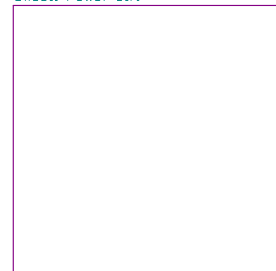
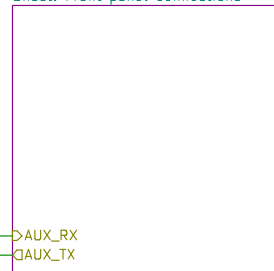


Sheet: Power ctrl



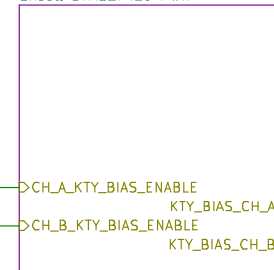
File: power.sch

Sheet: Front panel connections



File: front_panel_conn.sch

Sheet: STM32F429 PWR



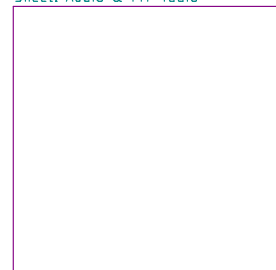
File: mcu_2.sch

I2C-addresses (on I2C1)
TMP100 (temperature sensors) :
1001000 (Front panel, outside left)
1001010 (FP, outside right)
1001100 (FP, inside left)
1001101 (FP, inside middle)
1001110 (FP, inside right)
1001001 (Main board #1)
1001011 (MB #2)
1001111 (MB #3)

INA226 (power-channel current sensors) :
1000000 (ch A, heater 1)
1000001 (ch A, heater 2)
1000100 (ch B, heater 1)
1000101 (ch B, heater 2)

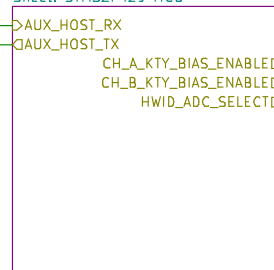
SI4735 (FM-radio rx) :
0010001 (if SEN pulled low [default])
1100011 (alternative, if SEN pulled high)

Sheet: Audio & FM-radio



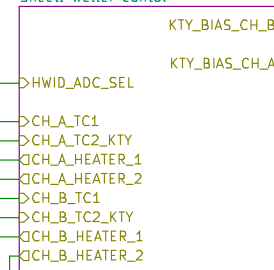
File: audio_fmradio.sch

Sheet: STM32F429 MCU



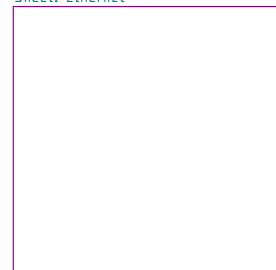
File: mcu_1.sch

Sheet: Weller control



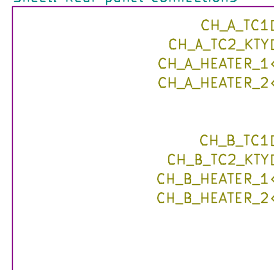
File: Weller_ctrl.sch

Sheet: Ethernet



File: ethernet.sch

Sheet: Rear panel connections



File: rear_panel_conn.sch

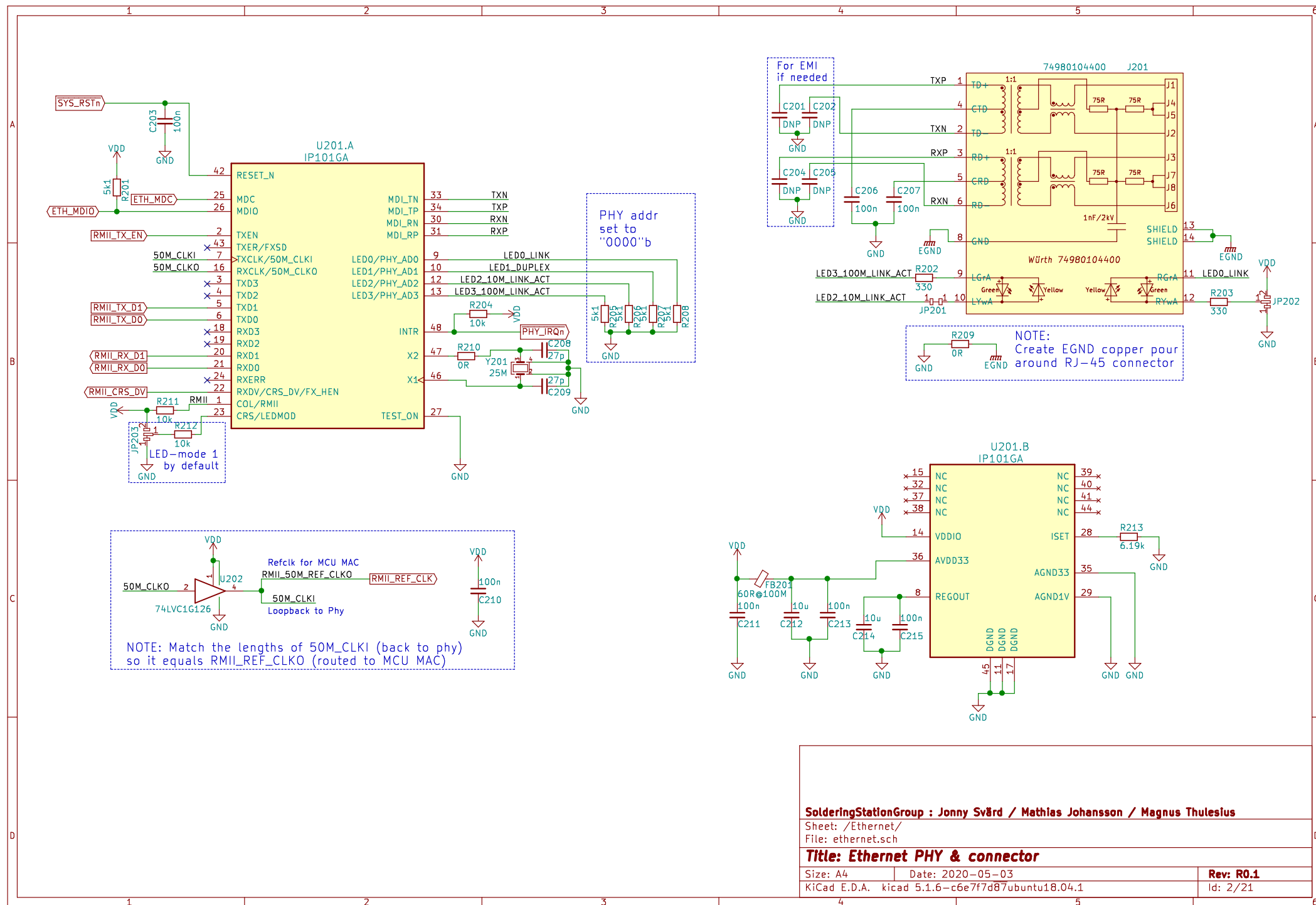
SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /
File: solderstn_mb.sch

