

Stilo

LED and Aquarium Computer

User manual ver. 2.1

Software ver: 2.1

Changes:

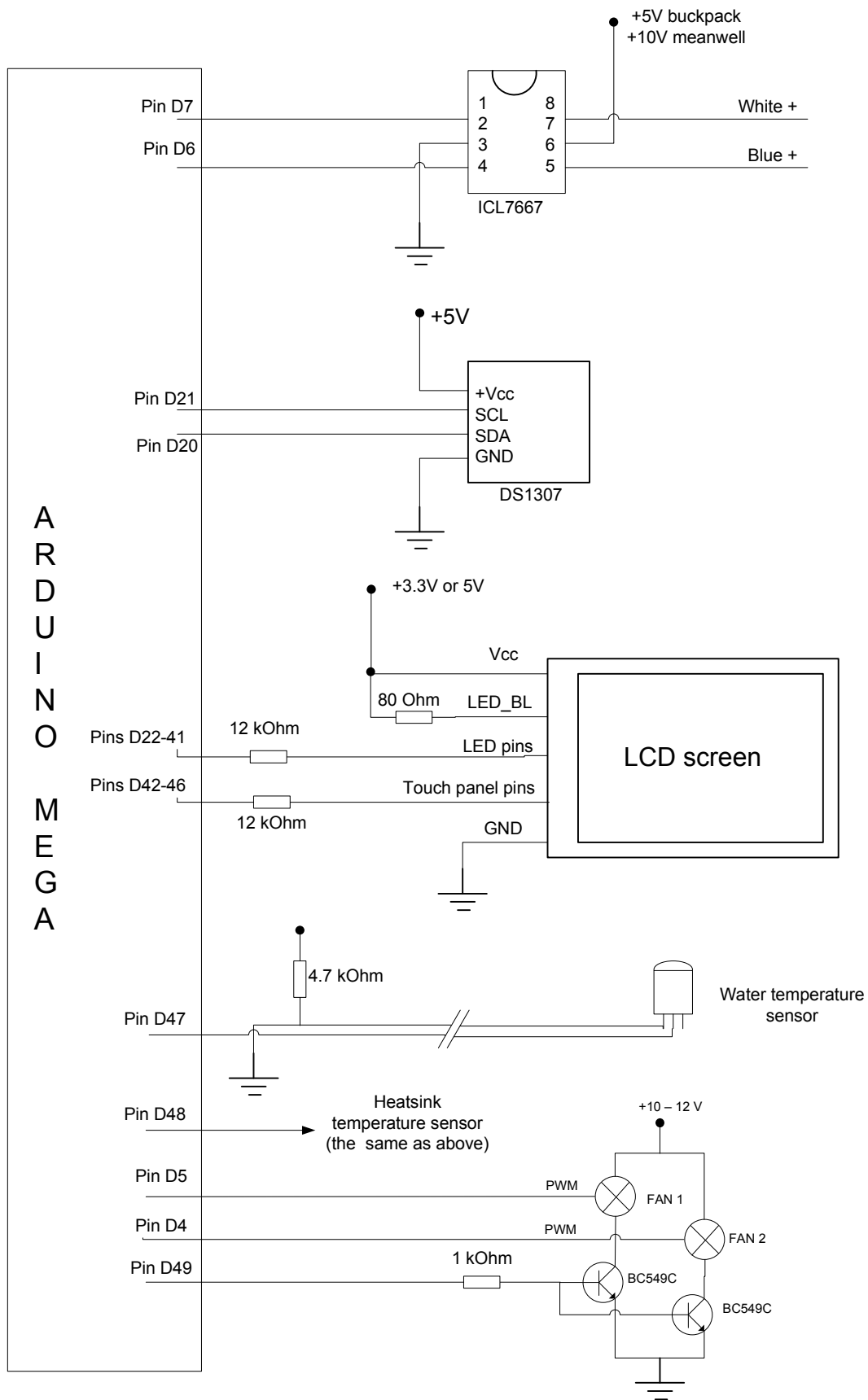
v. 2.1

- Water temperature sensor changed to digital DS18B20;
- Pins to control water heater, cooler and for alarm buzzer;
- Led heatsink temperature sensor (DS18B20 as well);
- Speed control for heatsink fans;
- Led values can be changed from menu;
- Setting can be stored in EEPROM.

