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## Description

The ZMID520x Evaluation Kit allows sensor module evaluation, laboratory setup, and module calibration development for the ZMID520x Family of Inductive Position Sensor ICs.

- ZMID5201: analog interface
- ZMID5202: PWM interface
- ZMID5203: SENT interface

The main purpose of the ZMID520x Evaluation Kit is communication between the user's computer and the ZMID520x. The computer sends commands and data via its USB port to the ZMID Communication Board.

The microcontroller on the Communication Board interprets these commands and relays them to the ZMID520x located on the ZMID520x Demo Board using the one-wire interface (OWI) communication interface.

The microcontroller also forwards data bytes from the ZMID520x back to the computer via the USB connection. These bytes can be sensor readings, raw analog-to-digital converter (ADC) data from analog outputs, or ZMID520x EEPROM contents.

The *ZMID520x EVK Application Software* is a graphical user interface (GUI) that is provided online for the kit. It supports all ZMID520x configurations and enables the user to understand the functionality of the ZMID520x as well as perform measurements.

## Features

- USB "plug and play" – no driver installation needed
- Small ZMID Communication Board: 5 cm × 8 cm
- One-wire communication interface (OWI) enables quick and easy configuration and calibration of the ZMID520x using the user's computer
- PWM, analog, or SENT reading of the output depending on product
- The modular design allows easy swapping of ZMID520x Demo Boards
- Ability to connect and evaluate an external module board
  - No external power supply needed
  - External module is supplied from the ZMID520x Demo Board

## Kit Contents

- ZMID520x Rotary 360° Demo Board with printed sensor coil
- ZMID Communication Board
- Micro-USB cable
- Kit software is available for download from the IDT web site:
  - [www.IDT.com/ZMID5201-EVK](http://www.IDT.com/ZMID5201-EVK)
  - [www.idt.com/ZMID5202-EVK](http://www.idt.com/ZMID5202-EVK)
  - [www.IDT.com/ZMID5203-EVK](http://www.IDT.com/ZMID5203-EVK)

## ZMID520x Evaluation Kit



**Important Notes**

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- (i) delivered hardware or software
- (ii) non-observance of instructions contained in this manual and in any other documentation provided to user, or
- (iii) misuse, abuse, use under abnormal conditions, or alteration by anyone other than IDT.

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**Restrictions in Use**

IDT's ZMID520x Evaluation Kit, consisting of the ZMID Communication Board, ZMID520x Demo Board, and micro-USB cable, and the *ZMID520x AID EVK Application Software* are designed for evaluation and configuration of the ZMID520x product family only. IDT's ZMID520x Evaluation Kit hardware and software must not be used for characterization measurements in terms of replacing calibrated laboratory environment and measurement devices.



**Important Equipment Warning:** Ensure the correct connection of all cables. Supplying the board using the wrong polarity could result in damage to the board and/or the equipment.

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## 1. Setup

### 1.1 Required User Equipment

A Windows®-based computer is required for interfacing with the kit and configuring the ZMID520x.

### 1.2 User Computer Requirements and Setup

#### 1.2.1 Computer Requirements

The user must have administrative rights on the computer to download and install the *ZMID520x EVK Application Software* for the kit.

The computer must meet the following requirements:

- Windows® XP SP3, Vista SP1 or later, 7 (including SP1), 8, 8.1, or 10. **Touch screens are not supported.**
- Supported architecture: x86 and x64
- Available USB port
- Internet access for downloading the *ZMID520x EVK Application Software*

#### 1.2.2 Software Installation and Setup

The *ZMID520x EVK Application Software* is not included with the kit. To ensure use of the latest version of the software, it is available for download free of cost in zip file format from the IDT web site on the web pages given on page 1.

Follow these procedures to install the *ZMID520x EVK Application Software*:

1. After downloading the zip file to the user's computer, extract the contents of the zip file.
2. Double-click on the extracted *setup.exe* file to activate the installation.
3. Follow the standard installation instructions displayed on the screen and change the installation path if required. If the default path settings have been used, the software automatically completes the installation and creates an access link on the user's computer under *Start > All Programs > IDT > ZMID520x EVKIT*. The installation dialog offers the option to create a desktop short-cut icon for the software.

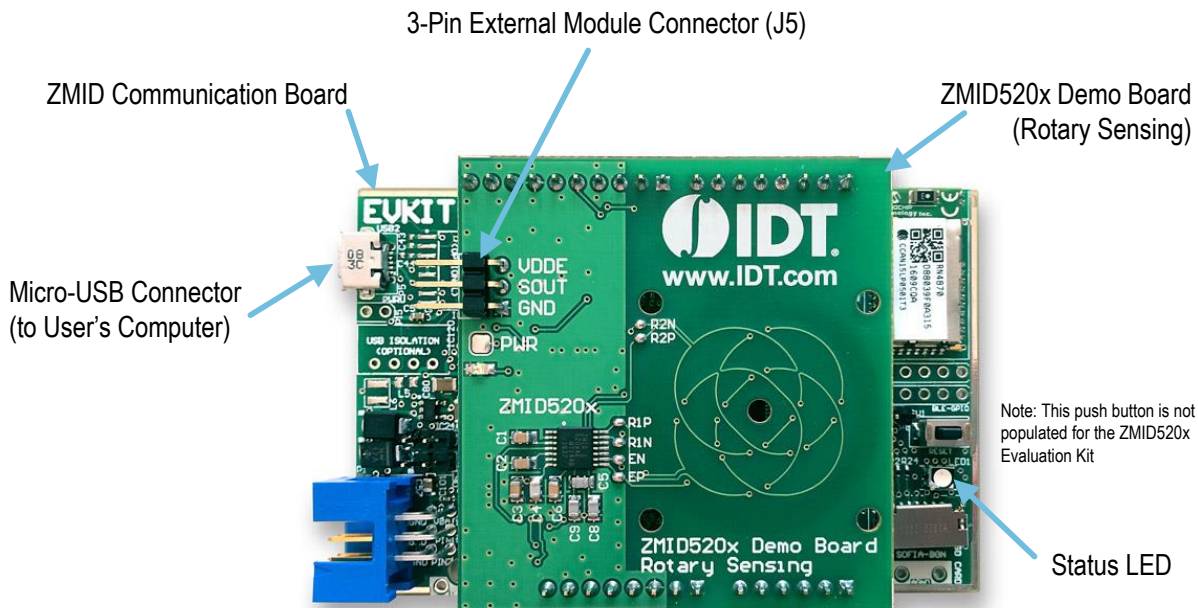
## 1.3 Hardware Setup

This section describes the basic hardware setup of the ZMID5202 Evaluation Kit and provides a brief overview on the components.

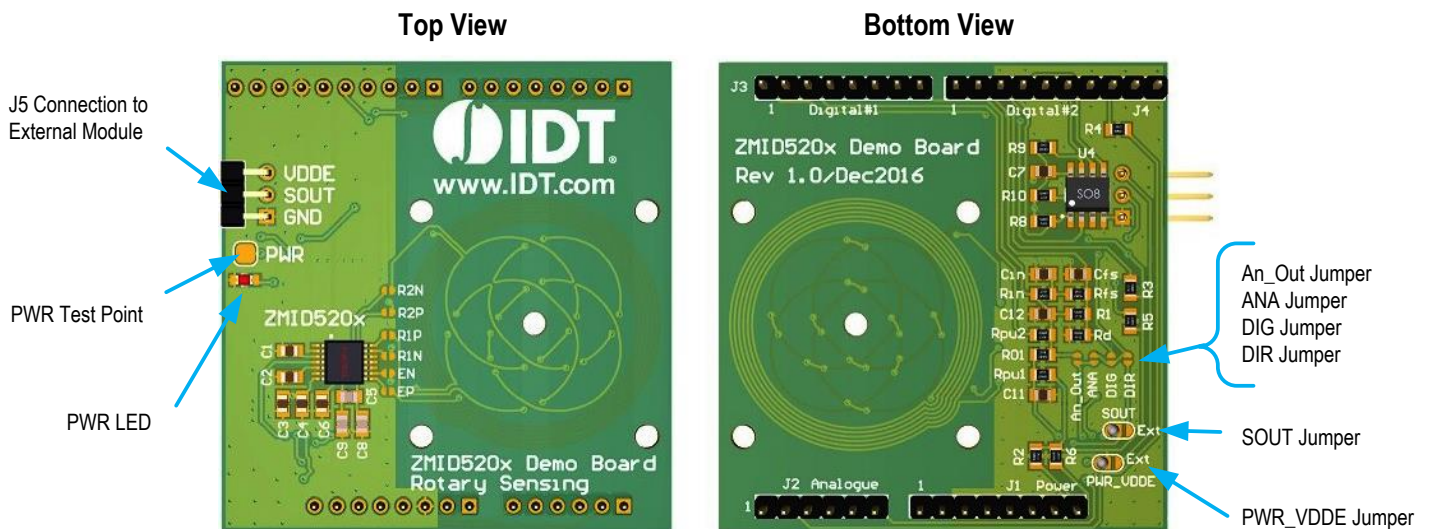
### 1.3.1 Overview of the Hardware

Figure 1 shows the assembled boards for the ZMID5202 Evaluation Kit.

