



Products Catalogue
September 2017 Edition

PRODUCTS CATALOGUE 2017



Open Source Electronics Platform

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1. Board & Modules

MQ2-FC22 Gas Sensor Module

MQ2 Smoke, LPG, Butane, Hydrogen, Gas Sensor Detector Module For Arduino.

Use for Detecting Combustible gas such as LPG, butane, methane, alcohol, propane, hydrogen, smoke, etc. Great for home or factory gas leakage detection.



MDU-1027 **MQ2-FC22** **RM 7.40**

HC-SR04P Ultrasonic Sensor Module

This module is the second generation of the popular HC-SR04 Low Cost Ultrasonic Sensor. Unlike the first generation HC-SR04 that can only operate between 4.8V~5V DC, this new version has wider input voltage range, allow it to work with controller operates on 3.3V.



MDU-1014 **HC-SR04P** **RM 4.80**

HC-SR501 Motion Detector

This motion sensor module uses the LHI778 Passive Infrared Sensor and the BISS0001 IC to control how motion is detected. The module features adjustable sensitivity that allows for a motion detection range from 3 meters to 7 meters.



MDU-1015 **HC-SR501** **RM 7.50**

18650 Battery Charging Module

5V microUSB 1A 18650 Lithium Battery Charging Board Charger Module+Protection. This versatile charger module is based on TP4056 IC, a constant-current/constant-voltage linear charger chip for single cell lithium-ion batteries.



MDU-1000 **18650-Charger** **RM 7.00**

TB6560 3A Stepper Motor Driver

Suitable for 2-phase Nema17 & Nema23 stepper motor driving up to 3A current rating. This module features low oscillation, high-performance forward and reverse driving of a two-phase bipolar stepping motor using only a clock input signal.



MDU-1039 **TB6560** **RM 38.00**

2-Channels 5V Optical Isolated Relay Module

This is 5V 2-channel relay interface board. It is equipped with high-current relays that work under AC250V 10A or DC30V 10A. It has a standard interface that can be controlled directly by microcontroller. This module is optically isolated from high voltage side for safety requirement.



MDU-1037 **2CHREL** **RM 8.00**

A4988 Stepper Motor Plug-in Driver Board

This daughter board with Allegro's A4988 micro-stepping bipolar stepper motor driver features adjustable current limiting, over-current and over-temperature protection, and five different micro-step resolutions (down to 1/16-step).



MDU-1001 **A4988MOD** **RM 7.00**

MB102PS Breadboard Power Supply Module

A 3.3V/5V Breadboard Power Supply Module with series diode, polarity reversal protection. The module can take 6.5V to 12V input and can produce 3.3V and +5V. This is a must have power supply module for experimenters.



MDU-1025 **A4988MOD** **RM 4.60**

ESP8266 Lua NodeMCU WiFi Module

New Wireless module with CH340 USB-UART, NodeMCU is WIFI IoT (Internet of Things) development board based on ESP8266. NodeMcu is a tiny board, based on ESP8266, integrates GPIO, PWM, IIC, 1-Wire and ADC all in one board.



MDU-1010 **ESP8266Lua** **RM 26.00**

ESP8266 WiFi Module

Low cost compact size WiFi module with build-in antenna.



MDU-1012 **ESP8266MOD** **RM 19.50**

ESP8266 WiFi Module Breadboard Friendly

Low compact size WiFi module with build-in antenna. With 2.54mm header pins compatible with breadboard hole spacing for easy prototyping.



MDU-1011 **ESP8266BB** **RM 21.00**

DS3231 High Precision RTC Module

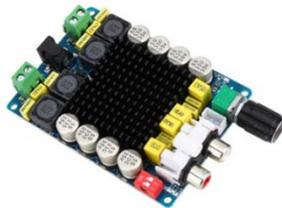
DS3231 is a low cost and extremely accurate I2C real-time clock, with an integrated crystal and temperature-compensated crystal oscillator (TCXO). The AT24C32 32KB build-in EEPROM that can be used to add non-volatile data storage.



MDU-1036 **DS3231-ZS042** **RM 6.20**

TDA7498 2x100W Class-D Amplifier

This amplifier board features a state-of-the-art, with dual channel Class-D TDA7498 IC, which delivers up to 100 watts per channel. The small 3.6" wide by 4.8" long PCB footprint allows this amplifier board to be used in many applications where size constraints limit the use of conventional amplifiers. Just add a 15 to 36 VDC power supply, signal source, and speakers!



MDU-1030 **TDA7498W100** **RM 56.00**

HT1209 Digital Temperature Controller

With this module you can intelligently control power to most types of electrical devices based on the temperature sensed by the included high accuracy NTC temperature sensor probe. The on board relay can switch up to a maximum of 240VAC at 5A or 14V DC at 10A. The actual temperature is displayed in degrees Centigrade with 3-digit 7-segment display.



MDU-1035 **HT1209** **RM 12.00**

GPD2856C-MP3 Player Board

This MP3 decoder board can play MP3 files from a USB flash drive or from a MicroSD flash memory card. The player has decent sound quality, an on-board 2W mono amplifier, and can be directly connected to a speaker. It also features a 3.5mm gold plated headphone jack that can connect headphones or an external audio amplifier.



MDU-1013 **GPD2856C** **RM 9.60**

Micro-SD Card Adapter Board

This micro-SD card adapter board goes designed for ease of use. Onboard 5V to 3V regulator provides 150mA for power-hungry cards. Push-push socket with card slightly over the edge of the PCB for easy to insert and remove. Comes with 2.54mm right angle header pins so you can get it on a breadboard.



MDU-1026 **MicroSD1189** **RM 5.60**

DC Motor Speed Controller 20A

High Quality Universal DC10-60V/20A PWM Motor Speed Controller Board.

This control board also suitable for LED lighting dimming application.



MDU-1016 **HK1227** **RM 23.50**

HTE-8020 WAV & MP3 Audio Decoder Module

This module support WAV lossless CD quality music play back and high quality MP3 music at 320Kbps bitrate. Mini small board design, 6-12V wide range power supply. Very versatile for car CD modification, the speaker level audio decoding, lossless CD players replacement. With remote control !!



MDU-1018 **HTE-8020** **RM 25.00**

USB Flash 8051uC Development Board

This versatile Flash Board is built around an AT89C5131A, which is an extended 8051-family micro-controller with an 80C52 core and a Full Speed USB port. As a sort of bonus, the IC has a complete update interface for downloading new firmware thru USB cable.



MDU-1019 **HT-USB5130** **RM 45.00**

RC522 RFID Contactless Reader Module

This RC522 RFID Development kit is based on NXP's a highly integrated reader/writer IC MFRC522 for contactless communication at 13.56MHz. The MFRC522 reader supports ISO/IEC 14443A/MIFARE and NTAG.



MDU-1040 **MFRC522** **RM 11.80**

MF1 S50 ISO/IEC14443A Contactless RFID Card

This card be read/write by almost any 13.56MHz RFID/NFC reader like RC522 RFID Reader Module. This card can be written to & store up to 1KB of data in writable EEPROM divided into banks, and can handle over 100,000 re-writes.



