ABOUT HARDWARE USED

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The HIGROTERM system is based upon the Arduino Mega board, DHT22 humidity and temperature sensors, solderless breadboard and necessary cables and connectors. The full description of the system will be part of a scientific published paper soon. In this document, a brief explanation of the hardware necessary to build the HIGROTERM system is given.

An overall view of the system is shown in Figure 1 and how to easily assemble it in a perfboard style.

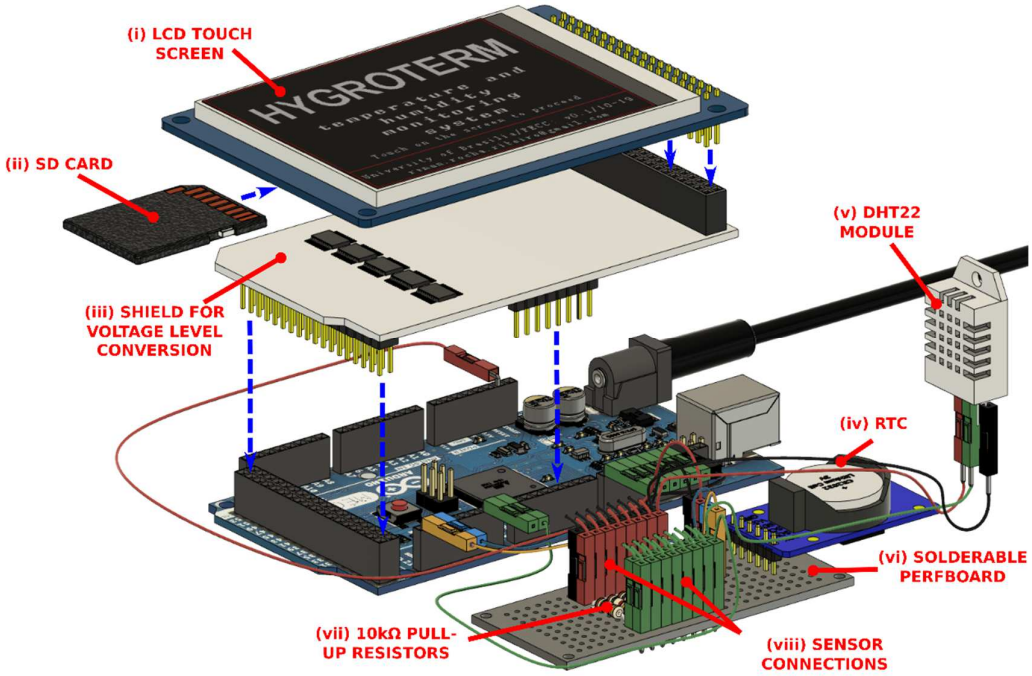

Figure 1 Overall view of the hardware.

Figure 2 shows in more details the cable connection, without including the LCD screen and shield for voltage level conversion, as they are directly stacked upon the Arduino Mega board. The pinout connection shown is the same as used in the source code of the system. For better clarity, the example only includes two units of DHT22 sensor, although the data lines for the 8 channels are available and illustrated, although not connected to sensors.

