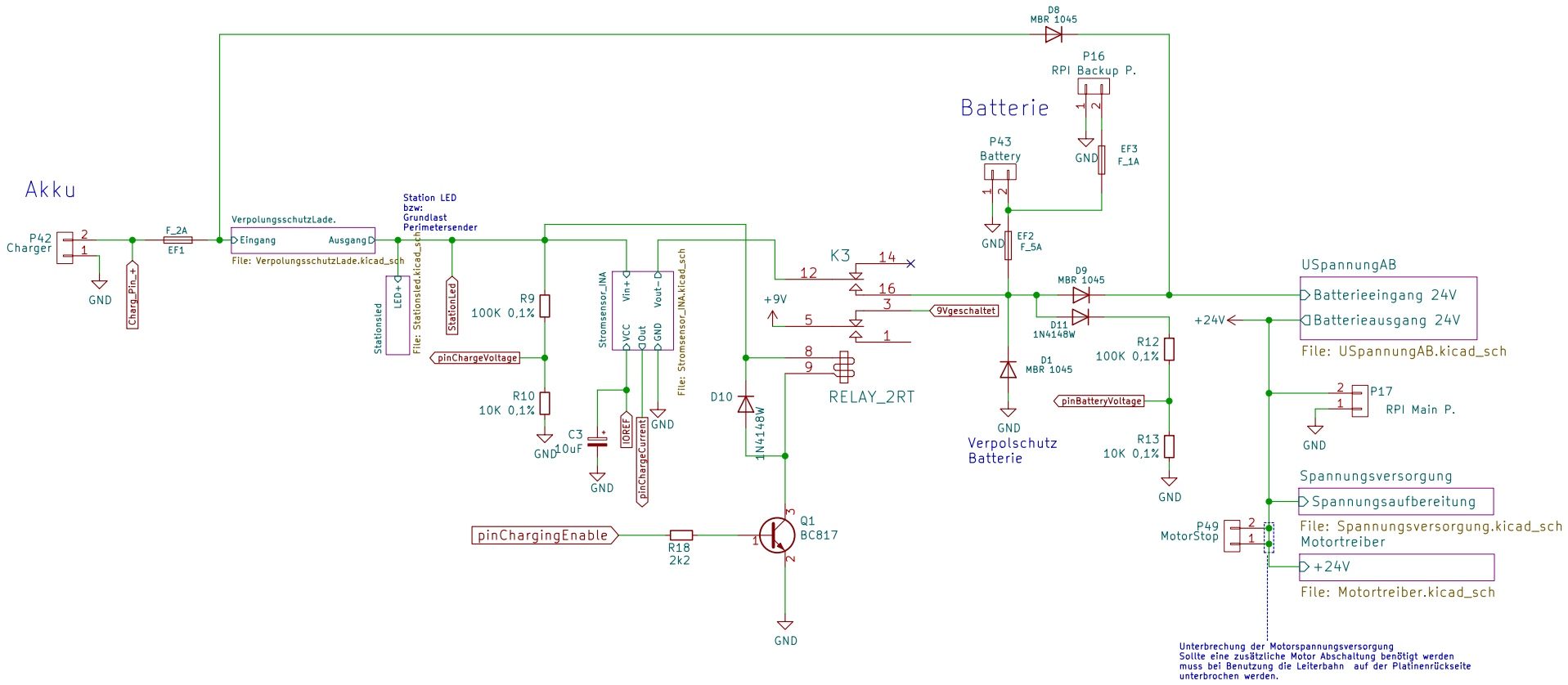


Leuchtdioden

Wlan_BT_GPS

I2C

Bohrlöcher

Anschlußstecker

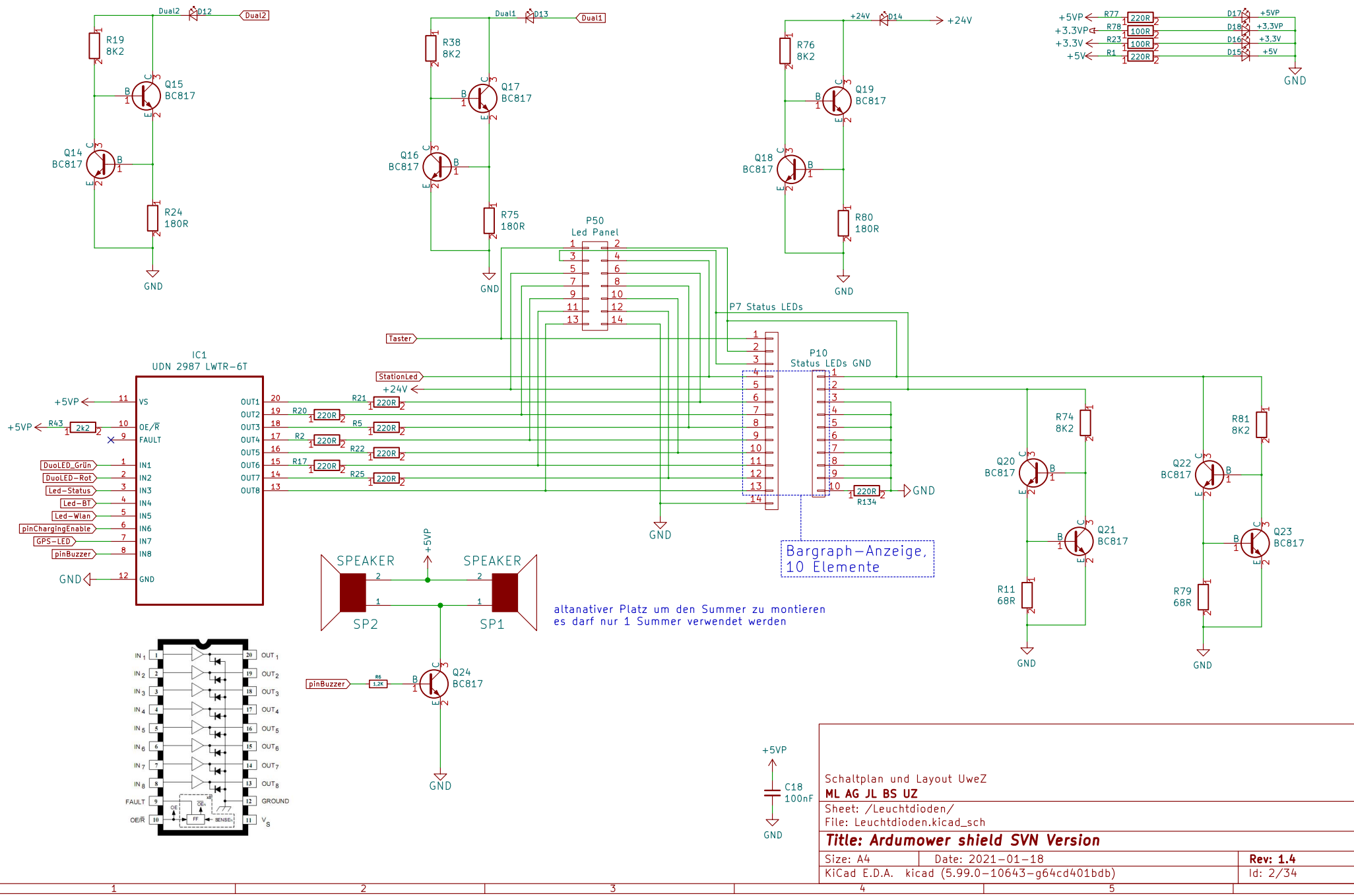
Arduino_Mega

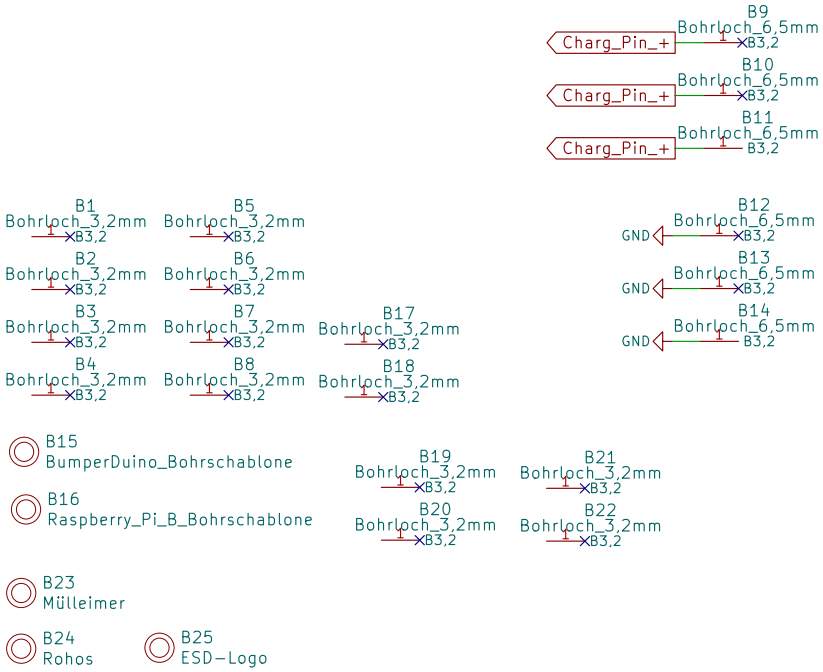
Unterspannungsschutz von AlexanderG
Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /
File: ardumower mega shield svn.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 1/34


Dual2
D12
R19
8K2
Q15
BC817
Q14
BC817
R24
180R
GND
Dual1
D13
R38
8K2
Q17
BC817
Q16
BC817
R75
180R
GND
+24V
D14
+24V
R76
8K2
Q19
BC817
Q18
BC817
R80
180R
GND
+5VP
+3.3VP
+3.3V
+5V
R77
R78
R23
R1
220R
100R
100R
220R
D17
D18
D16
D15
+5VP
+3,3VP
+3,3V
+5V
GND
P50
Led Panel
P7 Status LEDs
P10
Status LEDs GND
Taster
StationLed
+24V
IC1
UDN 2987 LWTR-6T
+5VP
R43
2k2
VS
OE/R
FAULT
DuoLED_Grün
DuoLED-Rot
Led-Status
Led-BT
Led-Wlan
pinChargingEnable
