# Configuring LabJack T Series Analog Output (DAC) using MatDeck

In this document, we will illustrate two alternative ways for configuring the DAC channels for LabJack T7 and T4 devices.

- MatDeck provides LabJack functions, and configuration can be done directly in MatDeck's C++ style Script . Additionally, you can configure devices in Python.
- However, the most effective and intuitive way for configuring the devices is by using MatDeck GUI configuration.

This document is "alive" and simultaneously executes commands, which is one of MatDeck's unique advantages.

## Configuring Analog Output at the Selected Channel in MatDeck Script

In order to configure and use the device, the LabJack T7 device should be opened in the document. The function ljdevice_open() returns the handle of the opened device:

```
1   dev := ljdevice_open("any", "any", "any")
```

The analog signals are usually generated by an analog output which is produced using the selected DAC channel. The output of DAC0 is generated using the stream output, which is configured here.

```
2   ljdevice_write(dev, "STREAM_OUT0_ENABLE", 0)
3   // Configure stream -out
4   // Allocate memory for the stream-out buffer
5   ljdevice_write(dev, "STREAM_OUT0_TARGET",ljname2address("DAC0"))
6   ljdevice_write(dev, "STREAM_OUT0_BUFFER_SIZE",512)
7   ljdevice_write(dev, "STREAM_OUT0_ENABLE", 1)
8   STREAM_OUT0_LOOP_VALUES := [0, 5, 0, 5, 0, 5, 0, 5, 0, 5]
9   // Write stream-out
10  ljdevice_write(dev, "STREAM_OUT0_LOOP_SIZE", 10)
11  ljdevice_awrite(dev, "STREAM_OUT0_BUFFER_F32", STREAM_OUT0_LOOP_VALUES)
12  ljdevice_write(dev, "STREAM_OUT0_SET_LOOP", 1)
13  a := ljdevice_last_error("s") //Check for errors in configuration
```

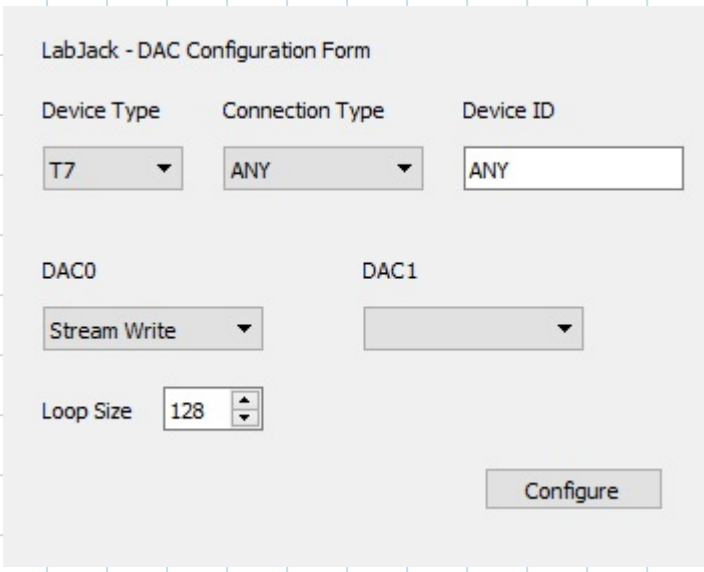| | | a = "LJ_SUCCESS" | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Finally, at the end, all the extended features should be disabled and the device should be closed.

```
14  ljdevice_close(dev)
```

## Configuring Analog Output at the Selected Channel by using MatDeck GUI

All the above parameters can be set by using ljdac_config_form in a very intuitive manner. By using this way, most of the lines of script code above are substituted by GUI settings. The same form can setup all T device pins.

$$form := ljdac\_config\_form(o , "FormDAC")$$
$$ljdac\_config\_form\_configure(form)$$

LabJack - DAC Configuration Form

| Device Type | Connection Type | Device ID |
|---|---|---|
| T7 | ANY | ANY |

DAC0

Stream Write

DAC1

Loop Size 128

Configure

All that is left to do is to set loop values. The device should be opened again as it was closed by the DAC form during configuration.

```
15  dev1 := ljdevice_open("any", "any", "any")
16  // Write stream-out
17  ljdevice_write(dev1, "STREAM_OUT0_LOOP_SIZE", 10)
18  ljdevice_awrite(dev1, "STREAM_OUT0_BUFFER_F32", STREAM_OUT0_LOOP_VALUES)
19  ljdevice_write(dev1, "STREAM_OUT0_SET_LOOP", 1)
20  ljdevice_close(dev1)
```