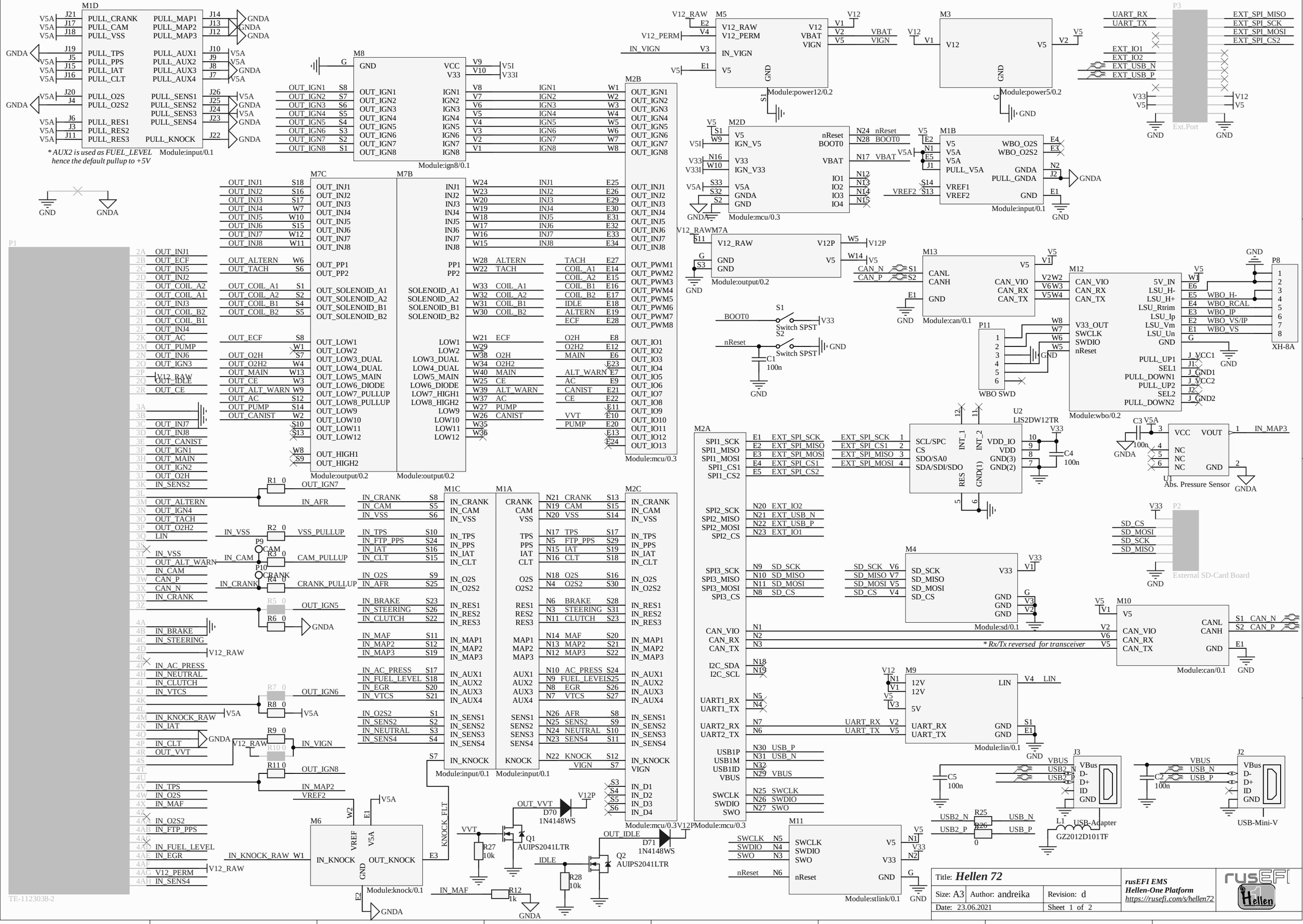
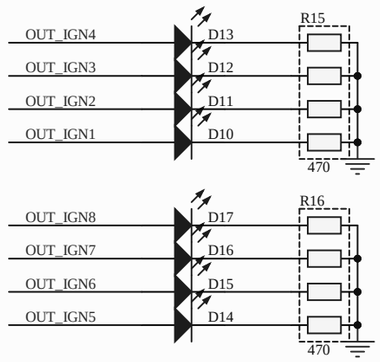
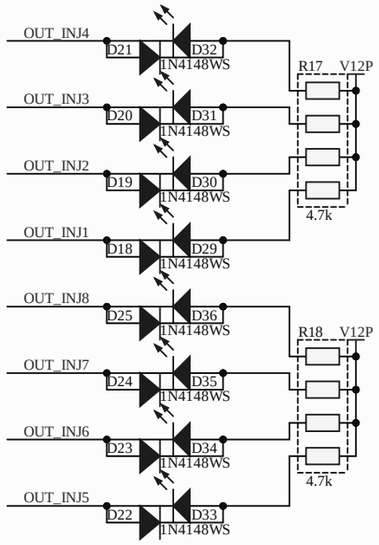
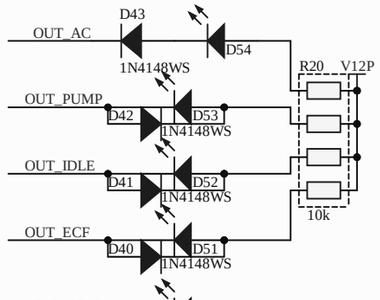
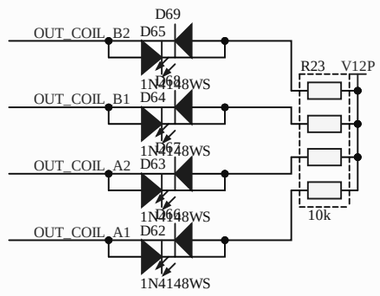
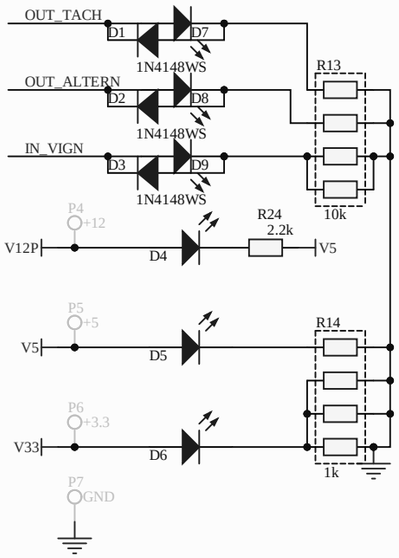

