

Smoke Detector GUI

ADC Value Viewer

User's Manual

Rev. 1.00

Contents

1	Overview	4
1.1	Smoke Detector GUI Program	4
1.2	System connection environment	6
1.3	System requirements	6
2	Installation	7
2.1	Program download	7
2.2	Program installation	8
2.3	Setup hardware UART interface	8
3	How to use Smoke Detector GUI Program	9
3.1	Power connection and initial settings	9
3.2	Buttons on the program screen	10
3.2.1	Connection	10
3.2.2	Run	10
3.2.3	Stop	11
3.2.4	Save data	11
3.2.5	Program termination	11
3.3	Input control options	12
3.3.1	Slave CH. count	12
3.3.2	Sampling interval	12
3.3.3	Display range	12
3.3.4	Resolution	13
3.3.5	Cursor and To LAST	13
3.3.6	ADC	13
3.3.7	Avrg	14
3.4	Graphs	14
3.4.1	ADC	14
3.4.2	Avrg	14
3.4.3	Scroll bar	15
	Revision history	16

List of figures

Figure 1. Fire System Block Diagram	5
Figure 2. Demo Board Connection Environment	6
Figure 3. Run Downloaded Installer	8
Figure 4. Program Screen	9
Figure 5. Help Menu (Slave CH. Count)	12
Figure 6. Help Menu (Sampling interval)	12
Figure 7. Help Menu (Display range)	12
Figure 8. Help Menu (Resolution)	13
Figure 9. Help Menu (Cursor)	13
Figure 10. Help Menu (ADC).....	13
Figure 11. Help Menu (Avg)	14
Figure 12. Example Graph for ADC	14
Figure 13. Example Graph for Avg	15
Figure 14. Example Graph for Avg	15

List of tables

Table 1. Connection Buttons	10
Table 2. Run Button.....	10
Table 3. Stop Button	11
Table 4. Save Button	11

1 Overview

1.1 Smoke Detector GUI Program

'Smoke Detector GUI Program' is a graphic-based user interface program that monitors ADC values of the Slave unit through UART communication with the Master (or Host) on the ABOV's Smoke Detector System.

The Master unit reads the ADC value of the Slave unit through Line Interface communication with the Slave unit, where the ADC value is a number indicating the amount of smoke in the air. That is, in ABOV's Smoke Detector System, the Slave unit is a sensor device that detects smoke, and the ADC value indicates the amount of smoke.

The Host unit has a display function that displays the ADC values with LCDs, but LCDs have limitations in expressing the numbers, so software such as the Smoke Detector GUI Program, which provides the ability of expressing ADC log values per hour in graphs and data, is necessary.

Users can select the number of channels from number 1 and number 4, and set the sampling period from 1 second to 10 seconds in units of 1 second.

The sampled ADC values and average values can be stored in CSV format, which can be read using Microsoft's Excel program.

For more information on the Smoke Detector including the system board and configuration, please visit the ABOV website shown below:

- https://www.abov.co.kr/en/search_result.php?keyword=A96L533&page=1&type=ALL&exquery=doc@%3CCATE_ID:contains:30%3E

