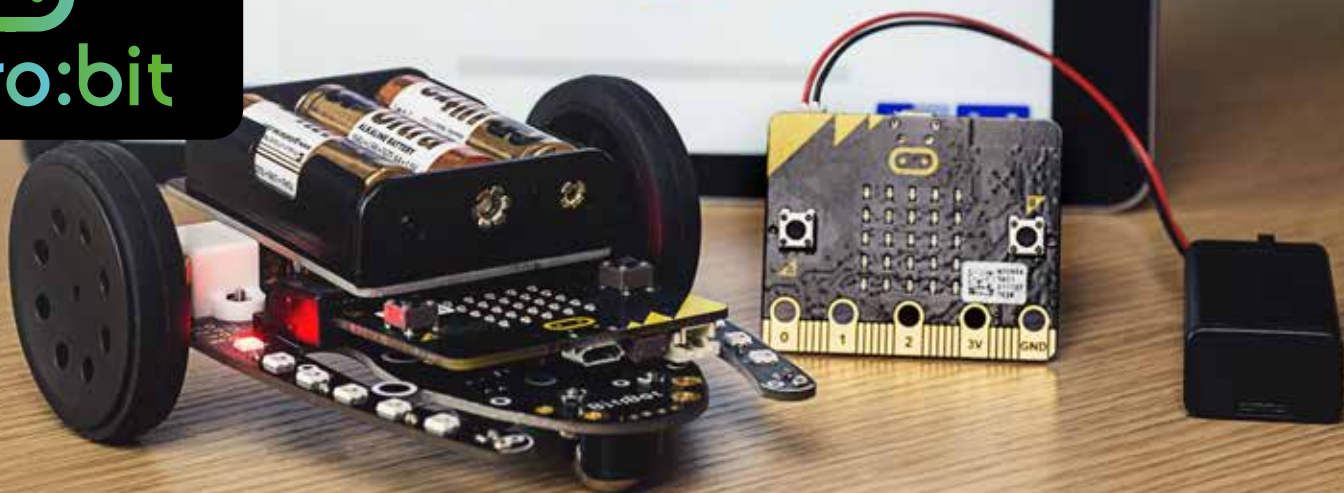


Robotics

Accelerometers & Compass Sensors	78	Motor Accessories	86	VEX IQ	68
Cue	64	Motors & Gearboxes	82	VEX IQ Accessories	72
Dash & Dot	58	Ozobot	66	VEX IQ Classroom Bundles	72
GPS Modules	79	Raspberry Pi Robots	55	VEX V5	74
Gyro Sensors	79	Robot Arms	77	Wooden Robotic Kits	81
Micro:bit Robots	54	Robot Chassis	77	Wonder Workshop	58
Line Follower Sensors	79	Sensor Robots	80		
LEGO®	76	SoftBank Robotics	65		
Makeblock	56	Servos	81		

Full range of Robotic products available at:

www.rapidonline.com



BIT:BOT

The Bit:Bot Robot is a feature-packed little robot that is almost ready to use, requiring no soldering, no wires and nothing more than a screwdriver to complete it. Plug your micro:bit into the connector on the robot, add three AA batteries and you are good to go.

Batteries and micro:bit sold separately

- 2x motors
- Super-smooth metal ball front caster
- 12x neopixel LEDs
- 2x line following sensors
- 2x analogue light sensors
- Sounder for making beeps wherever you go!
- Expansion connections for adding the Ultrasonic Distance Sensor

4tronix

£29.75

Order code 75-0117

Bit:Bot can be programmed using whichever micro:bit programming language you prefer. For beginners we recommend using the MakeCode block editor which has specific extensions for Bit:Bot programming www.microbit.org/code.

Here are a couple of fun little projects to get you started with your Bit:Bot.

Visit www.rapidonline.com/bitbot for detailed explanations and to download sample programs

REMOTE CONTROL BIT:BOT

A neat feature of micro:bit is the ability to send messages from one micro:bit to another. A practical use for this is as a remote control – accelerometer and button data is sent from one micro:bit and received by the one on the Bit:Bot where it is used to control the motors.

For this project you will need:

- A Bit:Bot and 3x AA batteries
- 2x micro:bits
- A micro:bit AAA battery box and 2x AAA batteries



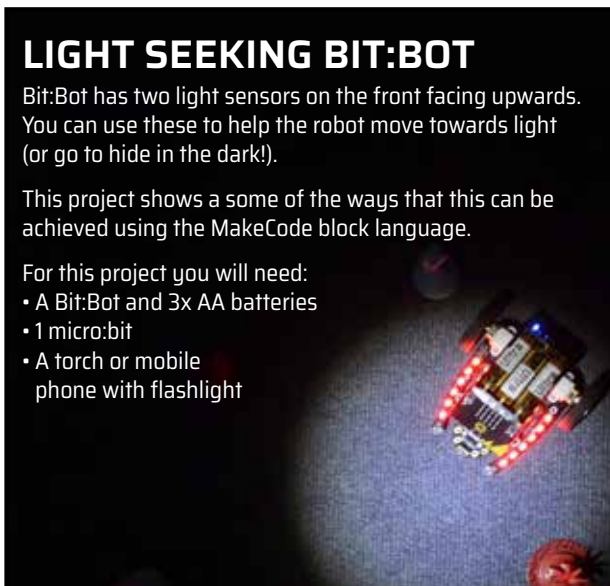
LIGHT SEEKING BIT:BOT

Bit:Bot has two light sensors on the front facing upwards. You can use these to help the robot move towards light (or go to hide in the dark!).

This project shows a some of the ways that this can be achieved using the MakeCode block language.

For this project you will need:

- A Bit:Bot and 3x AA batteries
- 1 micro:bit
- A torch or mobile phone with flashlight



PROJECT IDEAS

micro:bit Robots



Bit:Bot XL Robot for BBC micro:bit with Addressable LEDs



Introducing BitBot XL, taking the much-loved BitBot to the next level. There are several changes, some subtle, some not so subtle, to give a much-improved experience of using and working with the BitBot.

The Microsoft Makecode Extension for Bit:Bot also works for BitBot XL. Go to the Advanced tab or the Tools gear icon and select Extensions, then search for BitBot. It can automatically detect while running which version you have, or you can force it to be the Classic BitBot or the new XL.

- Dimensions: approx 10% larger in length and width
- Chunky wheels
- Ready assembled with battery pack permanently attached
- Motor gearboxes fully covered to minimise fluff, etc., in the gears
- Microbit mounted vertically
- Uses standard breakout connector for ultrasonic breakout buttons - removes all Bluetooth pairing issues and allows use of buttons in your code
- Line sensors no longer share pins with the Microbit
- Indicator LEDs added for line follower sensors
- 2 GVS outputs provided for potential servo usage with 5V power
- Makecode extension has been changed so code is compatible with both Classic and XL versions
- Buzzer now connected on Pin 0 so you can play music through it

Plus it still retains all these features from the classic BitBot:

- 2 micro-metal gear motors, both fully controllable in software, for both speed and direction
- Wheels with rubber tyres for maximum grip
- Front ball caster
- 12 smart RGB LEDs in 2 sets of 6 along the arms either side - select any colour for any pixel to produce stunning lighting effects as your Bit:Bot XL moves around
- 2 digital line following sensors - code your own line-following robots and race them to see whose code gets the fastest lap time!
- 2 analogue light sensors allow your Bit:Bot XL to be programmed to follow a light source such as a torch, or you could code it to go and hide in the darkest place it can find
- Buzzer - make beeping sounds or music whenever you want
- Powered from integrated 3x AA battery holder with on/off switch and blue indicator LED
- Easily plug your BBC micro:bit in and out using the vertical edge connector
- Expansion connections at the front for accessories
- Two GVS connectors with 5V for servos (shared with light sensors)

Notes. BBC Micro:Bit is not included - please see **75-0115**. Batteries, pen and ultrasonic sensor are sold separately - not included.

Type	Order code	1+
Robot only	N 75-5019	34.90
Robot + bundle	N 75-0299	36.95



4tronix Bit:Bot and Bit:Bot XL Robots for BBC micro:bit



The **Bit:Bot** Robot is a feature-packed little robot that is almost ready to go, requiring no soldering, no wires and nothing more than a screwdriver to complete it.

The Bit:Bot turns your micro:bit from a stand-alone programmable computer to an awesome mobile robot allowing you to explore and code the **BBC micro:bit** using any of the languages available.

The Bit:Bot is powered by 3x AA batteries which are also used to power your micro:bit so the original micro:bit battery holder is not needed. The micro:bit itself is easily plugged in and removed using the edge connector on the top of the robot.

Two versions of the optional Ultrasonic Distance Sensor are available. The removable version unplugs easily from its socket to aid access to the micro:bit download port. The soldered version is more stable and robust, but you may need a right-angled USB download cable to download a program with the sensor in situ.

Batteries and micro:bit sold separately.

Also available are a range of accessories designed to complement the Bit:Bot.

There is a **pen holder** available that is designed for use with either the Bit:Bot or CrumbleBot. The nifty little, and extremely thin PCB allows you to connect a pin to the back of your robot, and because the PCB is so thin it is very flexible, ensuring that it can exert downward pressure on the pen without lifting the robot off the ground. A rubber grommet with a 10mm internal diameter accepts Sharpie-type pens and the pen holder is easily fitted onto the battery support pillar of the robot. There are two versions, with or without a ring of 8x bright white LEDs that enhance the looks and shine light onto where the pen is writing.

The **Talon Grabber** has a jaw that you can control the opening of using standard servo code, as well as the specific code added to the Bit:Bot package.

- 2x micro-metal gear motors which can be controlled with both speed and direction
- Wheels with rubber tyres for maximum grip
- Super-smooth metal ball front caster
- 12x neopixel LEDs - select any colour for any pixel to produce stunning lighting effects as your Bit:Bot moves around
- 2x line following sensors - code your own line-following robots and race them to see which programmer can produce the fastest lap!
- 2x analogue light sensors so your Bit:Bot can be programmed to follow a light source such as a torch or hide in the darkest place it can find
- Sounder for making beeps wherever you go!
- Extension port for adding more neopixel LEDs

- Expansion connections at the front for adding the optional Ultrasonic Distance Sensor
- Pen holder and talon grabber also available

Type	Order code	1+
Bit:Bot Robot	75-0117	29.75
Bit:Bot XL Robot	N 75-5019	34.90
Bit:Bot XL Bundle	N 75-0299	36.95
Socketed ultrasonic	75-0121	3.71
Soldered ultrasonic	75-0119	3.71
Talon/grabber	75-5007	10.00
Pen holder Mk2	N 75-5015	2.50

565004

Raspberry Pi Robots



Ultimate Initio 4WD Robot Platform for Raspberry Pi with RoboHAT



The **Ultimate Initio** is a 4WD robot platform that is ideal for use with **Raspberry Pi** single board computer. The platform is a doddle to assemble and easy to use and comes with the RoboHAT robotics board and an assembled 2DOF pan-tilt servo assembly, as well as a number of other sensors that make this platform extremely flexible and perfect for a wide range of projects.

The main chassis comes pre-built, with the wheels, motors, gearboxes, battery box, wheel sensors all in place. The powerful 170-size motor is coupled to a high-quality gearbox and there are built-in speed encoders on each side. Each wheel can be individually decoupled from the gearbox so you can run the robot in 1WD, 2WD or 3WD modes if you want.

Kit contents:

- Main Initio chassis (with wheels, motors, gearboxes, battery box, wheel sensors, screws and all mountings)
- **RoboHAT** Robotics Controller Board **75-0824**
- Pan-Tilt 2DOF assembly with servos (ready assembled)
- 2x IR Obstacle sensors
- 2x IR Line sensors
- 1x Ultrasonic sensor
- All connecting cables as required for above items
- Build instructions and example code can be found on the **4tronix** website.

- Ideal for line following projects
- 6-cell battery box with switch (batteries not supplied)
- No soldering or gluing required
- Wiring already assembled
- Fixings for replacement stepper motors (not included)
- Injection moulded from tough ABS
- Includes mountings for additional boards and sensors
- Wheel size ø55 x 28mm
- Chassis size 180 x 120 x 93mm
- Height of top plate with wheels attached 110mm

Note: Raspberry Pi not included. **Note:** Batteries not included.

Type	Order code	1+
Ultimate Initio	75-0282	97.02

565225

Makeblock

makeblock

P1030024 Codey Rocky Programmable Robot

What is Codey Rocky?

The **MakeBlock Codey Rocky** is a coding robot for STEAM education. Codey provides an entertaining learning experience and introduction to programming for ages 6+. With the combination of easy-to-use robotics hardware together with **mBlock 5** block-based programming, you'll be up and coding within minutes.



Codey Rocky features an innovative 2 in 1 design structure:

Brainy Codey

Codey is the brains of the outfit, having over 10 programmable electronic modules that produce enough data for a host of applications.

Agile Rocky

Getting around is what Rocky loves best. Not only will Rocky swirl and follow lines, it will also navigate around obstacles, and you will have programmed Codey Rocky to do it.

The robot has a host of electronic modules, including a sound sensor, light sensor and an LED dot matrix display. You'll be able to code Codey Rocky to play music, follow lights, mimic facial expressions and a whole lot more. With some easy coding you'll be able to turn imagination into reality and enhance your skills, ability and confidence while you're doing it.

- IR Transmitter/Receiver: communicate with other robots and allows infrared remote control of electrical appliances
- Gear Knob: adjusts volume and variables
- LED Display: shows various patterns and RGB lighting effects
- 6-axis Gyroscope: detects tilts, shakes and turn angles, useful in designing somatosensory tricks which require tilts and shakes
- RGB LED Indicator: can be programmed freely, making Codey Rocky even more fun and expressive
- Voice sensor: detects ambient and motion sound levels
- Light sensor: detects the level of ambient light
- Buttons: all programmable for customisation
- Colour Infrared Sensor: detects colours, avoids obstacles, calculates distance and enables cruising

How do I do all this?

Well, at the heart of Codey Rocky is the **mBlock** software.

You harness the power and ease of this intuitive graphical programming software which makes programming simple and fun. By dragging and dropping building blocks on a flowchart-like interface you can set every movement that the robot makes. With one click you can even turn your block-based program into Python code so you can continue to learn and advance your programming skills.

With its built-in Wi-Fi, Codey Rocky can quickly connect to the cloud, opening up a new world of IoT functionality. Why not obtain weather data and use Codey Rocky to make forecasts? You can even make Codey Rocky into a wearable device.

Codey Rocky robot, of course, comes with loads of learning materials, helping to give you the professional guidance you need. There are example programs and tutorials that are constantly being updated and cover entry, intermediate and advance level projects.

Included with the kit is:

- 1 x; Codey
- 1 x Rocky
- 1 x Lanyard
- 1 x Micro USB data cable
- 8 x Codey Rocky colour card
- 1 x Name Sticker

Further information can be found at online by clicking on the following links:

Documentation
Quick Start Guide
Rocky Coding Guide

- Set your imagination free and unshackle your creativity with Codey Rocky!
- mBlock software
- Software learning + hardware creation
- Create dot matrix animations, design games, realise AI and IoT applications
- Programming as simple as playing blocks
- Switch to Python with one click for advanced programming learning
- AI ready with cutting-edge technology
- Program like building blocks
- Easy to start creating simple projects
- Low-entry for beginners to learn AI; fun with IoT, seize the future ahead
- Compatible with Makeblock Neuron
- Have fun with 10+ programmable sensors

Technical specification

Main control chip	ESP32
Transmission	Wi-Fi / Bluetooth / USB
Control platform	MacOS/Windows/Linux/Chrome OS/iOS
Battery	Lithium battery: 3.7V 950mAh
Sensors	Codey: LED matrix screen, loudspeaker, RGB light, buttons, gear potentiometer, sound sensor, light sensor, gyroscope and accelerometer, IR transmitter, IR receiver, volume sensor Rocky: IR color sensor, DC geared motor

Material

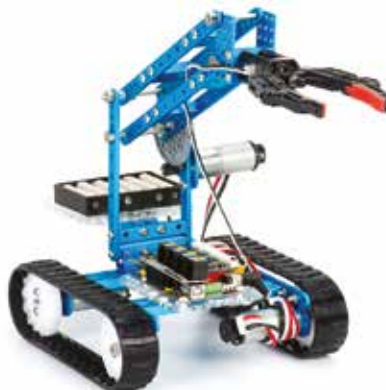
Supported programming language: Graphical programming: Scratch 3.0
Text programming: Python

Type	Order code	1+
Codey Rocky	75-0516	75.00
Class bundle of 10	75-0519	649.99

567266

makeblock

Arduino Compatible Ultimate Robot 10 in 1 Kit



The **Ultimate 10 in 1 robot kit from Makeblock** is the flagship of the Makeblock range with more parts, more possibilities and more fun. At the heart of the kit is the MegaPi robotics controller which is based on the popular Arduino Mega 2560 but with additional motor driver interfaces. With dedicated motor power inputs the MegaPi can drive up to 10 x servos plus 8 x DC motors or 4 x stepper motors simultaneously with a maximum output current of up to 10A. You can program it using the mBlock graphical programming tool or as you get more confident, graduate to C/C++ using the Arduino IDE. If you have a Raspberry Pi, it can function as the brains of your robot while the MegaPi handles the low level details opening up whole new area for creativity and exploration. It also supports a Bluetooth adaptor for wireless remote control from your Apple iPad (v3 or better) or Android (v4 or better) tablet.

With over 160 pieces, the Ultimate kit has plenty for you to work with including a gripper, 3 x DC motors, a phone mount, plus a wealth of beams, plates and brackets to build a large model. The major mechanical parts are made from beautiful anodised 6061 aluminium giving your robot a professional, hi-tech look as well as being very sturdy. The free Makeblock

tutorial page walks you through creating the 10 x different robots, by which time you'll be a robotics expert and ready to strike out on your own. You can build a tank with a robotic arm, a mobile drinks pourer, a camera dolly, two types of 360° rotating photography platforms, a self balancing robot, a 6-legged crawler, a rolling tank, a detecting robot, and a catapult ram.

