SENSIRION
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Evaluations-Kit EK-H1

Humidity
Version 1.1.1

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Introduction

With the AH31, SENSIRION AG has introduced a new generation of fully integrated relative humidity and temperature sensor systems with calibrated digital output. This integration of the sensor and readout circuitry on a single chip leads to an unbeatable price performance ratio and high reliability. Additionally, the sensor system features combined relative humidity and temperature measurement. The linear output signal is fully calibrated and allows sensor systems to be interchanged without additional calibration. Moreover, its digital output provides simple access to the sensor signal (plug and play). For further information on the AH31, please refer to the datasheet.

The hardware which is included was developed for evaluation- and reference design. It has therefore not been tested nor qualified for the same high standard of quality as the humidity- and temperature sensor AH31. In extreme environments, failures that would not be caused by the AH31 device may therefore occur.

The AH31 evaluation kit offers an easy-to-use environment to illustrate the unique features of the sensor system and to adapt it to your specific application. The contents of the kit are shown in *Fig. 1* and listed in *Tab. 1*. It includes a set of three AH31 sensors, the ASD11 microprocessor board (with LCD), a serial interface cable, a sensor interface cable and a power supply.

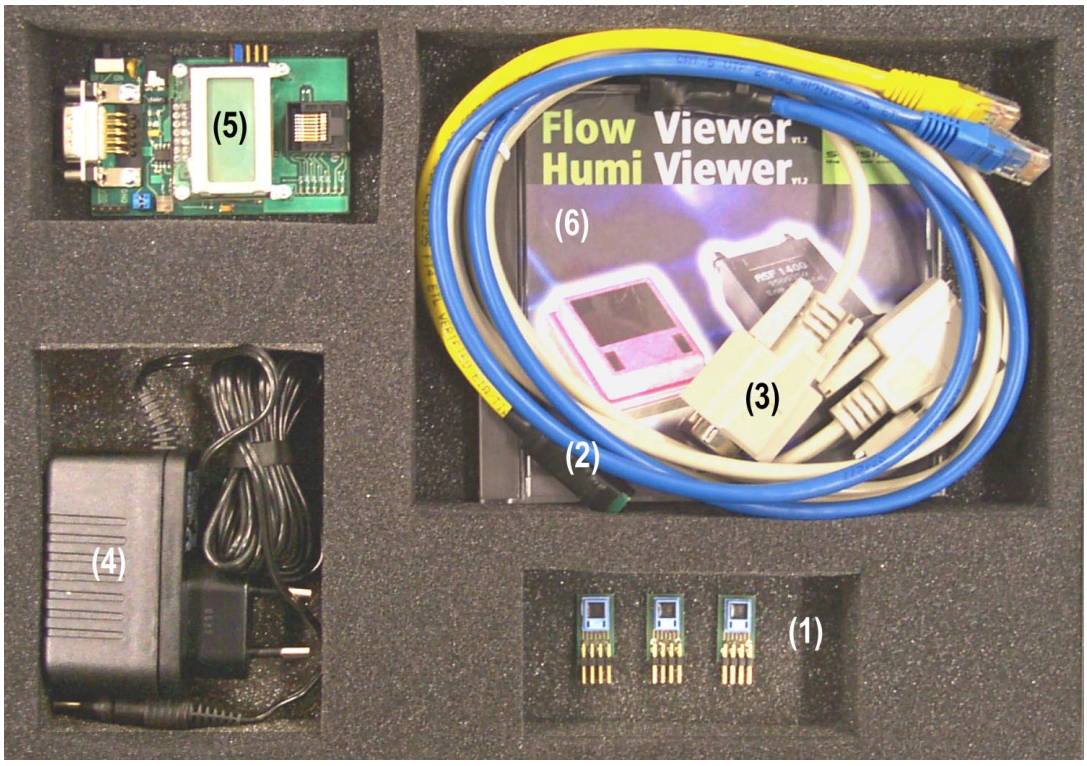

Fig. 1: Photograph of the evaluation kit and contents.

(1)	3 AH31 sensor systems
(2)	sensor interface cable
(3)	serial interface cable
(4)	power supply t
(5)	microprocessor board ASD11 (incl. LCD and RS-232 Interface)
(6)	HumiViewer (V1.3) software on CD
(7)	Jumper-Set (not shown in the picture)

Table 1: Contents of the EK-H1 evaluation kit.

