4.432	4.442	4.452	4.462	4.472	4.482	4.492	4.502	4.512	4.522
530	4.532	4.542	4.552	4.562	4.572	4.582	4.592	4.602	4.612	4.622
540	4.632	4.642	4.652	4.662	4.672	4.682	4.692	4.702	4.712	4.722
550	4.732	4.742	4.752	4.762	4.772	4.782	4.792	4.802	4.812	4.822
560	4.832	4.842	4.852	4.862	4.873	4.883	4.893	4.903	4.913	4.923
570	4.933	4.943	4.953	4.963	4.973	4.984	4.994	5.004	5.014	5.024
580	5.034	5.044	5.054	5.065	5.075	5.085	5.095	5.105	5.115	5.125
590	5.136	5.146	5.156	5.166	5.176	5.186	5.197	5.207	5.217	5.227
600	5.237	5.247	5.258	5.268	5.278	5.288	5.298	5.309	5.319	5.329
610	5.339	5.350	5.360	5.370	5.380	5.391	5.401	5.411	5.421	5.431
620	5.442	5.452	5.462	5.473	5.483	5.493	5.503	5.514	5.524	5.534
630	5.544	5.555	5.565	5.575	5.586	5.596	5.606	5.617	5.627	5.637
640	5.648	5.658	5.668	5.679	5.689	5.700	5.710	5.720	5.731	5.741

Table no 3 - extension

°C	0	1	2	3	4	5	6	7	8	9
650	5.751	5.762	5.772	5.782	5.793	5.803	5.814	5.824	5.834	5.845
660	5.855	5.866	5.876	5.887	5.897	5.907	5.918	5.928	5.939	5.949
670	5.960	5.970	5.980	5.991	6.001	6.012	6.022	6.033	6.043	6.054
680	6.064	6.075	6.085	6.096	6.106	6.117	6.127	6.138	6.148	6.159
690	6.169	6.180	6.190	6.201	6.211	6.221	6.232	6.243	6.253	6.264
700	6.274	6.285	6.295	6.306	6.316	6.327	6.338	6.348	6.359	6.369
710	6.380	6.390	6.401	6.412	6.422	6.433	6.443	6.454	6.465	6.475
720	6.486	6.496	6.507	6.518	6.528	6.539	6.549	6.560	6.471	6.581
730	6.592	6.630	6.613	6.624	6.635	6.645	6.656	6.667	6.677	6.688
740	6.699	6.709	6.720	6.731	6.741	6.752	6.763	6.773	6.784	6.795
750	6.805	6.916	6.827	6.838	6.848	6.859	6.870	6.880	6.891	6.902
760	6.913	6.923	6.934	6.945	6.956	6.966	6.977	6.988	6.999	7.009
770	7.020	7.031	7.042	7.053	7.063	7.074	7.085	7.096	7.107	7.117
780	7.128	7.139	7.150	7.161	7.171	7.182	7.193	7.204	7.215	7.225
790	7.236	7.247	7.258	7.269	7.280	7.291	7.301	7.312	7.323	7.334
800	7.345	7.356	7.367	7.377	7.388	7.399	7.410	7.421	7.432	7.443
810	7.454	7.465	7.476	7.486	7.497	7.508	7.510	7.530	7.541	7.552
820	7.563	7.574	7.585	7.596	7.607	7.618	7.629	7.640	7.651	7.661
830	7.672	7.683	7.694	7.705	7.716	7.727	7.738	7.749	7.760	7.771
840	7.782	7.793	7.804	7.815	7.826	7.837	7.848	7.859	7.870	7.881
850	7.892	7.904	7.915	7.925	7.937	7.948	7.959	7.970	7.981	7.992
860	8.003	8.014	8.025	8.036	8.047	8.058	8.069	8.081	8.092	8.103
870	8.114	8.125	8.136	8.147	8.158	8.169	8.180	8.192	8.203	8.214
880	8.225	8.236	8.247	8.258	8.270	8.281	8.292	8.303	8.314	8.325
890	8.336	8.348	8.359	8.370	8.381	8.392	8.404	8.415	8.426	8.437
900	8.448	8.460	8.471	8.482	8.493	8.504	8.516	8.527	8.538	8.549
910	8.560	8.572	8.583	8.594	8.605	8.617	8.628	8.639	8.650	8.662
920	8.673	8.684	8.695	8.707	8.718	8.729	8.741	8.752	8.763	8.774
930	8.786	8.797	8.808	8.820	8.831	8.842	8.854	8.865	8.876	8.888
940	8.899	8.910	8.922	8.933	8.944	8.956	8.967	8.978	8.990	9.001
950	9.012	9.024	9.035	9.047	9.058	9.069	9.081	9.092	9.103	9.115
960	9.126	9.138	9.149	9.160	9.172	9.183	9.195	9.206	9.217	9.229
970	9.240	9.252	9.263	9.275	9.286	9.298	9.309	9.320	9.332	9.343
980	9.355	9.366	9.378	9.389	9.401	9.412	9.424	9.435	9.447	9.458
990	9.470	9.481	9.493	9.504	9.516	9.527	9.539	9.550	9.562	9.573
1000	9.585	9.596	9.608	9.619	9.631	9.642	9.654	9.665	9.677	9.689
1010	9.700	9.712	9.723	9.735	9.746	9.758	9.770	9.781	9.793	9.804
1020	9.816	9.828	9.839	9.851	9.862	9.874	9.886	9.897	9.909	9.920
1030	9.932	9.944	9.955	9.967	9.979	9.990	10.002	10.013	10.025	10.037
1040	10.048	10.060	10.072	10.083	10.095	10.107	10.118	10.130	10.142	10.154
1050	10.165	10.177	10.189	10.200	10.212	10.224	10.235	10.247	10.259	10.271
1060	10.282	10.294	10.306	10.318	10.329	10.341	10.353	10.364	10.376	10.388
1070	10.400	10.411	10.423	10.435	10.447	10.459	10.470	10.482	10.494	10.506
1080	10.517	10.529	10.541	10.553	10.565	10.576	10.588	10.600	10.612	10.624
1090	10.635	10.647	10.659	10.671	10.683	10.694	10.706	10.718	10.730	10.742
1100	10.754	10.765	10.777	10.789	10.801	10.813	10.825	10.836	10.848	10.860
1110	10.872	10.884	10.896	10.908	10.919	10.931	10.943	10.955	10.967	10.979
1120	10.991	11.003	11.014	11.026	11.038	11.050	11.062	11.074	11.086	11.098
1130	11.110	11.121	11.133	11.145	11.157	11.169	11.181	11.193	11.205	11.217
1140	11.229	11.241	11.252	11.264	11.276	11.288	11.300	11.312	11.324	11.336
1150	11.348	11.360	11.372	11.384	11.396	11.408	11.420	11.432	11.443	11.455
1160	11.467	11.479	11.491	11.503	11.515	11.527	11.539	11.551	11.563	11.575
1170	11.587	11.599	11.611	11.623	11.635	11.647	11.659	11.671	11.683	11.695
1180	11.707	11.719	11.731	11.743	11.755	11.767	11.779	11.791	11.803	11.815
1190	11.826	11.839	11.851	11.863	11.875	11.887	11.899	11.911	11.923	11.935

