

Quick Start Guide

4-Channel Evaluation board for digital humidity modules

HYT 271, HYT 221, HYT R411 and HYT 939



Index

1. Evaluation board connections	2
2. Compatibility	3
3. Power supply and outputs	3
4. Signal transmission	3
5. Software installation	4
6. Assembly of sensors	4
7. Using the software	4
8. Flashing the firmware	6
Contact & disclaimer	7



The purpose of this evaluation board is to facilitate the evaluation of HYT sensor modules for humidity and temperature. The evaluation board enables to connect up to 4 HYT modules simultaneously.

1. Evaluation board connections

Though the humidity evaluation board has 8 connectors, a maximum 4 sensors can be used at a time (See section 4-6 for details).

The square-shaped connectors are for HYT 221, HYT 271, and HYT.R411 modules. The round connectors are for HYT 939P modules. The pinning of each sensor is displayed on the board.

To power the board, connect the USB Dongle to the Evaluation Board according to the "WHITE" and "RED" color markings. Then connect the USB Dongle to your PC.



Sensor 1 Sensor 2 Sensor 3 Sensor 4

Evaluation Board Top Connections

USB dongle connected to the evaluation board





2. Compatibility

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⊕, ∕⊖ The evaluation board is compatible with all IST AG humidity modules of the HYT family.



3. Power supply and outputs

The transmitter can be powered via USB cable from a PC or from a DC power source. Please refer to Schematics (1.1) for the position of the corresponding connectors.

Power supply requirements:

USB	5 V
DC power source	4 to 15 V DC (ca. 50 to 300 mA)
Pin assignment of J1 connector:	
Uh	Rel. Humidity, analog output 0-10V
GND	Ground
+U	Power supply PCB, input 4-15V DC
Ut	Temperature, analog output 0-10V

4. Signal transmission

4.1 Analog output

The analog voltage signals transmitted are directly proportional to the measured parameters. The following measuring and signal ranges represent the default HYT calibration:

Parameter	Output	Minimum	Maximum
Relative humidity	Uh	0% RH 0V	100% RH 10 V
Temperature	Ut	- 40 °C 0V	+125 °C 10 V

The effectively measured values can be calculated according to the following formula:





5. Software installation

Operating System:

Windows, 7, Windows 8/8.1, Windows 10, Windows 11.

The executable file is dependent on the iowkit.dll file. To run the software, it is important that the iowkit.dll file is in the same directory as the executable file.

Name

iowkit.dll
 Visual HYT.exe

DLL file and executable file in the same directory.

6. Assembly of sensors

Only one sensor can occupy a shared sensor slot . Each communication slot is shared between a square and round connector. Therefore, only one of them can be occupied. (Ex: Square connector of "Sensor 1" has a HYT271 connected, so the round connector of "Sensor 1" is considered occupied). When assembling the HYT 939P, make sure the shape of the sensor housing nose also matches the shape of the circle shaped connector. Assemble the flat chip sensors into the square connectors facing up.

See example of assembling the sensors on the Evaluation Board below.



Assembled sensors on the Evaluation Board. Occupied slots cannot be used.

7. Using the software

Steps to read sensor data:

- 1. Click "Scan I2C Bus" under the Interface section to ensure that the Evaluation Board can be found by the software.
- On the settings section, select the appropriate serior settings that correspond to how you have assembled the sensors on the Evaluation Board. Change the cycle time if needed. To apply the settings, click "Write". To read the previously applied settings, click "Read".
- Note: When using HYT 271/221/939 , select sensor type "HYT271", for HYT R411 "HYTR411"
- 3. To begin reading the sensor data, click "Read" located under the Interface section. To stop the reading, click "Stop Read".



Changing Address Module:

- 1
- Assemble the sensor that you desire to change the address in Sensor slot #1. Under the "Change Address" section, type the new decimal address in the "New Address" box. Finally, click "Set Address" to set the new desired address.
- 2. 3.

Hexadicimal	Decimal	Si
0x23	35	CC re
0x24	36	
0x25	37	
0x26	38	
0x27	39	
0x28	40	
0x29	41	
0x2A	42	
0x2B	43	
0x2C	44	
0x2D	45	

imple Hexadecimal to Decimal onversion chart for quick eference.

Data Acquisition / Logging:

- Under the Log section, click "Set Log". Browse the directory in which the log file is to be saved. Logging should begin upon reading the sensor data. To stop the software from logging further data, click "Unset Log". 1. 2. 3.

Visual-Hyt							×				
Read Close	oard found	Log SetLog	Uns	Setting Ty retLog Ty Ty	ngs ype Sensor 1 ype Sensor 2 ype Sensor 3 ype Sensor 4	HYT271 HYT271 HYTR411 None	> > > >	Sensc Fig 4.	or settii sensoi	ngs that correspc r assembly config	nd with uration
Address Address Humidity Temperature Temperature Time-Counter	sor 1 Sens	vr 2 Sensor % ^% ^rC 'F	3 Senso % 'C 'F	r4 Ro % Cy Ro Ro % Char "C Char "F Nu St	rcle Time [0.1 s] evision Visual evision Board Read nge Address Mo ew Address atus	01-01 Write					
ding the senso	"s data (adc	lress, humid	ity,	Nisual-Hyt Interface Scan I2C Bus Read Close	Read value StopRea	Log	SetLog	Unset	Log	Settings Type Sensor 1 Type Sensor 2 Type Sensor 3 Type Sensor 4 Cvcle Time [0.1 s]	HYT271 HYT271 HYTR411 None
				Sensordata Address Humidity Temperatur Temperatur Time-Count	Sensor 1 33 16.487 % e 27.750 °C e 81.951 °F er 5320 m	Sensor 2 32 15.522 % 27.408 °C 81.334 °F 15	Sensor 3 40 13.703 27.516 81.528	Sensor 4 	% % ^C F	Revision Visual Revision Board Read Change Address Mod New Address Status	Ul-01 Write





3. Flashing the firmware

Software «Microchip Studio»:

Programmer «USB AVRISP XPII»:

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₽/

https://www.microchip.com/en-us/tools-resources/develop/ microchip-studio

https://www.waveshare.com/usb-avrisp-xpii.htm

To successfully flash the firmware, the Evaluation Board must be powered on and have a connection to the programmer.

Power the Evaluation Board on by connecting it to the PC via the USB Dongle.





Please see pin assignment above. The recommended maximum length of the extension cable is 30 cm.



Tool Device Inter AVRISP mkll × ATxmega16E5 × PDI	ace Device signature • Apply 3. Mat	Target Voltage ch-settings-and	
Tool Device Inter AVRISP mkll ATxmega16E5 PDI	Apply 3. Mat	Target Voltage	
Interface settings Device Tool information Erase Chip Device information Flash (16 KB+4 Memories C\Users\User VErase Flash	Erase now KB BOOT) I\Firmware\Eval_Card.hex before programming	pply 	
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4. Click Verify EEPF Memories Advanced	OM after programming Programming OM after programming s (128 bytes)	ram Verify Read	
	<u>.</u>		
• OK			



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All mechanical dimensions are valid at 25 °C ambient temperature, if not differently indicated • All data except the mechanical dimensions only have information purposes and are not to be understood as assured characteristics • The information on this data sheet was examined carefully and will be accepted as correct; No liability in case of errors or or typing mistakes • Load with extreme values during a longer period can affect the reliability • The material contained herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner • Product specifications are subject to change without notice • All rights reserved