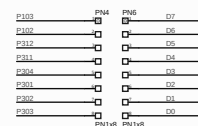
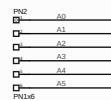
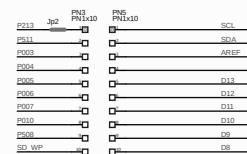
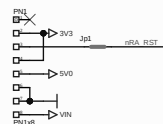


Arduino Rev. 3

Fm1 Fm3 Fm5
Fm2 Fm4 Fm6

Kh1
P1.2

Kh4
P1.2



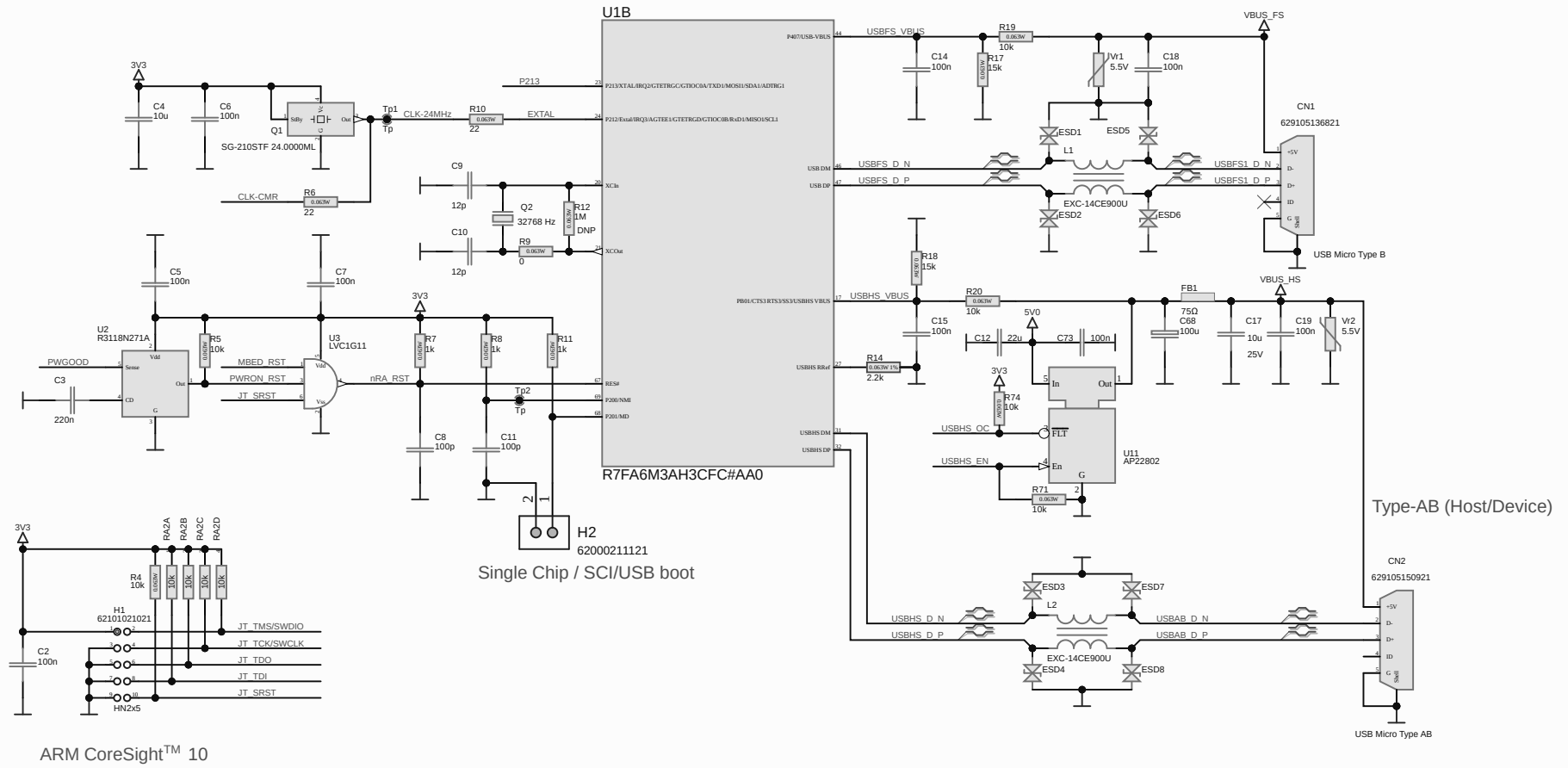
Kh2
P1.2

Kh3
P1.2

VK-RA6M3

Board I/O

A4	Revision: 1.0	
Date: 21.02.2022	Drawn by: DT	Approved by:
Sheet 1 of 7		



VK-RA6M3

CPU

A4

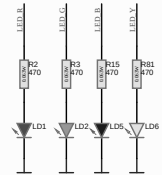
Revision: 1.0

