

# 工作用廉金属热电偶检定规程

JJG 351—1996

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Verification Regulation of Working  
Base Metal Thermocouple

JJG 351—1996

代替 JJG 351—1984

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## 工作用廉金属热电偶检定规程

本规程适用于长度不小于 750mm 的新制造和使用中的分度号为 K 的镍铬-镍硅热电偶、分度号为 N 的镍铬硅-镍硅热电偶、分度号为 E 的镍铬-铜镍热电偶、分度号为 J 的铁-铜镍热电偶（以下分别简称 K、N、E、J 型热电偶）在  $-40\sim 1300^{\circ}\text{C}$  范围内的检定。

### 一 技 术 要 求

#### 1 热电极的名义成分如表 1 规定。

表 1

热电偶名称	热电极名称	极 性	名义成分 (%)
镍铬-镍硅 (铝) <sup>③</sup>	镍 铬 <sup>①</sup>	正 极	Ni90 Cr10
	镍 硅	负 极	Ni97 Si3
镍铬硅-镍硅	镍铬硅	正 极	Ni84.4 Cr14.2 Si1.4
	镍 硅	负 极	Ni95.6 Si4.4
镍铬-铜镍	镍 铬 <sup>①</sup>	正 极	Ni90 Cr10
	铜 镍 <sup>②</sup>	负 极	Cu55 Ni45
铁-铜镍	铁	正 极	Fe 100
	铜 镍 <sup>②</sup>	负 极	Cu55 Ni45

注：  
 ①不同分度号两镍铬极不可互换；  
 ②不同分度号两铜镍极不可互换；  
 ③镍铬-镍硅采用镍铬-镍铝分度表。

#### 2 不同等级热电偶在规定温度范围内，其允差应符合表 2 规定。

#### 3 热电偶的外观应满足下列要求：

3.1 新制热电偶的电极应平直、无裂痕 直径应均匀；使用中的热电偶的电极不应有严重的腐蚀和明显缩径等缺陷。

3.2 热电偶测量端的焊接要牢固、呈球状，表面应光滑、无气孔、无夹渣。

表 2

热电偶名称	分度号	等级	测量温度范围 ( $^{\circ}\text{C}$ )	允 差 <sup>①</sup>
镍铬-镍硅 (铝)	K	I	$-40\sim 1100$	$\pm 1.5^{\circ}\text{C}$ 或 $\pm 0.4\% t$ <sup>②</sup>
		II	$-40\sim 1300$	$\pm 2.5^{\circ}\text{C}$ 或 $\pm 0.75\% t$
镍铬硅-镍硅	N	I	$-40\sim 1100$	$\pm 1.5^{\circ}\text{C}$ 或 $\pm 0.4\% t$
		II	$-40\sim 1300$	$\pm 2.5^{\circ}\text{C}$ 或 $\pm 0.75\% t$
镍铬-铜镍	E	I	$-40\sim 800$	$\pm 1.5^{\circ}\text{C}$ 或 $\pm 0.4\% t$
		II	$-40\sim 900$	$\pm 2.5^{\circ}\text{C}$ 或 $\pm 0.75\% t$
铁-铜镍	J	I	$-40\sim 750$	$\pm 1.5^{\circ}\text{C}$ 或 $\pm 0.4\% t$
		II	$-40\sim 750$	$\pm 2.5^{\circ}\text{C}$ 或 $\pm 0.75\% t$

注：  
 ①允差取大值；  
 ②t 为测量端温度。



## 二 检 定 条 件

### 4 标准器

4.1 1等、2等标准铂铑 10-铂热电偶各 1 支。

4.2 测量范围为： $(-30\sim 300)^{\circ}\text{C}$  的 2 等标准水银温度计一组，也可选用 2 等标准铂电阻温度计。

### 5 仪器设备

5.1 低电势直流电位差计一套，准确度不低于 0.02 级、最小步进值不大于  $1\mu\text{V}$ ，或具有同等准确度的其他设备。

5.2 多点转换开关，寄生电势不大于  $1\mu\text{V}$ 。

5.3 参考端恒温器，恒温器内温度为  $(0\pm 0.1)^{\circ}\text{C}$ 。

5.4 油恒温槽，在有效工作区域内温差小于  $0.2^{\circ}\text{C}$ 。

5.5 管式炉，其长度为 600mm，加热管内径约为 40mm。

5.5.1 管式炉常用最高温度为  $1200^{\circ}\text{C}$ ，最高均匀温场中心与炉子几何中心沿轴线上偏离不大于 10mm；在均匀温场长度不小于 60mm，半径为 14mm 范围内，任意两点间温差不大于  $1^{\circ}\text{C}$ 。

5.5.2 为保证管式炉温场符合检定要求，可在炉中心置一耐高温恒温块。

5.5.3 均匀温场测试方法见附录 3。

5.5.4 允许使用符合上述要求的其他检定设备。

5.6 控温设备，应满足检定要求。

5.7 热电偶测量端焊接设备。

5.8 钢卷尺、游标卡尺。

5.9 读数望远镜或 3~5 倍放大镜。

6 电测设备环境条件应符合使用要求。

## 三 检定项目和检定方法

7 热电偶的几何尺寸与外观，用钢卷尺、游标卡尺和目力检查，应符合要求。

8 经外观检查合格的新制热电偶，在检定示值前，应在最高检定点温度下，退火 2h 后，随炉冷却至  $250^{\circ}\text{C}$  以下。使用中的热电偶不退火。

9 热电偶的示值检定点温度，按热电偶丝材及电极直径粗细决定，如表 3 所示。

表 3

分 度 号	电 极 直 径 (mm)	检 定 点 温 度 ( $^{\circ}\text{C}$ )
K 或 N	0.3	400 600 700
	0.5 0.8 1.0	400 600 800
	1.2 1.6 2.0 2.5	400 600 800 1000
	3.2	400 600 800 1000 ( $1200$ )*
E	0.3 0.5 0.8 1.0 1.2	100 300 400
	1.6 2.0 2.5	(100) 200 400 600
	3.2	(200) 400 600 700

续表

分 度 号	电 极 直 径 (mm)	检 定 点 温 度 (℃)
J	0.3 0.5	100 200 300
	0.8 1.0 1.2	100 200 400
	1.6 2.0	(100) 200 400 500
	2.5 3.2	(100) 200 400 600
* 括号内的检定点, 可根据用户需要选定。		

10 300℃以下点的检定, 在油恒温槽中, 与2等标准水银温度计进行比较。检定时油槽温度变化不超过 $\pm 0.1^\circ\text{C}$ 。

10.1 将热电偶的两电极分别套上高铝绝缘瓷珠, 约500mm左右, 尾部穿塑料套管, 并在尾部露出20mm左右, 以连接参考端引线。

10.2 热电偶参考端的引线, 应使用同材质的铜导线进行连接, 接触要良好。铜导线在20℃时的电阻率应小于 $0.01724\mu\Omega\cdot\text{m}$ 。

10.3 在热电偶的测量端套上玻璃保护管, 插入油恒温槽中, 插入深度不应小于300mm, 玻璃管口沿热电偶周围, 用脱脂棉堵好。

10.4 将热电偶的参考端插入装有变压器油或酒精的玻璃管或塑料管中, 再分散插入冰点恒温器内, 插入深度不应小于150mm。

11 300℃以上的各点在管式炉中与标准铂铑10-铂热电偶进行比较, 其中, 检定I级热电偶时, 必须采用一等铂铑10-铂热电偶。

11.1 将标准热电偶套上高铝保护管, 与套好高铝绝缘瓷珠的被检热电偶用细镍铬丝捆扎成圆形一束, 其直径不大于20mm。捆扎时应将被检热电偶的测量端围绕标准热电偶的测量端均匀分布一周, 并处于垂直标准热电偶同一截面上。

11.2 将捆扎成束的热电偶装入管式炉内, 热电偶的测量端应处于管式炉最高温区中心; 标准热电偶应与管式炉轴线位置一致。

11.3 管式炉炉口沿热电偶束周围, 用绝缘耐火材料堵好。

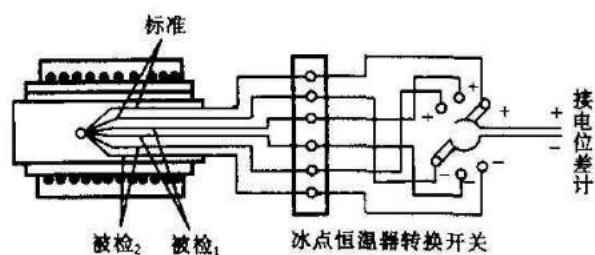


图1 检定时连接线路图

12 检定顺序, 由低温向高温逐点升温检定。炉温偏离检定点温度不应超过 $\pm 5^\circ\text{C}$ 。

13 检定时连接线路如图1所示, 直接测量标准与被检热电偶的热电势。

当炉温升到检定点温度, 炉温变化小于 $0.2^\circ\text{C}/\text{min}$ 时, 自标准热电偶开始, 依次测量各被检热电偶的热电势。

测量顺序如下:

标 $\rightarrow$ 被<sub>1</sub> $\rightarrow$ 被<sub>2</sub> $\cdots\rightarrow$ 被<sub>n</sub>

↓

标 $\leftarrow$ 被<sub>1</sub> $\leftarrow$ 被<sub>2</sub> $\cdots\leftarrow$ 被<sub>n</sub>

读数应迅速准确, 时间间隔应相近, 测量读数不应少于4次。测量时管式炉温度变化不大于 $\pm 0.25^\circ\text{C}$ 。

14 测量时将所有测量数据填写在检定记录表上 (见附录8)。

15 检定时被检热电偶的热电动势误差  $\Delta e_t$  计算方法:

15.1 300℃以下热电动势误差  $\Delta e_t$  用下式计算:

$$\Delta e_t = \bar{e}_{\text{被}} + S_{\text{被}} \cdot \Delta t_{\text{检}} - e_{\text{分}}$$

式中:  $\bar{e}_{\text{被}}$ ——被检热电偶在检定点附近温度下,测得的热电动势算术平均值;

$S_{\text{被}}$ ——被检热电偶在某检定点温度的微分热电动势;

$e_{\text{分}}$ ——被检热电偶分度表上查得的某检定点温度的热电动势值。

$$\Delta t_{\text{检}} = t_{\text{检}} - t_{\text{实}}$$

$t_{\text{检}}$ ——检定点温度;

$t_{\text{实}}$ ——实际温度 (实际温度 = 读数平均值 + 修正值);

$\Delta t_{\text{检}}$ ——检定点温度与实际温度的差值。

例1 在200℃时E型热电偶示值误差计算。

在200℃检定点附近,参考端为0℃,被检E型热电偶的热电动势值为13.452mV,2等标准水银温度计测得温场的温度为200.15℃,求被检热电偶在200℃时示值误差。

$$\Delta t_{\text{检}} = 200 - 200.15 = -0.15 (\text{℃})$$

从检定分度表查得,在200℃时热电偶的热电动势值和微分热电动势:

$$e_{\text{分}} = 13.421 \text{mV}$$

$$S_{\text{被}} = 0.074 \text{mV}$$

则可计算出  $\Delta e_{200}$ , 即:

$$\begin{aligned} \Delta e_{200} &= \bar{e} + S_{\text{被}} \cdot \Delta t - e_{\text{分}} \\ &= 13.452 + 0.074 \times (-0.15) - 13.421 \\ &= 0.020 (\text{mV}) \end{aligned}$$

则热电偶在200℃时示值误差:

$$\Delta t_{200} = \frac{\Delta e_{200}}{S_{\text{被}}} = \frac{0.020}{0.074} = 0.3 (\text{℃})$$

其修正值为-0.3℃。

15.2 300℃以上热电动势误差  $\Delta e$  用下式计算:

$$\Delta e = \bar{e}_{\text{被}} + \frac{e_{\text{标}} - \bar{e}_{\text{标}}}{S_{\text{标}}} \cdot S_{\text{被}} - e_{\text{分}}$$

式中:  $\bar{e}_{\text{被}}$ ——被检热电偶在某检定点附近温度下,测得的热电动势算术平均值;

$e_{\text{标}}$ ——标准热电偶证书上某检定点温度的热电动势值;

$\bar{e}_{\text{标}}$ ——标准热电偶在某检定点附近温度下,测得的热电动势算术平均值;

$e_{\text{分}}$ ——被检热电偶分度表上查得的某检定点温度的热电动势值;

$S_{\text{标}}$ 、 $S_{\text{被}}$ ——分别表示标准、被检热电偶在某检定点温度的微分热电动势。

例2 在1000℃时,N型热电偶示值误差计算。

在1000℃附近测得标准铂铑10-铂热电偶的热电动势算术平均  $\bar{e}_{\text{标}}$  值为9.558mV;被检N型热电偶的热电动势算术平均值  $\bar{e}_{\text{被}}$  为36.274mV。

从标准热电偶检定证书中查得1000℃时热电动势  $e_{\text{标}}$  为9.581mV;求被检N型热电偶在1000℃时的误差。从热电偶微分热电动势表中查得1000℃时,标准与被检热电偶1℃分

别相当于 0.012mV; 0.039mV。

从 N 型热电偶分度表中查得 1000℃ 时热电动势为 36.256mV。将以上数据代入下式, 可计算出误差  $\Delta e$  值。即:

$$\begin{aligned}\Delta e &= e_{\text{被}} + \frac{e_{\text{标}} - e_{\text{分}}}{S_{\text{标}}} \cdot S_{\text{被}} - e_{\text{分}} \\ &= 36.274 + \frac{9.581 - 9.558}{0.012} \times 0.039 - 36.256 \\ &= 0.093 \text{ (mV)}\end{aligned}$$

则热电偶在 1000℃ 时示值误差:

$$\Delta t = \frac{\Delta e}{S_{\text{被}}} = \frac{0.093}{0.039} = 2.4 \text{ (}^{\circ}\text{C)}$$

其修正值为 -2.4℃

#### 四 检定结果处理和检定周期

- 16 经检定符合本规程要求的热电偶发给检定证书; 不合格的热电偶, 发给检定结果通知书。如有需要, 可给出热电偶在各检定点的修正值。
- 17 热电偶的检定周期一般为半年, 特殊情况下可根据使用条件来确定。

#### 附录 1 热电偶用补偿导线的检定方法

1 补偿导线的热电特性应符合下表要求:

型号	热 电 动 势 允 差						
	100℃				200℃		
	热电 电动势 (mV)	允 差		热电 电动势 (mV)	允 差		热电偶 测量端 温度
		普通级	精密级		普通级	精密级	
KCA	4.096	100μV (2.5℃)*	60μV (1.5℃)	8.138	100μV (2.5℃)	60μV (1.5℃)	900℃
KCB	4.096	100μV (2.5℃)	60μV (1.5℃)	—	—	—	900℃
KX	4.096	100μV (2.5℃)	60μV (1.5℃)	8.138	100μV (2.5℃)	60μV (1.5℃)	900℃
NC	2.774	100μV (2.5℃)	60μV (1.5℃)	5.913	100μV (2.5℃)	60μV (1.5℃)	900℃
NX	2.774	100μV (2.5℃)	60μV (1.5℃)	5.913	100μV (2.5℃)	60μV (1.5℃)	900℃
EX	6.319	200μV (2.5℃)	120μV (1.5℃)	13.421	200μV (2.5℃)	120μV (1.5℃)	500℃
JX	5.269	140μV (2.5℃)	85μV (1.5℃)	10.779	140μV (2.5℃)	85μV (1.5℃)	500℃
* 括号内温度是按上表所列热电偶测量端温度的微分热电动势计算的。							

\* 括号内温度是按上表所列热电偶测量端温度的微分热电动势计算的。

- 2 一般用补偿导线检定 100℃ 点, 耐热用补偿导线检定 100℃、200℃ 点, 也可根据需要在其他温度点检定。
- 3 将补偿导线的两端的护层和绝缘层去除 (10~20) mm, 并将两个电极表面绝缘物清除干净, 使其一端焊接成一支热电偶, 然后参照本规程第 10 条进行检定。

#### 附录 2 带补偿导线热电偶的检定方法

本方法适用于 K、N、E、J 型热电偶, 接上补偿导线后整体进行检定。

- 1 只限检定 II 级允差热电偶。

- 2 须选用经检定的延长型补偿导线，允差为： $(100 \pm 0.2)^\circ\text{C}$ 。
- 3 参考接点温度不得超过  $100^\circ\text{C}$ 。
- 4 热电偶长度不小于  $350\text{mm}$ ，热电偶加补偿导线的总长度不小于  $750\text{mm}$ 。
- 5 参照本规程第三章进行检定。

### 附录 3 管式炉炉温温场测试方法

本方法适用于  $(300 \sim 1300)^\circ\text{C}$  范围内管式炉温场测试。

- 1 管式炉的技术要求应符合 5.5 款要求。
- 2 测试设备应符合 4 条、5.6、5.8 款要求。
- 3 定位块尺寸如图 1，材料为耐火材料。

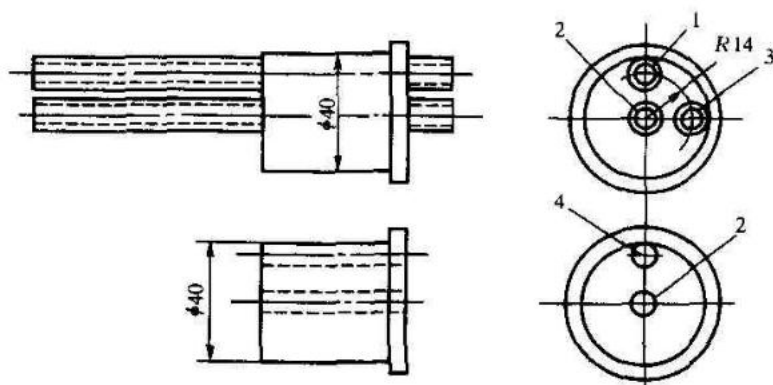


图 1 定位块示意图

- 4 将定位块装入管式炉两端，使其与炉端贴紧，并装好控温热电偶（从 4 号孔插入）。
- 5 将两支 2 等标准热电偶插入定位块中，使测量端处于炉轴线中点截面处。在标准热电偶绝缘管与定位块外端面相交点，用陶瓷铅笔做一记号，作为坐标“0”点，从此点分别向工作端和参考端每隔  $10\text{mm}$  做一记号，标上  $+5 \sim -5$  坐标。坐标示意图如图 2 所示。
- 6 将两支标准热电偶（简称标 1 和标 2）插入定位块中，并连接好线路，测量两支标准热电偶的热电动势值。

将炉温升到  $(1000 \pm 5)^\circ\text{C}$  时，待恒定后，依次测量标 1 和标 2 的热电动势，测量次数不应少于 4 次，在此测量时间内，管式炉内温度变化不得超过  $\pm 0.25^\circ\text{C}$ 。

**6.1 轴向温场测量：**将标 1 和标 2 分别插入 1 孔和 2 孔，并使标 1 工作端处于 0 坐标点，再分别使标 2 处于  $-5$ 、 $-4$ 、 $-3$ 、 $-2$ 、 $-1$ 、 $0$ 、 $1$ 、 $2$ 、 $3$ 、 $4$ 、 $5$  各点，分别测得标 1 和标 2 的热电动势。以标 1 为标准，以标 2 为被测，将标 1 在 0 坐标点测得的热电动势值均修正到  $1000^\circ\text{C}$  点，并将标 2 在各坐标点修正后的热电动势值，换算成温度，即为轴向温场分布。

**6.2 径向温场测量：**使标 1 和标 2 处于同一横截面上。标 1 置于炉轴线上不动，分别将标 2 置于炉内此截面上、下、左、右 4 点测量标 1 和标 2 的热电动势值。此测量共在  $-2$ 、 $-1$ 、 $0$ 、 $1$ 、 $2$  五个坐标的截面上进行。

以标 1 为标准，以标 2 为被测，将标 1 在一截面测得的热电动势值修正到  $1000^\circ\text{C}$ ，并将标 2 在该截面上、下、左、右各点测得的热电动势值，换算成温度值，即为该截面的径向

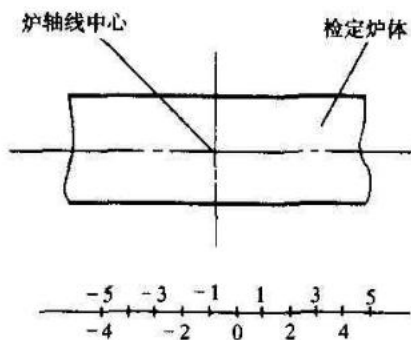


图 2 检定炉坐标示意图



温场分布。

#### 附录4 标准铂铑10-铂热电偶在(0~1300)℃范围内, 整百度的热电动势和温度对照表编制方法

- 1 将标准铂铑10-铂热电偶检定证书上给出的锌、铝(铍)、铜3个温度点上的热电动势值,填入表1,并计算其在3个温度点与标准分度表值之差,分别计为 $\Delta E_1$ 、 $\Delta E_2$ 、 $\Delta E_3$ 。
- 2 标准铂铑10-铂热电偶的系数 $a$ 、 $b$ 、 $c$ ,用表1中 $\Delta E_1$ 、 $\Delta E_2$ 、 $\Delta E_3$ 、标准铂铑10-铂热电偶的热电动势 $E(t)$ 和S型热电偶标准分度表值 $E_S(t)$ 的差值函数计算:

$$\Delta E(t) = E(t) - E_S(t) = a + bt + ct^2 \quad (1)$$

表1

序号	凝固点	温度 $t$ (℃)	标准热电偶检定证书值 $E_t(t)$ (μV)	S型分度表值 $E_S(t)$ (μV)	$\Delta E_t$ (μV)
1	锌	419.527		3446.89	$\Delta E_1$
2	铝	660.323		5860.13	$\Delta E_2$
2	铍	630.630		5552.80	$\Delta E_2$
3	铜	1084.62		10574.80	$\Delta E_3$

- 2.1 在检定证书上给出锌、铝、铜点时,用式(2)求系数。

$$\left. \begin{aligned} a &= 4.47201 \cdot \Delta E_1 - 4.45367 \cdot \Delta E_2 + 0.981667 \cdot \Delta E_3 \\ b &= -0.0108956 \cdot \Delta E_1 - 0.0147221 \cdot \Delta E_2 - \\ &\quad 0.00382658 \cdot \Delta E_3 \\ c &= 6.24408 \times 10^{-6} \cdot \Delta E_1 - 9.78770 \times 10^{-6} \cdot \Delta E_2 + \\ &\quad 3.54362 \times 10^{-6} \cdot \Delta E_3 \end{aligned} \right\} \quad (2)$$

- 2.2 在检定证书上给出锌、铍、铜点时,用式(3)求系数。

$$\left. \begin{aligned} a &= 4.87164 \cdot \Delta E_1 - 4.74785 \cdot \Delta E_2 + 0.876205 \cdot \Delta E_3 \\ b &= -0.0122166 \cdot \Delta E_1 + 0.0156946 \cdot \Delta E_2 - \\ &\quad 0.00347797 \cdot \Delta E_3 \\ c &= 7.12235 \times 10^{-6} \cdot \Delta E_1 - 10.43420 \times 10^{-6} \cdot \Delta E_2 + \\ &\quad 3.31186 \times 10^{-6} \cdot \Delta E_3 \end{aligned} \right\} \quad (3)$$

- 3 将系数 $a$ 、 $b$ 、 $c$ 代入(1),可得出所求整百度点的 $\Delta E(t)$ 值。

- 4 根据式(1)导出式(4):

$$E(t) = E_S(t) + \Delta E(t) \quad (4)$$

由此可求出标准铂铑10-铂热电偶在整百度点的热电动势值。

例 No.74—304 标准铂铑10-铂热电偶在锌、铍、铜3个点上的热电动势值分别为:  
 $E_1 = 3444 \mu V$ ,  $E_2 = 5546 \mu V$ ,  $E_3 = 10566 \mu V$ 。求系数 $a$ 、 $b$ 、 $c$ 和1200℃时该标准热电偶的热电动势值。

将 $E_1$ 、 $E_2$ 、 $E_3$ 填入表1中,求得

$$\Delta E_1 = -2.9 \quad \Delta E_2 = -6.8 \quad \Delta E_3 = -8.8$$

用式 (3) 求  $a, b, c$  系数, 得:

$$a = 10.44702 \quad b = -0.0406889 \quad c = 21.15337 \times 10^{-6}$$

在  $t$  取  $1200^{\circ}\text{C}$  时, 将  $a, b, c$  代入 (1) 式, 用  $\Delta E(t) = a + bt + ct^2$  求得  $\Delta E_{(1200)} = -7.9 (\mu\text{V})$ 。

将  $\Delta E(t)$  代入式 (4) 中:

$$E(t) = E_S(t) + \Delta E(t)$$

$$E_{(1200)} = E_{S(1200)} + \Delta E_{(1200)}$$

$$= 11951 - 7.9$$

$$= 11943 (\mu\text{V})$$

No. 74—304 标准铂铑 10-铂热电偶在  $1200^{\circ}\text{C}$  时热电动势值为  $11943 \mu\text{V}$ 。

## 附录 5 K、N、E、J 型热电偶热电动势允差表

镍铬-镍硅热电偶热电动势允许误差表

(K 型)

(mV)

测量端温度 ( $^{\circ}\text{C}$ )	热电动势 标准值	I 级		II 级	
		允许误差	热电动势范围	允许误差	热电动势范围
100	4.096	$\pm 0.062$	4.034 ~ 4.158	$\pm 0.103$	3.993 ~ 4.199
200	8.138	$\pm 0.060$	8.078 ~ 8.198	$\pm 0.100$	8.038 ~ 8.238
300	12.209	$\pm 0.062$	12.147 ~ 12.271	$\pm 0.104$	12.105 ~ 12.313
400	16.397	$\pm 0.068$	16.329 ~ 16.465	$\pm 0.127$	16.270 ~ 16.524
500	20.644	$\pm 0.085$	20.559 ~ 20.729	$\pm 0.160$	20.484 ~ 20.804
600	24.905	$\pm 0.102$	24.803 ~ 25.007	$\pm 0.191$	24.714 ~ 25.096
700	29.129	$\pm 0.117$	29.012 ~ 29.246	$\pm 0.220$	28.909 ~ 29.349
800	33.275	$\pm 0.131$	33.144 ~ 33.406	$\pm 0.246$	33.029 ~ 33.521
900	37.326	$\pm 0.144$	37.182 ~ 37.470	$\pm 0.270$	37.056 ~ 37.596
1000	41.276	$\pm 0.156$	41.120 ~ 41.432	$\pm 0.292$	40.984 ~ 41.568
1100	45.119	$\pm 0.167$	44.952 ~ 45.286	$\pm 0.312$	44.807 ~ 45.431
1200	48.838			$\pm 0.328$	48.510 ~ 49.166
1300	52.410			$\pm 0.340$	52.070 ~ 52.750

镍铬硅-镍硅热电偶热电动势允许误差表

(N 型)

(mV)

测量端温度 ( $^{\circ}\text{C}$ )	热电动势 标准值	I 级		II 级	
		允许误差	热电动势范围	允许误差	热电动势范围
100	2.774	$\pm 0.044$	2.730 ~ 2.818	$\pm 0.074$	2.700 ~ 2.848
200	5.913	$\pm 0.040$	5.864 ~ 5.882	$\pm 0.082$	5.831 ~ 5.995
300	9.341	$\pm 0.053$	9.288 ~ 9.374	$\pm 0.089$	9.252 ~ 9.430
400	12.974	$\pm 0.059$	12.915 ~ 13.033	$\pm 0.111$	12.863 ~ 13.085
500	16.748	$\pm 0.076$	16.672 ~ 16.824	$\pm 0.143$	16.605 ~ 16.891
600	20.613	$\pm 0.094$	20.519 ~ 20.707	$\pm 0.175$	20.438 ~ 20.788

续表

测量端温度 (℃)	热电动势 标准值	I 级		II 级	
		允许误差	热电动势范围	允许误差	热电动势范围
700	24.527	$\pm 0.110$	24.417~24.637	$\pm 0.206$	24.321~24.733
800	28.455	$\pm 0.126$	28.329~28.581	$\pm 0.235$	28.220~28.690
900	32.371	$\pm 0.140$	32.321~32.511	$\pm 0.264$	32.107~32.635
1000	36.256	$\pm 0.154$	36.102~36.410	$\pm 0.290$	35.966~36.546
1100	40.087	$\pm 0.167$	39.920~40.254	$\pm 0.313$	39.774~40.400
1200	43.846			$\pm 0.335$	43.511~44.181
1300	47.513			$\pm 0.351$	47.162~47.864

