Without accelerometer and SD card

Bus types
General purpose bus
Ignition
Injection
Outputs
Analog inputs (sensors)
Discrete inputs

Power

ETB driver

LEDs

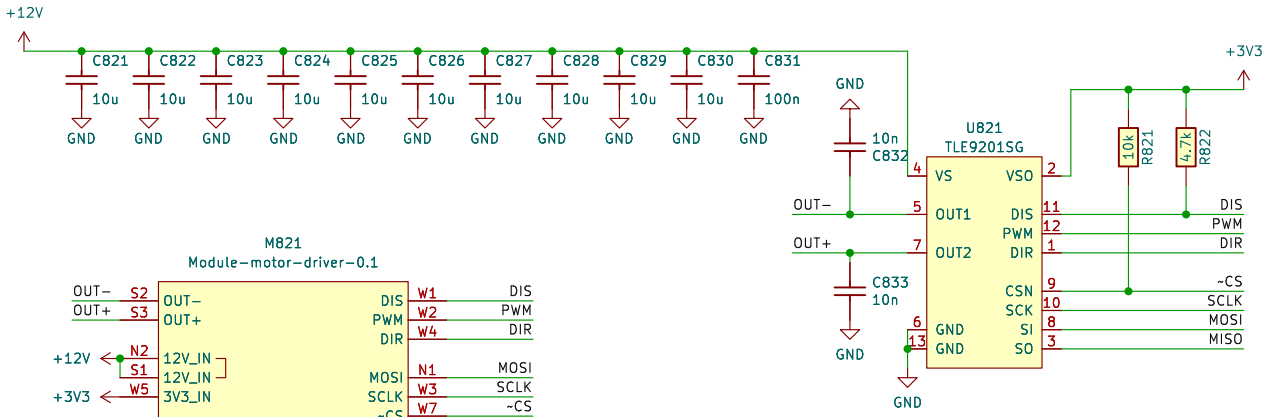
Prototype areas

FOR OFF ROAD PURPOSES ONLY
This is not for applications with emissions or safety regulations (AKA not for street use). This is for closed stages, track and equipment.

Board info
Hellen-One-PCB-logo
http://rusefi.com/s/hellen121vag

andreika @ rusEFI.com
Sheet: /
File: hellen121vag.kicad_sch

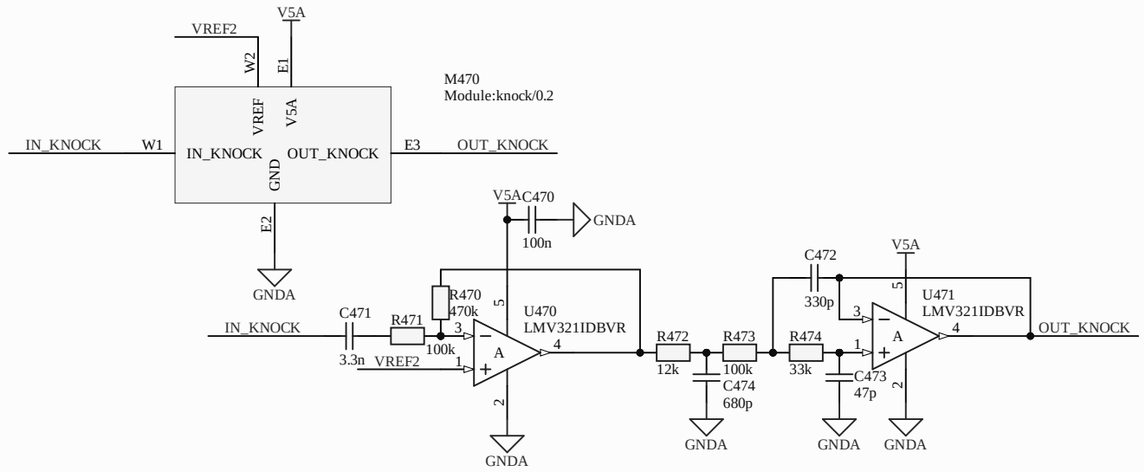
Title: Hellen121vag
Size: A1 | Date: 2021-06-13 | Rev: c
KiCad E.D.A. kicad (5.99.0-12439-g9495438 6e6) | Id: 1/1



