

# MI Thermocouple & RTD Units



**Thermal Resources Management LTD**  
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## Thermocouple Probe Data Sheet - 0.5 to 3.0mm Type K, J, T, E or N Thermocouples Terminated with Plain Seal

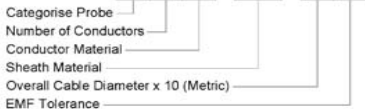
To order please specify the following:

1. Part reference (see example).
2. Design lengths specified in mm, including immersion length and tail length.
3. Type of junction - insulated (IJ) or bonded (BJ).
4. Any accessories required e.g. Lock nuts or termination glands.
5. Any special test requirements.

### Part Reference Example:

See table 1 for cables and specifications

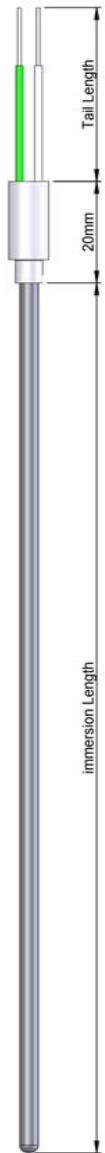
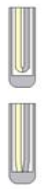
**P 2 K - 321 - 15 S**



### Junction Types.

**IJ - Insulated junction.**  
 Conductors welded together and insulated from sheath.

**BJ - Bonded Junction.**  
 Conductors and sheath welded together.



Type K - Nickel Chromium/Nickel Aluminium Conductors						
Overall Diameter	Number of Conductors	Sheath Material			Nominal Loop Resistance	Nominal Conductor Diameter
		AISI 321	Alloy 600	AISI 310		
		Maximum Operating Temperature				
		800	1100	1100		
		Cable Ref.				
mm ±					Ω/m@20°C	
0.5	0.02	T2K-321-05S	T2K-600-05S	T2K-310-05S	125.00	0.10
1.0	0.02	T2K-321-10S	T2K-600-10S	T2K-310-10S	31.50	0.20
1.5	0.02	T2K-321-15S	T2K-600-15S	T2K-310-15S	14.00	0.30
2.0	0.02	T2K-321-20S	T2K-600-20S	T2K-310-20S	7.90	0.40
2.0	0.03	T2K-321-20S	T2K-600-20S	T2K-310-20S	3.50	0.60
3.0	0.03	T2K-321-30S	T2K-600-30S	T2K-310-30S	10.90	0.34

Type J - Iron/Constantan Conductors						
Overall Diameter	Number of Conductors	Sheath Material			Nominal Loop Resistance	Nominal Conductor Diameter
		AISI 321	Alloy 600	-		
		Maximum Operating Temperature				
		750	750	-		
		Cable Ref.				
mm ±					Ω/m@20°C	
1.5	0.02	T2J-321-15S	T2J-600-15S	-	8.48	0.30
2.0	0.02	T2J-321-20S	T2J-600-20S	-	4.78	0.40
3.0	0.03	T2J-321-30S	T2J-600-30S	-	2.10	0.60
3.0	0.03	T4J-321-30S	T4J-600-30S	-	6.60	0.34

Type T - Copper/Constantan Conductors						
Overall Diameter	Number of Conductors	Sheath Material			Nominal Loop Resistance	Nominal Conductor Diameter
		AISI 321	Cupro Nickel	-		
		Maximum Operating Temperature				
		400	400	-		
		Cable Ref.				
mm ±					Ω/m@20°C	
1.5	0.02	T2T-321-15S	-	-	7.18	0.30
3.0	0.03	T2T-321-30S	-	-	1.80	0.60
1.5	0.02	-	T2T-400-15S	-	5.59	0.34
3.0	0.03	-	T2T-400-30S	-	1.15	0.75



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Type E - Nickel Chromium/Constantan Conductors						
Overall Diameter	Number of Conductors	Sheath Material			Nominal Loop Resistance	Nominal Conductor Diameter
		AISI 321	-	-		
		Maximum Operating Temperature				
		800	-	-		
		Cable Ref.				
mm ±					Ω/m@20°C	
1.0	0.02	T2E-321-10S	-	-	37.50	0.20
1.5	0.02	T2E-321-15S	-	-	16.80	0.30
2.0	0.02	T2E-321-20S	-	-	9.50	0.40
3.0	0.03	T2E-321-30S	-	-	4.20	0.60

Type N - Nirosil/Nsil Conductors						
Overall Diameter	Number of Conductors	Sheath Material			Nominal Loop Resistance	Nominal Conductor Diameter
		Alloy 600	Nicrobell	-		
		Maximum Operating Temperature				
		1100	1250	-		
		Cable Ref.				
mm ±					Ω/m@20°C	
1.0	0.02	T2N-600-10S	T2N-NG-10S	-	43.48	0.20
1.5	0.02	T2N-600-15S	T2N-NG-15S	-	19.32	0.30
2.0	0.02	T2N-600-20S	T2N-NG-20S	-	10.90	0.40
3.0	0.03	T2N-600-30S	T2N-NG-30S	-	4.83	0.60
3.0	0.03	T4N-600-30S	T4N-NG-30S	-	15.05	0.34

Connd. Config.	Tolerances	
	Class 1 (S <sup>*</sup> )	Class 2 (SS <sup>*</sup> )
K & N	+1.5°C from 40°C to 375°C ±0.4% above 375°C	+2.5°C from 40°C to 333°C ±0.75% above 333°C
J	+1.5°C from 40°C to 375°C ±0.4% above 375°C	+2.5°C from 40°C to 333°C ±0.75% above 333°C
T	+0.5°C from 40°C to 125°C ±0.4% above 125°C	+1.0°C from 40°C to 333°C ±0.75% above 183°C
E	+1.5°C from 40°C to 375°C ±0.4% above 375°C	+2.5°C from 40°C to 333°C ±0.75% above 333°C

\*Where class 2 cable is required the final letter of cable/probe reference (nominally 'S') is replaced with 'SS'

Conductor Configuration	IEC 684	BS 1843	ANSI MC96	DIN 43714	NFC 42-324
K	NCR+	NAL-			
J	Iron+	Con-			
T	Copper+	Con-			
E	NCR+	Con-			
N	Nicrosil+	Nsil-			

Notes.

Minimum immersion length is 100mm

ISO termination is sealed with epoxy resin as standard. Maximum operating temperature of seal: Alternative resins available on request.

Flexible stranded tails are available with PVC or PTFE IEC colour coded insulation as standard. Other materials and colour coding available on request.

EMF Characteristic: B nominal EMF to IEC 584-3.

