Buzzer

Sheet: Buzzer
File: Buzzer.sch
Buzzer
Buzzer_MOS_gate
5V
GND
+5V
GNDREF

Voltage/Angle sensor

Voltage_sensor
J6
Conn_01x02_Male
GNDREF
+5V
RV2
10k
C9
100nF

Temperature sensor

Sheet: RTD_temp_sense
File: RTD_temp_sense.sch
Temperature
AD2
5V
GND
J3
Conn_01x02_Male
GNDREF
+5V

Light sensing

Pot.meter
Conn_01x03_Male
J8
LDR_divider
LDR
R10
200k
RV1
10k
R11
Full light: 8–20k
Dark: >1Mohm

Power input

Sheet: Input_filter
File: Input_filter.sch
J9
Jack-DC
DC_1
DC_2
5V
GND
+5V
GNDREF

DAC

Filter notes:
– 1/2pi*R*C ~ 100Hz
DAC
10k
R15
C13
150nF
Conn_01x02_Male
J1
GNDREF

Buttons & LEDs

LED1
LED2
LED3
LED4
D4
D5
D6
D7
blue
270
R7
R6
R8
R9
BUTT1
BUTT2
SW2
SW3
SW_Push_Dual_OWN
GNDREF

Capacitive buttons

+5V
J14
TEST_1P
J17
TEST_1P
470k
R22
470k
R23
Capacitive_button_2
Capacitive_button_1

Reset circuitry

+5V
RESET_MEGA
470
R13
100
R16
R14
10K
C11
10nF
SW1
SW_Push_Dual_OWN
GNDREF

UART/USB connector

J4
USART test points
J2
R5
12
UART_RX
UART_TX
GNDREF

Rotary encoder

Conn_01x03_Male
J7
ROTA
ROTB
SW4
A
C
B
C10
C12
10nF
GNDREF

Programmer

J5
F1 Conn_02x03_Odd_Even
RESET_MEGA
SCK
MISO
MOSI
+5V
C2
100nF
GNDREF

U3 — ATMEGA128-16AU

C3
C
Ferrite_Bead
L1
C8
100n
PWR_FLAG
+5V
GNDREF
VCC
AVCC
GND
AGND
18pF1
18pF2
18pF
Y1
C5
100nF
RESET_MEGA
PEN
XTAL1
XTAL2
AREF
Capacitive_button_1
Capacitive_button_2
Voltage_sensor
Temperature
LDR_divider
MOSI
MISO
UART_RX
UART_TX
R30
12
Pot.meter
LDR_divider
(AD0)PA0
(AD1)PA1
(AD2)PA2
(AD3)PA3
(AD4)PA4
(AD5)PA5
(AD6)PA6
(AD7)PA7
(SS)PB0
(SCK)PB1
(MOSI)PB2
(MISO)PB3
(OC0)PB4
(OC1A)PB5
(OC1B)PB6
(OC2/OC1C)PB7
PG0(WR)
PG1(RD)
PG2(ALE)
PG3(TOSC2)
PG4(TOSC1)
PF0(ADC0)
PF1(ADC1)
PF2(ADC2)
PF3(ADC3)
PF4(ADC4/TCK)
PF5(ADC5/TMS)
PF6(ADC6/TDO)
PF7(ADC7/TDI)
(A8)PC0
(A9)PC1
(A10)PC2
(A11)PC3
(A12)PC4
(A13)PC5
(A14)PC6
(A15)PC7
PE0(RXD0/PDI)
PE1(TXD0/PDO)
PE2(XCK0/AIN0)
PE3(OC3A/AIN1)
PE4(OC3B/INT4)
PE5(OC3C/INT5)
PE6(T3/INT6)
PE7(IC3/INT7)
(SCL/INT0)PD0
(SDA/INT1)PD1
(RXD1/INT2)PD2
(TXD1/INT3)PD3
(ICP1)PD4
(XCK1)PD5
(T1)PD6
(T2)PD7
SCK
BUTT1
BUTT2
LED1
LED2
LED3
LED4
ROTB
ROTA
Buzzer
DAC

Sheet: LCD

File: LCD_.sch
Backlight
RS
EN
D4
D5
D6
D7
Mhole_2
Mhole_1

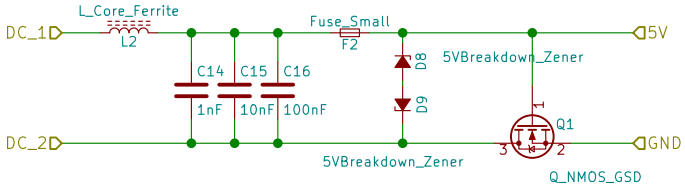
Sheet: Keypad

File: Keypad.sch
col_2
row_1
col_1
row_4
col_3
row_3
row_2
Mhole_1
Mhole_2
Mhole_3
Mhole_4

