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DBK81, DBK82, DBK83, & DBK84

Low-Noise, High-Accuracy, Thermocouple/mV Expansion

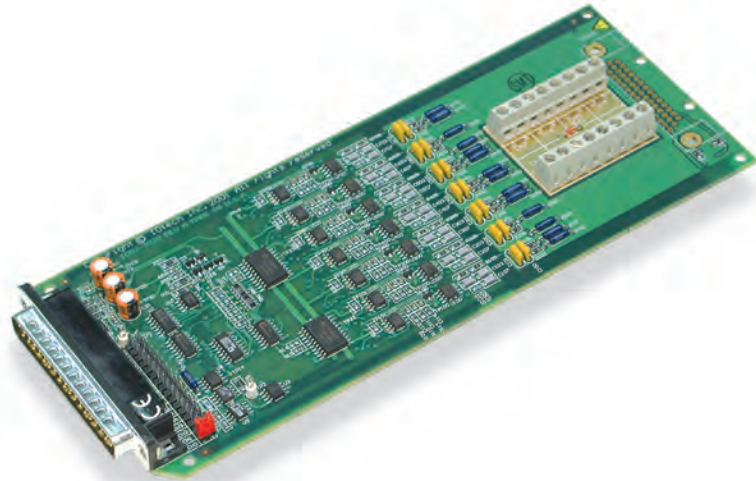
Features

- Measures type J, K, S, T, E, B, R, and N thermocouples as well as voltage up to ± 100 mV
- Low noise, high accuracy, high stability
- 200 kHz maximum scan rate
- High noise immunity
- Open thermocouple detection per channel
- Over-voltage protection
- Available in four form-factors:
 - 7-channel card with on-board screw terminals (DBK81)
 - 14-channel card with on-board screw terminals (DBK82)
 - 14-channel card with external signal connection "pod" (DBK83)
 - 14-channel module, housed in a metal package with mini TC connections (DBK84)

DBK81, DBK82, DBK83, and DBK84 are designed to provide very low-noise thermocouple and milli-volt measurements, with high accuracy and very close tracking between channels. This series provides TC accuracy up to 0.8 $^{\circ}\text{C}$, and noise typically less than 0.2 $^{\circ}\text{C}$ peak-to-peak, with no digital averaging required.

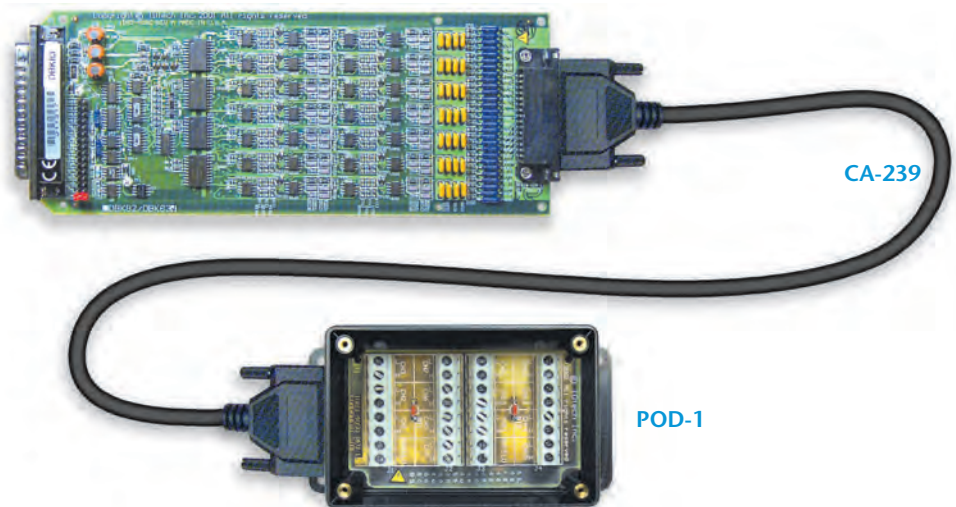
The performance of these new DBK cards is enabled through their use of very low-noise amplifiers on every channel. Built-in cold junction compensation and software-based linearization automatically provide quiet and stable temperature measurements, with no need to deal with the usual complexities associated with TC measurements.

DBK81



The DBK81 provides 7 differential TC or mV inputs, and on-board screw terminals for connection of TC/mV signals directly to the card.

DBK83



The DBK83 provides 14 differential channels of input (like the DBK82) and includes an external TC/mV connection pod with screw terminals. The DBK83 also allows TC connections to reside away from the

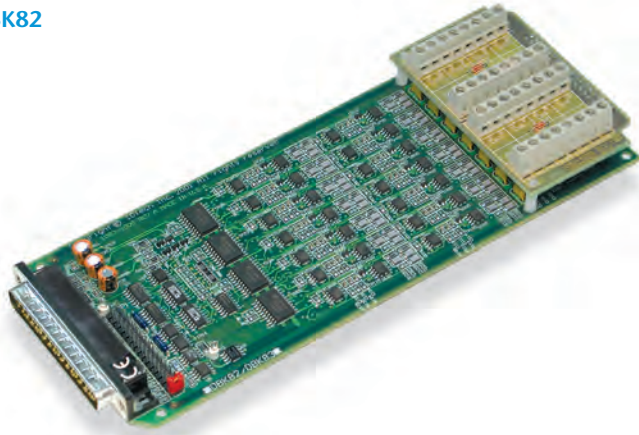
A/D system, reducing the length of thermocouple wire required. The DBK83 makes it easy to remove all signal connections by disconnecting one cable from the pod. A three-foot cable is included with the DBK83.