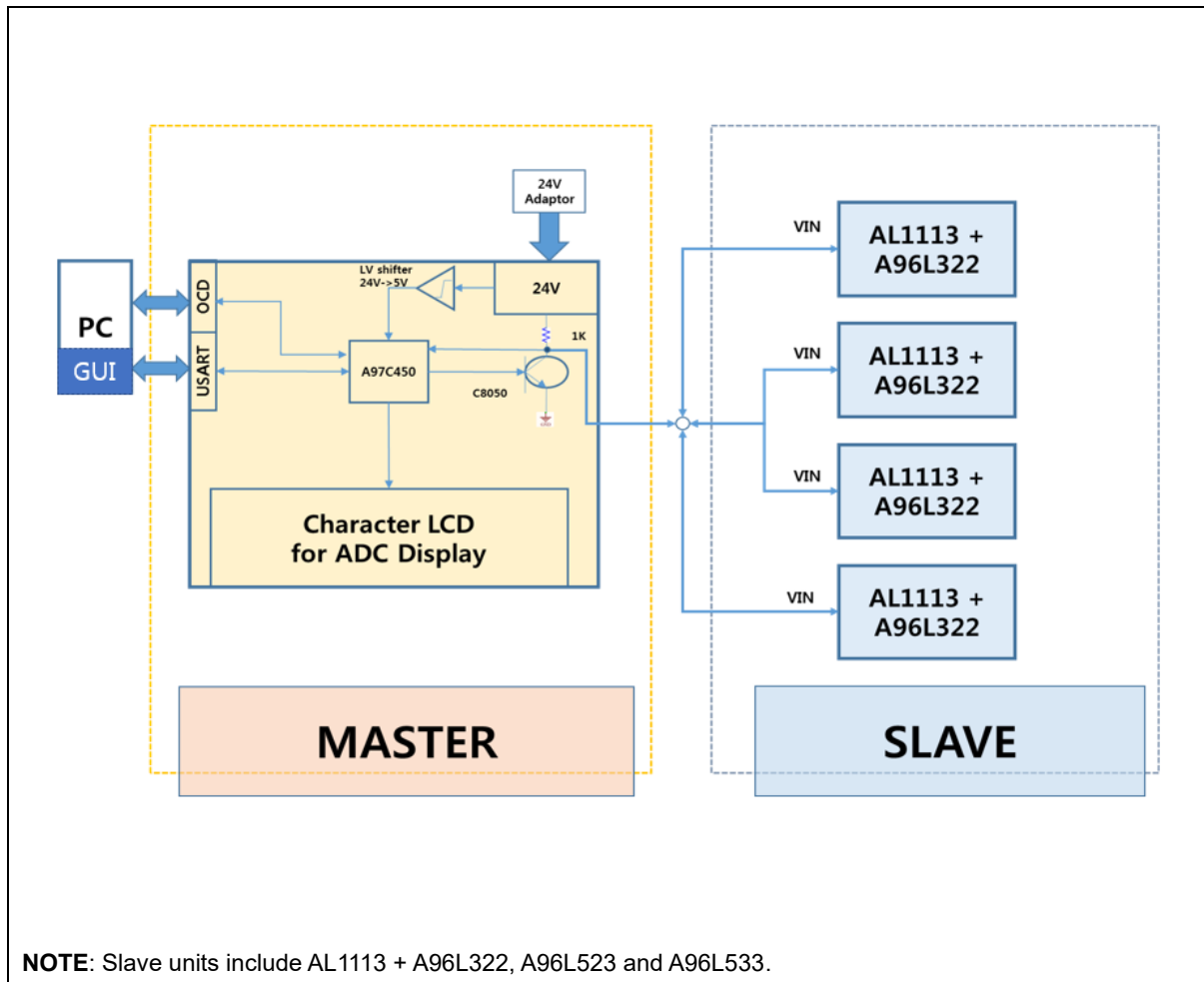


Figure 1. Fire System Block Diagram

1.2 System connection environment

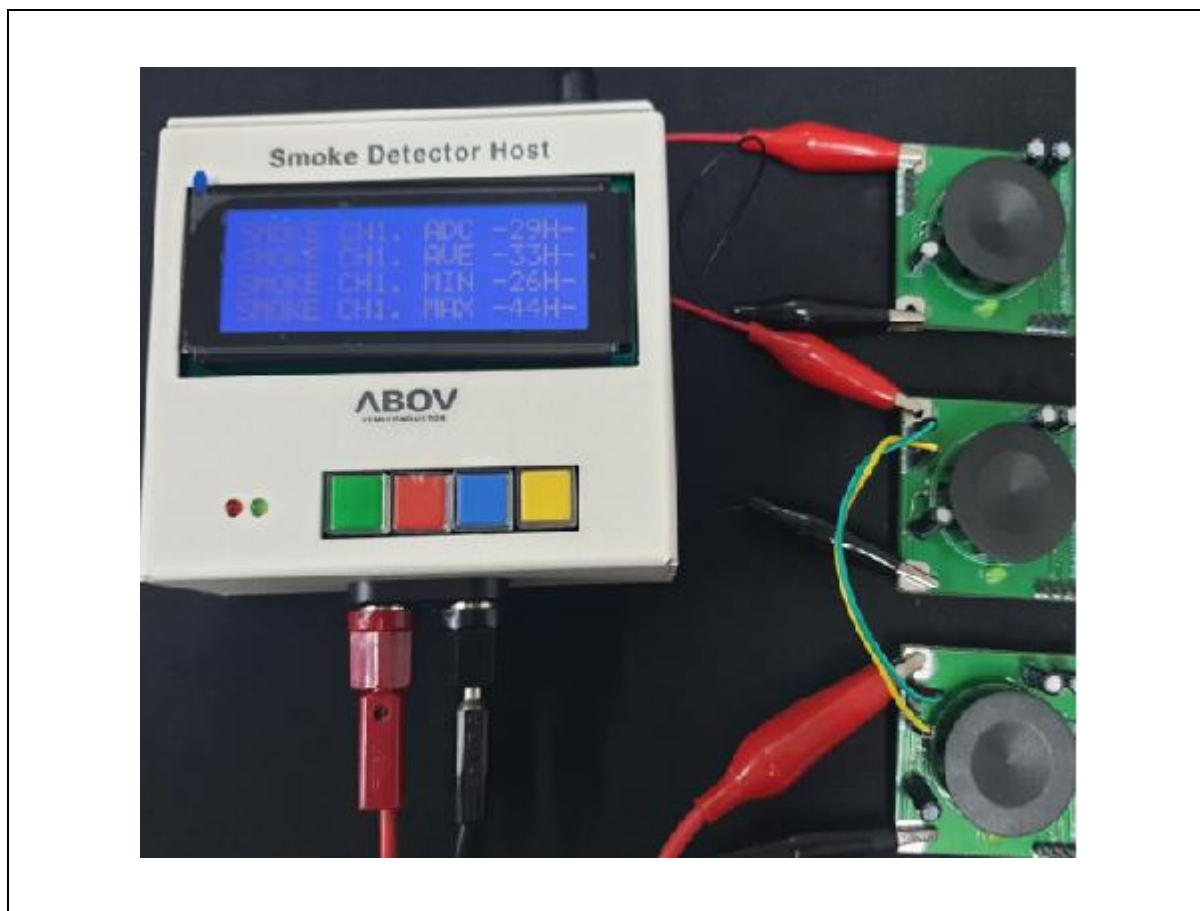


Figure 2. Demo Board Connection Environment

1.3 System requirements

The Smoke Detector GUI is compatible with the following Operating Systems.

- Microsoft Windows Vista
- Microsoft Windows 7
- Microsoft Windows 8 & 8.1
- Microsoft Windows 10 & later

This software can be run on a basic PC and does not require powerful specifications

2 Installation

2.1 Program download

Users can download the installer at the ABOV's website. It is ideal for the users to always have the latest version of software, as ABOV continues to add new devices and features.

Setup file's name shows the version number and generated date. For example, the setup file "Setup_SmokeDetector_GUI_V1.234.56(211123).exe" indicates the following information in the file name:

- The installer is for the Smoke Detector GUI Programmer S/W package.
- Its version is 1.234.56. Of these version numbers, each number divided by a period has the meaning listed below:
 - Major version = 1
 - Minor version = 234,
 - Patch version = 56
- It was released on November 23, 2021.

When the Smoke Detector GUI Program starts, it searches for the latest version on the ABOV website. If it finds a new version, it notifies the users.

2.2 Program installation

Once the program installation is finished, users can see the message shown in Figure 3. The users can run the installer without a software license nor a driver.