Date: 21.02.2022

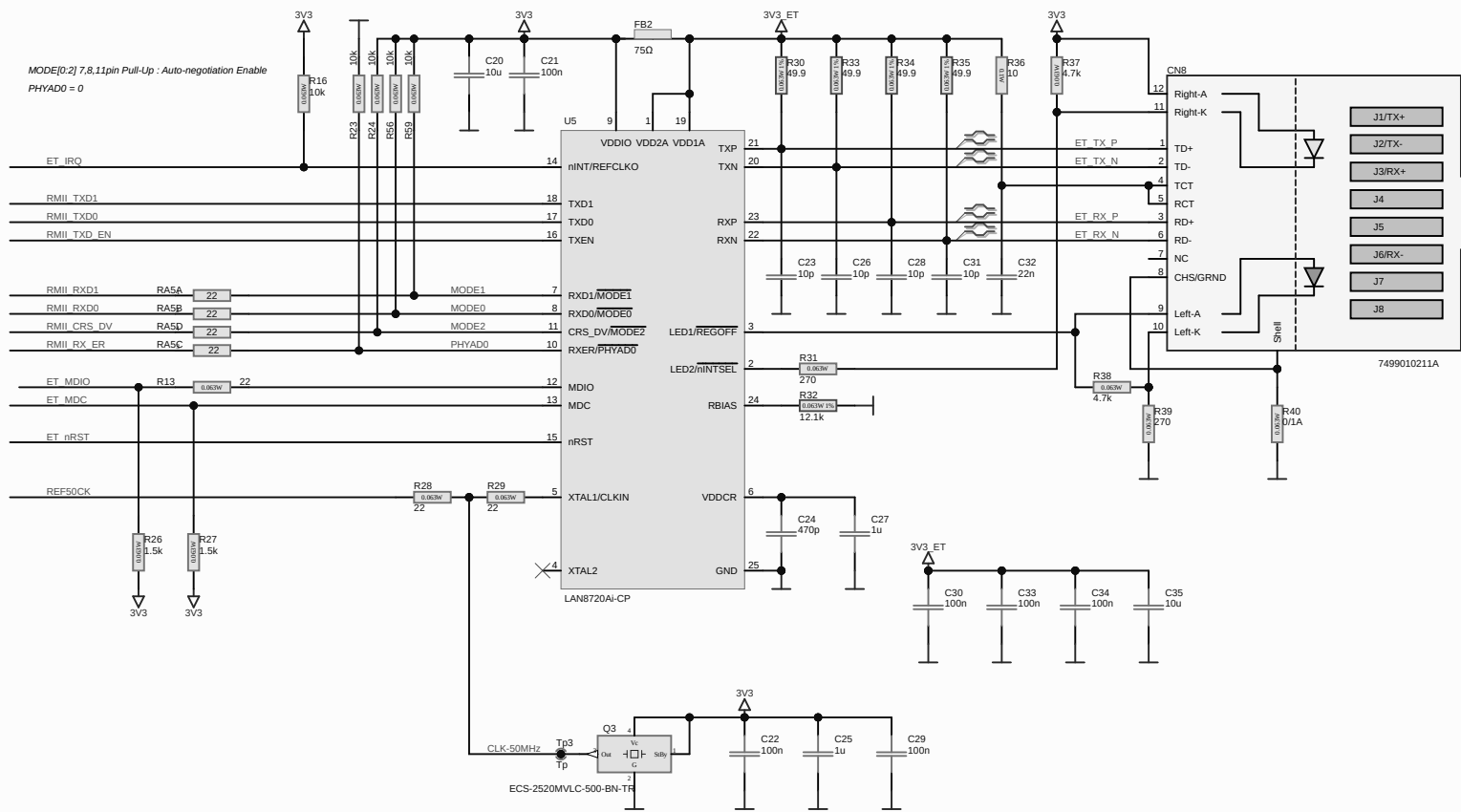
Drawn by: DT

Approved by:

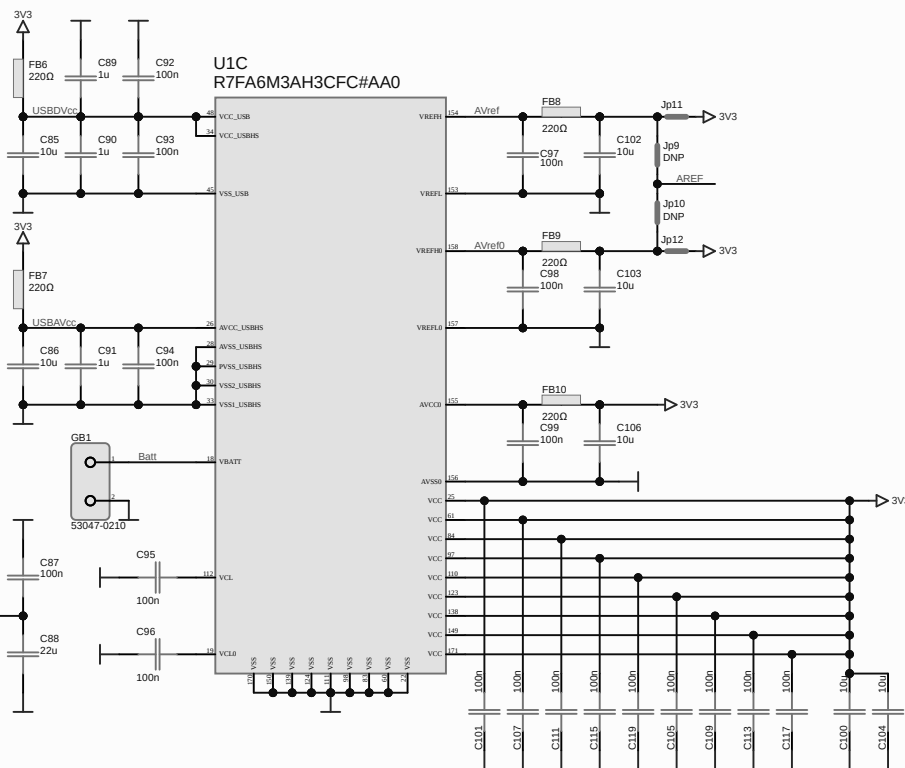
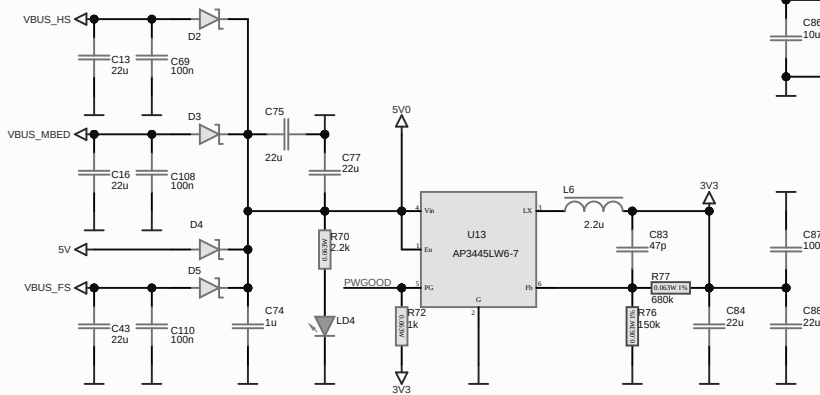
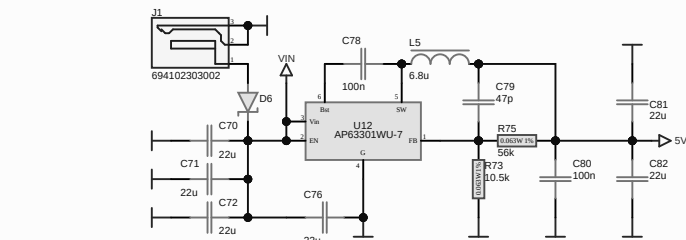
Sheet 2 of 7



