

Group	Part	Content	Quantity	Description/comment	Source/Link	Price per unit	Total	Note	Sum	1,193.96 €	
Actuators	N20 motor	1	4	12 V 50 rpm	https://funduishop.com/elektronische-module/elektromotoren-und-zubehoer/getriebemotoren/mini-getriebemotor-n20?number=F2310885	4.77 €	19.08 €				
Actuators	Pololu DRV8825	1	1	Stepper motor driver	https://funduishop.com/elektronische-module/elektromotoren-und-zubehoer/motortreiber/pololu-drv8825-stepper-motortreiber-carrier-high-current	3.29 €	3.29 €			Notes	
Actuators	Cytron MD 20A	1	1	20 A brushed DC driver	https://eu.robotshop.com/de/products/cytron-20a-6-30v-dc-motorsteuerung	23.80 €	23.80 €			1	
Actuators	Pololu DRV8876 QFN	1	1	1.1 A brushed DC driver	https://eu.robotshop.com/de/products/pololu-drv8876-qfn-einzeln-gebuerteter-dc-motortreibertrager	6.75 €	27.00 €				Original product not available any longer (link to replacement part)
Actuators	Sunfounder SF3218MG	1	1	1 servo motor	https://eu.robotshop.com/de/products/sunfounder-sf3218mg-metallgetriebe-digital-servo-20-kg-hohes-drehmoment	16.30 €	16.30 €				
Actuators	Joy-IT NEMA14-01	1	1	Nema 14 stepper motor	https://www.reichelt.de/schrittmotor-nema-14-1-8-0-4-a-8-v-nema14-01-p269220.html	17.70 €	17.70 €				
Actuators	775 12 V 10k rpm 150 W	1	1	775 brushed DC motor	https://www.amazon.de/dp/B078GWMYYM	13.99 €	13.99 €				
Actuators	5 mm flange shaft coupler	4	1	shaft adapter for 775 motor	https://www.amazon.de/dp/B0833PTFZM	9.99 €	9.99 €			2	
Batteries	SLS XTRON 5000MAH 351P	1	1	car battery	https://www.stefanslipshop.de/akkus/sls-xtron/sls-xtron-20c/sls-xtron-5000mah-3s1p-11-2v-20c-40c-985.html	51.90 €	51.90 €				They need to be pushed through bearings: double-check the tolerances!
Batteries	Duracell NiMH AA 2500 mAh	4	2	RC batteries	https://www.reichelt.de/nimh-akku-aa-mignon-2500-mah-4er-pack-dura-nimh-aa4-p357195.html	12.95 €	25.90 €				
Bearings	683ZZ	20	8	3x7x3	https://www.amazon.de/sourcing-map-Rillenkugellager-Doppelschild-Kohlenstoffstahl/dp/B07H5HXND9/	9.49 €	75.92 €				
Bearings	6802ZZ	10	4	15x24x5	https://www.amazon.de/XiKe-Kugellager-15x24x5mm-Abgedichtet-Rillenkugellager/dp/B095D74PZV/	11.59 €	46.36 €				
Bearings	6804ZZ	10	1	20x32x7	https://www.amazon.de/XiKe-Kugellager-20x32x7mm-Abgedichtet-Rillenkugellager/dp/B095D8RKTJ/	12.99 €	12.99 €				
Bearings	608ZZ	20	1	8x22x7	https://www.amazon.de/HonLena-Kugellager-Shielded-Rillenkugellager-Skateboard/dp/B08K936Y1Z/	9.99 €	9.99 €				
Bearings	605ZZ	10	1	5x14x5	https://www.amazon.de/sourcing-map-Rillenkugellager-5mmx14mmx5mm-Kohlenstoffstahl/dp/B07H936D3C/	7.99 €	7.99 €				
Bearings	LM6UU	10	1	6x12x19	https://www.amazon.de/DollaTek-6x12x19mm-Doppelseitige-Gummidichtung-Linear-Kugellager/dp/B081JNGFRY	7.99 €	7.99 €				