GPS-LED
pinBuzzer
GND
IN1
IN2
IN3
IN4
IN5
IN6
IN7
IN8
OUT1
OUT2
OUT3
OUT4
OUT5
OUT6
OUT7
OUT8
R21
R20
R5
R2
R22
R17
R25
220R
R134
GND
Bargraph-Anzeige,
10 Elemente
Q20
BC817
R74
8K2
Q21
BC817
R11
68R
GND
Q22
BC817
R81
8K2
Q23
BC817
R79
68R
GND
SPEAKER
SP2
SPEAKER
SP1
+5VP
altanativer Platz um den Summer zu montieren
es darf nur 1 Summer verwendet werden
pinBuzzer
R6
1.2K
Q24
BC817
GND
+5VP
C18
100nF
GND
Schaltplan und Layout UweZ
ML AG JL BS UZ
Sheet: /Leuchtdioden/
File: Leuchtdioden.kicad_sch
Title: Ardumower shield SVN Version
Size: A4
Date: 2021-01-18
Rev: 1.4
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)
Id: 2/34

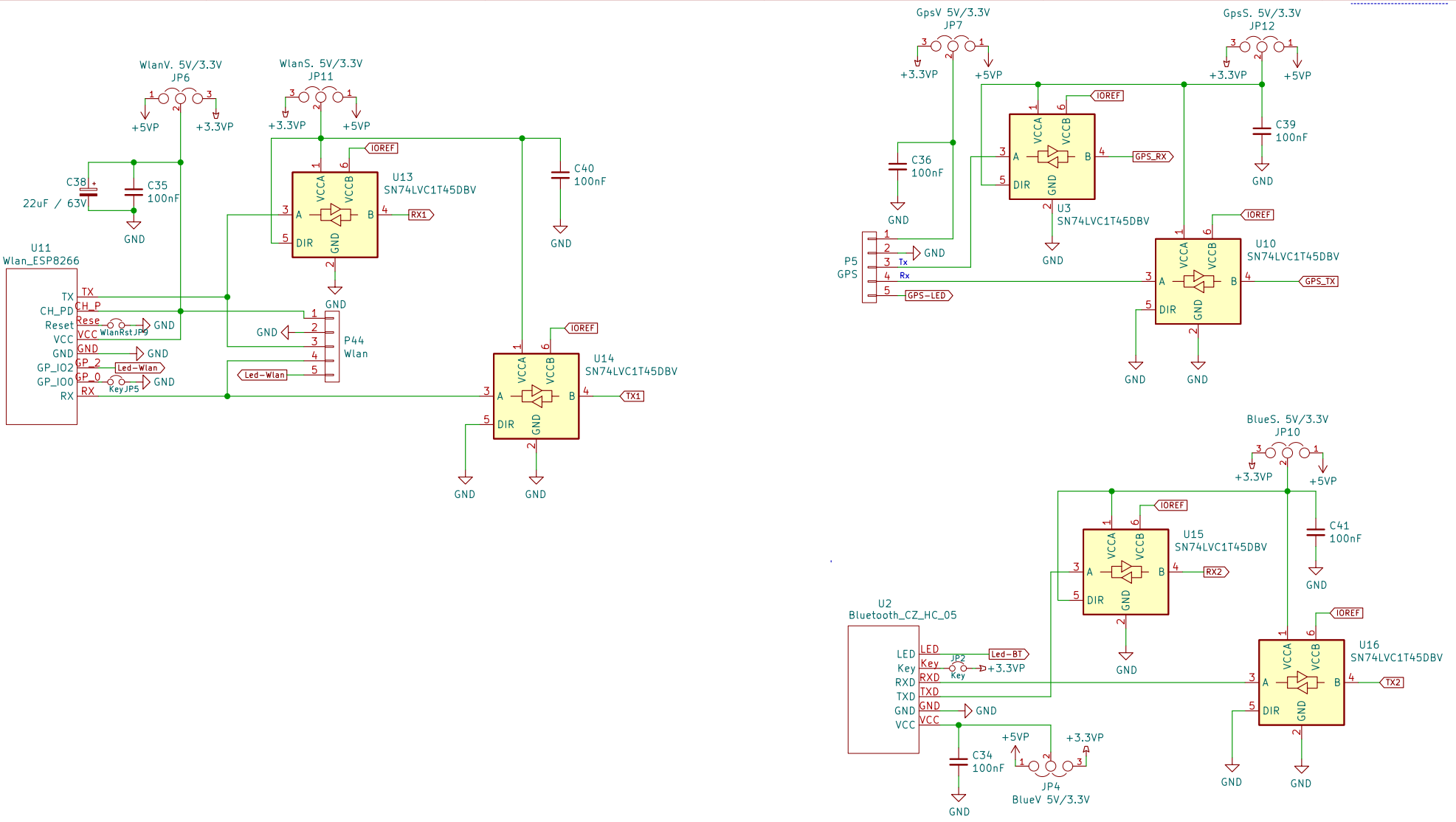


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Bohrlöcher/
File: Bohrlöcher.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 3/34



