



# ENS160 Dashboard Quick Start Guide

# ENS160 Evaluation Kit (EVK)

# ENS160 Dashboard Quick Start GuideRevision:2Release Date:2021-07-30Document Status:Production



# Content Guide

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## 1. Introduction

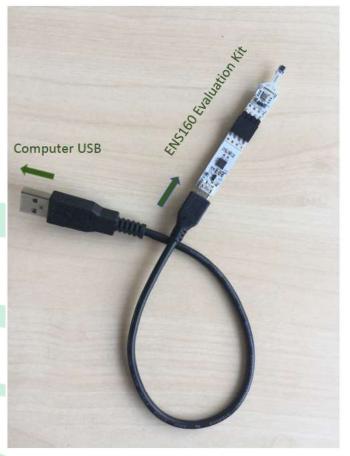
This ENS160 Dashboard Quick Start Guide is aimed at giving the customers an overview of how to use ENS160 Dashboard Software with the latest ENS160 evaluation kit released by ScioSense to evaluate sensor ENS160 performance.

# 1.1 ENS160 Evaluation Kit Parts

Apart from micro-USB-to-I<sup>2</sup>C converter and ENS160 combined with ENS210 break-out board (both included within the ENS160 Evaluation Kit package), user need prepare a USB2.0 type A to USB mini type B cable to run the ENS160 Evaluation Kit:

	Description
1	USB 2.0 type A to USB mini type B cable
1	micro-USB-to-I <sup>2</sup> C converter
1	ENS160 combined with ENS210 break-out board

The following picture shows how the evaluation kit should look like and how the parts should be assembled and connected to the computer.



#### Note: Recommended PC platform Windows 10 or higher and USB interface

When assembling the evaluation kit, please follow the steps below:

1. Have USB 2.0 A- to mini-USB type B connector cable with enough length ready.

2. Attach Mini-USB cable connector to ENS160 Evaluation kit socket.

3. Attach USB-A connector to PC.

Note: Never touch sensors.



# 1.2 ENS160 Dashboard Software

## ENS160 Dashboard Software can be downloaded from the link below:

#### https://downloads.sciosense.com/ens160/

# Copy ENS160 Dashboard zip-file from USB stick or other source to target directory and unzip in a folder of choice.

At2Tools.dll	01/02/2021 16:29	Application extension	156 KB
C ENS160_Dashboard	01/02/2021 16:29	Application	894 KB
🗟 HidLibrary.dll	01/02/2021 16:29	Application extension	39 KB
🖻 LICENSE	01/02/2021 16:29	Rich Text Format	113 KB
ScioSense.Common.dll	01/02/2021 16:29	Application extension	2.155 KB
ScioSense.Usb.Hid.dll	01/02/2021 16:29	Application extension	63 KB
ScottPlot.dll	01/02/2021 16:29	Application extension	334 KB
ScottPlot.WPF.dll	01/02/2021 16:29	Application extension	46 KB
settings	01/02/2021 16:29	Text Document	1 KB
System.Drawing.Common.dll	01/02/2021 16:29	Application extension	51 KB



# 2. Launch and Operation

Launch the application by double-clicking ENS160\_Dashboard, see the graph in Section 1.2.

The Main Window will pop up showing initial ENS160 Dashboard GUI as below:

Scios	ense	Dashboard <sup>①</sup>	
Dashboard		Select an Evaluation Kit	
Graphs OperatingMode Custom Pattern		ENS160	•
ogging Settings ystem			
Start Measureme	nt B		
NS160 / 5200BECAE3			
perating Mode	IDLE		
Humidity Correction	OFF		
eCO <sub>2</sub> 0 ppm	TVOC 0 ppb		
AQI-U	AQI-W		
RS1 0 kΩ	RS3 0 kΩ		
RS2 0 kO	RS4 0 kO		
emperature	0.0 °C		
elative Humidity	0 %		
bsolute Humidity	0.0 g/m <sup>3</sup>		
Dew Point	NaN °C		

As shown in above graph, there are three main areas in the GUI left side, which have been marked accordingly with three red letters A, B and C. These three areas A, B and C have been defined as below:

- A. Parameters Setting
- B. Start/Stop measurement
- C. Current Measurement Real Data Display.





#### To start a measurement, follow the following three steps:

- I. Click "Operating Mode" to choose the operation mode to Standard (ENS160: On).
- II. Click "Start Measurement"
- III. Click "Graphs" to see and evaluate sensor performance, while the ENS160 starts capturing, incoming data is displayed in graphs as well as the data display area.

