

## Connecting Warner's BC-535 to Molecular Devices' pClamp Program



These instructions are for connecting Warner Instruments' BC-535 Bilayer Clamp amplifier to Molecular Devices' Digidata and pClamp program.

I will assume that you have a BC-535, a Digidata, and pClamp. When necessary, I'll include independent instructions for connecting to a Digidata 1322 or 1440. Also, these instructions will work for any version of the software later than pClamp 8.

These instructions assume that you've already installed pClamp onto your computer and will configure settings for monitoring the current ( $I_m$ ), monitoring the holding potential ( $V_C$ ), setting the holding potential from software (Command IN), and configuring the gain telegraph. Feel free to skip any steps for items that you don't need.

And finally, you're welcome to make connections to the Digidata inputs different than those specified here. Just make sure to use the same software input number as the physical input you selected.

Begin by making take the following general connections between the BC-535 and the Digidata. (Use BNC's):

BC-535		Digidata	
Gain Telegraph	rear panel	Gain Telegraph - Input #0	rear panel
$I_m$ Output	front panel, hold section	IN #7	front panel
$V_C \times 10$ Output	front panel, hold section	IN #15	front panel
Command Input	front panel, hold section	OUT #0	front panel

Also, set the Command Input Front/Rear toggle to *front*, and the sensitivity toggle to *X0.1*.

### Software setup

1. Open Clampex
2. Verify that the digitizer (Digidata) is active and properly configured to Clampex.
  - [1] From the main menu, select Configure/Digitizer
  - [2] Select your Digidata Model
  - [3] Select *Configure*, then *Detect*

**Steps 4-6 only necessary if using Digidata 1322**

  - [4] Disconnect the BNC from the OUT #0 on the front of the Digidata
  - [5] Select *Calibrate*
  - [6] Reconnect the OUT #0 BNC
3. From the main menu, select **Configure/Telegraphed Instrument**
  - [1] Under Input Channels, select *Analog Input #7*
  - [2] Under Telegraph Instrument, select *BC-535 (updated)* from the drop-down list
  - [3] Under Telegraph Connections, select *Telegraph Input 0* for gain from the drop-down list
  - [4] Click OK to close the window. Say OK to the info dialog box that appears.

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### 4. From the main menu, select **Configure/Lab Bench**

#### [1] Select the Input Signals tab

- a) In the Digitizer Channels section
  - select *Analog IN #7*
- b) In the Signals section
  - Click on the *Add* button
  - Enter the word *Current*
  - Click OK
- c) In the Scaling section
  - Select signal units to be *pA*
  - Set the scale factor to *0.001 V/pA*
- d) In the Digitizer Channels section
  - Select *Analog IN #15*
- e) In the Signals section
  - Click on the *Add* button
  - Enter the word *Voltage*
  - Click OK
- f) In the Scaling section
  - Select signal units to be *mV*
  - Set the scale factor to *0.01 V/mV*

#### [2] Select the Output Signals tab

- a) In the Digitizer Channels section
  - Select *Analog OUT #0*
- b) In the Signals section
  - Click on the *Add* button
  - Enter the word  *Holding*
  - Click OK
- c) In the Scaling section
  - Select signal units to be *mV*
  - Set the scale factor to be *100 mV/V*
- d) Click OK to close the window.

### 5. From the main menu, select **Acquire/Edit Protocol**

#### [1] Under the Mode/Rate tab

- Set the acquisition mode to *gap-free*

#### [2] Under the Inputs tab

- Select *Channel #7*
- Select *Current* from the drop-down menu.
- Select *Channel #15*
- Select *Voltage* from the drop-down menu.

#### [3] Under the Outputs tab

- Select  *Holding* from the drop-down menu for Channel #0

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[4] Click OK to close the window

The Digidata and pClamp should now be configured to work with the BC-535.  
Attach the model membrane and perform a checkout of the instrument.