Sheet 3 of 7



VK-RA6M3			
LAN Interface			
A4	Revision: 1.0		
Date: 21.02.2022	Drawn by: DT	Approved by: *	Sheet 4 of 7



VK-RA6M3

Power Supply

A4

Revision: 1.0

Date: 21.02.2022

Drawn by: DT

Approved by:

Sheet 7 of 7

Designator	Description	Comment	Quantity	Part Number	Manufacturer	Placement
C1, C2, C5, C6, C7, C14, C15, C18, C19, C21, C22, C29, C30, C33, C34, C36, C37, C38, C41, C44, C48, C51, C52, C55, C56, C57, C63, C64, C65, C67, C69, C73, C78, C80, C87, C92, C93, C94, C95, C96, C97, C98, C99, C101, C105, C107, C108, C109, C110, C111, C113, C115, C117, C119	SMD 0402 50V X7R 10%	100n	54	885012205086	Würth Elektronik	
C3	SMD 0402 16V X7R 10%	220n	1	C1068224K-OSNNNC	Samsung	
C4, C20, C35, C45, C46, C47, C49, C50, C53, C58, C60, C61, C85, C86, C100, C102, C103, C104, C106	SMD 0402 6.3V X5R 20%	10u	19	885012105020	Würth Elektronik	
C8, C11	SMD 0402 50V COG 5%	100p	2		Samsung	
C9, C10	SMD 0402 50V COG 5%	12p	2	C106C1208SNNNNC	Samsung	
C12, C13, C16, C43, C81, C82	SMD 0603 10V X5R 10%	22u	6	C110A226MPSNNNC	Samsung	
C17	SMD 0603 25V X5R 10%	10u	1	C110A106MA8NNNC	Samsung	
C23, C26, C28, C31	SMD 0402 50V COG 5%	10p	4	GCMI1555C1H100XA160	Murata Electronics	
C24	SMD 0402 50V COG 5%	470p	1	C105C4718SNNNNC	Samsung	
C25, C27, C40, C59, C89, C90, C91	SMD 0402 16V X5R 10%	1u	7	C105A106KOSNNNC	Samsung	
C32	SMD 0402 16V X7R 10%	22n	1	C1068222K-OSNNNC	Samsung	
C39, C42	SMD 0402 50V COG 5%	18p	2	C105C180BSNNNC	Samsung	
C54	SMD 0603 10V X5R 20%	2.2u	1	C10603 10V 10V X5R SAMSUNG	Samsung	
C62	SMD 0805 50V X7R 10%	220n	1	C12184716PSNNNC	Samsung	
C66	SMD 0603 10V X5R 20%	10u	1	C10603 10V 10V X5R SAMSUNG	Samsung	
C68	SMD Case 0 10V 1.2D	100u	1	TAIC1070010RNU	AVX	
C70, C71, C72, C76	SMD 0805 25V X5R 10%	22u	4	GRM218R61E226ME4L	Samsung	
C74	SMD 0603 25V X5R 10%	1u	1	C110A105K8NNNC	Samsung	
C75, C77, C84, C88	SMD 0603 6.3V X5R 10%	22u	4	C110A226K8NNNC	Samsung	
C79, C83	SMD 0402 50V COG 5%	47p	2	C105C470BSNNNC	Samsung	
CN1, CN3	USB Connector WR-COM Type B SMT 5Pin Horizl FmliMicro	629105136821	2	629105136821	Würth Elektronik	
