XDAC-6U-R4G8-SMA

SPECIFICATION SHEET & MANUAL

2025

nicslab

CE RoHS

Important Notice and Disclaimer:

Safety Note

Do not operate this product in any manner not specified by Nicslab. Failure to comply with these precautions or with specific warnings or instructions elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument. Nicslab assumes no responsibility for any damage caused by mishandling that is beyond normal usage defined in this manual of this product.

Warning
Dangerous voltages capable of causing injury or death, are present in this instrument.

Caution
This symbol indicates hazard of any operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data.

Line Fuse
For 220V/250V, there are one 6A fuses.

Line Cord
The XDAC-6U-R4G8-SMA has a detachable, three-wire power cord for connection to the power source and to a protective ground.

Do Not Discard the Instrument Cover
Only authorized personnel from Nicslab should remove the instrument cover.

Do Not Alter the Instrument
Do not put any unauthorized parts or modify the instrument without Nicslab approval and warranty.

Cleaning Steps

To clean the instrument exterior:
- Unplug instrument from all voltage sources.
- Remove loose dust on the outside of the instrument with a barely damp lint-free cloth.
- Do not use abrasive cleaners.
- Allow the instrument to dry before reconnecting the power cord.

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1. Introduction

Nicslab XDAC-6U-R4G8-SMA system is a versatile multichannel source measurement system. The XDAC-6U-R4G8-SMA supports multiple voltage/current sourcing and voltage/current measurement. The system is suitable for sourcing and measuring low power applications from simple electronic circuits to complex photonic integrated circuits.

The XDAC-6U-R4G8-SMA provides independent 6 channels controlled by Graphical User Interface (GUI) and Standard Commands for Programmable Instruments (SCPI) through Ethernet port. The system has one mode: Constant Voltage (CV) ranging from unipolar 0 – 5 Volt, 0 – 10 Volt, and 0 – 20 Volt (please check your feature selection).

The features for XDAC-6U-R4G8-SMA in details are:

- 16-bits voltage control, see the resolution at Table 4.

- Enable voltage range configuration through software (technology that enables the user to select the output range with software without lose control of the high-resolution feature).

- Flexible voltage output configuration with 16-bit resolution unipolar 0 – 5 V, 0 – 10 V, 0 – 20 V *(Premium Upgrade)*.

- Flexible reading speed configuration for voltage and current with 8 increment value. – *Firmware version 4.1.1.1 and up.*

- Measurement time for single channel: 104 ms.

- Intuitive GUI.

- Maximum power output per channel 10 watts.

- Real time voltage reading (16-bits resolution = 1.25 mV).

- Real time current reading (16-bits resolution = 5 µA).

- Save function to create database.

- Upload function to generate the registrable voltage and current pattern.

- Sequence function for continuous voltage and current.

- Short circuits protection.

- SCPI command support (Python, C#, Matlab, and LabVIEW).

- SCPI Library *(Premium Upgrade)*.

- Windows, Mac, and Linux support.

- Ethernet Port.

The XDAC-6U-R4G8-SMA is connected to AC power via a wall socket, then you can plug into the Device-Under-Test (DUT). The voltage can be controlled through GUI or SCPI command via Ethernet port or USB (Ethernet to USB port converter).

The system diagram is as follow:
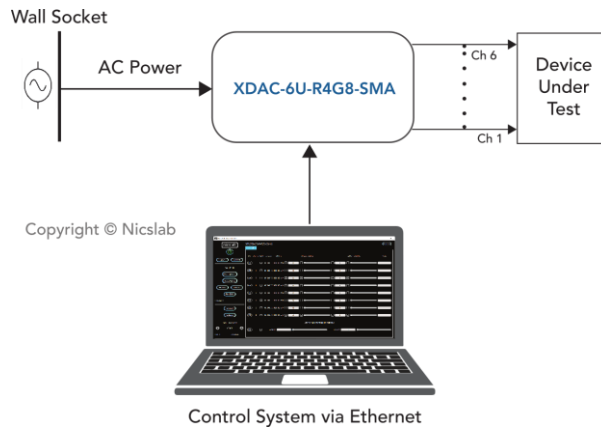
Figure 1. XDAC-6U-R4G8-SMA System Diagram

The package should include the following items:

Table 1. Checklist Items

No	Item	Qty (pc)	Checklist
1	XDAC-6U-R4G8-SMA Box	1	
2	AC power line cord	1	
3	Ethernet cable	1	
4	USB 2.0 Ethernet Network Adaptor	1	
5	USB flash disk	1	
6	Inside USB flash disk: a. GUI b. Specification & Manual c. Test Report d. Serial key (Upgrade) e. XDAC key f. Software Library (Premium) g. Comma-separated values (CSV) template (upload, demo sequence)	1	

2. Hardware

Specification Conditions

The operating and measurement conditions are under the following conditions:

Table 2. Specification Conditions

Items	Conditions
Room Temperature	0 ~ 40 °C
Humidity	5 ~ 80 % (No Condensing)
AC Power Input	AC Input 220 V. Frequency 47 to 63 Hz.
Waterproof/Dustproof	To be operated under room condition
Calibration period	2 years

Hardware Requirement

The requirements for the PC/Laptop to be used for this product installation are:

- Resolution   Min. 1024 x 768 pixel

- Hard disk   Min. 500 MB of available free space (32-bit and 64-bit operating system)

- USB Port   USB 2.0

- RAM   Min. 2 GB

- CPU   2.4 GHz or faster

- Ethernet port or internet connection via router.

Box Descriptions

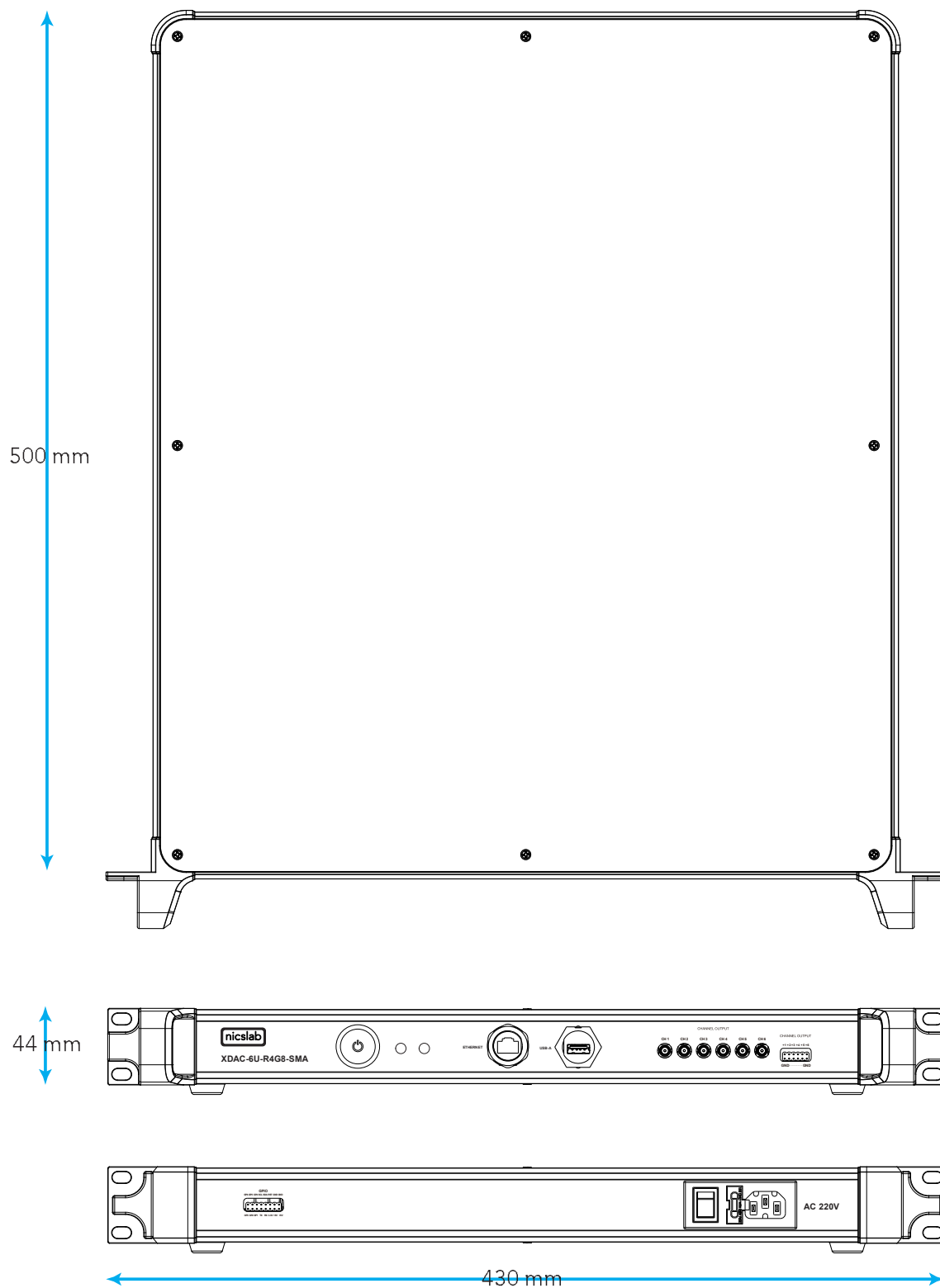The box size is 430 (W) x 500 (L) x 44 (H) mm, as shown in the pictures below:

Figure 2. Product Dimension

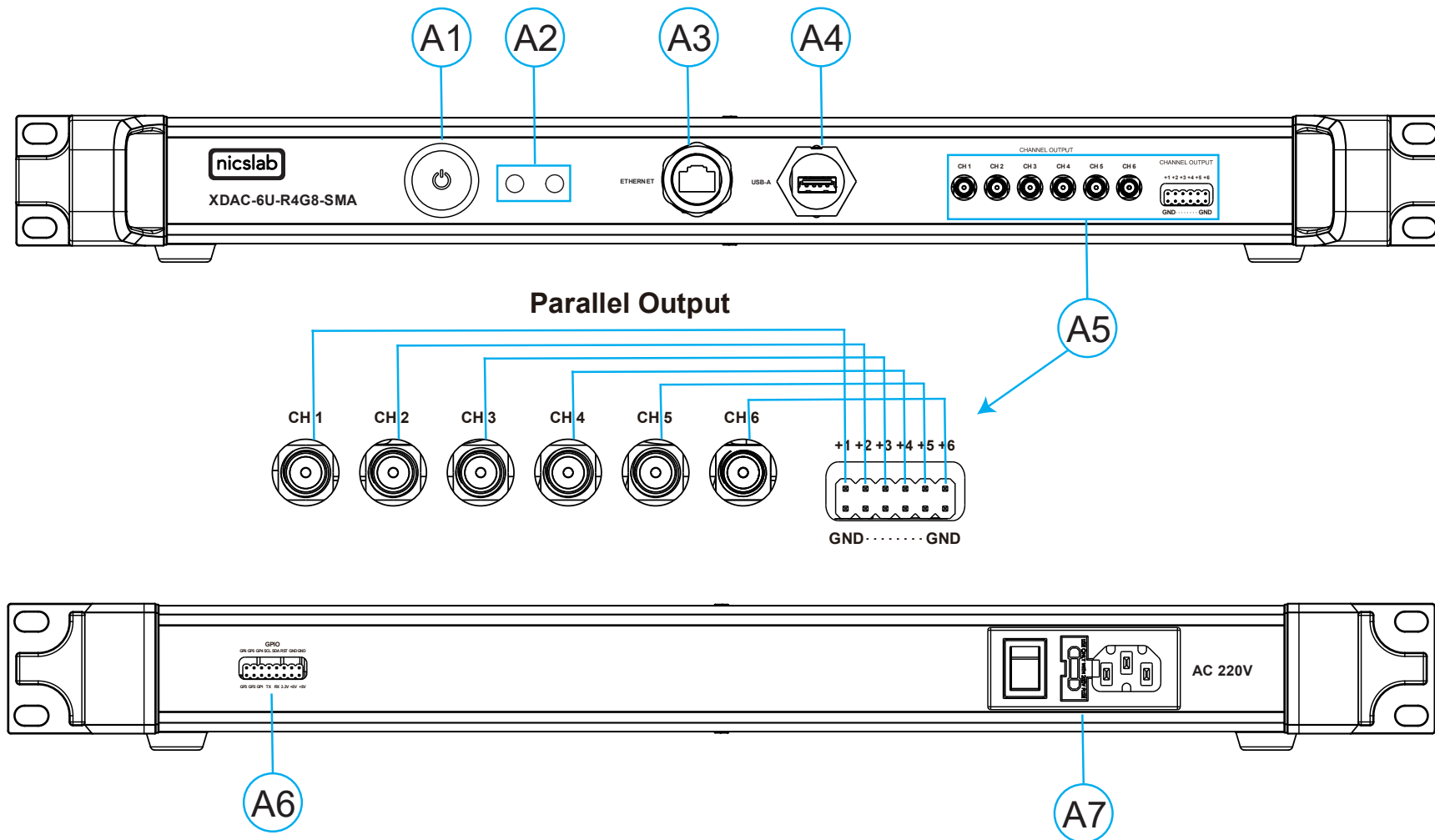The details of front, back and top panel of the box are described below:

Parallel Output

Figure 3. Front, and Back View

Note:

A1	Power Switch	Turns the instrument on or off.

Caution

Before turning OFF please **close the GUI or type shutdown (SCPI command)** to minimize the risk of corrupting the system file (such as data loss).

A2	Indicator Light	Green -> Power Indicator.

Blue -> Serial Transfer Data Active.

A3	Ethernet port	Use ethernet cable to connect. An ethernet to USB port converter is also possible to use if the computer doesn't have an ethernet port.

A4	USB-A	USB port type A.

A5	SMA and Pin Output (6 channels each)	To connect to Device Under Test (DUT) using a male connector (SMA) or jumper cable.

A6	GPIO	You may use it for external control and monitoring directly to the microprocessor.

Caution

A7	Input AC 220V	To input AC power to the instrument.

Please follow the safety notice on your electricity input.

XDAC-6U-R4G8-SMA Specifications

The performance specifications of Digital Analog Converter (DAC) <u>voltage</u> are listed in Table 3 below:

Table 3. DAC Voltage Performance Specification

No	Parameter	Min	Typ	Max	Unit	Test conditions/comments
1	Resolution	16			Bits	
2	Integral nonlinearity (INL)	-1	± 0.5	1	LSB	All ranges
3	Differential Nonlinearity (DNL)	-1	± 0.5	1	LSB	Specified 16-bit monotonic
4	Total unadjusted error	-0.1	± 0.01	0.1	%FSR	All ranges
5	Unipolar offset error	-0.03	± 0.015	0.03	%FSR	All unipolar ranges
6	Unipolar zero-code error	0	0.04	0.1	%FSR	All unipolar ranges
7	Full-scale error	-0.2	± 0.075	± 0.2	%FSR	All ranges
8	Gain error	-0.1	± 0.02	0.1	%FSR	All ranges
9	Unipolar offset error drift		±2		ppm of FSR/°C	All unipolar ranges
10	Gain error drift		±2		ppm of FSR/°C	All ranges
11	Output voltage drift over time		5		Ppm of FSR	T_A = 40 °C, Full-scale code, 1900 hours
DYNAMIC PERFORMANCE						
12	Output Voltage Settling Time		12		µs	¼ to ¾ and ¾ to ¼ scale setting time to ± 1 LSB, ±10 V range, R_L = 5 kΩ, C_L = 200 pF
13	Slew Rate		4		V/µs	All range except 0 to 5 V
14	Power-on glitch magnitude		0.3		V	Power-down to active DAC output, ±20 V range, Midscale code, R_L = 5 kΩ, C_L = 200 pF
15	Output noise		15		µV p-p	0.1 Hz to 10 Hz, Midscale code, 0 to 5 V range
16	Output noise density		78		nV/√Hz	1 kHz, Midscale code, 0 to 5 V range
17	AC PSRR		1		LSB/V	Midscale code, frequency = 60 Hz, amplitude 200 mVpp superimposed on V_{DD}, V_{CC} or V_{SS}
18	DC PSRR		1		LSB/V	Midscale code, V_{DD} = 5V, V_{CC} = 20V ±5 %, V_{SS} = 20V
19	Code change glitch impulse		4		nV-s	1 LSB change around major carrier, 0 to 5 V range
20	Channel to Channel AC crosstalk		4		nV-s	0 to 5 V range. Measured channel at midscale. Full-scale swing on all other channels.
21	Channel to Channel DC crosstalk		0.25		LSB	0 to 5 V range. Measured channel at midscale. All other channels at full-scale.
22	Digital feedthrough		1		nV-s	0 to 5 V range, Midscale code, F_{SCLK} = 1 MHz

The voltage control resolution is listed in Table 4 below. The resolution is 16-bits and have different value for each range. The default range is 0 – 20 V and can be adjusted in GUI premium version.

Table 4. Voltage Control Resolution

No	Range	Resolution
2	0 – 20 V	0.3 mV
3	0 – 10 V	150 µV
4	0 – 5 V	76 µV

The current value resolution is listed in Table 5 below.

Table 5. Current Value Resolution

No	Range	Resolution
1	0 – 500 mA	7.6 µA

Hardware Installation

This section describes how to install XDAC-6U-R4G8-SMA and how to connect your Device Under Test (DUT) to the output terminals.

Warning

Plug the provided AC cable cord to the electricity socket. Do not replace the detachable mains supply cords with inadequately rated cords. Failure to use properly rated cords may result in personal injury or death due to electric shock.

The steps are as follow:

1. Plug the 3P into Wall Socket (220 V) and make sure that the AC Power Switch (A8) is the off (O) position.

2. Turn the AC Power Switch on (I)

3. Before turning the instrument on, disconnect any device under tests (DUTs) from the instrument.

4. Install the software/GUI (see the Software Installation section) from the flash disk or Dropbox link.

5. To turn your instrument on, push the front-panel DC power button (A1). Push the DC Power button until the Blue light on the button is on.

6. Wait until there is Blue LED light (the system is ready to use).

7. You may now open the GUI (Green LED light means serial data transfer active).

8. Connect XDAC output to your Device Under Test (DUT).
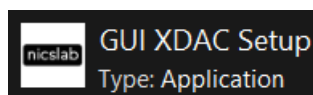
3. Software and Graphical User Interface (GUI)

Software Requirement

The GUI software is suitable with the following operating systems:
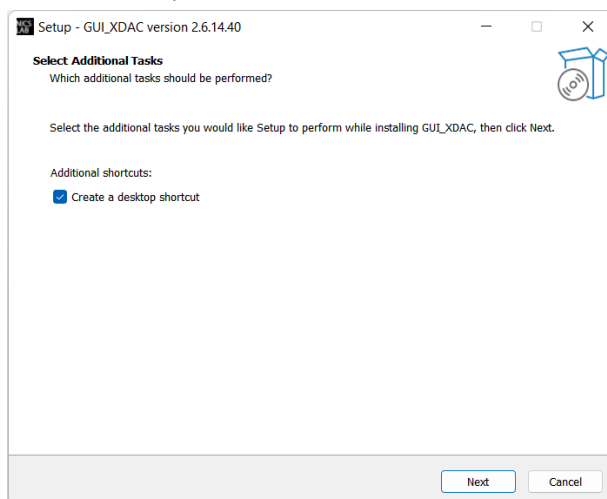
- Windows® 7 (32-bit, 64-bit).

- Windows® 10 (32-bit, 64-bit).

- Windows® 11 (64-bit).

- macOS Big Sur

- Linux Ubuntu

Software Installation

The first step is to install the XDAC_setup.exe file into your computer and then double-click to launch the GUI. The icon is as below:
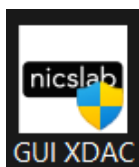

At the end step of the installation, check a 'Create a desktop shortcut'.

Double-click the executable GUI icon (as shown below) on your desktop to launch the GUI.

Graphical User Interface (GUI)

Start the XDAC by pressing the ON button, then you can control it by GUI. the display details are on the next page.

First, set up the connection to your instruments by entering the IP address. Please scan the XDAC IP address to know the XDAC IP. The XDAC IP address should appear if you scan it in local network via using IP scanner such as Angry IP scanner or NMAP.
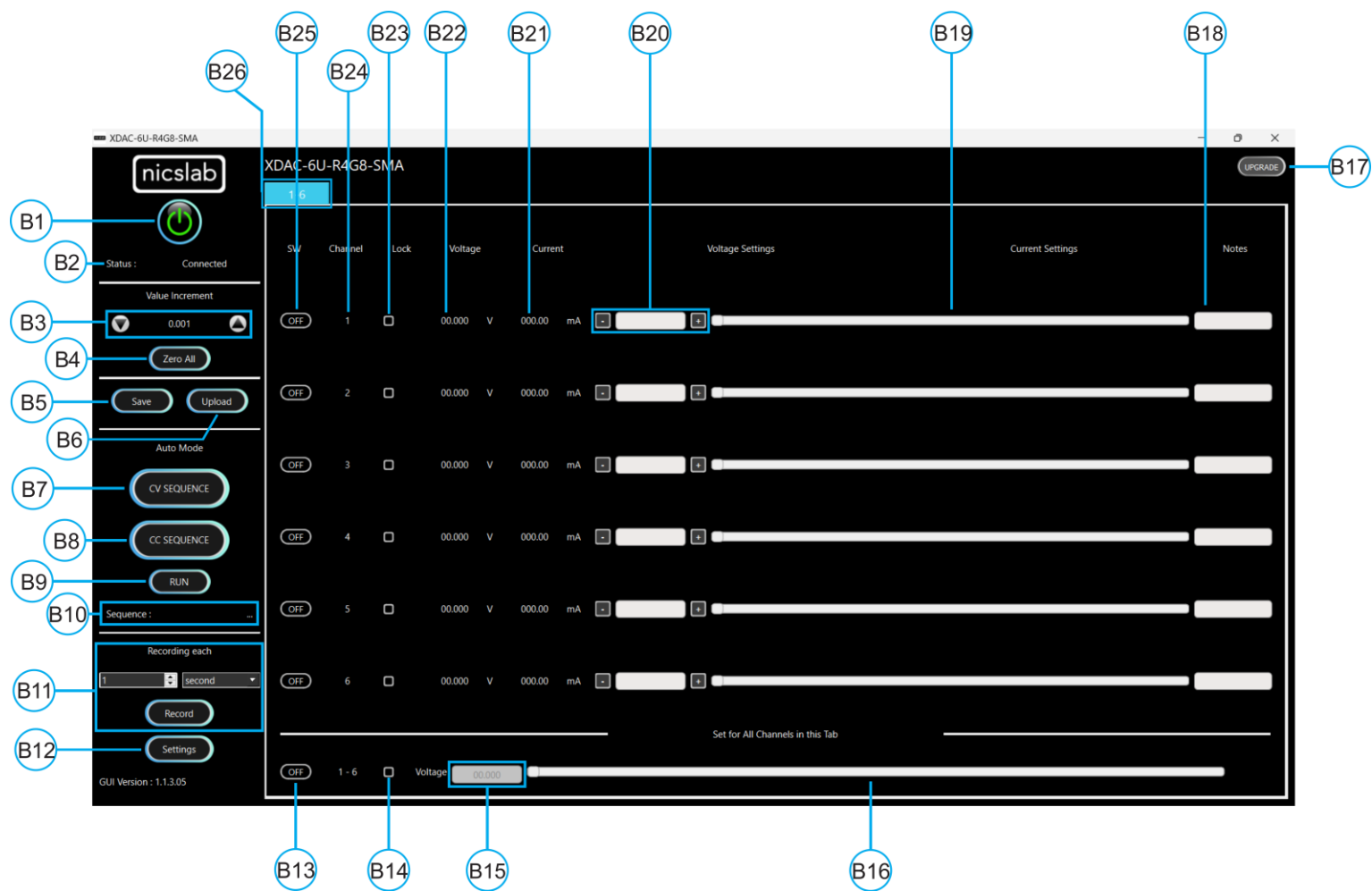
Figure 4. GUI

