



Latest Technology for Multimedia Applications 1,500 brand new products from industry leading suppliers



NEW

Development Tools Focus

LATEST TECHNOLOGY FROM THE INDUSTRY'S NO.1 RANGE

▶ See page 6



NEW

Test & Measurement















BRAND NEW PRODUCTS FROM THE INDUSTRY'S LEADING TEST & MEASUREMENT RANGE

▶ See page 41



WE SPEAK YOUR LANGUAGE...

Guaranteed high service no matter how you place your order

 <p>Phone: 00 800 121 29 67 E-mail: info-pl@farnell.com Technical: tech-pl@farnell.com Website: www.farnell.com/pl</p>	 <p>Phone: 0800 894946 E-mail: info-ro@farnell.com Technical: tech-ro@farnell.com Website: www.farnell.com/ro</p>	 <p>Phone: 8-10-8002-3644011 E-mail: russia-sales@farnell.com Technical: tech-ru@farnell.com Website: www.farnell.com</p>
 <p>Phone: 06 80 016 413 E-mail: info-hu@farnell.com Technical: tech-hu@farnell.com Website: www.farnell.com/hu</p>	 <p>Phone: 0800 80414 E-mail: info-si@farnell.com Technical: tech-si@farnell.com Website: www.farnell.com/si</p>	 <p>Phone: +44 870 1200 109 E-mail: info-tr@farnell.com Technical: tech-tr@farnell.com Website: www.farnell.com/tr</p>
 <p>Phone: 800 142 085 E-mail: info-cz@farnell.com Technical: tech-cz@farnell.com Website: www.farnell.com/cz</p>	 <p>Phone: 800-0111280 E-mail: info-ee@farnell.com Technical: tech-ee@farnell.com Website: www.farnell.com/ee</p>	 <p>Phone: 1-80 937 0015 E-mail: israel-sales@farnell.com Website: www.farnell.co.il</p>
 <p>Phone: 0800 001 332 E-mail: info-sk@farnell.com Technical: tech-sk@farnell.com Website: www.farnell.com/sk</p>	 <p>Phone: 8000-3557 E-mail: info-lv@farnell.com Technical: tech-lv@farnell.com Website: www.farnell.com/lv</p>	 <p>Phone: +44 870 1200 208 E-mail: export@farnell.com Website: www.farnell.com/tr</p>
 <p>Phone: 00800 1154487 E-mail: info-bg@farnell.com Technical: tech-bg@farnell.com Website: www.farnell.com/bg</p>	 <p>Phone: 8800-30988 E-mail: info-lt@farnell.com Technical: tech-lt@farnell.com Website: www.farnell.com/lt</p>	

Flexible payment, speedy delivery

Same day despatch¹

On all in stock orders placed before 4pm Monday - Friday

FLEXIBLE PAYMENT OPTIONS

Trade account or credit card



THE FARNELL GUARANTEE

If you're not 100% satisfied with your purchased products, return them in the original packaging to: Farnell Returns Dept, Farnell International Distribution Centre, Castleton Road, Leeds, LS12 2EN²



Support

Free technical support³

OUR TRAINED ENGINEERS ARE HERE TO HELP!

Chat live with our trained engineers at www.farnell.com

Free global legislation advice

RoHS, REACH, WEEE, EuP, Batteries Directive

- we've got it covered at: www.global-legislation.com

Free eProcurement

For complete cost control and total transparency

of spend: www.farnell.com/ibuy

Free flexible packaging options

Re-reeling, manufacturer waffle trays & tubes,

unique peel packaging for ICs.

No minimum order quantity

Fast reliable local service

We value your opinion

We care what you think and want to hear from you.

Please leave your thoughts or feedback at eemarketing@farnell.com



1. Not available in all countries. Visit www.farnell.com for details.
2. Excludes software, specially constructed items and products containing 'hazardous substances'.
3. Available to account customers only. Please see our 'Conditions of Supply' for full details.
4. Price reductions include products which do not appear in this catalogue. 'Reduced in price' means that at least one break price per product is now lower than the equivalent break price for that product offered by Farnell in its 2008 catalogue or otherwise in the last 12 months.

WELCOME TO SELECT

Design with the best

Major advances in technology have enabled the exciting multimedia devices we see everywhere today. Products like the iPhone Touch, Blu-ray DVD recorders and GPS systems would not be possible without advances in miniaturisation, power management, displays, interface technology, graphics processing, analogue signal conditioning and communications to mention just a few.



In this edition of Select we take a look at some of the products that enable the latest generation of multimedia technologies. In pages 4 and 5 we will see how these devices enable better audio and video quality, extended battery life, and can also enhance user experience by allowing easier manipulation of on-screen data.

The multimedia theme is continued in our displays and optoelectronics section. Even the best electronics in the world need a quality display to stand out from the crowd. The displays and optoelectronics featured in this section are suitable for a variety of solutions; from larger screens that are ideal for advertising applications to the smaller indicators for control. We also showcase some of the latest touch screen technologies, which offer a greater degree of flexibility and control than ever before.

Read about our latest selection of development tools from page 6 - 13. These kits ease the design process and enable you to get your products to market faster.

“ The advancement of robotics technology opens up a wide variety of new applications ”

In pages 18 and 19 we take a look at the selection of robotic products we offer. The advancement of robotics technology opens up a wide variety of new applications, so take a look and see if robotics could be the solution that you need for your next product or design.

Visit www.farnell.com to find out more about latest technology from Farnell's leading electronics product range.

Quintin Komaromy
Commercial Marketing Director - Farnell Europe

CONTENTS

TECHNOLOGY FIRST

Multimedia Focus	4
Semiconductors & Development Tools	
Development Tools	6
New Technology	14
FPGA	16
Robotics & Prototyping	
Robotics	18
PCB	20
Optoelectronics	
Optoelectronics	23
Passives	
Capacitors	28
Magnetic Components	30
Resistors	31
Electromechanical	
Connectors	33
Enclosures	35
Soldering	
Stations, Irons & Fume Extraction	37
Consumables & Accessories	40
Test Equipment	
Oscilloscopes	41
Bench Equipment	42
Network Test Equipment	46
Power	
Power Supplies	47
Batteries	50
Tools	
Hand Tools	51
Power Tools	54
Chemicals	
Chemicals & Accessories	57
Cable & Electrical	
Cable & Wire	60
Cable Accessories	62
Electrical Accessories	63
Switches	64
Lamps & Lighting	66

New from Farnell

700 new products added
online every week

...Latest technology ...Product exclusives ...New niche manufacturers

www.farnell.com



PF-XAL-AL Series - Audio Capacitor



Audio capacitors specially designed for high performance audio systems. Paper in oil (PIO) capacitors are hand wound using high purity aluminium foil and have hand soldered leads. Oil impregnated before being assembled, oil filled and hermetically sealed in an aluminium housing with phenolic resin and rubber end discs. 1mm diameter tinned copper lead out wires are solder sealed to the eyelets in the end discs.



300 Volt d. c. - Applications = Mainly Speakers & Crossover Systems

µF	nF	Tolerance	Dimensions		Mfrs. List No.	Order Code
			L	Dia.		
1	1000	± 10%	54	35	PF-XAL-AL-1.0/10/300	163-6693
2.2	2200	± 10%	95	45	PF-XAL-AL-2.2/10/300	163-6694
3.3	3300	± 10%	95	45	PF-XAL-AL-3.3/10/300	163-6695
4.7	4700	± 10%	95	45	PF-XAL-AL-4.7/10/300	163-6696
5	5000	± 10%	95	45	PF-XAL-AL-5.0/10/300	163-6697
6.8	6800	± 5%	95	65	PF-XAL-AL-6.8/5/300	163-6699
8	8000	± 5%	95	65	PF-XAL-AL-8.0/5/300	163-6700
10	10000	± 5%	95	65	PF-XAL-AL-10.0/5/300	163-6701

µF	Order Code	Price Each				
		1+	5+	25+	50+	100+
1µF	163-6693	12.41	11.03	9.92	9.18	8.84
2.2µF	163-6694	18.78	16.72	15.02	13.90	13.36
3.3µF	163-6695	23.13	20.59	18.50	17.11	16.46
4.7µF	163-6696	26.38	23.48	21.10	19.52	18.78
5µF	163-6697	27.24	24.25	21.80	20.16	19.40
6.8µF	163-6699	32.00	28.47	25.59	23.68	22.78
8µF	163-6700	35.21	31.34	28.17	26.06	25.08
10µF	163-6701	39.39	35.06	31.51	29.14	28.04

630 Volt d. c. - Applications = Mainly Amplifiers & Tube Amplifiers

µF	nF	Tolerance	Dimensions		Mfrs. List No.	Order Code
			L	Dia.		
0.01	10	± 20%	34	15	PF-XAL-AL-0.01/20/630	163-6702
0.02	20	± 20%	34	15	PF-XAL-AL-0.02/20/630	163-6703
0.05	50	± 20%	34	15	PF-XAL-AL-0.05/20/630	163-6705
0.1	100	± 10%	54	25	PF-XAL-AL-0.1/10/630	163-6706
0.22	220	± 10%	54	25	PF-XAL-AL-0.22/10/630	163-6707
0.33	330	± 10%	54	25	PF-XAL-AL-0.33/10/630	163-6708
0.47	470	± 10%	54	25	PF-XAL-AL-0.47/10/630	163-6709
1	1000	± 10%	54	35	PF-XAL-AL-1.0/10/630	163-6710
2.2	2200	± 10%	95	45	PF-XAL-AL-2.2/10/630	163-6711
3.3	3300	± 10%	95	45	PF-XAL-AL-3.3/10/630	163-6712
4.7	4700	± 10%	95	65	PF-XAL-AL-4.7/10/630	163-6713
5	5000	± 10%	95	65	PF-XAL-AL-5.0/10/630	163-6714
6.8	6800	± 10%	95	45	PF-XAL-AL-6.8/5/630	163-6715
8	8000	± 5%	95	65	PF-XAL-AL-8.0/5/630	163-6717
10	10000	± 5%	95	65	PF-XAL-AL-10.0/5/630	163-6718

µF	Order Code	Price Each				
		1+	5+	25+	50+	100+
0.01µF	163-6702	8.96	7.97	7.17	6.63	6.37
0.02µF	163-6703	9.27	8.25	7.41	6.87	6.61
0.05µF	163-6705	9.60	8.53	7.67	7.09	6.83
0.1µF	163-6706	9.97	8.87	7.97	7.37	7.09
0.22µF	163-6707	10.90	9.70	8.71	8.06	7.75
0.33µF	163-6708	11.94	10.63	9.55	8.84	8.50
0.47µF	163-6709	12.87	11.46	10.29	9.52	9.16
1µF	163-6710	13.80	12.28	11.03	10.21	9.82
2.2µF	163-6711	20.90	18.59	16.72	15.47	14.87
3.3µF	163-6712	25.72	22.88	20.56	19.02	18.30
4.7µF	163-6713	29.33	26.11	23.46	21.71	20.88
5µF	163-6714	30.30	26.95	24.23	22.41	21.56
6.8µF	163-6715	35.56	31.65	28.45	26.32	25.31
8µF	163-6717	39.16	34.84	31.33	28.97	27.88
10µF	163-6718	43.79	38.98	35.03	32.40	31.18

5-Wire Resistive Touch Screen



A durable range of analogue touch screens used over flat screen monitors in place of a mouse. The simple 5 wire resistive interface, facilitates simple interfacing using your own custom hardware, or using the optional windows compatible USB interface and supplied software.

- Simple 5 wire interface
- Input mode: Stylus or finger
- Knock tested to 350,000 times
- Operating temp: -10°C to +70°C

Size (")	Frame Size (mm)	Viewable Size (mm)	Active Size (mm)	Total Thickness (mm)	Tail Length (mm)	Order Code
6.4	150 x 115.5	133.6 x 101.4	130.6 x 98.4	1.5	85	1657627
7.0	170.1 x 106.3	158 x 94.6	154.4 x 92.1	1.5	205	1657629
8.4	196.09 x 149.86	174.8 x 132.2	171.4 x 128.8	2.2	155	1657631
10.4	248.92 x 186.69	219.9 x 167.83	215.9 x 163.83	2.2	205	1657632
12.1	271.27 x 205.74	252.87 x 191.4	248.87 x 187.4	2.2	205	1657633
15.0	332.9 x 248.9	311.1 x 235.1	307.1 x 231.1	3.2	205	1657634
15.1	356.01 x 264.39	320.01 x 242	310.01 x 232	3.2	305	1657635
17.0	356 x 286.5	343 x 275.5	337 x 269.5	2.2	205	1657636
17.1	365.4 x 290.18	343 x 275.4	340 x 272.4	3.2	305	1657637
19.0	401 x 323.4	387 x 311.7	378.5 x 303	2.2	205	1657638
19.2	401 x 323.4	387 x 311.7	381 x 305.7	3.2	205	1657639

Size	Mfrs. List No.	Order Code	Price Each			
			1+	5+		
6.4"	T064S-5RA003N-0A11R0-080FH	165-7627	18.55	17.63		
7"	T070S-5RBA05N-0A11R0-200FH	165-7629	18.98	18.03		
8.4"	T084S-5RA002N-0A18R0-150FH	165-7631	24.19	22.98		
10.4"	T104S-5RA003N-0A18R0-200FH	165-7632	36.29	34.47		
12.1"	T121S-5RA006N-0A18R0-200FH	165-7633	51.31	48.74		
15"	T150S-5RA001N-0A28R0-200FH	165-7634	58.89	53.01		
15.1"	T151S-5RA011N-0A28R0-300FH	165-7635	58.89	53.01		
17"	T170S-5RB004N-0A18R0-200FH	165-7636	62.20	55.99		
17.1"	T171S-5RA001N-0A28R0-300FH	165-7637	62.20	55.99		
19"	T190S-5RB001N-0A28R0-300FH	165-7638	72.58	66.06		
19.2"	T192S-5RB005N-0A28R0-200FH	165-7639	72.58	66.06		
Controller			COM-R5W-HT-580-R	145-4009	25.07	22.56

Single Digit Display - 14.2mm



Character Size 14.22mm
No. of Characters 1
Operating Temperature -40°C to +105°C



Colour	CA / CC	Mfrs. List No.	Order Code	Luminous Intensity (mcd) (typ)	Forward Voltage (V) (max)	Forward Current (mA) (max)	Price Each				
							1+	25+	500+		
Red	Anode	HDSM-531C	165-1442	16	2.6	25	1.40	0.95	0.77	0.69	0.66
Red	Cathode	HDSM-533C	165-1447	16	2.6	25	1.40	0.95	0.77	0.69	0.66
Orange	Anode	HDSM-531L	165-1446	19.5	2.6	25	1.58	1.08	0.87	0.78	0.75
Orange	Cathode	HDSM-533L	165-1450	19.5	2.6	25	1.58	1.08	0.87	0.78	0.75
Yellow	Anode	HDSM-531F	165-1443	20	2.6	25	1.58	1.08	0.87	0.78	0.75
Yellow	Cathode	HDSM-533F	165-1448	20	2.6	25	1.58	1.08	0.87	0.78	0.75
Green	Anode	HDSM-531H	165-1445	10.5	2.6	25	1.72	1.18	0.96	0.85	0.82
Green	Cathode	HDSM-533H	165-1449	10.5	2.6	25	1.72	1.18	0.96	0.85	0.82
Blue	Anode	HDSM-531B	165-9320	13.5	4	25	2.87	2.09	1.72	1.55	1.48
Blue	Cathode	HDSM-533B	165-9321	13.5	4	25	2.87	2.09	1.72	1.55	1.48

Mini RS232 Bluetooth Serial Adapter



The LM048 is the worlds smallest Bluetooth Serial RS232 Adapter with a comprehensive range of firmware commands. Using a EDR V2.0 Class 1 Bluetooth chipset as standard these units have a range of up to 100m with a transfer rate of up to 3Mbps. It has three LED status lights that indicate: Power on, Data transfer status and Bluetooth connection status. The mini USB port can be used to power the unit from either USB to USB or Mains to mini USB.

The strong housing is able to withstand knocks and has been drop tested from over 10 metres. This unit also has FCC, CE and RTTE approval.

Mfrs. List No.	Description	Order Code	Price Each
LM048	Mini RS232 Bluetooth Adapter	167-5410	44.80

FREE technical support
Our trained engineers are here to help!



See inside front cover

See inside front cover

www.farnell.com



i.MX Multimedia Applications Processors



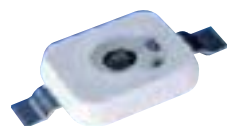
Freescale's i.MX family of applications processors is designed for use in smart-phones, portable media players, portable navigation devices, video surveillance, point-of-sale systems, bar code scanners, and many other consumer, industrial, health care and general-purpose embedded applications.



Mfrs. List No.	Pkg / Pins	Core Speed Max.	Operating Temp.	Order Code	1+	10+	100+
MC9328MXLCVM15	PBGA/256	150MHz	-40 to 85°C	157-9828	12.69	9.77	8.44
MC9328MXLCPV15	PBGA/225	150MHz	-40 to 85°C	157-9829	11.97	9.21	7.97
MC9328MXLVM20	PBGA/256	200MHz	0 to 70°C	157-9832	13.25	10.19	8.81
MC9328MXLVP15	PBGA/225	150MHz	0 to 70°C	157-9830	10.39	8.00	6.92
MC9328MXLVP20	PBGA/225	200MHz	0°C to +70°C	167-1694	8.28	--	--
MC9328MXSVP10	PBGA/225	100MHz	0 to 70°C	157-9831	9.27	7.13	6.18
MC9328MX21CVK	PBGA/289	266MHz	-40 to 85°C	157-9826	20.12	15.48	13.40
MC9328MX21CVM	PBGA/289	266MHz	-40 to 85°C	157-9822	17.58	13.51	11.13
MC9328MX21DVK	MAPBGA/289	266MHz	-30 to 70°C	157-9823	17.51	13.47	11.08
MC9328MX21VM	PBGA/289	266MHz	0 to 70°C	157-9825	15.29	11.76	9.68
MC9328MX21VK	PBGA/289	266MHz	0 to 70°C	157-9827	17.51	13.47	11.08
MCIMX27VOP4A	TMAP/404	400MHz	-20°C to +85°C	167-1692	12.19	--	--
MCIMX31CVKN5C	MAPBGA/ 473	400MHz	-40 to 85°C	157-9878	31.28	24.06	19.81
MCIMX31LVKN5C	MAPBGA/457	532MHz	0°C to +70°C	167-1693	15.33	--	--
MCIMX31VKN5B	MAPBGA/457	532MHz	0 to 70°C	157-9881	27.19	20.91	18.11
MCIMX31VKN5C	MAPBGA/457	532MHz	0 to 70°C	157-9882	27.19	20.91	17.21

Golden Dragon™ Plus

4 Watt High Power LED



Viewing Angle 170°
Forward Current 1A
Operating Temperature -40°C to +110°C



- The Golden DRAGON® Plus comes with a silicone dome for increased efficiency and brightness
- Ideal for general lighting due to high reliability and availability in the full white color temperature range
- Excellent thermal management
- Applications include room lighting, flood light, effect and accent lighting, specialty lighting, architectural lighting and reading lamps

Colour	Luminous Flux (350mA) min (lm)	Colour Temperature typ (K)	Forward Voltage max @ 350mA (V)	Mfrs. List No.	Order Code
3.8W					
Cool White	71	112	3.8	LUWW5AM-KXKZ-5P7R	160-3284
Cool White	71	112	3.8	LUWW5AM-KXKZ-5F8G	160-3285
Cool White	71	112	3.8	LUWW5AM-KXKZ-4C8E	160-3286
Cool White	82	130	3.8	LUWW5AM-KYLX-6P7Q	160-3287
4W					
Cool White	71	97	3.8	LWW5AM-KXKY-6K7L	160-3295
Warm White	39	71	3.8	LCWW5AM-HZJZ-4U9X	160-3291
Warm White	39	61	3.8	LCWW5AM-HZJY-4R9T	160-3293
Warm White	45	82	3.8	LCWW5AM-HZJX-4O9Q	160-3290
Neutral White	52	82	3.8	LCWW5AM-JYKX-4L8N	160-3289
Neutral White	61	82	3.8	LCWW5AM-JYKX-4L8N	160-3294
Neutral White	52	97	3.8	LCWW5AM-JYKY-4J8K	160-3288

Colour	Mfrs. List No.	Order Code	1+	10+	25+	50+
3.8W						
Cool White	LUWW5AM-KXKZ-5P7R	160-3284	8.22	5.76	5.23	4.79
Cool White	LUWW5AM-KXKZ-5F8G	160-3285	8.22	5.76	5.23	4.79
Cool White	LUWW5AM-KXKZ-4C8E	160-3286	8.22	5.76	5.23	4.79
Cool White	LUWW5AM-KYLX-6P7Q	160-3287	9.21	6.45	5.86	5.38
4W						
Cool White	LWW5AM-KXKY-6K7L	160-3295	6.59	4.60	4.19	3.84
Warm White	LCWW5AM-HZJZ-4U9X	160-3291	5.92	4.14	3.76	3.46
Warm White	LCWW5AM-HZJY-4R9T	160-3293	5.92	4.14	3.76	3.46
Warm White	LCWW5AM-HZJX-4O9Q	160-3290	6.25	4.38	3.98	3.65
Neutral White	LCWW5AM-JYKX-4L8N	160-3289	6.59	4.60	4.19	3.84
Neutral White	LCWW5AM-JYKX-4L8N	160-3294	6.59	4.60	4.19	3.84
Neutral White	LCWW5AM-JYKY-4J8K	160-3288	6.59	4.60	4.19	3.84

USB-RS232-PCB Converter

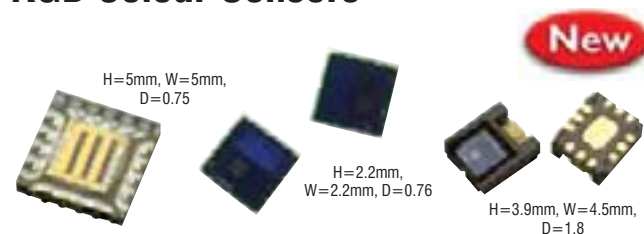


The USB-RS232-PCB is a USB to RS232 level serial UART converter PCB incorporating FTDI's FT232RQ USB to Serial UART interface IC device which handles all the USB signalling and protocols. The PCB provides a fast, simple way to connect devices with a RS232 level serial interface to USB. Each device contains a small internal electronic circuit board, utilising the FT232R plus a USB type-A connector. The integrated electronics also include an RS232 level shifter plus Tx and Rx LEDs which give a visual indication of UART traffic.

The PCB is USB powered and USB 2.0 full speed compatible. Each PCB supports a data transfer rate up to 1 Mbaud and supports the FTDIChip-ID™, with a unique USB serial number programmed into the FT232R. This feature can be used to create a security or password protected file transfer access using the PCB.

Mfrs. List No.	Description	Order Code	Price Each
USB-RS232-PCBA	USB-RS232-PCB Converter	168-6451	22.68

RGB Colour Sensors



Operating Temperature -20°C to +85°C
0°C to +70°C
-20°C to +85°C

Mfrs. List No.	Order Code	1+	25+	100+	250+
HDJD-S822-QR999	161-8709	7.88	5.52	4.45	4.05
ADJD-S311-CR999	161-8710	2.36	1.66	1.33	1.22
ADJD-S371-QR999	161-8712	3.77	2.64	2.13	1.94

FREE global legislation support



RoHS, REACH, WEEE, EuP, Batteries Directive - we've got it covered at: www.global-legislation.com

Need a better price?



Buy more and save more with our volume pricing service.

Contact us now:
Web: www.farnell.com
Phone: See inside front cover

ADuC7026 Evaluation Board



The EVAL-ADUC7026QSZ is a low cost QuickStart™ development system for ADuC7026 fully integrated microcontrollers. The development system includes full third-party support.

New

Features:

- 2-Layer PCB
- 9 V power supply
- 4-pin UART header
- 20-pin standard JTAG connector
- Demonstration circuit
- 32.768 kHz watch crystal
- ADR291 2.5 V external reference chip
- Reset/Download/IRQ0 push-buttons
- Power indicator/general-purpose LEDs
- Access to all ADC inputs and DAC output from external header
- Surface-mount and through hole general-purpose prototype area
- External memory and latch footprint

Mfrs. List No.	Description	Order Code	Price Each
EVAL-ADUC7026QSZ	ADuC7026 QuickStart Development System ...	164-9386	64.59

EZ-KIT Lite Evaluation Kit



For the ADSP-21364 SHARC® Processor



The ADSP-21364 EZ-KIT Lite provides developers with a cost-effective method for initial evaluation of the ADSP-21364 SHARC® Processor architecture via a USB-based, PC-hosted tool set. With this EZ-KIT Lite, users can learn more about Analog Devices' ADSP-21364 hardware and software development and quickly prototype a wide range of applications.

New

The EZ-KIT Lite includes an ADSP-21364 SHARC Processor desktop evaluation board along with an evaluation suite of the VisualDSP++® development and debugging environment including the C/C++ compiler, assembler, and linker. The evaluation suite of VisualDSP++ is designed to be used with the EZ-KIT Lite only.

Features:

- ADSP-21364 SHARC® Processor
- 1M x 8-bit FLASH memory
- 512K x 8-bit SRAM
- 512 Kbit SPI® FLASH memory
- AD1835 stereo, 96 kHz, 24-bit codec
- USB-based debugger interface

Mfrs. List No.	Description	Order Code	Price Each
ADZS-21364-EZLITE	EZ-KIT Lite Evaluation Kit for the ADSP-21364x SHARC® Processor Family	160-8853	403.95

AT91SAM9RL-EK Evaluation Kit



The AT91SAM9RL-EK evaluation kit enables the evaluation of and code development for applications running on an AT91SAM9RL device. It significantly reduces design cycle time, increasing confidence in a right-first-time system solution.

New

Features:

- 64Mb DRAM & 256Mb NAND Flash memory
- Atmel serial DataFlash®
- Atmel TWI serial EEPROM (footprint)
- USB High Speed device port interface
- DBGU serial communication port
- Additional serial communication port with RTS/CTS handshake control
- JTAG/ICE debug interface
- AC97 Audio Codec
- 3.5" 1/4 VGA TFT LCD Module with Touch-Screen and backlight
- Power LED and two general-purpose LED
- Two user, Wakeup & Reset push buttons
- MCI SD/MMC card slot
- four expansion connectors
- BGA-like EBI expansion footprint connector
- Lithium Coin Cell Battery Retainer

Mfrs. List No.	Description	Order Code	Price Each
AT91SAM9RL-EK	AT91SAM9RL-EK Evaluation Board	164-8589	643.27

AT91SAM9261-EK Evaluation Kit



The AT91SAM9261-EK Evaluation Kit supports the AT91SAM9261 ARM926EJ-S-based 32-bit RISC microcontroller and enables real-time code development and evaluation.

New

Board Features:

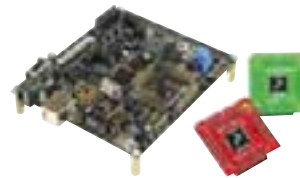
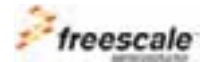
- 64 Mbytes of SDRAM memory
- 256 Mbytes of NAND Flash memory
- One Atmel® serial DataFlash®
- One USB device port interface
- Two USB host port interfaces
- One DBGU serial communication port
- JTAG/ICE debug interface

Kit Contents:

- AT91SAM9261 microcontroller
- One AT91SAM9261-EK board
- One A/B-type USB cable
- One USB device port interface
- One serial RS232 cable
- One RJ45 crossed Ethernet cable
- Universal input AC/DC power supply with US and EU plug adapter
- One DVD-ROM containing summary and full datasheets and an AT91SAM9261-EK software package

Description	Mfrs. List No.	Order Code	Price Each
AT91SAM9261-EK Evaluation Kit	AT91SAM9261-EK	162-9538	1,135.50

Flexis™ JM Family Demo Board



New

The DEMOJM is a cost-effective kit enabling quick microcontroller evaluation. The kit includes a DEMOJM base board, a red MCF51JM128 daughter card, and a green MC9S08JM60 daughter card. The included kit can first be used to demonstrate the features of the MC9S08JM60 devices, starting with an on-chip USB device controller and transceiver, the user can then change to the MCF51JM128 with an on-chip USB host and device dual-role controller.

Features:

- Freescale MMA7260QT 3-axis Accelerometer
- Virtual Serial Port
- USB device mode and host mode support with Mini-AB USB connector
- CAN transceiver
- 8 User LED's
- 1 Piezzo Buzzer
- I²C Pullups
- ADC with 10K Ohm POT
- 5 Push Buttons

DEMOJM	Flexis™ JM Family Demo Board	Order Code	Price Each
DC9S08JM16	S08JM16 Daughter Card	161-5614	78.74
		162-2668	10.63

MC56F8037EVM DSC Evaluation Board



The MC56F8037EVM evaluation module allows easier and faster development for 56F802x and 56F803x digital signal controllers. The module includes an MC56F8037 digital signal controller, RS-232 interface, user LED's, user push button switches, and a daughter card connector.

New

Features:

- Built-in circuitry for RS-232 communication
- User LEDs
- User pushbutton switches
- Daughter card connectors

Mfrs. List No.	Description	Order Code	Price Each
MC56F8037EVM	DSC Evaluation Board	157-9771	175.92

USB ColdFire® Multilink



The USB ColdFire® Multilink is an easy-to-use debug and programming interface for the ColdFire V2/V3/V4 line of microprocessors. The USB ColdFire Multilink is a member of P&E's family of USB Multilinks, which allow the PC to communicate with a target processor through the USB port of the PC. The Multilink controls the microprocessor by accessing the Background Debug Mode (BDM) of the target.



Features:

- Fast, hassle-free USB 2.0 communications interface
- Draws power directly from the USB port - no external power supply needed
- Multi-voltage support for targets ranging from 1.8 to 5.5V
- Compact size

Mfrs. List No	Description	Order Code	Price Each
USBMLCF	USB ColdFire Multilink	157-9893	187.53

Zoom i.MX31 LITEKIT Development Kit



The i.MX31 Lite Kit provides a product-ready software and hardware platform for evaluating the functionality of the Freescale™ i.MX processor and System on Module. It enables rapid design of embedded products targeting the medical, industrial, wireless, consumer markets and general purpose markets.

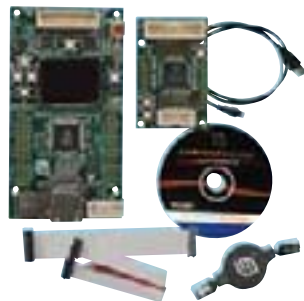


Kit Includes:

- Application baseboard
- SOM-LV
- Expansion breakout board
- CD-ROM
- Null-modem serial cable
- Ethernet crossover cable
- USB A to mini-B cable
- 5 volt power supply with power adapters
- End-User License Agreement
- Warranty card
- QuickStart Guide
- Freescale TIC card

Mfrs. List No	Description	Order Code	Price Each
MCIMX31LITEKITC	Zoom i.MX31 LITEKIT Development Kit	157-9879	529.16

Stellaris® LM3S8962 Evaluation Board



This Evaluation Kit provides a compact and versatile evaluation platform for Ethernet + CAN enabled Stellaris ARM® Cortex™-M3-based microcontrollers. Each board has an In-Circuit Debug Interface that provides hardware debugging functionality for the on-board Stellaris devices, and any Stellaris microcontroller-based target board.



Kit features:

- LM3S8962 Evaluation Board
- Stellaris LM3S8962 MCU with fully-integrated 10/100 embedded Ethernet controller
- QLED graphics display with 128 x 96 pixel resolution
- User LED, navigation switches, and select pushbuttons
- Magnetic speaker
- LM3S8962 I/O available on labeled breakout pads
- Standard ARM® 20-pin JTAG debug connector with input and output modes
- Standalone CAN device board using Stellaris LM3S2110 microcontroller
- Ethernet cable
- CAN ribbon cable
- USB and JTAG cables
- CD ROM

Mfrs. List No.	Description	Order Code	Price Each
EKK-LM3S8962	Ethernet + CAN Evaluation Kit	155-1844	58.83

REACH - SVHCs



Products containing **Substances of Very High Concern** under REACH can now be easily identified online. Look for this logo to access supporting safety datasheets at www.farnell.com

Stellaris® Serial-to-Ethernet Reference Design Kit



The RDK-S2E offers a complete, open-tool, and ready-to-implement solution designed to add web connectivity to any serial device.



This kit includes the Serial-to-Ethernet Module (MDL-S2E). The most common application for the MDL-S2E is for augmenting legacy products that only contain a serial port for a configuration or control interface. By simply installing the module, it provides many benefits including no major board redesign or software changes, easy sharing on a network other than Ethernet and a tiny form-factor for unobtrusive implementation. A 10-metre maximum cable length for serial connections is no longer a limitation.

MDL-S2E offers:

- LM3S6432 in a 10 x 10 mm BGA package for reduced board size
- 10/100 Mbit Ethernet port
- Auto MDI/MDIX cross-over correction
- Traffic and link indicators Serial ports
- UART ports include RTS/CTS for flow control
- UART0 has RS232 levels, transceiver runs at up to 230.4 Kbaud
- UART1 has CMOS/TTL levels, can run at 1.0 Mbaud

Mfrs. List No.	Description	Order Code	Price Each
RDK-S2E	Stellaris Serial-to-Ethernet RDK	162-7315	92.74

MPLAB® ICD 3 In-Circuit Debugger/Programmer



MPLAB ICD 3 In-Circuit Debugger is an all in one in-circuit debugger / programmer solution for Microchip's dsPIC Digital Signal Controller (DSC) and Flash PIC Microcontroller (MCU) devices. The ICD 3 programs and debugs these devices with the aid of the powerful and easy to use MPLAB Integrated Development Environment (IDE).



Features Include:

- Full-speed, Real-time emulation
- Source debugging, stopwatch, complex breakpoints, and in-circuit programming
- USB powered (USB 2.0, 480 Mbps)
- Internal 1MB memory buffer for increased download speed
- Overvoltage and undervoltage protection
- Target power, up to 100 MA
- Vdd range 2-5.5V
- Vpp range 2-14V
- Firmware upgrade via MPLAB IDE download

Kit Contents:

- 1x MPLAB ICD 3 In-Circuit Debugger module
- 1x USB cable
- 1x 6 inch RJ-11 modular cable from MPLAB ICD 3 to target
- 1x interface test module
- 1x CD containing MPLAB IDE software and product documentation

Mfrs. List No.	Description	Order Code	Price Each
DV164035	MPLAB® ICD 3 In-Circuit Debugger Kit	166-4878	189.53

PICDEM PIC18 Explorer Board

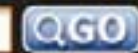


The PICDEM PIC18 Explorer demo board supports dozens of the general purpose PIC18 families using various processor Plug-In Modules (PIMs). It supports dozens of the general purpose PIC18 families using various processor Plug-In Modules (PIMs). This board is the ideal complement to the MPLAB ICD 2 debugger and programmer for a full-featured PIC18 development environment.



Mfrs. List No.	Description	Order Code	Price Each
DM183032	PIC18 Explorer Board	161-5691	86.15

Over 480,000 products online



dsPIC® Starter Kit



This starter kit is a complete hardware and software tool suite for exploring applications based upon dsPIC DSCs. The board is designed with a dsPIC33FJ256GP506 DSC that has 256 KB of flash memory, a high-fidelity audio codec, microphone input and headphone/speaker outputs, and is powered from the USB connection to the PC. Also on the board are reconfigurable switches, potentiometers, a temperature sensor and a 4 Mb serial EEPROM to store data such as audio samples.

Features:

- Integrated debugger / programmer
- USB powered
- dsPIC33FJ256GP506 DSC with 256 KB Flash and 16 KB RAM
- 16/24/32 bit codec with a maximum sampling frequency of 48KHz
- Low cost audio capture and play back circuitry using the 12 bit ADC and PWM Audio
- Microphone and line level inputs with adjustable input gain
- 100mW headphone amplifier with digital volume control
- 2 switches and 3 LEDs for user application purposes
- 4 Megabit serial flash memory for application use
- Temperature sensor

Mfrs. List No.	Description	Order Code	Price Each
DM330011	MPLAB Starter Kit for dsPIC DSCs	162-1788	51.68

PIC32 Starter Kit



The PIC32 Starter Kit comes complete with everything that you need to get started, including the USB-powered MCU board, the MPLAB® IDE and MPLAB C32 C compiler, documentation, sample projects with tutorials, schematics, and 16-bit compatible peripheral libraries. Application expansion boards will also be made available, which plug into the expansion slot on the bottom of the MCU board.

Mfrs. List No.	Description	Order Code	Price Each
DM320001	PIC32 Starter Kit	152-3317	43.06

PICDEM Z 2.4GHz Demo Kit



The PICDEM Z Demo Kit is designed to demonstrate the Microchip solution for the ZigBee protocol by using Microchips very own MRF24J40 transceiver. Included are two ZigBee nodes, each pre-programmed with demo Coordinator and Reduced Function Device (RFD) applications, and a ZENA Network Analyser Board. Each node in the kit consists of two boards: one motherboard and one RF card.

Mfrs. List No.	Description	Order Code	Price Each
DM163027-5	PICDEM Z Demo Kit	167-6240	232.60

PIC32 USB Starter Board



The PIC32 USB Starter Board provides the easiest and lowest cost method to experience the USB On-The-Go family of PIC32 microcontrollers. Users can develop USB embedded host, device, dual-role, or On-The-Go applications by combining this board with free USB software (On-The-Go support provided in a future software release). The kit includes the PIC32 USB Starter Board, a standard A to mini B cable for debugger & a standard A to micro B cable for USB application development.

Features:

- PIC32MX460F512L 32-bit microcontroller
- Green power-indicator LED
- Regulated +3.3V power supply for powering the starter board via USB or expansion board
- On-board crystal for precision microcontroller clocking (8 MHz)
- USB connectivity for on-board debugger communications
- PIC18LF4550 USB microcontroller for on-board debugging

- Orange Debug indicator LED
- Three push-button switches for user-defined inputs
- Three user-defined indicator LEDs
- Connector for various expansion boards (on the underside of board)
- USB Type A receptacle connectivity for PIC32MX Host based Applications
- USB Type Micro-AB receptacle for OTG and USB Device connectivity for PIC32MX OTG/Device based Applications (on the underside on board)
- USB Host and OTG power supply for powering PIC32MX USB applications

Mfrs. List No.	Description	Order Code	Price Each
DM320003	PIC32 USB Starter Board	162-1787	47.39

Graphics PICtail™ Plus Daughter Board



The Graphics PICtail™ Plus Daughter Board 2 is a demonstration board for evaluating Microchip Technology's graphic LCD display solution and Graphics Library for 16-bit microcontrollers. It is an expansion board compatible with the Explorer 16 Development Board (DM240001). It can be used in conjunction

with the Graphics Library for Microchip microcontrollers.

Features:

- 2.8" QVGA (320x240) LCD module with resistive touch screen
- 65K color support
- Supports portrait and landscape orientations
- Stand-alone graphics controller, Solomon Systech SSD1906, supporting 4/8-bit STN, 4/8-bit CSTN, 18-bit HR-TFT and 9/12/18-bit TFT interfaces via connector
- 4 Megabit (512Kx8) flash memory for graphic data storage
- Sound buzzer
- Horizontal PICtail™ Plus Daughter Board connection interface

Mfrs. List No.	Description	Order Code	Price Each
AC164127	Graphics PICtail Plus Daughter Board	156-3478	116.31

LPC-Stick and Extension Board



The **LPC-Stick** is a small modular evaluation kit. It provides target hardware with the LPC2468 microcontroller from NXP, external SRAM, user pins and LEDs for applications use. Combined with the proven USB debugger device connection and the non-limited HITOP development tools the LPC-Stick allows full access to all chip features, debugging and programming.

The **LPC-COM Extension Board** provides a set of communication features and pinouts (e.g. Ethernet and Phy, USB Host and Device, UART, SDCard, CAN phy, external power).

With the LPCStickView control software included in the LPC-Stick package the features of the LPC-Stick and the features of the Extension Boards can be controlled. E.g. Web server application, USB device, USB host and CAN functions are ready to use from the demo application. Optional external power can be obtained to build standalone running applications.

Mfrs. List No.	Description	Order Code	Price Each
OM11006	LPC-Stick	165-6835	45.68
OM11007	LPC-COM-Board	165-7592	63.06

QB-MINI2-EE On-Chip Debug Emulator

with Programming Function



MINICUBE2 is an on-chip debug emulator with flash programming function, which is used for debugging and programming a program to be embedded in on-chip flash memory microcontrollers.

Features:

- On-chip debugging
- Flash memory programming
- USB connection
- Variety of supported devices and expandability
- Self-testing function

Mfrs. List No.	Description	Order Code	Price Each
QB-MINI2-EE	MINICUBE2 Emulator	150-2867	110.75

V850ES/Fx3-CAN-IT! Demonstration Kit

NEC



The V850ES/Fx3-CAN-IT! is a demonstration kit for the V850ES/Fx3 32-bit RISC microcontroller. It supports On-Board debugging via the TK-V850 interface (monitor debugging) or via N-Wire. Additional FLASH programming and real time execution of application programs based on the V850ES/FG3 32-bit



RISC microcontroller is supported by the V850ES/Fx3 - CAN-IT! demonstration kit. The board is prepared to be connected to user hardware parts such as digital I/O or analogue signals.

Mfrs List No.	Description	Order Code	Price Each
V850FX3-CANIT	32 BIT CAN V850ES/FX3 Starter Kit	150-2863	146.74

Starter Kit for STM3210B-PRIMER

ST



This is a development and evaluating tool for the STM32 ARM Cortex M3 core-based microcontrollers.



Software Included

- RIDE7 development software toolset with project manager
- GNU C/C++ compiler
- Management application CircleOS task scheduler
- C source code for all sample applications & libraries

Hardware Features of Primer

- The Primer plugs directly into a host PC's USB
- 128x128 pixel color LCD
- Buzzer
- MEMs sensor,
- IrDA transceiver

Mfrs. List No	Order Code	Price Each
STM3210B-PRIMER	150-2504▲	36.12

STM3210E-PRIMER

ST



The STM32 Primer is a uniquely fun, easy, low-risk solution for exploring and developing applications for the STM32 ARM Cortex™-M3 core-based microcontrollers. Start exploring the power of the STM32 by playing with the included applications. The STM32 drives the fun, ergonomic hardware platform that combines a TFT graphical display with MEMs-based controls, plus tactile screen and joystick for navigating and controlling the GUI and game applications.



When running the applications, the Primer can operate in standalone mode powered by a battery (with power management circuit), which is recharged via the USB connection with a host PC.

Mfrs. List No	Description	Order Code	Price Each
STM3210E-PRIMER	STM3210E-PRIMER	167-9751▲	50.89

CC2520 Development Kit

TI
INSTRUMENTS



TI
INSTRUMENTS



The CC2520 Development Kit includes hardware and software that allows quick testing of the CC2520 RF performance and offers a complete platform for development of advanced prototype RF systems and for evaluation of the CC2520 right out of the box. The kit can be used for range testing using the pre-programmed PER tester running on the MSP430F2618. Use SmartRF® Studio to perform RF measurements. The radio can be easily configured to measure sensitivity, output power and other RF parameters. All I/O from the CC2520 are available on pin connectors on the SmartRF®05EB and on the CCMSPEM, allowing easy interconnection to other devices or controllers. These connectors are also compatible with logic analyser probes for easy debugging.

Kit Includes:

- 3x SmartRF®05EB
- 3x CC2520EM evaluation modules
- 3x Antennas
- 2x CCMSPEM430F2618
- 1x MSP-FET430UIF debug interface
- 3x USB cables
- Documents

Mfrs. List No.	Description	Order Code	Price Each
CC2520DK	CC2520 Development Kit	157-3886▲	528.17

OMAP5912 Starter Kit

TI
INSTRUMENTS



The OMAP5912 Starter Kit for Portable Data Terminals is a low cost, easy to use, convenient way of evaluating the features of the OMAP5912 Processor in next generation PDT devices. The kit includes a development board, and a collection of board and chip specific libraries as well as a suite of development tools



for Linux with an OMAP5912 specific Linux kernel. The kit allows users to get started on a portable data terminal-based application and device development.

Hardware Features:

- ARM9 core operating at 192 MHz
- DSP core operating at 192 MHz
- TLV320AIC23 Stereo Codec
- 32 Mbyte DDR SDRAM
- 32 Mbyte Flash ROM
- 4 Expansion connectors (bottom side)
- RS-232 Serial Port
- 10 MBPS Ethernet port
- USB Host Port
- Compact flash connector
- On board IEEE 1149.1 JTAG connector for optional emulation
- +5 Volt operation

Mfrs. List No.	Description	Order Code	Price Each
TMD5OSK5912-0E	OMAP5912 Starter Kit	167-6435▲	237.63

Z-Accel Demonstration Kit

TI
INSTRUMENTS



Kit Includes:

- 3x CC2480 Target Boards
- 1x eZ430 USB Emulator Board
- 2x AAA eZ430 Battery Boards (batteries included)



The eZ430-RF2480 Demo Kit is a complete USB-based MSP430 wireless demonstration tool providing all the hardware and software to evaluate the CC2480 2.4GHz ZigBee network processor and the MSP430F2274 microcontroller. It has everything needed to understand and fully evaluate the capabilities of CC2480 in a short amount of time with minimal effort.

Mfrs. List No.	Description	Order Code	Price Each
EZ430-RF2480	Z-Accel Demonstration Kit	157-3888▲	84.78

JN5139-EK020 Starter Kit

Jennic

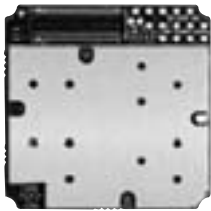


This starter kit is for use with the JN5139 32-bit wireless microcontroller. It provides easy and rapid development of wireless networks using the JenNet network stack or IEEE802.15.4 standard. It supports Jennic's "Jenie" API and Serial "AT-Jenie" programming interfaces, and is preloaded with the following demonstrations: Wireless sensor network, wireless serial link and serial AT.



Mfrs. List No.	Description	Order Code	Price Each
JN5139-EK020	JN5139-EK020 AT-Jenie Starter Kit	156-5712●	172.87

Wireless Module Solutions



SIM5210Z

The **SIM300x/340x & SIM305/345** are either Dual-band / Tri-Band or Quad-Band GSM/GPRS modules. With their tiny configuration they can fit almost all the space requirements in industrial applications. The leading features of each of these modules make them ideal for virtually unlimited applications.

The **SIM508/548** modules are Tri-Band/Quad-Band GSM/GPRS-enabled modules that are equipped with AGPS technology. The compact design of the SIM508/548 makes it easy to integrate GSM/GPRS & GPS as an all-in-one solution.

SIM5210 & SIM5212 are a HSDPA/WCDMA/GSM/GPRS/EDGE module solution that support up to 7.2M downlink speed and 384K uplink speed data service.

The range of **Evaluation boards (EVBs)** are used to support a selection of the above wireless modules.