Schaltplan und Layout UweZ

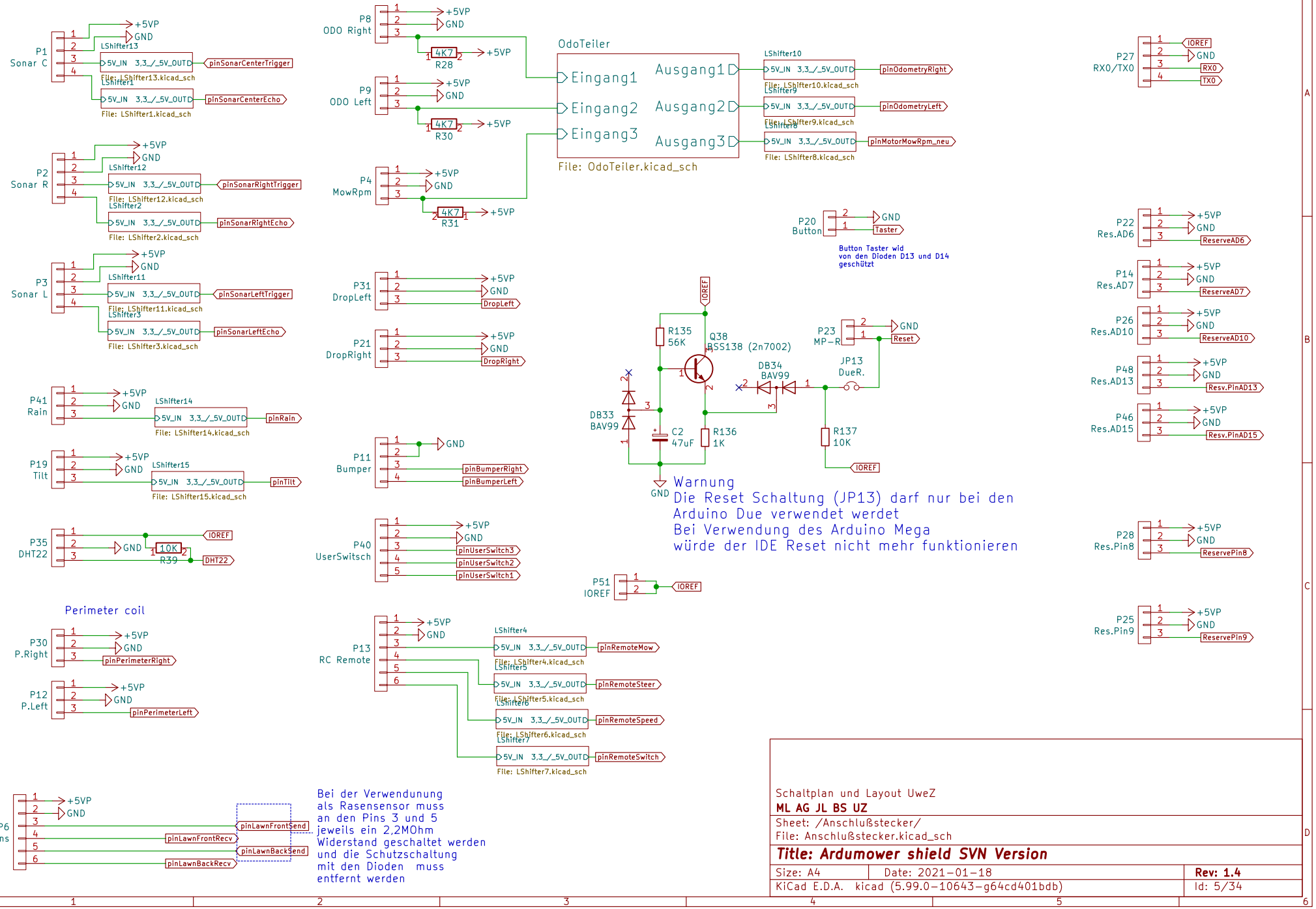
ML AG JL BS UZ

Sheet: /Wlan_BT_GPS/

File: Wlan_BT_GPS.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 4/34

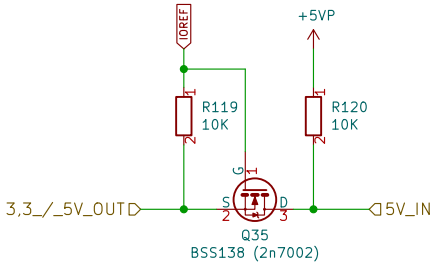


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/
File: Anschlußstecker.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 5/34

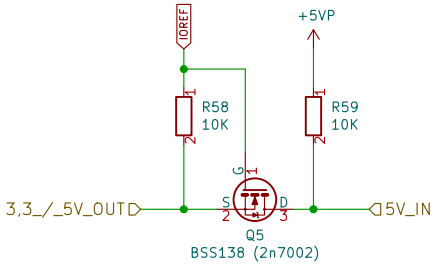


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter13/
File: LShifter13.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 6/34

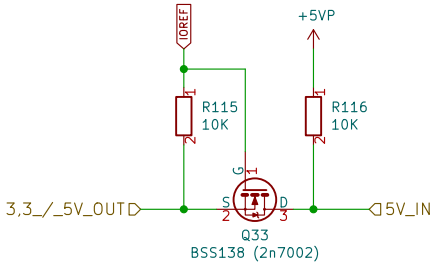


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter1/
File: LShifter1.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 7/34

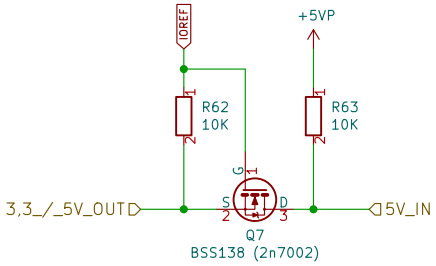


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter11/
File: LShifter11.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 8/34

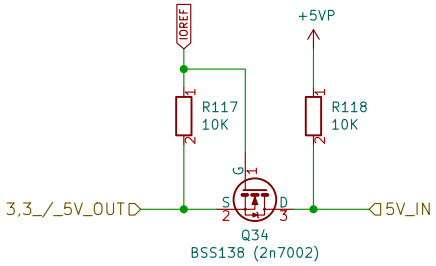


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter3/
File: LShifter3.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 9/34

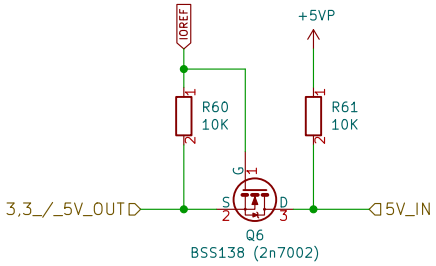


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter12/
File: LShifter12.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 10/34

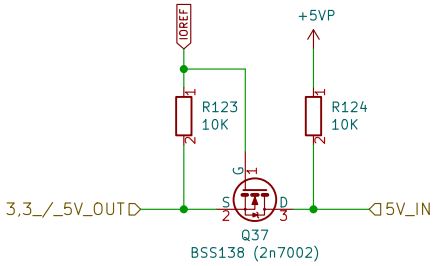


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter2/
File: LShifter2.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 11/34

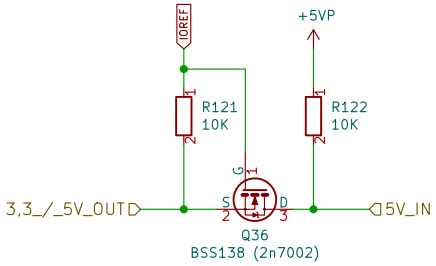


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter15/
File: LShifter15.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 12/34

