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Find the *Measurement Computing / IOtech DBK60* at our website: *Click HERE*

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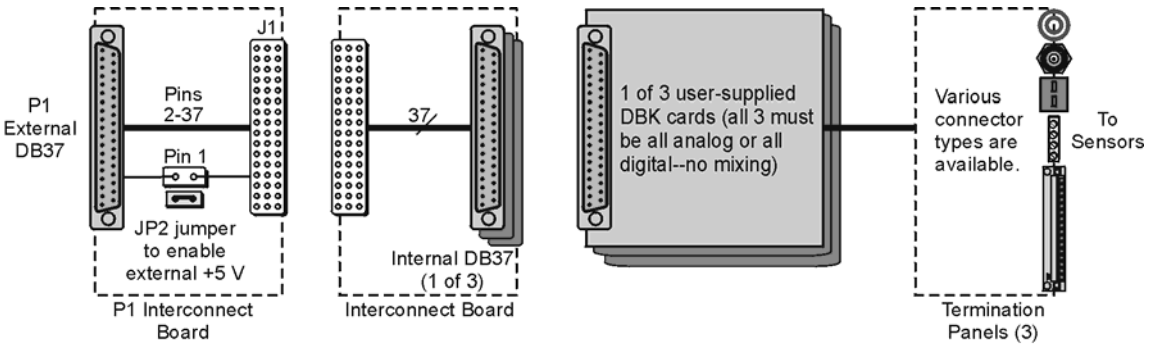
**Reference Notes**:

- Chapter 2 includes pinouts for P1, P2, P3, and P4. Refer to pinouts applicable to your system, as needed.
- In regard to calculating system power requirements, refer to *DBK Basics* located near the front of this manual.

## Overview

The DBK60 expansion chassis holds up to three analog DBK cards, or up to three digital DBK cards, and provides termination panels with connectors for various sensors. Several DBK60 units can be linked together and then to the primary acquisition device, e.g., a DaqBook, DaqBoard, or LogBook.

Splice plate kits can be used to stack multiple DBK60 units to the primary device.

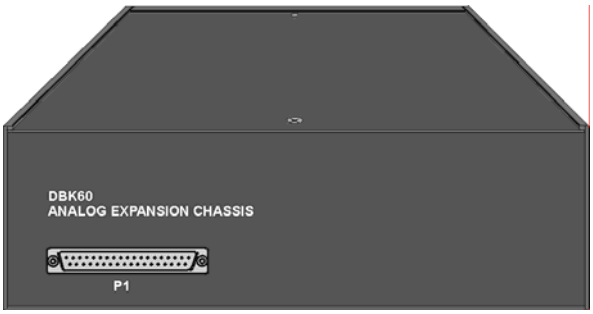



*DBK60 Block Diagram*



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The **front panel** has a male DB37 connector that leads to the acquisition processor via a CA-37-x, CA-37-xT, or equivalent cable.



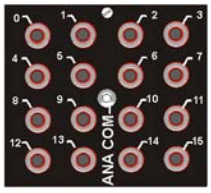

The **rear panel** is made of three termination panels with connectors for the various sensors.



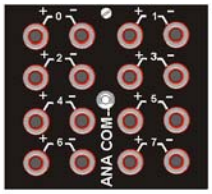
Blank Panel
DBK601



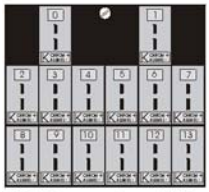

BNC Connectors
plus Analog Common
DBK602



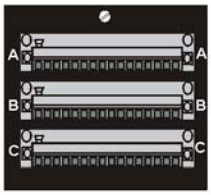

Safety Jacks, single-ended
plus Analog Common
DBK603




Safety Jacks, Differential
plus Analog Common
DBK604



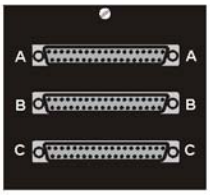
T/C Connectors, Differential
DBK605-B DBK605-R
DBK605-J DBK605-S
DBK605-K DBK605-T




Terminal Blocks,
16 connections per block
(48 connections per panel)
DBK606



Strain Relief Clamp
DBK607




DB37 Connectors, Female
DBK608

## Hardware Setup

Hardware setup involves configuring the DBK60, configuring up to three DBK cards that will be used with the module, installing the DBK cards, then connecting signal lines to the DBK60's termination panels.

