

Experiment BI-5: Operational Amplifier Circuits

Equipment Required

PC or Mac Computer

IX-TA data acquisition unit and power supply

USB cable

C-DIN-BB: Din to Breadboard cable

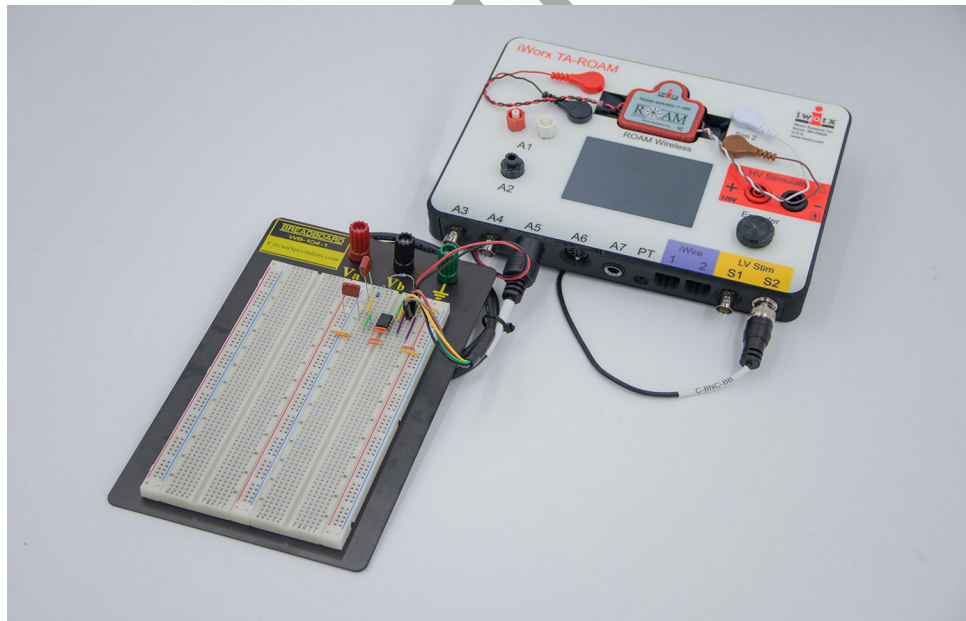
C-BNC-BB: BNC to Breadboard cable

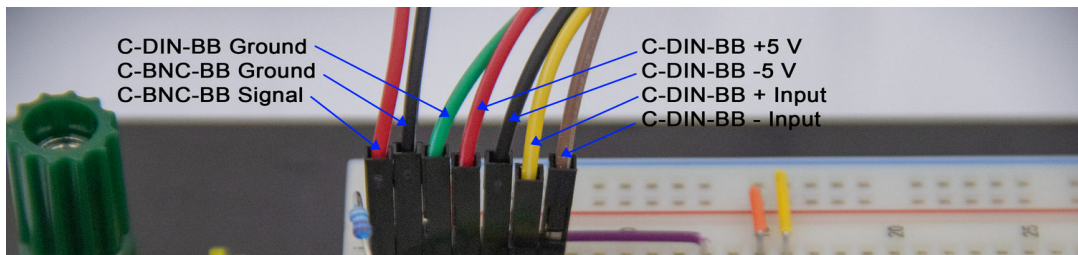
A-BREADBOARD: Breadboard.

Electronic components to build a filter on the breadboard.

Breadboard Setup

1. Insert the BNC connector on the end of the C-BNC-BB cable into the S1 stimulator port of the TA.
2. Connect the other end of the C-BNC-BB cable to the breadboard.
3. Insert the DIN8 connector of the C-DIN-BB cable into the A5 port of the TA.
4. Connect the other end of the C-DIN-BB cable to the breadboard.





For the various experiments, build the circuit on the breadboard, such that

- the signal from the stimulator (C-BNC-BB) is fed into the input of your circuit.
- Use the C-DIN-BB (+5V and -5V) cable to provide power to the circuit.
- Use the C-DIN-BB +input to send the signal from the output of your circuit to the IX-TA.
- In the circuits in this lab, the C-DIN-BB -input should be connected to the ground, since we have a single ended output from the circuits.
- The C-BNC-BB ground and the C-DIN-BB ground connection are connected together.

Setting up LabScribe

The provided OPamp_Circuits LabScribe setting file has been preset with the following settings. The instructions here are for your information and to help you modify other iWorx lab experiments to add the option for additional signal conditioning.

Open the Preferences dialog, by choosing Edit→Preferences (LabScribe → Preferences on a Mac) from the Main Menu.

- **Channels Tab.**
 - Enable the Channels to be recorded and Label them. These channels will be used:
 - A5 (Amplifier Output): This is the output of the Filter
 - S1 (Stimulator): This is what the Stimulator is outputting, This is the input to the OPamp circuit.

Preferences Dialog

Channel Stimulator Views Macros Options Events

Acquisition Mode: Chart Start: User Stop: User Speed: 2000 Samples/Sec Display Time: 20 sec

	Title	Mode/Function	Y Max	Y Min	Add Function	Units	Color
☐ A4	Channel 4	Off	0.41212	-0.5392	Add Function	Units	Red
☒ A5	Amplifier Output	DIN8	5.00000	-5.0000	Add Function	Units	Green
☐ A6	Raw Ch 6	Off	5.00000	-5.0000	Add Function	Units	Dark Blue
☐ DO2	DO2	Off	5.00000	-5.0000	Add Function	Units	Red
☐ A8	Raw Ch 8	Off	5.00000	-5.0000	Add Function	Units	Yellow
☐ EM1	EM1	Off	5.00000	-5.0000	Add Function	Units	Dark Green
☐ EM2	EM2	Off	5.00000	-5.0000	Add Function	Units	Brown
☐ i1 1	i1 1	Off	5.00000	-5.0000	Add Function	Units	Purple
☐ i1 2	i1 2	Off	5.00000	-5.0000	Add Function	Units	Dark Brown
☐ i1 3	i1 3	Off	5.00000	-5.0000	Add Function	Units	Dark Green
☐ i1 4	i1 4	Off	5.00000	-5.0000	Add Function	Units	Dark Blue
☒ S1	S1	Record	12.9048	-11.457	Add Function	Units	Dark Red
☐ S2	S2	Off	5.00000	-5.0000	Add Function	Units	Dark Blue

- **Stimulator Tab**

- Choose S1 stimulator
- Set the mode to Sinewave
- Set the Amplitude to 5V and the Frequency to 10 Hz.