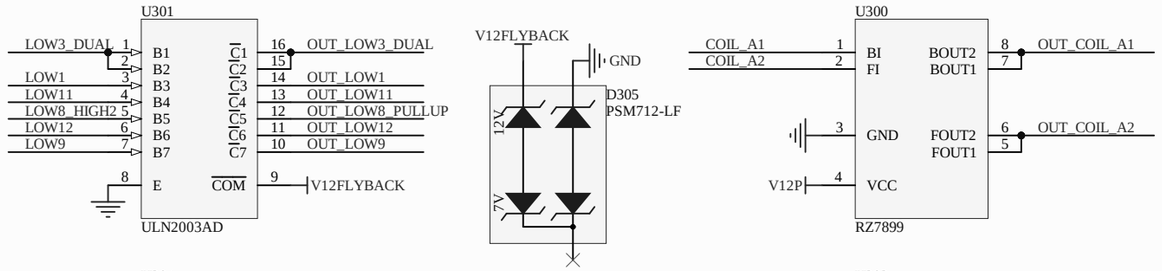
Sheet: /
File: hellen1−motor−driver.kicad_sch

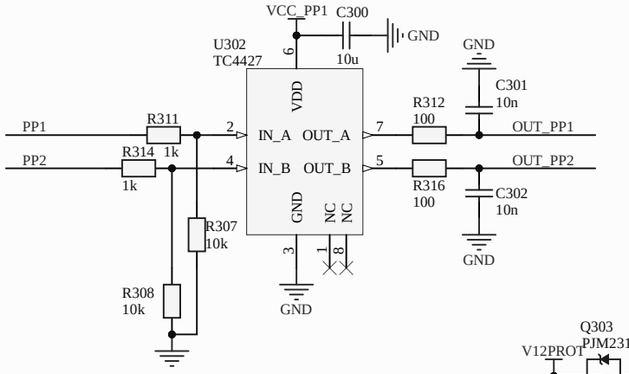
Title: Motor−driver module

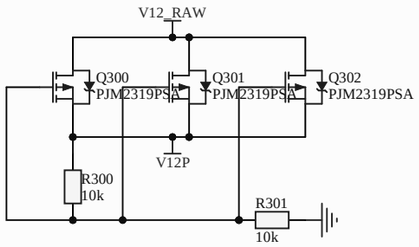
Size: A4	Date: 2024−03−07	**Rev: 0.1**
KiCad E.D.A. 8.0.3		Id: 1/1

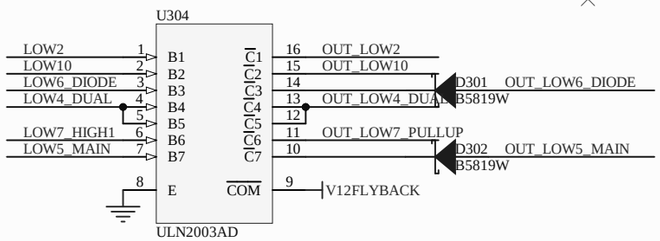


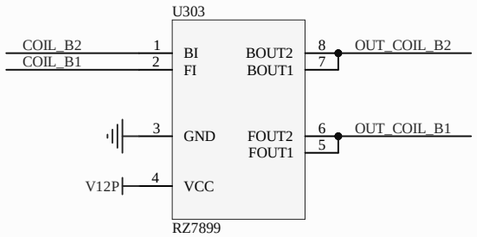
Title: ***Hellen-One Knock***			***rusEFI EMS*** ***Hellen-One Platform*** *https://rusefi.com/s/hellen72*
Size: A3	Author: andreika	Revision: 0.2	
Date: 15.02.2023		Sheet 1 of 1	