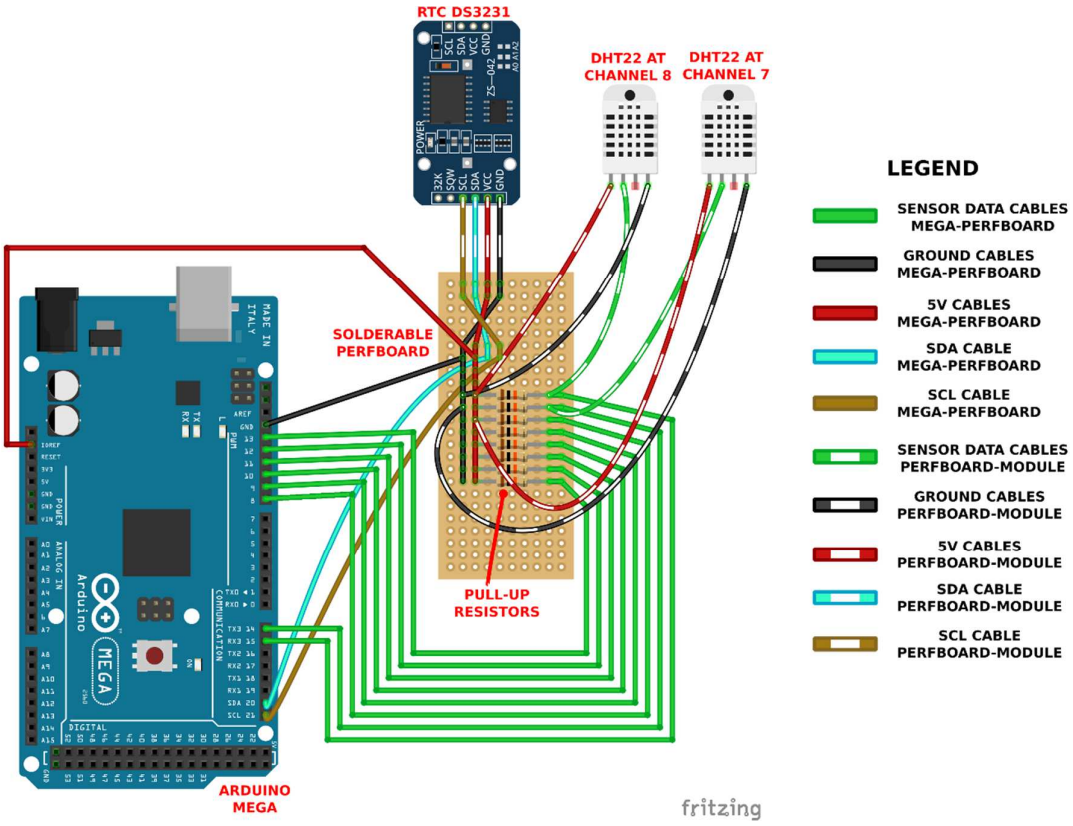

Figure 2 Cable connection using perfboard.

Figure 3 shows in more detail the cable connection using a breadboard. The shield for voltage level conversion is shown for completeness' sake, but its connection is to be done in a stacked form. In Figure 3, 2EDG connectors, shown in green, are included to better reflect a suggestion of a more reliable and flexible way to build the system and connect the sensors.

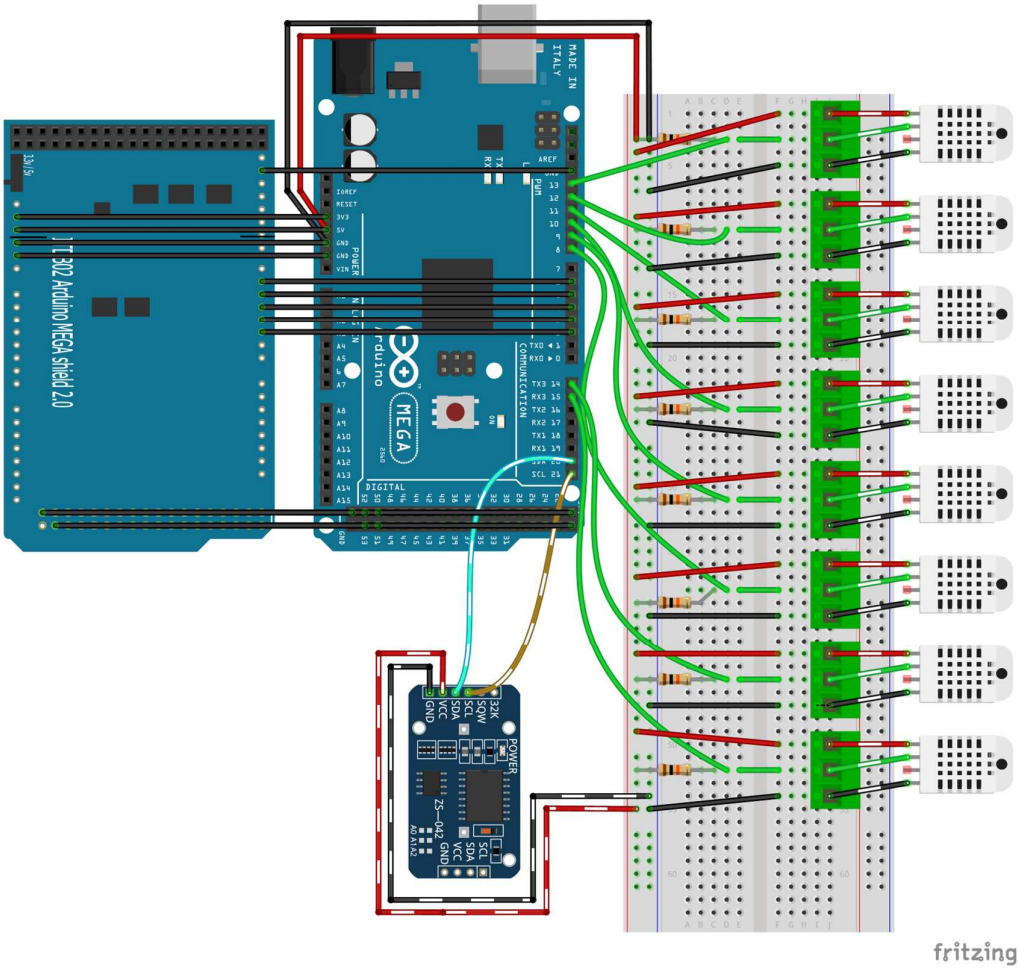

Figure 3 Cable connection using breadboard. The shield for voltage level conversion is shown with cables, but its connection should be stacked.

Figure 4 shows the circuit schematics of the system shown in Figure 3, for better tracing of the connection routes. This same schematics is included in this repository as a GERBER file and Fritzing native file.

