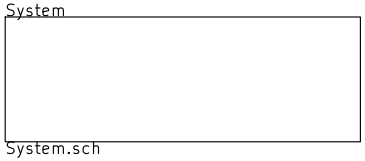
KILN CONTROLLER

System

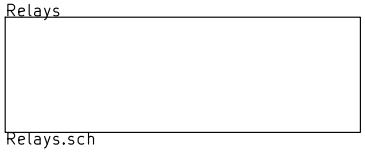


System.sch

LoadCells

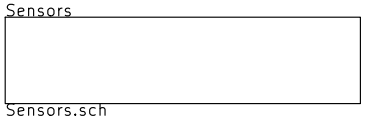
LoadCells.sch

Relays



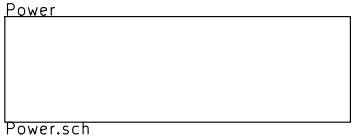
Relays.sch

Sensors



Sensors.sch

Power



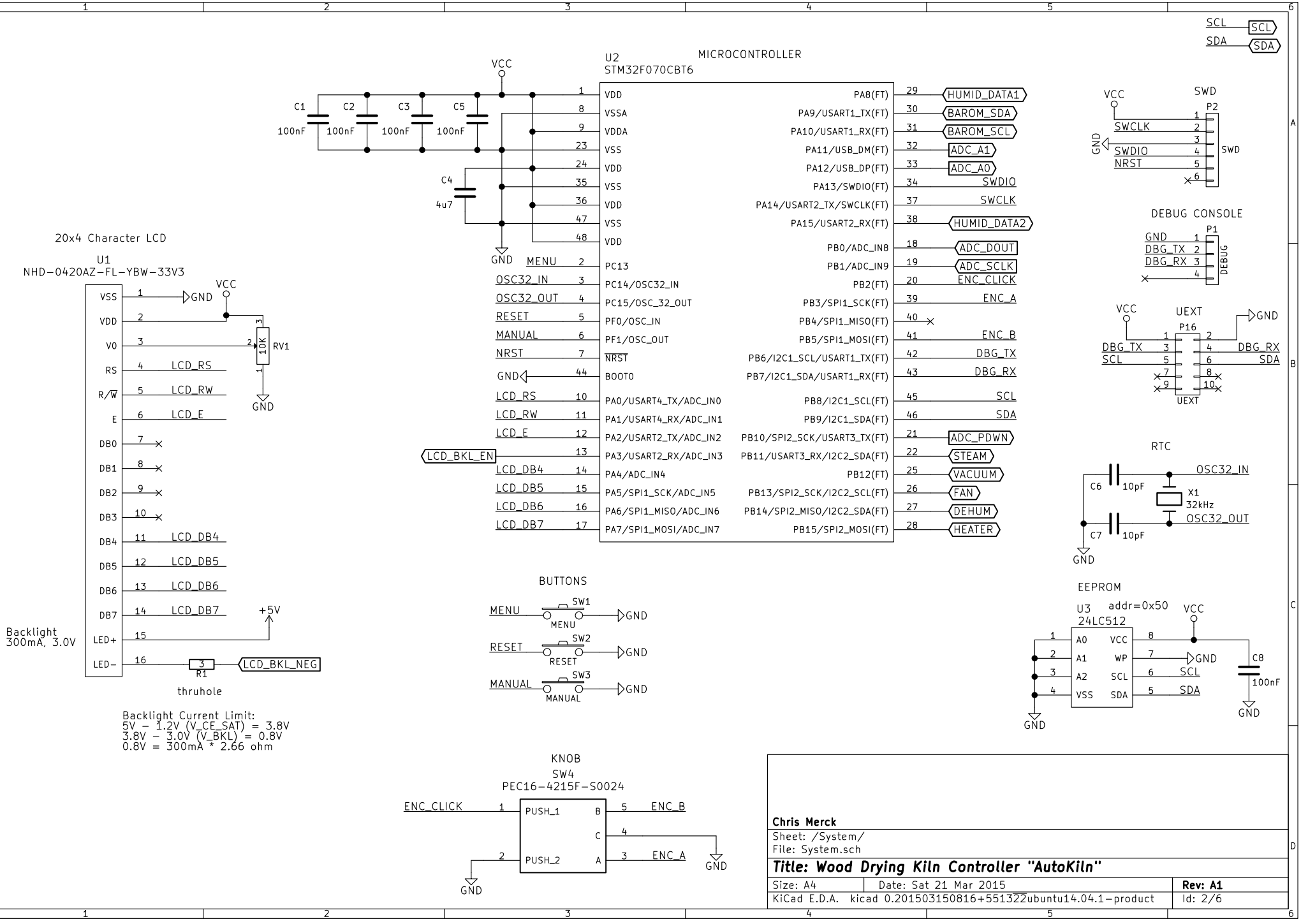