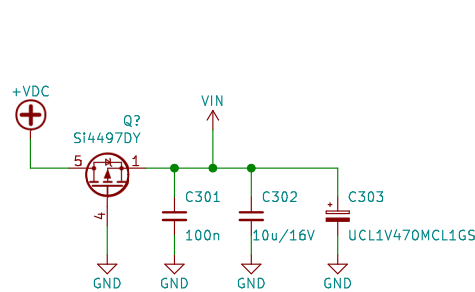
Title: DIY Soldering station, top level

Size: A4 Date: 2020-04-26
KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu18.04.1

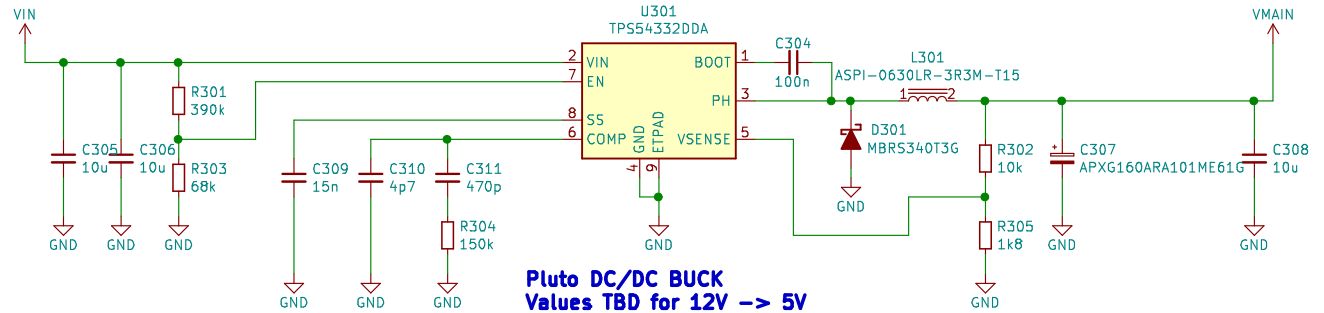
Rev: R0.1
Id: 1/21



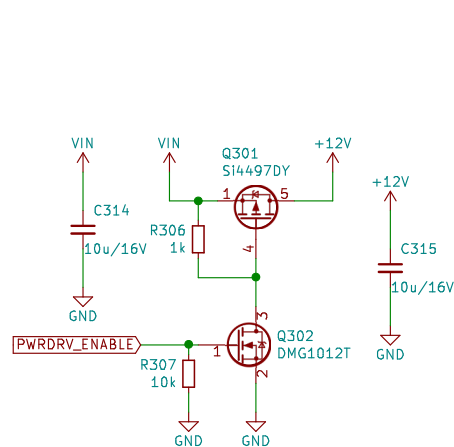
ToDo: VDC connector? Screw terminals? Solderable through-holes? Cable-shoe spades?



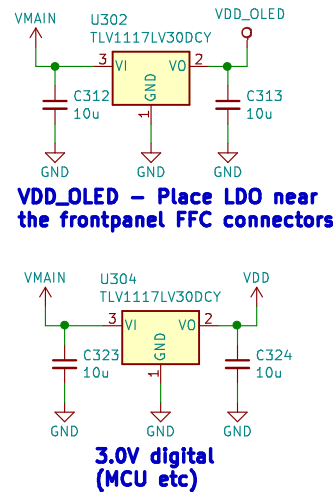
12V Board supply input and reverse voltage PFET



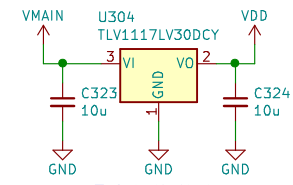
**Pluto DC/DC BUCK
Values TBD for 12V -> 5V**



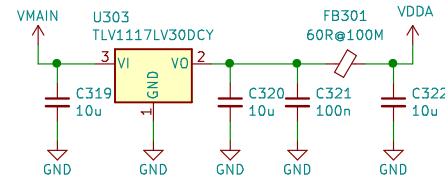
High-side PFET master-switch for the +12V PWM rail



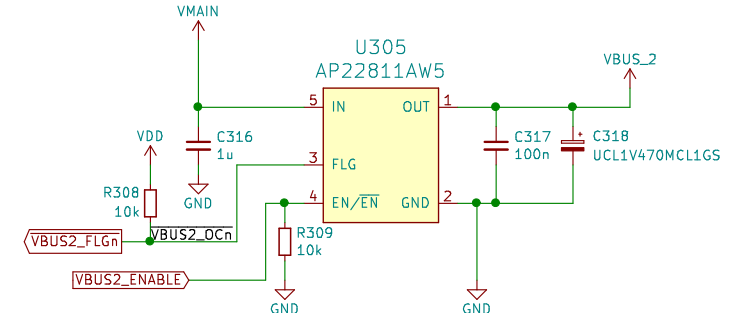
VDD_OLED - Place LDO near the frontpanel FFC connectors



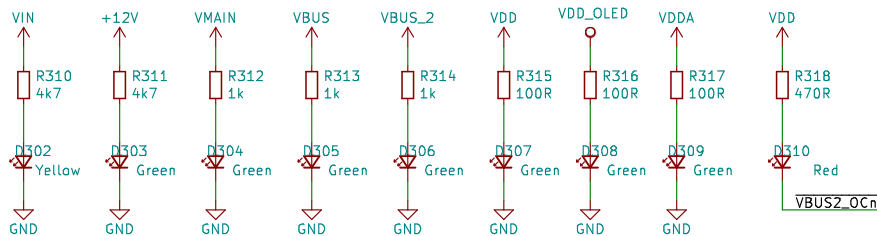
3.0V digital (MCU etc)



3.0V analog (Vref, Vadc, Vop, etc)



USB-2 VBUS



Power LED indicators

SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Power ctrl/

File: power.sch

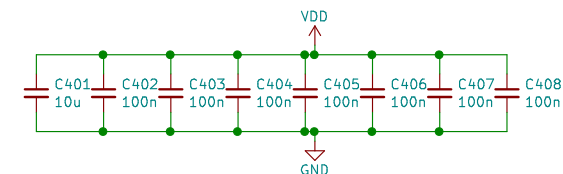
Title: DC/DC Buck, LDOs & master load-switches

