

BoM, for kit building assembly

ref	value	Position X	Position Y	Orientation	Layer	Vendor	Vendor P/N	NOTE1	NOTE 2	QTY
C1	100n	1.5400	2.3350	180	Front	DigiKey	399-5863-ND		Decoupling capacitor	1
C2	100u	1.8725	2.4125	270	Front	DigiKey	P833-ND		Capacitor Voltage Rating >= 16V	1
C3	100n	4.0750	2.3375	180	Front	DigiKey	399-5863-ND		Decoupling capacitor	1
C4	100n	3.7800	1.9050	90	Front	DigiKey	399-5863-ND		Decoupling capacitor	1
C5	100n	4.7875	1.9050	90	Front	DigiKey	399-5863-ND		Decoupling capacitor	1
C6	100n	5.7500	1.9050	90	Front	DigiKey	399-5863-ND		Decoupling capacitor	1
C7	100n	1.5400	2.4500	180	Front	DigiKey	399-5863-ND		Decoupling capacitor	1
C8	100u	2.1075	2.4125	90	Front	DigiKey	P833-ND		Capacitor Voltage Rating >= 16V	1
C9	100n	1.4700	3.3075	180	Front	DigiKey	399-5863-ND		Decoupling capacitor	1
C10	100n	2.4425	1.9550	0	Front	DigiKey	399-5863-ND		Decoupling capacitor	1
C13	100n	6.6800	1.9050	90	Front	DigiKey	399-5863-ND		Decoupling capacitor	1
C14	100n	3.8500	1.4750	90	Front	DigiKey	399-5863-ND		Decoupling capacitor	1
C15	100n	4.8700	1.4750	90	Front	DigiKey	399-5863-ND		Decoupling capacitor	1
C16	0.47mF,5V5				Front	DigiKey	EEC-S0HD473V		Super Capacitor	1
C17	100n				Front	DigiKey	399-5863-ND		Decoupling capacitor	1
D1	GRN	3.6350	3.2700	0	Front	DigiKey	1080-1134-ND		Debug LED, 3mm or 5mm LED, any Color	1
D2	YEL	3.9350	3.2700	0	Front	DigiKey	1080-1134-ND		Debug LED, 3mm or 5mm LED, any Color	1
D3	PWR	3.3350	3.2700	0	Front	DigiKey	1080-1134-ND		Debug LED, 3mm or 5mm LED, any Color	1
D4	3V3_Z	5.3200	2.3375	0	Front	DigiKey	1N5226BFSCT-ND		Zener Diode, 3.3V, for DCF77	1
D5	1N4007	3.3850	2.9050	180	Front	DigiKey	1N4007DICT-ND		Diode, for reverse polarity protection	1
D6	1N4148				Front	DigiKey	1N4148TA		Diode, Small signal	1
D7	1N4148				Front	DigiKey	1N4148TA		Diode, Small signal	1
D8	1N4148				Front	DigiKey	1N4148TA		Diode, Small signal	1
D9	1N4148				Front	DigiKey	1N4148TA		Diode, Small signal	1
K1	PWR	1.5400	2.6000	180	Front	DigiKey	SAM1031-50-ND		Header, Male, 3 pin, for PWR_SEL	1
--	--	--	--	--	--	DigiKey	S9341-ND		Jumper socket for PWR_SEL K1	1
K2	CONN_3	2.8250	1.1950	90	Front	DigiKey	SAM1031-50-ND		Header, Male, 3 pin, for LED_ENABLE	1
--	--	--	--	--	--	DigiKey	S9341-ND		Jumper socket for LED_ENABLE K2	1
P1	DCF77	5.2200	2.5825	0	Front	DigiKey	SAM1031-50-ND		Header, Male, 6 pin, for DCF77	1
P5	ANODES	3.8000	1.1400	180	Front	DigiKey	SAM1095-36-ND		Header, 16x2 pin	1
P6	KATHODES	5.8500	1.1400	180	Front	DigiKey	SAM1095-36-ND		Header, 16x2 pin	1
P7	FTDI	1.2900	2.2000	270	Front	DigiKey	SAM1043-50-ND		Header, 6 pin, right angle, for FTDI	1
P13	ISP	3.0200	2.4100	270	Front	DigiKey	SAM1095-36-ND	Optional	Header, 3x2 pin	1
P20	DC_IN	1.3275	2.9375	0	Front	DigiKey	CP-002B-ND		Barrel socket	1
R1	10k	5.1640	2.8800	90	Front	DigiKey	CF18JT10K0CT-ND		Resistor, 1/8W, 5%	1
R2	10k	5.5650	2.8800	90	Front	DigiKey	CF18JT10K0CT-ND		Resistor, 1/8W, 5%	1
R3	10k	6.3650	2.8800	90	Front	DigiKey	CF18JT10K0CT-ND		Resistor, 1/8W, 5%	1

