

Scroll to see the links	reference ID	#un	url	comments	url	supplier 1 €/un	€	url	supplier 2 €/un	€	url	supplier 3 €/un	€	(supplier alternatives focused on the Portuguese market) (!!!always check different supplier alternatives for the same product / item!!!)
Original Hangfa Discovery Q2	DQ2	1	hangfa	only used the mechanical parts of the robot, all the electronics were rebuilt	hangfa-eu	N/A	N/A	ozrobotics	\$ 1,629.00	\$ 1,629.00	hangfa-cn	N/A	N/A	
Discovery Q2														
DC Motor Drivers														
Cytron 13A 5-30V Single DC Motor Driver	MD10CR3	4	cytron	(preferred) 10A should be more than ok for the motors, single channel facilitates the replacement of possible failed drivers	robotshop	€ 18.88	€ 75.52	botland	€ 14.90	€ 59.60	opencircuit	€ 19.95	€ 79.80	
Cytron 10A 5-30V Dual DC Motor Driver	MDD10A	2	cytron	(preferred alternative) dual channel drivers should be more cheap (only two required)	robotshop	€ 27.80	€ 55.60	botland	€ 26.50	€ 53.00	opencircuit	€ 32.95	€ 65.90	
Cytron 20A 6-30V Single DC Motor Driver	MD20A	4	cytron	-	robotshop	€ 24.83	€ 99.32	botland	€ 22.90	€ 91.60	opencircuit	€ 29.35	€ 117.40	
Cytron 20A 6-30V Dual DC Motor Driver	MDD20A	2	cytron	-	robotshop	€ 41.39	€ 82.78	botland	€ 38.50	€ 77.00	opencircuit	€ 43.70	€ 87.40	
Electronics Battery														
Tattu 10000mAh 11.1V 15C 3S LiPo	TAA10K3S15E5	1	gensace	(preferred) max. continuous discharge of 150A and a 10000mAh capacity should be appropriate for more than 1h of continuous usage of the platform (accounting for sensors and other electronic devices)	gensace	€ 103.36	€ 103.36	mercadorcx	€ 104.00	€ 104.00	rcinnovations	€ 93.99	€ 93.99	
Tattu 8000mAh 11.1V 15C 3S1P Lipo	TAA80003S15E5	1	gensace	-	gensace	€ 93.01	€ 93.01	mercadorcx	€ 88.00	€ 88.00	rcinnovations	€ 85.99	€ 85.99	
Gens ace 8000mAh 11.1V 100C3S Lipo	GEA8K3S100E5	1	gensace	-	gensace	€ 72.35	€ 72.35	smartmodelism	€ 74.94	€ 74.94	rcparts	€ 79.30	€ 79.30	
Electronics Battery Management System (BMS) Passive														
18650 BMS Charger 3S 12.6V 20A Rev. 2.0	-	1	botnroll	(preferred) peak current of 20A and continuous output of 10A, ok for the electronics part; if you power the SBC to the electronics battery, probably go for the 40A BMS	botnroll	€ 5.50	€ 5.50	ptrobotics	€ 5.04	€ 5.04	aliexpress	€ 0.49	€ 0.49	
18650 BMS Charger 3S 11.1-12.6V40A	-	1	botnroll	-	botnroll	€ 4.90	€ 4.90	ptrobotics	€ 6.64	€ 6.64	aliexpress	€ 3.69	€ 3.69	
DC/DC Buck Boost Converter (optional: only required to ensure DC regulated power to the 2D/3D LiDARs, ethernet switch and/or power the SBC)														
DC 5-30V to 1.25-30V 8A Buck Boost Converter	-	1	aliexpress	(optional)	aliexpress	€ 14.05	€ 14.05	aliexpress	€ 5.10	€ 5.10	-	-	-	
