Upstream USB Port
The port connecting to the KVM control SBC (e.g. Orange Pi)

US_HUB
SL2.1A

C1 10uF
C2 10uF
+5V
GND

USB1_DM
USB1_DP

9 DM
10 DP
11 VDD5
12 GND
13 VDD33
14 VDD18
15 XOUT
16 XIN

8 DP1   UPS_DP1
7 DM1   UPS_DM1
6 DP2   UPS_DP2
5 DM2   UPS_DM2
4 DP3   UPS_DP3
3 DM3   UPS_DM3
2 DP4
1 DM4

To USB2UART
To USB HDMI Captuer
To USB Mass Storage

X2 12MHz

USB_UP
XH2.54-4P-
GND

4 4
3 3   USB1_DP
2 2   USB1_DM
1 1   +5V

Power Ripple Filter

+5V
C8 10uF
C9 100nF
GND

PWR_LED whiteLEDSMD

R5 1k
GND
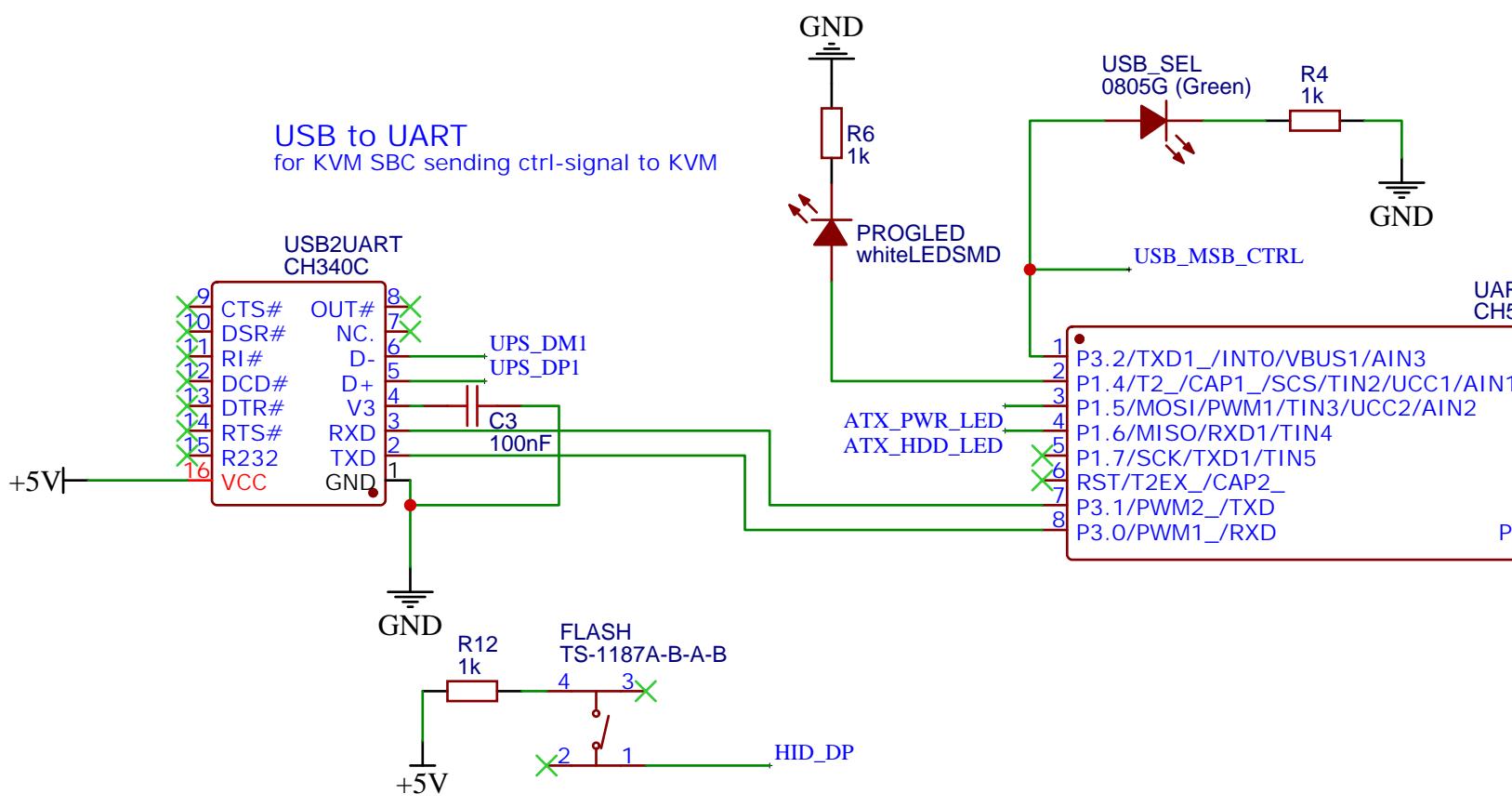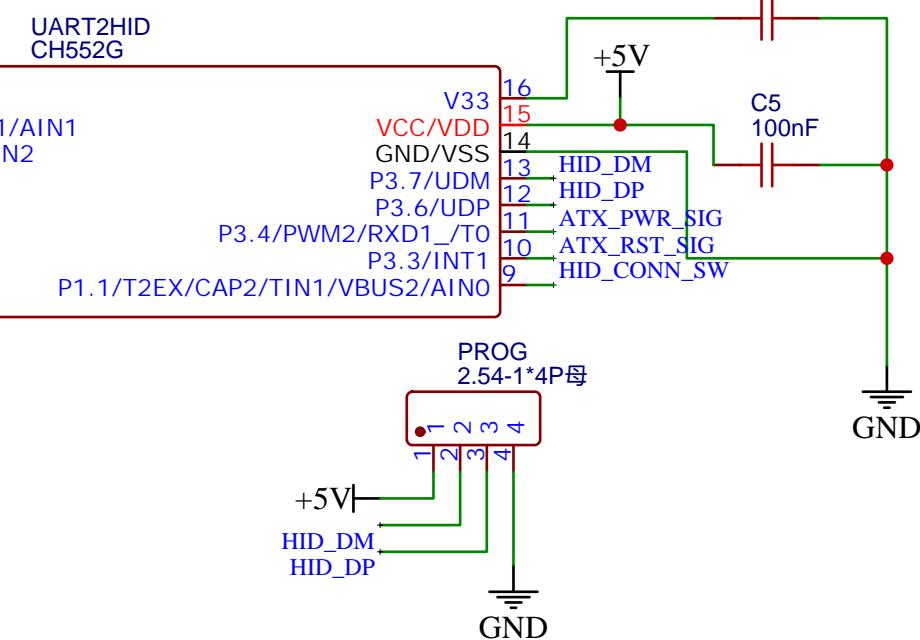
USB to UART
for KVM SBC sending ctrl-signal to KVM