Table no 3 - extension

°C	0	1	2	3	4	5	6	7	8	9
1200	11.947	11.959	11.971	11.983	11.995	12.007	12.019	12.031	12.043	12.055
1210	12.067	12.079	12.091	12.103	12.116	12.128	12.140	12.152	12.164	12.176
1220	12.188	12.200	12.212	12.224	12.236	12.248	12.260	12.272	12.284	12.296
1230	12.308	12.320	12.332	12.345	12.357	12.369	12.381	12.393	12.405	12.417
1240	12.429	12.441	12.453	12.465	12.477	12.489	12.501	12.514	12.526	12.538
1250	12.550	12.562	12.574	12.586	12.598	12.610	12.622	12.634	12.647	12.659
1260	12.671	12.683	12.695	12.707	12.719	12.731	12.743	12.755	12.767	12.780
1270	12.792	12.804	12.816	12.828	12.840	12.852	12.864	12.876	12.888	12.901
1280	12.913	12.925	12.937	12.949	12.961	12.973	12.985	12.997	13.010	13.022
1290	13.034	13.046	13.058	13.070	13.082	13.094	13.107	13.119	13.131	13.143
1300	13.155	13.167	13.179	13.191	13.203	13.216	13.228	13.240	13.252	13.264
1310	13.276	13.288	13.300	13.313	13.325	13.337	13.349	13.361	13.373	13.385
1320	13.397	13.410	13.422	13.434	13.446	13.458	13.470	13.482	13.495	13.507
1330	13.519	13.531	13.543	13.555	13.567	13.579	13.592	13.604	13.616	13.628
1340	13.640	13.652	13.664	13.677	13.689	13.701	13.713	13.725	13.737	13.749
1350	13.761	13.774	13.786	13.796	13.810	13.822	13.834	13.846	13.859	13.871
1360	13.883	13.895	13.907	13.919	13.931	13.943	13.956	13.968	13.980	13.992
1370	14.004	14.016	14.028	14.040	14.053	14.065	14.077	14.089	14.101	14.113
1380	14.125	14.138	14.150	14.162	14.174	14.186	14.198	14.210	14.222	14.235
1390	14.247	14.259	14.271	14.283	14.295	14.307	14.319	14.332	14.344	14.356
1400	14.368	14.380	14.392	14.404	14.416	14.429	14.441	14.453	14.465	14.477
1410	14.489	14.501	14.513	14.526	14.538	14.550	14.562	14.574	14.586	14.598
1420	14.610	14.622	14.635	14.647	14.659	14.671	14.683	14.695	14.707	14.719
1430	14.731	14.744	14.756	14.768	14.780	14.792	14.804	14.816	14.828	14.840
1440	14.852	14.865	14.877	14.889	14.901	14.913	14.925	14.937	14.949	14.961
1450	14.973	14.985	14.998	15.010	15.022	15.034	15.046	15.058	15.070	15.082
1460	15.094	15.106	15.118	15.130	15.143	15.155	15.167	15.179	15.191	15.203
1470	15.215	15.227	15.239	15.251	15.263	15.275	15.287	15.299	15.311	15.324
1480	15.336	15.348	15.360	15.372	15.384	15.396	15.408	15.420	15.432	15.444
1490	15.456	15.468	15.480	15.492	15.504	15.516	15.528	15.540	15.552	15.564
1500	15.576	15.589	15.601	15.613	15.625	15.637	15.649	15.661	15.673	15.685
1510	15.697	15.709	15.721	15.733	15.745	15.757	15.769	15.781	15.793	15.805
1520	15.817	15.829	15.841	15.853	15.865	15.877	15.889	15.901	15.913	15.925
1530	15.937	15.949	15.961	15.973	15.985	15.997	16.009	16.021	16.033	16.045
1540	16.057	16.069	16.080	16.092	16.104	16.116	16.128	16.140	16.152	16.164
1550	16.176	16.188	16.200	16.212	16.224	16.236	16.248	16.260	16.272	16.284
1560	16.296	16.308	16.319	16.331	16.343	16.355	16.367	16.379	16.391	16.403
1570	16.415	16.427	16.439	16.451	16.462	16.474	16.486	16.498	16.510	16.522
1580	16.534	16.546	16.558	16.569	16.581	16.593	16.605	16.617	16.629	16.641
1590	16.653	16.664	16.676	16.688	16.700	16.712	16.724	16.736	16.747	16.759
1600	16.771	16.783	16.795	16.807	16.819	16.830	16.842	16.854	16.866	16.878
1610	16.890	16.901	16.913	16.925	16.937	16.949	16.960	16.972	16.984	16.996
1620	17.008	17.019	17.031	17.043	17.055	17.067	17.078	17.090	17.102	17.114
1630	17.125	17.137	17.149	17.161	17.173	17.184	17.196	17.208	17.220	17.231
1640	17.423	17.255	17.267	17.278	17.290	17.302	17.313	17.325	17.337	17.349
1650	17.360	17.372	17.384	17.396	17.407	17.419	17.431	17.442	17.454	17.466
1660	17.477	17.489	17.501	17.512	17.524	17.536	17.548	17.559	17.571	17.583
1670	17.594	17.606	17.617	17.629	17.641	17.652	17.664	17.676	17.687	17.699
1680	17.711	17.722	17.734	17.754	17.757	17.769	17.780	17.792	17.803	17.815
1690	17.826	17.838	17.850	17.861	17.873	17.884	17.896	17.907	17.919	17.930
1700	17.942	17.953	17.965	17.976	17.988	17.999	18.010	18.022	18.033	18.045
1710	18.056	18.068	18.079	18.090	18.102	18.113	18.124	18.136	18.147	18.158
1720	18.170	18.181	18.192	18.204	18.215	18.226	18.237	18.249	18.260	18.271
1730	18.282	18.293	18.305	18.316	18.327	18.338	18.349	18.360	18.372	18.383
1740	18.394	18.405	18.416	18.427	18.438	18.449	18.460	18.471	18.482	18.493
1750	18.504	18.515	18.526	18.536	18.547	18.558	18.569	18.580	18.591	18.602
1760	18.612	18.623	18.634	18.645	18.655	18.666	18.677	18.687	18.698	

Table no 3 - extension

°C	0	1	2	3	4	5	6	7	8	9
0	0.000	-0.000	-0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002
10	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003	-0.003
20	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.002	-0.002	-0.002
30	-0.002	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001
40	-0.000	-0.000	-0.000	-0.000	-0.000	0.001	0.001	0.001	0.002	0.002
50	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.005	0.005	0.006
60	0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.010	0.010	0.011
70	0.011	0.012	0.012	0.013	0.014	0.014	0.015	0.015	0.016	0.017
80	0.017	0.018	0.019	0.020	0.020	0.021	0.022	0.022	0.023	0.024
90	0.025	0.026	0.026	0.027	0.028	0.029	0.030	0.031	0.031	0.032
100	0.033	0.034	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.042
110	0.043	0.044	0.045	0.046	0.047	0.048	0.049	0.050	0.051	0.052
120	0.053	0.055	0.056	0.057	0.058	0.059	0.060	0.062	0.063	0.064
130	0.065	0.066	0.068	0.069	0.070	0.071	0.073	0.074	0.075	0.077
140	0.078	0.079	0.081	0.082	0.083	0.085	0.086	0.088	0.089	0.091
150	0.092	0.093	0.095	0.096	0.098	0.099	0.101	0.102	0.104	0.106
160	0.107	0.109	0.110	0.112	0.113	0.115	0.117	0.118	0.120	0.122
170	0.123	0.125	0.127	0.128	0.130	0.132	0.133	0.135	0.137	0.139
180	0.140	0.142	0.144	0.146	0.148	0.149	0.151	0.153	0.155	0.157
190	0.159	0.161	0.163	0.164	0.166	0.168	0.170	0.172	0.174	0.176
200	0.178	0.180	0.182	0.184	0.186	0.188	0.190	0.192	0.194	0.197
210	0.199	0.201	0.203	0.205	0.207	0.209	0.211	0.214	0.216	0.218
220	0.220	0.222	0.225	0.227	0.229	0.231	0.234	0.236	0.238	0.240
230	0.243	0.245	0.247	0.250	0.252	0.254	0.257	0.259	0.262	0.264
240	0.266	0.269	0.271	0.274	0.276	0.279	0.281	0.284	0.286	0.289
250	0.291	0.294	0.296	0.299	0.301	0.304	0.307	0.309	0.312	0.314
260	0.317	0.320	0.322	0.325	0.328	0.330	0.333	0.336	0.338	0.341
270	0.344	0.347	0.349	0.352	0.355	0.358	0.360	0.363	0.366	0.369
280	0.372	0.375	0.377	0.380	0.383	0.386	0.389	0.392	0.395	0.398
290	0.401	0.404	0.406	0.409	0.412	0.415	0.418	0.421	0.424	0.427
300	0.431	0.434	0.437	0.440	0.443	0.446	0.449	0.452	0.455	0.458
310	0.462	0.465	0.468	0.471	0.474	0.477	0.481	0.484	0.487	0.490
320	0.494	0.497	0.500	0.503	0.507	0.510	0.513	0.517	0.520	0.523
330	0.527	0.530	0.533	0.537	0.540	0.544	0.547	0.550	0.554	0.557
340	0.561	0.564	0.568	0.571	0.575	0.578	0.582	0.585	0.589	0.592
350	0.596	0.599	0.603	0.606	0.610	0.614	0.617	0.621	0.625	0.632
360	0.632	0.636	0.639	0.643	0.647	0.650	0.654	0.658	0.661	0.669
370	0.669	0.673	0.677	0.680	0.684	0.688	0.692	0.696	0.699	0.703
380	0.707	0.711	0.715	0.719	0.723	0.727	0.730	0.734	0.738	0.742
390	0.746	0.750	0.754	0.758	0.762	0.766	0.770	0.774	0.778	0.782
400	0.786	0.790	0.794	0.799	0.803	0.807	0.811	0.815	0.819	0.823
410	0.827	0.832	0.836	0.840	0.844	0.848	0.853	0.857	0.861	0.865
420	0.870	0.874	0.878	0.822	0.887	0.891	0.895	0.900	0.904	0.908
430	0.913	0.917	0.921	0.926	0.930	0.935	0.939	0.943	0.948	0.952
440	0.957	0.961	0.966	0.970	0.975	0.979	0.984	0.988	0.993	0.997
450	1.002	1.006	1.011	1.015	1.020	1.025	1.029	1.034	1.039	1.043
460	1.048	1.052	1.057	1.062	1.066	1.071	1.076	1.081	1.085	1.090
470	1.095	1.100	1.104	1.109	1.114	1.119	1.123	1.128	1.133	1.138
480	1.143	1.148	1.152	1.157	1.162	1.167	1.172	1.177	1.182	1.187
490	1.192	1.197	1.202	1.206	1.211	1.216	1.221	1.226	1.231	1.236

Voltage variation (mV) of the Pt Rh 30%- Pt Rh 6% (B type) thermocouple with temperature , for the reference junction at 0° C

