

## Temperature Errors Caused By 1% Emissivity Change

The magnitude of temperature error created by a given emissivity uncertainty depends on the spectral range of the infrared thermometer, and the temperature of the target. The error table shows temperature errors caused by a 1% emissivity error, for different spectral bands at different target temperatures. The error is given in degrees Celsius. For 2-color instruments with spectral response Code R, 1% change represents change in the ratio of emissivities.

SPECTRAL RESPONSE CODE											
Mikron's Spectral Code	V	H	Q	P	M	D	L	E	F	B	R
Effective Wavelength	0.65µm	0.9µm	1.64µm	2.3µm	3.43µm	3.86µm	4.5µm	5.0µm	7.9µm	10.6µm	0.78-1.06
Target Temperature (°C)	Errors (°C)										
-50.0											
-40.0											
-30.0									1.0	0.8	
-20.0									0.7	0.6	
-10.0									0.5	0.4	
0.0									0.3	0.3	
10.0									0.2	0.2	
20.0									0.0	0.0	
30.0					0.0	0.0	0.0	0.0	0.0	0.0	
40.0					0.1	0.1	0.1	0.1	0.1	0.1	
50.0				0.1	0.2	0.2	0.2	0.2	0.2	0.2	
60.0				0.2	0.2	0.2	0.2	0.2	0.3	0.3	
70.0				0.2	0.2	0.3	0.3	0.3	0.4	0.4	
80.0				0.2	0.3	0.3	0.3	0.3	0.4	0.5	
90.0				0.2	0.3	0.3	0.3	0.4	0.5	0.5	
100.0			0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	
120.0			0.2	0.3	0.4	0.4	0.4	0.5	0.6	0.7	
140.0			0.2	0.3	0.4	0.4	0.5	0.5	0.8	0.9	
160.0			0.2	0.3	0.4	0.5	0.6	0.6	0.9	1.0	
180.0			0.2	0.3	0.5	0.5	0.6	0.7	1.0	1.1	
200.0			0.3	0.4	0.5	0.6	0.7	0.8	1.1	1.2	
220.0			0.3	0.4	0.6	0.7	0.7	0.8	1.2	1.4	
240.0			0.3	0.4	0.6	0.7	0.8	0.9	1.3	1.5	
260.0			0.3	0.5	0.7	0.8	0.9	1.0	1.4	1.6	
280.0			0.4	0.5	0.7	0.8	0.9	1.0	1.5	1.8	
300.0			0.4	0.5	0.8	0.9	1.0	1.1	1.6	1.9	
320.0			0.4	0.6	0.8	0.9	1.1	1.2	1.8	2.0	
340.0			0.4	0.6	0.9	1.0	1.2	1.3	1.9	2.2	
360.0			0.5	0.7	1.0	1.1	1.2	1.4	2.0	2.3	
380.0			0.5	0.7	1.0	1.1	1.3	1.4	2.1	2.4	
400.0		0.3	0.5	0.7	1.1	1.2	1.4	1.5	2.2	2.6	
420.0		0.3	0.5	0.8	1.2	1.3	1.5	1.6	2.4	2.7	
440.0		0.4	0.6	0.8	1.2	1.4	1.6	1.7	2.5	2.9	
460.0		0.4	0.6	0.9	1.3	1.4	1.7	1.8	2.6	3.0	
480.0		0.4	0.6	0.9	1.4	1.5	1.7	1.9	2.8	3.2	
500.0		0.4	0.7	1.0	1.4	1.6	1.8	2.0	2.9	3.3	
550.0		0.5	0.7	1.1	1.6	1.8	2.1	2.3	3.2	3.7	
600.0		0.5	0.8	1.2	1.8	2.0	2.3	2.5	3.6	4.1	10.6
650.0		0.6	0.9	1.4	2.0	2.3	2.6	2.8	4.0	4.5	11.2
700.0		0.6	1.0	1.5	2.2	2.5	2.8	3.1	4.3	4.9	11.7
750.0		0.7	1.1	1.7	2.5	2.8	3.1	3.4	4.7	5.3	12.2
800.0	0.5	0.8	1.2	1.8	2.7	3.0	3.4	3.7	5.1	5.7	12.8
850.0	0.6	0.8	1.3	2.0	3.0	3.3	3.7	4.0	5.5	6.1	13.4
900.0	0.6	0.9	1.4	2.2	3.2	3.5	4.0	4.3	5.9	6.5	14.0
950.0	0.7	1.0	1.5	2.4	3.5	3.8	4.3	4.7	6.3	6.9	14.6
1000.0	0.7	1.1	1.7	2.5	3.7	4.1	4.6	5.0	6.7	7.4	15.3
1100.0	0.9	1.3	1.9	2.9	4.3	4.7	5.3	5.7	7.5	8.2	16.7
1200.0	1.0	1.4	2.2	3.4	4.9	5.4	6.0	6.4	8.4	9.1	18.1
1300.0	1.1	1.6	2.4	3.8	5.5	6.0	6.7	7.2	9.2	10.0	19.7
1400.0	1.3	1.8	2.7	4.3	6.2	6.7	7.4	7.9	10.1	10.9	21.3
1500.0	1.4	2.0	3.0	4.8	6.8	7.4	8.1	8.7	11.0	11.9	23.1
1600.0	1.6	2.3	3.4	5.3	7.5	8.1	8.9	9.5	11.9	12.7	24.9
1700.0	1.8	2.5	3.7	5.8	8.2	8.9	9.7	10.3	12.8	13.7	26.8
1800.0	1.9	2.8	4.0	6.4	8.9	9.6	10.5	11.1	13.7	14.6	28.8
1900.0	2.1	3.0	4.4	7.0	9.6	10.4	11.3	12.0	14.6	15.5	30.9
2000.0	2.3	3.3	4.8	7.6	10.4	11.2	12.1	12.8	15.5	16.5	33.1
2100.0	2.5	3.6	5.2	8.2	11.2	12.0	12.9	13.6	16.4	17.4	35.4
2200.0	2.8	3.9	5.6	8.8	12.0	12.7	13.8	14.5	17.3	18.3	37.8
2300.0	3.0	4.2	6.0	9.5	12.7	13.6	14.6	15.3	18.3	19.3	40.2
2400.0	3.2	4.5	6.4	10.1	13.5	14.4	15.5	16.2	19.2	20.3	42.7
2500.0	3.5	4.9	6.9	10.8	14.3	15.2	16.3	17.1	20.2	21.2	45.4
2600.0	3.7	5.2	7.3	11.5	15.1	16.1	17.2	18.0	21.1	22.2	48.1
2700.0	4.0	5.6	7.8	12.2	15.9	16.9	18.1	18.9	22.1	23.1	50.9
2800.0	4.2	5.9	8.3	12.8	16.8	17.8	19.0	19.8	23.0	24.1	53.8
2900.0	4.5	6.3	8.8	13.6	17.6	18.6	19.9	20.7	24.0	25.1	56.8
3000.0	4.8	6.7	9.3	14.3	18.4	19.5	20.7	21.6	24.9	26.0	59.9