

## 1. GENERAL DESCRIPTION

This application note addresses an issue of the SENIS® 3DHALL sensor SENM3Dx, which may exhibit glitches in case of changing the amplifier gain setting (i.e. sensitivity setting). This imperfection causes an unintended loading of the bias DAC settings from the EEPROM data into the respective registers and thus change the sensor state. In the following section is a method explained, which avoids uncontrolled sensor state changes and provides a stable sensor operation.

## 2. SURPRESSING SIDE EFFECTS OF POSSIBLE GLITCHES

To circumvent erratic loading of data to registers, the best strategy is to write the preferred/correct data to the EEPROM, so that these settings are not going to unattended change the sensor state through the working registers. For instance, if the user wants to operate the SENM3Dx at a Hall element biasing current of 3.5 mA (register value 0x6) and this setting should not change during the event of a glitch, then the following has to be done:

- + write data 0x6 to registers DAC\_X, DAC\_Y and DAC\_Z (address 0x11 to 0x13)
- + write data 0x6 to EEPROM for all gain settings (Gain 0 data set to Gain 3 data set):
  - EDAC\_X\_G0 to EDAC\_Z\_G0 (address 0x140 to 0x142)
  - EDAC\_X\_G1 to EDAC\_Z\_G1 (address 0x150 to 0x152)
  - EDAC\_X\_G2 to EDAC\_Z\_G2 (address 0x160 to 0x162)
  - EDAC\_X\_G3 to EDAC\_Z\_G3 (address 0x170 to 0x172)
- + change amplifier gain setting and verify that the value of 0x6 remains unchanged for the registers DAC\_X, DAC\_Y and DAC\_Z

Note that the user may also write the preferred settings to the EEPROM, including the correct check sum and key, this will regularly load the EEPROM content at power-on of the SENM3Dx as default state and thus avoids glitches.

## 3. MORE INFORMATION

Further detailed information is available in the data sheet: <https://www.senis.swiss/sensors>  
Questions and comments may be addressed to [sensors@senis.ch](mailto:sensors@senis.ch)