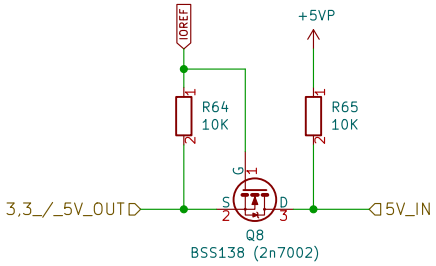


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter14/
File: LShifter14.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 13/34

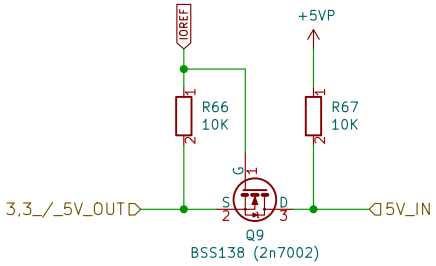


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter4/
File: LShifter4.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 14/34

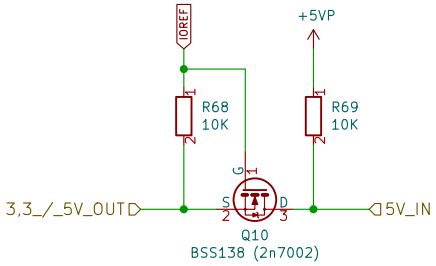


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter5/
File: LShifter5.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 15/34



Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter6/
File: LShifter6.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
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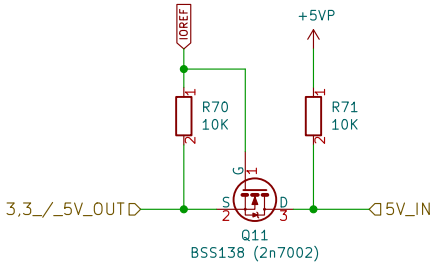
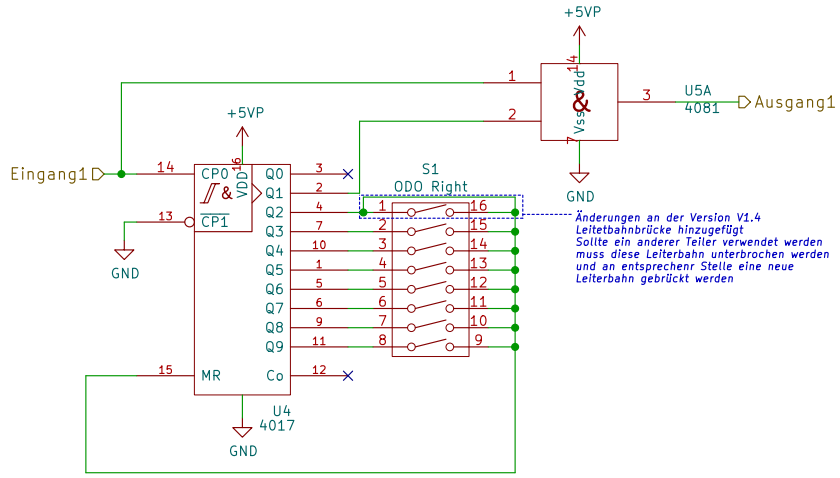


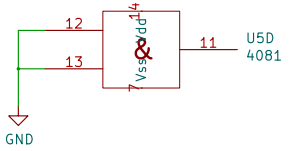
Schaltplan und Layout UweZ
ML AG JL BS UZ

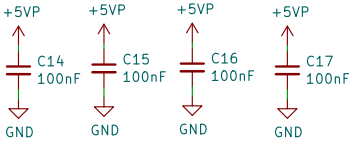
Sheet: /Anschlußstecker/LShifter7/
File: LShifter7.kicad_sch

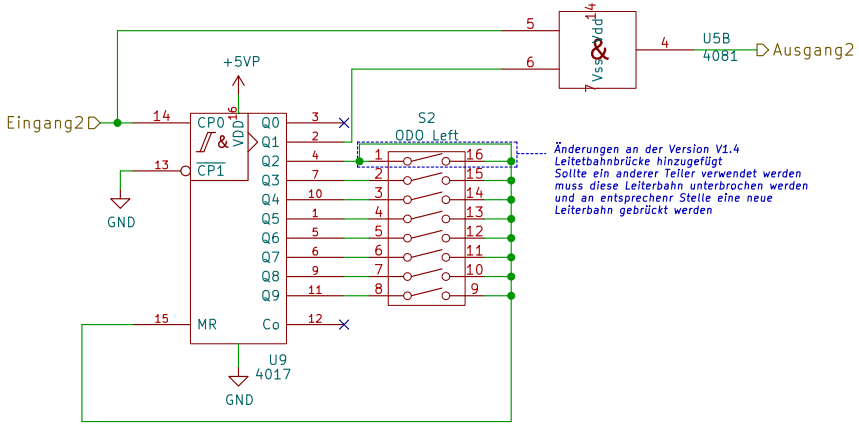
Title: Ardumower shield SVN Version

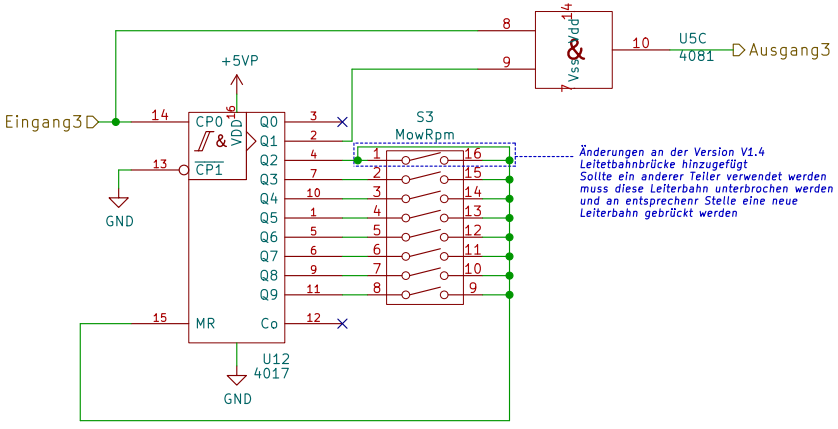
Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 17/34











Schaltplan und Layout UweZ

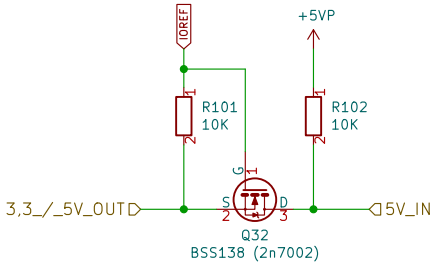
ML AG JL BS UZ

Sheet: /Anschlußstecker/OdoTeiler/

File: OdoTeiler.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 18/34

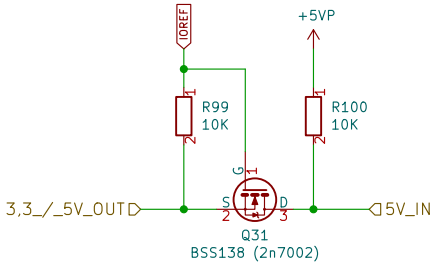


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter10/
File: LShifter10.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 19/34

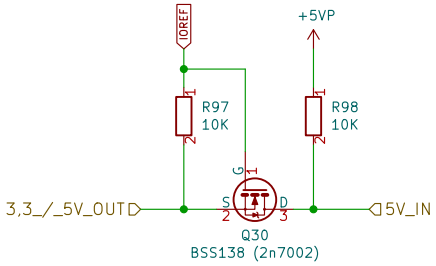


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter9/
File: LShifter9.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 20/34