Power.sch

Chris Merck

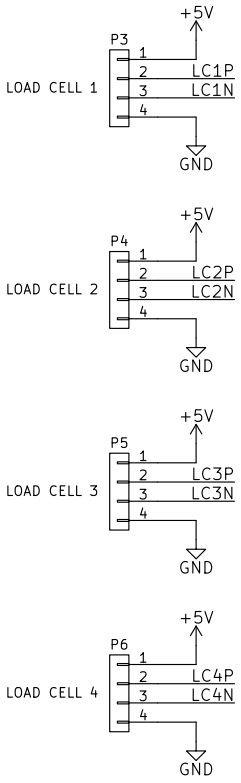
Sheet: /
File: autokiln.sch

Title: Wood Drying Kiln Controller "AutoKiln"

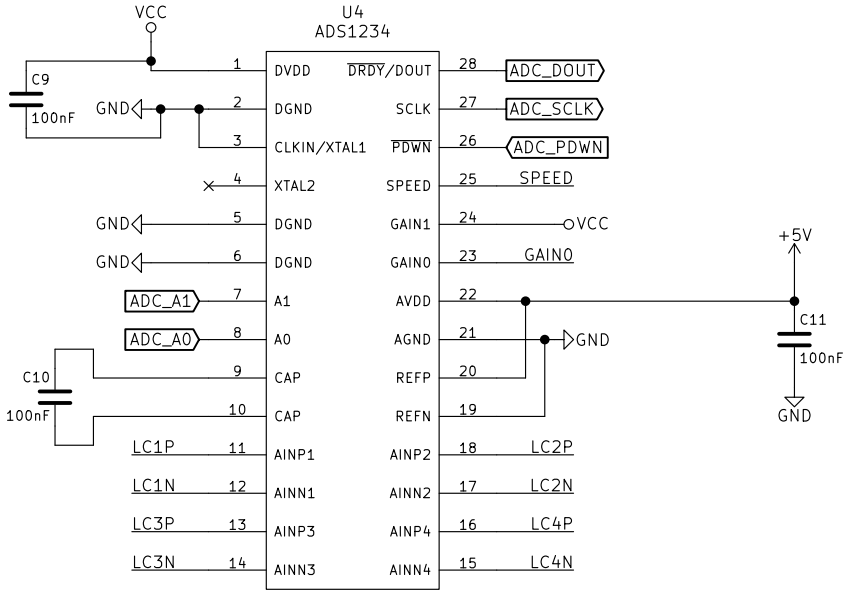
Size: USLetter	Date: Sat 21 Mar 2015	**Rev: A1**
KiCad E.D.A. kicad 0.201503150816+551322ubuntu14.04.1-product		Id: 1/6