ScioSens	se <sup>.</sup>	Operating Modes and Re	lated Optic	ons <sup>©</sup>
Dashboard		Select Operating Mode		
Graphs <b>OperatingMode</b> Custom Pattern	Step III. Step 1.	OP Modes RHT comp.		Description
Logging Settings System		Deep Sleep		Lowest power operational mode, temperature and humidity sensing only
		Idle		Idle mode, temperature and humidity sensing only
Start Measurement	Step II.	Standard		Standard mode, temperature, humidity and gas sensing
ENS160 / 5200BECAE3 Operating Mode Humidity Correction eCO <sub>2</sub> 548 ppm TVO	STANDARD	Custom	• 3	Custom Mode with individually configurable heater profiles / Duty cycles and sensor readout timings
AQI-U 2 AQI-V RS1 2054 kΩ RS RS2 1237 kΩ RS	3 328 kΩ			
Temperature Relative Humidity Absolute Humidity Dew Point	26.3 °C 25 % 6.2 g/m <sup>3</sup> 4.7 °C			

For detailed information, see Section 3.

Notes:

- The ENS160 dashboard launches one result window for one attached ENS160 evaluation kit
- After initial start-up allow min. 60 minutes of operation for adequate readings
- After each re-start allow min. 5 minutes of operation for adequate readings



# 3 Using the Graphical User Interface

## 3.1 Graphical Views

Whenever the Dashboard application software is running, the following kinds of windows are presented. You can see the ENS160 Dashboard version above the ScioSense logo on the left-upper corner.

On the left side of the window, users can switch from different options before or during measurement.

ENS160 Dashboard v1.0.0		- 0
Scios	ense <sup>.</sup> Dashboard <sup>(1)</sup>	
Dashboard	Select an Evaluation Kit	
Graphs Operating Mode	ENS160	
Logging Settings	UID: 5200BECAE3 BL_FW: 1.0.1 FW: 3.0.0	•
System		
ENS160 / 5200BECAE3 Operating Mode	IDLE	
Humidity Correction	OFF.	
eCO <sub>2</sub> 0 ppm AQI-U	TVOC 0 ppb	
RS1 0 kΩ	RS3 0 KΩ	
RS2 0 kΩ	RS4 0 kΩ	
Temperature	0.0 °C	
Relative Humidity	0 %	
Absolute Humidity	0.0 g/m <sup>3</sup>	
Dew Point	NaN °C	





# 3.1.1 Dashboard

Clicking on **Dashboard** on the left side of the window, user can find the UID number and Firmware version of the device ENS160 on the right side of the window.

# Dashboard <sup>()</sup>

Select an Evaluation Kit



# 3.1.2 Graphs

Selecting **Graphs** on the left side of the window, user will see three sections of drop-down menus i.e., **ENS160 Operating Mode, Graph Settings** and **Graph Selection**.

NS160 Operating Mod	le	Graph Settings	
Idle (ENS160: Off)	-	X Axis Values: Sample Count 🔻	
		✓ Use logarithmic scale for resistance graphs	
		Show sample value on mouse hover	
		✓ Auto Fit Graphs	
		Auto Fit Graphs	
		Auto Fit Graphs	
raph Selection		Auto Fit Graphs	
	▼ <b>℃</b> Ten	Auto Fit Graphs	
Image: Absolute Humidity [g/m³]         Image: CO2 [ppm]			

- ENS160 Operating Mode: From this drop-down menu, user could also switch among different operating modes, i.e.:
  - Deep Sleep (ENS160: Off)
  - Idle (ENS160: Off)
  - Standard (ENS160: On)



• **Graph Settings:** With one drop-down menu and three checkboxes to choose the user 's preferred way of data visualization.

There are two options in X Axis Values setting of drop-down menus:

- **Sample value:** X Axis Values shows the counting number of the sampling points.
- **Date and Time:** X Axis Values shows the corresponding date and time of measurement sampling points.

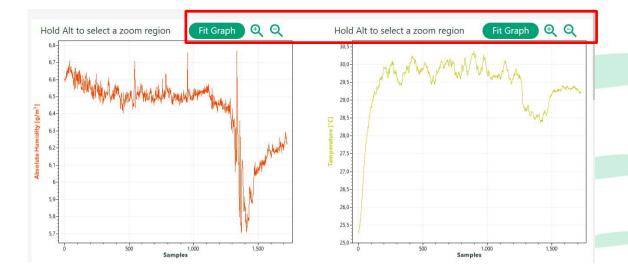
There are three checkboxes as shown below and two of them are activated by default:

- Use logarithmic scale for resistance graphs
   Show sample value on mouse hover
   Auto Fit Graphs
  - By activating /deactivating Use logarithmic scale for resistance graphs check box, Y-axis scale could be switched from logarithmic scale to linear scale.
  - When **Show sample value on mouse hover** checkbox is activated, cursor with dotted cross lines appears which could be pointed to the interested position of the data curve, and the corresponding values are shown at the bottom of the graph.





