DBK45™

4-Channel SS&H Card with Low-Pass Filter

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

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

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

DBK45 Simultaneous Sample & Hold Card Block Diagram

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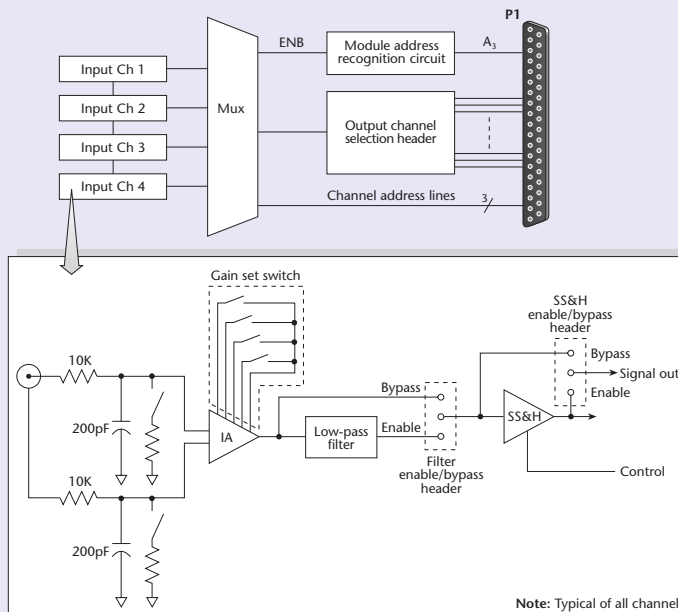
headers for each channel, to which you can add passive components for particular frequencies. Preconfigured plug-in headers for several preselected cutoff frequencies are optionally available.

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 SS&H, the per-channel rate is [Maximum sample rate/(n + 1)], where n=number of channels.

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:

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

Input Amplifier Slew Rate: 12 V/µs 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 µs (10V excursion to 0.1%); 0.7 µs (10V excursion to 0.01%)

Channel-to-Channel
Aperture Uncertainty: 50 ns

Output Droop Rate: 0.1 µV/µs

Input Gains: x1, 10, 100, 200, 500, and user determined up to 500

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

Input Offset Drift: [±5 + 100/G] µV/°C max

Input Bias Current: 100 pA max

Input Offset Current: 50 pA max

Input Impedance: 5 x 10¹² Ohms parallel with 6 pF (without 100K bias resistors enabled)

Switchable Bias Resistors: 100K each to analog common

Gain Errors:

x1	±0.04% max
x10	±0.1% max
x100	±0.2% max
x200	±0.4% max
x500	±1.0% max

Gain vs. Temperature:

x1	±20 ppm/°C max
x10	±20 ppm/°C max
x100	±40 ppm/°C max
x200	±60 ppm/°C max
x500	±100 ppm/°C max

Non-Linearity:

x1	±0.015% FS max
x10	±0.015% FS max
x100	±0.025% FS max
x200	±0.025% FS max
x500	±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	Part No.
4-channel simultaneous sample and hold card with four blank headers for user configured cut-off frequencies	DBK45

Accessories

Additional set of four blank headers	FM/USER

Pre-configured Frequency Modules (Butterworth)

5 Hz	FM5
10 Hz	FM10
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 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 (or contact factory for additional cabling options)

For complete information on accessories and cables, visit
www.iotech.com/acc

Related Products

* Attachment to the DaqBoard/2000 requires a DBK200, DBK201, DBK202, or DBK203 adapter