**Figure 1. ZMID520x Evaluation Kit**



**Figure 2. ZMID520x Rotary 360° Demo Board – Overview**



**Table 1. ZMID520x Rotary 360° Demo Board: Key Components and Connector Descriptions**

Note: See Figure 2 and section 4 for the locations of the jumpers referenced in this table. The jumper settings vary depending on the ZMID520x product number and depending on whether a user-provided external module is connected (see section 1.4). Section 4 gives the jumper settings if the user's external module is not used. Section 1.4 gives the settings when the user's module is used.

Connector	Description
J1, J2, J3, J4	Header strips connected to the ZMID Communication Board
J5	3-pin male connector for connecting external modules
ZMID520x	The ZMID520x IC (ZMID5201, ZMID5202, or ZMID5203 depending on the kit order code).
PWR	Test pin for VDD
PWR LED	Status LED for the VDD
SOUT	Jumper JP1 for connecting an external module
PWR_VDDE	Jumper JP2 for connecting an external module
DIR	Jumper JP3 – interface network
ANA	Jumper JP4 – interface network
DIG	Jumper JP5 – interface network
An_Out	Jumper JP6 – interface network



### 1.3.2 Connecting the Kit



**Important Equipment Warning:** Ensure the correct connection of all cables. Supplying the board using the wrong polarity could result in damage to the board and/or the equipment.

1. Ensure that the ZMID Communication Board is not connected to the computer.
2. Align the pin headers of the ZMID520x Demo Board with the headers of the ZMID Communication Board as shown in Figure 1 and slowly apply force on both sides to connect the two boards.
3. Connect the ZMID Communication Board to the computer using the micro-USB cable provided in the kit. Power is provided from the computer via the USB connection. No external power source is required.
4. The status LED on the ZMID Communication Board will turn on. This indicates that the board is ready to communicate with the *ZMID520x EVK Application Software*. The PWR LED on the ZMID520x Demo Board (see Figure 2) also turns on when the board is powered up.

### 1.4 External Module Connection

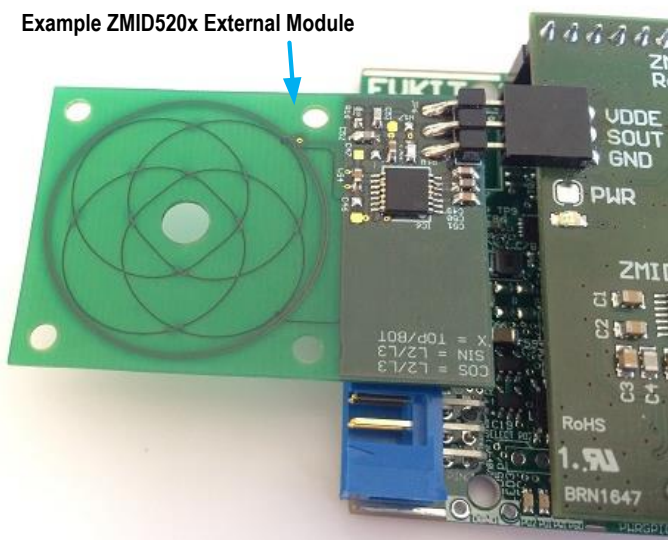


**Important Equipment Warning:** Ensure the correct connection of all cables. Supplying the board using the wrong polarity could result in damage to the board and/or the equipment.

There is an option to evaluate an external module by connecting it to the ZMID520x Demo Board. An external module is usually similar to the ZMID520x Demo Board but designed for a customized application. Since external modules can be equipped with ZMID5201, ZMID5202, or ZMID5203, all the interfaces (analog, PWM, SENT) can be supported when connecting to the 3-pin connector on the ZMID520x Demo Board; however jumper settings on the ZMID520x Demo Board must be modified depending on the interface type of the connected external module. See section 1.4.1 for a description of the hardware settings.

Before connecting an external module to the Demo Board ensure that the VDDE, SOUT, and GND pin connections on J5 match the module connector. Figure 2 shows an example of a rotary external module connected to the Demo Board.

**Figure 3. Example ZMID520x External Module Connected to the Demo Board**

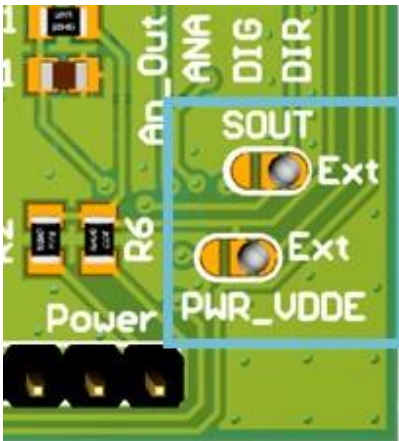


### 1.4.1 Jumper Settings for External Modules

To ensure that the correct interface network (located on the Demo Board) is used when reading the output signal of the ZMID520x, proper jumper settings are required on the bottom side of the Demo Board.

Whenever an external module is connected to the Demo Board, the jumpers SOUT and PWR\_VDDE must be switched to the “Ext” setting as shown in Figure 4. Additional jumper settings depend on the interface type of the ZMID520x IC populated on the external module. Table 2 describes the jumper settings for the different type of products.