USB2UART
CH340C

9 CTS#   OUT# 8
10 DSR#   NC. 7
11 RI#   D- 6   UPS_DM1
12 DCD#   D+ 5   UPS_DP1
13 DTR#   V3 4
14 RTS#   RXD 3
15 R232   TXD 2
16 VCC   GND 1

+5V
C3 100nF
GND

R12 1k
FLASH
TS-1187A-B-A-B
4   3
2   1   HID_DP
+5V

GND
R6 1k
PROGLED whiteLEDSMD

USB_SEL
0805G (Green)
R4 1k
GND

USB_MSB_CTRL

UART to HID
Converting KVM software signal to HID commands

UART2HID
CH552G

1 P3.2/TXD1_/INT0/VBUS1/AIN3
2 P1.4/T2_/CAP1_/SCS/TIN2/UCC1/AIN1
3 P1.5/MOSI/PWM1/TIN3/UCC2/AIN2
ATX_PWR_LED 4 P1.6/MISO/RXD1/TIN4
ATX_HDD_LED 5 P1.7/SCK/TXD1/TIN5
6 RST/T2EX_/CAP2_
7 P3.1/PWM2_/TXD
8 P3.0/PWM1_/RXD

16 V33
15 VCC/VDD
14 GND/VSS
13 P3.7/UDM   HID_DM
12 P3.6/UDP   HID_DP
11 P3.4/PWM2/RXD1_/T0   ATX_PWR_SIG
10 P3.3/INT1   ATX_RST_SIG
9 P1.1/T2EX/CAP2/TIN1/VBUS2/AIN0   HID_CONN_SW

