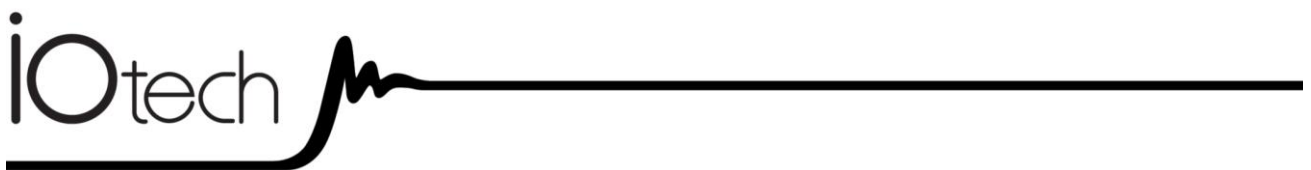


LogBook/360

*Stand-alone, Intelligent PC-based,
Data Acquisition System*



LogBook/360

461-0941 rev 3.0



324587C-01

Measurement Computing

10 Commerce Way
Norton, MA 02766

(508) 946-5100

Fax: (508) 946-9500

info@mccdaq.com

www.mccdaq.com

Software Installation QS360-1

Setting Up the Card Drawer QS360-3

Connecting the LogBook/360 to the PC, External DBKs, and Power QS360-6

Hardware Configuration QS360-7

LogBook/360 Device Configuration... QS360-8

Testing the Hardware QS360-10

Acquisition Configuration QS360-10

A Note About Calibration QS360-11

Before you get started

verify that you have the following items.

- LogBook/300
- TR-40U Power Supply
- Serial/Parallel Patch Cable, or PC Card Reader
- PC with ECP (Enhanced Capabilities Port)
- Data Acquisition CD
- Monitor: SVGA, 1024 x 768 screen resolution
- Windows XP users:
PC with Intel™ Pentium [or equivalent], 1 GHz; 512 MB memory; 10 GB disk space
- Windows Vista users:
PC must be *Windows Vista Premium Ready*

IMPORTANT! Software must be installed first!

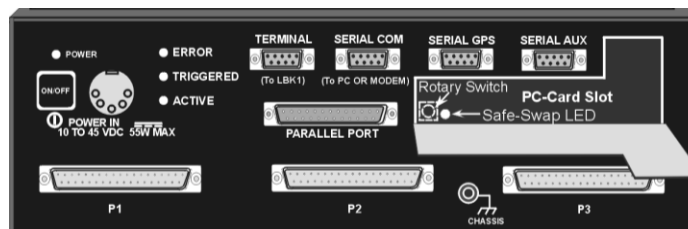
Software Installation

1. Close all running applications on the host PC.
2. Remove previous version drivers, if present. You can do this through Microsoft's **Add/Remove Programs** feature.
3. Insert the Data Acquisition CD (8.1.2 or higher) into your CD-ROM drive and wait for the PC to auto-run. An *Opening Screen* will appear. If AutoRun is disabled: (a) *right click* Windows Start menu, (b) select *Explore*; and (c) *double-click* MasterSetup.exe. As an alternative to using the CD, you can download software from: www.mccdaq.com/software
4. Click the <ENTER SETUP> button.
Note: If you are downloading software from our website, follow instructions provided there.
5. From the hardware selection screen, select your data acquisition device then follow the on-screen instructions.

Note: To enable all *LogView* features:

- (a) From *LogView's* main window, open the File pull-down menu,
- (b) select Authorization,
- (c) enter **ED7B55484273** in the dialog box and apply the code.

LogBook/360 combines the features and capabilities of LogBook/300 with a DBK60 expansion chassis. The *lower* portion of the **front panel** has three male DB37 connectors (P1, P2, and P3) for system expansion, and a post for connecting to CHASSIS ground. The *upper* section is nearly identical to LogBook/300.



LogBook/360, Front Panel



Reference Notes:

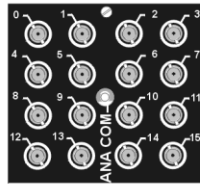
Depending on the nature of your LogBook system, you may find one or more of the following references to the *LogBook User's Manual* PDF helpful. The PDF manual is included on the Data Acquisition CD and is also available on our web-site.

