HDC1000EVM GUI User's Guide

User's Guide

Literature Number: SNAU161
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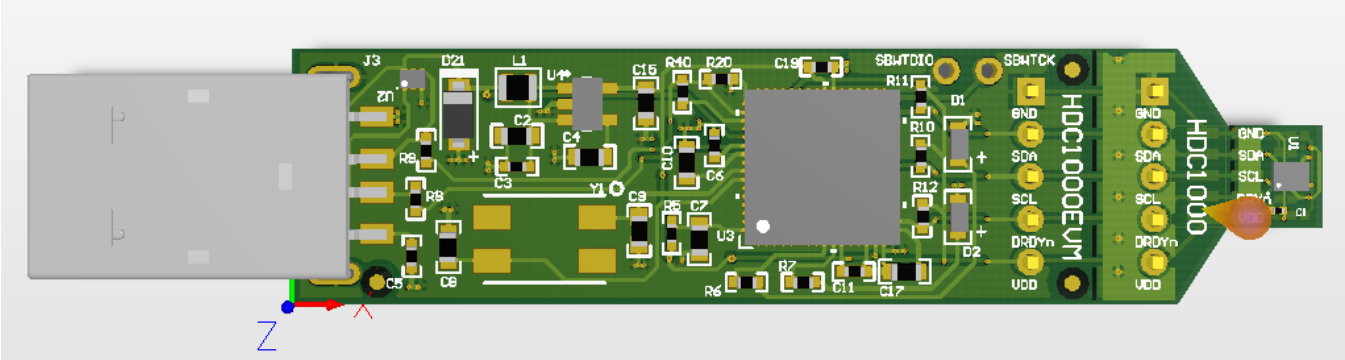
HDC1000 Evaluation Module Overview



The HDC1000 Evaluation Module (EVM) enables the user to test the humidity and temperature measurement capabilities of the HDC1000. The EVM is a USB device used with a host computer and controlled by a Graphical User Interface (GUI) software.

To quickly get started with the HDC1000 GUI, follow the steps below to load and configure a device.

1.1 Setup Requirements

1. The HDC1000 GUI and drivers must be installed on the host PC (download the software from TI web site)
2. The USB port of the EVM must be connected to the host PC.

1.2 Loading and Running

1. Plug the EVM into the host computer. The host computer should automatically detect the device as an HDC1000EVM.
2. By default the I2C address of the HDC1000 is set to 0x40 (the address is set on the EVM), if the address on the EVM is modified; change it accordingly in the I2C address field.
3. Launch the GUI. It automatically reads all the configuration registers.
4. Push the Start button to stream data for Humidity and Temperature.

