

PiHPSDR_Controller_MK_II_rev-2_BOM

K9IVB May 2, 2020

Rev: pre-b

Sch Ref	Basic Value / Description	Mouser # or other note	Mfr. #	MFgr	Full Description	Footprint	Order Qty.	Price	Ext.:
C1,C4, C9, C19, C22, C24, C27,	100 nf [0.1uf]	80-C0805C104Z5V	C0805C104Z5VACTU	Kemet	Multilayer Ceramic Capacitors MLCC - SMD/SMT 50V 0.1uF Y5V 0805 -20/+80%	0805	7	\$0.100	\$0.700
C2, C3, C5, C7, C10, C12, C21, C26	10 uf	963-TMK212BBJ106MGHT	TMK212BBJ106MGHT	Taiyo Yuden	Multilayer Ceramic Capacitors MLCC - SMD/SMT 0805 25VDC 10uF 20% X5R AEC-Q200	0805	8	\$0.220	\$1.760
C6	220uF10V	80-T491C227K010AT	T491C227K010AT	Kemet	Tantalum Capacitors - Solid SMD 10V 220uF 2312 10% ESR=900mOhms	TAN_C_W [2412]	1	\$1.510	\$1.510
C8	0.47uF	791-0805F474Z500CT	0805F474Z500CT	Walsin	Multilayer Ceramic Capacitors MLCC - SMD/SMT 0805 MLCC Y5V 0.47 uF - 20/+80% 50 V T&R GP	0805	1	\$0.200	\$0.200
C11,C17,C 20,C25	1uF/10V	77-VJ0805Y105KXQTBC	VJ0805Y105KXQTW1BC	Vishay	Multilayer Ceramic Capacitors MLCC - SMD/SMT 0805 1uF 10volts X7R 10%	C0805	4	\$0.180	\$0.720
C13,C14	100uF/10V	581-TPSC107K010R0150	TPSC107K010R0150	AVX	Tantalum Capacitors - Solid SMD 10V 100uF 10% 2312 ESR=.15Ohm AEC-Q200	TAN_C_W [2412]	2	\$0.220	\$0.440
C15	47uF/35V	581-TAJC476K020R	TAJC476K020RNJ	AVX	Tantalum Capacitors - Solid SMD 20V 47uF 10% 2312 ESR= 500 mOhm	TAN_C_W [2412]	1	\$0.220	\$0.220
C16	22uF/35V	80-T491C226K025	T491C226K025AT	Kemet	Tantalum Capacitors - Solid SMD 25V 22uF 2312 10% ESR=1.4ohms	TAN_C_W [2412]	1	\$0.220	\$0.220
C18	100uF/6.3V	963-LMK325ABJ107MM-T	LMK325ABJ107MM-T	Taiyo Yuden	Multilayer Ceramic Capacitors MLCC - SMD/SMT 1210 10VDC 100uF 20% X5R	C1210	1	\$0.220	\$0.220
	alt	80-T520A107M06ATE045	T520A107M006ATE045	KEMET	Tantalum Capacitors - Polymer SMD 6.3V 100uF 1206 20% ESR=45mOhms	1206	0	\$0.78	\$0.000
C23	1nF	80-C0805C102J5G	C0805C102J5GACTU	Kemet	Multilayer Ceramic Capacitors MLCC - SMD/SMT 50V 1000pF C0G 0805 5%	C0805	1	\$0.220	\$0.220
D1	SK54	821-SK54CV7G	SK54C V7G	Taiwan Semi	Schottky Diodes & Rectifiers 5A 40V Schottky Rectifier	SMC-2 / DO-214AB	1	\$0.72	\$0.72
D2	BAS16J	863-BAS16WT1G	BAS16WT1G	ON Semi	Diodes - General Purpose, Power, Switching 75V 200mA	SC-70-3	1	\$0.11	\$0.11
D3	LED	859-LTL2R3KGD-EM	LTL2R3KGD-EM	Lite-On	Standard LEDs - Through Hole Thru-Hole Lamp 5mm Grn 571nm 30Deg	TH 0.1 spacing	1	\$0.10	\$0.10

