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DBK18™

4-Channel Low-Pass Filter & Amplifier Card

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

Features

- **Provides four independent 3-pole low-pass filter channels**
- **Provides a separate instrumentation amplifier input stage for each channel**
- **User-configurable from DC to 50 kHz cut-off**
- **One system can accept up to 64 DBK18 cards for a total of 256 inputs**

See DBK45 for SS&H plus low-pass filter



The DBK18 provides four individually configured low-pass filters

The DBK18™ low-pass filter card provides IOtech's data acquisition systems with four low-pass filters that can be individually configured for a cut-off frequency from DC to 50 kHz Butterworth. Each DBK18 provides four channels of differential voltage input. The systems' 16 analog input channels can each accept four DBK18 cards, for a total of 256 analog input channels with low-pass filtering.

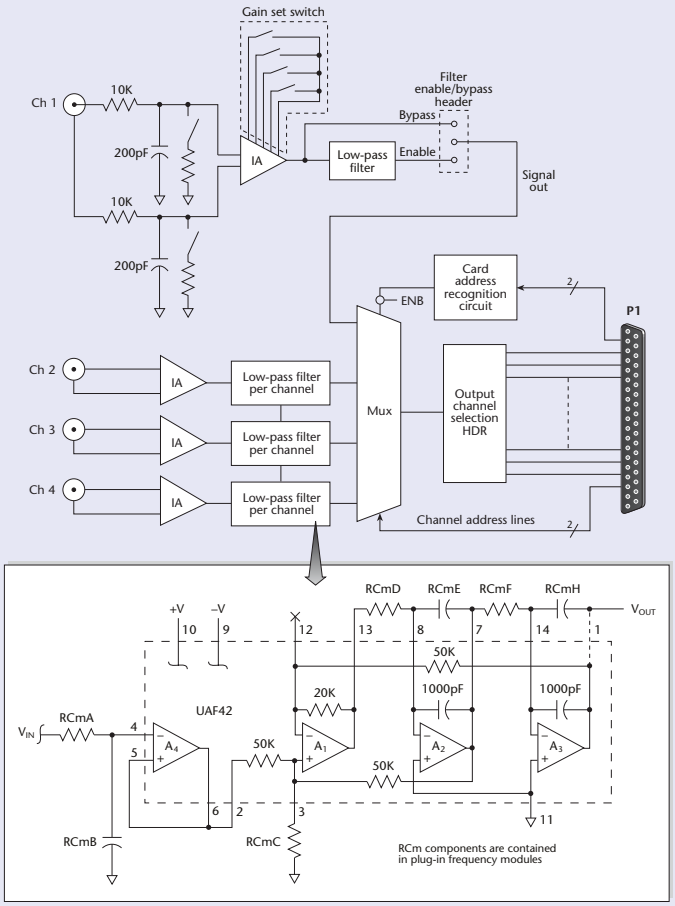
Each of the DBK18's four channels features an instrumentation amplifier with switch-selectable gains of x1, 10, 100, 200, and 500. Each channel is also equipped with a location for a user-selected gain resistor, allowing you to select a custom gain range of up to x500. Each of the instrumentation amplifier input stages are followed by separate active low-pass filter stages whose outputs are connected to an output multiplexer stage.

The DBK18's frequency-determined resistor and capacitor locations are on machined-pin IC sockets for maximum flexibility. The card is provided with blank plug-in headers for each channel, to which passive components for particular frequencies can be added. Pre-configured plug-in headers for several preselected cutoff frequencies are optionally available.

The DBK18 is equipped with BNC input connectors. Its differential inputs are equipped with switchable 100K bias resistors that are referenced to analog common.

Note: The DBK18 is also recommended for high gain DC applications.

DBK18 Low-Pass Filter Card Block Diagram



Note: Ch 1 is typical of Ch 2, Ch 3, and Ch 4

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DBK18™

Specifications & Ordering Information

Specifications

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

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

Input Amplifier Slew Rate: 12 V/µs min
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 10^{12} Ohms parallel with 6 pF
Switchable Bias Resistors: 100K Ohms 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

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

Note: For simultaneous sample and hold with anti-alias filter, see DBK45.

Power Consumption: 1085 mW

Ordering Information

Description	Part No.
4-channel low-pass filter card with four blank headers for user-configured cutoff frequencies	DBK18

Accessories

Additional set of four blank headers	FM/USER
Pre-Configured Frequency Modules (Butterworth) (set of four)	
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

LogBook
DaqBook
DaqLab
DaqScan
DBK10
DBK41
DBK45
DBK60
DaqBoard/2000 Series

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

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