Read over the following WARNING and CAUTION, then complete the steps to successfully setup your hardware.

**WARNING**

**Electrical Shock Hazard! To avoid injury or equipment damage, turn off power to all connected equipment during setup.**

**CAUTION**

**Use ESD tools, containers, and procedures during setup of DBK cards. Electrostatic discharge can damage some of the components.**

**To prevent pin damage, align DBK cards with the backplane DB37 connectors before gently pressing them together.**



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## 1 – Turn off system power and disconnect the DBK60

If the DBK60 is presently connected in a system, turn off all system devices and disconnect the DBK60 from the system.

## 2 – Remove the top cover (optional)

Removing the top cover is not necessary, but it does make it easier to set the JP2 jumper in step 6. A removed cover also allows for configuration and signal connection changes to be made to cards later on in the procedure, after the card drawer is returned to the DBK60.

To remove the top cover, simply remove the top cover screws and slide the cover towards the termination panels.

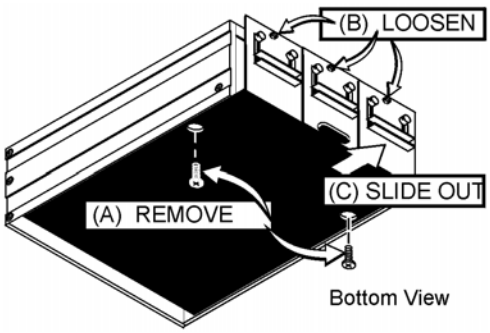
## 3 – Remove the card drawer

To remove the card drawer, refer to the A, B, and C call-outs in the figure at the right; then complete the corresponding steps below.

A. Remove the two screws that hold the card drawer to the chassis.

B. Loosen the three captive thumbscrews that hold the termination panels to the chassis.

C. Using the handle, carefully slide out the card drawer.




***Three Steps for Removing the Card Drawer***

## 4 – Remove the termination panels

Remove the two screws [two per panel] that secure each termination panel to the card drawer (see figure).

## 5 – Determine the power requirements

Depending on the power needs of your system's DBK cards, you may need to add a power card. Refer to *Power Requirements* in the *DBK Basics* section in regard to calculating your system's power needs.

A. Use the *DBK Power Requirements Work Table* to calculate the power requirements of your system's DBK cards.

B. Use the *Available Power Chart* to determine your system's power availability.

C. If the required power in step 5A is more than the available power in step 5B, or very close to it, you will need to use auxiliary power. There are two DBK auxiliary power supply cards for use in LogBook, DaqBook, and DaqBoard applications. These are the DBK32A and the DBK33.

- DBK32A – provides power at ±15 V.
- DBK33 – provides power at +5 V and ±15 V.



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## 6 – Configure the chassis for the power source

**Use one power source, and only one power source, for cards on the P1 bus!**

**+5 V** is selected with the **DBK60's JP2** jumper, located inside the expansion chassis on the P1 interconnect board (see the following figure for location).