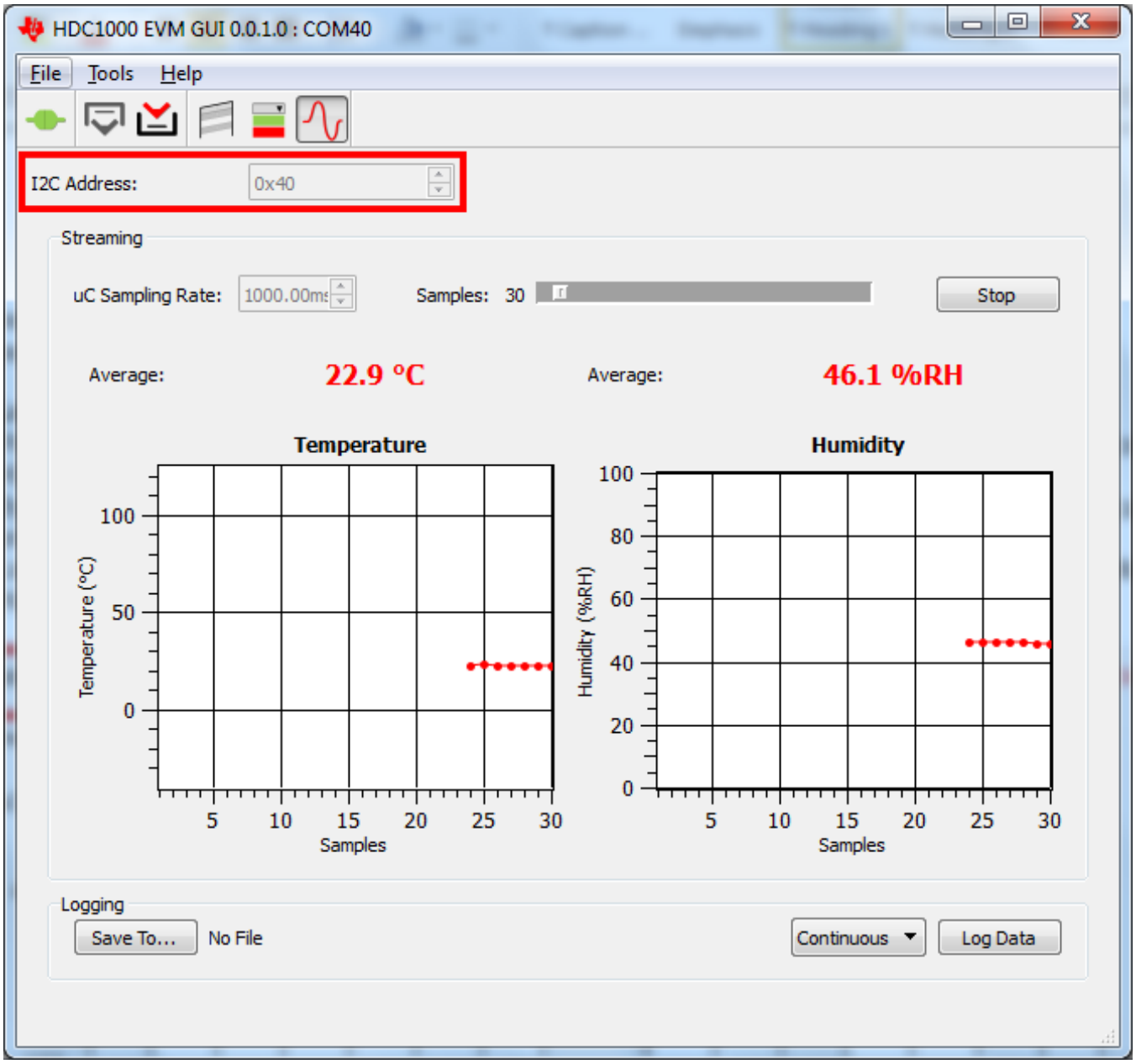


Figure 1-1. Streaming Section

1.3 Reloading the Device

If the EVM is disconnected from the host at any time, simply reconnect the device and the GUI will automatically discover and re-establish the streaming abilities with the device.

1.4 Configuring the Device Manually

1. To configure the internal registers of the HDC1000 the streaming of the data must be stopped. Click on "Stop" in the Streaming Section to stop streaming.

