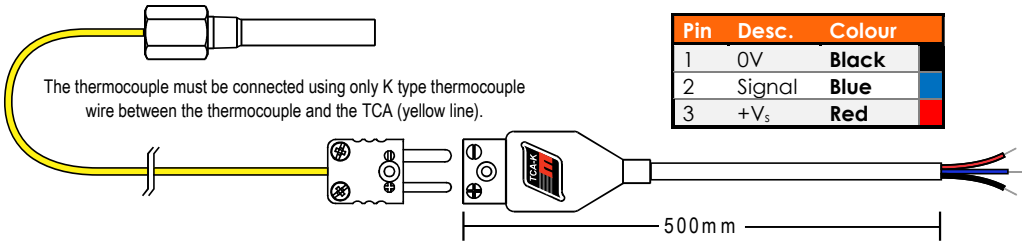
Thermocouple Amplifier (TCA)

Type-K (0°C to +1250°C)



Pin	Desc.	Colour
1	0V	Black
2	Signal	Blue
3	$+V_s$	Red

Features

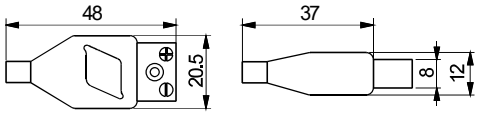
- Wide range temperature measurement. Ideal for Exhaust Gas Temperature (EGT), Brake Calliper Temperature etc.
- Wide power supply range, works from 5V to 16V
- Lightweight and compact housing

The TCA is an easy to use amplifier for K type thermocouples with a measurement range of 0 to +1250°C. The TCA uses an on-board temperature sensor to compensate for ambient temperatures up to 100°C

The TCA is compatible with most data acquisition systems and ECUs that have analogue voltage inputs. The TCA can be operated from a wide range of supply voltages (5V to 16V DC) producing an output voltage between 0V and 5V with a linear gain of approximately 4 mV/°C.

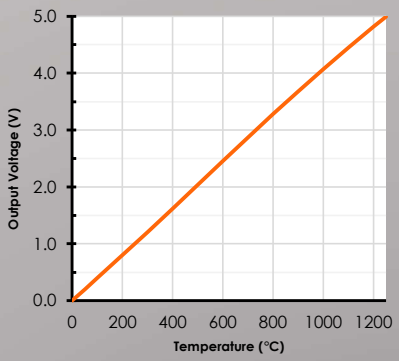
Specifications

Thermocouple Type	K-type (isolated or non-isolated)
Thermocouple Connector	Miniature connector
Measurement Range	0°C to +1250°C
Supply Voltage (V_s)	5 - 16 V (isolated supply recommended)
Current Draw (I_s)	1.2mA
Output Current (I_o)	1mA typical (short circuit protected)
Output Voltage (V_o)	0 - 5 V, 4 mV/°C (see Output Calibration)
Ambient Temperature (T_a)	0°C to 100°C
Environmental Protection	IP53
Calibration Error	± 3°C
Gain Error	± 0.2% (max)
Temperature Drift	0.01 °C/°C (T_A < 85°C) 0.02 °C/°C (T_A > 85°C)
Weight	18 g
Dimensions	50 x 20 x 10 mm



(All dimensions in mm)

Output Calibration



Temperature (°C)	Temperature (°F)	Output (V_o) (V)
0	32	**0.020**
50	122	**0.219**
100	212	**0.422**
200	392	**0.819**
300	572	**1.219**
400	752	**1.630**
500	932	**2.047**
600	1112	**2.466**
700	1292	**2.880**
800	1472	**3.287**
900	1652	**3.685**
1000	1832	**4.073**
1100	2012	**4.450**
1200	2192	**4.816**
1250	2282	**4.993**

Due to the non-linear characteristics of the thermocouple, greater accuracy at higher temperatures (>400°C) can be achieved by using the lookup table above rather than a simple 4mV/°C linear calibration.

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Ph: +64 9 525 2991 | sales@msel.com | www.msel.com | 218D Marua Rd, Mt Wellington, Auckland NZ