MDU-1041 **M1S50** **RM 1.45**

4-Channels 5V Optical Isolated Relay Module

This is 5V 4-channel relay interface board. It is equipped with high-current relays that work under AC250V 10A or DC30V 10A. It has a standard interface that can be controlled directly by microcontroller. This module is optically isolated from high voltage side for safety requirement.



MDU-1043 **4CHREL** **RM 15.00**

TTP223B 1-Touch Capacitive Sensor Module

This module is based on capacitive touch-sensing IC TTP223B. This versatile small sensor board is user configurable with on-board shorting pads as activated Low or High, momentary or latching output to suit for various control requirements.



MDU-1038 **TTP223B** **RM 6.80**

S50 ISO/IEC14443A Contactless RFID Key Tag

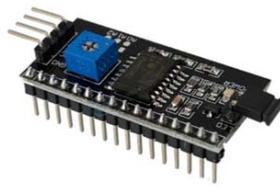
This is blank 13.56MHz RFID/NFC ISO/IEC 14443A keychain tag – often use in systems where a proximity identification is desired. The tag contains a small RFID chip and an antenna, and is passively powered by the reader/writer station when placed a couple inches away.



MDU-1044 **TAG-03** **RM 1.20**

I2C Serial Adapter for LCD Module

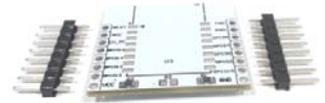
This I2C LCD Interface board use an I2C communication interface. It means it only needs 2 pins from microcontroller for the LCD display: VCC, GND, SDA, SCL.



MDU-1042 **I2C-1602** **RM 5.20**

ESP12E/F ESP8266 WiFi Module Adapter Board

Use this extension board to make the ESP12E/F breadboard friendly. All pins are easily laid out with 0.1" spacing for standard 0.1" header connector. This extension board is populated with 3.3V~500mA LDO voltage regulator so that it can be directly power by 5V or 3V systems voltage.



MDU-1045 **ESP12-33BD** **RM 1.80**

LM2596 DC-DC 3A Adjustable Step-down (Buck) Converter

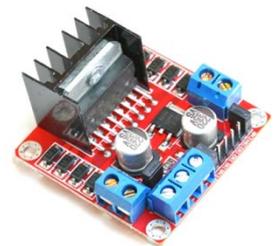
LM2596S DC-DC step down converter module, adjustable +1.23Vdc to 35Vdc output 3A maximum. Ideal for battery operated projects requiring a regulated power supply.



MDU-1050 **LM2596S** **RM 3.50**

L298N Dual H Bridge DC Motor Driver

This dual bidirectional motor driver is based on the very popular L298 Dual H-Bridge Motor Driver Integrated Circuit. The circuit will allow you to easily and independently control two motors of up to 2A each in both directions.



MDU-1049 **L298N-HB** **RM 7.50**

1200W High Power DC-DC Step-up Boost Converter

20A 1200W DC-DC Step Up Converter Module with Constant Current (CC) and Constant Voltage (CV) control.



MDU-1047 **DC-1K2** **RM 138.00**

Dual Display Digital DC Volt-Amp Meter Module 100V-50A

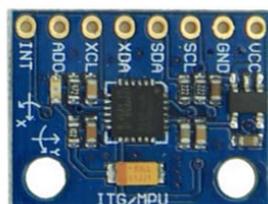
Compact voltage and current panel meter suitable for various equipments and measurements application. Built with dual 0.3" 7-segment 3-digits LED display module for simultaneous voltage and current display.



MDU-1048 **HT10050A** **RM 29.50**

MPU6050 3-Axis Accelerometer

This Accelerometer + Gyro sensor module is based on InvenSense MPU-6050 sensor, contains a MEMS accelerometer and a MEMS gyro in a single chip.



MDU-1053 **MPU6050** **RM 12.00**

ACS712 Hall Current Sensor Module 30A

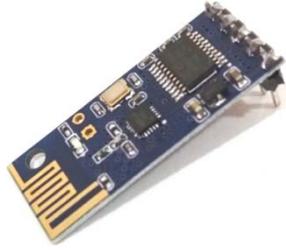
This is highly accurate sensor module to measure current up to 30A. ACS712 current sensor module operates from 5V and outputs analog voltage proportional to current measured on the sensing terminals.



MDU-1055 **ACS712-30A** **RM 13.00**

2.4GHz Serial RF Transceiver Module

This module is fully compatible with Arduino board and generally used in pairs for 2-ways RF communication. Operate in unlicensed ISM RF band of 2.405GHz~2.485GHz, operating distance can up to 200 meter line of sight.



MDU-1054 **XN297LCU** **RM 9.80**

40A Reversible Motor Speed Controller

This PWM (Pulse-Width-Modulation) DC Motor Speed Controller allows controlling the speed and direction of a DC motor. Continuous operating current of 40A.



MDU-1057 **HT-M4060FR** **RM 57.00**

2. Electronics Components

3296 Potentiometer

Bourns 3296Y Series 25-Turn Through Hole Cermet Trimmer Resistor with Pin Terminations, $\pm 10\%$ $\frac{1}{2}W$ $\pm 100ppm/^{\circ}C$.



RES-1460 3296Y-1-103LF 10K Ω RM 1.40

Single-In-Line Resistor Network

Thick Film Conformal Single-In-Line (SIL) Package Resistor Network. 0.3W $\pm 2\%$. Bussed 8-resistors, 9-pins SIL package. Black resin.



RES-1317 4608X101-104 100K Ω RM 0.50

HC49US Low Profile Quartz Crystal Unit

The HC-49USX Series is a low profile resistance weld type, through hole quartz crystal.



PAX-1030 HC49US-11.0592MHz RM 0.50

Peltier Thermoelectric Cooling Element

Thermo-electric or Peltier Cooling Modules also known as a TEC or a TEM. A thermoelectric cooling (TEC) module is a semiconductor-based electronic component that functions as a small heat pump.



PAX-1166 TEC1-12706 RM 11.50

Piezo Electric Buzzer

Piezo buzzers are used for making beeps, tones and alerts. This is panel mount type with loud output! Drive it with 3-20Vdc, with 3Hz pulses beeping or constant beeping. Beeping sound is 3.5KHz tone.



EMH-1132 HT2735 RM 7.50

40W Heater Cartridge for 3D Printer Extruder

This $\varnothing 6 \times 20$ mm Cylinder Cartridge Heater is a very suitable power and size for the 3d printer extruders application. 1-meter long heat resistance wire leads make connecting this heater quick and great flexibility. Come in supply of 12V or 24V, 40W power rating.



PAX-1167 HT1240HC-12V RM 8.50

Panel Mount Fuse Holders for 3AG Fuses

342 Series Hex nut Panel Mount Enclosed Fuse Holders for 3AG Fuses. Compatible with 3AG Fuses.



ASS-1023 342058 RM 9.50

T-0340RDAAF 5x20mm Fuse Holder

Suitable for 5x20mm fuses. Screwdriver slot release knob with Snap fit panel fixing. Solder & 2.8mm terminals with Low profile bezels.