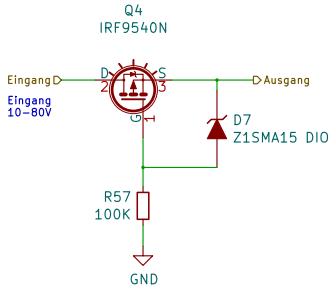


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Anschlußstecker/LShifter8/
File: LShifter8.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 21/34

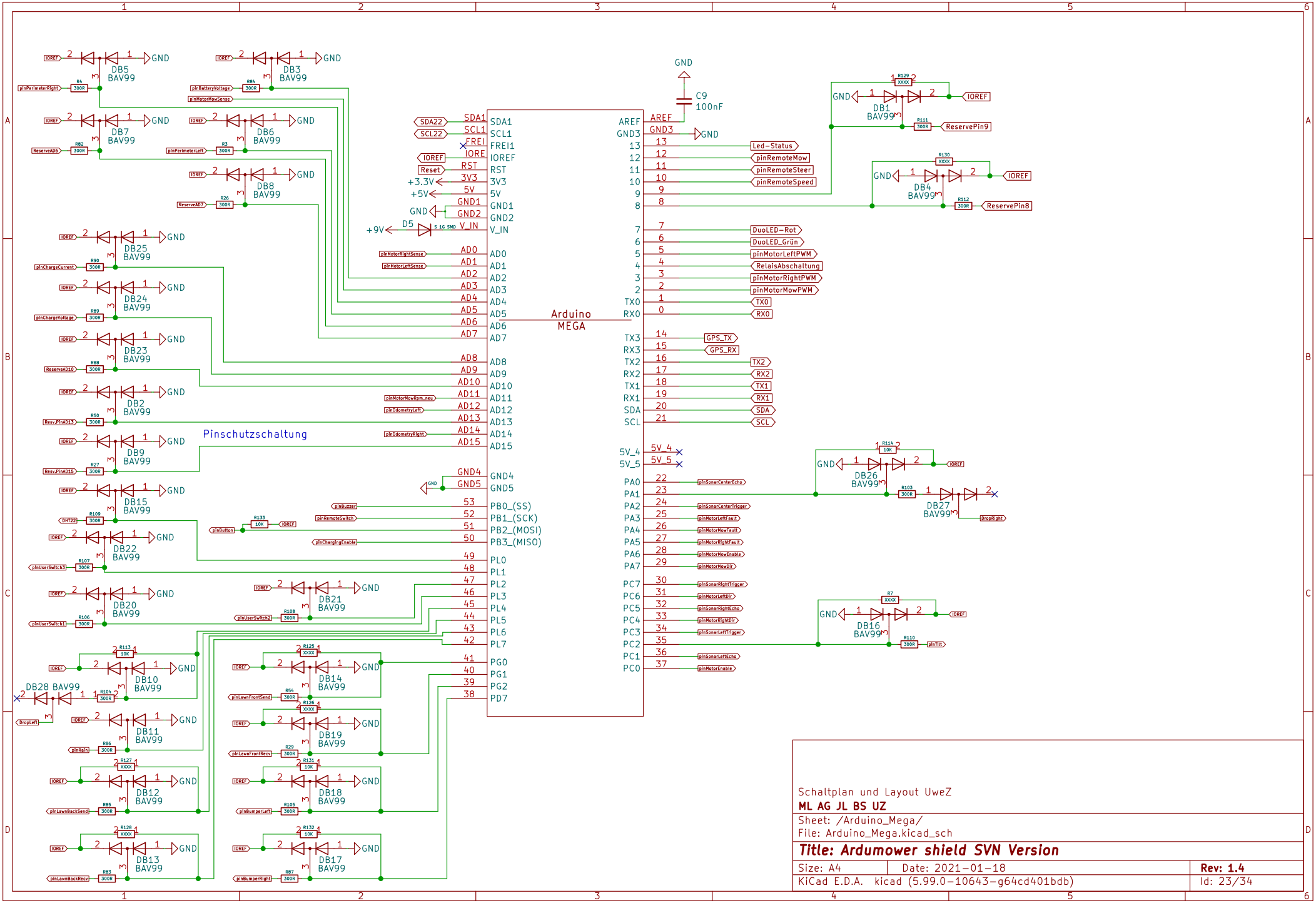


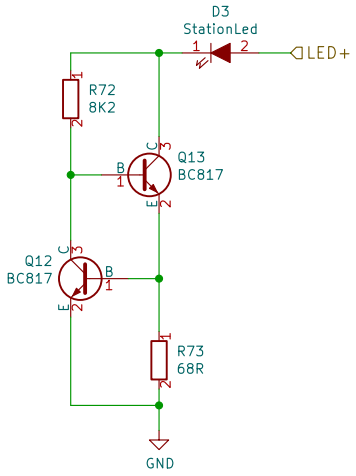
Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /VerpolungsschutzLade./
File: VerpolungsschutzLade.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 22/34


Arduino
MEGA
Pinschutzschaltung
Led-Status
pinRemoteMow
pinRemoteSteer
pinRemoteSpeed
DuoLED-Rot
DuoLED_Grün
pinMotorLeftPWM
RelaisAbschaltung
pinMotorRightPWM
pinMotorMowPWM
GPS_TX
GPS_RX
ReservePin9
ReservePin8
DropRight
DropLeft
Schaltplan und Layout UweZ
ML AG JL BS UZ
Sheet: /Arduino_Mega/
File: Arduino_Mega.kicad_sch
Title: Ardumower shield SVN Version
Size: A4
Date: 2021-01-18
Rev: 1.4
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)
Id: 23/34