New to mBlock/Scratch? mBlock is a graphical programming system based on Scratch where you drag and drop functional blocks from a palette onto a work area to create a program. Each shape has a different function and they snap together in logical ways, some even have slots to drop in other blocks. For example, a block might order the robot to run forward at speed 50 where the direction and speed are chosen from simple drop down menus. This drag and drop interface allows quite young children to get creative with the mBot yet is capable of programming complex behaviours.

Supplied with 1 x MegaPi, 1 x MegaPi shield for RJ25, 1 x Bluetooth module, 4 x motor drivers, 3 x encoder motors, 1 x ultrasonic sensor, 1 x line follower sensor, 1 x 3-axis accelerometer and gyro sensor, 1 x RJ25 adaptor, 1 x electronic shutter release, 1 x Makeblock gripper, 1 x 360° mobile phone bracket, 1 x battery holder (for 6 x AA batteries, not supplied) plus aluminium beams, plates and brackets, plastic timing pulleys, plastic gears, tracks and wheels, cables, nuts and bolts, and other hardware and accessories.

Please note that the Raspberry Pi, Pi camera, smartphone, DSLR camera and toy props are shown for illustration purposes and are not supplied.

- 10 robots in 1 kit
- Arduino compatible robot controller
- Range of free programming tools from novice to advanced
- Free tutorial online to help get you started
- Wireless programming via Bluetooth
- Complete kit, just add batteries

Type	Order code	1+
Ultimate robot kit	75-0695	218.90

563845

makeblock

mBot Ranger Arduino Compatible STEM 3-in-1 Robot Kit



The **mBot Ranger 3 in 1 from Makeblock** is an intermediate robotics kit for STEM or personal use. It is based around the Me Auriga programmable module with Arduino Mega 2560 compatibility which brings with it excellent online educational and tutorial resources. The Me Auriga has a wide range of programming options from novice to expert using free Open Source tools including mBlock, a graphical Scratch-like programming tool, all the way up to C/C++ using the Arduino development tools. You will be able to use the kit's range of sensors including an ultrasonic range finder, LED line follower, microphone, temperature sensor, light sensor and a 6-axis accelerometer/gyroscope. It also has a buzzer and 12 x RGB LEDs so your creation can flash and bleep messages to you.

To compliment the electronics, the Ranger kit contains all the parts you'll need (down to the last screw) to build 3 x very different robots; the tracked off-road tank, a fast trike and a fascinating self-balancing two-wheeler. The major parts are made from beautiful anodised aluminium giving your robot a professional, hi-tech look. Using the simple, step by step instructions and tools provided the kit should be ready for programming in no time. Take it for a test drive without any programming by pairing it over Bluetooth to your Apple or Android smartphone or tablet using the mBot app from the App Store or Google Play.

Programming your new gadget is where the adventure really begins. Jump into programming using the free mBlock program on your Windows or Mac PC and the supplied USB cable. Alternatively, use the Makeblock HD app on your iPad (v3 or better) or Android tablet (v4 or better) with a Bluetooth connection to read data from the sensors, control the robot and write programs using mBlock. When you start to feel more confident you can program the Arduino compatible Me Auriga using the Arduino IDE in C/C++.

New to mBlock/Scratch? mBlock is a graphical programming system based on Scratch where you drag and drop functional blocks from a palette onto a work area to create a program. Each shape has a different function and they snap together in logical ways, some have slots to drop in other blocks. For example, a block might order the robot to run forward at speed 50 where the direction and speed are chosen from simple drop down menus. This drag and drop interface allows quite young children to get creative with the Ranger yet is capable of programming complex behaviours.

Supplied with a printed instruction sheet, printed line-follower track, the Me Auriga Arduino compatible controller, 2 x DC encoder motors, Bluetooth module, Me Line Follower module and cable, Me Ultrasonic sensor, Makeblock beams and plates, wheels and tracks, screws and nuts, screwdriver, spanner, USB cable, and battery holder (requires 6 x AA batteries, not supplied). Makeblock provide a free tutorial to help you get the most out of this great kit.

- Build 3 x different robots from one kit
- Simple to build and program
- Range of free programming tools from beginner to advanced
- Ideal for STEM applications
- Drive the mBot Ranger from your smartphone
- Complete kit, just add batteries
- Bluetooth v4.0 or better is required for PC or Mac connectivity

Type	Order code	1+
mBot Ranger	75-0699	114.90

makeblock

mBot Arduino Compatible STEM Robot Kits with Bluetooth or 2.4GHz



The **mBot from Makeblock** is the perfect introduction to robotics for STEM or personal use. It is based around the mCore programmable module with Arduino UNO compatibility which brings with it excellent online educational and tutorial resources. The mCore has a wide range of programming options from novice to expert using free Open Source tools including mBlock, a graphical Scratch-like programming tool, all the way up to C/C++ using the Arduino development tools. You will be able use the kit's range of sensors including an ultrasonic range finder, LED line follower, and light sensor. It also has a buzzer and an RGB LED so your creation can flash and bleep messages to you. Finally, there's an infrared receiver and transmitter that you can use to control the bot using the remote control included in the kit (requires 1 x CR2025 coin cell, not supplied). The infrared can even be used to talk between mBots if you are feeling ambitious.

To complement the electronics, the mBot kit contains all the parts you'll need to build your first bot, down to the last screw. The major parts are made from beautiful anodised aluminium giving your robot a professional, hi-tech look. Using the simple, step by step instructions and tools provided, the kit should be ready for programming in less than 20 minutes.

Programming your new gadget is where the adventure really begins. Jump into programming using the free mBlock software on your Windows or Mac PC and the supplied USB cable. When you start to feel more confident you can program the Arduino compatible mCore using the Arduino IDE in C/C++. The **Bluetooth kit (75-0702)** has a range of programming and control options by pairing with Apple or Android smartphones and tablets including an mBot app, Makeblock HD and mBlocky (Apple only). The **2.4GHz kit (75-0701)** uses a wireless virtual USB connection (like a wireless mouse) so that you can program the mBot from the other side of the room as if it was plugged directly into your computer.

Once you've mastered the challenge of building and programming your mBot and you want a new adventure it's time to try some of the cool add-ons from Makeblock. Use the **6-legged add-on kit (75-0705)** with parts from the mBot kit and learn about levers and linkages while building a creepy crawly beetle. Alternatively, enhance the character of your creation with the mBlock compatible **Me 8x16 Blue LED Matrix (75-0707)** for simple animations or text.

Perhaps you could have your mBot scan its environment by mounting its ultrasonic range finder on the **Servo Pack add-on (75-0704)**, or give it a home-made flag to wave. The servo add-on gives you extra options for movement with your mBot.

New to mBlock/Scratch? mBlock programming system based on Scratch where you drag and drop functional blocks from a palette onto a work area to create a program. Each shape has a different function and they snap together in logical ways, some even have slots to drop in other blocks. For example, a block might order the robot to run forward at speed 50 where the direction and speed are chosen from simple drop down menus. This drag and drop interface allows quite young children to get creative with the mBot yet is capable of programming complex behaviours.

Supplied with a printed instruction sheet, printed line-follower track, the mBot Arduino compatible controller, 2 x DC motors, Me Line Follower module and cable, Me Ultrasonic sensor, chassis, wheels and all screws, screwdriver, USB cable, battery holder (requires 4 x AA batteries, not supplied) and an infrared remote control (requires 1 x CR2025 coin cell, not supplied). The Bluetooth and 2.4GHz versions are supplied with their respective modules. The 2mm thick aluminium chassis is attractive and strong, but better yet it's **compatible with Lego Technic** parts. Whether you have one mBot or an army there's plenty of opportunities to problem solve and learn new skills.

- Simple to build and program
- Range of free programming tools from beginner to advanced
- Ideal for STEM applications

- Wireless programming via 2.4GHz USB link or Bluetooth
- Complete kit, just add batteries
- Dimensions 170 x 90 x 90mm assembled
- Weighs 340g

Type	Order code	1+
mBot v1.1 2.4GHz	75-0701	81.17
mBot v1.1 Bluetooth	75-0702	63.70
mBot Servo add-on	75-0704	14.90
mBot 6-legged add-on	75-0705	14.90
mBot LED matrix 8x16	75-0707	9.05

makeblock

Robot Grippers



These grippers from **Makeblock** let your robot grab and carry objects giving you a new dimension of robot building to explore.

The **Mini-gripper** is perfect for getting a grip on lightweight objects. The gripper is made from acrylic and powered by a 9g servo to grab and carry small items such as ping-pong balls, plastic cups, Makeblock parts etc. The **Me RJ25 (75-0712)** adaptor is required to connect the Mini Gripper to the main board of any of the Makeblock robots.

The **Robot Gripper** is for getting a dealing with bigger objects than the mini-gripper can. The gripper is made from lightweight PVC and powered by an N20 screw motor which is protected by a thermal overload fuse. Suitable for the mBot (**75-0701** or **75-0702**) and mBot Ranger (**75-0699**). The **Me Dual DC Motor Driver adaptor (75-0713)** is required to connect the gripper to the mBot's main board.

Mini gripper:

- Accepts items between 22 and 60mm
- Accepts items up to 60g
- Requires an Me RJ25 adaptor (**75-0712**), not supplied
- Operating voltage 5 to 12V DC

Robot gripper:

- Non-slip covering for safety
- Accepts items up to 65mm
- Accepts items up to 1.5kg
- Requires an Me Dual DC Motor Driver (**75-0713**), not supplied
- Operating voltage 12V DC

Type	Order code	1+
Mini-gripper	75-0706	14.48
Robot gripper	75-0703	27.18
RJ25 adaptor	75-0712	2.64
Dual DC motor driver	75-0713	16.58



VEX IQ

VEX IQ Super Kit

Only

£269.99

Order code 70-7891

See page 68

Dash and Dot



Dash and Dot are the coolest, cutest robots around and they are on a mission to help teach KS1 and KS2 aged children. Both robots are feature-packed and can be programmed with Android, iOS, Kindle and Chromebook devices. They come ready-assembled and require almost no set up. They even have built-in rechargeable batteries so getting going couldn't be easier.



Why use Dash and Dot in your primary school?

Dash, Dot and the apps that support them have been specifically designed for use in primary education. We appreciate that one of the biggest concerns with any school investing in Ed Tech products is cost, so if you are going to invest in hardware for use in your classrooms you need to be sure that you are going to get value for money. The best way to do this is to make a device that delivers learning outcomes across the school for children of all ages.



Dash and Dot
Challenge Card Set

£22.99

Order code
70-1107



Learn to Code
Curriculum Guide and
Library Subscription

£109.99

Order code
70-1109



Gripper
Building Kit

£28.99

Order code
70-1114



Sketch Kit

£33.30

Order code
70-1110

A blue, rounded robot with a large circular head featuring a single eye with a black pupil and white teeth. It has a black sensor on its forehead and two large, rounded, blue body sections with black wheels.

£134.99

Order code
70-1100

A smaller, rounded blue robot with a large circular head featuring a single eye with a black pupil and white teeth. It has a black sensor on its forehead and four small, rounded, blue legs.

£44.99

Order code
70-1101

Dash

Dot

So who are Dash and Dot anyway?

Dash is a ready-assembled robot that requires almost no set up and it even has a built-in rechargeable battery so getting going couldn't be easier. But whilst it is easy to use and set up, Dash is a really smart robot that is packed with features and sensors - it can drive around, move its head, detect objects around it, identify which direction a sound is coming from, record and playback sounds and communicate with other Dash and Dot robots.

Dot is Dash's companion and is the brains without the brawn! Whilst Dot doesn't have wheels to make it move, it has loads of cool sensors and can interact with Dash as well as being used as a stand-alone device. Dot can hear sound, light up any colour you like, know when and how it is being moved and communicate with Dash.

You can build structures using LEGO® parts on both Dash and Dot by using the Building Brick Adaptors which are included with all Dash robots or available separately.



Markers Refill Kit
Pack of 6

£11.45

Order code
70-1121



Xylophone for
Dash Robot

£29.99

Order code
70-1103



Launcher for
Dash Robot

£20.99

Order code
70-1102



Dash and Dot
Accessory Pack

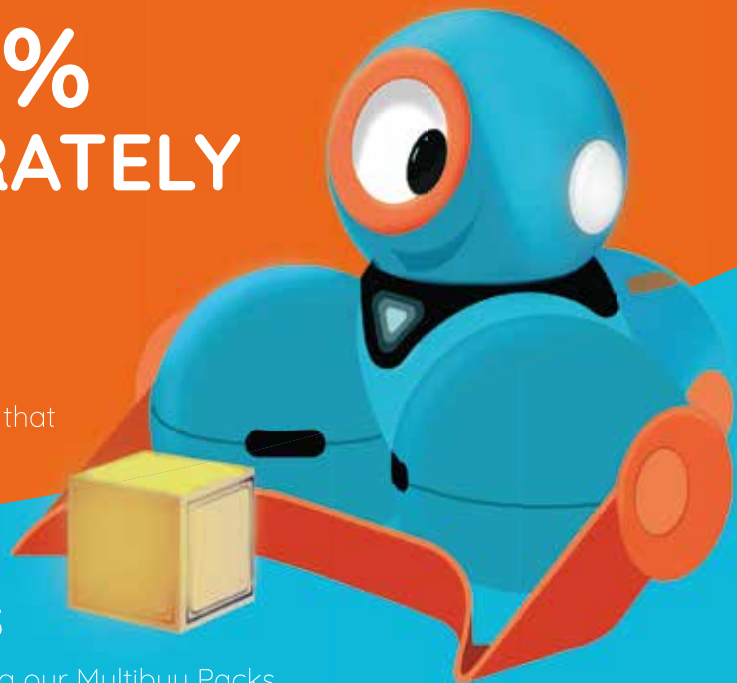
£29.99

Order code
70-1106

SAVE UP TO 25% OVER BUYING SEPARATELY

with our Wonder
Workshop bundles

Our money-saving bundles are perfect for schools or clubs that are looking for the most cost effective and comprehensive way to implement robotics.



Dash Robot Multibuy Packs

If you need multiple Dash robots, get the best value by using our Multibuy Packs

SAVE
6%



x6

6x Dash Robot
Multibuy Pack

£759.00

Order code
70-1115

SAVE
8%



x12

12x Dash Robot
Multibuy Pack

£1,485.00

Order code
70-1116



SAVE
25%

Wonder Pack

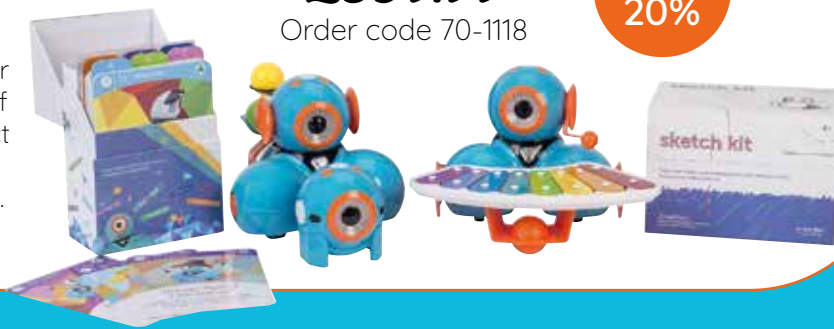
The Wonder Pack is a bundle containing both Dash and Dot robots as well as a whole host of accessories - the Xylophone, Launcher, Accessory Pack and Building Brick Connectors are all included. Ideal for those wanting to work with small groups.

£195.00

Order code 70-1104

Code Club Bundle

This bundle takes all the advantages of the Wonder Pack and adds another Dash robot, the Sketch Kit and a set of Challenge Cards which make it perfect for after school club use or as a way of expanding your computing lessons.



£359.99

Order code 70-1118

SAVE
20%

£1,800.00

Order code 70-1120

SAVE
10%

Wonder Workshop Class Bundle

Perfect for full classes working together in small groups of 2 or 3 students. This bundle contains robots, teaching materials and some of the most popular accessories.



Quantity	Description
10	Dash robot
10	Challenge Card set
5	Sketch Kit
5	Gripper Kit
1	Learn to Code Curriculum Guide

Class Bundles

Class bundles contain robots, accessories and teaching materials giving you everything that you need to deliver exciting lessons using Wonder Workshop robots and providing a saving over purchasing separately.



Wonder Workshop Ultimate Bundle

Our Ultimate bundle packs in both Dash and Dot robots, a wide range of accessories and teaching materials too. In smaller classes, students will be able to work with one robot each. In larger classes, there is still enough hardware for children to work in pairs.

SAVE
13%

Quantity	Description
15	Dash robot
5	Dot robot
5	Challenge Card set
15	Sketch Kit
5	Launcher Kit
5	Gripper Kit
5	Xylophone
5	Learn to Code Curriculum Guide



£2,689.00

Order code 70-1117

The Dash and Dot apps

Dash and Dot apps are available on iOS, Android and Kindle. Download them for free via your device's app store. Please note that Go! is not available on Kindle.

Go!

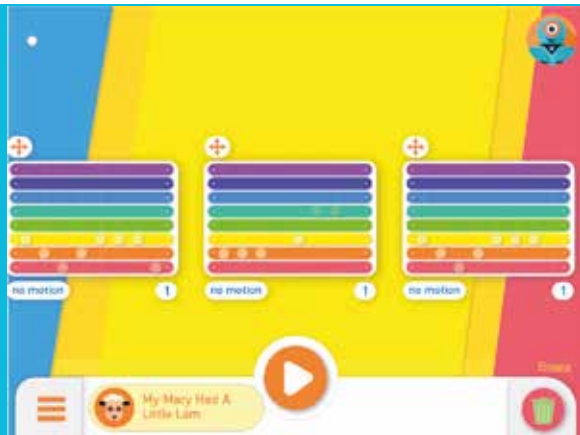
This app is for your youngest kids from reception class upwards.