Displ1	7 inch Display	Newark part # 49Y1712	RASPBERRYPI - DISPLAY	Newark, Pi Foundation Amazon etc	Raspberry Pi 7" Touch Screen Display 800x600. Use official if you want the display to fit the mounting holes.		1	\$60.000	\$60.000
	Extended DSI Cable 15cm			ebay	Ribbon Flex CSI Falt Cable 15cm for Raspberry Pi White [15 cond Longer cable needed to reach Pi] https://www.ebay.com/itm/372986679992		1	\$0.990	\$0.990
	Extended DSI Cable 20cm			Adafruit	Flex Cable for Raspberry Pi Camera or Display - 200mm / 8" https://www.adafruit.com/product/1647#description		1	\$1.950	
Enc1	Rotary Encoder	630-HRPG-ASCA-54F	HRPG-ASCA#54F	Broadcom	Encoders RPG SMT 120CPR	See Drawing	1	\$32.310	\$32.310
Enc6	alt		lpd3806-600bm-g5-24c		lpd3806-600bm-g5-24c AB Two Phase 5-24V 600 Pulses Incremental Optical Rotary Encoder		0	\$13.800	\$0.000
	alt				360/600P/R Photoelectric Incremental Rotary Encoder 5V-24V AB Two Phases Shaft F https://www.ebay.com/itm/360-600P-R-Photoelectric-Incremental-Rotary-Encoder-5V-24V-AB-Two-Phases-Shaft-F-192902140493?_trksid=p2385738.m4383.l4275.c10&var=493067531849		0	\$9.800	\$0.000
	Spinner knob			ebay or ?	6mm shaft - Large Diameter see below for examples https://www.ebay.com/itm/153820055773 https://www.ebay.com/itm/253105535263		1		
	Spinner knob	25M4622 [Newark]	Mentor 539.613	Newark [& Farnell]	Mentor 539.613 Black Knob, 35mm D x 18mm h, 6mm D shaft with set screw			\$5.600	
Enc6	header 1x5 pin			ebay or ?	1x5 Dupont housing & 5 male pins				
ENC-2 to 5	Dual rotary encoders	688-EC11EBB24C03	EC11EBB24C03	Alps	Encoders Dual Shaft Flat Slot 15 Pulses/30 Detent	Pin_Header_1x5 See Drawing	4	\$18.540	\$74.160
		Online components.com	EC11EBB24C03	Alps	Mechanical Encoder Rotary Incremental Flat 10mN-m Straight Quadrature Digital Square Wave 15PPR Through Hole PC Pins https://www.onlinecomponents.com/alps-electric/ec11ebb24c03-10113588.html?ref=searchchads360feed&utm_term=EC11EBB24C03&gclid=CjwKCAjwhOD0BRAQEiwAK7JHmBnPB9rRm1rqm4WluLu7oFo7HwpGa7AoeBBrr0wSyyA4g0eof0TTKBoCrn4QAvD_BwE&gclid=aw.ds		4	\$9.160	\$36.640
	Bottom Knob		twinbutton.stl_11_11_19.stl		16mm ODiam x 14mm High Shaft diameter 6.2mm Hole depth 5mm	see below			
	Top Knob		twinbutton.stl_11_11_19.stl		11mm ODiam x 11mm High Shaft diameter 3.6mm will need set screw				
ENC2-5	Alt [single]	688-EC11E183440C	EC11E183440C	ALPS	Encoders 5 Volts Through Hole		4	\$4.13	\$16.52

	Small Knob			ebay	6mm shaft		4		
	Small Knob	25M4171 [Newark]	Mentor 505.613	Newark [& Farnell]	Mentor 505.613 Black Knob, 12mm D x 12mm h, 6mm D shaft with set screw		4	\$3.530	\$14.120
J1	Connector	490-PJ-063AH	PJ-063AH	CUI Devices	DC Power Connectors Power Jacks	See Drawing	1	\$1.36	\$1.36
F1	Fuse	652-SF-1206SA500W-2	SF-1206SA500W-2	Bourns	Surface Mount Fuses 5 AMP 32V SLOW B 1206		1	\$1.35	\$1.35
IC1	MCP23017	579-MCP23017-E/SO	MCP23017-E/SO	Microchip	Interface - I/O Expanders 16bit Input/Output Exp I2C interface	SOIC-28	1	\$1.20	\$1.20
IC2	LMZ22005TZ	926-LMZ22005TZ/NOPB	LMZ22005TZ/NOPB	TI	Switching Voltage Regulators	TO-PMOD-7	1	\$11.35	\$11.35
J2	Header 1x4 pin			Many	0.25" sq 0.100" [2.54mm] spacing	Pin_Header_1x4			
J3	Header 2x20 pi	710-61304021821	61304021821	Würth	Headers & Wire Housings WR-PHD DUAL SCKT HDR 2.54MM		1	\$1.790	\$11.35
J5	Header 1x5 pin			Many	0.25" sq 0.100" [2.54mm] spacing	Pin_Header_1x5			
J7,J8	Header 1x3 pin			Many	0.25" sq 0.100" [2.54mm] spacing	Pin_Header_1x3			
L1,L2,L3,					Ferrite Beads WE-MPSB Ferrite 100MHz				
L4	Ferrite beads	710-74279226101	74279226101	Würth	100Ohm	1812 see data sh	4	\$0.64	\$2.560
R1,R3,R4	100K	603-RC0805FR-10100KL	RC0805FR-10100KL	Yago	Thick Film Resistors - SMD 100K OHM 1%	R0805	3	\$0.130	\$0.390
R2	680R	603-RC0805FR-13680RL	RC0805FR-13680RL	Yago	Thick Film Resistors - SMD 680 OHM 1%	R0805	1	\$0.130	\$0.130
R5	3.3K	603-RC0805FR-103K3L	RC0805FR-103K3L	Yago	Thick Film Resistors - SMD 3.3K OHM 1%	R0805	1	\$0.130	\$0.130
R6,R11	1.5K	603-RC0805FR-131K5L	RC0805FR-131K5L	Yago	Thick Film Resistors - SMD 1.5K OHM 1	R0805	2	\$0.130	\$0.260
R7	47R	603-RC0805FR-1347RL	RC0805FR-1347RL	Yago	Thick Film Resistors - SMD 47 OHM 1%	R0805	1	\$0.130	\$0.130
R9	180K	603-RE0805FRE07180KL	RE0805FRE07180KL	Yago	Thick Film Resistors - SMD 180K OHM 1%	R0805	1	\$0.130	\$0.130
R8, R10,							42		
R12 - R52	10K	603-RC0805FR-1010KL	RC0805FR-1010KL	Yago	Thick Film Resistors - SMD 10K OHM 1%	R0805	[100]	\$0.011	\$1.100
SW1-SW17	Tactile switch 6x6mm, 2.80mm sq button	612-TL3301SPF260QG	TL3301SPF260QG t/r	E-Switch	Tactile Switches 6.0X2.8MM 260G T/R Switch is 6X6 - 7.58mm [total] height, 260G acc force [2.80 mm square button to match rect C1 cap]	Unique E-SW design, gull wing [see mfg dwg]	17	\$0.360	\$6.120
	Rectangular Caps for Tactile Switch	612-1C-BK	1CBLK	E-Switch	Switch Bezels / Switch Caps 9 X 5MM RECT CAP BLK	9mm h with - 2.9mm sq slot 1.5mm d - Fits 2.8mm sq button	16	\$0.147	\$2.35
	Rect Sw Cap	612-1C-RD	1CRED	E-Switch	Switch Bezels / Switch Caps 9 X 5MM RECT CAP RED	see above	1	\$0.15	\$0.150
alt	Rnd SW Cap	612-1R-BK	1RBLK	E-Switch	Switch Bezels / Switch Caps 9 X 5MM RND CAP BLK	9mm h x 5mm D	16	\$0.147	\$2.35

