

- (g) Cabling is usually available with many different types of insulation material and outer covering to suit different applications. Choose carefully in consideration of ambient temperature, the presence of moisture of water and the need for abrasion resistance.
- (h) If errors or indicator anomalies occur, be sure to check the thermocouple, the cable, interconnections and the instrument. Many such problems are due to incorrect wiring or instrument calibration error, rather than the sensor.

Interchangeability is facilitated by the use of plug and socket connections. Special connectors are available for this purpose and thermocouple alloys or compensating materials are used for the pins and receptacles to avoid spurious thermal voltages. Such connectors are usually colour coded to indicate the relevant thermocouple type and are available as 'standard' size with round pins or 'miniature' size with flat pins.

Source: LABFACILITY TEMPERATURE HANDBOOK - Order Code 656-069.

229700

Welded Tip Thermocouples - Types J, K & T

Fibre Glass Insulated and PTFE Insulated



Fibre glass insulated
PTFE insulated



- 1 metre and 2 metre long welded tip thermocouples
- Choice of insulation: varnish-impregnated fibre glass (suitable for temperatures up to 350°C) or PTFE (suitable up to 250°C) which is chemically inert
- Manufactured to international reference tables **BS4937** (Part 3 for type J, Part 4 for Type K, Part 5 for Type T)

Fibre Glass Insulated	Type J	Type K	Type T
Wire diameter	1/0.315mm	1/0.315mm	1/0.315mm
Overall diameter	1.5mm	1.5mm	1.5mm
Temperature range	-50°C to +350°C	-50°C to +350°C	-50°C to +350°C
Positive leg	Iron	Nickel chromium	Iron
Negative leg	Constantan	Nickel aluminium	Constantan
PTFE Insulated	Type K	Type T	
Wire diameter	1/0.2mm	1/0.2mm	
Overall diameter	1.3mm	1.3mm	
Temperature range	-50°C to +250°C	-50°C to +250°C	
Positive leg	Nickel chromium	Copper	
Negative leg	Nickel aluminium	Constantan	

212204

Fibre Glass Insulated	Mftrs. List No.	Order Code	1+	10+	25+	50+
Type J, 2m	Z3-J-2M (IEC)	706-9212	514.00	478.00	448.00	419.00
Type K, 1m	Z3-K-1M (IEC)	706-9224	352.00	327.00	306.00	287.00
Type K, 2m	Z3-K-2M (IEC)	707-6137	518.00	482.00	451.00	423.00
Type T, 2m	Z3-T-2M (IEC)	707-6149	482.00	448.00	419.00	393.00
PTFE Insulated						
Type K, 1m	Z2-K-1M (IEC)	707-6150	282.00	263.00	246.00	230.00
Type K, 2m	Z2-K-2M (IEC)	707-6162	484.00	457.00	428.00	401.00
Type T, 1m	Z2-T-1M (IEC)	707-6174	254.00	236.00	221.00	207.00
Type T, 2m	Z2-T-2M (IEC)	707-6186	384.00	369.00	345.00	323.00

Probes Types J, K and T



Overall length = 207 (4.5mm dia type), 163 (3mm dia types). Probe length = 125.
Probe diameter = 3.0 or 4.5 (type K), 3.0 (types J and T), Bush thread = 1/4"BSPT, Lead length = 1m

- Thermocouple mineral-insulated probes sheathed in stainless steel, intended for temperature measurement and control applications
- Probes have an adjustable brass coupling which may be secured at any position along the length of the body to give the required depth of insertion
- Coupling includes a sealing olive which provides a gas or liquid seal
- Fitted with 1 metre of PVC-sheathed thermocouple cable

Temperature range	Type J	-40°C to +750°C	Output	Type J	50µV/°C
	Type K	-40°C to +1100°C		Type K	40µV/°C
	Type T	-40°C to +400°C		Type T	40µV/°C

212237

Probe Dia (mm)	Mftrs. List No.	Order Code	1+	10+	25+
Type J	3.0 T/C J 3MM (IEC)	707-7373	2,450.00	2,278.00	2,131.00
Type K	3.0 T/C K 3MM (IEC)	707-7385	2,785.00	2,590.00	2,423.00
Type K	4.5 T/C K 4.5MM (IEC)	707-7397	2,975.00	2,789.00	2,608.00
Type T	3.0 T/C T 3MM (IEC)	707-7403	2,490.00	2,316.00	2,166.00

Industrial Mineral Insulated Probes

Type K



- Type K mineral-insulated stainless steel sheathed probes particularly suitable for industrial applications
- Suitable for applications up to 1100 °C



- Probes can be bent to enable fitting in awkward locations
- High reliability and stability

The thermocouple junction is located at the tip and insulated from the sheath. Smaller diameter thermocouples respond to temperature changes more rapidly than larger diameters, but larger diameters are mechanically stronger. Available in a range of lengths and diameters.