M1D
PULL_CRANK
PULL_CAM
PULL_VSS
PULL_TPS
PULL_PPS
PULL_IAT
PULL_CLT
PULL_O2S
PULL_O2S2
PULL_RES1
PULL_RES2
PULL_RES3
PULL_MAP1
PULL_MAP2
PULL_MAP3
PULL_AUX1
PULL_AUX2
PULL_AUX3
PULL_AUX4
PULL_SENS1
PULL_SENS2
PULL_SENS3
PULL_SENS4
PULL_KNOCK
*AUX2 is used as FUEL_LEVEL hence the default pullup to +5V
Module:input/0.1
M8
Module:ign8/0.1
M2B
Module:mcu/0.3
M7C
M7B
Module:output/0.2
Module:output/0.2
Module:mcu/0.3
M5
Module:power12/0.2
M3
Module:power5/0.2
P3
Ext.Port
M2D
Module:mcu/0.3
M1B
Module:input/0.1
M7A
Module:output/0.2
M13
Module:can/0.1
M12
Module:wbo/0.2
P8
XH-8A
P11
WBO SWD
P1
TE-1123038-2
M2A
Module:mcu/0.3
U2
LIS2DW12TR
U1
Abs. Pressure Sensor
P2
External SD-Card Board
M4
Module:sd/0.1
M10
Module:can/0.1
M9
Module:lin/0.1
M11
Module:stlink/0.1
J3
USB-Adapter
J2
USB-Mini-V
M1C
M1A
M2C
Module:input/0.1
Module:input/0.1
M6
Module:knock/0.1
Switch SPST
Switch SPST
Q1
AUIPS2041LTR
Q2
AUIPS2041LTR
D70
1N4148WS
D71
1N4148WS
L1
GZ2012D101TF
Title: Hellen 72
Size: A3
Author: andreika
Revision: d
Date: 23.06.2021
Sheet 1 of 2
rusEFI EMS
Hellen-One Platform
https://rusefi.com/s/hellen72