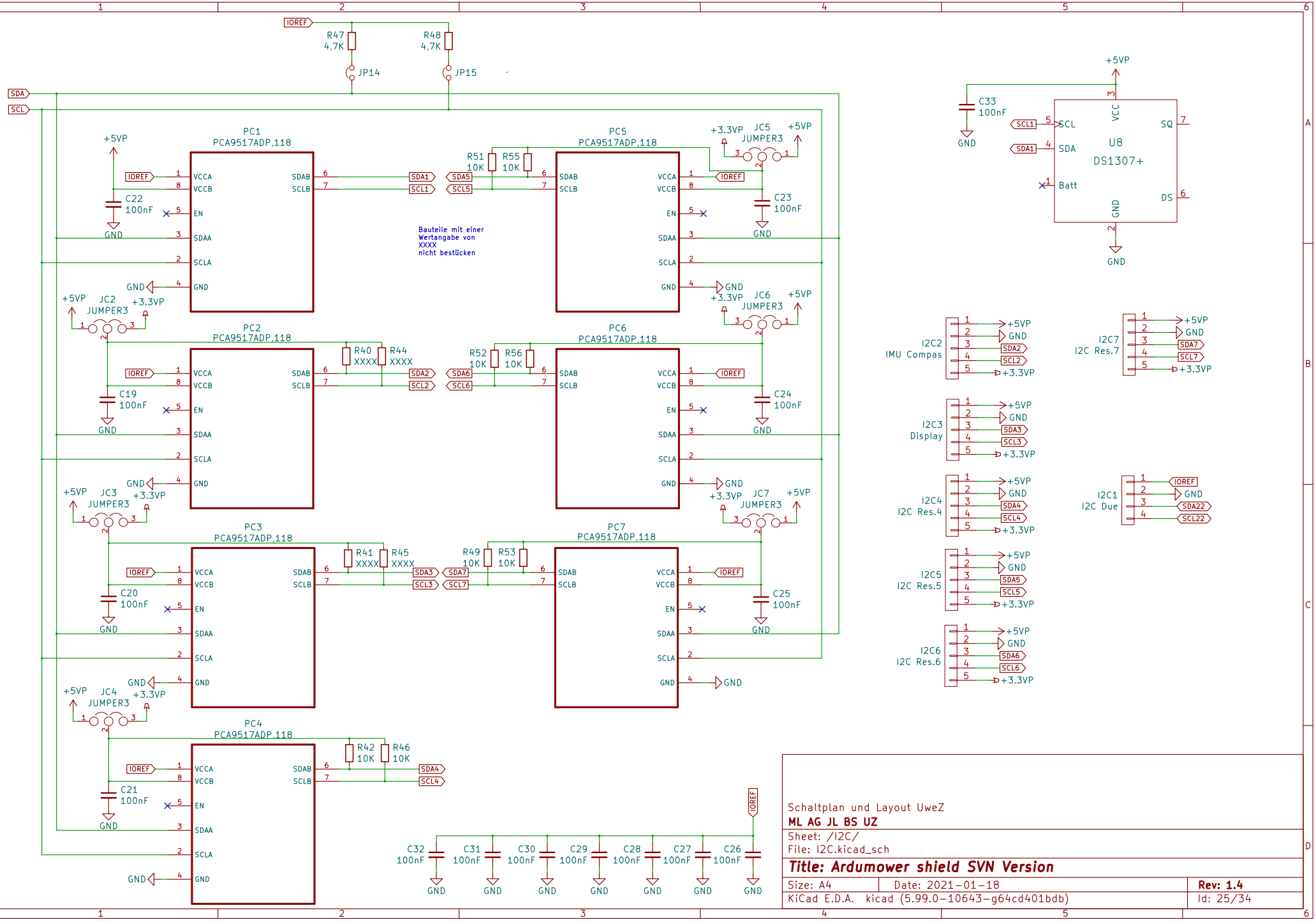


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Stationsled/
File: Stationsled.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 24/34

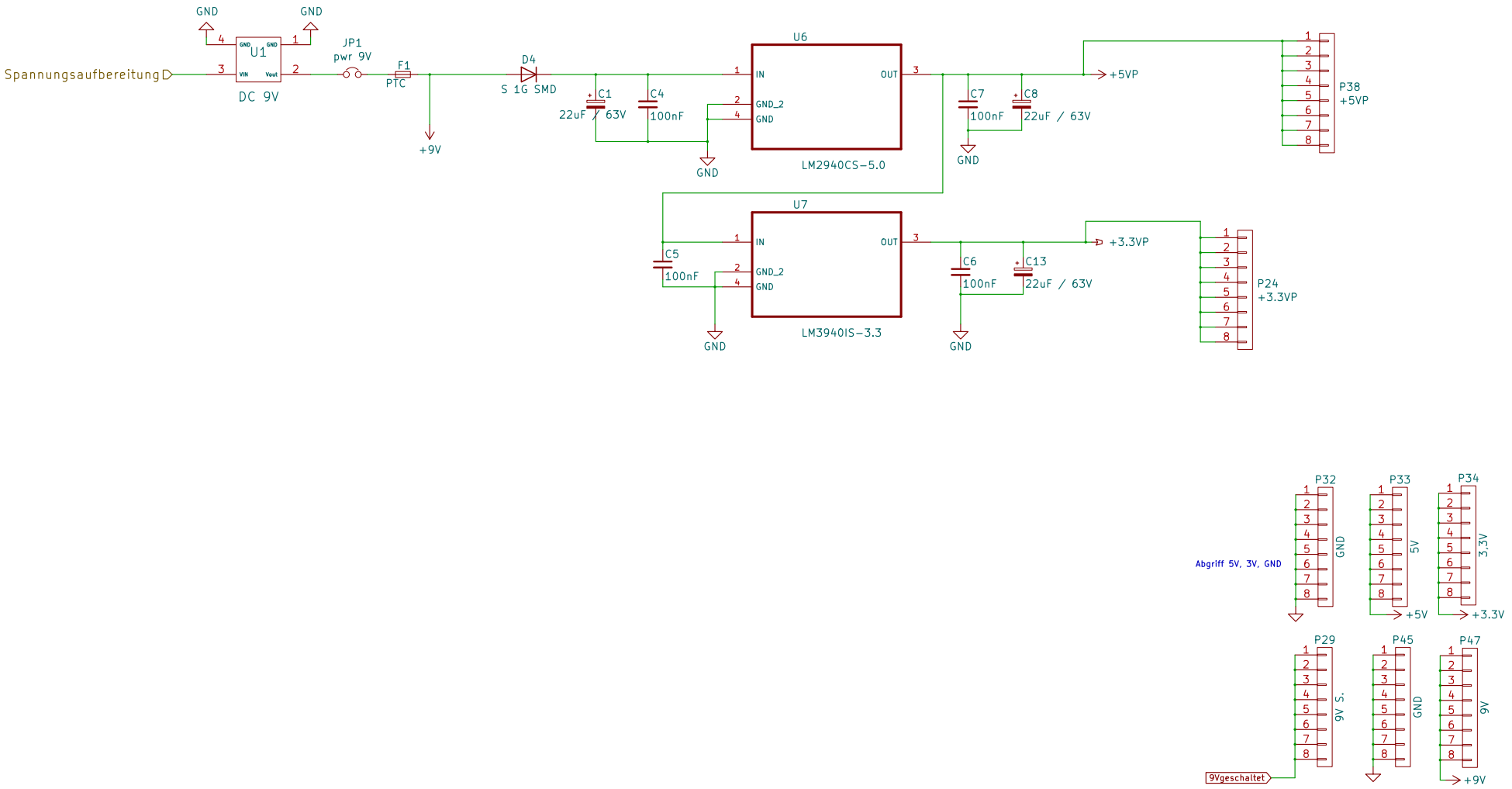


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /I2C/
File: I2C.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 25/34