Figure 1-2. Stop Streaming

2. Click on the "Configuration Section" icon in the main window toolbar.

Figure 1-3. Configuration Section Icon

3. Select the parameter to change. Changes are applied immediately.

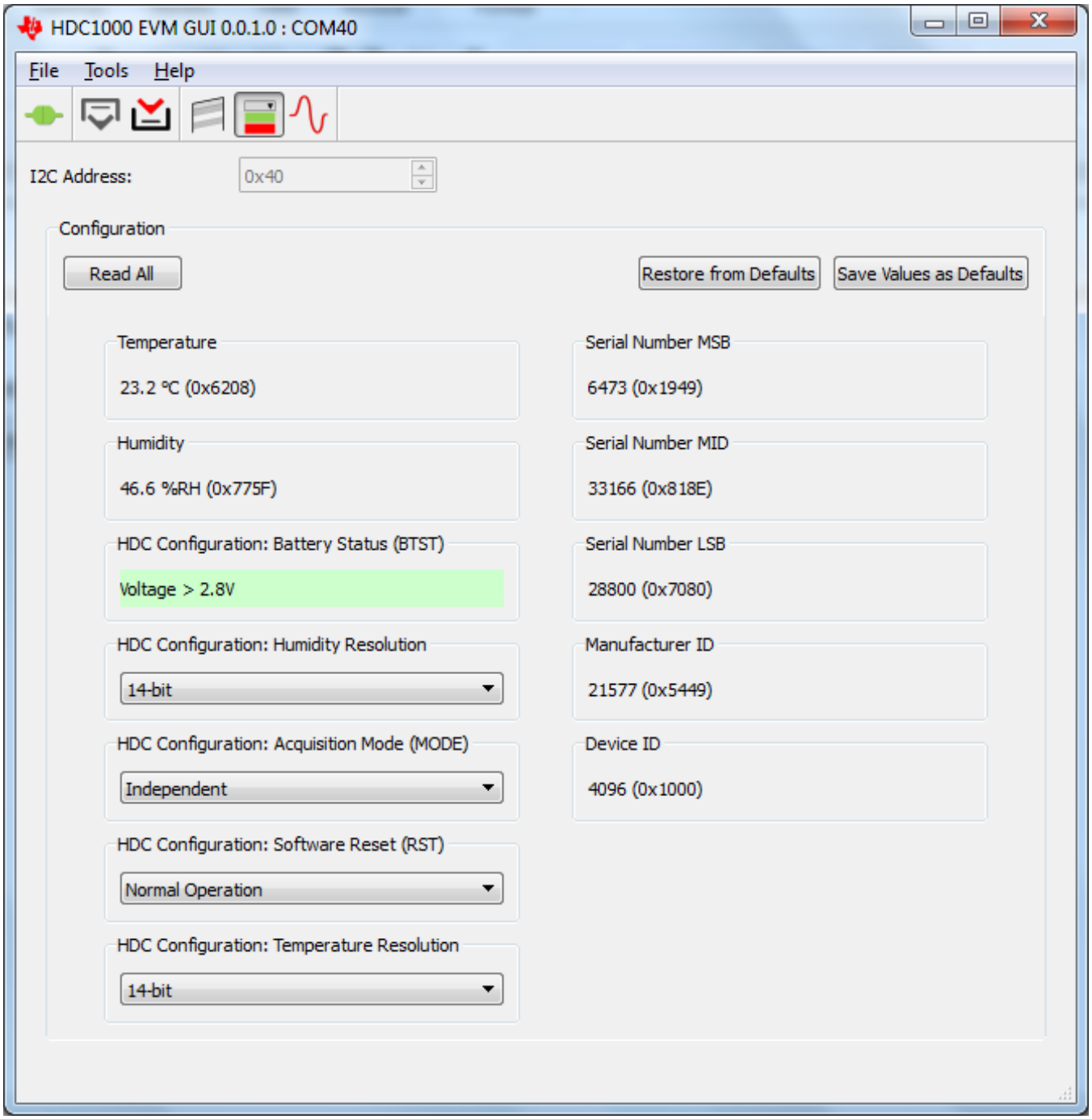


Figure 1-4. Configuration Section

Configuration Section

2.1 Saving Device Configuration

1. Click on the "Save" icon in the toolbar.

Figure 2-1. Save Icon

2. Type a name for the file.

2.2 Configuring the Device with Configuration File Defaults

1. To configure the HDC1000 with a configuration file the streaming must be stopped.
2. Click on the "Open" icon in the toolbar.

Figure 2-2. Open Icon

3. Select the configuration file and press open.

After the configuration file is loaded, the values are written once to all supported registers. To restore default values (values load at power on of the EVM), click on "Restore from Defaults".

It is also possible to store a default configuration in the micro controller by clicking the "Save Values as Defaults". At the power on of the EVM the HDC1000 is configured according to the saved configuration in the micro controller.

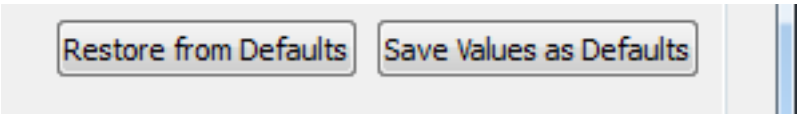


Figure 2-3. Restore Defaults

Relative Humidity GUI Overview

The relative humidity GUI provides graphical configuration and streaming support for the HDC1000. The GUI package includes drivers for use with the HDC1000 Evaluation Modules (EVM). The EVM provides a device abstraction layer for the GUI to communicate with the HDC1000 through I2C, and includes other extended functionalities.

