+5V to +3V3 Power

+5V +5V_FIL +5V_FIL U3 AZ1117H-3.3TRG1 +3V3
L2
C9 2.2uF   C10 2.2uF   C6 10uF   INPUT   OUTPUT OUTPUT   C7 10uF   C8 10uF   LED5 KT-0603R
R3 330
GND

Input USB

U2 TYPE-C-31-M-12 +5V
VBUS A4 / A9 / VBUS / B4 / VBUS / B9 / DP1 B6 / DP2 B7 / DN1 A6 / DN2 A7 / CC1 A5 / CC2 B5 / SBU1 A8 / SBU2 B8 / GND A1 / B1 / A12 / B12
USB_IN_P USB_IN_N
D1 MSUSBLC6-2SC6 I/O1 / GND / I/O2   USB_N +5V USB_P
R36 R35 5.1k 5.1k
GND
R5 0
SH1
GND

LCD connector
CN1 1.25mm-7P ZZ-MS
+3V3 GND SCK SDO LCD_RST LCD_CS LCD_DC

SWD
U13 1.25mm-4P ZZ-MS
+3V3 SWCLK SWDIO GND

Encoder
+3V3
R25 12k ENCA ENCB
SW3 EC11E1534408
R26 12k ENCSW

USB1
Power switch — Current sensing — Filtering — USB Port — Signal LEDs
+5V_FIL U1 TPS2553DBVR +5V_USB1_NF +5V_USB1_NF +5V_USB1 +5V_USB1
C1 2.2uF IN OUT / GND ILIM / EN /FAULT USB1_PW PWL_1 OCS1
R2 39k C5 2.2uF R1 100m C2 100nF C4 2.2uF L1 C3 10uF
U4 INA219AIDR VIN+ / VIN- / GND / VS A1 A0 SDA SCL SDA SCL +3V3 C11 100nF
U1 D2 MSUSBLC6-2SC6 KH-AF180WJ-JB VCC SHLD / D- / D+ / GND SHLD
LED1 MHT194CRGBCT R G B R31 330 R27 0
Iout(max)=22980/(R2k^0.94)=22980/(39^0.94)=734mA
U4, INA219 I2C address - 1000000

USB2
+5V_FIL U5 TPS2553DBVR +5V_USB2_NF +5V_USB2_NF +5V_USB2 +5V_USB2
C12 2.2uF EN2 USB2_PW PWL_2 OCS2
R6 39k C16 2.2uF R4 100m C13 100nF C14 2.2uF L3 C15 10uF
U6 INA219AIDR VIN+ VIN- GND VS A1 A0 SDA SCL +3V3 C17 100nF
D3 MSUSBLC6-2SC6 KH-AF180WJ-JB VCC SHLD D- D+ GND SHLD
LED2 MHT194CRGBCT R G B R32 330 R29 0
Iout(max)=22980/(R6k^0.94)=22980/(39^0.94)=734mA
U6, INA219 I2C address - 1000001

USB3
+5V_FIL U7 TPS2553DBVR +5V_USB3_NF +5V_USB3_NF +5V_USB3 +5V_USB3
C18 2.2uF EN3 USB3_PW PWL_3 OCS3
R8 39k C22 2.2uF R7 100m C19 100nF C20 2.2uF L4 C21 10uF
U8 INA219AIDR VIN+ VIN- GND VS A1 A0 SDA SCL +3V3 C23 100nF
D4 MSUSBLC6-2SC6 KH-AF180WJ-JB VCC SHLD D- D+ GND SHLD
LED3 MHT194CRGBCT R G B R34 330 R28 0
Iout(max)=22980/(R6k^0.94)=22980/(39^0.94)=734mA
U8, INA219 I2C address - 1000010

USB4
+5V_FIL U9 TPS2553DBVR +5V_USB4_NF +5V_USB4_NF +5V_USB4 +5V_USB4
C24 2.2uF EN4 USB4_PW PWL_4 OCS4
R10 39k C28 2.2uF R9 100m C25 100nF C26 2.2uF L5 C27 10uF
U10 INA219AIDR VIN+ VIN- GND VS A1 A0 SDA SCL +3V3 C29 100nF
D5 MSUSBLC6-2SC6 KH-AF180WJ-JB VCC SHLD D- D+ GND SHLD
LED4 MHT194CRGBCT R G B R33 330 R30 0
Iout(max)=22980/(R10k^0.94)=22980/(39^0.94)=734mA
U10, INA219 I2C address - 1000011

