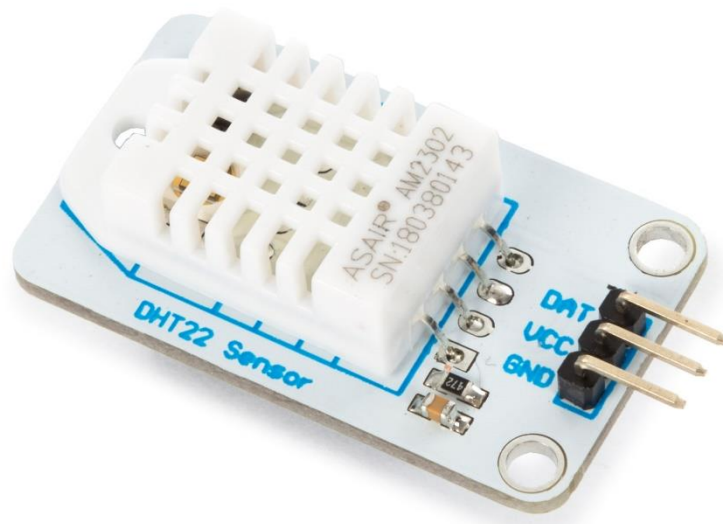


VMA345



USER MANUAL

1. Introduction



To all residents of the European Union

Important environmental information about this product

This symbol on the device or the package indicates that disposal of the device after its lifecycle could harm the environment. Do not dispose of the unit (or batteries) as unsorted municipal waste; it should be taken to a specialized company for recycling. This device should be returned to your distributor or to a local recycling service. Respect the local environmental rules.

If in doubt, contact your local waste disposal authorities.

Thank you for choosing Velleman! Please read the manual thoroughly before bringing this device into service. If the device was damaged in transit, do not install or use it and contact your dealer.

2. Safety Instructions



Read and understand this manual and all safety signs before using this appliance.



Indoor use only.

- This device can be used by children aged from 8 years and above, and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning the use of the device in a safe way and understand the hazards involved. Children shall not play with the device. Cleaning and user maintenance shall not be made by children without supervision.

3. General Guidelines

- Refer to the Velleman® Service and Quality Warranty on the last pages of this manual.
- All modifications of the device are forbidden for safety reasons. Damage caused by user modifications to the device is not covered by the warranty.
- Only use the device for its intended purpose. Using the device in an unauthorised way will void the warranty.
- Damage caused by disregard of certain guidelines in this manual is not covered by the warranty and the dealer will not accept responsibility for any ensuing defects or problems.
- Nor Velleman nv nor its dealers can be held responsible for any damage (extraordinary, incidental or indirect) – of any nature (financial, physical...) arising from the possession, use or failure of this product.
- Keep this manual for future reference.

4. What is Arduino®

Arduino® is an open-source prototyping platform based in easy-to-use hardware and software. Arduino® boards are able to read inputs – light-on sensor, a finger on a button or a Twitter message – and turn it into an output – activating of a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so, you use the Arduino programming language (based on Wiring) and the Arduino® software IDE (based on Processing).

Surf to www.arduino.cc and www.arduino.org for more information.

5. Overview

General

The CM2302/DHT22 is a temperature and humidity composite sensor. It uses dedicated digital module acquisition technology and temperature and humidity sensing technology to ensure high reliability and excellent long-term stability. The sensor includes a capacitive wet sensor and a high-precision NTC temperature sensor connected to a high-performance 8-bit microcontroller, ensuring the product's excellent quality, fast response, anti-interference ability and cost efficiency. Each sensor is being calibrated in a highly accurate humidity calibration room.

Compared to the DHT11, this sensor is more precise, more accurate and works in a bigger range of temperature/humidity, but its larger and more expensive.

Applications

HVAC, dehumidifiers, testing and testing equipment, consumer products, automotive, automatic control, data loggers, home appliances, humidity regulators, weather stations, and other related humidity detection control.