Table no 4

°C	0	1	2	3	4	5	6	7	8	9
0	0.000	-0.000	-0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002
10	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003	-0.003
20	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.002	-0.002	-0.002
30	-0.002	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001
40	-0.000	-0.000	-0.000	-0.000	-0.000	0.001	0.001	0.001	0.002	0.002
50	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.005	0.005	0.006
60	0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.010	0.010	0.011
70	0.011	0.012	0.012	0.013	0.014	0.014	0.015	0.015	0.016	0.017
80	0.017	0.018	0.019	0.020	0.020	0.021	0.022	0.022	0.023	0.024
90	0.025	0.026	0.026	0.027	0.028	0.029	0.030	0.031	0.031	0.032
100	0.033	0.034	0.035	0.036	0.037	0.038	0.039	0.040	0.041	0.042
110	0.043	0.044	0.045	0.046	0.047	0.048	0.049	0.050	0.051	0.052
120	0.053	0.055	0.056	0.057	0.058	0.059	0.060	0.062	0.063	0.064
130	0.065	0.066	0.068	0.069	0.070	0.071	0.073	0.074	0.075	0.077
140	0.078	0.079	0.081	0.082	0.083	0.085	0.086	0.088	0.089	0.091
150	0.092	0.093	0.095	0.096	0.098	0.099	0.101	0.102	0.104	0.106
160	0.107	0.109	0.110	0.112	0.113	0.115	0.117	0.118	0.120	0.122
170	0.123	0.125	0.127	0.128	0.130	0.132	0.133	0.135	0.137	0.139
180	0.140	0.142	0.144	0.146	0.148	0.149	0.151	0.153	0.155	0.157
190	0.159	0.161	0.163	0.164	0.166	0.168	0.170	0.172	0.174	0.176
200	0.178	0.180	0.182	0.184	0.186	0.188	0.190	0.192	0.194	0.197
210	0.199	0.201	0.203	0.205	0.207	0.209	0.211	0.214	0.216	0.218
220	0.220	0.222	0.225	0.227	0.229	0.231	0.234	0.236	0.238	0.240
230	0.243	0.245	0.247	0.250	0.252	0.254	0.257	0.259	0.262	0.264
240	0.266	0.269	0.271	0.274	0.276	0.279	0.281	0.284	0.286	0.289
250	0.291	0.294	0.296	0.299	0.301	0.304	0.307	0.309	0.312	0.314
260	0.317	0.320	0.322	0.325	0.328	0.330	0.333	0.336	0.338	0.341
270	0.344	0.347	0.349	0.352	0.355	0.358	0.360	0.363	0.366	0.369
280	0.372	0.375	0.377	0.380	0.383	0.386	0.389	0.392	0.395	0.398
290	0.401	0.404	0.406	0.409	0.412	0.415	0.418	0.421	0.424	0.427
300	0.431	0.434	0.437	0.440	0.443	0.446	0.449	0.452	0.455	0.458
310	0.462	0.465	0.468	0.471	0.474	0.477	0.481	0.484	0.487	0.490
320	0.494	0.497	0.500	0.503	0.507	0.510	0.513	0.517	0.520	0.523
330	0.527	0.530	0.533	0.537	0.540	0.544	0.547	0.550	0.554	0.557
340	0.561	0.564	0.568	0.571	0.575	0.578	0.582	0.585	0.589	0.592
350	0.596	0.599	0.603	0.606	0.610	0.614	0.617	0.621	0.625	0.632
360	0.632	0.636	0.639	0.643	0.647	0.650	0.654	0.658	0.661	0.669
370	0.669	0.673	0.677	0.680	0.684	0.688	0.692	0.696	0.699	0.703
380	0.707	0.711	0.715	0.719	0.723	0.727	0.730	0.734	0.738	0.742
390	0.746	0.750	0.754	0.758	0.762	0.766	0.770	0.774	0.778	0.782
400	0.786	0.790	0.794	0.799	0.803	0.807	0.811	0.815	0.819	0.823
410	0.827	0.832	0.836	0.840	0.844	0.848	0.853	0.857	0.861	0.865
420	0.870	0.874	0.878	0.882	0.887	0.891	0.895	0.900	0.904	0.908
430	0.913	0.917	0.921	0.926	0.930	0.935	0.939	0.943	0.948	0.952
440	0.957	0.961	0.966	0.970	0.975	0.979	0.984	0.988	0.993	0.997
450	1.002	1.006	1.011	1.015	1.020	1.025	1.029	1.034	1.039	1.043
460	1.048	1.052	1.057	1.062	1.066	1.071	1.076	1.081	1.085	1.090
470	1.095	1.100	1.104	1.109	1.114	1.119	1.123	1.128	1.133	1.138
480	1.143	1.148	1.152	1.157	1.162	1.167	1.172	1.177	1.182	1.187
490	1.192	1.197	1.202	1.206	1.211	1.216	1.221	1.226	1.231	1.236

Table no 4 - extension

°C	0	1	2	3	4	5	6	7	8	9
500	1.241	1.246	1.252	1.257	1.262	1.267	1.272	1.277	1.282	1.287
510	1.292	1.297	1.303	1.308	1.313	1.318	1.323	1.328	1.334	1.339
520	1.344	1.349	1.354	1.360	1.365	1.370	1.375	1.381	1.386	1.391
530	1.397	1.402	1.407	1.413	1.418	1.423	1.429	1.434	1.439	1.445
540	1.450	1.456	1.461	1.467	1.472	1.477	1.483	1.488	1.494	1.499
550	1.505	1.510	1.516	1.521	1.527	1.532	1.538	1.544	1.549	1.555
560	1.560	1.566	1.571	1.577	1.583	1.588	1.594	1.600	1.605	1.611
570	1.617	1.622	1.628	1.634	1.639	1.645	1.651	1.657	1.662	1.668
580	1.674	1.680	1.685	1.691	1.697	1.703	1.709	1.715	1.720	1.726
590	1.732	1.738	1.744	1.750	1.756	1.762	1.767	1.773	1.779	1.785
600	1.791	1.797	1.803	1.809	1.815	1.821	1.827	1.833	1.839	1.845
610	1.851	1.857	1.863	1.869	1.875	1.882	1.888	1.894	1.900	1.906
620	1.912	1.918	1.924	1.931	1.937	1.943	1.949	1.955	1.961	1.968
630	1.974	1.980	1.986	1.993	1.999	2.005	2.011	2.018	2.024	2.030
640	2.036	2.043	2.049	2.055	2.062	2.068	2.074	2.081	2.087	2.094
650	2.100	2.106	2.113	2.119	2.126	2.132	2.139	2.145	2.151	2.158
660	2.164	2.171	2.177	2.184	2.190	2.197	2.203	2.210	2.216	2.223
670	2.230	2.236	2.243	2.249	2.256	2.263	2.269	2.276	2.282	2.289
680	2.296	2.302	2.309	2.316	2.322	2.329	2.336	2.343	2.349	2.356
690	2.363	2.369	2.376	2.383	2.390	2.396	2.403	2.410	2.417	2.424
700	2.430	2.437	2.444	2.451	2.458	2.465	2.472	2.478	2.485	2.492
710	2.499	2.506	2.513	2.520	2.527	2.534	2.541	2.548	2.555	2.562
720	2.569	2.576	2.583	2.590	2.597	2.604	2.611	2.618	2.625	2.632
730	2.639	2.646	2.653	2.660	2.667	2.674	2.682	2.689	2.696	2.703
740	2.710	2.717	2.724	2.732	2.739	2.746	2.753	2.760	2.768	2.775
750	2.782	2.789	2.797	2.804	2.811	2.818	2.826	2.833	2.840	2.848
760	2.855	2.862	2.869	2.877	2.884	2.892	2.899	2.906	2.914	2.921
770	2.928	2.936	2.943	2.951	2.958	2.966	2.973	2.980	2.988	2.995
780	3.003	3.010	3.018	3.025	3.033	3.040	3.048	3.055	3.063	3.070
790	3.078	3.086	3.093	3.101	3.108	3.116	3.124	3.131	3.139	3.146
800	3.154	3.162	3.169	3.177	3.185	3.192	3.200	3.208	3.215	3.223
810	3.231	3.239	3.246	3.254	3.262	3.269	3.277	3.285	3.293	3.301
820	3.308	3.316	3.324	3.332	3.340	3.347	3.355	3.363	3.371	3.379
830	3.387	3.395	3.402	3.410	3.418	3.426	3.434	3.442	3.450	3.458
840	3.466	3.474	3.482	3.490	3.498	3.506	3.514	3.522	3.530	3.538
850	3.546	3.554	3.562	3.570	3.578	3.586	3.594	3.602	3.610	3.618
860	3.626	3.634	3.643	3.651	3.659	3.667	3.675	3.683	3.691	3.700
870	3.708	3.716	3.724	3.732	3.741	3.749	3.757	3.765	3.773	3.782
880	3.790	3.798	3.806	3.815	3.823	3.831	3.840	3.848	3.856	3.865
890	3.873	3.881	3.890	3.898	3.906	3.915	3.923	3.931	3.940	3.948
900	3.957	3.965	3.973	3.982	3.990	3.999	4.007	4.016	4.024	4.032
910	4.041	4.049	4.058	4.066	4.075	4.083	4.092	4.100	4.109	4.117
920	4.126	4.135	4.143	4.152	4.160	4.169	4.177	4.186	4.195	4.203
930	4.212	4.220	4.229	4.238	4.246	4.255	4.264	4.272	4.281	4.290
940	4.298	4.307	4.316	4.325	4.333	4.342	4.351	4.359	4.368	4.377
950	4.386	4.394	4.403	4.412	4.421	4.430	4.438	4.447	4.456	4.465
960	4.474	4.483	4.491	4.500	4.509	4.518	4.527	4.536	4.545	4.553
970	4.562	4.571	4.580	4.589	4.598	4.607	4.616	4.625	4.634	4.643
980	4.652	4.661	4.670	4.679	4.688	4.697	4.706	4.715	4.724	4.733
990	4.742	4.751	4.760	4.769	4.778	4.787	4.796	4.805	4.814	4.824
1000	4.833	4.842	4.851	4.860	4.869	4.878	4.887	4.897	4.906	4.915
1010	4.924	4.933	4.942	4.952	4.961	4.970	4.979	4.989	4.998	5.007
1020	5.016	5.025	5.035	5.044	5.053	5.063	5.072	5.081	5.090	5.100
1030	5.109	5.118	5.128	5.137	5.146	5.156	5.165	5.174	5.184	5.193
1040	5.202	5.212	5.221	5.231	5.240	5.249	5.259	5.268	5.278	5.287