STM32

U11 STM32F103C8T6
VBAT / PC13-TAMPER-RTC / PC14-OSC32_IN / PC15-OSC32_OUT / PD0-OSC_IN / PD1-OSC_OUT / NRST / VSSA / VDDA / PA0-WKUP / PA1 / PA2 / PA3 / PA4 / PA5 / PA6 / PA7 / PB0 / PB1 / PB2 / PB10 / PB11 / VSS_1 / VDD_1
VDD_3 / VSS_3 / PB9 / PB8 / BOOT0 / PB7 / PB6 / PB5 / PB4 / PB3 / PA15 / PA14 / PA13 / VDD_2 / VSS_2 / PA12 / PA11 / PA10 / PA9 / PA8 / PB15 / PB14 / PB13 / PB12
OSC_IN OSC_OUT C30 10nF GND
X1 16MHz C31 8pF C32 8pF GND
OSC_IN OSC_OUT NRES SW2 B3U-1000P C33 100nF +3V3
ENCA ENCB ENCSW R12 4.7k R13 4.7k +3V3
SCL SDA +3V3
LCD_CS LCD_RST LCD_DC SDO SCK
R11 12k SW1 MK-12C03-G015 +3V3
SWCLK SWDIO +3V3
STAT LED4 LED3 LED2 LED1 R37 330 LED6 KT-0603R GND
C36 100nF C37 100nF C38 100nF C55 100nF C39 100nF C40 2.2uF
CX1 = 2(CL - Cstray)=2(8-4)=8pF
Internal pull-down on pins PA0, PA1

USB HUB Controller

U12 USB2514B-I/M2
USB1_N USB1_P USB2_N USB2_P USB3_N USB3_P USB4_N USB4_P
USBDM_DN1/PRT_DIS_M1 / USBDP_DN1/PRT_DIS_P1 / USBDM_DN2/PRT_DIS_M2 / USBDP_DN2/PRT_DIS_P2 / VDDA33 / USBDM_DN3/PRT_DIS_M3 / USBDP_DN3/PRT_DIS_P3 / USBDM_DN4/PRT_DIS_M4 / USBDP_DN4/PRT_DIS_P4 / VDDA33 / TEST1 / PRTPWR1/BC_EN1 / OCS_N1 / CRFILT / VDD33 / PRTPWR2/BC_EN2 / OCS_N2 / PRTPWR3/BC_EN3
EP / VDDA33 RBIAS / PLLFILT / XTALIN / XTALIN/CLKIN / XTALOUT / VDDA33 / USBDM_UP / USBDP_UP / VDDA33 / SUSP_IND/LOCAL_PWR/NON_REM0 / VBUS_DET / RESET_N / HS_IND/CFG_SEL1 / SCL/SMBCLK/CFG_SEL0 / VDD33 / SDA/SMBDATA/NON_REM1 / OCS_N4 / PRTPWR4/BC_EN4 / OCS_N3
RBIAS R16 12k C34 10nF C35 100nF +3V3 GND
PLLFIL XTALIN XTALOUT X2 24MHz C42 8pF C41 8pF +5V_FIL
USB_P USB_N R19 100k VBUS_DET R20 100k LOCPWR R21 100k R22 100k
CFG1 CFG0 R23 100k R24 100k REM1 OCS4 OCS5 +3V3
EN1 OCS1 CRFIL EN2 OCS2 EN3
C43 100nF C44 10nF GND
C45 2.2uF C46 100nF C47 100nF C48 100nF C49 100nF C50 100nF C51 100nF +3V3
USB2514B-I/M2
NON_REM0, NON_REM1=0 - All ports are removable
CFG_SEL0, CFG_SEL1=0 - Self powered, individual OC sensing, straps enabled