BoM, for kit building assembly

ref	value	Position X	Position Y	Orientation	Layer	Vendor	Vendor P/N	NOTE1	NOTE 2	QTY
R4	10k	5.9650	2.8800	90	Front	DigiKey	CF18JT10K0CT-ND		Resistor, 1/8W, 5%	1
R5	10k	6.7650	2.8800	90	Front	DigiKey	CF18JT10K0CT-ND		Resistor, 1/8W, 5%	1
R6	4k7	3.4750	2.2875	270	Front	DigiKey	CF18JT4K70CT-ND		Resistor, 1/8W, 5%	1
R7	4k7	3.3750	2.2875	270	Front	DigiKey	CF18JT4K70CT-ND		Resistor, 1/8W, 5%	1
R8	1k	3.5850	3.0950	180	Front	DigiKey	CF18JT1K00CT-ND		Resistor, 1/8W, 5%	1
R9	1k	3.8850	3.0950	180	Front	DigiKey	CF18JT1K00CT-ND		Resistor, 1/8W, 5%	1
R10	10K	4.1850	3.0950	180	Front	DigiKey	CF18JT10K0CT-ND		Resistor, 1/8W, 5%	1
R11	LDR	4.2350	3.2700	270	Front	DigiKey	PDV-P9007-ND		LDR, 10k to 100k	1
R12	6.8E	6.6500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R13	6.8E	6.5500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R14	6.8E	6.4500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R15	6.8E	6.3500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R16	6.8E	6.2500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R17	6.8E	6.1500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R18	6.8E	6.0500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R19	6.8E	5.9500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R20	6.8E	5.7500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R21	6.8E	5.6500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R22	6.8E	5.5500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R23	6.8E	5.4500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R24	6.8E	5.3500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R25	6.8E	5.2500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R26	6.8E	5.1500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R27	6.8E	5.0500	1.4750	270	Front	DigiKey	6.8EBK-ND		Resistor, 1/6W, 5%	1
R28	10k	1.4700	1.3000	270	Front	DigiKey	CF18JT10K0CT-ND		Resistor, 1/8W, 5%	1
R29	220E	5.4200	2.2375	0	Front	DigiKey	CF14JT220RCT-ND		Resistor, 1/4W, 5%	1
R30	4k7	4.1000	2.1675	0	Front	DigiKey	CF18JT4K70CT-ND		Resistor, 1/8W, 5%	1
R31	1k	3.2850	3.0950	180	Front	DigiKey	CF18JT1K00CT-ND		Resistor, 1/8W, 5%	1
R32	10k	2.2075	1.1575	180	Front	DigiKey	CF18JT10K0CT-ND		Resistor, 1/8W, 5%	1
R33	10k	2.0100	1.1575	0	Front	DigiKey	CF18JT10K0CT-ND		Resistor, 1/8W, 5%	1
R34	820E				Front	DigiKey	CF18JT820R		Resistor, 1/8W, 5%	1
R35	4k7				Front	DigiKey	CF18JT4K70		Resistor, 1/8W, 5%	1
SW1	MODE	5.7650	3.1100	90	Front	DigiKey	450-1657-ND		Right Angle switch	1
SW2	HOUR+	6.1650	3.1100	90	Front	DigiKey	450-1657-ND		Right Angle switch	1
SW3	MIN+	5.3650	3.1100	90	Front	DigiKey	450-1657-ND		Right Angle switch	1
SW4	RST	4.9650	3.1100	90	Front	DigiKey	450-1657-ND		Right Angle switch	1
SW5	ENTER	6.5650	3.1100	90	Front	DigiKey	450-1657-ND		Right Angle switch	1