What You Need to Get Started

Make sure you have all of the following items before you install the hardware and HumiViewer software for Windows 95/98/2000/NT:

_ Windows 95/98/2000 or Windows NT version 4.0.
_ An unused serial interface port (e.g. COM1).
_ HumiViewer (V 1.3) software for Windows 95/98/2000/NT on CD.
_ Contents of your evaluation kit as described in the *Introduction.*

If you do not have a CD drive and would like to order the HumiViewer software on a floppy disk, please contact Sensirion AG. Additionally, software to be able to use the ASD11 with a Palm Pilot is available on our internet page (www.sensirion.com).

Installing the Hardware

In the following section, all the necessary electrical interconnections for the AH31 sensor system will be listed. These connections are required between the AH31, the ASD11 microprocessor board, a PC serial interface, and a power supply.

Observe precautions when handling electrostatic sensitive devices!

To install your AH31 hardware, complete the following steps (*see Fig. 2*):

_ Turn on your PC and start Windows 95/98/2000/NT.
_ Connect the serial interface cable with the COM port of your PC (configuration of the serial interface see *App. A*).
_ Connect the interface cable with the ASD11 microprocessor board using the serial interface connector (pin diagram of the ASD11 is given in *App. A*).
_ Plug in the power supply. Input 100V - 240V AC, 47Hz - 63Hz.
_ Connect the AH31 sensor system to the ASD11 microprocessor board using the sensor interface cable.

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Important: ensure you have the proper connection between sensors system AH31 and the interface cable.

The AH31 sensor system is now ready to measure humidity and temperature. In *Appendix A,* a more detailed description of the ASD11 microprocessor board is given, including jumper settings, a command summary, and a pin diagram of the serial interface.

