2553A Temperature generation for Thermocouple (Detail)

Type	Setting Temperature	Stability (1 h)	Accuracy (1 year)	Temperature Coefficient	Reference Junction Compensation Error
	℃	±℃	±℃	$\times 10^{-3}$℃/℃	±℃
R	-50	0.50	1.10	0.88	0.56
	0	0.30	0.80	0.00	0.41
	100	0.25	0.55	0.88	0.28
	600	0.15	0.40	3.40	0.19
	1600	0.15	0.40	8.52	0.16
	1768	0.20	0.45	8.69	0.18
S	-50	0.40	1.03	0.93	0.52
	0	0.30	0.75	0.00	0.38
	100	0.25	0.56	0.90	0.28
	400	0.20	0.47	3.44	0.22
	1600	0.20	0.44	8.54	0.18
	1768	0.20	0.51	10.46	0.20
B	400	0.40	1.00	0.90	0.04
	600	0.30	0.70	1.75	0.03
	1000	0.20	0.50	3.40	0.02
	1200	0.20	0.44	4.27	0.02
	1820	0.20	0.44	6.91	0.02
J	-210	0.10	0.25	2.83	0.84
	-100	0.05	0.11	0.86	0.40
	0	0.05	0.08	0.00	0.32
	1200	0.10	0.15	6.68	0.29
T	-250	0.30	0.72	5.98	2.13
	-200	0.15	0.29	2.55	0.86
	-100	0.10	0.16	0.86	0.50
	100	0.05	0.10	0.85	0.30
	400	0.05	0.09	1.92	0.22
E	-250	0.20	0.50	5.95	2.07
	-200	0.10	0.20	2.56	0.82
	-100	0.05	0.10	0.85	0.44
	0	0.05	0.07	0.00	0.34
	1000	0.05	0.12	5.53	0.27
K	-250	0.40	0.94	7.71	2.65
	-200	0.15	0.30	2.55	0.84
	-100	0.10	0.15	0.86	0.44
	0	0.05	0.11	0.00	0.35
	800	0.10	0.15	4.26	0.32
	1300	0.10	0.21	7.67	0.38

Type	Setting Temperature	Stability (1 h)	Accuracy (1 year)	Temperature Coefficient	Reference Junction Compensation Error
	℃	±℃	±℃	$\times 10^{-3}$℃/℃	±℃
N	-240	0.40	1.00	5.10	1.99
	-200	0.20	0.44	2.55	0.87
	-100	0.10	0.21	0.87	0.43
	0	0.10	0.16	0.00	0.34
	800	0.10	0.15	3.92	0.22
	1300	0.10	0.20	7.32	0.25
C	0	0.15	0.30	0.00	0.34
	200	0.10	0.26	1.72	0.27
	600	0.10	0.25	3.40	0.24
	1000	0.15	0.30	6.81	0.25
	2000	0.20	0.51	15.30	0.37
	2315	0.25	0.70	20.72	0.51
A	0	0.15	0.34	0.00	0.35
	100	0.10	0.29	0.87	0.29
	600	0.10	0.28	3.42	0.25
	1600	0.15	0.47	11.09	0.35
	2500	0.20	0.79	22.67	0.54

Setting Resolution: 0.1℃

Output resistance: Approx. 1 Ω

Temperature scale: ITS-90

Stability: Specified at an ambient temperature of 23 ± 1 °C.

Accuracy:

- Specified at an ambient temperature of 23 ± 5 °C. For ambient temperatures from 5 to 18 °C and 28 to 40 °C, add the temperature coefficient to the specified accuracy.
- Thermocouple error is not included in the accuracy.
- When using internal reference junction compensation (INT LED lit) or external reference junction compensation (EXT LED lit), the following values must be added to the specified accuracy.:
  - When internal compensation is used, or when RJ sensor 257875 is used for external compensation, add the reference junction compensation error to the accuracy.

    Example: Type R thermocouple, set temperature 0 °C, internal reference junction compensation selected

    Accuracy (1 year) at 0 °C for Type R: ± 0.80 °C

    The effect of the reference junction compensation is equal to the reference junction compensation error, which is ±0.41°C

    Therefore: Accuracy = (± 0.80 °C) + (± 0.41 °C) = ± 1.21 °C

- When external compensation is used with an RJ sensor other than 257875, divide the absolute value of the sensor temperature measurement accuracy by 0.3, round the result up to the nearest integer, and multiply the reference junction compensation error by that integer. Add the result to the accuracy.

  Example: Type R thermocouple, set temperature 0°C, external reference junction compensation used, RJ sensor temperature measurement accuracy = ± 0.5 °C

  Accuracy (1 year) at 0°C for Type R: ± 0.80 °C

  The effect of the reference junction compensation is calculated as follows:

  0.5/0.3 = 1.67 → rounded up to 2

  Multiplying the reference junction compensation error (± 0.41°C) by this factor gives: ± 0.41°C × 2 = ± 0.82°C

  Therefore, the accuracy is (±0.80°C) + (±0.82°C) = ±1.62°C

When the reference junction compensation mode is set to Manual Input (both the INT and EXT LEDs are off), no additional accuracy term is applied. (The status of the RJC LED is irrelevant in this condition.)

- The stability and accuracy for the temperatures between the set temperatures are those obtained by linear interpolation.
- To add the temperature coefficient compensation or the reference junction compensation error to the accuracy figure for a temperature between the set temperatures, linearly interpolate the accuracies obtained after adding the compensation.
- The thermoelectromotive force for temperatures not listed in the table will be ±(60 ppm of V_T + 4 μV) with respect to standard thermoelectromotive force V_T of the interpolating polynomial of IEC 60584-1.
- On models with the -UF suffix code, °F display is possible. Convert the source range, set temperature, stability, accuracy, temperature coefficient, and reference junction compensation error using the following expression. The resolution is 0.1 °F.

  °F = (9/5) × (°C) + 32