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Find the *Measurement Computing / IOtech DBK7* at our website: *Click HERE*

DBK7

4-Channel Frequency-Input Card

MEASUREMENT COMPUTING

Features

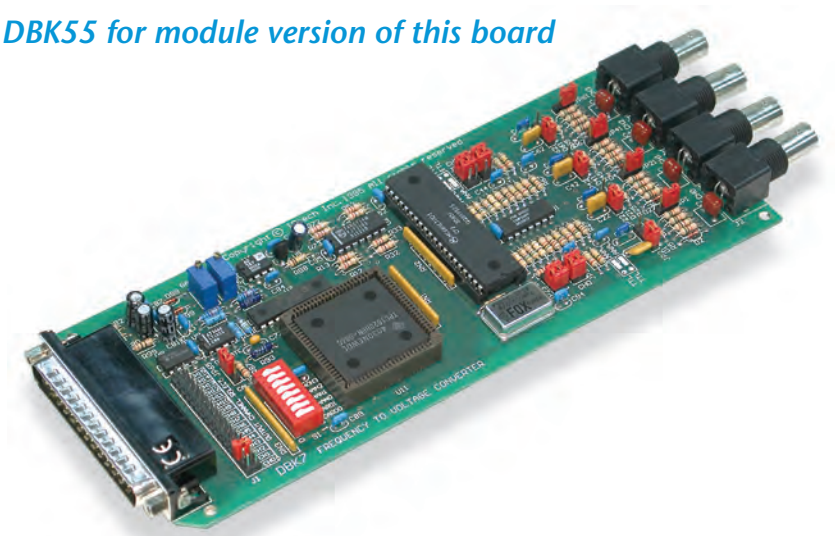
- Provides four frequency-measurement channels
- Programmable from 1 Hz to 950 kHz per channel
- Provides frequency resolution to 0.00025 Hz
- Accommodates low-level, high-level, or digital inputs
- Provides per-channel, user-configurable low-pass filters
- Ideal for making RPM measurements and monitoring flow meters

The DBK7 frequency-input card provides IOtech's data acquisition systems with four channels of frequency-measurement capability. The card measures the input signal's frequency and converts the frequency to a voltage, which can then be measured by the data acquisition system. The DBK7's output is read by the data acquisition system along with any other analog channels included in the analog scan group, allowing easy correlation of readings from the DBK7 with other test parameters. The DBK7 is particularly useful for making RPM measurements in applications such as automotive testing, or the monitoring of flow meters. As many as 64 DBK7s can be connected to one data acquisition system for a total of up to 256 channels. The DBK7 accepts low- and high-level analog signals, as well as digital signals.

Analog Inputs. The DBK7 accepts AC-coupled analog inputs up to 80V p-p. Each of its channels is equipped with a low-pass input filter that is jumper selectable for 100 kHz, 300 Hz, or 30 Hz. The card can accommodate 1 Hz to 100 kHz measurement of signals from 50 mV to 80V p-p.

Digital Inputs. The DBK7's digital inputs, which can measure signals from 0.001 Hz to 950 kHz, feature TTL Schmitt-trigger levels and can accept DC-coupled signals from -15V to +15V. The DBK7's digital inputs are equipped with pull-up resistors for use with relays or switches.

See DBK55 for module version of this board



The 4-channel DBK7 provides frequency-measurement capability

Frequency Range. The DBK7 provides 12-bit resolution at any frequency from 1 Hz to 950 kHz. Its software programmable range selection feature allows you to define minimum and maximum frequencies for conversion. This range is set on a per-channel basis and can extend over the full range of the card or be reduced to a frequency difference of 1 Hz or 1% of the maximum input frequency, whichever is greater. For example, you can configure one channel for 59.5 Hz to 60.5 Hz, another for 495 kHz to 500 kHz, and yet another for 1 to 950 kHz. When frequencies from 1 Hz to greater than 500 Hz are measured, a corresponding output voltage is generated 250 to 500 times per second; when frequencies from 1 Hz to less than 500 Hz are measured, they are updated once per cycle.

Update Rates. Since the DBK7's resolution is 12 bits regardless of the range selected, update times vary depending upon the range selected. For ranges from 1 Hz to the user-defined maximum upper range boundary, the voltage conversion update will occur every 2 to 4 ms or the period of the input frequency, whichever is greater. With a range of 0 to 10 kHz, the DBK7 will update every 2 to 4 ms. If the range is 0 to 60 Hz, the output will update every cycle or 16.6 ms. As the conversion range becomes more narrow — for example, from 49 to 51 Hz — the time to resolve the 2 Hz differential to 12-bit resolution increases; in this example, the conversion time would be approximately 59 ms.