镍铬-铜镍热电偶热电动势允许误差表

(E型)

(mV)

测量端温度 (℃)	热电动势 标准值	I 级		II 级	
		允许误差	热电动势范围	允许误差	热电动势范围
100	6.319	$\pm 0.101$	6.218~6.420	$\pm 0.169$	6.150~6.488
200	13.421	$\pm 0.111$	13.310~13.532	$\pm 0.186$	13.236~13.606
300	21.036	$\pm 0.117$	20.919~21.153	$\pm 0.195$	20.841~21.231
400	28.946	$\pm 0.128$	28.818~29.074	$\pm 0.240$	28.706~29.186
500	37.005	$\pm 0.162$	36.843~37.167	$\pm 0.303$	36.702~37.308
600	45.093	$\pm 0.194$	44.899~45.237	$\pm 0.363$	44.730~45.456
700	53.112	$\pm 0.223$	52.889~53.335	$\pm 0.418$	52.694~53.530
800	61.017	$\pm 0.251$	60.766~61.268	$\pm 0.471$	60.546~61.488
900	68.787	$\pm 0.277$	68.510~69.064	$\pm 0.519$	68.268~69.306
1000	76.373	$\pm 0.301$	76.072~76.674	$\pm 0.564$	75.809~76.937

铁-铜镍热电偶热电动势允许误差表

(J型)

(mV)

测量端温度 (℃)	热电动势 标准值	I 级		II 级	
		允许误差	热电动势范围	允许误差	热电动势范围
100	5.269	$\pm 0.082$	5.187~5.351	$\pm 0.136$	5.133~5.405
200	10.779	$\pm 0.083$	10.696~10.862	$\pm 0.139$	10.640~10.918
300	16.327	$\pm 0.083$	16.244~16.410	$\pm 0.138$	16.189~16.465
400	21.848	$\pm 0.088$	21.760~21.936	$\pm 0.165$	21.683~22.013
500	27.393	$\pm 0.112$	27.281~27.505	$\pm 0.210$	27.183~27.603
600	33.102	$\pm 0.140$	32.962~33.242	$\pm 0.263$	32.839~33.365
700	39.132	$\pm 0.174$	38.958~39.306	$\pm 0.326$	38.806~39.458
800	45.494	$\pm 0.207$	45.287~45.701	$\pm 0.388$	45.106~45.882
900	51.877	$\pm 0.225$	51.652~52.102	$\pm 0.421$	51.456~52.298
1000	57.953	$\pm 0.237$	57.716~58.190	$\pm 0.444$	57.509~58.398
1100	63.792	$\pm 0.254$		$\pm 0.477$	63.315~64.269
1200	69.553	$\pm 0.298$		$\pm 0.515$	69.038~70.068



# 附录6 S、K、N、E、J型热电偶

## 整百度点，微分热电动势表

$\mu\text{V}/^\circ\text{C}$

微分热电动势 温度 ( $^\circ\text{C}$ )	分 度 号				
	S	K	N	E	J
0	5.40	39.45	26.16	58.67	50.38
100	7.34	41.37	29.64	67.52	54.36
200	8.46	39.97	32.99	74.03	55.51
300	9.13	41.45	35.42	77.91	55.35
400	9.57	42.24	37.13	80.06	55.15
500	9.90	42.63	38.27	80.93	55.99
600	10.21	42.51	38.96	80.66	58.49
700	10.53	41.90	39.26	79.65	62.15
800	10.87	41.00	39.26	78.43	64.63
900	11.21	40.00	39.04	76.83	62.44
1000	11.54	38.98	38.61	75.16	59.26
1100	11.84	37.85	37.98		57.84
1200	12.03	36.49	37.19		57.24
1300	12.13	34.93	36.01		

# 附录7 S、K、N、E、J型热电偶分度表

## 铂铑 10-铂热电偶 (S型) $E(t)$ 分度表

参考温度:  $0^\circ\text{C}$

$t (^\circ\text{C})$	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
$E (\text{mV})$										
-50	-0.236									
-40	-0.194	-0.199	-0.203	-0.207	-0.211	-0.215	-0.219	-0.224	-0.228	-0.232
-30	-0.150	-0.155	-0.159	-0.164	-0.168	-0.173	-0.177	-0.181	-0.186	-0.190
-20	-0.103	-0.108	-0.113	-0.117	-0.122	-0.127	-0.132	-0.136	-0.141	-0.146
-10	-0.053	-0.058	-0.063	-0.068	-0.073	-0.078	-0.083	-0.088	-0.093	-0.098
0	0.000	-0.005	-0.011	-0.016	-0.021	-0.027	-0.032	-0.037	-0.042	-0.048

## 铂铑 10-铂热电偶 (S型) $E(t)$ 分度表

参考温度:  $0^\circ\text{C}$

$t (^\circ\text{C})$	0	1	2	3	4	5	6	7	8	9
$E (\text{mV})$										
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	0.143	0.149	0.155	0.161	0.167
30	0.173	0.179	0.185	0.191	0.197	0.204	0.210	0.216	0.222	0.229
40	0.235	0.241	0.248	0.254	0.260	0.267	0.273	0.280	0.286	0.292

续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
	$E$ (mV)									
50	0.299	0.305	0.312	0.319	0.325	0.332	0.338	0.345	0.352	0.358
60	0.365	0.372	0.378	0.385	0.392	0.399	0.405	0.412	0.419	0.426
70	0.433	0.440	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	0.538	0.545	0.552	0.559	0.566
90	0.573	0.580	0.588	0.595	0.602	0.609	0.617	0.624	0.631	0.639
100	0.646	0.653	0.661	0.668	0.675	0.683	0.690	0.698	0.705	0.713
110	0.720	0.727	0.735	0.743	0.750	0.758	0.765	0.773	0.780	0.788
120	0.795	0.803	0.811	0.818	0.826	0.834	0.841	0.849	0.857	0.865
130	0.872	0.880	0.888	0.896	0.903	0.911	0.919	0.927	0.935	0.942
140	0.950	0.958	0.966	0.974	0.982	0.990	0.998	1.006	1.013	1.021
150	1.029	1.037	1.045	1.053	1.061	1.069	1.077	1.085	1.094	1.102
160	1.110	1.118	1.126	1.134	1.142	1.150	1.158	1.167	1.175	1.183
170	1.191	1.199	1.207	1.216	1.224	1.232	1.240	1.249	1.257	1.265
180	1.273	1.282	1.290	1.298	1.307	1.315	1.323	1.332	1.340	1.348
190	1.357	1.365	1.373	1.382	1.390	1.399	1.407	1.415	1.424	1.432
200	1.441	1.449	1.458	1.466	1.475	1.483	1.492	1.500	1.509	1.517
210	1.526	1.534	1.543	1.551	1.560	1.569	1.577	1.586	1.594	1.603
220	1.612	1.620	1.629	1.638	1.646	1.655	1.663	1.672	1.681	1.690
230	1.698	1.707	1.716	1.724	1.733	1.742	1.751	1.759	1.768	1.777
240	1.786	1.794	1.803	1.812	1.821	1.829	1.838	1.847	1.856	1.865
250	1.874	1.882	1.891	1.900	1.909	1.918	1.927	1.936	1.944	1.953
260	1.962	1.971	1.980	1.989	1.998	2.007	2.016	2.025	2.034	2.043
270	2.052	2.061	2.070	2.078	2.087	2.096	2.105	2.114	2.123	2.132
280	2.141	2.151	2.160	2.169	2.178	2.187	2.196	2.205	2.214	2.223
290	2.232	2.241	2.250	2.259	2.268	2.277	2.287	2.296	2.305	2.314
300	2.323	2.332	2.341	2.350	2.360	2.369	2.378	2.387	2.396	2.405
310	2.415	2.424	2.433	2.442	2.451	2.461	2.470	2.479	2.488	2.497
320	2.507	2.516	2.525	2.534	2.544	2.553	2.562	2.571	2.581	2.590
330	2.599	2.609	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	2.851	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	2.983	2.993	3.002	3.012	3.021	3.031	3.040	3.050	3.059
380	3.069	3.078	3.088	3.097	3.107	3.116	3.126	3.135	3.145	3.154
390	3.164	3.173	3.183	3.192	3.202	3.212	3.221	3.231	3.240	3.250
400	3.259	3.269	3.279	3.288	3.298	3.307	3.317	3.326	3.336	3.346
410	3.355	3.365	3.374	3.384	3.394	3.403	3.413	3.423	3.432	3.442
420	3.451	3.461	3.471	3.480	3.490	3.500	3.509	3.519	3.529	3.538
430	3.548	3.558	3.567	3.577	3.587	3.596	3.606	3.616	3.626	3.635
440	3.645	3.655	3.664	3.674	3.684	3.694	3.703	3.713	3.723	3.732

续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
450	3.742	3.752	3.762	3.771	3.781	3.791	3.801	3.810	3.820	3.830
460	3.840	3.850	3.859	3.869	3.879	3.889	3.898	3.908	3.918	3.928
470	3.938	3.947	3.957	3.967	3.977	3.987	3.997	4.006	4.016	4.026
480	4.036	4.046	4.056	4.065	4.075	4.085	4.095	4.105	4.115	4.125
490	4.134	4.144	4.154	4.164	4.174	4.184	4.194	4.204	4.213	4.223
500	4.233	4.243	4.253	4.263	4.273	4.283	4.293	4.303	4.313	4.323
510	4.332	4.342	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	4.793	4.803	4.813	4.823
560	4.833	4.843	4.853	4.863	4.873	4.883	4.893	4.904	4.914	4.924
570	4.934	4.944	4.954	4.964	4.974	4.984	4.995	5.005	5.015	5.025
580	5.035	5.045	5.055	5.066	5.076	5.086	5.096	5.106	5.116	5.127
590	5.137	5.147	5.157	5.167	5.178	5.188	5.198	5.208	5.218	5.228
600	5.239	5.249	5.259	5.269	5.280	5.290	5.300	5.310	5.320	5.331
610	5.341	5.351	5.361	5.372	5.382	5.392	5.402	5.413	5.423	5.433
620	5.443	5.454	5.464	5.474	5.485	5.495	5.505	5.515	5.526	5.536
630	5.546	5.557	5.567	5.577	5.588	5.598	5.608	5.618	5.629	5.639
640	5.649	5.660	5.670	5.680	5.691	5.701	5.712	5.722	5.732	5.743
650	5.753	5.763	5.774	5.784	5.794	5.805	5.815	5.826	5.836	5.846
660	5.857	5.867	5.878	5.888	5.898	5.909	5.919	5.930	5.940	5.950
670	5.961	5.971	5.982	5.992	6.003	6.013	6.024	6.034	6.044	6.055
680	6.065	6.076	6.086	6.097	6.107	6.118	6.128	6.139	6.149	6.160
690	6.170	6.181	6.191	6.202	6.212	6.223	6.233	6.244	6.254	6.265
700	6.275	6.286	6.296	6.307	6.317	6.328	6.338	6.349	6.360	6.370
710	6.381	6.391	6.402	6.412	6.423	6.434	6.444	6.455	6.465	6.476
720	6.486	6.497	6.508	6.518	6.529	6.539	6.550	6.561	6.571	6.582
730	6.593	6.603	6.614	6.624	6.635	6.646	6.656	6.667	6.678	6.688
740	6.699	6.710	6.720	6.731	6.742	6.752	6.763	6.774	6.784	6.795
750	6.806	6.817	6.827	6.838	6.849	6.859	6.870	6.881	6.892	6.902
760	6.913	6.924	6.934	6.945	6.956	6.967	6.977	6.988	6.999	7.010
770	7.020	7.031	7.042	7.053	7.064	7.074	7.085	7.096	7.107	7.117
780	7.128	7.139	7.150	7.161	7.172	7.182	7.193	7.204	7.215	7.226
790	7.236	7.247	7.258	7.269	7.280	7.291	7.302	7.312	7.323	7.334
800	7.345	7.356	7.367	7.378	7.388	7.399	7.410	7.421	7.432	7.443
810	7.454	7.465	7.476	7.487	7.497	7.508	7.519	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	7.662
830	7.673	7.684	7.695	7.706	7.717	7.728	7.739	7.750	7.761	7.772
840	7.783	7.794	7.805	7.816	7.827	7.838	7.849	7.860	7.871	7.882

