DBK15
Universal Current/Voltage Input Card

Features
• Ideally suited for 4 to 20 mA measurements
• Can measure up to ±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 ±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 ±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.

Voltage Measurements. The DBK15 accommodates voltage measurements beyond the standard 10V range, accepting voltage divider resistors for up to ±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 ±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 ±5V full scale inputs without attenuation resistors.

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 ±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.

<table>
<thead>
<tr>
<th>Voltage Ranges</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>Shunt</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0</td>
<td>+5V</td>
</tr>
<tr>
<td>0</td>
<td>+10V</td>
</tr>
<tr>
<td>-2.5</td>
<td>+2.5V</td>
</tr>
<tr>
<td>-5</td>
<td>+5V</td>
</tr>
<tr>
<td>-15</td>
<td>+15V</td>
</tr>
<tr>
<td>-30</td>
<td>+30V*</td>
</tr>
<tr>
<td>other</td>
<td>other</td>
</tr>
</tbody>
</table>

* ±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, ±5 VDC (less attenuating resistors)
- **Current Input Range:** ±20 mA max
- **Gain Accuracy:** ±0.05% typ; ±0.25% max
- **Maximum Input Voltage** (without damage): ±35 VDC
- **Maximum Allowable Common Mode Voltage**
  - Ch to Ch: 10V
- **Slew Rate:** 10 V/µs
- **Settling Time:** 2 µs to 0.01%
- **CMRR:** 80 dB min
- **Non-Linearity:** 0.002% typ; 0.015% max
- **Unattenuated Bias Current:** 150 pA typ; 0.2 pA max @ 25 ºC
- **Offset Voltage:** ±(0.5 + S/G) mV @ 25 ºC typ; ± (2.0 + 24/G) mV @ 25 ºC max
- **Offset Drift:** ±(3 + 50/G) µV/ºC typ; ±(12 + 240/G) µV/ºC max
- **Power Consumption:** 485 mW

**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*