- For block diagrams and operational overviews, refer to Chapter 1 of the LogBook User's Manual PDF.
- For system expansion and calculating system power, refer to Ch. 4 and to the *DBK Basics* section.
- For information regarding LBK options, refer to Chapter 5.
- For specific DBK card information, refer to the *DBK Options Manual* PDF.

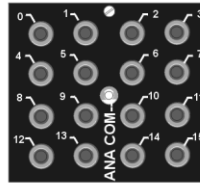
Note: The LogBook/360 rear panel supports three termination panels. Many different combinations are possible.



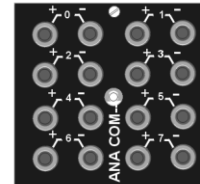
Blank Panel
DBK601



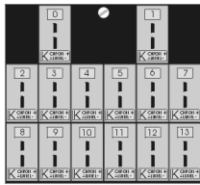
BNC Connectors
plus Analog Common
DBK602



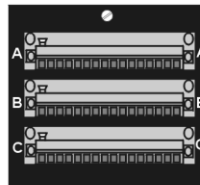
Safety Jacks, single-ended
plus Analog Common
DBK603



Safety Jacks, Differential
plus Analog Common
DBK604



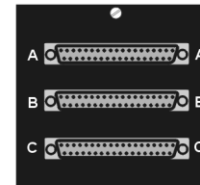
T/C Connectors, Differential
DBK605-B DBK605-R
DBK605-J DBK605-S
DBK605-K DBK605-T



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



Strain Relief Clamp
DBK607



DB37 Connectors, Female
DBK608

WARNING



Electric shock hazard. Turn off power to all system-connected devices prior to connecting or disconnecting cables, or setting hardware configurations. Failure to do so could result in electric shock or death, and equipment damage, even under low-voltage conditions.

CAUTION



Use ESD tools, containers, and procedures during setup of DBK cards. Electrostatic discharge can damage some components. To prevent pin damage, align DBK cards with the backplane DB37 connectors, then gently press them together.



When using LogBook in *attached mode*, the PC-Card [in LogBook] must already have the file `logbook.sys`. Otherwise, LogView cannot communicate with LogBook, and LogBook will appear dead.

Setting Up the Card Drawer

LogBook/360 can house three DBK cards internally, and make use of various termination panels. For user convenience, a card drawer can be slid free of the device. The following steps should be used when adding, removing, or changing cards. Refer to the following figure as needed.

1 – Turn off system power and disconnect LogBook/360.

Turn power off to the LogBook/360 and all connected devices. Disconnect LogBook/360 from the system.

2 – Remove top cover.

If you need to make any change on the LogBook motherboard, you will need to remove the top cover. Otherwise, the cover can remain in place. To remove the top cover, simply remove the two top cover screws and slide the cover free of the device.

3 – Remove card drawer.

- A. Remove the two screws that hold the card drawer to the chassis.
- B. Loosen the three termination panel thumbscrews.
- C. Carefully pull the card drawer free of the chassis.

4 – Remove termination panels.