Note:

Callout	Description
B1	ON/OFF Switch
B2	Status of connection
B3	Increment Settings
B4	Zero All Button
B5	Save File Button *- Premium Feature*
B6	Upload File Button *- Premium Feature*
B7	Auto Feature Sequence: Upload Table Button l CV Mode *- Premium Feature*
B8	Auto Feature Sequence: Upload Table Button l CC Mode *- Premium Feature – Button Disabled*
B9	Auto Feature: Run Button CV and/or CC Mode *- Premium Feature – Button only run CV mode*
B10	Name of the Sequence *- Premium Feature*
B11	Record Data Button *- Premium Feature*
B12	Setting for: 1. Set Limit voltage values *- Premium Feature* 2. V Range (16-bit precision for every range of voltages: 5, 10, 20) *- Premium Feature* 3. Set the Reading speed of Voltage and Current *- Premium Feature*
B13	ON/OFF Button for the current Tab
B14	Enable/Disable (Lock) Channel Controller for all channels in the current tab
B15	Text area to set the voltage for all channels in the current tab
B16	Slider to set the voltage for all channels in the current tab
B17	Upgrade Button
B18	Notes *- Premium Feature*
B19	Voltage Settings Slider
B20	Voltage Value Based on Increment Setting
B21	Current Value
B22	Voltage Value
B23	Enable/Disable (Lock) Channel Controller
B24	Number of channels
B25	ON/OFF Button per Channel
B26	Tab Channel

Initializing the GUI

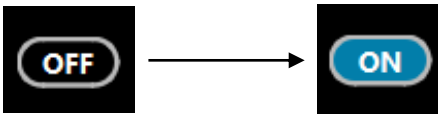This section shows how to initialize the GUI:

1. Launch the program by double clicking the "XDAC_setup_exe" icon.

2. Enter XDAC IP address as given. If the connection is successful, then the GUI will open and there is the Yellow indicator light.
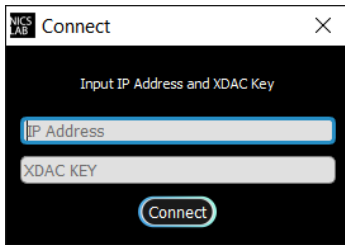
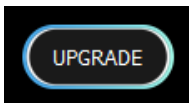3. Press the 'ON/OFF' button (B1) to start the GUI.

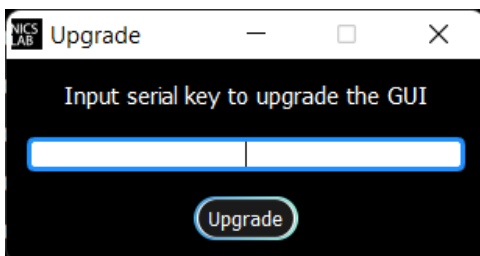4. Turn ON (B25) on each channel to the input voltage and current values.

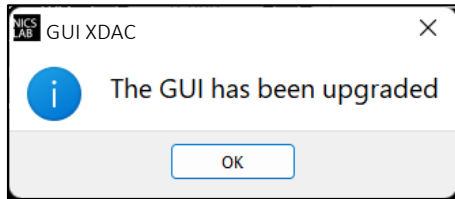## Premium Upgrade

This section shows how to upgrade the GUI to enable advanced features.

1. Press the upgrade button (B17) at the top right corner of the window

2. After the upgrade window opened, input the Premium Upgrade Key.

3. If your Premium Upgrade Key is valid, you will get a message that indicates a successful upgrade.

4.   You can use several features that were previously locked

The next few sections are the advanced features that are enabled after upgrading the GUI.

Constant Voltage Mode (CV Mode)

This section shows how to do CV mode according to your aim:

To do CV mode, you need to adjust the voltage value on (B19) or slider (B18).

Important note: When you manually input the values, always press 'Enter'.

Value Increment Setting

In this setting, the value of the voltage and current can be incrementally changed from a minimum of 0.001 to 1. Adjust the arrow to increase and decrease the value increment (B3).
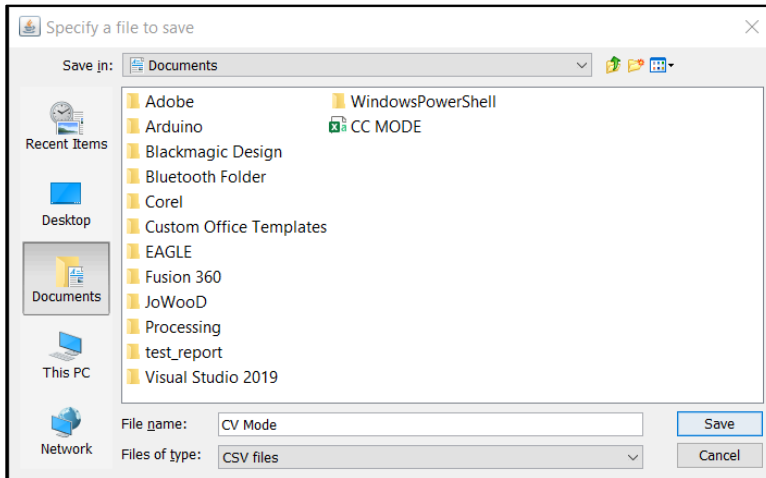

Decrease   Increase
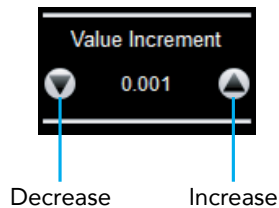
Save and Upload

The CSV file (.csv) resulting from the Save function can be uploaded again through the Upload button (B5). You may also create your own CSV file of voltage and current and upload it later.

1. To save the configuration, click the 'Save' button (B4).

2. Select a directory and write the file name.

3. The file will be saved as a .csv file.

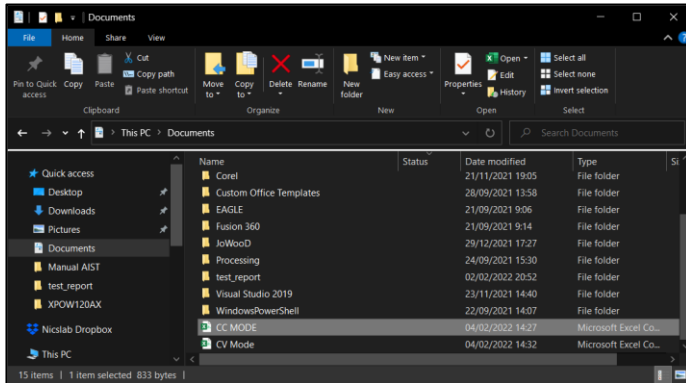4. Check the .csv file that you have saved.

