

Creating a Macro in Digital Works

A Macro is a circuit which we can “encapsulate” in a chip. It can be used in other circuits just as the provided basic gates can. Unfortunately the instructions for creating these macros in the Digital Works help facility are not completely clear or accurate. Here is the correct way:

1. Create and test the circuit.
2. Replace the interactive inputs and LED outputs with “Macro Tags” and connect these with wires as the inputs and outputs were connected.
3. Right click on one of the Macro Tags and select **Template Editor**. This will open a window with a picture of the chip as it will appear when used. You can change the size and shape of the chip and label it appropriately.
4. Add a “Pin” to the picture of the chip, right click on the pin and select **Associate with Tag**. The idea is that this pin then will be the external version of the macro tag that you chose in step 3.
5. Close the Template Editor. Unfortunately you have to close the Template Editor after each pin association.
6. Repeat steps 3 through 5 once for each macro tag in the circuit.
7. Save the file under an appropriate name.
8. To incorporate your macro in another circuit, select **Embed Macro** and place it in your new circuit. You will be asked to select a file that you created in steps 1 through 7. The chip will then appear in your circuit. Connect wires to its pins.
9. You can repeat step 8 several times if you need several copies of your chip in the circuit.
10. If you right click on one of these chips and select **Edit Macro**, you will see the internal wiring of the chip. You can even change this if you must. (That would only change the internal wiring of this one copy of the macro.) Then select **Close Macro** to go back to your circuit.