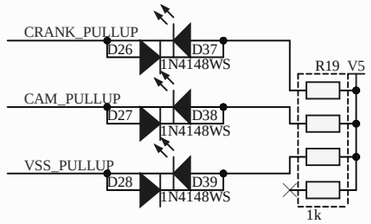


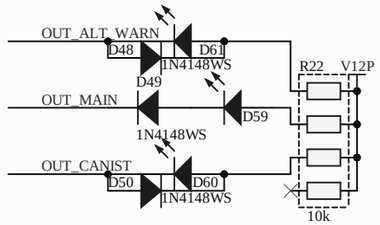


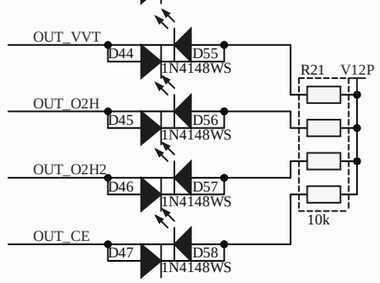




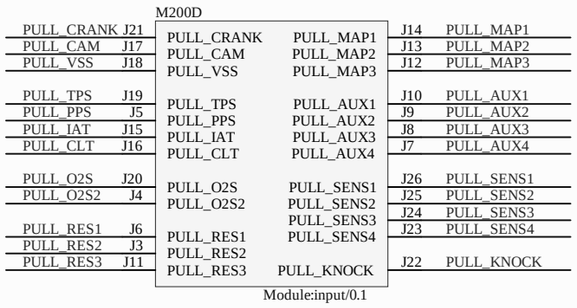


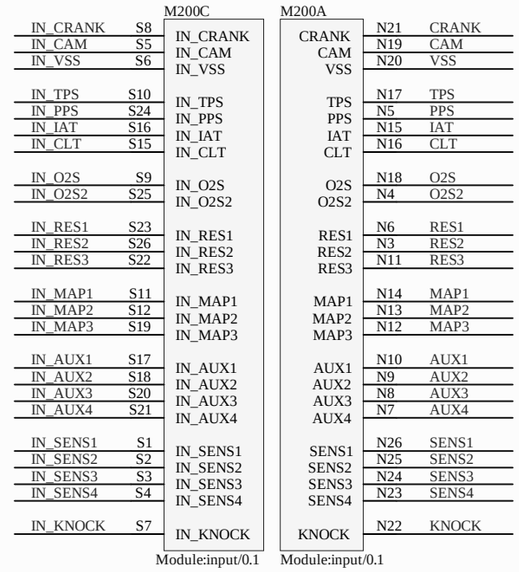


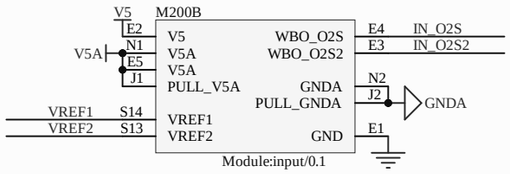


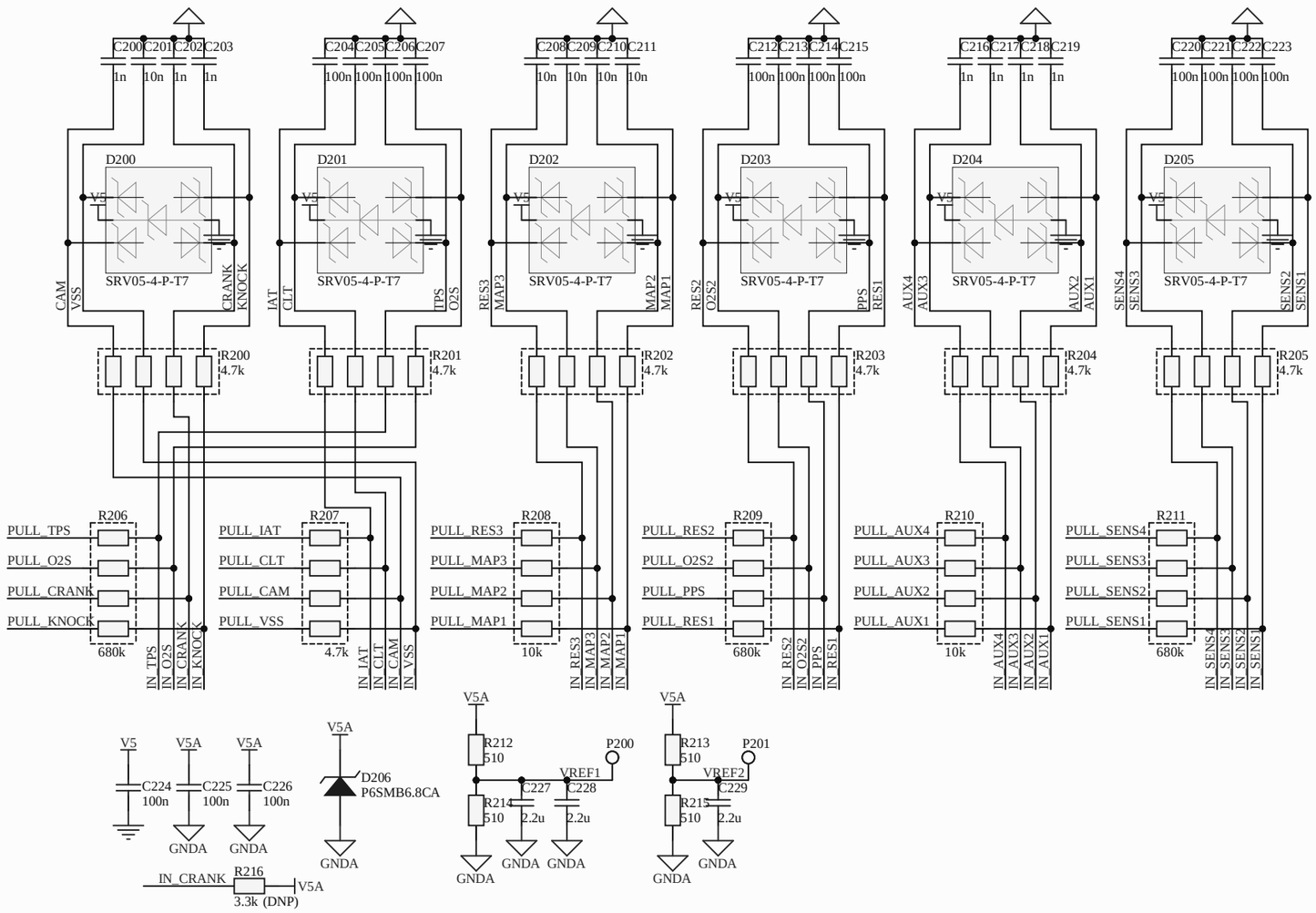


Title: ***Hellen72***			***rusEFI EMS***
Size: A3	Author: andreika	Revision: c	***Hellen-One Platform***
Date: 23.06.2021		Sheet 2 of 2	*https://rusefi.com/s/hellen72*

