Tardygrade BOM

Valid for pcb v0.4

Apart from the Tardygrade PCB and 3d printed parts, this is the complete list of components needed to build the robot.

I usually include the exact web store links from where I bought each component. Since I sourced my parts locally from Sweden these are mainly for reference. You should get the components from wherever is convenient from your location.

ESP32 dev board

Qty.	*Alt.*	*Part*	*Description*
1	A	Adafruit Feather HUZZAH32 – ESP32	https://www.adafruit.com/product/3405
	B	TinyPICO	https://www.tinypico.com/ Webstore link (Tindie)

Miscellaneous parts

Qty.	*Part*	*Description*
1	3.7V lipo cell 1500 mAh Type 803450	Dimensions: 8 x 34 x 50 mm. You can also use any cell smaller than that. https://www.electrokit.com/produkt/batteri-lipo-3-7v-1500mah/
1	JST-PH connector extension cable	Length: ~150 mm Wire diameter: 1.2 mm (max) https://www.electrokit.com/produkt/kabel-med-vinklad-kontakt-jst-ph-2-pol-150mm/
1	Micro servo 360° continuous rotation	“Tower Pro 9g” form factor https://www.electrokit.com/produkt/servo-msr-1-3-9-360/
1	Micro servo 180° rotation	https://www.electrokit.com/produkt/mg90s-micro-servo/ (The link shows a metal gear servo, but nylon gears works just as well)
1	Neodymium magnet	Dimensions: 6 x 3 mm Webstore link (Amazon)

PCB components

Through-hole

Qty.	*Part*	*Description*
2	Electrolytic capacitor 220 µF (Radial) Dia: 5 mm Pitch: 2 mm	Dimensions only important for snug fit on pcb. Other sizes will work fine too.
1	Male pin header 1 x 40, straight 2.54 mm	https://www.electrokit.com/en/product/pin-header-2-54mm-1x40p-blue/
1	Male pin header 1 x 40, right angle 2.54 mm	https://www.electrokit.com/produkt/stiftlist-2-54mm-1x40p-vinklad-brytbar/
1	Female pin header x 40 2.54 mm	https://www.electrokit.com/produkt/hylslist-2-54mm-1x40p/
1	2-pin Jumper 2.54 mm	https://www.electrokit.com/en/product/jumper-2-54mm-2p-black/

Surface mount

Qty.	*Part*	*Description*
1	Resistor 20kΩ Package (in): 0603	
1	Boost regulator, Microchip MCP1642D-50I/MS	There are two variants, named B and D. They are interchangeable for this application. Webstore link (Mouser)
2	Ceramic capacitor, 10 uF Package (in): 0603	Refer to MCP1642B/D datasheet section 5.4 for details on cap selection. This one should work: Webstore link (Mouser)
1	Inductor, Wurth 744052005 *Alternative part:* *Coilcraft LPS6225-472MRC*	If you can't source this part, the MCP1642B/D datasheet table 5-2 lists other suitable inductors. Webstore link (Mouser) *This alternative has similar specs and footprint and is currently in stock:* Webstore link (Mouser):
4	Hall switch, Diodes AH1902-Z-7 Package: SOT-553-5	Webstore link (Mouser)
4	Ceramic capacitor, 0.1 uF (100 nF) Package (in): 0603	Webstore link (Mouser)

Revision history

Rev.	Date	Comment
4	2021-10-28	Updated for pcb v0.4. Removed MOSFETs, buttons + minor updates
3	2021-10-12	Changed cap value and some links.
2	2021-10-10	Updated for pcb v0.31. Changed hall switch component.
1	2021-09-21	First revision