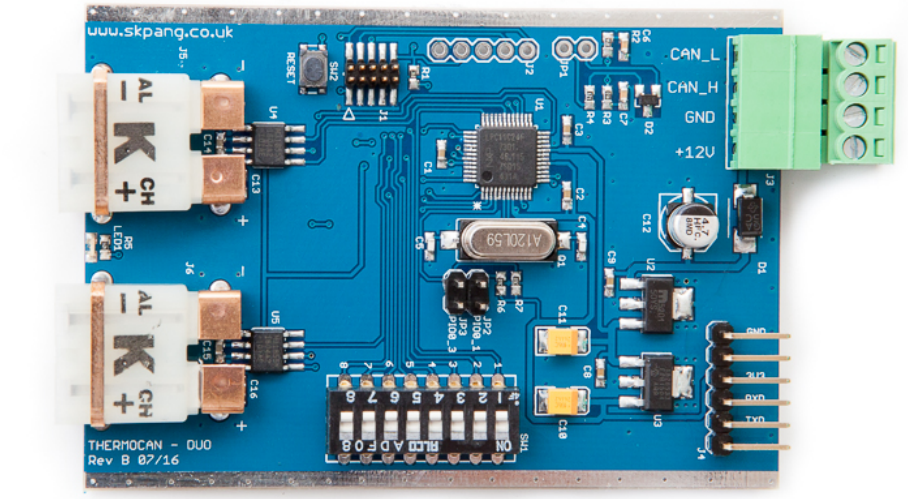


2 Channel CAN-Bus Thermocouple Interface K-Type

V1.0 July 2016

Product name	2 Channel CAN-Bus Thermocouple Interface K-Type
Model number	CANBUS-THERMO-2CH
Manufacturer	SK Pang Electronics Ltd

Contents

Table of Contents

1. Introduction

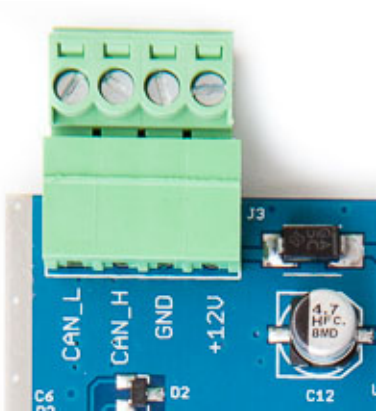
This board provides a two channel CAN-Bus thermocouple K-type interface. It can read a temperature from -270 to +1250 ºC depending on probe used. The CAN ID can be configured with the on board DIP switches and sample rate can be configure at 0.5 or 1 second interval.

1.1. Features

- Two channel K-type thermocouple inputs
- -270 to +1250 ºC input range (probe dependent)
- 0.25 ºC resolution
- 0.5 or 1 second sample rate
- 6v to 16v input voltage range
- Reverse voltage polarity protection
- Selectable CAN baudrate via dip switches. 125, 500, 1000kbps
- Selectable CAN ID via dip switches
- UART output
- SWD/JTAG header
- LED indicator

2. Power and CAN Connection (J3)

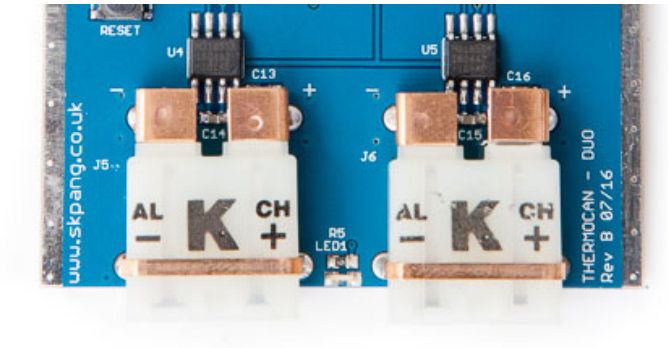
The board requires a supply voltage of 6v to 16v DC on connector J3. This connector is also the CAN data line.