Features

- ultra-low power consumption
- long transmission distance
- standard digital single bus output
- excellent long-term stability
- high-precision NTC

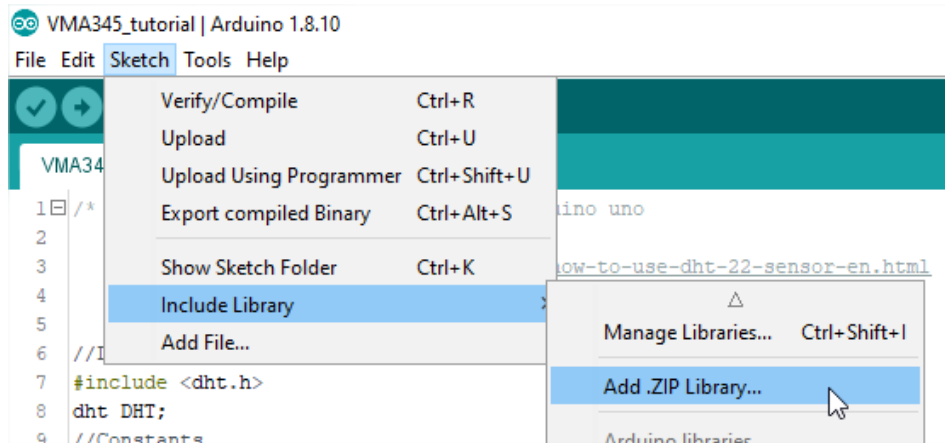
6. Connection VMA345 to a VMA100/Arduino® UNO

VMA100/Arduino® UNO
5V
GND
digital pin 2 (or other one)

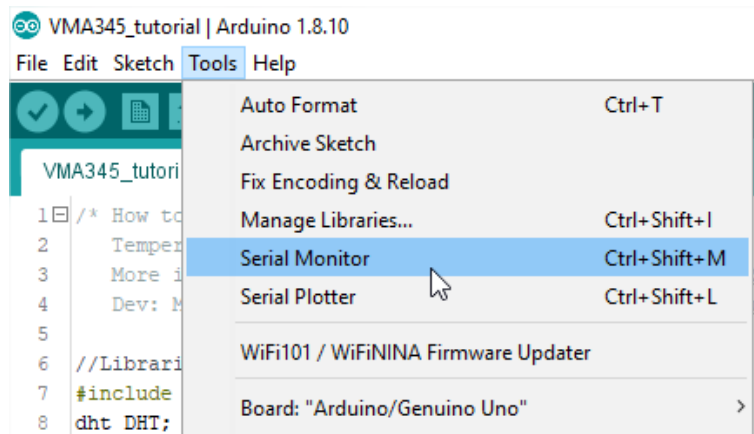
VMA345
VCC
GND
DAT

7. Software Example

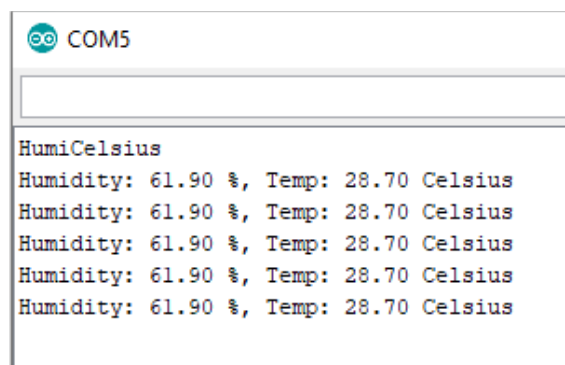
1. Download the VMA345_tutorial.zip and DHT_Library.zip from our website and unzip the VMA345_tutorial.zip into an INO sketch.
2. Open the Arduino IDE and load the VMA345_tutorial.ino.
3. Add the DHT_library to the IDE.



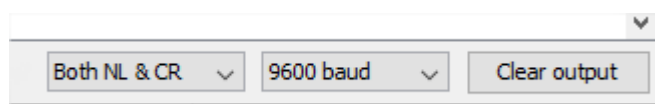
4. Now, compile and upload the sketch.
5. Open the serial monitor.



6. This would be the result.



Make sure the selected baud rate is the same as used in the sketch!