Mfrs. List No.	Description	Order Code	Price Each
GSM GPRS Modules			
SIM300Z	Tri-Band GSM/GPRS Plug-In Module	167-8274	38.23
SIM340Z	Quad-Band GSM/GPRS Plug-In Module	167-8282	39.38
SIM300CZ	Tri-Band GSM/GPRS Module w/ DIP Connector	167-8283	39.38
SIM340CZ	Quad-Band GSM/GPRS Module w/ DIP Connector	167-8285	40.54
SIM300DZ	Tri-Band GSM/GPRS SMD Module	167-8286	38.23
SIM340DZ	Quad-Band GSM/GPRS SMD Module	167-8288	39.38
SIM300EZ	Tri-Band GSM/GPRS SIM Holder Module	167-8289	39.38
SIM340EZ	Quad-Band GSM/GPRS SIM Holder Module	167-8290	40.54
SIM305Z	Dual-Band GSM/GPRS Plug-In Module	167-8291	38.23
SIM345Z	Quad-Band GSM/GPRS Plug-In Module	167-8293	39.38
GSM GPRS + GPS Combi Modules			
SIM508Z	Tri-Band GSM/GPRS & GPS Module	167-8294	63.81
SIM548Z	Quad-Band GSM/GPRS & GPS Module	167-8295	64.87
WCDMA HSDPA Modules			
SIM5210Z	HSDPA/WCDMA/GSM/GPRS/EDGE Module	167-8296	115.83
SIM5212Z	WCDMA/HSDPA/GSM/GPRS/EDGE Module	167-8297	125.55
Wireless Module Evaluation Boards			
SIM300EVB	SIM300 Evaluation Board	167-8298	46.33
SIM300CEVB	SIM300C Evaluation Board	167-8299	46.33
SIM508EVB	SIM508 Evaluation Board	167-8300	46.33
SIM5210EVB	SIM5210 Evaluation Board	167-8301	53.17
SIM5212EVB	SIM5212 Evaluation Board	167-8302	53.17

WiSpan™ Ethernet-to-Wireless Bridge



The WiSpan™ wireless bridge gives virtually any piece of electronic equipment with an Ethernet port industry-standard wireless 802.11 b/g connectivity quickly and easily. Its built-in IEEE 802.11i-compliant security ensures data privacy and integrity, and it features a rugged design and wide temperature range to easily handle harsh environments.

Features:

- Equips Ethernet-ready electronic equipment with 802.11 b/g wireless connectivity
- Enables remote monitoring and control of devices around the world
- Provides bulletproof wireless security with IEEE 802.11i-PSK, WPA-PSK, TKIP
- Ruggedized design and wide operating temperature range to withstand harsh environments
- FCC Class B, UL and EN EMC and safety-compliant

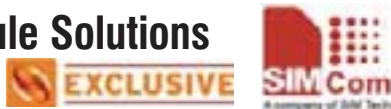
Mfrs. List No.	Description	Order Code	Price Each
WBG1000002-01	WiSpan™ Wireless Bridge	165-0343	247.89

STM32 (ARM Cortex M3) 32-bit Microcontroller Starter Kits



All of these kits contain everything required to enable users to quickly and easily evaluate the MCU's features, and to start development at very low cost. They include many ready-to-run code examples to demonstrate the device peripherals, with source files that can be adapted for users applications. ST was the first leading MCU supplier to introduce a family based on the Cortex-M3, and this starter kit portfolio offers the widest choice of tools, at the lowest cost, for users intending to develop applications for this core.

The Keil **STM3210B-SK/KEIL** starter kit features the Keil RealView Microcontroller Development Kit software, including the µVision3 integrated development environment for application programming and debugging, and the ARM RealView C/C++ Compilation Tools for up to 16 Kbytes of code, plus a full-featured STM32F103B-based evaluation board, with the ULINK in-circuit (USB/JTAG) debugger/programmer.



The Hitex **STM3210B-SK/HIT** starter kit is based on the HITOP5 integrated development environment, offering a full range of project management, source-code editing and debugging features through an intuitive graphical interface. The included Tasking Vx C/C++ compiler has no code-size limitation when used with the kit hardware. The kit includes a USB stick with STM32F103B and integrated debugging/programming capability, an extension I/O board with peripheral evaluation features, and the DashBoard GUI for MCU performance monitoring.

The IAR **STM3210B-SK/IAR** KickStart kit is based on the IAR Embedded Workbench for ARM (EWARM) development environment, running on an STM32F103B KickStart development board. It includes the IAR C/C++ compiler for up to 32 Kbytes of code, the J-Link in-circuit debugger/programmer (USB/JTAG), a built-in Flash loader, and sample projects for all of the STM32 device peripherals.

The Raisance **REva STM3210B-SK/RAIS** starter kit, based on the RIDE development environment for code up to 32 Kbytes, offers application debugging and seamless control of the included GNU C/C++ compiler through an intuitive graphical interface. The kit hardware has a modular design based on the USB-powered REva universal evaluation motherboard with embedded RLink in-circuit debugger/programmer (USB/JTAG), and comes with an STM32F103B daughterboard with device-specific evaluation features.

Mfrs. List No	Description	Order Code	Price Each
STM3210B-SK/KEI	Keil Starter Kit	150-2506	176.39
STM3210B-SK/HIT	Hitex Starter Kit	160-6330	97.12
STM3210B-SK/IAR	IAR Starter Kit	160-6331	210.78
STM3210B-SK/RAIS	Raisance Starter Kit	160-6332	218.50

Mini RS232 Bluetooth Serial Adapter



The LM048 is the worlds smallest Bluetooth Serial RS232 Adapter with a comprehensive range of firmware commands. Using a EDR V2.0 Class 1 Bluetooth chipset as standard these units have a range of up to 100m with a transfer rate of up to 3Mbps. It has three LED status lights that indicate: Power on, Data transfer status and Bluetooth connection status. The mini USB port can be used to power the unit from either USB to USB or Mains to mini USB.

The strong housing is able to with stand knocks and has been drop tested from over 10 metres. This unit also has FCC, CE and RTTE approval.

Mfrs. List No.	Description	Order Code	Price Each
LM048	Mini RS232 Bluetooth Adapter	167-5410	44.80

LM400 Bluetooth UART Module



The 12 Pin UART connection on this device allows it to be used as a plug and play module. This configuration will also allow users to upgrade equipment to Bluetooth SPP RS232 configuration far easier than re-designing a PCB.

By using the module in this way it means that one board can be designed and the Bluetooth module can be retro-fit, which makes upgrading and easy option.

Mfrs. List No.	Description	Order Code	Price Each
LM400	Bluetooth UART Module	167-5407	24.00

ZigBee/802.15.4 Application Kit



The ZigBee/802.15.4 Application Kit combines MaxStream's XBee RF modem with RCM3720 RabbitCore module along with an easy-to-use interface to help the user build a practical ZigBee wireless control network. The kit contains three Digi® ZigBee modules for full application reference. One ZigBee module is connected to an Ethernet enabled RCM3720 RabbitCore Module. The RCM3720 runs at 22.1 MHz, and provides 10Base-T Ethernet, 512K Flash, 256K SRAM, 1MB Serial Flash as on-board memory, and 33 GPIO lines. The other two ZigBee modules are standalone node devices.

Mfrs. List No.	Description	Order Code	Price Each
101-1137	ZigBee/802.15.4 Application Kit	155-4742	243.96

Digital Embedded Modules



The Wi.232EUR-R embedded radio module is targeted for the European market. It combines a low power wireless transceiver with a powerful multipoint-to-multipoint protocol controller. This forms an easy transparent SERIAL UART wireless communication solution, interfacing to any host microcontroller capable of replacing wires in any RS-232/422/485 application. No special addressing or formatting of data is required. Multiple modules can operate on the same channel because of the built-in carrier-sense-multiple-access (CSMA) protocol.

Features:

- 16-bit CRC error checking
- 76.8kbit/sec maximum RF data rate
- 2 channels in Wideband mode
- 6 channels in Narrowband mode
- Low power standby and sleep modes
- PHY and MAC layer protocol built in
- CSMA medium access control
- 115dB link budget in Wideband mode
- 8 modes allow user to optimize power/range
- Command mode for volatile and nonvolatile configuration
- 48-bit unique address
- 5 volt tolerant I/O

All the Wi.DP120x modules supports wide band and narrow band communication. These modules are suitable for operation in the European Social alarm bands (25kHz channel spacing) and can meet European (ETSI EN300-220-1 and EN301 439-3) compliance standards.

- The Wi.DP1203-433-R module has +15dBm output power and sensitivity of -111dBm @ 2.4kb/s and will support data rates up to 152.34 kb/s
- The Wi.DP1203-868-R module has +15dBm output power and sensitivity of -113dBm @ 4.5kb/s and will support data rates up to 152.34 kb/s
- The Wi.DP1205 modules have +15dBm output power and sensitivity of -113dBm @ 4.5kb/s and will support data rates up to 304.7 kb/s

Wi.DP1203 / Wi.DP1205 Features:

- SPI style digital serial interface
- Simple FCC certification as a digital spread spectrum device
- RX Current 14mA typical
- TX current 62mA @ 14dBm typical
- 32 wideband and 84 narrow band channels
- Supports Frequency Hopping

Mfrs. List No.	Description	Freq. Band (MHz)	Modulation Type	Baud Rate	Vcc	Order Code	Price Each
Wi.232EUR-R	Wi.232EUR-R Embedded Radio Module	868 - 870	FSK/DTS	2400 - 115200	3.6 - 2.7V	156-5157	19.51
Wi.DP1203-868-R	Wi.DP1203-868-R Embedded Transceiver Radio-only Module	868 - 870	FSK/DTS	1200 - 152340	2.4 - 3.6V	156-5158	12.52
Wi.DP1203-433-R	Wi.DP1203-433-R Embedded Transceiver Radio-only Module	433 - 435	FSK/DTS	1200 - 152340	2.4 - 3.6V	156-5159	12.52
Wi.DP1205-868-R	Wi.DP1205-868-R Embedded Transceiver Radio-only Module	868 - 870	FSK/DTS	1200 - 304700	2.4 - 3.6V	156-5160	13.27
Wi.DP1205-433-R	Wi.DP1205-433-R Embedded Transceiver Radio-only Module	433 - 435	FSK/DTS	1200 - 304700	2.4 - 3.6V	156-5161	13.27

XBEE RF Modules



The XBee Development Kit provides everything that is needed to rapidly create long range wireless data links based on MaxStream's XBee modules. The XBee modules feature self-discovery/self-healing mesh networking and support for coordinators, routers, end devices and low-power sleep modes.

Kit Includes:

- (1) XBee ZNet 2.5 w/ Wire Antenna (Coordinator)
- (1) XBee ZNet 2.5 w/ Wire Antenna (Router)
- (1) XBee ZNet 2.5 w/ Chip Antenna (Router)
- (1) XBee ZNet 2.5 w/ U.fl Connector (Router)
- (1) XBee ZNet 2.5 w/ RPSMA Connector (Router)
- (3) RS 232 Development Boards
- (2) USB Development Boards
- (2) 2.4 GHz RPSMA Antenna
- (1) U.fl to RPSMA Adapter Cable
- (3) RS 232 Serial Cables
- (2) USB Cables
- (1) Power Adapter
- (3) 9V Battery Clips
- (3) Adapters



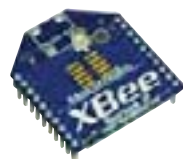
XB24-BPDK



XB24-BWIT-004



XB24-BCIT-004



XB24-BUIT-004



XB24-BSIT-004

The XBee OEM RF Modules have been engineered to operate within the ZigBee protocol and support the unique needs of low-cost, low-power wireless sensor networks. They require minimal power and provide reliable delivery of data between remote devices. All these modules operate within the ISM 2.4 GHz frequency band.

The XBee 802.15.4 OEM RF module is an IEEE 802.15.4 compliant solution that satisfies the unique needs of low-cost, low-power wireless sensor networks. It is easy-to-use, requires minimal power and provides reliable delivery of critical data between devices. Its small form factor saves valuable board space.



W1030



JF1R6-CR3-41

- The JF1R6-CR3-41 cable assembly is for connecting the RPSMA antenna to U.FL connector
- The W1030 External Antenna is for WLAN devices using ZigBee™, WiFi (802.11b/g) and Bluetooth®. It has a Omni-directional radiation pattern that provides broad 360° coverage

Mfrs List No.	Mfr.	Description	Order Code	Price Each
XB24-BPDK	MAXS	XBee ZNet 2.5 Development Kit	154-6389	306.49
XB24-BWIT-004	MAXS	XBee ZNet 2.5 (Formerly Series 2) RF Module, AT Router/End Device with Wire Antenna	154-6390	24.88
XB24-BCIT-004	MAXS	XBee ZNet 2.5 (Formerly Series 2) RF Module, AT Router/End Device with Chip Antenna	154-6391	24.88
XB24-BUIT-004	MAXS	XBee ZNet 2.5 (Formerly Series 2) RF Module, AT Router/End Device with U.FL Antenna	154-6392	24.88
XB24-BSIT-004	MAXS	XBee ZNet 2.5 (Formerly Series 2) RF Module, AT Router/End Device with RPSMA Antenna	154-6393	26.53
XB24-ASI-001	MAXS	XBee 802.15.4 (Formerly Series 1) RF Module, with RPSMA Antenna	154-6394	24.88
W1030	PULSE	Wireless External Antenna for 2.4 GHz Applications, 1/4 DIPOLE, RPSMA	154-6395	4.58
JF1R6-CR3-41	MAXS	U.FL to RPSMA Lead Adaptor	154-6396	7.48

MiniCore™ RCM5700 Module & Standard Development Kit



New



The MiniCore RCM5700 module packs a rich embedded feature set on an ultra-compact mini PCI Express form factor. As an added benefit the MiniCore RCM5700 offers the lowest profile of any embedded solution. At only 5cm in height, the RCM5700 delivers unprecedented flexibility to place network connectivity anywhere onto a customer-designed mother board.

The standard development kit has the essentials needed to design a microprocessor-based system, and includes a complete Dynamic C software development system. The RCM5700 development kit also contains a development board that will allow evaluation of the RCM5700.

Digital I/O and serial accessory boards will help to illustrate the RCM5700 features by running the sample programs included with Dynamic C. You will also be able to write and test software for the RCM5700 modules, including Ethernet or TCP/IP applications.

Mfrs. List No.	Description	Order Code	Price Each
101-1274	Standard Development Kit	167-3626	119.73
20-101-1235	MiniCore™ RCM5700 Module	167-3627	38.25

EB539 Easy RFID Pack



New



This bundle includes everything needed to rapidly develop RFID based systems linked to microcontroller hardware. It includes a copy of Flowcode V3 professional, an E-blocks PICmicro microcontroller USB multiprogrammer, LCD board, LED board, switch board, RFID board, power supply, two Mirfare type RFID cards, two I-code SLI type RFID cards and a spare 16F877A device. Flowcode macros for rapid RFID development are included.

Features:

- Rapid development of RFID based systems
- Includes a full copy of Flowcode
- Ideal for learning and project development

Mfrs. List No.	Description	Order Code	Price Each
EB539	Easy RFID Pack	162-0651	192.08

USB-RS232-PCB Converter



New



The USB-RS232-PCB is a USB to RS232 level serial UART converter PCB incorporating FTDI's FT232RQ USB to Serial UART interface IC device which handles all the USB signalling and protocols. The PCB provides a fast, simple way to connect devices with a RS232 level serial interface to USB.

Each device contains a small internal electronic circuit board, utilising the FT232R plus a USB type-A connector. The integrated electronics also include an RS232 level shifter plus Tx and Rx LEDs which give a visual indication of UART traffic.

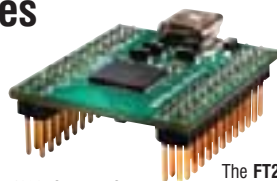
The PCB is USB powered and USB 2.0 full speed compatible. Each PCB supports a data transfer rate up to 1 Mbaud and supports the FTDIChip-ID™, with a unique USB serial number programmed into the FT232R. This feature can be used to create a security or password protected file transfer access using the PCB.

Mfrs. List No.	Description	Order Code	Price Each
USB-RS232-PCBA	USB-RS232-PCB Converter	168-6451	22.68

FT2232H & FT4232H Mini-Modules



New



FT4232HQ-MINI-MODULE

The FT2232H Mini Module is a USB-to-serial/FIFO development module which utilises the FT2232H USB Hi-Speed two-

FT2232HQ-MINI-MODULE

port bridge chip which handles all the USB signalling and protocols. It is ideal for development purposes to quickly prove functionality of adding USB to a target design.

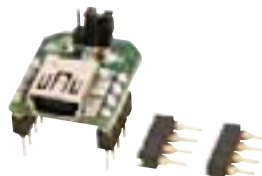
The FT4232H Mini Module is a USB-serial/MPSE development module which utilises the FT4232H USB Hi-Speed four-port bridge chip which handles all the USB signalling and protocols. It is ideal for development purposes to quickly prove functionality of adding USB to a target design.

Mfrs. List No.	Description	Order Code	Price Each
FT2232HQ-MINI-MODULE	USB-to-Serial / FIFO Development Module	169-7465	28.56
FT4232HQ-MINI-MODULE	USB-to-Serial / MPSE Development Module	169-7466	31.64

UB232R Mini Evaluation Module



New



The UB232R is ideal for new development purposes and also for adding a USB interface to existing product designs.

Based on the FT232RQ device, the UB232R supports RTS/CTS hardware handshaking and is powered from the USB port. Serial data communication is possible at up to 3Mbaud at TTL level. In addition, two of the EEPROM configurable CBUS pins of the FT232R are brought out allowing the

UB232R to be used to provide clock signals to external logic or signal traffic indicator LEDs.

Includes:

- Two 1x4 turned pin board headers with a standard 0.1" pitch

Mfrs. List No.	Description	Order Code	Price Each
UB232R	Mini Evaluation Module	161-5840	20.40

EV-TD124-UHC124- PCI Evaluation Board



New



This evaluation board is a system for TD124 customer evaluations and internal software development. It allows the user to install and use the TD124 in any PCI based computer. Application software running on the system has access to the TD124 via the PCI memory space. It can be used without the PCI104 PCI Bridge Board.

The EV-TD124-UHC124-PCI allows customers to:

- Evaluate the Oxford Semiconductor UHC124 USB host controller
- Run TD124 demonstrations
- Develop user software for TD124-UHC124 based applications

Mfrs. List No.	Description	Order Code	Price Each
EV-TD124-UHC124-PCI	EV-TD124-UHC124-PCI	165-6949	378.66

78Q21x3-DB MicroPHY™ MII Evaluation Boards



New



The 78Q21x3-DB is a design example for a 10/100BASE-TX Mbit/second Fast Ethernet MII Interface adaptor. A 78Q2123 or 78Q2133 MicroPHY transceiver provides the network physical interface and MII (Medium Independent Interface) interface.

Full-featured MII management functions are included along with an extended register set. The MicroPHY interfaces to CAT5 UTP cable via a 1:1 transformer.

The transceiver's transmitter includes on-chip the pulse shaper and low power line driver. The receiver incorporates a sophisticated combination of real-time adaptive equalization, an adaptive DC offset adjustment circuit and baseline wander correction. Smart squelch circuitry further improves the receiver's noise rejection. Full featured autonegotiation or parallel detect modes are supported.

Kits Include:

- MicroPHY MII Demo Board
- P.C.B. Gerber Files
- MicroPHY Data Sheet
- Demo Board Parts List
- Demo Board schematic

Mfrs. List No.	Description	Order Code	Price Each
78Q2123-DB	78Q2123-DB MicroPHY™ MII Demo Board	157-4552	122.76
78Q2133-DB	78Q2133-DB MicroPHY™ MII Demo Board	157-4554	122.76

EV-OXU200 PCI Evaluation Board



The EV-OXU200-PCI Evaluation Board is a system for OXU200 customer evaluations and internal software development in the PC environment. This Evaluation Board allows the user to install and use the EV-OXU200 in any PCI based computer. Application software running on the system has access to the OXU200 via the PCI memory space.



The EV-OXU200-PCI Evaluation Board is a two board combination of the following:

- An EV-OXU200 Evaluation Board
- A 33 MHz, 32-bit PCI Bridge Board (PCI104)

Mfrs. List No.	Description	Order Code	Price Each
EV-OXU200-PCI	EV-OXU200 PCI Evaluation Board	158-1467	559.69

FireFly / FireBlade Remote Control Systems



FireFly



FireBlade

The FireFly & FireBlade are a range of general purpose remote control systems. Installation simply requires connections to power supply and the output relay screw terminals. The output relays are activated by the button press on the transmitter encoder. Housed in a rugged IP68 weatherproof enclosure, the receiver has the capacity to learn up to 15 transmitter button pairings. These are memorised even if the power is removed. Each individual switch on each of the transmitters may be paired with any or all of the receiver relay outputs.

Features:

- 1, 2 or 4 channel systems
- 12 / 24Vdc or 230Vac Supply
- Range:
 - FireFly up to 100 metres
 - FireBlade up to 500 metres
- Reliable FM Modulation
- High Security RF Protocol
- 'Easy Learn' Tx Encoder Feature
- 4 Relays 6A @ 230Vac
- Momentary, Latching or Timed Outputs
- IP68 Rated Receiver Enclosure

Mfrs. List No.	Description	Freq (MHz)	Range (Metres)	Order Code	Price Each
FireFly Systems					
FIREFLY-S1	1Ch RC System	433.92	100	165-5092	101.77
FIREFLY-S2	2 Ch RC System	433.92	100	165-5093	110.08
FIREFLY-S4	4Ch RC System	433.92	100	165-5094	112.16
Additional FireFly Transmitters					
FIREFLY-TX1	1 Button Transmitter	433.92	100	165-5095	37.60
FIREFLY-TX2	2 Button Transmitter	433.92	100	165-5096	40.50
FIREFLY-TX4	4 Button Transmitter	433.92	100	165-5098	41.54
FIREFLY-TX8	8 Button Transmitter	433.92	100	165-5099	45.70
FireBlade Systems					
FIREBLADE-S1	1Ch RC System	434.525	500	165-5101	223.40
FIREBLADE-S2	2 Ch RC System	434.525	500	165-5102	225.05
FIREBLADE-S4	4Ch RC System	434.525	500	165-5104	227.34
Additional FireBlade Transmitters					
FIREBLADE-TX1	1 Button Transmitter	434.525	500	165-5105	79.21
FIREBLADE-TX2	2 Button Transmitter	434.525	500	165-5106	83.78
FIREBLADE-TX4	4 Button Transmitter	434.525	500	165-5107	85.30
FIREBLADE-TX8	8 Button Transmitter	434.525	500	165-5109	110.56
Kit					
FIREFLY-TX-IP-KIT	IP Sealing Kit and Belt Clip	-	-	165-5100	6.24

Image Sensor Demo System Kits



The CMOS image sensor demonstration kits include a PCB sensor headboard with a lens and a base camera demo board, as well as a USB cable and tripod. Purchasing a demo kit also grants a license to download and use Micron's DevSuite characterization software. The CMOS image sensor headboards are made with a standardised connector, so multiple headboards can be tested on a single demo kit base board. The headboard PCB comes complete with an image sensor and lens.

		Resolution	Optical Format	Frame Rate	Chroma	Package
MT9T031P12STCD ES	Demo Kit	3 Mp	1/2 inch	12-93 fps	RGB	PLCC
MT9T031P12STCH ES	Headboard	3 Mp	1/2 inch	12-93 fps	RGB	PLCC
MT9P031112STCD ES	Demo Kit	5 Mp	1/2.5 inch	14 fps	RGB	iLCC
MT9P031112STCH ES	Headboard	5 Mp	1/2.5 inch	14 fps	RGB	iLCC
MT9V131C12STCD ES	Demo Kit	VGA	1/4 inch	30 fps	RGB	CLCC
MT9V131C12STCH ES	Headboard	VGA	1/4 inch	30 fps	RGB	CLCC
MT9V135C12STCD ES	Demo Kit	VGA	1/4 inch	30 fps	RGB	CLCC
MT9V135C12STCH ES	Headboard	VGA	1/4 inch	30 fps	RGB	CLCC

Mfrs. List No	Description	Order Code	Price Each
MT9T031P12STCD ES	MT9T031 Colour 3Mp Complete Kit	169-5396	1,107.60
MT9T031P12STCH ES	MT9T031 Colour 3Mp Headboard	169-5397	305.21
MT9P031112STCD ES	MT9P031 Colour 5Mp Complete Kit - 7° Shift	169-5392	1,107.60
MT9P031112STCH ES	MT9P031 Colour 5Mp Headboard - 7° Shift	169-5394	305.21
MT9V131C12STCD ES	MT9V131 Colour VGA Complete Kit	169-5399	1,107.60
MT9V131C12STCH ES	MT9V131 Colour VGA Headboard	169-5401	305.21
MT9V135C12STCD ES	MT9V135 Colour VGA Complete Kit	169-5403	1,107.60
MT9V135C12STCH ES	MT9V135 Colour VGA Headboard	169-5404	305.21

REACH - SVHCs



Products containing **Substances of Very High Concern** under REACH can now be easily identified online. Look for this logo to access supporting safety datasheets at www.farnell.com

Need a better price?



Buy more and save more with our volume pricing service.

Contact us now:
Web: www.farnell.com
Phone: See inside front cover

Developers SIM Card



The Eseye Developers' SIM card is designed to meet the needs of engineers creating M2M cellular (telemetry or telematics) products. Along with the SIM card and instructions, the package includes a secure logon to the Eseye web portal which shows device status such as network registration and data usage, and allows activation and control of data and service limits.

Connectivity is supplied through Orange which has more base stations than any other UK network.

Features:

- 6 months service included in purchase price
- 2MB data per month maximum
- Web based management
- Real time connection status available
- Data usage available online
- Upgrades available for extended service, more data, SMS, Voice and Fixed IP

Mfrs. List No.	Description	Order Code	Price Each
ES-DEV-OUK-0602	Developers SIM Card	169-6743	67.19

Piccolo™ MCU controlSTICK



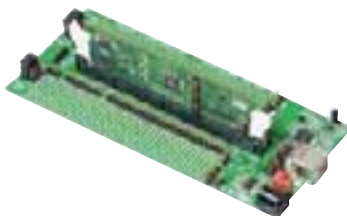
The Piccolo controlSTICK allows quick and easy evaluation all of the advanced capabilities of the new Piccolo microcontroller. Slightly larger than a memory stick, the Piccolo controlSTICK features on board JTAG emulation and access to all control peripherals. Example projects walk the user through the advanced functionality of Piccolo, from simply blinking an LED to configuring the high resolution ePWM peripherals.

Features:

- On board USB JTAG emulation
- Small USB memory stick form factor
- Access to all control peripherals through header pins
- Example projects show how to use Piccolo's features Low-cost

Mfrs. List No.	Description	Order Code	Price Each
TMDX28027USB	Piccolo controlSTICK	169-2054	33.58

Piccolo™ MCU Experimenter Kit



The Piccolo Experimenter Kit has a docking station that features on board USB JTAG emulation, access to all controlCARD signals, breadboard areas and RS-232 and JTAG connectors. Each kit contains a 28027 controlCARD. The controlCARD is a complete board level module that utilizes an industry-standard DIMM form factor to provide a low-profile single-board controller solution.

Features:

- TMX320F28027 microcontroller based controlCARD
- Docking station with on board USB JTAG emulation and access to all controlCARD signals
- Fully powered from USB connection, no external power supply needed
- Code Composer Studio™ IDE v3.3 C28x™ Free 32K Byte Version

Mfrs. List No.	Description	Order Code	Price Each
TMDXDOCK28027	Piccolo Experimenter Kit	169-2055	42.18

Piccolo™ MCU controlCARD



The controlCARD is a complete board level module that utilise an industry standard DIMM form factor to provide a low-profile single-board controller solution. Each controlCARD provides an isolated RS-232 interface for communications. The host system needs to provide only 5V power to the controlCARD.

Features:

- Small form factor - 9cm x 2.5cm
- Standard 100-pin DIMM interface
- F28x analog I/O, digital I/O and JTAG signals at DIMM interface
- Isolated RS-232 interface

Mfrs. List No.	Description	Order Code	Price Each
TMDXCNC28027	Piccolo controlCARD	169-2056	68.00

Airborne™ Evaluation & Design Kit (802.11 b/g)



The Evaluation & Design Kit provides software and utilities for a developer to quickly and easily operate and evaluate the Airborne™ Embedded Wireless Device Server Module. Designed as an evaluation and design aid for the embedded module, the board has a variety of exposed interfaces offering flexible options for connection to OEM applications and test configurations.

Features:

- Development tool for testing and debugging applications
- Battery operation enables portable evaluation
- Multiple options for flexible I/O connectivity
- Monopole high-gain antenna included
- Evaluation and test sample software provided
- Full documentation and User's Guide

Mfrs. List No.	Description	Order Code	Price Each
WLNG-EK-DP003	Evaluation & Design Kit (802.11b/g)	169-0817	395.55

APIX® Display Link Kit



The APIX Display Link Kit is designed to demonstrate the combined transmission of video and data using only one small-size STP-cable. It transmits digital graphics in VGA and SVGA resolution over one standard STP cable across distances of up to 20m. Interfacing to DVI-D and TTL RGB is supported.

Features:

- Supports DVI-D and digital RGB video
- Resolutions up to SVGA
- Supports UART interfacing
- Up to 20m distance
- Single +5V power supply

Mfrs. List No.	Description	Order Code	Price Each
APIX_ADLS	APIX Display Link Kit	169-5938	370.12

700 products added online every week



See our pick of the hottest products and latest technologies in 'What's New?' at www.farnell.com



Over 700 new products added online every week!

At Farnell, we research the latest developments to deliver our customers brand new technologies first. From the biggest names in the industry to innovative solutions from niche suppliers, access the latest technology at www.farnell.com

Latest technology, available first
See 'what's new' at **www.farnell.com**



Farnell

Nios® II Embedded Evaluation Kit

Cyclone III Edition



The Nios® II Embedded, Cyclone III Edition Evaluation Kit includes a full-featured FPGA development board, LCD Multimedia Daughtercard, hardware and software development tools, documentation and accessories needed to begin embedded and system on a programmable chip designs using FPGAs.



Kit Includes:

- Nios II Embedded Evaluation Board
- Nios II Embedded Evaluation Kit CD-ROM
- Altera Complete Design Suite DVD
- SD-Card Reader (USB 2.0)
- SD-Card Flash
- USB Cable
- DC power supply

Mfrs. List No.	Description	Order Code	Price Each
DK-N2EVAL-3C25N	Nios II Embedded Evaluation Kit, Cyclone III Edition	156-0814	424.76

DSP Development Kit

Cyclone III Edition



The DSP Development Kit, Cyclone III Edition delivers a complete digital signal processing (DSP) development environment for design engineers. The kit facilitates the entire design process from design conception through hardware implementation.

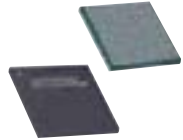


Kit Includes:

- Cyclone III development board
- Data Conversion HSMC
- DSP Builder development tool
- Quartus® II development software
- MATLAB/Simulink evaluation software
- Evaluation intellectual property (IP) cores
- power supply and cables

Mfrs. List No.	Description	Order Code	Price Each
DK-DSP-3C120N	DSP Development Kit, Cyclone III Edition	156-0817	1,465.15

Cyclone III FPGA Family



The Cyclone® III FPGA family delivers a combination of low power, high functionality, and low cost. Video and image processing, displays, and wireless are just a few of the many application areas where these FPGAs can be used. All Cyclone III devices support vertical migration within the same package. This allows designers to optimize density and cost as the design evolves.



Device	Pins/Package	Logic Elements	Memory (Kbits)	Multipliers	PLLs	Global Clock Networks	I/O Pins	Operating Temperature	Mfrs. List No.	Order Code	Price Each
3C5F256	256/FBGA	5,136	414	23	2	10	182	0°C to +85°C	EP3C5F256C8N	154-9367	14.21
3C5E144	144/EQFP	5,136	414	23	2	10	94	0°C to +85°C	EP3C5E144C8N	163-5055	10.76
3C5M164	164/MQFP	5,136	414	23	2	10	106	0°C to +85°C	EP3C5M164C8N	163-5056	13.16
3C5U256	256/UBGA	5,136	414	23	2	10	182	0°C to +85°C	EP3C5U256C8N	163-5057	14.57
3C10E144	144/EQFP	10,320	414	23	2	20	94	0°C to +85°C	EP3C10E144C7N	154-9363	21.94
3C10U256	256/UBGA	10,320	414	23	2	20	182	0°C to +85°C	EP3C10U256C8N	154-9368	24.53
3C10E144	144/EQFP	10,320	414	23	2	20	94	0°C to +85°C	EP3C10E144C8N	163-5058	16.99
3C10M164	164/MBGA	10,320	414	23	2	20	106	0°C to +85°C	EP3C10M164C8N	163-5059	18.86
3C10F256	256/FBGA	10,320	414	23	2	20	182	0°C to +85°C	EP3C10F256C8N	163-5060	20.76
3C16Q240	240/PQFP	15,408	504	56	4	20	160	0°C to +85°C	EP3C16Q240C8N	154-9365	26.67
3C16F256	256/FBGA	15,408	504	56	4	20	168	0°C to +85°C	EP3C16F256C8N	154-9366	28.13
3C16F484	484/FBGA	15,408	504	56	4	20	346	0°C to +85°C	EP3C16F484C8N	154-9369	31.56
3C16E144	144/EQFP	15,408	504	56	4	20	84	0°C to +85°C	EP3C16E144C8N	163-5061	22.42
3C16M164	164/MBGA	15,408	504	56	4	20	92	0°C to +85°C	EP3C16M164C8N	163-5063	25.26
3C16U256	256/UBGA	15,408	504	56	4	20	168	0°C to +85°C	EP3C16U256C8N	163-5064	28.02
3C16U484	484/UBGA	15,408	504	56	4	20	346	0°C to +85°C	EP3C16U484C8N	163-5065	32.33
3C25E144	144/EQFP	24,624	594	66	4	20	82	0°C to +85°C	EP3C25E144C8N	145-3474	35.80
3C25F256	256/FBGA	24,624	594	66	4	20	156	0°C to +85°C	EP3C25F256C8N	145-3470	40.62
3C25F324	324/FBGA	24,624	594	66	4	20	215	0°C to +85°C	EP3C25F324C8N	145-3468	38.52
3C25E144C8	144/EQFP	24,624	594	66	4	20	82	0°C to +85°C	EP3C25E144C8NES	163-5066	34.92
3C25Q240	240/PQFP	24,624	594	66	4	20	148	0°C to +85°C	EP3C25Q240C8N	163-5067	35.88
3C25U256	256/UBGA	24,624	594	66	4	20	156	0°C to +85°C	EP3C25U256C8N	163-5068	41.53
3C40F484	484/FBGA	39,600	1,134	126	4	20	331	0°C to +85°C	EP3C40F484C8N	154-9370	82.20
3C40U484	484/UBGA	39,600	1,134	126	4	20	331	0°C to +85°C	EP3C40U484C8N	154-9371	90.51
3C40Q240	240/PQFP	39,600	1,134	126	4	20	128	0°C to +85°C	EP3C40Q240C8N	163-5069	66.05
3C40F324	324/FBGA	39,600	1,134	126	4	20	195	0°C to +85°C	EP3C40F324C8N	163-5070	66.17
3C40F780	780/FBGA	39,600	1,134	126	4	20	535	0°C to +85°C	EP3C40F780C8N	163-5071	90.28
3C55F484	484/FBGA	55,856	2,340	156	4	20	327	0°C to +85°C	EP3C55F484C8N	163-5072	125.19
3C55U484	484/UBGA	55,856	2,340	156	4	20	327	0°C to +85°C	EP3C55U484C8N	163-5073	128.91
3C55F780	780/FBGA	55,856	2,340	156	4	20	377	0°C to +85°C	EP3C55F780C8N	163-5075	133.57
3C80F484	484/FBGA	81,264	2,745	244	4	20	295	0°C to +85°C	EP3C80F484C8N	163-5076	165.91
3C80U484	484/UBGA	81,264	2,745	244	4	20	295	0°C to +85°C	EP3C80U484C8N	163-7224	162.27
3C80F780	780/FBGA	81,264	2,745	244	4	20	429	0°C to +85°C	EP3C80F780C8N	163-5077	217.40
3C120F484	484/FBGA	119,088	3,888	288	4	20	283	0°C to +85°C	EP3C120F484C8N	163-5079	342.18
3C120F780	780/FBGA	119,088	3,888	288	4	20	531	0°C to +85°C	EP3C120F780C8N	163-5080	369.91

Blaster Download Cables



The ByteBlaster™ II and the USB-Blaster™ download cables allow you to program and configure Altera® devices. The cables drive configuration data from your PC to the device on the PCB, meaning design changes can be downloaded directly to the device. This makes for easier prototyping and also allows you to carry out multiple design iterations in quick succession.

Description	Mfrs. List No.	Connector Type A	Connector Type B	Order Code	Price Each
ByteBlaster™ II download cable	PL-BYTEBLASTER2N	25 Pin Male Header Parallel	10 Pin Female Plug	163-1973	133.67
USB-Blaster™ download cable	PL-USB-BLASTER-RCN	USB Universal Plug	10 Pin Female Plug	163-1975	248.53



MAX IIZ CPLDs



The MAX[®] II family of instant-on, non-volatile CPLDs is based on a 0.18- μ m, 6-layer-metal-flash process, with densities from 240 to 2,210 logic elements and non-volatile storage of 8 Kbits. These devices offer high I/O counts, fast performance, and reliable fitting versus other CPLD architectures. Featuring MultiVolt core, a user flash memory (UFM) block, and enhanced in-system programmability.



Pins/Package	Logic Elements	Typical Equivalent Macrocells	Equivalent Macrocell Range	UFM Size (bits)	I/O Pins	¹ PD (ns)	Operating Temperature	Mfrs. List No.	Order Code	Price Each
68/MBGA	240	192	128 to 240	8,192	54	7.5	0 - 85°C	EPM240ZM68C7N	160-2343	8.84
68/MBGA	240	192	128 to 240	8,192	54	7.5	0 - 85°C	EPM240ZM68C6N	160-2344	13.18
100/MBGA	240	192	128 to 240	8,192	80	7.5	0 - 85°C	EPM240ZM100C7N	160-2345	11.47
100/MBGA	240	192	128 to 240	8,192	80	7.5	0 - 85°C	EPM240ZM100C6N	160-2346	13.80
100/MBGA	570	440	240 to 570	8,192	76	9	0 - 85°C	EPM570ZM100C7N	160-2347	20.40
100/MBGA	570	440	240 to 570	8,192	76	9	0 - 85°C	EPM570ZM100C6N	160-2348	30.60
144/MBGA	570	440	240 to 570	8,192	116	9	0 - 85°C	EPM570ZM144C7N	160-2349	31.76
144/MBGA	570	440	240 to 570	8,192	116	9	0 - 85°C	EPM570ZM144C6N	160-2350	26.23
256/MBGA	570	440	240 to 570	8,192	160	9	0 - 85°C	EPM570ZM256C7N	160-2351	28.57
256/MBGA	570	440	240 to 570	8,192	160	9	0 - 85°C	EPM570ZM256C6N	160-2352	49.71

CoolRunner-II CPLD Starter Kit



The CoolRunner-II Starter Kit contains everything designers need to evaluate CoolRunner-II CPLDs. The Kit's evaluation board has a high-speed USB interface for power and programming, several features for easy prototyping, expansion slots, and an optional SPI ROM pad for memory interfacing. The kit also includes a 16x2 LCD display, USB cable, and reference designs for easy evaluation.

- Features:**
- Complete "Out-of-the-Box" evaluation platform
 - CoolRunner-II Utility Window
 - DataGATE evaluation "switch"
 - Easy set-up and monitoring
 - Free reference designs

Mfrs. List No.	Description	Order Code	Price Each
SK-CR11-L-G	CoolRunner-II Starter Kit	167-0944	37.08

CoolRunner™-II CPLDs

CoolRunner-II CPLDs deliver the high speed and ease of use associated with the XC9500/XL/XV CPLD family with the extremely low power versatility of the XPLA3 family in a single CPLD. This means that the exact same parts can be used for high-speed data communications/computing systems and leading edge portable products, with the added benefit of In System Programming. Low power consumption and high-speed operation are combined into a single family that is easy to use and cost effective. Clocking techniques and other power saving features extend the users' power budget.

Pins/Pkg	Macrocells	I/O Pins	T _{PD}	F _{SYSTEM1}	Mfrs. List No.	Order Code	1+	10+	100+	Price Each
44/VQFP	64	33	4.6ns	263MHz	XC2C64A-7VQG44C	160-5831	3.39	2.61	2.15	
100/VQFP	128	80	5.7ns	244MHz	XC2C128-7VQG100C	160-5829	7.40	5.70	5.66	
100/VQFP	256	80	5.7ns	263MHz	XC2C256-7VQG100C	160-5830	21.34	16.41	14.57	
144/TQFP	384	118	7.1ns	217MHz	XC2C384-10TQG144C	167-1085	20.60	--	--	
324/FBGA	384	240	7.1ns	217MHz	XC2C384-10FGG324C	167-1086	33.00	--	--	
208/PQFP	512	173	7.1ns	179MHz	XC2C512-10PQG208C	167-1087	38.09	--	--	

Platform Cable USB II



The Platform Cable USB II combines in-circuit configuration and programming of all Xilinx devices with its own integrated firmware which is held in a small form factor pod attached to the cable.

It is certified by the USB Implementers Forum (USB-IF), has industry-leading performance and is compatible with Full Speed (USB 1.1) and Hi-Speed (USB 2.0) ports. This product is an upgrade to and backwards compatible with Platform Cable USB and will address the new generation of PCs that have eliminated legacy IEEE 1284 parallel ports.

Features:

- Encapsulated innovative FPGA-based acceleration firmware
- True plug-and-play
- Bus-powered USB device (no power supply required)
- Automatically senses and adapts to target I/O voltage
- Firmware downloadable over cable
- Target power status LED
- CE and FCC compliant
- Compatible with target voltages in the range of +1.5 VDC to +5 VDC
- iMPACT and ChipScope™ tool support in ISE® software v6.3.03i (Windows only)
- Compatible with Windows and Linux operating systems
- Supports Boundary Scan and Slave-Serial configuration modes
- Backwards compatibility

Mfrs. List No.	Description	Order Code	Price Each
HW-USB-II-G	Platform USB Cable II	164-9384	257.70

Spartan® Starter Kits



The Spartan[®]-3AN Starter Kit provides out-of-the-box functionality to quickly evaluate device features and implement designs. This kit includes an evaluation board with 10/100 Ethernet PHY, 64 Mbytes of DDR2 SDRAM, 4 Mbit Platform Flash, two 16Mbit SPI serial Flash, ADC and DAC circuitry, a 2x16 LCD display, connectors supporting high-speed I/O standards, and more.

The Spartan[®]-3A Starter Kit delivers instant access to Spartan-3A FPGA device features such as SUSPEND power-saving mode, high-speed I/O options, DDR2 SDRAM memory interface, commodity flash configuration support, and FPGA/IP protection using Device DNA Security.

The Spartan[®]-3E FPGA Starter Kit is a complete development board solution giving designers instant access to the capabilities of the Spartan-3E family. Complete kit includes board, power supply, evaluation software, resource CD (application notes, white papers, data sheets, etc.), and USB cable.

Mfrs. List No.	Description	Order Code	Price Each	Mfrs. List No.	Description	Order Code	Price Each
HW-SPAR3AN-SK-UNI-G	Spartan-3AN Starter Kit	160-5824	232.33	HW-SPAR3E-SK-UK-G	Spartan-3E Starter Kit	160-5826	153.84
HW-SPAR3A-SK-UNI-G	Spartan-3A Starter Kit	160-5825	232.33				

Robot - POB-Bot Avoider



The POB-Bot Avoider is a complete robot built with a programmable color camera, a graphical black and white screen, an Input/Output controller, a caterpillar mobile tank and 3 distance sensors. The POB-Bot Avoider is the perfect robot to work on the obstacle avoidance problematic. Use the front distance sensor as a sole sensor or use all the 3 sensors to learn how to master the environment while the robot is moving. A CD-Rom including the development tools, program examples and documentation is provided. A serial cable, a USB/Serial adapter are also provided with the robot. Programmable in C, C++, Java, Basic and RISBEE.

Features:

- 1 POB-Eye to give vision and intelligence to your robot : color camera, native form recognition, programmable with C, C++, Java, Basic and RISBEE.
- 1 POB-LCD128 to develop your graphical user interface or to watch in real time what is coming from the camera.
- 1 POB-Proto to control digital and analogical I/O, servomotors, H-Bridge and a Joystick.
- 3 distance sensors sharp GP2D12, measures distances from 10 to 80 cm.
- A Tank to move the POB-Bot.
- The POB's Mechanical base
- 1 serial cable and a CD-ROM which includes the 3 compilers, documentation and examples

Mfrs. List No.
POB BOT AVOIDER

Order Code
169-1633

Price Each
446.88

Robot - POB-Bot Golden Pack



The POB-Bot Golden Pack is a complete robot built with a programmable color camera, a graphical black and white screen, an Input/Output controller, a caterpillar mobile tank and a motorized gripper plus a distance sensor. The POB-Bot Golden Pack acts on the environment. Use the native pattern recognition of the POB-Eye camera and the distance sensor of the gripper to localize objects to handle. Thanks to a springs system, you don't have to manage the size of the objects to handle. A

CD-Rom including the development tools, program examples and documentation is provided. A serial cable, a USB/Serial adapter are also provided with the robot. Programmable in C, C++, Java, Basic and RISBEE.

Features:

- 1 POB-Eye to give vision and intelligence to your robot : color camera, native form recognition, programmable with C, C++, Java, Basic and RISBEE.
- 1 POB-LCD128 to develop your graphical user interface or to watch in real time what is coming from the camera.
- 1 POB-Proto to control digital and analogical I/O, servomotors, H-Bridge and a Joystick.
- 1 POB-Proto with 7 screw terminals to plug the sensors
- 1 POB-Grip to catch environmental objects
- 1 gripper provided with a distance sensor
- A Tank to move the POB-Bot.
- The POB's Mechanical base
- 1 serial cable and a CD-ROM which includes the 3 compilers, documentation and examples
- New : 1 USB / Serial Adapter

Mfrs. List No.
POB BOT GOLDEN PACK

Order Code
169-1632

Price Each
536.48

Programmable Color Camera - POB-Eye



Programmable color camera A real brain for your robot, the POB-Eye is a color camera which allows you to do real time pattern recognition and brings the calculating power to the robot. The POB-Eye is programmable in C, C++, Java, Basic and RISBEE. An easy to use software SDK, with compilers and forms recognition tools, is also provided. The POB-Eye is the heart of our modular architecture.