Table no 4 - extension

°C	0	1	2	3	4	5	6	7	8	9
1050	5.297	5.306	5.316	5.325	5.334	5.344	5.353	5.363	5.372	5.382
1060	5.391	5.401	5.410	5.420	5.429	5.439	5.449	5.458	5.468	5.477
1070	5.487	5.496	5.506	5.516	5.525	5.535	5.544	5.554	5.564	5.573
1080	5.583	5.593	5.602	5.612	5.621	5.631	5.641	5.651	5.660	5.670
1090	5.680	5.689	5.699	5.709	5.718	5.728	5.738	5.748	5.757	5.767
1100	5.777	5.787	5.796	5.806	5.816	5.826	5.836	5.845	5.855	5.865
1110	5.875	5.885	5.895	5.904	5.914	5.924	5.934	5.944	5.954	5.964
1120	5.973	5.983	5.993	6.003	6.013	6.023	6.033	6.043	6.053	6.063
1130	6.073	6.083	6.093	6.102	6.112	6.122	6.132	6.142	6.152	6.162
1140	6.172	6.182	6.192	6.202	6.212	6.223	6.233	6.243	6.253	6.263
1150	6.273	6.283	6.293	6.303	6.313	6.323	6.333	6.343	6.353	6.364
1160	6.374	6.384	6.394	6.404	6.414	6.424	6.435	6.445	6.455	6.465
1170	6.475	6.485	6.496	6.506	6.516	6.526	6.536	6.547	6.557	6.567
1180	6.577	6.588	6.598	6.608	6.618	6.629	6.639	6.649	6.659	6.670
1190	6.680	6.690	6.701	6.711	6.721	6.732	6.742	6.752	6.763	6.773
1200	6.783	6.794	6.804	6.814	6.825	6.835	6.846	6.856	6.866	6.877
1210	6.887	6.898	6.908	6.918	6.929	6.939	6.950	6.960	6.971	6.981
1220	6.991	7.002	7.012	7.023	7.033	7.044	7.054	7.065	7.075	7.086
1230	7.096	7.107	7.117	7.128	7.138	7.149	7.159	7.170	7.181	7.191
1240	7.202	7.212	7.223	7.233	7.244	7.255	7.265	7.276	7.286	7.297
1250	7.308	7.318	7.329	7.339	7.350	7.361	7.371	7.382	7.393	7.403
1260	7.414	7.425	7.435	7.446	7.457	7.467	7.478	7.489	7.500	7.510
1270	7.521	7.532	7.542	7.553	7.564	7.575	7.585	7.596	7.607	7.618
1280	7.628	7.639	7.650	7.661	7.671	7.682	7.693	7.704	7.715	7.725
1290	7.736	7.747	7.758	7.769	7.780	7.790	7.801	7.812	7.823	7.834
1300	7.845	7.855	7.866	7.877	7.888	7.899	7.910	7.921	7.932	7.943
1310	7.953	7.964	7.975	7.986	7.997	8.008	8.019	8.030	8.041	8.052
1320	8.063	8.074	8.085	8.096	8.107	8.118	8.128	8.139	8.150	8.161
1330	8.172	8.183	8.194	8.205	8.216	8.227	8.238	8.249	8.261	8.272
1340	8.283	8.294	8.304	8.316	8.327	8.338	8.349	8.360	8.371	8.382
1350	8.393	8.404	8.415	8.426	8.437	8.449	8.460	8.471	8.482	8.493
1360	8.504	8.515	8.526	8.538	8.549	8.560	8.571	8.582	8.593	8.604
1370	8.616	8.627	8.638	8.649	8.660	8.671	8.683	8.694	8.705	8.716
1380	8.727	8.738	8.750	8.761	8.772	8.783	8.795	8.806	8.817	8.828
1390	8.839	8.851	8.862	8.873	8.884	8.896	8.907	8.918	8.929	8.941
1400	8.952	8.963	8.974	8.986	8.997	9.008	9.020	9.031	9.042	9.053
1410	9.065	9.076	9.087	9.099	9.110	9.121	9.133	9.144	9.155	9.167
1420	9.178	9.189	9.201	9.212	9.223	9.235	9.246	9.257	9.269	9.280
1430	9.291	9.303	9.314	9.326	9.337	9.348	9.360	9.371	9.382	9.394
1440	9.405	9.417	9.428	9.439	9.451	9.462	9.474	9.485	9.497	9.508
1450	9.519	9.531	9.542	9.554	9.565	9.577	9.588	9.599	9.611	9.622
1460	9.634	9.645	9.657	9.668	9.680	9.691	9.703	9.714	9.726	9.737
1470	9.748	9.760	9.771	9.783	9.794	9.806	9.817	9.829	9.840	9.852
1480	9.863	9.875	9.886	9.898	9.909	9.921	9.933	9.944	9.956	9.967
1490	9.979	9.990	10.002	10.013	10.025	10.036	10.048	10.059	10.071	10.082
1500	10.094	10.106	10.117	10.129	10.140	10.152	10.163	10.175	10.187	10.198
1510	10.210	10.221	10.233	10.244	10.256	10.268	10.279	10.291	10.302	10.314
1520	10.325	10.337	10.349	10.350	10.372	10.383	10.395	10.407	10.418	10.430
1530	10.441	10.453	10.465	10.476	10.488	10.500	10.511	10.523	10.534	10.546
1540	10.558	10.569	10.581	10.593	10.604	10.616	10.627	10.639	10.651	10.662
1550	10.674	10.696	10.697	10.709	10.721	10.732	10.744	10.756	10.767	10.779
1560	10.790	10.802	10.814	10.825	10.837	10.849	10.860	10.872	10.884	10.895
1570	10.907	10.919	10.930	10.942	10.954	10.965	10.977	10.989	11.000	11.012
1580	11.024	11.035	11.047	11.059	11.070	11.082	11.094	11.105	11.117	11.129
1590	11.141	11.152	11.164	11.176	11.187	11.199	11.211	11.222	11.234	11.246

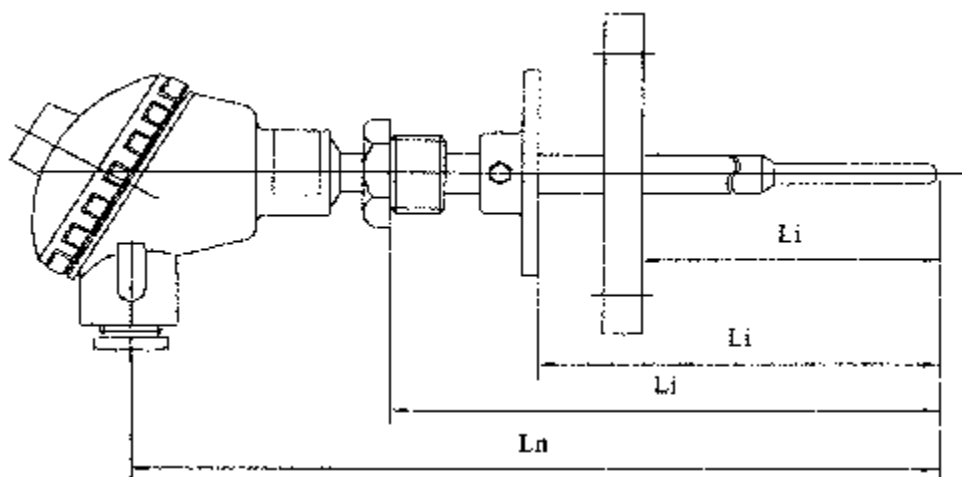
Table no 4 - extension

°C	0	1	2	3	4	5	6	7	8	9
1600	11.257	11.269	11.281	11.292	11.304	11.316	11.328	11.339	11.351	11.363
1610	11.374	11.386	11.398	11.409	11.421	11.433	11.444	11.456	11.468	11.480
1620	11.491	11.503	11.515	11.526	11.538	11.550	11.561	11.573	11.585	11.597
1630	11.608	11.620	11.632	11.643	11.655	11.667	11.678	11.690	11.702	11.714
1640	11.725	11.737	11.749	11.760	11.772	11.784	11.795	11.807	11.819	11.830
1650	11.842	11.854	11.866	11.877	11.889	11.901	11.912	11.924	11.936	11.947
1660	11.959	11.971	11.983	11.994	12.006	12.018	12.029	12.041	12.053	12.064
1670	12.076	12.088	12.099	12.111	12.123	12.134	12.146	12.158	12.170	12.181
1680	12.193	12.205	12.216	12.228	12.240	12.251	12.263	12.275	12.286	12.298
1690	12.310	12.321	12.333	12.345	12.356	12.368	12.380	12.391	12.403	12.415
1700	12.426	12.438	12.450	12.461	12.473	12.485	12.496	12.508	12.520	12.531
1710	12.543	12.555	12.566	12.578	12.590	12.601	12.613	12.624	12.636	12.648
1720	12.659	12.671	12.683	12.694	12.706	12.718	12.729	12.741	12.752	12.764
1730	12.776	12.787	12.799	12.811	12.822	12.834	12.845	12.857	12.869	12.880
1740	12.892	12.903	12.915	12.927	12.936	12.950	12.961	12.973	12.985	12.996
1750	13.008	13.019	13.031	13.043	13.054	13.066	13.077	13.089	13.100	13.112
1760	13.124	13.135	13.147	13.158	13.170	13.181	13.193	13.204	13.216	13.228
1770	13.239	13.251	13.262	13.274	13.285	13.297	13.308	13.320	13.331	13.343
1780	13.354	13.366	13.387	13.389	13.401	13.412	13.424	13.435	13.447	13.458
1790	13.470	13.481	13.493	13.504	13.516	13.527	13.539	13.550	13.562	13.573
1800	13.585	13.596	13.607	13.619	13.630	13.642	13.653	13.665	13.676	13.688
1810	13.699	13.711	13.722	13.733	13.745	13.756	13.768	13.779	13.791	13.802
1820	13.814									

Allowable errors for e.m.f. and temperature variation for the main thermocouples types