**Figure 4. SOUT and PWR\_VDDE Jumper Settings for External Module**



**Table 2. Jumper Settings for Connecting External Modules Depending on the Interface Type**

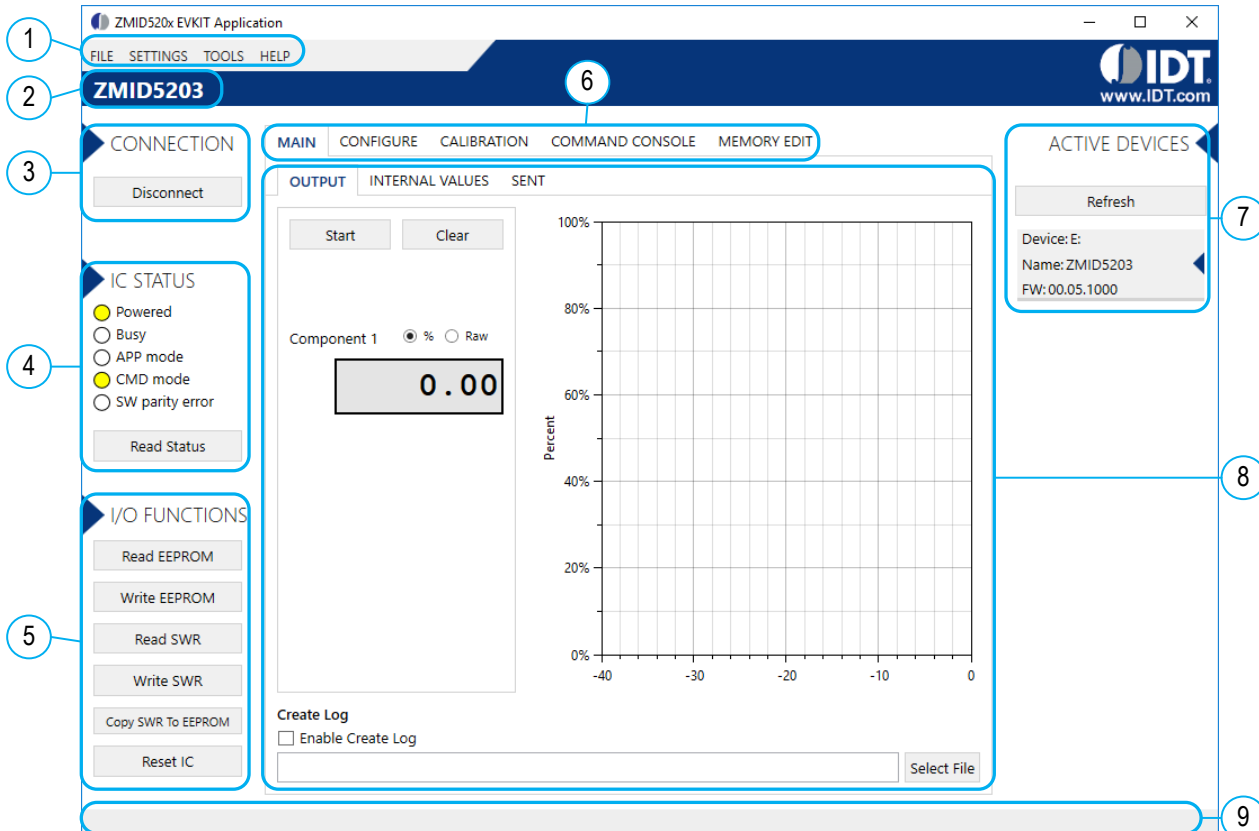
Connector	ZMID5201 Analog Interface	ZMID5202 PWM Interface	ZMID5203 SENT Interface
DIR (JP3)	Open	Closed	Closed
ANA (JP4)	Closed	Open	Open
DIG (JP5)	Open	Open	Open
An_Out (JP6)	Closed	Open	Open

## 2. ZMID520x EVK Application Software User Guide

### 2.1 Sections of the Display

The ZMID520x EVK Application Software provides a graphic user interface (GUI) for communicating with the kit. The GUI is displayed when the application is started. Figure 5 identifies the various sections of the display.

**Figure 5. Sections of the GUI Display – Example ZMID5203**



- 1 Menu bar: Contains settings and tools.
- 2 Information label: Displays the name of the connected device.
- 3 "CONNECTION" section: Displays connection-related options.
- 4 "IC STATUS" section: Displays status information from the connected device.
- 5 "I/O FUNCTIONS" section: Displays options to perform READ and WRITE actions to the connected device.
- 6 Navigation tabs: Used to switch between the different main window tabs.
- 7 "ACTIVE DEVICES" section: Displays a list of the currently connected communication boards.
- 8 Main window area: Displays options and information about the connected device.
- 9 Status bar: Displays status messages during operation.

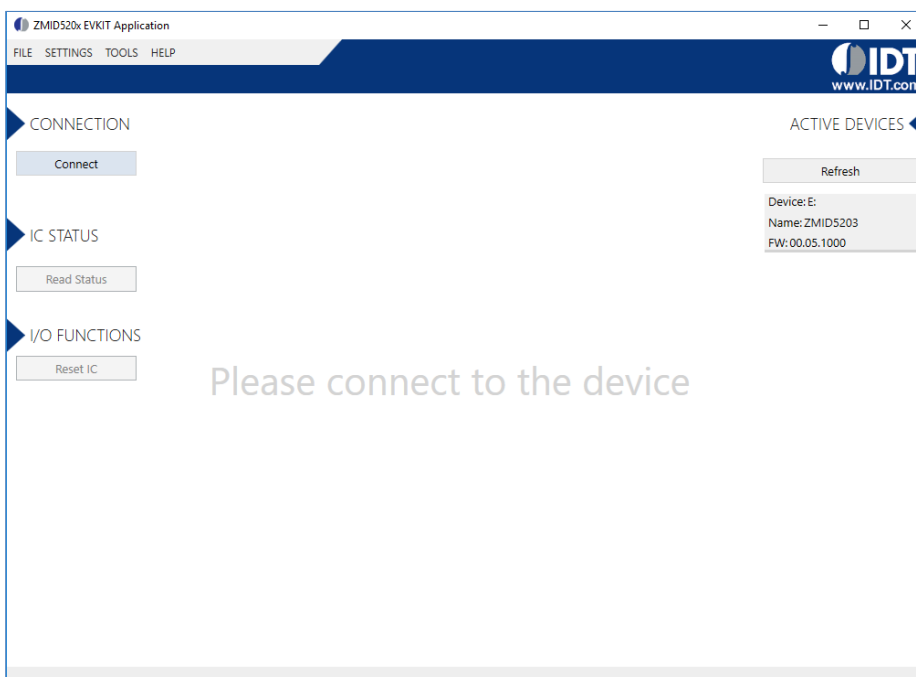
## 2.2 Getting Started

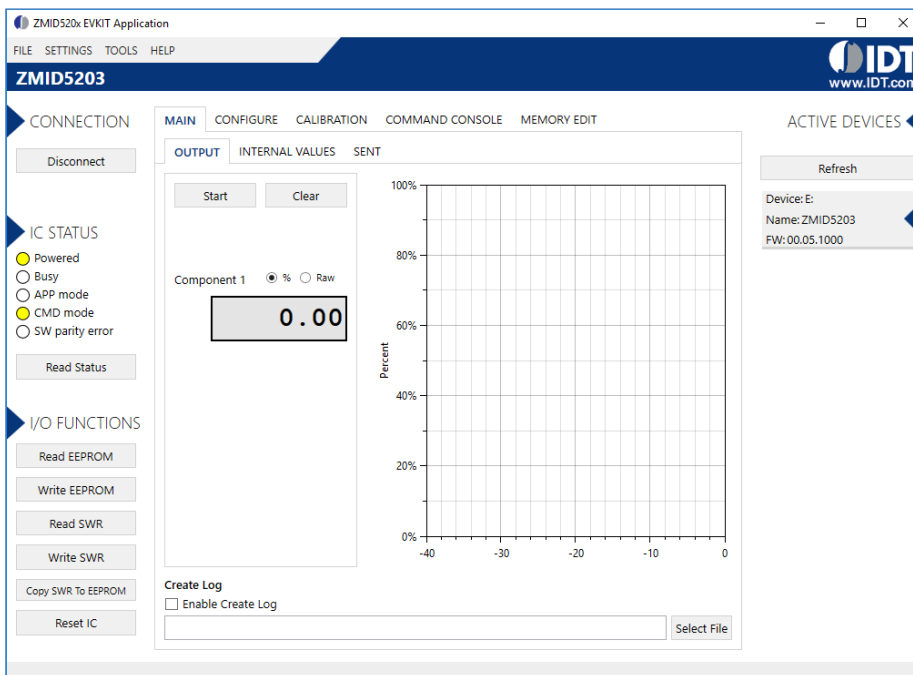
The following steps describe how to establish a connection to the ZMID520x Demo Board and perform measurements. The combination of a ZMID Communication Board and its connected ZMID520x Demo Board is referred to as the “device” in the GUI.

### 2.2.1 Connecting to a Device

1. Ensure that the ZMID520x Demo Board is properly connected to the ZMID Communication Board. See section 1.3.2.
2. Connect the ZMID Communication Board to the user’s computer using the micro-USB cable provided in the kit.
3. Start the GUI application.
4. The device will appear in the active devices section. If there are no other devices on the list, it will be automatically selected; otherwise select it by clicking on it.
5. If the device shows as unknown, manually identify the device first. For a description of how to manually identify a device, refer to section 2.6.
6. Click on the “Connect” button to initialize the connection.
7. After a successful connection, the GUI will display the contents of the main window area.