ASS-1019 T-0340RDAAF RM 6.40

Miniature AC Magnetic Buzzer \varnothing 12mm

This tiny speaker uses an electromagnet to drive a thin metal sheet. That means you need to use some form of alternating current to get sound. The good news is that this speaker is tuned to respond best with a square wave (e.g. from a microcontroller).



EMH-1046 **CEM-1203** **RM 2.40**

FH001A Fuses Holder 250VAC 15A

Panel mount fuse holder suitable for 3AG series fuses.



ASS-1028 **FH-001AF** **RM 4.80**

WXD3-13 Multi-Turn Potentiometer/10K Ω

Wire Wound 2W power rating. Resistance Tolerance of $\pm 5\%$, Angle of Rotation of $3600 \pm 20^\circ$. Voltage Rating: 160V.



RES-1476 **WXD3-13-10K** **RM 5.80**

HFD2 Series Sensitive 2A DPDT Latching Relay

The HFD2 Series subminiature DIP relay offers a coil voltage of 12VDC, 2 coil latching type.



EMH-1131 **HFD2-012-M-L2** **RM 7.50**

JRC-23F 125VAC-2A Miniature Signal Relay

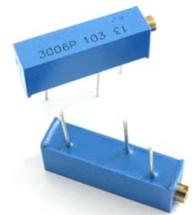
Space saving miniature PCB mount Signal Relay. Contact rating: 125Vac/2A. Coil Voltage: 5Vdc. Single Pole Double Throw contact arrangement.



EMH-1101 **JRC-23F/005/1ZS** **RM 4.40**

3006P High Precision Multi-Turn Potentiometer

3006P High Precision Multi-Turn Potentiometer for general application.



RES-1278 **3006P-503 - 50K Ω** **RM 1.50**

Single Turn Potentiometer

Single-turn top adjust PCB mount potentiometer for general application.

Pack of 5-pieces/lot.



RES-1477 **SM065-101 - 100 Ω** **RM 2.30**

3. Connector

JS910B 4mm Banana Terminal Connector

4mm Standard Short Banana Terminals. High quality, 4mm audio connectors. The terminal accepts 4mm banana plugs in the top. Maximum panel thickness 20mm. Connectors are available color coded in either red or black.



<u>CON-1074</u>	<u>JS910B-Black</u>	<u>RM 1.00</u>
<u>CON-1075</u>	<u>JS910B-Red</u>	<u>RM 1.00</u>

Banana Binding Post Connector

Insulated terminal binding post with 4mm socket. Panel insulating bushed have a location keyway, maximum panel size 12.7mm. Supply rating 60Vdc 20Amp.



<u>CON-1085</u>	<u>M436-R</u>	<u>RM 4.80</u>
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DSUB9 Serial 9-Pin Female Connector

9-Pins D-SUB Connector, 2.74mm Pitch. Right angle through-hole PCB mounting. With locking Jack Screw Holes.



<u>CON-1033</u>	<u>DSUB9R</u>	<u>RM 1.85</u>
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Pro Loudspeaker 4mm Banana Plug

High quality, gold plated 4mm audio connectors. This plug is stackable with a large entry hole which accepts cable up to a maximum of 7.5mm Outer. Maximum panel thickness 20mm. Connectors are available color coded in either red or black. Supply in pair (Red+Black).



<u>CON-1041</u>	<u>HT458229BR</u>	<u>RM 25.00</u>
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SMA Right Angle RF Female Connector

SMA (SubMiniature version A) connectors are semi-precision coaxial RF connectors. The connector has a 50 Ω impedance. It is designed for use from DC to 18 GHz. 16mm long neck type.



<u>CON-1060</u>	<u>SMA90R</u>	<u>RM 1.60</u>
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2-Pins Terminal Block 5mm Pitch

Miniature expandable terminal block. These terminal blocks are designed to 'snap' together. You can attach as many 3-pin or 2-pin ones along as you'd like to make arbitrary length of terminal block. Use this terminal blocks whenever making PCB-to-Wire connections.



<u>CON-1070</u>	<u>KF301-2P</u>	<u>RM 0.40</u>
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UG-1094/U BNC Straight Jack 75 Ω

Straight 75 Ω Panel Mount BNC Connector, jack, Solder Termination Nickel.



<u>CON-1066</u>	<u>UG1094-U</u>	<u>RM 10.40</u>
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75 Ω BNC To BNC Adapter

75 Ω ZDC/BNC RF coaxial adapter with a jack-jack (Female-Female) configuration and bayonet fitting. This 75 Ω RF coax BNC jack to BNC jack adapter has a nickel plated zinc body and gold plated female centre contact.



<u>CON-1026</u>	<u>75BNC2BNC</u>	<u>RM 5.60</u>
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2.54mm IDC Connector

2.54mm Pitch IDC Female Header Socket Connector. These crimp connectors can be snapped onto wire ribbon cable to make your own cable assemblies and keep your connections organized.



<u>CON-1035</u>	<u>FC2-06 – 6Pins</u>	<u>RM 0.30</u>
<u>CON-1036</u>	<u>FC2-10 – 10Pins</u>	<u>RM 0.45</u>

Arduino Stackable 2.54mm Header Connector

These headers are made to work with the Arduino boards. They are the perfect height for clearing the USB-B connector and great for stacking multiple shields.



<u>CON-1062</u>	<u>SP140520-10Pins</u>	<u>RM 0.60</u>
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RCA Female Audio/Video Connector-Red

RCA Female Connector PCB mounting type. Right Angle Thru-Hole 2-Terminal 1-Port. With Red color.



<u>CON-1046</u>	<u>KY006A1LR</u>	<u>RM 1.80</u>
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RCA Female Audio/Video Connector-Yellow

RCA Female Connector PCB mounting type. Right Angle Thru-Hole 2-Terminal 1-Port. With Yellow color.



<u>CON-1047</u>	<u>KY006A1LY</u>	<u>RM 1.80</u>
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2.54mm Shorting Links/Jumper

A range of 2.54mm pitch shorting links or jumpers with 2 x gold or tin plated female sockets in a black glass filled PBT UL94V-0 housing. Open top shorting links with a thumb grip.



<u>CON-1000</u>	<u>969102-BLACK</u>	<u>RM 1.00</u>
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3.5mm Stereo Audio Jack With DPDT Switch

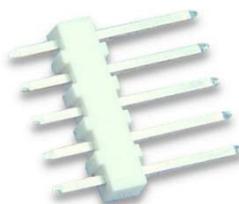
3.5 mm, Stereo Audio Jack. Right Angle, Through Hole, with DPDT Switch, Kinked Pins. Rated voltage and current of 12Vdc/1A.



<u>CON-1059</u>	<u>SJ3589ANG</u>	<u>RM 2.20</u>
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10-Pins 2.54mm Board-To-Wire Connector

Ideal for board-to-board and wire-to-board low-power and signal applications, KK254 connectors provide a flexible design and cost-saving solutions for a variety of applications. Delivering up to 5.0A and 250V per circuit in a 2.54mm centerline pitch. Number of contact: 10.