Size: A4 Date: 2020-05-08

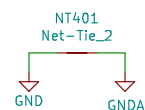
KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu18.04.1

Rev: R0.1

Id: 3/21



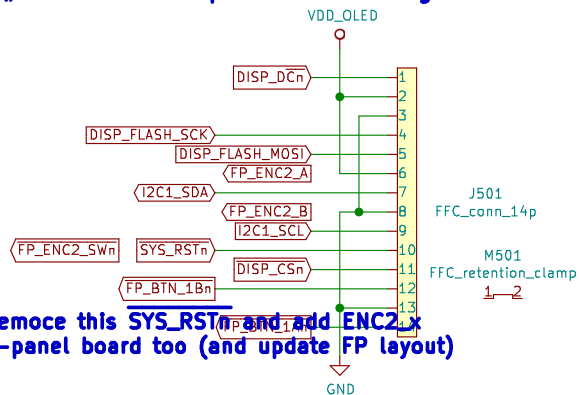
Precisin Vref. Place close to MCU. See REF6125 ds for layout suggestions.



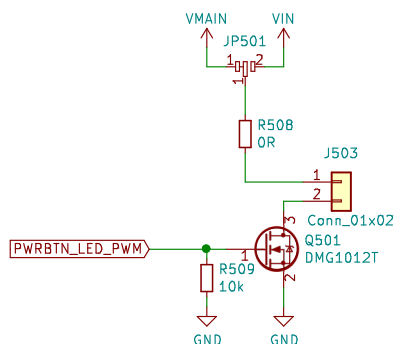
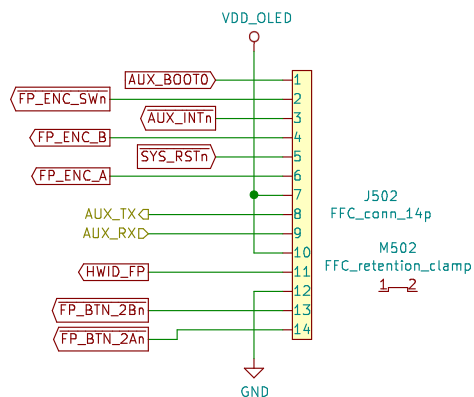
Switchable Vref for biasing KTY sensors (for cold-junction compensation), one per channel. The KTY's can then be measured through the ordinary TC amps.

Id: 4/21

Place vDD_OLED LDO close to FFC connectors
 TODO: add 2nd optional rotary encoder to FP board
 Ideally it would just be a 3d-printed holder option on same PCB that supports PwrBtn. Worst-case, air-wire in the Rotary signals to 5pin header a bit off.
 (TODO#2: Need new 3d-printed holder design for left-side Rotary...)

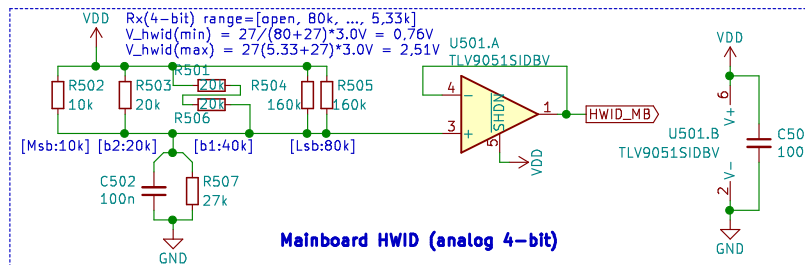


TODO: Remoce this SYS_RSTn and add ENC2_A to front-panel board too (and update FP layout)

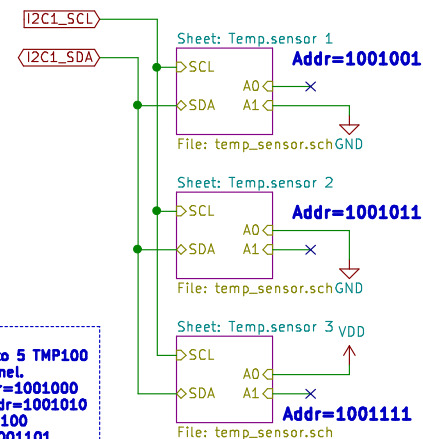
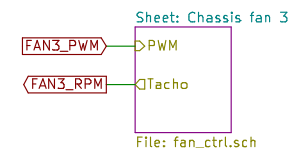
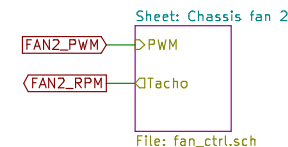
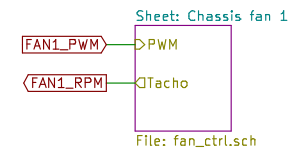


FancyBtn LED connector
 (PWM ctrl low-side: 5V/12V selectable V+)

TODO: TBD contacts – cable shoe blades, or Pluto 2p Power-connector...?
 JST? Molex?



Mainboard HWID (analog 4-bit)

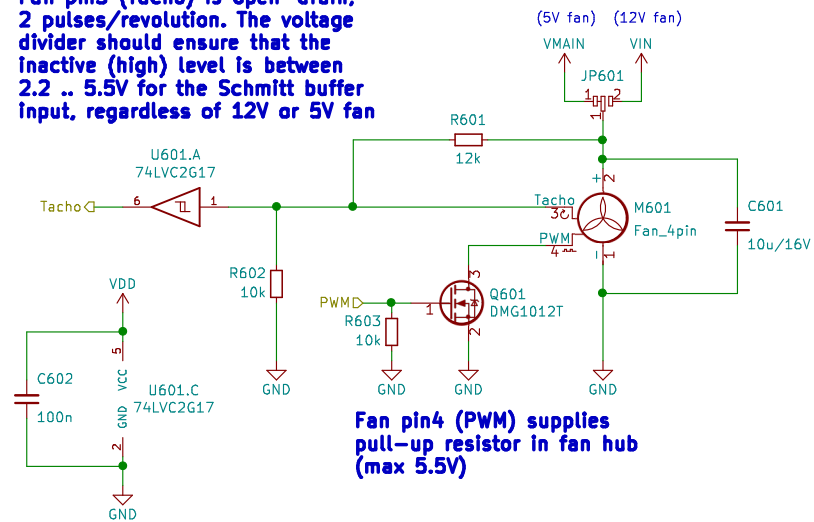


Ambient temperature sensors (TMP100)

Note:
 There're additional up-to 5 TMP100 sensors on the front panel.
 Display-side, left : addr=1001000
 Display-side, right : addr=1001010
 Inside, left : addr=1001100
 Inside, middle : addr=1001101
 Inside, right: addr=1001110

SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius		
Sheet: /Front panel connections/		
File: front_panel_conn.sch		
Title: Front-side and internal connectors		
Size: A4	Date: 2020-08-03	Rev: R0.1
KiCad E.D.A.	kiCad 5.1.6-c6e7f7d87ubuntu18.04.1	Id: 5/21

Fan pin3 (Tacho) is open-drain, 2 pulses/revolution. The voltage divider should ensure that the inactive (high) level is between 2.2 .. 5.5V for the Schmitt buffer input, regardless of 12V or 5V fan



Fan pin4 (PWM) supplies pull-up resistor in fan hub (max 5.5V)

SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Front panel connections/Chassis fan 1/

File: fan_ctrl.sch

Title: Fan controller

Size: A4

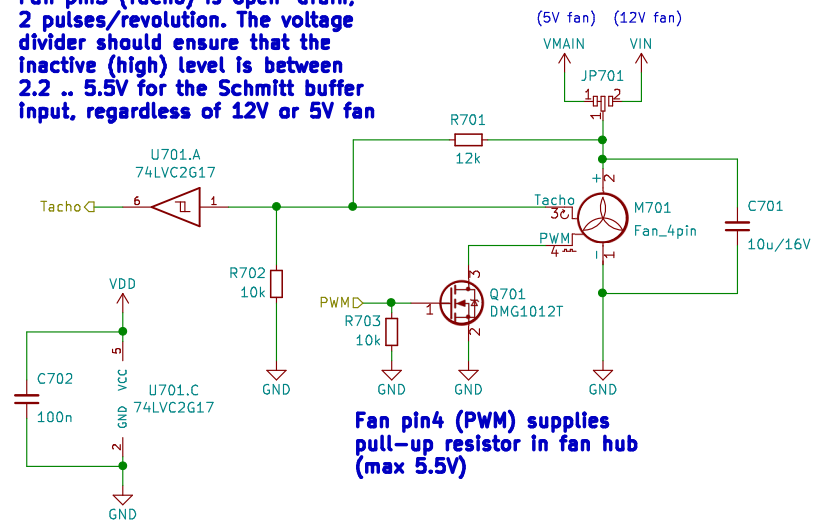
Date: 2020-08-09

Rev: R0.1

KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu18.04.1

Id: 6/21

Fan pin3 (Tacho) is open-drain, 2 pulses/revolution. The voltage divider should ensure that the inactive (high) level is between 2.2 .. 5.5V for the Schmitt buffer input, regardless of 12V or 5V fan



Fan pin4 (PWM) supplies pull-up resistor in fan hub (max 5.5V)

SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Front panel connections/Chassis fan 2/

File: fan_ctrl.sch

Title: Fan controller

Size: A4

Date: 2020-08-09

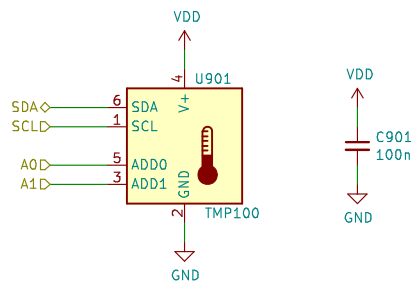
Rev: R0.1

KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu18.04.1

Id: 7/21



Id: 8/21

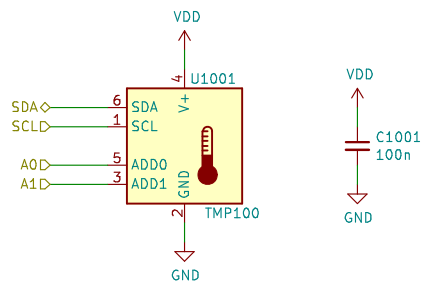


SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Front panel connections/Temp.sensor 1/
File: temp_sensor.sch

Title:

Size: A4	Date:	Rev: R0.1
KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu18.04.1		Id: 9/21

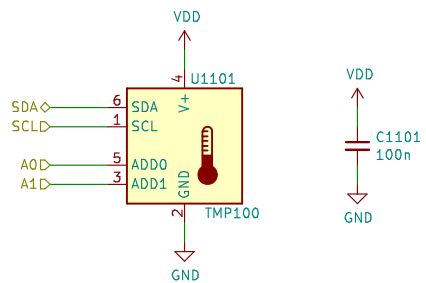


SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Front panel connections/Temp.sensor 2/
File: temp_sensor.sch

Title:

Size: A4	Date:	Rev: R0.1
KiCad E.D.A.	kiCad 5.1.6-c6e7f7d87ubuntu18.04.1	Id: 10/21



SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Front panel connections/Temp.sensor 3/
File: temp_sensor.sch

Title:

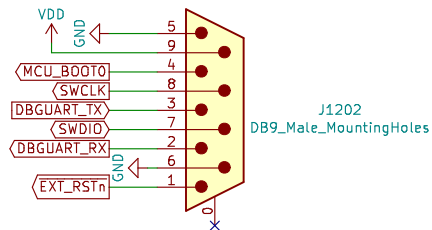
Size: A4	Date:	Rev: R0.1
KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu18.04.1	Id: 11/21	

Notes:
 Audio-jack 3.5mm – located on audio page
 RJ45 ethernet – located on ethernet page

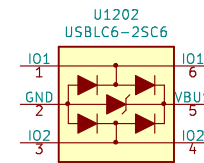
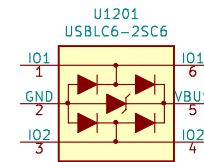
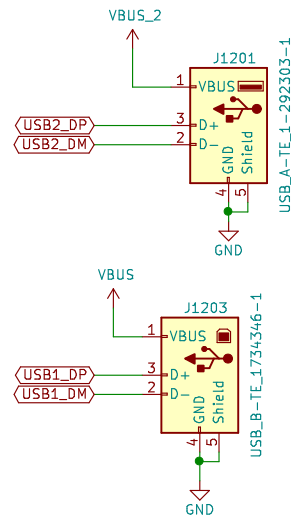
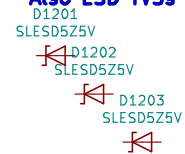
DBGUART / SWD (dsub-9?)
 FM-ant? (AM-ferrit extern..?)
 USB1 (device)
 USB2 (host)
 Force Bootloader/rst
 2x Amphenol Weller-jacks!