					Switch Bezels / Switch Caps 9 X 5MM RND				
alt	Rnd SW Cap	612-1R-RD	1RRED	E-Switch	CAP red	see above	1	\$0.15	\$0.150
T1	FDD6685	512-FDD6685	FDD6685	ON Semiconductor	MOSFET 30V P-Channel PowerTrench	TO-252-3	1	\$0.54	\$0.54
T2	2N7002K	512-2N7002K	2N7002K	ON Semiconductor	MOSFET 60V, 300mA N-Chan	SOT-23-3	1	\$0.36	\$0.36
Raspberry Pi					Raspberry Pi V3 or 4		1		
Case Components					Front Panel Express shop				
					https://shop.frontpanelexpress.com/index.php#Products				
Side rails -1		GLGP1013 - 256		FPE	Side Profile 1 / black, black anodized 256mm L x 42mm h		2	\$8.730	\$17.460
Side rails -2		GLGP1023 - 256		FPE	Side Profile 2 / black, black anodized 256mm L x 56mm h		0	\$9.160	\$0.000
Top Plate				FPE / alt	144 mm h x 256mm l x 2mm t	see below	1		
Bottom Plate				FPE / alt	144 mm h x 256mm l x 2mm t - Blank		1		
Left side plate				FPE / alt	42mm h x 158mm W - Blank		1		
Right side plate				FPE / alt	144mm h x 42mm D	see below	1		
					Spacer PCB to top panel approx 8.46mm [0.33"] with #4-40 screws & washers.		4		
Hardware kit	[Alternate - Look at BoltDepot.com]	CG MS 1121		FPE / alt	Assembly kit ISP/A3.0-SW, DIN 7981, black galvanized		1	\$3.080	\$3.080
example		ebay -or Amazon			Inkjet Decal Paper for graphics				
					https://www.ebay.com/itm/INKJET-Waterslide-DECAL-CLEAR-Paper-5-Sheets-8-5-x11-WATER-SLIDE-Transfer-				

Design Information

github	https://github.com/g0orx/pihpsdr
E-Switch	TL3301SPF260QG.pdf
E-Switch	1C-Blk.pdf
E-Switch	1R-Blk.pdf
FPE	Housing-Assembly.pdf
fpe/manual	PiHPSDR Controller MKII_rev2_K9IVB_FP_05022020.fpd
fpe/manual	Left_Hand_pnl_PiHPSDR_K9IVB_04292020.fpd
	DL2RMM Case files.zip
	twinbutton.stl_11_11_19.stl
	twinbutton_07_04_20_2.stl
	Concentric Knobs for Alps_04212020.pdf
Alps	ec11_d_82_EC11E183440C.gif

Alt Enc 2-5 Sibgle encoder with sw