SCL
SDA
U2
STM32F070CBT6
MICROCONTROLLER
VCC
C1 100nF
C2 100nF
C3 100nF
C5 100nF
C4 4u7
GND
VDD
VSSA
VDDA
VSS
VDD
VSS
VDD
VSS
VDD
MENU
OSC32_IN
OSC32_OUT
RESET
MANUAL
NRST
GND
LCD_RS
LCD_RW
LCD_E
LCD_BKL_EN
LCD_DB4
LCD_DB5
LCD_DB6
LCD_DB7
PC13
PC14/OSC32_IN
PC15/OSC_32_OUT
PF0/OSC_IN
PF1/OSC_OUT
NRST
BOOT0
PA0/USART4_TX/ADC_IN0
PA1/USART4_RX/ADC_IN1
PA2/USART2_TX/ADC_IN2
PA3/USART2_RX/ADC_IN3
PA4/ADC_IN4
PA5/SPI1_SCK/ADC_IN5
PA6/SPI1_MISO/ADC_IN6
PA7/SPI1_MOSI/ADC_IN7
PA8(FT) HUMID_DATA1
PA9/USART1_TX(FT) BAROM_SDA
PA10/USART1_RX(FT) BAROM_SCL
PA11/USB_DM(FT) ADC_A1
PA12/USB_DP(FT) ADC_A0
PA13/SWDIO(FT) SWDIO
PA14/USART2_TX/SWCLK(FT) SWCLK
PA15/USART2_RX(FT) HUMID_DATA2
PB0/ADC_IN8 ADC_DOUT
PB1/ADC_IN9 ADC_SCLK
PB2(FT) ENC_CLICK
PB3/SPI1_SCK(FT) ENC_A
PB4/SPI1_MISO(FT)
PB5/SPI1_MOSI(FT) ENC_B
PB6/I2C1_SCL/USART1_TX(FT) DBG_TX
PB7/I2C1_SDA/USART1_RX(FT) DBG_RX
PB8/I2C1_SCL(FT) SCL
PB9/I2C1_SDA(FT) SDA
PB10/SPI2_SCK/USART3_TX(FT) ADC_PDWN
PB11/USART3_RX/I2C2_SDA(FT) STEAM
PB12(FT) VACUUM
PB13/SPI2_SCK/I2C2_SCL(FT) FAN
PB14/SPI2_MISO/I2C2_SDA(FT) DEHUM
PB15/SPI2_MOSI(FT) HEATER
SWD
P2
SWCLK
SWDIO
NRST
DEBUG CONSOLE
P1
DBG_TX
DBG_RX
UEXT
P16
RTC
C6 10pF
C7 10pF
X1
32kHz
OSC32_IN
OSC32_OUT
EEPROM
U3
24LC512
addr=0x50
C8 100nF
20x4 Character LCD
U1
NHD-0420AZ-FL-YBW-33V3
VSS
VDD
V0
RS
R/W
E
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
LED+
LED-
LCD_RS
LCD_RW
LCD_E
LCD_DB4
LCD_DB5
LCD_DB6
LCD_DB7
RV1 10K
+5V
Backlight
300mA, 3.0V
R1 3
LCD_BKL_NEG
thruhole
Backlight Current Limit:
5V - 1.2V (V_CE_SAT) = 3.8V
3.8V - 3.0V (V_BKL) = 0.8V
0.8V = 300mA * 2.66 ohm
BUTTONS
MENU SW1
RESET SW2
MANUAL SW3
KNOB
SW4
PEC16-4215F-S0024
ENC_CLICK
PUSH_1
PUSH_2
ENC_B
ENC_A
Chris Merck
Sheet: /System/
File: System.sch
Title: Wood Drying Kiln Controller "AutoKiln"
Size: A4
Date: Sat 21 Mar 2015
Rev: A1
KiCad E.D.A. kicad 0.201503150816+551322ubuntu14.04.1-product
Id: 2/6

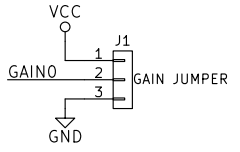
LOAD CELL CONNECTORS



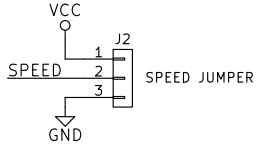
LOAD CELL AMPLIFIER / ADC



JOIN AGND WITH DGND
UNDER ADS1234



GAIN = 64 or 128



SPEED = 10SPS or 80SPS

Chris Merck

Sheet: /LoadCells/
File: LoadCells.sch

Title: Wood Drying Kiln Controller "AutoKiln"