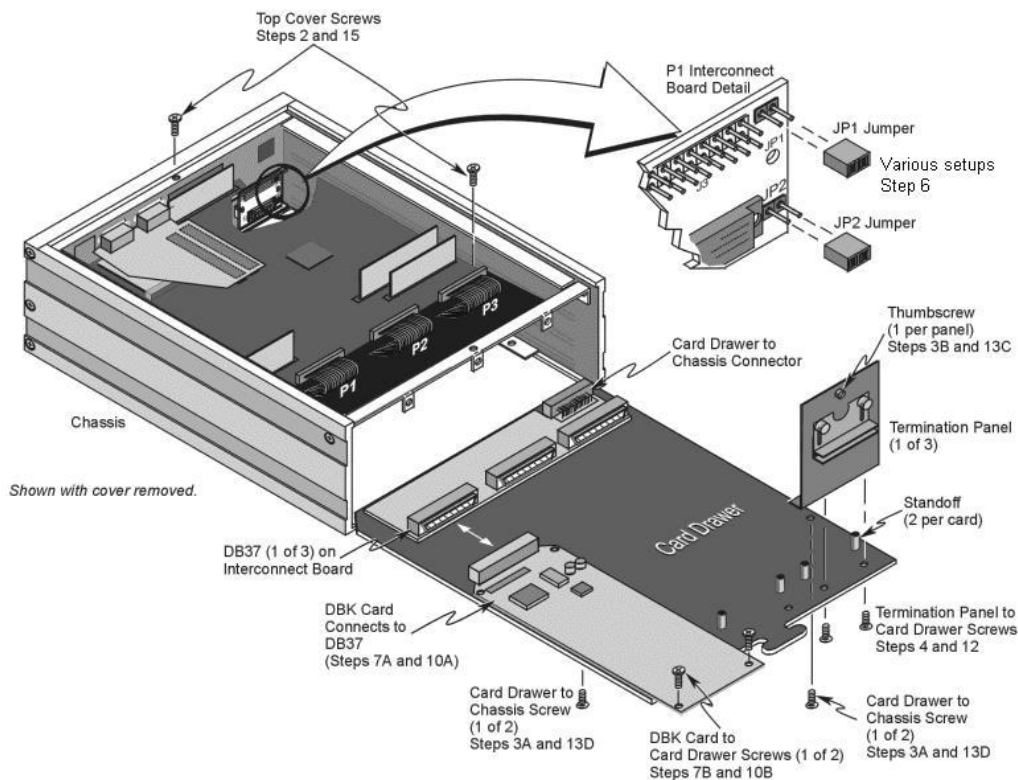
For each termination panel, remove the two screws that mount it to the card drawer, then remove the termination panel.

5 – Determine power requirements.

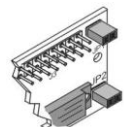
Depending on the power needs of your system's DBK cards, you may need to add a power card. Refer to the *DBK Basics* section of the *LogBook User's Manual* PDF in regard to calculating your system's power requirement.

If the required power is more than the available power your system will require auxiliary power. One of two power supply cards can be used with LogBook/360:

- **DBK32A** – This DBK supplies ± 15 V for use with a LogBook, DaqBook, or DaqBoard.
- **DBK33** – This DBK supplies +5 V and ± 15 V for use with Log Book, DaqBook, DaqBoard, or Daq PC-Card.



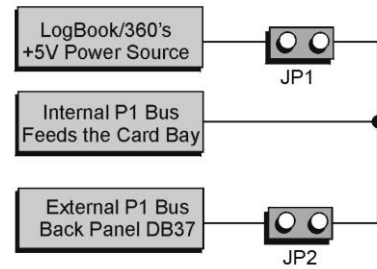
Leave jumpers JP1 and JP2 in place unless a DBK33 is being used. If a DBK33 is being used configure the P1 interconnect board according to the table presented in step 6.



6 - FOR DBK33 USERS ONLY! Configure the P1 interconnect board for power source.

*This step only applies when a DBK33 is being used with the system.
If you are not using a DBK33 skip to step 7.*

The schematic to the right shows the LogBook/360 jumpers, JP1 and JP2, which are used to distribute the LogBook's +5V power supply. DBK cards that attach to the LogBook's P1 bus need +5V, +15V, and -15V power sources to operate. Typically, the LogBook's power supply meets this requirement, but if additional power is needed, a DBK32A or DBK33 must be added.



The LogBook's power supply employs diode protection on its +/-15V supplies so that no conflict will take place when a DBK32A or DBK33 is added to the P1 bus. **However, adding a DBK33, with its +5V source, necessitates the proper positioning of the JP1 and JP2 jumpers.**

Adding a DBK33 to your system with the jumpers set incorrectly can damage your LogBook, DBK33, and other system components. Refer to the following table for important information regarding configuration.

CAUTION



Adding a DBK33, with its +5V source, necessitates the proper positioning of the JP1 and JP2 jumpers on the LogBook/360 P1 interconnect board. Adding a DBK33 to your system with the jumpers set incorrectly can damage the LogBook, DBK33, and other system components.

WHEN JP1 AND JP2 JUMPERS ARE IN PLACE A DBK33 CANNOT BE USED IN THE SYSTEM!