<u>CON-1002</u>	<u>KK254-10</u>	<u>RM 1.00</u>
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40-Pin SIL Female Headers 2.54mm Pitch

40-Pin Single-In-Line (SIL) female straight PCB header connector. Can be cut to any number of pins configuration. Standard 2.54mm (0.1") pin spacing.



Please note: You will probably lose one pin with each cut.

<u>CON-1021</u>	<u>B06-1x40AG1x2</u>	<u>RM 1.50</u>
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USB Type B Right Angle Receptacle Socket

These Through Hole USB Receptacles have a high temperature Nylon Glass Fibre filled UL 94V-0 housing colored white with a Tin plated copper alloy shell. This type of USB receptacles is suited to various applications.



CON-1067 **USB-BRA-W1** **RM 1.00**

MJ3536N 3.5mm Audio Jack

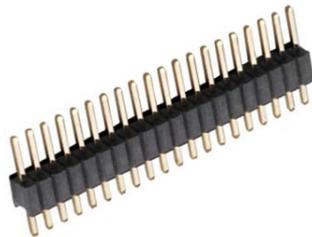
3.5mm, Mono, Right Angle, Through Hole, Audio Jack. Right angle Horizontal Orientation for PCB mounting. Voltage/Current Rating: 12Vdc/1A.



CON-1067 **MJ3536N** **RM 2.40**

2.54mm Pitch 40x1 SIL Straight Pin Header

P2540 series PCB pin header connector with a 2.54mm pitch. These P2540 series PCB headers are available with dual and single row, vertical and right angle configurations making them a versatile solution for various applications.



CON-1009 **P2540-S180** **RM 1.00**

2.54mm Pitch 40x2 DIL Right Angle Pin Header

P2540 series PCB pin header connector with a 2.54mm pitch. These P2540 series PCB headers are available with dual and single row, vertical and right angle configurations making them a versatile solution for various applications.



CON-1010 **P2540-D90** **RM 1.50**

80-Pins 40x2 DIL Female Header

Dual row of 80-holes Dual-In-Line DIL (40x2) female header. Can be cut to any pin count. Standard 0.1" spacing. We use them extensively in our Handsontec original boards design. They mate very well with break-away male headers.



CON-1022 **B06-2x40AG1** **RM 2.50**

20-Pins 0.3" DIP IC Socket 2.54mm Pitch

This 3000 DIL IC sockets have tin-plated dual wipe contacts that offer maximum contact retention at minimum cost and a large lead-in area provides easy package insertion.



CON-1003 **3000-2201** **RM 0.35**

3-Pin 250VAC/10A Power Plug Sockets

IEC 320 C14 male plug, 3-pin terminals, durable material construction, long using life. Used widely in lab equipment, fitness equipment, industrial automation equipment, etc. Fit for fuse with 5x20mm size. Use only with a 250V fuse.



CON-1038 **DB-14-10A** **RM 4.50**

RCA Jack with Metal Housing

Premium range of RCA Jacks with full metal casing provide the user with a reliable connection which can be used in a variety of Audio / Video applications. Available in cable mounting, with Red and Black color ring.



CON-1080 **RCA Jack-Red** **RM 4.60**

CON-1081 **RCA Jack-Black** **RM 4.60**

6.35mm (1/4") Cable Mount Stereo Audio Jack

This 6.35mm (1/4 inch) jack plug of high quality connectors in stereo versions, straight in satin nickel and black cover finish ideal for all applications that call for a 1/4 inch phono plug, including microphones, musical instruments and many others.



CON-1013 **635Audio-Jack** **RM 6.00**

80-Way 2-Row Straight PCB Pin Header

These P2540 2.54mm PCB headers can be used in a wide range of applications and are established as standard connectors in embedded PCs, motherboards and large electronics systems.



CON-1050 **P2540-D180** **RM 1.50**

2.1mm DC Power Socket PCB Mount

These PCB mounted sockets are fitted with an N/C contact and are designed to be used with a 2.1mm plug. Chassis mounting sockets for the 2.1mm plugs.



CON-1084 **DC005** **RM 0.30**

4mm Banana Plug – Cable Mount

This standard 4mm banana plug with rigid screw on PVC body comes in range of red and black body color for easy identifications. The plug pin comes with solder bucket for secure cable fixing with spring terminal.



CON-1011 **KB2008B** **RM 1.80**
CON-1012 **KB2008R** **RM 1.80**

RJ45 Modular Jack Socket

RJ45 Modular Jack Socket, right angle PCB Mount type. Horizontal Plastic 8P8C Modular Jack TAB Down.



CON-1001 **RJ45-90** **RM 1.40**

HR911105A MagJack LAN Connector

PCB mount RJ45 Magnetic Jack (MagJack) Network Connector with built-in Transformer & LED.



CON-1077 **HR911105A** **RM 4.80**

BNC / Straight Plug Crimp Type RF Connector

BNC / Straight Plug Crimp Type RF Connector. For cable 6/ 75Ω+93.



CON-1053 **R142085** **RM 7.50**

4. Switches

TS7703 Silent Silicon Rubber Tact Switch

Silent type soft feeling silicon rubber tactile switch. 8mm x 8mm x 5mm.



SWH-1011 **TS7703** **RM 0.90**

KCD6 Rocker Switch with Neon Light

Single Pole Double Throw (SPDT) Rocker Switch. 3-Pin Terminals, On/OFF Snap-In mounting type. Built in red neon light. Light lits when switch is in the on position.



SWH-1002 **KCD6** **RM 3.50**

16-Position BCD Coded Rotary Switch

Hexadecimal 16 position rotary switch. DIP rotary dial up to 1248C 16-bit 0-F code switch. 4:1 positive code. Molded-in terminals and fully sealed construction. Standard 2.54mm pin spacing.



SWH-1012 **ERD416RS** **RM 3.20**

PS22F03L Pushbutton Switch

Latching Push Button Switch. Double-Pole-Double-Throw DPDT.



SWH-1004 **PS22F03L** **RM 1.00**

TS21B SPDT Momentary Pushbutton Switch

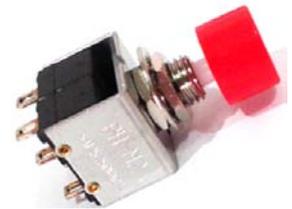
Sub-Miniature Single-Pole-Double-Throw Push button Switches with hex nut for panel mounting.



SWH-1010 **TS21B-UQ-S** **RM 1.60**

PH-M2 DPDT Momentary Push-Button Switch

Double-Pole-Double-Throw (DPDT) Momentary Push-Button Switch. Hex Nut Fixing Rear Mount Type. Φ 10mm red top button.



SWH-1003 **PH-M2** **RM 3.50**

Double-Pole Switch On-On 6A/125VAC

Apem's 5000 Series switches for peak currents for switching power supplies, DC-DC converters, motors, etc.

Manufacturing Part No: 5646A9.