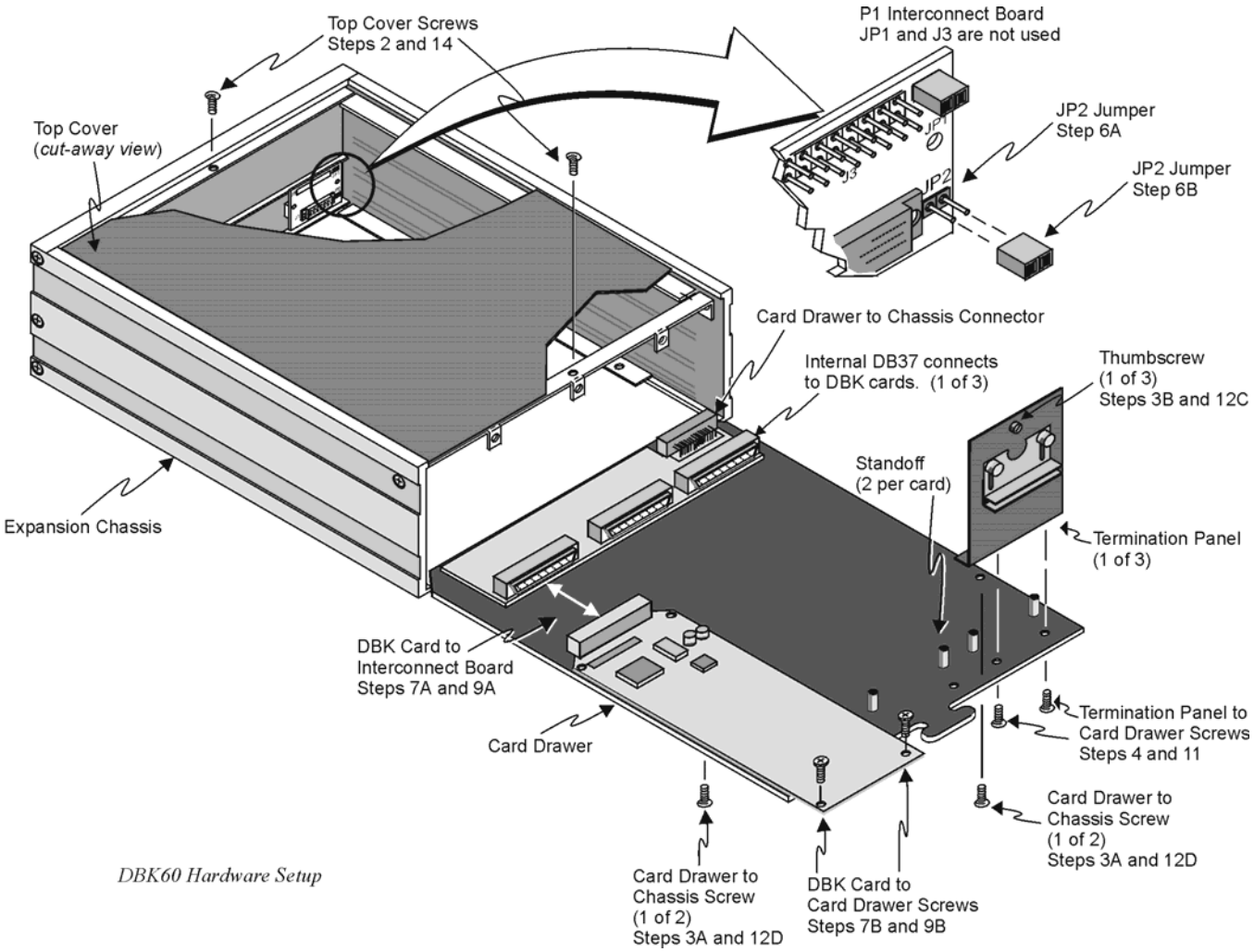
**±15 V** is selected with two **JP1 jumpers, located on the board of the primary data acquisition device**, such as a DaqBook or ISA-type DaqBoard.
DO NOT CONFUSE THESE JP1 JUMPERS WITH THE JP1 JUMPER IN THE DBK60.

A. If **+5 V** will be supplied from a source *outside the expansion chassis*, place a jumper on DBK60's JP2 header. JP2 is located on the P1 interconnect board (see figure).

B. If **+5 V** will be supplied from a DBK33 power card *inside the expansion chassis*, remove the jumper from the JP2 header (located on the P1 interconnect board).

C. If using a **DBK32A** or **DBK33** power card *anywhere in the system*, remove the +15 V and -15 V jumpers from **JP1** on the **primary data acquisition device**, such as a DaqBook or ISA-type DaqBoard. DO NOT CONFUSE THESE JP1 JUMPERS WITH THE JP1 JUMPER IN THE DBK60.

**Reference Notes**:
Refer to the DBK32A or DBK33 sections, if applicable.




*DBK60 Hardware Setup*



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## 7 – Install a power card, if needed

If you determined [in step 5] that additional power is needed, add a DBK32A or DBK33 power card to the acquisition processor chassis, or to the DBK60 expansion chassis.

To install a power card in a DBK60 complete steps 7A and 7B. Refer to the previous figure as needed.

A. Carefully align the power card's DB37 connector with a DB37 connector on DBK60's P1 interconnect board and gently press the power card to establish a complete and solid connection.

B. Use two screws to secure the power card to DBK60's card drawer standoffs.

## 8 – Configure the DBK cards

Configure channel addresses that are unique to each card; i.e., do not duplicate addresses. Some cards make use of jumpers for address configuration, while others make use of DIP switches.