P1 Interconnect Board Configurations for DBK33 Applications

JP1	JP2	P1 Interconnect Board*	LogBook +5V Power Source		Notes Pertaining to DBK33
			Internal P1 Bus	External P1 Bus	
In	Out		Yes	No	When the JP1 jumper is in place and the JP2 jumper is out, if the system is using external DBKs the DBK33 will need to be external. Internal DBKs will be powered from LogBook's internal P1 bus.
Out	In		No	No	When the JP1 jumper is out and the JP2 jumper is in place, if DBKs are used internally or externally, the DBK33 can be internal or external and will power both internal and external DBK cards.
Out	Out		No	No	When the JP1 and JP2 jumpers are both out, the following apply: <ul style="list-style-type: none"> ○ If using internal DBKs, you will need to use an internal DBK33. ○ If using external DBKs, you will need to use an external DBK33.

* Refer to the LogBook/360 Hardware Setup figure on page QS360-3 for the P1 interconnect board's location.



Leave jumpers JP1 and JP2 in place, unless a DBK33 is being used. If a DBK33 is being used configure the P1 interconnect board according to the above table.

7 – Install power card if necessary.

If you determined in step 5 that additional power was needed, add a DBK32A or DBK33 power card to the chassis. The *DBK Option Cards & Modules User's Manual* includes detailed information regarding these power-related cards.

- A. Carefully align the power card's DB37 connector with a DB37 connector on the interconnect board and gently press them together.
- B. Mount the power card with two screws into the standoffs on the card drawer.

8 – Configure DBK cards.

Configure unique channel addresses with the jumpers on the DBK cards. Some cards have other jumpers and/or DIP switches. Refer to the specific DBK sections of the *DBK Options Manual* (p/n 457-0905) as needed.

9 – Install DBK cards.

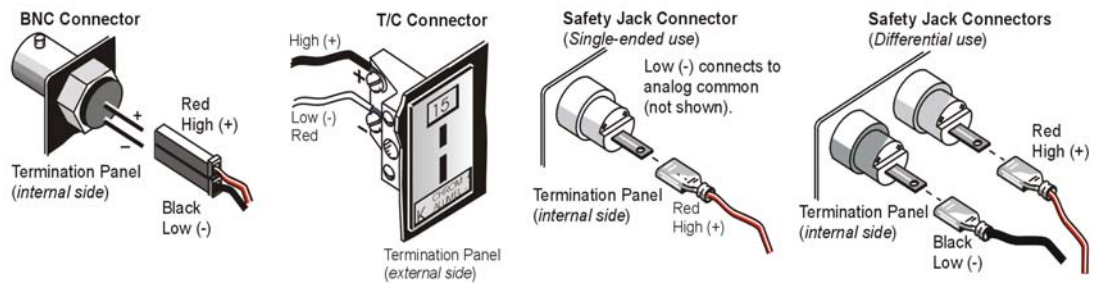
You must use **all analog** DBK cards in the LogBook/360; unless you have a factory modification that allows the use of **all digital** cards. You can not use both analog and digital cards at the same time.

- A. Carefully align the DBK card's DB37 connector with a DB37 connector on the interconnect board and gently press them together (see figure).
- B. Mount the DBK card with two screws into the standoffs on the card drawer (see previous figure).
- C. Continue installation of any remaining DBK cards.

10 – Connect internal signals.

Connect signal inputs from DBK cards to termination panels. DBK cards connect to the termination panels in various ways (see figure and particular DBK sections in the *DBK Option Cards and Modules User's Manual*):

- 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. Always make sure the T/C connector and wire type match the T/C type used.



11 – Install termination panels.

Mount the termination panels to the card drawer with two screws for each panel.

12 – Install card drawer.

The card drawer slides into the bottom track of the chassis.

- A. Hold the card drawer by its handle and tilt it up slightly. Place it on the bottom track of the chassis.
- 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 holding the termination panels to the chassis.
- D. Install the two screws holding the card drawer to the chassis.

13 – Connect external signals.

Connect signal inputs from sensors to termination panels.