CH_A_HEATER_1D
 CH_A_HEATER_2D
 CH_A_TC1
 CH_A_TC2_KTY

CH_B_HEATER_1D
 CH_B_HEATER_2D
 CH_B_TC1
 CH_B_TC2_KTY



TODO:
 * Add 74HC*-buffer for the external signals
 * Also ESD TVSs



TODO:
 * ESD for USBs

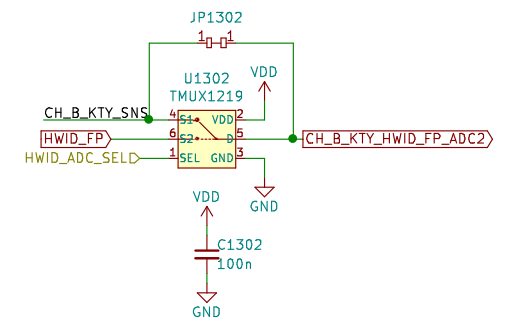
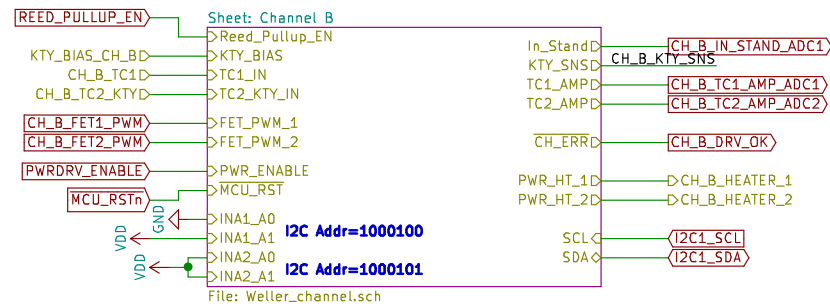
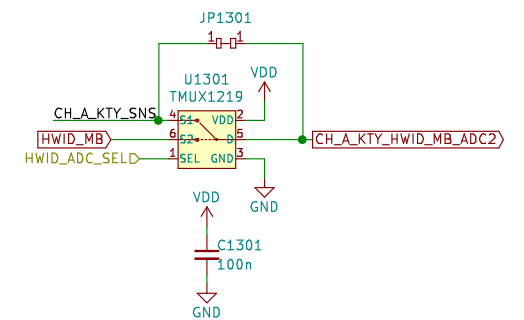
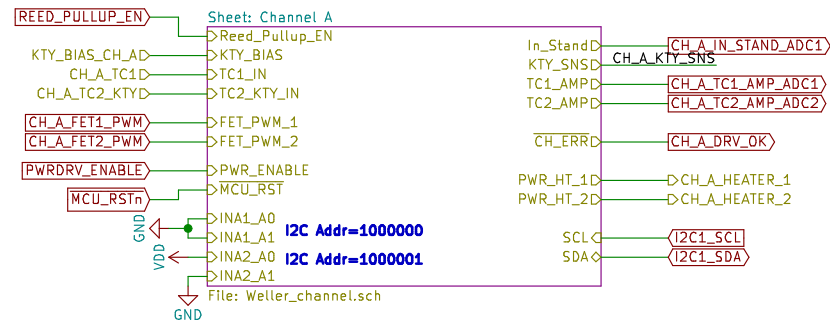
SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Rear panel connections/
 File: rear_panel_conn.sch

