SENSIRION
THE SENSOR COMPANY

SHTxx
Humidity & Temperature
Sensmitter

Application Note
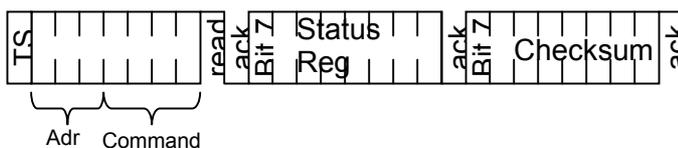# Status Register

1 Introduction

Some of the advanced functions of the SHTxx are available through the status register.
This document describes the required communication and the features available through the status register.

2 Revision History

August 27, 2001	C2	URO	Revision 0.9 (Preliminary)
October 20, 2001	C2	URO	Revision 1.00 changed to new CI
November 12, 2001	C2	URO	Revision 1.10 added status register bit for resolution
November 22, 2001	C2	URO	Revision 1.11 corrected polarity of resolution bit
January 24,2002	C1	URO	Revision 1.2 default values bit 4-7, EOL paragraph, small typos

3 The Status Register

3.1.1 Status Register read

3.1.2 Status Register write
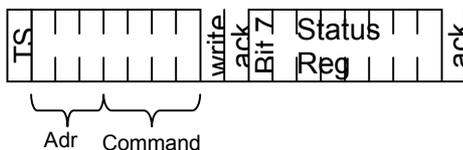
3.1.3 Status Register

Bit	Type	Description	Default	
7		reserved	0	
6	R	End of Life (low voltage detection)	X	
5		reserved	0	
4		reserved	0	
3		For Testing only, do not use	0	
2	R/W	Heater	0	off
1	R/W	no reload from OTP	0	reload
0	R/W	'1' = 8bit RH / 12bit Temperature resolution '0' = 12bit RH / 14bit Temperature resolution	0	12bit RH 14bit Temp.

3.1.4   Heater

An on chip heating element can be switched on. It will increase the temperature of the sensor by approximately 5°C. Power consumption will increase by 8mA @ 5V.

Applications:

- By comparing temperature and humidity values before and after switching on the heater, proper functionality of both sensors can be verified.
- In high RH environments heating the sensor element will avoid condensation.

Warning: The built-in calibration is not correct while the SHT11 is heated!

3.1.5   End Of Life (EOL, low voltage detector)

The SHT11 End of Life (EOL) function detects VDD voltages below 2.45V. Accuracy is ±0.1V

Warning: This bit is only updated during a measurement.

3.1.6   Calibration reload before measurement

To save power and gain speed the OTP reload before every measurement may be bypassed. This saves ~8.2ms from each measurement time.

Explanation:

In rare ESD environments the SHT11 may temporarily lose the calibration data from the volatile memory. Default is therefore to reread it from the OTP memory before every measurement.

3.1.7   Measurement resolution

The measurement resolution of 14bit (temperature) and 12bit (humidity) can be reduced to 12 and 8 bit. This is especially useful in high speed or extreme low power applications

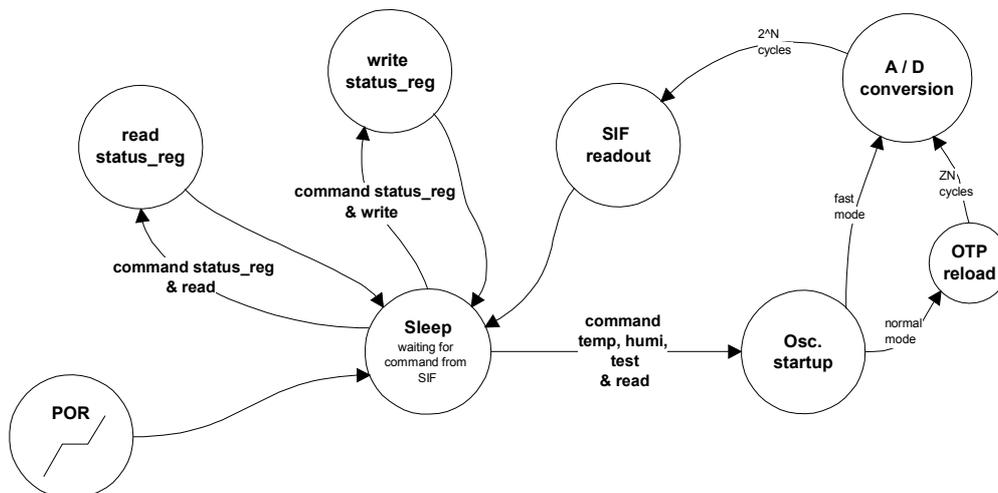"0" is 12/14bit   "1" is 8/12bit.

3.2 Digital state machine

Figure 1   Digital Finite State Machine State Diagram

Headquarters and Sales Office