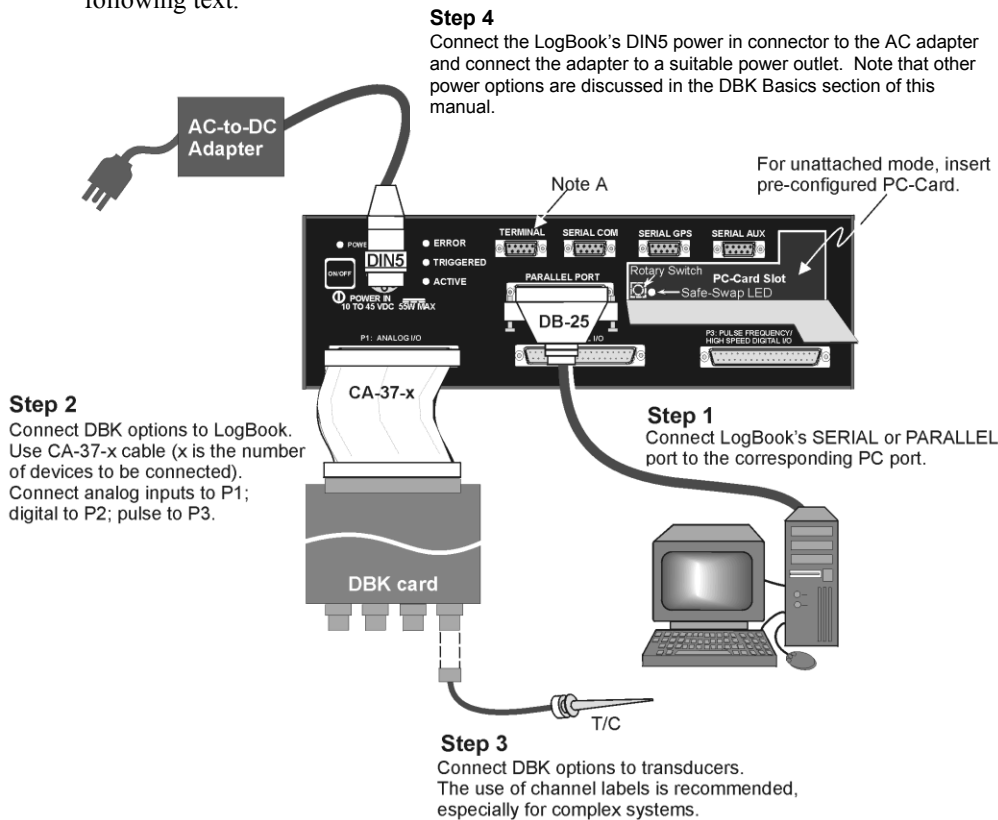
14 – Install top cover.

If the top cover was removed, slide it back into place and secure with two screws.

Connecting the LogBook/360 to the PC, External DBKs, and to Power

The following hardware-connection figure and procedure are generic; details vary with system complexity. For “unattached mode,” a pre-configured PC-Card is inserted in the PC-Card slot, and no connection to a PC is made. The following figure illustrates the “attached” mode.

Note: Connecting LogBook/360 to a PC applies to the “attached mode” only. Many applications will make use of three internal DBK cards only, having no need to attach external DBK cards or modules as discussed in the following text.



Note A:
When used, the LogBook Terminal option (LBK1) connects to LogBook's TERMINAL port. If LBK1 is not used, a remote ON/OFF switch and LED indicator option can be connected to LogBook via the TERMINAL port. LBK options are detailed in the LBK chapter of the user's manual.

LogBook/360 System, “Attached Mode,” Basic Connections

Note: Rear panel connections may be made via terminal blocks, as discussed in the previous section, *Card Drawer Setup*.

After verifying that all equipment power is off, hardware connection typically proceeds as follows. Refer to the above figure as needed.

1. Connect the LogBook/360 to the host PC. There are four ways for LogBook/360 to communicate with the PC. These are: parallel port, serial port to serial port, serial port to USB, and manual transportation of the PC-Card. Note that the parallel port method is represented in the previous figure.
 - a) **Parallel port to parallel port** – *If using the parallel port*, connect a DB25male to DB25female parallel cable [e.g., CA-35-2 or CA-35-6 (2ft. or 6ft. respectively)] to PARALLEL PORT on LogBook/360, and to the corresponding parallel port on the host PC. When this method is used, the PC must be set to the ECP mode. See *ECP Parallel Port*, page QS360-9 for additional information.
 - b) **Serial port to serial port** – *If using the serial port*, use a null modem serial cable (CA-47) to connect the DB9 SERIAL PORT on LogBook/360 to the corresponding DB9 serial port on the host PC.