Connectors	Molex 16-02-0102	100	2	Molex SL female crimp pin	https://www.mouser.de/ProductDetail/Molex/16-02-0102?qs=UAYrm%2Fm%252BCjFwK7bqgtPw%3D%3D	9.00 €	18.00 €				
Connectors	Molex 16-02-0114	100	1	Molex SL male crimp pin	https://www.mouser.de/ProductDetail/Molex/16-02-0114?qs=UAYrm%2Fm%252BCjFwK7bqgtPw%3D%3D	14.80 €	14.80 €				
Connectors	Molex 70543-0001	10	2	Molex SL 2-pin socket	https://www.mouser.de/ProductDetail/Molex/70543-0001?qs=Yx%252BzC2nXqRtKxtMAO73sw%3D%3D	8.04 €	16.08 €				
Connectors	Molex 70543-0002	10	2	Molex SL 3-pin socket	https://www.mouser.de/ProductDetail/Molex/70543-0002?qs=Yx%252BzC2nXqRtKxtMAO73sw%3D%3D	8.80 €	17.60 €				
Connectors	Molex 70543-0003	10	2	Molex SL 4-pin socket	https://www.mouser.de/ProductDetail/Molex/70543-0003?qs=Yx%252BzC2nXqRtKxtMAO73sw%3D%3D	9.49 €	18.98 €				
Connectors	Molex 50-57-9402	10	3	Molex SL 2-pin female connector	https://www.mouser.de/ProductDetail/Molex/50-57-9402?qs=U6Gr9%2FN%252B%2F90k3bHh8UPA%3D%3D	1.94 €	5.82 €				
Connectors	Molex 50-57-9403	10	3	Molex SL 3-pin female connector	https://www.mouser.de/ProductDetail/Molex/50-57-9403?qs=U6Gr9%2FN%252B%2F90k3bHh8UPA%3D%3D	1.55 €	4.65 €				
Connectors	Molex 50-57-9404	10	3	Molex SL 4-pin female connector	https://www.mouser.de/ProductDetail/Molex/50-57-9404?qs=U6Gr9%2FN%252B%2F90k3bHh8UPA%3D%3D	1.58 €	4.74 €				
Connectors	Molex 70107-0001	10	1	Molex SL 2-pin male connector	https://www.mouser.de/ProductDetail/Molex/70107-0001?qs=3%2Fy1uQ6JznnzEDOV9OGA%3D%3D	3.18 €	3.18 €				
Connectors	Molex 70107-0002	10	1	Molex SL 3-pin male connector	https://www.mouser.de/ProductDetail/Molex/70107-0002?qs=3%2Fy1uQ6JznnzEDOV9OGA%3D%3D	4.33 €	4.33 €				
Connectors	Jamara XT60	1	1	M/F pair of high-current connectors	https://www.reichelt.de/steckverbinder-fuer-li-polymer-akkus-2-polig-xt60-hstxt60-stbu-p207648.html?&trstct=pos_0&nbcs=1	1.99 €	1.99 €				
Electronics	ESP32 MCU	2	1	with connector for external antenna	https://www.amazon.de/Haospace-ESP32-WROOM-32U-ESP32-DevKitC-Development-Entwicklungsboard/dp/B0C3B8H4J/	15.99 €	15.99 €			1	
Electronics	Antenna	2	1	external antenna for ESP32	https://www.amazon.de/2-4GHz-Omni-direktionale-Antenne-802-11n-Pigtail/dp/B07FDN82D8/	6.99 €	6.99 €				
Electronics	ESP32 MCU	1	1	with onboard antenna	https://funduishop.com/elektronische-module/wireless-iot/esp-wifi/funduino-esp32-wroom32-wlan-wifi-entwicklungsboard-mit-cp2102	9.07 €	9.07 €				
Electronics	1 W E10 LED (white)	5	1	4 are needed	https://www.amazon.de/Ruiandion-LED-Leuchtmittel-Taschenlampe-Scheinwerfer-Mini-Kopflampe/dp/B08V85B6LJ/	8.99 €	8.99 €				