Table no 5

Thermocouple name	Fier-constantan (J)		Cromel-alumel (K)		PtRh 10%-Pt (S)				PtRh 30%-PtRh 6% (B)	
Temperature (°C)	Allowable error									
	*	*	*	*	Class I		Class II		*	*
	mV	°C	mV	°C	mV	°C	mV	°C	mV	°C
-200	± 0.110	± 5.0	± 0.078	± 5.0	*	*	*	*	*	*
-100	± 0.123	± 3.0	± 0.122	± 4.0	*	*	*	*	*	*
0	± 0.150	± 3.0	± 0.154	± 4.0	± 0.008	± 1.5	± 0.015	± 3.0	*	*
100	± 0.164	± 3.0	± 0.166	± 4.0	± 0.011	± 1.5	± 0.022	± 3.0	*	*
200	± 0.165	± 3.0	± 0.166	± 4.0	± 0.012	± 1.5	± 0.024	± 3.0	*	*
300	± 0.165	± 3.0	± 0.166	± 4.0	± 0.014	± 1.5	± 0.027	± 3.0	± 0.010	± 3.0
400	± 0.165	± 3.0	± 0.170	± 4.0	± 0.016	± 1.7	± 0.028	± 3.0	± 0.012	± 3.0
500	± 0.213	± 3.8	± 0.201	± 4.8	± 0.018	± 1.9	± 0.028	± 3.0	± 0.015	± 3.0
600	± 0.263	± 4.5	± 0.234	± 5.5	± 0.021	± 2.1	± 0.030	± 3.0	± 0.018	± 3.0
700	± 0.322	± 5.2	± 0.250	± 6.2	± 0.024	± 2.3	± 0.037	± 3.5	± 0.023	± 3.5
800	± 0.368	± 6.0	± 0.287	± 7.0	± 0.028	± 2.5	± 0.044	± 4.0	± 0.032	± 4.0
900	± 0.422	± 6.8	± 0.312	± 7.8	± 0.031	± 2.7	± 0.052	± 4.5	± 0.038	± 4.5
1000	*	*	± 0.332	± 8.5	± 0.033	± 2.9	± 0.058	± 5.0	± 0.045	± 5.0
1100	*	*	± 0.350	± 9.2	± 0.036	± 3.1	± 0.063	± 5.5	± 0.055	± 5.5
1200	*	*	± 0.362	± 10.0	± 0.040	± 3.3	± 0.072	± 6.0	± 0.063	± 6.0
1300	*	*	± 0.373	± 10.8	± 0.042	± 3.5	± 0.078	± 6.5	± 0.068	± 6.5
1400	*	*	*	*	± 0.044	± 3.7	± 0.084	± 7.0	± 0.067	± 7.0
1500	*	*	*	*	± 0.049	± 3.9	± 0.094	± 7.5	± 0.090	± 7.5
1600	*	*	*	*	± 0.049	± 4.1	± 0.096	± 8.0	± 0.092	± 8.0
1700	*	*	*	*	*	*	*	*	± 0.098	± 8.5
1800	*	*	*	*	*	*	*	*	± 0.104	± 9.0

NORMAL THERMOCOUPLES
TC- 01.X.XX.X.X.X.X.X.
TC-51.X.XX.X.X.X.X.X.

TECHNICAL CHARACTERISTICS

- time constant : medium ($15 < \tau < 90$ s)
- exploitation category 1 according to STAS 6692-83
- protection rank: IP 65 according to SR EN 60529
- maximum working pressure: 10 bar
- other technical characteristics are detailed in the tables

CODING

Level a: TC type ad the precision class

TC type	Precision Class	Code
Normal thermocouple (PtRh10%-Pt; PtRh30%-PtRh 6%)	I (A)	51
Normal thermocouple	II (B)	01

Level b: Material and wires number

Material	Number	Code	Material	Number	Code
PtRh10%	1	1	Cromel	1	5
PtRh10%	2	2	Cromel	2	6
PtRh30	1	3	Fier	1	7
PtRh30%	2	4	Fier	2	8

Level c: characteristics of the protection tube

Nominal diameter (mm)	Nominal length (mm)	Code	Nominal diameter (mm)	Nominal length (mm)	Code
Special order		00	12	250	21
12	250	01		500	22
	500	02		750	23
	750	03		1000	24
	1000	04		1250	25
	1250	05		1500	26
	1500	06		1750	27
	1750	07		2000	28
	2000	08	18	500	32
20	250	11		750	33
	500	12		1000	34
	750	13	24	500	42
	1000	14		750	43
	1250	15		1000	44
	1500	16		1250	45
	1750	17		1500	46
	2000	18		1750	47
				2000	48

Level d: Material of the protection tube

Material in the protection tube	Temperature	Code
Thermocouple without protection tube	0...600 °C	1
Carbon steel	0...900 °C	2
Stainless steel	0...1150 °C	3
Refractory steel	0...1600 °C	4
Ceramics KER 610 dimulit 610 pythagoras 610	0...1800 °C	5
Ceramics KER 710	0...1140 °C	6
Inconel 600	0...600 °C	7

Level e: Temperature range

Temperature range °C		Wire type	Code
Continuous duty	Intermittent duty		
0...500	0...+550	Iron - Constantan	2
0...650	0...+850	Cromel - Alumel	3
0...750	0...+950	Cromel - Alumel	4
0...900	0...+1100	Cromel - Alumel	5
0...1100	0...+1200	Cromel - Alumel	6
0...1200	0...+1300	PtRh10%-Pt	7
0...1300	0...+1400	PtRh10%-Pt	8
600...1600	600...+1800	PtRh30%-PtRh6%	9

Level f: Fixing device

Type of fixing device	Code	Type of fixing device	Code
Special order	0	Welded nipple G 1"	5
No fixing device	1	Welded nipple M20 x 1,5	6
Mobile flange	2	Welded nipple Br ¾"	7
Fix flange	3	Welded nipple Br 1"	8
Welded nipple G ¾"	4		

Level g: Immersion Length

Nominal Length (see level "c") (mm)								
250	500	750	1000	1250	1500	1750	2000	Code
Immersion Length(100 ≤ Li ≤ Ln-100) (mm)								
Special order (to be specified)								0
RTDs without fixing device								1
-	400	650	900	1150	1400	1650	1900	2
-	350	600	800	1000	1270	1500	1800	3
-	300	570	750	980	1200	1350	1750	4
-	280	550	700	950	1100	1300	1700	5
-	260	500	650	910	1000	1200	1600	6
-	250	450	600	850	900	1110	1500	7
150	200	425	500	800	800	1050	1400	8
100	110	400	400	700	700	1000	1300	9

Level h: Type of execution and climatic protection

Type of execution	Climatic protection STAS 6692-83	Code
Special order		0
Normal	Temperate (N)	1
Normal	Marine (M)	2
Normal	Tropical (T)	3
Normal	Marine Tropical (MT)	4
EEx dIICT6	Temperate (N)	5
EEx dIICT6	Marine (M)	6
EEx dIICT6	Tropical (T)	7
EEx dIICT6	Marine Tropical (MT)	8

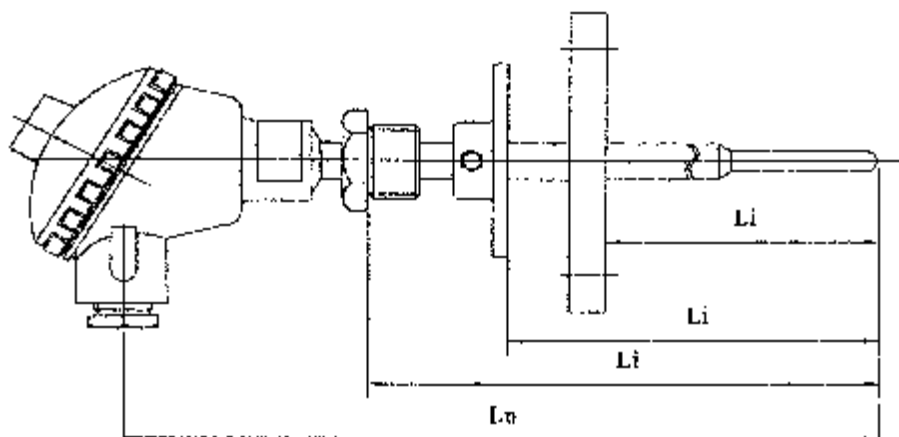
Coding Example:

Normal thermocouple Class A; wire material PtRh10%-Pt; no. of wires 1; protection tube ø22, Ln = 1000 mm; ceramic KER 610; temperature range 0...1200 °C; no fixation; variable immersion length; normal execution and climatic protection T:

TC-01.1.24.5.7.1.1.1.

Note: on special order, the thermocouples with ceramic tube can be executed with an additional internal tube, stainless or refractory steel, to ensure a higher resistance to corrosive environment.

FAST THERMOCOUPLES
TC- 02.X.XX.X.X.X.X.X.



TECHNICAL CHARACTERISTICS

- time constant : minor ($\tau < 15$ s)
- exploitation category 1 according to STAS 6692-83
- protection rank: IP 65 according to SR EN 60529
- maximum working pressure: 10 bar
- other technical characteristics are detailed in the tables

CODING

Level a: TC type and the precision class

TC type	Code
Fast thermocouple	

Level b: Wire material and number

Material	Number	Code	Material	Number	Code
Chromel -Alumel					

Level c: characteristics of the protection tube

Nominal diameter (mm)	Nominal length (mm)	Code	Nominal diameter (mm)	Nominal length (mm)	Code
Special order		00			
12	250	01	20	1250	15
	500	02		1500	16
	750	03		1750	17
	1000	04		2000	18
	1250	05	22	250	21
	1500	06		500	22
	1750	07		750	23
	2000	08		1000	24
20	250	11		1250	25
	500	12		1500	26
	750	13		1750	27
	1000	14		2000	28

Level d: Material of the protection tube

Material in the protection tube	Code
Stainless steel	3
Refractory steel	4

Level e: Temperature range

Temperature range °C		Code
Continuous duty	Intermittent duty	
0...+750	0...+950	4
0...+900	0...+1100	5
0...+1100	0...+1200	6

Level f: Fixing device

Type of fixing device	Code	Type of fixing device	Code
Special order	0	Welded nipple G 1"	5
No fixing device	1	Welded nipple M20 x 1,5	6
Mobile flange	2	Welded nipple Br 1"	7
Fix flange	3	Welded nipple Br ¾"	8
Welded nipple G ¾"	4		

Level g: Immersion Length

Nominal Length (see level "c") (mm)								
250	500	750	1000	1250	1500	1750	2000	Code
Immersion Length(100 ≤ Li ≤ Ln-100) (mm)								
Special order (to be specified)								0
RTDs without fixing device								1
-	400	650	900	1150	1400	1650	1900	2
-	350	600	800	1000	1270	1500	1800	3
-	300	570	750	980	1200	1350	1750	4
-	280	550	700	950	1100	1300	1700	5
-	260	500	650	910	1000	1200	1600	6
-	250	450	600	850	900	1110	1500	7
150	200	425	500	800	800	1050	1400	8
100	110	400	400	700	700	1000	1300	9