- c) **Serial port to USB port** - Requires an adapter kit. To connect the LogBook to a USB port you will need a *RS-232 to USB Interface Adapter Kit* p/n CA-232-USB-KIT (available from MCC). Refer to the associated Quick Start document (QS RS-232_to_USB_Interface.pdf) for a list of the kit's contents and for RS-232 to USB conversion instructions. The pdf is included on Data Acquisition CD (rev 8.1.2 and higher).
- d) **PC-Card** – With PC-Card communication, LogBook/360 does not require a connection to the computer, as communication is accomplished via the PC-Card. To provide the PC-Card with the correct configuration file, it must be configured from the PC, through LogView. After the PC-Card is configured, it is inserted into LogBook's PC-Card slot, located behind the front panel door.



Reference Note:

Information pertaining to PC-Cards can be found in chapter 1 and in the *LogView* section of the *LogBook User's Manual* PDF.

- 2. Connect LogBook/360 to the DBK cards and modules. For connecting internal DBK cards, refer to the earlier section entitled, *Setting Up the Card Drawer*.

Most analog DBKs connect to P1; digital DBKs generally connect to P2. Refer to the *DBK Options Manual* (457-0905) in regard to your particular DBKs and for general DBK installation details.

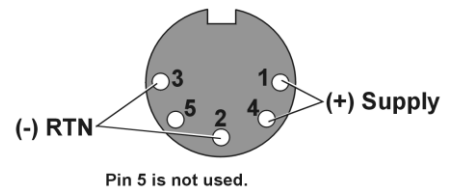
The CA-37-x cable can daisy-chain several DBKs including the DBK41, which has a built-in P1 bus connection for 10 DBK cards. The *x* in the cable part number refers to the number of devices that can be connected (a CA-37-1 actually has two DB-37 connectors).

Note: Chapter 4 of the *LogBook User's Manual* PDF includes pinouts for LogBook/360's P1, P2, and P3 connectors.

CAUTION

For analog signal inputs via P1, do not exceed -35 VDC or +45 VDC. Exceeding these limits could result in equipment damage.

- 3. Connect DBK(s) to transducer(s). Follow instructions for particular DBK as described in the *DBK Option Cards & Modules User's Manual* and for the particular transducer. Some DBKs can accommodate both BNC and screw-terminal connections.
- 4. Connect LogBook/360 to a suitable power source, such as the included AC-to-DC adapter or optional DBK34A UPS / Battery Module. DC power sources such as a car batteries must supply 10 to 45 VDC and use the correct DIN5 pinout (see figure). A locking DIN5 connector assures a secure power connection for applications subject to vibration and thermal stress.



DIN5 Power Input Connector
(As seen on LogBook/360 Front Panel)

Hardware Configuration



Reference Notes:

Refer to the device-specific sections of the LBK options chapter [in the user's manual PDF] and the *DBK Option Cards & Modules User's Manual* PDF for information regarding these devices. Note that certain DBK options require manual configuration.

LogBook/360's top cover does not need to be removed, except to add or remove an LBK option, or to replace the fuse.

Most LogBook/360 configuration is done via software as described in section, *LogBook/360 Device Configuration*. LogBook/360 configuration does not require the setting of jumpers or switches, unless the RS-485 communication option is being used.