Microcontroller Board Circuit														
Arduino Mega 2560 Rev3	A000067	1	arduino	(required)	arduino	€ 51.62	€ 51.62	robertmauser	€ 42.90	€ 42.90	botnroll	€ 42.90	€ 42.90	
Arduino Mega Proto Shield Rev3 (PCB)	A000080	1	arduino	(required)	arduino	€ 6.35	€ 6.35	robertmauser	€ 6.40	€ 6.40	opencircuit	€ 5.90	€ 5.90	
Female header stackable 8 pin (10 un.)	-	1	opencircuit	(optional) allows to stack protoboard circuits on top of Arduino	opencircuit	€ 3.05	€ 3.05	-	-	-	-	-	-	
Female header stackable 10 pin (10 un.)	-	1	opencircuit	Mega and/or helps to have easy accessibility to PWM and encoders signals using an oscilloscope	opencircuit	€ 3.50	€ 3.50	-	-	-	-	-	-	
Female header stackable 2x18 pin (2 un.)	-	1	opencircuit	-	opencircuit	€ 3.20	€ 3.20	-	-	-	-	-	-	
IDC Header Straight 6-Way	-	8	-	(optional) although we used IDC connectors to make it compatible with the original cables, you may use other	robertmauser	€ 0.45	€ 3.60	rs	€ 0.66	€ 5.28	ptrobotics	€ 0.25	€ 2.00	
IDC Socket 6-Way	-	8	-	-	robertmauser	€ 0.53	€ 4.24	rs	€ 1.09	€ 8.72	ptrobotics	€ 0.49	€ 3.92	
Single Board Computer (SBC)														
LattePanda3 Delta	DFR0981	1	lattepanda	-	farnell	€ 220.62	€ 220.62	digikey	€ 265.66	€ 265.66	mouser	€ 265.05	€ 265.05	
Samsung 970 EVO Plus 250 GB PCIe NVMe M.2	MZ-V7S250BW	1	samsung	(optional) if you want to upgrade the 64GB storage (faster read and writing speeds, 64GB for data e.g.)	amazon-es	€ 48.21	€ 48.21	kuantokusta	€ 51.54	€ 51.54	-	-	-	
UGREEN USB 3.0 Hub with 4-Port	CM21950985	1	ugreen	(optional) increases #USB ports available (e.g., joystick, keyboard and/or mouse adapter, etc.)	amazon-es	€ 12.19	€ 12.19	kuantokusta	-	-	-	-	-	
Single Board Computer (SBC) Battery (optional: power SBC through USB C PD protocol; if not used, DC/DC buck-boost converter to have 11-15VDC)														
Powerbank Xiaomi Mi 50W 20000 mAh	PB200SZM	1	xiaomi	(preferred) 50W > minimum 24W, if 3A current consumption the 20000mAh allows for 6h+	amazon-es	€ 80.17	€ 80.17	kuantokusta	€ 50.46	€ 50.46	-	-	-	
UGREEN Nexode Powerbank 100W 20000mAh	-	1	ugreen	(not tested!)	amazon-es	€ 81.32	€ 81.32	ugreen	€ 69.99	€ 69.99	-	-	-	
Networking (optional: default network interfaces of the SBC may be ok for you)														
Bingfu Antena WiFi Dual Band RP-SMA 25cm U.FL IPX IPEX MHF4 M.2 NGFF Intel	BFN00525	1	bingfu	(optional) same Wi-Fi antennas as in F1TENTH	amazon-es	€ 12.19	€ 12.19	-	-	-	-	-	-	
Brainboxes 5 Port Unmanaged Ethernet Switch 10/100Mbps	SW-005	1	brainboxes	(optional) if you want to have multiple 2D/3D LiDARs communicating to the SBC (single ethernet port...)	farnell	€ 61.30	€ 61.30	digikey	€ 48.41	€ 48.41	mouser	€ 48.30	€ 48.30	