- By default, the Auto Fit Graphs checkbox is activated. If it is deactivated, then Fit Graph, zoom in and zoom out functions will become activated with icons color changing from grey to green as shown below. Move the cursor to the graphs and then pressing left mouse button, the arrow cursor will change to hand cursor in the user can move hand cursor around to observe not only actual measurement data, but also measurement data in the past. Hold Alt to select a zoom region to zoom in and check sensor performance in detail. To zoom out click Fit Graph icon.





• **Graph Selection**: There are six graphs being presented simultaneously. User can use the drop-down menus with twelve options to choose six graphs which should be displayed in the open window. These twelve graph options are listed below:

ENS160 Dashboard v1.0.0		ENS160 Dashboard v1.0.0	
ScioSense	ENS160 Operating Mode	ScioSense	ENS160 Operating Mode
	Standard (ENS160: On)	2	Standard (ENS160: On)
Dashboard		Dashboard	
Graphs Operating Mode		Graphs	
Logging Settings		Operating Mode	
System		Logging Settings	
	Graph Selection	System	
Start Measurement			Graph Selection
ENS160 / 5200BECAE3	Absolute Humidity [g/m³]	Start Measurement	Graph Selection
Operating Mode STANDARD	Absolute Humidity [g/m <sup>3</sup> ]	_	Absolute Humidity [g/m³] 🔻 🏼
Humidity Correction ON	Dew Point [°C]	ENS160 / 5200BECAE3	Temperature [°F]
eCO <sub>2</sub> 460 ppm TVOC 42 ppb	Temperature [°C]	Operating Mode STANDARD	
AQI-U 1	Hc Temperature [°F]	Humidity Correction ON	Properties (K) eCO <sub>2</sub> [ppm]
RS1 2016 kΩ RS3 309 kΩ	Temperature [K]	eCO <sub>2</sub> 460 ppm TVOC 42 ppb	TVOC [ppb]
RS2 1333 kΩ RS4 257 kΩ	eCO <sub>2</sub> [ppm]	AQI-U 1	RS1 [kΩ]
Temperature 29.4 °C	TVOC [ppb]	RS1 2016 kΩ RS3 309 kΩ	
Relative Humidity 23 % Absolute Humidity 6.7 g/m <sup>3</sup>	E	RS2 1333 kΩ RS4 257 kΩ	6 RS3 [kΩ]
Dew Point 5.9 °C	S S THE AND AN ANALY MAN		<sup>8</sup> RS4 [kΩ]
· · · · · · · · · · · · · · · · · · ·	H 64	Temperature 29.4 °C	á.



#### 3.1.3 Operating Mode

When choosing **Operating Mode**, three different operating modes i.e. (**Deep Sleep**, **Idle**, **Standard**) can be selected. By default, ENS160 is set with **IDLE** mode and RH&T compensation are activated. By choosing **Standard**, user can do standard gas sensing measurements.

# Operating Modes and Related Options <sup>①</sup>

Select Operating Mode

OP Modes	RHT comp.	Description
Deep Sleep		Lowest power operational mode, temperature and humidity sensing only
Idle		Idle mode, temperature and humidity sensing only
Standard	~	Standard mode, temperature, humidity and gas sensing

### 3.1.4 Logging Setting

Clicking on Logging Setting on the left side of the window, user can see on the right side

of the window as below:

Per default all data will be logged automatically with timestamps. By activating to choose using decimal points or decimal comma data formats.

The default logging interval is 1s in Standard mode and could be set by the drop-down menu to different values.

Maximum Logfile Size could also be set in advance by using drop-down menu, the default size is 1024MB.

Current file will be saved with a default logging file name as stated in the window i.e., ENS160\_UID ID\_xxxx.csv



Settings	
Enable Logging	
Use decimal point (e.g. 1.5)	Use decimal comma (e.g. 1,5)
Logging Interval (s)	1 🗢
Maximum Logfile Size (MB)	1024
Current File	
ENS160 5200BECAE	3_637480490463597519.csv

To view the location where the current logging data is saved, place mouse cursor over the logging file name or directly click "View Logfiles" button directly navigating to the default folder with saved data log file. Click "Change Location" to freely change the location where the log data file should be saved.