CN2	USB Connector WR-COM USB Micro SMT Type AB Horizl	629105150921	1	629105150921	Würth Elektronik	
CN4	FFC & FPC Connector WR-FPC 0.5mm SMT 2IF 24Pin Horizl Top Cont	68712414022	1	68712414022	Würth Elektronik	
CN5	Memory Card Connector WR-CIO SD Micro Card 8Pin Push & Push	689371010811	1	689371010811	Würth Elektronik	
CN6	FFC & FPC Connector WR-FPC SMT Horizl 50mm Bolt Cont 6P	687106183722	1	687106183722	Würth Elektronik	
CN7	WR-FPC SMT 2F Horizontal Bottom Contact Low Profile, pitch 0.5mm, 40p	687140183722	1	687140183722	Würth Elektronik	
CN8	Ethernet Connector 1X1 TAB DOWN W/LEDs	7499010211A	1	7499010211A	Würth Elektronik	
CN9	Fixed Terminal Block WR-TBL Terminal block - Screwless Push In - THT	6914020910058	1	6914020910058	Würth Elektronik	
D2, D3, D4, D5, D6	SMD SOD128 5A 30V Schottky	PMEC3050EP	5	PMEC3050EP-115	Nexperia	
EDS13, EDS14	WE-TVS TVS Diode - Standard Series	824098024	2	824098024	Würth Elektronik	
ESD1, ESD2, ESD3, ESD4, ESD5, ESD6, ESD7, ESD8, ESD9, ESD10, ESD11, ESD12	ESD Suppressors / TVS Diodes WE-VE ESD 0402 12Vdc 5pF	82357120050	12	82357120050	Würth Elektronik	
FB1, FB2	SMD 1806 3.5A 750/15mΩ	120n	2	BLM18P60005N1L	Murata	
FB3, FB4, FB5, FB6, FB7, FB8, FB9, FB10	Ferrite Bead WE-CBF HF 0603 SMD 100MHz 220Ohm 600mA	220u	8	742863122	Würth Elektronik	
GB1	Headers & Wire Housings VERTICAL HDR 2P	53047-0210	1	53047-0210	Molex	
H1	Pin Header, Board-to-Board, 1.27mm, 2 Rows, 10 Contacts, Surface Mount, WR-PHD Series	62101021021	1	62101021021	Würth Elektronik	
H2	WR-PHD Pin Header, THT, pitch 2mm, Single Row, Vertical, 2p	62000211121	1	62000211121	Würth Elektronik	
J1	DC Power Connectors WR-DC PwrJk CrPrnTHt Right Angled	694102303002	1	694102303002	Würth Elektronik	
Jp1, Jp2, Jp11, Jp12	SMD 0402 0 Ω	0.05	6	06035A3000U750	UniOhm	
Jp3, Jp6	SMD 0402 0 Ω	0.05	2	06035A3000U150	UniOhm	
Jp4, Jp5, Jp9, Jp10	SMD 0402 0 Ω	0.05	4	06035A3000U750	UniOhm	DNP
L1, L2, L3	Common mode Noise Filters 90Ω	EXC-14CE900U	3	EXC-14CE900U	Panasonic	
L4	Fixed Inductor 1210 22uH 20%	22uH	1	LQH32PN220MNL	Murata Electronics	