BoM, for kit building assembly

ref	value	Position X	Position Y	Orientation	Layer	Vendor	Vendor P/N	NOTE1	NOTE 2	QTY
U1	74HC595	4.3000	1.9050	180	Front	DigiKey	568-1484-5-ND		IC SHIFT REGISTER 8BIT 16DIP	1
*	Socket 16 DIP					DigiKey	A100206-ND		Socket for IC U1	1
U2	74HC595	3.3000	1.9050	180	Front	DigiKey	568-1484-5-ND		IC SHIFT REGISTER 8BIT 16DIP	1
*	Socket 16 DIP					DigiKey	A100206-ND		Socket for IC U2	1
U3	ATMEGA8-P	4.0250	2.6125	0	Front	DigiKey	ATMEGA328-PU-ND		IC MCU AVR 32K FLASH 28PDIP	1
*	Socket 28 DIP					DigiKey	A100210-ND		Socket for IC U3	1
U4	74HC595	6.2000	1.9050	180	Front	DigiKey	568-1484-5-ND		IC SHIFT REGISTER 8BIT 16DIP	1
*	Socket 16 DIP					DigiKey	A100206-ND		Socket for IC U4	1
U5	74HC595	5.3000	1.9050	180	Front	DigiKey	568-1484-5-ND		IC SHIFT REGISTER 8BIT 16DIP	1
*	Socket 16 DIP					DigiKey	A100206-ND		Socket for IC U5	1
U6	DS1307	2.1600	1.6200	0	Front	DigiKey	DS1307+-ND		IC RTC SERIAL 512K 8-DIP	1
*	Socket 8 DIP					DigiKey	A100204-ND		Socket for IC U6	1
U7	UDN2981A	4.3500	1.4750	0	Front	Jameco	1762681		Trans Darlington NPN/PNP 50 Volt 0.5A 18-Pin Plastic	1
*	Socket 18 DIP					DigiKey	A100207-ND		Socket for IC U7	1
U8	UDN2981A	3.3500	1.4750	0	Front	Jameco	1762681		Trans Darlington NPN/PNP 50 Volt 0.5A 18-Pin Plastic	1
*	Socket 18 DIP					DigiKey	A100207-ND		Socket for IC U8	1
U9	78L05	1.9225	2.6325	180	Front	DigiKey	MC7805CTGOS-ND		ONLY if V_IN > 5V. ELSE USE SHORTING LINK	1
X1	16MHz	4.5200	2.9425	0	Front	DigiKey	X908-ND		Resonator, with capacitors, 3 pin	1
X2	CRYSTAL	2.0600	1.8850	0	Front	DigiKey	535-9034-ND		Crystal for RTC U6	1
PCB1	PCB	--	--	--	--	--			Main Board	1