续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
850	7.893	7.904	7.915	7.926	7.937	7.948	7.959	7.970	7.981	7.992
860	8.003	8.014	8.026	8.037	8.048	8.059	8.070	8.081	8.092	8.103
870	8.114	8.125	8.137	8.148	8.159	8.170	8.181	8.192	8.203	8.214
880	8.226	8.237	8.248	8.259	8.270	8.281	8.293	8.304	8.315	8.326
890	8.337	8.348	8.360	8.371	8.382	8.393	8.404	8.416	8.427	8.438
900	8.449	8.460	8.472	8.483	8.494	8.505	8.517	8.528	8.539	8.550
910	8.562	8.573	8.584	8.595	8.607	8.618	8.629	8.640	8.652	8.663
920	8.674	8.685	8.697	8.708	8.719	8.731	8.742	8.753	8.765	8.776
930	8.787	8.798	8.810	8.821	8.832	8.844	8.855	8.866	8.878	8.889
940	8.900	8.912	8.923	8.935	8.946	8.957	8.969	8.980	8.991	9.003
950	9.014	9.025	9.037	9.048	9.060	9.071	9.082	9.094	9.105	9.117
960	9.128	9.139	9.151	9.162	9.174	9.185	9.197	9.208	9.219	9.231
970	9.242	9.254	9.265	9.277	9.288	9.300	9.311	9.323	9.334	9.345
980	9.357	9.368	9.380	9.391	9.403	9.414	9.426	9.437	9.449	9.460
990	9.472	9.483	9.495	9.506	9.518	9.529	9.541	9.552	9.564	9.576
1000	9.587	9.599	9.610	9.622	9.633	9.645	9.656	9.668	9.680	9.691
1010	9.703	9.714	9.726	9.737	9.749	9.761	9.772	9.784	9.795	9.807
1020	9.819	9.830	9.842	9.853	9.865	9.877	9.888	9.900	9.911	9.923
1030	9.935	9.946	9.958	9.970	9.981	9.993	10.005	10.016	10.028	10.040
1040	10.051	10.063	10.075	10.086	10.098	10.110	10.121	10.133	10.145	10.156
1050	10.168	10.180	10.191	10.203	10.215	10.227	10.238	10.250	10.262	10.273
1060	10.285	10.297	10.309	10.320	10.332	10.344	10.356	10.367	10.379	10.391
1070	10.403	10.414	10.426	10.438	10.450	10.461	10.473	10.485	10.497	10.509
1080	10.520	10.532	10.544	10.556	10.567	10.579	10.591	10.603	10.615	10.626
1090	10.638	10.650	10.662	10.674	10.686	10.697	10.709	10.721	10.733	10.745
1100	10.757	10.768	10.780	10.792	10.804	10.816	10.828	10.839	10.851	10.863
1110	10.875	10.887	10.899	10.911	10.922	10.934	10.946	10.958	10.970	10.982
1120	10.994	11.006	11.017	11.029	11.041	11.053	11.065	11.077	11.089	11.101
1130	11.113	11.125	11.136	11.148	11.160	11.172	11.184	11.196	11.208	11.220
1140	11.232	11.244	11.256	11.268	11.280	11.291	11.303	11.315	11.327	11.339
1150	11.351	11.363	11.375	11.387	11.399	11.411	11.423	11.435	11.447	11.459
1160	11.471	11.483	11.495	11.507	11.519	11.531	11.542	11.554	11.566	11.578
1170	11.590	11.602	11.614	11.626	11.638	11.650	11.662	11.674	11.686	11.698
1180	11.710	11.722	11.734	11.746	11.758	11.770	11.782	11.794	11.806	11.818
1190	11.830	11.842	11.854	11.866	11.878	11.890	11.902	11.914	11.926	11.939
1200	11.951	11.963	11.975	11.987	11.999	12.011	12.023	12.035	12.047	12.059
1210	12.071	12.083	12.095	12.107	12.119	12.131	12.143	12.155	12.167	12.179
1220	12.191	12.203	12.216	12.228	12.240	12.252	12.264	12.276	12.288	12.300
1230	12.312	12.324	12.336	12.348	12.360	12.372	12.384	12.397	12.409	12.421
1240	12.433	12.445	12.457	12.469	12.481	12.493	12.505	12.517	12.529	12.542

续表

$t (^{\circ}\text{C})$	0	1	2	3	4	5	6	7	8	9
$E \text{ (mV)}$										
1250	12.554	12.566	12.578	12.590	12.602	12.614	12.626	12.638	12.650	12.662
1260	12.675	12.687	12.699	12.711	12.723	12.735	12.747	12.759	12.771	12.783
1270	12.796	12.808	12.820	12.832	12.844	12.856	12.868	12.880	12.892	12.905
1280	12.917	12.929	12.941	12.953	12.965	12.977	12.989	13.001	13.014	13.026
1290	13.038	13.050	13.062	13.074	13.086	13.098	13.111	13.123	13.135	13.147
1300	13.159	13.171	13.183	13.195	13.208	13.220	13.232	13.244	13.256	13.268
1310	13.280	13.292	13.305	13.317	13.329	13.341	13.353	13.365	13.377	13.390
1320	13.402	13.414	13.426	13.438	13.450	13.462	13.474	13.487	13.499	13.511
1330	13.523	13.535	13.547	13.559	13.572	13.584	13.596	13.608	13.620	13.632
1340	13.644	13.657	13.669	13.681	13.693	13.705	13.717	13.729	13.742	13.754
1350	13.766	13.778	13.790	13.802	13.814	13.826	13.839	13.851	13.863	13.875
1360	13.887	13.899	13.911	13.924	13.936	13.948	13.960	13.972	13.984	13.996
1370	14.009	14.021	14.033	14.045	14.057	14.069	14.081	14.094	14.106	14.118
1380	14.130	14.142	14.154	14.166	14.178	14.191	14.203	14.215	14.227	14.239
1390	14.251	14.263	14.276	14.288	14.300	14.312	14.324	14.336	14.348	14.360
1400	14.373	14.385	14.397	14.409	14.421	14.433	14.445	14.457	14.470	14.482
1410	14.494	14.506	14.518	14.530	14.542	14.554	14.567	14.579	14.591	14.603
1420	14.615	14.627	14.639	14.651	14.664	14.676	14.688	14.700	14.712	14.724
1430	14.736	14.748	14.760	14.773	14.785	14.797	14.809	14.821	14.833	14.845
1440	14.857	14.869	14.881	14.894	14.906	14.918	14.930	14.942	14.954	14.966
1450	14.978	14.990	15.002	15.015	15.027	15.039	15.051	15.063	15.075	15.087
1460	15.099	15.111	15.123	15.135	15.148	15.160	15.172	15.184	15.196	15.208
1470	15.220	15.232	15.244	15.256	15.268	15.280	15.292	15.304	15.317	15.329
1480	15.341	15.353	15.365	15.377	15.389	15.401	15.413	15.425	15.437	15.449
1490	15.461	15.473	15.485	15.497	15.509	15.521	15.534	15.546	15.558	15.570
1500	15.582	15.594	15.606	15.618	15.630	15.642	15.654	15.666	15.678	15.690
1510	15.702	15.714	15.726	15.738	15.750	15.762	15.774	15.786	15.798	15.810
1520	15.822	15.834	15.846	15.858	15.870	15.882	15.894	15.906	15.918	15.930
1530	15.942	15.954	15.966	15.978	15.990	16.002	16.014	16.026	16.038	16.050
1540	16.062	16.074	16.086	16.098	16.110	16.122	16.134	16.146	16.158	16.170
1550	16.182	16.194	16.205	16.217	16.229	16.241	16.253	16.265	16.277	16.289
1560	16.301	16.313	16.325	16.337	16.349	16.361	16.373	16.385	16.396	16.408
1570	16.420	16.432	16.444	16.456	16.468	16.480	16.492	16.504	16.516	16.527
1580	16.539	16.551	16.563	16.575	16.587	16.599	16.611	16.623	16.634	16.646
1590	16.658	16.670	16.682	16.694	16.706	16.718	16.729	16.741	16.753	16.765
1600	16.777	16.789	16.801	16.812	16.824	16.836	16.848	16.860	16.872	16.883
1610	16.895	16.907	16.919	16.931	16.943	16.954	16.966	16.978	16.990	17.002
1620	17.013	17.025	17.037	17.049	17.061	17.072	17.084	17.096	17.108	17.120
1630	17.131	17.143	17.155	17.167	17.178	17.190	17.202	17.214	17.225	17.237
1640	17.249	17.261	17.272	17.284	17.296	17.308	17.319	17.331	17.343	17.355



续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
1650	17.366	17.378	17.390	17.401	17.413	17.425	17.437	17.448	17.460	17.472
1660	17.483	17.495	17.507	17.518	17.530	17.542	17.553	17.565	17.577	17.588
1670	17.600	17.612	17.623	17.635	17.647	17.658	17.670	17.682	17.693	17.705
1680	17.717	17.728	17.740	17.751	17.763	17.775	17.786	17.798	17.809	17.821
1690	17.832	17.844	17.855	17.867	17.878	17.890	17.901	17.913	17.924	17.936
1700	17.947	17.959	17.970	17.982	17.993	18.004	18.016	18.027	18.039	18.050
1710	18.061	18.073	18.084	18.095	18.107	18.118	18.129	18.140	18.152	18.163
1720	18.174	18.185	18.196	18.208	18.219	18.230	18.241	18.252	18.263	18.274
1730	18.285	18.297	18.308	18.319	18.330	18.341	18.352	18.362	18.373	18.384
1740	18.395	18.406	18.417	18.428	18.439	18.449	18.460	18.471	18.482	18.493
1750	18.503	18.514	18.525	18.535	18.546	18.557	18.567	18.578	18.588	18.599
1760	18.609	18.620	18.630	18.641	18.651	18.661	18.672	18.682	18.693	

镍铬-镍硅热电偶 (K 型)  $E(t)$  分度表

参考温度: 0°C

$t$ (°C)	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
$E$ (mV)										
-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	-6.370	-6.377	-6.382	-6.388	-6.393	-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	-6.252
-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	-5.797	-5.813	-5.829	-5.845	-5.861	-5.876
-180	-5.550	-5.569	-5.588	-5.606	-5.624	-5.642	-5.660	-5.678	-5.695	-5.713
-170	-5.354	-5.374	-5.395	-5.415	-5.435	-5.454	-5.474	-5.493	-5.512	-5.531
-160	-5.141	-5.163	-5.185	-5.207	-5.228	-5.250	-5.271	-5.292	-5.313	-5.333
-150	-4.913	-4.936	-4.960	-4.983	-5.006	-5.029	-5.052	-5.074	-5.097	-5.119
-140	-4.669	-4.694	-4.719	-4.744	-4.768	-4.793	-4.817	-4.841	-4.865	-4.889
-130	-4.411	-4.437	-4.463	-4.490	-4.516	-4.542	-4.567	-4.593	-4.618	-4.644
-120	-4.138	-4.166	-4.194	-4.221	-4.249	-4.276	-4.303	-4.330	-4.357	-4.384
-110	-3.852	-3.882	-3.911	-3.939	-3.968	-3.997	-4.025	-4.054	-4.082	-4.110
-100	-3.554	-3.584	-3.614	-3.645	-3.675	-3.705	-3.734	-3.764	-3.794	-3.823
-90	-3.243	-3.274	-3.306	-3.337	-3.368	-3.400	-3.431	-3.462	-3.492	-3.523
-80	-2.920	-2.953	-2.986	-3.018	-3.050	-3.083	-3.115	-3.147	-3.179	-3.211
-70	-2.587	-2.620	-2.654	-2.688	-2.721	-2.755	-2.788	-2.821	-2.854	-2.887
-60	-2.243	-2.278	-2.312	-2.347	-2.382	-2.416	-2.450	-2.485	-2.519	-2.553
-50	-1.889	-1.925	-1.961	-1.996	-2.032	-2.067	-2.103	-2.138	-2.173	-2.208

续表

$t$ (°C)	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
$E$ (mV)										
-40	-1.527	-1.564	-1.600	-1.637	-1.673	-1.709	-1.745	-1.782	-1.818	-1.854
-30	-1.156	-1.194	-1.231	-1.268	-1.305	-1.343	-1.380	-1.417	-1.453	-1.490
-20	-0.778	-0.816	-0.854	-0.892	-0.930	-0.968	-1.006	-1.043	-1.081	-1.119
-10	-0.392	-0.431	-0.470	-0.508	-0.547	-0.586	-0.624	-0.663	-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

镍铬-镍硅热电偶 (K 型)  $E(t)$  分度表

参考温度: 0°C

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
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	1.163
30	1.203	1.244	1.285	1.326	1.366	1.407	1.448	1.489	1.530	1.571
40	1.612	1.653	1.694	1.735	1.776	1.817	1.858	1.899	1.941	1.982
50	2.023	2.064	2.106	2.147	2.188	2.230	2.271	2.312	2.354	2.395
60	2.436	2.478	2.519	2.561	2.602	2.644	2.685	2.727	2.768	2.810
70	2.851	2.893	2.934	2.976	3.017	3.059	3.100	3.142	3.184	3.225
80	3.267	3.308	3.350	3.391	3.433	3.474	3.516	3.557	3.599	3.640
90	3.682	3.723	3.765	3.806	3.848	3.889	3.931	3.972	4.013	4.055
100	4.096	4.138	4.179	4.220	4.262	4.303	4.344	4.385	4.427	4.468
110	4.509	4.550	4.591	4.633	4.674	4.715	4.756	4.797	4.838	4.879
120	4.920	4.961	5.002	5.043	5.084	5.124	5.165	5.206	5.247	5.288
130	5.328	5.369	5.410	5.450	5.491	5.532	5.572	5.613	5.653	5.694
140	5.735	5.775	5.815	5.856	5.896	5.937	5.977	6.017	6.058	6.098
150	6.138	6.179	6.219	6.259	6.299	6.339	6.380	6.420	6.460	6.500
160	6.540	6.580	6.620	6.660	6.701	6.741	6.781	6.821	6.861	6.901
170	6.941	6.981	7.021	7.060	7.100	7.140	7.180	7.220	7.260	7.300
180	7.340	7.380	7.420	7.460	7.500	7.540	7.579	7.619	7.659	7.699
190	7.739	7.779	7.819	7.859	7.899	7.939	7.979	8.019	8.059	8.099
200	8.138	8.178	8.218	8.258	8.298	8.338	8.378	8.418	8.458	8.499
210	8.539	8.579	8.619	8.659	8.699	8.739	8.779	8.819	8.860	8.900
220	8.940	8.980	9.020	9.061	9.101	9.141	9.181	9.222	9.262	9.302
230	9.343	9.383	9.423	9.464	9.504	9.545	9.585	9.626	9.666	9.707
240	9.747	9.788	9.828	9.869	9.909	9.950	9.991	10.031	10.072	10.113
250	10.153	10.194	10.235	10.276	10.316	10.357	10.398	10.439	10.480	10.520
260	10.561	10.602	10.643	10.684	10.725	10.766	10.807	10.848	10.889	10.930
270	10.971	11.012	11.053	11.094	11.135	11.176	11.217	11.259	11.300	11.341
280	11.382	11.423	11.465	11.506	11.547	11.588	11.630	11.671	11.712	11.753
290	11.795	11.836	11.877	11.919	11.960	12.001	12.043	12.084	12.126	12.167

