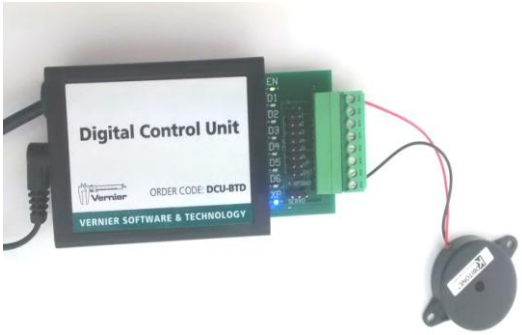
DCU Hardware and Software Set Up

SETTING UP DCU HARDWARE

1. Connect a Vernier sensor to the LabQuest.

2. Connect the Digital Control Unit (DCU) to external power and to a LabQuest DIG port. If controlling using Logger *Pro*, connect the interface to a computer and open the software.

   - The EN (green LED) indicates when the DCU is properly connected to LabQuest.
   - The XP (blue LED) indicates that the DCU is properly connected to external power.
   - The D1–D6 lights indicate that the DCU line is activated. [Note: Only D1-D3 are available using LabQuest 2 app or Logger *Pro* software.]
   - The DCU Header Pins and Screw Terminal connect output circuits and devices to DCU lines (Pins 1–6), XP (Pin 7), and GND (Pin 8).



3. Connect your output device(s) to the header pins or screw terminal of the DCU. You will need to create a complete circuit by connecting your device to a DCU Line (Pins 1–3) and GND (Pin 8).

4. Test your hardware. Choose Set Up Sensors ► DCU from the Experiment menu in Logger *Pro*. In the LabQuest 2 app tap on Sensors ► DCU Setup. You can test three output lines of the DCU by selecting the check box for Line 1 On, Line 2 On, and/or Line 3 On. The LEDs on the circuit board extending from the DCU will turn on when the line is on and any output device connected to that line will also turn on.

Use Logger Pro Digital Out or LabQuest 2 DCU Setup to test and program unit

5. Program the DCU activation in the Digital Out dialog for Logger *Pro* or the DCU Setup dialog for LabQuest 2. See Setting Up Software for more details.

TROUBLESHOOTING DCU HARDWARE

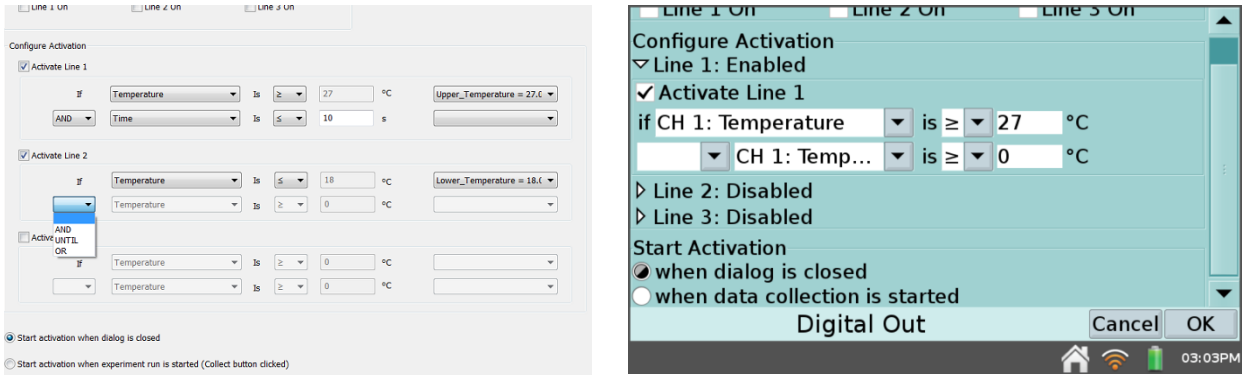
1. Make sure the DCU is connected to an external power supply. An external power supply is especially important when connecting electronic components such as motors that draw a lot of current.
2. Check for loose or improperly-wired connections between the output devices and the DCU, as the output device may be connected to the wrong pin or terminal.
3. Use the Test DCU option in the Digital Out dialog to check that the LEDs, buzzers, and other output devices connected to the DCU are wired correctly.
4. The Digital Output dialog is available only if the applicable sensor is connected to LabQuest.

SETTING UP SOFTWARE

1. Select the Activate Line check box for each line you want to activate and write a logic statement for each line selected. **Note:** You can select the sensor quantity or time in each logic statement.

   - Select ≥ or ≤ and enter either a value or select a User Parameter to complete each logic statement.
   - Create compound logic statements using AND, UNTIL, and OR.

2. Choose when you want the DCU to begin monitoring the sensor(s) and activating the output lines. Once activation has begun, the DCU will activate the selected lines when the conditions (logic statements) are met. Troubleshoot if necessary.



Dialog screens for Logger Pro and LabQuest 2

TROUBLESHOOTING

Make sure you are running the most current version of Logger *Pro* or the LabQuest 2 software. The Digital Out dialog was added to Logger *Pro* in version 3.8.6 and version 2.7 for LabQuest. Free updates are available at www.vernier.com/support/updates

Use compound logic statements carefully.

- Select AND to turn on the DCU line when *both* comparison conditions have been reached.
- Select UNTIL to turn on the DCU line when the first threshold value is reached and you want it to stay on until the second value is reached.
- Select OR to turn the DCU line on when *either* comparison condition is reached.

For additional information, refer to the *DCU User Manual* at www.vernier.com/files/manuals/dcu-btd.pdf