3.1 Host Platform Requirements

The HDC1000EVM GUI supports:

- 32-bit and 64-bit Windows 7
- 32-bit and 64-bit Windows XP

The host machine is required for device configuration and data streaming.

3.2 EVM Information

The GUI can perform the following with the HDC1000EVM:

- Configure register data through I2C (SCL, SDA)
- Stream register data through I2C
- Detect interrupts through I2C and DRDYn

3.3 Hardware Setup

Below are the steps which are necessary to prepare the EVM for the GUI:

- The GUI must be installed on the host.
- The EVM driver must be installed on the host.
- The EVM must be connected to a full speed USB port (1.0 or above).

3.4 Icon Toolbar

The icon toolbar contains various icons which navigate between sections and perform various functions.

Figure 3-1. Icon Toolbar

Table 3-1. Toolbar description

NAME	DESCRIPTION	ICON
Connection Information	Indicates whether an EVM is connected to the PC, and if so, provides details of the connected device.	• EVM is connected  • EVM is disconnected 

Table 3-1. Toolbar description (continued)

NAME	DESCRIPTION	ICON
Open	Opens saved register settings and defaults	
Save	Saves all current register settings and defaults	
Register Settings	Shows Register Settings Section	
Configuration	Shows Configuration Section	
Streaming	Shows Streaming Section	

3.5 Connecting and Disconnecting

Device discovery, connection, and disconnection are performed automatically.

3.6 General Configuration

In the configuration section, all registers of the device can be accessed. To access this section, streaming must be stopped.