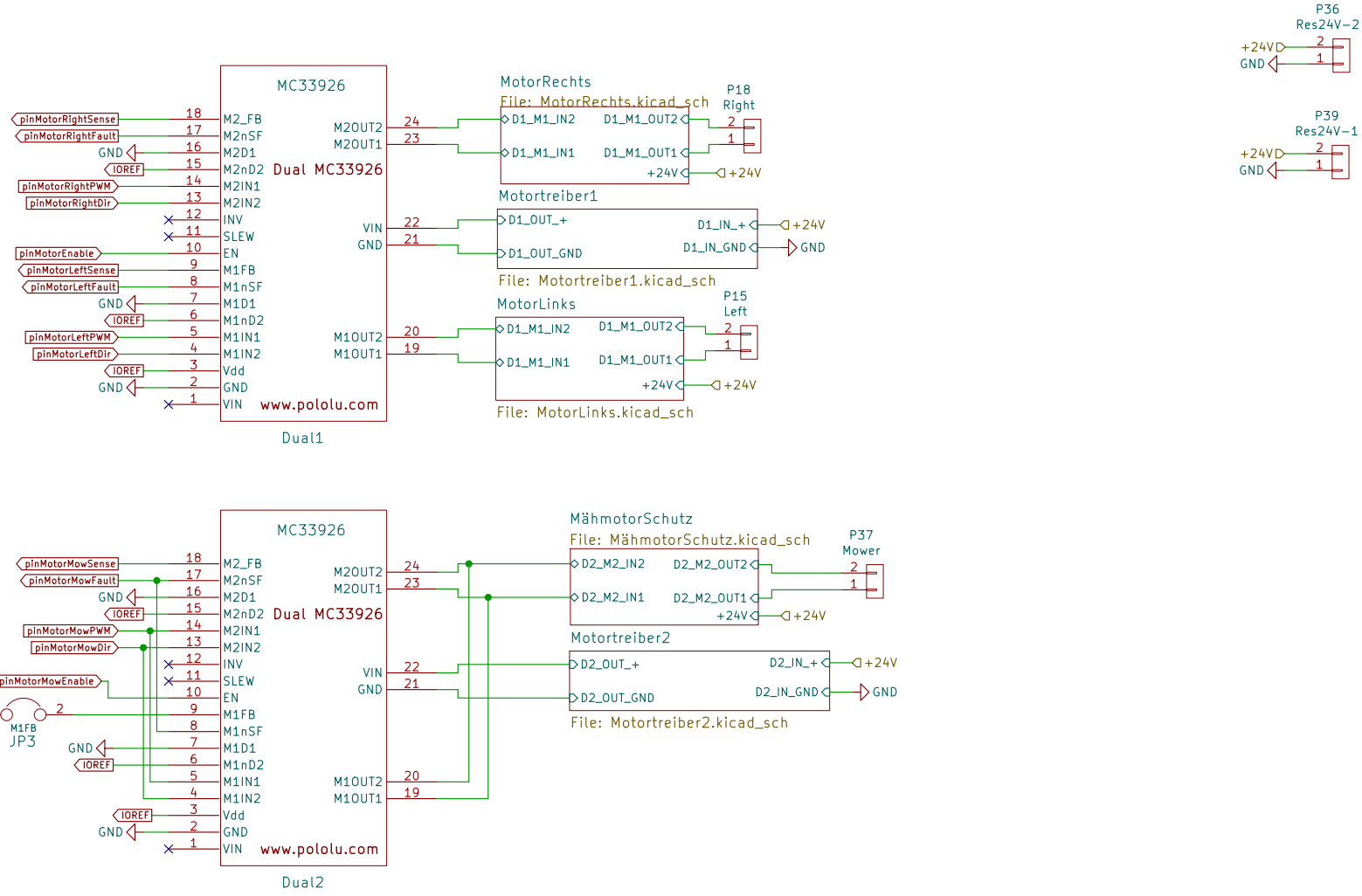


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Spannungsversorgung/
File: Spannungsversorgung.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 26/34



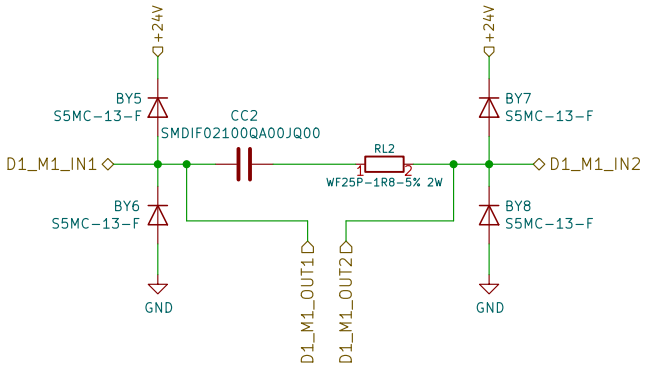
Unsere Motoren haben:
Encoder 5 Impulse pro Umdrehung
31 Umdrehungen nach dem Getriebe
mit einer Übersetzung 1:212
Das entspricht etwa 6572 Umdrehungen des Motors vor dem Getriebe.
Das heißt der Motor vor dem Getriebe dreht sich 212mal damit der Motor nach dem Getriebe sich 1 mal dreht.
Impulse pro Umdrehung wäre demnach : 6572 /31 = 212
Da der Encoder aber vor dem Getriebe sitzt haben wir bei einer Radumdrehung 212*5 Impulse.
Also 1060 pro Radumdrehung

Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Motortreiber/
File: Motortreiber.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 27/34



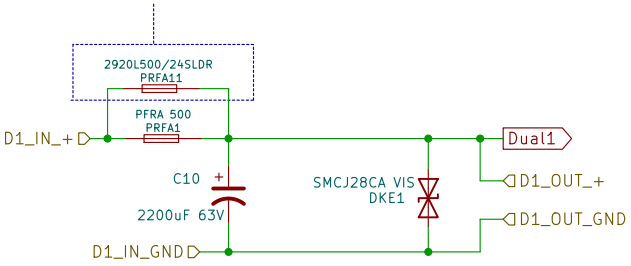
Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Motortreiber/MotorLinks/
File: MotorLinks.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 28/34

Änderungen an der Version V1.4
Polyfuse alternative hinzugegfügt.
Es darf nur die SMD oder die Drahtversion verwendet werden
nicht alle 2 gleichzeitig

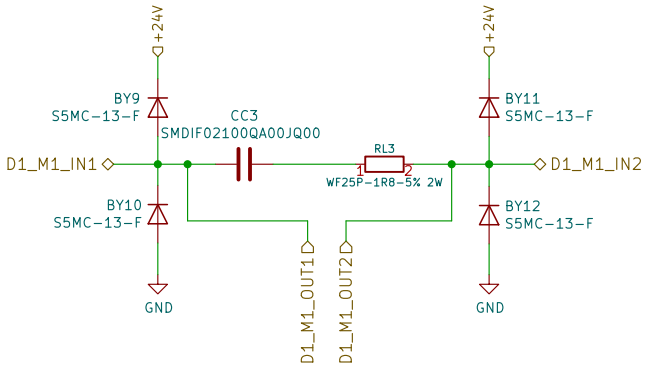


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Motortreiber/Motortreiber1/
File: Motortreiber1.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 29/34

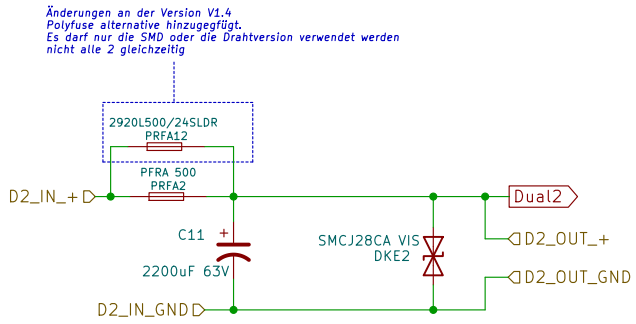


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Motortreiber/MotorRechts/
File: MotorRechts.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 30/34

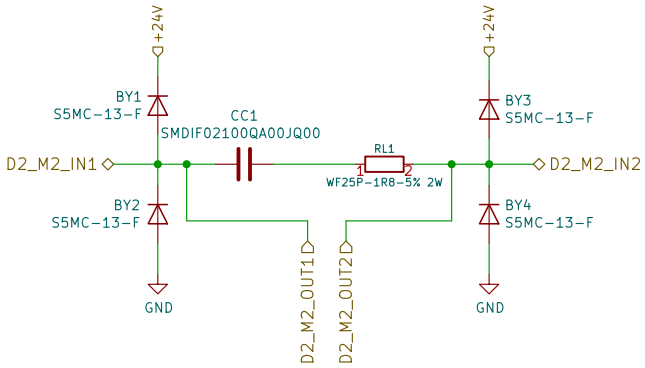


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Motortreiber/Motortreiber2/
File: Motortreiber2.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 31/34