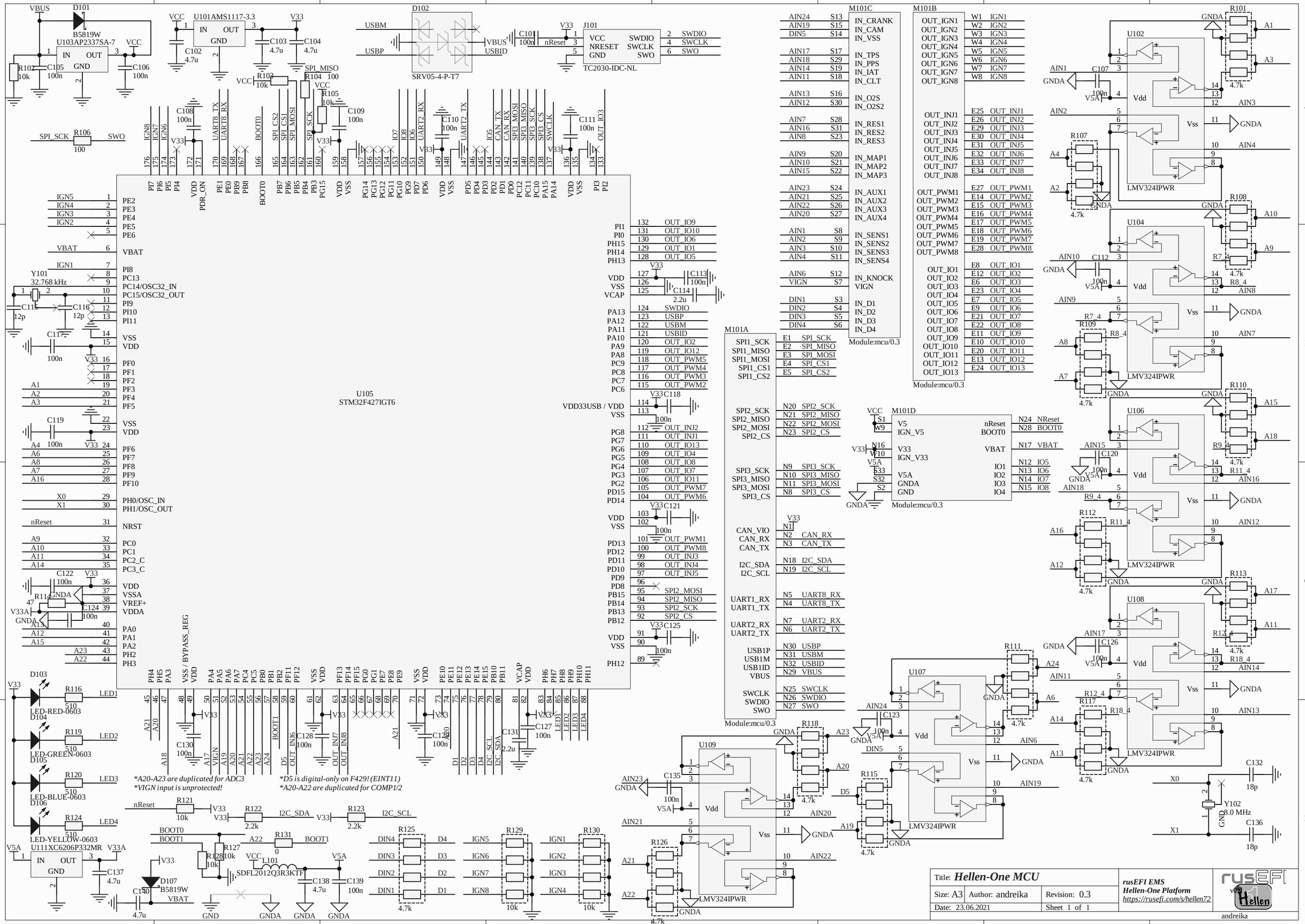


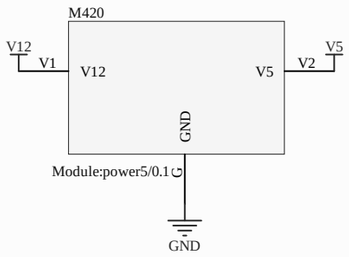


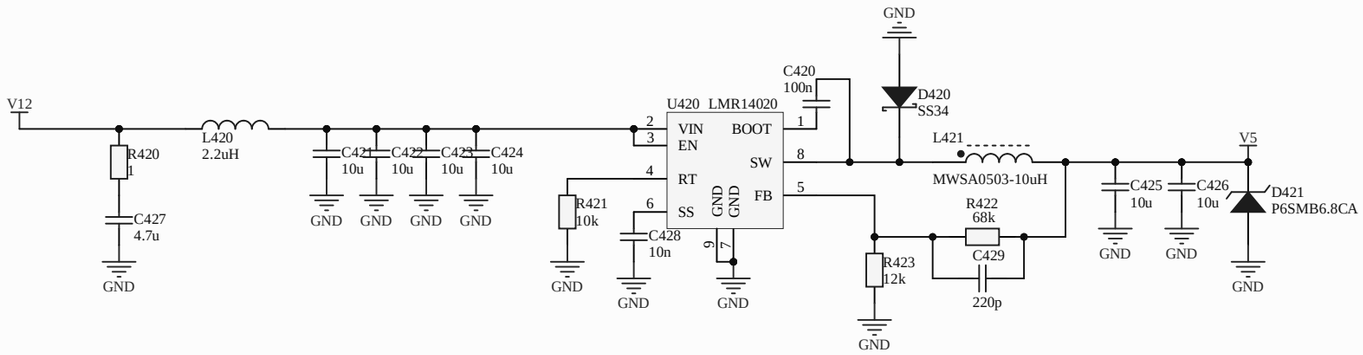




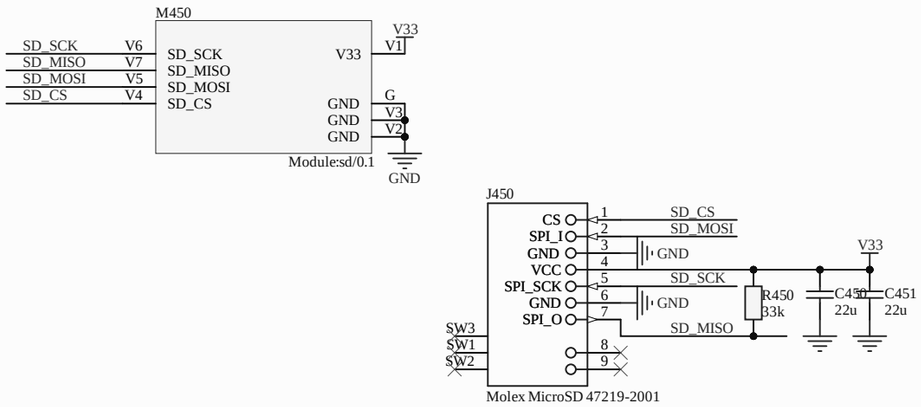
Title: ***Hellen-One: Input***			***rusEFI EMS*** ***Hellen-One Platform*** *https://rusefi.com/s/hellen72*
Size: A3	Author: andreika	Revision: 0.1	
Date: 23.04.2021		Sheet 1 of 1	


U105
STM32F427IGT6
Module:mcu/0.3
M101A
M101B
M101C
M101D
TC2030-IDC-NL
SRV05-4-P-T7
LMV324IPWR
*A20-A23 are duplicated for ADC3
*VIGN input is unprotected!
*D5 is digital-only on F429! (EINT11)
*A20-A22 are duplicated for COMP1/2
Title: Hellen-One MCU
Size: A3
Author: andreika
Revision: 0.3
Date: 23.06.2021
Sheet 1 of 1
rusEFI EMS
Hellen-One Platform
https://rusefi.com/s/hellen72
andreika