续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
300	12.209	12.250	12.291	12.333	12.374	12.416	12.457	12.499	12.540	12.582
310	12.624	12.665	12.707	12.748	12.790	12.831	12.873	12.915	12.956	12.998
320	13.040	13.081	13.123	13.165	13.206	13.248	13.290	13.331	13.373	13.415
330	13.457	13.498	13.540	13.582	13.624	13.665	13.707	13.749	13.791	13.833
340	13.874	13.916	13.958	14.000	14.042	14.084	14.126	14.167	14.209	14.251
350	14.293	14.335	14.377	14.419	14.461	14.503	14.545	14.587	14.629	14.671
360	14.713	14.755	14.797	14.839	14.881	14.923	14.965	15.007	15.049	15.091
370	15.133	15.175	15.217	15.259	15.301	15.343	15.385	15.427	15.469	15.511
380	15.554	15.596	15.638	15.680	15.722	15.764	15.806	15.849	15.891	15.933
390	15.975	16.017	16.059	16.102	16.144	16.186	16.228	16.270	16.313	16.355
400	16.397	16.439	16.482	16.524	16.566	16.608	16.651	16.693	16.735	16.778
410	16.820	16.862	16.904	16.947	16.989	17.031	17.074	17.116	17.158	17.201
420	17.243	17.285	17.328	17.370	17.413	17.455	17.497	17.540	17.582	17.624
430	17.667	17.709	17.752	17.794	17.837	17.879	17.921	17.964	18.006	18.049
440	18.091	18.134	18.176	18.218	18.261	18.303	18.346	18.388	18.431	18.473
450	18.516	18.558	18.601	18.643	18.686	18.728	18.771	18.813	18.856	18.898
460	18.941	18.983	19.026	19.068	19.111	19.154	19.196	19.239	19.281	19.324
470	19.366	19.409	19.451	19.494	19.537	19.579	19.622	19.664	19.707	19.750
480	19.792	19.835	19.877	19.920	19.962	20.005	20.048	20.090	20.133	20.175
490	20.218	20.261	20.303	20.346	20.389	20.431	20.474	20.516	20.559	20.602
500	20.644	20.687	20.730	20.772	20.815	20.857	20.900	20.943	20.985	21.028
510	21.071	21.113	21.156	21.199	21.241	21.284	21.326	21.369	21.412	21.454
520	21.497	21.540	21.582	21.625	21.668	21.710	21.753	21.796	21.838	21.881
530	21.924	21.966	22.009	22.052	22.094	22.137	22.179	22.222	22.265	22.307
540	22.350	22.393	22.435	22.478	22.521	22.563	22.606	22.649	22.691	22.734
550	22.776	22.819	22.862	22.904	22.947	22.990	23.032	23.075	23.117	23.160
560	23.203	23.245	23.288	23.331	23.373	23.416	23.458	23.501	23.544	23.586
570	23.629	23.671	23.714	23.757	23.799	23.842	23.884	23.927	23.970	24.012
580	24.055	24.097	24.140	24.182	24.225	24.267	24.310	24.353	24.395	24.438
590	24.480	24.523	24.565	24.608	24.650	24.693	24.735	24.778	24.820	24.863
600	24.905	24.948	24.990	25.033	25.075	25.118	25.160	25.203	25.245	25.288
610	25.330	25.373	25.415	25.458	25.500	25.543	25.585	25.627	25.670	25.712
620	25.755	25.797	25.840	25.882	25.924	25.967	26.009	26.052	26.094	26.136
630	26.179	26.221	26.263	26.306	26.348	26.390	26.433	26.475	26.517	26.560
640	26.602	26.644	26.687	26.729	26.771	26.814	26.856	26.898	26.940	26.983
650	27.025	27.067	27.109	27.152	27.194	27.236	27.278	27.320	27.363	27.405
660	27.447	27.489	27.531	27.574	27.616	27.658	27.700	27.742	27.784	27.826
670	27.869	27.911	27.953	27.995	28.037	28.079	28.121	28.163	28.205	28.247
680	28.289	28.332	28.374	28.416	28.458	28.500	28.542	28.584	28.626	28.668
690	28.710	28.752	28.794	28.835	28.877	28.919	28.961	29.003	29.045	29.087



续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
700	29.129	29.171	29.213	29.255	29.297	29.338	29.380	29.422	29.464	29.506
710	29.548	29.589	29.631	29.673	29.715	29.757	29.798	29.840	29.882	29.924
720	29.965	30.007	30.049	30.090	30.132	30.174	30.216	30.257	30.299	30.341
730	30.382	30.424	30.466	30.507	30.549	30.590	30.632	30.674	30.715	30.757
740	30.798	30.840	30.881	30.923	30.964	31.006	31.047	31.089	31.130	31.172
750	31.213	31.255	31.296	31.338	31.379	31.421	31.462	31.504	31.545	31.586
760	31.628	31.669	31.710	31.752	31.793	31.834	31.876	31.917	31.958	32.000
770	32.041	32.082	32.124	32.165	32.206	32.247	32.289	32.330	32.371	32.412
780	32.453	32.495	32.536	32.577	32.618	32.659	32.700	32.742	32.783	32.824
790	32.865	32.906	32.947	32.988	33.029	33.070	33.111	33.152	33.193	33.234
800	33.275	33.316	33.357	33.398	33.439	33.480	33.521	33.562	33.603	33.644
810	33.685	33.726	33.767	33.808	33.848	33.889	33.930	33.971	34.012	34.053
820	34.093	34.134	34.175	34.216	34.257	34.297	34.338	34.379	34.420	34.460
830	34.501	34.542	34.582	34.623	34.664	34.704	34.745	34.786	34.826	34.867
840	34.908	34.948	34.989	35.029	35.070	35.110	35.151	35.192	35.232	35.273
850	35.313	35.354	35.394	35.435	35.475	35.516	35.556	35.596	35.637	35.677
860	35.718	35.758	35.798	35.839	35.879	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	36.484
880	36.524	36.564	36.604	36.644	36.685	36.725	36.765	36.805	36.845	36.885
890	36.925	36.965	37.006	37.046	37.086	37.126	37.166	37.206	37.246	37.286
900	37.326	37.366	37.406	37.446	37.486	37.526	37.566	37.606	37.646	37.686
910	37.725	37.765	37.805	37.845	37.885	37.925	37.965	38.005	38.044	38.084
920	38.124	38.164	38.204	38.243	38.283	38.323	38.363	38.402	38.442	38.482
930	38.522	38.561	38.601	38.641	38.680	38.720	38.760	38.799	38.839	38.878
940	38.918	38.958	38.997	39.037	39.076	39.116	39.155	39.195	39.235	39.274
950	39.314	39.353	39.393	39.432	39.471	39.511	39.550	39.590	39.629	39.669
960	39.708	39.747	39.787	39.826	39.866	39.905	39.944	39.984	40.023	40.062
970	40.101	40.141	40.180	40.219	40.259	40.298	40.337	40.376	40.415	40.455
980	40.494	40.533	40.572	40.611	40.651	40.690	40.729	40.768	40.807	40.846
990	40.885	40.924	40.963	41.002	41.042	41.081	41.120	41.159	41.198	41.237
1000	41.276	41.315	41.354	41.393	41.431	41.470	41.509	41.548	41.587	41.626
1010	41.665	41.704	41.743	41.781	41.820	41.859	41.898	41.937	41.976	42.014
1020	42.053	42.092	42.131	42.169	42.208	42.247	42.286	42.324	42.363	42.402
1030	42.440	42.479	42.518	42.556	42.595	42.633	42.672	42.711	42.749	42.788
1040	42.826	42.865	42.903	42.942	42.980	43.019	43.057	43.096	43.134	43.173

续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
1050	43.211	43.250	43.288	43.327	43.365	43.403	43.442	43.480	43.518	43.557
1060	43.595	43.633	43.672	43.710	43.748	43.787	43.825	43.863	43.901	43.940
1070	43.978	44.016	44.054	44.092	44.130	44.169	44.207	44.245	44.283	44.321
1080	44.359	44.397	44.435	44.473	44.512	44.550	44.588	44.626	44.664	44.702
1090	44.740	44.778	44.816	44.853	44.891	44.929	44.967	45.005	45.043	45.081
1100	45.119	45.157	45.194	45.232	45.270	45.308	45.346	45.383	45.421	45.459
1110	45.497	45.534	45.572	45.610	45.647	45.685	45.723	45.760	45.798	45.836
1120	45.873	45.911	45.948	45.986	46.024	46.061	46.099	46.136	46.174	46.211
1130	46.249	46.286	46.324	46.361	46.398	46.436	46.473	46.511	46.548	46.585
1140	46.623	46.660	46.697	46.735	46.772	46.809	46.847	46.884	46.921	46.958
1150	46.995	47.033	47.070	47.107	47.144	47.181	47.218	47.256	47.293	47.330
1160	47.367	47.404	47.441	47.478	47.515	47.552	47.589	47.626	47.663	47.700
1170	47.737	47.774	47.811	47.848	47.884	47.921	47.958	47.995	48.032	48.069
1180	48.105	48.142	48.179	48.216	48.252	48.289	48.326	48.363	48.399	48.436
1190	48.473	48.509	48.546	48.582	48.619	48.656	48.692	48.729	48.765	48.802
1200	48.838	48.875	48.911	48.948	48.984	49.021	49.057	49.093	49.130	49.166
1210	49.202	49.239	49.275	49.311	49.348	49.384	49.420	49.456	49.493	49.529
1220	49.565	49.601	49.637	49.674	49.710	49.746	49.782	49.818	49.854	49.890
1230	49.926	49.962	49.998	50.034	50.070	50.106	50.142	50.178	50.214	50.250
1240	50.286	50.322	50.358	50.393	50.429	50.465	50.501	50.537	50.572	50.608
1250	50.644	50.680	50.715	50.751	50.787	50.822	50.858	50.894	50.929	50.965
1260	51.000	51.036	51.071	51.107	51.142	51.178	51.213	51.249	51.284	51.320
1270	51.355	51.391	51.426	51.461	51.497	51.532	51.567	51.603	51.638	51.673
1280	51.708	51.744	51.779	51.814	51.849	51.885	51.920	51.955	51.990	52.025
1290	52.060	52.095	52.130	52.165	52.200	52.235	52.270	52.305	52.340	52.375
1300	52.410	52.445	52.480	52.515	52.550	52.585	52.620	52.654	52.689	52.724
1310	52.759	52.794	52.828	52.863	52.898	52.932	52.967	53.002	53.037	53.071
1320	53.106	53.140	53.175	53.210	53.244	53.279	53.313	53.348	53.382	53.417
1330	53.451	53.486	53.520	53.555	53.589	53.623	53.658	53.692	53.727	53.761
1340	53.795	53.830	53.864	53.898	53.932	53.967	54.001	54.035	54.069	54.104
1350	54.138	54.172	54.206	54.240	54.274	54.308	54.343	54.377	54.411	54.445
1360	54.479	54.513	54.547	54.581	54.615	54.649	54.683	54.717	54.751	54.785
1370	54.819	54.852	54.886							

镍铬硅-镍硅热电偶 (N型)  $E(t)$  分度表参考温度:  $0^{\circ}\text{C}$ 

$t (^{\circ}\text{C})$	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
$E (\text{mV})$										
-270	-4.345									
-260	-4.336	-4.337	-4.339	-4.340	-4.341	-4.342	-4.343	-4.344	-4.344	-4.345
-250	-4.313	-4.316	-4.319	-4.321	-4.324	-4.326	-4.328	-4.330	-4.332	-4.334
-240	-4.277	-4.281	-4.285	-4.289	-4.293	-4.297	-4.300	-4.304	-4.307	-4.310
-230	-4.226	-4.232	-4.238	-4.243	-4.248	-4.254	-4.258	-4.263	-4.268	-4.273
-220	-4.162	-4.169	-4.176	-4.183	-4.189	-4.196	-4.202	-4.209	-4.215	-4.221
-210	-4.083	-4.091	-4.100	-4.108	-4.116	-4.124	-4.132	-4.140	-4.147	-4.154
-200	-3.990	-4.000	-4.010	-4.020	-4.029	-4.038	-4.048	-4.057	-4.066	-4.074
-190	-3.884	-3.896	-3.907	-3.918	-3.928	-3.939	-3.950	-3.960	-3.970	-3.980
-180	-3.766	-3.778	-3.790	-3.803	-3.815	-3.827	-3.838	-3.850	-3.862	-3.873
-170	-3.634	-3.648	-3.662	-3.675	-3.688	-3.702	-3.715	-3.728	-3.740	-3.753
-160	-3.491	-3.506	-3.521	-3.535	-3.550	-3.564	-3.578	-3.593	-3.607	-3.621
-150	-3.336	-3.352	-3.368	-3.384	-3.400	-3.415	-3.431	-3.446	-3.461	-3.476
-140	-3.171	-3.188	-3.205	-3.221	-3.238	-3.255	-3.271	-3.288	-3.304	-3.320
-130	-2.994	-3.012	-3.030	-3.048	-3.066	-3.084	-3.101	-3.119	-3.136	-3.153
-120	-2.808	-2.827	-2.846	-2.865	-2.883	-2.902	-2.921	-2.939	-2.958	-2.976
-110	-2.612	-2.632	-2.652	-2.672	-2.691	-2.711	-2.730	-2.750	-2.769	-2.789
-100	-2.407	-2.428	-2.448	-2.469	-2.490	-2.510	-2.531	-2.551	-2.571	-2.592
-90	-2.193	-2.215	-2.237	-2.258	-2.280	-2.301	-2.322	-2.344	-2.365	-2.386
-80	-1.972	-1.995	-2.017	-2.039	-2.062	-2.084	-2.106	-2.128	-2.150	-2.172
-70	-1.744	-1.767	-1.790	-1.813	-1.836	-1.859	-1.882	-1.905	-1.927	-1.950
-60	-1.509	-1.533	-1.557	-1.580	-1.604	-1.627	-1.651	-1.674	-1.698	-1.721
-50	-1.269	-1.293	-1.317	-1.341	-1.366	-1.390	-1.414	-1.438	-1.462	-1.485
-40	-1.023	-1.048	-1.072	-1.097	-1.122	-1.146	-1.171	-1.195	-1.220	-1.244
-30	-0.772	-0.798	-0.823	-0.848	-0.873	-0.898	-0.923	-0.948	-0.973	-0.998
-20	-0.518	-0.544	-0.569	-0.595	-0.620	-0.646	-0.671	-0.696	-0.722	-0.747
-10	-0.260	-0.286	-0.312	-0.338	-0.364	-0.390	-0.415	-0.441	-0.467	-0.492
0	0.000	-0.026	-0.052	-0.078	-0.104	-0.131	-0.157	-0.183	-0.209	-0.234