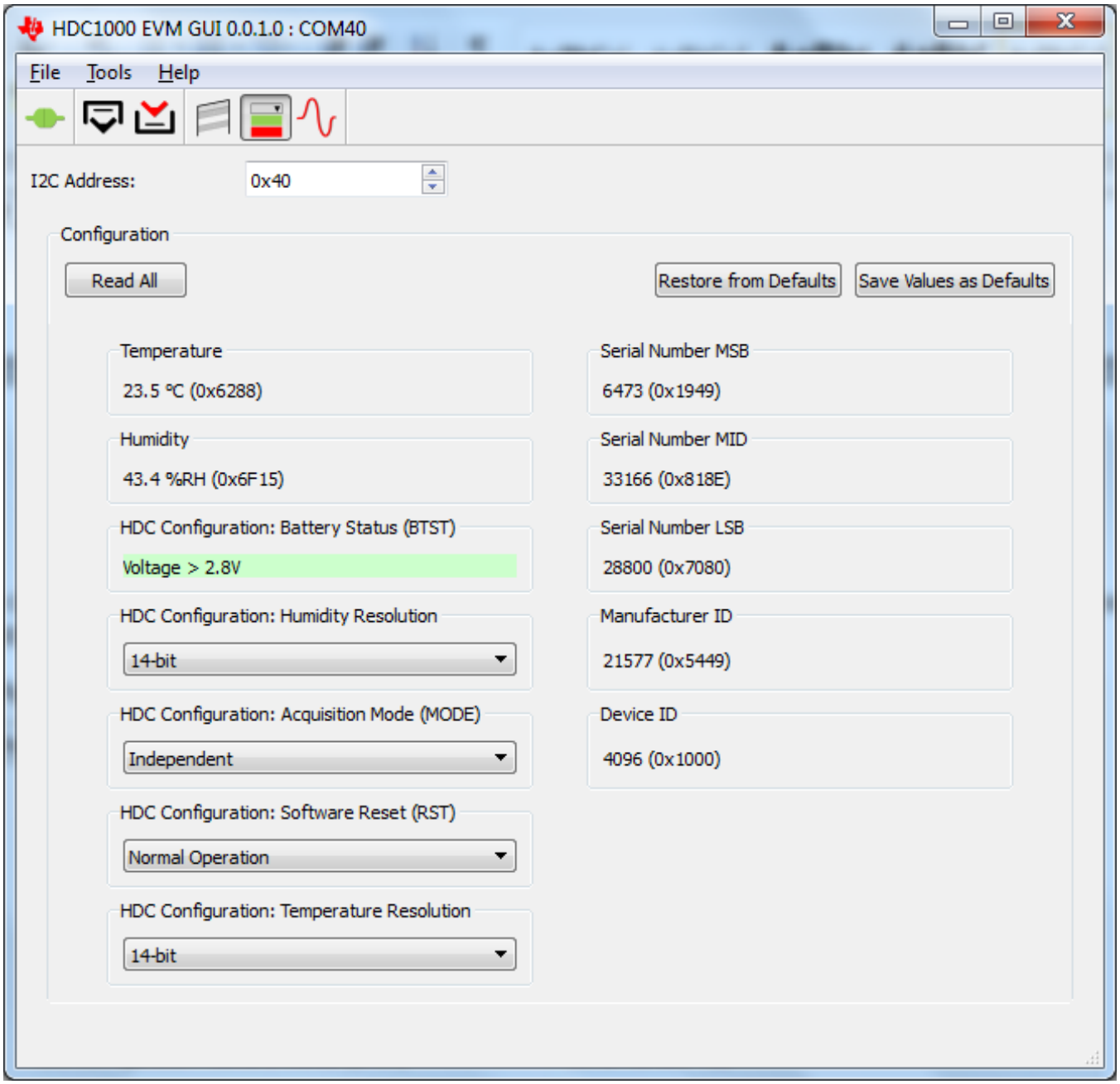


Figure 3-2. Configuration Section

In the configuration window, select the parameter to change. Changes are applied immediately. Press “Read All” to refresh all configuration, status, and data. Press “Restore Defaults” to write values from the default column (if they exist) to the current register value.

3.7 Register Settings

In the register settings section, all registers of the device can be accessed. To read/write registers, streaming must first be stopped by pressing the "Stop" button.