Sheath material	310 stainless steel
Temperature range of probe	-40°C to 1100°C
Pot seal	M8 x 1.0mm thread L=25
Pot temperature	200°C max.
Leads	PTFE insulated 7/0.2 mm, L = 100

Mftrs List No: KMI/probe dia. probe length (IEC)

FOR SUITABLE COMPRESSION GLANDS SEE ORDER CODE 708-8206

222133

Probe Dia. (mm)	Probe L (mm)	Order Code	1+	10+	25+
0.5	150	721-8898	2,612.00	2,429.00	2,272.00
0.5	250	NEW 424-8170	2,439.00	2,269.00	2,122.00
0.5	500	NEW 424-8181	2,772.00	2,600.00	2,432.00
1	150	707-8110	1,657.00	1,541.00	1,441.00
1	250	707-8122	1,634.00	1,588.00	1,486.00
1	500	707-8134	1,826.00	1,777.00	1,662.00
1.5	150	707-8146	1,169.00	1,087.00	1,017.00
1.5	250	707-8158	1,220.00	1,134.00	1,061.00
1.5	500	707-8160	1,252.00	1,164.00	1,090.00
1.5	1000	707-8171	1,464.00	1,361.00	1,273.00
3	150	707-8183	1,301.00	1,210.00	1,132.00
3	250	707-8195	1,332.00	1,238.00	1,158.00
3	500	707-8201	1,392.00	1,295.00	1,211.00
3	1000	707-8213	1,728.00	1,607.00	1,503.00
6	250	707-8225	2,084.00	1,938.00	1,813.00
6	500	707-8237	2,287.00	2,127.00	1,990.00
Probes with Grounded Junction					
0.5	150	424-8417	1,992.00	1,853.00	1,733.00
0.5	250	424-8429	2,033.00	1,890.00	1,768.00
0.5	500	424-8430	2,338.00	2,174.00	2,034.00

Adjustable Bayonet Thermocouple

Types J and K



- Adjustable bayonet thermocouples designed primarily for the plastics and packaging industry, but recommended wherever spring loaded contact is required



- Thermocouple junction is housed in a rugged stainless steel tip
- Supplied with 2 metres of stainless steel braided lead fitted with a 170mm spring with adjustable fixing cap
- Separate bayonet adaptor locates via a 1/8" BSP male thread
- Fixing cap of the thermocouple is fitted to the adaptor to ensure secure spring loaded contact
- Suitable for temperatures up to 350°C

212338

Mftrs. List No.	Order Code	1+	10+	25+	50+
Type J J-ABT-2 (IEC)	707-9801	1,313.00	1,235.00	1,175.00	1,188.00
Type K K-ABT-2 (IEC)	707-9813	1,545.00	1,437.00	1,344.00	1,259.00
Adaptor	152-239	282.00	263.00	246.00	230.00

Thermocouple Cables

General Data

Thermocouple Extension and Compensation Cable

Extension cable has a temperature v e.m.f. relationship to the appropriate standard over the complete temperature range. It can, therefore, be used for producing a thermocouple junction and for joining thermocouples to their measuring instruments. It is limited in temperature, only by the rating of its insulation.

Compensating cable is of different composition to extension cable but has a similar temperature v e.m.f. relationship over a limited range, and **should only be used for joining thermocouples to their measuring instruments**. It can only be used in a limited ambient temperature, generally not higher than 80°C.

Ordinary copper wires and connectors should never be used to join thermocouples to instruments-substantial errors can result. Use only thermocouples compensating or extension cable and thermocouple connectors.

Guide to wire and Cable Insulation

Insulation Material	Usable Temperature Range	Application Guide
PVC	-10°C to 105°C	Good general-purpose insulation for 'light' environments. Waterproof and very flexible.
PTFE	-75°C to 250/300°C	Resistant to oils, acids, other adverse agents and fluids. Good mechanical strength and flexibility.
Glass-fibre (varnished)	-60°C to 350/400°C	Good temperature range but will not prevent ingress of fluids. Fairly flexible but does not provide good mechanical protection.
Glass-fibre (varnished) stainless steel overbraid	-60°C to 350/400°C	Good resistance to physical disturbance and high temperature (up to 400°C). Will not prevent ingress of fluids.