

Features

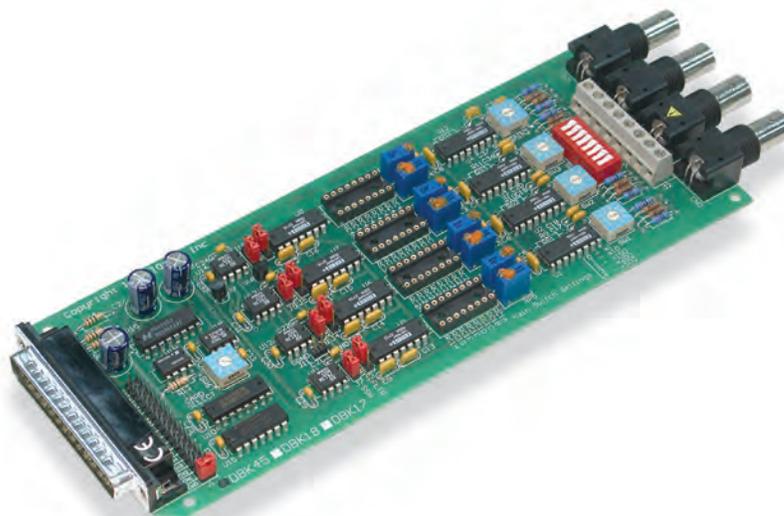
- Provides four differential inputs with simultaneous sampling*
- Configurable gain ranges of x1, 10, 100, 200, and 500
- Provides four independent 3-pole low pass filter channels
- User-configurable low-pass filter from DC to 50 kHz cutoff
- Convenient BNC input connectors
- Channels are sampled within 100 ns of each other

Each DBK45 card provides four differential analog input channels equipped with low-pass filters and simultaneous sample and hold.

The DBK45 provides a wide selection of full scale inputs. Each channel features its own instrumentation amplifier with gain ranges of x1, 10, 100, 200, and 500, as well as individually configurable low-pass filters. This lets you maximize your signal via the DBK45's input ranges, low-pass filter the output, and simultaneously sample and hold* all channels before digitizing. Up to 64 DBK45 cards can be attached to one system for a total of 256 differential inputs.

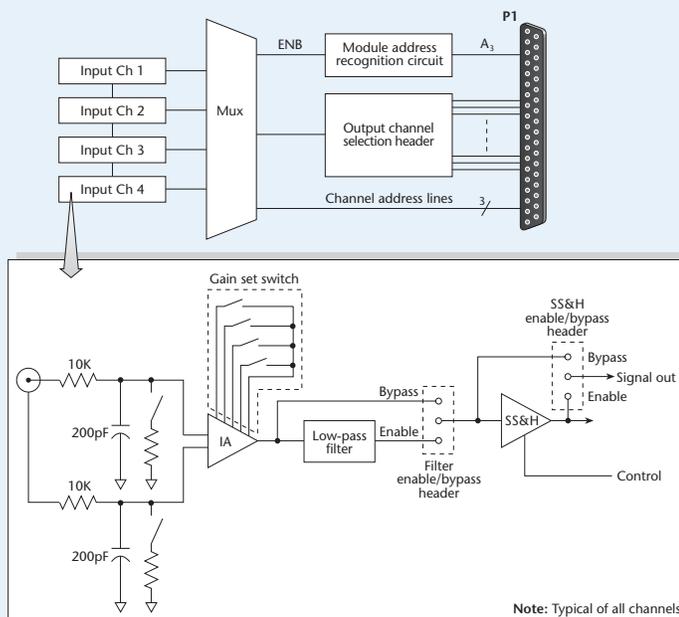
Gain Ranges. In addition to featuring jumper-pin selectable x1, 10, 100, 200, and 500 gain, each of the DBK45's four channels is equipped with a location for a user-selected gain resistor, allowing you to select a custom gain up to x500. (This gain range is selectable via a gain-select switch per channel.)