Incoming Signal Noise. In addition to its low-pass filter, the DBK7 has a predefined hysteresis level built into each channel; this helps eliminate false counting caused by high-frequency noise. A programmable debounce is provided with times of 0.6 ms, 2.5 ms, and 10 ms; this is for electromechanical devices such as switches or relays, which bounce or chatter while switching.

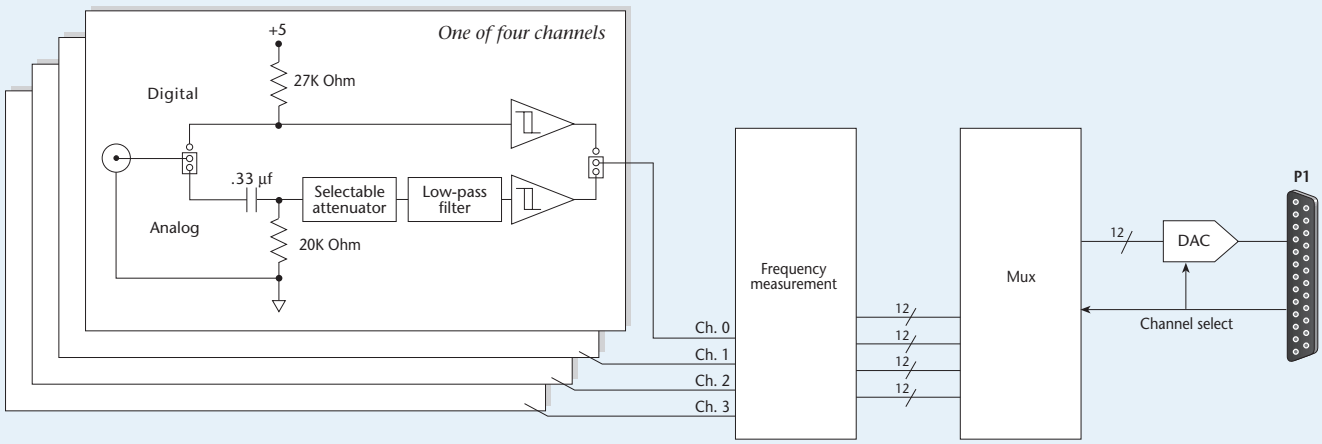
Auto-Calibration. The DBK7 is automatically calibrated upon initialization to compensate for data acquisition system errors and to ensure system accuracy.

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DBK7

Specifications & Ordering Information

DBK7 Frequency-Input Card Block Diagram



Specifications

Operating Temperature: -30 to +70 ˚C
Connector: DB37 male, mates with P1*; BNC connectors for signal inputs
Number of Channels per Card: 4
Maximum Cards per System: 64
Frequency-to-Voltage Ranges: Programmable from 1 Hz to 950 kHz digital; 1 Hz to 100 kHz analog
Temperature Coefficient: 10 ppm for every degree outside the range of 0 to 50 ˚C
Accuracy: 0.1%
Low-Pass Filters: 300 Hz and 30 Hz
Debouncing: off 0.6, 2.5, and 10 ms

Input Characteristics

Low-Level Analog Signals
Minimum: 100 mV guaranteed (50 mV typ)
Maximum: 80V p-p sine wave
Minimum Slew: 5V/s
Hysteresis: 15 mV
Impedance: AC-coupled (0.33 µF), in series with 20 kOhm to ground; see block diagram

High-Level Analog Signals
Minimum: 1.25V guaranteed, 0.75V typ
Maximum: 80V p-p sine wave
Minimum Slew: 50V/s
Hysteresis: 250 mV
Impedance: AC-coupled (0.33 µF), in series with 20 kOhm to ground

Digital Signals
Input Voltage: -15V to +15V
Threshold Voltage (low): 0.8V typ, 0.5V min
Threshold Voltage (high): 1.6V typ, 2.1V max
Hysteresis: 400 mV min
Pulse Width (high or low): 520 ns min
Input Impedance: 27 kOhm pull-up to +5V in parallel with 50 pF

Power Consumption: 420 mW

Ordering Information

Description	Part No.
4-channel frequency-to-voltage input card	DBK7

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

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