LogBook/360 Device Configuration

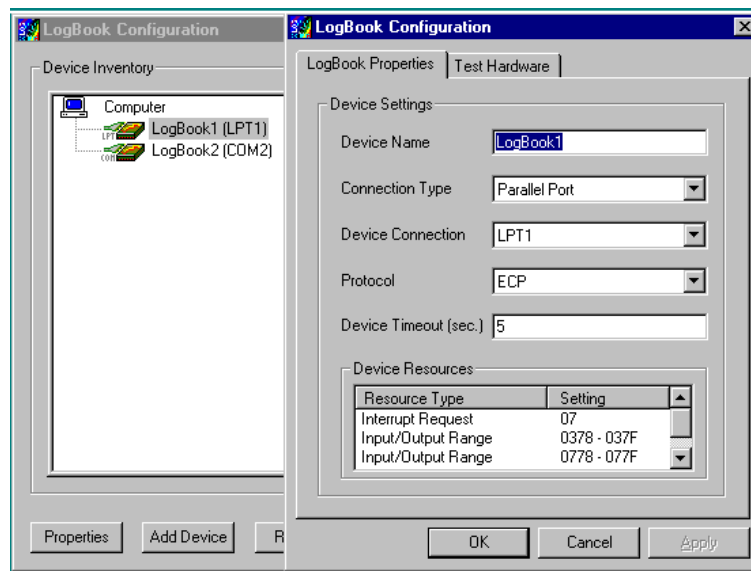
A configuration utility is supplied via a control panel applet. The **LogBook Configuration** applet allows you to add a device, remove a device, or change existing configuration settings. From this same window, you can also access a built-in utility to test the connected device for current setup and performance.

LogBook Configuration can be found in the Windows Control Panel. The Control Panel can be navigated to from Window's desktop Start button as follows:

Start ⇒ Settings ⇒ Control Panel

You can enter LogBook Configuration during driver installation or whenever you wish to add, remove or change device configuration settings. The following description applies to either method.

The first configuration window will display configured devices in the Device Inventory field based on the port they're connected to. Devices are represented by an icon, and text, e.g., LogBook (LPT1), as can be seen in the following figure. If no devices are configured, the device inventory field will remain blank. The figure shows the first and second configuration windows overlapped.



LogBook Configuration Windows

The four buttons across the bottom of the first configuration window (previous figure) are used as follows:

- **Properties.** Configuration settings for a device can be changed or modified from the corresponding properties window. To do so, double-click the device icon or single-click the device and then single-click the **P**roperties button. The second configuration window will appear for the selected device as shown in the previous figure.
- **Add Device.** The **A**dd Device button is used to add a device configuration whenever a new device is added to the system. LogView cannot recognize a device unless listed in the configuration window.
- **Remove.** The **R**emove button is used to remove a device from the configuration. A device may be removed if it is no longer installed or if the device's configuration no longer applies.
- **Close.** The **C**lose button may be used at any time to exit the LogBook Configuration applet.

The second configuration window displays the properties for the selected LogBook. Fields include:

- **Device Name** is displayed with the default name, numbered successively as configured. This field can be changed to any descriptive name as desired.
- **Connection Type** can be serial or parallel port.
- **Device Connection** specifies the port name.
- **Protocol** is used to set the parallel port protocol (ECP only) or serial protocol (RS-232 or RS-485).
- **Device Timeout** specifies the number of seconds LogView will wait for a LogBook response before displaying an error condition.

ECP Parallel Port



To use parallel port communication with an attached LogBook/360, your PC *must* support the ECP protocol AND be set in the ECP mode.

PCs made since 1994 probably support the Enhanced Computer Port protocol (ECP). If your parallel port does not support ECP, you can communicate with the LogBook/360 via the RS-232 serial port, or you can add an ECP-compatible ISA board or PC-Card parallel port. Setting the PC to ECP mode varies with different computers. On some computers, you can enter the BIOS Setup utility from Windows Settings or during startup by pressing the F1 function key. The Parallel Port Mode property can be found under the Peripheral Configuration group menu item. If necessary, consult your PC's documentation or your PC's manufacturer.



To ensure ECP compatibility after proper setup, use the Test Hardware utility (described on page QS360-10). Before testing, make sure LogBook/360 is properly connected, powered on, and that the Parallel Port Mode is set to ECP (in BIOS Setup).

CAUTION

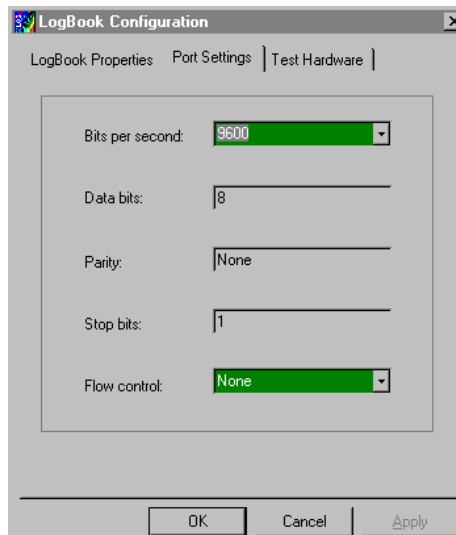


Making errors in BIOS Setup can disrupt your system's operation. If test hardware indicates a problem and you have inadequate experience with the BIOS Setup utility, consult your System Administrator or other qualified individual.

