

# Thermocouple Assembly

DS3014



## Features:

- Variety of wire diameters from 0.15mm to 0.50mm (larger may be available)
- Options for bare wire elements, ceramic insulated elements or sheathed thermocouple assemblies



## Description:

Roxspur Measurement and Control offer Type-R, S and B thermocouples in a variety of wire diameters ranging from 0.15mm to 0.50mm (larger diameters may also be available). Thermocouples can be supplied as bare wire elements, ceramic insulated elements or sheathed thermocouple assemblies.

## Ceramic Insulators

Element wires are insulated with recrystallised alumina insulators as standard. The insulator is normally a single continuous piece however shorter sectional insulating beads can be fitted if preferred.

## Thermocouple Assemblies

The thermocouple elements are supplied fitted into ceramic closed end protection sheaths which in turn can then be fitted into a high temperature steel sheath if required. A wide range of thermocouple connection heads are available to complete the assembly.

## Ceramic Protection Sheaths

RM&C offer ceramic closed end sheaths in aluminous porcelain, recrystallised alumina or silicon carbide. Aluminous porcelain is recommended for temperatures up to 1,400°C and recrystallised alumina for temperatures up to 1,700°C. Silicon carbide is recommended for temperatures up to 1,450°C and is normally used as an outer protection sheath which requires an inner porcelain or alumina sheath to protect the element.

## Metal Protection Sheaths

RM&C offer a number of high temperature steels for use as either closed end protection sheaths or as sockets to fix ceramic sheaths to connection heads. Stocked materials include stainless steels in 216 and 310 grades, inoconel 600 and 601, chrome/iron stainless steel 446 and sandvik 253MA nickel chrome. Where a metal protection is used, a ceramic inner sheath is normally used.

## Process Connections

Flanged and threaded process fittings are available in carbon steel and stainless steel. These can be supplied as adjustable fittings or fixed welded. Cast iron adjustable flanges are also available.



## General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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### TERMINATION HEADS

Ceramic terminal blocks are fitted as standard to all heads.

<b>Standard Single Head</b>	General purpose die cast aluminium alloy head with hinged lid.
<b>Weatherproof Single Head</b>	Cast aluminium alloy head for outside applications and where liquid or moisture ingress is a problem. Incorporating threaded lid, seal, 3/4" BSP process thread and 20mm ISO cable entry. The weatherproof single head is also available in cast iron.

### PROCESS CONNECTIONS

<b>Fixed Welded Process</b>	Available in carbon steel and stainless steel with parallel or tapered thread.
<b>Adjustable Process</b>	Available in carbon steel and stainless steel with parallel or taper thread.
<b>Flanges - Fixed Welded</b>	Available in carbon steel and stainless steel to customer specifications.
<b>Flanges - Adjustable Standard Sizes</b>	3" (76.20mm) cast iron
	<b>4" (101.60mm) cast iron</b>
	<b>5" (127.00mm) cast iron</b>

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### METAL PROTECTION SHEATHS

Inner impervious refractory sheath fitted on all noble metal thermocouples. Temperature limits subject to operational environment and thermocouple element type.

<b>253 Cr Ni REM</b> <b>1,100°C temperature limit</b> <b>3/4" NB x SCH 40 (26.67 x 20.93)</b> <b>1/2" NB x SCH 40 (21.34 x 15.80)</b> <b>5/8" OD x 1/2" ID (15.87 x 12.70)</b>	<b>54 Cr Fe</b> <b>1,150°C temperature limit</b> <b>3/4" NB x SCH 40 (26.67 x 20.93)</b> <b>1/2" NB x SCH 40 (21.34 x 15.80)</b> <b>1/2" OD x 1/4" ID (12.70 x 6.35)</b>
<b>600 Ni Cr Fe</b> <b>1,150°C temperature limit</b> <b>1" OD x 3/4" ID (25.40 x 19.05)</b> <b>1/2" NB x SCH 40 (21.34 x 15.80)</b> <b>5/8" OD x 1/2" ID (15.87 x 12.70)</b> <b>1/2" OD x 3/8" ID (12.70 x 9.52)</b>	<b>Stainless Steel</b> <b>Available in diameters:</b> <b>3/8" to 1 1/4" (9.5mm to 32mm)</b>
<b>601 Ni Cr Fe Al</b> <b>1,250°C temperature limit</b> <b>1" OD x 3/4" ID (25.40 x 19.05)</b>	

### THERMOCOUPLE ELEMENT

Noble Metal	Diameter	
<b>Type-R<sup>1</sup></b>	0.15mm	0.35mm
<b>0.45mm</b>	0.5mm	
<b>Type-S<sup>1</sup></b>	0.15mm	0.35mm
<b>0.45mm</b>	0.5mm	
<b>Type-B<sup>2</sup></b>	0.15mm	0.35mm
<b>0.45mm</b>		
<b><sup>1</sup>Conductors conform to BS EN60584-2:1993 Class 1 tolerance</b>		
<b><sup>2</sup>Conductors conform to BS EN60584-2:1993 Class 2 tolerance</b>		

Also available: Other thermocouple types and insulated elements.

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## REFRACTORY SOCKETS

Sheathed thermocouples only - available in mild steel and heat resisting steel.

2 3/4" diameter (57.15mm)
1 3/8" diameter (34.92mm)
1 5/16 diameter (1" nominal bore) (33.3mm)
1 1/2" diameter (31.75mm)
1 1/16" diameter (3/4" nominal bore) (26.98mm)
3/4" diameter (19.05mm)
5/8" diameter (15.87mm)
1/2" diameter (12.70mm)

## REFRACTORY PROTECTION SHEATHS

Aluminous Porcelain*	
Temperature limit: 1,400°C	Socket Size
20mm OD x 15mm ID	3 or 4
17mm OD x 13mm ID	5
12mm OD x 8mm ID	6
10mm OD x 7mm ID	7
8mm OD x 5mm ID	8
Recrystallised Alumina	
Temperature limit: 1,800°C	Socket Size
20mm OD x 15mm ID	3 or 4
17mm OD x 13mm ID	5
12mm OD x 8mm ID	6
10mm OD x 7mm ID	7
8mm OD x 5mm ID	8

Silicon Carbide	
Temperature limit: 1,450°C	Socket Size
50mm OD x 25mm ID	1
31mm OD x 15mm ID	2
25mm OD x 15mm ID	2 or 3

Temperature limit subject to operational environment and thermocouple element type.

\* Not recommended above 1,200°C for noble metal thermocouples.

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