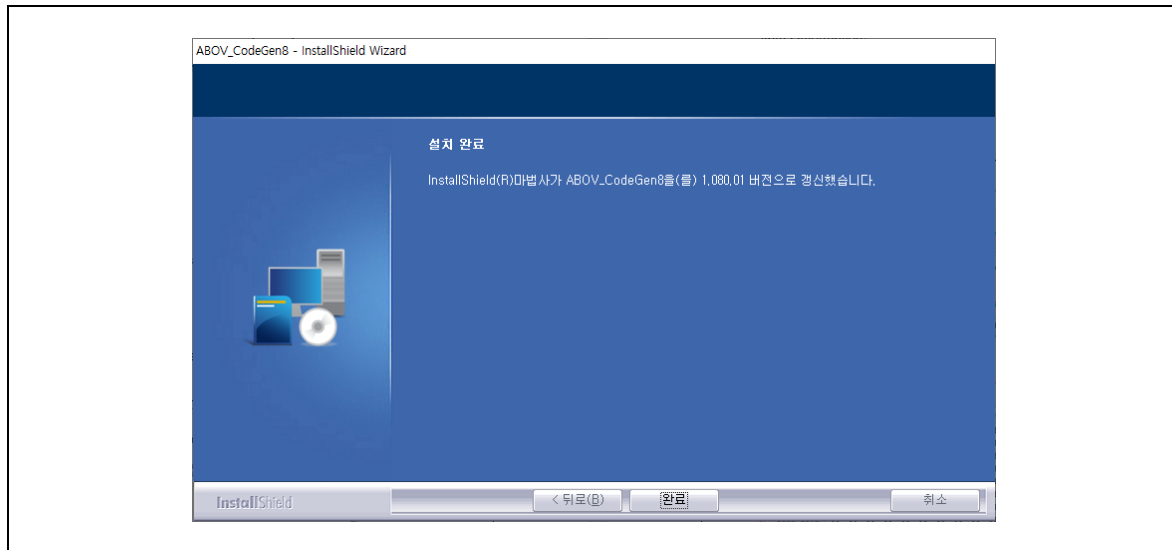


Figure 3. Run Downloaded Installer

2.3 Setup hardware UART interface

Smoke Detector H/W is connected with the PC through USB, and communicates with PC through UART. Therefore, those who use the Smoke Detector System for the first time must install UART driver.

Silicon Labs' CP2102 is used as a USB-to-UART chip, and corresponding driver can be downloaded from the internet. After downloading the driver, install it with the H/W connected.

3 How to use Smoke Detector GUI Program

3.1 Power connection and initial settings

Once the program is installed and H/W setup is completed, the Smoke Detector GUI Program can be started by following the procedure below:

1. Connect the Smoke Detector Host with the Slave Board.
2. Connect the power of the Smoke Detector Host to the 24V adapter that we provided. If the output voltage of the adapter is required to be between 12V and 24V, a normal adapter can be used too.
3. When the power is successfully connected, users can see the messages shown below.

“TOOL NOT CONNECTED!!”

“CLICK CONNECT BUTTON”

4. Using a USB cable, connect the Smoke Detector Host to the PC where the Smoke Detector GUI Program is installed.
5. Start the Smoke Detector GUI Program on the PC. When the Program starts, users can see the dialog box as shown in Figure 4.