Level h: Type of execution and climatic protection

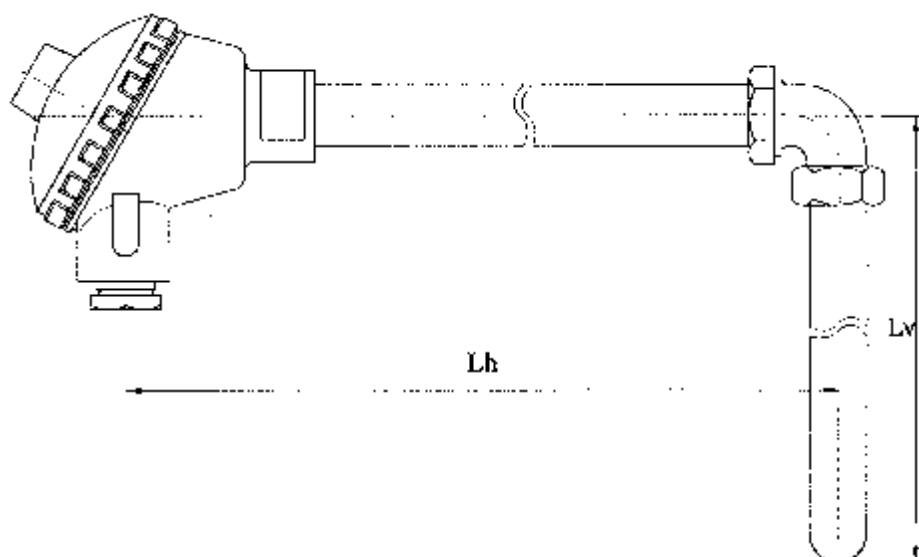
Type of execution	Climatic protection STAS 6692-83	Code	Type of execution	Climatic protection STAS 6692-83	Code
Normal	Temperate (N)	1	EEx dIICT6	Temperate (N)	5
Normal	Marine (M)	2	EEx dIICT6	Marine (M)	6
Normal	Tropical (T)	3	EEx dIICT6	Tropical (T)	7
Normal	Marine Tropical (MT)	4	EEx dIICT6	Marine Tropical (MT)	8

Coding Example:

Fast thermocouple; wire material Chromel -Alumel; no. of wires 1; protection tube ø22, Ln = 1000 mm; refractory steel; temperature range 0...1100 °C; fix flange fixation; immersion length 800mm; normal execution and climatic protection T:

TC-02.5.24.4.6.3.3.3.

ANGLE-TYPE THERMOCOUPLES
TC- 03.X.XX.X.X.X.X.X.



TECHNICAL CHARACTERISTICS

- time constant : major ($\tau > 90$ s)
- exploitation category 1 according to STAS 6692-83
- protection rank: IP 65 according to SR EN 60529
- maximum working pressure: 10 bar
- other technical characteristics are detailed in the tables

CODING

Level a: TC type ad the precision class

TC type	Code
Angle-type thermocouple	03

Level b: Wire material and number

Material	Number	Code
Chromel- Coppel	1	3
Chromel- Coppel	2	4
Chromel –Alumel	1	5
Chromel –Alumel	2	6

Level c: characteristics of the protection tube

Horizontal diameter (mm)	Nominal length of the horizontal tube (mm)	Vertical diameter (mm)	Nominal length of the vertical tube (mm)	Code
Special order				00
20	250	20	500	01
	250		750	02
	500		500	03
	500		750	04
	500		1000	05
	500		1250	06
	500		1500	07
	750		500	08
	750		750	09
	750		1000	10
	750		1250	11
	1000		750	12
	1000		1000	13
12	250	12	500	14
	250		750	15
	500		500	16
	500		750	17
	500		1000	18
	500		1250	19
	500		1500	20
	750		500	21
	750		750	22
	750		1000	23
	750		1250	24
	1000		750	25
	1000		1000	26

Level d: Material of the protection tube

Horizontal tube	Vertical tube	Code	Horizontal tube	Vertical tube	Code
Special order		0	OLT	Stainless steel	3
OLT	OTL	2	OLT	Refractory steel	4

Level e: Temperature range

Continuous duty	Intermittent duty	Code
0...+750	0...+950	4
0...+900	0...+1100	5
0...+1100	0...+1200	6

Level f: Fixing device

Type of fixing device	
Special order	0
No fixing device	1
Mobile flange	2

Level g: Immersion Length

Immersion Length	Code	Immersion length	code
Special order	0	$100 \leq L_i \leq L_{NV} - 150$	1

Level h: Type of execution and climatic protection

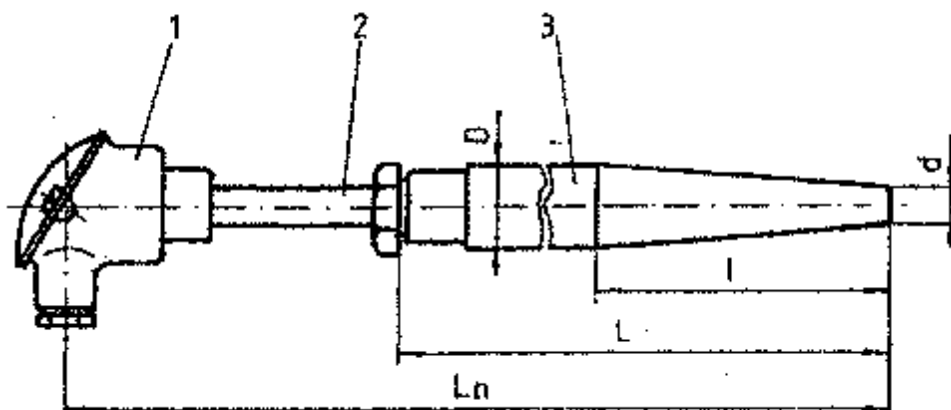
Type of execution	Climatic protection STAS 6692-83	Code
Normal	Temperate (N)	1

Coding Example:

Angle-type thermocouple; wire material Chromel –Alumel simple; protection tube $L_{NO} = 500$ mm and $L_{NV} = 1500$ mm; refractory steel; temperature range in continuous duty $0...+900$ °C; mobile flange fixation; variable immersion length; normal execution and climatic protection T:

TC-03.5.07.3.5.2.1.1.

THERMOCOUPLES for HIGH PRESSURE
TC- 04.X.XX.X.X.X.X.X.



TECHNICAL CHARACTERISTICS

- time constant : major ($\tau > 90$ s)
- exploitation category 1 according to STAS 6692-83
- protection rank: IP 65 according to SR EN 60529
- maximum working pressure: according to tube pressure
- other technical characteristics are detailed in the tables

CODING

Level a: TC type and the precision class

TC type	Code
Thermocouple for high pressure	04

Level b: Wire material and number

Material	Number	Code
Chromel –Alumel	1	5
Chromel –Alumel	2	6
Iron- Constantan	1	7
Iron- Constantan	2	8

Level c: characteristics of the protection tube

High pressure tube				Nominal length L _N (mm)	Code
L	L	D	d		
140	65	24	12,5	315	01
200	125	24	12,5	375	02
200	125	30	16	375	03
200	65	24	12,5	375	04
260	125	24	12,5	435	05
255	125	30	16	430	06
255	125	30	16	750	07
255	125	30	16	1000	08
255	125	30	16	2000	09

Level d: Material of the protection tube

Material	Code	Material	Code
Special order	0	W1.4541 (10TiNiCr 180)	4
W1.4571 (10TiMoNiCr 175)	3		

Level e: Temperature range

Continuous duty	Intermittent duty	Code
Special order		0
0...+500	0...+550	2

Level f: Fixing device

Type of fixing device	Code
Special order	0
No fixing device	1

Level h: Type of execution and climatic protection

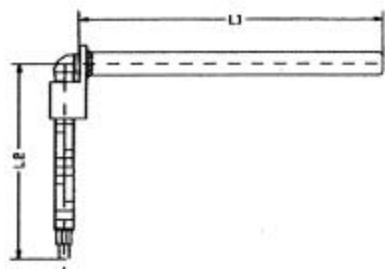
Type of execution	Climatic protection STAS 6692-83	Code	Type of execution	Climatic protection STAS 6692-83	Code
Normal	Temperate (N)	1	EEx dIICT6	Temperate (N)	5
Normal	Marine (M)	2	EEx dIICT6	Marine (M)	6
Normal	Tropical (T)	3	EEx dIICT6	Tropical (T)	7
Normal	Marine Tropical (MT)	4	EEx dIICT6	Marine Tropical (MT)	8

Coding Example:

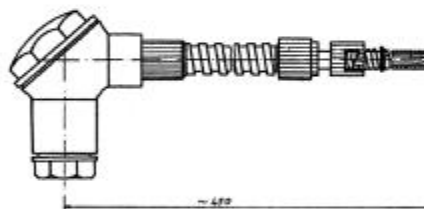
Thermocouple for high pressure ; wire material Chromel –Alumel simple; protection tube L = 200 mm, l= 65mm; D = 24 mm, d= 12.5mm, L_N =375 mm; tube material W 1.4571; temperature range in continuous duty 0...+900 °C; no fixation; immersion length 65mm; normal execution and climatic protection N:

TC-04.5.01.3.1.1.1.1.