Go! acts as a remote control for Dash.

- Drive the robot around using the on-screen joystick (top speed can be limited using the slider)
- Move the head to make Dash look around
- Create patterns by controlling which of Dash's 12 LED eye segments are illuminated.
- Independently change the colour of the ear and chest LEDs and experiment with different ways of making them flash
- Get Dash to play a number of pre-recorded sounds
- Record your voice into the microphone on the tablet device and play it back through Dash as a way of making Dash talk

What is Go! good for?

- Developing a child's fine motor skills
- Spatial awareness
- Acting out stories and characters
- Understanding sound and light



Xylo (All ages)

Xylo is designed to be used specifically with the **Dash Xylophone accessory**. This accessory is available separately or is included as part of the **Wonder Pack**.

Xylo introduces children to both programming and music by allowing them to create visual sequences of notes which Dash can then play on the Xylophone.

What is Xylo good for?

- Algorithm design
- Command sequences and control flow
- Loops

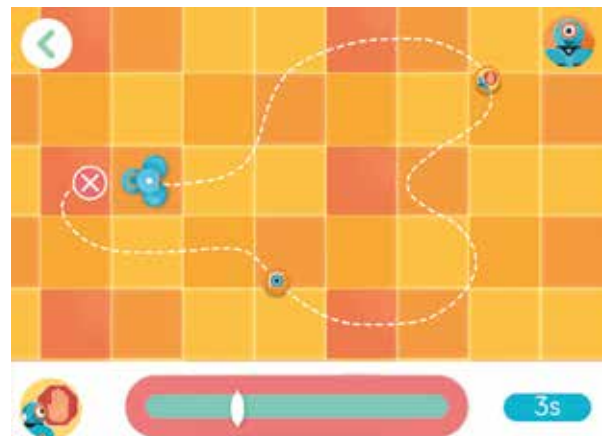
Path (Key Stage 1 and Key Stage 2)

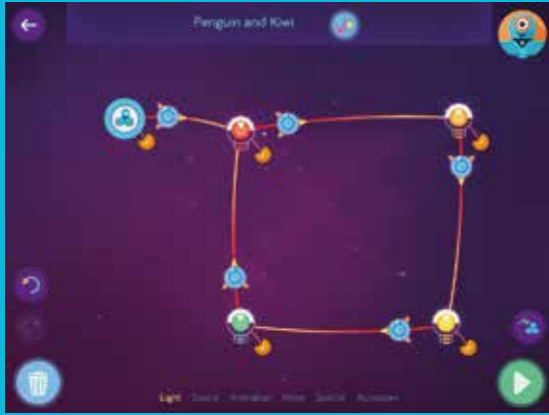
Path allows you to draw a route for Dash to follow. When you press the head of the on-screen Dash, the real-life Dash will follow the path you have drawn. You can drop various icons along the way, so that the robot plays a sound or does an action at certain points along the route.

There are various "challenges" within the software such as a racetrack and farmyard but perhaps the most powerful part is the free space which allows children to explore distances, estimating, sequencing and more.

What is Path good for?

- Spatial awareness - try to estimate a route around some obstacles on the floor
- Basic algorithm design
- Sequences
- Control flow
- Sensors and events
- Problem solving





Wonder (Later Key Stage 1 and Key Stage 2)

Wonder is an introduction to coding which lets children discover sequences and algorithms using a very visual interface. Connect the commands together with lines much like you would with a flow chart and use inputs from sensors to control the program flow.

For children that are completely new to coding, Wonder can be easier to understand than the more traditional Blockly language.

What is it good for?

- Ideal for children who are new to coding
- Algorithm design
- Command sequences
- Control flow
- Loops
- Sensors and events

Blockly (Mainly Key Stage 2 but also great for budding programmers in Key Stage 1)

Blockly is the full programming app for Dash and Dot - it's ideal for teaching coding and can be used in conjunction with the accessories like the launcher and the pen add on to create exciting tasks. It can also be used with the **Challenge Card Set** and the **Learn to Code Curriculum Guide** teacher book which sets mini-challenges for students to solve and give the teachers solutions explanations.

What is it good for?

- Perfect introduction to block programming (coding)
- Algorithm design
- Command sequences
- Control flow
- Conditionals (Booleans, if/then/else)
- Loops
- Sensors and events
- Variables



Compatible devices

Dash and Dot can be programmed from iOS, Android, Kindle and Chromebook devices but please note that not all the apps are available on all devices.

*Go is not available on iPad Pro, please use the Wonder app controller on these devices

Apple iOS

Android

Kindle

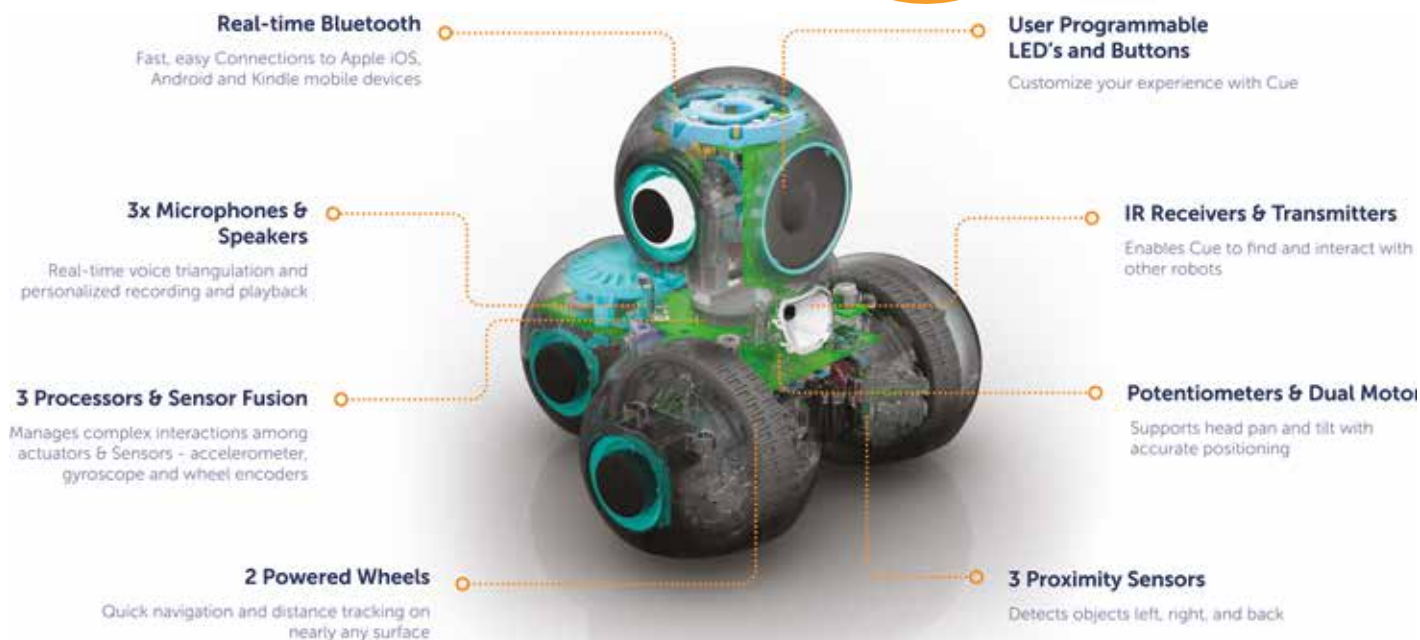
Chromebook

	Wonder	Path	Blockly	Go	Xylo	Swift
Apple iOS	✓	✓	✓	✓*	✓	✓
Android	✓	✓	✓	✓	✓	
Kindle	✓	✓	✓		✓	
Chromebook	✓		✓			

CUE™

Cue is a programmable robot who is closely related to Dash. Visually, Cue looks really similar to its brother, but the biggest difference is how Cue is programmed. Whilst Dash is ideal for learning coding at Key Stage 1 and 2, Cue is better suited to Key Stage 3

CUE
£141.99
Order code 70-1108



Cue and the curriculum

Here are a few ways in which Cue can help deliver the computing programmes of study at KS3:

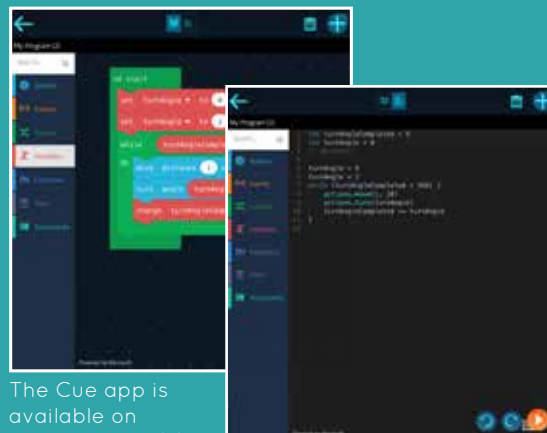
- Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems – **use Cue to simulate autonomous navigation, social robots, human-robot interaction**
- Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem – **collect and filter data from sensors to remove errors, create an algorithm to solve a maze, create an algorithm to draw a specific shape using the sketch kit**
- Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions – **Cue app allows you to use both blocks and text (JavaScript) to create programs. In both, students can create functions, variables and use events**
- Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal] – **all standard Boolean logic can be implemented in the Cue app using both block and JavaScript coding**

Accessorise and customise!

Because the shell of Cue is identical to that of Dash, it is compatible with all the same accessories including the Building Brick Connectors and the Sketch Kit. (70-1110 & 70-1105)

Programming

Cue is programmed using an app using Microsoft's MakeCode platform. It's the same thing that the micro:bit programming language is built on which means it is tried and tested in an education environment. Like it's micro:bit counterpart, the Cue app allows you to code in a graphical block language or using a text-based JavaScript environment.



The Cue app is available on Windows 10, iOS & Android devices.

SoftBank Robotics



Pepper Academic Edition Robot 3 Year Warranty

Pepper is an autonomous talking humanoid robot which can be programmed to perceive emotions and adapt its behaviour to the mood of the humans around it. Pepper can identify joy, sadness, anger or surprise and respond appropriately making interactions with humans incredibly natural and intuitive.

It has astonishing flexibility and fluidity of movement and can gesture with the speed and grace of a human while its 3 omni-directional wheels enable the robot to move around freely through 360°. Pepper has a total of 20 degrees of freedom. The robot also has a 10.1 inch touch screen which allows the integration of web pages, applications and images.

Pepper was designed to make interactions with human beings as natural and intuitive as possible and as a result the robot has been used in commercial applications all over the world.

Programming Pepper is easy using the bespoke Choregraphe* software which has been tried and tested on Pepper's smaller cousin NAO. Choregraphe* is used to build and manage the behaviours that you develop for the robot. Advanced users can also develop applications and behaviours using the Python and C++ SDKs.

Academic package includes:

Pepper robot
30Ah battery
Power supply/battery charger
3-year warranty

- Height: 1.2m (4ft)
- Weight: 28kg (62lb)
- Battery: lithium-ion 30Ah (for 12 hours usage)

Academic package includes: Pepper robot, 30Ah battery, power supply/battery charger and 3-year manufacturer's warranty. Please note - Pepper is only available to schools, colleges and universities. For commercial requirements, please contact us.

*Mac compatibility of Choregraphe is for OS X 10.8.3 and previous. Later versions are currently not compatible.

Technical specification

Height:	1.2m (4ft)
Weight:	28kg (62lb)
Battery:	Lithium-ion 30Ah
CPU:	ATOM Z530
Display:	LG 10.1 inch Android touch screen
Vision:	1 x ASUS Xtion SoC 3D sensor 2 x OV5640 1080p video cameras
Audio:	2 x 5W speakers 4 x microphones
Inertial unit:	3-axis gyro 3-axis accelerometer
Environment sensors:	6 x laser line generators 3 x bumper switches 2 x sonar distance sensors
Tactile sensors:	3 x head sensors 4 x hand sensors (2 in each hand)
Degrees of freedom:	Head - yaw and pitch Shoulder - pitch and roll Elbow - yaw and roll Wrist - yaw Hand - open/close Hip - roll and pitch Knee - pitch

Type	Order code	1+
Pepper robot	70-8870	14300.00

563399



NAO6 Academic Edition

The NAO6 is the latest generation of the brilliant NAO humanoid robot family. Having continuously evolved from the 1st generation, this 6th generation model gives even more performance and greater capabilities than ever before. Improvements have been made in virtually every area as well as a host of new features such as a dual-mode camera and auto-focus.



NAO is still the most widely used humanoid robot for academic purposes worldwide. The robot creates a unique human-robot interaction experience and is a renowned teaching aid for use in areas such as robotics, systems and control and computer sciences. Use NAO to explore programming, sensors, interaction with people and the environment and much more.

The robot is capable of autonomous movement, and can converse with anyone as well as identifying objects and interacting with its environment. Anyone can write the programs that let NAO know what you want it to do, the graphical interface of the **Choregraphe** software.

Students can explore event-based, sequential or parallel programming using the configurable behaviour boxes. You can also create your own behaviours, as well as using Python to write more complex scripts.

NAO robot can be programmed by either connecting an Ethernet cable between the robot and your computer, or via a WiFi connection. The software suite is compatible with Windows, Mac and Linux.

NAO can only be supplied to schools, colleges and universities. To find out more, please contact education@rapidonline.com or call us and speak to a member of the Education Team.

- Robots available with either 2 year or 3 year warranty
- NAO robot stands 58cm tall and is packed full of technology
- Humanoid body with 25 degrees of freedom for realistic movement
- 1-Year maintenance extension available, **70-8896**

Note: Please note that these robots can only be supplied to educational establishments.

Technical specification

Among the many features are:

- 2x Cameras for object and face recognition (including a 5MP camera)
- 4x Omnidirectional microphones allow for detection of sound
- 2x Loudspeakers
- 4x Sonar ultrasonic range finders for detection of obstacles and objects
- 2x Infrared emitters and receivers
- 2x Force-sensitive resistors provide a graceful, adaptive walk
- Bluetooth, Ethernet & Wi-Fi connectivity
- More powerful CPU, larger RAM
- Inertia sensor for balance control - 2 gyrometers and 1 accelerometer
- Capacitive tactile sensors for interaction with people
- Dark grey trim

Package includes:

- 1x NAO Evolution Humanoid Robot with 2 or 3 year warranty
- 4x Educational Online Textbooks on teaching robotics and programming
- Access to Choregraphe Suite and SDK

Type	Order code	1+
NAO6 + 2 yr warr.	70-8893	5400.00
NAO6 + 3 yr warr.	70-8894	6300.00
1 Year maint. ext.	70-8896	1000.00

567052

Need a product urgently?

We can offer a next day, before noon, delivery service

01206 751166



NAO Humanoid Robot Spare Rechargeable Battery and Charger

A spare or replacement rechargeable battery and charger pack for the NAO humanoid robot.

- Spare or replacement battery and charger pack for NAO robot
- Allows extended operation without interruption



Type	Order code	1+
Battery charger	70-8888	199.00
Battery + charger	70-8897	269.00

539029



NAO Humanoid Robot Hard Transport & Storage Case

Move and store your NAO robot safely and easily with this super-strong wheeled transport case.

- Retractable rubber-coated handle
- Two built-in wheels
- Four press-and-pull latches
- Two padlock loops
- Durable lightweight HPX® polycarbonate resin
- Water resistant
- Inner dimensions: 55.9 x 43.2 x 25.4cm (22 x 17 x 10in.)
- Outer dimensions: 62.5 x 50 x 29.7cm (24.6 x 19.7 x 11.7in.)
- Weight (empty) 7.62kg (16.8lb)



Please note: The styrofoam packing supplied with your NAO robot at time of delivery should be retained to fit inside the case. This will then give perfect protection for your robot during transportation and storage.

Type	Order code	1+
NAO transport case	70-8890	306.17

555906



FPV Micro-Drone Starter Kit

Only

£125.99

Order code 70-1201

See page 87



THE SMALL BUT MIGHTY LOW COST ROBOT!

Here at Rapid we know a thing or two about educational robots and the Ozobot Bit and Ozobot Evo really grabbed our attention because of how easy they are to use. We'd go as far to say they are the easiest to use programmable robots we have ever seen.

One of the biggest barriers with robots can often be related to software rather than hardware – is it compatible with your machines? Do I need drivers? Do I need to involve IT support? What about if I want to use a tablet? Ozobot removes all that pain. As long as you have an internet connection and a web browser, just about any device can program Bit and Evo. PC, Mac, tablet, smart phone, interactive whiteboard ...

And even if you don't have a screen to hand, you can still program Ozobot with just pens and paper using the unique scree-free coding system.



OzoBlockly

OzoBlockly is a graphical programming language based on Blockly which is used by a wide range of educational coding tools. What makes Ozoblockly different is the five progressive programming modes that it offers.

Whichever skill level you are using, Ozoblockly has a built-in help file and plenty of challenges to keep your students busy. Simply colour-print the challenge "maps" on A4 paper and follow the task instructions.

1

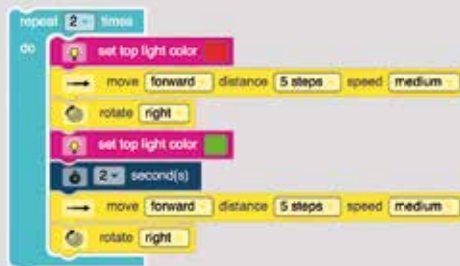
Pre-Reader



Suitable even for reception age children, Pre-Reader is the most basic mode in OzoBlockly. It has clear picture-based blocks that are large and easy to assemble.

2

Beginner



Beginner mode extends from Pre-Reader with the introduction of simple loops. Blocks are now described with text titles as well as pictures.

3

Intermediate



Control Ozobot's ability to follow lines using the line navigation category. Intermediate mode also introduces some simple if/else logic blocks.

The world needs more problem-solving leaders, which means that we need more students excited about STEM topics. If students aren't given the opportunity to learn how much fun engineering can be at an early age, how will they know if it's something that interests them?