v. 1.5

- Minor changes to design;
- Added temperature probe and temperature control page, for testing purposes at the moment;
- Tidied up the code

v.1 initial release



40-pin LCD connector	Arduino
1 GND	GND
2 VCC	*
3 N.C.	
4 LCD_RS	38
5 LCD_WR	39
6 LCD_RD	+3.3V
7 LCD_DB8	22
8 LCD_DB9	23
9 LCD_DB10	24
10 LCD_DB11	25
11 LCD_DB12	26
12 LCD_DB13	27
13 LCD_DB14	28
14 LCD_DB15	29
15 LCD_CS	40
16 N.C.	
17 LCD_RESET	41
18 N.C.	
19 LED_BL	*
20 N.C.	

40-pin LCD connector	Arduino
21 LCD_DB0	37
22 LCD_DB1	36
23 LCD_DB2	35
24 LCD_DB3	34
25 LCD_DB4	33
26 LCD_DB5	32
27 LCD_DB6	31
28 LCD_DB7	30
29 TouchP_CLK	46
30 TouchP_CS	45
31 TouchP_DIN	44
32 TouchP_BUSY	
33 TouchP_OUT	43
34 TouchP_Penirq	42
35 SD_OUT	
36 SD_SCK	
37 SD_DIN	
38 SD_CS	
39 N.C.	
40 N.C.	

Parts:

LCD screen – ebay, the seller was electronics_lee from China but there are others as well. The screen must have HX8347-A driver with 16-bit interface and ADS7843 compatible touch panel controller.

It's possible to connect different LCD's but it will involve changing libraries and amending the sketch code.

Arduino Mega

Mega proto board

RTC (assembled or parts: DS1307 chip, 32.768kHz Crystal, CR2032 battery and holder, 2 x 10kOhm resistors).

ICL7667 chip

2 x **DS18B20** temperature sensors

Various resistors

Transistors

From many shop with electronic components.

Heatsink fan – PC fan with PWM control, they are recognized by having 4 wires instead of usual three. The fourth wire (usually blue) is used to control fan speed. The specification says PWM frequency must be between 21-28 kHz but PWM from arduino is 490Hz. Most of fans will work with arduino PWM signal but they can be noisy at lower speed. The fans I have tried are Arctic Cooling 12 PWM AC and they are very quiet but they don't turn off at 0%, so I have used transistors.

Water sensor – they have to be made waterproof so I used a glass vial from API test kit, filled bottom part with thermo paste (the one used between processors and heatsinks), immersed the sensor in it and filled the rest with aquarium silicone.

Pins setting:

```
ITDB02 myGLCD(38,39,40,41);  
ITDB02_Touch myTouch(46,45,44,43,42);  
#define ONE_WIRE_BUS_W 47  
#define ONE_WIRE_BUS_H 48  
const int ledPinBlue = 6;  
const int ledPinWhite = 7;  
const int tempHeatPin = 9;  
const int tempCoolPin = 10;  
const int tempAlarmPin = 11;  
const int fan1PWMpin = 4;  
const int fan2PWMpin = 5;  
const int fanTranzPin = 49;
```

- RS, WR, CS, RESET pins for LED screen
- Touch screen control pins
- Water temperature sensor
- Heatsink temperature sensor
- pin for the blue LED
- pin for the white LED
- pin to control heater
- pin to control cooler
- pin for alarm buzzer
- PWM pin for heatsink fan
- PWM pin for heatsink fan
- pin to turn fan on/off