**Figure 6. Start-up Screen**

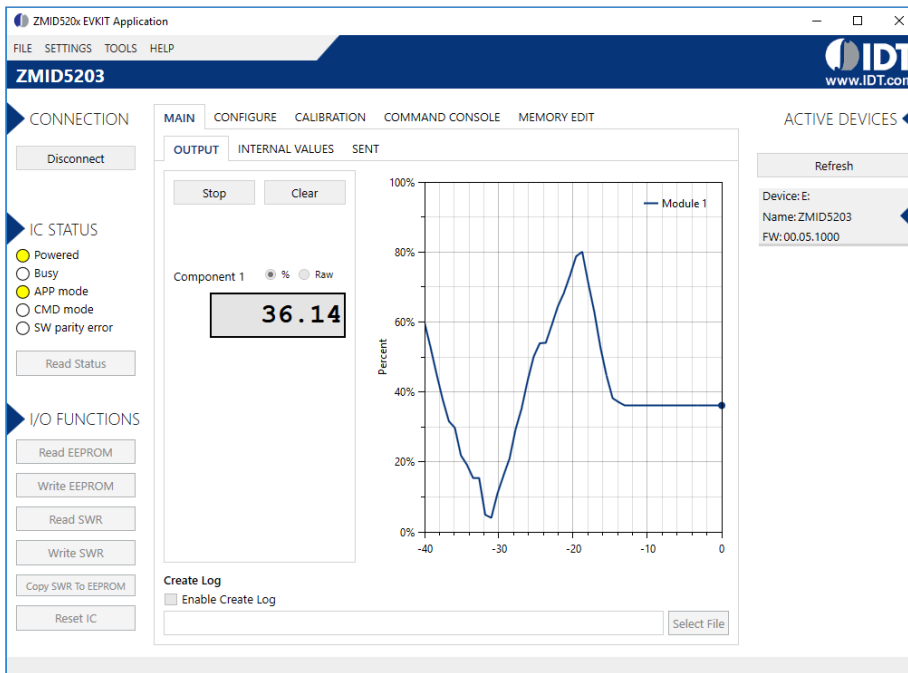


**Figure 7. Display When Connected to a Device – ZMID5203 Example**


## 2.2.2 Reading Measurements

- After connecting to a device, select the "MAIN" tab from the navigation menu. Two sub-tabs "OUTPUT" and "INTERNAL VALUES" are displayed if the ZMID5201 or ZMID5202 is connected. For the ZMID5203, the "SENT" sub-tab is also displayed and provides a SENT interface decoder. The "OUTPUT" tab displays the reading at the ZMID520x output pin SOUT.
- The "OUTPUT" tab readings represent
  - Analog values for the ZMID5201
  - PWM values for the ZMID5202
  - SENT values for the ZMID5203
- Use the "Component 1" radio buttons to select the desired method of presenting the values, which can be displayed as raw (decimal/hexadecimal) values or as scaled values in percent.
- Clicking the "Start" button will activate the measurements and change this button to the "Stop" button. The GUI disables some of its buttons and options while the measurement is active. Clicking the "Stop" button will deactivate the measurement and reactivate all options and buttons again.
- At the bottom of each measurement tab, the "Enable Create Log" box can be checked to log the measured values into a \*.csv file. The filename and its location are specified with the "Select File" entry field.

The "OUTPUT" tab displays the physical values by using either the ADC or digital inputs of the ZMID Communication Board. Figure 8 shows an example of SENT interface readings. For the PWM or analog interface, the values are captured using a 12-bit ADC located on the ZMID Communication Board. Hence, the accuracy of the measured values is limited due to the setup. The ZMID Evaluation Kit is not intended to act as a measurement device rather than a configuration tool.

**Figure 8. “OUTPUT” Tab – ZMID5203 Example**


The “INTERNAL VALUES” tab displays measurements that are only accessible via OWI (see Figure 9). Therefore, all the readings are digital register contents and not limited in terms of hardware accuracy.

**Figure 9. “INTERNAL VALUES” Tab – ZMID5203 Example**


There are three controls that can be used to view and change settings on the device.

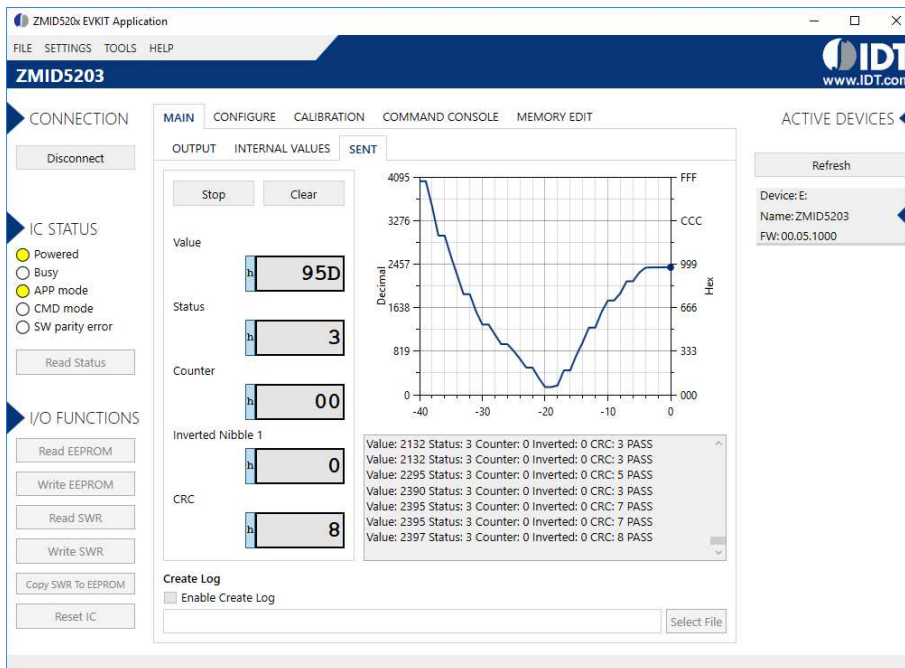
- **AGC Mode:** Gain and integration time control – used to enable or disable the Automatic Gain Control (AGC) and the Integration Time Control of the device. The following standard options are available in the drop-down menu:
  - Gain adaptation and integration time adaptation off
  - Gain adaptation and integration time adaptation on

Two additional options are available for the AGC Mode that are for advanced testing only. Note: Before using either of these options, contact IDT support (see last page for contact information).

  - Gain adaptation off and Integration time adaptation on
  - Gain adaptation on and Integration time adaptation off
- **AGC Gain Stage.** Depending on the AGC Mode, this control has different behaviors:
  - When the AGC is active (“Gain and integration time adaptation” is on), the value in the “ACG Gain Stage” entry field specifies the maximum gain for gain regulation. During measurements, the box becomes read-only and displays the existing gain stage setting that the ZMID520x is using.
  - When the AGC is disabled (“Gain and integration time adaptation” is off), the value in the input field specifies the selected gain stage.
- **Over Sampling Rate.** The parameter OSR defines the number of averaging samples per receiving channel and reduces the noise level on the signal.

The “SENT” tab is only available when the ZMID5203 Demo Board is connected to the ZMID Communication Board. It displays the decoded SENT data information as shown in Figure 10.