Title: Backside connectors

Size: A4
 KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu18.04.1

Date: 2020-08-14
 Rev: R0.1
 Id: 12/21



SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Weller ctrlol/

File: Weller_ctrl.sch

Title: Dual Weller WMRP or WMRT capable channels

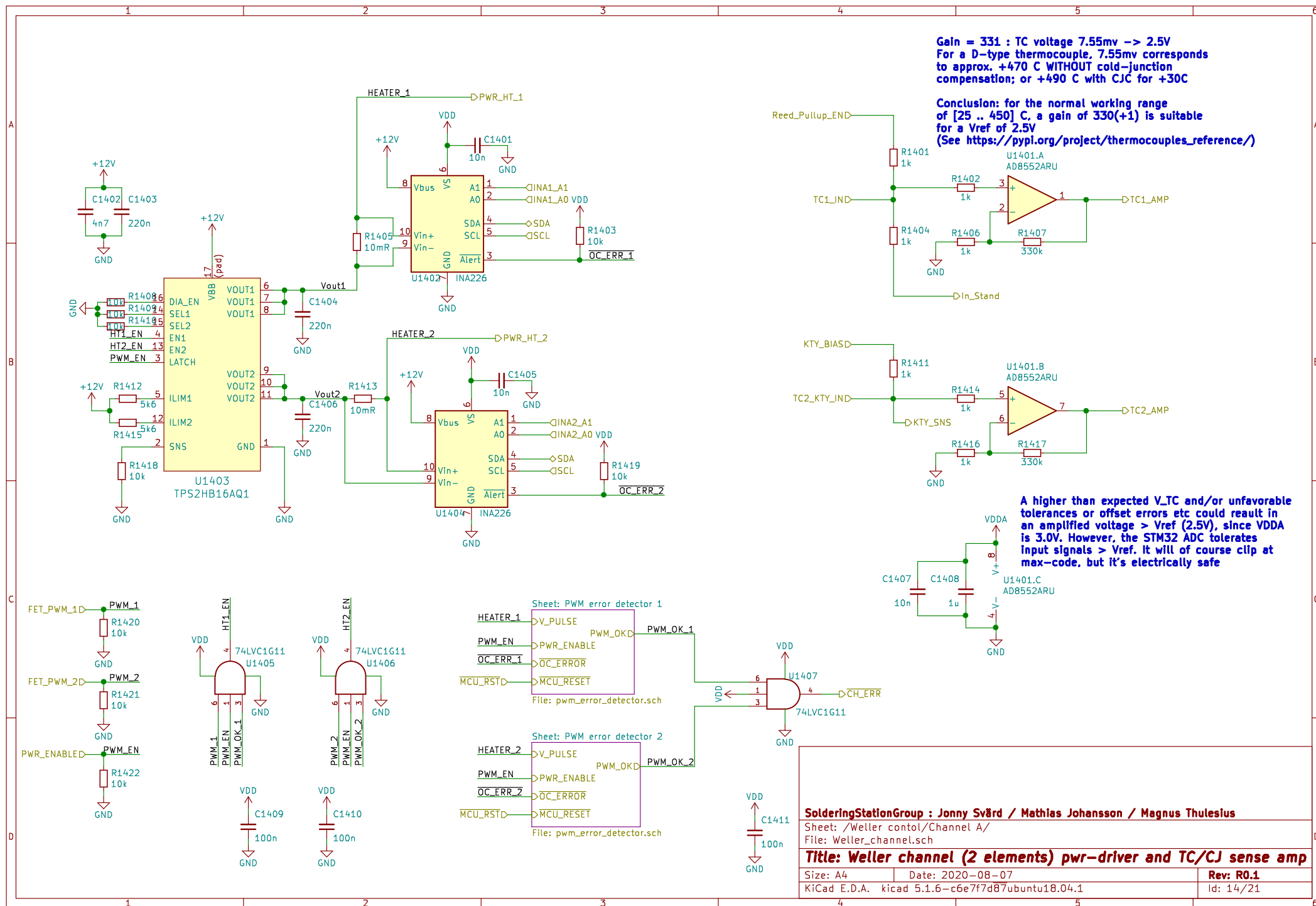
Size: A4

Date: 2020-08-07

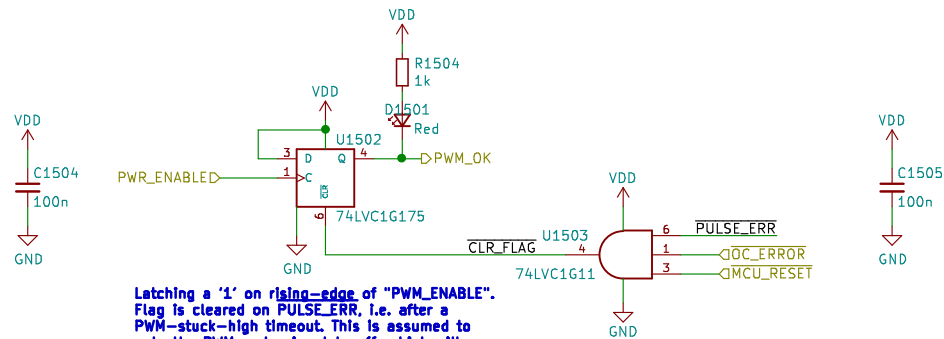
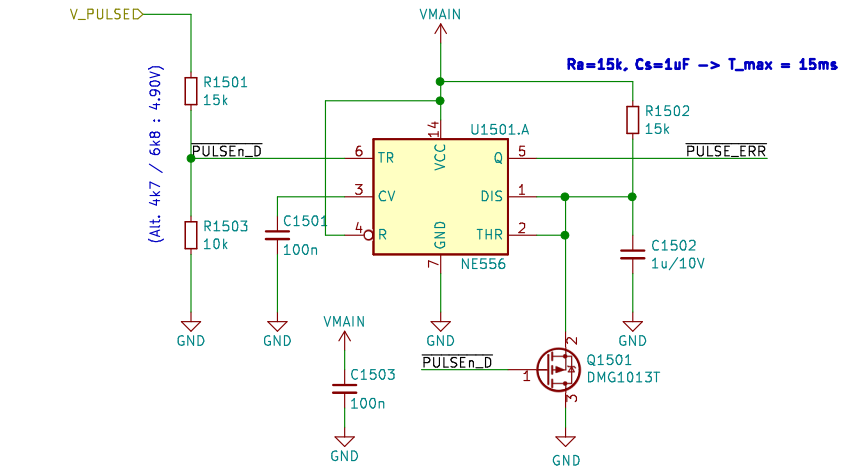
Rev: R0.1

KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu18.04.1

Id: 13/21



12V PWM pulse-train for Heater



SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Weller contol/Channel A/PWM error detector 1/

File: pwm_error_detector.sch

Title: HW PWM stuck-high detection with latched flag

Size: A4

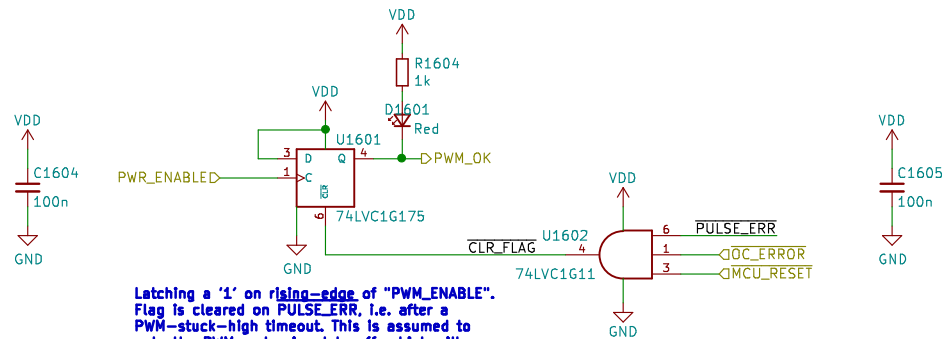
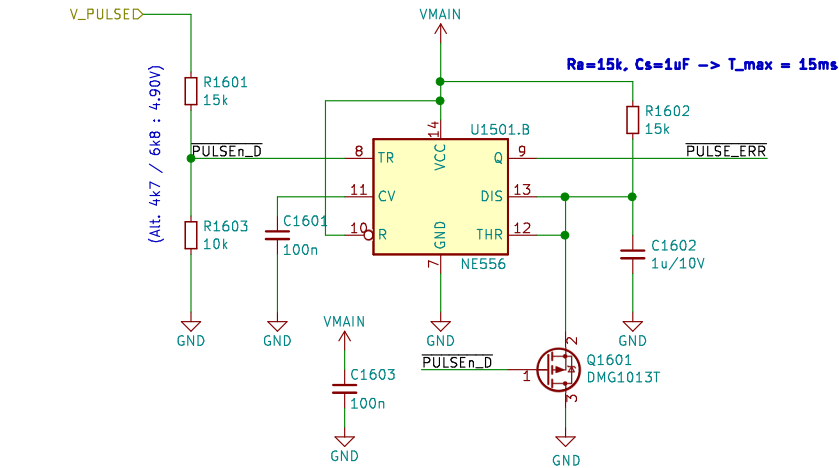
Date: 2020-08-12

Rev: R0.1

KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu18.04.1

Id: 15/21

12V PWM pulse-train for Heater



SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Weller contol/Channel A/PWM error detector 2/

