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#### Reference Notes:

- Refer to [Chapter 2, Power Management](#), in regard to calculating system power requirements.
- [Chapter 3, System Connections and Pinouts](#), includes pinouts for P1, P2, P3, and P4. Refer to the pinouts that are applicable to your system, as needed.

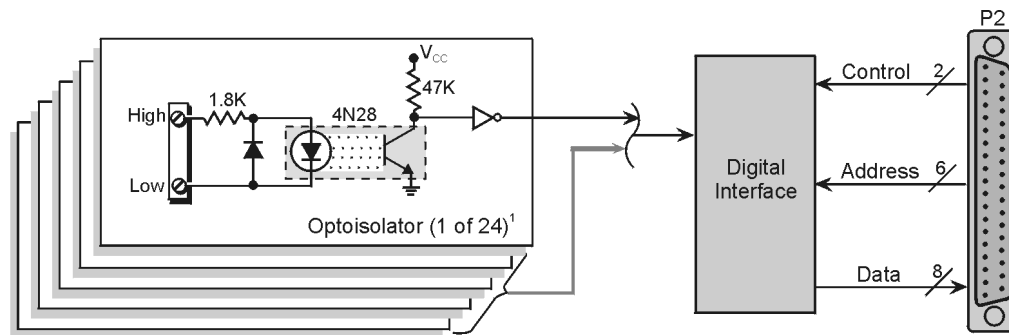
## Overview

The DBK23 is a 3-port by 8-bit digital input chassis that connects to the LogBook's, DaqBook or DaqBoard[ISA type] P2 Digital I/O Port or, for the DaqBoard/2000 Series boards [except DaqBoard/2003], to an appropriate P4 adapter. These adapters are discussed in the DBK200 series document modules.

The DBK23 provides 500 V isolation from the DaqBook/DaqBoard or LogBook system and from channel-to-channel. Up to 8 DBK23s can attach to the LogBook or to the DaqBook/DaqBoard (not the Daq PC-Card), offering up to 192 bits of isolated digital input.

The DBK23 provides screw terminal access to each of its 24 isolated inputs. A slide-out PCB allows easy access to the controls and connectors. The input circuitry allows input voltages ranging from 0 to 30.0 V.

**Note:** The local digital I/O cannot be used while any DBK23s are attached.



The optoisolator illustrated is typical of the remaining 23 optoisolators.

DBK23 Block Diagram

## Power Requirements

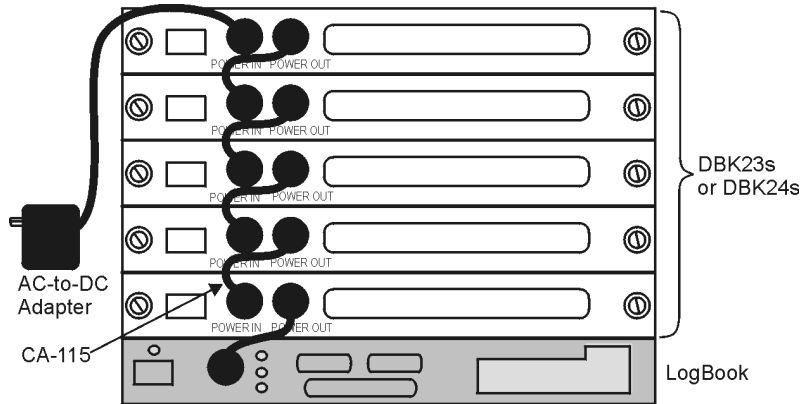
The DBK23 can be powered from a 9 to 24 VDC source such as an adapter, a standard 12 volt car battery, or an optional rechargeable nickel-cadmium battery module (DBK30A). This power flexibility makes the DBK23 ideal for field and remote data acquisition applications.

Power supplied to the DBK23 powers the on-board regulator. Connect the power supply (AC adapter) to the 5-pin DIN (labeled POWER IN) located on the front panel of the DBK23 chassis. Note the two power indicators on the rear panel of the DBK23. Check that both SYSTEM and LOCAL power LEDs are on at all times during operation. The second 5-pin DIN connector (labeled POWER OUT) can be cascaded to another accessory. A single power source can supply multiple DBK23 units.

## CAUTION



Excessive power consumption can cause equipment damage. Calculate system power requirements prior to daisy-chaining.

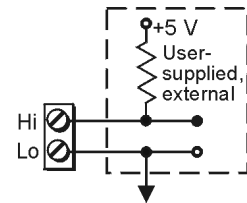


*Power Daisy-Chain*

## Hardware Setup

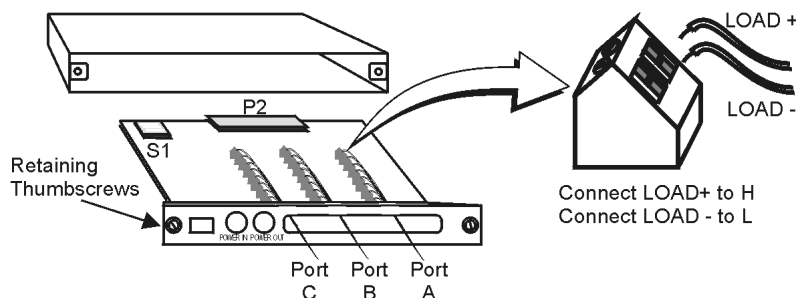
### Card Connection

Open the DBK23 case by loosening the two retaining screws on the chassis front panel. Slide out the DBK23 board in order to connect wires to terminal blocks. Each input channel (or bit) is equipped with a discrete two-pole screw terminal block for isolated HI and LOW termination. The terminals accept 12 AWG to 22 AWG wire. Insulated wire types selected should meet or exceed 500 V isolation specifications.