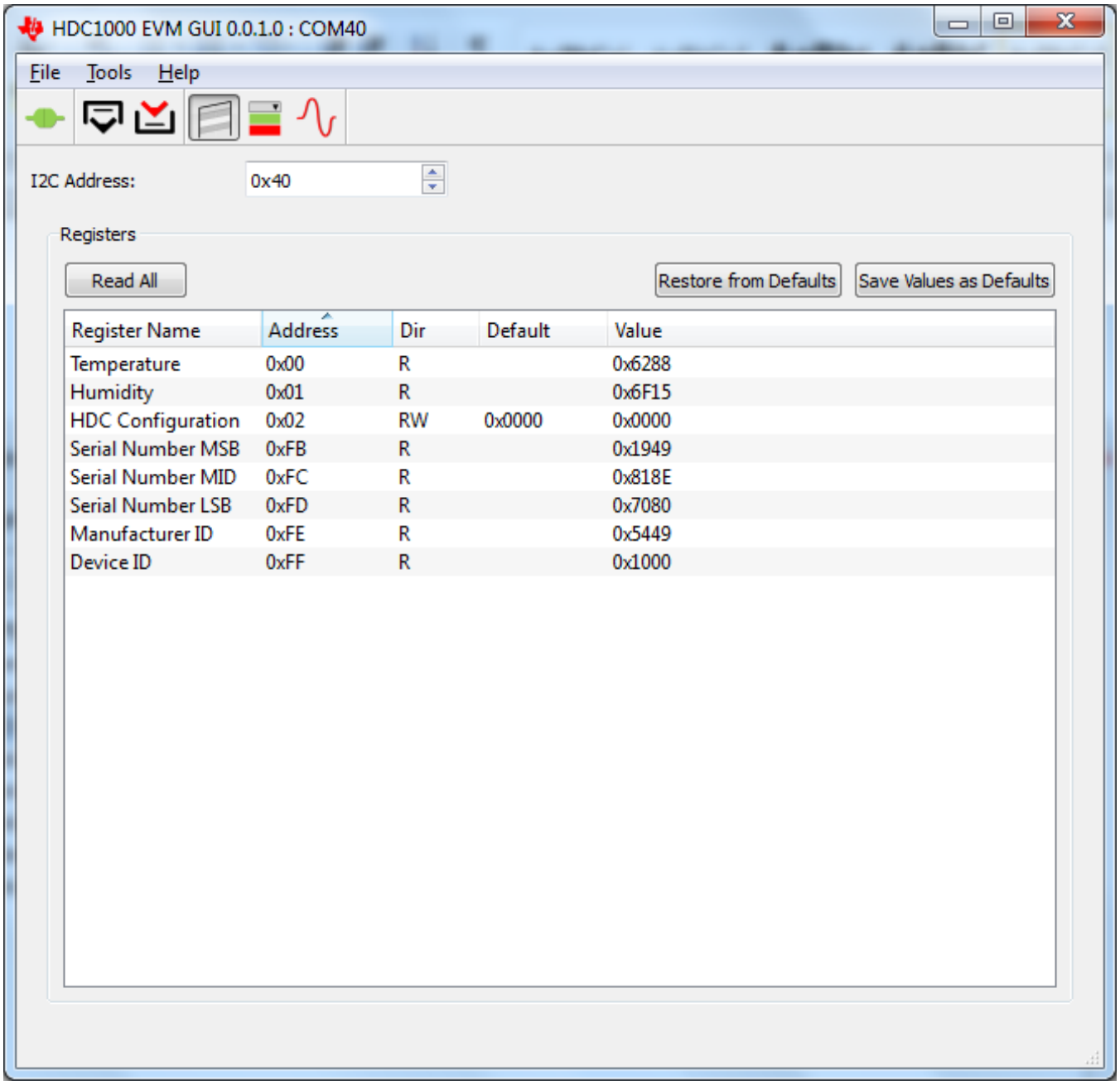


Figure 3-3. Register Settings

Double-click on a register in the table to read/write. If a register is read only (indicated by a "R" in the Dir column), the selected register is read immediately and the table value updated. If the register is read/write (indicated by a "RW" in the Dir column), a dialog pops up and the user can choose a new register value. If the value is not changed, it will default to a read.

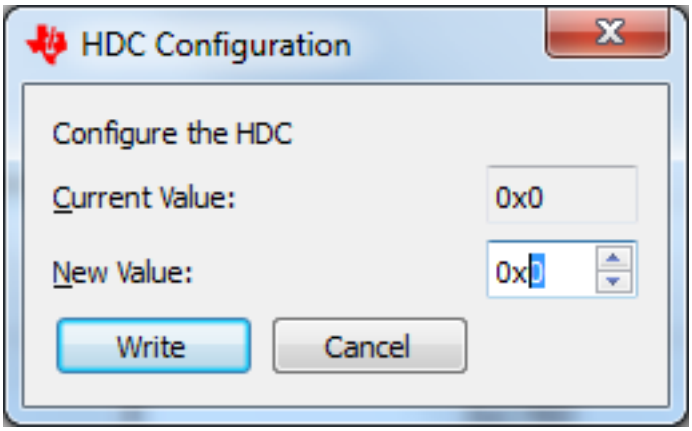


Figure 3-4. Read/Write Register Dialog

Press “Read All” to refresh all configuration, status, and data.

Press “Restore Defaults” to write values from the default column (if they exist) to the current register value.

3.8 Data Streaming

Data is streamed from the EVM to the GUI when the "Start" button is pressed. The sampling rate of the EVM and the number of samples to plot can be configured.

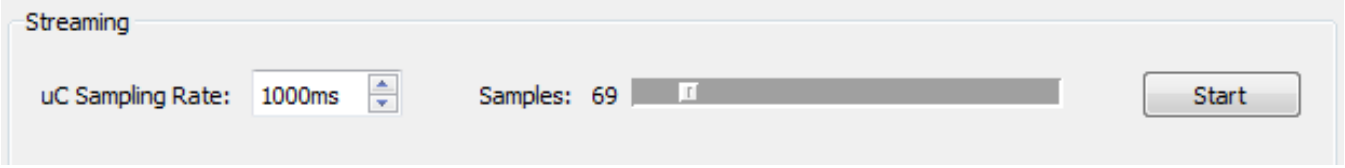


Figure 3-5. Streaming Configuration

The sampling rate can only be set when the streaming is stopped. The GUI acquire always Temperature and Humidity, so in order to minimize any offset caused by self-heating of the sensor, do not exceed 1S/s (1 Temp + 1 RH measurement per second).