Features:

- The POB-Eye is built with a ARM 7TDMI processor running at 60Mhz and with a CMOS color camera :
- Flash Memory 128 Ko
 - Ram : 64Ko
 - Input/Output : 15
 - Bus I2C
 - UART
 - Image size : 88x120 pixels (32Ko), Color Image (1 octet per color)
 - Power : 6v to 9v, 2A maximum
 - Logical signals voltage : 3.3v (5v allowed)
 - Logical signals current : 10mA maximum
 - Dimensions : 49.5x64.3 mm

Mfrs. List No.
LFEC6E-L-EV

Order Code
129-1871

Price Each
166.04

Robotic Controller - Dual POB



The Dual-POB is a board that allows you to easily create your robot with many kinds of things that are usually not compatible. For example, many people want to use a NXT from LEGO with standard servos and analog distance sensor from Sharp. Now its possible! To program the Dual-POB, the user has not to be an expert. Of course a C language is available, but a very simple graphical user interface named RISBEE is available.

Features:

First side, the ATmega board:

- ATmega 128
- Flash memory: 128KBytes

- SRam memory: 4KBytes
- EEprom memory: 4KBytes
- Frequency : 16Mhz
- Power supply: 6V to 10V.

- Courant max : 1,5A
- Dimensions : 89 x 76 mm
- 8 analog inputs, 14 digital I/O: They are on a 26 pin connector for ribbon cable.
- The power tension of the I/O is 5V, the digital output consumption must not exceed 20mA per pin.

255 Dynamixel Robotis Servomotors:

The Dual-POB allows to communicate using the serial bus of Robotis at 1Mb/s. This bus is made of Data, GND and +Power. It is recommended to use a power equal to 9.6v that can go up to 2A.

The power supply of the Dual-POB and the Robotis Bus is the same.

- NXT Connector: The NXT connector is connected to I2C bus of the Dual-POB. It must be set as slave mod.
- USB: For USB communication, POB did chose a FTDI ship. Many drivers are available for many operating systems. The Dual-POB can communicate with: Windows Vista x64, XP x64, Server 2003 x64, Vista, XP, Server 2003, 2000, ME, 98, Linux, Mac OS X, Mac, Mac OS 9, Mac OS 8, Windows CE.NET (Version 4.2 and greater) This ship FTDI works like a Serial/USB adapter, so the user only sees a serial port.

- Bluetooth: The industrial Bluetooth module (optional) is a Serial/bluetooth adapter. It can work up to 115200baud/s.

Second side, the PIC board:

- 18 standards servomotors: To get the best torque, the power supply of the servomotors is 6V.

- PWM, 1 double H bridge: This double H Bridge allows to manage 2 DC motors. It provides a tension of 6V that can be modulated with the PWM.

You can use a different power supply for the H bridge, a switch is to select if you use the default tension or your own tension. Mind that the power supply of the H Bridge is shared with the servomotors

- Dimensions : 76 x 76 mm

Board of connectors (Option):

- 1 power connector 5V
- 14 screw connectors for the digital I/O
- 8 screw connectors for the analog inputs
- 1 ribbon connector for the Dual-POB
- Dimensions : 100 x 50 mm

Mfrs. List No.
DUAL POB

Order Code
169-1644

Price Each
211.68

Robotic Pack - POB-Pack 2



The POB-Pack 2 Robotics includes a color camera POB-Eye, a graphical black & white screen POB-LCD and the I/O controller POB-Proto. You enjoy the POB-Eye calculating power and the native pattern recognition possibilities. The POB-Proto manages all the Input/Output, servomotors, DC motors, joystick... (Technical Documentation downloadable on our website). A CD-Rom including development

tools, program examples and documentation is provided. A serial cable, a USB/Serial adapter and a batteries handler are also provided with the pack. Programmable in C, C++, Java, Basic and RISBEE.

Features:

- 1 POB-Eye to give vision and intelligence to your robot : color camera, native form recognition, programmable with C, Java, Basic and RISBEE.
- 1 POB-LCD128 to develop your graphical user interface or to watch in real time what is coming from the camera.
- 1 POB-Proto to control digital and analogical I/O, servomotors, H-Bridge and a Joystick.
- 1 serial cable and a CD-ROM which includes the 3 compilers, documentation and examples
- A USB/Serial adapter
- A batteries holder (8 AA LR6)

Mfrs. List No.
POB PACK 2

Order Code
169-1634

Price Each
357.28



40,000 PRICES REDUCED

Robotic pack - Dual Pack



The Dual-Pack is a set of robotics parts to build a full and high performance robot. The Dual-Pack is made of a Dual-POB (detailed description here), a POB-Eye color camera (detailed description here), a graphical screen POB-LCD and the connectors board Dual-I/O.

Features:

- + Dual-POB
- + POB-Eye
- + POB-LCD
- + Dual-I/O

Mfrs. List No. DUAL PACK	Order Code 169-1647	Price Each 424.48
-----------------------------	------------------------	----------------------

Formula Flowcode Maze Solving Buggy



This maze solving robot has been designed to provide a motivating platform for learning robotics for all ages. The robot addresses the requirements of technology education in schools and colleges and the electronic circuit board can also be used for mechanical projects at 16+.

It uses an advanced PICmicro 18 series microcontroller with internal precision motor controller circuitry, has 3 infrared distance sensors, line following sensors on a separate circuit board, a speaker, audio level sensor, light sensor, two spare switch inputs, 8

user programmable LEDs, and various expansion buses - including an E-blocks port.

Features:

- Flowcode graphical programming software
- USB programmable
- High technical specification
- Micromouse competition compatible
- Can also be programmed in C and Assembly
- A2 line following track is provided

Mfrs. List No. HP794	Description Maze Solving Buggy	Order Code 161-0264	Price Each 76.16
-------------------------	-----------------------------------	------------------------	---------------------

Mobile Robot

High-tech 'ASURO' build it yourself Mobile Robot



ASURO is a small, mobile robot which has been developed for training and teaching purposes that can be programmed as required in C. Construction is simple for experienced electronic technicians, and can even be carried out by those starting to learn electronics. With the exception of the PCBs, only commercially available components are used, which drive easily obtainable normal fine motors.

Programming is easy, using Freeware tools. ASURO is suitable for those who want to start using

processor-controlled circuits, for student projects, for further and higher education courses.

- Driven by two electric motors
- ASURO uses two phototransistors to record the background brightness, and thus determine the direction.
- Six sensor keys help ASURO to identify and circumvent obstructions.
- The infrared transceiver allows a data link to be formed between ASURO and a PC. (requires USB link adaptor - to be ordered separately)

Further Accessories:

- ASURO Extension boards: contains 2 experimental boards, 1 connector kit for Asuro motherboard, 2 connector kits for experimental boards and one ceramic capacitor

Description Robot Kit	Order Code 809-2575	Price Each 46.45
Accessories		
USB Adaptor	903-2118	12.99
Extension PCB	970-6488	4.74

Brushless DC Motor Reference Design Kit



The Stellaris Brushless DC Motor Control Reference Design Kit with Ethernet and CAN contains all the necessary hardware and software to design, develop, and integrate BLDC motor applications. It is a sophisticated four-quadrant motor control for three-phase brushless DC motors rated at up to 36 V.

Kit Contents:

- Main control circuit board
- 3-phase brushless DC motor
- 24V wall power supply
- Retractable Ethernet cable
- Debug adapter
- Graphical control program for Windows™ on CD
- Guide, Manuals, Code, BOM, schematics, and Gerber files on CD

Mfrs. List No. RDK-BLDC	Description Brushless DC Motor Reference Design Kit	Order Code 155-1848	Price Each 144.18
----------------------------	--	------------------------	----------------------

Brushed DC Motor Control



Stand-Alone Module & Reference Design Kit



The Stellaris® Brushed DC Motor Control is available as a stand-alone, ready-for-production Module and a Reference Design Kit.

The Brushed DC motor control design offers high performance CAN networking with variable speed control for 12V brushed DC motors at up to 40A continuous current, along with a rich set of control options and sensor interfaces, including analog and quadrature encoder interfaces. The design uses highly optimized software and a powerful 32-bit Stellaris LM3S2616 microcontroller to implement open-loop speed control as well as closed-loop control of speed, position, or motor current.

The high-frequency Stellaris-based PWM enables DC motors to run smoothly and quietly over a wide speed range. The LM3S2616 microcontroller's robust combination of features, along with the efficient and deterministic performance of the ARM Cortex-M3 core, positions the design into a wide variety of consumer and industrial applications.

Mfrs. List No. MDL-BDC	Description Stand-Alone Module	Order Code 167-3913	Price Each 84.69
RDK-BDC	Reference Design Kit	167-3914	170.17

SO / SOJ-SMD Multiadapter

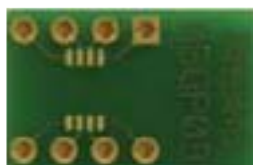


- EPOXY fibre-glass FR4 1.50 mm double-sided 35 μ m Cu
- Through plated holes \varnothing 1.00 mm
- Adapter for 10 different SOs
- Solder and component side with chem. Ni/AU surface and solder stop mask
- pre-scratched rated break points for the separation of individual modules from the board
- Size: 58 x 88.00 mm

Pitch (mm)	mil	No. of Pins	Size (mm)
1.27	0.5	8	3.9 (153 mil)
1.27	0.5	8 - w	7.5 (295 mil)
1.27	0.5	14	3.9 (153 mil)
1.27	0.5	16	3.9 (153 mil)
1.27	0.5	16 - w	7.5 (295 mil)
1.27	0.5	20 - w	7.5 (295 mil)
1.27	0.5	24 - w	7.5 (295 mil)
1.27	0.5	28 - w	7.5 (295 mil)
1.27	0.5	32	7.5 (295 mil)
1.27	0.5	40 (SOJ)	10.16 (400 mil)

Mfrs. List No.	Order Code	1+	10+	50+	
RE932	117-2131	11.37	--	--	
Case Style	Mfrs. List No.	Order Code	1+	10+	50+
SO-8	RE932-01	142-6169	3.56	3.42	3.28
SO-8W	RE932-02	142-6170	3.56	3.42	3.28
SO-14	RE932-03	142-6171	3.56	3.42	3.28
SO-16	RE932-04	142-6172	3.56	3.42	3.28
SO-16W	RE932-05	142-6173	3.56	3.42	3.28
SO-20W	RE932-06	142-6174	3.56	3.42	3.28
SO-24W	RE932-07	142-6176	3.56	3.42	3.28
SO-28W	RE932-08	142-6177	3.56	3.42	3.28
SO-32	RE932-09	142-6178	3.56	3.42	3.28
SOJ 40	RE932-10	142-6179	3.56	3.42	3.28

SMD Adapter - MSOP



- FR4 EPOXY fibre-glass 1.50 mm double-sided 35 μ m Cu (pth)
- Solder and component side with chem. Ni/AU surface and solder stop mask
- hole dia 1.00 mm
- adapter for 1 x MSOP-8 or 1 x MSOP-10

Mfrs. List No.	Stecker Typ	Order Code	1+	10+	100+
RE903	MSOP-8	128-7740	5.70	5.20	4.57
RE904	MSOP-10	128-7741	5.70	5.20	4.57

Eurocard RE200

Size 100 x 160mm



- 1.5 mm single-sided 35 μ m Cu
- Epoxy version: hot air leveling (HAL-leadfree)
- 38 x 61 single-hole conductor 2.2 mm \varnothing
- hole spacing 2.54 x 2.54 mm
- hole dia 1.0 mm

Mfrs. List No.	Order Code	1+	5+	10+	50+
RE200-HP SRBP FR2 single sided	117-2146	3.05	2.95	2.80	2.45
RE200-LF Epoxy FR4 single sided	117-2148	4.84	4.65	4.45	3.73
RE200-LFDS Epoxy FR4 double sided	117-2149	9.44	8.66	7.95	6.42
RE200-C3 CEM3 single sided	122-1144	4.14	3.54	3.06	2.67

SMD-PCB RE435

53 x 95 mm



Grid: 39 x 59
Pitch: 1.27mm x 1.27mm
Material: Epoxy

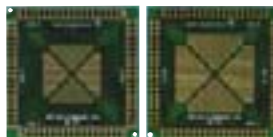
Pad area: 1.00mm²
Hole dia: 0.35mm

For connection with DIN 41612 C and R Connectors.

- EPOXY fibre-glass FR4 0.70 mm double-sided 35 μ m Cu (pth)
- chem. SN
- SMD breadboard 1.27 x 1.27 mm (1/40°)
- 39 x 59 single-hole conductors 1.0 mm²
- hole dia 0.35 mm
- suitable for all SMD components
- size 53 x 95 mm

Mfrs. List No.	Order Code	1+	5+	10+	50+
RE435-LF	117-2133	10.46	9.64	9.16	8.08

QFP Multiadapter 144



- Component sides with solder resist mask
- Four pin rail rows 2 x 18 pole, basic grid 2.54 mm, borings 1.00 mm \varnothing
- Size 57,2 x 57,2 mm
- EPOXY resin FR4 1.50 mm double-sided 35 μ m CU (pth)
- chem. Ni/AU

- Two universal QFP layouts for various housing sizes and pin numbers:
 - LQFP; PQFP, TQFP
 - Layer 1: 24 - 144 pins, 0.50 mm pitch, sq.
 - Layer 2: 24 - 144 pins, 0.65 mm pitch, sq.

Mfrs. List No.	Order Code	1+	+	+	+
RE471	117-2126	19.02	--	--	--

SMD/SOT-23 Multiadapter Prototyping Board RE 901

Also for SOT-23/8, SOT-223, SOT-89, TO-252 and SC-75



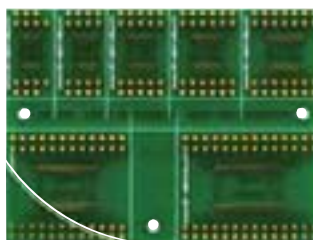
Multiadapter circuit board with six micro-miniature semiconductor circuits. The PCB can be equipped with twenty different types of semiconductor: **SOT-23** (with SOT-23/3, SOT-23/5, SOT-23/6, SC59, SC74, SC74A, SMT3, SMT5 and SMT6), **SOT-223**, **TO-252/D-PAK**, **SOT-89**, **SOT-23/8** (with SC70, SC88A, UMT3, UMT5 and UMT6) and **SC75** (with EMT3 and SC75A). The

board layouts meet the industry standard of the respective semiconductor case size.

Measurements for	SOT-23/6	SOT-23/8
Pad-Size (mm)	0.71 x 1.0	0.46 x 1.1
Pad-Pitch (mm)	0.95	0.56
Size (mm)	2.54	2.54
Configuration	2 rows x 3	2 rows x 4
Board size	22.86 x 46.72mm	
Board thickness	1.5mm	
Board material	FR4 (single sided 35 μ m Cu)	
Components side	Chemical nickel/goldsolder stop-off mask and board assembly print	
Connections	8 pole pin terminal connection spacing 2.54 mm, boring \varnothing 1.00 mm	
Break off lines	Pre notched to separate the modules	
Gerber Data	Tanning data (format Gerber) for production of the solder stop-off mask and the solder paste print are available free of charge on request	

Mfrs. List No.	Order Code	1+	+	+	+
RE901	117-2113	3.90	--	--	--

SSOP-SMD Multiadapter



- Pitch 065 mm / 0.635 mm
- EPOXY fibre glass FR4 1.5 mm double-sided 35 μ m Cu
- Through plated holes 1.00 mm \varnothing
- Adapter for 7 different SSOP
- Solder and component side with chem. Ni/AU surface and solder stop mask
- pre-scratched rated break points for the separation of individual modules from the board
- Size: 61.40 x 81.70 mm

Pitch (mm)	mil	No. of Pins	Size (mm)
0.65	22.5	14	5.3 (208 mil)
0.65	22.5	16	5.3 (208 mil)
0.65	22.5	20	5.3 (208 mil)
0.65	22.5	24	5.3 (208 mil)
0.65	22.5	28	5.3 (208 mil)
0.635	25.7	48	7.5 (300 mil)
0.635	25.7	56	7.5 (300 mil)

Mfrs. List No.	Order Code	1+	10+	50+	
RE931	117-2129	10.80	--	--	
Case Style	Mfrs. List No.	Order Code	1+	10+	50+
SSOP-14	RE931-01	142-6161	4.03	3.90	3.73
SSOP-16	RE931-02	142-6162	4.03	3.90	3.73
SSOP-20	RE931-03	142-6164	4.03	3.90	3.73
SSOP-24	RE931-04	142-6165	4.03	3.90	3.73
SSOP-28	RE931-05	142-6166	4.03	3.90	3.73
SSOP-48	RE931-06	142-6167	4.03	3.90	3.73
SSOP-56	RE931-07	142-6168	4.64	4.48	4.28

Prototyping Board



- EPOXY fibre-glass FR4 1.50 mm, double-sided 35 µm CU
- plated-through-holes
- HAL-leadfree
- hole spacing 1.27 x 1.27 mm (1/40")
- 113 x 76 single-hole conductor 1.0 mm² (8588 pads)

- size 100 x 160 mm
- connector 32/ 64/ 96-channel
- DIN 41612 type C

Mfrs. List No.	Order Code	1+	5+	10+
RE438-LF	122-1146	19.64	17.88	16.37

Hex-Standoff M 2,5



Spacer Type B Male-Female



Material

- Steel 9SMnPb28K (according to DIN 1.0718)
- Brass CuZn40Pb2 (according to DIN 2.0402)
- Plating according to DIN 267**
- Zinc-plated 5 µm (A2E)
- Nickel-plated 3 µm (E1E)

Production Tolerances

- Hex size according to DIN 7168 medium (medium ±0.15 mm)
- Length of half dog point ca. ±0.25 mm
- Screw thread according to DIN 13 part 13, cut
- Screw thread undercut according to DIN 76
- End of screw thread similar to DIN 85 (flat point)

Mfrs. List No.	Order Code	4+	24+	48+
05.12.053	146-6814	0.250	0.185	0.160
05.12.083	146-6825	0.149	0.111	0.097
05.12.103	146-6834	0.196	0.160	0.122
05.12.123	146-6844	0.210	0.160	0.133
05.12.173	146-6854	0.250	0.185	0.160

Hex Standoff Metric M3



Spacer Type B Male - Female



Material

- Steel 9SMnPb28K (according to DIN 1.0718)
- Brass CuZn40Pb2 (according to DIN 2.0402)
- Plating according to DIN 267**
- Zinc-plated 5 µm (A2E)
- Nickel-plated 3 µm (E1E)

Production Tolerances

- Hex size according to DIN 7168 medium (medium ±0.15 mm)
- Length of half dog point ca. ±0.25 mm
- Screw thread according to DIN 13 part 13, cut
- Screw thread undercut according to DIN 76
- End of screw thread similar to DIN 85 (flat point)

Steel				Brass nickel-plated			
L	I	A	SW 5,5	L	I	A	SW 5,5
5	2.5	6	146-6725	5	2.5	6	146-6735
6	2.5	6	146-6745	6	2.5	6	146-6754
7	4.5	6	146-6764	7	4.5	6	146-6775
8	5	6	146-6785	8.0	5	6	146-6795
10	6.5	6	146-6815	8.5	6	6	146-6805
12	7	6	146-6836	10	6.5	6	146-6826
14	7	6	146-6855	12	7	6	146-6845
15	7	6	146-6726	15	7	6	146-6869
18	7	6	146-6755	16	7	6	146-6736
20	7	6	146-6765	17	7	6	146-6746
25	7	6	146-6786	20	7	6	146-6776
28	7	8	146-6806	30	7	6	146-6827
30	7	6	146-6817	30	7	6	146-6827
35	7	6	146-6837				
38	7	6	146-6846				

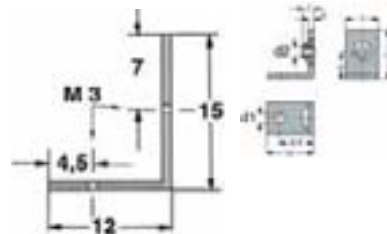
Steel				Brass nickel-plated			
L	I	A	SW 5,5	L	I	A	SW 5,5
40	7	6	146-6856				
45	7	6	146-6727				
50	9	8	146-6737				
60	7	6	146-6747				
70	7	6	146-6757				

Mfrs. List No.	Order Code	4+	24+	48+
Steel Zinc-plated SW 5.5				
05.13.051	146-6725	0.196	0.160	0.122
05.13.061	146-6745	0.220	0.185	0.149
05.13.071	146-6764	0.220	0.185	0.149
05.13.081	146-6785	0.250	0.196	0.160
05.13.101	146-6815	0.185	0.149	0.122
05.13.121	146-6836	0.220	0.185	0.149
05.13.141	146-6855	0.300	0.220	0.185
05.13.151	146-6726	0.250	0.185	0.160
05.13.181	146-6755	0.250	0.196	0.160
05.13.201	146-6765	0.250	0.185	0.160
05.13.251	146-6786	0.300	0.220	0.185
05.13.281	146-6806	0.340	0.270	0.210
05.13.301	146-6817	0.280	0.210	0.185
05.13.351	146-6837	0.280	0.210	0.171
05.13.381	146-6846	0.380	0.300	0.250
05.13.401	146-6856	0.350	0.280	0.210
05.13.451	146-6727	0.460	0.360	0.300
05.13.501	146-6737	0.460	0.360	0.300
05.13.601	146-6747	0.390	0.310	0.250
05.13.701	146-6757	0.500	0.380	0.320
Brass nickel-plated SW 5,5				
05.13.053	146-6735	0.160	0.122	0.097
05.13.063	146-6754	0.185	0.149	0.122
05.13.073	146-6775	0.171	0.133	0.111
05.13.083	146-6795	0.171	0.133	0.111
05.13.087	146-6805	1.920	1.510	1.210
05.13.103	146-6826	0.185	0.149	0.122
05.13.123	146-6845	0.185	0.149	0.122
05.13.153	146-6869	0.210	0.160	0.122
05.13.163	146-6736	0.220	0.185	0.149
05.13.173	146-6746	0.220	0.171	0.133
05.13.203	146-6776	0.210	0.171	0.133
05.13.253	146-6796	0.250	0.196	0.160
05.13.303	146-6827	0.250	0.185	0.160

Mounting Brackets With Thread



For mounting of components



Dimensions in mm						Mfrs. List No.
a	b	B	s	d1	d2	Material
10.0	11.0	7.0	1.0	∅ 3,2	M 3	Steel nickel-plated
12.0	15.0	10.0	1.5	M 3	M 3	Steel nickel-plated

Mfrs. List No.	Order Code	4+	24+	48+
14.86.313	146-6883	0.196	0.160	0.122
14.86.353	146-6885	1.490	1.140	0.930





Packaged, protected, perfect

Thousands of ICs now available in our innovative peel packaging

We've extended our peel packaging to cover IC case sizes from 5x5mm to 14x14mm:

- ▶ Complete protection for a wide range of ICs
- ▶ Clear product identification with batch number and Farnell part number
- ▶ All round protection in transit and storage
- ▶ Reduced moisture ingress and anti-static protection
- ▶ No minimum order requirement

Peel Packaging - exclusive to
Farnell: **www.farnell.com**



High Brightness LED Arrays



1692075, 1692080, 1692083

1692076, 1692077, 1692078, 1692079, 1692081, 1692084, 1692085

- Compact high flux density light source
- Uniform high quality illumination
- Uniform consistent white light
- Streamlined thermal path
- Energy star / ANSI compliant binning structure
- More energy efficient than incandescent, halogen and some fluorescent lamps
- Low voltage DC operation
- Instant light with unlimited dimming
- Long operating life

Bridgelux LED Arrays have been specifically developed to provide lamp and luminaire manufacturers with a solution that will simplify system level integration, further reducing system cost. Typical applications include task, accent, track, down light, wide area, security as well as other hospitality, architectural, commercial and industrial lighting. Bridgelux LED Arrays have been developed with a focus on uniform and high quality light, improved energy efficiency and environmentally friendly packaging.

Viewing Angle	Forward Current	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Cool White					
120°	600mA	440lm	10.6V	BXRA-C0400-00000	169-2075
120°	900mA	880lm	14.1V	BXRA-C0800-00000	169-2076
120°	1300mA	1320lm	14.3V	BXRA-C1200-00000	169-2077
120°	1750mA	2200lm	18V	BXRA-C2000-00000	169-2078
Neutral White					
120°	1400mA	1320lm	17.5V	BXRA-N1200-00000	169-2079
120°	800mA	440lm	10.5V	BXRA-N0400-00000	169-2080
120°	1200mA	880lm	14.1V	BXRA-N0800-00000	169-2081
Warm White					
120°	900mA	440lm	10.6V	BXRA-W0400-00000	169-2083
120°	1300mA	880lm	14.3V	BXRA-W0800-00000	169-2084
120°	1600mA	1320lm	17.8V	BXRA-W1200-00000	169-2085

Mftrs. List No.	Order Code	1+	25+	100+	Price Each
Cool White					
BXRA-C0400-00000	169-2075	13.10	11.87	10.08	
BXRA-C0800-00000	169-2076	21.73	19.82	16.80	
BXRA-C1200-00000	169-2077	28.78	26.10	22.06	
BXRA-C2000-00000	169-2078	43.57	39.65	33.49	
Neutral White					
BXRA-N1200-00000	169-2079	48.38	43.90	37.18	
BXRA-N0400-00000	169-2080	19.60	17.81	15.12	
BXRA-N0800-00000	169-2081	34.83	31.70	26.77	
Warm White					
BXRA-W0400-00000	169-2083	19.60	17.81	15.12	
BXRA-W0800-00000	169-2084	34.83	31.70	26.77	
BXRA-W1200-00000	169-2085	48.38	43.90	37.18	

High Luminous Efficacy LED Emitters



5W



- General lighting
- Office lighting
- Accent and task lighting
- Commercial refrigeration
- Display lighting
- Architectural detail lighting

LED / Lamp Size 4.4mm x 4.4mm Operating Temperature -40°C to +125°C Forward Current 1.5A

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Deep Red	90°	-	3.1V	LZ1-00R205	167-8950
Red	90°	106lm	2.8V	LZ1-00R105	167-8949
Amber	90°	80lm	3V	LZ1-00A105	167-8943
Green	80°	175lm	3.8V	LZ1-00G105	167-8947
Blue	80°	52lm	3.8V	LZ1-00B205	167-8944
Dental Blue	80°	-	3.8V	LZ1-00DB05	167-8946
Cool White	95°	209lm	3.8V	LZ1-00CW05	167-8945
Neutral White	85°	180lm	3.8V	LZ1-00NW05	167-8948
Warm White	95°	130lm	3.8V	LZ1-00WW05	167-8952

Colour	Mftrs. List No.	Order Code	1+	10+	50+	100+	Price Each
Deep Red	LZ1-00R205	167-8950	7.09	6.71	6.32	6.00	
Red	LZ1-00R105	167-8949	5.10	4.82	4.52	4.24	
Amber	LZ1-00A105	167-8943	5.10	4.82	4.52	4.24	
Green	LZ1-00G105	167-8947	5.80	5.48	5.16	4.84	
Blue	LZ1-00B205	167-8944	5.80	5.48	5.16	4.84	
Dental Blue	LZ1-00DB05	167-8946	16.77	15.83	15.03	14.28	
Cool White	LZ1-00CW05	167-8945	5.80	5.48	5.16	4.84	
Neutral White	LZ1-00NW05	167-8948	5.80	5.48	5.16	4.84	
Warm White	LZ1-00WW05	167-8952	5.80	5.48	5.16	4.84	

Surface Mount - 0402

Water Clear Lens



Viewing angle 120°
Reverse voltage 5V
Storage temperature -40°C to +85°C
Operating temperature -40°C to +85°C

Colour	Forward Current (mA)	Peak Wavelength (nm)	Forward Voltage (V) typ	Forward Voltage (V) max	Power Dissipation (mW)	Order Code
Orange	195	610	2	2.5	75	161-4112
Super Yellow	160	590	2	2.5	125	161-4114
Red	160	636	2	2.6	170	161-4115
Green	160	574	2.2	2.6	100	161-4116

Colour	Mftrs. List No.	Order Code	1+	10+	100+	500+	Price Each
Orange	SML-LX0402SOC-TR	161-4112	0.260	0.220	0.189	0.151	
Super Yellow	SML-LX0402SYC-TR	161-4114	0.270	0.240	0.200	0.165	
Red	SML-LX0402SIC-TR	161-4115	0.270	0.240	0.200	0.165	
Green	SML-LX0402SUGC-TR	161-4116	0.560	0.490	0.410	0.360	

P4 Series



L=7.6, W=7.6

- Applications include:
- Indicators
 - Advertising Signs
 - Automotive Lighting
 - Illuminations
 - Message Boards
 - Traffic



Colour	Viewing Angle	Luminous Flux (typ)	Forward Voltage (max)	Forward Current	Mftrs. List No.	Order Code
Hi Red	120°	6lm	3V	70mA	LP379UHR1-C0G-01-00001	164-9021
Amber	120°	7lm	3V	70mA	LP379UYL1-C0G-01-00001	164-9023
Green	120°	2lm	4.4V	30mA	LP379PPG1-C0G-03-00001	164-9020
Blue	120°	0.8lm	4.4V	30mA	LP379PBL1-C0G-03-00001	164-9019
White	130°	1.1lm	4.4V	30mA	LP368PWN1-D0G-00001	164-9015
White	60°	7lm	4.4V	30mA	LP377FWH1-60G-00001	164-9017
White	90°	7lm	4.4V	30mA	LP377FWH1-90G-00001	164-9018

Colour	Mftrs. List No.	Order Code	5+	25+	100+	Price Each
Hi Red	LP379UHR1-C0G-01-00001	164-9021	0.29	0.28	0.26	
Amber	LP379UYL1-C0G-01-00001	164-9023	0.29	0.28	0.26	
Green	LP379PPG1-C0G-03-00001	164-9020	0.47	0.43	0.40	
Blue	LP379PBL1-C0G-03-00001	164-9019	0.40	0.38	0.36	
White	LP368PWN1-D0G-00001	164-9015	0.56	0.52	0.49	
White	LP377FWH1-60G-00001	164-9017	0.53	0.49	0.46	
White	LP377FWH1-90G-00001	164-9018	0.53	0.49	0.46	

OSTAR™ - Lighting



4 LEDs without optics 4 LEDs with optics 6 LEDs without optics 6 LEDs with optics

- Applications:
- General lighting
 - Microscope illumination
 - VMS (variable message signs)
 - High end strobe light

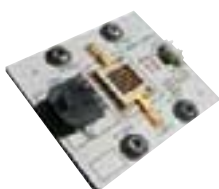
Forward Current 700mA Operating Temperature -40°C to +100°C

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
4 LEDs - Without Optics					
Warm White	120°	315lm	16.4V	LECWE2A-MXNZ-MRNU	168-0587
Warm White	120°	230lm	16.4V	LECWE2A-LYNX-URVU	168-0588
6 LEDs - Without Optics					
Warm White	120°	210lm	24.5V	LECWE3A-MYPY-SRTU	168-0589
Warm White	120°	240lm	24.5V	LECWE3A-MZPY-MRNU	168-0590
Warm White	120°	180lm	24.5V	LECWE3A-MXPX-URVU	168-0591
4 LEDs - With Optics					
Warm White	130°	240lm	16.4V	LECWE2B-MZPY-MRNU	168-0592
Warm White	130°	315lm	16.4V	LECWE2B-MXNZ-URVU	168-0593
Warm White	130°	210lm	16.4V	LECWE2B-MYPX-ORRU	168-0594
Warm White	130°	210lm	16.4V	LECWE2B-MYNZ-SRTU	168-0595
6 LEDs - With Optics					
Warm White	130°	390lm	24.5V	LECWE3B-NZQX-MRNU	168-0597
Warm White	130°	280lm	24.5V	LECWE3B-NXPY-URVU	168-0598
Warm White	130°	520lm	24.5V	LECWE3B-NYPZ-SRTU	168-0599
Warm White	130°	330lm	24.5V	LECWE3B-NYPZ-ORRU	168-0601
Ultra White	130°	278lm	24.5V	LEUWE3B-PZQZ-ERFT	168-0603



Mfrs. List No.	Order Code	1+	5+	10+	25+
4 LEDs - Without Optics					
LECWE2A-MXNZ-MRNU	168-0587	24.79	22.31	19.57	17.24
LECWE2A-LYNX-URVU	168-0588	24.79	22.31	19.57	17.24
6 LEDs - Without Optics					
LECWE3A-MYPY-SRTU	168-0589	37.18	31.24	27.40	24.12
LECWE3A-MZPY-MRNU	168-0590	37.18	31.24	27.40	24.12
LECWE3A-MXPX-URVU	168-0591	37.18	31.24	27.40	24.12
4 LEDs - With Optics					
LECWE2B-MZPY-MRNU	168-0592	30.68	24.54	21.53	18.95
LECWE2B-MXNZ-URVU	168-0593	30.68	24.54	21.53	18.95
LECWE2B-MYPX-QRRU	168-0594	30.68	24.54	21.53	18.95
LECWE2B-MYNZ-SRTU	168-0595	30.68	24.54	21.53	18.95
6 LEDs - With Optics					
LECWE3B-NZQX-MRNU	168-0597	30.68	24.54	21.53	18.95
LECWE3B-NXPY-URVU	168-0598	35.60	32.18	29.36	25.85
LECWE3B-NYPZ-SRTU	168-0599	35.60	32.18	29.36	25.85
LECWE3B-NYPZ-QRRU	168-0601	35.60	32.18	29.36	25.85
LEUWE3B-PZQZ-ERFT	168-0603	41.32	37.18	32.61	28.72

Uno LE



- Smart, compact, efficient, high-power LED spot source
- Embedded thermal protection
- Long-life and reliable performance
- Applications include entertainment lighting, neo-natal, operating room lighting, dental applications and forensic investigation



Colour	Luminous Flux typ	Total Radiant Flux (typ)	Wavelength / (Colour Temp.) peak / (typ)	Mfrs. List No.	Order Code
Blue	200lm	4600mW	465nm	* BLUE	160-6838
Green	800lm	1700mW	520nm	* GREEN	160-6841
Amber	300lm	680mW	595nm	* AMBER	160-6842
Red	340lm	1900mW	630nm	* RED	160-6843
White	850lm	—	(4250K)	* WHITE	160-6844
NIR	—	1900mW	870nm	* NIR	160-6845
SUVA	—	480mW	365nm	* SUVA	160-6846
UVA	—	480mW	375nm	* UVA	160-6847
Violet	—	4800mW	405nm	* VIOLET	160-6848

* ENFIS UNO LE...

Colour	Order Code	1+	3+	5+	10+	25+
Blue	160-6838	113.86	109.48	—	—	—
Green	160-6841	113.86	109.48	—	—	—
Amber	160-6842	113.86	109.48	—	—	—
Red	160-6843	113.86	109.48	—	—	—
White	160-6844	123.76	119.00	—	—	—
NIR	160-6845	183.16	176.12	—	—	—
SUVA	160-6846	183.16	176.12	—	—	—
UVA	160-6847	183.16	176.12	—	—	—
Violet	160-6848	183.16	176.12	—	—	—

Powerwhite Linear Modules



Colour: Cool White
 Colour Temperature (typ): 5300K
 Number of LEDs: 6
 Temperature Range: -30°C to +55°C



- Fully modular linear arrays of ultra high brightness LEDs
- Utilizes the latest 80+ lumen LUXE-ON@ Rebel™ LEDs
- >70% lumen maintenance @ 60,000 hours at maximum acceptable ambient temperature
- Lifesaver® thermal protection
- Onboard 350mA constant current driver runs off low voltage input (LV range)
- Primary heatsinking included (LV range)
- Applications include linear lighting, accent lighting, flood lighting, street and area lighting, general illumination
- 159-3580 and 159-3581 require LED driver 159-3579

Optic	Mfrs. List No.	Order Code	1+	3+	8+	+
Powerwhite Linear Modules						
5° spot	LML6C1-CW-SP	159-3580	53.57	48.54	43.15	—
5 x 20° oval	LML6C1-CW-OV	159-3581	53.57	48.54	43.15	—
Entry cable	LML6-CON-CAB	159-3582	3.83	3.46	3.08	—
End plug	LML6-TER-CAB	159-3583	1.10	1.00	0.90	—
Powerwhite Linear Modules - With On-Board Driver						
5° spot	LML6-LV-CW-SP	159-3585	63.30	57.37	50.98	—
5 x 20° oval	LML6-LV-CW-OV	159-3586	63.30	57.37	50.98	—
Entry cable	LML6-LV-CON-CAB	159-3587	2.92	2.65	2.36	—
End plug	LML6-LV-M2M-CAB	159-3588	1.96	1.77	1.58	—
LED Driver						
	PWD60-35-70	159-3579	48.70	44.14	39.22	—

TFT Colour LCD Modules, LED Backlit



- Touchscreen options
- SR-NLT — Super reflective, natural light technology (*)
- ST-NLT — Super transmissive, natural light technology (**)



Screen Size	Resolution	Luminance	Power Consumption	Voltage Supply	Mfrs. List No.	Order Code
3.5"	240 x 320	220cd/m ²	50mW	3V	NL2432HC22-40J *	162-6054

Screen Size	Resolution	Luminance	Power Consumption	Voltage Supply	Mfrs. List No.	Order Code
3.5"	240 x 320	200cd/m ²	50mW	3V	NL2432HC22-41K *	162-6053

Screen Size	Resolution	Luminance	Power Consumption	Voltage Supply	Mfrs. List No.	Order Code
6.5"	640 x 480	550cd/m ²	—	3.3V	NL6448BC20-21D	162-6059
6.5"	640 x 480	800cd/m ²	—	3.3V	NL6448BC20-21C **	162-6060

Screen Size	Resolution	Luminance	Power Consumption	Voltage Supply	Mfrs. List No.	Order Code
7"	800 x 480	400cd/m ²	2.9W	3.3V	NL8048BC19-02	162-6062

Screen Size	Mfrs. List No.	Order Code	1+	3+	5+	+
QVGA						
3.5"	NL2432HC22-41K	162-6053	63.63	59.10	—	—
QVGA - Touchscreen						
3.5"	NL2432HC22-40J	162-6054	60.29	55.98	—	—
VGA						
6.5"	NL6448BC20-21D	162-6059	279.91	272.13	—	—
6.5"	NL6448BC20-21C	162-6060	366.99	356.80	—	—
WVGA						
7"	NL8048BC19-02	162-6062	211.49	205.62	—	—

LCD TFT Displays



Overall Size H x W x D (mm)	Display Size (diagonal)	Resolution	Display Format	Backlight Type	Mfrs. List No.	Order Code
76.9 x 63.9 x 3.5	3.5"	320 x 240	QVGA	LED	LQ035Q3DW02	168-5285
104.6 x 144 x 12.3	5.7"	640 x 480	VGA	LED	LQ057V3DG02	168-5286
149.5 x 199.5 x 11.6	8.4"	640 x 480	VGA	LED	LQ084V3DG02	168-5287
179.5 x 246.5 x 12.5	10.4"	640 x 480	VGA	LED	LQ104V1DG62	168-5288
134 x 212 x 12.5	8.5"	800 x 480	WVGA	LED	LQ085Y3DG06	168-5289
152.5 x 251.1 x 5	10.6"	1280 x 768	XGA	LED	LQ106K1LA05	168-5290
184 x 278 x 11.3	12.1"	1280 x 800	XGA	LED	LQ121K1LG11	168-5291
179.4 x 246.5 x 13.7	10.4"	800 x 600	SVGA	LED	LQ104S1DG61	168-5292
179.4 x 246.5 x 13.7	10.4"	800 x 600	SVGA	LED	LQ104S1LG61	168-5293
209 x 276 x 11	12.1"	800 x 600	SVGA	LED	LQ121S1DG61	168-5294
209 x 276 x 11	12.1"	800 x 600	SVGA	LED	LQ121S1LG61	168-5295

Touchscreen Version	Display Size	Resolution	Display Format	Backlight Type	Mfrs. List No.	Order Code
76.9 x 63.9 x 4.5	3.5"	320 x 240	QVGA	LED	LQ035Q1DH01	168-5283

Resolution	Mfrs. List No.	Order Code	1+	3+
320 x 240	LQ035Q3DW02	168-5285	37.49	33.07
640 x 480	LQ057V3DG02	168-5286	115.44	101.85
640 x 480	LQ084V3DG02	168-5287	220.38	194.45
640 x 480	LQ104V1DG62	168-5288	251.87	222.23
800 x 480	LQ085Y3DG06	168-5289	155.92	137.58
1280 x 768	LQ106K1LA05	168-5290	256.37	226.21
1280 x 800	LQ121K1LG11	168-5291	221.89	195.79
800 x 600	LQ104S1DG61	168-5292	188.90	166.68
800 x 600	LQ104S1LG61	168-5293	188.90	166.68
800 x 600	LQ121S1DG61	168-5294	188.90	166.68
800 x 600	LQ121S1LG61	168-5295	188.90	166.68
Touchscreen Version				
320 x 240	LQ035Q1DH01	168-5283	43.48	38.36

OLED Evaluation Kits

PDK Series



- Easy to use yet powerful and versatile development and demonstration tool for driving passive matrix OLED displays from the USB port of a PC
- The kit consists of an OLED display with transition Board, USB controller card, mini USB cable and a CD with software application and drivers
- USB controller card is common for all the available kits

Display Size	Mftrs. List No.	Order Code	Price Each 1+
128 x 65	PDK-N-12864WE-1A	167-6986	310.15
26 x 64	PDK-N-2864BY-2A	167-6987	310.15
28 x 32	PDK-N-2832BE-2A	167-6988	310.15
33.4 x 21.7	PDK-N-32645E-2A	167-6989	310.15
160 x 128	PDK-N-160128FC-1A	167-6990	310.15
128 x 64	PDK-N-12864YO-3A	167-6991	310.15
128 x 32	PDK-N-12832YW-1A	167-6992	310.15
128 x 32	PDK-N-12832BE-1A	167-6993	310.15
128 x 33	PDK-N-12833YW-2A	167-6995	310.15
128 x 33	PDK-N-12833BE-2A	167-6996	310.15
128 x 64	PDK-N-12864YO-1A	167-6997	310.15
128 x 64	PDK-N-12864YO-5A	167-6998	310.15
128 x 34	PDK-N-12864YO-7A	167-6999	310.15
256 x 64	PDK-N-25664YW-3A	167-7000	310.15
256 x 64	PDK-N-25664BE-4A	167-7001	310.15
256 x 64	PDK-N-25664YW-4A	167-7002	310.15
256 x 64	PDK-N-25664BE-3A	167-7003	310.15

Active Matrix OLED Displays



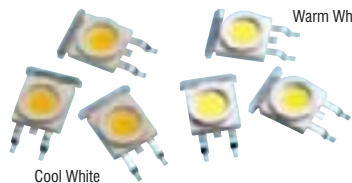
- 10000 to 1 contrast ratio
- 180 degree superior viewing angle
- Super thin and low power
- Ultra fast response rates
- Full colour pixels

Operating Temperature -20°C to +60°C

Display Size	Power Consumption	Dimensions			Mftrs. List No.	Order Code
		H	D	W		
31.68 x 39.6	240	68.8	1.5	38	C02000ILC-C	158-9471
36.72 x 48.96	300	58.6	1.65	42	C0240QGLA-T	158-9472
36.72 x 48.96	300	58.6	2.75	42	C0240QGLH-T	158-9473
43.2 x 57.6	400	67.75	1.75	49.1	C0283QGLD-T	158-9474
43.2 x 57.6	400	67.75	2.9	49.1	C0283QGLH-T	158-9475
95 x 53.8	800	98.05	1.95	103.5	P0430WQLC-T	158-9476
95 x 53.8	800	98.05	3.05	103.5	P0430WQLB-T	158-9478
74.88 x 42.43	700	85.45	1.6	82.8	P0340WQLC-T	167-7023
74.88 x 42.43	700	85.45	2.8	82.8	P0340WQLB-T	167-7024

Display Size	Mftrs. List No.	Order Code	Price Each		
			1+	5+	10+
31.68 x 39.6	C02000ILC-C	158-9471	29.44	27.17	25.98
36.72 x 48.96	C0240QGLA-T	158-9472	41.22	38.06	36.38
36.72 x 48.96	C0240QGLH-T	158-9473	48.09	44.40	42.44
43.2 x 57.6	C0283QGLD-T	158-9474	53.01	48.93	46.77
43.2 x 57.6	C0283QGLH-T	158-9475	59.86	55.26	52.83
95 x 53.8	P0430WQLC-T	158-9476	163.07	151.41	--
95 x 53.8	P0430WQLB-T	158-9478	181.18	168.25	--
74.88 x 42.43	P0340WQLC-T	167-7023	98.50	90.29	87.38
74.88 x 42.43	P0340WQLB-T	167-7024	107.40	98.45	95.27

Moonstone™ 3W Power LED Light Source



Viewing Angle 120°
 Forward Current 700mA
 Forward Voltage 4.3V
 Operating Temperature -40°C to +95°C

The Moonstone™ 3W Power LED Light Source is a high performance energy efficient device which can handle high thermal and high driving current. The exposed pad design has excellent heat transfer from the package to the motherboard.