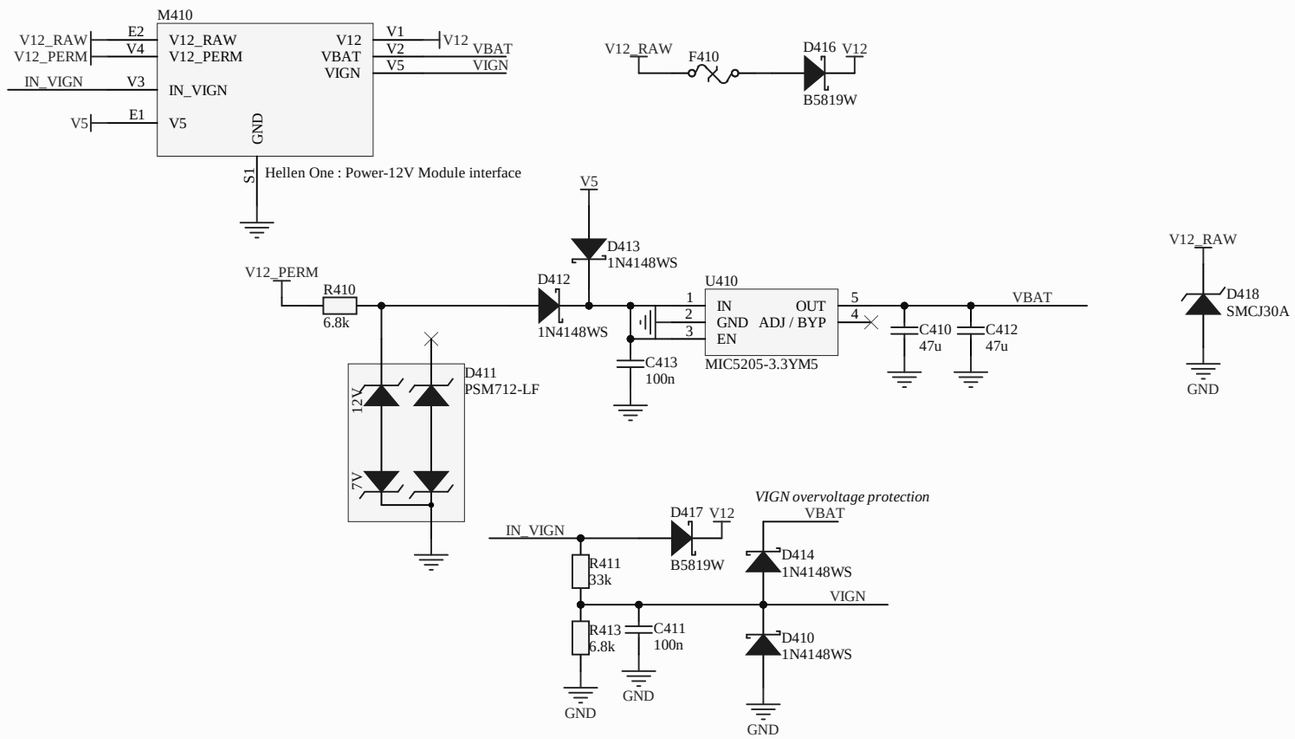




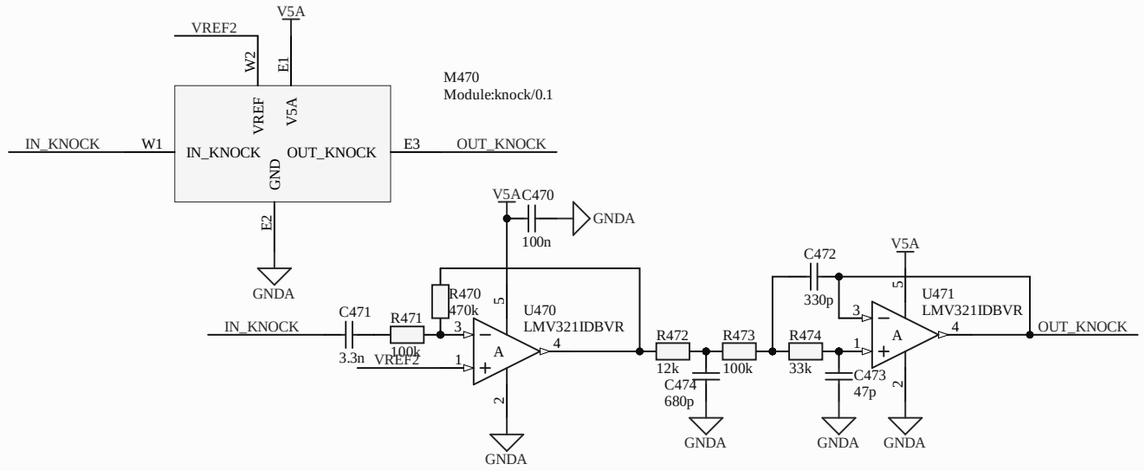
Title: ***Hellen-One Power5***			***rusEFI EMS***
Size: A3	Author: andreika	Revision: 0.2	***Hellen-One Platform***
Date: 24.02.2021		Sheet 1 of 1	*https://rusefi.com/s/hellen72*



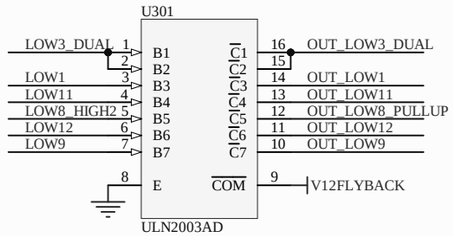
Title: ***Hellen-One SD-Card***			***rusEFI EMS*** ***Hellen-One Platform*** *https://rusefi.com/s/hellen72*
Size: A3	Author: andreika	Revision: 0.1	
Date: 02.03.2021		Sheet 1 of 1	

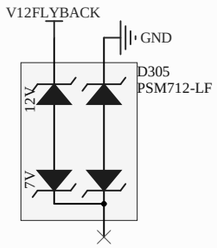


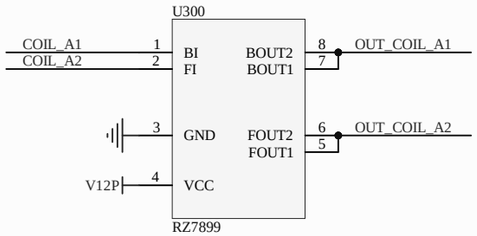
Title: ***Hellen-One Power12***			***rusEFI EMS*** ***Hellen-One Platform*** *https://rusefi.com/s/hellen72*
Size: A3	Author: andreika	Revision: 0.2	
Date: 24.05.2021		Sheet 1 of 1	

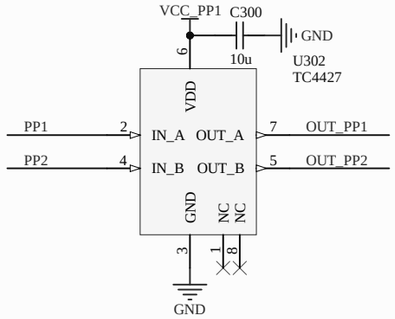


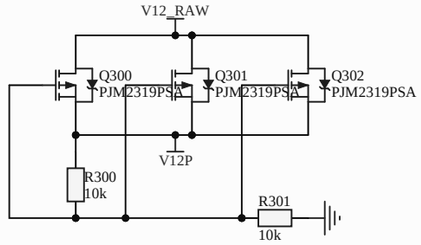
Title: ***Hellen-One Knock***			***rusEFI EMS*** ***Hellen-One Platform*** *https://rusefi.com/s/hellen72*
Size: A3	Author: andreika	Revision: 0.1	
Date: 28.01.2021		Sheet 1 of 1	