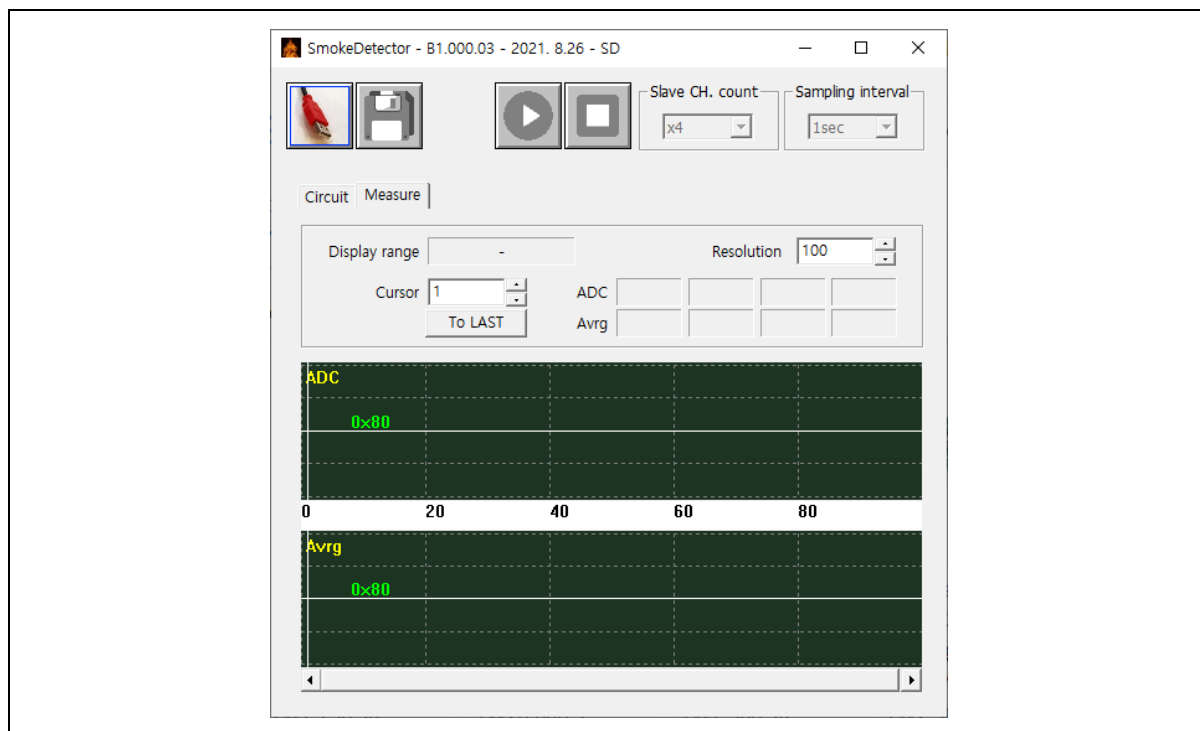




Figure 4. Program Screen

3.2 Buttons on the program screen

3.2.1 Connection

This button is used to connect with the Target H/W.

Table 1. Connection Buttons

	<ul style="list-style-type: none"> • It indicates that the PC is not connected with the Target H/W yet. • By clicking on this button, the process of searching for the H/W that is connected to the PC is performed.
	<ul style="list-style-type: none"> • When the Target H/W is found, the PC is connected with the Target H/W. • After the connection, this button is changed to the image on the left and disabled.

When the PC is normally connected to the Target H/W (the Smoke Detector Host Board in this document), the LCD screen of the Smoke Detector Host Board displays the message below:

"INPUT DURATION AND"



"CLICK START BUTTON!!"

If it is detected that communication with the H/W is disconnected during the Program operation, this button is enabled for re-connection.

3.2.2 Run

This button is used to allow the Target H/W to start sampling.

Table 2. Run Button



	<ul style="list-style-type: none"> • This button is disabled if the Target H/W is not connected. • This button is disabled while the Program is operating.
	<ul style="list-style-type: none"> • It is automatically enabled when the Target H/W is connected. • When clicking on this button, the Target H/W starts sampling.

When the Target H/W starts sampling, the Program collects data at specified time intervals from the specified number of channels, and the corresponding values are displayed in graphs and text in the dialog box.

3.2.3 Stop

This button is used to allow the Target H/W to stop sampling.

Table 3. Stop Button



	<ul style="list-style-type: none"> • This button is disabled if the Target H/W is not connected. • This button is disabled while the Program is not operating.
	<ul style="list-style-type: none"> • It is automatically enabled only when the Program is operating. • When clicking on this button, the Target H/W stops sampling.

When the Target H/W stops sampling, the collected data can be stored.

3.2.4 Save data

This button is used to store the sampling data.