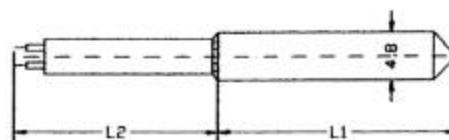
Thermocouple Iron- Constantan



Straight- type Miniature Thermocouple Iron- Constantan



Miniature Thermocouple Iron- Constantan



TECHNICAL CHARACTERISTICS

- time constant : medium ($15 < \tau < 90$ s)
- exploitation category 1 according to STAS 6692-83
- protection rank: IP 65 according to SR EN 60529
- other technical characteristics are detailed in the tables

CODING

Level a: TC type and the precision class

TC type	Code
Miniature thermocouple	05

Level b: Wire material and number

Material	Number	Code
Chromel –alumel	1	5
Iron - Constantan	1	7

Level c: characteristics of the protection tube

Type	L1 (mm)	L2 (mm)	Ø (mm)	Code	Type	L1 (mm)	L2 (mm)	Ø (mm)	Code
Straight	100	430	4,8	01	Straight	70	10000	4,8	26
Angle	100	430	4,8	02	Straight	100	10000	4,8	27
Angle	101	130	6	03	Angle	55	1000	4,8	28
Angle	153	1000	10	04	Angle	400	400	4,8	29
Angle	153	2000	10	05	Angle	56	1520	7	30
Angle	153	3000	10	06	Angle	140	1000	10	31
Angle	153	4000	10	07	Angle	140	2000	10	32
Angle	153	5000	10	08	Angle	140	3000	10	33
Angle	153	6000	10	09	Angle	140	4000	10	34
Angle	153	7000	10	10	Angle	140	5000	10	35
Angle	153	8000	10	11	Angle	140	6000	10	36
Angle	153	9000	10	12	Angle	140	7000	10	37
Angle	153	10000	10	13	Angle	140	8000	10	38
Angle	223	1000	10	14	Angle	140	9000	10	39
Angle	223	2000	10	15	Angle	140	10000	10	40
Angle	223	3000	10	16	Angle	210	1000	10	41
Angle	223	4000	10	17	Angle	210	2000	10	42
Angle	223	5000	10	18	Angle	210	3000	10	43
Angle	223	6000	10	19	Angle	210	4000	10	44
Angle	223	7000	10	20	Angle	210	5000	10	45
Angle	223	8000	10	21	Angle	210	6000	10	46
Angle	223	9000	10	22	Angle	210	7000	10	47
Angle	223	10000	10	23	Angle	210	8000	10	48
Straight	18	10000	4,8	24	Angle	210	9000	10	49
Straight	25	10000	4,8	25	Angle	210	10000	10	50

Level d: Material of the protection tube

Material	Code
Special order	0
Stainless Steel	3

Level e: Measuring range

Continuous duty	Intermittent duty	Code
0...+350	0...+400	1
0...+500	0...+550	2
0...+800	0...+900	4

Level f: Fixing device

Type of fixing device	Code	Type of fixing device	Code
Special order	0	Nipple Br ½"	4
No fixing device	1	Nipple G ½"	5
Socket	2	Nipple M 18x 1,5	6
Nipple NPT ½ "	3	Interior thread Screw nut M 16 x1	7

Level g: Immersion length

Immersion Length	Code
Variable Immersion Length	1
53	2
63	3
350.5	4
34	5

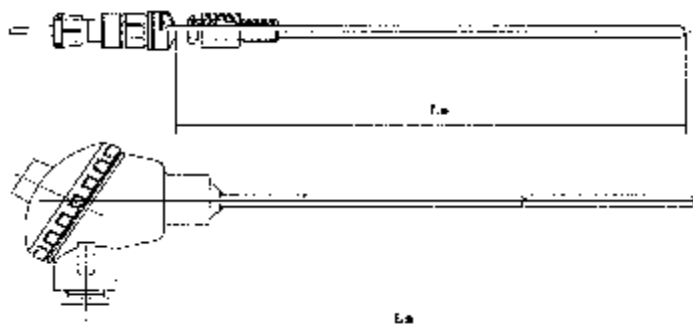
Level h: Type of execution and climatic protection

Type of execution	Climatic protection	Code
Special order		0
Normal	Temperate (N)	1
Normal	Marine (M)	2
Normal	Tropical (T)	3
Normal	Marine Tropical (MT)	4

Coding Example:

Angle-type Miniature Thermocouple; wire material Iron- Constantan simple; protection tube L1 = 100 mm, L2= 430 mm; Ø= 4.8 mm; tube material stainless steel; temperature range in continuous duty 0...+500 °C; socket fixation; immersion length 53 mm; normal execution and climatic protection N:

TC-05.7.02.3.2.2.2.1.



TECHNICAL CHARACTERISTICS

- time constant : minor ($\tau < 15$ s)
- exploitation category 1 according to STAS 6692-83
- protection rank: IP 65 according to SR EN 60529
- other technical characteristics are detailed in the tables

CODING

Level a: TC type and the precision class

TC type	Code
Thermocouple with mineral insulation	0

Level b: Wire material and number

Material	Number	Code
Special order		0
Chromel –Coppel	1	3
Chromel –Coppel	2	4
Chromel –Alumel	1	5
Chromel –Alumel	2	6
Iron- Constantan	1	7
Iron- Constantan	2	8

Level c: characteristics of the protection tube

Tube Ø	Wire Ø	Ln (mm)	Code	Tube Ø	Wire Ø	Ln (mm)	Code	Tube Ø	Wire Ø	Ln (mm)	Code
Special order			00	3	0.45...0.50	1250	17	2500	0.75...0.80	2500	34
1,5	0.30...0.35	3	01	1500		2750	18	2750		2750	35
1,5		3	02	1750		3000	19	3000		3000	36
1,5		3	03	2000		250	20	250		250	37
1,5		3	04	2250		500	21	500	0.95...1.00	500	38
1,5		3	05	2500	0.75...0.80	750	22	750		750	39
1,5		3	06	2750		1000	23	1000		1000	40
1,5		3	07	3000		1250	24	1250		1250	41
1,5		4,5	08	250		1500	25	1500		1500	42
1,5		4,5	09	500		1750	26	1750		1750	43
1,5		4,5	10	750		2000	27	2000		2000	44
1,5		4,5	11	1000		2250	28	2250		2250	45
1,5		4,5	12	1250		2500	29	2500		2500	46
3	0.45...0.50	4,5	13	1500		2750	30	2750		2750	47
3		4,5	14	1750		3000	31	3000		3000	48
3		4,5	15	2000		2000	32				
3		4,5	16	2250		2250	33				

Level d: Material of the protection tube Level e: Measuring range

Material	Code
Stainless Steel	0...900° C
Refractory steel	0...1100° C
Inconel 600	0...1140° C

Continuous duty	Intermittent duty	Code
0...+500° C	0...+550° C	2
0...+650° C	0...+850° C	3
0...+750° C	0...+950° C	4

Level f: Fixing device

Type of fixing device	Code	Type of fixing device	Code
Special order	0	Fix nipple G 1/4"	5
No fixing device	1	Fix nipple G 1"	6
Fix nipple G 1/4"	2	Nut M20 x 2,5	7
Mobile nipple G 1/4"	3	Thread M 12x 1.75	8
Fix nipple G 3/4"	4	Mobile nipple Br 1/4"	9

Level g: Immersion Length

Nominal Length							
250	500	750	1000	315	370	435	Code
Immersion Length							
Special order							
Variable immersion length : Thermocouples without fixing device or with mobile nipple							1
-	400	650	900	-	-	-	2
-	350	600	800	-	-	-	3
180	300	570	750	-	-	-	4
170	280	550	700	-	-	-	5
160	260	500	650	-	-	-	6
150	250	450	600	-	-	-	7
145	200	425	500	-	-	-	8
100	100	400	400	115	300	365	9

Level h: Type of execution and climatic protection

Type of execution	Climatic protection STAS 6692-83	Code
Special order		0
Normal	Temperate (N)	1

Coding Example:

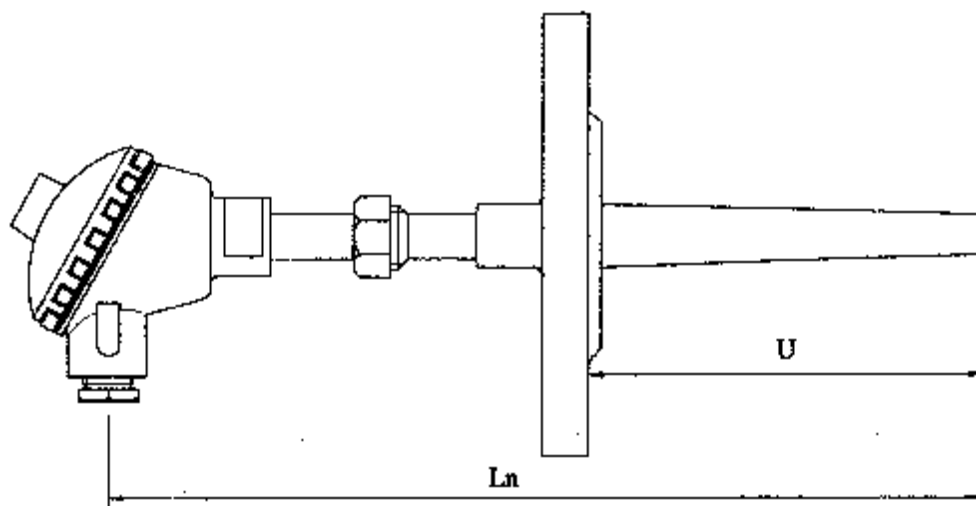
Thermocouple with mineral insulation; wire material Cr –Al simple; protection tube ø1.5mm, L_n = 1000 mm; stainless steel; temperature range in continuous duty 0...+500 °C; Fix nipple G 3/4"; immersion length 400mm; normal execution and climatic protection N:

TC-06.5.04.2.2.4.1.1. or

TC-06.5.04.2.2.4.1.1. with the measurement junction insulated from the protection tube

Note: On special order, these types can be executed with the measurement junction insulated from the protection tube. Therefore, when order, the thermocouple code will be followed by this specification.

THERMOCOUPLES for REFINERIES and PETROCHEMISTRY
TC- 07.X.XX.X.X.X.X.X.