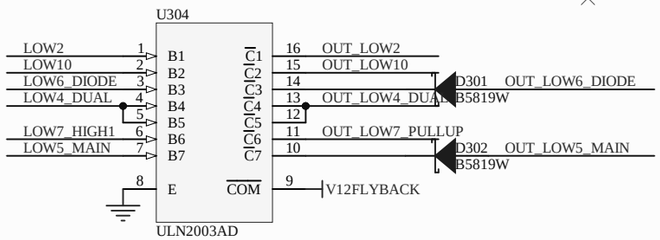


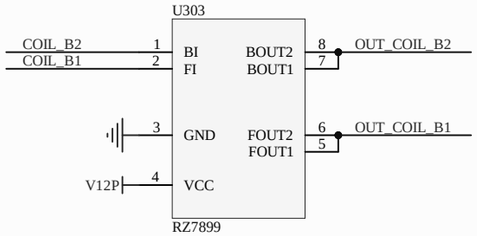


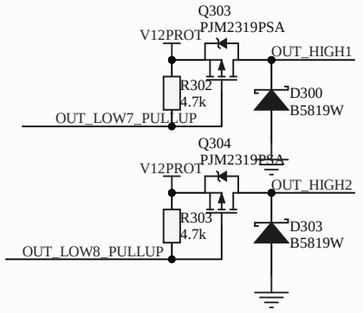


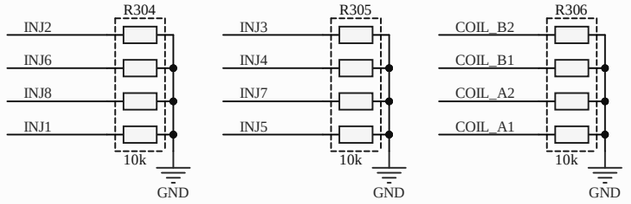


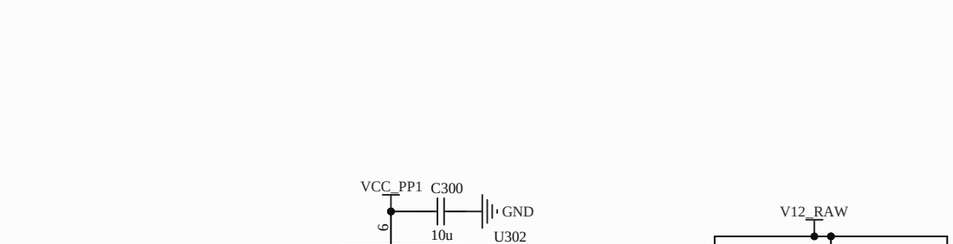


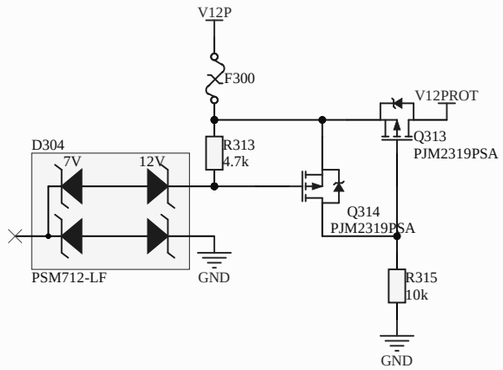


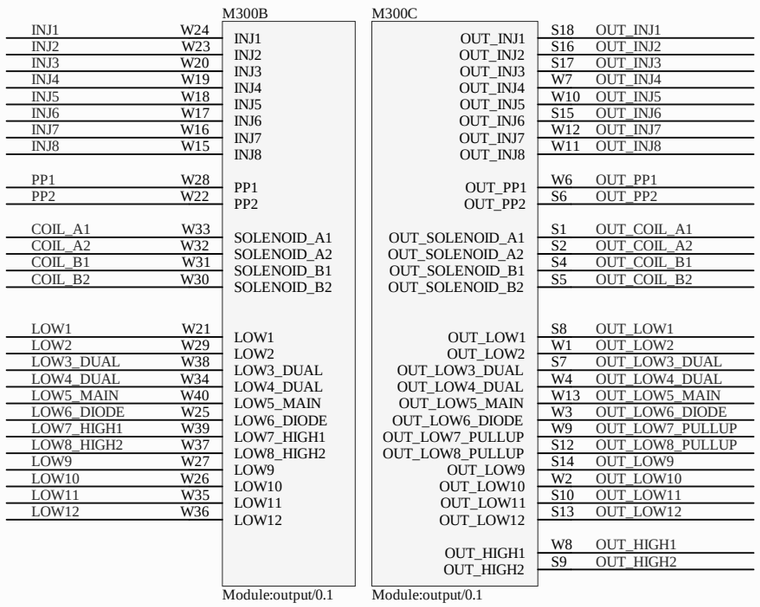


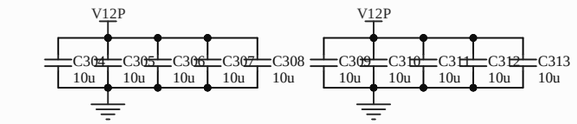


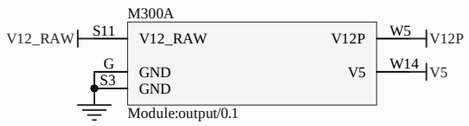


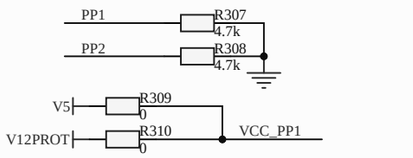






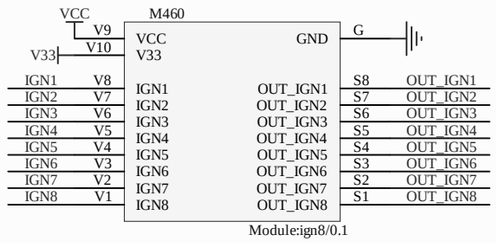


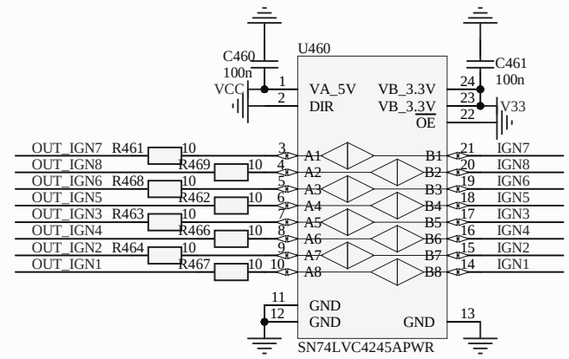