*Typical Circuit Use*

Strip insulation from the ends of wires (no more than 1/4"). Insert wire into the screw terminal receptacle so that only the bare portion of wire extends into the opening. Bare wire should not extend more than 1/16" beyond the receptacle. These steps are essential to maintaining proper voltage isolation. Once the wire ends are in place, turn the slot head screw at the top of the block until the receptacle grips the wire firmly. Do not over tighten. Captive holes have been placed in appropriate locations to secure groups of wires to the board. Nylon lock ties (not included) work well for this purpose.



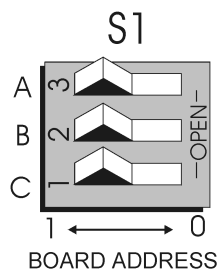
*DBK23 Card/Signal Connection*

## Card Configuration

The LogBook, DaqBook, and DaqBoard can each support up to eight DBK23s in a daisy-chain configuration using an accessory cable (see figure). Each unit is then configured via the on-board DIP switch (S1) for its unique base address. No more than one unit in a common chain may have the same S1 setting. The table shows possible switch settings and addresses. The XI/O addresses can be used by programmers to access specific ports on specific cards.



Software constants have been predefined in the API as follows: **DdpExpnA**; **DdpExpnB**; **DdpExpnC**. Where “n” is replaced by the card number shown in the address table; and A, B, or C is the port for that card.



Bank	Card No.	S1 Configuration			XI/O Address Value (Hex)		
		C	B	A	Port C	Port B	Port A
0	0	0	0	0	0x62	0x61	0x60
	1	0	0	1	0x66	0x65	0x64
1	2	0	1	0	0x6A	0x69	0x68
	3	0	1	1	0x6E	0x6D	0x6C
2	4	1	0	0	0x72	0x71	0x70
	5	1	0	1	0x76	0x75	0x74
3	6	1	1	0	0x7A	0x79	0x78
	7	1	1	1	0x7E	0x7D	0x7C

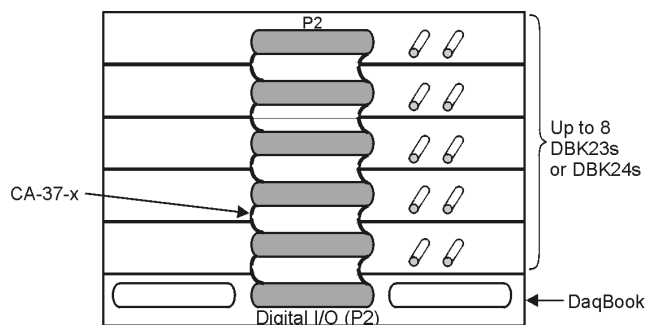
## DaqBook and DaqBoard Connection

Connect the P2 digital I/O port of the DaqBook or DaqBoard [ISA type] or, for a DaqBoard/2000 Series board [except DaqBoard/2003] to an appropriate P4 adapter, to the P2 connector of the DBK23 using an accessory cable. Select up to 8 positions for a total of 192 programmable isolated inputs.

Note that P4 adapters are discussed in the DBK200 Series document modules.

## DaqBoard/2000 Series Board Connection

Use a 37 pin accessory cable to connect the P2 digital I/O port of an appropriated DaqBoard/2000 Series P4 adapter to DBK23's P2. Note that you can select up to eight positions for a total of 192 programmable isolated inputs.



Connecting Multiple DBK23/24s

P4 adapters are discussed in the DBK200 Series document modules.



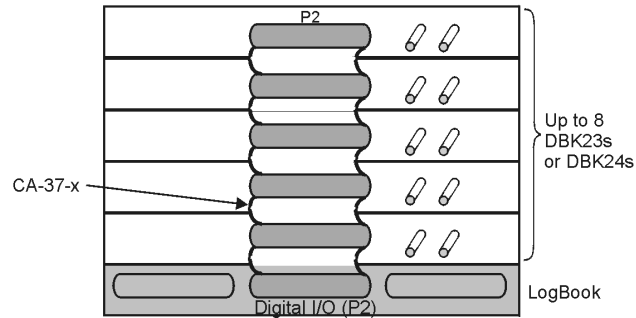
P2 expansion cables must be kept short for proper operation. Do not exceed 14" per attached DBK card.

## DaqBook and DaqBoard Configuration

There are no hardware configuration setups internal to the DaqBook or DaqBoard required for the DBK23.

### LogBook Connection

Connect the P2 digital I/O port of the LogBook to the P2 connector of the DBK23 using an accessory cable. Select up to 8 positions for a total of 192 programmable isolated inputs.



*Connecting Multiple DBK23 or DBK24s*

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## Software Setup

### Reference Notes:



- **DaqView users** - Refer to [Chapter 4, DBK Setup in DaqView](#).
- **LogView users** - Refer to [Chapter 5, DBK Setup in LogView](#).

**Note:** Refer to the full-page table on the next page for valid hex codes.



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## **DBK23 – Specifications**

**Name/Function:** General Purpose Optically Isolated Digital Input Module

**Channels:** 24 I/O channels

**Connector:** Screw terminals for signal outputs

**Input Voltage Levels:**

Range: 3 to 30 VDC

Input Current: 1.5 to 15 mA

Operating Voltage Range: 9 to 24 VDC

**Module Power Requirements:** 0.25 W; AC adapter included

**120 VAC Adapter Supplied:** 15 VDC @ 0.9 A

**Isolation Voltage:**

Channel-to-channel: 500 V

Channel-to-system: 500 V

**Channel Address:** Set by DIP switch