DBK81™, DBK82™, DBK83™, & DBK84™

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

Compatibility: ✔ LogBook   ✔ DaqBook   ✔ DaqLab   ✔ DaqScan   ✔ DaqBoard/2000 Series

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. The new series provides TC accuracy up to 0.5˚C, and noise typically less than 0.2˚C peak-to-peak, with no digital averaging required.
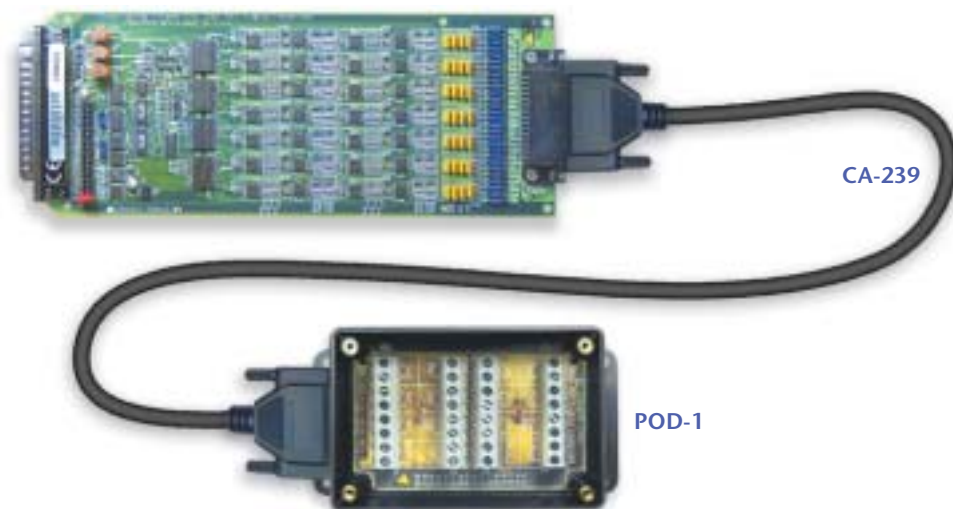
The performance of these new DBK cards is enabled through their use of very low-noise amplifiers on every channel. Built-in cold junction compensation and software-based linearization automatically provide quiet and stable temperature measurements, with no need to deal with the usual complexities associated 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

CA-239

POD-1

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.

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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.

Specifications

Operating Temperature: -30°C 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
    81: 1060 mW; **82-84:** 1810 mW

Ordering Information

Description	Part Number
7-channel TC/mV card with screw-terminal connections	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
Extra screw terminal pod for DBK84   POD-1
For use with DBK10, use CA-37-x ribbon cable; contact factory of additional cabling options
For use with DBK60 or LogBook360, 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
Shielded P1 T cable for use with DaqBook/2020, LogBook/360, and WBK40/41   CA-255-4T
Shielded P1 T cable for use with DaqBook/2001, DaqBook/2005, LogBook/300, DaqLab/2001, and DaqLab/2005   CA-255-2T
Ribbon cable for use with DaqScan   CA-37-x

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 requires a DBK200, DBK201, DBK202, or DBK203 adapter
** ±100 mV with a DaqBook/2000 series, DaqBoard/2000 series or LogBook; ±50 mV with a DaqBook/200 series

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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