

Parts list by Lab (these parts also serve Problem Sets)
 See below for sources and notes on individual components.

MODULE	QUANTITY	ITEM	DETAIL	NOTES
Lab 1	1	sensor	sensor rotary position 12mm SMD	goes up to 10k
Lab 2	2	sensor	120.4 Ohm thermistor	Add leads and silicone waterproof
Lab 2	2	R	10k	
Lab 2	2	R	50k	
Lab 2	4	R	20k	
Lab 2	2	R	1k	
Lab 2	2	R	0.5k	
Lab 3	3	R	121	
Lab 3	1	R	115	
Lab 3	1	potentiometer	10 ohm 1 turn pot	
Lab 3	1	chip	AD623 chip	
Lab 3	1	R	200	
Lab 4	1	sensor	Hs1101LF humidity sensor	https://www.digikey.com/products/en?keywords=HS1101LF
Lab 4	1	C	100pF	
Lab 4	1	C	120pF	
Lab 4	1	C	150pF	
Lab 4	1	C	180pF	
Lab 4	1	C	220pF	
Lab 5	2	chip	AD623 chip	
Lab 5	3	R	100k	
Lab 5	3	R	4.9k	
Lab 5	1	R	499	
Lab 5	3	C	1uF	
Lab 5	1	C	10uF	
Lab 5	6	sensor	body electrodes	3M 2560 Red Dot Multi-Purpose Monitoring Electrode
Lab 5	3 sets		alligator clips	https://www.adafruit.com/product/1008
Lab 6	1	sensor	pressure cuff	
Lab 6	2 sets	R & C	RC cutoff ~1hz	
Lab 6	1 set	R & C	RC cutoff ~10hz	
Lab 6	2	R	1k	
Lab 6	2	R	2k	
Lab 6	1	R	4k	
Lab 6			BPdata.csv - canvas	
Lab 7	1	chip	LMC6484A chip	
Lab 7	1	R	1M	
Lab 7	1	C	0.1uF	
Lab 7	1	R	100	
Lab 7	1		red LED	
Lab 8	2	chip	LMC6484A chip	
Lab 8	2	R	10k	
Lab 8	2	R	1k	
Lab 8	1	R	1M	
Lab 8	1		photodiode	
Lab 8	1	C	10nF	
Lab 8	1 set	R & C	RC cutoff ~1hz	
Lab 8	1 set	R & C	RC cutoff ~10hz	
Lab 9	1	chip	AD623 chip	
Lab 9	2	chip	LMC6484 chip	

Lab 9	2	R	2k
Lab 9	2	R	1k
Lab 9	3	C	10nF
Lab 9	2	C	1nF
Lab 9	2	C	10uF
Lab 9	2	C	1uF
Lab 9	2	R	50k
Lab 9	2	R	30k
Lab 9	1	R	4k
Lab 10	1	chip	LMC6484 chip
Lab 10	1	chip	SN74ATC08 logic chip
Lab 10	1 set	sensor	transmitter and reciever
Lab 10	2sest	R & C	40khz band pass + amplifier
Lab 10		R & C	non-inverting amplifier gain ~2.5x or about 20-100x
Lab 10	1	R	1k
Lab 10	1	R	5k
Lab 10	1	R	10k
Lab 10	2	R	20k
Lab 10	1	R	100k
Lab 10	2	R	200k
Lab 10	1	R	1M

Parts and equipment details

Parts

Component	Notes	Sources
photodiode	Osram Opto SFH 203 P IR + visible Light Si photodiode, Through Hole 5 mm package	DigiKey p/n: 475-2649-ND
Capacitors	Ceramic, $\pm 5\%$, Through hole	Digikey, various p/n
Resistors	Metal film, $\frac{1}{4}$ Watt, $\pm 1\%$ axial	DigiKey various p/n
Chips	Op Amp, LCM6484: Through hole mount, 14-pin DIP package Instrumentation amplifier, AD623, Through hole mount 8-pin DIP package Quadruple 2-input positive AND gates, SN74ACT08 14-pin DIP package	DigiKey: LMC6484, https://www.digikey.com/products/en?keywords=LMC6484AIN%2FNOBP-ND AD623, https://www.digikey.com/product-detail/en/analog-devices-inc/AD623ANZ/AD623ANZ-ND/750974 SN74ACT08N, https://www.digikey.com/product-detail/en/texas-instruments/SN74ACT08N/296-4354-5-ND/375842
LEDs	Red, Green, Blue, 3 mm Round, 6 mm height, Radial T-1 clear package	DigiKey, various p/n e.g., P/N LTL-4266N, https://www.digikey.com/product-detail/en/lite-on-inc/LTL-4266N/160-1034-ND/121770
Prototyping board	5.5 cm x 17 cm, 830 tie points	Adafruit p/n 239, https://www.adafruit.com/product/239
Thermistor	120.4 Ohm, Gage factor = 2	Omega p/n KFH-3-120-C1-11L1M2R,
Wire strippers	Multisize wire stripper & cutter	Adfruit p/n 147, https://www.adafruit.com/product/147
Potentiometer	10 Ohm, 1 turn, 1 W $\pm 5\%$	DigiKey p/n 3345P-1-100-ND, https://www.digikey.com/product-detail/en/bourns-inc/3345P-1-100/3345P-1-100-ND/2536476
Wire	140pcs U Shape solderless breadboard jumper cable wire Or 22 gauge wire, various colors	Various e.g., https://www.electronicshub.org/breadboard-kits-beginners/
Header pins	For testing prototype board points	Male breakaway headers, straight, 0.100" contact centers, ~6mm head and tail. Sullins, P-E-0.100-36-S-AB-N https://s3.amazonaws.com/catalogspreads-pdf/PAGE112-113%20.100%20MALE%20HDR.pdf

Equipment & software

Analog Discovery 2 (\$279)

<https://store.digilentinc.com/analog-discovery-2-100msps-usb-oscilloscope-logic-analyzer-and-variable-power-supply/>

Waveforms (Free download)

<https://store.digilentinc.com/waveforms-previously-waveforms-2015/>