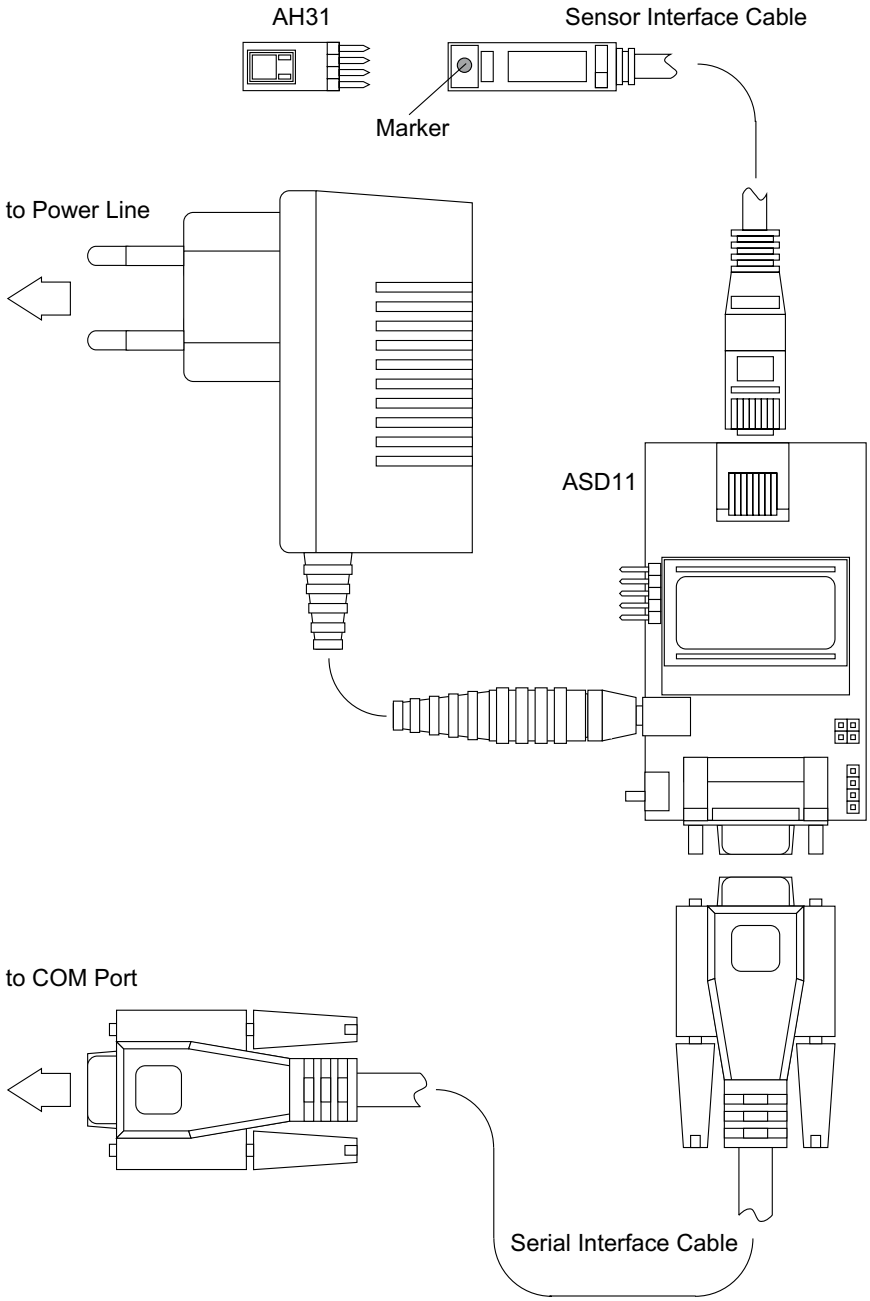

Fig. 2: General measurement setup for the EK-H1.

Installing the Software und Start-Up

After having installed the AH31/ASD11 hardware, complete the following steps to install the HumiViewer V1.3 software for Windows 95/98/2000/NT on your PC:

_ Insert the CD with the HumiViewer V1.3 software for Windows 95/98/2000/NT.
_ Open the "DISKS" file on the software CD, then double-click "SETUP.EXE" and follow the instructions of the installation wizard.
_ Double-click the "HumiViewer_AH31" icon on your desktop to start the application.
_ Note: If no units are displayed in the program it may be that your decimal symbol in the "Regional Setting Properties" is wrong.

For a detailed description of HumiViewer V1.3 software please refer to next section.

Please note: This software is copyright and intended exclusively for demonstration and laboratory purposes. It may not be used or copied commercially. SENSIRION AG does not offer any guarantee.

Description of Software for HumiViewer (V1.3)

In order to operate the AH31, dedicated software is provided with your evaluation kit. Although the software allows *plug-and-play,* some additional remarks will be given.

To start the HumiViewer, double click its icon on your desktop. A pop-up window will appear to guide you to the proper setting of your COM port with the connected AH31/ASD11 (*see Fig. 3*). If the AH31/ASD11 cannot be linked to the Humi Viewer, please check all your connections between the sensor and your system.

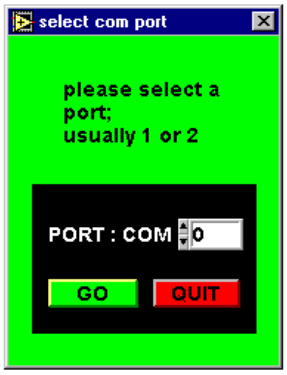

Fig. 3: Pop-up window for proper connection of the AH31/ASD11 to the HumiViewer.

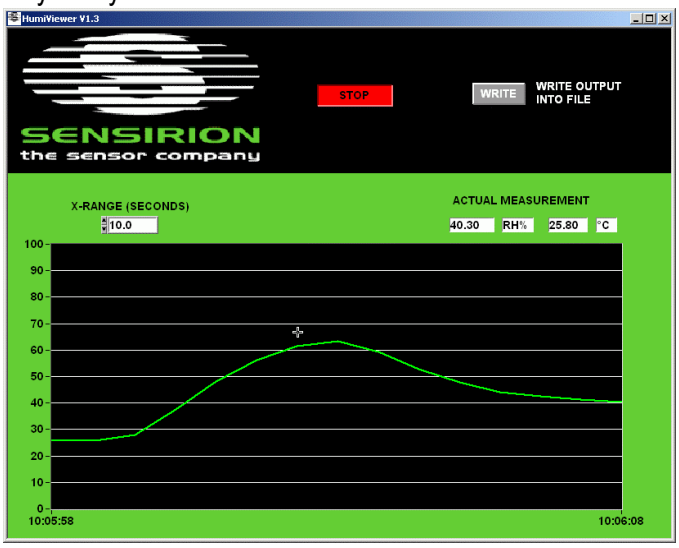

Fig. 4: Main window of HumiViewer to display measurement data of the AH31.