Size: A4	Date: Sat 21 Mar 2015	**Rev: A1**
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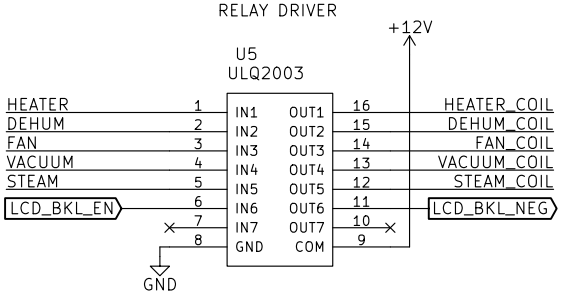
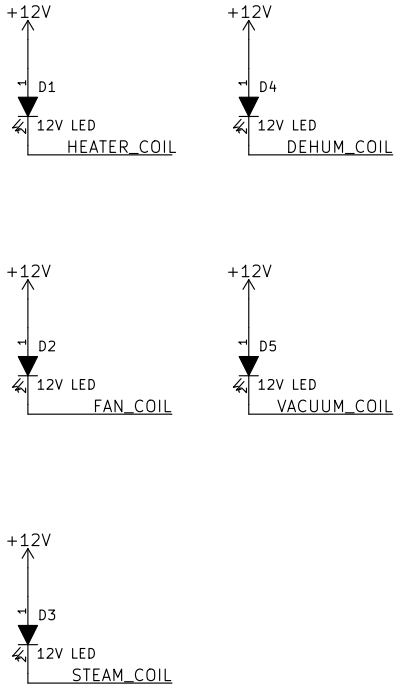
HEATER
DEHUM
FAN
VACUUM
STEAM

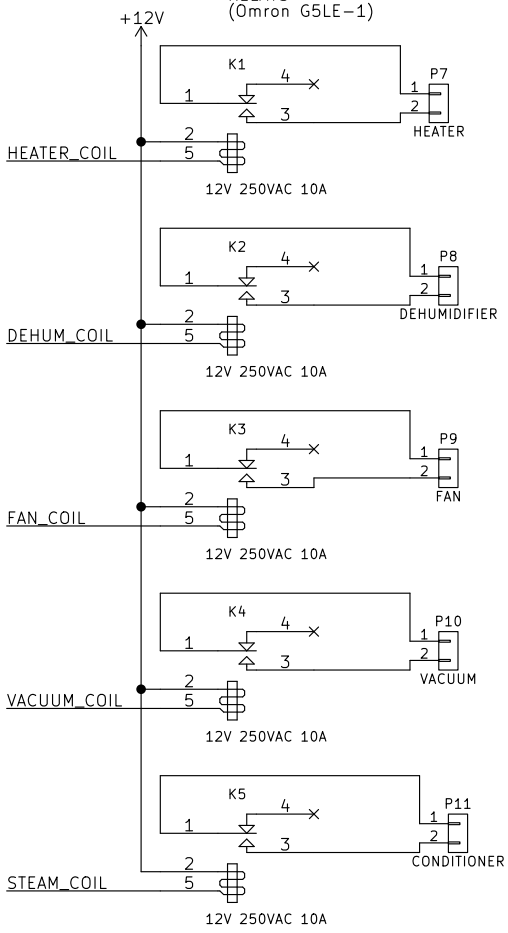
RELAY DRIVER



RELAY INDICATORS



RELAYS
(Omron G5LE-1)



Chris Merck

Sheet: /Relays/
File: Relays.sch

Title: Wood Drying Kiln Controller "AutoKiln"

Size: A4	Date: Sat 21 Mar 2015	**Rev: A1**
KiCad E.D.A.	kicad 0.201503150816+551322ubuntu14.04.1-product	Id: 4/6