TECHNICAL CHARACTERISTICS

- time constant : minor ($\tau < 15$ s)
- exploitation category 1 according to STAS 6692-83
- protection rank: IP 65 according to SR EN 60529
- maximum working pressure: according to tube pressure
- other technical characteristics are detailed in the tables

CODING

Level a: TC type ad the precision class

TC type	Code
Thermocouple for refineries and oil chemistry	07

Level b: Wire material and number

Material	Number	Code
Chromel –Alumel	1	5
Chromel –Alumel	2	6
Iron- Constantan	1	7
Iron- Constantan	2	8
Chromel - Constantan	1	9

Level c: Flange characteristic and the sealing type

Flange characteristic and the sealing type	Code	Flange characteristic and the sealing type	Code	Flange characteristic and the sealing type	Code	Flange characteristic and the sealing type	Code
Comanda speciala	00	Dn 32 Pn16CP1	25	Dn 40 Pn16 PS1	50	1" ANSI 300 RJ	75
Dn 25 Pn16PU	01	Dn 32 Pn25;40 CP1	26	Dn 40 Pn25;40 PS1	51	2" ANSI 300RJ	76
Dn 25 Pn25;40PU	02	Dn 40 Pn16 CP1	27	Dn 50 Pn16 PS1	52	1" ANSI 600RJ	77
Dn 32 Pn16PU	03	Dn 40 Pn25;40 CP1	28	Dn 50 Pn25;40 PS1	53	1" ANSI 1500RJ	78
Dn 32Pn25;40PU	04	Dn 40 Pn64;100 CP1	29	Dn 25 Pn16 PS2	54	Dn 25 Pn16 PA2	79
Dn 40 Pn16PU	05	Dn 50 Pn16 CP1	30	Dn 25 Pn25;40 PS2	55	Dn 25 Pn25;40 PA2	80
Dn 40 Pn25;40PU	06	Dn 50 Pn25;40 CP1	31	Dn 32 Pn16 PS2	56	Dn 25 Pn64;100 PA2	81
Dn 40 Pn64;100PU	07	Dn 50 Pn64 CP1	32	Dn 32 Pn25;40 PS2	57	Dn 32 Pn16 PA2	82
Dn 50 Pn16PU	08	Dn 50 Pn100 CP1	33	Dn 40 Pn16 PS2	58	Dn 32 Pn25;40 PA2	83
Dn 50 Pn25;40PU	09	Dn 25 Pn16 CP2	34	Dn 40 Pn25;40 PS2	59	Dn 32 Pn64;100 PA2	84
Dn 50 Pn64PU	10	Dn 25 Pn25;40 CP2	35	Dn 50 Pn16 PS2	60	Dn 40 Pn16 PA2	85
Dn 50 Pn100PU	11	Dn 25 Pn25;100 CP2	36	Dn 50 Pn25;40 PS2	61	Dn 40 Pn25;40 PA2	86
Dn 25 Pn16PA1	12	Dn 32 Pn16 CP2	37	Dn 25 Pn64;100 SI	62	Dn 40 Pn64;100 PA2	87
Dn 25 Pn25;40PA1	13	Dn 32 Pn25;40 CP2	38	Dn 25 Pn160 SI	63	Dn 50 Pn16 PA2	88
Dn 32 Pn16PA1	14	Dn 32 Pn64;100 CP2	39	Dn 40 Pn64;100 SI	64	Dn 50 Pn25;40 PA2	89
Dn 32 Pn25;40PA1	15	Dn 40 Pn16 CP2	40	Dn 40 Pn160 SI	65	Dn 50 Pn64 PA2	90
Dn 40 Pn16P11	16	Dn 40 Pn25;40 CP2	41	Dn 50 Pn100 SI	66	Dn 50 Pn100 PA2	91
Dn 40 Pn25;40PA1	17	Dn 40 Pn64;100 CP2	42	Dn 50 Pn160 SI	67	Dn 25 Pn100 PC2	92
Dn 40 Pn64;100PA1	18	Dn 50 Pn16 CP2	43	1" ANSI 300 RF	68	Dn 50 Pn100 CP2	93
Dn 50 Pn16PA1	19	Dn 50 Pn25;40 CP2	44	1" ANSI 300 RF	69	Dn 25 Pn64;100 PU	94
Dn 50 Pn25;40PA1	20	Dn 50 Pn64 CP2	45	2" ANSI 300 RF	70	Dn 25 Pn64;100 PA1	95
Dn 50 Pn64PA1	21	Dn 25 Pn16 PS1	46	1" ANSI 600 RF	71	Dn 25 Pn64;100 CP1	96
Dn 50 Pn100PA1	22	Dn 25 Pn25;40 PS1	47	1" ANSI 600 RF	72	Dn 50 Pn64;SI	97
Dn 25 Pn16CP1	23	Dn 32 Pn16 PS1	48	2" ANSI 600 RF	73		
Dn 25 Pn25;40CP1	24	Dn 32 Pn25;40 PS1	49	1" ANSI 300 RJ	74		

Level d: Material of the protection tube

Material for protection tube	Code	Material for protection tube	Code
Special order	0	W1.4541 (10TiNiCr 180)	4
W1.4571 (10TiMoNiCr 175)	3		

Level e: Temperature range

Continuous duty	Intermittent duty	Code
0...+500	0...+550	0
0...+750	0...+950	3

Level f: Fixing device

Type of fixing device	Code
Special order	0
Fix flange	3

Level g: Immersion length

"U" quote	Code	"U" quote	Code
150	1	400	6
200	2	450	7
250	3	500	8
300	4	550	9
350	5	600	70

Level h: Type of execution and climatic protection

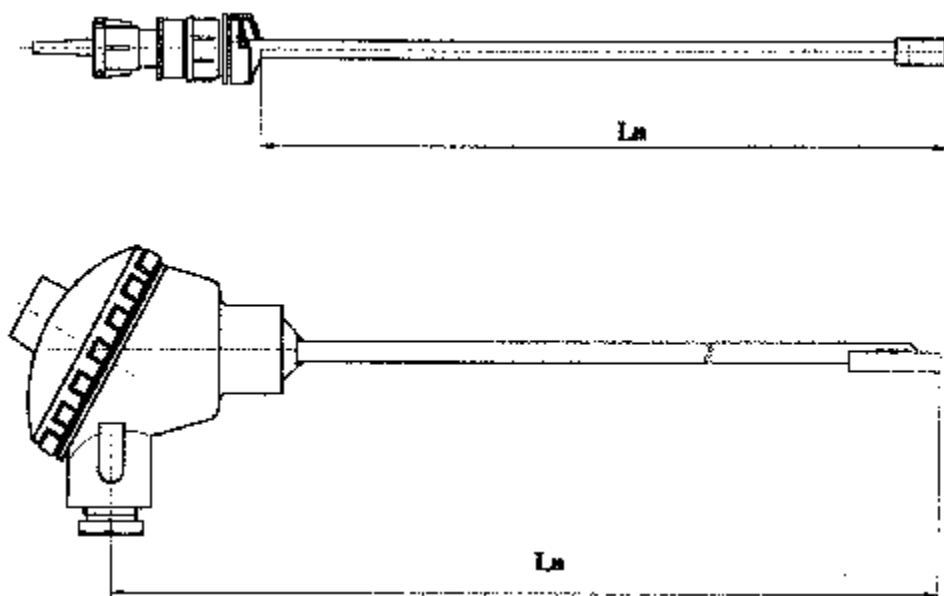
Type of execution	Climatic protection	Code
Special order		0
EEx dIICT6	Temperate (N)	5
EEx dIICT6	Marine Tropical (MT)	8

Coding Example:

Thermocouple for refineries and oil chemistry; wire material Cr –Al double; Dn32Pn25; 40 flange and PU sealing; tube material W1.4571; temperature range in continuous duty 0...+500 °C; Fix flange device; immersion length 150mm; EEx dIICT6 execution and climatic protection N:

TC-07.6.04.3.2.3.1.5.

THERMOCOUPLES for SURFACE
TC- 08.X.XX.X.X.X.X.



TECHNICAL CHARACTERISTICS

- time constant : minor ($\tau < 15$ s)
- exploitation category 1 according to STAS 6692-83
- protection rank: IP 65 according to SR EN 60529
- other technical characteristics are detailed in the tables

CODING

Level a: TC type ad the precision class

TC type	Code
Thermocouple for surface	08

Level b: Wire material and number

Material	Number	Code
Chromel –Alumel	1	5
Iron- Constantan	1	7

Level c: characteristics of the flange and the sealing type

Diameterl (mm)	Ln(mm)	Code	Diameterl (mm)	Ln(mm)	Code	Diameter (mm)	Ln(mm)	Code
Special order		00	3	1000	14	4,5	2000	28
1,5	250	01	3	1250	15	6	250	31
1,5	500	02	3	1500	16	6	500	32
1,5	750	03	3	1750	17	6	750	33
1,5	1000	04	3	2000	18	6	1000	34
1,5	1250	05	4,5	250	21	6	1250	35
1,5	1500	06	4,5	500	22	6	1500	36
1,5	1750	07	4,5	750	23	6	1750	37
1,5	2000	08	4,5	1000	24	6	2000	38
3	250	11	4,5	1250	25	5	520	39
3	500	12	4,5	1500	26	5	1020	40
3	750	13	4,5	1750	27	14	600	41

Level d: Material of the protection tube

Material	Code	Material	Code
Stainless Steel	3	Refractory steel	4

Level e: Temperature range

Continuous duty	Intermittent duty	Code	Continuous duty	Intermittent duty	Code
0...+350	0...+400	1	0...+650	0...+850	3
0...+500	0...+550	2	0...+750	0...+950	4

Level f: Fixing device

Type of fixing device	Code	Type of fixing device	Code
Special order	0	Coupling pulley Ø8.2	5
Coupling plate	1	Coupling pulley Ø10.2	6
Thread M14	2	Coupling pulley Ø12.2	7
Coupling pulley Ø15	3	Coupling pulley Ø14	8
Coupling pulley Ø6.2	4	Coupling pulley Ø18	9

Level g: Immersion Length

Immersion Length	code
These types don't have immersion length, the fixing devices are at the end of the tube	1

Level h: Type of execution and climatic protection

Type of execution	Climatic protection STAS 6692-83	Code	Type of execution	Climatic protection STAS 6692-83	Code
Normal	Temperate (N)	1	EEx dIICT6	Temperate (N)	5
Normal	Marine (M)	2	EEx dIICT6	Marine (M)	6
Normal	Tropical (T)	3	EEx dIICT6	Tropical (T)	7
Normal	Marine Tropical (MT)	4	EEx dIICT6	Marine Tropical (MT)	8

Coding Example:

Thermocouple for surface ; wire material Chromel –Alumel simple; protection tube Ø 1.5 mm, Ln= 1000mm; tube material stainless steel; temperature range in continuous duty 0...+500 °C; Coupling pulley Ø6.2 fixation; no immersion length; normal execution and climatic protection N:

TC-08.5.04.3.2.4.1.1.