- Energy efficient
- High current operation
- Wide viewing angle
- Exposed pad for excellent heat transfer
- Long operation life
- Silicone encapsulation
- Suitable for reflow soldering process

Luminous Intensity (typ)	Mftrs. List No.	Order Code	Price Each			
			1+	25+	100+	250+
Cool White						
145lm	ASMT-MW22-NNN00	168-6143	4.28	2.99	2.41	2.20
145lm	ASMT-MW22-NNNS0	168-6144	4.84	3.38	2.73	2.49
145lm	ASMT-MW22-NNNU0	168-6145	4.84	3.38	2.73	2.49
145lm	ASMT-MW22-NNNW0	168-6146	4.54	3.18	2.56	2.34
145lm	ASMT-MW22-NNNZ0	168-6147	4.28	2.99	2.41	2.20
Cool White Diffused						
125lm	ASMT-MWE2-NMN00	168-6149	4.37	3.05	2.45	2.24
Warm White						
125lm	ASMT-MY22-NMN00	168-6151	4.37	3.05	2.45	2.24
125lm	ASMT-MY22-NMNU0	168-6152	4.96	3.47	2.80	2.55
125lm	ASMT-MY22-NMNW0	168-6153	4.63	3.25	2.62	2.39
125lm	ASMT-MY22-NMNZ0	168-6154	4.37	3.05	2.45	2.24
Warm White Diffused						
110lm	ASMT-MYE2-NMN00	168-6155	4.47	3.14	2.52	2.30

LumiSpot-K2



LED Light Engines



L=127, W=100, H=15.5
LumiSpot 12-K2



L=180, W=180, H=15.5
LumiSpot 32-K2



- Solid-state RGB and single-colour technology LED light engines
- Based on high-power K2 LED technology mounted on high-specification aluminium-backed PCBs
- Designed for use with low-voltage, constant-current power supplies
- Applications include architectural lighting, spotlights, floodlights, accent lighting, colour washing, nightclubs, restaurants, bars
- Suggested driver 159-3607

LumiSpot 12-K2

	Red	Green	Blue	White	Amber
Luminous Flux / (Radiometric Power)	180lm	240lm	(1140mW)	240lm	180lm
Wavelength / (Colour Temperature)	645nm	550nm	460nm	(4500K)	597nm
Current (max)	700mA	1000mA	1000mA	1000mA	700mA

Colour	Mftrs. List No.	Order Code	Price Each		
			1+	5+	10+
Red, Green, Blue, White	LSP12-K2-RGBW	159-3597	125.36	113.96	104.46
Red, Green, Blue, Amber	LSP12-K2-RGBA	159-3598	131.15	119.21	109.28
White (x2)	LSP12-K2-WWWW	159-3599	144.79	131.62	120.66

LumiSpot 32-K2

	Red	Green	Blue	White	Amber
Luminous Flux / (Radiometric Power)	180lm	180lm	(1140mW)	640lm	480lm
Wavelength / (Colour Temperature)	645nm	550nm	460nm	(4500K)	597nm
Current (max)	700mA	1000mA	1000mA	1000mA	700mA

Colour	Mftrs. List No.	Order Code	Price Each		
			1+	3+	8+
Red, Green, Blue, White	LSP32-K2-RGBW	159-3600	269.95	258.37	247.76
Red, Green, Blue, Amber	LSP32-K2-RGBA	159-3601	283.82	271.66	260.50
White (x2)	LSP32-K2-WWWW	159-3603	316.41	302.86	290.40

TFT and CSTN LCD Displays



CFL and LED Backlit



TFT Displays



5W Inverter



8W Inverter



- Optical Performance: Very High Quality, focus on strong viewing angle and contrast
- High Quality / Precision Manufacturer Kyocera recognised as performance/technology leader, lowest failure rates in market
- Long Term Supply Minimum 7 years
- Long Lifetime Displays (as standard - 50K + hrs LED) For standard range of industrial panels, KC have longest lifetimes available (50K hrs LED, 75K hrs CFL)

Size (*)	Resolution	Brightness (cd/m ²)	Backlight	Invertor	Standard	Mftrs. List No.	Order Code
TFT Displays							
5.7	320 x 240	240	LED	—	TFT-QVGA	TCG057QVLBB-G00	150-0403
5.7	320 x 240	300	LED	—	TFT-QVGA	TCG057QVLBA-G00	150-0402
5.7	320 x 240	350	LED	—	TFT-QVGA	TCG057QVLAC-G00	150-0407
5.7	640 x 240	1000	CFL	—	TFT-QVGA	TCG057QV1AC-G50	162-6427
5.7	640 x 480	200	CFL	150-0410	TFT-VGA	THG057VG1AC-H00	150-0408
5.7	640 x 480	200	LED	—	TFT-VGA	TCG057VGLBB-G00	162-6426
5.7	640 x 480	250	LED	—	TFT-VGA	TCG057VGLBA-G00	162-6424
5.7	640 x 480	280	CFL	150-0410	TFT-VGA	TCG057VG1AD-G00	150-0409
5.7	640 x 480	300	CFL	—	TFT-VGA	TCG057VG2AD-G00	162-6429
5.7	640 x 480	350	CFL	—	TFT-VGA	TCG057VG1AC-G00	162-6430
5.7	640 x 480	800	CFL	—	TFT-VGA	TCG057VG1AC-G50	162-6428
8.5	800 x 480	400	CFL	—	TFT-VGA	TCG085WV1AB-G00	150-0398
10.4	640 x 480	450	CFL	150-0411	TFT-VGA	TCG104VG2AA-G00	150-0397
CSTN Displays							
4.7	320 x 240	120	LED	—	CSTN	KCG047QVLAB-A21	162-6422
5.7	320 x 240	130	CFL	—	CSTN	KHS057QV1CJ-G01	150-0400
5.7	320 x 240	180	LED	—	CSTN	KCG057QVLDG-G000	162-6423
5.7	320 x 240	245	LED	—	CSTN	KCG057QVLDG-G77	150-0401

Size (*)	Mftrs. List No.	Order Code	1+	3+	5+
TFT Displays					
5.7	TCG057QVLBB-G00	150-0403	210.11	196.55	187.48
5.7	TCG057QVLBA-G00	150-0402	191.83	179.46	171.18
5.7	TCG057QVLAC-G00	150-0407	237.52	222.20	211.95
5.7	TCG057QV1AC-G50	162-6427	143.65	133.39	124.49
5.7	THG057VG1AC-H00	150-0408	213.15	199.39	190.20
5.7	TCG057VGLBB-G00	162-6426	155.42	144.31	134.69
5.7	TCG057VGLBA-G00	162-6424	134.22	124.63	116.32
5.7	TCG057VG1AD-G00	150-0409	243.62	227.90	217.37
5.7	TCG057VG2AD-G00	162-6429	164.84	153.06	142.86
5.7	TCG057VG1AC-G00	162-6430	153.07	142.14	132.66
5.7	TCG057VG1AC-G50	162-6428	162.49	150.89	140.83
8.5	TCG085WV1AB-G00	150-0398	222.30	207.96	198.35
10.4	TCG104VG2AA-G00	150-0397	341.06	319.05	304.33
CSTN Displays					
4.7	KCG047QVLAB-A21	162-6422	96.54	89.66	83.68
5.7	KHS057QV1CJ-G01	150-0400	164.44	153.83	146.74
5.7	KCG057QVLDG-G000	162-6423	115.38	107.14	100.00
5.7	KCG057QVLDG-G77	150-0401	188.79	176.61	168.46
Invertor, 6" to 13" compatibility, single bulb drive					
—	CX-L0612A	150-0410	48.73	45.58	43.49
Invertor, 10" to 12" compatibility, dual bulb drive capable					
—	CX-A0308	150-0411	76.13	71.21	67.93

Flexistrip™



High performance, extremely versatile DC flexible LED strip designed for industrial, architectural, signage and many other illumination and lighting applications.

Viewing Angle 120° Forward Voltage (max) 24V
Forward Current 20mA Operating Temperature -33°C to +55°C

L=200, W=10, H=2.1

Colour	Mftrs. List No.	Order Code	1+	10+	50+	100+
Red - Green - Blue	FFSRGB2	168-4447	22.34	16.25	14.90	13.75

Atlas Power LED Solutions



149-8222 149-8224 149-8226 149-8229
149-8223 149-8225 149-8227 149-8231

Colour	Luminous Flux (min)	Luminous Flux (typ)	Wavelength (min)	Wavelength (max)	Forward Current	Voltage (typ)	Power (typ)	Mftrs. List No.
Red	69lm	109lm	619nm	629nm	700mA	4.6V	3.2W	NT-41A0-0482
Amber	104lm	131lm	584nm	594nm	700mA	5.1V	3.6W	NT-41E0-0483
Blue	50lm	63lm	460nm	470nm	700mA	6.9V	4.8W	NT-42B1-0484
Green	172lm	216lm	515nm	535nm	700mA	6.9V	4.8W	NT-42C1-0485

Colour	Mftrs. List No.	Order Code	1+	10+	50+
Red	NT-41A0-0482	149-8222	12.51	11.37	10.42
Amber	NT-41E0-0483	149-8223	15.64	14.21	13.03
Blue	NT-42B1-0484	149-8224	14.85	13.51	12.38
Green	NT-42C1-0485	149-8225	18.56	16.88	15.47

Colour	Mftrs. List No.	Order Code	1+	10+	50+
Atlas RGB	OP-4LN1-0457	149-8226	9.76	8.87	8.13
Atlas White	OP-4LN2-0492	149-8227	9.76	8.87	8.13
Atlas RGB	OP-4FM1-0442	149-8229	5.61	3.75	3.26
Atlas White / RGB	OP-4FW1-0441	149-8231	5.61	3.75	3.26

PLCC4 Series



Applications include:

- Indicators
- Illuminations
- LCD backlights
- Automobile applications

L=3.2, W=2.7

Colour	Viewing Angle	Luminous Intensity (typ)	Forward Voltage (max)	Forward Current	Mftrs. List No.	Order Code
Hi Red	120°	650mcd	2.6V	50mA	LM1-UHR1-01-N1-00001	164-9010
Red	120°	1600mcd	3V	70mA	LM1-UHR1-11-N1-00001	164-9011
Amber	120°	600mcd	2.6V	50mA	LM1-UYL1-01-N1-00001	164-9013
Amber	120°	1500mcd	3V	70mA	LM1-UYL1-11-N1-00001	164-9014
Green	120°	900mcd	4V	25mA	LM1-EPG1-01-N2-00001	164-9006
Green	120°	1100mcd	4.2V	30mA	LM1-EPG1-11-N2-00001	164-9007
Blue	120°	320mcd	4V	25mA	LM1-EBL1-01-N2-00001	164-9004
Blue	120°	400mcd	4.2V	30mA	LM1-EBL1-11-N2-00001	164-9005
White	120°	1000mcd	4V	25mA	LM1-EWN1-01-N2-00001	164-9008
White	120°	1400mcd	4.2V	30mA	LM1-EWN1-11-N2-00001	164-9009

Colour	Mftrs. List No.	Order Code	5+	25+	100+
Hi Red	LM1-UHR1-01-N1-00001	164-9010	0.29	0.28	0.26
Red	LM1-UHR1-11-N1-00001	164-9011	0.31	0.29	0.27
Amber	LM1-UYL1-01-N1-00001	164-9013	0.29	0.28	0.26
Amber	LM1-UYL1-11-N1-00001	164-9014	0.31	0.29	0.27
Green	LM1-EPG1-01-N2-00001	164-9006	0.49	0.47	0.43
Green	LM1-EPG1-11-N2-00001	164-9007	0.50	0.48	0.45
Blue	LM1-EBL1-01-N2-00001	164-9004	0.47	0.43	0.40
Blue	LM1-EBL1-11-N2-00001	164-9005	0.48	0.45	0.41
White	LM1-EWN1-01-N2-00001	164-9008	0.62	0.58	0.55
White	LM1-EWN1-11-N2-00001	164-9009	0.62	0.58	0.55

20 Watt Light Flood

on Another Linear Heat Spreader



The OPA731 Series are designed for areas where lighting intensity and reliability are essential. The light beam angles of 40° and 120° are ideal for illuminating small and medium size areas while requiring minimal

space. A patented substrate is used to ensure the best heat dissipation of any light assembly in the industry.

Colour	Viewing Angle	Forward Current	Luminous Intensity (typ)	Forward Voltage (max)	Mftrs. List No.	Order Code
Red	40°	1.4A	520lm	12.5V	OPA731RD	167-8574
Yellow	40°	1.4A	700lm	12.5V	OPA731YD	167-8578
Green	40°	1.4A	960lm	18V	OPA731GD	167-8573
Blue	40°	1.4A	180lm	18V	OPA731BD	167-8572
White	120°	1.4A	960lm	18V	OPA731W	167-8575
White	40°	1.4A	960lm	18V	OPA731WD	167-8576

Colour	Mftrs. List No.	Order Code	1+	25+	100+	250+	500+
Red	OPA731RD	167-8574	67.46	59.95	38.55	36.47	35.04
Yellow	OPA731YD	167-8578	67.46	59.95	38.55	36.47	35.04
Green	OPA731GD	167-8573	134.13	119.22	76.64	72.50	69.69
Blue	OPA731BD	167-8572	97.09	86.28	55.47	52.47	50.43
White	OPA731W	167-8575	80.09	72.84	46.60	44.82	43.14
White	OPA731WD	167-8576	94.53	85.96	54.98	52.89	50.93

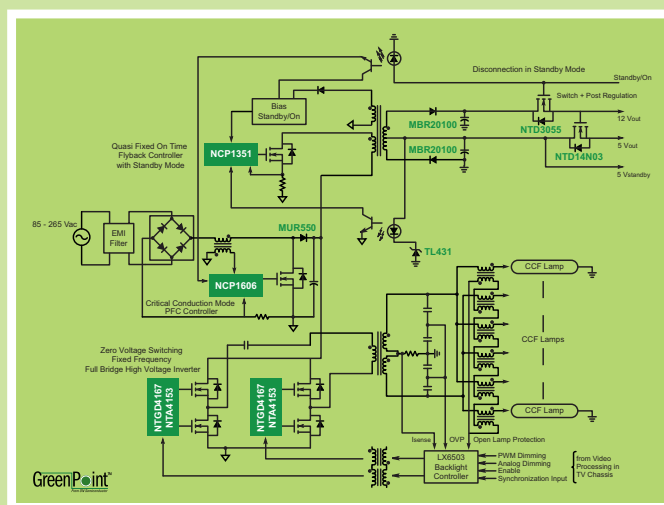
Innovate.

With the power of ON Semiconductor.



ON Semiconductor delivers greater efficiency to you, your designs and your design teams, so you can stand out in the multimedia marketplace.

As the experts in energy efficient products and solutions, ON Semiconductor can give you the power to make your products and programs more efficient. We improve the designs of leading companies around the world with our broad portfolio of ASICs, ASSPs, standard ICs and discrete components, backed up by expert service and support. Design engineers like you trust ON Semiconductor because, year after year, we help you reduce power consumption, decrease design times and deliver innovative multimedia products to market faster.



Up to 180 W High Voltage LCD TV Power & Integrated Inverter Supply Reference Design

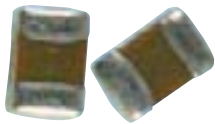
All brand names and logos are registered trademarks or trademarks of their respective holders.

Connect with a world of efficiency at www.onsemi.com.
The Power of ON Semiconductor.

ON Semiconductor®



Multilayer ceramic – Hi-Cap 0402 - 1210 Sizes



Dielectric
Temperature coefficient
Operating Temperature
Tolerance

COG/NPO
± 30ppm/°C
-55°C to +125°C
± 5%



KEMET now offers industry-leading capacitance values that combine ultra-high capacitance with the stability and performance of a Class 1 dielectric. These new part types provide design engineers with an MLCC alternative to competing capacitor technologies in applications that are sensitive to electrically and/or mechanically induced circuit noise.

0402 Case Size

nF	Order Code	10+	100+	Price Each	500+	1K+	10K+
25 Volt d.c.							
2.2	153-5555	0.250	0.123	0.082	0.063	0.049	
50 Volt d.c.							
0.47	153-5556	0.240	0.119	0.080	0.059	0.047	
0.68	153-5557	0.240	0.119	0.080	0.059	0.047	
1	153-5558	0.210	0.104	0.069	0.052	0.041	
1.5	153-5561	0.250	0.123	0.082	0.063	0.049	
100 Volt d.c.							
0.47	153-5562	0.290	0.148	0.100	0.074	0.059	
1	153-5563	0.260	0.129	0.086	0.065	0.052	

0603 Case Size

nF	Order Code	10+	100+	Price Each	500+	1K+	4K+
25 Volt d.c.							
15	153-5564	0.240	0.115	0.077	0.058	0.046	
50 Volt d.c.							
2.2	153-5565	0.174	0.086	0.058	0.044	0.035	
3.3	153-5566	0.179	0.090	0.060	0.045	0.036	
4.7	153-5567	0.179	0.090	0.060	0.045	0.036	
6.8	153-5568	0.220	0.111	0.074	0.055	0.044	
100 Volt d.c.							
1.5	153-5569	0.270	0.138	0.091	0.068	0.054	

0805 Case Size

nF	Order Code	10+	100+	Price Each	500+	1K+	2K5+
25 Volt d.c.							
47	153-5570	0.600	0.300	0.200	0.151	0.121	
50 Volt d.c.							
6.8	153-5571	0.530	0.270	0.178	0.133	0.108	
10	153-5573	0.450	0.220	0.152	0.114	0.091	
15	153-5574	0.500	0.260	0.168	0.127	0.102	
22	153-5575	0.530	0.270	0.178	0.133	0.108	
100 Volt d.c.							
3.3	153-5576	0.400	0.200	0.137	0.102	0.082	
4.7	153-5577	0.440	0.220	0.147	0.111	0.087	

1206 Case Size

nF	Order Code	10+	100+	Price Each	500+	1K+	10K+
25 Volt d.c.							
15	153-5578	1.330	0.660	0.440	0.340	0.270	
50 Volt d.c.							
22	153-5579	1.250	0.640	0.410	0.310	0.260	
33	153-5580	1.250	0.640	0.410	0.310	0.260	
47	153-5581	1.400	0.690	0.460	0.350	0.280	
68	153-5582	1.590	0.800	0.530	0.390	0.310	
100 Volt d.c.							
6.8	153-5583	0.780	0.390	0.270	0.197	0.158	

1210 Case Size

nF	Order Code	10+	100+	Price Each	500+	1K+	2K5+
50 Volt d.c.							
100	153-5585	2.86	1.43	0.95	0.72	0.57	
150	153-5586	2.86	1.43	0.95	0.72	0.57	
100 Volt d.c.							
100	153-5587	3.49	1.75	1.16	0.86	0.69	

1812 Case Size

nF	Order Code	10+	100+	Price Each	500+	1K+	+
50 Volt d.c.							
220	167-9459	3.79	1.89	1.25	0.75	--	
470	167-9460	4.13	2.06	1.38	0.82	--	
100 Volt d.c.							
100	167-9461	3.88	1.94	1.29	0.77	--	
150	167-9462	4.13	2.06	1.38	0.82	--	
330	167-9463	5.51	2.76	1.84	1.10	--	

2220 Case Size

nF	Order Code	10+	100+	Price Each	500+	1K+	+
50 Volt d.c.							
22	167-9452	1.62	0.81	0.54	0.32	--	
33	167-9453	1.65	0.82	0.55	0.32	--	
47	167-9455	1.53	0.76	0.52	0.30	--	
220	167-9456	1.94	0.96	0.64	0.38	--	
100 Volt d.c.							
100	167-9457	1.89	0.95	0.63	0.37	--	
150	167-9458	2.15	1.08	0.72	0.43	--	

MH Series

Stacked Parallel Ceramic Capacitors



In order to provide a RoHS compliant, stacked ceramic capacitor offering for the power supply industry AVX have developed the MH range of products.

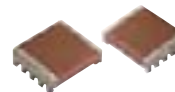
- Excellent ESR and voltage immunity
- Can be a same pad size replacement for tantalum parts
- Mechanically extremely robust
- Molded case

Operating temperature Tolerance: -55°C to +125°C ± 20%
Dielectric Case Size: X7R V

µF	Mfrs. List No.	Order Code	1+	Price Each	10+	100+	250+
25 Volt d.c.							
10	MHV13C106MAT2A	167-2273	7.38	6.32	5.54	4.93	
22	MHV13C226MAT2A	167-2272	7.44	6.37	5.57	4.95	
50 Volt d.c.							
10	MHV15C106MAT2A	167-2271	7.38	6.32	5.54	4.93	
4.7	MHV15C475MAT2A	167-2274	7.25	6.20	5.42	4.83	
100 Volt d.c.							
1	MHV11C105MAT2A	167-2275	6.35	5.44	4.76	4.23	
1.5	MHV11C155MAT2A	167-2276	6.62	5.67	4.96	4.41	
2.2	MHV11C225MAT2A	167-2270	7.02	6.01	5.28	4.68	

RH Series

Stacked Ceramic Capacitors in a Surface Mountable Lead Frame



The Stacked capacitor configuration gives a very high capacitance value whilst the surface mount leadframe provides the component with excellent resistance to mechanical damage.

- Uses high CV manufacture and stack configuration to offer very high cap values on small PCB footprint
- Low ESR / ESL
- None of the build costs associated with thru hole technology

Operating temperature Tolerance: -55°C to +125°C ± 20%
Dielectric Case Size: X7R

µF	Mfrs. List No.	Order Code	1+	Price Each	10+	100+	250+	500+
50 Volt d.c.								
4.7	RH215C475MAARA3	167-2281	7.55	6.47	5.66	5.03	4.52	
10	RH215C106MAARA3	167-2279	5.28	4.51	3.95	3.52	3.16	
22	RH225C226MAARA3	167-2278	8.93	7.66	6.72	5.98	5.38	
100 Volt d.c.								
2.2	RH221C225MAARA3	167-2282	4.96	4.24	3.72	3.30	2.98	
4.7	RH221C475MAARA3	167-2280	8.15	6.99	6.12	5.42	4.88	

Polymer Multilayer Capacitors

ST Series



- Dielectric of thin polymer layer ensures superior performance at high temperature
- Small and lighter than conventional film capacitors
- No characteristic change by piezoelectricity

Tolerance: ± 20% Operating Temperature: -55°C to +125°C

µF	Order Code	1+	Price Each	25+	100+	250+
16 Volt d.c.						
1	168-8445	3.34	3.02	2.63	2.44	
1.5	168-8436	3.34	3.02	2.63	2.44	
25 Volt d.c.						
0.68	168-8447	3.34	3.02	2.63	2.44	
1	168-8438	3.34	3.02	2.63	2.44	

µF	Order Code	Price Each			
		1+	25+	100+	250+
35 Volt d.c.					
0.47	168-8449	3.34	3.02	2.63	2.44
0.68	168-8450	3.34	3.02	2.63	2.44
50 Volt d.c.					
0.22	168-8442	3.34	3.02	2.63	2.44
0.33	168-8451	3.34	3.02	2.63	2.44

3225 Case Size

µF	Order Code	Price Each			
		1+	25+	100+	250+
16 Volt d.c.					
2.2	168-8446	3.95	3.60	3.11	2.89
3.3	168-8437	3.95	3.60	3.11	2.89
25 Volt d.c.					
1.5	168-8448	3.95	3.60	3.11	2.89
2.2	168-8439	3.95	3.60	3.11	2.89
35 Volt d.c.					
1	168-8440	3.95	3.60	3.11	2.89
1.5	168-8441	3.95	3.60	3.11	2.89
50 Volt d.c.					
0.47	168-8444	3.95	3.60	3.11	2.89
0.68	168-8452	3.95	3.60	3.11	2.89

T521 Series – High Voltage Polymer



- High Voltage (20V - 35V)
- Stable temperature characteristics
- Safe failure mode
- Low ESR (125mOhm)

Dimensions L = 7.3 W = 4.3 H = 1.9
Tolerance ± 20%

Capacitance µF	Order Code	Price Each			
		1+	25+	50+	100+
15	169-5345	3.29	3.01	2.81	2.67



Capacitance µF	Ripple (mA)	ESR (mΩ)	Dimensions			Mfrs. List No.	Order Code
			L	W	D		
2 Volt d.c.							
100	3000	9	7.3	4.3	1.9	2SXE100M	154-7024
330	3500	9	7.3	4.3	2.7	2SW330M	154-7028
4 Volt d.c.							
68	3000	13	7.3	4.3	1.9	4SXB68M	128-1875
100	3000	10	7.3	4.3	1.9	4SXE100M	154-7025
150	3000	10	7.3	4.3	1.9	4SXE150M	154-7026
220	3500	9	7.3	4.3	2.7	4SW220M	154-7029
6.3 Volt d.c.							
10	1900	50	7.3	4.3	1.4	6SL10M	154-7022
47	3000	13	7.3	4.3	1.9	6SXB47M	154-7023
100	3000	10	7.3	4.3	1.9	6SXE100M	154-7027
100	3500	10	7.3	4.3	2.7	6SW100M	128-1876

µF	Order Code	Price Each			
		1+	25+	50+	100+
2 Volt d.c.					
100	154-7024	2.03	1.84	1.69	1.65
330	154-7028	6.24	5.68	5.08	4.60
4 Volt d.c.					
68	128-1875	0.77	0.71	0.63	0.59
100	154-7025	2.80	2.56	2.36	2.30
150	154-7026	5.04	4.59	4.11	3.72
220	154-7029	4.98	4.59	4.11	3.72
6.3 Volt d.c.					
10	154-7022	1.96	1.79	1.61	1.44
47	154-7023	3.23	2.95	2.64	2.36
100	154-7027	5.28	4.82	4.30	3.90
100	128-1876	2.54	2.41	2.22	2.12

RF/RG Series - Gold Capacitors

Stacked Coin Type



RG Series

RF Series



- Ideally suited for use in CMOS memory back-up
- 2000h endurance
- Radial, vertical or horizontal case styles

Operating temperature -25°C to +85°C Tolerance @ 20°C +80%, -20%

Farads	Voltage d.c.	Dimensions		Lead Size	Lead Pitch	Mfrs. List No.	Order Code
		H	Dia.				
0.68	3.6	9.5	21.5	6 x 1.2	5	EECRF0V684	155-0075
0.68	5.5	9.5	21.5	6 x 1.2	5	EECRF0H684	155-0076
1	3.6	5	21	5 x 1	5	EECRG0V105H	155-0077
1	3.6	6	19	3.5 x 1	20	EECRG0V105V	155-0078

Farads	Mounting	Order Code	Price Each			
			1+	10+	50+	100+
0.68	Radial	155-0075	4.21	3.72	3.47	2.79
0.68	Radial	155-0076	4.21	3.72	3.47	2.79
1	Vertical	155-0077	5.82	5.16	4.68	3.83
1	Horizontal	155-0078	3.49	3.10	2.81	2.30

P160 Series

16mm Rotary Potentiometer - Audio Applications



- Conductive plastic element
- 100,000 cycle life
- Metal shaft / bushing
- Specifically designed for audio applications

Voltage Rating 200V ac
Operating Temperature -20°C to +70°C

0.1 Watt

Resistance	Order Code	Price Each			
		1+	10+	50+	100+
10kohm	168-4812	1.33	1.23	1.15	1.05
25kohm	168-4815	1.33	1.23	1.15	1.05
100kohm	168-4817	1.33	1.23	1.15	1.05
250kohm	168-4819	1.33	1.23	1.15	1.05
500kohm	168-4821	1.33	1.23	1.15	1.05
1Mohm	168-4823	1.33	1.23	1.15	1.05

0.2 Watt

Resistance	Order Code	Price Each			
		1+	10+	50+	100+
10kohm	168-4813	1.33	1.23	1.15	1.05
25kohm	168-4816	1.33	1.23	1.15	1.05
100kohm	168-4818	1.33	1.23	1.15	1.05
250kohm	168-4820	1.33	1.23	1.15	1.05
500kohm	168-4822	1.33	1.23	1.15	1.05

PC-CON Series



- Conductive polymer aluminium solid electrolytic capacitors
- Low impedance and low ESR at high frequency
- High ripple current capability
- Excellent endurance characteristics
- Reflow soldering method available

Operating temperature -55 to 105°C
Tolerance ±20%

Operating Life 2000h



Shielded Power Inductor

WE-PD3 Series



- Magnetically shielded version which results in a low leakage field
- Extremely low profile of type M: 2.7mm
- Low inherent losses, high storage capacity
- Operating temperature: -40°C to +125°C
- Operating frequencies up to 10 MHz
- EMI-filter, perfectly suitable for switching regulators e.g. of National Semiconductor, Linear Technology, Texas Instruments, STMicroelectronics, Maxim, Micrel, Semtech
- Perfectly suitable for switching regulators with extremely high efficiency

Type	Dimensions (mm)						
	A	B	C	D	E	F	G
Type S	6.6	4.45	2.92	1	4.32	3.05	1.27
Type M	12.7 ±0.2	10.3 ±0.2	2.7 ±0.3	2.4 ±0.2	7.6 ±0.3	2.5 ±0.2	-
Type L	12.7 ±0.2	10.0 ±0.2	4.9 ±0.3	2.4 ±0.2	7.6 ±0.3	2.0 ref.	-
Type X	18.54	15.24	7.62	2.54	12.7	2.54	-

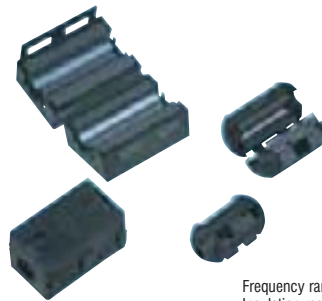
Inductance (µH)	Tolerance	Selfres. frequency (MHz)	R _{DC} typ. (Ω)	Current rating (A)	Mftrs. List No.	Order Code
Type S						
1	± 20%	250	0.014	3	7445101	163-6057
2.2	± 20%	120	0.021	1.8	74451022	163-6058
4.7	± 20%	105	0.045	1.4	74451047	163-6060
6.8	± 20%	50	0.055	1.2	74451068	163-6061
10	± 20%	38	0.056	1	7445110	163-6062
15	± 20%	33	0.075	0.8	74451115	163-6063
22	± 20%	25	0.09	0.7	74451122	163-6064
47	± 20%	20	0.16	0.5	74451147	163-6065
68	± 20%	15	0.221	0.4	74451168	163-6067
100	± 20%	10	0.393	0.3	7445120	163-6068
150	± 20%	9	0.41	0.26	74451215	163-6069
220	± 20%	6	0.58	0.22	74451222	163-6070
470	± 20%	4	1.7	0.19	74451247	163-6071
Type M						
1.5	± 20%	78	0.029	3	7445301	163-6072
2.2	± 20%	68	0.037	2.76	7445302	163-6073
4.7	± 20%	43	0.065	1.9	7445304	163-6074
					7445306	163-6075
10	± 20%	36	0.117	1.24	74453010	163-6076
15	± 20%	29	0.17	1	74453115	163-6077
22	± 20%	21	0.248	0.8	74453122	163-6079
47	± 20%	13	0.481	0.6	74453147	163-6081
68	± 20%	12	0.62	0.48	74453168	163-6082
100	± 20%	9.3	1.164	0.4	7445320	163-6083
Type L						
2.2	± 20%	108	0.023	3.8	7445402	163-6084
4.7	± 20%	30.4	0.034	2.7	7445404	163-6085
6.8	± 20%	23.3	0.041	2.2	74454068	163-6086
10	± 20%	20	0.048	2	74454010	163-6087
15	± 20%	14.6	0.064	1.7	74454115	163-6088
22	± 15%	13.5	0.076	1.4	74454122	163-6089
47	± 15%	9.3	0.158	1	74454147	163-6090
68	± 15%	6.9	0.285	0.82	74454168	163-6092
100	± 10%	5.9	0.373	0.68	7445420	163-6093
150	± 10%	4.8	0.456	0.55	74454215	163-6094
220	± 10%	4	0.683	0.45	74454220	163-6095
470	± 10%	2.9	1.35	0.3	74454247	163-6096
680	± 10%	2.6	1.94	0.26	74454268	163-6097
1000	± 10%	1.9	2.75	0.22	7445430	163-6098
Type X						
10	± 20%	30	0.023	3.9	74459010	163-6099
15	± 20%	20	0.03	3.5	74459115	163-6100
22	± 20%	18	0.048	3.4	74459122	163-6101
47	± 20%	10	0.085	2.8	74459147	163-6102
68	± 20%	9	0.105	2.2	74459168	163-6103
100	± 20%	7	0.151	1.7	7445920	163-6104
150	± 20%	6	0.209	1.3	74459215	163-6105
220	± 20%	5	0.311	1.2	74459222	163-6106
470	± 20%	3	0.661	0.8	74459247	163-6107
680	± 20%	2.5	1.059	0.7	74459268	163-6109
1000	± 20%	2	1.427	0.6	7445930	163-6111

Order Code	Order Code	1+	10+	Price Each	50+	100+	250+
Type S	All Values	1.76	1.67	1.57	1.48	1.39	
Type M	All Values	1.80	1.71	1.62	1.52	1.43	
Type L	All Values	1.95	1.85	1.76	1.66	1.56	
Type X	All Values	2.04	1.95	1.85	1.74	1.64	

OD	Dimensions			Min. Impedance (Ω)		Order Code
	ID	H	25MHz	100MHz		
14.2	6.35	28.5	130	185	964-0495	
14.2	7.0	28.5	130	210	964-0509	
16	9.0	17	60	140	964-0517	
14.2	8.0	28.5	110	210	964-0525	
17.5	9.5	28.5	90	150	964-0533	
17.5	10.7	28.5	90	160	964-0541	
26	13	28.5	130	200	964-0550	

Order Multiple=5	Price Each					
ID x H	Order Code	5+	25+	100+	250+	500+
6.35 x 28.5	964-0495	1.18	1.05	0.95	0.80	0.75
7.0 x 28.5	964-0509	1.39	1.29	1.15	0.96	0.91
9.0 x 17	964-0517	1.25	1.13	1.00	0.84	0.81
8.0 x 28.5	964-0525	1.31	1.16	1.04	0.90	0.84
9.5 x 28.5	964-0533	1.48	1.34	1.18	1.00	0.93
10.7 x 28.5	964-0541	1.48	1.34	1.18	1.00	0.93
13 x 28.5	964-0550	2.71	2.45	2.15	1.80	1.77

Hinged Clamp Cores



- A range of easy to fit data line filters providing a simple solution to the problems of radiated noise emissions generated by electronic equipment
- The filter simply clips around the cable to be shielded and locks closed with no need to disconnect the cable or remove connectors
- No grounding is required unlike cable shields.

Frequency range 10MHz to 300MHz
Insulation resistance 10MΩ (min) between case and cores
Case material Black Nylon 66 to **UL94V-0**

Cable Diameter	Typical Impedance (Ω)		Dimensions			Order Code
	25MHz	100MHz	L	W	H	
Rectangular						
6.5	135	220	32	19.5	19	964-0444
10	90	190	32	24.5	23	964-0452
13	105	190	32	31.5	30	964-0460
Oval						
3.5	4.5	115	25.2	14.5		964-0479
5.0	45	115	29.6	16		964-0487

Cable Diameter	Order Code	Price Each					
		1+	10+	50+	100+	250+	
LF-65B	6.5	964-0444	3.57	3.07	2.63	2.20	2.11
LF-100B	10	964-0452	4.94	4.37	3.80	3.24	3.08
LF-130B	13	964-0460	6.37	5.54	4.74	4.00	3.91
LF35B	3.5	964-0479	2.64	2.21	2.13	1.67	1.60
LF50B	5.0	964-0487	2.87	2.59	2.30	1.98	1.86

EMI Cores



- Toroidal ferrite cores which attenuate electrical noise in signal and data cables
- Applications include digital audio systems, computers and peripherals and any sensitive electronic equipment

Dimensions	OD	ID	H	Typical Impedance (Ω)		Code
				25MHz	100MHz	
16	10	14	40	125	964-0380	
20	10	10	45	120	964-0398	
25	15	12	40	120	964-0401	
28	16	13	50	120	964-0410	
28	16	20	70	130	964-0428	
31.5	19	16	55	115	964-0436	

Order Multiple=5	Price Each				
Order Code	5+	25+	100+	250+	500+
964-0380	1.14	1.05	0.99	0.80	0.71
964-0398	1.21	1.14	1.05	0.86	0.77
964-0401	1.25	1.16	1.06	0.90	0.80
964-0410	1.66	1.56	1.44	1.10	1.05
964-0428	2.09	1.99	1.85	1.52	1.38
964-0436	2.09	1.99	1.85	1.52	1.38

0.25 Watt ±0.5% ±50ppm/°C – MCMFOW4



L=6.8 max, Dia=2.5 max, Lead length=28, Lead dia=0.54

- Precision leaded metal film resistors

Power rating @ 70°C	0.25W	Tolerance	0.5%
Voltage rating	250V	Temperature coefficient	±50ppm/°C
Overload voltage	500V	Operating temperature	-55°C to +155°C
Withstand voltage	500V		

Stocked in the following OHMIC Values:

26R1 = 156-3155	110R = 156-3080	442R = 156-3213	1K78 = 156-3133
27R7 = 156-3159	121R = 156-3085	464R = 156-3216	1K87 = 156-3134
28R7 = 156-3163	127R = 156-3088	487R = 156-3219	2K05 = 156-3164
30R1 = 156-3177	133R = 156-3091	511R = 156-3227	2K15 = 156-3165
31R6 = 156-3183	140R = 156-3094	536R = 156-3230	2K26 = 156-3168
33R2 = 156-3187	154R = 156-3098	562R = 156-3234	2K37 = 156-3169
34R8 = 156-3192	162R = 156-3102	590R = 156-3237	2K42 = 156-3224
36R5 = 156-3195	169R = 156-3104	619R = 156-3244	2K49 = 156-3170
38R3 = 156-3198	178R = 156-3110	649R = 156-3247	2K61 = 156-3171
40R2 = 156-3207	187R = 156-3113	681R = 156-3250	2K74 = 156-3172
42R2 = 156-3212	196R = 156-3116	715R = 156-3255	2K87 = 156-3173
44R2 = 156-3215	205R = 156-3136	750R = 156-3258	3K01 = 156-3199
46R4 = 156-3218	215R = 156-3139	825R = 156-3265	3K16 = 156-3200
48R7 = 156-3222	226R = 156-3143	866R = 156-3268	3K32 = 156-3201
51R1 = 156-3229	237R = 156-3146	953R = 156-3278	3K48 = 156-3202
53R6 = 156-3232	249R = 156-3149	1K = 156-3120	3K65 = 156-3203
56R2 = 156-3236	261R = 156-3152	1K05 = 156-3119	3K83 = 156-3204
59R = 156-3239	274R = 156-3157	1K15 = 156-3121	4K02 = 156-3223
64R9 = 156-3249	287R = 156-3161	1K1 = 156-3122	4K64 = 156-3225
68R1 = 156-3252	301R = 156-3175	1K21 = 156-3123	4K87 = 156-3226
75R = 156-3260	316R = 156-3181	1K27 = 156-3124	5K11 = 156-3240
82R5 = 156-3267	332R = 156-3185	1K33 = 156-3125	5K36 = 156-3241
86R6 = 156-3272	348R = 156-3189	1K47 = 156-3126	5K62 = 156-3242
90R9 = 156-3275	365R = 156-3193	1K4 = 156-3127	5K9 = 156-3243
90R9 = 156-3277	383R = 156-3196	1K54 = 156-3128	6K19 = 156-3253
95R3 = 156-3281	402R = 156-3205	1K62 = 156-3131	6K81 = 156-3254
100R = 156-3074	422R = 156-3209	1K69 = 156-3132	7K15 = 156-3262

EMI Sleeves



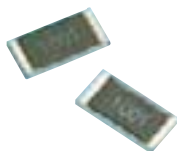
- Ferrite sleeves which will provide attenuation of EMI on power and data cables, without affecting data transmitted through the cable
- Suitable for use on computers, peripherals, digital audio systems etc.

Note: To enable the cable to pass smoothly through the sleeve an allowance should be made for tolerances in the OD of the cable and the ID of the sleeve.

7K5 = 156-3263	19K6 = 156-3118	51K1 = 156-3228	133K = 156-3090
7K87 = 156-3264	20K5 = 156-3137	53K6 = 156-3231	140K = 156-3093
8K25 = 156-3274	21K5 = 156-3140	56K2 = 156-3235	154K = 156-3097
8K66 = 156-3274	22K6 = 156-3144	59K = 156-3238	162K = 156-3101
9K09 = 156-3283	23K7 = 156-3147	61K9 = 156-3246	169K = 156-3103
9K53 = 156-3284	24K9 = 156-3150	64K9 = 156-3248	178K = 156-3109
10K = 156-3077	26K1 = 156-3153	68K1 = 156-3251	187K = 156-3112
10K5 = 156-3078	27K4 = 156-3158	71K5 = 156-3256	196K = 156-3115
11K = 156-3082	28K7 = 156-3162	75K = 156-3259	205K = 156-3135
11K5 = 156-3083	30K1 = 156-3176	78K7 = 156-3261	215K = 156-3138
12K1 = 156-3089	31K6 = 156-3182	82K5 = 156-3266	226K = 156-3141
13K3 = 156-3092	33K2 = 156-3186	86K6 = 156-3271	237K = 156-3145
14K = 156-3095	34K8 = 156-3190	90K9 = 156-3276	249K = 156-3148
14K7 = 156-3082	36K5 = 156-3194	95K3 = 156-3279	261K = 156-3151
15K4 = 156-3100	38K3 = 156-3197	100K = 156-3073	274K = 156-3156
16K2 = 156-3106	40K2 = 156-3206	105K = 156-3076	287K = 156-3160
16K5 = 156-3107	42K2 = 156-3211	110K = 156-3079	301K = 156-3174
16K9 = 156-3108	44K2 = 156-3214	115K = 156-3081	316K = 156-3179
17K8 = 156-3111	46K4 = 156-3217	121K = 156-3084	332K = 156-3184
18K7 = 156-3114	48K7 = 156-3220	127K = 156-3086	348K = 156-3188

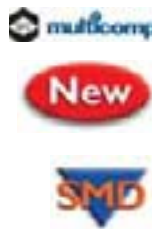
		Price Each				
Order Code	5+	50+	100+	500+	1K+	5K+
All Values	0.440	0.400	0.360	0.250	0.240	0.175

Current Sense



- Thick Film Chip Resistors
- Range of case sizes available
- Cost effective

Resistance tolerance ± 1%
Operating temperature -55°C to +155°C



0.25 Watt (1206 Case Size)

Stocked in the following OHMIC Values

OR047 = 163-4317	OR33 = 163-4313	OR68 = 163-4315	OR75 = 163-4316
------------------	-----------------	-----------------	-----------------

		Price Each					
Resistance	Order Code	10+	50+	100+	500+	1K+	5K+
OR047	163-4317	0.250	0.200	0.180	0.144	0.103	0.091
OR05	163-4314	0.240	0.200	0.189	0.150	0.103	0.091
OR33	163-4313	0.125	0.114	0.100	0.078	0.054	0.047
OR68	163-4315	0.069	0.057	0.048	0.032	0.018	0.016
OR75	163-4316	0.069	0.057	0.048	0.032	0.018	0.016

0.5 Watt (2010 Case Size)

Stocked in the following OHMIC Values

OR01 = 163-4324	OR022 = 163-4323	OR033 = 163-4326	OR33 = 163-4322
OR015 = 163-4325	OR03 = 163-4321	OR2 = 163-4319	

		Price Each					
Resistance	Order Code	10+	50+	100+	500+	1K+	5K+
OR01	163-4324	0.370	0.310	0.280	0.220	0.167	0.147
OR015	163-4325	0.370	0.310	0.280	0.220	0.167	0.147
OR022	163-4323	0.270	0.220	0.200	0.171	0.122	0.108
OR03	163-4321	0.270	0.220	0.200	0.171	0.122	0.108
OR033	163-4326	0.270	0.220	0.200	0.171	0.122	0.108
OR2	163-4319	0.220	0.186	0.169	0.141	0.102	0.090
OR33	163-4322	0.220	0.186	0.169	0.141	0.102	0.090

1 Watt (2512 Case Size)

Stocked in the following OHMIC Values

OR01 = 163-4334	OR03 = 163-4329	OR22 = 163-4330	OR47 = 163-4332
OR025 = 163-4328	OR05 = 163-4327	OR3 = 163-4333	

		Price Each					
Resistance	Order Code	10+	50+	100+	500+	1K+	5K+
OR01	163-4334	0.440	0.370	0.340	0.280	0.194	0.160
OR025	163-4328	0.320	0.280	0.240	0.210	0.148	0.129
OR03	163-4329	0.320	0.280	0.240	0.210	0.148	0.129
OR05	163-4327	0.320	0.280	0.240	0.210	0.148	0.129
OR22	163-4330	0.260	0.220	0.195	0.165	0.118	0.103
OR3	163-4333	0.260	0.220	0.195	0.165	0.118	0.103
OR47	163-4332	0.260	0.220	0.195	0.165	0.118	0.103

WDBR Series



- Ultra low profile thick film on steel planar power resistors
- High power rating - 1.5kW, 2kW, 3kW and 7kW versions
- High pulse handling capability
- Will 'failsafe' (open circuit) under overload (fault) conditions while maintaining minimum 1kV dielectric withstand voltage
- Applications include dynamic motor braking and industrial welding

WDBR1 L = 49.3, W = 35.85, D = 0.9
WDBR2 L = 60.96, W = 40.64, D = 0.9
WDBR3 L = 101.6, W = 70, D = 0.9
WDBR7 L = 152.4, W = 101.6, D = 1.5

1.5 kWatt - WDBR1

Max Pulse Power	180W	Resistance tolerance	±10%
Max Continuous Load	1.5kW	Max working voltage	2500V d.c

Stocked in the following OHMIC Values:

12R = 129-2591	22R = 129-2592	47R = 129-2593	100R = 129-2594	150R = 129-2595
----------------	----------------	----------------	-----------------	-----------------

2 kWatt - WDBR2

Max Pulse Power	200W	Resistance tolerance	±10%
Max Continuous Load	2kW	Max working voltage	2500V d.c

Stocked in the following OHMIC Values:

12R = 129-2597	22R = 129-2598	47R = 129-2599	100R = 129-2600	150R = 129-2601
----------------	----------------	----------------	-----------------	-----------------

3 kWatt - WDBR3

Max Pulse Power	260W	Resistance tolerance	±10%
Max Continuous Load	3kW	Max working voltage	2500V d.c

Stocked in the following OHMIC Values:

12R = 129-2603	22R = 129-2604	47R = 129-2605	100R = 129-2606	150R = 129-2607
----------------	----------------	----------------	-----------------	-----------------

7 kWatt - WDBR7

Max Pulse Power	280W	Resistance tolerance	±10%
Max Continuous Load	7kW	Max working voltage	2500V d.c

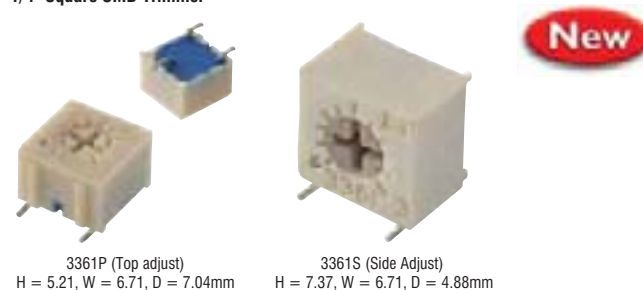
Stocked in the following OHMIC Values:

47R = 129-2608	100R = 129-2609	150R = 129-2610
----------------	-----------------	-----------------

		Price Each			
Power rating	Order Code	1+	5+	10+	25+
1.5 kW	All Values	10.64	9.58	8.62	7.76
2 kW	All Values	14.24	12.81	11.54	10.38
3 kW	All Values	24.39	21.95	19.76	17.79
7 kW	All Values	24.39	21.95	19.76	17.79

0.5 Watt – 3361 Series

1/4" Square SMD Trimmer



3361P (Top adjust) H = 5.21, W = 6.71, D = 7.04mm
3361S (Side Adjust) H = 7.37, W = 6.71, D = 4.88mm

- Single-Turn / Cermet / Industrial / Sealed
- Withstands harsh environments and immersion cleaning processes
- Miniature package

Power rating @ 75°C	0.5W	Contact resistance variation	3 % or 3 ohms max
Voltage rating	300V	Dielectric strength (sea level)	900 VAC
Resistance tolerance	± 10%	Adjustment angle	240° nom
Temperature coefficient	±100ppm/°C	Operating temperature	-55°C to +125°C

		Price Each					
Order Multiple=5	Resistance	Order Code	5+	50+	100+	250+	750+
3361P	100R	169-6055	1.08	0.96	0.88	0.82	0.62
	500R	169-6056	1.08	0.96	0.88	0.82	0.62
	1K	169-6057	1.08	0.96	0.88	0.82	0.62
	2K	169-6058	1.08	0.96	0.88	0.82	0.62
	5K	169-6059	1.08	0.96	0.88	0.82	0.62
	10K	169-6060	1.08	0.96	0.88	0.82	0.62
	20K	169-6061	1.08	0.96	0.88	0.82	0.62
3361S	50K	169-6062	1.08	0.96	0.88	0.82	0.62
	100K	169-6064	1.08	0.96	0.88	0.82	0.62
	100R	169-6065	1.08	0.96	0.88	0.82	0.62
	500R	169-6066	1.08	0.96	0.88	0.82	0.62
	1K	169-6067	1.08	0.96	0.88	0.82	0.62
	2K	169-6068	1.08	0.96	0.88	0.82	0.62
	5K	169-6069	1.08	0.96	0.88	0.82	0.62
10K	169-6070	1.08	0.96	0.88	0.82	0.62	
20K	169-6071	1.08	0.96	0.88	0.82	0.62	
50K	169-6072	1.08	0.96	0.88	0.82	0.62	
100K	169-6073	1.08	0.96	0.88	0.82	0.62	

Technical information at your fingertips



Over **352,000** technical datasheets available online. Visit www.farnell.com and look for the **Tech Info** heading in your search results.