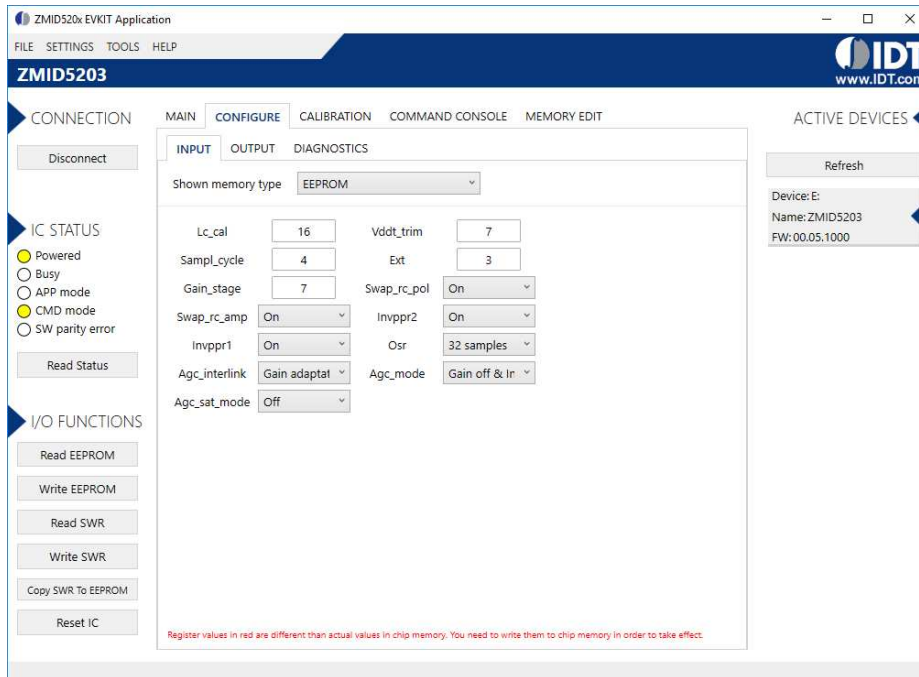
**Figure 10. “SENT” Tab (ZMID5203 only)**



## 2.3 Changing the Configuration Settings

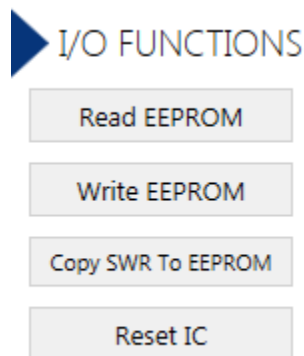
The “CONFIGURE” tab (see Figure 11) is designed to provide the user with an easy way of viewing and editing the IC configuration. Each value represents a register or a part of a register from the internal memory of the device. The displayed memory type can be either the ZMID520x EEPROM or the SWR memory. SWR refers to shadow registers used as the working memory for the ZMID520x, which can be temporarily written via the GUI to the ZMID520x for development purposes.

**Figure 11. “CONFIGURE” Tab – Selection of Memory Type to be Displayed**

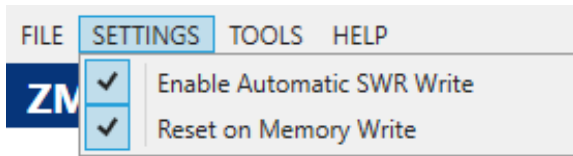


If parameters in the EEPROM memory selection have been changed, the ZMID520x must be reset after the writing process is finished for the changes to take effect. This is done automatically after pressing the “Write EEPROM” button from the “I/O FUNCTIONS” section (see Figure 12). This can be disabled via the “SETTINGS” menu > “Reset on Memory Write.” In the case of the SWR selection, by default changes are immediately written to the SWR memory of the ZMID520x. The option can be disabled via the “SETTINGS” menu > “Enable Automatic SWR Write” (see Figure 13). Clicking the “Write SWR to EEPROM” button in the “I/O FUNCTIONS” section copies all of the current SWR settings to the EEPROM memory of the device. This section also provides the “Reset IC” button for manually resetting the ZMID520x. The reset power cycles the device and puts it in Command Mode. After reset, the contents of the EEPROM of the device are copied to its working memory SWR.

**Figure 12. Buttons in the I/O FUNCTIONS Section**



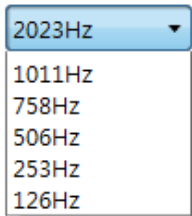


**Figure 13. Options on the SETTINGS Menu**


There are three different data types shown on the “CONFIGURE” tab:

1. Numerical values are displayed in a white field (see Figure 14). If they are hexadecimal “0x” is automatically inserted at the beginning of the value (see Figure 15).
2. Values with predefined multiple choices are displayed in a drop-down menu (see Figure 15).
3. Read-only values are displayed with a light blue background. They can only be selected and copied (see Figure 16).

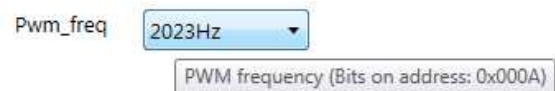
**Figure 14. Example of Editable Numerical Values**

**Figure 15. Example of a Multiple Choice Value**

**Figure 16. Example of Read-Only Values**


Changing a value will change the font color to red (see Figure 17). This indicates that the change is not yet applied to the actual memory (EEPROM or SWR) of the IC. To apply the change, click the corresponding “Write...” button in the “I/O FUNCTIONS” section. If the “Reset IC” or one of the “Read” buttons is pressed, the values will be set to represent the current settings of the device.

**Figure 17. Example of a Modified Value that is Not Yet Saved to Memory**


Context-sensitive pop-ups (see Figure 18), referred to as “tooltips,” provide additional information that appears briefly as the cursor hovers over an element on the screen. The tooltips for entry fields include a brief description of the setting and the address of the internal memory register.

**Figure 18. Example of Tooltip Information**


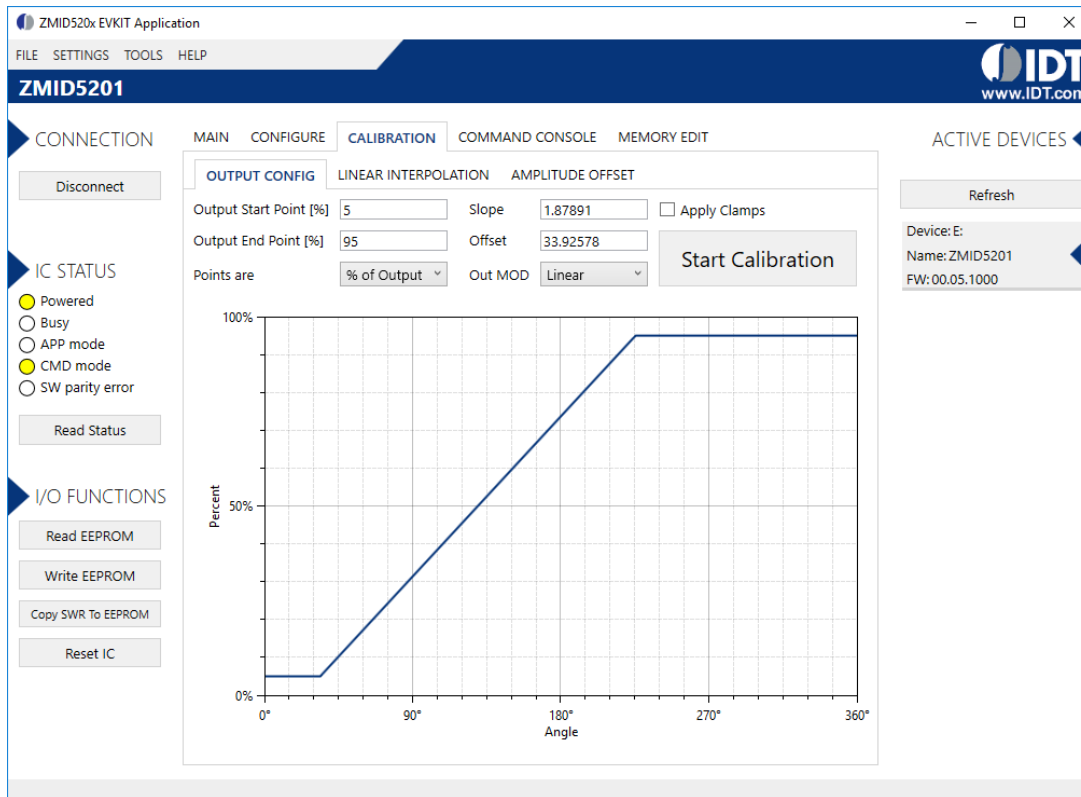
## 2.4 Calibration

There are three sub-tabs under the “CALIBRATION” tab: OUTPUT CONFIG, LINEAR INTERPOLATION, and AMPLITUDE OFFSET.

