Technical Description SENSEVAL-SHT4XV1

Evaluation Board for SHT4x Temperature and Humidity Sensor

- Evaluation board with SHT4x RHT sensor
- Compatible with the STMicroelectronics DIL 24 socket
- Supported by the STEVAL-MKI109V3 Motherboard
- Compatible with STM32Nucleo boards and STM32Cube Software
- 1.08 V to 3.6 V supply voltage and ultra-low power consumption

Product Summary

The evaluation kit for the SHT4x RHT enables easy sensor evaluation and facilitated prototyping.
The SHT40 Evaluation Board is compatible with the STMicroelectronics DIL 24 socket and is supported by the STEVAL-MKI109V3 motherboard. The Evaluation Board is also compatible with the STM32Nucleo boards from STMicroelectronics.
This technical description is limited to the SENSEVAL-SHT4XV1 evaluation board. For more information on the SHT4x specifications and the interfacing consult the SHT4x datasheet.

SHT4x is a digital sensor platform for measuring relative humidity and temperature at different accuracy classes. Its I2C interface provides several preconfigured I2C addresses and maintains an ultra-low power budget. The power-trimmed internal heater can be used at three heating levels thus enabling sensor operation in demanding environments. The four-pin dual-flat-no-leads package is suitable for surface mount technology (SMT) processing and comprises an optional on-package patented PTFE membrane or a removable protection cap.

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1 Hardware Interface Specification

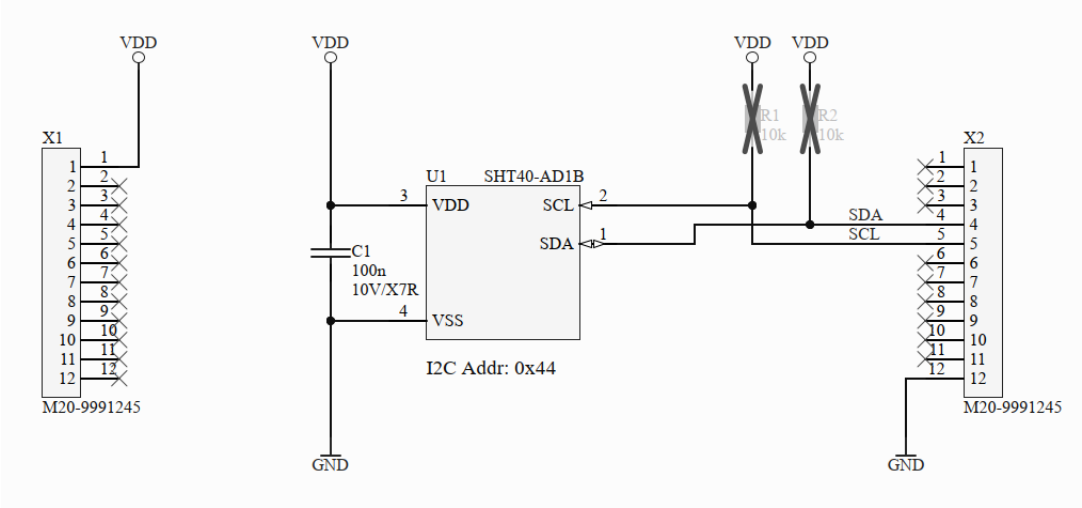

Figure 1: Schematic Diagram of the SENSEVAL-SHT4XV1

1.1 Sensor detailed Pinout

Pin	Name	Comment
1	SDA	I2C serial data input / output
2	SCL	I2C serial clock input
3	VDD	Power supply (positive supply)
4	GND	Ground (negative supply)

Table 1: Sensor pin assignment.

1.2 DIL24 Pinout

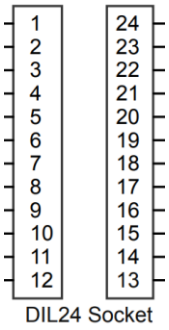

Figure 2: DIL24 Socket Circuit Diagram

Pin	Name	Comment
1	VDD	Power supply (positive supply)
13	GND	Ground (negative supply)
20	SCL	I2C serial clock input
21	SDA	I2C serial data input / output

Table 2: DIL 24 pin assignment. Unused pins are omitted from the table

2 Sensirion Nucleo I²C SHT4X Driver

2.1 Example I²C SHT4X Driver

An example of the I²C SHT4X Driver for the STM32 Nucleo Cube can be found on Sensirion's GitHub repository: [Sensirion/nucleo-i2c-sht4x: SHT4x driver for STs Nucleo F103RB board with the X-NUCLEO-IKS02A1 shield (github.com)]

2.2 Connecting the Evaluation board to the Nucleo F103RB

To connect the SENSEVAL-SHT4XV1 to the Nucleo F103RB board please use a jumper wire set (not included with the evaluation board). Table 3 shows the connection between the evaluation board Pins and the Nucleo F103RB board pins

Nucleo F103RB board	SENSEVAL-SHT4XV1	SHT4x
1	Pin +3v3	VDD
13	Pin GND	GND
20	Pin PB_8	SCL
21	Pin PB_9	SDA