VEX IQ is a robotics platform designed to transform STEM learning for young students (aged 8-15) and their teachers. When students have the ability to work independently and snap robots together using this intuitive and easy-to-use system, it can unlock a curiosity and a passion that will stay with them for life.



Super Kit
£269.99

Order code
70-7891

SUPER KIT

(Order code 70-7891)

The Super Kit is where the VEX IQ experience begins. This comprehensive package is tailored to give you everything you need to build VEX IQ robots for both classroom and competition use. As well as having over 800 structural and motion components, the kits also contain motors, sensors, controller, batteries, charger, storage bin and free programming software.

Use the Super Kit to design your own robots from scratch or build one of the numerous robots from our detailed instructions.

ROBOT BUILDS

Every Super Kit contains printed instructions for building the Clawbot. In addition, there are numerous other instructions which can be downloaded for free – each of these robots can be built from the parts in the Super Kit. Students can use them as a basis for their own designs or to learn how different types of mechanisms work.

Clawbot IQ

A mobile lifting robot ideal for handling cubes. It can carry one cube and store a second on its back.



Armbot IQ

This crane robot is fixed to the spot but has 4-degrees of freedom. It's perfect for learning more complex programming tasks such as sorting objects.



Ike IQ

A cute mobile robot that can lift and carry various items.



Clutch IQ

Clutch has a lifting arm with a gripper that points down, making it perfect for picking up balls like those used in the Bank Shot and Squared away VEX IQ Challenge games.



Smart Motor x4

The smart motor gives your robot movement but also provides feedback to help improve autonomous behaviours.

- Control speed, direction, time, revolutions or degrees
- Accurately control motor position and speed
- Mounts to VEX IQ hardware using standard pins

Bumper Switch x2

A simple push switch.

- Detect collisions with objects or walls
- Use as a limit switch to detect when the endpoint of travel in a mechanism is reached

Robot Brain

As the name suggests, this is the powerful brain that controls your robot.

- Programmable
- Backlit LCD screen
- 12 Smart Ports allow you to connect any combination of motors and sensors
- Download programs via USB or Bluetooth

Touch LED x2

An input and output in a single device

- the Touch LED can output any colour and detect human touch
- RGB LED to output any colour
- Capacitive touch sensor will detect a human press but ignore contact with robots or other objects

Controller

This video game style controller provides students with a familiar way to take control of their robot

- Program your robot to respond to inputs from the controller
- 4 analogue joystick axis
- 8 digital buttons
- Recharge via micro-USB

Colour Sensor

This sensor can be used to detect the colour of objects and also has a wealth of other functions.

- Independently measures the red, green and blue components of a coloured object
- Measure ambient light level
- Greyscale mode ideal for line tracking
- Proximity detection

Battery and Charger

This rechargeable battery slides on to the Robot Brain to give power to your creations. When it needs charging, just slide it on to the included smart charger.

- 7.2V
- 2000mAh capacity

Gyro

The Gyro measures turn rate and calculates direction to improve the accuracy of your robot's autonomous movements.

- Make accurate turns
- Maintain a heading

Distance Sensor

The Distance Sensor uses ultrasonic sound waves to measure distance from an object.

- Measures distance from 50mm to 1m
- Continuously measures distance to minimise delays

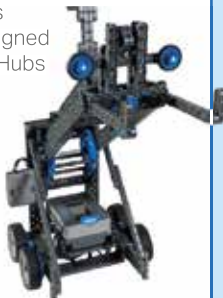
Stretch IQ

Originally designed for the Ringmaster VEX IQ Challenge game, Stretch can collect and lift a variety of different objects.



Flex IQ

Using only 3 of the 4 motors in the Super Kit, Flex is a good starting point for students looking to add another mechanism to a robot. It was originally designed for lifting the Hubs in the Next Level VEX IQ Challenge game.



V-Rex IQ

An excellent example of how linkages can be used – V-Rex uses just one motor to move the legs, arms and mouth of the dinosaur.



Download robot build PDFs from www.rapidonline.com/VEXIQ

PROGRAMMING VEX IQ



FREE

VEXcode IQ

VEXcode IQ Blocks is a graphical drag & drop programming environment powered by Scratch 3.0 which will make it a familiar sight for many students. This familiarity reduces the learning curve significantly meaning that students will be programming their robots to perform autonomous tasks in no time.

Students can get their robot up and running with as little as one block whilst more experienced users can create fully autonomous competition robot programs. All features of every VEX IQ sensor is available to make your robot do more than ever before.

VEXcode IQ Blocks is completely free and is supported on Windows, Mac, Chromebooks, iOS and Android making it extremely flexible and allowing you to utilise any device available to you.

- Scratch 3.0 based
- Windows, Mac, Chromebook, Android and iOS compatible
- USB downloading
- Wireless downloading via Bluetooth from compatible devices
- Built-in video tutorials
- Includes over 40 example programs to help students learn how to use blocks and explore their robot's potential

For more advanced users, VEXcode IQ Text is a free C++ text-based programming environment which allows you to create more complex VEX IQ robot programs.

- Advanced text editor features such as autocomplete, auto indent, syntax colouring, bracket matching, code-collapsing and more
- Windows, Mac and Chromebook
- USB or wireless downloading via Bluetooth from compatible devices

Robot Mesh Studio

Robot Mesh Studio is a free, browser-based programming environment for VEX IQ that offers a Blockly graphical interface and a Python text-based language. As these languages are extremely popular in education environments, they are a welcome addition to the VEX IQ programming options.

- Windows via Chrome or Firefox
- Mac OS via Chrome
- Chromebook
- Linux via Chrome

Robot Mesh Studio also offers a unique "Mimic" feature which allows you to build realistic VEX IQ robots in a virtual environment and program them with the same RMS programming interface that you would use for a real robot.

Try Robot Mesh Studio today at www.robotmesh.com/studio



FREE

STEM Labs

The VEX IQ STEM Labs are free, easy to follow STEM lesson plans that help you get the most out of your VEX IQ kits in the classroom and allow students to learn independently.

As well as covering robot builds and programming, STEM Labs also covers other science, engineering and maths topics. Each module has downloadable PDF and PowerPoint resources to use in the classroom and the Teachers Portal has additional resources to aid staff with lesson planning.



FREE

Support

VEX IQ is designed to be as easy to use in the classroom as possible but if you need any help or advice, technical support is just a click or call away.

Extensive trouble-shooting and support materials can be found in the Knowledge Base at help.vex.com. Alternatively, you can e-mail our VEX experts education@rapidonline.com or call **01206 751166**.

VEX IQ CHALLENGE

The VEX IQ Challenge is a STEM competition for KS2 and KS3 students to test their robot design and programming skills. In the VEX IQ Challenge, students build a robot using VEX IQ parts to solve an engineering challenge that is presented in the form of a game.

Students will need to master 3 disciplines, each with a number of 60 second matches:

- **Driver Skills** – One team on the field operating the robot with the controller
- **Programming Skills** – One team on the field, fully autonomous with no controllers allowed
- **Teamwork Challenge** – Two teams on the field working collaboratively to score points

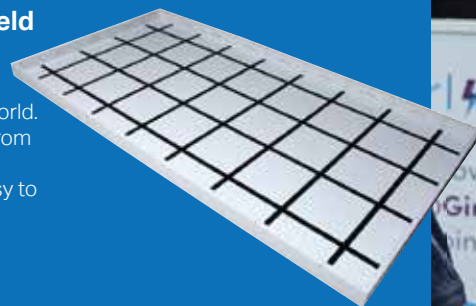


VEX IQ Challenge Field

These fields are the same as the ones used in official competitions all over the world. The 8ft x 4ft field is made from 32 tiles that clip together in minutes which makes it easy to store when not in use.

£174.99

Order code 70-7935



Challenge Team Bundle

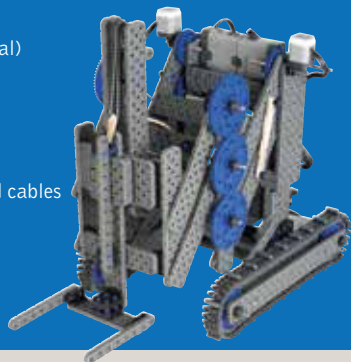
The VEX IQ Super Kit is ideal for starting a new team but those wanting to build more complex robots should look no further than the Challenge Team Bundle.

This comprehensive kit contains everything you'll ever need for the most competitive VEX IQ Challenge robots.

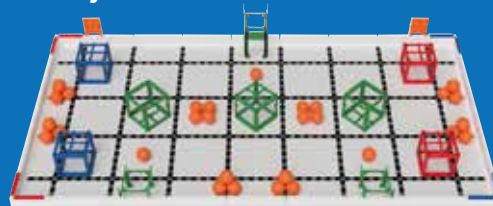
- VEX IQ Brain
- VEX IQ Joystick and radios
- 6 Smart Motors (the maximum number allowed for the VEX IQ Challenge)
- 7 Sensors
- 12 Smart Cables
- 16 Wheels (including omni-directional)
- Chain and Sprocket Kit
- Tank Tread/Intake Kit
- Thousands of structural parts
- 2 Storage bins and trays
- All batteries, chargers and download cables

£399.99

Order code 70-7953



Squared Away Game Elements Kits



See www.rapidonline.com for latest Game Elements Kits

To find out more about how to take part, visit www.rapidonline.com/VEXIQ

Magnetic USB cable £4.90

(Order code 19-9930)

Not only is it quicker and easier to use a magnetic USB cable with your VEX IQ Brains, but it can also help to prolong the life of the micro-USB download socket.



VEX IQ Classroom Bundles



Classroom Bundles



These **VEX IQ Classroom Bundles** are designed to support classroom learning by providing enough equipment to support groups of 10, 20 or 30 students working in groups of two.

Each pair will have a **VEX IQ Super Kit, 70-7902**, containing a VEX IQ Brain, Controller, 4 motors, 7 sensors and 850 structural parts as well as all batteries, chargers and download cables. Each kit is supplied in a stackable storage bin for easy storage at the end of each lesson.

The kits can be used in conjunction with the **VEX IQ Curriculum** which can be downloaded free from www.rapidonline.com/VEXIQ

All kits are supplied with Highrise Cubes for use in your own classroom competitions. The 30 student bundle also includes a full VEX IQ Challenge field which can be built or packed away in minutes.

- Use the free graphical Modkit software to program your robots
- Classroom Curriculum available to download
- Kits can also be used to enter the national VEX IQ Challenge
- All kits include batteries, chargers and storage boxes for every robot

Technical specification				
Order code	Description	No. of students	Super kits	Highrise IQ challenge field
70-7950	VEX IQ group bundle	10	5	18 No
70-7951	VEX IQ small class bundle	20	10	36 No
70-7952	VEX IQ classroom bundle	30	15	36 Yes

Type	Order code	1+
Group bundle	70-7950	1349.99
Small class bundle	70-7951	2699.99
Classroom bundle	70-7952	3999.99

548357

VEX IQ Accessories



Robot Brain

The VEX IQ Robot Brain is the heart of the VEX IQ system.

- 12x identical Smart ports - connect any device to any port, sensors or motors
- Backlit LCD for simple operation
- Built in programs make robot building faster
- Programmable with Modkit for VEX or ROBOTC

Type	Order code	1+
IQ Robot Brain	70-7904	89.99

530019



Controller

Pair the VEX IQ Controller with a Robot Brain and gain remote control of your robot.

- 4x Joystick axis
- 8x Buttons
- Battery sold separately, order code **70-7909**
- 2.4GHz radio module sold separately, order code **70-7910**

Type	Order code	1+
IQ Controller	70-7908	29.99

530013



2.4 GHz Data Radio

The VEX IQ system 2.4 GHz radio is used to wirelessly drive your VEX IQ Robot using the Controller. 2 radio modules are required - 1 for the Brain and 1 for the Controller.

- 2.4GHz Radio modules which allow you to remotely control your VEX IQ Robots
- 1x radio module included
- Controller not included

Type	Order code	1+
2.4 GHz Radio	70-7910	7.99

530041



Smart Radio

The Smart Radio expands the potential of the VEX IQ Robot Brain and Controller by enabling wireless communication with smartphones, tablets and computers using Bluetooth 4.0+ connections. This allows for wireless programming of robots, interaction with robots using smartphones or tablets running Bluetooth 4.0 or higher, and other advanced features.

Supported mobile devices include Android 4.4, iPhone 4s, 3rd generation iPad, 1st generation iPad Mini, or any newer versions of the above. Compatible with VEX IQ Robot Brain, VEX IQ Controller, smartphones, tablets, computers, or other devices using the Bluetooth 4.0 (or higher) protocol.

The Smart Radio takes the VEX IQ Robot Brain to the next level of wireless capabilities, enabling wireless programming, wireless debugging and wireless datalogging.

- Can be used in place of existing 900 MHz and 2.4 GHz wireless radios
- Supports multiple connections (e.g. Robot Brain + Controller + Tablet)
- Unleashes advanced Robot Brain wireless capabilities
- Pack includes one Smart Radio module - 2 are required to use a VEX IQ robot and controller together

Type	Order code	1+
Smart radio	70-7947	9.99

554730



Smart Motor

The Smart Motor does more than just make your wheels spin or arm move. The built in processor, quadrature encoder and current monitor allow for advanced control and feedback through the Robot Brain.

- Command speed, direction, time, revolutions and degrees
- Mounts directly to VEX IQ structural components
- Command motors up to 3,000 times/second
- Encoder resolution is 0.375 degrees
- Supports event programming to simplify software

Type	Order code	1+
Smart Motor	70-7911	14.99

530022



Long Smart Cable Pack

A pack of 8x long smart cables for VEX IQ Smart Motors and Sensors.

- 2x 800mm Smart Cable
- 2x 1.0m Smart Cable
- 1x 1.2m Smart Cable
- 1x 1.4m Smart Cable
- 1x 1.6m Smart Cable
- 1x 2.0m Smart Cable



Type	Order code	1+
Cable pack	70-7946	16.99

554729



Robot Battery

Replacement battery for the VEX IQ Robot Brain

- Nickel Metal Hydride technology
- 7.2V
- 2000mAh



Type	Order code	1+
Robot Battery	70-7905	14.99

530013



Competition Add-On Kit



The VEX IQ Competition Add-On Kit is the best VEX IQ expansion bundle for competitive teams. It complements the Super Kit with the advanced motion components needed to give your team a competitive edge.

- Omni-directional wheels allow for more complex drive systems
- Chain and sprocket kit helps you to create more elaborate mechanisms
- Over 2.4m (8 feet) of tank tread and chain
- Includes 2 motors and 12 wheels
- See Technical Specification for full list of contents
- **VEX part no. 228-3600**

Competition add-on kit contains the following:

Chain & Sprocket kit

- 200x chain links
- 8x 8 tooth sprockets
- 8x 16 tooth sprockets
- 4x 24 tooth sprockets
- 4x 32 tooth sprockets
- 4x 40 tooth sprockets
- 200x tread/attachment links
- 4x 24 tooth sprockets
- 40x traction links
- 20x short intake flaps
- 20x medium intake flaps
- 20x long intake flaps

Wheel Kit

- 6x small wheel hubs
- 4x large wheel hubs
- 4x 100mm travel rubber tyres
- 4x 160mm travel rubber tyres
- 4x 200mm travel rubber tyres
- 4x 250mm travel rubber tyres
- Additional Wheels & Motors**
- 2x 200mm travel omni-directional wheels
- 2x smart motors

Type	Order code	1+
Competition add-on	70-7940	79.99

546301

VEX IQ Foundation Add-On Kit



The ideal kit for expanding your VEX IQ parts collection. More parts allow for bigger and more complex creations with additional robot mechanisms.

- Contains over 850 VEX IQ components
- Structural and motion components included
- Includes Storage Bin and Tray

Type	Order code	1+
Structure Kit	70-7903	74.99

530014

VEX IQ Competition Fields and Spares

These field perimeter and tiles are exactly the same as the ones used in the VEX IQ Challenge.

- Official IQ Challenge perimeter and tiles
- Snap-together construction allows for assembly in minutes and easy storage/transport
- Available as full fields or half fields for use in smaller spaces



Type	Order code	1+
Full Field	70-7935	174.99
Half Field	70-7936	89.99
Spare field tile	70-8180	7.99
Spare perimeter wall	70-8181	4.99
Spare corner wall	70-8182	4.99

530020

VEX IQ 200mm Travel (62mm dia.) Omni Directional Wheels Pack of 2

These Omni-Directional wheels roll forward like normal wheels but slide sideways with almost no friction (no skidding during turns). Use these wheels to make your robot turn smoothly or build a holonomic drive train.



- Diameter approx. 62mm
- Travel: 200mm (distance covered in 1 revolution)
- Omni-Directional Wheels roll sideways with very little friction
- Minimize skidding during turns
- Made from ABS plastic
- Rollers are soft rubber-coated ABS

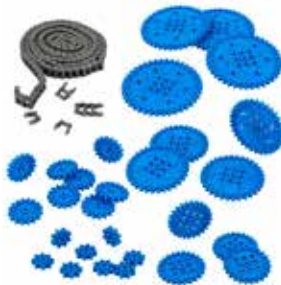
Type	Order code	1+
Omni Wheel Pk 2	70-7926	7.99

530018

VEX IQ Chain & Sprocket Kits

These chains and sprockets are used for additional gear reductions and to drive mechanisms.

- Pack of 200 Chain Links
- Pack of 8 8 Tooth Sprockets
- Pack of 8 16 Tooth Sprockets
- Pack of 4 24 Tooth Sprockets
- Pack of 4 32 Tooth Sprockets
- Pack of 4 40 Tooth Sprockets



Colour	Order code	1+
Black	70-8121	17.99
Green	70-8127	17.99
Orange	70-8119	17.99
Pink	70-8129	17.99
Purple	70-8123	17.99
Red	70-8117	17.99
Yellow	70-8125	17.99
Blue, yellow	70-7921	15.99
Additional chain pack 200 links	70-7907	9.99

554513

VEX IQ Gear Kit

This kit contains VEX IQ Gears, rack gears, worm gears and linear slides.