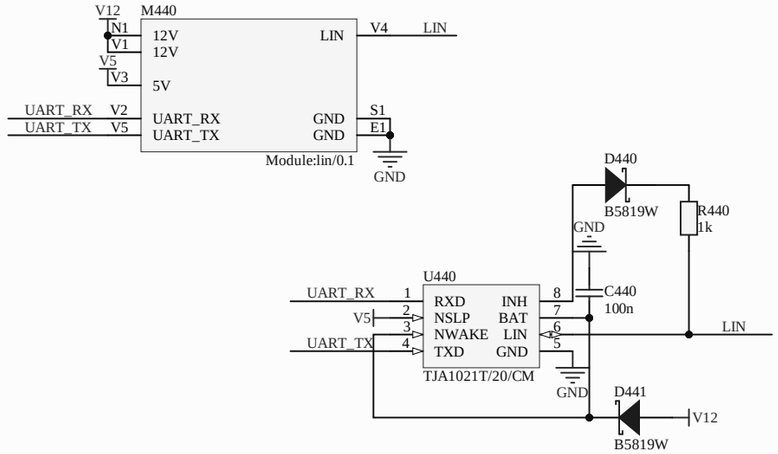
** These can be removed in the board compilation file*

Title: ***Hellen-One Output***	***rusEFI EMS***
Size: A3 Author: andreika Revision: 0.2	***Hellen-One Platform***
Date: 24.05.2021 Sheet 1 of 1	*https://rusefi.com/s/hellen72*

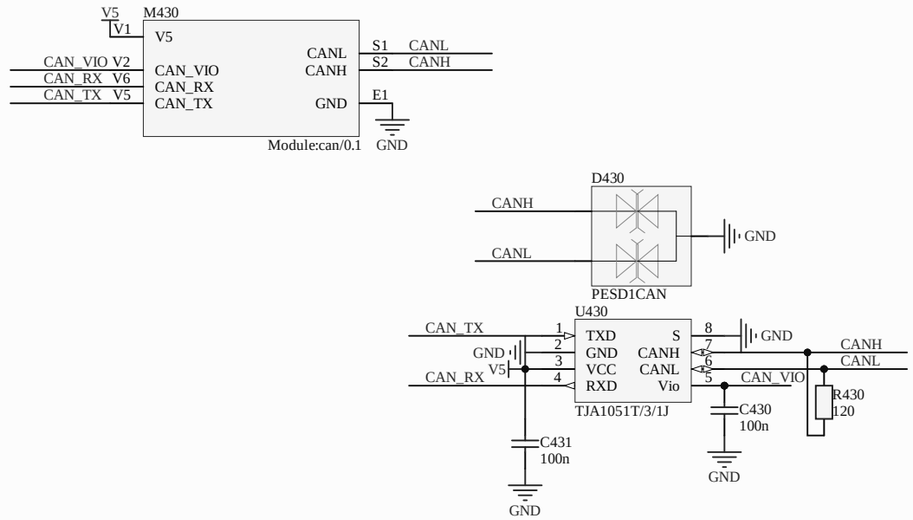




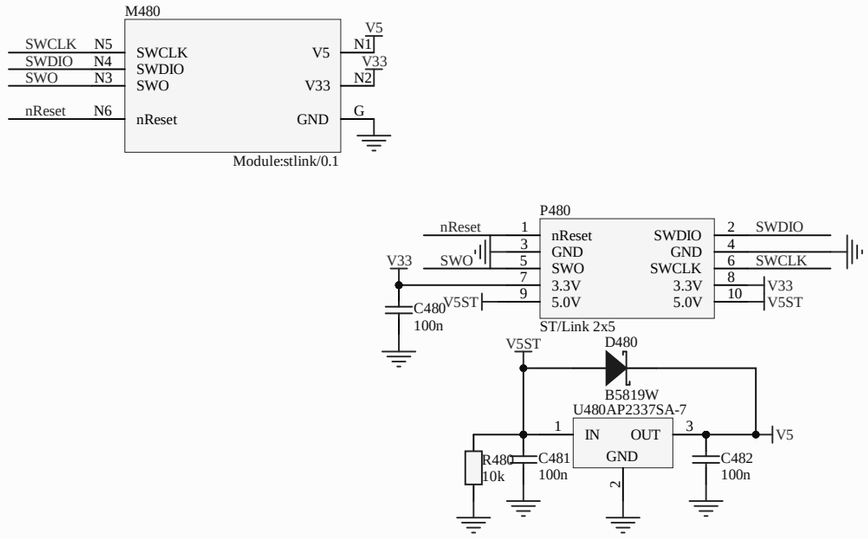
Title: ***Hellen-One IGN8***			***rusEFI EMS*** ***Hellen-One Platform*** *https://rusefi.com/s/hellen72*
Size: A3	Author: andreika	Revision: 0.1	
Date: 23.04.2021		Sheet 1 of 1	