**Reference Note**:
Refer to the appropriate *DBK document modules* in regard to specific DBK configuration.

## 9 – Install the DBK cards




**You cannot mix analog and digital DBK cards in the DBK60; in other words, use all analog or all digital, but not both.**

A. Carefully align the DBK card's DB37 connector with a DB37 connector on the interconnect board and gently press gently press the DBK card to establish a complete and solid connection (see previous figure).

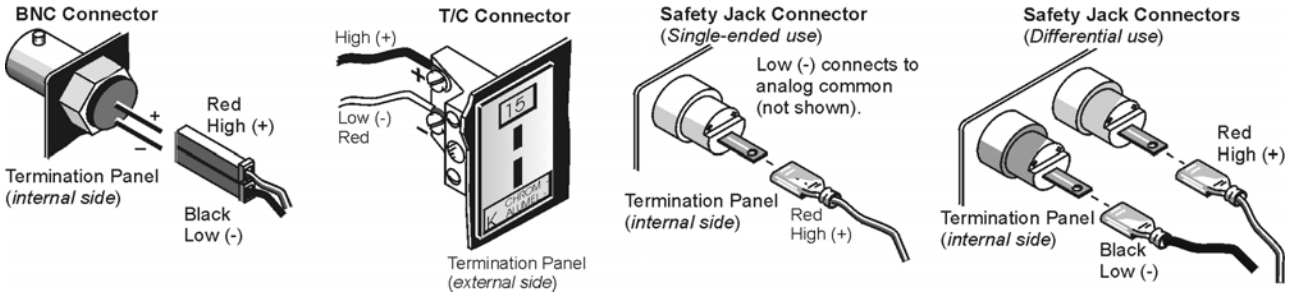
B. Use two screws to secure the DBK card to the standoffs on the DBK60 card drawer (see previous figure).

C. Repeat installation steps 9A and 9B for additional DBK cards, as applicable. Be sure that all cards to be installed are analog, or all digital. Analog and digital can not be mixed within a DBK60.

## 10 – Connect the internal signals

**Connect signal inputs from DBK cards to the termination panels.** DBK cards connect to the termination panels in various ways. Refer to the following figure and to the specific *DBK document modules* as needed.

- Single-ended connections use analog common.
- Differential connections require the proper polarity, typically red-to-red for high (+) and black-to-black for low (-).
- For thermocouples, red is generally the low side. The T/C connector and wire type must match the T/C type used.




## 11 – Install the termination panels

Mount the termination panels to the card drawer. Use two screws to secure each panel.
Refer to the *DBK60 Hardware Setup* figure.



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## 12 – Install the card drawer

A. Hold the card drawer by its handle and tilt it up slightly. Place it on the bottom track of the DBK60.

B. Carefully slide the card drawer into the chassis. When it engages the bottom track, level the card drawer and continue inserting it until it engages with the P1 interconnect board.

C. Tighten the three captive thumbscrews [on the termination panels] into the chassis (see *DBK60 Hardware Setup* figure).

D. Install the two bottom screws that hold the card drawer to the chassis.

## 13 – Connect external signals

Connect signal inputs from the sensors to termination panels.

## 14 – Install the top cover

If the top cover had been removed, slide it back into position and secure the cover with the two top cover screws.

## 15 – Connect the DBK60 to the rest of your acquisition system

A. **If using analog DBK cards**, connect the DBK60 to P1 of the system.

B. **If using digital DBK cards**, connect the DBK60's P1 to a P2 port of the system. Then Re-label the DBK60 front panel connector "P2."

## 16 – Turn on system power and check operation

# *DBK60 - Specifications*

**Description**: DBK Card Expansion chassis accommodating 3 DBK cards, configurable power capability. Selection of 7 termination panels to allow custom user input connection.

**Capacity**: Accommodates any 3 DBK expansion cards.
Analog and Digital DBK cards cannot be mixed within a single DBK60 enclosure.

**Material**: Aluminum and Steel

**Finish**: Black, powder-coated

**Dimensions**: 280 mm x 330 mm x 89 mm (11" x 13" x 3.5")

**Weight**: 3.08 kg empty (7 lbs.); cards .25 to .75 kg each (8 to 12 oz)



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