+5V
C4 100nF
C5 100nF
GND

PROG
2.54-1*4P
1 2 3 4
+5V
HID_DM
HID_DP
GND
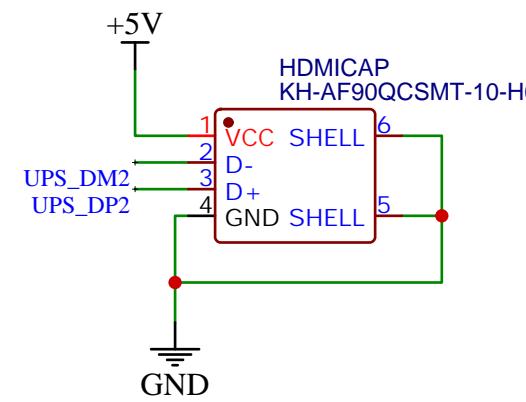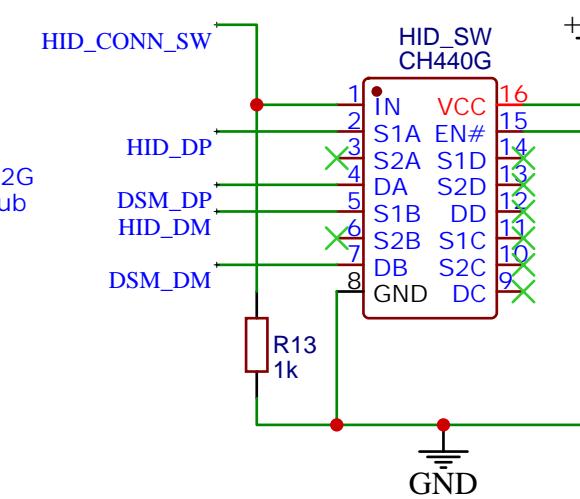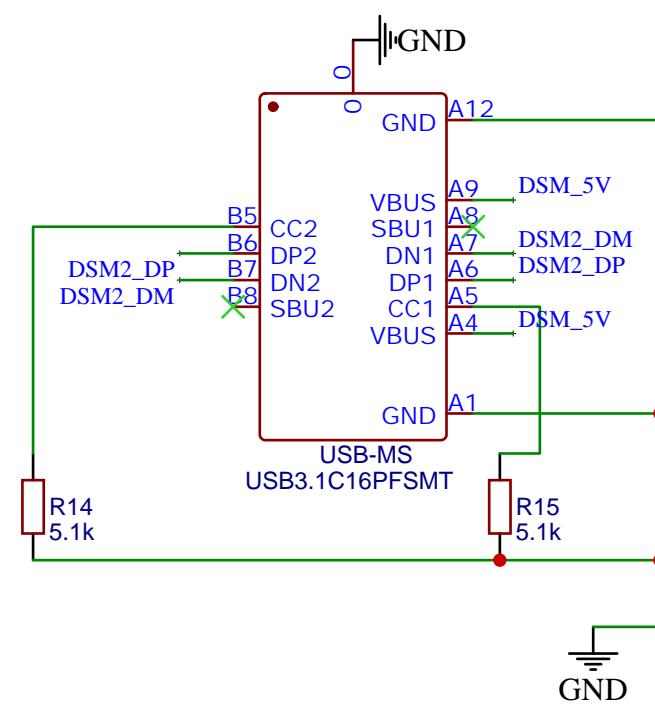
USB HDMI Capture Card
Connect MS2109 USB Capture Device

+5V

HDMICAP
KH-AF90QCSMT-10-H6.3

1	VCC	SHELL	6
2	D-		
3			
4	D+		5
	GND	SHELL	

UPS_DM2
UPS_DP2

GND
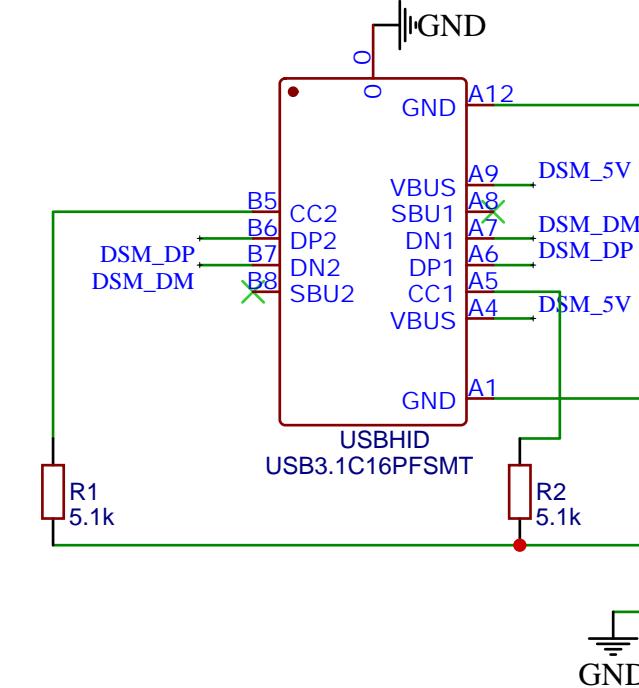
USB HID Downstream Switch
Use for remote plug & unplug for BIOS / UEFI

