

HS300x

Custom I2C Address Programming

1. Abstract

This document describes how to change the default I2C address of the HS300x sensor. These instructions must be followed carefully to avoid corrupting the data stored in the non-volatile memory of the sensor.

2. Changing the Default I²C Address

The first step in setting a custom I²C address is to access the non-volatile memory by putting the sensor into “programming mode.” Figure 1 shows the sequence of commands that must be sent to the chip within 10ms of applying power to the sensor. The bus master must send the current I²C address with a Write bit, followed by the command 0xA0|0x00|0x00.

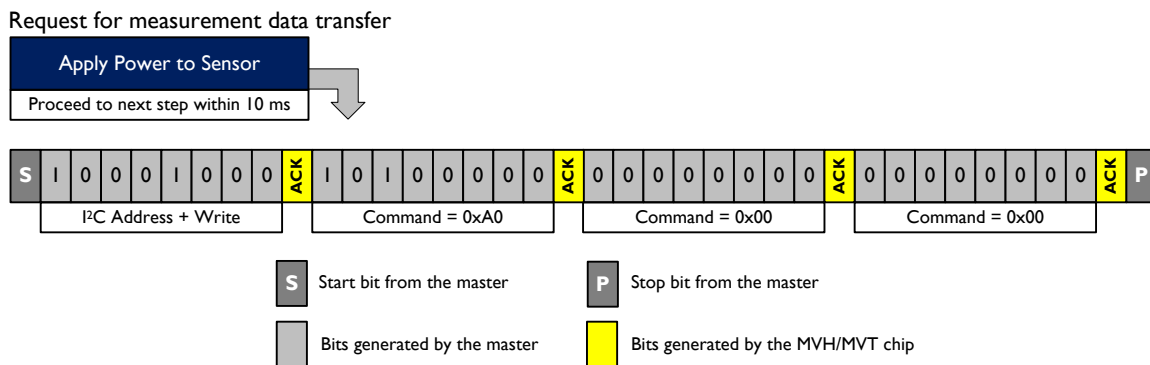


Figure 1. Sequence of Commands to Enter the Programming Mode

This command takes 120µs to process, after which the bus master has access to the non-volatile memory. The addresses of the registers associated with the I²C address are displayed in Table 1. Each register is 16 bits wide, and the I²C address is stored in the 7 least significant bits of the registers.

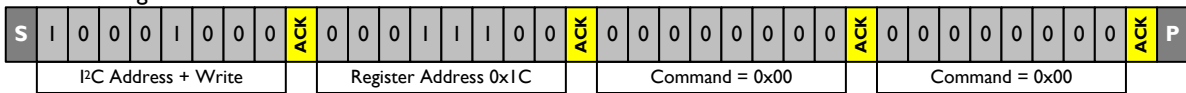
Table 1. Non-volatile Memory Registers Associated with the I²C Address

| Address | Register Description |
|---------|---|
| 0x1C | I2C Address – Read Register (bits [6:0]) |
| 0x5C | I2C Address – Write Register (bits [6:0]) |

The procedure to set the I²C address is displayed in Figure 2. Since the I²C address is stored in bits [6:0] of a 16-bit register, these bits must be modified while leaving the other bits unchanged. As such, before writing a new I²C address, the contents of the register must be read to preserve bits [15:7]. Once bits [6:0] have been changed, the register can be written to the sensor.

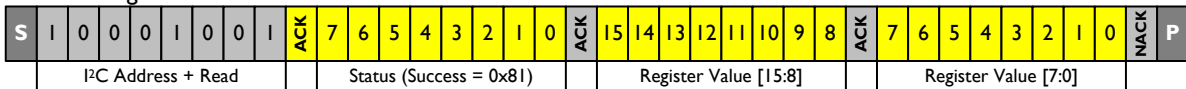
Step 1

Write the register address



Step 2

Read the register contents



Step 3

Change bits [6:0] of the register to the desired I²C address, **without changing the other bits**

Step 4

Write the register contents back

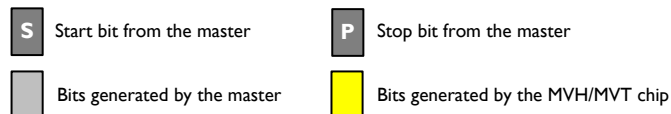
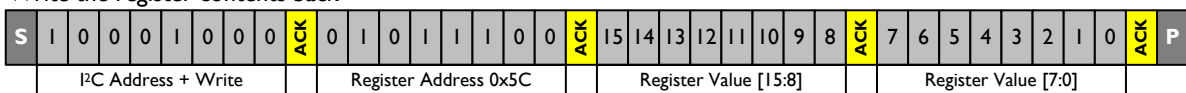


Figure 2. Sequence of Commands to Modify the I²C Address

The sensor non-volatile memory requires 120µs to load the data into the registers after step 1, and 15ms to write the data after step 4. **Failure to comply with these processing times may result in data corruption and introduce errors in sensor measurements.**

The new I²C address will take effect once the sensor is powered down and then powered up again. Alternatively, to return to normal operation without cycling the power, the master can send the old I²C address and a Write bit, followed by the command: 0x80|0x00|0x00.

3. Revision History

| Revision | Date | Description |
|----------|-----------|------------------|
| 1.0 | Oct.14.20 | Initial release. |

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