File: pwm_error_detector.sch

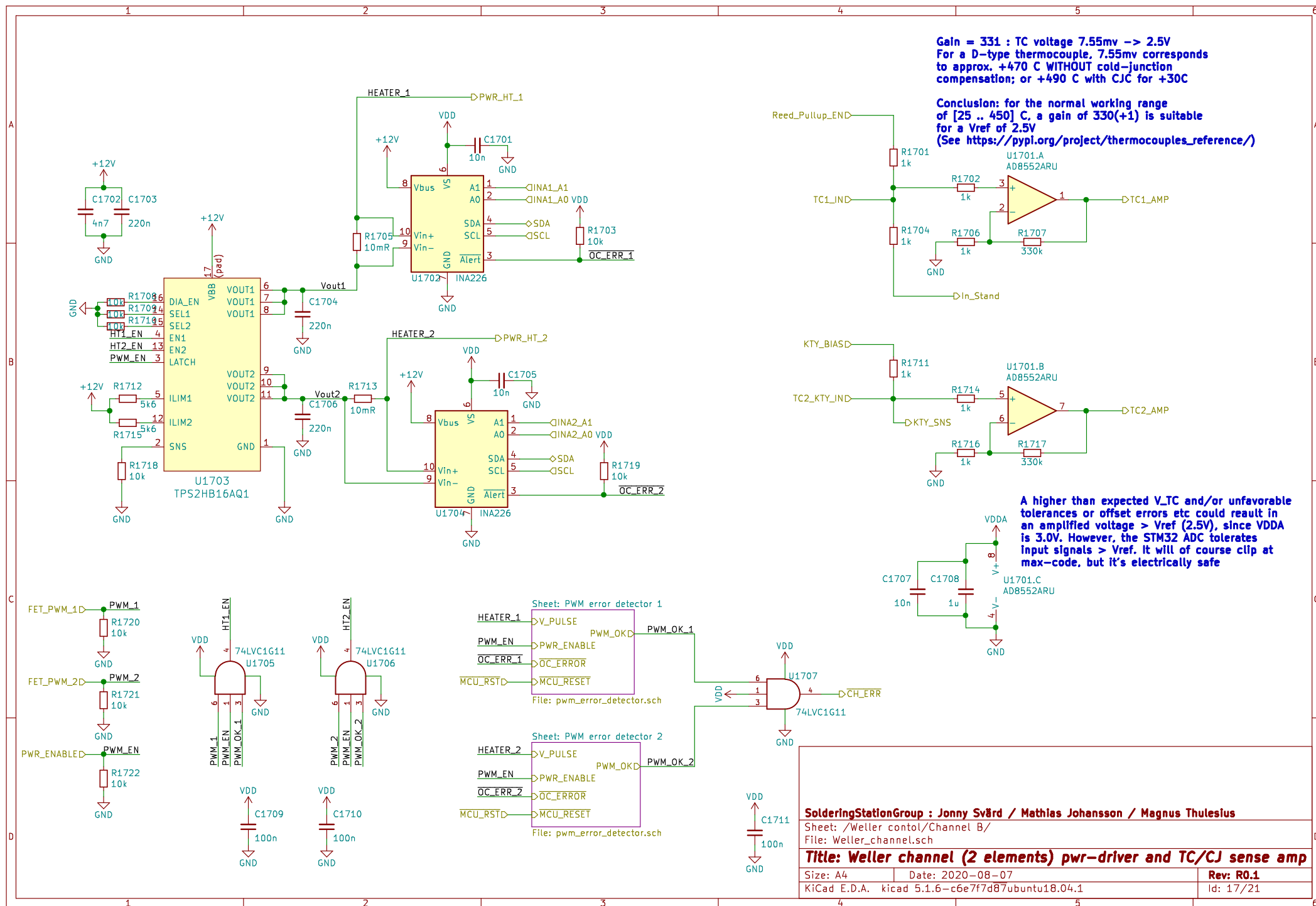
Title: HW PWM stuck-high detection with latched flag

Size: A4 Date: 2020-08-12

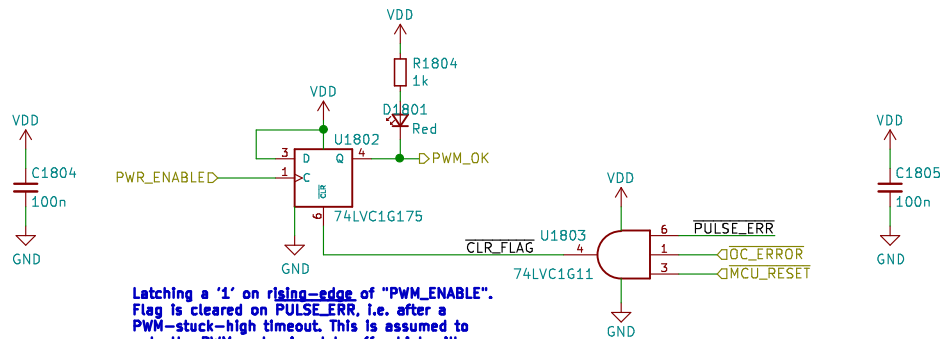
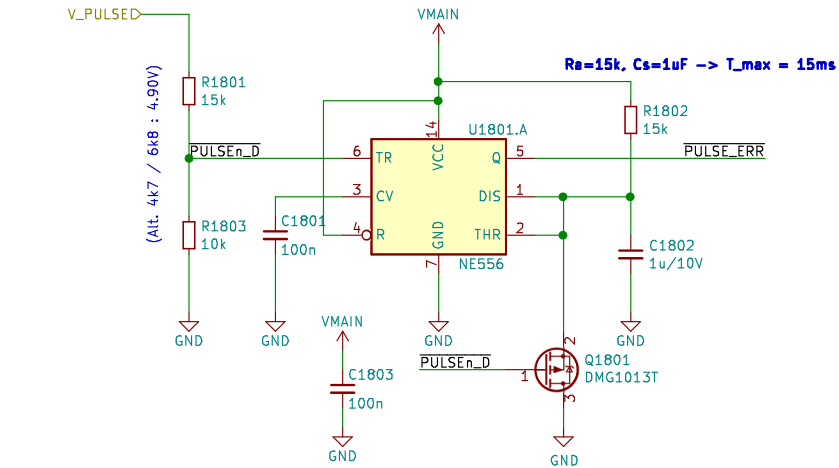
KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu18.04.1

Rev: R0.1

Id: 16/21



12V PWM pulse-train for Heater



SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Weller contol/Channel B/PWM error detector 1/