The voltage, current, and notes are recorded. If the file doesn't appear to have saved data from all channel, consider trying to open the file with another program, like Notepad, for further inspection.

5. To upload the configuration, click the 'Upload' button (B6).

6. Choose and open the intended file.

7. It will upload the configuration like the previous configuration.

Note: When you upload CV mode, the current setting slider values automatically show 2184.50 bit to open the current flow from the supply. You may adjust this to match your requirements.

Sequence Automation

Sequence is the setting that automates the determined values of voltage (V) given the certain Delay Time (in milliseconds).

1. The template of the sequence is given, then you need to input your intended values of CV Sequence (from 0 to 20 V), and Delay Time (in milliseconds). Set the delay time to more than 2 seconds to have more accurate values. To have a faster response (switching time) you can set it via the SCPI command (see Operating XDAC through SCPI command).

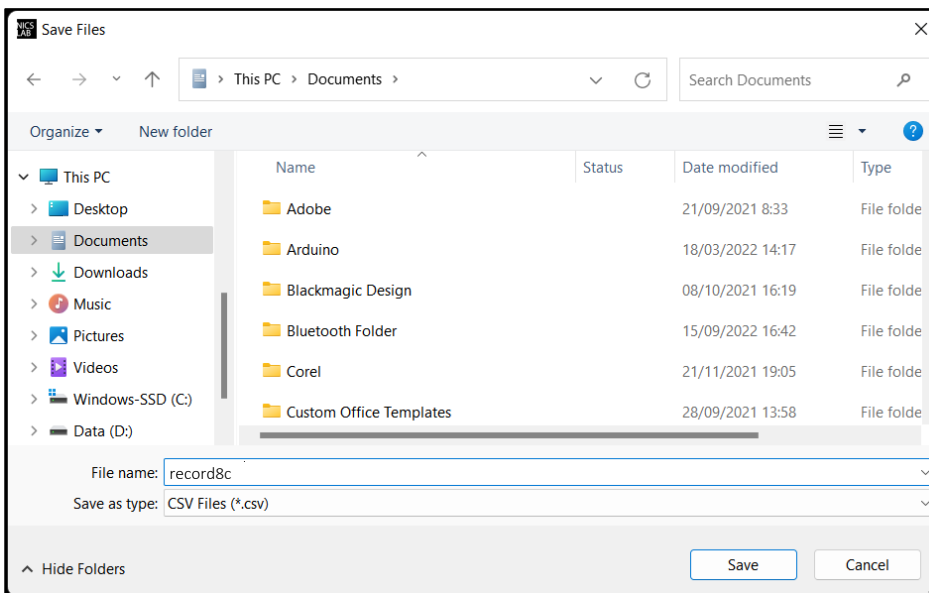|	A	B	C	D	E	F	G	H	I	J	
1		Seq 1	Seq 2	Seq 3	Seq 4	Seq 5	Seq 6	Seq 7	Seq 8	Note	(A)
2	Delay Time	6000	5478	4912	3409	4213	5902	6012			
3	Channel 1	5	50	0	100	150	150	0	300	Fan1	
4	Channel 2	10	50	0	100	160	150	0	300	Fan2	
5	Channel 3	15	50	0	100	170	150	0	300	Motor1	
6	Channel 4	20	50	0	100	180	150	0	300	Motor2	(B)
7	Channel 5	25	50	0	100	190	150	0	300	Sensor1	
8	Channel 6	30	50	0	100	200	150	0	300	Sensor2	
9	Channel 7	35	50	0	100	210	150	0	300	Sensor3	
10	Channel 8	40	50	0	100	220	150	0	300	Not Used	

Note:

A.   Template given for CV sequences.

B.   Input your intended values according to the modes (CV: 0 – 20 V).

2. Choose the CV sequence mode (B7). When you click you need to open the corresponding CSV sequence file.

3. After uploading, choose sequence mode by clicking 'Run' (B9). It will CV sequence depends on the .csv file that you uploaded before.

Record

'Record' (B11) keeps data of voltage and current values. You can choose how often the data is stored in a unit of time. The default value is the data will be stored each one second. The record starts by the time you click the Record button and will finish when you click again the same button.
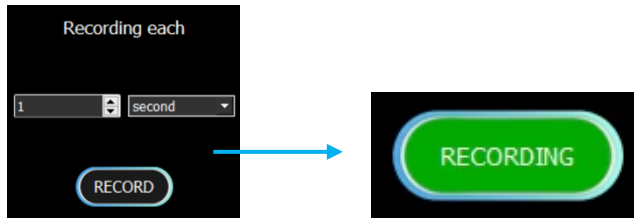
Click the same button to stop Recording. After that, put the file in any directory

This is the output of recorded file

Settings

Click the 'Settings' button (B12).

The 'Settings' feature consists of:

- Set maximum limit for voltage values.
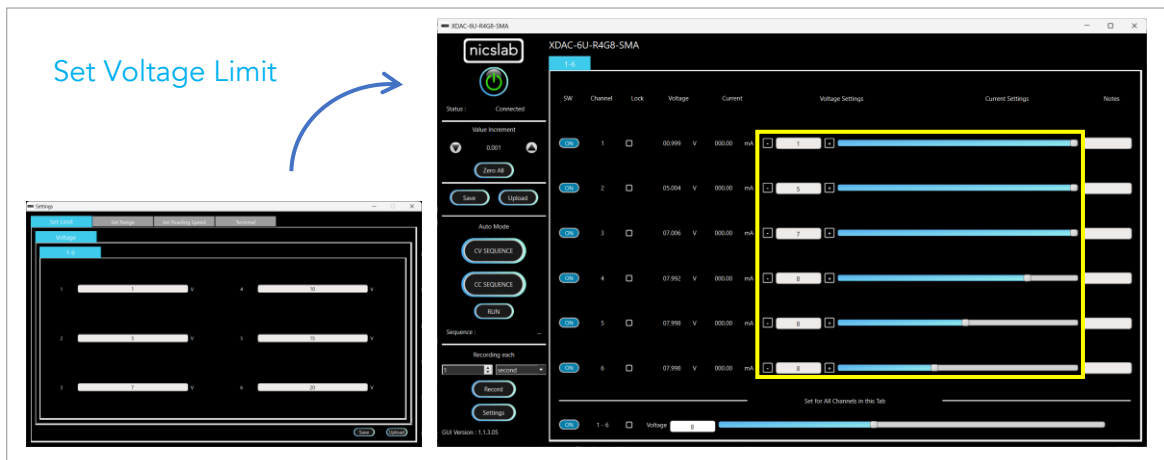
Important note: When you input the values, always press 'Enter'.