L5	1.34A 120mΩ 4x4x1.65mm	6.8u	1	LQH44PN68MNP0L	Murata	
L6	Fixed Inductor 2.2uH 2A 130mOhms 1MHz Tol:20%	2.2u	1	17TM021610ALMA2R2MTAA	TDK	
LD1	Standard LED - SMD WL-SMCD SMD MonoChip 0603 Red 632nm	150060S55040	1	150060S55040	Würth Elektronik	
LD2, LD3, LD4	Standard LED - SMD WL-SMCD SMD Mono SMD 0603 Green 520nm	150060S55040	3	150060S55040	Würth Elektronik	
LD5	Standard LED - SMD WL-SMCD SMD Mono SMD 0603 Blue 465nm	150060S55040	1	150060S55040	Würth Elektronik	
LD6	Standard LED - SMD WL-SMCD SMD MonoChip 0603 Yllw 591nm	SML-D12Y1W	1	150060Y55040	Würth Elektronik	
PN1, PN4, PN6	H8.6	PN1x8	2	861300611821	Würth Elektronik	
PN2	H8.6	PN1x6	1	861300611821	Würth Elektronik	
PN3, PN5	H8.6	PN1x10	2	861300611821	Würth Elektronik	
Q1	Standard Clock Oscillators SG-2105TF 24.0000ML SMD XTAL OSC MHz 50PPM -40 85C	SG-2105TF 24.0000ML	1	SG-2105TF 24.0000ML	Epson	
Q2	Crystal WE-XTAL 32.768KHz 2 0ppm 2.0 x 1.2mm	830050789	1	830050789	Würth Elektronik	
Q3	SMD CMOS Oscillator 50MHz	ECS-2520MVLIC-500-BN-TR	1	ECS-2520MVLIC-500-BN-TR	ECS	
Q4	Crystal WE-XTAL 12.0MHz 30ppm 3.2 x 2.5mm	12.000 MHz	1	830106388809	Würth Elektronik	
R1, R4, R5, R16, R19, R20, R23, R24, R41, R42, R45, R48, R50, R51, R56, R59, R62, R63, R64, R65, R66, R71, R74	SMD 0402 0.063W 5% 50V	10k	29		YAGEO	
R2, R3, R15, R49, R81	SMD 0402 0.063W 5% 50V	470	5		YAGEO	
R6, R10, R13, R25, R28, R29, R58, R78, R80	SMD 0402 0.063W 5% 50V	22	9		YAGEO	
R7, R8, R11, R72	SMD 0402 0.063W 5% 50V	1k	4		YAGEO	
R9	SMD 0402 0.063W 5% 50V	0	1		YAGEO	
R12	SMD 0402 0.063W 5% 50V	1M	1		YAGEO	DNP
R14	SMD 0402 0.063W 1% 50V	2.2k	1		YAGEO	
R17, R18	SMD 0402 0.063W 5% 50V	15k	2		YAGEO	
R21, R22, R60, R61, R70	SMD 0402 0.063W 5% 50V	2.2k	5		YAGEO	
R26, R27	SMD 0402 0.063W 5% 50V	1.5k	2		YAGEO	
R31, R33, R34, R35	SMD 0402 0.063W 1% 50V	20.9	4		YAGEO	
R31, R39	SMD 0402 0.063W 5% 50V	270	2		YAGEO	
R32	SMD 0402 0.063W 1% 50V	12.1k	1		YAGEO	
R36	SMD 0603 0.1W 5% 75V	10	1		YAGEO	
R37, R38	SMD 0402 0.063W 5% 50V	4.7k	2		YAGEO	
R40	SMD 0402 0.063W 5% 50V	97.1k	1		YAGEO	
R43, R44, R54, R55, R57, R79	SMD 0402 0.063W 5% 50V	22k	6		YAGEO	