Table 3: SENSEVAL- SHT4XV1 to Nucleo F103RB board Pin assignment

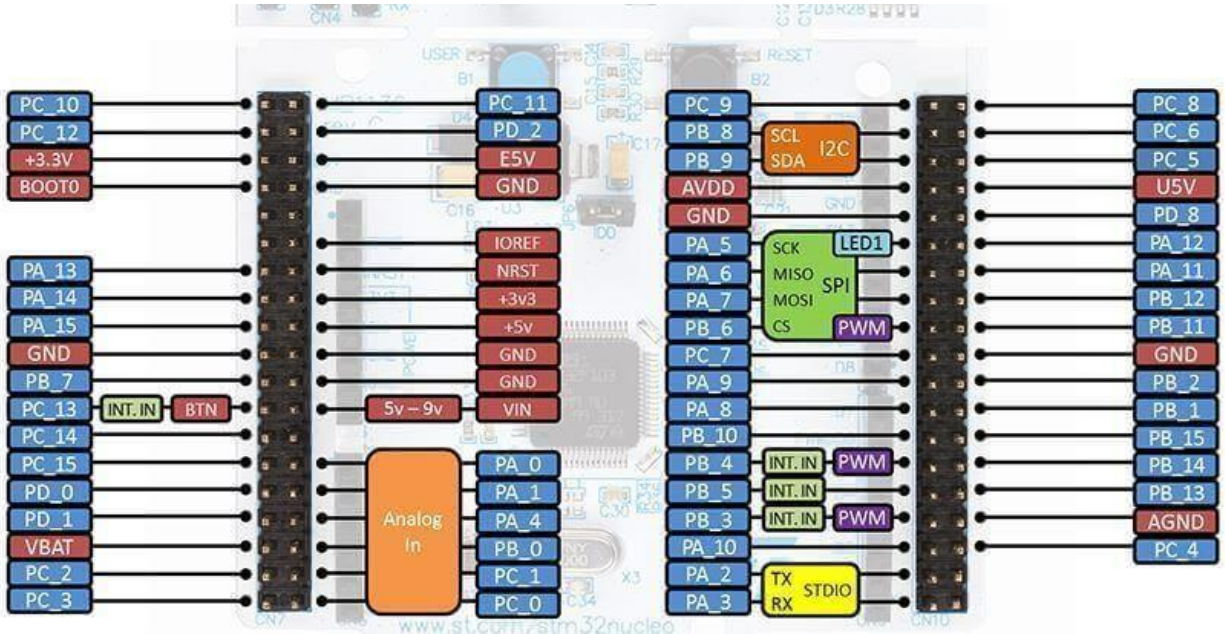

Figure 3: Nucleo F103RB Pinout diagram

Note: *The Nucleo board does not contain internal pull-ups. Either you have a breakout board for your sensor that has pull-ups, or you have to add pull-ups by our own. The provided setup assumes that ~5K pull-ups are installed. As the required pull-ups heavily depend on your actual hardware setup (e.g. length wires), it's a good thing to check the signals SCL and SDA with an oscilloscope.*

2.3 Using the SENSEVAL-SHT4XV1 with a DIL24 compatible STM32NUCLEO expansion board

The following STM32Nucleo expansion boards are compatible with the SENSEVAL-SHT4XV1:

- X-NUCLEO-IKS01A2
- X-NUCLEO-IKS01A3
- X-NUCLEO-IKS02A1

Figure 4, shows a picture of the SENSEVAL-SHT4XV1 mounted on the X-NUCLEO-IKS02A1 expansion board with the Nucleo F103RB board:

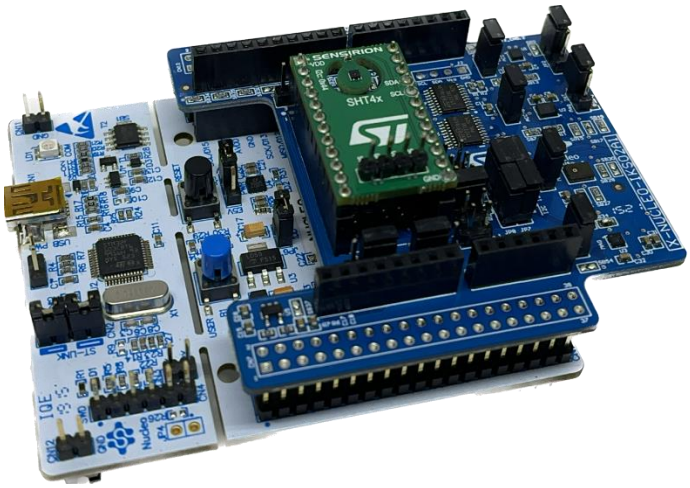

Figure 4: the SENSEVAL-SHT4XV1 mounted on the X-NUCLEO-IKS02A1 expansion board with the Nucleo F103RB board

3 Revision History

Date	Version	Page(s)	Changes
November 2022	1	All	Initial version