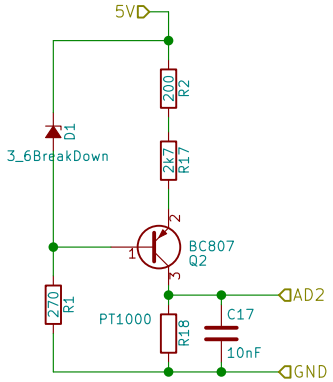
PCB mounting holes

J24
J25
J26
J27
Conn_01x01

Sheet: /	
File: panel.sch	
Title: AVR Development board	
Size: A3	Date: 2020-09-06
KiCad E.D.A. kicad 5.1.10-88a1d61d58~ubuntu20.04.1	Id: 1/6
	Rev:



Sheet: /Input_filter/ File: Input_filter.sch		
Title:		
Size: A4	Date: 2020-07-18	**Rev:**
KiCad E.D.A. kicad 5.1.10-88a1d61d5890ubuntu20.04.1		Id: 2/6



Design notes:
- load current will be approximately 1 mA
- 0,4K/mW self-heating -> it shall be compensated by SW

Calculations:
1) Zener
Vt = 5V
Iload = 1mA
Rmaxload = 1300 (at about 78 °C according to datasheet)

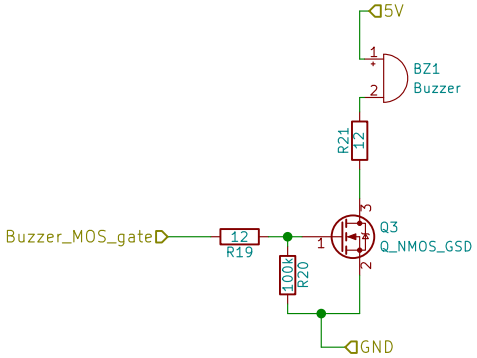
Rmaxload = (Vt - Vz)/Iload

Vz = Vt - Rmaxload*Iload = 3,7 (available is 3,6V - close enough)

2) Zener resistor
Vz = 3,6V
Iz = 5mA

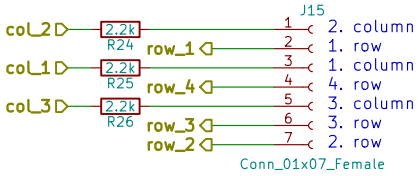
Rz = (Vt - Vz)/Iz = 280 ohm (availabla is 270 - close enough)

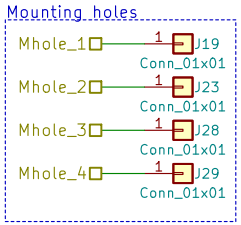
Sheet: /RTD_temp_sense/		
File: RTD_temp_sense.sch		
Title:		
Size: A4	Date: 2020-07-18	**Rev:**
KiCad E.D.A. kicad 5.1.10-88a1d61d5890ubuntu20.04.1		Id: 3/6



Sheet: /Buzzer/ File: Buzzer.sch		
Title:		
Size: A4	Date: 2020-07-18	**Rev:**
KiCad E.D.A. kicad 5.1.10-88a1d61d5890ubuntu20.04.1		Id: 4/6

Devices picture is good. The leftmost pin is number 1 and the rightmost is number 7

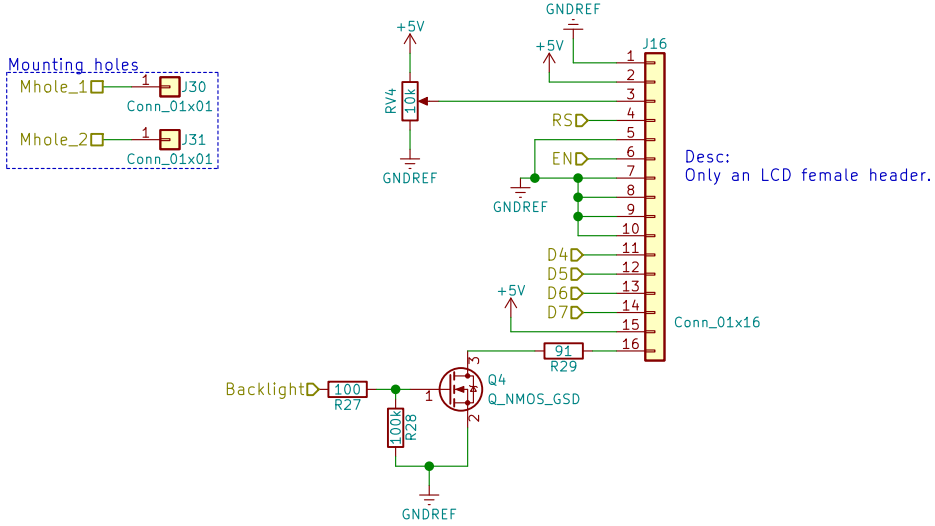




Design Notes:
– spacers
?– M2, 10mm
–screws
?– M2, 6mm

Sheet: /Keypad/		
File: Keypad.sch		
Title:		
Size: A4	Date: 2020-07-18	**Rev:**
KiCad E.D.A. kicad 5.1.10-88a1d61d5890ubuntu20.04.1		Id: 5/6

Design Notes:
-spacers:
?- M3, 11mm
- screws:
?- M3, 4mm



Sheet: /LCD_/		
File: LCD_.sch		
Title:		
Size: A4	Date: 2020-07-18	**Rev:**
KiCad E.D.A. kicad 5.1.10-88a1d61d5890ubuntu20.04.1		Id: 6/6