Brainboxes 5 Port Unmanaged Ethernet Switch 10/100/1000Mbps	SW-015	1	brainboxes	(optional) some 3D LiDAR may surpass the 100Mbps requirement (depending on the configuration)	farnell	€ 102.29	€ 102.29	digikey	€ 95.04	€ 95.04	mouser	€ 87.12	€ 87.12	
UGREEN RJ45 female coupler Gigabit Ethernet 1000Mbps	NW114 20390	1	ugreen	(optional) facilitates the connection of the Hokuyo UST-10LX (short Ethernet cable)	amazon-es	€ 3.66	€ 3.66	kuantokusta	€ 3.90	€ 3.90	-	-	-	
Miscellaneous														
XT30 Connector - Pair Male/Female	xt30	10	-	(optional) DC derivation bus to power the sensors	botnroll	€ 1.50	€ 15.00	digikey	€ 1.81	€ 18.10	aliexpress	€ 0.26	€ 2.60	
XT60 Connector - Pair Male/Female	xt60	5	-	(optional) connection from the inside to the exterior of the original Discovery Q2 metallic box	botnroll	€ 1.50	€ 7.50	digikey	€ 1.43	€ 7.15	aliexpress	€ 0.21	€ 1.05	
Terminal Blocks 10mm² VDE DIN EN 60998 - DIN EN 60999	096-9065	2	robertmauser	GND and Vcc (Vbattery or Vbms) buses	robertmauser	€ 2.17	€ 4.34	-	-	-	-	-	-	
Sensors (depends on your desired perception system! Here only put the ones tested with the modified platform)														
Inertial Measurement Units (IMUs)														
Xsens MTi-3 AHRS	MTi-3-5A-DK	1	xsens	-	mouser	€ 458.85	€ 458.85	digikey	€ 427.54	€ 427.54	farnell	€ 419.99	€ 419.99	
Xsens MTi-630 AHRS	MTi-630-DK	1	xsens	-	mouser	€ 1,054.50	€ 1,054.50	digikey	€ 1,086.38	€ 1,086.38	farnell	€ 1,034.00	€ 1,034.00	
2D Laser Scanners														
Hokuyo UST-10LX-X401/H402	UST-10LX	1	hokuyocsa	-	robotshop	€ 1,783.50	€ 1,783.50	generationrobo	€ 1,878.00	€ 1,878.00	-	-	-	
LDRobot D300Kit LD-19	D300	1	ldrobot	-	robotshop	€ 121.77	€ 121.77	amazon-es	€ 60.98	€ 60.98	dfrobot	\$ 119.00	\$ 119.00	
SLAMTEC RPLIDAR S2	S2	1	slamtec	-	robotshop	€ 471.88	€ 471.88	generationrobo	€ 536.64	€ 536.64	amazon-es	€ 405.59	€ 405.59	
YDLIDAR X4	X4	1	ydlidar	-	xiaor-geek	\$ 96.99	\$ 96.99	rlx	€ 128.17	€ 128.17	-	-	-	
3D Light Detection And Ranging (LiDAR)														
Livox Mid-360	mid-360	1	livox	-	livox	€ 659.00	€ 659.00	-	-	-	-	-	-	
Ouster OS1 64	os1-64	1	ouster	-	-	-	-	-	-	-	-	-	-	
RoboSense RS-HELIOS-5515	rs-helios-5515	1	robosense	-	robotshop	€ 5,166.00	€ 5,166.00	generationrobo	€ 4,742.40	€ 4,742.40	-	-	-	
Velodyne VLP-16	vlp-16	1	ouster	-	-	-	-	-	-	-	-	-	-	
RGB + Depth Cameras														
Intel RealSense D455	d455	1	intel	-	mouser	€ 439.66	€ 439.66	digikey	€ 423.73	€ 423.73	rs	€ 676.78	€ 676.78	
Intel RealSense L515	l515	1	intel	-	digikey	€ 595.13	€ 595.13	-	-	-	-	-	-	
OAK-D Pro Fixed Focus	A00565	1	luxonis	-	luxonis	\$ 349.00	\$ 349.00	mouser	€ 331.55	€ 331.55	digikey	€ 490.82	€ 490.82	