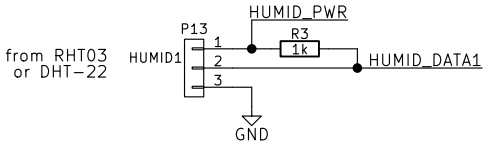
HUMID_DATA1 HUMID_DATA1

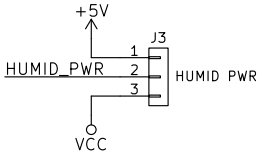
HUMID_DATA2 HUMID_DATA2

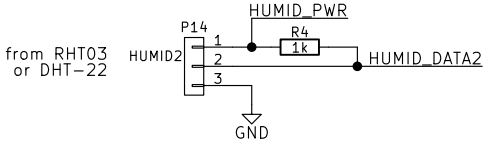
BAROM_SDA BAROM_SDA

BAROM_SCL BAROM_SCL

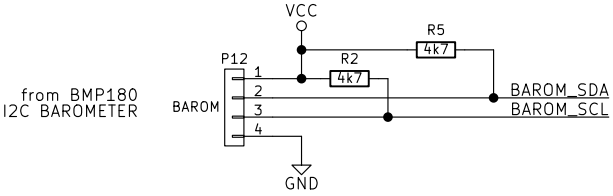
HUMIDITY AND TEMP SENSOR





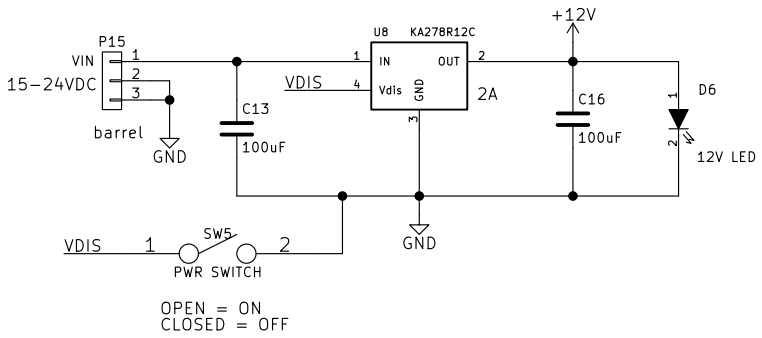


BAROMETRIC PRESSURE SENSOR

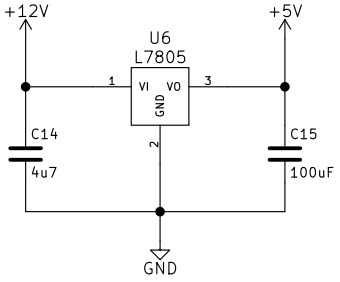


Chris Merck		
Sheet: /Sensors/ File: Sensors.sch		
Title: Wood Drying Kiln Controller "AutoKiln"		
Size: A4	Date: Sat 21 Mar 2015	**Rev: A1**
KiCad E.D.A. kicad 0.201503150816+551322ubuntu14.04.1-product		Id: 5/6

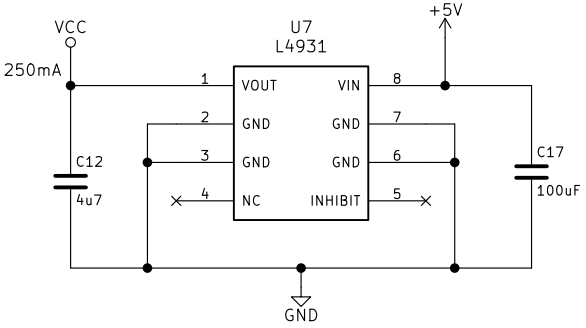
12V SUPPLY



5V SUPPLY



3.3V SUPPLY



Chris Merck		
Sheet: /Power/ File: Power.sch		
Title: Wood Drying Kiln Controller "AutoKiln"		
Size: A4	Date: Sat 21 Mar 2015	**Rev: A1**
KiCad E.D.A. kicad 0.201503150816+551322ubuntu14.04.1-product		Id: 6/6