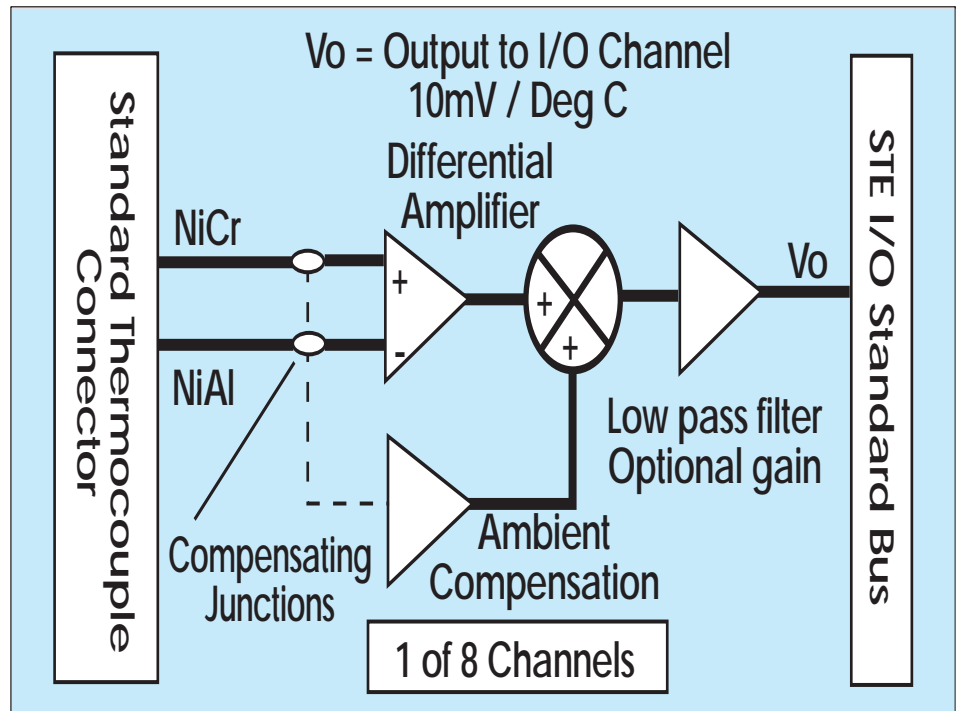


Features

- Type K thermocouples
 - 270 to +1370 degC operation
- Type J thermocouples
 - 210 to +1200 degC operation
- 10mV per degC output
- 8 input channels
- Differential inputs
- Type K miniature input connectors
- Low pass filter
- Gain option
- Industrial standard I/O Bus
- Single height euro-card

Description

The A-301 is an 8 channel thermocouple signal conditioning input board. Thermocouples are temperature measuring devices that are popular because of their small size and low cost. They cover a measurement range from -270 to +1370 degC. If a temperature difference is present the number of free electrons, in different pieces of metal, creates a potential difference that is a repeatable function with temperature. The effect only produces 40uV per degC so a differential amplifier is used to amplify the reading to 10mV per degC. The board also has a compensating junction so that re-



calibration is not required with changes in ambient temperature. The output is buffered by a low pass filter with optional gain so further conditioning the signal before analogue to digital conversion.

The thermocouple input board uses the AD595 chip with instrumentation amplifier and cold junction compensator for each of the 8 channels. The outputs are fed through low pass unity gain filters. These can optionally be made into amplifiers by adding extra resistors. Each channel has been calibrated to +/-1 degC within 0 to 100 degC and at 500 degC is typically less than 1% in error.

The card takes its outputs to the standard analogue I/O bus connector. This is a 50 way IDC type ribbon cable connector. This bus has 32 input lines which pass to on to the system's Analogue to Digital con-

verter. The 8 thermocouple outputs can be linked to any of these 32 lines. Provision has been made to give single ended or differential output.

The thermocouple connectors use miniature type K connectors which are mounted on the rear of the PCB. A thermocouple sensor can be plugged into any of the 8 channels. The connectors are polarised with the positive connection being the narrower of the two. The output of the card produces 10mV per degC. For example 25 degC will produce a reading of 250mV at the output. The actual reading will be better than +/-1degC for input temperatures between 0 and 100 degC. An open circuit thermocouple will drive the amplifier negative so that an open circuit input can be detected.