SWH-1015 **5646A9** **RM 15.20**

6x6mm Tactile Switch

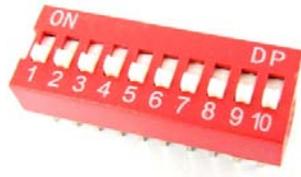
Tact switches are SPST snap action switches to be used with small currents (rated at 50mA 12Vdc). These Tact switches provide a sharp, clear and assuring operating feel, have low contact resistance, high contact reliability and come in a wide selection of operating forces.



SWH-1009 **TL1105** **RM 0.20**

DIP Switch 8 Way SPST

This SPST (single-pole-single throw) through-hole switches with a raised actuator and they are available in an array of positions.



SWH-1016

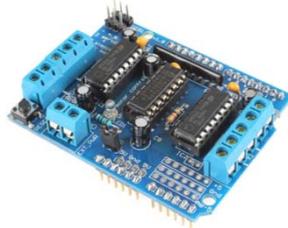
DS-08

RM 1.00

5. Arduino Boards & Arduino Shield

L293D Motor Driver Shield for Arduino

This Motor Shield is a great and quick way to control DC motors, servos or even stepper motors. It has the capability of controlling up to 2 stepper motors, 4 DC motors and 2 servos. This shield would be a good start for beginners because of its versatility for its low price range.



MOD-1021 **L293DSHD** **RM 13.50**

16x2 LCD/Keypad Shield for Arduino

16x2 Character LCD + 6-Keys Shield for Arduino. Version-1 with PWM back-light brightness control. 5 buttons on one analog input (A0). Any combinations of the 5 buttons lead to 32 different key values.



MOD-1022 **1602LCDSHD** **RM 13.50**

W5100 Ethernet Shield for Arduino

Arduino Ethernet Shield R3 allows an Arduino board to connect to the internet. It is based on the Wiznet W5100 Ethernet chip.



MOD-1032 **5100ethernet** **RM 13.50**

CNC/3-Axis Stepper Motor Shield

CNC-Shield is a shield that plugs onto the Arduino development platform transforming it into a CNC controller using the grbl CNC firmware.



MOD-1008 **cncshieldv3** **RM 11.80**

Arduino Mega2560-R3 Controller Board

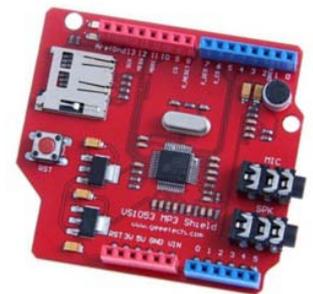
The Arduino Mega2560-R3 is a microcontroller board based on the ATmega2560 processor. The MEGA 2560 is designed for more complex projects. With 54 digital I/O pins, 16 analog inputs and a larger space for your sketch it is the recommended board for 3D printers and robotics projects. This gives your projects plenty of room and opportunities.



MDU-1005 **Mega2590-R3** **RM 41.80**

VS1053B WAV/MP3 Player Shield for Arduino

With this board you can pull MP3 or CD quality WAV files from the microSD card and play them using only one shield, effectively turning any Arduino into a fully functional stand-alone MP3 player or high CD quality sound player! The MP3 Shield utilizes the VS1053B MP3 audio decoder IC to decode audio files.



MDU-1031 **VS1053BSHD** **RM 51.00**

Arduino Uno R3

Arduino-Uno-R3 Controller Boards. With CH340G USB Bridge IC. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button.



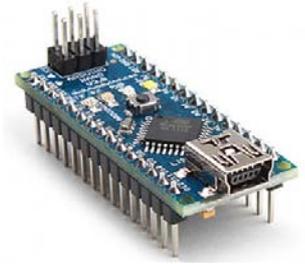
MDU-1006

Arduino Uno R3

RM 21.00

Arduino Nano 3.0 Controller Board

The Arduino Nano is a small, complete, and breadboard-friendly board based on the ATmega328P. It lacks only a DC power jack and powered by USB, and works with a Mini-B USB cable.



MDU-1046

Arduino Nano R3

RM 12.40

6. LED/ LCD & Digital Display

BC1602A 16x2 LCD Module White Character

16x2 LCD Module. Blue Screen with white character & backlight negative display 5V module. 8-bit or 4-bit data interface and 3 control lines make this module easily interface to popular microcontroller board.



DSP-1157 **BC1602A** **RM 10.00**

Dual Digit 0.5" 7-Segment LED Display. Red Color.

This 0.5" LED 7-Segment display is designed for viewing distances up to 7m. Common anode mode. These devices use an industry standard size package and pinout. Both the numeric and ±1 overflow devices feature a right hand decimal point.



DSP-1067 **ELD516** **RM 4.80**

3mm LED

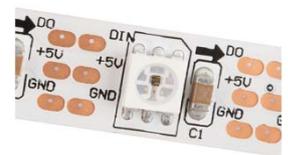
This family of LEDs is in 3 mm (T-1) through hole packages. They are available in various color options with either a diffused or water clear lens type. 3 mm round LEDs offer low power consumption and a long lifetime from a rugged and reliable package.



DSP-1154 **204-10SURD** **RM 0.06**

WS2812B RGB LED Strip/50cm~15-LEDs

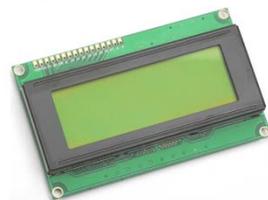
These LED strips are just about the best way to get tons of colorful LED light with a minimum of wiring and fuss! Each strip is 50cm in length and contains 15 light elements. Each element contains a red, green, and blue LED, as well as a tiny WS2812 controller chip.



DSP-1159 **WS2812B-AR** **RM 14.00**

20x4 2004 LCD Module with I2C Serial Interface

This is I2C interface 20x4 LCD display module, a new high-quality 4 line 20 character LCD module with on-board contrast control adjustment, backlight and I2C communication interface.



DSP-1165 **HT2004-I2C** **RM 29.00**

GDM2004D 20x4 LCD Module

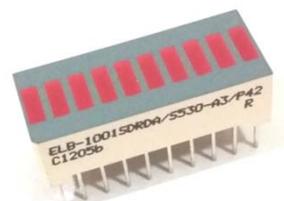
20x4 LCD Module. Yellow Green Screen with Backlight display 5v module.



DSP-1094 **OCU2004D** **RM 23.60**

10-Segments LED Bar Graph Display

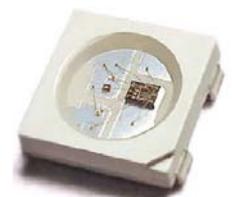
LED Bar Display. Red Color. 10-Segments. Designed for viewing distances up to 7 meters. There are separate anodes and cathodes for each light segment.



DSP-1066 **1001SDRDA** **RM 2.50**

WS2812B Intelligent Control RGB LED

WS2812B is an intelligent control RGB LED light source RGB controller chip integrated in 5050 package components. It internal includes intelligent digital port data latch and signal reshaping amplification driver circuit.



DSP-1167 **WS2812B** **RM 2.00**

ITR20002 Opto Interrupter Reflective

The ITR20002-A consist of an infrared emitting diode and an NPN silicon phototransistor, encased side-by-side on converging optical axis in a black thermoplastic housing.



