Low Power Measurement Mode
For SHTC1, SHTW2 and STSC1 Humidity and Temperature Sensor

Introduction

For applications requiring minimal power consumption, the SHTC1 provides a dedicated low power measurement mode with a specific set of commands. For reasons of simplicity, the text below refers to SHTC1, but the document also applies to SHTW2 and STSC1 sensors (the exception are humidity related parts which don't apply to STS sensors).

The SHTC1 provides a low power measurement mode with a specific set of commands (see Table 1). Using the low power mode significantly shortens the measurement duration and thus minimizes the energy consumption per measurement (see Table 2).

Please note that the benefit of lowest possible power consumption comes at the cost of a reduced repeatability and noise performance of the RH and T output, compared to the standard measurement mode (see Table 2). This can be critical if the sensor signals are used for data post-processing. Therefore, using the low power mode is not recommended when RH and T signals are used for data post-processing.

Furthermore, when using the low power mode it is recommended to keep the I²C bus free of communication while the SHTC1 is measuring. Activity on the SCL line during the measurement may further affect the repeatability of the sensor signals.

Measurement Commands for Low Power Mode			
Clock Stretching Enabled		Clock Stretching Disabled	
Read T First	Read H First	Read T First	Read H First
0x6458	0x44DE	0x609C	0x401A

Table 1 Measurement commands for low power measurement mode. Please note that measurements in low power mode have higher noise on the physical sensor output.

Parameter	Min.	Typ.	Max.	Units
Measurement Duration	-	0.71	0.94	ms
Supply current during measurement	-	230	380	µA
Average supply current @ 1 measurement per second	-	0.9	-	µA
Average power consumption @ 1 measurement per second	-	1.5	-	µW
Energy consumption per measurement	-	0.3	-	µJ
RH repeatability[1]	-	0.2	-	%RH
T repeatability[1]	-	0.3	-	°C

Table 2 Characteristic values for measurements in low power mode.

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[1] The stated repeatability is 3 times the standard deviation (3σ) of multiple consecutive measurement values at constant conditions and is a measure for the noise on the physical sensor output.

Revision history

Date	Revision	Changes
21 May 2013	1	Initial release
29. January 2015	2	Added SHTW1 and STSC1
15. March 2016	3	Added avg. current consumption and avg. power consumption
06. May 2016	4	Added SHTW2, removed SHTW1

Headquarters and Subsidiaries

SENSIRION AG
Laubisruetistr. 50
CH-8712 Staefa ZH
Switzerland

phone: +41 44 306 40 00
fax: +41 44 306 40 30
info@sensirion.com
www.sensirion.com

Sensirion AG (Germany)
phone: +41 44 927 11 66
info@sensirion.com
www.sensirion.com

Sensirion Inc., USA
phone: +1 805 409 4900
info_us@sensirion.com
www.sensirion.com

Sensirion Japan Co. Ltd.
phone: +81 3 3444 4940
info@sensirion.co.jp
www.sensirion.co.jp

Sensirion Korea Co. Ltd.
phone: +82 31 345 0031 3
info@sensirion.co.kr
www.sensirion.co.kr

Sensirion China Co. Ltd.
phone: +86 755 8252 1501
info@sensirion.com.cn
www.sensirion.com.cn

To find your local representative, please visit www.sensirion.com/contact