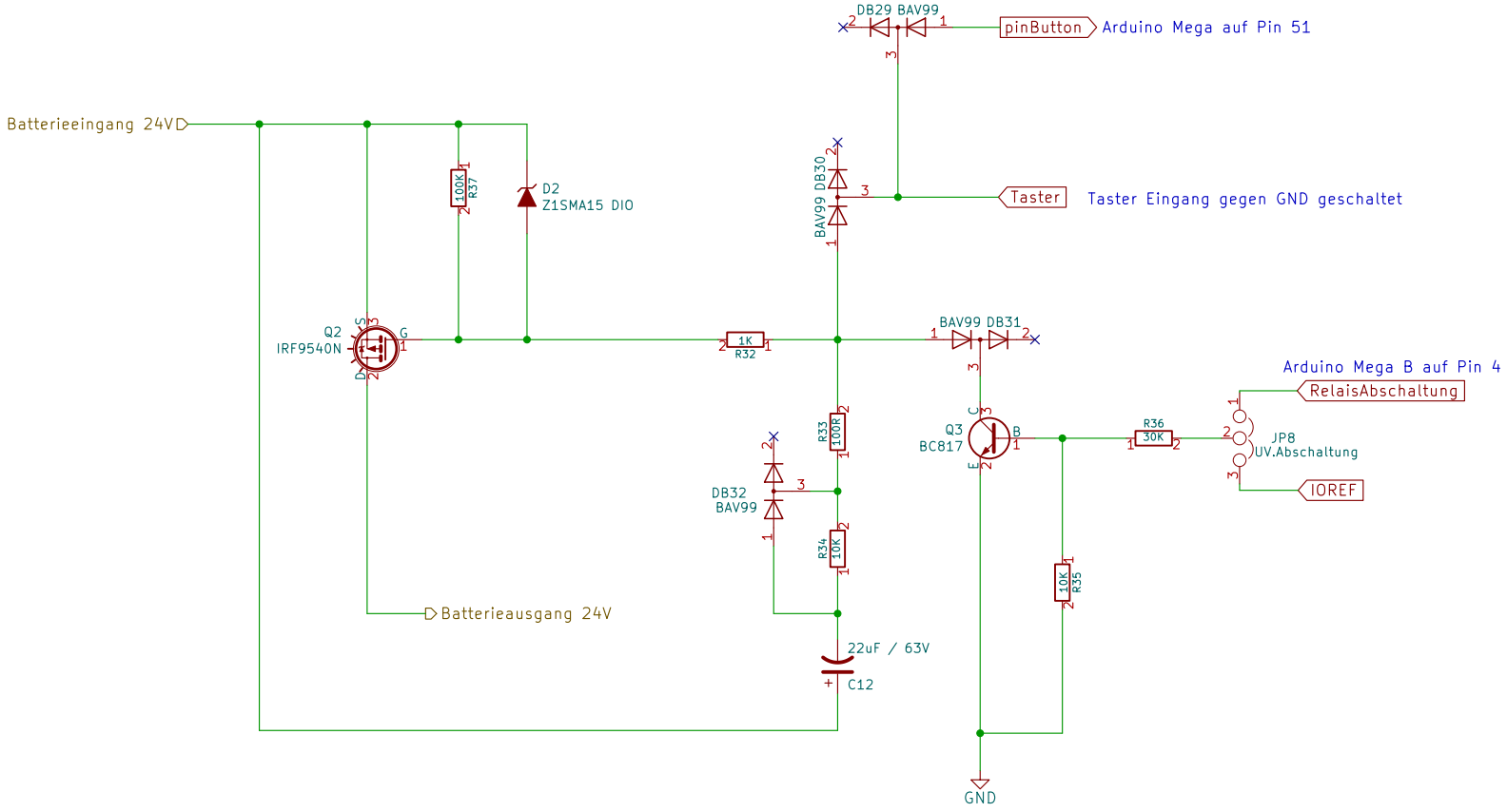


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Motortreiber/MähmotorSchutz/
File: MähmotorSchutz.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 32/34

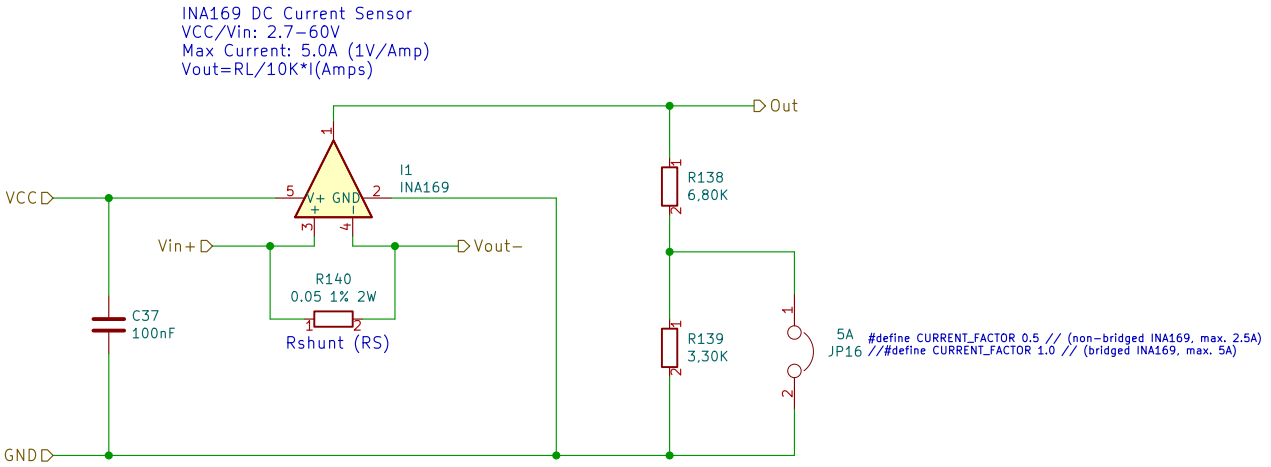


Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /USpannungAB/
File: USpannungAB.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 33/34



Hier Optimale Werte für die Berechnung der Messspannung eintragen			
	Akkuspannung:	28,0 V	28,0 V
	Messstrom Ig	6,3 A	6,3 A
	Messwiderstand	0,05 Ω	0,05 Ω
6,8 KΩ	Arduino Spannung	3,3 V	5,0 V
3,3 KΩ	Gesamtwdst	4,44 Ω	4,44 Ω
	Lastwdst	4,39 Ω	4,39 Ω
	Messwdst Uv	0,32 V	0,32 V
	P.V.	1,98 W	1,98 W
10,1 KΩ	Is	1,980 (A pro Volt)	1,980 (A pro Volt)
	Ina Out Max	2,35 V	4,05 V
	Ro	9,40 KΩ	16,20 KΩ

ergibt folgende Widerstand Kombination		Auflösung	INA Messbereich bis	Auflösung	INA Messbereich bis
6,8 KΩ		2,941 (A pro 1 Volt)	6,91 A	2,941 (A pro 1 Volt)	11,91 A
3,3 KΩ		6,061 (A pro 1 Volt)	14,24 A	6,061 (A pro 1 Volt)	24,55 A
0,0 KΩ		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0,0 KΩ		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
0,0 KΩ		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
10,1 KΩ		1,980 (A pro 1 Volt)	4,65 A	1,980 (A pro 1 Volt)	8,02 A

Schaltplan und Layout UweZ
ML AG JL BS UZ

Sheet: /Stromsensor_INA/
File: Stromsensor_INA.kicad_sch

Title: Ardumower shield SVN Version

Size: A4	Date: 2021-01-18	**Rev: 1.4**
KiCad E.D.A. kicad (5.99.0-10643-g64cd401bdb)		Id: 34/34