DSP-1104

ITR20002

RM 2.10

7. Mechanical Linear Motion Components

Metric Metal Shielded Radial Ball Bearing.

This bearing is a kind of multi-purpose miniature metal shielded ball bearing. This is widely used where the inner ring rotates like in precision instruments, 3D Printer, CNC machines, micro motor, remote control model, skater board, industries.



Size: (Inner Diameter x Outer Diameter x Width)mm

<u>MCH-1008</u>	608ZZ (8x22x7)mm	RM 4.15
<u>MCH-1009</u>	625ZZ (5x16x5)mm	RM 2.20
<u>MCH-1010</u>	688ZZ (8x16x5)mm	RM 2.20

GT2 Pulley 5mm Bore

For precise linear motion control, GT2 belts and pulleys offer excellent precision at a great price. This pulley is meant for use with GT2 6mm wide belts only. Fit to motor shaft with 5mm diameter.



<u>MCH-1013</u>	GT2-20T	RM 7.50
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8mm-to-5mm Motor Shaft Flexible Couplings

This Aluminum Helical Shaft coupling is commonly used in 3D Printers, CNC machines and other DIY projects to couple 5mm shaft Stepper motors and 8mm rods, threaded rods, precision trapezoidal rods. The coupler takes care of small misalignments, deviations and twists in the system.



<u>MCH-1007</u>	GT5x8	RM 6.60
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SK16 Linear Shaft Holder

Anodized Aluminum Alloy SK Series Shaft Holder is designed for use in small CNC machines, linear stages, 3D printers and other devices that utilize linear shafts. Used to fix the both sides of linear rail shaft.



<u>MCH-1093</u>	SK16	RM7.50
<u>MCH-1114</u>	SK10	RM5.00

F695ZZ Flange Double Shielded Bearings

This metric miniature ball bearings are supplied in chrome steel and can withstand heavy radial loads and moderate thrust loads in both directions.



<u>MCH-1108</u>	F695ZZ	RM 2.50
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Delrin V-Wheels for CNC 3D Printer Linear Motion

This Open Builds Delrin V-Wheels are great for use with any V Wheel Linear Guide System. They can be used with V-Slot Extrusion/profile.



<u>EMHH-1165</u>	VW625	RM 2.80
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LMK10UU 10mm Square Flange Bearings Bushing

The nut of the standard type Linear Bushing is integrated with a flange. This enables the Linear Bushing to be directly mounted onto the housing with bolts, thus achieving easy installation.



MCH-1016 **LMK10UU** **RM 10.00**

Flange Trapezoidal T-8 Lead Screw Nut

Flanged bronze nut for four starts trapezoidal lead screws. Manufactured from bronze with good wear resistance and suitable for smooth linear motion applications.



MCH-1178 **HT-T8N** **RM 8.80**

Anti-Backlash T-Nut for Lead Screw

Axial Anti-backlash (AAB) T-nuts consist of a main nut body and a secondary ring that share the same thread form. There is a spring between the two components that force each part against opposing flanks of the screw thread.



MCH-1179 **T8-N-AB** **RM 14.00**

8mm Trapezoidal Lead Screw with Nut

This precision trapezoidal (metric) lead screws pitch and diameter are a perfect combination of high torque and speed. This screw fits the bill for most machine designs and will quickly become a standard on 3D printer , CNC Machine and robotics DIY community. Length: 350mm.



MCH-1095 **THSL-350-8D** **RM 24.00**

GT2 Timing Belt – Open Ended

The GT2 series of belts are designed specifically for linear motion. They use a rounded tooth profile, with 2mm pitch, that guarantees that the belt tooth fits smoothly and accurately in the pulley groove



Length: 1-meter.

MCH-1123 **HT-GT2-06** **RM 7.40**

8. Motor and Fan

40x40x10 mm DC Brushless Cooling Fan

Ultra quiet powerful brushless DC fan, quiet sleeve-bearing design. Specialized design, professional made, stable performance.

Operating Temperature: -10 C to +60C. Long Life Expectancy.



EMH-1071 **GDT4010S12B** **RM 6.50**

GA12-N20 Geared Mini DC Motor

This is a DC Mini Metal Gear Motor, ideal for making robots. Light weight, high torque and low RPM. Fine craftsmanship, durable, not easy to wear. Widely used on boat, model car, robotic, home appliances, linear motion control.



EMH-1176 **GA12-N20** **RM 18.50**

30x30x10 mm DC Brushless Cooling Fan

Ultra quiet powerful brushless DC fan, quiet sleeve-bearing design. Specialized design, professional made, stable performance.

Operating Temperature: -10 C to +60C. Long Life Expectancy.



EMH-1070 **GDT3010S12B** **RM 7.50**

Nema23 Bipolar/Unipolar Stepper Motor 1.0A

A stepper motor to satisfy all your 3D-Printer, robotics, Linear Motion projects needs! This 6-wire uni-polar/bipolar stepper motor has 1.8° per step for smooth motion and a nice holding torque.



EMH-1179 **23HS2610** **RM 110.00**

1.2A Nema 17 Stepper Motor

A stepper motor to satisfy all your 3D-Printer, robotics, Linear Motion projects needs! This 4-wire bipolar stepper has 1.8° per step for smooth motion and a nice holding torque.



EMH-1016 **42HS40-1204D** **RM 44.50**

1.7A Nema 17 Stepper Motor

A stepper motor to satisfy all your 3D-Printer, robotics, Linear Motion projects needs! This 4-wire bipolar stepper has 1.8° per step for smooth motion and a nice holding torque.



EMH-1181 **17HS-4401SD** **RM 47.00**

SG90 Tower Pro Gear Micro Servo Motor

Tiny and lightweight with high output power. Servo can rotate approximately 180 degrees (90 in each direction). Good for beginners who want to make stuff move without building a motor controller with feedback & gear box.



EMH-1140 **TPSG90S** **RM 7.40**

Nema-17 Planetary Geared Stepper Motor

This high precision NEMA17 Stepper motor has an integrated Planetary Gearbox with 1:5.18 gear ratio, the resolution can reach 0.35°step angle.



EMH-1173 **42BYGP40P** **RM 185.00**

Nema-17 High Torque Stepper Motor

The motor is specified to have a max current of 1.5A/phase with holding torque of >80N.cm, so that it could be driven easily with common motor shield for Arduino (or other motor driver) and a wall adapter or lead-acid battery.



EMH-1182 **42BYGH60** **RM 68.00**

Nema-17 Stepper Motor Right Angle Bracket

Durable with alloy steel material. Fit for 42mm stepper motor such as NEMA17. Easy to install.



MCH-1133 **17BR525250** **RM 8.50**

1.7A Nema 17 Dual Shaft Stepper Motor

A stepper motor to satisfy all your 3D-Printer, robotics, Linear Motion projects needs! This 4-wire dual shaft bipolar stepper has 1.8° per step for smooth motion.



EMH-1005 **17HS1910** **RM 55.00**

775 Ball Bearing DC Motor

Ball bearing DC motor with built-in cooling fan. High torque with wide operating voltage 12~36 Vdc with speed of 3600~9000 RPM. Suitable for motor tools application and DIY projects.