Electronics	E10 LED socket	10	1	4 are needed	https://www.amazon.de/dp/B089ND3V9H/ref=pe_27091401_487027711_TE_SCE_dp_2	7.99 €	7.99 €				
Electronics	WS2812 RGB Strip (144 LEDs/m)	1 m	1	30 cm are needed	https://www.amazon.de/gp/product/B088IPL2PH/ref=ppx_yo_dt_b_asin_title_o01_s00?ie=UTF8&th=1	15.99 €	15.99 €				
Electronics	ACS712 30A	1	1	30 A version (66 mV/A)	https://funduishop.com/elektronische-module/sensoren/strom-spannung/acs712-stromstaerkesensor-30a	3.00 €	3.00 €				
Electronics	PCA9685	1	1	Servo controller board	https://funduishop.com/elektronische-module/elektromotoren-und-zubehoer/motortreiber/16-kanal-12bit-pwm-servomotor-treiber-ic-pca9685	8.85 €	8.85 €				
Electronics	ADS1115	1	3	ADC boards	https://www.amazon.de/Kompatibel-Analog-Digital-Wandler-ADC-Modul-Arduino-Raspberry/dp/B0C2Q3C781/	5.99 €	17.97 €			1	
Electronics	Bidirectional logic level shifter	1	1	5V <-> 3.3V	https://funduishop.com/bauelemente/aktive-bauelemente/transistoren/logic-level-converter-bidirektional-5v-zu-3-3v-und-3-3v-zu-5v-fuer-arduino	1.45 €	1.45 €				
Electronics	MCP23017	1	1	DIP-28, 12C	https://www.reichelt.de/i-o-erweiterung-16bit-1-8-5v-seriell-i2c-dip-28-mcp-23017-e-sp-p140074.html	1.80 €	1.80 €				
Electronics	MAR 1821.1101	1	2	Marquardt switch, series 1820	https://www.reichelt.de/kippschalter-6-4-a-250vac-1x-ein-aus-faston-mar-1821-1101-p36806.html	3.00 €	6.00 €				
Electronics	WIPPE 1801.6115	1	2	Marquardt on/off switch, series 1800	https://www.reichelt.de/wippschalter-1x-aus-schwarz-i-o-wippe-1801-6115-p108235.html	1.50 €	3.00 €				
Electronics	20x04 I2C LCD module	1	1	HD44780 with I2C adapter	https://funduishop.com/elektronische-module/displays/lcd/20x04-2004-i2c-lcd-modul-hintergrundbeleuchtung-blau	6.87 €	6.87 €				
Electronics	ONPOW anti-vandal push button	1	4	with LED, 16 mm mounting hole	https://www.pollin.de/p/onpow-vandalismusgeschuetzter-taster-220-v-ac-0-5-a-1-no-rot-421217	4.99 €	19.96 €				
Electronics	Battery holder	1	1	6xAA	https://funduishop.com/diy-werkstatt/stromversorgung/batteriefaecher-und-klemmen/batteriefach-6x-aa-9v-ohne-stecker	1.97 €	1.97 €				
Electronics	Omeg PC20BU 10k linear	1	5	Poti with 6 mm shaft	https://www.pollin.de/p/omeg-potentiometer-pc20bu-10-ko-linear-240663	1.90 €	9.50 €				
Electronics	Bourns 93R1AR2215L	1	2	High-quality poti with 6 mm shaft	https://www.reichelt.de/drehpotentiometer-10-kohm-linear-6-mm-bou-93r1ar22a15l-p232657.html	6.25 €	12.50 €			2	
Electronics	Panasonic AV 32543 AT	1	1	Limit switch	https://www.reichelt.de/snap-action-mikroschalter-1x-um-rollenhebel-av-32543-at-p191401.html	1.80 €	1.80 €				