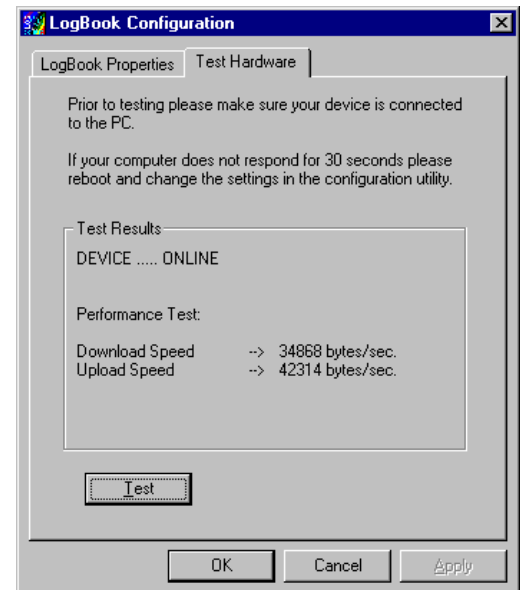
Serial Port

If the selected device is connected to a serial port the properties window will include the fields shown in the figure at right. Baud rate can be set from 1200 to 115200 bits per second (default 9600). When all fields have been changed to the desired settings, you can click on one of the following options:

- **A**pply to store the device configuration. Parameters are not locked in until you click the Apply button. If you make changes and don't click Apply, clicking the Test button in Test Hardware will yield unexpected errors.
- **O**K to store the configuration and exit the current property screen.
- **C**ancel to exit the current screen without storing any changes.
- **T**est Hardware to test the current device.



LogBook Properties Tab



Test Hardware Tab

Testing the Hardware

Before testing LogBook/360:

- a) Verify the device has been properly installed.
- b) Make sure the communication cable (serial or parallel) is firmly in place to the proper ports.
- c) Verify the device is powered-on.



Testing the LogBook/360 device might cause the system to hang. If test results are not displayed within 30 seconds, or if the system does not respond properly do the following:

- **Reboot the system.**
- **Upon power-up, re-enter the LogBook Configuration.**
- **Ensure the configuration settings are correct. Change the settings as applicable.**

To begin the test, click the Test button. Test results should be displayed within a few seconds.

Test results indicate if the device is online (properly connected, powered on and ready to transfer the data) or offline. If the device is online, Performance Test will display Download and Upload speed rates. These rates represent the maximum speed at which downloading and uploading files can be performed. Actual transfer time will depend on channel configuration and the size of the transfer.

Acquisition Configuration

An acquisition is configured using LogView on a PC and then stored as an acquisition setup file on a PC-Card. The PC-Card may be in an attached LogBook/360 or in the PC to be later manually transferred to an unattached LogBook/360. The system's DBK cards are listed; the scan sequence is defined; the trigger conditions are specified, etc.



Reference Note:

Configuring the acquisition is described in the *LogView* section of the user's manual PDF.

A Note about Calibration

Calibration is typically performed automatically through LogView software; however, some DBKs may require manual calibration. LogView's 2-point calibration fine-tunes the reading's slope and offset error ($mx+b$). DBKs working with non-linear sensors typically condition/convert the reading to a linear form. Otherwise, a non-linear analog input signal is difficult to read accurately. Careful use of the calculated channels may yield usable approximations in simple, limited-range conditions.



Reference Notes:

An example of 2-point calibration is provided under the *Procedures* heading in the *LogView* section of the user's manual PDF.

For information on calibrating the DBK16 and the DBK43A, refer to the *DBK Option Cards and Modules User's Manual* PDF.

Measurement Computing

10 Commerce Way
Norton, MA 02766

(508) 946-5100

Fax: (508) 946-9500

info@mccdaq.com

www.mccdaq.com