

Birch Mini Joystick - U								Unit Cost	Total Cost	Total Print time (hr)	Total filament (g)	
Version: <u>V0.2</u>		Last Updated: 2023-Mar-31						\$ 35.59	\$ 50.87	3.18	36.8	
Commercial Parts												
ID	Part Name	Part Type	QTY	QTY/PKG	\$/PKG	PKG QTY	\$/Unit	Extended	Total	Link		
	Mini 2-Axis Analog Thumbstick	Electrical	1	1	\$ 3.84	1	\$ 3.84	\$ 3.84	\$ 3.84	https://www.digikey.ca/en/products/detail/adafruit-indust		
	Analog Mini Thumbstick Breakout Board	Electrical	1	1	\$ 2.16	1	\$ 2.16	\$ 2.16	\$ 2.16	https://www.digikey.ca/en/products/detail/adafruit-indust		
	Universal Proto-board PCB 4cm x 6cm	Electrical	1	3	\$ 3.60	1	\$ 1.20	\$ 1.20	\$ 3.60	https://www.digikey.ca/en/products/detail/adafruit-indust		
	SeeedStudio XAIO RP2040	Electrical	1	1	\$ 7.78	1	\$ 7.78	\$ 7.78	\$ 7.78	https://www.digikey.ca/en/products/detail/seeed-technol		
	24 AWG Wire, 1 foot	Electrical	1	1	\$ 0.72	1	\$ 0.72	\$ 0.72	\$ 0.72	https://www.digikey.ca/en/products/detail/cnc-tech/3122		
	M2 x 6 mm Self Tapping Screws	Mechanical	8	1000	\$ 12.99	1	\$ 0.01	\$ 0.10	\$ 12.99	https://a.co/d/1mQQYbU		
	USB C cable - 6 ft	Electrical	1	1	\$ 11.09	1	\$ 11.09	\$ 11.09	\$ 11.09	https://a.co/d/hniaViQ		
	(Optional for mount) M3 hex nut x2	Mechanical	0	100	\$ 6.65	0	\$ 0.07	\$ -	\$ -	https://www.digikey.ca/en/products/detail/b-f-fastener-su		
	(Optional for mount) M3x12mm screw x2	Mechanical	0	1	\$ 1.11	0	\$ 1.11	\$ -	\$ -	https://www.digikey.ca/en/products/detail/apm-hexseal/R		
	(Optional for mount) Tee nut	Mechanical	0	1	\$ 0.48	0	\$ 0.48	\$ -	\$ -	https://www.homedepot.ca/product/paulin-1-4-inch-20-te		
	Digikey shipping (if spending less than \$100)	Shipping	1	1	\$ 8.00	1	\$ 8.00	\$ 8.00	\$ 8.00			
3D Printed Parts		ESTIMATED PRICING USING 1KG ROLL COST:		\$ 25.00								
ID	Part	Material	QTY	Mass (g) / Unit	Time / Unit		Print Time (Min)	Estimated Unit Price	Total Price	Link		
	Birch_Enclosure_Bottom v1.0	PLA	1	14.9	127		106	\$ 0.37	\$ 0.37			
	Birch_Enclosure_Top v1.0	PLA	1	10.6	74		67	\$ 0.27	\$ 0.27			
	Inner cover disk v1.0	PLA	1	0.5	4		4	\$ 0.01	\$ 0.01			
	Overlay v1.0	PLA	1	1.7	14		14	\$ 0.04	\$ 0.04			
	(Optional) Joystick_Camera_Mount	PLA	0	8.5	54		0	\$ 0.21	\$ -			
	(Optional) Topper - small dome	PLA	0	0.6	8		0	\$ 0.02	\$ -			
	(Optional) Topper - medium dome	PLA	0	1.7	17		0	\$ 0.04	\$ -			
	(Optional) Topper - large dome	PLA	0	4.9	37		0	\$ 0.12	\$ -			
	(Optional) Topper - ring	PLA	0	1.5	16		0	\$ 0.04	\$ -			
	(Optional) Topper - concave	PLA	0	1	10		0	\$ 0.03	\$ -			
								\$ -	\$ -			
Custom Printed Circuit Board (PCB)												
ID	Part		QTY									
Tools for Assembly												
	Flush cutters											
	Wire strippers											
	Soldering iron											
	Philips head screw driver											
	3D printer											
	(Optional for mount adapter) 1/4-20 screw or hex bolt, at least 1/2" long									https://www.homedepot.ca/product/paulin-1-4-20-x-1-2-i		
Alternatives (if there are other sources for some parts link them below)												
ID	Part and description	Part Type	QTY	QTY/PKG	\$/PKG	PKG QTY	\$/Unit	Extended	Total	Link		
	Universal Proto-board PCB 4cm x 6cm - Amazon	Electrical	1	10	\$ 11.31	1	\$ 1.13	\$ 1.13	\$ 11.31	https://a.co/d/ftDjYV		
	Analog Mini Thumbstick Breakout Board - Adafruit	Electrical	1	1	\$ 1.50	1	\$ 1.50	\$ 1.50	\$ 1.50	https://www.adafruit.com/product/3246		
	Mini 2-Axis Analog Thumbstick	Electrical	1	1	\$ 2.50	1	\$ 2.50	\$ 2.50	\$ 2.50	https://www.adafruit.com/product/2765		
	24 Guage wire	Electrical	1	6	\$ 22.99	1	\$ 3.83	\$ 3.83	\$ 22.99	https://a.co/d/0x1zLnq		
	24 Guage wire	Electrical	1	3	\$ 13.99	1	\$ 4.66	\$ 4.66	\$ 13.99	https://a.co/d/e5IVoxq		

	Jumper wire kit - varying lengths	Electrical	10	560	\$ 18.99	1	\$ 0.03	\$ 0.34	\$ 18.99	https://a.co/d/i4QJhrz	
	24 Gauge Wire	Electrical	1	3	\$ 3.95	1	\$ 1.32	\$ 1.32	\$ 3.95	https://www.jameco.com/z/803-3-25-Jameco-Valuepro-Ho	
	Jumper wire kit - varying lengths	Electrical	10	70	\$ 6.60	1	\$ 0.09	\$ 0.94	\$ 6.60	https://www.digikey.ca/en/products/detail/global-specialt	
	Tee nuts - 100 pack	Mechanical	1	100	\$ 14.99	1	\$ 0.15	\$ 0.15	\$ 14.99	https://a.co/d/bvtz0On	
	2 mm self tapping screws	Mechanical	8	750	\$ 20.99	1	\$ 0.03	\$ 0.22	\$ 20.99	https://a.co/d/3lzWcJa	
	(Optional for mount) M3 x 10-12mm screws and nuts x2	Mechanical	0	340	\$ 22.14	0	\$ 0.07	\$ -	\$ -	https://a.co/d/0B9sK8N	

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