- 10x 12-Tooth Gears
- 10x 36-Tooth Gears
- 6x 60-Tooth Gears
- 4x 36-Tooth Crown Gears
- 8x Rack Gears
- 4x Linear Slider
- 2x Worm Gears
- 6x Worm Gear Brackets



Type	Order code	1+
Gear Kit	70-7924	12.99

530015

VEX IQ Tank Tread & Intake Kits

Use these kits to create intake mechanisms to collect and release objects or tank tread drive trains to allow your robot to tackle the roughest terrains.

- Pack of 200 Tread/Attachment Links
- Pack of 4 24-Tooth Sprockets
- Pack of 40 Traction Link
- Pack of 20 Short Intake Flaps
- Pack of 20 Medium Intake Flaps
- Pack of 20 Long Intake Flaps



Colour	Order code	1+
Black	70-8122	24.99
Green	70-8128	24.99
Orange	70-8120	24.99
Pink	70-8130	24.99
Purple	70-8124	24.99
Red	70-8118	24.99
Yellow	70-8126	24.99

554556

VEX IQ Long Shaft Add-On Pack

This add-on kit contains 14 'long length' shafts enabling you to construct even larger VEX IQ robots. The shafts allow you to transfer motion over long distances with ease.

- Material: Zinc-plated steel
- VEX IQ type **228-4420**



Qty	Type	Length (mm)	Qty	Type	Length (mm)
2	9x pitch	112.5	1	16x pitch	201.4
2	10x pitch	125.2	1	18x pitch	226.8
2	11x pitch	137.9	1	20x pitch	252.2
2	12x pitch	150.6	1	22x pitch	277.6
1	14x pitch	176.0	1	24x pitch	303.0

Type	Order code	1+
Long shaft pack	70-7949	7.99

554701

VEX IQ Smart Motor Mount Pack

These plastic motor support caps slide onto the back of the VEX IQ Smart Motor. Use the single motor support cap's second set of mounting holes to attach motors in new ways, or use the dual motor support mount to attach two Smart Motors back-to-back.

- Supplied with 2x single and 2x dual caps



Type	Order code	1+
Motor mounting caps	70-7948	3.99

554731

REGISTER FOR THE VEX IQ CHALLENGE



Contact
education@rapidonline.com
to find out how





VEX Robotics kits help to inspire students to become the problem-solving heroes of tomorrow. The VEX EDR system harnesses the excitement of building robots to immerse students in STEM concepts as well as familiarising them with using basic tools.

VEX EDR robots are constructed using steel or aluminium structural parts which are assembled using nuts and bolts. The mechanical parts such as gears and sprockets are manufactured from engineering-grade plastics such as acetal and nylon.

V5 is the latest generation control system for the highly popular VEX EDR robotics platform.



V5 Brain

At the heart of any VEX robot project is the V5 Robot Brain. Run programs, get real-time feedback and troubleshoot your robot directly via the colour touch-screen. The 21 Smart Ports automatically detect the type of connected device and handle motors and sensors interchangeably for maximum flexibility. Legacy VEX EDR Sensors and Motors are also supported through eight 3-Wire ports.

- 4.25" full colour touch-screen
- Dashboards provide real-time diagnostics
- 21x Smart Ports
- Eight 3-Wire ports for analogue and digital sensors
- Download programs wirelessly
- Programmable with free VEX Coding Studio software or third-party tools such as PROS and Robot Mesh Studio.

£164.99

Order code 70-8186



VEX V5 Wireless Controller

The controller has two analogue joysticks and twelve buttons, arranged in the familiar game controller-style design. An internal rechargeable battery ensures enough charge to get you through multiple class sessions or a full day of competition.

Instant real-time feedback from the Robot Brain is provided via a monochrome LCD screen allowing programmers to send data and text to the screen for debugging and driver information.

- LCD Screen for real-time information
- Start and stop programs from the controller
- Programmable haptic feedback
- Competition practice mode - sync up with other robots and run practice matches
- Built-in VEXnet 3.0 radio and Bluetooth
- Integrated rechargeable battery

£84.99

Order code 70-8187

VEX V5 Vision Sensor

Improve your robot's autonomous capabilities by detecting the colour, location and size of objects using the V5 Vision Sensor. Recognises up to 7 different colours and many tens of objects simultaneously.

- Tracks up to seven individual colours at once
- Analyze objects for advanced tracking and path planning
- Built-in Wi-Fi for live viewing from web browser
- Also compatible with VEX IQ



£55.99

Order code 70-8198

V5 Smart Motor

This V5 Smart Motor is an extremely powerful unit that puts an integrated encoder and a motor controller into one compact package. You can customise speed and torque performance with interchangeable gear cartridges which allow for 100, 200 or 600rpm shaft output speed.

- Built-in encoder tracks a robot's rotational position and velocity
- Current and temperature feedback
- Compatible with high-strength (1/4") and standard (1/8") VEX EDR shafts
- Supplied with 200rpm (green) gear cartridge



£29.99

Order code 70-8185

VEXcode

An all new way to code your VEX V5 robots in both graphical and text environments. Whichever version you choose, you will find integrated tutorials, plenty of sample programs and a user-friendly robot configuration tool to ensure a shallow learning curve.

Both versions are available on PC, Mac and Chromebook and the graphical version is also available for Android and iOS devices too.



VEXcode V5 Blocks

Based on Scratch 3.0, VEXcode V5 Blocks is a graphical programming language with a very shallow learning curve making it easy for anyone to write effective programs for their robot, regardless of experience.



VEXcode V5 Text

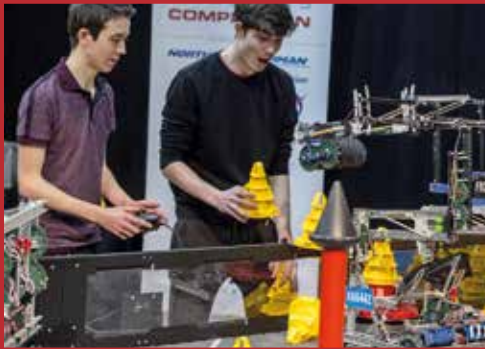
For more advanced programmers, VEXcode V5 Text is a fully featured C++ text editor with features such as Autocomplete and version control.

VEX Robotics Competition

VEX Competitions bring STEM skills to life by tasking teams of students with designing and building a robot to play against other teams in a game-based engineering challenge. Classroom STEM concepts are put to the test as students learn lifelong skills in teamwork, leadership, communications, and more. Tournaments are held year-round at a regional level and culminate at the VEX Robotics UK National Championship each year.

The specific challenge that the teams need to undertake changes each year which means students can continue to develop their skills year after year.

To learn more about the VEX Robotics Competition, visit www.rapidonline.com/VEX



Classroom Starter Kits

The Classroom Starter Kit is a good introduction to V5 based around the V5 Clawbot robot. The Classroom Super Kit contains a wide range of mechanical parts and different types of wheels which allows students to experiment with lots of different designs and mechanisms.

	Classroom Super Kit	Classroom Starter Kit
	70-8195	70-8194
	£924.99	£459.99
V5 Brain, Controller, Radio Module	✓	✓
Li-ion Robot Battery and Charger	✓	✓
V5 Smart Motors	6	4
Bumper Switches	4	2
Potentiometer	2	✗
Distance sensor	1	✗
Steel structural parts	31	9
Omni-wheels	8	2
Mecanum wheels	4	✗
Other wheels	12	2
High strength gears and sprockets	35	2
Additional motion pack	✓	✗
Tools and accessories	✓	✓



Competition Starter Kits

Designed specifically for use in the VEX Robotics Competition, these Competition Starter Kits contain aluminium structural parts and high strength mechanical parts for the rigours of competitive robotics.

	Competition Super Kit	Competition Starter Kit
	70-8197	70-8196
	£1199.99	£699.99
V5 Brain, Controller, Radio Module	✓	✓
Li-ion Robot Battery and Charger	✓	✓
V5 Smart Motors	8	4
Additional 36:1 motor gear cartridge	2	✗
Bumper Switches	4	2
Vision Sensor	✓	✗
Aluminium structural parts	52	27
Omni-wheels	4	2
Other wheels	4	6
High strength gears and sprockets	102	30
Tank tread, intake kit and high strength chain	✓	✓
Tools and accessories	✓	✓
Storage bin and tray	✓	✓



VEX V5 System Bundle

The V5 system bundle contains: V5 robot brain; V5 controller with integrated battery; V5 robot battery, charger and cable; V5 radio; V5 smart cables; USB cable.

£359.99

Order code 70-8183

For more V5 products see www.rapidonline.com/vex

LEGO®

LEGO education

Education WeDo 2.0 Core Set and Accessories



This **280-piece** set from the **LEGO Education WeDo 2.0** range is based upon the latest science standards and was created to enhance students' curiosity and science skills. The set is delivered in an easily portable storage bin along with sorting trays, labels, a Smarhub, a medium motor, tilt sensor, and enough building elements to occupy two students.

The accompanying desktop and tablet-supported software provides an easy-to-use programming environment and includes the **WeDo 2.0 Curriculum Pack**, which covers life, physical, earth, and space sciences, as well as engineering.

The accompanying eLearning program helps teachers to become confident users of the WeDo 2.0 Core Set.

- Provides investigating, modelling and designing solutions
- Engages students in science by making it real and relevant
- Encourages basic programming, collaboration and presentation skills
- Available on both desktop and tablet devices
- Integrated documentation tool to document projects: pictures, screen shots, videos, and written text
- Inbuilt assessment
- Supplied with sturdy storage bin and sorting tray for easy classroom management

Smarhub, medium motor, sensors and other accessories also available separately.

Type	Order code	1+
Core set	70-6536	179.22
Smarhub 2 I/O	70-6537	45.99
Transformer	70-6539	24.98
Medium motor	70-6540	16.99
Replacement pack	70-6543	5.99
Rechargeable battery	70-6538	39.99

564920

LEGO education

Pneumatics Add-on Set

This Pneumatics add-on set for the 9632/9686 Simple & Powered Machines Set, **70-6053**, provides five principle models and four real-life pneumatics models.

- Provides a safe introduction to pneumatics
- Includes full-colour building instructions, pumps, tubes, cylinders, valves, air tank and manometer
- Build and explore pneumatics through real-life LEGO models
- Investigate power systems and components
- Explore kinetic and potential energy
- Allows children to work as technical investigators
- Manometer measures pressure in both psi and bar



- Buddy Building concept allows students to build the models in teams
- Brick Type LEGOTechnic
- Piece count 31
- Meets Science & Technology curriculum goals
- Suitable for **Key Stages 3 & 4** (ages 11 to 16)
- **LEGO type 9641**

Type	Order code	1+
Pneumatics add-on	70-6054	63.89

082377

LEGO education

Renewable Energy Add-on Set

An exciting add-on set for use with the LEGO Simple and Powered Machines Set, 9686, order code **70-6053**.

It allows students to learn all about renewable energy sources and

is compatible with both the Machines and Mechanisms portfolio and LEGO MINDSTORMS Education. The set features a solar panel, turbine blades, a motor/generator, LED lights, an extension wire and the unique LEGO Energy Meter. The set includes full-colour building instructions for six real-life LEGO models. Connected with the MINDSTORMS NXT brick, the Energy Meter works as a sensor, making it ideal to use with the MINDSTORMS Data Logging software.

- Gives students a highly relevant insight into different Renewable Energy sources, e.g. solar, wind, hydro and hand generated power
- The product is compatible with both Simple and Powered Machines and MINDSTORMS
- Includes building instructions for 6 different models to build with the Simple and Powered machines set
- Free activities and building instructions to build with MINDSTORMS on www.MINDSTORMSEducation.com
- Includes Energy Meter that allows students to store and use the generated energy
- The Energy Meter also gives you the opportunity to datalog in the MINDSTORMS datalogging software
- Key Learning Points:
 - Building and exploring renewable energy through real-life LEGO models
 - Exploring energy supply, transfer, accumulation, conversion and consumption
- Engaging students in engineering and design
- Piece count 12
- Recommended for ages 8+

Building instructions for machines and mechanisms, and activities for MINDSTORMS can be downloaded free of charge from LEGOeducation.com.

Type	Order code	1+
Renewable energy set	70-6055	80.95

500033



LEGO education

Simple & Powered Machines Set

The core brick set in the range of machines & mechanisms solutions, this set includes full-colour building instruction booklets for 10 principle models and 18 main models. Combine with curricular-relevant activity packs and add-on sets to carry out a broad range of activities within design technology, science and mathematics.

- Building and exploring real life machines and mechanisms
- Investigating powered machines with the motor
- Using plastic sheets for calibration and capturing wind
- Exploring gearing mechanisms with the assorted gear wheels incl. differential
- Piece count 396
- Age 8+
- Brick Type LEGO Technic
- Storage tray: 425 x 309 x 156mm
- **LEGO type 9686**

Type	Order code	1+
Simple/Powered machines	70-6053	128.83

082424

LEGO duplo

Early Simple Machines

The Duplo Early Machines Set is ideal for introducing youngsters to mechanical principles such as gears, levers, pulleys, wheels and axles, as well as investigating energy, buoyancy and balance.

The set includes inspirational inbox cards for building eight different models such as the Measuring Car and the Spinning Top

- Exclusive for this set is a plastic punch-out sheet with eyes, sails, scales and wings
- Number of pieces: 102
- Suitable for **Foundation** and **Key Stage 1** (ages 4 to 7)

Type	Order code	1+
Duplo Simple Machines	70-1312	126.04

019522



BBC micro:bit Pocket Sized Codeable Computer Starter Kit

- Microbit
- Battery Box
- Batteries
- USB Cable

Only

£12.84

Order code 75-0116

www.rapidonline.com

Robot Arms

RVFM

Robotic Arm and Optional USB PC Interface

This Robot Arm helps you get to grips, literally, with the basics of robotic technology. Following the detailed instructions, you can build your own wire-controlled



Robot Arm, and control its movements via the remote control box. Alternatively, you can operate the Robot Arm from your PC by installing the optional USB Interface Kit (sold separately). The robot has 5 motors and 5 joints and features base rotation, elbow and wrist motion and a gripping function. A built-in searchlight means you can even operate the Robot Arm in the dark.

- Educational kit includes all necessary parts (except tools)
- Supplied complete with wired hand controller
- Add the optional USB interface and software (sold separately) to control your robotic arm from your PC
- No soldering required
- Maximum lift 100g
- Dimensions 37.5 x 16.1 x 23cm
- Weight 658g
- Requires 4x D batteries (not supplied)
- Optional USB Interface Kit is compatible with Windows Vista, Windows® XP and Windows® 7

Not suitable for children under 5 due to inclusion of small parts

Type	Order code	1+
Robotic arm	06-9349	20.68
USB interface	06-9350	16.93

518239

DOBOT

Magician Robotic Arm



Meet **Dobot Magician** - the desktop robotic arm with incredible **accuracy** and repeatability. Dobot is **versatile** - it can be controlled via a PC, remote control, gesture control or programmed to operate as a standalone unit.

Dobot Magician's control software is called DobotStudio. It has a wealth of integrated features including Teach and Playback mode (no coding required!), graphical programming via Blockly and text programming. Dobot can also be controlled via a Leap Motion gesture control unit, remote joystick and via Bluetooth or WiFi.

Because Dobot's movements are so accurate, it is an excellent way to learn about control, automation and how industrial robots work without the need for large machinery.

Dobot comes at just a fraction of the size and cost of its industrial equivalent making it **ideal for the classroom** environment. Dobot also offers a large amount of flexibility through its Extended Input and Output (EIO) ports which allow users to connect their own sensors, motors, servos or additional microcontrollers.

- Number of axes 4
- Maximum payload 500g
- Maximum reach 320mm
- Position accuracy 0.2mm
- Robot power supply 12V/7A
- DC Power adaptor (included) 100 to 240V AC, 50/60Hz
- Power consumption 60W maximum
- Weight 3.4kg
- Base footprint 158 x 158mm
- Made from aluminium alloy and ABS

Supplied with everything you need to use Dobot: Dobot Magician robot arm; power supply; 3 different end effectors - claw, suction cup and pen; USB cable; WiFi module; bluetooth module; joystick remote control; DobotStudio software. This version does not include a laser engraver or 3D print extruder.

Type	Order code	1+
Robotic arm	70-0480	1089.90

564463

DOBOT

Sliding Rail Kit



An extra metre brings you endless possibilities!

As Dobot Magician's official accessory, the sliding rail kit expands its functional area to a whole new extent. With interchangeable tool heads and graphical programming environment, you'll design complicated workflows like a pro.

From organizing objects, to writing a long letter, this simple accessory will make industry 4.0 approachable like never before. The rail is made from a single piece of steel using high precision CNC milling. And it runs like silk.

The sliding rail is supplied with wire set, tool kit, attachments and assembly instructions.

- **Specifications**
- Max. payload: 5kg
- Effective travel distance: 1000mm
- Maximum speed: 150mm/s
- Maximum acceleration: 150mm/s²
- Repeat positioning accuracy: 0.01mm
- Absolute positioning accuracy: 0.25mm
- Dimensions (L x W x H): 132 x 120 x 55mm
- Weight: 4.7kg

Dobot not included.

Type	Order code	1+
Sliding rail kit	70-0481	823.90

565241

DOBOT

Conveyor Belt Kit



The simplest mini production line ever.

The conveyor kit for the Dobot Magician gives you a complete production line simulation. The kit consists of a conveyor belt with adjustable speed, a distance sensor and a colour sensor. Combined with the powerful and programmable

Dobot Magician, these are the ideal essentials for you to create a highly effective simulated production line, or even apply it to an actual factory scenario.

The conveyor belt is supplied complete with 40 wooden cubes, a demonstration positioning board and user manual.