#### 3.1.5 System

Clicking on **System** on the left side of the window, user can see on the right side the Hardware Information and do **Reset Dashboard** to factory settings.





apart from that, below:

- Reset Sensors
- Upload New Firmware File
- View Trims

These are mainly for maintenance purposes with support from ScioSense.

Reinitialize sensor to default factory settings. This includes reset of paselines. This cannot be undone.
Reset Sensors
Firmware Update
Upload New Firmware File
Trims

3.2 Start and Termination of Measurement

To start or terminate the standard mode of operation, just simply click Start/Stop Measurement button.

ENS160 Dashboard v1.0.0		– a ×	
ScioSense	ENS160 Operating Mode	Graph Settings	
S.	Standard (ENS160: On)	X Axis Values: Sample Count	
Dashboard		✓ Use logarithmic scale for resistance graphs	
Graphs		Show sample value on mouse hover	
Operating Mode		Auto Fit Graphs	
Logging Settings System			
	Craph Solaction		
Start Measurement	Graph Selection		
<sup>с</sup>	- Absolute Humidity [g/m³] ▼	Temperature [°C]	
ENS160 / 5200BECAE3	- <b>L</b> eCO <sub>2</sub> [ppm] - <b>L</b>	TVOC [ppb]	
Operating Mode STANDARD	-] RS1 [kΩ]]	RS2 [kΩ]	
Humidity Correction ON			
eCO <sub>2</sub> 460 ppm TVOC 42 ppb		h Q Q Hold Alt to select a zoom region Fit Graph Q Q	
AQI-U	Hold Alt to select a zoom region Fit Grap	h Q Q Hold Alt to select a zoom region Fit Graph Q Q	
RS1 2016 kΩ RS3 309 kΩ	6.9-	200 M MA MA A	
RS2 1333 kΩ RS4 257 kΩ	6.8	205 / W W WWW M	
Temperature 29.4 °C		29.0	
Relative Humidity     23 %       Absolute Humidity     6.7 q/m <sup>3</sup>	En es Many Man Man Man Man Man Man	2 285 WVV	
Absolute Humidity 6.7 g/m <sup>3</sup> Dew Point 5.9 °C	1 64 MAN	273	
		1 27,5-1 V	



# 3.3 Current Measurement Real Data Display

When a measurement is running, the field marked within red frame of below picture is for current measurement real data display.

O ENS160 Dashboard v1.0.0	- 0 ×
ScioSense	ENS160 Operating Mode Graph Settings
Dashboard	Standard (ENS160: On)
Graphs Operating Mode	Show sample value on mouse hover
Logging Settings System	
Start Measurement	Graph Selection
ENS160 / 5200BECAE3 Operating Mode STANDARD	Imposed of values (g), m (s)     Imposed of (c)       Imposed of (c)     Imposed of (c)       Imposed of (c) <t< th=""></t<>
Humidity Correction         ON           eCO2         460 ppm         TVOC         42 ppb           AQI-U         1         1	Hold Alt to select a zoom region Fit Graph Q Q Hold Alt to select a zoom region Fit Graph Q Q
RS1 2016 kΩ RS3 309 kΩ RS2 1333 kΩ RS4 257 kΩ	69 68 68
Temperature     29.4 °C       Relative Humidity     23 %       Absolute Humidity     6.7 g/m³       Dew Point     5.9 °C	

Items displayed are descripted in detail in the table below:

Label	Description
ENS160.DATA_ECO2 [PPM]	Equivalent CO <sub>2</sub> concentration <sup>1</sup>
ENS160.DATA_TVOC [PPB]	Concentration of total volatile organic compounds (TVOC) <sup>1</sup>
Relative humidity [%RH]	Ambient Relative humidity
Temperature [°C]	Ambient temperature
AQI-U	Air Quality Index according to UBA (Umweltbundesamt)
Absolute Humidity[g/m³]	Grams are used to measure the water vapor, and the air is measured in cubic meters
Dew Point[°C]	The temperature at which water vapor turns into a liquid and creates condensation
Rs1, Rs2, Rs3, Rs4[kOhm]	Raw data of sensing material on four hotplates

<sup>1</sup> See ENS160 datasheet for a detailed description of the signals.

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Revision	Date	Comment	Page
1	2021-04-06	Initial version	All
2	2021-07-30	Update Section1.1 first paragraph	3
	2021-07-30	Update Section1.2 by adding Dashboard Software download link	4

# 5 Revision Information

#### Note(s) and/or Footnote(s):

- 1. Page and figure numbers for the previous version may differ from page and figure numbers in the current revision.
  - 2. Correction of typographical errors is not explicitly mentioned.