R46, R47	SMD 0603 0.1W 5% 75V	270	2		YAGEO	
R52	SMD 0402 0.063W 5% 50V	100k	1		YAGEO	
R53	SMD 0402 0.063W 1% 50V	1.5k	1		YAGEO	
R67	SMD 0805 0.125W 1% 150V	1.3	1		YAGEO	
R68, R69	SMD 1206 0.25W 5% 200V	120	2	RC1206JR-07120RL (No value)	YAGEO	
R73	SMD 0402 0.063W 1% 50V	10.5k	1		YAGEO	
R75	SMD 0402 0.063W 1% 50V	58k	1		YAGEO	
R76	SMD 0402 0.063W 1% 50V	15k	1		YAGEO	
R77	SMD 0402 0.063W 1% 50V	880k	1		YAGEO	
RA2	SMD 0805 (4RM-0402) 0.0625W 5%	10k	1	YC124-JR-074K7L	YAGEO	
RA5, RA6, RA7, RA12, RA13	SMD 0805 (4RM-0402) 0.0625W 5%	22	5	YC124-JR-074K7L	YAGEO	
RA9, RA10, RA11	SMD 0805 (4RM-0402) 0.0625W 5%	22k	3	YC124-JR-074K7L	YAGEO	
Reset, SB1	Tactile Switch WS-TASV SMT 2.5mm 180g 18mA 18V Black	434130205916	1	434130205916	Würth Elektronik	
T1	12V 0.260/4.5V 1.08Ω 0.15V 1.3A	B2703P01TL	1	B2703P01TL	ROHM Semiconductor	
T2	45V 0.1A 100MHz 4 SpF	BC847CW	1	BC847CW71G	ON Semiconductor	
U1	Renesas RA6M3 120MHz 32-bit Cortex M4 MCU LQFP176	R7FA6M3AH3CF0A A0	1	R7FA6M3AH3CF0A A0	Renesas	
U2	Supertsoy Circuits Low Voltage Detector w/SENSE pin	RS118N271A	1	RS118N271A-TR-FE	Reich Electronics	
U3	3 Input Pos AND Gate	LVCL11	1	SN74LVCL11D8VR	Texas Instruments	
U5	Ethernet ICs Small Footprint RMII 10/100 Ethernet	LAN8720A1-CP	1	LAN8720A1-CP	Microchip Technology	
U6	ARM Cortex-M0 64KB Flash 128B SRAM	LP11108FH133/50L	1	LP11108FH133/50L	NXP Semiconductors	
U7	Flash 128Mb	W25Q128VSIQ	1	W25Q128VSIQ	Winbond	
U8	LED Lightm Driver White LED Step-Up 1.2MHz 0.22uF	AP2030A49-TR-G1	1	AP2030A49-TR-G1	Diodes Incorporated	
U9	RS-485 Interface IC 3.3V 1 Mbps	SN69HVD12D	1	SN69HVD12D	Texas Instruments	
U10	CAN Interface IC 3.3V 1 Mbps	SN69HVD232DR	1	SN69HVD232DR	Texas Instruments	
U11	Current Limited, Power-Distribution Switch USB, 2A, 60 mOhms	AP22802	1	AP22802AW5-7	Diodes Incorporated	
U12	Vin 3.8-32V 500KHz R=0.8V Iout=3A	AP63801WU-7	1	AP63801WU-7	Diodes Incorporated	
U13	Vin 2-14.5V Vout 0-6V Vin Pb-0.8V Imax=3A	AP3445W6-7	1	AP3445W6-7	Diodes Incorporated	
V11, V12, V15	Varistor WE-VS SMD 0402 220pF 20A 5.5VDC	82537040	1	82537040	Würth Elektronik	