- Set range for voltage (B19, B20, and B22). The range of voltages are 0 – 5 V, 0 – 10 V, and 0 – 20 V. Each range has 16-bit precision. The set range setting is also restricting the set limit setting, so the limit cannot exceed the range.
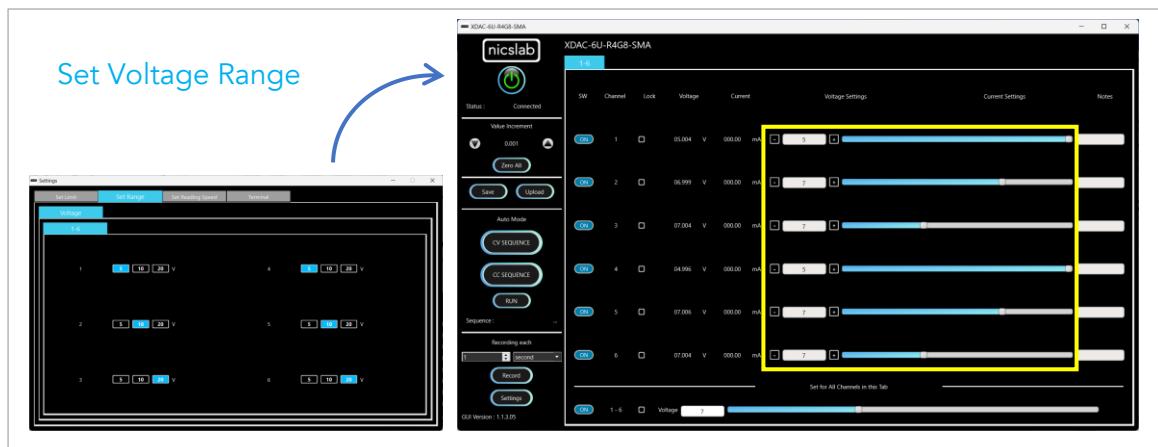
- Set reading speed to adjust different speed for reading voltage and current. The speed is based on averaging number of sample output values. Faster options can make conversion time smaller but the results noisier. The latest firmware has more degree of flexibility regarding reading speed value.

Reading Speed
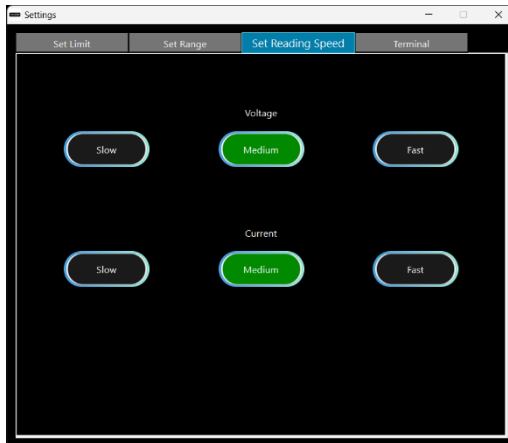
Reading Speed (Latest Firmware)

- Terminal to read the input from software to hardware and the corresponding hardware response. This feature is useful to find problems with the hardware or software.
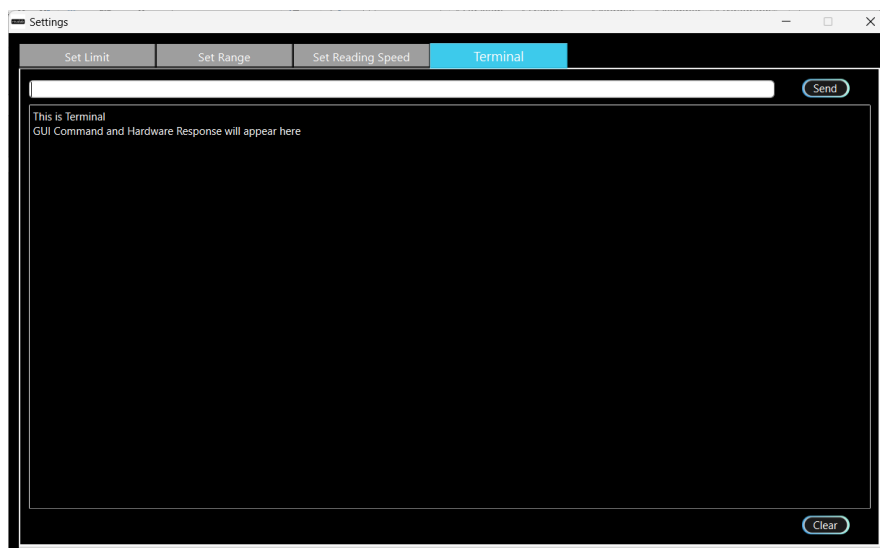
4. Operating XDAC through SCPI command

This section set guidelines to help you develop program for any language suits you best. As an example, we give the Python example.

Python Installation (Example)

Please follow steps below for dynamic programming using SCPI command through Python via TCP/IP.

The following Python and packages need to be installed:

1. Python 2.7 or Python 3.X (download and install the latest version from www.python.org). *Tested with Python 3.9.

2. PyCharm 2017.3.4 or the latest version (download and install the latest version from https://www.jetbrains.com/pycharm/)
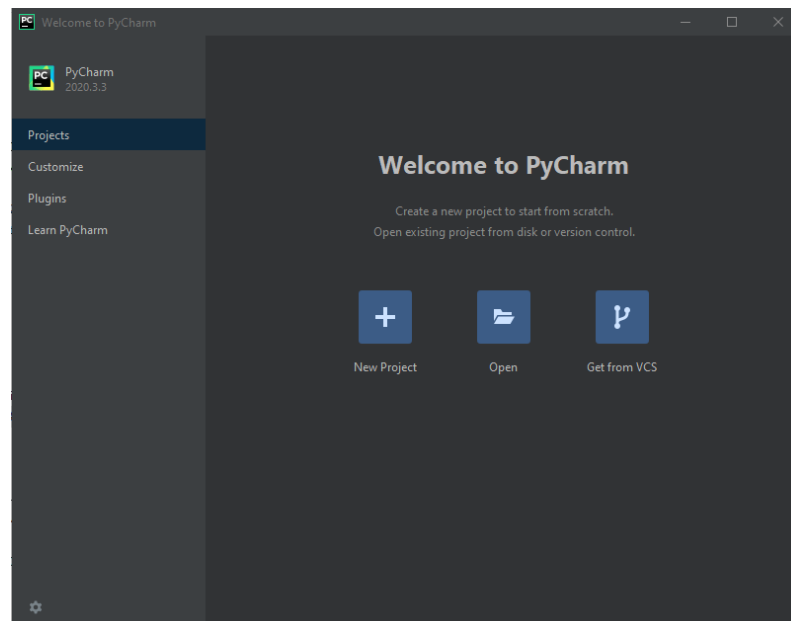
Run Python Code (Example)

To run the Python code please follow the steps below:

1. Open PyCharm software and open file example (e.g XDAC-8U-R4G8.py)
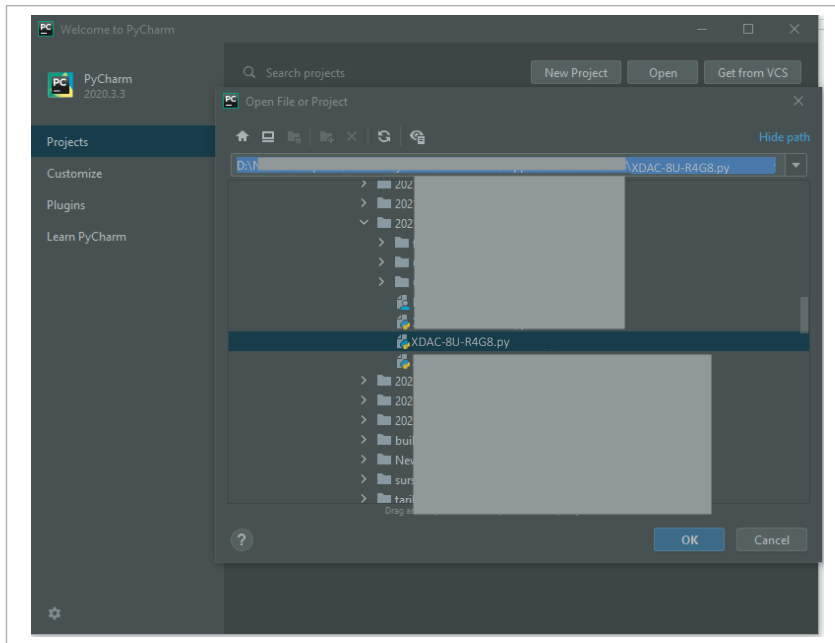
2. Configure Python interpreter (see figure below) by clicking Configure Python Interpreter link on the drop-down menu, or in File >> Settings >> Project Interpreter.
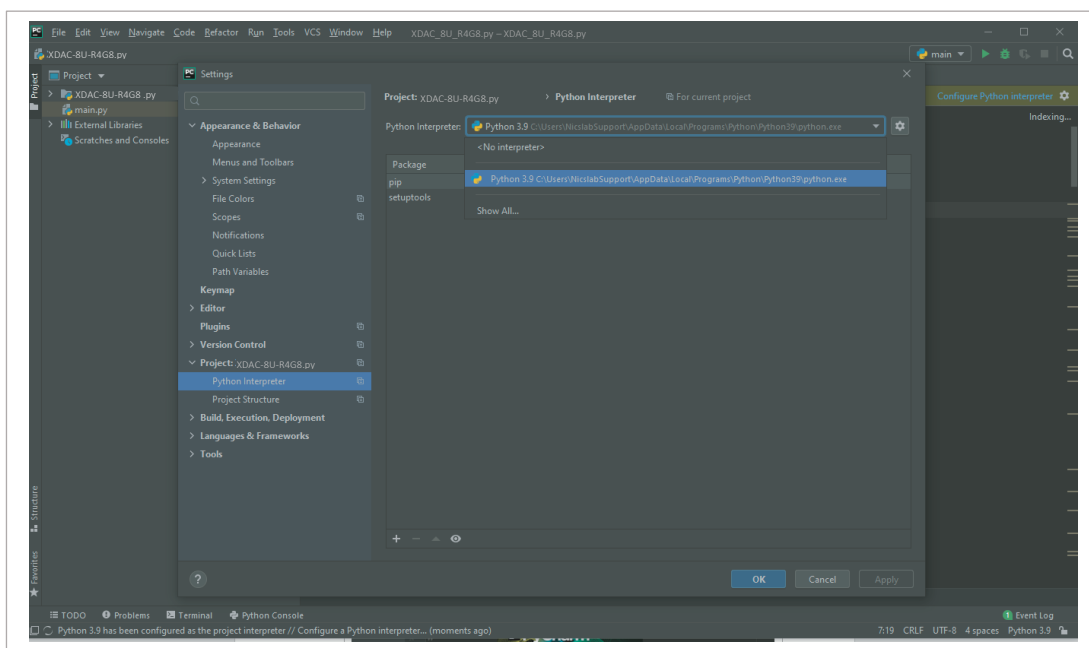
3. Install additional packages, for example: enum34, by:

    A.   clicking '+' button

    B.   search and choose enum34

    C.   install all the packages.
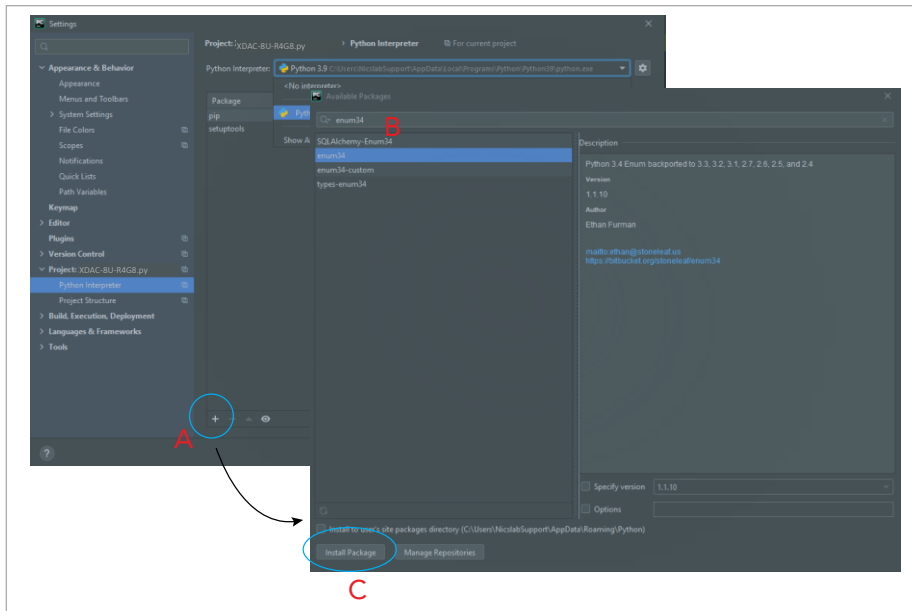
4. The packages for the Python Interpreter are listed in the green rectangle.
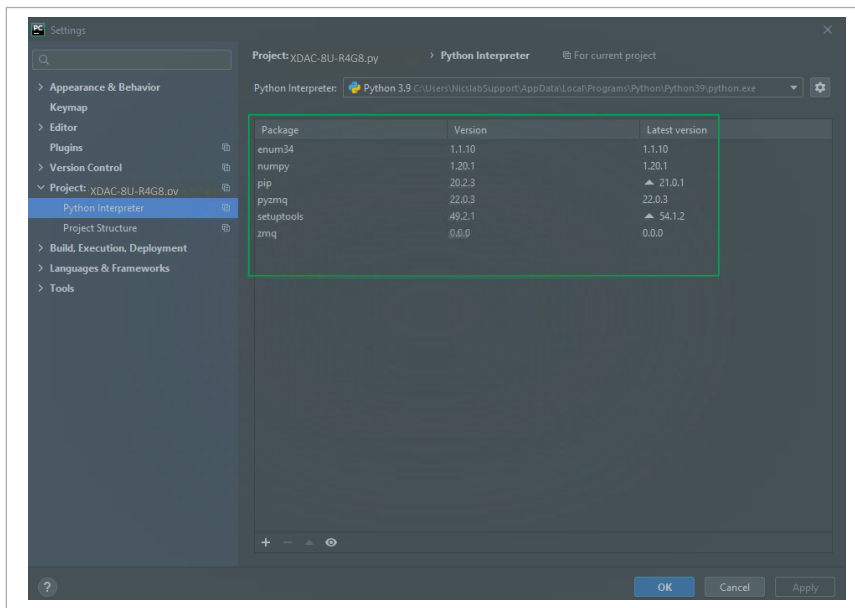
5. Select Python Configuration and choose the file name.

6. Run the file by clicking the green arrow button on the top right corner to test the XDAC (Please refer to the code and SCPI commands references).

Python Function (Example)

1. Input IP Address

   ```
   XDAC_IP = "169.xxx.xx.xx"
   ```

2. Unlock and Lock XDAC

   ```
   unlock(XDACkey)
   lock()
   ```

   note: You must unlock your XDAC first before you can use It.

3. Set Voltage for single channel

   ```
   setChannelVoltage(channel, voltageVal)
   ```

   `channel (int):` channel number

   `voltageVal (float):` 0 – 20 V

   Example:

   ```
   setChannelVoltage(1, 15)
   ```

   #Set voltage to 15 V in channel 1

4. Set Voltage Range for single channel

   ```
   setChannelVoltangeRange(channel, range)
   ```

   `channel (int):` channel number

   `rangeVal (int):` 0 – 2

   `0` = 0 – 5 V

   `1` = 0 – 10 V

   `2` = 0 – 20 V

5. Set for all channels

   ```
   setVoltageAllChannels(AllVValues)
   ```

   `AllVValues (float array):` voltage values in an array (V)

   ```
   setRangeAllChannels(AllRValues)
   ```

   `AllRValues (float array):` range values in an array

   Example:

```
AllVValues = [20.1, 2.5, 13.0, 10.5, 9.5, 22]

AllRValues = [5, 5, 6, 5, 7, 4]

setRangeAllChannels(AllRValues)

setVoltageAllChannels(AllVValues)
```