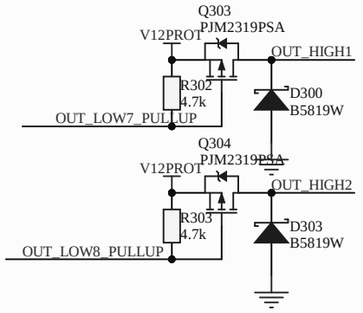


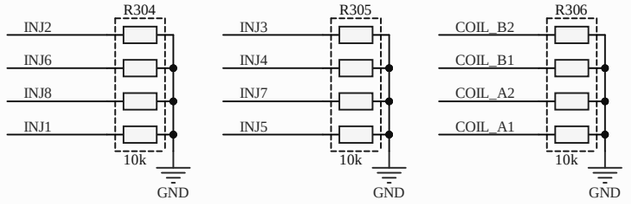


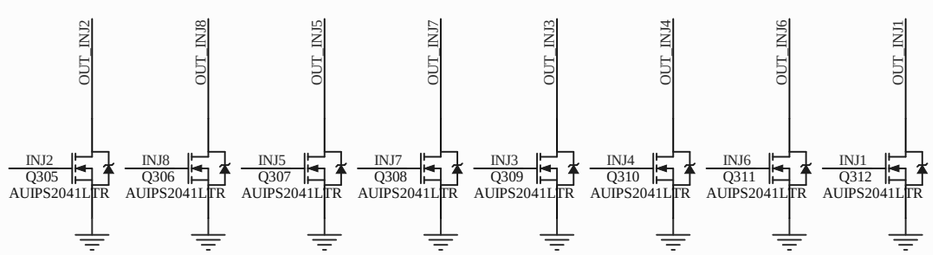


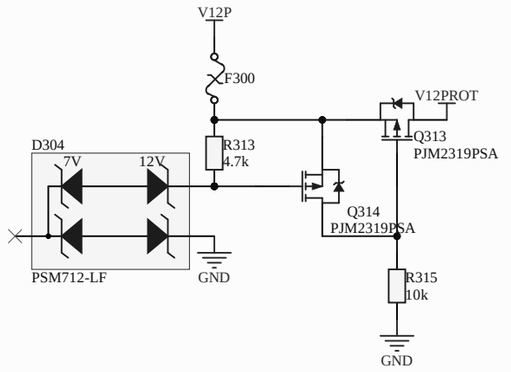


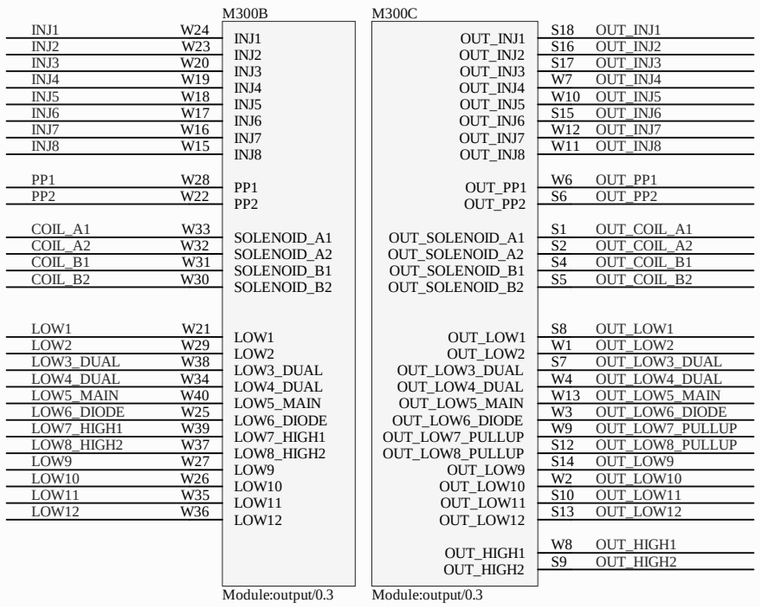


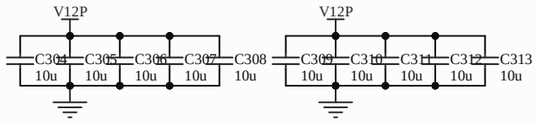


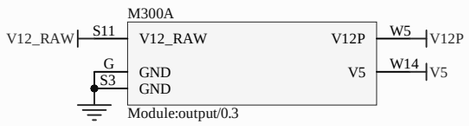


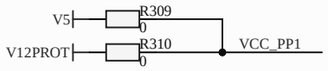






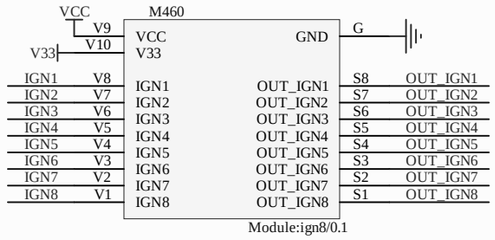


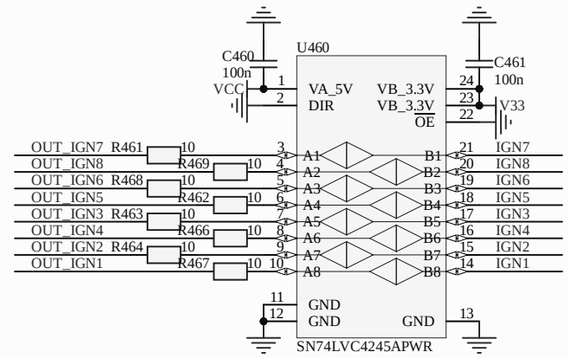