Filament	PETG filament	1 kg	3	Prusament Jet Black	https://www.prusa3d.com/product/prusament-petg-jet-black-1kg/	29.99 €	89.97 €				
Filament	PETG filament	1 kg	1	Prusament Jungle Green	https://www.prusa3d.com/product/prusament-petg-jungle-green-1kg/	29.99 €	29.99 €				
Filament	TPU filament	500 g	2	FilaFlex 40 Black	https://fla-tech.store/product/filaflexible40/?currency=USD	29.98 €	59.96 €				
Magnets	Neodymium disc magnet (south)	10	1	8x3.5x3	https://www.magnethandel.de/neodym-ringmagnete-senkung-sued-8-35-3-mm-schwarz	2.90 €	2.90 €				
Magnets	Neodymium disc magnet (north)	10	1	8x3.5x3	https://www.magnethandel.de/neodym-ringmagnete-senkung-nord-8-35-3-mm-schwarz	2.90 €	2.90 €				
Metal bars	Aluminium round bar	1 m	3	6 mm diameter (not more than 6 mm)	local hardware store	4.00 €	12.00 €			2	
Metal bars	Steel round bar	1 m	1	3 mm diameter (not more than 3 mm)	local hardware store	10.00 €	10.00 €			2	
PCB parts	Gaptec LC78_05-2.0	1	1	5V 2A DC-DC converter	https://www.reichelt.de/dc-dc-wandler-6-5-30-vin-5-0-vout-2-a-sip-3-ic78-05-2-0-p242830.html?&trstct=pol_2&nbcs=1	13.30 €	13.30 €				
PCB parts	Gaptec LME78_03-1.0	1	2	3.3V 1A DC-DC converter	https://www.reichelt.de/dc-dc-wandler-3-w-3-3-v-1000-ma-to-220-lme78-03-1-0-p242852.html?&trstct=pol_78&nbcs=1	3.85 €	7.70 €				
PCB parts	Gaptec LME78_05-1.0	1	1	5V 1A DC-DC converter	https://www.reichelt.de/dc-dc-wandler-5-w-5-v-1000-ma-to-220-lme78-05-1-0-p242853.html?&search=lme78	3.85 €	3.85 €				
PCB parts	AKL 175-04	1	1	connector terminal, 4x, up to 4 mm²	https://www.reichelt.de/netzanschlussklemme-4-pol-4-mm-rm-7-5-akl-175-04-p27057.html?&trstct=pol_0&nbcs=1	1.20 €	1.20 €				
PCB parts	Quadrios resistor set	1	1	20x20 different resistors	https://www.pollin.de/p/quadrios-widerstands-set-201711p004-metallschicht-0-5-watt-1-800557	13.45 €	13.45 €				
PCB parts	Omron B3F-1002	1	3	PCB pushbutton	https://www.reichelt.de/kurzhubtaster-b3f-serie-1-no-24-v-dc-50-ma-omr-b3f-1002-p258312.html	0.29 €	0.87 €				
PCB parts	Vishay TLHG 4600	1	1	LED, green, 3 mm	https://www.reichelt.de/led-3-mm-bedrahtet-gruen-2-mcd-120-vis-thg-4600-p230866.html	0.49 €	0.49 €				
PCB parts	Panasonic FC 100/50	1	6	Radial Cap, 100 µF, 50 V, 5 mm spacing	https://www.reichelt.de/elko-radial-100-f-50-v-105-c-low-esr-10-x-12-5-mm-rm-5-0-rad-fc-100-50-p84620.html	0.22 €	1.32 €				
PCB parts	ECC KT5500B106K (X7R)	1	4	SMD Capacitor, 10 µF, 50 V, G2220	https://www.reichelt.de/smd-kerko-2220-10-f-50-v-10-mlcc-ecc-cts500b106k-p256486.html	0.99 €	3.96 €				
PCB parts	X7R-G1206 22/10	1	8	SMD Capacitor, 22 µF, 10 V, G1206	https://www.reichelt.de/smd-vielschichtkondensator-g1206-22-f-10-v-x7r-g1206-22-10-p89742.html	0.26 €	2.08 €				
PCB parts	WAL 0805B104K50										