Low-Pass Filters. Each DBK45 channel is equipped with a low-pass filter that is user configured for cut-off frequencies from DC to 50 kHz, and for Butterworth, Chebyshev, or Bessel characteristics. The DBK45's frequency determining resistor and capacitor locations are on machined-pin IC sockets for maximum flexibility. The card is provided with blank plug-in headers



The DBK45 provides four channels of simultaneous sample and hold, as well as low-pass filtering

DBK45 Simultaneous Sample & Hold Card Block Diagram



for each channel, to which you can add passive components for particular frequencies. Preconfigured plug-in headers for several preselected cutoff frequencies are optionally available.

Connections. The DBK45 is equipped with a DB37 connector for the data acquisition system and BNC connectors with switchable bias resistors for accepting analog signal inputs.

* In systems incorporating DBK products with SSH, the per-channel rate is [maximum sample rate/(n + 1)], where n=number of channels

DBK45

Specifications & Ordering Information



Specifications

Connector: DB37 male, mates with P1*; BNC connectors for signal inputs

Number of Channels: 4

Number of Cards Addressable: 64

Input Type: Differential

Voltage Input Ranges:

0 to ± 5 VDC

0 to ± 500 mVDC

0 to ± 50 mVDC

0 to ± 25 mVDC

0 to ± 10 mVDC

For Custom Gains:

$$R_{\text{user}} = \frac{40,000}{\text{Gain}-1} - 80 \quad (\text{Ohms})$$

Input Amplifier Slew Rate: 12 V/ μ s min

Active Filter Device: UAF42 (Burr-Brown)

Number of Poles/Filter: 3

Types of Filters: Bessel, Butterworth, and Chebyshev

Bandwidth: 72.4 kHz (filter bypass)

Frequency Range: 0.1 Hz to 50 kHz; the frequency is set by installation of 4 to 6 resistors and/or capacitors in the provided socket locations

Frequency Modules: Optional frequency module kits are available that consist of 4 plug-in resistor/capacitor (RC) headers preconfigured for any of the following frequencies—5 Hz, 10 Hz, 100 Hz, 500 Hz, or 1 kHz; all are Butterworth type filters

Acquisition Time: 0.6 μ s (10V excursion to 0.1%); 0.7 μ s (10V excursion to 0.01%)

Channel-to-Channel

Aperture Uncertainty: 50 ns

Output Droop Rate: 0.1 μ V/ μ s

Input Gains: x1, 10, 100, 200, 500, and user deter-

mined up to 500

Input Offset Voltage: [500 + 5000/G] μ V max (nullable)

Input Offset Drift: [± 5 + 100/G] μ V/ $^{\circ}$ C max

Input Bias Current: 100 pA max

Input Offset Current: 50 pA max

Input Impedance: 5×10^{12} Ohms parallel with 6 pF (without 100K bias resistors enabled)

Switchable Bias Resistors: 100K each to analog common

Gain Errors:

x1 $\pm 0.04\%$ max

x10 $\pm 0.1\%$ max

x100 $\pm 0.2\%$ max

x200 $\pm 0.4\%$ max

x500 $\pm 1.0\%$ max

Gain vs. Temperature:

x1 ± 20 ppm/ $^{\circ}$ C max

x10 ± 20 ppm/ $^{\circ}$ C max

x100 ± 40 ppm/ $^{\circ}$ C max

x200 ± 60 ppm/ $^{\circ}$ C max

x500 ± 100 ppm/ $^{\circ}$ C max

Non-Linearity:

x1 $\pm 0.015\%$ FS max

x10 $\pm 0.015\%$ FS max

x100 $\pm 0.025\%$ FS max

x200 $\pm 0.025\%$ FS max

x500 $\pm 0.045\%$ FS max

Common-Mode Rejection:

x1 70 dB min

x10 87 dB min

x100 100 dB min

x200 100 dB min

x500 100 dB min

Dimensions: 209 mm W x 82 mm D x 19 mm H (8.25" x 0.75" x 3.25")

Power Consumption: 1565 mW

Ordering Information

Description

4-channel simultaneous sample and hold card with four blank headers for user configured cut-off frequencies

Part No.

DBK45

Accessories

Additional set of four blank headers FM/USER

Pre-configured Frequency Modules (Butterworth)

100 Hz FM100

500 Hz FM500

1 kHz FM1000

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)

Product Compatibility

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

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