镍铬硅-镍硅热电偶 (N型)  $E(t)$  分度表参考温度:  $0^{\circ}\text{C}$ 

$t (^{\circ}\text{C})$	0	1	2	3	4	5	6	7	8	9
	$E (\text{mV})$									
0	0.000	0.026	0.052	0.078	0.104	0.130	0.156	0.182	0.208	0.235
10	0.261	0.287	0.313	0.340	0.366	0.393	0.419	0.446	0.472	0.499
20	0.525	0.552	0.578	0.605	0.632	0.659	0.685	0.712	0.739	0.766
30	0.793	0.820	0.847	0.874	0.901	0.928	0.955	0.983	1.010	1.037
40	1.065	1.092	1.119	1.147	1.174	1.202	1.229	1.257	1.284	1.312
50	1.340	1.368	1.395	1.423	1.451	1.479	1.507	1.535	1.563	1.591
60	1.619	1.647	1.675	1.703	1.732	1.760	1.788	1.817	1.845	1.873
70	1.902	1.930	1.959	1.988	2.016	2.045	2.074	2.102	2.131	2.160
80	2.189	2.218	2.247	2.276	2.305	2.334	2.363	2.392	2.421	2.450
90	2.480	2.509	2.538	2.568	2.597	2.626	2.656	2.685	2.715	2.744
100	2.774	2.804	2.833	2.863	2.893	2.923	2.953	2.983	3.012	3.042
110	3.072	3.102	3.133	3.163	3.193	3.223	3.253	3.283	3.314	3.344
120	3.374	3.405	3.435	3.466	3.496	3.527	3.557	3.588	3.619	3.649
130	3.680	3.711	3.742	3.772	3.803	3.834	3.865	3.896	3.927	3.958
140	3.989	4.020	4.051	4.083	4.114	4.145	4.176	4.208	4.239	4.270
150	4.302	4.333	4.365	4.396	4.428	4.459	4.491	4.523	4.554	4.586
160	4.618	4.650	4.681	4.713	4.745	4.777	4.809	4.841	4.873	4.905
170	4.937	4.969	5.001	5.033	5.066	5.098	5.130	5.162	5.195	5.227
180	5.259	5.292	5.324	5.357	5.389	5.422	5.454	5.487	5.520	5.552
190	5.585	5.618	5.650	5.683	5.716	5.749	5.782	5.815	5.847	5.880
200	5.913	5.964	5.979	6.013	6.046	6.079	6.112	6.145	6.178	6.211
210	6.245	6.278	6.311	6.345	6.378	6.411	6.445	6.478	6.512	6.545
220	6.579	6.612	6.646	6.680	6.713	6.747	6.781	6.814	6.848	6.882
230	6.916	6.949	6.983	7.017	7.051	7.085	7.119	7.153	7.187	7.221
240	7.255	7.289	7.323	7.357	7.392	7.426	7.460	7.494	7.528	7.563
250	7.597	7.631	7.666	7.700	7.734	7.769	7.803	7.838	7.872	7.907
260	7.941	7.976	8.010	8.045	8.080	8.114	8.149	8.184	8.218	8.253
270	8.288	8.323	8.358	8.392	8.427	8.462	8.497	8.532	8.567	8.602
280	8.637	8.672	8.707	8.742	8.777	8.812	8.847	8.882	8.918	8.953
290	8.988	9.023	9.058	9.094	9.129	9.164	9.200	9.235	9.270	9.306
300	9.341	9.377	9.412	9.448	9.483	9.519	9.554	9.590	9.625	9.661
310	9.696	9.732	9.768	9.803	9.839	9.875	9.910	9.946	9.982	10.018
320	10.054	10.089	10.125	10.161	10.197	10.233	10.269	10.305	10.341	10.377
330	10.413	10.449	10.485	10.521	10.557	10.593	10.629	10.665	10.701	10.737
340	10.774	10.810	10.846	10.882	10.918	10.955	10.991	11.027	11.064	11.100

续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
350	11.136	11.173	11.209	11.245	11.282	11.318	11.355	11.391	11.428	11.464
360	11.501	11.537	11.574	11.610	11.647	11.683	11.720	11.757	11.793	11.830
370	11.867	11.903	11.940	11.977	12.013	12.050	12.087	12.124	12.160	12.197
380	12.234	12.271	12.308	12.345	12.382	12.418	12.455	12.492	12.529	12.566
390	12.603	12.640	12.677	12.714	12.751	12.788	12.825	12.862	12.899	12.937
400	12.974	13.011	13.048	13.085	13.122	13.159	13.197	13.234	13.271	13.308
410	13.346	13.383	13.420	13.457	13.495	13.532	13.569	13.607	13.644	13.682
420	13.719	13.756	13.794	13.831	13.869	13.906	13.944	13.981	14.019	14.056
430	14.094	14.131	14.169	14.206	14.244	14.281	14.319	14.356	14.394	14.432
440	14.469	14.507	14.545	14.582	14.620	14.658	14.695	14.733	14.771	14.809
450	14.846	14.884	14.922	14.960	14.998	15.035	15.073	15.111	15.149	15.187
460	15.225	15.262	15.300	15.338	15.376	15.414	15.452	15.490	15.528	15.566
470	15.604	15.642	15.680	15.718	15.756	15.794	15.832	15.870	15.908	15.946
480	15.984	16.022	16.060	16.099	16.137	16.175	16.213	16.251	16.289	16.327
490	16.366	16.404	16.442	16.480	16.518	16.557	16.595	16.633	16.671	16.710
500	16.748	16.786	16.824	16.863	16.901	16.939	16.978	17.016	17.054	17.093
510	17.131	17.169	17.208	17.246	17.285	17.323	17.361	17.400	17.438	17.477
520	17.515	17.554	17.592	17.630	17.669	17.707	17.746	17.784	17.823	17.861
530	17.900	17.938	17.977	18.016	18.054	18.093	18.131	18.170	18.208	18.247
540	18.286	18.324	18.363	18.401	18.440	18.479	18.517	18.556	18.595	18.633
550	18.672	18.711	18.749	18.788	18.827	18.865	18.904	18.943	18.982	19.020
560	19.059	19.098	19.136	19.175	19.214	19.253	19.292	19.330	19.369	19.408
570	19.447	19.485	19.524	19.563	19.602	19.641	19.680	19.718	19.757	19.796
580	19.835	19.874	19.913	19.952	19.990	20.029	20.068	20.107	20.146	20.185
590	20.224	20.263	20.302	20.341	20.379	20.418	20.457	20.496	20.535	20.574
600	20.613	20.652	20.691	20.730	20.769	20.808	20.847	20.886	20.925	20.964
610	21.003	21.042	21.081	21.120	21.159	21.198	21.237	21.276	21.315	21.354
620	21.393	21.432	21.471	21.510	21.549	21.588	21.628	21.667	21.706	21.745
630	21.784	21.823	21.862	21.901	21.940	21.979	22.018	22.058	22.097	22.136
640	22.175	22.214	22.253	22.292	22.331	22.370	22.410	22.449	22.488	22.527
650	22.566	22.605	22.644	22.684	22.723	22.762	22.801	22.840	22.879	22.919
660	22.958	22.997	23.036	23.075	23.115	23.154	23.193	23.232	23.271	23.311
670	23.350	23.389	23.428	23.467	23.507	23.546	23.585	23.624	23.663	23.703
680	23.742	23.781	23.820	23.860	23.899	23.938	23.977	24.016	24.056	24.095
690	24.134	24.173	24.213	24.252	24.291	24.330	24.370	24.409	24.448	24.487



续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
700	24.527	24.566	24.605	24.644	24.684	24.723	24.762	24.801	24.841	24.880
710	24.919	24.959	24.998	25.037	25.076	25.116	25.155	25.194	25.233	25.273
720	25.312	25.351	25.391	25.430	25.469	25.508	25.548	25.587	25.626	25.666
730	25.705	25.744	25.783	25.823	25.862	25.901	25.941	25.980	26.019	26.058
740	26.098	26.137	26.176	26.216	26.255	26.294	26.333	26.373	26.412	26.451
750	26.491	26.530	26.569	26.608	26.648	26.687	26.726	26.766	26.805	26.844
760	26.883	26.923	26.962	27.001	27.041	27.080	27.119	27.158	27.198	27.237
770	27.276	27.316	27.355	27.394	27.433	27.473	27.512	27.551	27.591	27.630
780	27.669	27.708	27.748	27.787	27.826	27.866	27.905	27.944	27.983	28.023
790	28.062	28.101	28.140	28.180	28.219	28.258	28.297	28.337	28.376	28.415
800	28.455	28.494	28.533	28.572	28.612	28.651	28.690	28.729	28.769	28.808
810	28.847	28.886	28.926	28.965	29.004	29.043	29.083	29.122	29.161	29.200
820	29.239	29.279	29.318	29.357	29.396	29.436	29.475	29.514	29.553	29.592
830	29.632	29.671	29.710	29.749	29.789	29.828	29.867	29.906	29.945	29.985
840	30.024	30.063	30.102	30.141	30.181	30.220	30.259	30.298	30.337	30.376
850	30.416	30.455	30.494	30.533	30.572	30.611	30.651	30.690	30.729	30.768
860	30.807	30.846	30.886	30.925	30.964	31.003	31.042	31.081	31.120	31.160
870	31.199	31.238	31.277	31.316	31.355	31.394	31.433	31.473	31.512	31.551
880	31.590	31.629	31.668	31.707	31.746	31.785	31.824	31.863	31.903	31.942
890	31.981	32.020	32.059	32.098	32.137	32.176	32.215	32.254	32.293	32.332
900	32.371	32.410	32.449	32.488	32.527	32.566	32.605	32.644	32.683	32.722
910	32.761	32.800	32.839	32.878	32.917	32.956	32.995	33.034	33.073	33.112
920	33.151	33.190	33.229	33.268	33.307	33.346	33.385	33.424	33.463	33.502
930	33.541	33.580	33.619	33.658	33.697	33.736	33.774	33.813	33.852	33.891
940	33.930	33.969	34.008	34.047	34.086	34.124	34.163	34.202	34.241	34.280
950	34.319	34.358	34.396	34.435	34.474	34.513	34.552	34.591	34.629	34.668
960	34.707	34.746	34.785	34.823	34.862	34.901	34.940	34.979	35.017	35.056
970	35.095	35.134	35.172	35.211	35.250	35.289	35.327	35.366	35.403	35.444
980	35.482	35.521	35.560	35.598	35.637	35.676	35.714	35.753	35.792	35.831
990	35.869	35.908	35.946	35.985	36.024	36.062	36.101	36.140	36.178	36.217
1000	36.256	36.294	36.333	36.371	36.410	36.449	36.487	36.526	36.564	36.603
1010	36.641	36.680	36.718	36.757	36.796	36.834	36.873	36.911	36.950	36.988
1020	37.027	37.065	37.104	37.142	37.181	37.219	37.258	37.296	37.334	37.373
1030	37.411	37.450	37.488	37.527	37.565	37.603	37.642	37.680	37.719	37.757
1040	37.795	37.834	37.872	37.911	37.949	37.987	38.026	38.064	38.102	38.141

续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
1050	38.179	38.217	38.256	38.294	38.332	38.370	38.409	38.447	38.485	38.524
1060	38.562	38.600	38.638	38.677	38.715	38.753	38.791	38.829	38.868	38.906
1070	38.944	38.982	39.020	39.059	39.097	39.135	39.173	39.211	39.249	39.287
1080	39.326	39.364	39.402	39.440	39.478	39.516	39.554	39.592	39.630	39.668
1090	39.706	39.744	39.783	39.821	39.859	39.897	39.935	39.973	40.011	40.049
1100	40.087	40.125	40.163	40.201	40.238	40.276	40.314	40.352	40.390	40.428
1110	40.466	40.504	40.542	40.580	40.618	40.655	40.693	40.731	40.769	40.807
1120	40.845	40.883	40.920	40.958	40.996	41.034	41.072	41.109	41.147	41.185
1130	41.223	41.260	41.298	41.336	41.374	41.411	41.449	41.487	41.525	41.562
1140	41.600	41.638	41.675	41.713	41.751	41.788	41.826	41.864	41.901	41.939
1150	41.976	42.014	42.052	42.089	42.127	42.164	42.202	42.239	42.277	42.314
1160	42.352	42.390	42.427	42.465	42.502	42.540	42.577	42.614	42.652	42.689
1170	42.727	42.764	42.802	42.839	42.877	42.914	42.951	42.989	43.026	43.064
1180	43.101	43.138	43.176	43.213	43.250	43.288	43.325	43.362	43.399	43.437
1190	43.474	43.511	43.549	43.586	43.623	43.660	43.698	43.735	43.772	43.809
1200	43.846	43.884	43.921	43.958	43.995	44.032	44.069	44.106	44.144	44.181
1210	44.218	44.255	44.292	44.329	44.366	44.403	44.440	44.477	44.514	44.551
1220	44.588	44.625	44.662	44.699	44.736	44.773	44.810	44.847	44.884	44.921
1230	44.958	44.995	45.032	45.069	45.105	45.142	45.179	45.216	45.253	45.290
1240	45.326	45.363	45.400	45.437	45.474	45.510	45.547	45.584	45.621	45.657
1250	45.694	45.731	45.767	45.804	45.841	45.877	45.914	45.951	45.987	46.024
1260	46.060	46.097	46.133	46.170	46.207	46.243	46.280	46.316	46.353	46.389
1270	46.425	46.462	46.498	46.535	46.571	46.608	46.644	46.680	46.717	46.753
1280	46.789	46.826	46.862	46.898	46.935	46.971	47.007	47.043	47.079	47.116
1290	47.152	47.188	47.224	47.260	47.296	47.333	47.369	47.405	47.441	47.477
1300	47.513									

镍铬-铜镍合金(康铜)热电偶(E型)  $E(t)$  分度表

参考温度: 0°C

$t$ (°C)	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
$E$ (mV)										
-270	-9.835									
-260	-9.797	-9.802	-9.808	-9.813	-9.817	-9.821	-9.825	-9.828	-9.831	-9.833
-250	-9.718	-9.728	-9.737	-9.746	-9.754	-9.762	-9.770	-9.777	-9.784	-9.790
-240	-9.604	-9.617	-9.630	-9.642	-9.654	-9.666	-9.677	-9.688	-9.698	-9.709
-230	-9.455	-9.471	-9.487	-9.503	-9.519	-9.534	-9.548	-9.563	-9.577	-9.591
-220	-9.274	-9.293	-9.313	-9.331	-9.350	-9.368	-9.386	-9.404	-9.421	-9.438
-210	-9.063	-9.085	-9.107	-9.129	-9.151	-9.172	-9.193	-9.214	-9.234	-9.254
-200	-8.825	-8.850	-8.874	-8.899	-8.923	-8.947	-8.971	-8.994	-9.017	-9.040