** These can be removed in the board compilation file*

Title: ***Hellen-One Output***		***rusEFI EMS***	rusEFI Hellen
Size: A3	Author: andreika	Revision: 0.3	***Hellen-One Platform***
Date: 26.11.2021		Sheet 1 of 1	*https://rusefi.com/s/hellen1/*





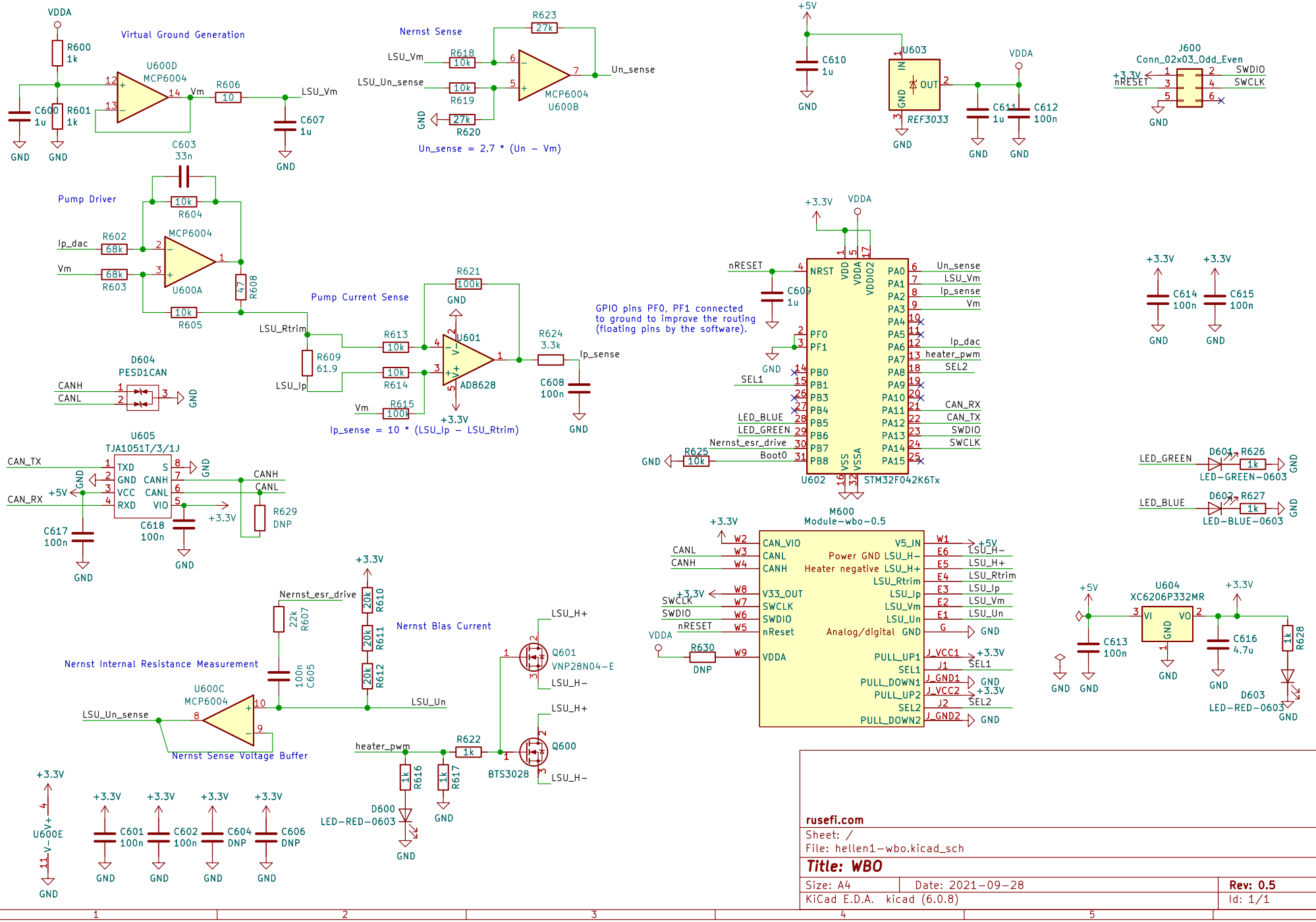
Title: ***Hellen-One IGN8***			***rusEFI EMS*** ***Hellen-One Platform*** *https://rusefi.com/s/hellen1/*
Size: A3	Author: andreika	Revision: 0.2	
Date: 18/03/2022		Sheet 1 of 1	