Table 4. Save Button

	<ul style="list-style-type: none"> • This button is disabled if there is no sampled data. • This button can be disabled even during sampling.
	<ul style="list-style-type: none"> • It is automatically enabled if sampled data exists. • When clicking on this button, the sampled data is stored as a CSV type file in a storage device of the PC.

A CSV (Comma Separated Values) type file is a data file that consists of text in which multiple fields are separated by commas (.). It can be read using a normal text editor, but when it is read using an Excel program, each field is more clearly distinguished, making it easy to read and manage.

3.2.5 Program termination

To exit the Program, click the 'X' button in the upper right corner of the dialog box.

The Program execution information at the time when the Program is terminated, such as the number of Slave channels and sampling intervals, is automatically stored, so the Program can start with those values at the next execution.

Sampled data are not automatically stored.

3.3 Input control options

3.3.1 Slave CH. count

Using this option, users can set the number of Slave units connected to the Target H/W. The users can choose between number 1 and number 4.

This is enabled only when the Target H/W is connected in Idle state.

If the users try to change the value of this option when there is collected data, a warning dialog box is displayed before erasing the existing data.

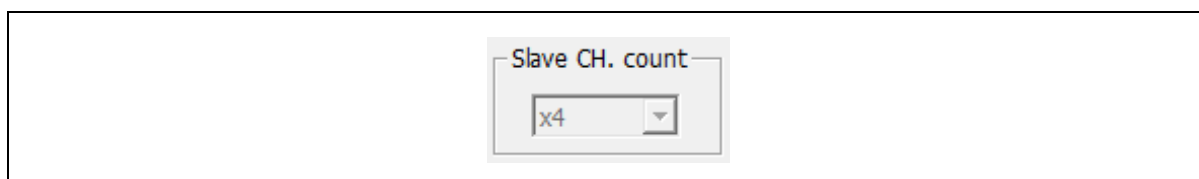


Figure 5. Help Menu (Slave CH. Count)

3.3.2 Sampling interval

Using this option, users can set the time interval when sampling at the Target H/W. The users can select an interval time from 1 second to 10 seconds.

This is enabled only when the Target H/W is connected in Idle state

If the users try to change the value of this option when there is collected data, a warning dialog box is displayed before erasing the existing data.

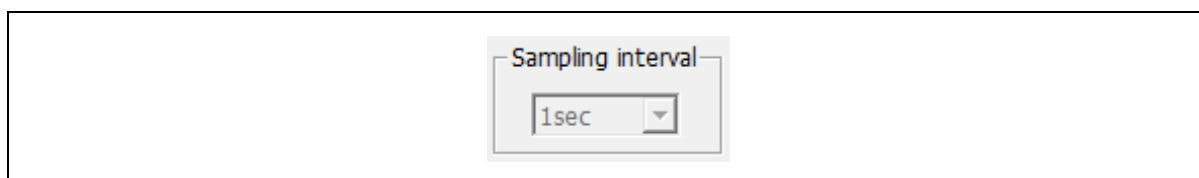


Figure 6. Help Menu (Sampling interval)

3.3.3 Display range

This option displays the total depth of data stored so far. The number of this option increases as data sampling progresses, increasing in the range from 1 to 32768.

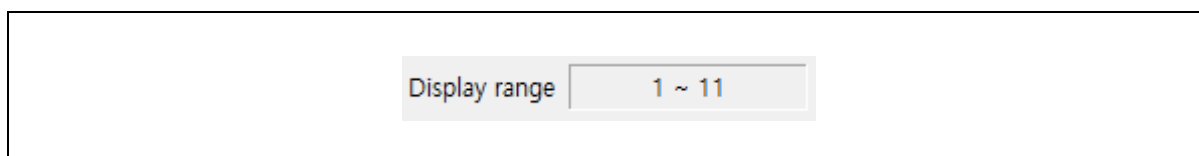


Figure 7. Help Menu (Display range)

3.3.4 Resolution

This option is used to set the resolution of the horizontal axis of graphs.

If the resolution number is small, a narrow section is expanded, and if the resolution number is large, a wide section is displayed.

The resolution number can be selected between 1 and 32768.