Conveyor belt

- Max. payload: 500g
- Effective delivering distance: 600mm
- Maximum speed: 120mm/s
- Maximum acceleration: 1100mm/s²
- Dimensions: 700 x 215 x 60mm
- Weight: 4.2kg
- **Distance measuring sensor unit**
- Measurable range: 20 to 150mm
- Signal: analog output
- Input: 4.5 to 5.5V
- **Colour recognising sensor unit**
- Input: 3 to 5V
- Detectable: non-glowing object
- White LED embedded, on/off controllable

Dobot not included.

Type	Order code	1+
Conveyor belt kit	70-0482	299.00

565242

Robot Chassis

Rapid

2WD & 4WD Servo Robot Platforms



The **2WD and 4WD Robot Platforms from Rapid** give you the opportunity to build a simple robot at a bargain price. They're based around an anodised aluminium chassis which is pre-cut for servos. The chassis also has a useful set of mounting holes and slots for additional hardware such as a microcontroller or sensors. These platforms are compatible with any microcontroller such as the Arduino, OrangePip, PICAXE, Genie and others, as **servos do not require additional motor drivers**.

All the parts for the platform are included in the box: 1 x anodised aluminium chassis, screws and nuts, just add your own microcontroller. The 2WD platform also includes 2 x servos, 2 x wheels with tyres, and 1 x castor. The 4WD platform also includes 4 x servos, and 4 x wheels with tyres.

- Strong, colourful aluminium chassis
- Supplied with servos
- All screws and nuts included
- Compatible with Arduino, OrangePip, PICAXE, Genie and others
- **Does not require motor drivers**

Type	Order code	1+
2WD	70-6415	12.08
4WD	70-6416	16.38

566042

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2WD & 4WD Motor Robot Platform Kits



This mini motor robot platform kit is available in 2wd or 4wd versions. The platform uses 2 or 4 DC motor gearboxes for drive, with speeds up to 100rpm and torque of 1.3kg/cm at 800mA. The robust red anodised aluminium chassis can stand up to knocks and tumbles and features additional mounting holes so that other hardware such as microcontrollers or sensors may be mounted.

The platforms are compatible with microcontrollers such as the Arduino, Orangepi, PICAXE, Genie, etc. The kit includes motors, chassis and fixings and wheels.

- Easy to assemble kit
- 60mm Diameter wheels with silicon tyres
- Wheels press-fit onto motor gearbox output shafts
- Power supply 4.5 to 6V DC
- Supplied with all fixings required

Type	Order code	1+
2WD Motor robot	70-6417	10.11
4WD Motor robot	70-6418	14.52

564035



Magician Chassis

The Magician Chassis is a quick and easy way of using your preferred microcontroller system (such as PICAXE, GENIE, Arduino) in robotics applications. The self assembly kit comes complete with two high torque motors with built-in gearboxes, wheels, rollerball front wheel and 3xAA battery holder. The cleverly perforated chassis allows you to easily mount your PCBs using PCB pillars and screws.

- Overall dimensions 175 x 125 x 75mm
- Requires some simple assembly
- 65mm diameter wheels

Type	Order code	1+
Magician Chassis	13-1192	18.78

518246



ARX-CH09 Robot Chassis



A self assembly kit which allows rapid prototyping of robotics projects using microcontrollers. The kit includes two motor and gear sets, wheels, rollerball rear wheel and 4x AAA battery box.

Incorporate your own choice of microcontroller such as GENIE or PICAXE and then add sensors such as microswitches or the popular SRF005 ultrasonic range finder (**78-1085**).

- 140 x 120 x 50mm
- Requires some assembly
- 40mm diameter wheels

Type	Order code	1+
Robot Chassis	13-1196	13.26

518248



RP-5 Robot Tank Track Chassis

The RP5 is a tank track style chassis, which is an ideal base for building mobile robots.

The chassis has built-in motors and gearboxes which you can easily interface with PICAXE, GENIE, Arduino or any other microcontroller system, as well as radio control systems.



The RP5 tank track chassis is supplied ready assembled - just add your own control system and batteries!

- Dimensions: 175 x 135 x 60mm
- 2x 280 type motors
- 80:1 gear ratio
- Rubber tank tracks
- 6x AA Battery holder included

Type	Order code	1+
Tank Chassis	13-1194	33.38

518247



Initio 4WD Robot Platform Inc. Motors, Gearboxes and Encoders

The Initio is an easy to build, and easy to use 4WD robot platform designed especially for use with **Arduino** and **Raspberry Pi** single-board computers.

This extremely flexible platform features powerful, built-in 170-size motors with high quality gearboxes, and speed encoders on each side. Each wheel can be individually decoupled from the gearbox, so you can run the robot as a 1WD, 2WD or 3WD.



The main chassis is already built, with all wires connected so there is no soldering or gluing required - just add your control board and screw on the top plate. The base-plate will directly mount an Arduino (UNO, Mega2560 or Leonardo) or Raspberry Pi (not supplied). There is a 6-cell battery box with switch (batteries not supplied), charging socket and motor driver and board wiring already assembled. Additionally there are fixings for stepper motors (not included) so you can replace the DC Motors with stepper motors for greater accuracy.

- Can be used for loads of projects
- Injection moulded from tough ABS
- Includes mountings for additional boards and sensors
- Wheel size $\phi 55 \times 28$ mm
- Chassis size 180 x 120 x 93mm
- Height of top plate with wheels attached 110mm

Note: Raspberry Pi/Arduino not included. **Note:** Batteries not included.

Type	Order code	1+
Initio 4wd robot	75-0281	32.00

565324

Accelerometers & Compass Sensors



HC-SR504 Ultrasonic Ranging Module

The HC-SR504

is a non-contact ultrasonic ranging module with a 20 to 4000mm range. The module includes ultrasonic transmitter, receiver, and control circuit - all on a compact circuit board.



- Easy to use
- Ranging accuracy up to 3mm
- Compact dimensions

Technical specification

Voltage	5V DC
Current	15mA
Frequency	40Hz
Range	20 to 4000mm
Measurement angle	15°
Trigger input signal	10µs TTL pulse
Echo output signal	Input TTL level signal + range in proportion
Dimensions	45 x 20 x 15mm

Type	Order code	1+	10+	50+
HC-SR504	74-1109	2.39	2.25	2.09

565684



Grove Motion Sensor, Control and Actuator Modules

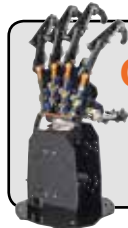
The **Grove Motion Sensor Modules** from **Seeed Studio**

give you a range of options to monitor motion and position in your next project. The range includes accelerometers, gyroscopes, and compasses as well as distance, motion and proximity sensors. There's even a GPS receiver which is compatible with any microcontroller with a spare serial port (Arduino, Raspberry Pi etc.). If your next project needs to keep track of where it is and where it's going then take a look at the **Grove** add-on modules.



Type	Order code	1+
Accelerometer	75-0439	7.38
Accelerometer ($\pm 1.5g$)	75-0458	7.50
Accelerometer ($\pm 16g$)	75-0454	7.43
Collision sensor	75-0473	6.32
Digital gyro	75-0450	13.99
Electromagnet	75-0470	8.49
GPS receiver	75-0435	22.65
I2C Motor Driver	75-0432	10.69
IR distance sensor	75-0468	4.43
PIR Motion Sensor	75-0433	6.77
Reflective sensor	75-0465	3.95
Ultrasonic ranger	75-0427	11.28
Vibration motor	75-0466	2.18

565346



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Sharp Infrared Distance Sensors

These infrared distance sensors are ideal for use in robotics projects because of their ease of use. The sensors give an analogue output which has a 2V variation between the maximum and minimum distances meaning they can be interfaced with just about any microcontroller.

Two versions are available and should be selected based on the distance that you wish to measure.

- Easy to use
- 5V supply required
- Analogue output
- 3-way JST connector - a suitable connecting cable with 30cm leads is available separately (**70-6412**)

Type	Order code	1+
4-30cm Optical sensor	70-6407	8.65
10-80cm Optical sensor	70-6408	9.30



Triple-Axis Accelerometer Breakout Boards

The **Adafruit Triple-Axis Accelerometers** offer adjustable sensitivity and a choice of either I2C or SPI bus connectivity. Select from ± 2 , 4, 8 or 16g sensitivity; $\pm 2g$ gives a higher resolution for slow movements while $\pm 16g$ is best for high speed tracking. They can be configured to detect various events, such as a single tap or free-fall.

Supplied as a fully assembled and tested accelerometer boards plus a strip of 0.1in. pitch header pins for you to solder on as required. Adafruit provide a free tutorials to help get you started, please refer to the individual product pages for details.

- 3-axis accelerometers with adjustable full scale
- Detect free-fall events etc.
- I2C or SPI connectivity
- Breadboard friendly

Type	Order code	1+
ADXL345	73-5332	14.88
LIS3DH	73-5283	5.89



Line Follower Sensors



Optical Switch Phototransistor Output

These **reflective sensors** from **Vishay** contain an infrared emitter and phototransistor in a leaded plastic package designed to exclude visible light. The specification and feature set of these optical sensors makes them ideal for line tracking and following and also suitable for applications such as **position**



sensor for shaft encoder, detection of reflective materials, limit switch for mechanical motion, etc.

- Available in standard and long lead versions
- Peak operating distance 2.5mm
- Operating range 0.2 to 15mm
- Typical output current 1mA
- Daylight blocking filter
- Emitter wavelength 950nm
- Dimensions 10.2 x 5.8 x 7mm
- Package includes 2x mounting clips

Type	Order code	1+
Optical switch	60-8260	0.58
Optcl switch long legs	60-8261	0.679

559424

Gyro Sensors



L3GD20 Triple-Axis Gyro Breakout Board

The **Adafruit L3GD20 3-axis Gyro Breakout Board** has an adjustable full scale of ± 250 , ± 500 or ± 2000 degrees per second. It's simple to interface to a microcontroller with both I2C and SPI connectivity. Then add 3.3 to 5V logic and power compatibility and you have a very useful and versatile little board.

Supplied as a fully assembled and tested gyro board plus a strip of 0.1in. header pins for you to solder on as required. Adafruit provide a **free library** as an example to help get you started.

- ± 250 to ± 2000 degree per second full scale (42 to 333rpm)
- On-chip temperature sensor
- 3.3 to 5V logic and power compatible
- I2C and SPI connectivity
- Dimensions 30.7 x 19.1 x 3mm (1.2 x 0.75 x 0.12in.)
- Adafruit part no.: 1032

Type	Order code	1+
Gyro breakout board	73-5397	10.39

563269



GPS Modules



Grove Motion Sensor, Control and Actuator Modules

The **Grove Motion Sensor Modules** from **Seeed Studio** give you a range of options to monitor motion and position in your next project.

The range includes accelerometers, gyroscopes, and compasses as well as distance, motion and proximity sensors. There's even a GPS receiver which is compatible with any microcontroller with a spare serial port (Arduino, Raspberry Pi etc.). If your next project needs to keep track of where it is and where it's going then take a look at the **Grove** add-on modules.



Type	Order code	1+
Accelerometer	75-0439	7.38
Accelerometer ($\pm 1.5g$)	75-0458	7.50
Accelerometer ($\pm 16g$)	75-0454	7.43
Collision sensor	75-0473	6.32
Digital gyro	75-0450	13.99
Electromagnet	75-0470	8.49
GPS receiver	75-0435	22.65
I2C Motor Driver	75-0432	10.69
IR distance sensor	75-0468	4.43
PIR Motion Sensor	75-0433	6.77
Reflective sensor	75-0465	3.95
Ultrasonic ranger	75-0427	11.28
Vibration motor	75-0466	2.18

560348



Grove - Physical Sensor Modules

The **Physical Sensor modules from Seeed Studio** provides a range of specialist sensors to microcontrollers and computers such as the Arduino, Raspberry Pi etc.. The range includes gas and alcohol sensors, plus fingerprint, vibration, and touch sensors. There's even a module to measure galvanic skin response from any microcontroller with a spare analog port.



Type	Order code	1+
Fingerprint sensor	75-0446	37.78
Galvanic skin sensor	75-0453	7.54
Gas sensor CO	75-0462	5.74
Gas sensor LPG	75-0467	8.90
Magnetic switch	75-0469	2.38
Piezo sensor	75-0449	5.26
Sound sensor	75-0448	3.74
Sound sensor	75-0460	4.47
Touch sensor	75-0452	11.59
Temperature sensor	75-0459	8.90

560372



Arduino Global Positioning System (GPS) Shields

With these **Arduino Global Positioning System (GPS) Shields** your Arduino will always know where it is.



Order code	Mfrs. Part no.	Features
73-4738	ADA1272	GPS shield with antenna connector

Type	Order code	1+
Adafruit GPS	73-4738	60.80

559647

5-piece Basic Electronics Tool Kit

Only
£10.43

Order code 85-0064



Page 197



Ultimate GPS Breakout Board MTK3339 Chipset 66 Channel Version 3

A GPS breakout board designed around the **MTK3339** chipset. This high quality GPS module can track up to 22 satellites on 66 channels and also features a built-in antenna and -165dB tracking, high sensitivity receiver. Location update rate is up to 10 per second and power usage is only 20mA during navigation.



The module has a built in data-logging capability that can log time, date, longitude, latitude, and height is logged every 15 seconds and only when there is a fix. The internal FLASH can store about 16 hours of data. When a bigger antenna is required, any 3V active GPS antenna can be connected via the uFL connector. The module will automatically detect the active antenna and switch over.

Includes one fully assembled and tested module, header for breadboarding, CR1220 coin cell holder (coin cell not included).

- Onboard ultra-low dropout 3.3V regulator
- 5V Friendly design and only 20mA current draw
- Breadboard friendly + two mounting holes
- ENABLE pin to turn off module using any microcontroller pin or switch
- Footprint for optional coin cell to keep RTC running and allow warm starts
- Fix status LED

Technical specification

Satellites	22 tracking, 66 searching
Patch Antenna Size	15 x 15 x 4mm
Update rate	1 to 10Hz
Position Accuracy	<3m
Velocity Accuracy	0.1m/s
Warm/cold start	34s
Acquisition sensitivity	-145 dBm
Tracking sensitivity	-165 dBm
Maximum Velocity	515m/s
Vin range	3.0 to 5.5V DC
MTK3339 Operating current	25mA tracking, 20 mA current draw during navigation
Output	NMEA 0183, 9600 baud default DGPS/WAAS/EGNOS supported FCC E911 compliance and AGPS support (Offline mode : EPO valid up to 14 days) Up to 210 PRN channels Jammer detection and reduction Multi-path detection and compensation

Type	Order code	1+
GPS Breakout board	75-0496	33.01

559280



Ultimate GPS HAT for Raspberry Pi A+, B+ or 2

The Ultimate GPS HAT has a built-in Real Time Clock (RTC) and a GPS module, adding precision time and location to a Raspberry Pi Model A+, B+, or Pi 2. The module has an internal patch antenna that works quite well when used outdoors. A u.FL connector enables connection to an external antenna. Additional features include status LEDs, PPS output on fix, and it is possible to obtain 7 years timekeeping by using a CR1220 backup battery (not supplied).



- Fully assembled GPS and PCB + 2 x 20 GPIO header
- Sensitivity -165 dBm
- 10Hz Updates

- 66 Channels
- Only 20mA current draw
- Break-outs for all the Raspberry Pi's extra pins
- Plenty of prototyping area for adding LEDs, sensors, etc.
- Requires a 12mm coin battery (e.g. CR1220)

Type	Order code	1+
GPS HAT	75-0504	31.48

559287

Sensor Robots

CIC

Line Tracking Mouse Kit

A sound-activated robot mouse that can follow a black line on a white background.



- A sharp sound, such as a handclap, sets the mouse tracking a line, using three photointerrupters as its eyes
- Self assembly kit includes:
- A programmed IC
- 2 sets of geared motors
- Suitable for **Key Stages 2, 3 & 4** (ages 7 to 16)

Requires 4x AA batteries (not included).

Type	Order code	1+
Line tracking mouse	13-1035	15.78

060686

CIC

Line Tracking Robot

The Line Tracking Robot will help keep you on the right track if you are interested in basic robotics. Follow the detailed instructions and you can assemble a robot that will follow the route you have designed for him. The Line Tracking Robot has 2 photo interrupters as eyes which can distinguish black from white using infrared rays. Create a route using black tape or a marker pen and the robot will follow it.



- Easy to assemble as no soldering is necessary
- All parts supplied (excluding tools)
- Suitable for Key Stages 3, 4 and 5
- Finished robot height 10.5 cm
- 2 x AA batteries required (not supplied)

Type	Order code	1+
Line Tracking Robot	06-9348	15.52

518244

CIC

Sound Reversing Car Kit

A small robot car that responds to sound.

- Using a microphone as a sound detector, the car reverses and turns when it 'hears' a sharp sound such as a handclap or the sound generated by hitting an obstacle



Requires 2x AA batteries (not included).

Type	Order code	1+
Sound reversing car	13-1030	9.42

060685

CIC

Follow-Me Robot

You can build your own faithful friend with the Follow Me Sound-Detecting Robot. This little chap responds to clapping sounds. With 4 built-in microphones, he detects the source of the sound and will turn and move towards it with a flash of his eyes and a beep. If he doesn't hear a signal for 2 minutes he will go into sleeping mode.



- Educational kit suitable for Key Stages 3, 4 and 5
- Kit includes all necessary parts (except tools)
- Full assembly instructions provided
- No soldering required
- Robot effective within 1 metre of sound source
- Finished robot heights 15cm
- Requires 4 x AAA batteries (not supplied)

Not suitable for children under 5 due to presence of small parts.

Type	Order code	1+
Follow-Me Robot	06-9347	22.69

518243

CIC

Escape Robot Kit

The Escape robot kit enables you to build a robot that never fails to find its way out of a maze. The Escape robot makes use of three infrared emitting diodes and one infrared receiving module to send and receive signals to detect obstacles. It contains an in-built microprocessor which enables it to think and process information about its environment.