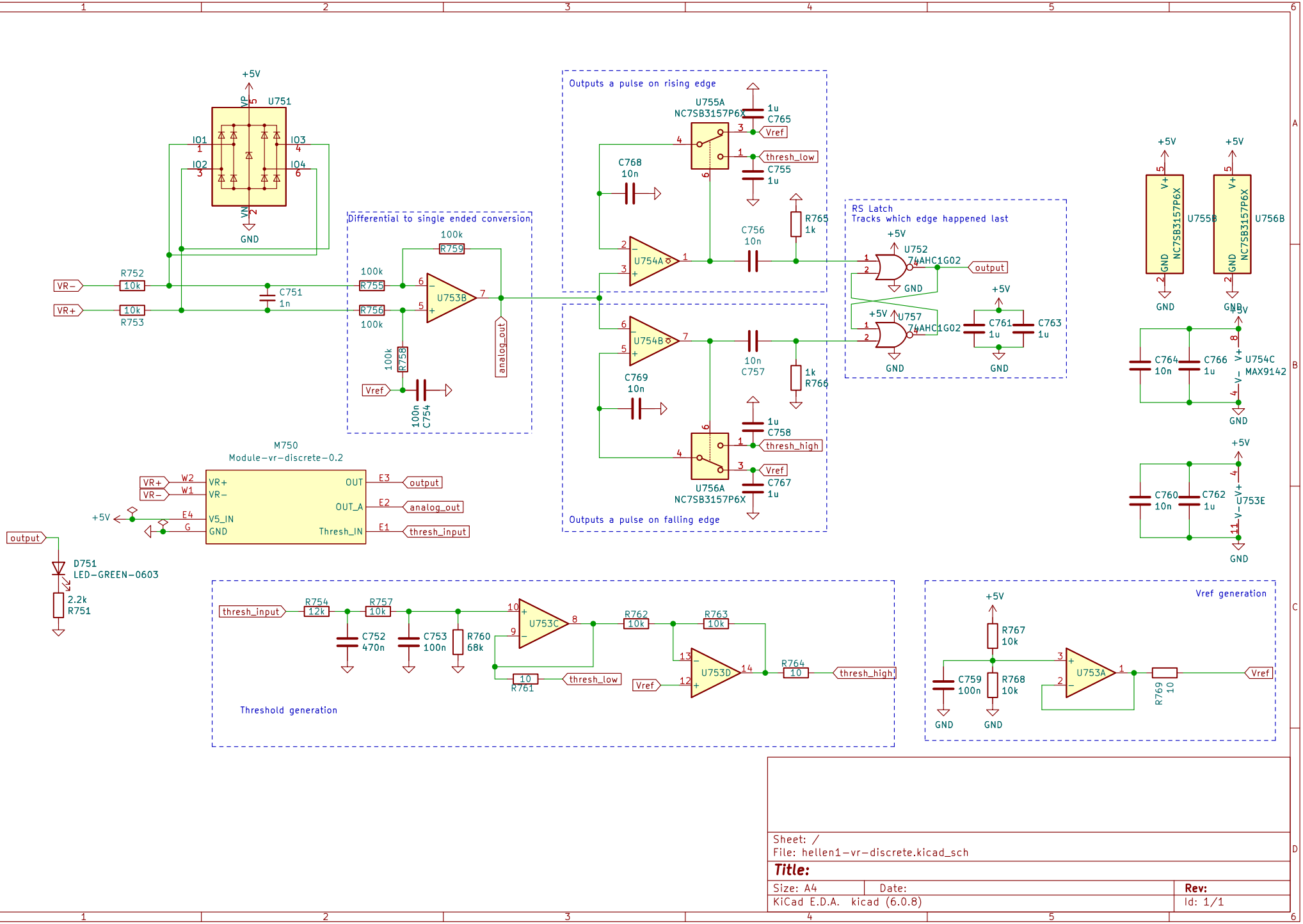
M410
V12_RAW V3 V12_RAW V12 E2 V12
V12_PERM V1 V12_PERM VBAT E1 VBAT
VIGN E3 VIGN
IN_VIGN V2 IN_VIGN
V5 E4 V5
5VP V4 5VP
EN E5 EN_5VP GND PG_5PV E6 PG
S1 Hellen One : Power-Module interface