Figure 8. Help Menu (Resolution)

3.3.5 Cursor and To LAST

Using this option, users can move the cursor of the graph to the desired position by entering numbers.

Clicking the "To LAST" button moves the cursor to the most recently sampled data.

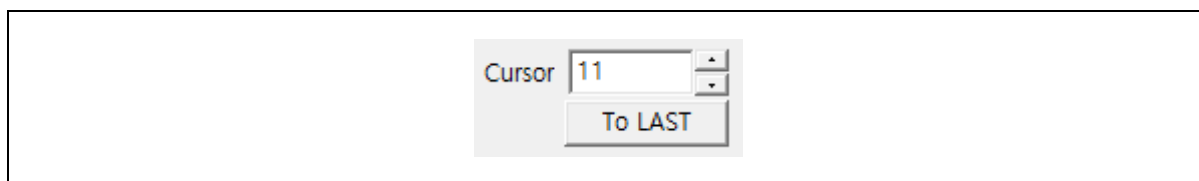


Figure 9. Help Menu (Cursor)

3.3.6 ADC

Users can view the ADC value displayed in hexadecimal numbers, which is sampled at the specified cursor position.

The background colors of each number shown in Figure 10 are the same as the solid line colors of the corresponding values used in the graph.



Figure 10. Help Menu (ADC)

3.3.7 Avrg

Users can view the average value in hexadecimal numbers, which is obtained by adding the ADC value sampled at the specified cursor position and the 7 sampled data before the cursor position. (Average of total 8 sampled data)

The background colors of each number shown in Figure 11 are the same as the solid line colors of the corresponding values used in the graph.



Figure 11. Help Menu (Avrg)

3.4 Graphs

3.4.1 ADC

It displays the sampled ADC value in graph, and shows the changes on the time line.

When clicking the left mouse button, the cursor moves to the desired position. When clicking the right mouse button, the level value is displayed, which is the corresponding height converted into hexadecimal numbers.

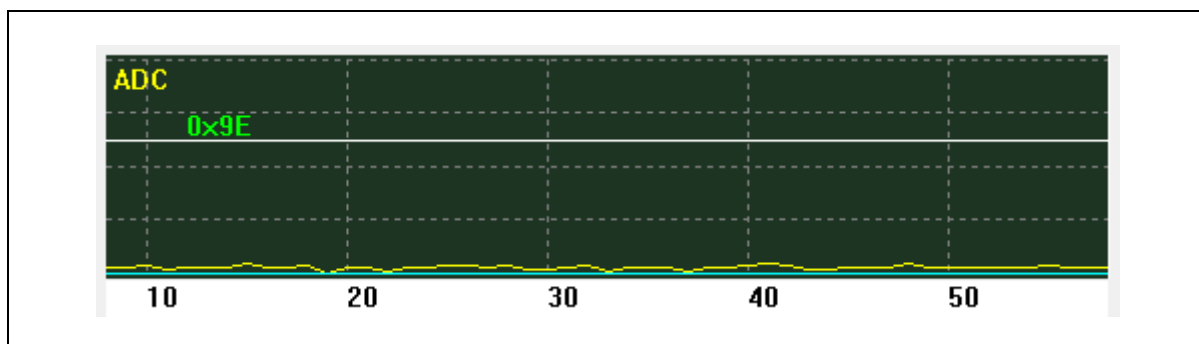


Figure 12. Example Graph for ADC

3.4.2 Avrg

It displays the average of the sampled ADC values in graph, and shows the changes on the time line.

When clicking the left mouse button, the cursor moves to the desired position. When clicking the right mouse button, the level value is displayed, which is the corresponding height converted into hexadecimal numbers.