Specification

Type K thermocouple

-270 to +1370 degC

Common mode -4 to +12 Volts

Bias current 0.1uA

Filter 0.47 sec low pass

Absolute max. -5 to +12 Volts

Type J thermocouple

-210 to +1200 degC

Common mode -4 to +12 Volts

Bias current 0.1uA

Filter 0.47 sec low pass

Absolute max. -5 to +12 Volts

Offset error at 30 degC

+/- 0.5 degC

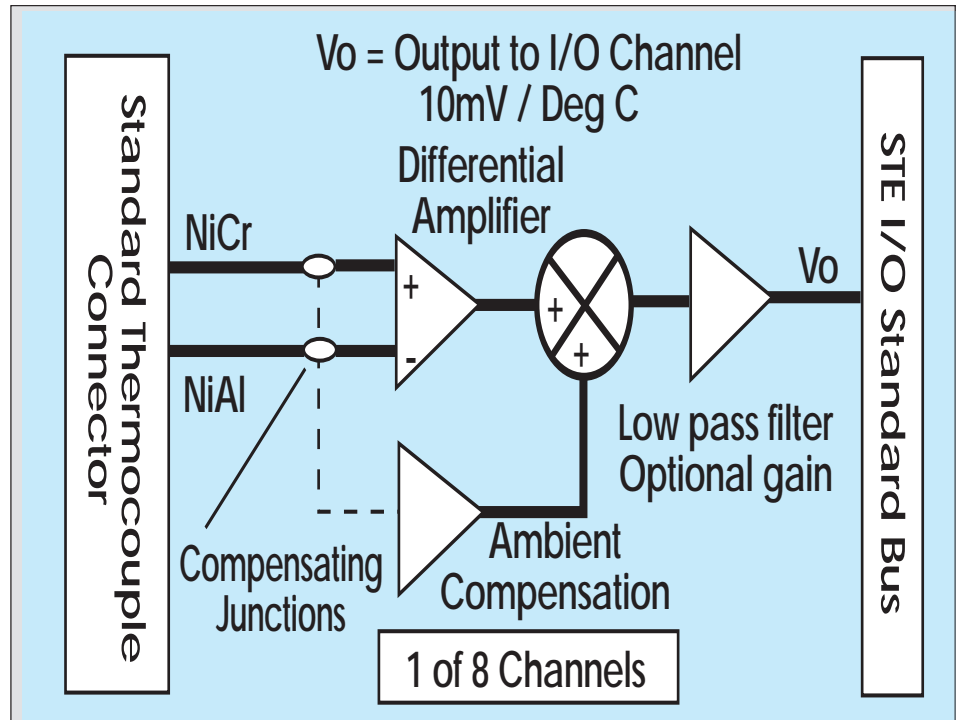
Stability v Temp

+/-0.05 degC/degC

Outputs

Transfer function 10mV/degC

-2.5 to +10 Volts



-200 to +950 degC

Number of channels

8

Link selectable to 32 inputs

Connectors

Miniature type K sockets

50 way IDC I/O bus

Power Requirements

+12 Volts 20mA (max.)

-12 Volts 20mA (max.)

Tempertaure Range

0 to 55 degC

Humidity

0 to 90% RH (non condensing)

Size

3U euro-card 100*160mm

Order Codes

A-301	Type K Thermocouple SCB
A-302	Type J Thermocouple SCB
K-100	Mini-Module
L-200	Mini-Module+Plus
K-350	Mini-Module Analogue Board
V-120	VMEbus Mini-Module+Plus
V-350	VMEbus Analogue Board

Miscellaneous

MA-301 Technical manual

A301 940321

CMSS

Cambridge Microprocessor Systems Limited,

Unit 17 - 18 Zone 'D',
Chelmsford Road Ind. Est.,
Great Dunmow,
Essex, U.K. CM6 1XG.

Telephone 0371 875644
FAX 0371 876077

0371 875644



Cambridge Microprocessor Systems Ltd.