Once the connection has been set up, the HumiViewer main window will appear (*see Fig. 4*). Measurements are started with the *START* button and interrupted with the *STOP* button. The speed of data acquirement is set by *X-RANGE (SECONDS). WRITE OUTPUT TO FILE* allowsmeasurementdatato be saved in a text file.

Appendix A: ASD11 microprocessor board

With the ASD11 microprocessor board, the digital output signal of the AH31 is recorded and adjusted for non-linearity and temperature dependency as described in the datasheet. It can then be transmitted to your PC by RS-232. The board is shown in *Fig. 5.* with the corresponding settings of the jumpers. The serial connector of the microprocessor board is a 9-pin female D-SUB connector and can be connected to any serial COM port (9600 baud, 8 data bits, 1 stop bit, no parity, no protocol).

	settings jumpers A		
	default	**open**	**closed**
A1	open	Celsius display	Fahrenheit display
A2	open	humidity, temperature	SPI values
A3	open	high accuracy	low accuracy
A4	closed	serial interface drivers off	serial interface drivers on
A5	open	-	reset system

wiring interface connector	**settings jumpers B**	
	position B1 (default, typical for pc)	position B2 (crossed, typical for PDA)
pin 2	receive data *RxD*	transmit data *TxD*
pin 3	transmit data *TxD*	receive data *RxD*
pin 5	signal ground GND	signal ground GND

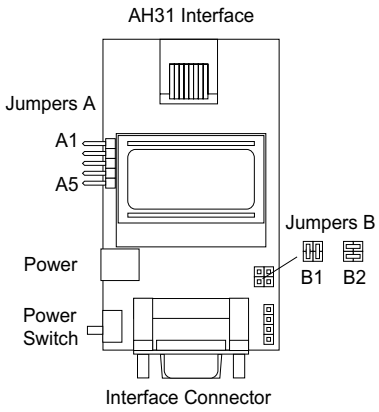

Fig. 5: Microprocessor board with its corresponding jumper settings.B1 direct, no intersection for PC, B2 crossed for PDA.

Die Mikroprocessorboard ASD11 can also be used with any terminal program (e.g. HyperTerminal, VersaTerm,). The following section summarizes the commands available to control the ASD11.

VER	provides the version of the sensor software
GET	starts a single measurement given as SPI value
GO	starts continuous measurement
S	stops measuring

Each command has to be confirmed by the *Enter-Key*, the commands are not case sensitive.

Appendix B: Pin Diagram through hole AH31

Pin	Name	Comment
1	CLK	Sensor Clock
2	/CS	SPI Chip Select Input
3	SCK	SPI Serial Clock Input
4	MISO	SPI Serial Data Output
5	VDD	Speisespannung
6	GND	Erde
7	PD	Power Down
8	CKS	Nicht benutzt, muss mit Speisespannung verbunden sein

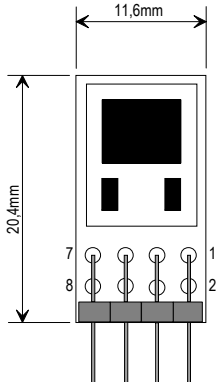

Fig. 6 Pin description through hole AH31

Important Information

The warranty for each SENSIRION AG product comes in the form of a written warranty which governs sale and use of such product. Such warranty is contained in the printed terms and conditions under which such product is sold, or in a separate written warranty supplied with the product. Please refer to such written warranty with respect to its applicability to certain applications of such product.

These products may be subject to restrictions on use. Please contact SENSIRION AG for a list of the current additional restrictions on these products. By purchasing these products, the purchaser of these products agrees to comply with such restrictions. Please contact SENSIRION AG for clarification of any restrictions described herein.

SENSIRION AG reserves the right, without further notice, to change the SENSIRION EK-H1 Humidity Evaluation Kit product specifications and/or information in this document and to improve reliability, functions and design.

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SPI™ is a trademark of Motorola.

Caution: The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation, take normal ESD precautions when handling this product.

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