94

NOT USED COMPONENTS

A0	CONN_1	--	--	--	--	--	Break Out Pad, no component		Arduino Port A0	1
A1	CONN_1	--	--	--	--	--	Break Out Pad, no component		Arduino Port A1	1
A2	CONN_1	--	--	--	--	--	Break Out Pad, no component		Arduino Port A2	1
C11	22p	4.4000	3.1400	270	Front	DigiKey	BC1034CT-ND	Optional	if using crystal instead of resonator	1
C12	22p	4.6400	3.1400	270	Front	DigiKey	BC1034CT-ND	Optional	if using crystal instead of resonator	1
CD1	CDOT1	1.6725	1.6200	90	Front	DigiKey	3M9515-ND	Optional	if using I2SD, rtcBoB or ChronoDot, Socket, 4 pin	1
CD2	CDOT2	2.5725	1.6200	90	Front	DigiKey	3M9515-ND	Optional	if using I2SD, rtcBoB or ChronoDot, Socket, 4 pin	1
CD3	CDOT3	1.4475	1.6200	90	Front	DigiKey	3M9515-ND	Optional	if using I2SD, rtcBoB or ChronoDot, Socket, 4 pin	1
D13	CONN_1	--	--	--	--	--	Break Out Pad, no component		Arduino Port D13	1
P2	SDA	1.6950	1.3025	0	Front	DigiKey	SAM1031-50-ND	Optional	Header, Male, 2 pin, Link for INT, OPEN for EXT	1
--	--	--	--	--	--	DigiKey	S9341-ND	Optional	Jumper socket for SCL, K4	1
P3	SCL	1.6975	1.9425	180	Front	DigiKey	SAM1031-50-ND	Optional	Header, Male, 2 pin, Link for INT, OPEN for EXT	1
--	--	--	--	--	--	DigiKey	S9341-ND	Optional	Jumper socket for SDL, K5	1
P4	CONN_1	1.9200	3.1580	0	Front	--			Fixing Screw for Voltage Regulator	1
P8	CONN_1	--	--	--	--	--			Fixing Screw for Board	1

BoM, for kit building assembly

ref	value	Position X	Position Y	Orientation	Layer	Vendor	Vendor P/N	NOTE1	NOTE 2	QTY
P9	CONN_1	--	--	--	--	--			Fixing Screw for Board	1
P10	CONN_1	--	--	--	--	--			Fixing Screw for Board	1
P11	CONN_1	--	--	--	--	--			Fixing Screw for Board	1
P24	DIL6	--	--	--	--	--			Prototyping area	1
P25	DIL6	--	--	--	--	--			Prototyping area	1
P26	DIL6	--	--	--	--	--			Prototyping area	1
P27	DIL6	--	--	--	--	--			Prototyping area	1
P28	DIL6	--	--	--	--	--			Prototyping area	1
P29	DIL6	--	--	--	--	--			Prototyping area	1
P30	DIL6	--	--	--	--	--			Prototyping area	1
P31	DIL6	--	--	--	--	--			Prototyping area	1
P32	DIL6	--	--	--	--	--			Prototyping area	1
P33	DIL6	--	--	--	--	--			Prototyping area	1
P34	DIL6	--	--	--	--	--			Prototyping area	1
P35	DIL6	--	--	--	--	--			Prototyping area	1
P36	DIL6	--	--	--	--	--			Prototyping area	1
P37	DIL6	--	--	--	--	--			Prototyping area	1
P41	STACK-L	1.3000	1.5500	270	Front	DigiKey	SAM1009-50-ND	Optional	Socket, 4 pin, right angle, for daisy-chaining boards	1
P42	STACK-R	6.7600	1.5500	90	Front	DigiKey	SAM1043-50-ND	Optional	Header, 4 pin, right angle, for daisy-chaining boards	1
P49	CONN_1	--	--	--	--	--			Fixing Screw for rtcBoB	1
P50	CONN_1	--	--	--	--	--			Fixing Screw for rtcBoB	1
P51	CONN_1	--	--	--	--	--			Fixing Screw for rtcBoB	1
P52	CONN_1	--	--	--	--	--			Fixing Screw for rtcBoB	1
U10	DS3231N	2.2000	1.4475	0	Back	DigiKey	DS3231S#-ND	Optional	IC, RTC	1