We Are The Market Leader In...



Discrete Semiconductors

- Number 1 worldwide in low-voltage power MOSFETs
 - Number 1 worldwide in rectifiers
 - Number 1 worldwide in glass diodes
 - Number 1 worldwide in infrared components
- ...and others

Passive Components

- Number 1 worldwide in wirewound and other power resistors
 - Number 1 worldwide in foil, SMD thin film, and leaded film resistors
 - Number 1 worldwide in wet tantalum capacitors
 - Number 1 worldwide in strain gage sensors and load cells
- ...and others



Ethercon RJ45 Type



- Robust RJ45 data connector
- For harsh and demanding environments in audio and stage applications
- Complies with Cat 5 requirements
- Chassis connector mates with both Neutrik connector carrier with inserted RJ45 plug and sole standard RJ45 plug

Cable Connector	Receptacle
Mating Cycles	Number of Contacts
1000	8
Material	Rated Current
Galvanised Nickel	1.5A
Housing	Dielectric Strength
Strain Relief Clamp	Contact Resistance
Bushing	Insulation Resistance
Temperature Range	Housing Mat
-30°C to 80°C	Contact Mat
	Contact Plating
	1000V
	10m
	500
	PBTP
	CuSn
	Gold

Mfrs. List No.	Order Code	1+	10+	50+	100+
Cable Connector					
NE8MC	388-6244	2.02	1.87	1.79	1.69
Receptacle PCB Mount-Horizontal					
NE8FAV	120-2031	3.12	2.91	2.65	2.41
NE8FAH	388-6256	2.89	2.69	2.58	2.45
Receptacle PCB Mount-Vertical					
NE8FDV	489-3062	3.34	3.08	2.83	2.56
Receptacle IDC Terminals					
NE8FAVYK	388-6268	5.71	5.31	5.08	4.89
NE8FDV-YK	489-5009	6.22	5.78	5.53	5.32
Receptacle 110 Punch Down Terminals					
NE8FDV-Y110	456-0814	6.06	5.60	5.13	4.65
Receptacle Feed Through Terminals					
NE8FDP	120-2032	6.06	5.95	5.77	5.47
NE8FDP-B	727-0379	9.42	8.75	8.00	7.24

Ultra Small SMT Coaxial Connectors

U.FL Series (Commodity Version)



Receptacle



Cable Assembly Plug

- 2.5mm mated height
- 7.7mm² footprint
- High frequency performance DC to 6 GHz
- Plug diameter - 0.81mm / 1.37mm
- Nominal attenuation at 6GHz - 9.42dB/m (0.81mm Ø) / 4.3dB/m (1.37mm Ø)
- Ultra-fine Teflon Cable
- Extraction tool for easy removal

Typical applications: Mobile phones, Wireless LAN, Mini-PCI, Bluetooth, PDA, GPS, electronic measuring instruments, etc.

Specification:-	Materials:-
Impedance	Shell
50Ω	Phosphor Bronze silver plated
VSWR	Male Contact
1.3 max	Brass Tin plated
Voltage Rating	Female Contact
60V AC (rms)	Phosphor Bronze gold plated
Contact Resistance Outer	Insulator
10 mΩ max	Receptacle LCP UL94V-0
Contact Resistance Centre	Plug PBT UL94V-0
20 mΩ max	
Frequency Range	
DC - 6GHz	
Temperature Range	
-40°C to +90°C	

Cable Length	Mfrs. List No.	Order Code	1+	10+	25+	50+	100+
Cable Assembly Plugs, 0.81mm							
50mm U.FL-2LP-04K1T-A-(50)	168-8065		1.85	1.71	1.60	1.48	1.33
100mm U.FL-2LP-04K1T-A-(100)	168-8067		1.94	1.80	1.69	1.56	1.41
150mm U.FL-2LP-04K1T-A-(150)	168-8068		2.08	1.93	1.80	1.66	1.50
200mm U.FL-2LP-04K1T-A-(200)	168-8069		2.17	2.03	1.88	1.72	1.57
300mm U.FL-2LP-04K1T-A-(300)	168-8070		2.36	2.21	2.06	1.88	1.71
Cable Assembly Plugs, 1.37mm							
50mm U.FL-2LP-088K1T-A-(50)	168-8071		1.76	1.65	1.53	1.42	1.29
100mm U.FL-2LP-088K1T-A-(100)	168-8072		1.85	1.72	1.61	1.49	1.36
150mm U.FL-2LP-088K1T-A-(150)	168-8073		1.94	1.81	1.69	1.57	1.43
200mm U.FL-2LP-088K1T-A-(200)	168-8074		2.02	1.87	1.75	1.61	1.48
300mm U.FL-2LP-088K1T-A-(300)	168-8075		2.20	2.05	1.90	1.76	1.60
Receptacle, SMT							
U.FL-R-SMT-1(10)	168-8077		0.50	0.45	0.41	0.37	0.34
Extraction Tool							
Mfrs. List No.	Order Code	1+	3+				
U.FL-LP-N2	168-8076	22.74	17.02				

RF Cable Assemblies



Specification:-
 Attenuation 1.5dB
 VSWR 1.5 max
 Frequency Range 45MHz - 6GHz
 Impedance 50Ω

- U.FI to SMA cable assemblies
- Cable length from 75mm to 150mm

Cable Length	Mfrs. List No.	Order Code	1+	10+	25+	50+	100+
150mm	CASS-0419-RC	168-8079	9.76	8.67	7.81	7.09	6.50
100mm	CASS-0442-RC	168-8081	9.50	8.43	7.58	6.90	6.33
75mm	CASS-0627-RC	168-8082	9.36	8.33	7.49	6.82	6.25

Modular Connectors, Cat 6



Plugs



- Designed for solid and stranded conductors
- Meets EIT/TIA Category 6 component standard when terminated to Category 6 compliant cable
- Electro-polished contacts for minimum of 1000 insertion cycles
- Loadbar for ease of assembly
- Field installable with Category 6 termination tool
- Shielded and unshielded plugs available

Plug Body Material	Contact Material	Contact Plating	No. of Ways	LAN Category	Flammability Rating
Polycarbonate	Copper Alloy	Gold	8	Cat6	UL94V-0

Description	Mfrs. List No.	Order Code	5+	50+	100+	500+
Unshielded for un-splined cable	SS-39100-008	157-2183	1.04	0.93	0.87	0.81
Unshielded for splined cable	SS-39100-011	157-2184	1.04	0.93	0.87	0.81
Shielded	SS-39200-011	157-2185	1.62	1.51	1.46	1.33

Jacks



- Preloaded, formed wire contacts offer superior mechanical and electrical performance
- Through hole jacks for PCB soldering
- Designed for Category 6 patch panel and wall jack applications

- Vertical, right angle, shielded and unshielded jacks available
- Minimum of 1000 insertion cycles

Plug Body Material	Contact Material	Contact Plating	No. of Ways	LAN Category	Flammability Rating
Thermoplastic	Copper Alloy	Gold	8	Cat6	UL94V-0

Description	Mfrs. List No.	Order Code	1+	10+	50+	100+
Vertical, unshielded	SS-60000-007	157-2186	1.74	1.52	1.25	1.04
Vertical, shielded	SS-60000-008	157-2187	3.12	2.79	2.32	1.97
R/A, shielded	SS-60000-009	157-2188	3.12	2.79	2.32	1.97
R/A, unshielded	SS-60000-010	157-2189	2.90	2.54	2.09	1.74

Cat6a Jacks

- Easily compensated to CAT6a performance levels through an integrated flexible circuit board design
- Flexible PCB design helps cancel Near End Cross Talk (NEXT) at the plug / jack interface
- Right angle mount, shielded jack
- Minimal secondary compensation required due to the jack's construction
- Selectively plated contacts with 50 micro-inches of gold
- Designed for use in 10 Gigabit Ethernet applications
- UL 94V-0 plastic
- Wave solder compatible

Description	Mfrs. List No.	Order Code	1+	10+	50+	100+
R/A, shielded	SS-60300-010	157-2190	4.49	4.08	3.75	3.28

Hand Tools

Professional hand tools for the assembly of shielded and unshielded Cat 6 plugs.

Description	Mfrs. List No.	Order Code	1+
Unshielded	2980047-01	157-2197	103.20
Shielded	2980075-01	157-2198	278.29

 **40,000 PRICES REDUCED**

RJ45 Single Port MagJack®



- 10/100/1000 Gigabit Ethernet Jacks
- Plug tab up and tab down
- With or without LEDs and bi-colour
- RJ45 and USB port combinations
- Right Angle mount
- Power over Ethernet options
- Extended temperature range of -40°C to +85°C

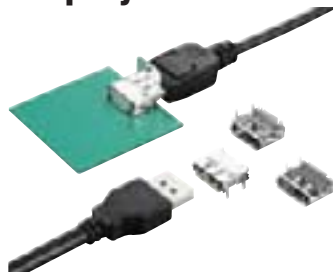


Specifications:-					
Order Code	157-2191	157-2193	157-2194	157-2195	157-2196
No. of LEDs	2	0	2	2	2
Colour of LEDs	Green / Yellow	-	Yellow / Bi-colour (Green, Yellow, Orange)	Green / Yellow	Yellow / Bi-colour (Green, Orange)
Tab Up / Down	Down	Down	Up	Up	Up
USB	-	-	2 X A	-	-
PoE	-	-	-	Yes	Yes

Contact Material:- Copper Alloy
Contact Plating: Gold

Mfrs. List No.	Order Code	1+	10+	50+	100+
SI-61001-F	157-2191	5.26	4.78	4.39	3.85
SI-61007-F	157-2193	5.26	4.78	4.39	3.85
0862-1J1T-43	157-2194	5.61	5.11	4.67	4.10
SI-52008-F	157-2195	4.72	4.29	3.93	3.46
0826-1X1T-80	157-2196	11.79	10.73	9.83	8.62

Display Port Connectors



DP1 Series



- Compatible with the next-generation flat panel interface standard DisplayPort 1.1a.
- Secure shielding with metallic shell, VESA certified
- Board-side receptacle is available as a reverse SMT type for reverse mounting, angle SMT type with flange, and standard angle SMT

- Mating height is 6.5mm
- 2m and 3m plug cable assemblies available

Specifications:-			
Current Rating	0.5A	Withstanding Voltage	500 VACrms/min.
Contact Plating	Gold	Contact Resistance	50mohm
Insulation Resistance	100Mohm	No. of Contacts	20
Durability	10000 cycles	Applicable Wire	Twinnax cables (30-32 AWG)
Operating Temp.	-20°C to 85°C		

Mfrs. List No.	Order Code	1+	10+	50+	100+
R/A SMT Standard Type without Flange					
DP1R020JQ1R400	167-9718	0.96	0.92	0.84	0.76
R/A SMT Reverse Type without Flange					
DP1RD20JQ2R400	167-9719	0.96	0.92	0.84	0.76
R/A SMT Standard Type with Flange					
DP1R020JQ3	167-9720	1.71	1.64	1.50	1.40
Display Port Cable Assemblies					
Mfrs. List No.	Cable Length	Order Code	1+	5+	10+
DP1P020ST30200LB	2m	167-9721	23.51	21.27	19.03
DP1P020ST30300LB	3m	167-9722	26.87	23.51	21.27

High Definition Multimedia Interface



(HDMI) Connector System



The new HDMI cable assemblies, adaptors and connectors provide an uncompressed digital link between consumer electronics equipment such as DVD players, set-top boxes and audio video monitors such as plasma display screens for high definition TVs.

- Eliminates the confusion of multiple cables used to connect current A/V systems
- 5 Gbps supports high definition video and multichannel digital audio in a single cable
- 10,000 mating cycles
- DVI backward compatible
- Fully shielded
- Lead-free plating

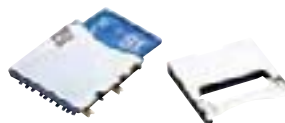
Mfrs. List No.	Cable Length	Order Code	1+	10+	50+	100+
HDMI to HDMI Cable						
88768-9800	1m	874-9981	10.48	9.76	9.04	8.75
88768-9810	2m	489-5630	12.64	9.84	9.59	9.34
88768-9820	3m	489-5642	18.14	16.41	15.04	14.10
88768-9830	5m	874-9990	18.23	17.15	16.60	16.06
88767-1010	10m*	875-0009	30.54	27.78	25.46	23.86
88767-1020	15m*	875-0017	41.43	37.65	34.52	32.39
DVI to HDMI Cable						
88768-3500	1m	875-0025	10.63	10.01	9.67	9.32
88768-3510	2m	489-5654	15.86	12.35	11.45	11.08
88768-3520	3m	489-5666	12.34	11.59	11.24	10.91
88768-3530	5m	875-0033	12.22	11.49	11.14	10.81
88767-0910	10m*	875-0041	23.78	21.59	19.81	18.57
88767-0920	15m*	875-0050	29.30	27.54	26.68	25.82
Mfrs. List No.	Description	Order Code	1+	10+	50+	100+
Adaptors						
88764-5900	HDMI (F) to P&D (M)	121-1005	9.09	8.29	7.57	7.10
88767-0600	HDMI (F) to DVI (M)	121-1007	14.56	13.70	13.25	12.81
88764-2000	HDMI (M) to DVI (F)	121-1008	7.99	7.52	7.27	7.01
Headers, R/A						
5002541927	Standard Type	867-2822	2.21	2.08	1.58	1.47
5002541931	Flange Type	112-5352	3.53	3.29	3.20	3.11
Receptacles, R/A, Through Hole						
47151-1001	Standard	151-6661	1.37	1.27	1.21	1.13
47151-1002	Flange	151-6662	1.37	1.27	1.21	1.13
47266-0001	Black	151-6663	0.62	0.58	0.55	0.52

* 10 and 15 metre cable lengths are not HDMI 1.1 compliant, however should function at 800 x 600 or 1024 x 768 resolution.

SDIO Memory Card Connectors



5738 Series



- 5738 series is a range of SDIO memory connectors
- Two tail types available - outer tail suitable for notebook PCs and digital AV equipment, and inner tail suitable for mobile phones and PDA

- Low profile design - stacking heights range between 2.7 & 2.9mm
- Spring-eject mechanism
- Equipped with write protection switch and card detection switch

Specifications:-			
Material Insulator	Heat Resistance Plastic	Contact Material	Copper Alloy
Contact Plating	Au (0.25µm Min.)	Current Rating	0.5A
Voltage Rating	5V AC/DC	Withstanding Voltage	500Vrms/min
No. of Ways	9	Pitch	2.5 / 1.7 mm
No. of Mating Cycles	10000	Operating Temperature	-25°C to 90°C

Mfrs. List No.	Tail Type	Stack Height	Order Code	1+	10+	50+
14 5738 009 784 859+	Outer Tail	2.8mm	155-8174	2.18	2.07	1.98
14 5738 009 302 859+	Inner Tail	2.9mm	155-8175	2.18	2.07	1.98
14 5738 009 210 859+	Outer Tail	2.7mm	155-8176	2.26	2.14	2.05

microSD™ Memory Card & SIM Card Combo Connector



ST5 Series



- Compatible with slide type GSM11.11 plug-in SIM card & push-push microSD™
- 1mm push stroke
- 3.3mm card eject length
- Half lock structure
- 4 ground connection points
- Dimensions (H x D x W) - 2.8 x 17.35 x 19.2mm

Specifications:-			
Current Rating	0.5A per pin	Rated Voltage	10V per pin
No. of Contacts	14 + 2 (D-SW)	Withstanding Voltage	500VAC r.m.s. per min.
Contact Material	Copper Alloy	Contact Plating	Gold over Nickel
Housing Material	Synthetic Resin	Contact Resistance	100mohm
Insulation Resistance	1000Mohm	Operating Temp.	-25°C to 85°C
Flammability Rating	UL94V-0		

Mfrs. List No.	Order Code	1+	10+	50+	100+
ST5S014V4A	169-1660	2.34	2.22	2.09	1.88

Multipurpose (Standard & Flanged Lid)

IP54/IP65 Diecast

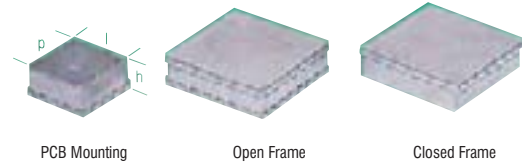


- Rugged electronic enclosure, diecast in aluminium alloy
- Easy to machine, perfect for audio and RF shielding
- RFI/EMI shielded
- Lap jointed lid, fastened by machine screws into threaded holes
- Standard and flanged lid versions meet IP54
- Watertight IP65 versions of standard and flanged lid complete the range

External Dimensions L x W x D (mm)	Mftrs. List No.	Order Code	1+	5+	10+	25+
Standard Box						
27 x 52.5 x 38	1590H	427-3059	4.44	4.35	4.24	4.17
27 x 46.5 x 50.5	1590LB	929-980	5.53	5.13	4.91	4.66
27 x 92.5 x 38.5	1590A	306-1589	5.82	5.71	5.60	5.49
21 x 100 x 50	1590G	382-4410	6.80	6.66	6.52	6.40
27 x 111.5 x 59.5	1590B	306-1590	7.48	7.34	7.19	7.03
40 x 110.5 x 81.5	1590S	929-992	7.95	7.47	7.17	6.85
30 x 118.5 x 93.5	1590BB	930-003	6.89	6.46	6.20	5.92
35.3 x 121.1 x 66	1590N1	382-4421	10.89	10.67	10.45	10.25
45 x 145 x 95	1590J	427-3060	9.91	9.72	9.53	9.33
33 x 188 x 119.5	1590DD	306-1607	18.26	17.89	17.54	17.18
57 x 192 x 111	1590R1	382-4433	17.11	16.77	16.44	16.11
46 x 153 x 82	1590P1	306-1619	11.29	11.05	10.84	10.63
50 x 50 x 25	1590LLB	100-9517	4.74	4.65	4.56	4.47
56 x 187.5 x 119.5	1590D	306-1620	17.98	17.62	17.26	16.92
52.5 x 120 x 94	1590C	306-1632	9.63	9.44	9.24	9.06
55 x 120.5 x 79.5	1590T	930-015	7.38	6.94	6.66	6.37
55 x 119.5 x 119.5	1590U	930-027	12.19	11.47	10.98	10.48
75 x 125 x 125	1590K	427-3072	14.88	14.59	14.29	14.01
90 x 119.5 x 119.5	1590V	930-039	12.63	11.91	11.40	10.88
92 x 92 x 42	1590Y	100-9518	9.93	9.74	9.55	9.35
63.5 x 187.5 x 187.5	1590F	930-040	18.35	17.25	16.54	15.80
78 x 187.5 x 119.5	1590E	306-1644	17.36	17.02	16.68	16.35
120 x 120 x 34	1590Q	100-9519	11.48	11.26	11.02	10.81
125 x 125 x 57	1590KK	100-9520	14.77	14.47	14.19	13.90
Watertight Standard Box						
27 x 92.5 x 38.5	1590WA	306-1668	6.45	6.33	6.20	6.08
21 x 96 x 46	1590WG	382-4445	8.46	8.29	8.12	7.96
27 x 111.5 x 59.5	1590WB	306-1670	8.34	8.16	8.01	7.85
30 x 118.5 x 93.5	1590WBB	306-1681	10.23	10.02	9.81	9.62
46 x 153 x 82	1590WP1	306-1711	13.14	12.88	12.61	12.36
52 x 187.5 x 119.5	1590WD	306-1723	20.83	20.42	20.00	19.60
52.5 x 120 x 94	1590WC	306-1735	10.39	10.19	9.99	9.79
55 x 119.5 x 119.5	1590WU	306-1759	16.37	16.04	15.72	15.40
63 x 187.5 x 187.5	1590WF	306-1760	25.33	24.84	24.35	23.86
78 x 187.5 x 119.5	1590WE	306-1772	20.16	19.77	19.36	18.97
120 x 120 x 34	1590WQ	100-9528	14.15	13.85	13.59	13.31
Flanged Lid Box						
27 x 50.5 x 50.5	1590LBF	306-1796	6.61	6.46	6.34	6.22
27 x 92.5 x 38.5	1590AF	306-1802	5.82	5.71	5.60	5.49
21 x 100 x 50	1590GFL	382-4470	6.80	6.66	6.52	6.40
27 x 111.5 x 59.5	1590BFL	306-1814	7.48	7.34	7.19	7.03
30 x 118.5 x 93.5	1590BBFL	306-1826	8.51	8.34	8.16	8.01
35.3 x 121.1 x 66	1590N1FL	382-4482	11.23	11.00	10.79	10.57
57 x 192 x 111	1590R1FL	382-4494	16.62	16.30	15.96	15.64
40 x 110.5 x 81.5	1590SFL	306-1840	7.78	7.50	7.28	6.94
46 x 153 x 82	1590P1FL	306-1851	11.63	11.40	11.18	10.94
52 x 187.5 x 119.5	1590DFL	306-1917	17.98	17.62	17.26	16.92
52.5 x 120 x 94	1590CFL	306-1929	9.77	9.58	9.37	9.20
55 x 120.5 x 79.5	1590TFL	306-1930	9.12	8.94	8.75	8.58
55 x 119.5 x 119.5	1590UFL	306-1942	13.08	12.81	12.57	12.32
63 x 187.5 x 187.5	1590DFL	306-1954	22.39	21.94	21.52	21.08
78 x 187.5 x 119.5	1590EFL	306-1966	17.36	17.02	16.68	16.35
90 x 119.5 x 119.5	1590VFL	306-1978	15.80	15.48	15.18	14.86
Watertight Flanged Lid Box						
27 x 92.5 x 38.5	1590WAF	306-1991	6.45	6.33	6.20	6.08
21 x 100 x 50	1590WGF	384-2575	8.46	8.29	8.12	7.96
27 x 111.5 x 59.5	1590WBF	306-2004	8.51	8.34	8.16	8.01
30 x 118.5 x 93.5	1590WBBFL	306-2016	10.51	10.30	10.10	9.89
35.3 x 121.1 x 66	1590WN1FL	384-2587	12.57	12.32	12.06	11.83
33 x 188 x 119.5	1590WDDFL	306-2028	21.08	20.65	20.24	19.85
40 x 110.5 x 81.5	1590WSFL	306-2030	11.40	11.18	10.94	10.73
46 x 153 x 82	1590WP1FL	306-2041	13.14	12.88	12.61	12.36
52 x 187.5 x 119.5	1590WDFL	306-2053	20.83	20.42	20.00	19.60
55 x 120.5 x 79.5	1590WTF	306-2077	10.91	10.70	10.47	10.27
Standard Black Box						
50 x 50 x 21	1590LLBBK	100-9521	6.69	6.55	6.42	6.29
50.5 x 50.5 x 27	1590LBBK	443-7100	8.68	8.51	8.34	8.16
52.5 x 38 x 27	1590HBK	443-7111	8.46	8.29	8.12	7.96
92.5 x 38.5 x 27	1590ABK	443-7123	8.51	8.34	8.16	8.01
100 x 50 x 21	1590YBK	100-9522	12.34	12.08	11.85	11.60
110.5 x 81.5 x 40	1590GBK	443-7135	9.03	8.85	8.67	8.50
110.5 x 59.5 x 27	1590SBK	443-7147	13.48	13.20	12.95	12.68
111.5 x 59.5 x 30	1590BBK	443-7159	11.26	11.02	10.81	10.60
118.5 x 93.5 x 30	1590BBBK	443-7160	12.60	12.35	12.10	11.86
119.5 x 119.5 x 55	1590UBK	443-7172	15.42	15.12	14.82	14.52
120 x 94 x 52.5	1590CBK	443-7196	13.52	13.24	12.98	12.71
120.5 x 79.5 x 55	1590TBK	443-7202	12.05	11.82	11.57	11.35
120 x 120 x 30	1590QBK	100-9523	13.60	13.32	13.06	12.79
121.1 x 66 x 35.3	1590NBK	443-7214	14.77	14.47	14.19	13.90
125 x 125 x 75	1590KKB	443-7226	15.18	14.86	14.57	14.28

External Dimensions L x W x D (mm)	Mftrs. List No.	Order Code	1+	5+	10+	25+
Standard Black Box						
145 x 95 x 45	1590JBK	443-7238	11.51	11.29	11.05	10.84
153 x 82 x 46	1590P1BK	443-7240	16.03	15.71	15.40	15.09
187 x 119 x 56	1590DBK	443-7251	19.99	19.59	19.21	18.82
187.5 x 119.5 x 78	1590EBK	443-7263	22.94	22.48	22.04	21.59
187.5 x 187.5 x 63	1590FBK	443-7275	28.37	27.80	27.24	26.69
187.5 x 119.5 x 52	1590DDBK	443-7287	22.71	22.25	21.81	21.37
192 x 111 x 57	1590R1BK	443-7299	19.17	18.78	18.40	18.04
Flanged Lid Black Box						
50 x 50 x 27	1590LBFBLK	443-7305	8.68	8.51	8.34	8.16
92.5 x 38.5 x 27	1590AFBLK	443-7317	8.51	8.34	8.16	8.01
100 x 50 x 21	1590GFLBK	443-7329	9.03	8.85	8.67	8.50
110.5 x 81.5 x 40	1590SFLBK	443-7330	13.88	13.61	13.33	13.07
111.5 x 59.5 x 27	1590BFLBK	443-7342	11.26	11.02	10.81	10.60
118.5 x 93.5 x 30	1590BBFLBK	443-7354	12.60	12.35	12.10	11.86
119.5 x 119.5 x 55	1590UFLBK	443-7366	15.42	15.12	14.82	14.52
120 x 94 x 52.5	1590CFLBK	443-7380	13.52	13.24	12.98	12.71
120.5 x 79.5 x 55	1590TFLBK	443-7391	12.05	11.82	11.57	11.35
121.1 x 66 x 35.3	1590N1FLBK	443-7408	14.77	14.47	14.19	13.90
153 x 82 x 46	1590P1FLBK	443-7410	16.03	15.71	15.40	15.09
187.5 x 119.5 x 52	1590DFLBK	443-7421	22.71	22.25	21.81	21.37
187.5 x 119.5 x 63	1590EFLBK	443-7433	22.94	22.48	22.04	21.59
187.5 x 187.5 x 63	1590FFLBK	443-7445	28.37	27.80	27.24	26.69
188 x 119.5 x 33	1590DDFLBK	443-7457	22.71	22.25	21.81	21.37
192 x 111 x 61	1590R1FLBK	443-7469	19.17	18.78	18.40	18.04
Watertight Standard Lid Black Box						
50 x 50 x 31	1590WLBBK	443-7470	9.71	9.52	9.32	9.14
92.5 x 38.5 x 31	1590WABK	443-7494	10.37	10.17	9.96	9.77
100 x 50 x 25	1590WGBK	443-7500	12.11	11.87	11.63	11.40
110.5 x 82.5 x 44	1590WSBK	443-7512	15.42	15.12	14.82	14.52
112 x 60.5 x 31	1590WBBK	443-7524	12.00	11.76	11.51	11.29
119.5 x 94 x 35	1590WBBBK	443-7536	14.11	13.82	13.55	13.27
121.1 x 66 x 35.3	1590WN1BK	443-7585	16.91	16.56	16.23	15.92
153 x 82 x 46	1590WP1BK	443-7615	17.52	17.16	16.81	16.49
187.5 x 119.5 x 52	1590WDBK	443-7627	25.74	25.22	24.72	24.23
187.5 x 119.5 x 78	1590WEBK	443-7639	25.91	25.40	24.90	24.39
187.5 x 187.5 x 63	1590WFBK	443-7640	31.51	30.88	30.26	29.66
Watertight Flanged Black Box						
46.5 x 46.5 x 31	1590LWFLBK	443-7676	9.71	9.52	9.32	9.14
105.5 x 77.5 x 44	1590WSFLBK	443-7706	15.40	15.09	14.80	14.49
108 x 56.5 x 31	1590WBFLBK	443-7718	12.32	12.06	11.83	11.58
115 x 89.5 x 34	1590WBBFLBK	443-7720	14.50	14.22	13.93	13.66
115 x 89.5 x 56.5	1590WCFLBK	443-7755	15.42	15.12	14.82	14.52
188 x 119.5 x 52	1590WDFLBK	443-7792	25.74	25.22	24.72	24.23
183 x 115 x 82	1590WEFLBK	443-7809	25.91	25.40	24.90	24.39

RFI/EMI Screening



- Quick, efficient and cost effective specific board level screening
- PCB mounting, open frame, closed frame, screening strips and can types available
- Fingered lids provide easy

H		List No.	Order Code	1+	Price Each	10+	20+
PCB Can							
15	20	20	PCMC1	444-6641	2.24	1.98	1.72
15	25	25	PCMC2	444-6653	2.60	2.31	2.00
15	40	30	PCMC5	444-6689	2.86	2.53	2.22
15	40	40	PCMC7	444-6707	3.00	2.68	2.34
15	50	50	PCMC8	444-6719	3.56	3.16	2.77
20	60	40	PCMC9	444-6720	3.56	3.16	2.77
25	70	50	PCMC10	444-6732	4.60	4.08	3.56
25	75	75	PCMC11	444-6744	5.39	4.80	4.19
Screening Strips x 5							
232	10	0.54	SS232/10-5PK	444-6768	5.62	4.95	4.36
232	15	0.54	SS232/15-5PK	444-6770	6.45	5.72	4.97
232	20	0.54	SS232/20-5PK	444-6781	6.55	5.79	5.12
Divider Strip for PCB Mounting							
			SS185/25T	118-1390	1.38	1.24	1.15

Hand Held - Minitec



ABS



- Designed for hand-held, wearing around the neck or on the wrist operation
- 4 standard sizes
- Large range of colour combinations for case and TPE ring
- Flat, for push-buttons or recessed, for membrane key-pad case styles available
- Soft TPE rings provide loops or eyelets for the Key Ring, Necklace or Wrist Strap
- PCB supports in the base
- Easy assembly with self-tapping screws
- Made from ABS (UL 94 HB) - Standard colours



Types ES & EM Types DS & DM

- Black (IR) models made from PMMA (Plexiglass®)
- IP 41 Protection class
- Key Ring, Necklace Straps and Wrist Straps available

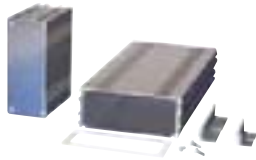
Colour	Description	Enclosure External Dimensions (mm)		Dimensions (mm)		Type
		D	W	H	PCB	
White	RAL 9002					
Lava	NCS S 7502-B	52	32	15	36 x 24	ES
Black	RAL 9005	68	43	18	51 x 34	EM
Volcano	NCS S 2-G	51	32	13	35 x 27	DS
Orange	NCS S 1070-Y40R	70	44	16	51 x 38	DS
Green	NCS S 1070-G60Y					
Blue	NCS S 1060-B					

Colour	Body	TPE Ring	Mftrs. List No.	Order Code	1+	Price Each	10+	25+	50+
Type ES - Single TPE Ring - Flat									
White	White	White	B9002617	153-9202	4.85	4.58	4.42	4.23	
White	Volcano	White	B9002007	153-9203	4.85	4.58	4.42	4.23	
White	Orange	White	B9002017	153-9204	4.85	4.58	4.42	4.23	
White	Green	White	B9002027	153-9205	4.85	4.58	4.42	4.23	
White	Blue	White	B9002037	153-9207	4.85	4.58	4.42	4.23	
Lava	Volcano	Blue	B9002008	153-9215	4.85	4.58	4.42	4.23	
Lava	Lava	Blue	B9002918	153-9216	3.39	3.20	3.10	2.97	
Lava	Orange	Blue	B9002018	153-9217	4.85	4.58	4.42	4.23	
Lava	Green	Blue	B9002028	153-9219	4.85	4.58	4.42	4.23	
Lava	Blue	Blue	B9002038	153-9221	4.85	4.58	4.42	4.23	
Black (IR)	Black (IR)	Black (IR)	B9002046	153-9227	5.60	5.30	5.11	4.88	
Type ES - Single TPE Ring - Recessed									
White	White	White	B9002627	153-9208	3.39	3.20	3.10	2.97	
White	Volcano	White	B9002057	153-9209	4.85	4.58	4.42	4.23	
White	Orange	White	B9002067	153-9210	4.85	4.58	4.42	4.23	
White	Green	White	B9002077	153-9213	4.85	4.58	4.42	4.23	
White	Blue	White	B9002087	153-9214	3.39	3.20	3.10	2.97	
Lava	Volcano	Blue	B9002058	153-9222	4.85	4.58	4.42	4.23	
Lava	Lava	Blue	B9002928	153-9223	4.85	4.58	4.42	4.23	
Lava	Orange	Blue	B9002068	153-9224	4.85	4.58	4.42	4.23	
Lava	Green	Blue	B9002078	153-9225	3.39	3.20	3.10	2.97	
Lava	Blue	Blue	B9002088	153-9226	4.85	4.58	4.42	4.23	
Black (IR)	Black (IR)	Black (IR)	B9002096	153-9228	5.60	5.30	5.11	4.88	
Type ES - Double TPE Ring - Flat									
White	White	White	B9002637	153-9229	4.85	4.58	4.42	4.23	
White	Volcano	White	B9002107	153-9230	4.85	4.58	4.42	4.23	
White	Orange	White	B9002117	153-9233	4.85	4.58	4.42	4.23	
White	Green	White	B9002127	153-9234	4.85	4.58	4.42	4.23	
White	Blue	White	B9002137	153-9235	4.85	4.58	4.42	4.23	
Lava	Volcano	Blue	B9002108	153-9242	4.85	4.58	4.42	4.23	
Lava	Lava	Blue	B9002938	153-9244	3.39	3.20	3.10	2.97	
Lava	Orange	Blue	B9002118	153-9245	4.85	4.58	4.42	4.23	
Lava	Green	Blue	B9002128	153-9246	4.85	4.58	4.42	4.23	
Lava	Blue	Blue	B9002138	153-9247	4.85	4.58	4.42	4.23	
Black (IR)	Black (IR)	Black (IR)	B9002146	153-9253	5.60	5.30	5.11	4.88	
Type ES - Double TPE Ring - Recessed									
White	White	White	B9002647	153-9236	4.85	4.58	4.42	4.23	
White	Volcano	White	B9002157	153-9237	4.85	4.58	4.42	4.23	
White	Orange	White	B9002167	153-9238	4.85	4.58	4.42	4.23	
White	Green	White	B9002177	153-9239	4.85	4.58	4.42	4.23	
White	Blue	White	B9002187	153-9241	4.85	4.58	4.42	4.23	
Lava	Volcano	Blue	B9002158	153-9248	4.85	4.58	4.42	4.23	
Lava	Lava	Blue	B9002948	153-9249	4.85	4.58	4.42	4.23	
Lava	Orange	Blue	B9002168	153-9250	4.85	4.58	4.42	4.23	
Lava	Green	Blue	B9002178	153-9251	4.85	4.58	4.42	4.23	
Lava	Blue	Blue	B9002188	153-9252	4.85	4.58	4.42	4.23	
Black (IR)	Black (IR)	Black (IR)	B9002196	153-9256	5.60	5.30	5.11	4.88	

Colour	Body	TPE Ring	Mftrs. List No.	Order Code	1+	Price Each	10+	25+	50+
Type EM - Single TPE Ring - Flat									
White	White	White	B9004617	153-9257	6.16	5.82	5.62	5.38	
White	Volcano	White	B9004007	153-9258	6.16	5.82	5.62	5.38	
White	Orange	White	B9004017	153-9259	6.16	5.82	5.62	5.38	
White	Green	White	B9004027	153-9260	6.16	5.82	5.62	5.38	
White	Blue	White	B9004037	153-9261	4.31	4.08	3.93	3.76	
Lava	Volcano	Blue	B9004008	153-9268	6.16	5.82	5.62	5.38	
Lava	Lava	Blue	B9004918	153-9269	6.16	5.82	5.62	5.38	
Lava	Orange	Blue	B9004018	153-9270	6.16	5.82	5.62	5.38	
Lava	Green	Black (IR)	B9004028	153-9271	4.31	4.08	3.93	3.76	
Lava	Blue	Black (IR)	B9004038	153-9272	6.16	5.82	5.62	5.38	
Black (IR)	Black (IR)	Black (IR)	B9004046	153-9278	7.07	6.71	6.46	6.18	
Type EM - Single TPE Ring - Recessed									
White	White	White	B9004627	153-9262	4.31	4.08	3.93	3.76	
White	Volcano	White	B9004057	153-9263	6.16	5.82	5.62	5.38	
White	Orange	White	B9004067	153-9264	6.16	5.82	5.62	5.38	
White	Green	White	B9004077	153-9265	6.16	5.82	5.62	5.38	
White	Blue	White	B9004087	153-9266	6.16	5.82	5.62	5.38	
Lava	Volcano	Blue	B9004058	153-9273	6.16	5.82	5.62	5.38	
Lava	Lava	Blue	B9004928	153-9274	4.31	4.08	3.93	3.76	
Lava	Orange	Blue	B9004068	153-9275	6.16	5.82	5.62	5.38	
Lava	Green	Blue	B9004078	153-9276	6.16	5.82	5.62	5.38	
Lava	Blue	Blue	B9004088	153-9277	6.16	5.82	5.62	5.38	
Black (IR)	Black (IR)	Black (IR)	B9004096	153-9281	4.95	4.69	4.52	4.32	
Type EM - Double TPE Ring - Flat									
White	White	White	B9004637	153-9282	6.16	5.82	5.62	5.38	
White	Volcano	White	B9004107	153-9283	6.16	5.82	5.62	5.38	
White	Orange	White	B9004117	153-9284	6.16	5.82	5.62	5.38	
White	Green	White	B9004127	153-9285	6.16	5.82	5.62	5.38	
White	Blue	White	B9004137	153-9286	6.16	5.82	5.62	5.38	
Lava	Volcano	Blue	B9004108	153-9294	6.16	5.82	5.62	5.38	
Lava	Lava	Blue	B9004938	153-9295	6.16	5.82	5.62	5.38	
Lava	Orange	Blue	B9004118	153-9296	6.16	5.82	5.62	5.38	
Lava	Green	Blue	B9004128	153-9297	6.16	5.82	5.62	5.38	
Lava	Blue	Blue	B9004138	153-9298	6.16	5.82	5.62	5.38	
Black (IR)	Black (IR)	Black (IR)	B9004146	153-9305	4.95	4.69	4.52	4.32	
Type EM - Single TPE Ring - Recessed									
White	White	White	B9004647	153-9287	6.16	5.82	5.62	5.38	
White	Volcano	White	B9004157	153-9289	6.16	5.82	5.62	5.38	
White	Orange	White	B9004167	153-9290	6.16	5.82	5.62	5.38	
White	Green	White	B9004177	153-9291	6.16	5.82	5.62	5.38	
White	Blue	White	B9004187	153-9293	6.16	5.82	5.62	5.38	
Lava	Volcano	Blue	B9004158	153-9299	6.16	5.82	5.62	5.38	
Lava	Lava	Blue	B9004948	153-9301	6.16	5.82	5.62	5.38	
Lava	Orange	Blue	B9004168	153-9302	4.31	4.08	3.93	3.76	
Lava	Green	Blue	B9004178	153-9303	6.16	5.82	5.62	5.38	
Lava	Blue	Blue	B9004188	153-9304	6.16	5.82	5.62	5.38	
Black (IR)	Black (IR)	Black (IR)	B9004196	153-9306	7.07	6.71	6.46	6.18	
Type DS - With Recess - Oval Hole									
White	White	White	B9002657	153-9307	4.85	4.58	4.42	4.23	
White	Volcano	White	B9002207	153-9308	4.85	4.58	4.42	4.23	
White	Orange	White	B9002217	153-9312	4.85	4.58	4.42	4.23	
White	Green	White	B9002227	153-9313	4.85	4.58	4.42	4.23	
White	Blue	White	B9002237	153-9314	4.85	4.58			

Extruded Heat Sink Case

Anodized Aluminium



Silver anodised aluminium extruded box section that is designed to accept PCB's. The range of boxes is ideal for small circuits, R.F. amplifiers etc. This series features dovetail slots down the side which will accept a Linc-Lug mounting bracket to facilitate surface mounting of the box. One side of the box features two sets of appearance enhancing grooves. Between the set of grooves

is a shallow (0.5mm deep) recess which could be used for a label.

- Manufactured from aluminium 6063
- Silver anodised finish of 5µm thickness, which can easily be painted
- Available in three different lengths
- Cases include end panels and screws which are not be fitted
- The gasket sets comprise of 2 gaskets and 8 washers
- Gasket available to seal to IP65

Dimensions (mm)			Mfrs. List No.	Order Code	Price Each			
H	W	L			1+	10+	50+	100+
30	63.5	40	MCREAS40	154-9964	5.13	4.75	4.31	3.93
30	63.5	80	MCREAS80	154-9965	6.57	6.10	5.54	5.05
30	63.5	120	MCREAS120	154-9966	7.96	7.38	6.71	6.12
30	108.5	80	MCREBS80	154-9967	8.66	8.02	7.29	6.63
30	108.5	160	MCREBS160	154-9968	13.34	12.35	11.23	10.24
30	108.5	220	MCREBS220	154-9969	17.08	15.83	14.38	13.10
45	108.5	80	MCRECS80	154-9970	9.88	9.15	8.32	7.57
45	108.5	160	MCRECS160	154-9971	15.04	13.92	12.66	11.52
45	108.5	220	MCRECS220	154-9973	18.66	17.28	15.71	14.31
53.5	169.8	80	MCREDS80	154-9974	17.21	15.94	14.48	13.19
53.5	169.8	160	MCREDS160	154-9975	24.29	22.49	20.45	18.63
53.5	169.8	220	MCREDS220	154-9976	30.80	28.53	25.93	23.62
Accessories - Black ABS Bezels								
To fit:								
MCREAS Cases			MCZAB1	154-9977	0.86	0.78	0.71	0.65
MCREBS Cases			MCZBB1	154-9979	1.08	1.00	0.91	0.81
MCRECS Cases			MCZCB1	154-9980	1.31	1.22	1.11	1.02
MCREDS Cases			MCZDB1	154-9981	1.92	1.78	1.62	1.48
Accessories - Gasket Sets								
To fit:								
MCREAS Cases			MCGEA1	154-9982	2.62	2.42	2.21	2.00
MCREBS Cases			MCGEB1	154-9983	3.19	2.95	2.69	2.43
MCRECS Cases			MCGEC1	154-9985	3.72	3.44	3.12	2.84
MCREDS Cases			MCGED1	154-9986	5.54	5.13	4.66	4.23
Accessories - Linc Lugs (PK of 2)								
40mm With fitted screw								
MCLPS40				154-9958	2.89	2.69	2.43	2.22
80mm								
MCLPS80				154-9961	2.69	2.48	2.25	2.06

WR 3000M - Innovative Repair Station

3 tool channels with automatic tool detection



WR 3000M Set (with DSX 80)

WR 3000M Set (with DXV 80)

A self contained rework station for use with through hole and surface mount technology PCBs.

- Multipurpose repair station
- Specifically tailored to the needs and requirements of professional repairs to latest-technology electronic sub-assemblies in industrial production engineering and in the repair and laboratory fields
- 3 independent tool channels with automatic tool detection, guarantees the simultaneous operation of 3 soldering tools
- Precise temperature control performance at the soldering tip is guaranteed by the digital control electrotechnology together with superior quality sensor and heat-transfer technology
- High-speed measured-value acquisition provides for maximum temperature precision and optimum dynamic temperature performance in load situations
- All Weller High-Speed Micro Tools such as the WMRP micro soldering bit and the WMRT micro desoldering tweezers can be connected
- Extremely powerful bits, such as the new 200 Watt, HAP 200 hot air pencil, can also be easily connected
- Equipped with a mini USB port
- Monitor software for monitoring, parameterising and data logging is included in the software package
- Innovative special functions such as automatic channel changing, temperature preselection buttons for each channel, Factory Calibration Check
- Large easy read LCD display

WR 3000M Set (158-2381 (UK & EU)):WR 3M; HAP 200 Hot-air pencil with WDH 30 Safety rest; DSX 80 Desoldering iron with WDH 30 Safety rest; WP 80 Soldering iron with WDH 10 Stop + go Safety rest; WVP Vacuum pick up; WDC 2 Dry cleaner, Mains Cable Standard (F) and UK (G).
WR 3000M Set (133-9575 (UK & EU)):HAP 200 hot-air pencil and WDH 30 Safety rest; DXV 80 desoldering iron with WDH 40 Safety rest; WP 80 Soldering Iron with WDH 10 Stop + Go Safety rest; WVP Vacuum pick up; WDC 2 Dry cleaner; Mains Cable Standard (F) and UK (G).
WR 3M (161-4559 (UK + EU)):WR 3M Control Unit only

Can be used with the following Weller tools: HAP 1, DSX 80, DXV 80, WMRP, WSP 80, MPR 80, WMP, LR 82, WSP 150, LR 21, WMRT, WST 20, WTA 50, WST 82, WSB 80, WHP 80, WVP, WSB 150, WRK:

Description	Type	Mfrs. List No	Order Code	Price Each 1+
Repair station-Set (with DSX 80)	WR 3000M (UK + EU)	0053368699	158-2381	1,922.91
Repair station-Set (with DXV 80)	WR 3000M (UK + EU)	0053368399	133-9575	1,922.91
Control Unit only	WR 3M (UK + EU)	0053366399	161-4559	1,377.92

WHS 40 D Temperature Controlled Soldering Station

For hobbyist and semi-professional users



- Temperature controlled soldering station
- 18 V low voltage soldering iron
- Temperature variable 150°C to 450°C
- Digital display of temperature
- Ergonomically designed handle
- Meets European safety standard and is CE approved
- Supplied with 2mm iron plated chisel tip, stand and sponge

An entry level hand soldering station for use with through hole and surface mount components, with digital display. The station is particularly aimed at non-professional users

Mfrs. List No.	Order Code	1+	5+
WHS 40D UK	148-9551	124.87	121.13

WD1000 Soldering Station With Free Tip Maintenance Kit

Uses WD1 Control Unit



The WD1000 Soldering Station provides increased functionality and greater controllability to meet the demands of current day assembly, rework, repair and laboratory requirements. The WD1 control unit supplied with the station is an ergonomic design with a LCD display; it incorporates a microprocessor controlled, closed loop temperature control system to ensure temperature accuracy and dynamic temperature stability. All "Temtronic" tools up to a maximum of 80W can be driven from the power unit.