3.9 Average, Point, Min, Max Values

Average is the default display type. To toggle between sample point, min, and max values, right-click the display.

Display options	Functionality
Average	The average of all the data points currently in the plot
Point	The newest data point value currently in the plot
Min	The minimum data point value currently in the plot
Max	The maximum data point value currently in the plot

A larger number of samples would result in a larger averaging window.

3.10 Zooming and Scaling

Plots are interactive. Zooming options are available by right-clicking the plot and selecting an option from the context menu.

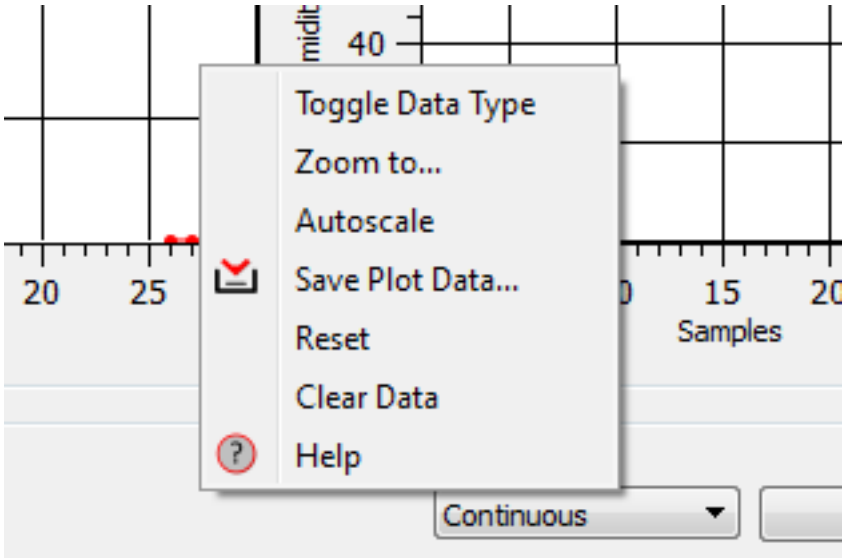


Figure 3-6. Plot Context Menu

View Option	Functionality
Zoom to...	Zooms to window
Autoscale	Autoscales the data in the plot
Reset	Resets the Zoom window to its default setting
Help	Displays shortcut keys and mouse mappings for scaling and zooming

3.11 Saving and Loading

3.11.1 Configurations

Configurations can be saved and loaded. To save a configuration, click on the "Save" icon. To load a configuration, click on the "Open" icon.

Configurations include all register names, current values, and default values. They are saved in Comma Separated Files (*.csv) and can be modified using a text or spreadsheet editor.

3.11.2 Plot Data

Right-click a plot and select “Save Data…”

Data can be saved to a new file or an existing one. If an existing file is chosen, data will be appended.