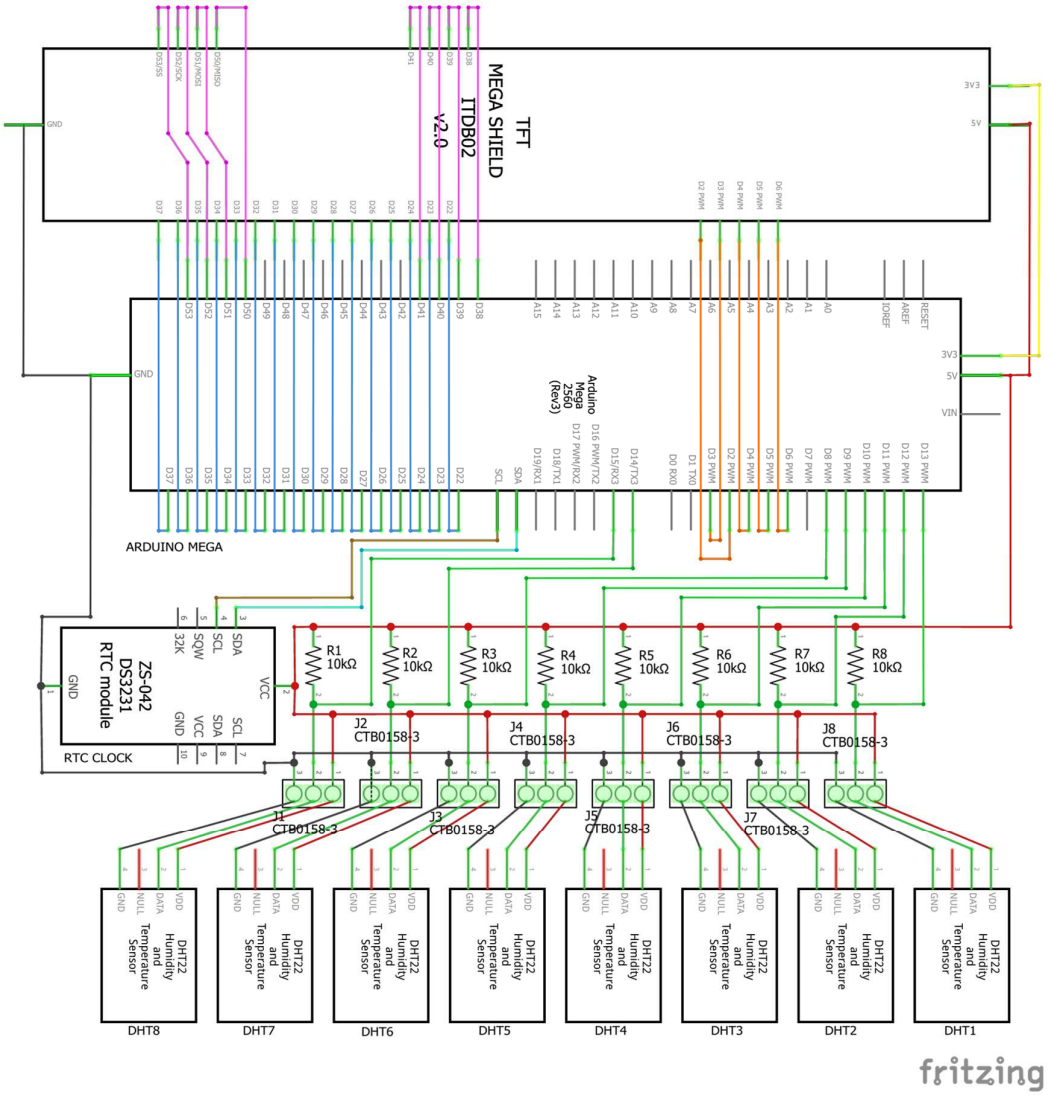

Figure 4 Schematic.

Table 1 presents the bill of materials for the system. This bill includes the 2EDG connectors to allow the unplugging the DHT22 sensors as desired, for better practicability. It also includes 4 core AWG cables that shall be used to connect the sensors to the system and a rectangular rigid plastic enclosure box for a better system aesthetic.

Component	Quantity
Arduino MEGA board (clone)	1
3.2'' 240X320 LCD touch screen model TFT_320QDT_9341	1
Voltage level conversion shirl model – TFT LCD Mega Shield V2.2	1
8 GB microSD card	1
12 V power supply adapter	1
RTC DS3231 module	1
DHT module	8
Solderable perfboard	1
10 kΩ resistor	8

2.54mm jumper cables (male-male) – pack with 40 units	1
2.54mm jumper cables – male-female – pack with 40 units	1
2.54mm female pin socket connector	40
2EDG connector	8
4 core AWG cable to connect sensors to system (1 meter)	10
Rectangular rigid plastic enclosure box	1

Table 1 Bill of materials.

Blank

(maybe not anymore...)