EMH-1166 **HT775-DC12** **RM 31.00**

JGB37-3530 High Torque DC Gear Motor 12V

JGB37-3530 is a high quality DC gear (all metal) motor available in a wide range of RPM configurations, ideal for linear motion control, DIY project and robotics application. Speed: 295RPM.



EMH-1174 **JGB37-3530** **RM 43.00**

Right Angle Bracket for 775 Series Motor

Durable with extra thickness of 5mm alloy steel material frame. Fit for 775 series DC Motor. Open U slot type for easy motor installation.



MCH-1195 **HT775BR** **RM 10.50**

A58SW-555 Worm Gear Motor

A58SW-555 is a high quality DC worm gear motor available in a wide range of RPM configurations, ideal for linear motion control, DIY project and robotics application.



EMH-1183 **A58SW-555** **RM 98.00**

GA12 N20 Motor Mounting Bracket

This is a compact mounting bracket ideally designed for N20 micro gear motors. It is made of ABS plastic material and it is designed to fit perfectly to N20 motors.



EMH-1183 **N20BRK** **RM 2.50**

A58SW Worm Gear Motor Bracket

Durable with thickness of 3mm solid alloy steel material frame. Fit for A58SW series of Worm Gear DC Motor.



MCH-1196

A58SW-BR

RM 11.00

9. Tools & Accessory

PL2303HX USB to RS232 Converter

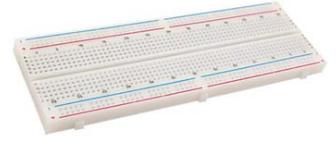
This PL2303HX cables are a family of USB to TTL serial UART converter cables incorporating Prolific's PL2303HX USB to Serial UART interface IC device which handles all the USB signaling and protocols. Inside the big USB plug is a USB-Serial conversion chip and at the end of the 1m cable are power, TX & RX signal pins.



ASS-1015 **PL2303HX-C** **RM 13.00**

MB102 830 Full Sized Solderless Bread Board

This is a full-size breadboard, 830 tie points. Good for small and medium projects. Measure 5.5 cm x 17 cm with a standard double-strip in the middle and two power rails on both sides. You can pull the power rails off easily to make the breadboard as thin as 3.5cm. You can also snap these breadboards together either way to make longer and/or wider breadboards.



ASS-1004 **MB102-830** **RM 6.50**

Tinned Bare Copper Wire Ø0.57mm x 10m

Tinned copper wire (or Hook Up Wire) is an un-insulated wire used for connecting electronic components on a circuit board, lead wire, and jewelry making. A bare copper wire is coated in a layer of tin to prevent oxidation. The wire is a subdued silver color and is very pliable. It is used in a variety of un-insulated applications including electrical hook-ups, jumpers, and ground.



ASS-1021 **HT5710** **RM 5.00**

Kapton Polyimide Tape

Kapton Tape, also known as Polyimide Tape, is an electrically insulating heat resistant tape that has many uses for 3D printers. Designed for high temperature masking applications, including the protection of printed circuit board gold finger contacts during wave soldering, heater bed in 3D printer.



Length: 30 meters. Width: 6mm, 20mm, 50mm

ASS-1003 **Kapton3006-6mm** **RM 6.00**

ASS-1002 **Kapton3020-20mm** **RM 16.00**

ASS-1000 **Kapton3050-50mm** **RM 32.00**

Mylar Insulating Tape. Anti Flame & High Temperature

This Mylar (polyester) Heat Resistant, Flame Retardant and High Temperature Insulation Adhesive Tape is a high quality product that is ideal for a wide variety of applications and projects. Fire proof, anti glue loose, anti solvents, aging resistance. Widely use in electronics industry, insulating pack for transformers, motors, coil capacitor and switching power supply. Width: 25mm. Length: 66m.



ASS-1007 **mylar256603** **RM 15.20**

Hexagon Allen Key

A hex key, also known as an Allen wrench, can help you easily fasten or loosen bolts, particularly those that are small and difficult to reach with other tools. These keys are precision heat treated, hardened, and tempered to ensure maximum toughness at the wrench core. The hex key set comes with a variety of sizes to accommodate a variety of jobs from assembly to automotive.



ASS-1024 **Hex Allen Key** **RM 1.80**

4x4 Matrix Membrane Keypad

This 16-button keypad provides a useful human interface component for micro-controller projects. Convenient adhesive backing provides a simple way to mount the keypad in a variety of applications.



ASS-1026 **4416Keypad** **RM 5.40**

HT718 Heat sink for TO220 Components

Small heat sink for TO-220 components. Ideal for keeping your 5V and 3.3V regulators running cool. Black anodized bolt on type with 2.5W dissipation.



MCH-1097 **HT718-220** **RM 0.35**

936 Soldering Iron 50W

High quality 936 ESD protection soldering iron, it is the industry standard work horse solder iron. Is an inexpensive, constant temperature soldering iron that you can stack to conserve valuable bench space. It will run for years without repairs. It's ESD safe for solder critical static sensitive applications. With replaceable solder tip and heating elements.



ASS-1025 **JYA505** **RM 35.00**

900MT-K Solder Tip – Bevel Type

This type of solder tip has a shape like a knife and is capable of soldering by applying the tip in 3 ways: line, face and point. It is used for soldering at narrow pitches, correction of bridging and drags soldering. To be use with 936 Series soldering iron.



ASS-1031 **900M-T-K** **RM 8.50**

40Pin F/M Jumper Wire 20cm

Multi Color Dupont Cable 20cm 2.54mm 1-pin Female to Male Jumper Wire for breadboard application. Handy for making wire harnesses or jumper between headers on PCB's.



ASS-1027 **40P-MF-J1020** **RM 3.90**

6x4mm Solder Cleaning Sponge

A cellulose sponge supplied as a flat sheet, in the dry state to moisten with water. Clean soldering iron tips quickly and efficiently.



ASS-1032 **6040SP** **RM 1.00**

900M-T-I Solder Tip for 936 Soldering Iron

This type of soldering tip has a thin conical end and is an ultra fine tip which is best suited for soldering at narrow pitches.



ASS-1034 **900M-T-I** **RM 8.50**

KS936A Soldering Station Temperature Control

The KS936A+ ESD protected soldering station is an inexpensive, temperature adjustable station that you can stack on workbench to conserve valuable bench space.



ASS-1033 **KS936A** **RM 95.00**

Solder Wick De-Soldering Braid

Solder-Wick offers the state of the art in desoldering technology. Solder-Wick is designed for today's heat sensitive electronic components using lighter mass, pure copper braid construction.



ASS-1030 **TU3015** **RM 7.50**

Rosin Core Soldering Wire 0.8mm/100g

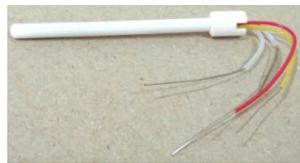
Rosin core low temperature soldering wires. Good solder ability, no spattering and non-corrosive. With a low melting point, widely used in electrical and electronics industry.