- Large scale easy view LCD display
- ESD Safe
- Lead free manufacture capability
- Three fixed temperatures can be assigned with the temperature buttons - You can set the temperatures value as desired
- Temperature lock, set back and calibration, programmable from the power unit
- Interlock functions and remote ID for ISO applications
- You can extend the functional diversity of this unit with a USB interface for ISO application for calibration, configuration and precise measured values
- The soldering tools themselves are recognised automatically by the WD1/WD1000 and the corresponding control parameter assigned
- Antistatic design of the safety rest has four different settings
- The WP80 uses LT series tips

Contents of WD1000 with free tip maintenance kit : WD1 control unit, mains cable, operating instructions, safety information, jack plug, soldering iron WP80, safety rest WDH10 and tip maintenance kit (WDC Dry cleaner, tip activator and polishing bar)

Input Voltage	230V / 50/60Hz
Power Input	95W
Protection Class	I (Control Unit), III (Soldering Iron)
Dimensions (LxWxH)	134 x 108 x 147mm
Temperature Control	50°C - 450°C (150°F-850°F)
Temperature Accuracy	± 9°C (±17°F)
Temperature Stability	± 5°C (±9°F)
Leak Resistance of Soldering Tip *	≤ 2 Ω (Tip to ground)
Leak Voltage of Soldering Tip *	≤ 2 mV (Tip to ground)
* Tip to ground	

Description	Order Code	Price Each
WD1000 UK With Free Tip Maintenance Kit	146-6490	277.65
WD1000 EU With Free Tip Maintenance Kit	146-6491	277.65

WFE 2X Fume Extraction System



The WFE 2X is a fume extraction unit suitable for applications with a high demand for gas and particle filtration, e.g. soldering, adhesives, clean room work and laser.

It can be placed on a trolley and be moved easily between different work places. Variable speed and alarm function for

filter exchange can be sent via remote control. For applications which produce a large quantity of particles, e.g. lead-free soldering, an external pre-filter can be fitted to increase the lifetime of the main filter.

- Mobile fume extraction unit purifies air at up to 2 work stations
- Electronic filter control and easy filter exchange
- Wireless remote control with alarm function
- Extra noise damped metal housing
- Quick and simple installation
- Minimized foot print
- Switching power supply fits for all global voltages
- Optimized lifetime filter

WFE 2X Kit 1 Content:

- WFE 2X Unit
- 60mm Funnel Arm Kit

WFE 2X Kit 2 Content:

- WFE 2X Unit
- 60mm Articulated Sloped Arm Kit

Description	Mftrs. List No.	Order Code	Price Each	
			1+	5+
WFE 2X Unit Only	0053658899	167-6547	960.78	931.95
WFE 2X Kit 1	0053658999	167-6541	1,069.32	1,037.23
WFE 2X Kit 2	0053658799	167-6555	1,117.56	1,084.03
Accessories				
60mm Funnel Nozzle	0053657399	167-6543	30.55	29.64
60mm Sloped Nozzle	0053657799	167-6545	27.34	26.51
60mm Sloped Arm Kit	0053657299	167-6542	119.80	116.20
60mm Funnel Arm Kit	0053657199	167-6548	119.80	116.20
60mm Articulated Sloped Arm Kit	0053657999	167-6549	184.80	179.26
60mm Hose (1m length)	0058735427	167-6551	24.53	23.79
60/50 Adaptor	0058762750	167-6552	28.15	27.29
WFE 2X Remote Control	0053659399	167-6553	159.99	155.19
WFE 2S Remote Control	0058735909	167-6554	136.68	132.57
H13 Compact Filter	0053659099	167-6550	233.16	226.16
F7 Fine Filter (Pack of 10)	0058735885	167-6546	37.79	36.65

MFR-1110 SmartHeat® Soldering Station



The MFR Series uses Metcal SmartHeat® technology to deliver the power required for lead-free connections. SmartHeat's variable power technology instantaneously senses and continuously delivers the precise thermal energy to the pad, yielding high quality solder joints while protecting sensitive components from damage.

- Powered by Metcal SmartHeat® technology
- Mains and Hand piece Ground Detection
- Auto Sleep stand for extended tip life
- Brass cleaning pad for removal of lead free solder tarnish
- Automatic power down when idle
- Small shaft diameter provides access to tightly cramped rework areas
- Compatible with hand piece 1629932 Rework tweezers
- MFR-1110 , uses SFP-*** series tips

Contents: Control unit, soldering and rework handpiece and soldering workstand.

Description	Mftrs. List No.	Order Code	Price Each	
			1+	5+
Soldering Station	MFR-1110	162-9771	189.28	
Replacement Accessories				
Soldering / Rework Hand-piece	MFR-H1-SC	162-9933	56.00	
Workstand with sponge	WS1	134-1341	50.40	

BVX-101 Fume Extraction System



With Flexible Arm attached



- Single-user system with multi-user power for thorough, effective fume extraction
- No installation means easy set-up and relocation
- Small, space-saving footprint.
- Bi-Coloured LED to indicate blocked filters
- Unique blower design provides quiet operation
- Efficient arm or plenum applications provide flexibility in fume extraction - The flexible arm part (hose) can be removed
- 300mm wide opening (plenum) on the front
- Flexible arm (hose) length: 600mm

Static Pressure	1250 Pa	Dimensions (HxWxD)	290x300x230mm
Flow Rates	85m³/h With HEPA Filter	Voltage	90 - 264 Vac
Noise Level	55dBA	Frequency	47 - 440Hz
Weight	9kg	Power	85W

Description	Pack	Mftrs. List No.	Order Code	Price Per Pack
Fume Extraction System	1	BVX-101	495-0495	334.88
Replacement Accessories				
Pre Filter	5	FP-BVX	495-1384	20.61
Main Filter (Combined HEPA/gas)	1	FM-BVX	495-1396	61.60
Flexible Arm/Hose (ESD Safe)	1	BVX-ARM	495-1402	42.56

PS-900 SmartHeat® Soldering System



Buy 3 Get 1 Free



The PS-900 is a fixed temperature Soldering Station that varies power to match the thermal demand of the device being soldered. **SmartHeat® Technology** provides an exceptionally fast response when under load while eliminating the potential for thermal overshoot. The result is a high quality solder joint formed at safe, controlled temperatures.

The PS-900 increases productivity by performing a wide range of applications. It is suited for lead-free soldering processes, multilayer boards and thermally demanding components. What's more, SmartHeat technology enables the PS-900 to solder at lower temperatures, even for such demanding applications as lead-free soldering processes. This means operators are more productive and materials are safe from damaging temperatures.

- Compact design
- Rugged cast aluminum housing
- SmartHeat® Temperature Control
- Autosleep Workstand
- Low cost, quick-change heater coil
- Added plating thickness to tips

Contents: System includes power supply with power cord, hand-piece with cord, workstand with sponge and cartridge removal pad

Note: Uses SFV-xxxx series tips

Supply Voltage	100-240	50-60Hz	Power Output	60W
Power Consumption	90W		Dimensions (HxWxD)	115x80x160mm

Description	Mftrs. List No.	Order Code	Price Each
Soldering Station Kit	PS-900	156-0738	155.68
4 For the price of 3	PS-900	162-6652	467.04
Replacement Accessories			
Coil Assembly	PS-CA3	156-0739	19.60
Soldering Handpiece + Coil	PS-HC3	156-0740	47.04
Autosleep Workstand with Sponge	WS2	134-1343	32.12



MX-5010 Soldering and Rework System



472909/476824



EXCLUSIVE

New

The MX-5010 is configured with the Metcal Advanced™ Hand-piece. This system is highly effective for soldering applications including: lead-free, high mass components or boards, thermally sensitive components requiring low operating temperature, high volume production soldering and touch-up soldering operations.

- Double the power of its predecessor, the MX-5000 time-to-recovery increases production rates and throughput
- New Metcal Advanced hand-piece provides a cooler, lighter weight and more comfortable feel for the operator
- SmartHeat technology (no calibration, safe and controlled temperatures) and built-in power meter
- The new Metcal Advanced hand-piece uses the STTC and SMTC Series Cartridges (same as previous MX-500 System)
- Quick and efficient heating high-mass cartridges increasing operator throughput

Contents: Control unit, soldering and rework handpiece and soldering workstand.

Supply Voltage	100-240V 50-60Hz	Power Output	80W
Power Consumption	125W	Dimensions (HxWxD)	235x121x130mm

Description	Mfrs. List No.	Order Code	Price Each
Solder / Rework Station	MX-5010	169-7226	1+ 464.80

Soldering and Rework Station



ZD-912



The ZD-912 Soldering & Rework Station is a high-performance and multi-function station, suitable for lead-free applications. It can be used for soldering and desoldering all types of surface mounted IC's and prevents any damage to the PCB or components. The temperature sensor on the top of the tips can check the tip temperature quickly and decreases the possibility of the tip temperature falling off.

Contents of Station: Power unit, soldering iron (with conical tip), hot air tool, ZD-10K stand with sponge, 4 hot air nozzles, user instructions

Technology Specification

Supply Voltage	230V (220-240V)
Power	60W Soldering Iron 320W Hot Air SMD Rework

Technology Specification

Temperature range	160°C - 480°C
Heating Element	Ceramic Heater

Mfrs. List No.	Order Code	1+	3+	10+	50+
Rework Station (UK & EU Plug)	149-8360	153.81	142.27	134.59	124.08

Bench Mount Fume Absorber



A bench mount fume absorber allowing greater versatility during hand soldering applications. Available in standard and ESD versions.

- Flexible arm mounts easily to almost any bench, or desk.
- High performance fan
- Activated carbon filter
- Absorbs flux and lead fumes
- Easy filter replacement
- Supplied with 3 filters
- Mains cable length: 1.1m
- Light duty hand soldering only

Technical Data

Power Consumption	23W
Dimensions (HxWxD)	270x220x168mm (Head Unit)
Extension	0.55m from bench top to top of stand (fully extended)
Filter Dimensions (HxWxD)	130x130x10mm
Weight	1.8kg

Not recommended when using Rosin based flux solders.

Tip Cleaner



- Contents made of low abrasive brass shavings
- No water or messy wet sponges necessary
- No temperature drop as in conventional sponges
- Anti-slip pad on the base and an integral adjustable soldering iron rest
- Two concave indents on the top rim
- Dimensions (Dia. x H): Ø82x30mm

Description	Order Code	1+	5+
Tip Cleaner	146-7280	5.57	5.43

SolderPro 180 Gas Soldering Iron



SolderPro 180 Kit

- Self standing cushioned pistol grip soldering/torch tool for professional use
- Auto-ignition
- Max. power rating 185W electrical equivalent
- Ready to use in 30 seconds after ignition
- Three function tips change in seconds for soldering gun, torch or hot air blower
- Supplied with 2 x empty fuel cartridges (LEC-10) - Refill with any branded butane gas
- Suitable for automotive repairs, aviation service, heavy gauge wires, industrial cable repairs and much more
- Brazing up to 2,450°F
- Dimensions (HxL): 170x203mm (Including Tip)

Contents of SolderPro 180K (Kit): SolderPro 180 Gun, 2 x Refillable fuel cartridges (LEC-10), solder dispenser with 60/40 rosin core 1mm solder, tip cleaning sponge + sponge holder, cleaning flux paste, desolder gun, 3 1/2" wire cutters, PS-80 deflector tip, PS-70 hot blower tip, PS-60 1.8mm conical tip, PS-75 spare orifice assembly, stainless steel cleaning brush

Soldering Tip Temperature	250 - 550°C (480 - 1000°F)
Equivalent Wattage	30 - 185W
Torch Temperature	1300°C (2500°F)
Gas Container Capacity	40ml
Operating Time (one gas filling)	100 mins. (at mid setting)
Handle Dimensions	38x41mm
Weight (when filled)	560g

Description	Order Code	1+	3+	10+	25+	50+
SolderPro 180	129-6783	22.11	20.97	20.32	19.66	19.22
SolderPro 180 Kit	129-6785	50.80	48.17	46.66	45.17	44.16

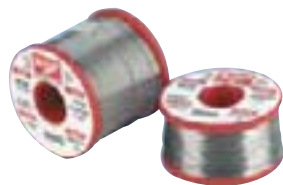
Micro-Therm Gas Torch



- Ideal for drying, heating and shrink wrapping applications
- 650°C flameless heat
- Safety lock
- Fuelled by a standard cigarette lighter (included) - Refill with any branded butane gas
- Dimensions (HxWxD): 115x80x25mm
- Weight: 95g
- Supplied with heat deflector (17mm lateral ☉)

Mfrs. List No.	Order Code	1+	3+	10+	25+	50+
MJ-600	129-6827	13.14	12.29	11.59	11.02	10.38

60/40 Alloy, 309 Rosin Flux

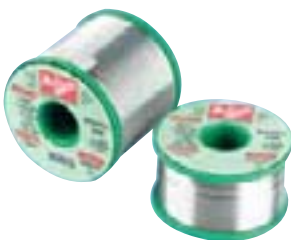


- Contains five cores of Halide-free, non-corrosive "309" rosin based flux
- Pale coloured residues do not require cleaning
- Extra wetting ability for faster soldering
- For all general purpose electronic assembly and rework applications

Alloy Flux Type	60/40 (60% Tin, 40% Lead) 309, Rosin based	Melting Temperature Tip Temperature (Approx.)	180°C 308°C
-----------------	---	--	----------------

Weight	Wire Diameter	Order Code	Price Per Reel	
			1+	10+
250g Reels	0.5mm	509-0787 ▲	16.50	15.00
	0.7mm	509-0799 ▲	23.09	21.02
	0.9mm	509-0805 ▲	14.80	13.45
500g Reels	1.2mm	509-0817 ▲	14.11	12.82
	0.7mm	509-0830 ▲	27.91	25.38
	0.9mm	509-0842 ▲	28.32	25.74
	1.2mm	509-0854 ▲	28.11	25.56

Lead Free 97SC (SAC305), 309 Rosin Cored Solder wire



Lead Free (97SC) SAC305, 309 Rosin Cored Solder wire was developed in response to customer requests for a cored solder wire that will solder difficult surfaces (good spread on nickel, stainless steel, chromel, monel, constantin etc.) whilst leaving pale post soldering residues. Heat stable - low fuming with a mild odour.

- Pale coloured residues do not require cleaning
- Mild odour
- Halide content < 1.0%

- Contains five cores of non-corrosive 309 Rosin based flux
- Complies with all lead-free legislative requirements

Alloy Flux Type	Lead Free, 96.5% Tin, 0.5% Copper, 3% Silver 309, Rosin based	Melting Temperature Tip Temperature (Approx.)	217°C 340°C - 420°C
-----------------	--	--	------------------------

Wire Diameter	Order Code	Price Per Reel	
		1+	10+
0.5mm	125-7142 ●	40.30	36.28
0.7mm	125-7143 ●	30.50	27.44
1.0mm	125-7144 ●	31.54	28.39
1.2mm	125-7145 ●	31.01	27.92
1.6mm	125-7148 ●	30.73	27.65

Lead Free Alloy, Mildly Activated No-Clean Flux



New alloy: Tin (97.1%), Silver (2.6%), Copper (0.3%)



- Mildly activated no-clean flux formulation
- Contains 5 cores of flux
- Increased flux content (2.7% by weight) - low fuming and low spitting
- Minimal clear residues, do not require cleaning

- Complies with all lead-free legislative requirements
- Suitable for general lead-free, no-clean assembly, or rework of PCBs assembled in a lead-free no-clean process

Alloy Flux Type	Sn97.1Ag2.6Cu0.3 Mildly activated, no-clean	Melting Temperature Tip Temperature (Approx.)	217°C - 224°C 350°C - 370°C
-----------------	--	--	--------------------------------

Weight	Wire Diameter	Order Code	Price Per Reel	
			1+	5+
250g Reels	0.5mm	101-5459 ●	15.48	13.94
	0.7mm	101-5460 ●	14.63	13.16
	1mm	101-5462 ●	13.05	11.73
500g Reels	1.2mm	101-5463 ●	13.00	11.69
	0.7mm	101-5464 ●	28.45	25.60
	1mm	101-5465 ●	26.04	23.41
	1.2mm	101-5466 ●	25.91	23.33

LF318 Lead Free No-Clean Solder Paste



- Lead free, Halide free solder paste
- No clean residues
- 88.5% metal content
- Suitable for reflow in air or nitrogen
- 96SC (SAC 387) 95.5% Tin, 3.8% Silver, 0.7% Copper
- Melting point 217 °C

Size	Order Code	Price Each	
		1+	10+
500g Jar	125-7149 ●	58.24	55.33

Lead-free Tip Tinning Block



TTC LF



- Rapid and effective for cleaning and re-tinning very corroded tips
- Compact block containing flux and lead-free solder in powder form
- Compatible with lead or lead-free processes
- Activator is decomposed by heat
- Alloy complies with international standards of purity
- Minimal residues
- Packed in a small metal tin with a lid and self-adhesive pad so that it can be fixed to any surface

TTC LF	Order Code	Price Each		
		1+	10+	50+
	111-5477	5.13	4.75	4.26

Direct Lead Check Swabs



Easy to use, disposable **LeadCheck®** Swabs will work on any surface, instantly turning bright pink when lead is present. Each swab is ready to use. There are no hidden steps or lengthy procedures. **LeadCheck®** are odourless, disposable and non-staining. The entire test procedure is so convenient that it can be performed anywhere in 30 seconds. There's even a test card confirmation card to verify test results.

Order Code	Price Each	
	1+	10+
141-7755	41.73	

Digital Oscilloscope

LeCroy WaveAce



Long Memory Mask Test Math Parameter

Key Features:

- Simple to use with auto set-up
- Easyscope remote control software included
- Unique waveform sequence recorder
- Pass/Fail testing
- 5.7" colour display with zoom on all models
- 60 MHz, 100 MHz, 200 MHz and 300 MHz B/W
- Sample rates up to 2 GS/s
- Long Waveform Memory - 4 kpts/Ch and 8 kpts/Ch configurations
- Advanced Triggering - Edge, Width, Video, Rise Time
- 32 automatic measurements
- Multi-language User Interface and Context Sensitive Help
- Large internal waveform and setup storage
- 4 math functions plus FFT
- USB host and device connections for printers, memory sticks and PC remote control

Model No.	102	112	202	212	222	232
Order Code	163-3307	163-3308	163-3309	163-3310	163-3311	163-3312
Input Channels	2					
Bandwidth	60 MHz	100 MHz	60 MHz	100 MHz	200 MHz	300 MHz
Rise Time	5.8 ns	3.5 ns	5.8 ns	3.5 ns	1.75 ns	1.2 ns
Input Coupling	1 M Ω " 13 pF				1 M Ω " 13 pF, 50 Ω	
Display	5.7" Color, 320 x 240 resolution					
Sample rate (Equivalent Time)	50 GS/s					
Peak Detect Period	10 ns					
Memory Length	4 kpts/Ch			9 kpts/Ch		
Vertical Resolution	8 bits					
Vertical Sensitivity	2 mV/div-5 V/div Bandwidth Limiting					
Bandwidth Limiting Filter	20 MHz					
Maximum Input Voltage	400 V CAT II					
Probes	10:1, 1:1 Switchable Passive Probe (one per channel)					
Timebase Range	5 ns/div-50 s/div			2.5 ns/div-50 s/div		

Mfrs. List No.	Order Code	Price Each
		1+
WAVEACE 102	163-3307	950.00
WAVEACE 112	163-3308	1,145.00
WAVEACE 202	163-3309	1,145.00
WAVEACE 212	163-3310	1,445.00
WAVEACE 222	163-3311	1,750.00
WAVEACE 232	163-3312	2,385.00

WaveSurfer Oscilloscope

Xs-A and MXs-A



Introducing the LeCroy WaveSurfer Xs-A - the very latest version of the highly popular oscilloscope. The new WaveSurfer now features:

- New PC system with faster processor, more RAM and faster hard drive resulting in some process being up to 2 times faster
- 5 Mpts/ch memory as standard
- New operating system
- LXi support (class C)
- Standard HDTV Trigger

- M-Types also offer:
10 Mpts/ch memory
5 GS/s per channel on 1 GHz model, interleaved on 600 MHz
Advanced trigger & MathSurf included as standard
LabNotebook

Mfrs. List No.	Order Code	Price Each
		1+ 5+
WAVESURFER 104MXS-A	169-8117	11,945.00 11,825.55
WAVESURFER 64MXS-A	169-8118	10,735.00 10,627.65
WAVESURFER 44MXS-A	169-8119	8,975.00 8,885.25
WAVESURFER 24MXS-A	169-8120	7,855.00 7,776.45
WAVESURFER 104XS-A	169-8121	10,900.00 10,791.00
WAVESURFER 64XS-A	169-8122	9,765.00 9,667.35
WAVESURFER 44XS-A	169-8123	7,855.00 7,776.45
WAVESURFER 24XS-A	169-8124	6,730.00 6,662.70
WAVESURFER 62XS-A	169-8125	8,145.00 8,063.55
WAVESURFER 42XS-A	169-8127	6,460.00 6,395.40

Oscilloscope

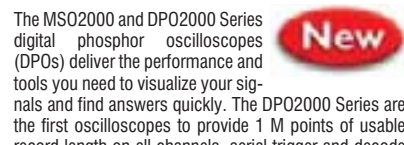
DPO / MSO



DPO2012 DPO2024 MSO2012



MSO2024



The MSO2000 and DPO2000 Series digital phosphor oscilloscopes (DPOs) deliver the performance and tools you need to visualize your signals and find answers quickly. The DPO2000 Series are the first oscilloscopes to provide 1 M points of usable record length on all channels, serial trigger and decode analysis options, a variable low-pass filter that also allows you to see signal details to the oscilloscope's full bandwidth and all in a compact form factor. The MSO2000 Series adds 16 integrated digital channels, enabling you to visualize and time correlate analog and digital signals on a single instrument. This integration extends triggering functionality across all 20 channels - which is ideal for debugging mixed analog and digital designs.

Features & Benefits

- Key Performance Specifications
- 100 MHz and 200 MHz bandwidth models
- 2 or 4 analog channels
- 16 digital channels (MSO2000 Series)
- Sample rates up to 1 GS/s on all channels
- 1 Mega sample record length on all channels
- 5,000 wfms maximum waveform capture rate
- Suite of advanced triggers

Vertical System Analog Channels

	MSO2012 DPO2012	MSO2014 DPO2014	MSO2014 DPO2024
Input Channels	2	4	4
Analog Bandwidth*1 (-3 dB)	100 MHz	100 MHz	200 MHz
Calculated Rise Time	3.5 ns	3.5 ns	2.1 ns
Hardware Bandwidth Limits	20 MHz		
Input Coupling	AC, DC, GND		
Input Impedance	1 M Ω \pm 2%, 11.5 pF \pm 2 pF		
Input Sensitivity Range	2 mV/div to 5 V/div		
Vertical Resolution	8 bits		

Horizontal System - Analog Channels

	MSO2012 DPO2012	MSO2014 DPO2014	MSO2014 DPO2024
Maximum Sample Rate (all channels)	1 GS/s		
Minimum Peak Detect Pulse Width	7.0 ns	3.5 ns	
Maximum Record Length (all channels)	1 M points		
Timebase Range	4 ns to 100 s	2 ns to 100 s	
Timebase Delay Time Range	-10 div to 5000 s		
Channel-to-Channel Deskew Range	\pm 100 ns		
Timebase Accuracy	\pm 25 ppm		

Mfrs. List No.	Description	Order Code	Price Each
			1+
DPO2012	Oscilloscope, DPO 2CH 100MHz	165-0367	2,240.00
DPO2014	Oscilloscope, DPO 4CH 100MHz	165-0368	2,700.00
DPO2024	Oscilloscope, DPO 4CH 200MHz	165-0369	3,250.00
MSO2012	Oscilloscope, MSO 2CH 100MHz	165-0370	3,110.00
MSO2014	Oscilloscope, MSO 4CH 100MHz	165-0371	3,740.00
MSO2024	Oscilloscope, MSO 4CH 200MHz	165-0372	4,480.00
Accessories			
			1+
DPO2AUTO	Module, Automotive Serial Trigger	166-5104	605.00
DPO2COMP	Module, Computer Serial Trigger	166-5105	605.00
DPO2CONN	Module, Ethernet & External Monitor	166-5106	344.00
DPO2EMBD	Module, Embedded Serial Trigger	166-5107	605.00
P2221	Passive Probe, 1X/10X 200MHz	166-5109	82.88
RMD2000	Rackmount Kit	166-5111	330.40
ACD2000	Sort Large Case	166-5112	151.20

Agilent U1401A Handheld Multi-function Calibrator/Meter



(HxWxD) 192 x 90 x 54mm

The U1401A Handheld Multi-function Calibrator/Meter from Agilent Technologies sets new levels of versatility and convenience in process control calibration with its ability to simultaneously source and measure. Such versatility, complete with high performance DMM capability, in an attractive price-value point, sets the U1401A strides ahead of other instruments in its class.

Agilent's U1401A Handheld Multi-function Calibrator/Meter incorporates complete DMM performance into a process calibration tool, with the unique ability to both source and measure simultaneously. Capable of generating constant voltage and current, it also functions as a pulse signal generator, well-suited for calibration of process control devices such as flow meters. Simultaneously, the U1401A allows users to conveniently utilize its DMM functions as well, such as to measure output mA readings from devices such as transmitters and isolators. As such, calibration needs that require both sourcing and measuring at the same time are conveniently met - all at an attractive price point. Its standalone DMM features are just as versatile to be used on the electronics bench. Capable of measuring both AC and DC signals, it readily tackles everyday DMM tasks such as measuring resistance, frequency, temperature and diode checking.

- Key Features:**
Simultaneous source and measure

- Conveniently source voltage, current or pulse signals and perform DMM measurements at the same time, with the same tool. Avoid looking for that extra DMM to perform your calibration tasks.

Process calibration tool incorporated with complete DMM features

- Full-featured DMM capable of measuring AC and DC signals, resistance, frequency, temperature as well as perform diode and continuity checks. Avoid carrying that extra DMM.
 - Auto SCAN and RAMP modes to ease automated testing.
- Trusted reliability and value**
- 3-year warranty standard with every unit.
 - Comes with stylish carrying case worth \$50.
 - Comes with Certificate of Calibration and protective holster for versatile handling.
 - Data Logging software and optional IR-USB cable for PC connectivity.

Display

Both primary and secondary displays are 5-digit liquid crystal display (LCD) with a maximum reading of 51,000 counts and automatic polarity indication.

Power Supply

Rechargeable batteries - 1.2V x 8 pieces (Ni-MH), no cadmium, lead or mercury. External switching adapter, AC 100V to 240V, 50/60 Hz input and DC 24V/2.5A output

Standard shipped items:

Quick Start Guide; Certificate of Calibration (CoC); Calibrator/Meter standard test lead kit; Yellow test lead for mA simulation; Protective holster; Carrying case; Rechargeable battery pack; AC power adapter & power cord; Product Reference CD; Data logging software

Order Code	1+	Price Each	5+
169-5353	609.00	602.91	596.88

Agilent U1731A/32A Handheld LCR Meters



(HxWxD) 87 x 184 x 41mm

With Agilent's new line of handheld LCR meters, you can perform quick, basic LCR measurements at your convenience. Now that they're available at a lower price point compared to traditional benchtop units, everyone can be equipped for passive component testing on the bench or on the go. The U1731A/32A are housed in robust overmold and tested to stringent industrial standards.

Features:

- 20,000 counts resolution
- Dual display with backlight (for U1732A)
- Wide LCR ranges with 2 to 4 selectable test frequencies
- Auto-calculation of phase angle (for U1732A), dissipation factor and quality factor
- Tolerance mode: 1%, 5% and 10% (20% with U1732A)
- Relative mode
- Hold and Min/Max/Average recordings
- Data logging to PC with optional IR-to-USB cable

Selection of test frequencies

U1731A: 120 Hz/1 kHz

U1732A: 100 Hz/120 Hz/1 kHz/10 kHz

Power Supply

9 V Alkaline battery (ANSI/NEDA 1604A or IEC 6LR61)

AC power adapter and cord available as options

Power consumption

~40 mA (on battery operation)

0.08 mA after auto power-off

Standard U1731A/32A ordering includes:

Quick Start Guide; User's and Service Guide; Certificate of Calibration (CoC); Alligator clip leads; Data logging software; 9 V Alkaline battery

Order Code	1+	Price Each	5+
169-5351	176.00	174.24	172.50
169-5352	212.00	209.88	207.78

Function/Arbitrary Waveform Generator



33250A



33210A

The Agilent Technologies 33210A Function/Arbitrary Waveform Generator is the latest addition to the 332XX family. Waveforms are generated using direct digital synthesis (DDS) technology which creates stable, accurate low distortion sine waves as well as square waves with fast rise and fall times up to 10 MHz and linear ramp waves up to 100 kHz. For user defined waveforms, option 002 provides 14-bit, 50 MSa/s 8K point Arbitrary Waveform Generation.

33250A

- 80 MHz sine and square wave outputs
- Sine, square, ramp, noise and other waveforms
- 50 MHz pulse waveforms with variable rise/fall times
- 12-bit, 200 MSa/s, 64K-point deep arbitrary waveform

33210A

- 10 MHz Sine and Square waveforms
- Pulse, Ramp, Triangle, Noise, and DC waveforms
- Optional 14-bit, 50 MSa/s, 8K point Arbitrary Waveform Generator
- AM, FM, and PWM modulation types
- Linear & logarithmic sweeps and burst operation
- 10 mVpp to 10 Vpp amplitude range
- Graph mode for visual verification of signal settings
- Connect via USB, GPIB and LAN
- Fully compliant to LXI Class C specification

33250A

Frequency Characteristics

Sine	1 [mu]Hz to 80 MHz
Square	1 uHz to 80 MHz
Pulse	500 uHz to 50 MHz
Arb	1 uHz to 25 MHz
Ramp	1 uHz to 1 MHz
White noise	50 MHz bandwidth
Resolution	1 uHz; except pulse, 5 digits
Accuracy (1 year)	2 ppm, 18°C to 28°C 3 ppm, 0°C to 55°C

General

Power supply	100-240 V, 50-60 Hz 100-127 V, 50-400 Hz
Power consumption	140 VA
Operating temp.	0°C to 55°C
Storage temp.	-30°C to 70°C
Stored states	4 named user configurations
Power on state interface	default or last IEEE-488 and RS-232 std.
Language	SCPI-1997, IEEE-488.2
Dimensions (WxHxD)	
Bench top	254 x 104 x 374 mm
Rackmount	213 x 89 x 348 mm
Weight	4.6 kg
Safety designed to	EN61010-1, CSA1010.1, UL-311-1
EMC tested to	IEC-61326-1 IEC-61000-4-3 criteria B IEC-61000-4-6 criteria B
Vibration and shock	MIL-T-28800E, Type III, Class 5
Acoustic noise	40 dBA

33210A

Waveform Characteristics

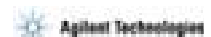
Sine frequency range	1 mHz to 10 MHz
Square Frequency range	1 mHz to 10 MHz
Ramp, Triangle Frequency range	1 mHz to 100 kHz
Pulse Frequency range	1 mHz to 5 MHz
Noise Bandwidth	7 MHz typical

General

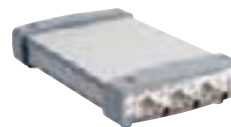
Power supply	Cat II 100 - 240 V @ 50/60 Hz (-5%, +10%) 100 - 120 V @ 400 Hz (± 10%)
Power consumption	50 VA max
Operating environment	IEC 61010 Pollution Degree 2 Indoor Location
Operating temperature	0°C to 55°C
Operating humidity	5% to 80% RH, non-condensing
Operating altitude	Up to 3000 meters
Storage temperature	-30°C to 70°C
State storage	Power off state automatically saved, Four user-configurable stored states
Interface	LAN LXI-C Ethernet 10/100
Language	USB 2.0, GPIB SCPI - 1993, IEEE-488.2
Dimensions (W x H x D)	
Bench top	261.1 mm x 103.8 mm x 303.2 mm
Rack mount	212.88 mm x 88.3 mm x 272.3 mm
Weight	3.4 kg (7.5 lbs)
Safety designed to	UL-1244, CSA 1010, EN61010
EMC tested to	MIL-461C, EN55011, EN50082-1
Vibration and shock	MIL-T-28800, Type III, Class 5
Acoustic noise	30 dBA
Warm-up time	1 hour

Mfrs. List No.	Order Code	Price Each
33250A	163-7309	3,304.00
33210A	163-7310	864.00

USB Oscilloscope



Modular



H = 41, W = 117, D = 180mm.

- 2 channels (simultaneous sampling)
- 100MHz and 200MHz models
- Bundled software includes basic spectrum analysis (FFT, peak search, next peak)
- Up to 1GSa/s maximum sample rate
- Up to 32Mpts memory depth

- Advance triggering including edge, pulse width and TV
- Hi-Speed USB 2.0 TMC 488.2 standards
- Four maths functions, including FFT's standard
- DUAL-PLAY - Standalone and modular capability

The U2701A and U2702A Oscilloscopes are bundled with the user-friendly Agilent Modular Instrument Measurement Manager software which offers a simple interface for quick setup, configuration and measurement control. These oscilloscopes are compatible with:

- Agilent VEE and Agilent T & M Toolkit
- Microsoft Visual Studio, NET, C/C++ and Visual Basic 6
- LabVIEW
- MATLAB®

Bandwidth	Mftrs. List No.	Order Code	Price Each
100MHz	U2701A	157-7812	961.00
200MHz	U2702A	157-7813	1,185.00
Accessories			
Case	U2781A	129-7812	858.00
Cable, BNC	U2921A-100	157-9661	15.04
Cable, Secure USB, 2m	U2921A-101	157-9662	15.04
Probe, Passive 1:1 20MHz	10070C	157-9663	145.00
Probe, Passive 10:1 150MHz (U2701A)	N2862A	157-9664	85.54
Probe, Passive 10:1 300MHz (U2702A)	N2863A	157-9665	112.00

Bench Power Supply - Variable Voltage



- Variable voltage and current
- Switch mode technology for improved operating efficiency
- Low ripple and noise
- Compact ergonomic design occupies a small bench area

Line Regulation	20mV			
Load Regulation	50mV			
Dimensions / Weight	150 x 70 x 250mm / 2kg			
Output Voltage	Output Current	Mftrs. List No.	Order Code	
1V - 60V	1.6A	72-8340	157-3426	
1V - 36V	3A	72-8345	157-3427	
1V - 20V	5A	72-8350	157-3428	

Mftrs. List No.	Order Code	1+	5+	10+
72-8340	157-3426	124.00	122.76	121.53
72-8345	157-3427	124.00	122.76	121.53
72-8350	157-3428	124.00	122.76	121.53

Bench Power Supplies - Single, Dual, Triple

EX-R Series



0 - 35V, 0 - 5A 0 - 35V, 0 - 4A Triple RS232 model available
 0 - 35V, 0 - 4A Dual 0 - 75V, 0 - 2A Dual

The EX-R series has been developed from the best selling EX series with improved features that include 4 digit meters and switchable remote sense terminals on most models.

- Mixed-mode power design with linear final regulation
- Four digit meters for high resolution (not EX752M)
- Constant voltage or constant current with automatic crossover
- Fully isolated outputs on duals and triples, separate output switches
- Third auxiliary output variable 1.5V to 5.0V at 5A on EX354RT
- Switchable remote sense terminals (not EX752M or EX355P)
- Multi-mode operation including 75V/4A single output mode on EX752M
- Safety & EMC complies with EN61010-1, EN50081-1, EN50082-1
- Model EX355P is digitally programmable via RS232

Mftrs. List No.	Outputs	Power	Dimensions (WxHxD)	Weight
EX355R	Single 0-35V, 0-5A	175W	140 x 160 x 320mm	3kg
EX355P	Single 0-35V, 0-5A	175W	140 x 160 x 320mm	3kg
EX354RD	Dual 2x 0-35V, 0-4A	280W	260 x 160 x 320mm	4.3kg
EX354RT	Triple 2x 0-35V, 0-4A	305W	260 x 160 x 320mm	4.3kg
EX752M	Dual 2x 0-75V, 0-2A	300W	255 x 155 x 280mm	4.3kg
Load regulation (main outputs)		<0.01% for 90% load change		
Line regulation		<0.01% for 10% line change		
Ripple & noise (main outputs)		Typically <2mV rms, <10mV pk-pk		
Meter accuracies		Voltage 0.3% ±3 digits; current 0.5% ±3 digits		

Outputs	Mftrs. List No.	Order Code	1+	3+
Single	EX355R	167-0786	295.68	282.24
Single	EX355P	471-8483	376.32	365.03
Dual	EX354RD	167-0783	436.80	430.08
Triple	EX354RT	167-0784	492.80	470.40
Dual	EX752M	351-0840	515.20	499.74

Picoscope 9201 & 9211



Designed specifically for the complex task of analysing high-speed electrical signals, the PicoScope 9201 & 9211 is ideal for many advanced applications including: signal analysis, timing analysis, testing and design of high-speed digital communication systems, network analysis, semiconductor testing, and research and development.

Main specifications of the PicoScope 9201 include:

- 12 GHz bandwidth on 2 channels
- Dual timebase from 10 ps/div
- Up to 10 GHz trigger bandwidth
- 5 TS/s equivalent time sample rate
- High resolution cursor and automatic waveform measurements with statistics
- Waveform processing including FFT
- Time and voltage histograms
- Eye-diagram measurements for NRZ and RZ
- Automated mask test
- USB 2.0 or LAN (optional)
- Familiar Windows graphical user interface
- Lightweight and energy efficient design

Typical applications include:

- Electrical standards compliance testing
- Semiconductor characterization
- Telecom service and manufacturing
- Timing analysis
- Digital system design and characterization
- Electronic mask drawing and display
- Automatic pass/fail limit testing
- High speed serial bus pulse response

Additional Features for the 9211:

- Clock data recovery

Mftrs. List No.	Order Code	1+	3+
PICOSCOPE 9201	158-1562	6,714.40	6,378.40
PICOSCOPE 9211	166-9211	7,834.40	--

TRMS Multimeter with USB Data Logging



- 40,000 count LCD display with bargraph
- Full icon display and dual backlight
- TRMS measurement
- Autoranging / manual range selection
- AC/DC voltage and current measurement
- Resistance and capacitance measurement
- Frequency and duty cycle measurement
- °C/°F temperature measurement (K type probes)
- 4-20mA measurement (0-100%)
- Min/Max/Relative modes
- Data and peak hold
- Continuity buzzer and diode test

- USB interface and datalogging (software supplied)
- Sleep mode and low battery warning
- Supplied with 9V battery, carry bag, USB lead, temperature probe, test leads, test clips and user manual

Model: 72-7732

A high performance, intelligent multimeter with a USB interface and 9999 record datalogging. The multimeter also has extensive measurement functions, high accuracy and TRMS measurement.

	Range	Accuracy
DC Voltage	400mV, 4V, 40V, 400V, 1000V	±(0.025% + 5)
AC Voltage	4V, 40V, 400V, 1000V	±(0.4% + 30)
DC / AC Current	400µA, 4000µA, 40mA, 400mA, 10A	±(0.1% + 15)
Resistance	400Ω, 4KΩ, 40KΩ, 400KΩ, 4MΩ, 40MΩ	±(0.3% + 8)
Capacitance	40nF, 400nF, 4 µF, 40(µF, 400µF, 4mF, 40mF	±(1% + 20)
Temperature		±(1%)
Frequency	40Hz to 400MHz	±(1% + 30)
Data Logging	9999 Records	
Input Impedance	10MΩ	
Dimensions	93x200x40mm (WxHxD)	
Weight	384g	

Description	Order Code	1+	3+
	156-3719	158.00	156.42

Electrical Troubleshooting Kit

1587ET

FLUKE

New



Contents:

- Fluke 1587 Insulation Multimeter
- i400 Current Clamp (includes C101 hard case)
- Fluke 62 Mini IR Thermometer

Mfrs. List No.	Order Code	+	+	+
1587ET	124-2941		--	--

HVAC Multimeter

116

True RMS FLUKE

New



The Fluke 116 was specifically designed for the HVAC professional. It has everything needed in an HVAC meter including temperature and microamp measurements to quickly troubleshoot problems with HVAC equipment and flame sensors. Use the Fluke 116 to test motor start and run capacitors up to 10,000 microfarads. Rely on the Fluke 116 to make your everyday measurements - up to 600 volts ac or dc, 40 MΩ, diode test and exceptionally fast continuity.

- True RMS AC measurements
- Large 6000 count display with white LED backlight
- Analogue bargraph
- Built in thermometer and temperature probe included for HVAC applications
- Microamps to test flame sensors
- Resistance, continuity, frequency and capacitance measurements
- LoZ: low input impedance to eliminate ghost (stray) voltage to make more accurate measurements

W=84 H=167 D=46mm. Weight 550g

- AutoVolt: automatic ac/dc selection
- Auto/Manual ranging
- MIN/MAX/AVG functions
- Data Hold
- Low battery indication
- Diode Test
- Compact case with removable holster
- CAT III 600 V
- 400 hours operation from supplied 9V alkaline battery
- Supplied with user manual and TL75 test leads

	Maximum	Max. Resolution	Best Accuracy
DC Voltage	600V	1mV	±(0.5%+2)
AC Voltage	600V	1mV	±(1.0%+3)
Resistance	40MΩ	0.1Ω	±(0.9%+1)
Capacitance	10mF	1nF	±(1.9%+2)
Frequency	50kHz	0.01Hz	±(0.1%+2)

Description	Mfrs. List No.	Order Code	+	+	+
HVAC Multimeter	116	127-4601		--	--
Accessories					
Carry Case	C50	424-006		--	--
Magnetic Hanger	TPAK	302-9578		--	--
Test Lead Set	TL223..	431-4219		--	--
					Price Each
Standard Calibration Charge					S C4 38.19
UKAS Calibration Charge					N C4 65.80

Premium service without a premium price



With thousands of prices already reduced, go online to see our most up-to-date pricing: www.farnell.com

Fluke 113 True-RMS Multimeter and 322 Clamp Meter

FLUKE



L=167.1, W=85.1, D=46, Weight=404g

The Fluke Electrician's Combo kit is the perfect solution to meet the demands of Electrical Professionals. This combo kit pairs the new Fluke 113 DMM with a Fluke 322 clamp meter for productive and effective troubleshooting in one total solution. The 113 Multimeter has the features needed to repair most electrical and electronic problems. This meter is simple-to-use and has significant improvements over the original Fluke 7-600 and other basic multimeters. Using the Fluke VCHEK™ LoZ low impedance measurement function, users can simultaneously test for voltage and continuity. Added measurement functions include backlight, Min/Max and capacitance.

Features and benefits:

Fluke 113 Multimeter

- VCHEK™ LoZ low impedance measurement function to simultaneously test for voltage and continuity
- A large backlit display allows for easy visibility in low-lit areas
- True-rms for accurate AC measurements on non-linear loads

Fluke 322 Clamp Meter

- Rugged and compact: ideal for current measurements up to 400 A in tight cable compartments
- 0,01A resolution in the 40 A range

Mfrs. List No.	Order Code	Price Each
FLUKE 113/322	170-0076	156.80

Fluke 179 True-RMS Multimeter and I400S Clamp Meter

FLUKE



I400S:

All models offer true RMS AC voltage and current readings, 6000-count resolution, min-max-average recording, as well as frequency and capacitance ranges. Despite all of these and many other useful features, the 179 remains easy to use. The ergonomic case with integrated holster protects the units in rough and tough environments. To change the batteries, the case does not have to be opened as access to the batteries is through an easy to open battery door. All inputs are protected to EN61010-1 CAT IV 600V/CAT III 1000V. The Fluke 179 is supplied with TL75 test leads, installed 9V battery and user manual and comes with Fluke's unique lifetime warranty.

Nominal Current Range(s)	40A, 400A
Continuous AC Current Range	0.5 - 40A, 5 - 400A
Highest Current	1000A
Lowest Measurable Current	0.5A
Basic Accuracy (48-65Hz)	2% + 0.15A
Useable Frequency	45Hz - 3kHz
Max. Working Voltage	1000V
Max. Conductor Dia.	32mm
Output Level(s)	10mV/A, 1mV/A
Output Cable (m)	2.5m
BNC Adaptor	✓
Safety	CAT IV 600V, CAT III 1000V

Mfrs. List No.	Order Code	Price Each
FLUKE 179/I400	170-0077	258.72

Digital Logging Multimeters **FLUKE**

Fluke 287 & Fluke 289



H=254 W=194 D=76mm. Weight 1kg



High performance industrial logging multimeters. Log data and display it graphically on the large display.

- Large 50,000 count 320x240 dot matrix display
 - Logging function with TrendCapture for easy review of logged data
 - Multiple readings per display
 - True RMS measurements (AC and AC+DC)
 - Info button for convenient on-board help
 - Optical USB Communications interface for easy data transfer
 - Internal memory allows up to 180 hours of logging
 - Current measurement to 20A (30 seconds), 10A continuous
 - Peak capture (records transients as fast as 250µs)
 - Min/Max and Average functions with Time Stamp
 - Protected to IP54
 - All inputs are protected to **EN61010-1 CAT III 1000V / CAT IV 600V**
 - **UL, CSA and TUV listed**
- Fluke 289 Additional Features:**
- Low pass filter for motor drive measurements
 - Low impedance function prevents false "ghost voltage" readings
 - 50Ω range for motor winding and low ohm measurements

Function	Measuring Ranges	Resolution	Accuracy
VDC	1000V	1µV	± (0.025%+5d)
VAC	1000V	1µV	± (0.4%+40d)
ADC	10A	0.01µA	± (0.15%+2d)
AAC	10A	0.01µA	± (0.7%+5d)
Resistance	500MR	0.01Ω	± (0.05%+2d)
Conductance	50nS	0.01nS	±(1.0%+10d)
Capacitance	100mF	0.001nF	± (1.0%+5d)
Frequency	1MHz	0.01Hz	± (0.005%+1d)
Temperature	-200°C to 1350°C	0.1°C	(1% + 1°C)

Accuracies are best accuracies for each function. Supplied with TL71 silicone test leads, probe holder, 6x AA batteries (installed) and manual

289FVF - FlukeView Combo Kit: contains Fluke 289 and accessories as above plus; alligator clips, 80BK thermocouple, FlukeView forms software, data cable and a soft carry case.

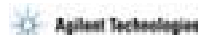
TLK287 Test Lead Kit is designed for electronics designers, test and service technicians. The kit includes: spring tipped probes, micro-grabbers, mini alligator clips, leads and couplers.

TLK289 Test Lead Kit is designed for high-end industrial users. The kit includes: SureGrip alligator clips, SureGrip grabbers, SureGrip hook clips, Suregrip industrial test probes, magnetic hanger, temperature adaptor with K-type thermocouple, soft carry case. Rated to 1000V CAT III.

Prices where indicated by a are subject to change. Please call your local sales office or visit www.farnell.com for the latest prices.