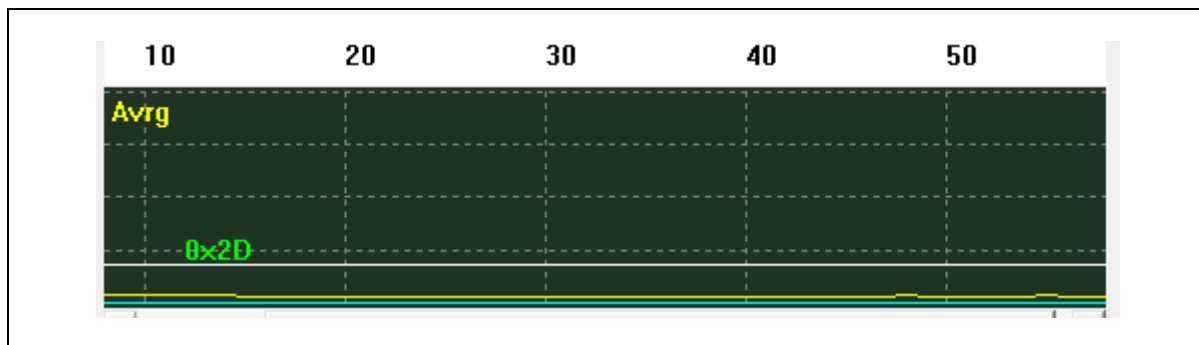


Figure 13. Example Graph for Avrg

3.4.3 Scroll bar

It scrolls up and down the sections displayed on the graph.

Users can scroll through any section in Idle states, but during sampling, only move to the area where the cursor is located.

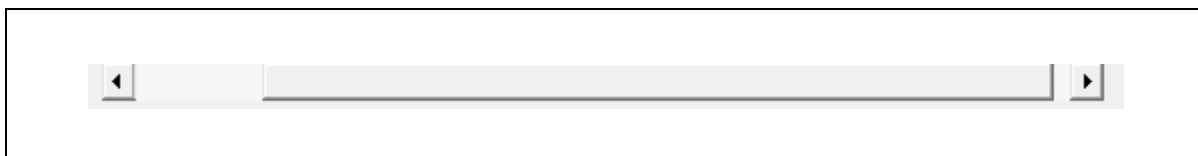


Figure 14. Example Graph for Avrg

Revision history

Revision	Date	Notes
1.00	Nov. 18, 2021	Document created

Korea

Regional Office, Seoul
R&D, Marketing & Sales
8th Fl., 330, Yeongdong-daero,
Gangnam-gu, Seoul,
06177, Korea

Tel: +82-2-2193-2200
Fax: +82-2-508-6903
www.abovsemi.com

HQ, Ochang
R&D, QA, and Test Center
93, Gangni 1-gil, Ochang-eup,
Cheongwon-gun,
Chungcheongbuk-do,
28126, Korea

Tel: +82-43-219-5200
Fax: +82-43-217-3534
www.abovsemi.com

Domestic Sales Manager

Tel: +82-2-2193-2206
Fax: +82-2-508-6903
Email: sales_kr@abov.co.kr

Global Sales Manager

Tel: +82-2-2193-2281
Fax: +82-2-508-6903
Email: sales_gl@abov.co.kr

China Sales Manager

Tel: +86-755-8287-2205
Fax: +86-755-8287-2204
Email: sales_cn@abov.co.kr

ABOV Disclaimer**IMPORTANT NOTICE – PLEASE READ CAREFULLY**

ABOV Semiconductor ("ABOV") reserves the right to make changes, corrections, enhancements, modifications, and improvements to ABOV products and/or to this document at any time without notice. ABOV does not give warranties as to the accuracy or completeness of the information included herein. Purchasers should obtain the latest relevant information of ABOV products before placing orders. Purchasers are entirely responsible for the choice, selection, and use of ABOV products and ABOV assumes no liability for application assistance or the design of purchasers' products. No license, express or implied, to any intellectual property rights is granted by ABOV herein. ABOV disclaims all express and implied warranties and shall not be responsible or liable for any injuries or damages related to use of ABOV products in such unauthorized applications. ABOV and the ABOV logo are trademarks of ABOV. All other product or service names are the property of their respective owners. Information in this document supersedes and replaces the information previously supplied in any former versions of this document.

© 2021 ABOV Semiconductor – All rights reserved