ASS-1035 **Solder08** **RM 12.0**

24V/50W Heating Element for 936 Soldering Iron Station

This 24V/50W ceramic heating element is with 4 wires type with K-type thermocoupler as temperature sensor. Compatible with 936 series of soldering iron and soldering station with temperature control.



ASS-1039 **HT1322-936** **RM 12.00**

FL2 50A 75mV Current Shunt Resistor For Ammeter.

An Ammeter Shunt resistor allows the measurement of current values too large to be directly measured by a particular ammeter. Could be used either in a Digital or an Analog meter.



ASS-1041 **FL-2-50A** **RM 6.80**

Wii Nunchuk Remote Controller for Arduino

A great invention of Nintendo is the Nunchuk, a cheap extension for the Wii remote control. As it uses I2C as transportation protocol, it's easy to access the raw data of the controller. Can be easily interface to Arduino or Raspberry Pi.



ASS-1040 **Wii Nunchuk** **RM 31.50**

10. Engineering Material

5052H32 Aluminum Alloy Sheet

Aluminum alloy 5052 in H32 temper has very good corrosion resistance to seawater and marine and industrial atmosphere. It also has very good weld ability and good cold formability.



Size: 200mm x 250mm
Thickness: 3 ~ 5mm

MCH-1003	5052H3203-3mm	RM 21.00
MCH-1004	5052H3204-4mm	RM 30.00
MCH-1005	5052H3205-5mm	RM 38.00

L Joining Plate for 2020 Aluminum Profile

These aluminum plates allow you to join standard 20mm T-slot/T-slot aluminum extrusion profile at a 90 degree angle. The holes are spaced 25mm apart on each arm, allowing them to be used in the slots or in tapped holes on the edges of 20mm extrusion.



MCH-1115	HT-90PLT	RM 2.80
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3030 Roll-In T-Nuts with Leaf Spring

An essential part for working with slotted aluminum extrusion. These slim metal nuts slide into the side-slot of the extrusion. Suitable for 30/40 Profile.



5-pcs/lot.

MCH-1115	3030M5TN	RM 5.60
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20TN Drop-in Tee Nut

These are post insertion Tee Nuts that can be added anywhere along the slot of compatible extrusions/profile. These Drop-In Tee Nuts are great to have on hand because they do not need to be placed in from the ends of the extrusion.



MCH-1180	20TN-M5	RM 3.50
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FB6061 Aluminum Flat Bar/0.5x1.25 Inch

FB6061 Aluminum Flat bar, is an extruded aluminum product that is very versatile and has a wide range of applications. FB6061 Aluminum Flat Bar is widely used for all types of fabrication projects where lightweight and corrosion resistance is a concern.



MCH-1177	FB6061-1332	RM 16.80
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Ø3mm Hollow Brass Tubing

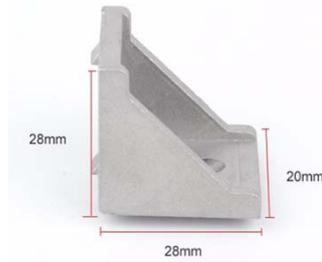
Round Seamless Brass tubing is commonly used for architectural detail and industrial design elements. Alloys are comparable in strength, formability and weld ability. Length: 200mm



MCH-1106	HT-3020BT	RM 8.80
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20x28mm Right Angle Bracket

(28x28x20)mm Right Angle Bracket for Aluminum Extrusion. Suitable with aluminum profile size of 20x20mm, 20x40mm.



2020 P5 Series Aluminum Profile

Series P5 aluminum profiles are generally based on 20mm core dimensions, with a 5mm slot that allows a maximum slot nut thread of M5, these aluminum extrusions are used for small, light precision applications such as sensor supports, 3D printer, CNC machine and robotic linear motion.



MCH-1098 **2820R90BRK** **RM 3.20**

MCH-1132 **AL-P5-2020-60** **RM 24.00**

11. Screws & Nuts

M3 Wing Nut

A Wing Nut is a Round Nut with a pair of “wings” to enable it to be turned without tools, used where frequent adjustments are needed or part removal can be made quickly at some later stage.



Pack of 5-pieces/lot.

<u>MCH-1107</u>	<u>M3-M3WNP</u>	<u>RM 3.20</u>
<u>MCH-1049</u>	<u>M4-M4WNP</u>	<u>RM 3.90</u>
<u>MCH-1069</u>	<u>M5-M5WNP</u>	<u>RM 4.00</u>

Nylon Plastic Hexagon Nut – M4 Series

This nut is made of plain and durable nylon 6.6. This hexagon nut with metric thread, features hex head and hex type drive.



Pack of 10-pieces/lot.

<u>MCH-1193</u>	<u>M4xNL-Nut</u>	<u>RM 1.50</u>
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Nylon Plastic Hexagon Head Screw – M4 Series

This screw is made of plain and durable nylon 6.6. This hexagon head screw with metric thread, features hex head and hex type drive.



Pack of 10-pieces/lot.

<u>MCH-1192</u>	<u>M4xNL10HEX-10mm</u>	<u>RM 2.20</u>
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M3 Hexagon Brass Standoff Spacer/15mm.

These hexagonal metal spacers have female/male or male/male type M3 thread size.



Pack of 5-pieces/lot.

<u>MCH-1117</u>	<u>HT315MF6-15mm</u>	<u>RM 1.80</u>
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Nylon Philips Cross Round Head Screw.

DIN7985 Black Plastic Nylon Cheese Head Phillips Screw. Cross Recessed Raised Head type.



Pack of 10-pieces.

<u>MCH-1197</u>	<u>M4xNL08PH-BK</u>	<u>RM 2.20</u>
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Hex Socket Head Shoulder Screws M5 Thread

These hexagon socket shoulder screws feature a small cylindrical head with tall vertical sides. The socket screws are ideal when you have less room for wrenches.



<u>MCH-1198</u>	<u>M5xSH16-16mm</u>	<u>RM 1.60</u>
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12. Power Supply

240W 12V 20A Switch Mode Power Supply SMPS

Fully enclosed switching power supply for general applications with wide range power line input voltage. Highly reliable power output with short circuit and overload protection.



<u>PSU-1001</u>	<u>S240-12V20A</u>	<u>RM 69.00</u>
<u>PSU-1002</u>	<u>S300-12V25A</u>	<u>RM 73.00</u>

13. Robotics

2-wheels Smart Car Chassis with Speed Encoder Disc

This is a chassis for a 3 wheeled robot car. Well designed robot car chassis kit suitable for Arduino/Raspberry mobile robot development platform.



EMH-1062 2WHCAR RM 22.50

GA12-N20 Geared Motor+Rubber Wheels Kit

This is a DC Mini Metal Gear Motor plus rubber wheel and motor mounting kit, ideal for making robots. Light weight motor, high torque and low RPM.



2 sets of rubber wheel + GA gear motor + mounting bracket.

EMH-1180 GA12-WH-K RM 47.00

Rubber Wheels for GA12-N20 Geared Motor

This is typical rubber wheel for small robot mobile platforms application. The tire is soft black rubber with deep tread for added traction in rugged terrain.



ASS-1017 N20D4319W RM 3.50