### 2.4.1 “OUTPUT CONFIG” Tab

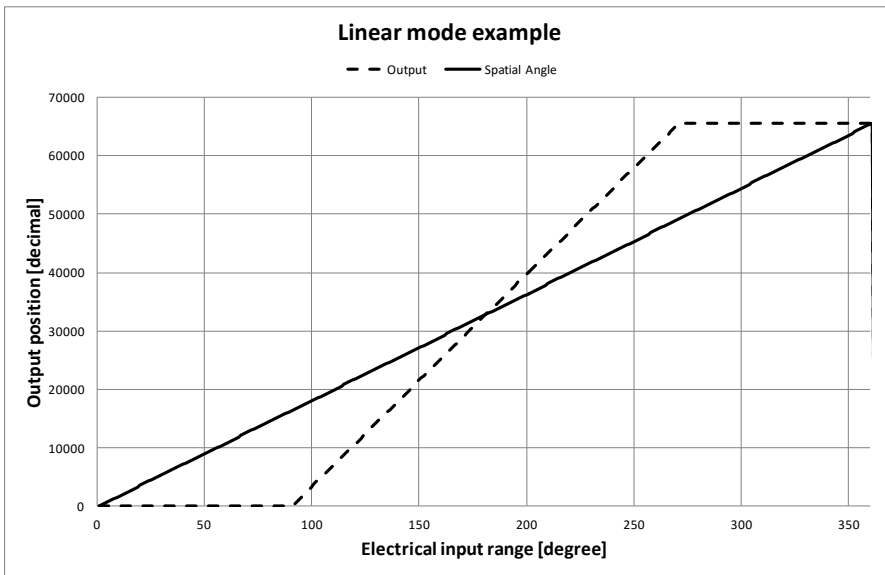
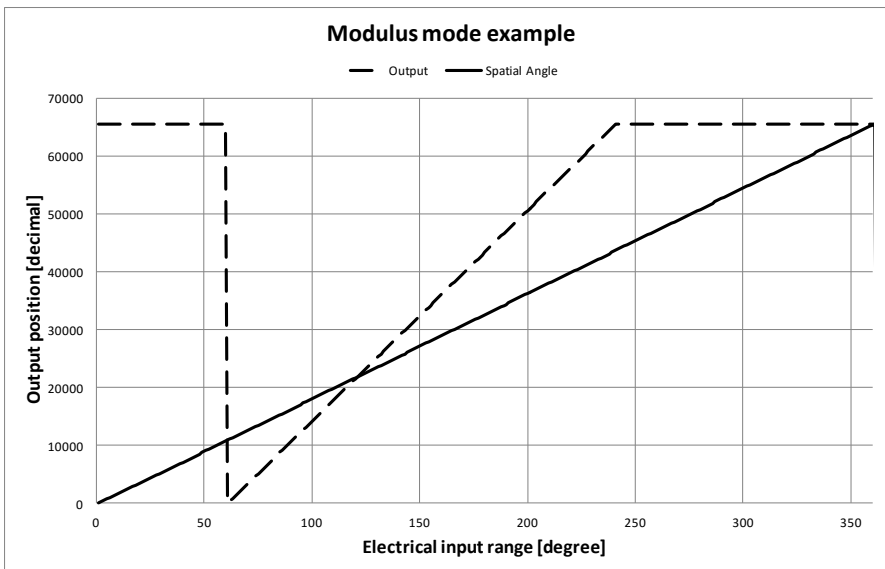
The “OUTPUT CONFIG” sub-tab (see Figure 19) is used to configure the output behavior of the ZMID520x. For a detailed description of output settings, refer to the *ZMID520x Datasheet*.

**Figure 19. “OUTPUT CONFIG” Tab – ZMID5201 Example**



There are three values that can be edited for subsequent use during the calibration procedure:

- Output Start Point [%]: Defines the desired output value when the target is at the mechanical start point.
- Output End Point [%]: Defines the desired output value when the target is at the mechanical end point.
- Out MOD: Defines the output mode.
  - Linear: The Linear Output Mode is a non-repeating output mode in which the sensor output signal is clamped at the mechanical end points (see Figure 20).
  - Modulo 360: The Modulo Output (Sawtooth Output) Mode is a repeating output mode in which the sensor output signal is not clamped at the mechanical end points, but it is switched back to its origin (see Figure 21).

**Figure 20. Linear Output Mode Example with Slope = 2, Offset = 90°**

**Figure 21. Modulus Output Example with Slope = 2, Offset = 60°**


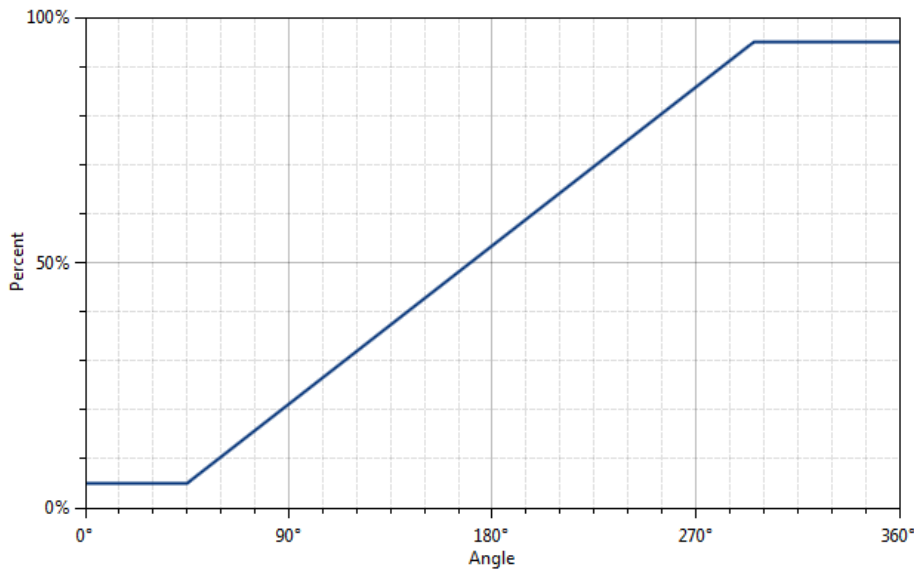
The results from the calibration procedure are displayed in two fields on the “OUTPUT CONFIG” tab. They are direct representations of the *Offset* and *Slope* registers in the ZMID520x. The values can also be manually entered by the user.

- Slope: The slope of the transfer function of the output signal.
- Offset: The zero-offset of the output signal referenced to the mechanical position in degrees.

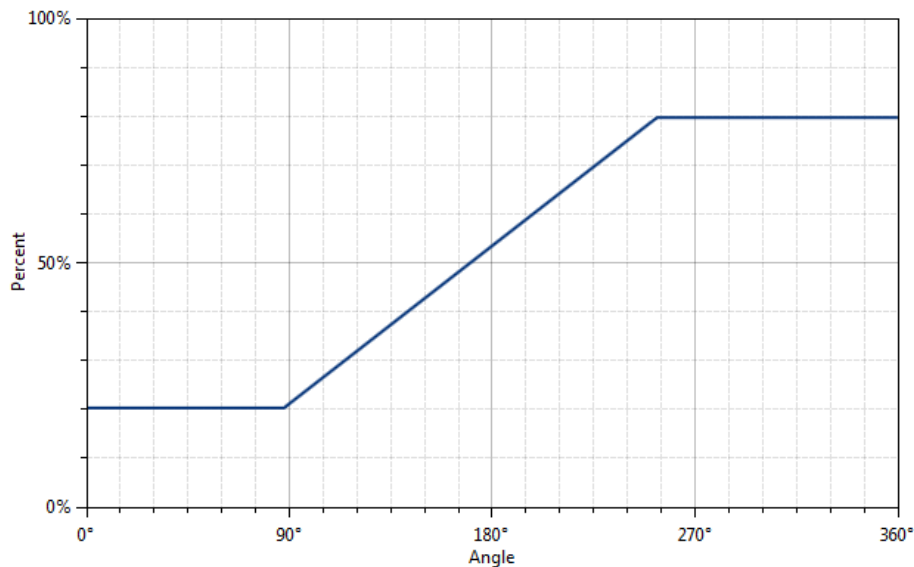
There are two additional settings available only for the ZMID5201 (Analog interface) and the ZMID5202 (PWM Interface): “Apply Clamps” and “Points are.”

