

2.2 Standard values for the Alert Limits

During power-up or during resets **pre-defined limits are loaded into the register**. These values can be changed as explained in Table 2.

Alert Limit			Initial Value	
			Physical Value (RH/T)	Hex Value
high alert limit	set limit		80% / 60°C	0x CD 33
	clear limit		79% / 58°C	0x C9 2D
Low alert limit	Clear limit		22% / -9°C	0x 38 69
	set limit		20% / -10°C	0x 34 66

Table 1 Initial values for the alert limits. The limits can be changed with the command shown in Table 2

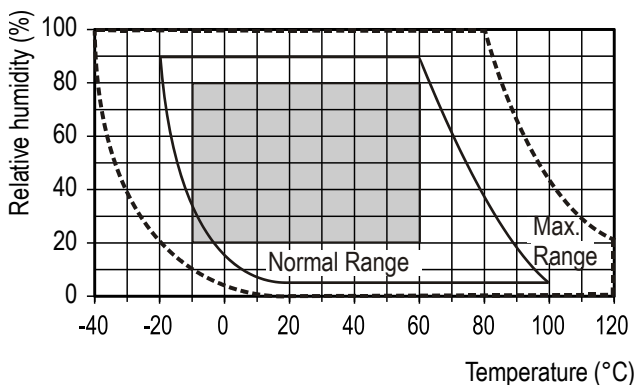


Figure 3 The alert is active in the areas outside the shaded area.

2.3 Alert Mode Commands

The eight different limits can be read through the commands shown in Table 2. With each command temperature and humidity limits are read from the sensor.

Command			Hex Code	
			Command MSB	Command LSB
READ	High alert limit	set	0xE1	1F
		clear		14
	Low alert limit	clear		09
		set		02
WRITE	High alert limit	set	0x61	1D
		clear		16
	Low alert limit	clear		0B
		set		00

Table 2 Alert limit commands for reading the alert limits. Read or write behavior is controlled through the first bit in the MSB.

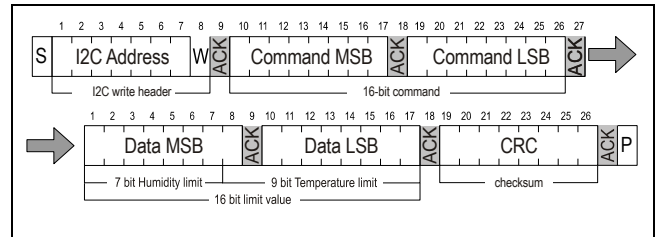


Table 3 Alert limit commands for writing the alert limits. Read or write behavior is controlled through the first bit in the MSB.

2.4 Typical procedure to calculate the limits

The reduced data format is shown in Figure 2.

- Choose the limits for RH and T (e.g. MaxSet limit, $RH_{MaxSet}=80\%$ & $T_{MaxSet}=60^{\circ}C$)
- Convert the RH_{MaxSet} and the T_{MaxSet} limits to their respective 16 bit binary value
 - $RH_{MaxSet}=1100'1100'1100'1101$
 - $T_{MaxSet}=1001'1001'1001'1010$
- Remove the 9 LSBs of the RH_{MaxSet} limits
 - $RH_{MaxSet}=1100'1100'1100'1101$
- Remove the 7 LSBs of the T_{MaxSet} limits
 - $T_{MaxSet}=1001'1001'1001'1010$
- Combine the reduced values (step 3 and 4) according to **Figure 2**
 - $RH, T_{MaxSet}=1100'1101'0011'0011=0x E699$
- Calculate the 8 bit CRC from the 16 bit limit value

An excel sheet is supplied as well that can be used to calculate the Alert limits.

2.5 Typical procedure to change the alert condition

- Calculate the limits as explained in section 2.4 (the predefined values are the normal range and shown in Table 1)
- Set the periodic frequency to the desired value through issuing of the appropriate command

The alert mode is now active.

3 Further condition that can raise an alert

The ALERT pin will also become active (high) after power-up and after resets, regardless whether the later was triggered by a brown-out, by a user command (soft reset, general call) or via the nRESET pin.

Description of the Content of the status register

Bit	Field description	Default value
15	Alert pending status '0': no pending alerts '1': at least one pending alert	'1'
14	Reserved	'0'
13	Heater status '0': Heater OFF '1': Heater ON	'0'
12	Reserved	'0'
11	RH tracking alert '0': no alert '1': alert	'0'
10	T tracking alert '0': no alert '1': alert	'0'
9:5	Reserved	'00000'
4	System reset detected '0': no reset detected since last 'clear status register' command '1': reset detected (hard reset, soft reset command or supply fail)	'1'
3:2	Reserved	'00'
1	Command status '0': last command executed successfully '1': last command not processed. It was either invalid, failed the integrated command checksum	'0'
0	Write data checksum status '0': checksum of last write transfer was correct '1': checksum of last write transfer failed	'0'

Table 4 Status register of SHT3x

3.1 Readout the status register

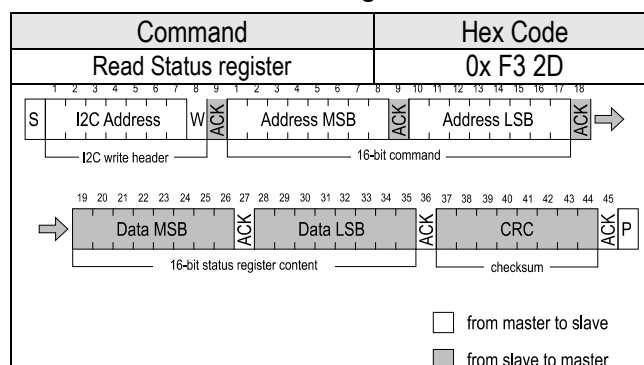


Table 5 Read out status register. The content of the user register is described below (Clear blocks are controlled by the microcontroller, grey blocks by the sensor.)

3.2 Clear Status register

All flags (Bit 15, 11, 10, 4) in the status register (Table 4) can be cleared (set to zero) by sending the command shown in Table 6.

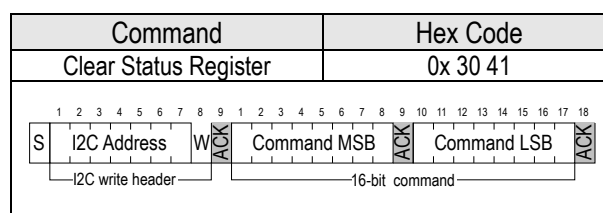


Table 6 Command to clear all status register flags (Clear blocks are controlled by the microcontroller, grey blocks by the sensor.)

3.3 Behaviour in the case of brown-out or power-up

If a brown-out or power-up occurs, the sensor will restart automatically. This sets all values to the default values (Table 1). Therefore, all customer defined limits are lost. As explained above an Alert is issued in this case.

Revision History

Date	Version	Page(s)	Changes
May 2015	1	all	Release of Version 1

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