DBK81, DBK82, DBK83, & DBK84

Specifications & Ordering Information



DBK82



The DBK82 provides 14 differential channels of TC or mV inputs, and is physically taller than the DBK81. The DBK82 installs into a DBK60, LogBook/360, or DaqLab/2000 Series, where it can be wired directly to the mini-TC connector panels (DBK605). Note that the DBK82 will not install into single-height slots on the DaqBook/2000X, or DBK10. The DBK82 consumes two expansion slots in the DBK41 10-slot enclosure.

DBK84



The DBK84 is a 14-channel module with built-in mini-TC terminal jacks. The DBK84 can mechanically attach directly to any module or enclosure. The DBK84 is best suited for applications where mini-TC jacks are in use, and where quick attachment and removal of TCs is desired.

| TC Accuracy at Measurement Temperature in °C (±°C) | | | | | | | | | | | |
|--|------|------|------|-----|-----|-----|-----|-----|-----|------|------|
| Type | Min | Max | -100 | 0 | 100 | 300 | 500 | 700 | 900 | 1100 | 1400 |
| J | -200 | 760 | 0.8 | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 | — | — | — |
| K | -200 | 1200 | 0.9 | 0.8 | 0.8 | 0.9 | 1.1 | 1.1 | 1.2 | 1.3 | — |
| T | -200 | 400 | 0.9 | 0.8 | 0.8 | 0.8 | — | — | — | — | — |
| E | -270 | 650 | 0.8 | 0.7 | 0.7 | 0.7 | 0.8 | — | — | — | — |
| S | -50 | 1768 | — | 3.1 | 2.4 | 2.0 | 2.0 | 1.9 | 2.0 | 2.1 | 2.1 |
| R | -50 | 1768 | — | 3.1 | 2.1 | 2.0 | 1.9 | 1.9 | 1.7 | 1.9 | 2.0 |
| B | 50 | 1780 | — | — | — | 4.9 | 3.2 | 2.8 | 2.4 | 2.3 | 2.0 |
| N28 | -270 | 400 | 1.2 | 0.9 | 0.9 | 0.9 | — | — | — | — | — |
| N14 | 0 | 1300 | — | 0.9 | 0.9 | 0.9 | 1.1 | 1.1 | 1.2 | 1.3 | — |

* Attachment to the DaqBoard/2000 Series requires a DBK200, DBK202, DBK203A, DBK209, DBK213, or DBK214

** ±100 mV with a DaqBook/2000 Series, DaqBoard/2000 Series or LogBook

Specifications

Operating Temperature: -30 to +70 °C

System Connector: All DBK options have a DB37 male, which mates with P1* TC/mV Connector

DBK81: Board-mounted screw terminals

DBK82: Board-mounted screw terminals

DBK83: External pod-mounted screw terminals

DBK84: Mini-TC connectors

Functions: TC types J, K, S, T, E, B, R, N; x100 (voltage)

Inputs

DBK81: 7 differential TC/mV inputs

DBK82: 14 differential TC/mV inputs

DBK83: 14 differential TC/mV inputs

DBK84: 14 differential TC/mV inputs

Input Voltage Range: ±100 mV**

Input Impedance: 40M Ohm (differential); 20M Ohm (single-ended)

Input Bandwidth: 4 Hz

Input Bias Current: 10 nA typ

CMRR: 100dB typ

Maximum Working Voltage (signal + common mode): ±10V

Over-Voltage Protection: ±40V

Power Requirements

DBK81: 35 mA max from ±15V; 2 mA max from +5V

DBK82: 60 mA max from ±15V; 2 mA max from +5V

DBK83: 60 mA max from ±15V; 2 mA max from +5V

DBK84: 60 mA max from ±15V; 2 mA max from +5V

Voltage Accuracy: ±(0.2% of rdg +50 µV)

Temperature Coefficient: 10 ppm for every degree outside the range of 0 to 50 °C

TC Accuracy: Valid for one year, 18 to 28 °C, see table below

Temperature Coefficient for Type T TC: ±0.03 °C per °C ambient outside the range of 18 to 28 °C

Minimum Resolution: 0.1 °C for all TC types

Power Consumption

DBK81: 1060 mW;

DBK82, DBK83, DBK84: 1810 mW

Ordering Information

Description

7-channel TC/mV card with screw-terminal connections

14-channel TC/mV card with screw-terminal connections

14-channel TC/mV card with external screw-terminal Pod and 3 ft. cable

14-channel TC/mV module with mini TC connector jacks

Part Number

DBK81

DBK82

DBK83

DBK84

Male Connectors for Subminiature TC Jacks

Type J male connector

Type K male connector

Type T male connector

CN-144-JM

CN-144-KM

CN-144-TM

Accessories & Cables

DBK81, DBK82, and DBK83

For use with DBK10, use CA-37-x ribbon cable; contact factory for additional cabling options

For use with DBK60 or LogBook/360, no cable is required (except from DBK60 or LogBook/360 to the A/D mainframe)

For use with no enclosure, use CA-37-x, where x is the number of DBK devices attached

For use with DaqLab Series (internal slots), use CA-255-2T with one board, or CA-37-2 for use with two DBK cards; contact factory for additional cabling options

DBK84

Rack mount kit

Molded T expansion cable; 2 in.

Molded T expansion cable; 4 in.

Ribbon cable, where x is the number of DBK devices attached

RackDBK3

CA-255-2T

CA-255-4T

CA-37-x

Note: DBK82 does not install in a DBK10 enclosure. The CA-37-x ribbon cable can also be used in lieu of the CA-255-x molded T cables.



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