续表

$t$ (°C)	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
$E$ (mV)										
-190	-8.561	-8.588	-8.616	-8.643	-8.669	-8.696	-8.722	-8.748	-8.774	-8.799
-180	-8.273	-8.303	-8.333	-8.362	-8.391	-8.420	-8.449	-8.477	-8.505	-8.533
-170	-7.963	-7.995	-8.027	-8.059	-8.090	-8.121	-8.152	-8.183	-8.213	-8.243
-160	-7.632	-7.666	-7.700	-7.733	-7.767	-7.800	-7.833	-7.866	-7.899	-7.931
-150	-7.279	-7.315	-7.351	-7.387	-7.423	-7.458	-7.493	-7.528	-7.563	-7.597
-140	-6.907	-6.945	-6.983	-7.021	-7.058	-7.096	-7.133	-7.170	-7.206	-7.243
-130	-6.516	-6.556	-6.596	-6.636	-6.675	-6.714	-6.753	-6.792	-6.831	-6.869
-120	-6.107	-6.149	-6.191	-6.232	-6.273	-6.314	-6.355	-6.396	-6.436	-6.476
-110	-5.681	-5.724	-5.767	-5.810	-5.853	-5.896	-5.939	-5.981	-6.023	-6.065
-100	-5.237	-5.282	-5.327	-5.372	-5.417	-5.461	-5.505	-5.549	-5.593	-5.637
-90	-4.777	-4.824	-4.871	-4.917	-4.963	-5.009	-5.055	-5.101	-5.147	-5.192
-80	-4.302	-4.350	-4.398	-4.446	-4.494	-4.542	-4.589	-4.636	-4.684	-4.731
-70	-3.811	-3.861	-3.911	-3.960	-4.009	-4.058	-4.107	-4.156	-4.205	-4.254
-60	-3.306	-3.357	-3.408	-3.459	-3.510	-3.561	-3.611	-3.661	-3.711	-3.761
-50	-2.787	-2.840	-2.892	-2.944	-2.996	-3.048	-3.100	-3.152	-3.204	-3.255
-40	-2.255	-2.309	-2.362	-2.416	-2.469	-2.523	-2.576	-2.629	-2.682	-2.735
-30	-1.709	-1.765	-1.820	-1.874	-1.929	-1.984	-2.038	-2.093	-2.147	-2.201
-20	-1.152	-1.208	-1.264	-1.320	-1.376	-1.432	-1.488	-1.543	-1.599	-1.654
-10	-0.582	-0.639	-0.697	-0.754	-0.811	-0.868	-0.925	-0.982	-1.039	-1.095
0	0.000	-0.059	-0.117	-0.176	-0.234	-0.292	-0.350	-0.408	-0.466	-0.524

镍铬-铜镍合金 (康铜) 热电偶 (E型)  $E(t)$  分度表

参考温度: 0°C

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
0	0.000	0.059	0.118	0.176	0.235	0.294	0.354	0.413	0.472	0.532
10	0.591	0.651	0.711	0.770	0.830	0.890	0.950	1.010	1.071	1.131
20	1.192	1.252	1.313	1.373	1.434	1.495	1.556	1.617	1.678	1.740
30	1.801	1.862	1.924	1.986	2.047	2.109	2.171	2.233	2.295	2.357
40	2.420	2.482	2.545	2.607	2.670	2.733	2.795	2.858	2.921	2.984
50	3.048	3.111	3.174	3.238	3.301	3.365	3.429	3.492	3.556	3.620
60	3.685	3.749	3.813	3.877	3.942	4.006	4.071	4.136	4.200	4.265
70	4.330	4.395	4.460	4.526	4.591	4.656	4.722	4.788	4.853	4.919
80	4.985	5.051	5.117	5.183	5.249	5.315	5.382	5.448	5.514	5.581
90	5.648	5.714	5.781	5.848	5.915	5.982	6.049	6.117	6.184	6.251
100	6.319	6.386	6.454	6.522	6.590	6.658	6.725	6.794	6.862	6.930
110	6.998	7.066	7.135	7.203	7.272	7.341	7.409	7.478	7.547	7.616
120	7.685	7.754	7.823	7.892	7.962	8.031	8.101	8.170	8.240	8.309
130	8.379	8.449	8.519	8.589	8.659	8.729	8.799	8.869	8.940	9.010
140	9.081	9.151	9.222	9.292	9.363	9.434	9.505	9.576	9.647	9.718



续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
150	9.789	9.860	9.931	10.003	10.074	10.145	10.217	10.288	10.360	10.432
160	10.503	10.575	10.647	10.719	10.791	10.863	10.935	11.007	11.080	11.152
170	11.224	11.297	11.369	11.442	11.514	11.587	11.660	11.733	11.805	11.878
180	11.951	12.024	12.097	12.170	12.243	12.317	12.390	12.463	12.537	12.610
190	12.684	12.757	12.831	12.904	12.978	13.052	13.126	13.199	13.273	13.347
200	13.421	13.495	13.569	13.644	13.718	13.792	13.866	13.941	14.015	14.090
210	14.164	14.239	14.313	14.388	14.463	14.537	14.612	14.687	14.762	14.837
220	14.912	14.987	15.062	15.137	15.212	15.287	15.362	15.438	15.513	15.588
230	15.664	15.739	15.815	15.890	15.966	16.041	16.117	16.193	16.269	16.344
240	16.420	16.496	16.572	16.648	16.724	16.800	16.876	16.952	17.028	17.104
250	17.181	17.257	17.333	17.409	17.486	17.562	17.639	17.715	17.792	17.868
260	17.945	18.021	18.098	18.175	18.252	18.328	18.405	18.482	18.559	18.636
270	18.713	18.790	18.867	18.944	19.021	19.098	19.175	19.252	19.330	19.407
280	19.484	19.561	19.639	19.716	19.794	19.871	19.948	20.026	20.103	20.181
290	20.259	20.336	20.414	20.492	20.569	20.647	20.725	20.803	20.880	20.958
300	21.036	21.114	21.192	21.270	21.348	21.426	21.504	21.582	21.660	21.739
310	21.817	21.895	21.973	22.051	22.130	22.208	22.286	22.365	22.443	22.522
320	22.600	22.678	22.757	22.835	22.914	22.993	23.071	23.150	23.228	23.307
330	23.386	23.464	23.543	23.622	23.701	23.780	23.858	23.937	24.016	24.095
340	24.174	24.253	24.332	24.411	24.490	24.569	24.648	24.727	24.806	24.885
350	24.964	25.044	25.123	25.202	25.281	25.360	25.440	25.519	25.598	25.678
360	25.757	25.836	25.916	25.995	26.075	26.154	26.233	26.313	26.392	26.472
370	26.552	26.631	26.711	26.790	26.870	26.950	27.029	27.109	27.189	27.268
380	27.348	27.428	27.507	27.587	27.667	27.747	27.827	27.907	27.986	28.066
390	28.146	28.226	28.306	28.386	28.466	28.546	28.626	28.706	28.786	28.866
400	28.946	29.026	29.106	29.186	29.266	29.346	29.427	29.507	29.587	29.667
410	29.747	29.827	29.908	29.988	30.068	30.148	30.229	30.309	30.389	30.470
420	30.550	30.630	30.711	30.791	30.871	30.952	31.032	31.112	31.193	31.273
430	31.354	31.434	31.515	31.595	31.676	31.756	31.837	31.917	31.998	32.078
440	32.159	32.239	32.320	32.400	32.481	32.562	32.642	32.723	32.803	32.884
450	32.965	33.045	33.126	33.207	33.287	33.368	33.449	33.529	33.610	33.691
460	33.772	33.852	33.933	34.014	34.095	34.175	34.256	34.337	34.418	34.498
470	34.579	34.660	34.741	34.822	34.902	34.983	35.064	35.145	35.226	35.307
480	35.387	35.468	35.549	35.630	35.711	35.792	35.873	35.954	36.034	36.115
490	36.196	36.277	36.358	36.439	36.520	36.601	36.682	36.763	36.843	36.924
500	37.005	37.086	37.167	37.248	37.329	37.410	37.491	37.572	37.653	37.734
510	37.815	37.896	37.977	38.058	38.139	38.220	38.300	38.381	38.462	38.543
520	38.624	38.705	38.786	38.867	38.948	39.029	39.110	39.191	39.272	39.353
530	39.434	39.515	39.596	39.677	39.758	39.839	39.920	40.001	40.082	40.163
540	40.243	40.324	40.405	40.486	40.567	40.648	40.729	40.810	40.891	40.972

续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
550	41.053	41.134	41.215	41.296	41.377	41.457	41.538	41.619	41.700	41.781
560	41.862	41.943	42.024	42.105	42.185	42.266	42.347	42.428	42.509	42.590
570	42.671	42.751	42.832	42.913	42.994	43.075	43.156	43.236	43.317	43.398
580	43.479	43.560	43.640	43.721	43.802	43.883	43.963	44.044	44.125	44.206
590	44.286	44.367	44.448	44.529	44.609	44.690	44.771	44.851	44.932	45.013
600	45.093	45.174	45.255	45.335	45.416	45.497	45.577	45.658	45.738	45.819
610	45.900	45.980	46.061	46.141	46.222	46.302	46.383	46.463	46.544	46.624
620	46.705	46.785	46.866	46.946	47.027	47.107	47.188	47.268	47.349	47.429
630	47.509	47.590	47.670	47.751	47.831	47.911	47.992	48.072	48.152	48.233
640	48.313	48.393	48.474	48.554	48.634	48.715	48.795	48.875	48.955	49.035
650	49.116	49.196	49.276	49.356	49.436	49.517	49.597	49.677	49.757	49.837
660	49.917	49.997	50.077	50.157	50.238	50.318	50.398	50.478	50.558	50.638
670	50.718	50.798	50.878	50.958	51.038	51.118	51.197	51.277	51.357	51.437
680	51.517	51.597	51.677	51.757	51.837	51.916	51.996	52.076	52.156	52.236
690	52.315	52.395	52.475	52.555	52.634	52.714	52.794	52.873	52.953	53.033
700	53.112	53.192	53.272	53.351	53.431	53.510	53.590	53.670	53.749	53.829
710	53.908	53.988	54.067	54.147	54.226	54.306	54.385	54.465	54.544	54.624
720	54.703	54.782	54.862	54.941	55.021	55.100	55.179	55.259	55.338	55.417
730	55.497	55.576	55.655	55.734	55.814	55.893	55.972	56.051	56.131	56.210
740	56.289	56.368	56.447	56.526	56.606	56.685	56.764	56.843	56.922	57.001
750	57.080	57.159	57.238	57.317	57.396	57.475	57.554	57.633	57.712	57.791
760	57.870	57.949	58.028	58.107	58.186	58.265	58.343	58.422	58.501	58.580
770	58.659	58.738	58.816	58.895	58.974	59.053	59.131	59.210	59.289	59.367
780	59.446	59.525	59.604	59.682	59.761	59.839	59.918	59.997	60.075	60.154
790	60.232	60.311	60.390	60.468	60.547	60.625	60.704	60.782	60.860	60.939
800	61.017	61.096	61.174	61.253	61.331	61.409	61.488	61.566	61.644	61.723
810	61.801	61.879	61.958	62.036	62.114	62.192	62.271	62.349	62.427	62.505
820	62.583	62.662	62.740	62.818	62.896	62.974	63.052	63.130	63.208	63.286
830	63.364	63.442	63.520	63.598	63.676	63.754	63.832	63.910	63.988	64.066
840	64.144	64.222	64.300	64.377	64.455	64.533	64.611	64.689	64.766	64.844
850	64.922	65.000	65.077	65.155	65.233	65.310	65.388	65.465	65.543	65.621
860	65.698	65.776	65.853	65.931	66.008	66.086	66.163	66.241	66.318	66.396
870	66.473	66.550	66.628	66.705	66.782	66.860	66.937	67.014	67.092	67.169
880	67.246	67.323	67.400	67.478	67.555	67.632	67.709	67.786	67.863	67.940
890	68.017	68.094	68.171	68.248	68.325	68.402	68.479	68.556	68.633	68.710
900	68.787	68.863	68.940	69.017	69.094	69.171	69.247	69.324	69.401	69.477
910	69.554	69.631	69.707	69.784	69.860	69.937	70.013	70.090	70.166	70.243
920	70.319	70.396	70.472	70.548	70.625	70.701	70.777	70.854	70.930	71.006
930	71.082	71.159	71.235	71.311	71.387	71.463	71.539	71.615	71.692	71.768
940	71.844	71.920	71.996	72.072	72.147	72.223	72.299	72.375	72.451	72.527

续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
950	72.603	72.678	72.754	72.830	72.906	72.981	73.057	73.133	73.208	73.284
960	73.360	73.435	73.511	73.586	73.662	73.738	73.813	73.889	73.964	74.040
970	74.115	74.190	74.266	74.341	74.417	74.492	74.567	74.643	74.718	74.793
980	74.869	74.944	75.019	75.095	75.170	75.245	75.320	75.395	75.471	75.546
990	75.621	75.696	75.771	75.847	75.922	75.997	76.072	76.147	76.223	76.298
1000	76.373									

铁-铜镍合金 (康铜) 热电偶 (J型)  $E(t)$  分度表

参考温度: 0°C

$t$ (°C)	-0	-1	-2	-3	-4	-5	-6	-7	-8	-9
$E$ (mV)										
-210	-8.095									
-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	-7.403	-7.429	-7.456	-7.482	-7.508	-7.534	-7.559	-7.585	-7.610	-7.634
-170	-7.123	-7.152	-7.181	-7.209	-7.237	-7.265	-7.293	-7.321	-7.348	-7.376
-160	-6.821	-6.853	-6.883	-6.914	-6.944	-6.975	-7.005	-7.035	-7.064	-7.094
-150	-6.500	-6.533	-6.566	-6.598	-6.631	-6.663	-6.695	-6.727	-6.759	-6.790
-140	-6.159	-6.194	-6.229	-6.263	-6.298	-6.332	-6.366	-6.400	-6.433	-6.467
-130	-5.801	-5.838	-5.874	-5.910	-5.946	-5.982	-6.018	-6.054	-6.089	-6.124
-120	-5.426	-5.465	-5.503	-5.541	-5.578	-5.616	-5.653	-5.690	-5.727	-5.764
-110	-5.037	-5.076	-5.116	-5.155	-5.194	-5.233	-5.272	-5.311	-5.350	-5.388
-100	-4.633	-4.674	-4.714	-4.755	-4.796	-4.836	-4.877	-4.917	-4.957	-4.997
-90	-4.215	-4.257	-4.300	-4.342	-4.384	-4.425	-4.467	-4.509	-4.550	-4.591
-80	-3.786	-3.829	-3.872	-3.916	-3.959	-4.002	-4.045	-4.088	-4.130	-4.173
-70	-3.344	-3.389	-3.434	-3.478	-3.522	-3.566	-3.610	-3.654	-3.698	-3.742
-60	-2.893	-2.938	-2.984	-3.029	-3.075	-3.120	-3.165	-3.210	-3.255	-3.300
-50	-2.431	-2.478	-2.524	-2.571	-2.617	-2.663	-2.709	-2.755	-2.801	-2.847
-40	-1.961	-2.008	-2.055	-2.103	-2.150	-2.197	-2.244	-2.291	-2.338	-2.385
-30	-1.482	-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	-1.142	-1.190	-1.239	-1.288	-1.336	-1.385	-1.433
-10	-0.501	-0.550	-0.600	-0.650	-0.699	-0.749	-0.798	-0.847	-0.896	-0.946
0	0.000	-0.050	-0.101	-0.151	-0.201	-0.251	-0.301	-0.351	-0.401	-0.451