- **“Apply Clamps” checkbox:** If activated, the output is clamped between the specified start and end points if the target goes beyond these mechanical positions. Due to the low resolution of the clamps register, the available clamping values might not match the selected output start and end points exactly. See Figure 22 and Figure 23 for examples of the output without clamping and the output with clamping, respectively.

**Figure 22. Output without Clamping**



**Figure 23. Output Clamped from 20% to 80%**



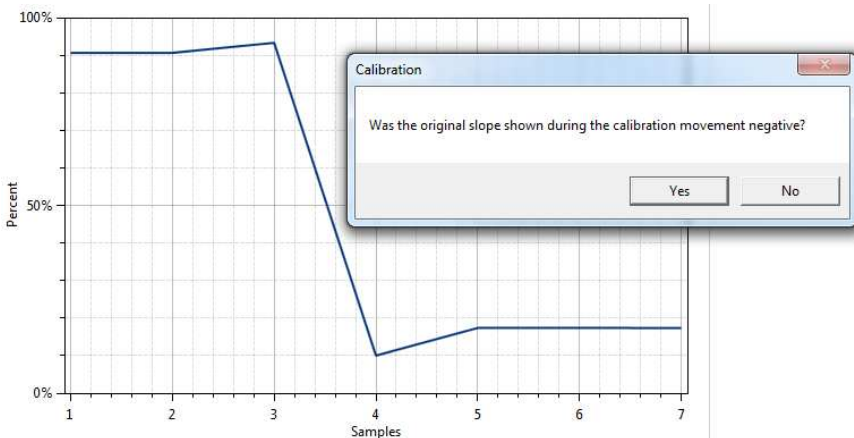
- **“Points are” drop-down menu:** Defines how the start and end points should be interpreted. Two options are available:
  - % of Output: The start and end points are percent values of the ZMID5201/ZMID5202 output. The position result is mapped between 5% and 95% of the output of the IC. For example, setting the start point to 20% is equivalent to 20%VDD (analog) or 20% duty cycle (PWM).
  - % of Pos0: The start and end points are percent values of the Pos0 register (0 to 65535 in codes). For example, setting the start point to 20% is equivalent to 13107 in codes.

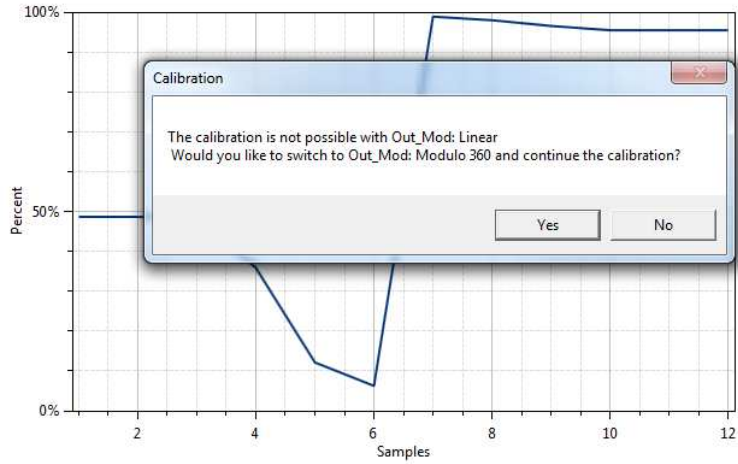
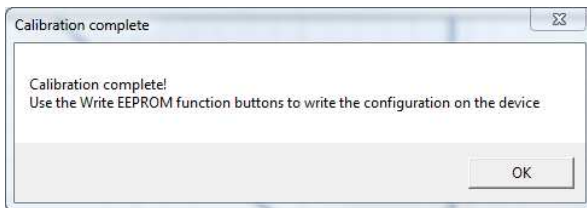
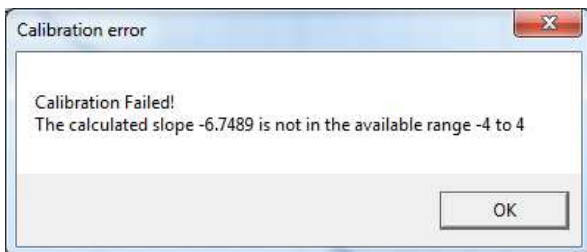
### 2.4.2 Automatic Output Calibration Procedure

To start the automatic calibration, click the “Start Calibration” button. The GUI will guide the user through a sequence of instructions for performing the calibration procedure.

1. Move the sensing target to the start position, and click “OK” in the dialog box. The graph will start displaying the internal reading of the position.
2. Move the sensing target to the end position, and click OK. The GUI will automatically attempt to determine if the slope polarity of the values is positive (values ascending) or negative (values descending). If this cannot be determined, the GUI will ask the user to specify the polarity of the slope. For the example provided in Figure 24, the slope is negative.
3. Based on the acquired data, the GUI will attempt to calculate the best values for the *Slope*, *Offset*, and *Clamps* registers. If the calibration is not possible with the currently selected “Out MOD” setting, the GUI will ask the user to change to the other setting (see Figure 25). The calculated values will be prepared to be written to the memory, and the user will be directed to use the “Write EEPROM” button in the “I/O FUNCTIONS” section to write the new coefficients to the memory of the device. See Figure 26.
4. If the calculated values are out of range or the calibration is not possible, a message will inform the user which value is affected. The most common cause of unsuccessful calibration is setting the start and end target positions too close to each other since this could require a slope value larger than the valid range of slope values. See Figure 27.
5. A detailed log from the calibration function is available from the “TOOLS” menu -> “Open Log File” -> “Calibration.”