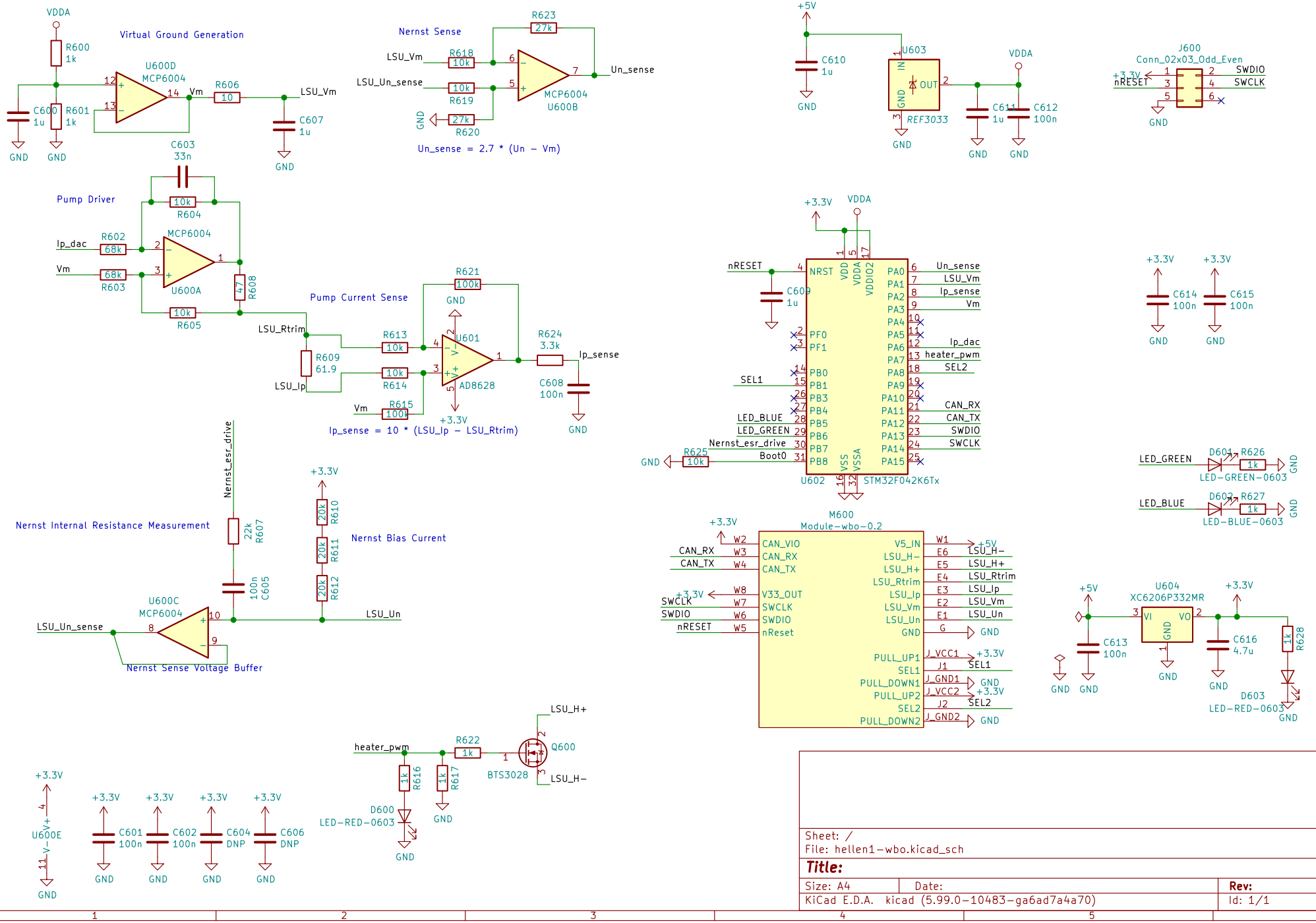
Title: ***Hellen-One LIN***			***rusEFI EMS*** ***Hellen-One Platform*** *https://rusefi.com/s/hellen72*
Size: A3	Author: andreika	Revision: 0.1	
Date: 02.03.2021		Sheet 1 of 1	



Title: ***Hellen-One CAN***			***rusEFI EMS***
Size: A3	Author: andreika	Revision: 0.1	***Hellen-One Platform***
Date: 02.03.2021		Sheet 1 of 1	*https://rusefi.com/s/hellen72*



Title: ***Hellen-One ST-Link***			***rusEFI EMS***
Size: A3	Author: andreika	Revision: 0.1	***Hellen-One Platform***
Date: 02.03.2021		Sheet 1 of 1	*https://rusefi.com/s/hellen72*


Virtual Ground Generation
VDDA
R600 1k
U600D MCP6004
C600 1u
R601 1k
Vm
R606 10
LSU_Vm
C607 1u
GND
Nernst Sense
R623 27k
LSU_Vm
R618 10k
LSU_Un_sense
R619 10k
R620 27k
U600B MCP6004
Un_sense
Un_sense = 2.7 * (Un − Vm)
+5V
C610 1u
U603
REF3033
C611 1u
C612 100n
J600
Conn_02x03_Odd_Even
SWDIO
SWCLK
nRESET
Pump Driver
C603 33n
R604 10k
Ip_dac
R602 68k
Vm
R603 68k
U600A MCP6004
R608 47
R605 10k
Pump Current Sense
R621 100k
LSU_Rtrim
R613 10k
R614 10k
R609 61.9
LSU_Ip
U601 AD8628
R615 100
R624 3.3k
Ip_sense
C608 100n
Ip_sense = 10 * (LSU_Ip − LSU_Rtrim)
nRESET
C609 1u
U602 STM32F042K6Tx
PA0 Un_sense
PA1 LSU_Vm
PA2 Ip_sense
PA3 Vm
PA6 Ip_dac
PA7 heater_pwm
PA8 SEL2
PA11 CAN_RX
PA12 CAN_TX
PA13 SWDIO
PA14 SWCLK
SEL1
LED_BLUE
LED_GREEN
Nernst_esr_drive
Boot0
R625 10k
C614 100n
C615 100n
LED_GREEN
D604
R626 1k
LED-GREEN-0603
LED_BLUE
D602
R627 1k
LED-BLUE-0603
Nernst Internal Resistance Measurement
Nernst_esr_drive
R607 22k
C605 100n
U600C MCP6004
LSU_Un_sense
Nernst Sense Voltage Buffer
Nernst Bias Current
R610 20k
R611 20k
R612 20k
LSU_Un
M600
Module-wbo-0.2
CAN_RX
CAN_TX
SWCLK
SWDIO
nRESET
V33_OUT
CAN_VIO
LSU_H−
LSU_H+
LSU_Rtrim
LSU_Ip
LSU_Vm
LSU_Un
PULL_UP1
SEL1
PULL_DOWN1
PULL_UP2
SEL2
PULL_DOWN2
U604 XC6206P332MR
C613 100n
C616 4.7u
R628 1k
D603 LED-RED-0603
heater_pwm
R622 1k
R616 1k
R617 1k
D600 LED-RED-0603
Q600 BTS3028
LSU_H+
LSU_H−
U600E
C601 100n
C602 100n
C604 DNP
C606 DNP
Sheet: /
File: hellen1-wbo.kicad_sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (5.99.0-10483-ga6ad7a4a70)
Id: 1/1