V12_RAW F410 D416 B5819W
D418 SMCJ30A
V12 LED1 R424 10k MHT136UGCT GND
R420 1 C427 4.7u
L420 2.2uH
C421 10u C422 10u C423 10u C424 10u
U420 LMR14020 VIN EN RT SS BOOT SW FB GND GND
C420 100n
D420 SS34
L421 MWSA0503-10uH
R421 10k C428 10n
R422 68k C429 220p
R423 12k
C425 10u C426 10u D421 P6SMB6.8CA
V5 LED3 R426 2.4k MHT136UGCT
R428 4.7k PG
U411 TLS115 IN EN ADJ GND GND OUT PG
C414 1u C415 1u
5VP LED4 R427 2.4k MHT136UGCT
D413 1N4148WS
U410 IN GND EN OUT ADJ / BYP
C413 100n MIC5205-3.3YM5 C410 47u C412 47u VBAT

IN_VIGN D417 B5819W
R411 33k R413 6.8k C411 100n
VBAT *VIGN overvoltage protection*
D414 1N4148WS D410 1N4148WS
VIGN LED2 R425 10k MHT136UGCT
V12_PERM R410 6.8k
D412 1N4148WS
D411 PSM712-LF 12V 7V

Title: ***power_12and5V***			***rusEFI EMS*** ***Hellen-One Platform*** *https://rusefi.com/s/hellen72*
Size: A3	Author:	Revision: 0.1	
Date: 15.02.2023		Sheet 1 of 1	