HID_CONN_SW

+5V

HID_SW
CH440G

1	IN	VCC	16
2	S1A	EN#	15
3	S2A	S1D	14
4	DA	S2D	13
5	S1B	DD	12
6	S2B	S1C	11
7	DB	S2C	10
8	GND	DC	9

HID_DP
DSM_DP
HID_DM
DSM_DM

R13
1k

GND

HID_DP/DP from CH552G
DSM_DP/DM from DSM USB Hub

Guest USB Port (Mass Storage)
USB device mode for guest system (e.g. PC)

GND

USB-MS
USB3.1C16PFSMT

	GND	A12
	VBUS	A9	DSM_5V
B5	CC2	SBU1	A8
B6	DP2	DN1	A7	DSM2_DM
B7	DN2	DP1	A6	DSM2_DP
B8	SBU2	CC1	A5
		VBUS	A4	DSM_5V
	GND	A1	

DSM2_DP
DSM2_DM

R14
5.1k

R15
5.1k

GND

Guest USB Port (HID)
USB device mode for guest system (e.g. PC)

GND

USBHID
USB3.1C16PFSMT

	GND	A12
	VBUS	A9	DSM_5V
B5	CC2	SBU1	A8
B6	DP2	DN1	A7	DSM_DM
B7	DN2	DP1	A6	DSM_DP
B8	SBU2	CC1	A5	DSM_5V
		VBUS	A4	
	GND	A1	

DSM_DP
DSM_DM

R1
5.1k

R2
5.1k

GND

TITLE: Guest Side		REV: 1.0
EasyEDA	Company: imuslab	Sheet: 1/1
	Date: 2025-02-20 Drawn By: tobychui	
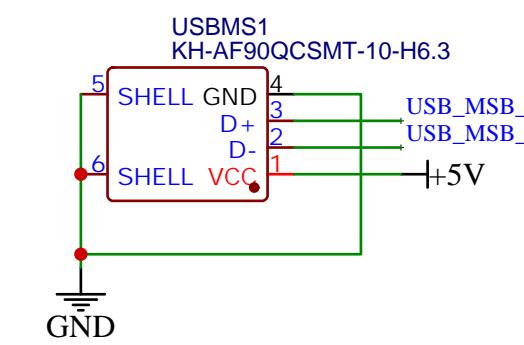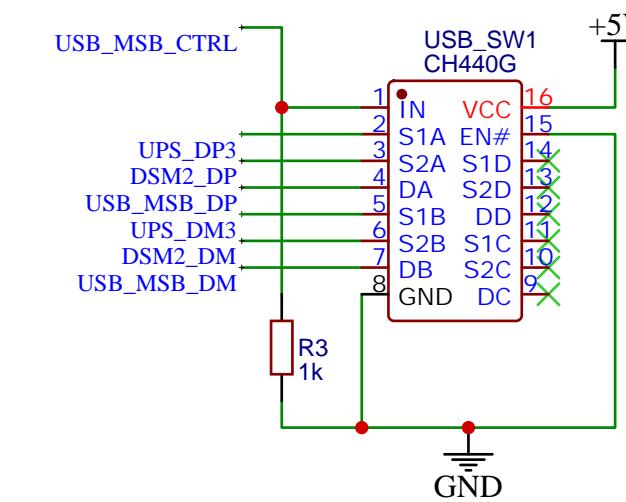
USB Mass Storage Port

For USB drive or other user required USB hardware

USBMS1
KH-AF90QCSMT-10-H6.3

Pin	Label		Label	Pin	Signal
5	SHELL	GND	4	USB_MSB_DP
		D+	3	USB_MSB_DM
		D-	2	
6	SHELL	VCC	1	+5V

GND

USB Mass Storage Switching Bus

Default to upstream (KVM Host),
set IN to HIGH to switch over to downstream (computer being controlled)

USB_MSB_CTRL

+5V

USB_SW1
CH440G

Pin	Left	Right	Pin
1	IN	VCC	16
2	S1A	EN#	15
3	S2A	S1D	14
4	DA	S2D	13
5	S1B	DD	12
6	S2B	S1C	11
7	DB	S2C	10
8	GND	DC	9

