

# DBK81, DBK82, DBK83, & DBK84

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

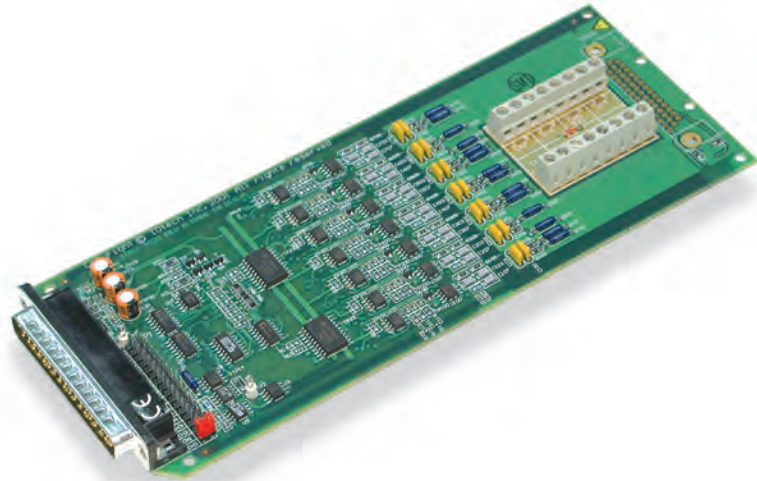
### Features

- Measures type J, K, S, T, E, B, R, and N thermocouples as well as voltage up to  $\pm 100$  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  $0.8$  °C, and noise typically less than  $0.2$  °C peak-to-peak, with no digital averaging required.

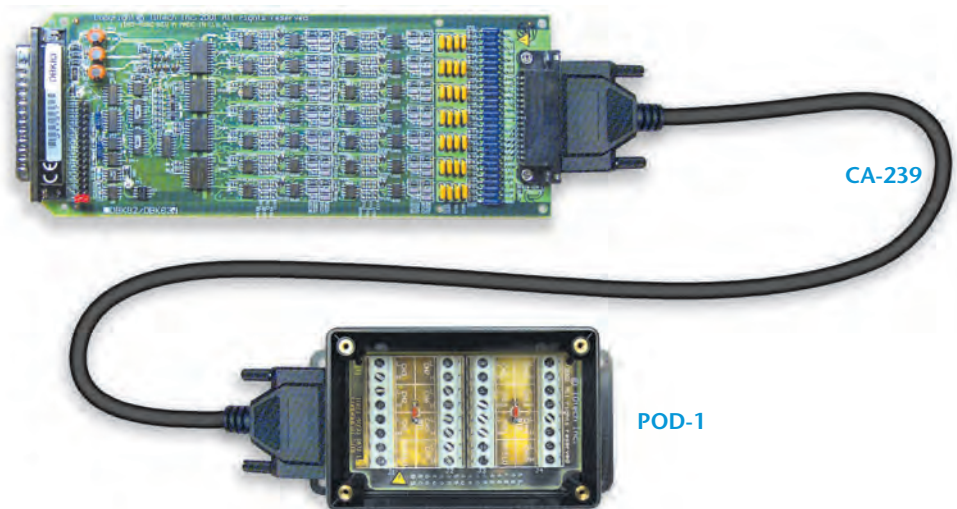
The performance of these new DBK cards is enabled through their use of very low-noise amplifiers on every channel. Built-in cold junction compensation and software-based linearization automatically provide quiet and stable temperature measurements, with no need to deal with the usual complexities associated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

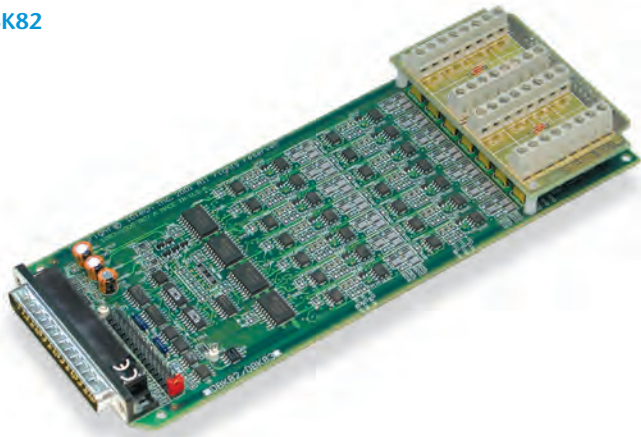
A/D system, reducing the length of thermocouple wire required. The DBK83 makes it easy to remove all signal connections by disconnecting one cable from the pod. A three-foot cable is included with the DBK83.

# 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

### Part Number

DBK81

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

DBK82

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

DBK83

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

DBK84

## Male Connectors for Subminiature TC Jacks

Type J male connector

CN-144-JM

Type K male connector

CN-144-KM

Type T male connector

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

RackDBK3

Molded T expansion cable; 2 in.

CA-255-2T

Molded T expansion cable; 4 in.

CA-255-4T

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

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.