E3631A 可编程直流电源测试程序使用说明

谢承臻

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1 设备参数

ES3631A[1]只有后面的一个 USB 接口，三个通道的输出电压电流范围如下:

- CH1: V(0V, 6.18V), *RST[2] = 0V; I(0.001A, 5.15A), *RST = 5A.
- CH2: V(0V, 25.75V), *RST = 0V; I(0.001A, 1.03A), *RST = 1A.
- CH3: V(-25.75V, 0V), *RST = 0V; I(0.001A, 1.03A), *RST

2 测试代码说明

测试程序为 ES3631A.py，使用时根据以下步骤进行:

1. 修改 resource_name 的值, 这是仪器 I/O 接口的参数, 在设备前面板按照 Utilities → I/O Config → USB Status 的按键顺序查看。实验室里一台是 MY61003060, 另一台是 MY61002637;

2. 初始化设置，一般不用改;

3. 主体部分[3]，要干啥任务在这设置。这块用的库是 keysight_kte36000, 有啥函数要用点这里找说明。下面是一些常用的函数:

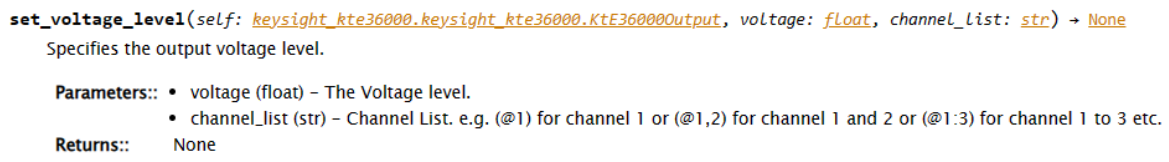

图 1: 设置输出电压

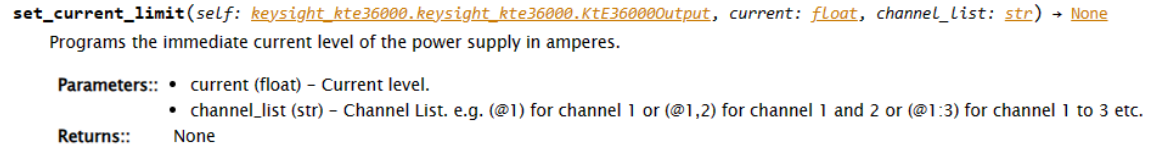

图 2: 设置输出电流

[1]具体的编程指南和用户指南见 ./manual

[2]默认值

[3]位置在第一个 bookmark 后

set_enabled(*self: keysight_kte36000.keysight_kte36000.KtE36000Output, enabled: bool, channel_list: str*) → None

Enables or Disables the selected power supply output.

Parameters::
- enabled (bool) – The output enable state for the specified channels.
- channel_list (str) – Channel List. e.g. (@1) for channel 1 or (@1,2) for channel 1 and 2 or (@1:3) for channel 1 to 3 etc.

Returns:: None

图 3: 使能设置

measure(*self: keysight_kte36000.keysight_kte36000.KtE36000Measurement, measure_type: keysight_kte36000.keysight_kte36000.FetchType, channel_list: str*) → float

Returns the measured value.

Parameters::
- **measure_type** (*FetchType*) – The measure type.
- **channel_list** (*str*) – Channel List. e.g. (@1) for channel 1 or (@1,2) for channel 1 and 2 or (@1:3) for channel 1 to 3 etc.

Returns:: Measured value.

Return type:: float

Remarks::
- MEAS:ARR:CURR – Queries return an array containing the instantaneous input current.
- MEAS:ARR:VOLT – Queries return an array containing the instantaneous input voltage.
- MEAS:ARR:POW – Queries return an array containing the instantaneous input power.

图 4: 返回测量结果

class **FetchType**

Select the Fetch Type.

Members:

CURRENT : The current.

VOLTAGE : The Voltage.

POWER : The Power.

CURRENT_ACDC : The total rms(AC+DC) measurement.

CURRENT_MAX : The maximum current.

CURRENT_MIN : The minimum current.

VOLTAGE_ACDC : The total rms(AC+DC) measurement.

VOLTAGE_MAX : The maximum voltage.

VOLTAGE_MIN : The minimum voltage.

POWER_MAX : The maximum power.

POWER_MIN : The minimum power.

图 5: FetchType 类

4. 检查报错，用的函数是 `utility.error_query`。一般不用改，报的啥错看打印结果就好。

5. 打开终端到程序所在目录下运行程序即可。