铁-铜镍合金 (康铜) 热电偶 (J型)  $E(t)$  分度表

参考温度: 0°C

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
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	0.814	0.865	0.916	0.968
20	1.019	1.071	1.122	1.174	1.226	1.277	1.329	1.381	1.433	1.485
30	1.537	1.589	1.641	1.693	1.745	1.797	1.849	1.902	1.954	2.006
40	2.059	2.111	2.164	2.216	2.269	2.322	2.374	2.427	2.480	2.532

续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
50	2.585	2.638	2.691	2.744	2.797	2.850	2.903	2.956	3.009	3.062
60	3.116	3.169	3.222	3.275	3.329	3.382	3.436	3.489	3.543	3.596
70	3.650	3.703	3.757	3.810	3.864	3.918	3.971	4.025	4.079	4.133
80	4.187	4.240	4.294	4.348	4.402	4.456	4.510	4.564	4.618	4.672
90	4.726	4.781	4.835	4.889	4.943	4.997	5.052	5.106	5.160	5.215
100	5.269	5.323	5.378	5.432	5.487	5.541	5.595	5.650	5.705	5.759
110	5.814	5.868	5.923	5.977	6.032	6.087	6.141	6.196	6.251	6.306
120	6.360	6.415	6.470	6.525	6.579	6.634	6.689	6.744	6.799	6.854
130	6.909	6.964	7.019	7.074	7.129	7.184	7.239	7.294	7.349	7.404
140	7.459	7.514	7.569	7.624	7.679	7.734	7.789	7.844	7.900	7.955
150	8.010	8.065	8.120	8.175	8.231	8.286	8.341	8.396	8.452	8.507
160	8.562	8.618	8.673	8.728	8.783	8.839	8.894	8.949	9.005	9.060
170	9.115	9.171	9.226	9.282	9.337	9.392	9.448	9.503	9.559	9.614
180	9.669	9.725	9.780	9.836	9.891	9.947	10.002	10.057	10.113	10.168
190	10.224	10.279	10.335	10.390	10.446	10.501	10.557	10.612	10.668	10.723
200	10.779	10.834	10.890	10.945	11.001	11.056	11.112	11.167	11.223	11.278
210	11.334	11.389	11.445	11.501	11.556	11.612	11.667	11.723	11.778	11.834
220	11.889	11.945	12.000	12.056	12.111	12.167	12.222	12.278	12.334	12.389
230	12.445	12.500	12.556	12.611	12.667	12.722	12.778	12.833	12.889	12.944
240	13.000	13.056	13.111	13.167	13.222	13.278	13.333	13.389	13.444	13.500
250	13.555	13.611	13.666	13.722	13.777	13.833	13.888	13.944	13.999	14.055
260	14.110	14.166	14.221	14.277	14.332	14.388	14.443	14.499	14.554	14.609
270	14.665	14.720	14.776	14.831	14.887	14.942	14.998	15.053	15.109	15.164
280	15.219	15.275	15.330	15.386	15.441	15.496	15.552	15.607	15.663	15.718
290	15.773	15.829	15.884	15.940	15.995	16.050	16.106	16.161	16.216	16.272
300	16.327	16.383	16.438	16.493	16.549	16.604	16.659	16.715	16.770	16.825
310	16.881	16.936	16.991	17.046	17.102	17.157	17.212	17.268	17.323	17.378
320	17.434	17.489	17.544	17.599	17.655	17.710	17.765	17.820	17.876	17.931
330	17.986	18.041	18.097	18.152	18.207	18.262	18.318	18.373	18.428	18.483
340	18.538	18.594	18.649	18.704	18.759	18.814	18.870	18.925	18.980	19.035
350	19.090	19.146	19.201	19.256	19.311	19.366	19.422	19.477	19.532	19.587
360	19.642	19.697	19.753	19.808	19.863	19.918	19.973	20.028	20.083	20.139
370	20.194	20.249	20.304	20.359	20.414	20.469	20.525	20.580	20.635	20.690
380	20.745	20.800	20.855	20.911	20.966	21.021	21.076	21.131	21.186	21.241
390	21.297	21.352	21.407	21.462	21.517	21.572	21.627	21.683	21.738	21.793

续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
400	21.848	21.903	21.958	22.014	22.069	22.124	22.179	22.234	22.289	22.345
410	22.400	22.455	22.510	22.565	22.620	22.676	22.731	22.786	22.841	22.896
420	22.952	23.007	23.062	23.117	23.172	23.228	23.283	23.338	23.393	23.449
430	23.504	23.559	23.614	23.670	23.725	23.780	23.835	23.891	23.946	24.001
440	24.057	24.112	24.167	24.223	24.278	24.333	24.389	24.444	24.499	24.555
450	24.610	24.665	24.721	24.776	24.832	24.887	24.943	24.998	25.053	25.109
460	25.164	25.220	25.275	25.331	25.386	25.442	25.497	25.553	25.608	25.664
470	25.720	25.775	25.831	25.886	25.942	25.998	26.053	26.109	26.165	26.220
480	26.276	26.332	26.387	26.443	26.499	26.555	26.610	26.666	26.722	26.778
490	26.834	26.889	26.945	27.001	27.057	27.113	27.169	27.225	27.281	27.337
500	27.393	27.449	27.505	27.561	27.617	27.673	27.729	27.785	27.841	27.897
510	27.953	28.010	28.066	28.122	28.178	28.234	28.291	28.347	28.403	28.460
520	28.516	28.572	28.629	28.685	28.741	28.798	28.854	28.911	28.967	29.024
530	29.080	29.137	29.194	29.250	29.307	29.363	29.420	29.477	29.534	29.590
540	29.647	29.704	29.761	29.818	29.874	29.931	29.988	30.045	30.102	30.159
550	30.216	30.273	30.330	30.387	30.444	30.502	30.559	30.616	30.673	30.730
560	30.788	30.845	30.902	30.960	31.017	31.074	31.132	31.189	31.247	31.304
570	31.362	31.419	31.477	31.535	31.592	31.650	31.708	31.766	31.823	31.881
580	31.939	31.997	32.055	32.113	32.171	32.229	32.287	32.345	32.403	32.461
590	32.519	32.577	32.636	32.694	32.752	32.810	32.869	32.927	32.985	33.044
600	33.102	33.161	33.219	33.278	33.337	33.395	33.454	33.513	33.571	33.630
610	33.689	33.748	33.807	33.866	33.925	33.984	34.043	34.102	34.161	34.220
620	34.279	34.338	34.397	34.457	34.516	34.575	34.635	34.694	34.754	34.813
630	34.873	34.932	34.992	35.051	35.111	35.171	35.230	35.290	35.350	35.410
640	35.470	35.530	35.590	35.650	35.710	35.770	35.830	35.890	35.950	36.010
650	36.071	36.131	36.191	36.252	36.312	36.373	36.433	36.494	36.554	36.615
660	36.675	36.736	36.797	36.858	36.918	36.979	37.040	37.101	37.162	37.223
670	37.284	37.345	37.406	37.467	37.528	37.590	37.651	37.712	37.773	37.835
680	37.896	37.958	38.019	38.081	38.142	38.204	38.265	38.327	38.389	38.450
690	38.512	38.574	38.636	38.698	38.760	38.822	38.884	38.946	39.008	39.070
700	39.132	39.194	39.256	39.318	39.381	39.443	39.505	39.568	39.630	39.693
710	39.755	39.818	39.880	39.943	40.005	40.068	40.131	40.193	40.256	40.319
720	40.382	40.445	40.508	40.570	40.633	40.696	40.759	40.822	40.886	40.949
730	41.012	41.075	41.138	41.201	41.265	41.328	41.391	41.455	41.518	41.581
740	41.645	41.708	41.772	41.835	41.899	41.962	42.026	42.090	42.153	42.217



续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
	E (mV)									
750	42.281	42.344	42.408	42.472	42.536	42.599	42.663	42.727	42.791	42.855
760	42.919	42.983	43.047	43.111	43.175	43.239	43.303	43.367	43.431	43.495
770	43.559	43.624	43.688	43.752	43.817	43.881	43.945	44.010	44.074	44.139
780	44.203	44.267	44.332	44.396	44.461	44.525	44.590	44.655	44.719	44.784
790	44.848	44.913	44.977	45.042	45.107	45.171	45.236	45.301	45.365	45.430
800	45.494	45.559	45.624	45.688	45.753	45.818	45.882	45.947	46.011	46.076
810	46.141	46.205	46.270	46.334	46.399	46.464	46.528	46.593	46.657	46.722
820	46.786	46.851	46.915	46.980	47.044	47.109	47.173	47.238	47.302	47.367
830	47.431	47.495	47.560	47.624	47.688	47.753	47.817	47.881	47.946	48.010
840	48.074	48.138	48.202	48.267	48.331	48.395	48.459	48.523	48.587	48.651
850	48.715	48.779	48.843	48.907	48.971	49.034	49.098	49.162	49.226	49.290
860	49.353	49.417	49.481	49.544	49.608	49.672	49.735	49.799	49.862	49.926
870	49.989	50.052	50.116	50.179	50.243	50.306	50.369	50.432	50.495	50.559
880	50.622	50.685	50.748	50.811	50.874	50.937	51.000	51.063	51.126	51.188
890	51.251	51.314	51.377	51.439	51.502	51.565	51.627	51.690	51.752	51.815
900	51.877	51.940	52.002	52.064	52.127	52.189	52.251	52.314	52.376	52.438
910	52.500	52.562	52.624	52.686	52.748	52.810	52.872	52.934	52.996	53.057
920	53.119	53.181	53.243	53.304	53.366	53.427	53.489	53.550	53.612	53.673
930	53.735	53.796	53.857	53.919	53.980	54.041	54.102	54.164	54.225	54.286
940	54.347	54.408	54.469	54.530	54.591	54.652	54.713	54.773	54.834	54.895
950	54.956	55.016	55.077	55.138	55.198	55.259	55.319	55.380	55.440	55.501
960	55.561	55.622	55.682	55.742	55.803	55.863	55.923	55.983	56.043	56.104
970	56.164	56.224	56.284	56.344	56.404	56.464	56.524	56.584	56.643	56.703
980	56.763	56.823	56.883	56.942	57.002	57.062	57.121	57.181	57.240	57.300
990	57.360	57.419	57.479	57.538	57.597	57.657	57.716	57.776	57.835	57.894
1000	57.953	58.013	58.072	58.131	58.190	58.249	58.309	58.368	58.427	58.486
1010	58.545	58.604	58.663	58.722	58.781	58.840	58.899	58.957	59.016	59.075
1020	59.134	59.193	59.252	59.310	59.369	59.428	59.487	59.545	59.604	59.663
1030	59.721	59.780	59.838	59.897	59.956	60.014	60.073	60.131	60.190	60.248
1040	60.307	60.365	60.423	60.482	60.540	60.599	60.657	60.715	60.774	60.832
1050	60.890	60.949	61.007	61.065	61.123	61.182	61.240	61.298	61.356	61.415
1060	61.473	61.531	61.589	61.647	61.705	61.763	61.822	61.880	61.938	61.996
1070	62.054	62.112	62.170	62.228	62.286	62.344	62.402	62.460	62.518	62.576
1080	62.634	62.692	62.750	62.808	62.866	62.924	62.982	63.040	63.098	63.156
1090	63.214	63.271	63.329	63.387	63.445	63.503	63.561	63.619	63.677	63.734

续表

$t$ (°C)	0	1	2	3	4	5	6	7	8	9
$E$ (mV)										
1100	63.792	63.850	63.908	63.966	64.024	64.081	64.139	64.197	64.255	64.313
1110	64.370	64.428	64.486	64.544	64.602	64.659	64.717	64.775	64.833	64.890
1120	64.948	65.006	65.064	65.121	65.179	65.237	65.295	65.352	65.410	65.468
1130	65.525	65.583	65.641	65.699	65.756	65.814	65.872	65.929	65.987	66.045
1140	66.102	66.160	66.218	66.275	66.333	66.391	66.448	66.506	66.564	66.621
1150	66.679	66.737	66.794	66.852	66.910	66.967	67.025	67.082	67.140	67.198
1160	67.255	67.313	67.370	67.428	67.486	67.543	67.601	67.658	67.716	67.773
1170	67.831	67.888	67.946	68.003	68.061	68.119	68.176	68.234	68.291	68.348
1180	68.406	68.463	68.521	68.578	68.636	68.693	68.751	68.808	68.865	68.923
1190	68.980	69.037	69.095	69.152	69.209	69.267	69.324	69.381	69.439	69.496
1200	69.553									

附录 8 廉金属热电偶检定记录格式

检定点 (°C)	标 准 $e_{\text{证}}$	电位差计:			送检单位和被检热电偶分度号					
		标准热电偶								
		No.			No.	No.	No.	No.	No.	
		读 数	1							
			2							
			3							
			4							
			平均							
与检定点之差										
实 际 值										
误 差										
		读 数	1							
			2							
			3							
			4							
			平均							
与检定点之差										
实 际 值										
误 差										

检定:

复核:

年 月 日

## 附录9 检定证书（背面）格式

### 检 定 结 果

温度  
(℃)

修正值  
(℃)

参考端温度为0℃

注：下次检定时必须带此证书。