File: pwm_error_detector.sch

Title: HW PWM stuck-high detection with latched flag

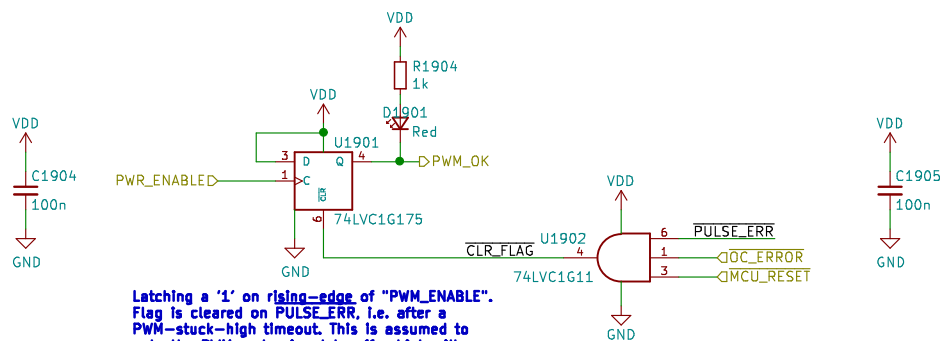
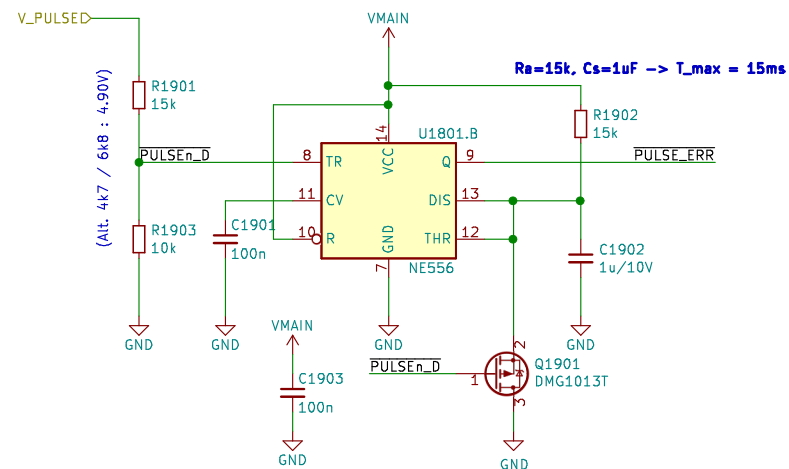
Size: A4

Date: 2020-08-12

Rev: R0.1

KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu18.04.1

Id: 18/21



Latching a '1' on rising-edge of "PWM_ENABLE".
Flag is cleared on PULSE_ERR, i.e. after a PWM-stuck-high timeout. This is assumed to gate the PWM-pulse input to off, which will clear the PULSE_ERR from the 555, which will allow the D-flipflop to be re-enabled by a subsequent toggling 1->0->1 of "PWM_ENABLE".

SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Weller contol/Channel B/PWM error detector 2/

File: pwm_error_detector.sch

Title: HW PWM stuck—high detection with latched flag

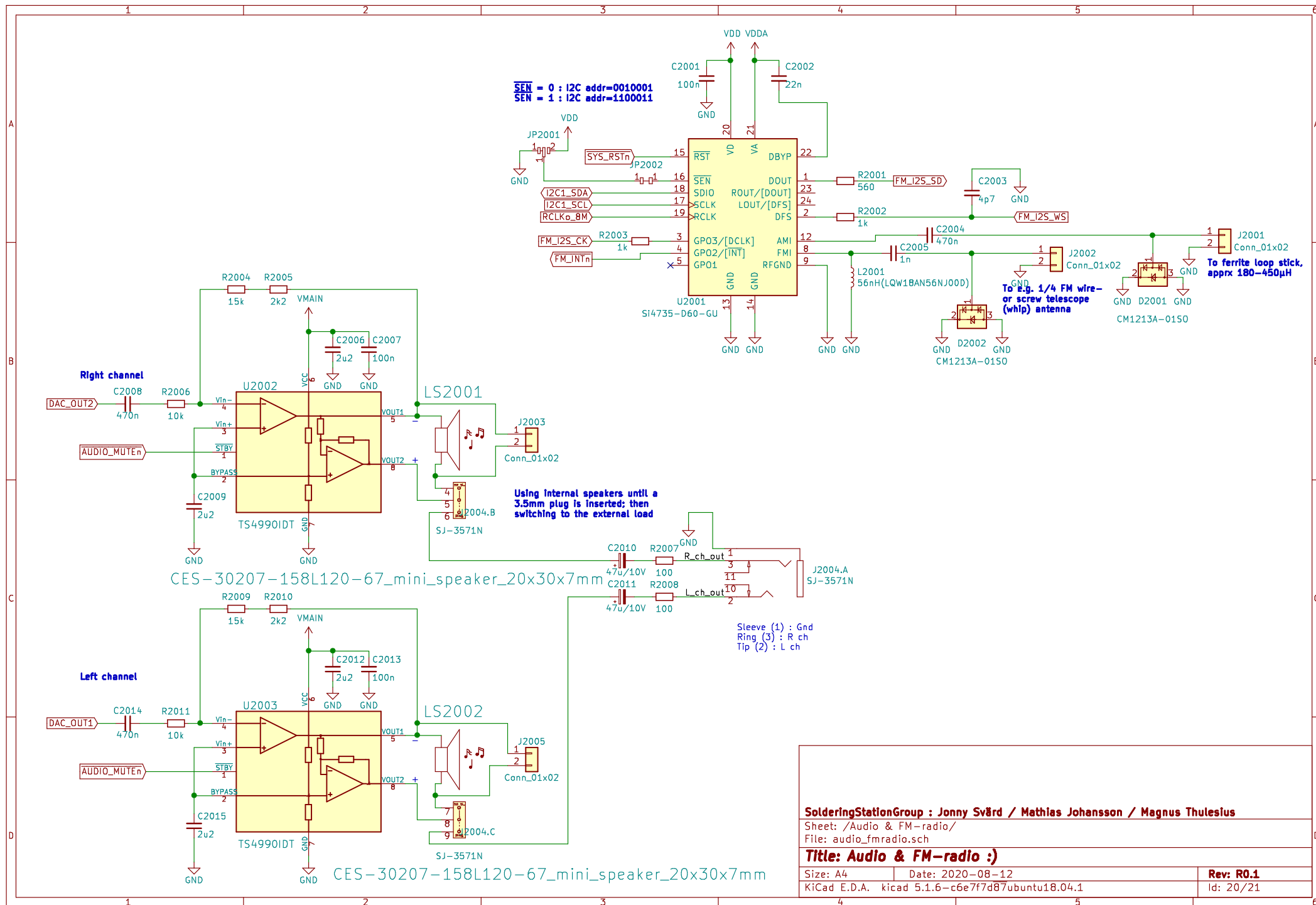
Size: A4

Date: 2020-08-12

Rev: R0.1

KiCad E.D.A.	kicad 5.1.6-c6e7f7d87ubuntu18.04.1
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Id: 19/21



SolderingStationGroup : Jonny Svärd / Mathias Johansson / Magnus Thulesius

Sheet: /Audio & FM-radio/

File: audio_fmradio.sch

Title: Audio & FM-radio :)

Size: A4

Date: 2020-08-12

Rev: R0.1

KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu18.04.1

Id: 20/21