8. Example Sketch

```
/* How to use the DHT-22 sensor with Arduino uno
   Temperature and humidity sensor
   More info: http://www.ardumotive.com/how-to-use-dht-22-sensor-en.html
   Dev: Michalis Vasilakis // Date: 1/7/2015 // www.ardumotive.com */

//Libraries
#include <dht.h>
dht DHT;
//Constants
#define DHT22_PIN 2 // DHT 22 (AM2302) - what pin we're connected to

//Variables
float hum; //Stores humidity value
float temp; //Stores temperature value

void setup()
{
  Serial.begin(9600);
}

//Variables

void loop()
{
  int chk = DHT.read22(DHT22_PIN);
  //Read data and store it to variables hum and temp
  hum = DHT.humidity;
  temp= DHT.temperature;
  //Print temp and humidity values to serial monitor
  Serial.print("Humidity: ");
  Serial.print(hum);
  Serial.print(" %, Temp: ");
  Serial.print(temp);
  Serial.println(" Celsius");
  delay(1000); //Delay 1 sec.
}
```

9. Technical Specifications

typical accuracy	+/- 2 % RH
operating range	0 to 99.9 % RH
humidity response time	5 s
typical accuracy temperature	+/- 0.5 °C
operating range temperature	-40 to 80 °C
interface	1 wire
supply voltage	3.3 to 5.5 VDC
supply current	max. 1.5 mA

Use this device with original accessories only. Velleman nv cannot be held responsible in the event of damage or injury resulting from (incorrect) use of this device. For more info concerning this product and the latest version of this manual, please visit our website www.velleman.eu. The information in this manual is subject to change without prior notice.

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No part of this manual may be copied, reproduced, translated or reduced to any electronic medium or otherwise without the prior written consent of the copyright holder.

Velleman® Service and Quality Warranty

Since its foundation in 1972, Velleman® acquired extensive experience in the electronics world and currently distributes its products in over 85 countries.

All our products fulfil strict quality requirements and legal stipulations in the EU. In order to ensure the quality, our products regularly go through an extra quality check, both by an internal quality department and by specialized external organisations. If, all precautionary measures notwithstanding, problems should occur, please make appeal to our warranty (see guarantee conditions).

General Warranty Conditions Concerning Consumer Products (for EU):

- All consumer products are subject to a 24-month warranty on production flaws and defective material as from the original date of purchase.
- Velleman® can decide to replace an article with an equivalent article, or to refund the retail value totally or partially when the complaint is valid and a free repair or replacement of the article is impossible, or if the expenses are out of proportion.

You will be delivered a replacing article or a refund at the value of 100% of the purchase price in case of a flaw occurred in the first year after the date of purchase and delivery, or a replacing article at 50% of the purchase price or a refund at the value of 50% of the retail value in case of a flaw occurred in the second year after the date of purchase and delivery.

• Not covered by warranty:

- all direct or indirect damage caused after delivery to the article (e.g. by oxidation, shocks, falls, dust, dirt, humidity...), and by the article, as well as its contents (e.g. data loss), compensation for loss of profits;
- consumable goods, parts or accessories that are subject to an aging process during normal use, such as batteries (rechargeable, non-rechargeable, built-in or replaceable), lamps, rubber parts, drive belts... (unlimited list);
- flaws resulting from fire, water damage, lightning, accident, natural disaster, etc....;
- flaws caused deliberately, negligently or resulting from improper handling, negligent maintenance, abusive use or use contrary to the manufacturer's instructions;
- damage caused by a commercial, professional or collective use of the article (the warranty validity will be reduced to six (6) months when the article is used professionally);
- damage resulting from an inappropriate packing and shipping of the article;
- all damage caused by modification, repair or alteration performed by a third party without written permission by Velleman®.
- Articles to be repaired must be delivered to your Velleman® dealer, solidly packed (preferably in the original packaging), and be completed with the original receipt of purchase and a clear flaw description.
- Hint: In order to save on cost and time, please reread the manual and check if the flaw is caused by obvious causes prior to presenting the article for repair. Note that returning a non-defective article can also involve handling costs.
- Repairs occurring after warranty expiration are subject to shipping costs.
- The above conditions are without prejudice to all commercial warranties.

The above enumeration is subject to modification according to the article (see article's manual).