Description	Mftrs. List No.	Order Code	1+	3+	5+
Multimeter	287	142-2691	509.00	503.91	498.87
Multimeter	289	142-2692	550.00	544.50	539.06
FlukeView Combo Kit	289/FVF	142-2693	633.00	626.67	620.40
Test Lead Kit	TLK287	150-3745	133.00	131.67	130.35
Test Lead Kit	TLK289	150-3746	133.00	131.67	130.35
Standard Calibration Charge					
UKAS Calibration Charge					

Agilent U1401A Hand-held Multi-function Calibrator/Meter



The U1401A Handheld Multi-function Calibrator/Meter from Agilent Technologies sets new levels of versatility and convenience in process control calibration with its ability to simultaneously source and measure. Such versatility, complete with high performance DMM capability, in an attractive price-value point, sets the U1401A strides ahead of other instruments in its class.

Agilent's U1401A Handheld Multi-function Calibrator/Meter incorporates complete DMM performance into a process calibration tool, with the unique ability to both source and measure simultaneously. Capable of generating constant voltage and current, it also functions as a pulse signal generator, well-suited for calibration of process control devices such as flow meters. Simultaneously, the U1401A allows users to conveniently utilise its DMM functions as well, such as to measure output mA readings from devices such as transmitters and isolators. As such, calibration needs that require both sourcing and measuring at the same time are conveniently met - all at an attractive price point. Its standalone DMM features are just as versatile to be used on the electronics bench. Capable of measuring both AC and DC signals, it readily tackles everyday DMM tasks such as measuring resistance, frequency, temperature and diode checking.

(HxWxD) 192 x 90 x 54mm

Key Features:
Simultaneous source and measure

- Conveniently source voltage, current or pulse signals and perform DMM measurements at the same time, with the same tool. Avoid looking for that extra DMM to perform your calibration tasks.

Process calibration tool incorporated with complete DMM features

- Full-featured DMM capable of measuring AC and DC signals, resistance, frequency, temperature as well as perform diode and continuity checks. Avoid carrying that extra DMM.

- Auto SCAN and RAMP modes to ease automated testing.

Trusted reliability and value

- 3-year warranty standard with every unit.
- Comes with stylish carrying case worth \$50.
- Comes with Certificate of Calibration and protective holster for versatile handling.
- Data Logging software and optional IR-USB cable for PC connectivity.

Display

Both primary and secondary displays are 5-digit liquid crystal display (LCD) with a maximum reading of 51,000 counts and automatic polarity indication.

Power Supply

Rechargeable batteries - 1.2V x 8 pieces (Ni-MH), no cadmium, lead or mercury. External switching adapter, AC 100V to 240V, 50/60 Hz input and DC 24V/2.5A output

Standard shipped items:

Quick Start Guide; Certificate of Calibration (CoC); Calibrator/Meter standard test lead kit; Yellow test lead for mA simulation; Protective holster; Carrying case; Rechargeable battery pack; AC power adapter & power cord; Product Reference CD; Data logging software

Order Code	1+	2+	5+
169-5353	609.00	602.91	596.88

MicroMapper



MMP-50



MMP-KIT



MMP-TTK

MicroMapper™ Pro

- Simplifies voice/data/video cable testing with a 'quick check' test for twisted pair and coax connectors.
- Test terminations, length, cable ID, and location reliably and quickly with one tester.
- Full wiremap including split pair and distance to break clearly displayed on a large LCD.
- Locates cable with built-in analog toner
- Identifies cable with up to eight optional cable IDs

MicroMapper™ Pro Kit

- Comprehensive testing, locating, and ID tagging for voice/data/video cable
- Verifies voice/data/video cable wiremap with a 'Quick-check' test
- Tests twisted pair and coax connectors without adapters
- Locates cable with built-in analog toner and included Pro3000 probe
- Identifies cable with up to eight included cable IDs

MMP-KIT Includes:

MicroMapper™ Pro VDV Cable Tester, Pro3000™ Tone Probe, # 1-8 Cable IDs, F-type adapter, multi-language Getting Started Guide, batteries

MMP-TTK Includes:

MicroMapper™ Pro VDV Cable Tester, #1 Cable ID, F-type adapter, multi-language Getting Started Guide, Pro3000™ Probe, IS50 Pro-Tool™ Kit, batteries, and deluxe Fluke Networks carry case

Mfrs. List No.	Order Code	Price Each	
		1+	3+
MMP-50	169-9369	188.16	179.20
MMP-KIT	169-9370	302.40	287.84
MMP-TTK	169-9371	339.36	322.56
MMP-ID1	169-9372	22.40	21.28
MMP-IDK28	169-9373	97.44	92.96

DTX CableAnalyser


SFPOWERMETER



SFPSINGLEMODESOURCE

SimpliFiber Pro is an improved fiber test set that simplifies and shortens the front-line testing process by reducing the multiple steps and using a simultaneous dual-wavelength testing feature to measure the range of power levels in just half the time. Allowing for a non-touch solution to check for a live fiber without having to plug into ports and enabling a network technician to do time-consuming procedures that normally require a team



FINDFIBER



FTK2000



FTK1000



FTK1300



FTK1350



FTK1450

SimpliFiber Pro singlemode 1310/1500 source

FindFiber: One FindFiber Remote ID source

FindFiber-6: Set of six FindFiber Remote ID sources

FTK1000 Basic Fiber Verification Kit: Includes SimpliFiber Pro optical power meter, 850/1300 multimode source, and carrying case

FTK1300 Multimode Fiber Verification Kit: Includes SimpliFiber Pro optical power meter, 850/1300 multimode source, VisiFault VFL, FT120 FiberViewer, FindFiber Remote ID sources, and carrying case; ST and LC adapter

FTK1350 Multimode Fiber Verification Kit with FT500 FiberInspector Mini: Includes SimpliFiber Pro optical power meter, 850/1300 multimode source VisiFault VFL, FT500 FiberInspector Mini, FindFiber Remote ID sources, and carrying case; ST and LC adapter

FTK1450 Complete Fiber Verification Kit with FT500 FiberInspector Mini: Includes SimpliFiber Pro optical power meter, 850/1300 multimode source, 1310/1550 singlemode source, VisiFault VFL, FT500 FiberInspector Mini, two FindFiber Remote ID sources, and carrying case; ST and LC adapter, NFC-Kit-Box fiber optic cleaning kit

FTK2000 Singlemode Fiber Verification Kit: Includes SimpliFiber Pro optical power meter, 1310/1550 singlemode source, and carrying case

Model	Description
NFK1-SMPLX-SC	62.5 uM simplex reference cord set (SC/SC x 2); special patented damage-resistant end-faces
NFK1-SMPLX-LC	62.5 uM simplex reference cord set (SC/LC, LC/LC); special patented damage-resistant end-faces
NFK1-SMPLX-ST	62.5 uM simplex reference cord set (SC/ST, ST/ST); special patented damage-resistant end-faces
NFK2-SMPLX-SC	50 uM simplex reference cord set (SC/SC x 2); special patented damage-resistant end-faces
NFK2-SMPLX-LC	50 uM simplex reference cord set (SC/LC, LC/LC); special patented damage-resistant end-faces
NFK2-SMPLX-ST	50 uM simplex reference cord set (SC/ST, ST/ST); special patented damage-resistant end-faces
NFK3-SMPLX-SC	SM simplex reference cord set (SC/SC x 2); special patented damage-resistant end-faces
NFK3-SMPLX-LC	SM simplex reference cord set (SC/LC, LC/LC); special patented damage-resistant end-faces
NFK3-SMPLX-ST	SM simplex reference cord set (SC/ST, ST/ST); special patented damage-resistant end-faces
NFA-SC-SINGLE	SC interchangeable adapter
NFA-LC-SINGLE	LC interchangeable adapter
NFA-ST-SINGLE	ST interchangeable adapter

Mfrs. List No.	Order Code	Price Each	
		1+	3+
SFPOWERMETER	169-9333	700.00	665.28
SFPSINGLEMODESOURCE	169-9334	1,282.40	1,218.56
FINDFIBER	169-9335	113.12	107.52
FINDFIBER-6	169-9336	680.96	647.36
FTK1000	169-9338	1,509.76	1,434.72
FTK1300	169-9339	2,244.48	2,132.48
FTK1350	169-9340	3,116.96	2,961.28
FTK1450	169-9341	4,575.20	4,346.72
FTK2000	169-9342	2,115.68	2,010.40
NFK1-SMPLX-SC	169-9343	76.16	72.80
NFK1-SMPLX-LC	169-9344	76.16	72.80
NFK1-SMPLX-ST	169-9345	76.16	72.80
NFK2-SMPLX-SC	169-9346	76.16	72.80
NFK2-SMPLX-LC	169-9347	76.16	72.80
NFK2-SMPLX-ST	169-9348	76.16	72.80
NFK3-SMPLX-SC	169-9352	76.16	72.80
NFK3-SMPLX-LC	169-9353	76.16	72.80
NFK3-SMPLX-ST	169-9354	76.16	72.80
NFA-SC-SINGLE	169-9355	73.92	70.56
NFA-LC-SINGLE	169-9356	73.92	70.56
NFA-ST-SINGLE	169-9357	73.92	70.56

700 products added online every week

See our pick of the hottest products and latest technologies in 'What's New?' at www.farnell.com

DTX CableAnalyser



DTX-LT INTL

This revolutionary new platform significantly reduces total time to certify by improving every aspect of the testing process. It all starts with a Cat 6 Autotest time that's three times faster than other testers - and fiber testing that's five times faster. But that's just the beginning. DTX also gives you Level IV Accuracy, unmatched troubleshooting diagnostics, 900 MHz of testing bandwidth, 12-hour battery life, and nearly instant setup and reporting

DTX-MFM2 is a set of two DTX Multimode Fiber Modules, each incorporating:

- 850 nm and 1300 nm LED sources combined into a single output port
- 850/1300/1310/1550 nm power meter
- Integrated VFL

DTX-SFM2 is a set of two DTX Singlemode Fiber Modules, each incorporating:

- 1310 nm and 1550 nm laser sources combined into a single output port
- 850/1300/1310/1550 nm power meter
- Integrated VFL

The DTX Compact OTDR is a full featured Optical Time Domain Reflectometer (OTDR) module that snaps onto a DTX CableAnalyser. In addition to copper testing, it makes this powerful certification tool a complete, easy-to-use OTDR that shoots and analyses traces on singlemode and multimode fiber.

The DTX-Coax Test Adapters give you the ability to test video distribution cabling or legacy data network coaxial cabling with the DTX CableAnalyser™ Series

DTX-NSM: Certify cabling, verify network service availability, verify link connectivity and document in one LinkWare report. Documentation provides clear evidence that the job was done right.

The DTX-PCU6S Patch Cord Test Solution gives you a simple, cost-effective way to quickly verify whether a patch cord meets TIA/ISO performance specifications

Mfrs. List No.	Order Code	1+	3+	Price Each
DTX-LT INTL	169-9358	5,576.48	5,297.60	
DTX-MFM2	169-9359	3,271.52	3,108.00	
DTX-SFM2	169-9360	4,500.16	4,275.04	
DTX-OTDR-KIT	169-9361	6,956.32	6,608.00	
DTX-COAX	169-9363	491.68	467.04	
DTX-NSM	169-9364	862.40	819.84	
DTX-PCU6S	169-9365	577.92	548.80	
DTX-CHA001AS	169-9366	203.84	193.76	
DTX-PLA002PRP	169-9367	51.52	49.28	
DTX-PLA002S	169-9368	622.72	591.36	

50 - 150 Watt Single Output



- High MTBF up to 700 000 hours
- Operating temperature up to 70 °C
- Very High efficiency up to 87%
- Compact
- Withstands 300VAC surges (5s)

Applications

- Test & Measurement
- General Purpose
- Automated Service
- LED Lighting & Displays
- Factory Automation

Input Voltage: 88-264 VAC, except LS150 Switch selectable for 115 or 230VAC
 Input Frequency: 47-63 Hz
 Leakage Current: < 1mA
 Cooling: Convection
 Operating Temperature: -25 to +70°C. Derate linearly to 50% load from +50 to +70°C
 Safety Approvals: UL recognised, IEC, EN, CE
 EMI: EN55011/EN55022-B, FCC-B Conducted & Radiated

Mfrs. List No.	Output Voltage (V)	Output Current (A)	Output Power (W)	Efficiency (%)	Order Code	Price Each
LS50-3.3	3.3	10	33	75	165-7435	33.04
LS50-5	5	10	50	80	165-7436	33.04
LS50-12	12	4.2	50.4	84	165-7437	33.04
LS50-15	15	3.4	51	85	165-7438	33.04
LS50-24	24	2.2	52.8	86	165-7439	33.04
LS50-36	36	1.4	50.4	86	165-7440	33.04
LS50-48	48	1.1	52.8	86	165-7441	33.04
LS75-3.3	3.3	15	49.5	75	165-7442	37.41
LS75-5	5	12	60	79	165-7443	37.41
LS75-12	12	6	72	84	165-7444	37.41

Mfrs. List No.	Output Voltage (V)	Output Current (A)	Output Power (W)	Efficiency (%)	Order Code	Price Each
LS75-15	15	5	75	85	165-7445	37.41
LS75-24	24	3.2	76.8	86	165-7447	37.41
LS75-36	36	2.1	75.6	86	165-7448	37.41
LS75-48	48	1.6	76.8	87	165-7449	37.41
LS100-3.3	3.3	20	66	75	165-7450	52.19
LS100-5	5	16	80	79	165-7451	52.19
LS100-12	12	8.5	102	82	165-7452	52.19
LS100-15	15	7	105	84	165-7453	52.19
LS100-24	24	4.5	108	86	165-7454	52.19
LS100-36	36	3	108	86	165-7455	52.19
LS100-48	48	2.3	110.4	86	165-7456	52.19
LS150-3.3	3.3	30	99	75	165-7457	54.54
LS150-5	5	26	130	79	165-7459	54.54
LS150-12	12	12.5	150	83	165-7461	54.54
LS150-15	15	10	150	85	165-7462	54.54
LS150-24	24	6.5	156	86	165-7463	54.54
LS150-36	36	4.3	154.8	87	165-7464	54.54
LS150-48	48	3.3	158.4	87	165-7465	54.54

140 Watt Single Output

Industrial and Medical Approvals



- High Efficiency Resonant Topology
- High Power Density 7.9 W/in³
- 120/148 W - Convection/Forced-cooled
- 12 V Fan Output as Standard
- Remote Sense as Standard
- Dual fused
- 3 year warranty

ECM140: H = 31.8, W = 127, D = 76.2mm

Input Voltage: 80-264 Vac (120-370 Vdc), Derate at <90 Vac input
 Line Regulation: ±0.5% max.
 Load Regulation: ±1%
 Ripple & Noise: 1% pk-pk
 Efficiency: Typically 88%
 Operating Temperature: 0°C to +70°C consult datasheet for derating
 Safety Approvals: UL, CSA, TUV, CE
 EMC: EN55022 B conducted, EN55022 A radiated

Mfrs. List No.	Output Voltage	Output Current (Convection)	Output Current (with 10 CFM airflow)	Fan Output
ECM140US12	12V	10A	11.7A	12.0V / 0.5A
ECM140US15	15V	8A	9.3A	12.0V / 0.5A
ECM140US18	18V	6.6A	7.7A	12.0V / 0.5A
ECM140US24	24V	5A	5.8A	12.0V / 0.5A
ECM140US48	48V	2.5A	2.9A	12.0V / 0.5A

Mfrs. List No.	Order Code	1+	5+	10+	25+
ECM140US12	162-4685	81.76	79.31	76.85	73.58
ECM140US15	162-4686	81.76	79.31	76.85	73.58
ECM140US18	162-4687	81.76	79.31	76.85	73.58
ECM140US24	162-4688	81.76	79.31	76.85	73.58
ECM140US48	162-4689	81.76	79.31	76.85	73.58

TBL Series

15-150Watt, Low profile, DIN-Rail



- Low profile case, module height only 55mm
- Fits into flat control panels used in building automation
- Safety class II
- Short circuit and overload protection
- Adjustable output voltage
- UL 508 listed, UL 1310 approvals
- 3 years product warranty

Input voltage range: 85-264 VAC, 47-63 Hz
 Output regulation: ± 1 % max.
 Output voltage adjustment range: 5 V models: 5.0-5.2 VDC, 12 V models: 12-16 VDC, 24 V models: 24-28 VDC
 Ripple & noise: <100 mV pk-pk (20 MHz BW)
 EMI emission: EN 55011, class B, EN 55022, class B, EN 61000-6-3
 EMC immunity: EN 61000-6-2
 Output current limitation: 100-150 % I_{max}. (automatic recovery)
 Efficiency: 80 % typ.
 Operating temperature: -25°C to +70°C, above 60°C derating 2.5 %/K
 Safety standards / approvals: IEC/EN 60950-1, EN 50178, EN 60204, EN 61558-2-8
 IEC 60068-2-6 / IEC 60068-2-27
 Vibration/Shock: IEC 60068-2-6 / IEC 60068-2-27

Mfrs. List No.	Output (W/WA)	Order Code	Mfrs. List No.	Output (W/WA)	Order Code
TBL 015-105	12/5/2.4	163-5217	TBL 060-112	54/12/4.5	163-5224
TBL 015-112	15/12/1.25	163-5218	TBL 060-124	60/24/2.5	163-5225
TBL 015-124	15/24/630	163-5221	TBL 090-112	72/12/6	163-5226
TBL 030-112	30/12/2.5	163-5222	TBL 090-124	90/24/3.75	163-5227
TBL 030-124	30/24/1.25	163-5223			

Mfrs. List No.	Order Code	Price Each			
		1+	5+	10+	25+
TBL 015-105	163-5217	36.40	34.94	33.20	31.53
TBL 015-112	163-5218	34.72	33.33	31.66	30.07
TBL 015-124	163-5221	34.27	32.89	31.25	29.69
TBL 030-112	163-5222	43.34	41.61	39.52	37.54
TBL 030-124	163-5223	41.44	39.78	37.79	35.90
TBL 060-112	163-5224	58.24	55.91	53.11	50.46
TBL 060-124	163-5225	55.89	53.65	50.96	48.42
TBL 090-112	163-5226	73.36	70.43	66.90	63.55
TBL 090-124	163-5227	68.21	65.48	62.20	59.09

Vehicle DC to DC Converters

Regulated



A compact vehicle DC to DC converter that plugs directly into a 12V car cigar lighter

- 1.5, 3, 4.5, 6, 7.5, 9, 12V selectable output
- Flush voltage selector switch to prevent any accidental switching of the output voltage
- Fully IC regulated output
- Current rating 1.5/3V=300mA, 4.5/6V=500mA, 7.5/9V=800mA, 12V=1.2A
- Outputs via 6 interchangeable output connectors
- Short circuit protection
- Automatic thermal and overload cut-off

Order Code	Price Each		
	1+	5+	10+
121-7060	5.38	5.34	5.13

Vehicle DC to DC Converters

Regulated



A compact vehicle DC to DC converter that plugs directly into a 12V car cigar lighter

- 1.5, 3, 4.5, 6, 7.5, 9, 12Vdc selectable output
- Flush voltage selector switch to prevent any accidental switching of the output voltage
- 12V or 24V dc input
- Fully regulated output
- 2A Current rating
- Outputs via 6 interchangeable output connectors
- Short circuit protection
- Automatic thermal and overload cut-off

Order Code	Price Each		
	1+	5+	10+
121-7058	8.05	8.01	7.49

15 Watt Single Output Desktop PSUs

Compact External



H = 36, W = 38, D = 91mm

Input Voltage 90 - 264VAC
 Input Frequency 47 - 63 Hz
 Input Current 0.4 A at 115 VAC
 Efficiency 85% typical
 Ripple & Noise 1% max pk-pk
 Total Regulation ±3-7%, model dependant
 Operating Temperature 0°C to 70°C, derate from 40°C
 MTBF 300 kHrs to MIL-STD-217F
 Safety Approvals EN60950-1:2001, UL/cUL60950-1, CCC, CE
 Emissions EN55022 FCC Part-15C Level B Conducted & Radiated

Mfrs. List No.	Power Rating (W)	Output Voltage (V)	Output Current (A)	Order Code
AEL15US03	8	3.3	2.5	163-3333
AEL15US05	12	5	2.4	163-3334
AEL15US08	15	8	1.87	163-3335
AEL15US09	15	9	1.66	163-3336
AEL15US12	15	12	1.25	163-3337
AEL15US15	15	15	1	163-3339

Mfrs. List No.	Power	Output	Output	Output
AEL15US18	15	18	830	163-3341
AEL15US24	15	24	620	163-3342
AEL15US30	15	30	500	163-3343
AEL15US36	15	36	420	163-3344
AEL15US48	15	48	310	163-3345

30 Watt Single Output Medical Desktop PSUs

Compact External



H = 30, W = 110, D = 50mm

Input Voltage 90 - 264VAC
 Input Frequency 47 - 63 Hz
 Input Current 0.6 A rms max
 Inrush Current 50 A max at 264 VAC
 Line Regulation ±1%
 Ripple & Noise 1% max, 20 MHz Bandwidth
 Operating Temperature 0°C to 60°C
 MTBF 500 kHrs to MIL-STD-217F
 Safety Approvals UL60601-1, EN60601-1, IEC60601-1, CE Mark
 Emissions EN55011 Level B conducted & radiated

Mfrs. List No.	Power Rating (W)	Output Voltage (V)	Output Current (A)	Efficiency (%)	Order Code
PDM30US05	20	5	4	74	162-5685
PDM30US09	27	9	3	81	162-5686
PDM30US12	30	12	2.5	82	162-5687
PDM30US15	30	15	2	83	162-5689
PDM30US18	30	18	1.65	83	162-5691
PDM30US24	30	24	1.25	83	162-5692

Mfrs. List No.	Order Code	Price Each			
		1+	5+	10+	25+
PDM30US	All Order Codes	38.08	36.94	35.80	34.27

72W Single Output External PSUs



Dims (WxHxD) : 66 x 165 x 98mm

- Standard 5-year manufacturer warranty
- Wide Range Universal AC input
- Protected against short circuit, overload, overvoltage and over temperature
- 100% testing and burn-in
- Fully enclosed plastic Case
- International approvals (UL, CSA, CE)
- 3-pin IEC320/C14 mains socket inlet

Input voltage 90-264 VAC, 47/63 Hz
 Line regulation ±1%
 Load regulation ±5%
 Ripple Noise ±1% pk - pk max
 EMC Emissions: EN55022 and FCC Part 115, Class B. Conducted and Radiated EN61000-3-2, -3; Immunity: EN61000-4-2, -3, -4, -5, -6, -8, -11
 Efficiency 82% typical
 MTBF >500,000

Mfrs. List No.	Power (W)	Voltage (V)	Current (A)	Order Code	1+	5+	10+
FWP7212	72	12	6	150-2594	53.72	52.09	50.55
FWP7215	72	15	4.8	150-2595	32.23	31.26	30.33
FWP7218	72	18	4	150-2596	32.23	31.26	30.33
FWP7224	72	24	3	150-2597	53.72	52.09	50.55
FWP7248	72	48	1.5	150-2598	53.72	52.09	50.55

Higher Efficiency, Higher Power Density, Uncompromised Reliability

Medical and Commercial Power Supplies



Commercial and Medical Grade

- 5W to 500W and more
- Custom Designs upon request

Open Frame, Encased and Desktop

- Universal AC Inputs
- Single & Multiple Outputs

KEY BENEFITS AND FEATURES

Ultra High Efficiency

- Higher Power Density
- Smaller Size

Uncompromised Reliability

- 5 Year Warranty
- Very High MTBF



"Global Partnership with Premier Farnell"

See our extended product range at www.elpac.com
or contact saleseurope@elpac.com

Alkaline Manganese- 'PROCELL'



- Industrial high performance alkaline batteries
- Corrosion free construction
- Long shelf life
- Special branding to reduce pilferage

	Voltage	Can Style	Capacity mAh	Max. Dimensions L W D	Weight (g) Approx.	Mfrs. List No.	Order Code
MN2400	1.5	AAA	1175	44.5 — 10.5	11	MN2400	249-816
MN1500	1.5	AA	2700	50.5 — 14.5	24	MN1500	249-828
MN1400	1.5	C	7750	50 — 26.2	67	MN1400	249-830
MN1300	1.5	D	18000	61.5 — 34.2	141	MN1300	249-841
MN1604	9	PP3	550	48.5 26.5 17.5	45	MN1604	249-853

Note: Supplied and priced in packs

10 Per Pack Can Style	Mfrs. List No.	Order Code	1+	+	+	+	+
AAA	MN2400	249-816	4.65	---	---	---	---
AA	MN1500	249-828	4.65	---	---	---	---
C	MN1400	249-830	13.37	---	---	---	---
D	MN1300	249-841	14.99	---	---	---	---
PP3	MN1604	249-853	28.41	---	---	---	---

1.5 Volt Lithium Iron Disulphide Ultimate Lithium



- Lasts 7x longer than standard alkaline batteries in digital cameras
- Up to 10 year shelf life
- Wide operating temperature range
- No significant loss in capacity at low temperatures
- Weighs 33% less than alkaline equivalent
- Thermal overload protected
- Ideal for use in high drain devices, such as digital cameras, MP3 players and GPS systems

A unique battery offering the advantages of lithium technology but with a 1.5 volt output.

Operating Temperature		-40°C to +60°C	
Voltage (V)	Can Style	Typical Capacity (mAh)	Weight (g)
1.5	AA	3000	15
1.5	AAA	1250	8

Can Style	Pack Qty	Order Code	1+	10+	25+	50+	100+
AA	2	149-4849	5.84	5.62	5.44	5.25	4.83
AA	4	149-4850	10.32	9.90	9.52	9.18	8.69
AAA	2	149-4851	5.84	5.62	5.44	5.25	4.83
AAA	4	149-4852	10.32	9.90	9.52	9.18	8.69

NiCd/NiMH Desktop Charger

Basic 5 Plus



H=54, W=174, D=142mm

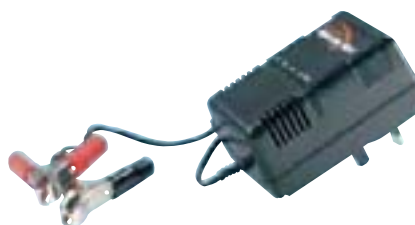
- Desktop charger for 1-4 AAA, AA, C or D type batteries or 1-2 9V PP3 type batteries
- Automatic matching of charging current
- Charges both NiCd/NiMH batteries
- LED charge status indication
- Reverse polarity protection
- 230V ac mains adaptor supplied
- 3 year manufacturer's warranty

Battery Type NiCd / NiMH	Capacity (mAh)	Charge Current (mA)	Charge Time (Hrs)
AAA	170-1000	50	4hrs 50mins - 28hrs
AA	700-2700	150	6hrs 30mins - 25hrs 15mins
C	1500-5000	200	10hrs 30mins - 35hrs
D	1500-10000	200	10hrs 30 mins - 70hrs
9V	120-250	15	11hrs 15mins - 23hrs 20mins

	Mfrs. List No.	Order Code	1+	Price Each 5+	10+
Basic 5 Plus	5207303/UK	129-4241	10.04	9.33	8.88

Plug-in Charger for Lead Acid Rechargeable Batteries

ALCS 2-24A



- Automatic charger for lead acid rechargeable batteries from 2-24V and 2-24Ah
- Automatic adjustment to the voltage of battery being charged
- LED indication of cell voltage selected
- LED charging indication
- Over charge protection
- Trickle charge after full charge
- Short-circuit and reverse polarity protection
- Supplied with crocodile clip connectors
- 3 years manufacturer's warranty

Charging-time table (for empty rechargeable batteries):

Voltage	Final Charge Voltage	Charging Current	Trickle Charge	Charging Time
2 V	2.3 V	900 mA	20mA	40min/500mAh
6 V	6.9 V	700 mA	20mA	50min/500mAh
12 V	13.8 V	600 mA	20mA	60min/500mAh
24 V	27.6 V	300 mA	20mA	120min/500mAh

Mfrs. List No.	Order Code	1+	Price Each 5+	10+
ALCS2-24A UK	129-4244	17.15	15.90	15.24
ALCS2-24A Euro	120-5745	16.22	---	---

Zinc Air - EasyTab™

Hearing Aid



- 1.4V Zinc Air batteries
- Improved performance-up to 30% longer life than previous Duracell hearing aid batteries
- Easy to open package and remove the batteries
- Easy to insert into your hearing aid
- Colour coded for correct battery selection

Type	Capacity (mAh)	Max. L	Dimensions Dia.	Equivalents	Order Code
DA13	210	5.4	7.9	PR48, A13, V13A, PR13	432-7287
DA10	50	3.6	5.6	PR70, V10AT, V230A, PZA230	432-7299
DA312	105	3.6	7.8	PR41, A312, V312A, PR312	432-7305
DA675	510	5.4	11.6	PR44, A675, V675A, PR675	432-7317

Type	Pack Qty	Order Code	1+	Price per Pack 10+	20+	100+
DA13	6	432-7287	4.82	4.60	4.47	4.24
DA10	6	432-7299	4.82	4.60	4.47	4.24
DA312	6	432-7305	2.84	2.71	2.62	2.50
DA675	6	432-7317	4.82	4.60	4.47	4.24

FREE global legislation support



RoHS, REACH, WEEE, EuP, Batteries Directive - we've got it covered at:
www.global-legislation.com

Snap-On



Snap-on connector for use with PP3 and PP6 batteries.

Type 1 replaces the BH9 connector. Type 2 has a rigid plastic housing with strain relief.

10 Per Pack		Price Per Pack			
Type	Order Code	1+	25+	100+	
1	118-3123	1.62	1.36	1.21	
2	118-3124	2.96	2.73	2.48	

Digital Microscope

Dino-Lite



Digital Microscope

Studied and designed for a professional use, Dino-Lite is very compact microscope product range which allows the users all high standard shootings (pictures and videos) even in real time and has a zoom feature that may magnify up to 500X. Measurements features such as lines, angles, diameters and radius, calibration as well are available.

All the following products are sold with professional rack AM35B or standard rack AMITA. Professional Rack AM35B is also available as a spare parts in single packaging.

Practical Uses:

- Quality control in industrial field
- After-Sales Services
- Technical teleconferences
- Research and science

Digital Microscope with Rack AMITA

Rack AM35B

Features:

- MicroTouch snapshot
- Video frame rate: up to 30fps
- Built-in 8 white-light LED illumination
- Software: DinoCapture with support for measurement functions, calibration option and additional digital zoom
- Interface: High speed USB image transmission (PC)

Resolution	Adjustable magnifications:	Delivered rack	Order Code
1.3 M pixels (1280 x 1024)	10 x ~50x, 200x	AMITA	164-0612
1.3 M pixels (1280 x 1024)	10 x ~50x, 200x	AM35B	168-5819
1.3 M pixels (1280 x 1024)	10x~20x, 20x~92x	AM35B	168-5821
1.3 M pixels (1280 x 1024)	10 x ~50x, 200x	AM35B	168-5822
1.3 M pixels (1280 x 1024)	500x	AM35B	168-5823
640* 480pixels (VGA)	10x ~50x, 200x	AM35B	169-8164

Description	Mfrs. List No.	Order Code	Price Each		
			1+	3+	5+
Digital Microscope with rack AMITA	413T-A	164-0612	334.88	330.40	323.68
Digital Microscope with rack AM35B	413T-X	168-5819	442.40	420.00	397.60
Digital Microscope with rack AM35B	413TL-X	168-5821	464.80	442.40	420.00
Digital Microscope with rack AM35B	413TZ-X	168-5822	480.48	446.88	431.20
Digital Microscope with rack AM35B	413TS-X	168-5823	435.68	413.28	390.88
Digital Microscope with rack AM35B	313PLUS-X	169-8164	280.00	267.68	256.48
Professional Rack	AM35B	164-0613	128.80	122.08	120.38

Digital Microscope, USB



- Digital microscope with image capture facility
- Manual focus range from 10mm
- 10x - 200x magnification
- 4x White LEDs provide illumination in any conditions
- Software (supplied) shows live feed on your monitor/notebook
- Capture still images and video up to 1280x960 resolution (640x480 pixel sensor)

- TWAIN compatible
- USB interface with 1.4m cable
- Supports Win 98SE/ME/2000/XP or later

- Dimensions (HxWxD): 33x33x112mm
- Contents: Microscope, software and user guide.

MICROSCOPE, DIGITAL, USB	Mfrs. List No.	Order Code	Price Each		
			1+	3+	10+
	D00997	169-3470	66.08	61.60	54.88

Handheld Metal Magnifier with LEDs



- Up to 12 LED lights with high-quality illumination
- Lighting adjustable, min. 6 and max. 12 LEDs
- Quality 88mm optical glass lens
- Durable, zinc alloy handle

- Easy to transport and store
- Protective case is included
- Batteries (1.5V x 2 AA), to be ordered separately

Description	Mfrs. List No.	Order Code	Price Each		
			1+	5+	10+
Handheld Metal Magnifier with LEDs	MA-017	166-6223	22.85	21.69	20.55
Battery 1.5V x 2AA	V4006	304-1761	0.65	0.58	0.54

Magnifier With 2 Arms



- Rimless Optical Lens Magnifier with Detail Inset
- Sturdy Alloy Clamp with Protective Coated Clip holds Magnifier firmly
- Stands on Desk or Tabletop with Legs Pulled Out
- Flexible Goose Neck adjusts to any position
- 2 LED Lights can also be used as a Reading Light

Description	Mfrs. List No.	Order Code	Price Each		
			1+	5+	10+
Two-Arms Clip/Stand Magnifier	MA-018	166-6224	22.85	21.69	20.55

Standard Round Magnifier



- ABS plastic magnifier with a 75mm \varnothing acrylic lens
- Main lens gives a x2 magnification with an inset giving a x4 magnification

Mfrs List No.	Order Code	Price Each	
		1+	5+
1130P	126-7537	7.94	7.48

150mm Digital Caliper



- LCD, internal/external measurement
- True mm/inch conversion
- Thumb roll for fine adjustment
- Supplied in fitted case with spare battery

Order Code	1+	Price Each	
		5+	10+
131-5135	23.88	21.53	



Electronic Tool Kit

EXCLUSIVI Pro'sKit



- A well equipped tool kit for the electronics engineer
- Supplied in a sturdy zipper case
- Exclusive to Farnell

Content

Micro-Cutting Plier
Clean Cut Micro Nipper
Heavy Duty Long Nose Plier
Desoldering Pump
Solder Aid Tool Kit
Slot Screwdrivers 2.0mm, 2.5mm, 3.0mm
Phillips Screwdrivers PH0, PH00
Tamperfree Torx Screwdrivers T5, T6, T7, T8, T10, T15
Extremely Fine And Sharp Tip Tweezer
Super Fine Tip Straight Tweezer
2 SMD Tweezers

4 PCS Plastic Tweezer Set
Precision Knife
40W Soldering Iron
Soldering Tip Cleaner
Helping Hand with Soldering Stand
3 PCS Anti-Static Alignment Tool Kit
Quick-Fasten ESD Wrist Band
Vacuum pick-up Tool
PLCC Extractor
IC Extractor
Inspection Mirror
Flux Bottle

Description	Mfrs. List No.	Order Code	Price Each		
			1+	5+	10+
Tool Kit (sold. iron with UK plug)	PK-4025C-40	166-6225	80.25	76.23	72.26
Tool Kit (sold. iron with EU plug)	PK-4025B-40	166-6226	80.25	76.23	72.26

Maintenance Tool Kit

EXCLUSIVI Pro'sKit



- A well equipped tool kit for the maintenance engineer
- Supplied in a durable, soft nylon zipper case
- Exclusive to Farnell

Content

Digital Multimeter
Mains Tester
40W Soldering Iron
Soldering Tip Cleaner
Desoldering Pump
VDE Combination Pliers
VDE Side Cutter
VDE Long Nose Pliers

VDE Cable Stripper
Electrician Scissors
Utility Knife
2 VDE Slot Screwdrivers: 3.0, 5.5
2 VDE Phillips Screwdrivers: PH1, PH2
Ball-Point Hex Key Set: 2.5, 3, 4, 5, 6, 8, 10
2 PCS Tweezer Set
Utility Component Storage Box
Adjustable Wrench

Description	Mfrs. List No.	Order Code	Price Each		
			1+	5+	10+
Tool Kit (sold. iron with UK plug)	PK-2807C-40	166-6227	68.77	65.32	61.88
Tool Kit (sold. iron with EU plug)	PK-2807B-40	166-6229	68.77	65.32	61.88

Electronic Tool Kit

Pro'sKit



New

Content (166-6221)

Long nose plier 135mm
Diagonal cutting plier 110mm
Lineman's plier 210mm
Long nose plier 150mm
Adjustable wrench 6"
Side cutting plier 165mm
5pcs needle file set
Soldering iron 40W 220V
Professional multimeter
Measuring tape(3M/10FT)
Solder core 63%, SN
7pcs hex key set
Wire stripper cutter
Utility knife (3 blades self loading)
Electrician's scissors
Solder aid tools

Desoldering pump
10pcs electronic combination wrench
Flux bottle (2pcs/pack)
Blow brush (ø62mm)
IC extractor
Slip joint plier 154mm
9 Pro-soft screwdrivers:
3.0 x75mm, #0 x75mm, 5.0 x75mm,
#1 x75mm, 6.0 x100mm, #2 x100mm,
#2 x250mm, 6.0x40mm, #2 x40mm
6 pcs electronic screwdriver set
Soldering tip cleaner
Super fine tip straight
Utility component storage box
Hobby Vise
Pallet for PK-5307
Aluminum frame tool case w/1 pallet

Description	Mfrs. List No.	Order Code	Price Each		
			1+	5+	10+
Tool Kit (sold. iron with UK plug)	PK-5307CM-40	166-6221	90.70	86.11	81.63
Tool Kit (sold. iron with EU plug)	PK-5307BM-40	166-6222	90.70	86.11	81.63

Premium Electricians Tool Kit



- Everything the apprentice or new starter would need, featuring:
- Designed with Electrician's, Service Engineers and Technicians in mind

- The Extra heavy duty polyester case has 50 internal pockets and padded internal compartments
- Giving enough room to store the full premium tool kit
- Case has carry strap and shoulder strap
- Contents: 1 each of the following:
 - VDE Combination Pliers 200mm, VDE Snipe Nose Pliers 170mm, VDE Side Cutters 160mm
 - VDE Slotted Screwdrivers 2.5x75, 4x100mm
 - VDE PH1, PH2, PZD 1, PZD 2 Screwdrivers
 - VDE Modulo 2 Screwdriver for size 2 terminal screws
 - Junior Hacksaw, Fusion Tape Measure 5m, Electrician's Pocket Knife and VDE Mainstester
 - Claw Hammer and Re-Threading Tool
- Dimensions: 430x190x320mm

Mfrs. List No.	Order Code	Price Each	
		1+	5+
595003	128-3227	177.62	167.56

69 Piece Tool Kit

DURATOOL



Contents:

- Junior hacksaw
- 150mm mini level
- 125mm x 250mm roofing square
- 3m measuring tape with rubber cover
- 16oz tubular hammer with rubber grip
- Ratchet screwdriver
- 60mm bit holder
- 200mm adjustable wrench with dipped handle
- 175mm (7") carpenter pencil
- 150mm (6") stainless ruler
- Trim knife with soft comfortable handle
- 2 x electric clips
- 150mm (6") combination pliers
- 150mm (6") long nose pliers
- 150mm (6") side cutting pliers
- 4 x screwdrivers with cushion grip:
 - Slotted: 5 x 75mm, 6 x 100mm
 - Phillips: PH1 x 75mm, PH2 x 100mm
- 9 x hex keys: 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10mm
- 40 x 25mm bits:
 - Slotted: 3, 3, 4, 4, 5, 5, 6, 6, 7, 7mm
 - Phillips: PH0, PH1, PH2, PH2, PH2, PH3
 - Pozidriv: PZ0, PZ1, PZ2, PZ2, PZ2, PZ3
 - Torx: T10, T15, T20, T25, T27, T30, T40
 - Square: S0, S1, S2, S2, S3
 - Hex: 3, 4, 5, 6, 7mm

Order Code	Price Each			
	1+	5+	10+	20+
136-1386	18.22	16.92	15.79	14.81

Electronic Professional Side Cutters



The Best Cutters You'll Ever Use



- High quality ball bearing steel
- 63 - 65 Rockwell Hardness (HRC)
- 2-Component ESD Ergonomic handles, soft comfortable gripping surface, hard plastic core
- Dual leaf springs in blue steel



- Matched bearing rings to minimize metal-metal contact and friction
- Lap joint with screw to achieve a high level of strength and precision
- Static dissipative ($10^6 - 10^8 \Omega/\text{sq.}$), oil, grease and wear-resistant
- All cutters available with three types of cutting blades:
 - Semi-flush: for soft and hard wire
 - Flush: for very precise cutting of soft wire
 - Full-flush: for a perfect cutting of soft wire

Head Size	Cut Type	Cutting Capacity	Overall length inch	mm	Mfrs. List No.	Order Code
Oval Head						
S	Semi-flush	0.2 - 1.2 mm	4.8"	123	D00998	169-6510
S	Flush	0.1 - 1.2 mm	4.8"	123	D00999	169-6511
S	Full-flush	0.1 - 1.0 mm	4.8"	123	D01000	169-6512
L	Semi-flush	0.3 - 1.6 mm	4.9"	125	D01001	169-6513
L	Flush	0.2 - 1.6 mm	4.9"	125	D01002	169-6514
L	Full-flush	0.2 - 1.2 mm	4.9"	125	D01003	169-6515
Tapered Head						
S	Semi-flush	0.2 - 1.2 mm	4.8"	123	D01004	169-6516
S	Flush	0.1 - 1.2 mm	4.8"	123	D01005	169-6517
S	Full-flush	0.1 - 1.0 mm	4.8"	123	D01006	169-6519
L	Semi-flush	0.3 - 1.6 mm	4.9"	125	D01007	169-6521
L	Flush	0.2 - 1.6 mm	4.9"	125	D01008	169-6522
L	Full-flush	0.2 - 1.2 mm	4.9"	125	D01009	169-6523
Tapered & Relieved Head						
S	Semi-flush	0.2 - 1.0 mm	4.8"	123	D01010	169-6524
S	Flush	0.1 - 1.0 mm	4.8"	123	D01011	169-6525
S	Full-flush	0.1 - 0.8 mm	4.8"	123	D01012	169-6526

Mfrs. List No.	Head Size	Cut Type	Order Code	1+	5+	10+
Oval Head						
D00998	S	Semi-flush	169-6510	26.04	23.97	23.46
D00999	S	Flush	169-6511	26.60	24.47	23.97
D01000	S	Full-flush	169-6512	27.16	24.98	24.47
D01001	L	Semi-flush	169-6513	27.16	24.98	24.47
D01002	L	Flush	169-6514	27.72	25.48	24.98
D01003	L	Full-flush	169-6515	28.28	26.04	25.48
Tapered Head						
D01004	S	Semi-flush	169-6516	26.04	23.97	23.46
D01005	S	Flush	169-6517	26.60	24.47	23.97
D01006	S	Full-flush	169-6519	27.16	24.98	24.47
D01007	L	Semi-flush	169-6521	27.16	24.98	24.47
D01008	L	Flush	169-6522	27.72	25.48	24.98
D01009	L	Full-flush	169-6523	27.94	25.70	25.14
Tapered & Relieved Head						
D01010	S	Semi-flush	169-6524	27.94	25.70	25.14
D01011	S	Flush	169-6525	27.94	25.70	25.14
D01012	S	Full-flush	169-6526	27.94	25.70	25.14

Electronic Professional Pliers



The Best Pliers You'll Ever Use



- High quality ball bearing steel
- 63 - 65 Rockwell Hardness (HRC)
- 2-Component ESD Ergonomic handles, soft comfortable gripping surface, hard plastic core
- Dual leaf springs in blue steel



- Matched bearing rings to minimize metal-metal contact and friction
- Lap joint with screw to achieve a high level of strength and precision
- Static dissipative ($10^6 - 10^8 \Omega/\text{sq.}$), oil, grease and wear-resistant

Mfrs. List No.	Jaw	Overall length inch	mm	Order Code	1+	5+	10+
Long Snipe Nose							
D01013	Smooth	5.6"	143	169-6527	23.52	21.62	21.17
D01014	Serrated	5.6"	143	169-6528	24.64	22.68	22.18
Snipe Nose							
D01015	Smooth	5.2"	133	169-6529	22.96	21.11	20.66
D01016	Serrated	5.2"	133	169-6530	24.08	22.18	21.67
Flat Nose							
D01017	Smooth	5.2"	133	169-6532	22.18	20.38	19.94
Round Nose							
D01018	Smooth	5.2"	133	169-6533	24.92	22.90	22.46

Precision Tweezer Sets



ESD-conductive



161-7215 (includes: 3.SA; 7A.SA; 12.SA.SMD; 13.SA.SMD)
 161-7216 (includes: 3.SA; 5.SA; 7A.SA; 12.SA.SMD; 13.SA.SMD)
 161-7218 (includes: 3.SA; 3C.SA; 5.SA; 7A.SA; 12.SA.SMD; 13.SA.SMD)

- The Set contains the most used precision tweezers
- Made of Anti-Magnetic Anti-Acid stainless Steel with ESD polyester epoxy coating ($10^5 - 10^6 \text{ ohm}$)
- Comfortable handling and insertion of SMD components

Mfrs. List No.	Type	Description	length
D00831	3.SA ESD	Sharp Tweezers	120
D00832	3C.SA ESD	Sharp Tweezers	110
D00833	5.SA ESD	Fine Tips Tweezers	110
D00834	7A.SA ESD	Fine Curved Tweezers	115
D00836	12.SA.SMD	SMD Tweezers for handling and positioning 2 and 3 lead SOT 45° bent	120
D00837	13.SA.SMD	SMD Tweezers for handling and positioning 1mm components	120

Mfrs. List No.	Order Code	1+	5+	10+
D00838	161-7215	33.54	32.20	30.86
D00839	161-7216	41.38	39.76	38.08
D00840	161-7218	44.74	42.95	41.16

PLCC Extractor Tool



- For removing PLCC type devices from their sockets
- Prevents damage to the IC packaging and socket
- Easy to use, simply squeeze the tool handle to extract
- Length: 98mm

Order Code	1+	5+	Price Each 20+	50+	200+
125-7169	3.45	3.08	2.84	2.71	2.39

15 Piece Precision Screwdriver Set



- Cushion handle provides super soft comfortable grip allowing use over prolonged periods
 - Supplied in a convenient plastic carry case
- Set contents:
 Slotted - 2 x 65mm, 2.5 x 65mm, 3 x 65mm, 4 x 65mm
 Phillips - PH000 x 65mm, PH00 x 65mm, PH0 x 65mm, PH1 x 65mm
 Torx - T6 x 50mm, T7 x 50mm, T8 x 50mm, T9 x 50mm, T10 x 50mm, T15 x 50mm, T20 x 50mm

Order Code	1+	5+	Price/Set 10+	20+	50+
144-7570	8.13	7.22	6.44	5.95	5.54

Fatmax™ Mobile Project Centre



HEAVY DUTY & DURABLE

- Metal legs and robust frame on both work surface and hand cart for maximum loading capacity
- Heavy duty wheels easy to maneuver on the site and down stairs

ULTIMATE FUNCTIONALITY

- Large work surface at an optimal work height of 85cm
- Telescopic cart handles for ergonomic hold and easy

maneuvering; to be pulled up when in hand cart position

- Compact packaging including few parts to assemble
- User friendly assembly and operation instructions included with safety precautions
- Easy conversion: 3 simple steps from work surface to hand cart and back
- Folds flat for easy storage in the vehicle or the work place

UNIQUE BENEFITS

- Integrated cable holder
- Clamps practically anything: versatile clamping, soldiers included to secure the object in place
- Clamping is easily adjustable with rotating handles
- Special insert for your drills or power tool to rest in on the work surface

Mfrs. List No.	Order Code	1+	6+	12+
93-972	169-6679	84.00	79.80	75.60

Stud Sensor 200 Centre Finder



- One Pass™ stud sensor detection - saves time
- Centre find technology - for improved performance
- Audible and LCD indicators
- Detects studs up to 19mm for use on plasterboard
- Includes live wire detection



Mfrs. List No.	Order Code	1+	6+	12+
77-720	169-6682	16.24	15.46	14.62

Tape Measure, Micropower-lock 5M/16"



- Versatile wide blades
- Mylar™ polyester film extends life of entire blade
- High-impact, ABS case with rubber over mold withstand rugged conditions
- Stronger spring ensures extra-long life and smooth



blade recoil

- Riveted, corrosion-resistant hook moves to allow for accurate inside/outside measurements
- easy-to-read, high-contrast blade for all light conditions
- Top-forward blade lock designed for easy locking and unlocking

Mfrs. List No.	Order Code	1+	6+	12+
33-553	169-6684	11.76	11.20	10.58

Sports Utility Quick Change Knife



- Multi-blade and multi-function knife
- Metallic body with soft grip handle for comfort
- 3" / 75mm serrated sport blade
- Standard utility blade for multi-purpose cutting
- One handed operation
- Blade slider extends the blade quickly and easily
- Wide thumb grip for easy operation

Mfrs. List No.	Order Code	1+	6+	12+
10-813	169-6655	18.98	18.03	17.08

Fatmax™ 6 PC Instrument Screwdrivers



- Contents
- PZ0 x 75mm
- Parallel 2.5mm x 50mm x 50mm, 3mm x 50mm
- Parallel 3mm x PH0 x 75mm

Mfrs. List No.	Order Code	1+	6+	12+
65-492	169-6675	19.60	18.65	17.64

Maxlife™ 369 Tripod Flashlight



- Bright-white 1.25 Watt LED light
- Spot-to-flood light focusing capability
- Innovative tripod design offers hands-free convenience
- Weather-resistant anodized aluminium space frame construction tripod legs
- Perfect for a project or emergency situation
- Multi-position head focuses light precisely where it's needed
- Low-power indicator light flashes so you're never caught in the dark
- Durable, impact-resistant design with design with a graphite ABS composite head and shatter-resistant polycarbonate lens
- Simple 3-position switch lets you choose Low, High or Off
- Runs on 3, 6 or 9 AA batteries (not included)

Mfrs. List No.	Order Code	1+	6+	8+
95-155	169-6676	26.77	25.42	24.08

3.6V Cordless Screwdriver



Technical Data	
Battery Capacity	1
Voltage	3.6V
No Load Speed	180rpm
Max. Torque	3N-m
Weight	0.3kg

Model: IX0 111



- Forward and reverse screwdriving with LED indicator
- Front power light
- Soft grip handle
- 2 finger trigger
- Battery life indicator
- Battery charger doubles as a useful tool-holder
- Supplied with 5 hour charger (with magnetic bit holder), selection of 12 screw-driver bits
- 2 year manufacturer's warranty

Order Code	Price Each		
	1+	3+	20+
167-7918	33.35	32.03	

200 Piece Accessory Kit

DREMEL



- 200 high quality Dremel accessories in a unique storage box
- Includes Dremel SpeedClic - an innovation that makes changing cut-off wheels quick and easy
- Box includes extra storage
- Includes accessories for applications such as carving, engraving, routing, grinding, sharpening, cleaning, polishing, cutting and sanding



Mfrs. List No.	Order Code	Price Each		
		1+	3+	20+
26150704JA	167-5589	46.42	44.11	

Cordless Drill/Screwdriver

DEWALT

DC940KB



12V drill/driver suitable for drilling and screw-driving applications. Three speed settings for optimum performance in high torque, normal use and high speed applications. Twenty two position adjustable torque control settings for precise screwdriving. 13mm keyless chuck with automatic spindle lock. Supplied with one hour charger, 2 x 2.6Ah Ni MH battery packs and heavy duty carry case.