6. Set OFF for single channel

```
setOff(channel)
```

`channel (int):` channel number

7. Read single-channel value

```
readSingleChannelVoltage(channel)

readSingleChannelCurrent(channel)
```

`channel (int):` channel number

return value of voltage or current in one channel

8. Read real-time value for all channels

```
readAllChannelVoltage()
```

Return list of voltage from all channels

```
readAllChannelCurrent()
```

Return list of current from all channels

9. Set one channel to run automatically and record it

```
sweepOne(channel, seqValueV, duration)
```

`channel (int):` channel number

`seqValueV:` voltage values in an array (V)

`duration (int):` duration in seconds

10. Measurement Configuration

```
measurementConfig(averagingSample, voltageConv, currentConv)
```

30

Set measurement averaging sample, voltage, and current conversion time

```
averagingSample (int(index)):
```
Measurement sample to be average index

Average Sample Number Index: 0 – 7:

```
Index 0 = 1 Sample

Index 1 = 4 Samples

Index 2 = 16 Samples

Index 3 = 64 Samples

Index 4 = 128 Samples

Index 5 = 256 Samples

Index 6 = 512 Samples

Index 7 = 1024 Samples
```

```
voltageConv (int(index)) =
```
voltage conversion time index

```
currentConv (int(index)) =
```
current conversion time index

V and I ADC Conversion Time Index:

```
Index 0 = 50 µS

Index 1 = 84 µS

Index 2 = 150 µS

Index 3 = 280 µS

Index 4 = 540 µS

Index 5 = 1052 µS

Index 6 = 2074 µS

Index 7 = 4120 µS
```

Example:

```
measurementConfig(2, 3, 3)
```

Set measurement configuration to 16 samples, Index 3 (280 µS) voltage conversion time, and Index 3 (280 µS) current conversion time.

11. <u>Sweep value for single channel</u>

```
sweepOne(channel, seqValueV, duration)
```

```
channel (int): channel number

seqValueV (list): list of voltage value

duration (int): duration in seconds
```

12. <u>Shutdown XDAC</u>

```
shutdown()
```

SCPI Commands

The XDAC can be controlled using Standard Commands for Programmable Instruments (SCPI). To initialize the SCPI commands, you need to import ZMQ library. Then you must use Req-Rep mode in port "5555". After that you can type your commands and send it to the XDAC. You can see the example below:

```python
import zmq

# Change with XDAC IP Address
XDAC_IP = "192.168._____"

# Connect to Req Server on XDAC via ZMQ
context = zmq.Context()
req_socket = context.socket(zmq.REQ)
req_socket.connect("tcp://%s:5555" % XDAC_IP)
```

Description: Unlock XDAC by XDAC Key

Format:

```
GETINFO:KEY
```

Example 1: Unlock XDAC with XDAC Key : `nicslabtes`.

```
GETINFO:nicslabtes
```

Description: Lock XDAC

Format:

```
LOCK
```

Description: Set output voltage for single channel

Format:

```
SETV:CHANNEL:VOLT
```

Example 1: Set the output of channel 1 to 4 V.

```
SETV:1:4
```

Example 2: Set the output of channel 3 to 0.25 V.

```
SETV:3:0.25
```

Description: Set output voltage range for single channel

Format:

```
SETR:CHANNEL:RANGE
```

```
range(int): 0 - 2
```

$0 = 0 - 5\,V$

$1 = 0 - 10V$

$2 = 0 - 20\,V$

Example 1: Set the output range of channel 1 to 0 – 20 V.

```
SETR:1:2
```


Description: Read voltage of a single channel

Format:

```
MEASV:CHANNEL
```

Example 1: Get the voltage output of channel 1.

```
MEASV:1
```


Description: Read current of a single channel

Format:

```
MEASC:CHANNEL
```

Example 1: Get the current output of channel 3.

```
MEASC:3
```


Description: Change Measurement config for All Channels

Format:

```
CONFIG:AVERAGINGSAMPLE_IDX:VOLTAGECONV_IDX:CURRENTCONV_IDX
```

```
AVERAGINGSAMPLE_IDX: [0 - 7]
```

0 = 1 Sample

1 = 4 Samples

2 = 16 Samples

3 = 64 Samples

4 = 128 Samples

5 = 256 Samples

6 = 512 Samples

7 = 1024 Samples

VOLTAGECONV_IDX: [0 - 7] = CURRENTCONV_IDX: [0 - 7]

0 = 50 µS

1 = 84 µS

2 = 150 µS

3 = 280 µS

4 = 540 µS

5 = 1052 µS

6 = 2074 µS

7 = 4120 µS

Example: Set measurement configuration to 16 samples, Index 3 (280 µS) voltage conversion time, and Index 4 (540 µS) current conversion time.

CONFIG:2:3:4

Description: Set zero voltage for a single channel

Format:

ZERO:CHANNEL

Example: Set zero of channel 1

ZERO:1

Description: Shutdown System

Format:

EXIT

5. System Shutdown

This section describes how to shut down the XDAC-6U-R4G8-SMA.

In the case of using GUI, the steps are as follows:

1. Set OFF all the channel in the GUI.
2. Press the ON/OFF Button in GUI (B1, Figure 4), this will change the color of the button from green to grey.
3. Close The GUI window (this will soft shutdown the program inside the XDAC-6U-R4G8-SMA).
4. Press DC Power button (A1, Figure 4).
5. Turn off the AC Power button (A8, Figure 4).

In the case of using SCPI or Python, the steps are as follows:

1. Use `setOff(channel)` function to set off the channel used before.
2. Use `lock()` and `shutdown()` function to soft shutdown the program inside the XDAC-6U-R4G8-SMA.
3. Press DC Power button (A1, Figure 4).
4. Turn off the AC Power button (A8, Figure 4).

NOTE: once the soft shutdown occurred, the Green led will be turned off, and XDAC-6U-R4G8-SMA cannot directly be used again, since the system is not ready (refers to Hardware Installation). To use XDAC-6U-R4G8-SMA after a soft shutdown occurred, just switch off and switch on again (restart) the XDAC-6U-R4G8-SMA.

6. Troubleshooting

Please use the following guidelines to identify a particular problem. If the solution does not rectify the problem, contact us at support@nicslab.com.

Table 6. Troubleshooting

Problem	Cause	Solution
Failed to connect at GUI	The AC power supply is OFF	Turn ON the AC power switch on the back of device then switch ON the DC power (Front Blue button)
Failed to connect at GUI	The switch power is OFF	Switch ON the power
Failed to connect at GUI	No Blue LED light (XDAC system is not ready)	Restart the system by pressing 'Reset' button and wait until the Blue LED light ON
Failed to connect at GUI	No Green light (no data transfer)	Restart the GUI
Green light offs when software active or software freeze	Initialization failed	Restart the software / unplug - plug USB/Ethernet connector/Press Reset Button
No channel output detected at device under test	Connection failed	Check metal pad check point to intended channel
Unable to upload the file	File format problem	Make sure the file format is .csv
No value after upload the file	File problem	Check the file content, make sure there is no blank space on each row.
Unable to use Auto Mode feature	File format problem	Check file format should be csv file. Check content format

7. Warranty

Nicslab warrants the hardware and software designed by Nicslab to work accordingly, fulfilling the highest standard of quality product. All Nicslab products are covered by a **3-year limited warranty** from the date of shipment. Nicslab is not liable for consequential or incidental damages or for errors in subject to misuse, neglect, accident, modification, use in critical operation, or has been soldered or altered in any way outside stated by us or unauthorized maintenance.

Nicslab retains to change the material and technical data of this manual at any time without notice, in future editions.

Please do not hesitate to contact us at support@nicslab.com if you would like to have more information on warranty or return and refund policy.

8. Compliance

This product complies to the requirements of the European Union's *Conformite Europenne* (CE) and Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2015/863 (RoHS3). The certificates can be accessed here.

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