

### Features

- Ideally suited for 4 to 20 mA measurements
- Can measure up to  $\pm 30V^*$
- Provides 16 differential input channels
- Offers user-configurable current or voltage input

Each DBK15 multiplexing input card provides 16 channels of current or voltage input to IOtech's data acquisition systems. A system can accept up to 16 DBK15 cards, for a total of 256 potential analog input channels per system.

The DBK15 features a 16-channel multiplexer and a programmable gain input amplifier. Its durable component sockets accept resistors that configure each channel for either current-to-voltage conversion or for voltage attenuation. The DBK15 is supplied with sixteen precision 250 Ohm resistors for making 4 to 20 mA measurements, and sixteen sets of 6:1 voltage dividers for accommodating up to  $\pm 30V^*$  inputs.

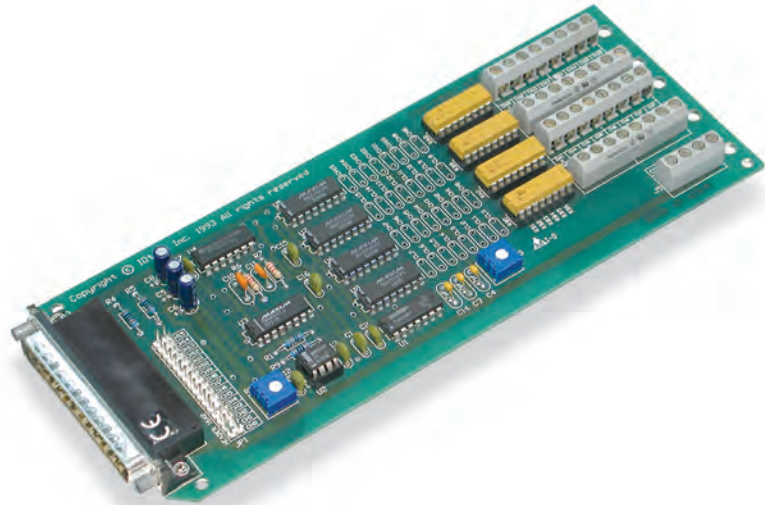
The DBK15 can also accept other user-supplied resistor values, facilitating user-selectable current-to-voltage conversion or voltage attenuation factors.

When employed without resistors, the DBK15 provides 16 differential voltage inputs, which accommodate  $\pm 5V$  full scale inputs.

The DBK15's input amplifier is software programmable for x1 or x2 gain per channel, and for unipolar 0 to +10V or bipolar -5 to +5V input per channel.

### Voltage & Current Measurements

The voltage and current input ranges shown in the accompanying charts supply a full-span signal to the A/D converter, providing maximum measurement resolution.



The DBK15 provides 16 channels of current or voltage input

**Voltage Measurements.** The DBK15 accommodates voltage measurements beyond the standard 10V range, accepting voltage divider resistors for up to  $\pm 30^*$  VFS inputs. You can obtain any combination of input ranges by simply installing the appropriate resistor combination on the DBK15 card. The card's on-board programmable gain instrumentation amplifier (PGIA) can be set for a  $\pm 5V$  output span or a 0 to +10V output span, allowing users to set the A/D converter for either configuration. The DBK15 can also be configured to accept  $\pm 5V$  full scale inputs without attenuation resistors.

Voltage Ranges			
Input Voltage		Configuration	
Min	Max	Attenuation	Gain
0	+5V	—	x2
0	+10V	—	x1
-2.5	+2.5V	—	x2
-5	+5V	—	x1
-15	+15V	6:1	x2
-30	+30V*	6:1	x1
other	other	other	x1, x2

**Current Measurements.** The DBK15 is ideal for accommodating transducers with 4 to 20 mA output; it is only necessary to install the supplied 250 Ohm resistors in the appropriate location on the board. The DBK15's on-board PGIA is software selectable for either a  $\pm 5V$  output span or a 0 to +10V output span. To accommodate other current ranges, you need only install a different shunt resistor for the DBK15.

Current Ranges			
Input Current		Configuration	
Min	Max	Shunt	Gain
0	+20 mA	250 Ohm	x2
-20 mA	+20 mA	250 Ohm	x1
other	other	other	x1, x2

\*  $\pm 10V$  to  $30V$  input signals can be measured by installing  $<10$  kOhms attenuation resistors on the card. For 1% or greater accuracy, the output impedance of the measured signal should be  $<100$  Ohms. To accurately measure high-voltage signals with  $>100$  Ohms of output impedance, the DBK8 high-voltage input card should be used rather than the DBK15. The DBK8 has very high-input impedance, which is ideal for measuring high-voltage input signals.

# DBK15

## Specifications & Ordering Information

### Specifications

**Connector:** DB37 male, mates with P1\*; screw terminals provided for signal connection

**Gain Ranges:** x1, 2

**Number of Channels:** 16 differential

**Voltage Input Ranges:** 0 to +10 VDC,  $\pm 5$  VDC  
(less attenuating resistors)

**Current Input Range:**  $\pm 20$  mA max

**Gain Accuracy:**  $\pm 0.05\%$  typ;  $\pm 0.25\%$  max

**Maximum Input Voltage**  
(without damage):  $\pm 35$  VDC

**Maximum Allowable Common Mode Voltage**  
Ch to Ch: 10V

**Slew Rate:** 10 V/ $\mu$ s

**Settling Time:** 2  $\mu$ s to 0.01%

**CMRR:** 80 dB min

**Non-Linearity:** 0.002% typ;  
0.015% max

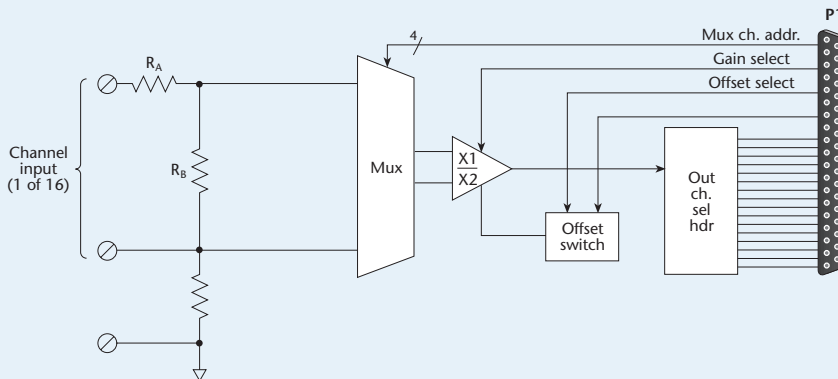
**Unattenuated Bias Current:** 150 pA typ;  
0.2  $\mu$ A max @ 25 °C

**Offset Voltage:**  $\pm(0.5 + 5/G)$  mV @ 25 °C typ;  
 $\pm(2.0 + 24/G)$  mV @ 25 °C max

**Offset Drift:**  $\pm(3 + 50/G)$   $\mu$ V/C° typ  
 $\pm(12 + 240/G)$   $\mu$ V/C° max

**Power Consumption:** 485 mW

### DBK15 Universal/Current Voltage Input Card Block Diagram



### Ordering Information

#### Description

Universal current/voltage multiplexing input card with 16 user-installable 6:1 voltage attenuation resistors and 16 user-installable 250 Ohm current shunt resistors

#### Part No.

DBK15

### Product Compatibility

- ✓ LogBook
- ✓ DaqBook
- ✓ DaqLab
- ✓ DaqScan
- ✓ DaqBoard/2000 Series

### Cables

For use with DBK10, use CA-37-x ribbon cable, or contact factory of 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 (or contact factory for additional cabling options)

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