J3	Function
1	CAN_L
2	CAN_H
3	GND
4	+12V

1.2. Probe Connection

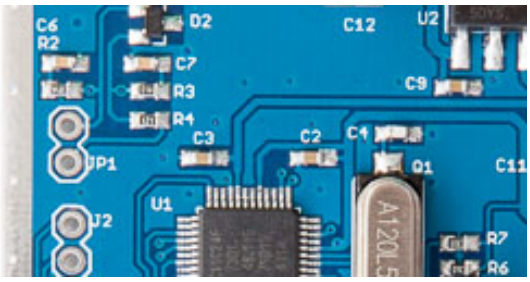
The thermocouple probes is connected to J5 and J6.



Probe 1	J5
Probe 2	J6

1.3. 120Ω Terminator

There is a 120Ω fitted to the board. To use the terminator solder a 2way header pin to JP1 then insert a jumper.

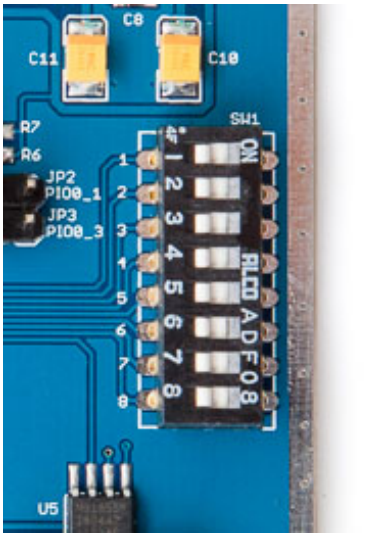


1.4. LED

There is a LED fitted to the board. This is flashes every time a measurement is taken.

1.5. Configuration Switches (SW1)

The board has 8 DIP switches used for configuration



CAN Baudrate	Switch Settings
125 kbps	SW1-1 = ON ; SW1-2 = ON
500 kbps	SW1-1 = ON ; SW1-2 = OFF
1000 kbps	SW1-1 = OFF ; SW1-2 = ON

Sample Interval	Switch Settings
0.5 second	SW1-3 = ON
1.0 second	SW1-3 = OFF

CAN ID (decimal)	Switch Settings
100	SW1-4 = OFF ; SW1-5 = OFF ; SW1-6 = OFF ; SW1-7 = OFF ; SW1-8 = OFF
101	SW1-4 = ON ; SW1-5 = OFF ; SW1-6 = OFF ; SW1-7 = OFF ; SW1-8 = OFF
102	SW1-4 = OFF ; SW1-5 = ON ; SW1-6 = OFF ; SW1-7 = OFF ; SW1-8 = OFF
103	SW1-4 = ON ; SW1-5 = ON ; SW1-6 = OFF ; SW1-7 = OFF ; SW1-8 = OFF
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109	SW1-4 = ON ; SW1-5 = OFF ; SW1-6 = O;FF SW1-7 = ON ; SW1-8 = OFF
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131	SW1-4 = ON ; SW1-5 = OFF ; SW1-6 = ON; SW1-7 = ON ; SW1-8 = ON

3. CAN Data Format

CAN ID	DLC	B0	B1	B2	B3	B4	B5	B6	B7
1xx	8	Signed 16bit Probe 1		Probe 1 Status		Signed 16bit Probe 2		Probe 2 Status	

B2 Probe 1 Status

7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	1= Probe Fault

B6 Probe 2 Status

7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	1= Probe Fault

Note : The probe status bit should be check first. If bit 0 is a '1' then the temperature should be ignored.

The temperature reading is a 16bit signed number in Little Endian format. The reading also need to be converted to real temperature by multiplying it by 0.25

This will give a real temperature reading with a resolution of 0.25°C

1.6. Python Example

A python example for use with the PiCAN2 board on the Raspberry Pi is available from github.

https://github.com/skpang/ThermoCAN-Python-examples