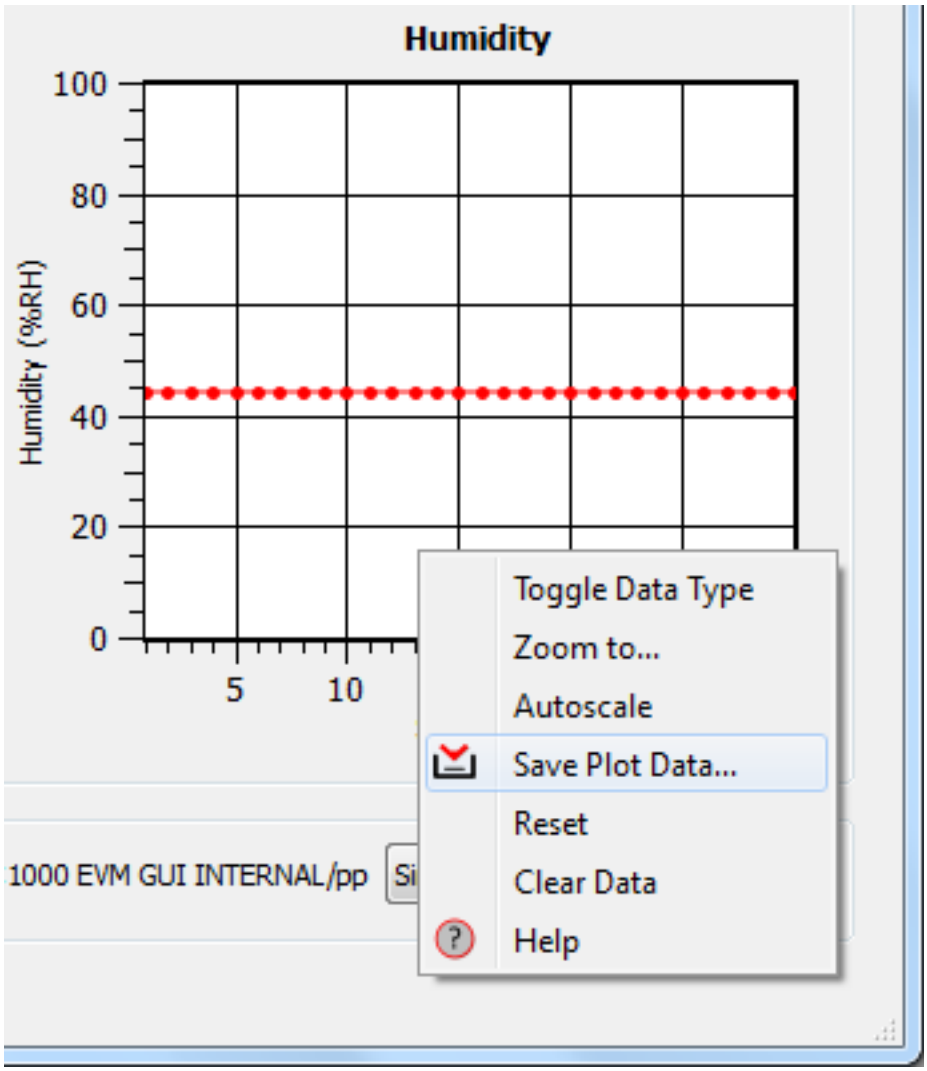


Figure 3-7. Saving Data from a plot

3.11.3 Data Logging to a file

It is also possible to save all the data collected by the GUI in a log file. First of all click on the "Save To…" button to create and name a data log file. Next click the "Log Data" button. The data will be saved in the Comma Separated Value format.

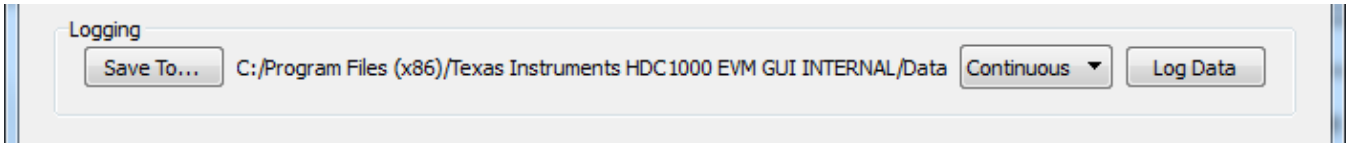


Figure 3-8. Data Log

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Industry Canada Compliance (English)

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This radio transmitter has been approved by Industry Canada to operate with the antenna types listed in the user guide with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

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Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés dans le manuel d'usage et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

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2. Use EVMs only after user obtains the license of Test Radio Station as provided in Radio Law of Japan with respect to EVMs, or
3. Use of EVMs only after user obtains the Technical Regulations Conformity Certification as provided in Radio Law of Japan with respect to EVMs. Also, do not transfer EVMs, unless user gives the same notice above to the transferee. Please note that if user does not follow the instructions above, user will be subject to penalties of Radio Law of Japan.

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