- Soldering required
- Suitable for **Key Stages 2, 3 & 4** (ages 7 to 16)

Requires 4x AAA batteries (not included).

Type	Order code	1+
Escape robot	13-1090	13.34

070721

RVFM

Four-Legged Walking Robot

Enjoy building this four-legged robot.

- Can be used for demonstrations, as a guide for self-designed robots, or as a basis for developing more complex mechanisms
- All parts are supplied, including laser-cut components and motorised gearbox
- Suitable for **Key Stages 2 & 3** (ages 7 to 14)

Requires 1x AA battery (not included).

Type	Order code	1+
Four legged robot	13-0886	7.94

010549

Order online

Save time, and place your order at:
www.rapidonline.com

RVFM

Robot Duck

This pack contains all of the basic components for the creation of a two-legged robot duck. However, it does not include all of the instructions, allowing your pupils to conduct creative investigation.

- Suitable for **Key Stages 2 & 3** (ages 7 to 14)

Requires 1x AA battery (not included).

Type	Order code	1+
Two legged robot duck	13-0884	4.54

010548



Jitterbugs

Create a fantastic motorised jitterbug, which jumps and moves, by utilising a spinning off-centre mass (see 06-0698, for off-centre mass wheels).

- The bug's battery and motor are hung underneath, so that a graphic image can be glued to the top plate
- This great value product, comes complete with all components, instructions, plus a choice of 3 graphic images
- Suitable for **Key Stages 2 & 3** (ages 7 to 14)

Requires 1x AA battery (not included).

Type	Order code	1+
Jitterbug	13-0790	1.75

066880

Wooden Robotic Kits

CIC

Automech Kit

A motorised racing car kit based around pre-punched wooden parts and a modular gearbox kit.

- No soldering required
- Pulley operation
- Tools required: modelling knife, screwdriver and long nose pliers
- Supplied complete with, switch, battery holder and all parts needed
- Suitable for **Key Stage 2+** (ages 7 and above)

Requires 2x AA cells (not included).

Type	Order code	1+	5+	10+	20+
Automech	13-0998	9.37	8.65	8.03	7.30

066880



Stunt Buggy

Build this motorised **Stunt Buggy** from **Technokit** and you will be amazed at how it zips along and even performs wheelies! This super-cool electric buggy is easy to construct with no glue or mess – just fit together the



interlocking printed thick card pieces, add the electrical and mechanical components and it's ready to go. Either construct so the printed sections are on the outside, or build your buggy inside out and paint or decorate your own design. The **Stunt Buggy** is the perfect inexpensive gift for boys (and tomboys) aged from 8 to 108!

Set includes:

- Printed panels
- Axles
- Pulleys
- Pulley insert
- Electric motor
- Motor mount
- Foam wheels
- Drive band
- Battery box
- Decal sheet
- Instruction manual

Requires 2x AA batteries (not included).

Type	Order code	1+
Stunt buggy	13-1504	7.27

019568



Dragster Kit

With this kit you can build a super-cool, fast dragster that will amaze your friends – not just with its speed but also with its good looks! Easy to construct with no glue or mess – just push together the interlocking printed thick card pieces, add the electrical and mechanical components and then have fun playing with your **Dragster** or keep it as a desk trophy. You can either construct it so the printed sections are on the outside, or build your **Dragster** inside-out and paint or decorate your own design. The dragster makes a perfect and inexpensive gift for boys and girls aged 8 to 108. An exciting technology project designed to stimulate a practical knowledge technology while having fun.

Contents:

- Printed panels
- Axles
- Pulleys
- Pulley insert
- Electric motor
- Motor mount
- Foam wheels
- Drive band
- Battery box
- Decal sheet
- Colour instructions
- Size when built 255 x 145 x 90mm

Requires 2 x AA batteries.

Type	Order code	1+
Dragster	06-8632	7.27

517622

Servos



SCS15 Smart Control Digital Servo with Metal Gears and Brackets



The **SCS15** is a multipurpose UART **robot servo** designed for use with Arduino. The unit can work in both servo mode and wheel mode. The servo mode can be wired together in robots to control limbs and set them at specific angles. The wheel mode is intended for wheel-type operations. The SCS15 can give feedback on the values of position, temperature, load, speed and input voltage, as well as having the ability to set parameters such as speed of rotation, max. output torque, operating voltage limit, operating temperature limit, etc.

To connect to Arduino The TTLLinker control board is required (available separately as 37-1333). The TTLLinker is a signal conversion board. Arduino needs to convert its UART signals to the half duplex type and through TTLLinker connect to SCS15. The TTLLinker also has more interfaces to make provision for more sensors.

- Supplied with metal gears and brackets
- A 70mm wheel with tyre is also available (37-1334)
- SCS15 is easily controlled by Arduino
- The SCS15 has a unique ID number to identify on BUS network
- Operating voltage range 6 to 8.4V
- 73 rpm Max. operating speed at 8.4V

Technical specification	
Dimensions	40 x 20 x 40.5mm
Weight	56g
Gear type	Metal 275:1
Bus interface	TTL Level Multi Drop
Position sensor and resolution	Potentiometer (215° / 1024°)
Operating angle	200° (Servo Mode)
Control system	Bus Packet Communication
ID	254 ID (0 to 253)
Communication speed	38400bps 1 Mbps
Motor type	Carbon
Bearing type	2BB
Operating voltage	6 to 8.4V
Stall torque(kg.cm)	15 @ 6V, 16.5 @ 7.4V, 17 @ 8.4V
Stall current	1.5A @ 7.4V
Operating speed (rpm)	55 @ 6V, 65 @ 7.4V, 73 @ 8.4V
Connector (wire length)	3P&5264 (15cm)

Type	Order code	1+	5+	10+
SCS15 Servo	37-1332	23.03	21.25	20.57
TTLLinker board	37-1333	3.06		
70mm Wheel and tyre	37-1334	0.54		
3-Pin servo cable	37-1337	0.548		

558935

Low Temperature Miniature Glue Gun

The Anvil AV-LTGG Low Temperature Miniature Glue Gun operates at approximately 100 to 120°C rather than the normal glue gun temperature of around 190 to 200°C, or higher, significantly reducing the danger of serious burns or damage to delicate materials.

Only

£6.66

Order code 87-0404

www.rapidonline.com





FS90R Analog Micro Servo Continuous Rotation

The **FS90R** is an analog micro servo that is capable of continuous rotation clockwise or anti-clockwise, as opposed to moving to a set position. The servo is ideal for the beginning roboticist and is perfect for use with the Motor Shield for **Arduino**. The servo can be controlled using any servo code, hardware or library and to control with an **Arduino**, just connect the orange control wire to pin 9 or 10 and use the Servo library included with the **Arduino IDE**.

Also available is a wheel (**37-1338**) that can be attached directly to the servo. The servo and wheel are also available as a package (**37-1336**).

- Good for making simple moving robots
- Small dimensions means servo can fit in confined spaces
- Lightweight
- Operating voltage 4.8 to 6V
- A 3-pin 10cm cable is available for connecting servos

Technical specification			
Dimensions	23.2 x 12.5 x 22mm		
Weight	9g		
Operating speed	110 rpm @ 4.8V, 130 rpm @ 6V		
Stall torque	1.3kg.cm @ 4.8V, 1.5kg.cm @ 6V		
Operating voltage	4.8 to 6V		
Direction	CCW		
Operating angle	Continuous rotation		
Required pulse	900 to 2100µs		
Connector wire length	20cm		
Type	Order code	1+	
FS90R 360° Servo	37-1335	4.80	
Servo and wheel	37-1336	6.01	
Wheel for servo	37-1338	1.47	

559636



FS90 Mini Servo 120° Operating Speed 0.12sec/60°

The **FS90** is an analog micro servo that has 120° of rotation. The servo is ideal for the beginning roboticist and is perfect for use with the Motor Shield for **Arduino**. The servo can be controlled using any servo code, hardware or library and to control with an **Arduino**, just connect the orange control wire to pin 9 or 10 and use the Servo library included with the **Arduino IDE**.

- Good for making simple moving robots
- Small dimensions means servo can fit in confined spaces
- Lightweight
- Operating voltage 4.8 to 6V
- A 3-pin 10cm cable is available for connecting servos (**37-1337**)

Technical specification			
Dimensions	23.2 x 12.5 x 22mm		
Weight	9g		
Operating speed	0.12sec/60° (4.8V) 0.10sec/60° (6V)		
Stall torque	1.3kg.cm (4.8V) 1.5kg.cm (6V)		
Operating voltage	4.8 to 6V		
Control system	Analogue		
Direction	CCW		
Operating angle	120°		
Type	Order code	1+	25+
FS90 Servo	37-1339	3.11	2.80

560555



Tower Pro SG90 Mini Servo

The Tower Pro SG90 Mini Servo is a low-cost, well specified servo ideal for use in radio-controlled models and for interfacing with microcontroller systems like **Arduino**, **Raspberry Pi**, **PICAXE**, etc.

- Size: 23 x 12.2 x 29mm
- Low-cost, high quality
- Supplied complete with control horns and mounting screws
- **Tower Pro type SG90**

Technical specification			
Dimensions	23 x 12.2 x 29mm		
Operating voltage	4.8V		
Stall torque	1.8kg/cm (4.8V)		
Operating speed	0.1s / 60° (4.8V)		
Dead band width	10µs		
Temperature range	0 to 55°C		
Weight	9g		
Type	Order code	1+	25+ 50+
Mini servo	37-1330	3.39	3.11 2.81

530144



BMS-410C Plastic Gear JR Standard Servo Analogue Servo

The Modelcraft BMS-410C Standard Servo is not only economical, but ideal for many applications in **Radio Control** modelling owing to its **standard dimensions**. It is also compatible with microcontroller systems such as **PICAXE**, **Arduino** and **Raspberry Pi**.

- Standard dimensions
- Includes control horn and screw
- **Modelcraft type BMS-410C**

Technical specification			
Manufacturer part No.	BMS-410C		
Servo type	Standard servo		
Connector system	JR		
Gears	Plastic		
Servo technology	Analogue servo		
Servo time 6V / 7.4V	0.15sec/ 60°		
Servo time at 4.8 V	0.17sec/ 60°		
Servo time at 6 V	0.15sec/ 60°		
Servo torque at 4.8 V	35Ncm		
Servo torque at 6 / 7.4 V	44Ncm		
Servo torque at 6 V	44Ncm		
Stroke time at 4.8 V	0.17sec/ 60° / 0.15sec/ 60°		
Length	40.5mm		
Width	20mm		
Weight	38g		
Type	Order code	1+	
Plastic gear servo	49-9395	6.18	

534062



ES-07 JR Micro Servo

The Modelcraft ES-07 JR micro servo should be a must for any serious model maker, either as a spare servo for your model or as part of the basic equipment of a hobbyist workshop.

- Product includes servo and servo horn



We bring
STEM to life

Technical specification

Order code	51-2307
Connector system	JR
Dimensions	(L x W x H) 19.7 x 8.2 x 24mm
Gear material	Plastic
Servo technology	Analogue servo
Servo type	Micro servo
Stroke time at 4.8V	0.09s / 60°
Torque at 4.8V	5Ncm
Type of bearing	Plain bearing
Weight	4.4g
Manufacturer part no.	ES-07 JR

Type	Order code	1+
Micro Servo	51-2307	10.99

524218



Servo Tape 230 x 65 x 2mm

Double-sided adhesive foam tape to attach servos, receivers, gyro systems and other radio control components.

- Good adhesion
- Size 230 x 65 x 2mm
- Supplied in **packs of 2**

Technical specification			
Dimensions	(L x W) 230mm x 65mm		
Thickness	2.0mm		
Type	Order code	1+	
Servo Tape	51-2318	2.14	

524229



Micro Servo MC1811

Affordable micro servo from Modelcraft, suitable for use as a replacement servo for ARF models or as part of the standard equipment for the hobby workshop.

- Mounting material included

Technical specification

Order code	51-2338
Connector system	JR
Dimensions	(L x W x H) 23 x 11.5 x 24.5mm
Gear material	Plastic
Servo technology	Analogue servo
Servo time 6V / 7.4V	0.08s (60°)
Servo torque 6 V / 7.4 V	18
Servo type	Micro servo
Stroke time at 4.8V	0.10s (60°) / 0.08 s (60°)
Torque at 4.8V	15 / 18Ncm
Type of bearing	Plain bearing
Manufacturer part no.	MC1811

Type	Order code	1+
Micro Servo	51-2338	6.47

524249

Motors & Gearboxes



Mini Vibration Motor 3V 2.0mm Circular

The **Mini Vibration Motor** from **Seeed Studio** operates from 3V DC and vibrates constantly when energised. The motor is not sensitive to the polarity of the voltage applied.

- Product includes servo and servo horn

Type	Order code	1+
Vibration motor	75-0416	0.911

560351



Mini Vibration Motor 3V Rectangular

The **Mini Vibration Motor** from **Seeed Studio** operates from 3V DC and vibrates constantly when energised. The motor is not sensitive to the polarity of the voltage applied.

- Operating Voltage: 2.2 to 3.6V DC
- Rated Voltage: 3.0V DC
- Rated Speed: 12,000 90mA max
- Stall Current: 120mA max
- Starting Voltage: 2.0V DC max
- Mechanical Noise: 50db(A) max
- Weight: 2g approx.
- Dimension: 12 x 4.6 x 4.6mm



Type	Order code	1+
Vibration motor	75-0417	2.09

560352



3V, 13100 RPM DC Motor

A low-cost miniature DC motor with many applications including models, robotics and educational demonstration equipment.

- Operating voltage 1.5 to 4.5V DC
- Two flat sides make the motor ideal for mounting on a PCB
- Rotates counter-clockwise when viewed from shaft end
- Solder tag termination



Technical specification

Rated voltage	3V DC
No load current	0.34A max.
No load speed	16,400rpm $\pm 15\%$
Rated load	8.0 g.cm
Rated load current	1.07A max.
Rated load speed	13,100rpm $\pm 12\%$
Length excluding shaft	25mm
Diameter	20mm
Width across flats	15.1mm
Shaft length	9.4mm
Shaft diameter	2mm
Weight	17g approx.

MOQ 2

Type	Order code	2+	25+	100+
3V, 13,100 rpm	37-0140	0.666	0.523	0.392

061539



Miniature Motor 3V 5240rpm

A low-cost miniature motor offering a higher stall torque.

- Ideal for models, robotics, etc.
- Operating voltage 1.5 to 4.5V DC
- Rotates clockwise when viewed from shaft end
- Solder tag termination



Technical specification

Rated voltage	3V DC
No load current	0.13A max.
No load speed	6700rpm $\pm 15\%$
Rated load	10.0 g.cm
Rated load current	0.45A max.
Rated load speed	5240rpm $\pm 12\%$
Length excluding shaft	26.9mm
Diameter	23.8mm
Shaft length	8.6mm
Shaft diameter	2mm
Weight	28g approx.

Type	Order code	1+	25+	100+
3V, 5240 rpm motor	37-0142	0.964	0.715	0.655

061541



Miniature Motor 3V 8000rpm

A high torque miniature DC motor for higher power requirements.

- Operating voltage 1.5 to 6.0V DC
- Rotates clockwise when viewed from shaft end
- Solder tag termination



Technical specification

Rated voltage	3V DC
No load current	0.23A max.
No load speed	9000rpm $\pm 15\%$
Rated load	10.0 g.cm
Rated load current	0.63A max.
Rated load speed	8000rpm $\pm 12\%$
Length excluding shaft	30.5mm
Diameter	24.2mm
Shaft length	12mm
Shaft diameter	2mm
Weight	42g approx.

Type	Order code	1+	25+	100+
3V, 8000 rpm motor	37-0144	0.929	0.739	0.63

061542



Solar Motor Worm Drive Gear Box

A worm drive gearbox in an aluminium housing powered by a solar motor.

- Shaft length 125mm approx.



Type	Order code	1+
Worm drive gearbox	06-1592	4.94

553715



Self Adhesive Motor Mount

A push fit motor mount to suit our range of miniature motors.

- Base has self adhesive surface for easy mounting of the motor as required
- Colour may vary
- Supplied in **packs of 10**



Type	Order code	1+
Motor mount	37-0360	2.04

064468



Motor Clip 21mm Diameter

Suitable for holding a motor to a flat surface.

- Ideal for use with motors with a diameter of 21mm



MOQ 3

Type	Order code	3+
21mm Motor clip	06-6054	0.29

079306

Pricing

Pricing correct at time of going to press.
For up-to-date pricing visit www.rapidonline.com



Motor Clip

Suitable for holding a motor.

- Heat in hot water to soften for easier fitting
- Ideal for use with motors with a diameter of 21 and 23.8mm
- Paper packaging may be required with 21mm motors



MOQ 10

Type	Order code	10+
21/23.8mm dia. Motors	06-6052	0.098

078968



EMG30 Motor with Gearbox and Integrated Encoder

The EMG30 is a 12V motor and 30:1 reduction gearbox in a single unit giving a 1.5 to 200rpm output speed.

It also has a built-in hall-effect motor encoder which gives precise control.

- Terminated with a 6-way JST connector for easy connection
- Mounting bracket available separately (**70-6406**)
- Can be controlled via I2C using the MD25 driver



Technical specification

Rated voltage	12V
Rated torque	1.5kg/cm
Rated speed	170rpm
Rated current	530mA
No load speed	516
No load current	150mA
Stall current	2.5A
Rated output	4.22W
Encoder counts per o/p shaft turn	360

Type	Order code	1+
EMG30 Motor	70-6404	25.65

554056



EMG30 Aluminium Mounting Bracket

Aluminium mounting bracket designed for the EMG30 motor.

- Robust construction
- 74 x 25 x 45mm



Type	Order code	1+
Mounting bracket	70-6406	2.84

554077



100mm Diameter Robot Wheel

This 100mm diameter wheel is fitted with a 5mm hub and retaining grub screw, which means it can be easily fitted to a motor that has a 5mm shaft with a flat.

