

CRC Calculation Step-by-Step

This information is based on the Data Sheet "Humidity Sensor SHT1x / SHT7x" and the Application Note "CRC Calculation humidity sensors" which are available from our homepage www.sensirion.com.

Sample values RH DATA high byte and RH DATA low byte for a CRC calculation and transmission are given in the datasheet on page 3 under the timing diagram Fig. 5. The CRC-8 Checksum value is given from us for this example.

CRC calculation

The CRC calculation comprises the whole communication:

- Command byte: 00000101

- RH DATA high byte: 00001001

- RH DATA low byte: 00110001

(values taken from indicated section in the datasheet)

- CRC-8 Checksum: 00011010

(CRC value given from us)

Step-by-Step CRC calculation

! Note: Calculation starts with default setting of status register that is 0 for all bits. If you change register settings you have to begin the CRC calculation with the register setting bits as first crc register setting.

1. initialization of the CRC register with lower nibble of status register reversed:

crc reg: 00000000

command byte: 00000101

XOR --> 00000101 → decimal: 5

Look up table: 5 corresponds with 245.

Convert decimal 245 into binary code

new crc value (245=): 11110101

2. process the first DATA byte:

crc reg: 11110101

1st DATA byte: 00001001

XOR --> 11111100 → decimal: 252

Look up table: 252 corresponds with 255.

Convert decimal 255 into binary code

new crc value (255=): 11111111

3. process the second DATA byte:

crc reg: 11111111

2nd DATA byte : 00110001

XOR --> 11001110 → decimal: 206

Look up table: 206 corresponds with 88.

Convert decimal 88 into binary code

new crc value (88=): 01011000

reversed CRC from SHT11: 01011000 q.e.d.

Revision History

Date	Revision	Changes
3.9.2007	1.00	All

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