UPS_DP3
DSM2_DP
USB_MSB_DP
UPS_DM3
DSM2_DM
USB_MSB_DM

R3
1k

GND

TITLE:
USB Mass Storage

REV: 1.0

Company: imuslab
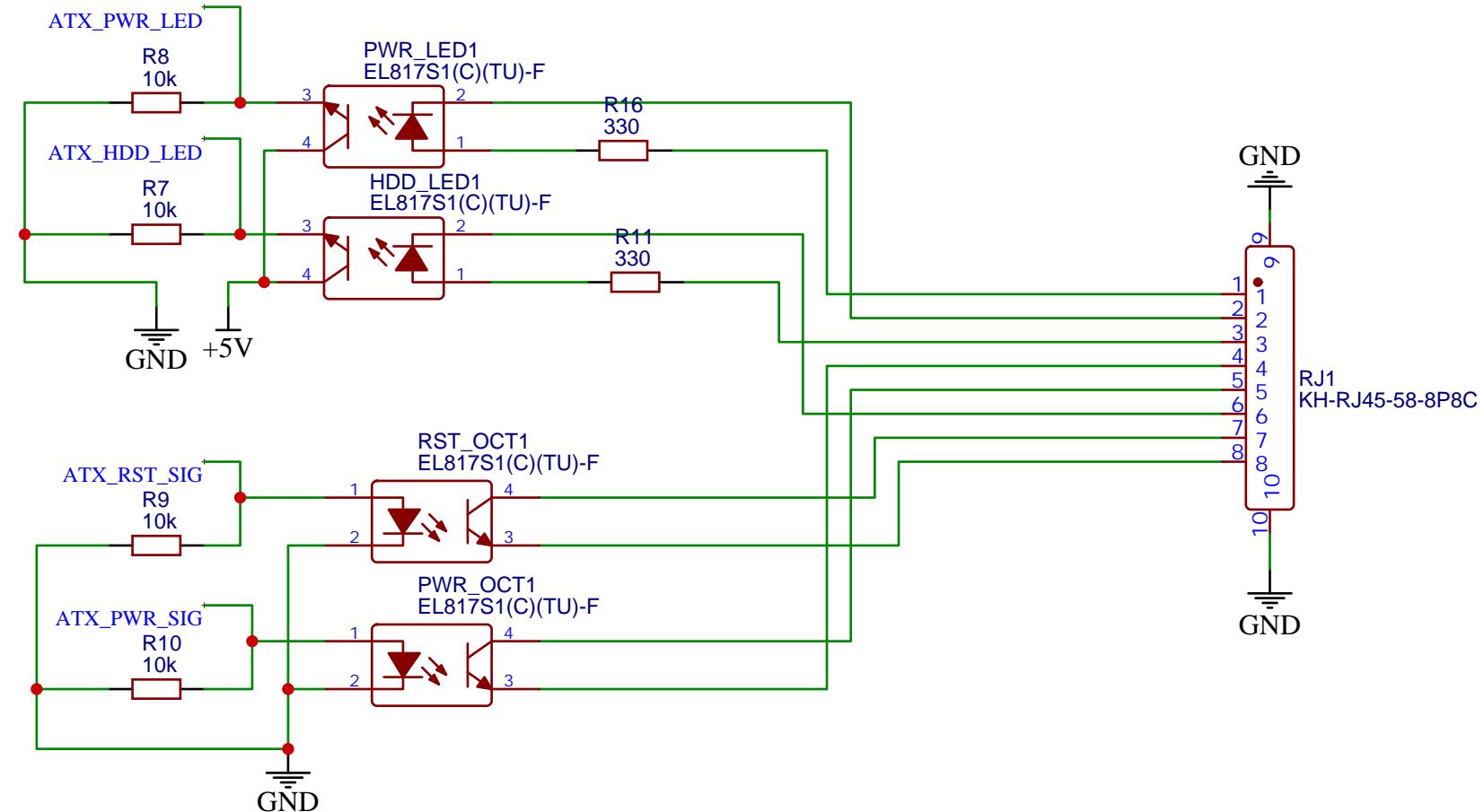
Sheet: 1/1

Date: 2025-03-30   Drawn By: tobychui

EasyEDA

ATX Power Control

Notes: ATX_PWR_LED and ATX_HDD_LED default to LOW, active HIGH

This design should be compatible with PiKVM ATX Board Pinsout (Not Tested)

ATX_PWR_LED
R8
10k
PWR_LED1
EL817S1(C)(TU)-F
R16
330

ATX_HDD_LED
R7
10k
HDD_LED1
EL817S1(C)(TU)-F
R11
330

GND   +5V

ATX_RST_SIG
R9
10k
RST_OCT1
EL817S1(C)(TU)-F

ATX_PWR_SIG
R10
10k
PWR_OCT1
EL817S1(C)(TU)-F

GND

GND

RJ1
KH-RJ45-58-8P8C

GND