Virtual Ground Generation
U600D
MCP6004
R600 1k
R601 1k
C600 1u
C607 1u
R606 10
Vm
LSU_Vm
Nernst Sense
R623 27k
R618 10k
R619 10k
R620 27k
LSU_Vm
LSU_Un_sense
Un_sense
U600B
Un_sense = 2.7 * (Un − Vm)
+5V
C610 1u
U603
REF3033
C611 1u
C612 100n
VDDA
J600
Conn_02x03_Odd_Even
SWDIO
SWCLK
nRESET
Pump Driver
C603 33n
R604 10k
R605 10k
R602 68k
R603 68k
R608 47
Ip_dac
Vm
U600A
Pump Current Sense
R621 100k
R613 10k
R614 10k
R615 100
R609 61.9
R624 3.3k
C608 100n
U601
AD8628
LSU_Rtrim
LSU_Ip
Ip_sense
Ip_sense = 10 * (LSU_Ip − LSU_Rtrim)
D604
PESD1CAN
CANH
CANL
GPIO pins PF0, PF1 connected
to ground to improve the routing
(floating pins by the software).
nRESET
C609 1u
SEL1
LED_BLUE
LED_GREEN
Nernst_esr_drive
R625 10k
Boot0
U602
STM32F042K6Tx
C614 100n
C615 100n
U605
TJA1051T/3/1J
CAN_TX
CAN_RX
C617 100n
C618 100n
R629 DNP
LED_GREEN
LED_BLUE
D601
D602
R626 1k
R627 1k
LED−GREEN−0603
LED−BLUE−0603
M600
Module−wbo−0.5
Power GND LSU_H−
Heater negative LSU_H+
Analog/digital GND
R630 DNP
U604
XC6206P332MR
C613 100n
C616 4.7u
R628 1k
D603
LED−RED−0603
Nernst Internal Resistance Measurement
Nernst Bias Current
R607 22k
R610 20k
R611 20k
R612 20k
C605 100n
U600C
MCP6004
LSU_Un_sense
Nernst Sense Voltage Buffer
LSU_Un
Q601
VNP28N04−E
Q600
BTS3028
heater_pwm
R622 1k
R616 1k
R617 1k
D600
LED−RED−0603
U600E
C601 100n
C602 100n
C604 DNP
C606 DNP
rusefi.com
Sheet: /
File: hellen1−wbo.kicad_sch
Title: WBO
Size: A4
Date: 2021−09−28
Rev: 0.5
KiCad E.D.A. kicad (6.0.8)
Id: 1/1


+5V
U751
IO1
IO2
IO3
IO4
VP
VN
GND
VR−
VR+
R752
10k
R753
10k
C751
1n
Differential to single ended conversion
100k
R759
100k
R755
100k
R756
U753B
analog_out
100k
R758
Vref
100n
C754
Outputs a pulse on rising edge
U755A
NC7SB3157P6X
1u
C765
Vref
thresh_low
C755
1u
C768
10n
U754A
C756
10n
R765
1k
RS Latch
Tracks which edge happened last
U752
74AHC1G02
output
U757
74AHC1G02
C761
1u
C763
1u
U754B
C769
10n
10n
C757
1k
R766
1u
C758
thresh_high
Vref
C767
1u
U756A
NC7SB3157P6X
Outputs a pulse on falling edge
U755B
U756B
C764
10n
C766
1u
U754C
MAX9142
C760
10n
C762
1u
U753E
M750
Module−vr−discrete−0.2
VR+
VR−
W2
W1
VR+
VR−
V5_IN
GND
OUT
OUT_A
Thresh_IN
E3
E2
E1
E4
G
output
analog_out
thresh_input
output
D751
LED−GREEN−0603
2.2k
R751
thresh_input
R754
12k
R757
10k
C752
470n
C753
100n
R760
68k
U753C
R762
10k
R763
10k
U753D
R764
10
thresh_high
10
R761
thresh_low
Vref
Threshold generation
Vref generation
R767
10k
C759
100n
R768
10k
U753A
R769
10
Vref
Sheet: /
File: hellen1−vr−discrete.kicad_sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (6.0.8)
Id: 1/1