- Ideal for use with the EMG30 motor
- Rubber tyre
- 5mm Hub with retaining grub screw
- Supplied singly



Type	Order code	1+
100mm Robot wheel	70-6411	8.39

554059



MDS25 Dual H-Bridge Driver

Designed to work with the EMG30 motors, the MDS25 can drive two motors and is controlled by serial or I2C making it compatible with most microcontroller platforms.



The board has two modes of operation which allow direct individual control of each motor or the ability to send a speed and turn command when using two motors. An onboard 5V regulator allows you to use the 12V batteries that will power your robot to also power your microcontroller or other electronics.

- 2x 6-way JST connectors for easy interface with EMG30 motors
- Can be controlled via serial or I2C connection
- Compatible with a wide range of microcontrollers including Arduino and PICAXE
- Returns 360 counts per revolution when used with the EMG30
- Up to 2.8A per motor
- On-board 5V 300mA regulator for powering your microcontroller

Type	Order code	1+
Dual H-bridge driver	70-6405	36.63

554057

MFA/COMO DRILLS

Geared Motor Accessory Kit

A kit containing a useful selection of mechanical parts, ideal for the construction of motorised models, robots, buggies, technology projects, etc.



- Motorised gearbox
- Wheels
- Hardware
- Gears
- Rack and pinion
- Perforated metal sheet and strips
- Axles/shafts
- Nuts, bolts and washers
- Chain and sprockets
- Worm drive
- Toggle switch
- Size D 1.5V zinc-chloride battery and battery box

Type	Order code	1+	5+
Geared motor kit	37-1100	24.79	24.11

064471

RVFM

Submarine Motor

A submarine motor encased in a plastic housing with a rubber sucker for attachment.



- Motor pulls apart to insert battery
- Twisting the battery starts the motor
- Dimensions 120mm(L) approx.

Requires 1x AA battery (not included).

Type	Order code	1+
Submarine motor	06-6050	1.84

078967



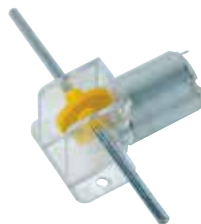
We bring
STEM to life

RVFM

Economy Gearbox and Motor

An economy gearbox with clear casing.

- Complete with 3V motor
- Helps pupils to understand the mechanics and movement of gears and motors
- Reduction ratio 40:1
- Output shaft diameter 4mm



Type	Order code	1+
Economy gearbox	37-0165	3.55

010556

CIC

2-in-1 Gearbox



A gearbox kit which contains:

- Electric motor (3-6V)
- 2 sets of gears giving either a 60:1 or 288:1 reduction (approx. 200 or 42rpm)
- Gearbox chassis and shafts

Type	Order code	1+
2-in-1 Gearbox	13-1020	3.56

064472

Rapid

Buggy Accessory Kit

A great chance for you to buy a bumper pack of model accessories, whilst also making a super saving.

- 2x caterpillar tracks
- 100x card axle supports
- 100x gears in assorted sizes and colours
- 100x wheels in assorted colours
- 20x 3V motors
- 20x S/A motor mounts
- Supplied in an educational storage tray with lid
- Supplied as a pack



Type	Order code	1+
Model accessory kit	13-0162	37.85

070726



E30-150 77mm (3in.) 24V Motors

Ampflow E30-150 motors are designed to give the best possible performance at the lowest possible price.

Using ferrite magnets and with a nominal voltage of 24V, these motors have a peak power of 1.0hp making them ideal for heavy-duty robotics, motorised vehicles and automation applications.

A 9-tooth sprocket and key suitable for the motor shaft is available separately, please see order code **37-0289**.



The motors are available with or without an 8.3:1 reduction chain-drive gearbox.

- Motor diameter: 79mm
- Motor length: 102mm
- Peak power: 0.75kW (1.0hp)
- Motor RPM 5600

Type	Order code	1+
Motor	37-0311	67.98

565848



A28-150 77mm (3in.) 24V Motors and Gearboxes

Ampflow A28-150 motors are designed to give the best possible performance at the lowest possible price.

Using neodymium magnets and with a nominal voltage of 24V, these motors have a peak power of 3.0hp making them ideal for heavy-duty robotics, motorised vehicles and automation applications.



A 9-tooth sprocket and key suitable for the motor shaft is available separately, please see order code **37-0289**.

The motors are available with an 8.3:1 reduction chain-drive gearbox.

- Motor diameter: 77mm
- Motor length: 102mm
- Peak power: 2.2kW (3.0hp)
- Motor RPM 6100

Type	Order code	1+
Motor and gearbox	37-0316	349.41

565849



A28-150-F 77mm (3in.) Diameter High Performance Motors and Gearboxes

The Ampflow A28-150-F series are designed to give the highest possible performance from brushed DC motors.

Using rare-earth neodymium magnets and with a nominal voltage of 24 (or 48V), these motors have a peak power of 3.0hp (4.6hp for 48V model) making them ideal for high performance, heavy-duty robotics, motorised vehicles and automation applications. They are fitted with a fan and are drilled with vent holes to allow flow-through cooling which allows longer duty cycles and even higher power outputs.

A 9-tooth sprocket and key suitable for the motor shaft is available separately, please see order code **37-0289**.

The motors are available in 24V and 48V ratings with or without an **8.3:1 reduction chain-drive gearbox**.

Replacement brushes, order code **37-0285**, are available separately.

Type	Voltage	Order code	1+
Motor	24V	37-0313	316.20
Motor and gearbox	24V	37-0317	359.41
Motor and gearbox	48V	37-0318	354.29

565850



A28-400-F 77mm (3in.) Diameter High Performance Motors and Gearboxes

The Ampflow A28-400-F series are designed to give the highest possible performance from brushed DC motors.

Using rare-earth neodymium magnets and with a nominal voltage of 24 (or 48V), these motors have a peak power of 4.3hp (9.1hp for 48V model) making them ideal for high performance, heavy-duty robotics, motorised vehicles and automation applications. They are fitted with a fan and are drilled with vent holes to allow flow-through cooling which allows longer duty cycles and even higher power outputs.

A 9-tooth sprocket and key suitable for the motor shaft is available separately, please see order code **37-0289**.

The motors are available in 24V and 48V ratings with or without an **8.3:1 reduction chain-drive gearbox**.

Replacement brushes, order code **37-0285** are available separately.

Type	Voltage	Order code	1+
Motor	24V	37-0282	429.56
Motor	48V	37-0284	429.53
Motor and gearbox	48V	37-0291	450.00

565227



E30-400 79mm Diameter (3in.) 24V Motors and Gearboxes

Ampflow E30-400 motors are designed to give the best possible performance at the lowest possible price.

Using ferrite magnets and with a nominal voltage of 24V, these motors have a peak power of 2.1hp making them ideal for heavy-duty robotics, motorised vehicles and automation applications.

A 9-tooth sprocket and key suitable for the motor shaft is available separately, please see order code **37-0289**.

The motors are available with or without an 8.3:1 reduction chain-drive gearbox.

- Motor diameter: 79mm
- Motor length: 147mm
- Peak power: 1.58kW (2.1hp)
- Motor RPM 5700

Type	Order code	1+
Motor	37-0281	101.99
Motor with gearbox	37-0288	271.93

565226



A40-300 102mm (4in.) Diameter High Performance Motors

The A40-300 is Ampflow's larger 102mm (4in.) offering that gives more power than the 79mm (3in.) ferrite magnet motors. Rated at 24V and



producing a peak power of 3.8hp, these motors are ideal for heavy-duty robotics, motorised vehicle and automation applications.

The motors are mounted using flanges with 8.65mm (0.34in.) holes.

Replacement brushes are available separately.

- Diameter 101mm (4in.)
- Length 176mm (6.9 in.)
- Peak Power 2.8kW (3.8)
- Stall torque 27Nm (3840oz.-in.)
- Efficiency 84%
- Nominal voltage 24V
- RPM 4000
- Shaft diameter 15.9mm (5/8in.)
- Shaft length: 44.45mm (1.75in.)
- Key-way: 4.76mm (3/16in.)
- Magnet type: ferrite
- No-load current: 3.5A
- Resistance: 0.05Ω
- Weight: 5.4kg (11.9lb)
- Ampflow type **A40-300**

Type	Order code	1+
Motor	37-0286	420.97

565228



Sprocket and Key for E30 and A28 Motors

These sprockets have a 12.7mm (½in.) bore to fit Ampflow E30 and A28 motors and are supplied with a suitable key.

The sprockets have 9 teeth and work with #35 roller chain.

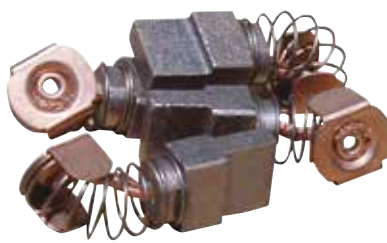


Type	Order code	1+
Sprocket and key	37-0289	13.14

565229



Replacement Brushes and Brush Caps for Ampflow Motors



Replacement brush sets and brush caps for Ampflow A40-300 and A28-400 motors.

- Replacement caps fit both A40-300 and A28-400 motors

Type	Order code	1+
Brushes for A28-400	37-0285	44.21
Brushes for A40-300	37-0287	40.95
Brush caps (4)	37-0293	14.69

565786



High-Traction Drive Wheels with Keyed Hubs

These wheels are from the Colson Performa range, which has long been a favourite of combat robot builders.

The non-marking thermoplastic elastomer tread is permanently



bonded to a ribbed polyolefin wheel core which is fitted with a 19.05mm (¾in.) aluminium hub with a 6.35mm (¼in.) key-way. Each wheel comes with a 6.35mm (¼in.) key and two steel discs for holding the wheel in place on the end of a 19.05mm (¾in.) shaft.

- Wheel diameter 152mm (6in.)
- Shaft diameter 19.05mm (¾in.)
- Ideal for direct fitting to Ampflow gear-motors **37-0283**, **37-0288** & **37-0291**

Type	Order code	1+
150mm keyed wheel	37-0389	27.19
200mm keyed wheel	37-0290	35.13
250mm keyed wheel	37-0292	22.46

565892



Victor BB 300A PWM Motor Speed Controller



The VEX Victor BB has been designed from the ground up for combat robotics use, but also has numerous other applications where a high continuous current rating is required. The fan-less design is based on over 15 years of combat robot experience with VEX's main objective being to produce the best performing, most durable and lightweight speed controller possible.

The speed controller can be quickly switched from brake to coast mode and can also be connected to a PC via USB to set advanced features such as current limiting, throttle response and battery eliminator circuits.

The VEX Victor BB is the ideal speed controller for use with the Ampflow range of high power motors.

Specification:

- Supply voltage: up to 50V (12C)
- Input signal: PWM
- Maximum current: 300A continuous
- Dimensions: 77 x 77 x 39mm
- Weight: 550g
- Cable: 8 AWG extra-flexible

Type	Order code	1+
VEX 300A controller	70-6435	449.99

565240

A N T E X

XS25W Soldering Iron 230V with Silicone Cable and 13A Plug

Only

£19.99

Order code 85-1145

www.rapidonline.com



Motor Accessories



TB6612 1.2A DC/Stepper/Solenoid Motor Driver Breakout Board

The Adafruit Solenoid / Stepper Motor Driver Breakout Board

The TB6612 dual H-bridge chip that can supply 1.2A, which isn't that high in real terms but it's a huge current compared to the recommended 20mA output from an Arduino GPIO pin for example. The chip has built-in flyback diodes to prevent damage due to inductive kick-back and Adafruit have added reverse polarity protection on the motor power input as well. The H-bridges are disabled at power-up to prevent twitching when power is applied. All the logic inputs are 3.3 to 5V compatible so you can run the driver board from an Arduino or Raspberry Pi, while the motor power has a separate input from 4.5 to 13.5V DC. There's a separate PWM input on each H-bridge so that you can control the motor speed.

Supplied as an fully assembled and tested board plus a strip of 0.1in. header pins for you to solder on as required. Adafruit supply a free tutorial to get you started. An ideal board for those times when you just want to get something working quickly.

- Dual H-bridge breakout board
- Flyback diodes and reverse motor power protected
- Motors disabled on power up
- 2 x bidirectional DC motors, 1 x stepper motor, 2 x solenoids
- Up to 1.2A drive current per motor
- 3.3 to 5V logic and power compatible
- Separate motor power from 4.5 to 13.5V DC
- Adafruit part no.: 2448

Type	Order code	1+
Breakout board	75-5310	4.65

563235



Grove Motion Sensor, Control and Actuator Modules

The **Grove Motion Sensor Modules** from **Seeed Studio** give you a range of options to monitor motion and position in your next project. The range includes accelerometers, gyroscopes, and compasses as well as distance, motion and proximity sensors. There's even a GPS receiver which is compatible with any microcontroller with a spare serial port (Arduino, Raspberry Pi etc.). If your next project needs to keep track of where it is and where it's going then take a look at the **Grove** add-on modules.

Type	Order code	1+
Accelerometer	75-0439	7.38
Accelerometer ($\pm 1.5g$)	75-0458	7.50
Accelerometer ($\pm 16g$)	75-0454	7.43
Collision sensor	75-0473	6.32
Digital gyro	75-0450	13.99
Electromagnet	75-0470	8.49
GPS receiver	75-0435	22.65
I2C Motor Driver	75-0432	10.69
IR distance sensor	75-0468	4.43
PIR Motion Sensor	75-0433	6.77
Reflective sensor	75-0465	3.95
Ultrasonic ranger	75-0427	11.28
Vibration motor	75-0466	2.18

560346



2305 Haptic Motor Controller (DRV2605L)

The Adafruit DRV2605L Haptic Motor Controller

The DRV2605L chip adds effects to haptic motor control giving you freedom to choose more interesting or informative vibrations. The DRV2605L chip has a library of 123 effects such as click, double click, ramp, and hum, including various intensities; it's a very smart chip. To make your project easier, Adafruit supply a tutorial and code library for Arduino. This should be simple to convert to any microcontroller. The board uses I2C so connecting to it is quick and simple and with Adafruit's library you should be up and running in no time. It is specified to work with Linear Resonance Actuator (LRA) and Eccentric Rotating Mass (ERM) type motors, though Adafruit have only tested it with ERM motors.

Supplied as a fully assembled board plus 1 x 5-pin header for you to solder on if your project needs it.

Haptic or vibration motors are available separately.

- Make haptic feedback motors more interesting and informative
- Have different effects for different conditions rather than a single buzz
- Works with 3 to 5V power and logic

Type	Order code	1+
Haptic motor driver	75-0568	7.11

561285



Stepper Motor Control/Driver

The L293D is a monolithic integrated, high voltage, high current, 4-channel driver.

- L293E is a quad push-pull driver capable of delivering output currents up to 1A per channel
- L297 generates four phase drive signals for two phase bipolar and four phase unipolar stepper motors in microcomputer controlled applications



Device	Function	Package	Order code
L293D	Accepts DTL/TTL logic levels, will drive inductive loads, DC and stepper motors, switching power transistors.	DIL-16	82-0192
L293E	TTL compatible control, inhibit input on each pair of drivers, external connections for sensing resistors.	DIL-20	82-0194
L297	Motor can be driven in half-step, normal and wave drive modes, on-chip PWM chopper circuits permit switch-mode control of the current in the windings. Requires only clock, direction and mode input signals.	DIL-20	82-0198

Type	Order code	1+	10+	25+	100+
L293D	82-0192	3.71	2.39	2.08	1.60
L293E	82-0194	2.97	2.38	2.24	
L297	82-0198	7.24	6.05	5.79	

034479



815 Servo/PWM Driver 16 Channel 12-bit

The Adafruit PCA9635

PWM/servo driver breakout board will drive 16-channels with 12-bit PWM (Pulse Width Modulation) at up to 1.6kHz. This versatile



board can drive servos or LEDs or anything else that needs PWM with output voltages up to 6V. Uses a miserly 2 x I2C pins on the microcontroller, and the I2C address selection means you can have up to 62 of these boards for a total of 992 channels! Adafruit supplies a software library you can download and a tutorial to get you started.

Supplied as a fully assembled board plus 4 sets of 3 x 4 male straight headers, a 2-pin terminal block, and 1 x 6 0.1in. header pins for breadboarding. The microcontroller, servos and LEDs are available separately.

Available either as a breakout board or as an Arduino shield.

- Drive 16 x servos or 16 x LEDs with 12-bit PWM up to 1.6kHz
- 5V compliant, compatible with 3.3V Arduino
- Drive outputs up to 6V, ie LEDs with 3.4V Vf
- I2C driver with built-in clock reduces microcontroller overhead
- Terminal block for power with reverse polarity protection

Type	Order code	1+
Servo/PWM driver	75-0565	14.30

561282



Soft-link Tubing

Soft silicone polymer tubing which can be used as a flexible coupling in many low-torque applications, such as flexible drive shafts, universal joints, linking push/pull rods, etc. Its unusual softness and strength allows for an amount of compliance in otherwise rigid drive systems.

- Ideal for modelling and robotics applications where high torque and accuracy are not of paramount importance
- Bore dia. approx. 2.5mm
- Supplied in lengths of 1m

Type	Order code	1+
1m Soft-link tube	37-1275	1.53

064484



Plastic Pulleys

A range of plastic pulleys ideal for use with our range of miniature motors.

- Rigid black plastic with deep V-grooves
- All sizes include motor spindle stand-offs
- Excellent for robots, mechanical constructions, science experiments as well as functional tasks
- 10mm pulley will interference fit on to a 2mm shaft
- Other pulleys will interference fit on to a 3.2mm shaft



MQQ 10 - In Multiples of 10		
Type	Order code	10+
10mm dia.	37-0342	0.10
MQQ 5		
Type	Order code	5+
20mm dia.	37-0344	0.17
30mm dia.	37-0346	0.17
MQQ 4		
Type	Order code	4+
40mm dia.	37-0348	0.25

071522

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