UpFuse - Characterization

28H4

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CONTENTS:

CHAPTER

ONE

REQUIREMENTS

- The script is based on PyVisa. This package requires a VISA interface in the background (NI-VISA download via: ni.com)
- Driver for the GPIB-USB-interface (NI-488.2 download via: ni.com)

CHAPTER

TWO

MEASUREMENT.PY

Script to perform measurements for the characterization of nanoionic devices.

measurement.**measurement**(*file_set_times*, ***kwargs*)

Performs measurements for the characterization of nanoionic memories using a Keihtley 236.

Parameters

:param file_set_times: str The file location of an Excel file containing the individual set times.

:key gpib_address: int GPIB adress of the Keihtley 236. (Default is 16).

:key compliance: str Compliance Value [A]. Scientific notation required e.g "1E-9" for 1nA. (Default value is 1E-9).

:key measurement_delay: float Delay time [s] between applying the measuring voltage and the start of the measurement. (Default value is 30).

:key measurement_range: str Measurement source_range for the current. Allowed values are: Auto, 1nA, 10nA, 100nA, 1µA, 10µA, 100µA, 1mA, 10mA and 100mA. (Default value is 1nA).

:key measurement_voltage: float Applied voltage [V] during the measurement step. (Default value is 1).

:key rest_period: float Delay time [s] between the end of the measurement and the start of the next set pulse. (Default value is 120).

:key set_voltage: float Applied voltage [V] during the set step. (Default value is 1).

measurement.**read_set_times**(*file*)

Returns the first column of an Excel file as list.

CHAPTER

THREE

RESET_SMU.PY

Simple script to reset the Keithley236 to its factory defaults.

CHAPTER

FOUR

KEITHLEY236 API

class SimpleKeithley236.Keithley236.**Keithley236**(*gpib_address=16*, *compliance_level='1E-3'*, *measurement_range='1mA'*)

Minimal control interface (GPIB) for a Keihtley 236 for the characterization of nano-ionic memories.

Methods

impulse(voltage, duration)	Applies the voltage [V] for the duration [s].
measurement(voltage[, delay])	Returns measured current [A] for the applied voltage [V].

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