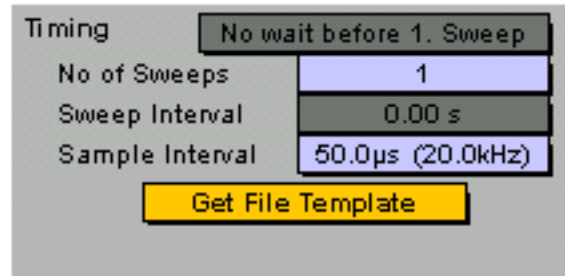


The "Get File Template" Feature

The DAC-stimulus template output by PULSE can be either computed by the program or loaded from a file instead if you activate Get File Template in the Timing section of the Pulse Generator window. This way you can stimulate any complex pulse pattern that PULSE

otherwise can not calculate. You can even stimulate a prerecorded voltage trace such as an action potential. There are the following things to consider when using the File Template feature:



1. The template must be in a file in the folder where the `pgf` -files are. Beginning with *PULSE+PULSEFIT* v8.10 you can put the files into a sub-folder inside the folder where the `pgf` -files are. In this case, the folder name must be the name of the stimulus.
2. The name of the template file must be `[stimulus name]_[sweep number]` . E.g., if the stimulus name is `IV` , then *PULSE* looks for the template file `IV_1` to be the first sweep, `IV_2` for the second sweep, etc.
3. The file must contain one voltage value per stimulus point. The voltage value must be a short (4 byte), binary IEEE-floating point format number. All values must be in volt, i.e., if a voltage of -80 mV has to be output, then the required value is -0.080.

Here is an example that demonstrate how the File Template works to stimulate a prerecorded pulse pattern. You can easily test this using the model circuit:

1. Generate a simple stimulus named `Get` with one sweep per series (No of Sweeps = 1) and three Constant segments (Duration: 20, 10, and 50 ms, Voltage: -80, 0 and -80 mV). There should be no trigger (Triggers = 0), the Sample Interval should be 0.1 ms and one input channel has to be acquired (Channels = 1). The sequence should not be linked (Linked Sequence = NIL) or use leak pulses (No of Leaks = 0). Stim DA and input Channels are set to Default.
2. In the oscilloscope window, execute the `Get` stimulus. You should see the current response with its corresponding pulse shape. Let's assume that the response is 50 pA in amplitude. Note: the Store button must be on in the oscilloscope, otherwise the sweep would not be stored.
3. To generate a file template first clear the sweep buffer (Buffer → Clear) and then add the acquired sweep into it (Buffer → Add).
4. The sweep data has been acquired as *pA* and now has to be scaled into *mV*. This is done by calling Buffer → Scale and entering `1e9` as the Scale factor.

5. Store the sweep buffer to disk as `Get_1` (Buffer → Save as binary File...).
6. Now, go back to the *Pulse Generator* window, select the `Get` stimulus and activate `Get File Template`.
7. Finally, execute the `Get` stimulus again in the *Oscilloscope* window. The file template is read and used as the template, and you should see the corresponding current response.

Alternatively, you can use third party programs such as Igor to generate the stimulus template file.