**Figure 24. Specify the Original Slope**

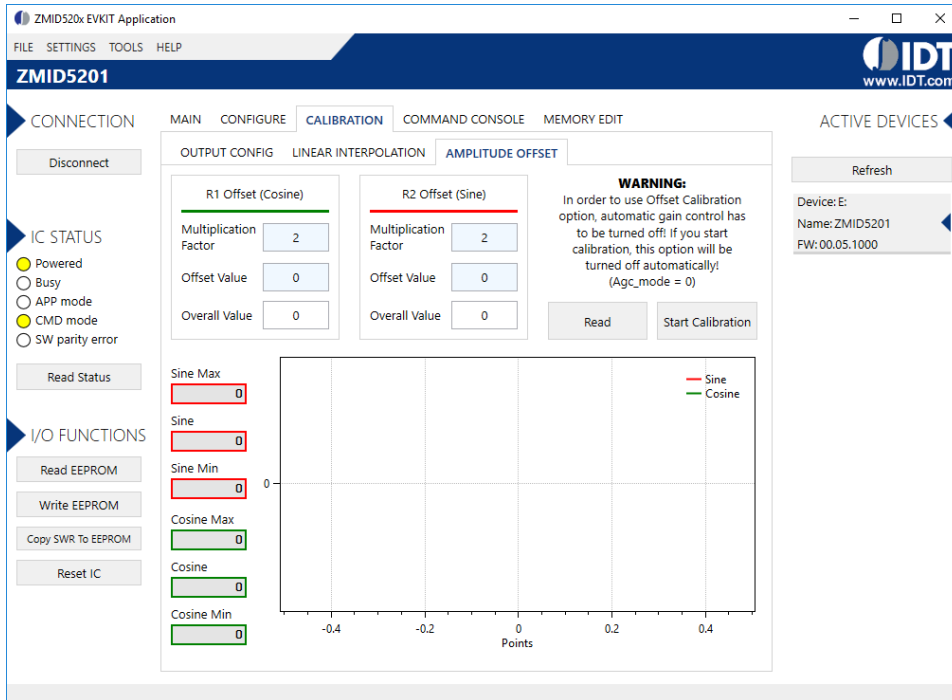


**Figure 25. Request for Changing the Out\_Mod Setting**

**Figure 26. Successful Calibration Message**

**Figure 27. Unsuccessful Calibration Message**


### 2.4.3 “AMPLITUDE OFFSET” Tab

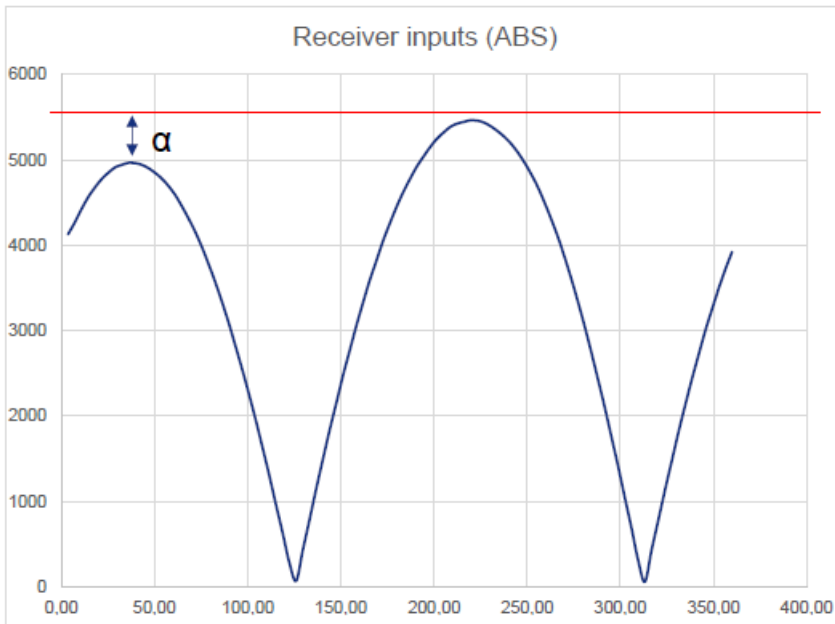
The “AMPLITUDE OFFSET” sub-tab is located under the “CALIBRATION” tab (see Figure 28). It is used to compensate the offset of the signal acquired from coils R1 and R2 connected to the ZMID520x.

**Figure 28. “AMPLITUDE OFFSET” Tab – ZMID5201 Example**



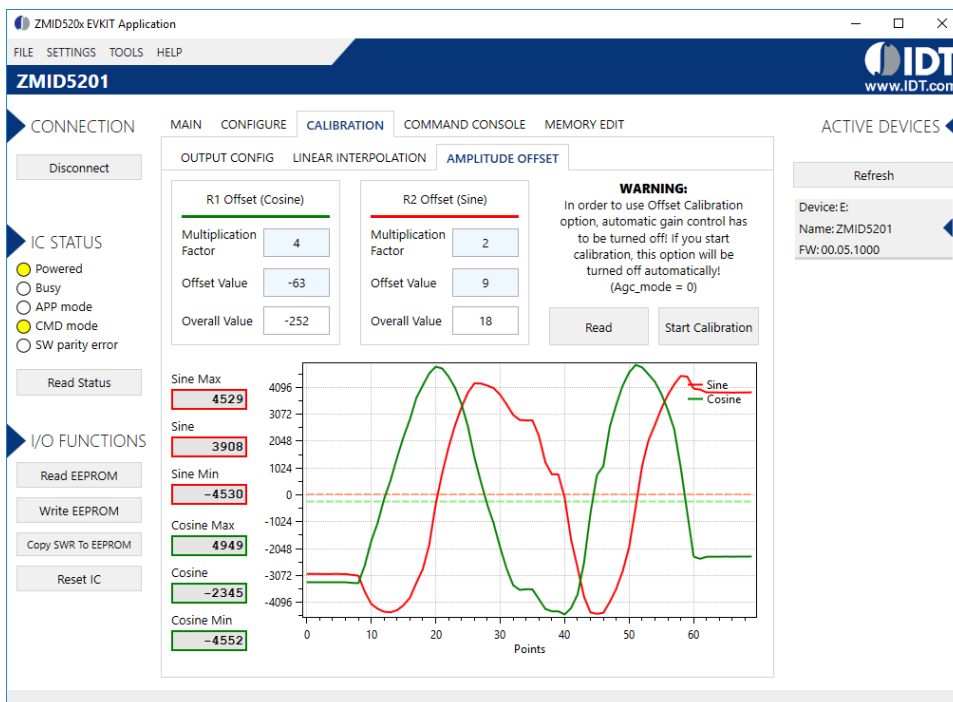
For each of the coils, the following are displayed:

1. Multiplication factor; this value will be displayed at the end of calibration (2 or 4).
2. Offset value; this value will be displayed at the end of calibration (0 to  $\pm 63$ ).
3. The overall value to be added to (subtracted from) the R1 and R2 values. This field can be directly defined by the user.
4. After calibration is performed, write to the EEPROM to save the offset values.

**Figure 29. Receiver Coil (ABS Value) Offset Example with Offset Compensation =  $\alpha/2$** 


To start the automatic calibration for amplitude offset, click the “Start Calibration” button. The GUI will guide the user through a sequence of instructions for performing the calibration procedure.

1. Move the target to one end position of the movement range, and press “Ok.”
2. Move the target at the opposite end position of the movement range, and press “Ok.”
3. Values for the Multiplication Factor, Offset Value, and Overall Value will be updated (see Figure 30).

**Figure 30. Amplitude Offset Calibration Completed – ZMID5201 Example**




### 2.4.4 “LINEAR INTERPOLATION” Tab

The table on the “LINEAR INTERPOLATION” tab shows the nine points for which a value can be specified for application to a correction curve over the position range (see Figure 31).

The table has the following rows:

- Correction Point: Constraint points for linearization 1 to 9; below each correction point, the electrical position is shown in the next row (0 to 360 degrees in pre-calibration or 0 to 100% after calibration).
- Ideal Value: The ideal value (read-only) according to the motion range provided.
- Measured Value [mm] or [deg]: Entry field for values measured at the correction points (“mm” is not applicable to the ZMID520x Rotary 360° Demo Board). These values are entered by the user.
- Correction: These read-only values (integers in the range of -127 to 127) will be added (after a multiplication x 32) to the “Spatial Angle” data if linearization is performed before calibration; in the case of linearization post-calibration, these values will be applied (after a multiplication x 32) to the Position 0 data, resulting in the Position 1 data. See the description of the “Start Reading” button below for an explanation of the “Position 0” and “Position 1” data fields.

Three additional controls are available on this tab.

- Motion Range [mm] or [deg]: Entry field for the linear motion range in mm (not applicable to the ZMID520x Rotary 360° Demo Board) or the arc/rotation motion range in degrees. This user-selected value is used to calculate the ideal values.
- Correction Mode: This drop-down menu allows selecting whether the linearization is applied before or after calibration.
- Angle Offset: This drop-down menu offers the option to shift the linearization points if required. Whether the offset is applied or not is determined by the non-linearity error distribution. (Refer to the *ZMID520x Datasheet* for details).

**Figure 31. “LINEAR INTERPOLATION” Tab – ZMID5201 Example**

The screenshot shows the 'LINEAR INTERPOLATION' tab in the ZMID520x EVKIT Application. The interface includes a navigation menu with options like CONNECTION, MAIN, CONFIGURE, CALIBRATION, COMMAND CONSOLE, and MEMORY EDIT. The 'CALIBRATION' section is active, showing a table of correction points and various control fields.

Correction Point	1	2	3	4	5	6	7	8	9
0	12.5	25	37.5	50	62.5	75	87.5	100	
Idle Value	0	45	90	135	180	225	270	315	360
Measured Value [mm] or [deg]	0	0	0	0	0	0	0	0	0
Correction	0	-127	-127	-127	-127	-127	-127	-127	-127

Control fields include: Motion Range [mm] or [deg] (360), Correction Mode (Post-calibration), Angle Offset (0), Spatial Angle (207), Position 0 (326), and Position 1 (326). A 'Start Reading' button is also present.

The “Start Reading” button triggers a continuous reading of the three internal position registers of the ZMID520x (see Figure 31 for the corresponding measurement points in the calibration process). This is implemented to help the user measure the linearization error at the specific points. The “Spatial Angle” reading represents the CORDIC output angle before applying the slope and offset calibration. The “Position 0” reading is the position value after applying the slope and offset calibration but before applying the linear interpolation. The “Position 1” reading is the final value after the linear interpolation is applied (see Figure 32)

To save changes to the device, use the corresponding “Write...” button in the “I/O FUNCTIONS” section.

**Figure 32. Calibration Diagram**