Model Number	DC727KA
No Load Speed	0-450/0-1450/0-1800 rpm
Drilling Capacity Steel	13 mm
Drilling Capacity Wood	38 mm
Maximum Torque	48 N-m
Battery	2 x 2.6Ah Ni MH
Weight	2.3 kg

Description	Order Code	Price Each
DC940KB drill/driver	135-2967	222.88
Replacement battery DE9501-XJ	135-2987	66.08

"High Speed", 230V

DREMEL



- Multipro Model 3950 is a high speed multipurpose tool
- No transformer needed
- Powerful motor (10,000 rpm to 37,000 rpm)
- Light, compact and easy to handle
- Dual bearing shaft
- Precisely centred 3.2mm collet
- Shaft lock
- Supplied in a storage case with 40 accessories.

Drill L=200, Dia.=50

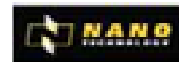
Accessories

	Mfrs. List No.	Order Code
Collet 2.4mm (3/32")	481	109-136
Collet 1.6mm (1/16")	482	109-137
Collet 0.8mm (1/32")	483	109-138
Cut off disc 22.3. (7/8") dia. 0.64 (0.025") thick. Supplied as a pack of 36	409	109-139
Mandrel for cut off disc	402	109-140
60 grit sanding drum 12.7mm (1/2") dia.	407	109-141
Flexible drive shaft, 1 MTR	2.615.022.5PD	109-142

	Price Each			
	Order Code	1+	4+	20+
Collet 2.4mm	109-136	1.39	1.32	1.29
Collet 1.6mm	109-137	2.78	2.64	2.56
Collet 0.8mm	109-138	2.78	2.64	2.56
Cut-off Disc (pk 36)	109-139	6.96	6.61	6.44
Disc mandrel	109-140	1.19	1.13	1.09
Sanding drum 60 Grit 1/2 Diameter	109-141	2.04	1.94	1.89
Collet 2.4mm	109-136	1.39	1.32	1.29
Router Table	725-5688	38.75	34.88	32.94

28 Volt Heavy Duty 3 Mode dedicated SDS-Plus Cordless Hammer

DEWALT



Standard Equipment

- 1 hour charger
- 2 batteries
- Multi-position side handle
- Grease
- Heavy duty carrying case



- Ideal for drilling anchors and fixing holes into concrete, brick and masonry from 4 mm to 26 mm
- 28 Volt Li-Ion technology delivers significantly improved user flexibility through 40% more runtime compared with 24 Volt, over double battery life and 80% full charge within 30 minutes charging
- Large 19 mm optimised hammer mechanism delivers corded drilling performance
- Efficient and compact gearbox for longer runtime and lighter weight
- Spring loaded battery latch system and guiderail for quick change and and secure battery fitment
- Internal mechanism connected to external housings via spring dampeners meaning significantly lower vibration, reduced user fatigue allowing longer operating periods

Voltage	28 V	Impact Energy	0-2700 ip
Battery Capacity	Li-Ion 2.2 Ah	Blows per Minute	4300 bpm
Power Output	450 Watts	Tool Holder	M16
No Load Speed	0-1150rpm		

Description	Mfrs. List No.	Order Code	Price Each	
			1+	5+
28 Volt SDS Hammer Drill	DC228KL-GB	166-4835	570.08	541.58
Multi Chemistry Charger	DE9135-GB	166-4845	99.68	94.70

24V Combi Drill

DURATOOL



Technical Data	
Battery Capacity	1.2Ah
Voltage	24V
Chuck	Keyless
Chuck Size	13mm
No Load Speed	900rpm
Hammer	Yes
Max. Torque	14 N-m
Drilling Capacity ∅:	
Wood	22mm
Steel	10mm
Masonry	13mm



Model: D00016

- Ideal for light trade applications
- 16 torque settings for driving different sizes of screws and drilling various materials
- Suitable for drilling wood, steel and masonry
- Forward and reverse action
- Supplied with 2 x batteries, 1 hour charger, 6 drill bits, 6 screwdriver bits, bit adaptor and blow moulded carry case

Description	Order Code	Price Each
24V Combi Drill	129-3121	38.09
Spare Battery	136-7036	8.98
Spare Charger	136-7037	7.80

10.8V Screwdriver - Cordless

GSR 10.8V-Li



10.8V Lithium-ion battery professional cordless screwdriver. Features a strong magnetic bit holder, soft grip handle for comfort, 10 stage adjustable torque settings plus 1 drill mode and in-built LED spot light. Supplied with 30 minute charger, 2 x battery packs, holster and soft durable fabric case.

Model	GSR 10.8V-Li
Voltage	10.8 V
No Load Speed	0-400 rpm
Tool Holder	6.35 mm
Battery	2 x 1.0Ah Li-ion
Weight	0.8 kg

Description	Order Code	Price Each
Screwdriver	135-8775	99.68
Replacement battery 10.8V Li	135-8776	45.35

Cordless Screwdriver

DC600KA



3.6V, 2 speed reverse action screwdriver. Features 3 stage pivot action adjustable soft grip handle and independent on/off switch for a light to illuminate work. 8 x adjustable torque settings. Supplied with charger, 2 x 1.2Ah Ni Cd battery packs and carry case.

Description	Order Code	Price Each
DC600KA screwdriver	135-2953	66.64
Replacement battery DE9054	135-2974	20.16

18V Mini Drill Kit

D00012



- Two-speed rotary tool kit
 - Ideal for electronics, craft and hobby work
 - Supplied with **60 various accessories**
 - Attractive aluminium carry and storage case with strong perspex window
- Kit contents: Mini drill, plug-in transformer with UK pins, accessories and carry case.

Voltage (Tool)	18V	Chuck Capacity	1-3.2mm
No Load Speed	8000-18000rpm	Mains Adaptor Input Voltage	230V

Model No.	Order Code	Price Each	
		1+	5+
D00012	129-3117	14.52	13.63

100 Accessory Kit



This accessory set includes the 100 best selling accessories in a handy tin box. The accessories can be easily stored in the foam insert or the included small plastic case. Accessories cover everything from drilling, cutting, polishing, engraving and grinding.

Mfrs. List No.
701

Order Code
149-6780

Price Each
1+
14.50

Heat Guns

DW340K



Variable temperature control and regulation. Removable front ring enables working in restricted places. Supplied with glass protection, spoon reflector, cone, fish tail surface nozzles and paint scraper.

Model Number	DW340K
Input Power	2000 W
Heat Settings	50-600 °C

Voltage
230V

Order Code
135-3006

Price Each
1+
32.48

18V Drill/Driver



Technical Data

Battery Capacity	1.2Ah
Voltage	18V
Chuck	Keyless
Chuck Size	10mm
No Load Speed	900rpm
Hammer	No
Max. Torque	10 N-m
Drilling Capacity \varnothing :	
Wood	16mm
Steel	6mm
Masonry	-

Model: D00013

- 16 torque settings
- Built-in bit holder

Supplied with battery, charger, 6 drill bits, 6 screwdriver bits, bit adaptor and blow moulded carry case

Description	Order Code	Price Each
18V Drill/Driver	129-3118	17.62
Spare Battery	129-3119	5.82
Spare Charger	129-3120	3.47

300 Series Multitool



230Volt, 125watt motor multi-tool. Variable speed 10000-33000rpm. Ergonomic design with soft grip and comfort switches. On board wrench storage and integrated hang hook. Multi-tool 300/25 is supplied with 25 x mixed accessories and storage case. Multi-tool 300/55 is supplied with flex-shaft 55 x mixed accessories and storage case.

Description	Order Code	Price Each
Multitool 300/25	135-8780	38.68

PCB Cleaner, 400ML



Highly effective PCB cleaner for the removal of light oils, fluxes, and grime. Excellent materials compatibility. Fast drying. Leaves no residue.



	Mfrs.		Price Each		
	List No.	Order Code	1+	6+	12+
PCB CLEANER, 400ML	6130004010	166-6245	6.12	5.82	5.53

Flux Remover, 400ml



FLUX REMOVER is a unique blend of solvents formulated to remove flux residues and uncured surface mount adhesives from printed circuitboards (PCB's). Flux Remover also effectively removes burnt-on flux residue, solder pastes and acrylic conformal coatings

- Excellent removal of flux residues from PCB's and electronic components.
- Penetrates quickly and evaporates completely after use leaving a clean, dry surface.
- Removes uncured surface mount adhesive residues from stencils and application equipment.
- Removes acrylic conformal coatings.



	Mfrs.		Price Each		
	List No.	Order Code	1+	6+	12+
FLUX REMOVER, 400ML	6130004040	166-6246	5.79	5.49	5.22

Cyanoacrylate Adhesive



D00683



- Easy to apply and bonds instantly on contact with mated surfaces. This adhesive is especially effective on plastics and rubbers.
- Solvent free, medium viscosity and fast curing.
- Exhibits excellent environmental resistance and is suited to general purpose applications.



Model	Size	Colour	Order Code	Price Each			
				1+	5+	10+	25+
D00683	50g	Clear	150-2810	15.72	15.25	14.78	14.35

Silicone Grease, Water Pot-able



- Plastic to plastic
- Rubber to rubber
- Rubber to plastic
- Plastic to metal
- Rubber to metal

Silicone greases are formulated to provide very durable, non-setting, workstable products used to lubricate, electrically insulate and act as a heat transfer medium. They provide excellent protection against moisture and other harsh environmental conditions. Silicone polymers in general exhibit good resistance and remain stable when operating in an environment with elevated temperatures and silicone greases are no exception

Size	Temp Range	Mfrs.		Price Each		
		List No.	Order Code	1+	5+	10+
75ml	-50 °C - 200 °C	SGM494	50G 166-7365	6.57	6.25	5.92

Potting & Encapsulation Compounds



PX439XS/BK - Excellent heat resistance to 200deg C - Excellent Thermal transfer properties - Flame retardant to UL94-V0 3mm thickness - High Chemical resistance - High electrical insulating characteristics



EL420C/NC - Water white clarity - Low viscosity - Long term UV stability - Low exotherm and shrinkage

EL583C is a very high performance self healing polyurethane resin system. EL583C has been designed to give environmental protection to a wide range of delicate electrical and electronic components and modules. Particularly suited to transducers, connectors and seals used in the automotive, telecommunications and defence industries.

Mfrs. List No.	Order Code	Price Each		
		1+	5+	10+
PX439XS/BK/100	166-4501	8.60	8.16	7.76
PX439XS/BK/250	166-4502	11.92	11.33	10.75
EL420C/NC/250	166-4504	13.50	12.81	12.19
EL420C/NC/250	166-4504	13.50	12.81	12.19
EL583C/NC/250	166-4506	16.30	15.49	14.72

Potting & Encapsulation Compunds



PX439XS/BK - Excellent heat resistance to 200deg C - Excellent Thermal transfer properties - Flame retardant to UL94-V0 3mm thickness - High Chemical resistance - High electrical insulating characteristics

EL420C/NC - Water white clarity - Low viscosity - Long term UV stability - Low exotherm and shrinkage

EL583C is a very high performance self healing polyurethane resin system. EL583C has been designed to give environmental protection to a wide range of delicate electrical and electronic components and modules. Particularly suited to transducers, connectors and seals used in the automotive, telecommunications and defence industries.

Mfrs. List No.	Order Code	Price Each		
		1+	5+	10+
PX439XS/BK/100	166-4501	8.60	8.16	7.76
PX439XS/BK/250	166-4502	11.92	11.33	10.75
EL420C/NC/250	166-4504	13.50	12.81	12.19
EL420C/NC/250	166-4504	13.50	12.81	12.19
EL583C/NC/250	166-4506	16.30	15.49	14.72

FREE technical support

Our trained engineers are here to help!



See inside front cover

See inside front cover

www.farnell.com

Flux Removers



Flux-Off Flux Removers are specially formulated to remove all types of rosin (types R, RA, RMA), rosin-based no clean, synthetic-based no clean (type SA) and water soluble (type OA) flux. All products are safe for use on plastics.



Product	Primary Flux Removed			Features				Cleaning Methods			
	Roslin-Based (R, RMA, RA, No Clean)	No Clean (SA-Synthetic)	Water Soluble	Non-Flammable	Fast Drying	Plastic Safe	Aerosol	Brush-Clean™ System	Ultra-sonics	Cold Immersion	
Flux-Off® CZ	X	X*	X	X	X	X	X	X			
Flux-Off® Rosin	X				X	X	X	X		X	
Flux-Off® Water Soluble			X			X		X			

* Test on synthetic no clean flux

Flux-Off™ CZ Flux remover

The first non-ozone depleting, non-flammable flux remover safe for use on plastics

- Nonflammable
- Removes flux from hard-to-reach areas
- All-Way Spray Valve allow use when inverted
- Fast Drying leaving no residue
- Cleans rosin, water soluble and most no-clean flux
- Contains CIROZANE™ CFC Replacement Chemistry made with HFE from 3M
- Available in BrushClean™ System for removing stubborn stains

Flux-Off™ Rosin

The plastic safe flux remover for cleaning rosin and rosin-based no-based flux

- Flammable
- Fast drying leaving no residue
- All-Way Spray Valve allows use when inverted
- Removes flux from hard-to-reach areas
- Available in BrushClean™ System for removing stubborn residues
- Liquid version available

Flux-Off™ Water Soluble

The plastic safe flux remover for removing water soluble flux from water sensitive areas

- Flammable
- All-Way Spray Valve allows use when inverted
- Removes flux from hard-to-reach areas
- Moderate to fast drying leaving no residue
- Available in BrushClean™ System for removing stubborn residues

Description	Size	Order Code	Price Each			
			1+	12+	36+	72+
Flux-Off™ CZ brush	0.2l	957-033	22.60	21.88	21.46	20.14
Flux-Off™ Rosin brush	0.2l	860-414	7.39	6.99	6.70	6.08
Flux-Off™ water soluble	0.2l	860-402	6.96	6.56	6.28	5.71

VeriClean™



- A moderately aggressive defluxer
- Safely removes a variety of contaminants including fluxes, paste & organic residues
- Fast drying & low aroma
- Safe on all components & many substrates
- Chemical family: Methyl Siloxanes
- Trigger grip compatible (1637213)
- RoHS & WEEE compliant.



Size	Mfrs. List No.	Order Code	Price Each		
			1+	12+	24+
320ml	MCC-DC1101	163-7372	9.49	8.92	8.72

Thermally Conductive Adhesive



Adhesive for power supply components, ink jet printerheads; bonding ICs with heat sinks

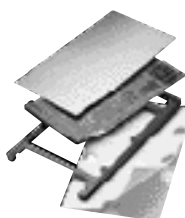


Shelf Life from Date of manufacture @ Room Temp, Months	Room Temp Working Time	Mins Heat Cure Time @ room Temp	Mfrs. List No.	Order Code
12	>4 days	120	SE 4486 CV 330ML	167-5172

Mfrs. List No.	Order Code	Price Each		
THERMAL ADH SE 4486 CV 330ML	167-5172	1+	12+	24+
		80.73	76.69	72.87

Nitrile Phenolic Resin

5 Minute Bond



Flexible, heat or solvent activated dry film adhesive composed of synthetic elastomer, thermoplastic, and thermo-setting resins.



- Flexible film adhesive with very high bond strength (5,000psi overlap shear)
- Rugged heat/environmental resistance
- Heat or solvent activated
- To provide additional heat and solvent resistance film can be lightly crosslinked using a post heat exposure
- May be die-cut to facilitate bonding of complex parts

Thickness	Dimensions	Mfrs. List No.	Order Code	Price Each		
				1+	6+	12+
2 mm	25mm x 33Mtr	70-0025-1113-0	167-6097	46.52	44.21	41.99
2 mm	25mm x 55Mtr	70-0060-2627-5	167-6098	93.06	88.40	83.98
2 mm	50mm x 55Mtr	70-0025-1124-7	167-6099	100.84	95.80	91.01
2 mm	75mm x 55Mtr	70-0060-0418-1	167-6100	186.10	176.80	167.96

Thread Locker

D00685



- Designed for permanent locking where disassembly / removal for maintenance is not required.
- Ideal for use on fasteners of 25mm and above, suspension bolts, bearing cap bolts and studs, motor transmissions and pump mounts.



Model	Size	Colour	Order Code	Price Each			
				1+	5+	10+	25+
D00685	50ml	Green	150-2812	15.14	14.68	14.24	13.82



i-Buy is the new online purchasing system, FREE from Farnell

Completely flexible and personalised to your company's needs, i-Buy provides many of the custom features of an expensive eProcurement system but at no cost to your company!

- ▶ Fully automated approval process for reduced paperwork
- ▶ Set individual users' spend and department budgets for complete cost control
- ▶ Download reports at line level detail for total transparency of your company's spend
- ▶ Fully integrated into the Farnell website, it's easy to use and easy to set up

Intelligent buying, free from Farnell
www.farnell.com/ibuy



Farnell

UL1430 Hook-up Wire (CSA REW XLPVC)



- UL recognised AWM 1430
- Tinned stranded copper conductors
- 24-18 AWG
- Operating temperature -55°C to +105°C
- Rated voltage 300V
- Colour-Coded, Irradiated PVC insulation
- Supplied in 304.8m reels

Irradiated PVC Insulated hook-up wire is exposed to controlled electron beam radiation which results in an insulation far superior to ordinary PVC. XLPVC withstands higher temperatures than ordinary PVC. Because of its ability to resist solder iron heat; it is the ideal material to use where high reliability is essential and particularly valuable in the wiring of tight, high density systems. XLPVC is tougher than ordinary PVC resulting in greatly improved abrasion and cut through resistance.

Gauge	Conductor Strand	Nominal Outside Dia	Maximum Current
24AWG	7 / 32AWG	1.42mm	7A
22AWG	7 / 30AWG	1.58mm	10A
20AWG	7 / 28AWG	1.75mm	13A
18AWG	7 / 26AWG	2.08mm	18A

Gauge	Order Code	Colour	Price Per Reel	
			1+	5+
24 AWG	161-9428	White	100.74	96.71
	161-9429	Black	100.74	96.71
	161-9430	Red	100.74	96.71
	161-9431	Green	100.74	96.71
	161-9432	Yellow	100.74	96.71
	161-9434	Blue	100.74	96.71
	161-9435	Brown	100.74	96.71
	161-9436	Orange	100.74	96.71
	161-9437	Grey	100.74	96.71
	161-9438	Violet	100.74	96.71
22 AWG	161-9439	White	121.27	116.42
	161-9440	Black	121.27	116.42
	161-9441	Red	121.27	116.42
	161-9442	Green	121.27	116.42
	161-9443	Yellow	121.27	116.42
	161-9444	Blue	121.27	116.42
	161-9446	Brown	121.27	116.42
	161-9447	Orange	121.27	116.42
	161-9448	Grey	121.27	116.42
	20 AWG	161-9449	White	139.94
161-9450		Black	139.94	134.34
161-9451		Red	139.94	134.34
161-9452		Green	139.94	134.34
161-9453		Yellow	139.94	134.34
161-9454		Blue	139.94	134.34
161-9455		Brown	139.94	134.34
161-9456		Orange	139.94	134.34
161-9458		Grey	139.94	134.34
161-9459		Violet	139.94	134.34
18 AWG	161-9460	White	175.39	168.37
	161-9461	Black	175.39	168.37
	161-9462	Red	175.39	168.37
	161-9463	Green	175.39	168.37
	161-9464	Yellow	175.39	168.37
	161-9465	Blue	175.39	168.37
	161-9466	Brown	175.39	168.37
	161-9467	Orange	175.39	168.37
	161-9468	Grey	175.39	168.37
	161-9471	Violet	175.39	168.37

Composite CCTV Cable



Jacketless - Riser Rated



- Designed CCTV/Surveillance applications
- No overall jacket
- Composite consists of 3 groups of cables
- Banana Peel® construction with coax, twisted pair and unshielded conductors
- 152.4m Reels

Cable Group 1 - Video RG 59/U Coax, 20 AWG (solid) Bare Copper
 Cable Group 2 - Control 1 Pair, Shielded, Stranded Bare Copper
 130-2866 = 23 AWG, 130-2867 = 22 AWG, 130-2868 = 18 AWG,
 Cable Group 3 - Power 2-Conductor, 18 AWG, Unshielded, Stranded Bare Copper

Nominal OA Diameter	Minimum Bend Radius	Maximum Pulling Tension	Mfters List No.	Order Code
10.44mm	104mm	115lb	500PTZ 000500	130-2866
10.64mm	106mm	120lb	501PTZ 000500	130-2867
11.46mm	114mm	140lb	502PTZ 000500	130-2868

Order Code	1+	5+	10+
130-2866	325.15	308.90	293.44
130-2867	363.01	344.85	327.61
130-2868	401.35	381.28	362.23

3183YAG - Artic Grade Three-Core Round Artic Flex



- Plain stranded copper conductors, Blue, Brown, Green/Yellow insulated.
- Sheathed overall in Arctic grade PVC
- Suitable for outdoor applications and where flexibility is required at sub-zero temperatures
- Available in Yellow, Blue or Orange sheath

Voltage rating	300/500V	Operating temperature		Current Rating (A)
		Min.	Max.	
Conductor Area (mm ²)	0.75	6.4	8	6
	1.5	8	9.8	15
	2.5	9.6	12	20

100m Reels Conductor Area	Order Code	Price Per Reel				
		1+	5+	10+	25+	
Yellow	0.75mm ²	120-2675	61.62	56.26	49.85	43.10
	1.5mm ²	163-7998	60.52	55.91	50.59	46.74
	2.5mm ²	163-8000	95.37	88.96	83.40	75.13
Blue	0.75mm ²	163-2291	45.29	41.35	36.65	31.68
	1.5mm ²	163-7999	60.52	55.91	50.59	46.74
	2.5mm ²	163-8001	95.37	88.96	83.40	75.13
Orange	0.75mm ²	120-2676	62.29	56.87	50.40	43.57
	1.5mm ²	120-2677	61.82	57.11	51.68	47.75
	2.5mm ²	120-2678	132.03	123.16	115.45	104.00

Continuous Length in 1m Multiples Conductor Area	Order Code	Price Per Metre	
		1+	25+
Yellow	0.75mm ²	163-8054	0.72
	1.5mm ²	163-8055	1.50
	2.5mm ²	163-8056	2.40
Blue	0.75mm ²	163-8057	0.72
	1.5mm ²	163-8058	1.50
	2.5mm ²	163-8059	2.40
Orange	0.75mm ²	163-8060	0.72
	1.5mm ²	163-8061	1.50
	2.5mm ²	163-8062	2.40

Switchgear Wire Type BU (BS6231)



- Switchgear and control wire to BS6231
- Plain annealed copper solid conductor
- Flexible PVC sheath
- Reel length 100m

Voltage rating	CSA	Current Rating (in free air)	Conductor Size (mm)		Nominal Outside Dia
			1 / 1.13mm	1 / 1.38mm	
600 V (conductors to earth) 1000V (between conductors)	1mm ²	15A	1 / 1.13mm	1 / 1.38mm	3.2mm
	1.5mm ²	20A	1 / 1.38mm	1 / 1.78mm	3.5mm
	2.5mm ²	28A	1 / 1.78mm		3.9mm

Colour	Order Code	Price Per Reel		
		1+	5+	
1.0mm ²	Black	146-5902	22.65	22.19
	Blue	146-5903	22.65	22.19
	Red	146-5904	22.65	22.19
	Green / Yellow	146-5905	22.65	22.19
1.5mm ²	Black	146-5906	26.33	25.22
	Blue	146-5907	26.33	25.22
	Green / Yellow	146-5911	26.33	25.22
2.5mm ²	Black	146-5912	43.23	41.98
	Blue	146-5913	43.23	41.98
	Red	146-5914	43.23	41.98
	Green / Yellow	146-5915	43.23	41.98

Olflex® Number Coded YY Control Cable



Control cable with numbered cores



The Olflex® Number Coded YY Control Cable is ideally suited for use as control, signal and power cable in a variety of applications. Its high flexibility ensures easy installation whilst the tough external sheathing will resist the effects of many acids, caustic solutions and various oils. Areas of use include machine tool engineering, plant installations, car production lines, bottling plants and other automated production facilities.

Cores are of electrolytic fine copper wire strands with a PVC-based insulation are laid up in black with white consecutive numbering. Outer sheath of a special PVC-based compound in silver-grey. With protective earth conductor.

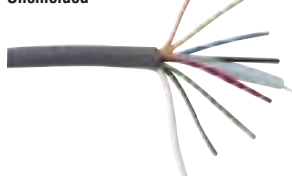
Minimum bend radius (flexing)	15 x diameter
Minimum bend radius (static)	4 x diameter
Temperature range (flexing)	-5 to 70°C
Temperature range (static)	-5 to 70°C
Working voltage	300/500 V
Conductor stranding	to BS6360 Class 5, VDE 0295 Class 5
Colour code	VDE 0293, BS6500 Black cores/white numbers
In accordance with VDE Regulations	VDE Reg No 7030
Length	50m

Mfrs. List No.	Number of cores	Nominal cable diameter	Order Code	Price Per Reel	
				1+	3+
0.75mm²					
1119103	3	5.7mm	117-9042	24.98	23.49
1119104	4	6.2mm	165-7595	31.12	29.87
1119105	5	6.7mm	120-4058	27.69	26.31
1119107	7	7.3mm	120-4059	37.78	35.90
1119112	12	9.9mm	120-4060	98.74	92.83
1mm²					
1119203	3	6mm	165-7596	30.08	28.87
1119204	4	6.5mm	165-7597	39.24	37.67
1119205	5	7.1mm	165-7599	49.01	47.04
1119207	7	8mm	120-4062	47.95	45.55
1.5mm²					
1119303	3	6.7mm	120-4064	43.05	40.47
1119304	4	7.2mm	165-7600	54.04	51.87
1119305	5	8.1mm	165-7601	67.91	65.18
1119307	7	8.9mm	165-7602	95.19	91.37
2.5mm²					
1119403	3	8.1mm	165-7603	68.17	65.41
1119404	4	8.9mm	165-7605	88.26	84.72
1119405	5	10mm	165-7606	111.05	106.61

Communication and Control Cable



Unshielded



- **UL2509 recognised, CSA CMG FT4**
- Grey PVC jacket with colour coded PVC insulation
- Voltage rating 300V
- Operating temperature -20°C to +75°C
- Supplied in 30.5m reels



Cables intended for general purpose communications use within buildings in accordance with NEC Section 800-53 (c).

Mfrs. List No.	No. of Cores	Outside Dia. (mm)	CSA (mm ²)	AWG
1895C	2	4.6	0.51	20
1896C	3	4.8	0.51	20
1896/4C	4	5.3	0.51	20
1896/5C	5	5.9	0.51	20
1896/6C	6	6.5	0.51	20
1896/7C	7	6.5	0.51	20
1896/8C	8	6.9	0.51	20
1897C	2	5	0.81	18
1898C	3	5.3	0.81	18
1898/4C	4	6.1	0.81	18
1898/5C	5	6.6	0.81	18
1898/6C	6	7.4	0.81	18
1898/7C	7	7.4	0.81	18
1899C	2	5.7	1.31	16
1899/3C	3	6.3	1.31	16
1899/4C	4	6.9	1.31	16

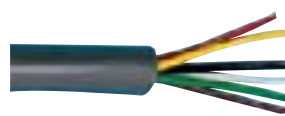
Mfrs. List No.	Order Code	Price Per Reel		
		1+	5+	10+
1895C	161-9538	14.52	14.08	13.66
1896C	161-9539	16.52	16.02	15.55
1896/4C	161-9540	22.51	21.84	21.17
1896/5C	161-9541	31.53	30.58	29.66
1896/6C	161-9542	47.22	46.27	45.35
1896/7C	161-9543	46.08	45.15	44.25
1896/8C	161-9544	53.58	51.98	50.40
1897C	161-9545	16.95	16.43	15.94
1898C	161-9546	22.98	22.29	21.62
1898/4C	161-9547	34.69	34.00	33.31
1898/5C	161-9549	37.40	36.64	35.91

Mfrs. List No.	Order Code	Price Per Reel		
		1+	5+	10+
1898/6C	161-9551	44.83	43.49	42.18
1898/7C	161-9552	46.08	45.15	44.25
1899C	161-9553	23.00	22.31	21.64
1899/3C	161-9554	63.04	61.15	59.33
1899/4C	161-9555	101.67	98.63	95.66

XTRA-GUARD® 1 Multi-Core Unshielded



22 AWG



- Multi-core 22 AWG (7/30 AWG) tinned copper conductors
- Premium grade PVC jacket for extended cable life
- Nylon rip cord for ease of jacket stripping
- **CSA certified flame test-4, UL recognised, listed passing UL94V-1**

• Applications include computer peripherals, point of sale equipment, industrial process controls, medical electronics and other high technology environments

• **UL Style 2464**

30.5m Reels		Mfrs. List No.	Order Code	Price Per Reel/Metre				
No. of Cores	Nominal Outside Dia.			1+	5+	10+	15+	20+
2	4.3	5002C-100	130-2223	86.48	79.95	72.49	63.60	61.08
3	4.8	5003C-100	130-2224	106.10	98.07	88.93	78.03	74.93
4	5.2	5004C-100	130-2225	135.42	125.16	113.49	99.59	95.65
6	5.8	5006C-100	130-2226	145.85	134.80	122.25	107.27	103.02

Continuous Length in 1m Multiples		Mfrs. List No.	Order Code	Price Per Reel/Metre				
No. of Cores	Nominal Outside Dia.			1+	5+	10+	15+	20+
2	4.3	5002C	130-2272	5.04				
3	4.8	5003C	130-2273	3.62				
4	5.2	5004C	130-2274	7.88				
6	5.8	5006C	130-2275	8.48				

Unitronic® LAN STP/S 500MHz CAT 6E



LAN CAT.6 cable is designed for high speed networks and meets the requirements acc. to EIA/TIA-568 and TSB36 as well as ISO/IEC 11801 resp. EN 50173 (class d). Used mainly where the terminal density is very high, e.g. cabling of offices, administration and R & D buildings in the tertiary area (horizontal).

Please note: According to Standard ISO/IEC 11801 resp. EN 50173 the cable length in the Tertiary Area (Horizontal Area, Floor) should not exceed 100m (90m in the cable duct and 10m in the Working Area).

Nominal outside diameter	7.1mm	These STP/S cables are specified up to 500 MHz. Impedance of cables = 100 Ohm +/-15% EIA = Electronic Industries Association TIA = Telecommunication Industries Association TSB = Technical Systems Bulletin
Conductor resistance	154ohm/km	
Impedance	100 ±15Ω	
Mutual capacitance	47nF/km	
Attenuation per 100m	3.5 @ 4.0MHz	
	5.5 @ 10.0MHz	
	7.9 @ 20.0MHz	
	10.0 @ 31.25MHz	
	14.4 @ 62.5MHz	
	18.3 @ 100MHz	
	26.1 @ 200MHz	

100m Reel		Mfrs. List No.	Order Code	Price Per Reel/Metre				
				1+	5+	10+	15+	20+
2170143	150-3949	115.61		108.95	103.58	98.39	93.43	
2170143	150-4116	2.56		--	--	--	--	

RG179PE 75Ω



Low density, polyethylene spaced coaxial cable suitable for data transmission applications. Inner conductor 7/0.102mm Silver Plated Copper Covered Steel. Tinned copper braid screened and Black PVC sheathed overall.

Nominal outside diameter	2.54mm	Operating temperature	70°C max
Capacitance	68.8pF/m	Attenuation per 10m	6.9dB @ 400MHz,

Colour	Reel Length	Order Code	Price Per Reel		
			1+	5+	10+
Black	25m	134-7171	34.79	33.39	32.04
Black	100m	134-7173	133.04	127.72	122.63

Multi-Ties

Natural and Black



These cable ties feature internal serrations allowing for a positive hold onto cable, hose and pipe bundles. The design of the head guarantees a high tensile strength whilst allowing a very low insertion force, this, combined with the bent tail design ensures a simple and quick installation.

- 500 ties in a storage jar
- Contents:
 - 100 x 2.5mm - Qty 200
 - 150 x 3.5mm - Qty 100
 - 200 x 4.6mm - Qty 200
- One-piece moulded Natural or Black Polyamide 6.6

HellermannTyton



Mfrs. List No.	Colour	Order Code	1+	10+	25+	50+
HTJAR1BK	Black	167-4204	14.21	13.79	13.38	12.98
HTJAR1NT	Natural	167-4205	14.21	13.79	13.38	12.98

PAN-TY® Miniature Cable Ties

Product



- Nylon material for indoor use
- With perforated, tear-off tops
- Max bundle diameter of 21mm
- Max operating temperature of 85°C
- Overall length of 102mm
- Colour combinations match the universally accepted Even-Count Color Code
- Pocket pouch kit holds five (50-piece) packages and is made of a white vinyl



Mfrs. List No.	Colour	Pack Qty	Order Code	1+	5+	10+
PLT1M-L6-10	Blue / White	50	165-7336	2.27	2.21	2.14
PLT1M-L3-10	Orange / White	50	165-7337	2.27	2.21	2.14
PLT1M-L5-10	Green / White	50	165-7338	2.27	2.21	2.14
PLT1M-L1-10	Brown / White	50	165-7340	2.27	2.21	2.14
PLT1M-L8-10	Slate / White	50	165-7341	2.27	2.21	2.14
Pocket Pouch Kits						
PP5X50F	Assorted	250	165-7335	22.57	21.90	21.24

Helaglass Sleeving

HellermannTyton



Helaglass is a glass fibre braid lightly impregnated with silicone. Designed to be used for the insulation of wires in heating elements and other domestic appliances subject to high temperatures. This flexible glass-fibre braided sleeving is impregnated with silicone and is especially suited for thermal protection in lighting applications.



- Good resistance to chemical atmospheres
- Good flexibility
- Fireproof

Material: Glass fibre with silicone
 Colour: White
 Operating Temperature: -60°C to +250°C Continuous, (peaks of +450°C)
 Flammability: Self-extinguishing

Mfrs. List No.	Dia. (mm)	Order Code	1+	10+	25+	50+
GSS1 WHITE	1	167-4264	4.69	4.56	4.42	4.29
GSS1.5 WHITE	1.5	167-4265	5.01	4.85	4.70	4.57
GSS2 WHITE	2	167-4266	5.62	5.45	5.30	5.14
GSS2.5 WHITE	2.5	167-4267	6.63	6.44	6.24	6.06
GSS3 WHITE	3	167-4268	8.32	8.08	7.83	7.59
GSS4	4	167-4269	9.13	8.86	8.59	8.33
GSS5	5	167-4270	11.76	11.40	11.07	10.73
GSS6	6	167-4271	14.50	14.08	13.65	13.25
GSS7	7	167-4272	15.76	15.28	14.83	14.38
GSS8	8	167-4273	18.88	18.31	17.76	17.24
GSS10	10	167-4275	21.26	20.62	20.00	19.41

Releasable Cable Ties

HellermannTyton



The SRT range offers solutions to numerous bundling applications. The soft, flexible material makes these ties particularly suitable for use on data and fibre-optic cables. The elasticity of the material makes them ideal for securing young trees to support poles, and other applications within the gardening and landscaping industry.

Manufactured from a soft, tear-resistant thermoplastic polyurethane these ties have several unique features. UV and weather resistant, strong yet elastic and suitable for temperatures as low as -40°C. The SRT ties are releasable and reusable which is ideal for bundling cables in temporary applications such as musical events, Theatres, cable harnesses.

Mfrs. List No.	Length (mm)	Width (mm)	Bundle Dia. (mm)	Tensile Strength (N)
SOFTFIX XS	180	7	45	57
SOFTFIX S	260	7	79	57
SOFTFIX M	260	11	55	123
SOFTFIX L	340	11	90	123
SOFTFIX XL	580	28	150	360
SOFTFIX XXL	880	28	240	360

Mfrs. List No.	Pack Qty	Order Code	1+	10+	25+	50+
SOFTFIX XS	16	167-4196	5.86	5.69	5.51	5.34
SOFTFIX S	12	167-4197	5.86	5.69	5.51	5.34
SOFTFIX M	8	167-4198	5.86	5.69	5.51	5.34
SOFTFIX L	6	167-4199	5.86	5.69	5.51	5.34
SOFTFIX XL	3	167-4200	5.86	5.69	5.51	5.34
SOFTFIX XXL	2	167-4203	5.86	5.69	5.51	5.34

Twist Tail™ Cable Tie

Thermally Stable



- Quick and easy to install, no tools required
- Strong, made of Polyamide 6.6, with 220N minimum tensile strength
- Safe, tail breaks off neat and clean, with no sharp edges
- General purpose applications, indoor and outdoor
- UL recognised
- Available in 3 different lengths and 2 colours (white and UV-resistant black)

Mfrs. List No.	Colour	Length (mm)	Width (mm)	Thickness (mm)	Max. bundle dia. (mm)
TT-7-50-9-C	White	180	4.7	1.4	44
TT-7-50-0-C	Black	180	4.7	1.4	44
TT-11-50-9-C	White	282	4.7	1.4	76
TT-11-50-0-C	Black	282	4.7	1.4	76
TT-14-50-9-C	White	358	4.7	1.4	102
TT-14-50-0-C	Black	358	4.7	1.4	102

Mfrs. List No.	Order Code	1+	10+	25+	50+
TT-7-50-9-C	162-0816	4.60	4.32	4.04	3.75
TT-7-50-0-C	162-0817	4.60	4.32	4.04	3.75
TT-11-50-9-C	162-0818	10.37	9.86	9.34	8.87
TT-11-50-0-C	162-0819	10.37	9.86	9.34	8.87
TT-14-50-9-C	162-0820	11.83	11.22	10.62	10.08
TT-14-50-0-C	162-0821	11.83	11.22	10.62	10.08

Elastomeric Cable Ties

Product



Elastomeric cable ties provide reliable bundling of high performance fiber and copper cables, while maintaining network data integrity by protecting against over-tensioning. The soft material has no sharp edges, promoting worker safety. These flexible ties cinch the cable bundle, preventing lateral movement along the bundle. The UL 94V-0 flammability rating and halogen-free construction ensures compliance with environmental and industry requirements. The releasable design accommodates frequent moves, adds, and changes (MACs). Elastomeric cable ties ensure reliability, scalability, and aesthetics for network applications.



Length (mm)	Width (mm)	Max Bundle Dia. (mm)	Min. Loop Tensile Strength (N)
216	12.7	59.7	80

Mfrs. List No.	Order Code	1+	5+	10+
ERT2M-C20	165-7322	54.10	52.47	50.89

Adaptalok ATSTM

Adaptalok ATSTM represents a unique and innovative solution in flexible conduit systems. Until now, manufacturers have produced fittings and seals separately, and assembled them together, or had the customer assemble them. This increases assembly time and introduces the possibility for errors.

Adaptalok ATSTM uses a sophisticated moulding process to mould an internal conduit seal and a face seal washer. This makes installation times very fast, and extremely reliable, because the seals cannot be left out. The conduit system also benefits from the highest IP rating possible.

- Fastest fit products: time saving
- Very easy to install
- No parts to lose
- Seal and washer permanently fitted
- Highly visible for inspections
- Nylon 6.6 Body
- IP66, 67, 68 & 69k performance as standard
- One piece fitting, no customer assembly
- Halogen Free
- Low Smoke Zero Halogen (LSOH)



- 19mm slot pitch
- 8mm slot width
- Zero Halogen
- Low smoke
- Wide range of sizes
- Supplied in 2m lengths
- UL, CSA and Lloyds Register approved

Width (mm)	Height (mm)	Pack Qty	Order Code	Price Per Pack		
				1+	5+	10+
Open Slot						
25	37.7	12	163-0300	470.36	456.24	433.43
25	50	12	163-0302	627.44	608.61	578.19
25	75	8	163-0303	546.96	530.56	504.02
Closed Slot						
25	37.7	12	163-0304	470.36	456.24	433.43
25	50	12	163-0305	627.44	608.61	578.19
25	75	8	163-0306	546.96	530.56	504.02

Non-metallic Conduit



Conduit size (mm)	Outside dia. (mm)	Conduit pitch F=Fine, C=Coarse	Black		Grey	
			25m	50m	25m	50m
13	13.0	F	-	162-1295	-	-
16	15.8	F	-	162-1296	-	162-1303
21	21.2	F	-	162-1297	-	162-1304
28	28.5	C	-	162-1298	-	162-1305
34	34.5	C	-	162-1299	-	162-1306
42	42.5	C	162-1301	-	162-1307	-
54	54.5	C	162-1302	-	-	-
13	13.0	F	-	162-1317	-	162-1325
16	15.8	F	162-1308	162-1318	-	162-1326
21	21.2	F	162-1309	162-1320	-	162-1327
28	28.5	C	162-1310	162-1321	-	162-1328
34	34.5	C	162-1313	162-1323	-	162-1329
42	42.5	C	162-1314	-	-	-
54	54.5	C	162-1315	-	-	-

Mfrs. List No.	Colour	Length	Order Code	1+	5+	10+
Lightweight Conduit						
PAFL13/BL/50M	Black	50m	162-1295	89.16	86.49	82.16
PAFL16/BL/50M	Black	50m	162-1296	130.86	126.94	120.60
PAFL21/BL/50M	Black	50m	162-1297	152.61	148.03	140.63
PACL28/BL/50M	Black	50m	162-1298	221.09	214.46	203.74
PACL34/BL/50M	Black	50m	162-1299	272.52	264.33	251.12
PACL42/BL/25M	Black	25m	162-1301	248.94	241.48	229.41
PACL54/BL/25M	Black	25m	162-1302	379.64	368.26	349.84
PAFL16/GR/50M	Grey	50m	162-1303	130.86	126.94	120.60
PAFL21/GR/50M	Grey	50m	162-1304	152.61	148.03	140.63
PACL28/GR/50M	Grey	50m	162-1305	221.09	214.46	203.74
PACL34/GR/50M	Grey	50m	162-1306	272.52	264.33	251.12
PACL42/GR/25M	Grey	25m	162-1307	248.94	241.48	229.41
Standard Weight Conduit						
PAFS16/BL/25M	Black	25m	162-1308	82.03	79.58	75.60
PAFS21/BL/25M	Black	25m	162-1309	101.94	98.88	93.93
PACS28/BL/25M	Black	25m	162-1310	151.24	146.72	139.38
PACS34/BL/25M	Black	25m	162-1313	166.48	161.48	153.41
PACS42/BL/25M	Black	25m	162-1314	299.94	290.94	276.39
PACS54/BL/25M	Black	25m	162-1315	404.31	392.19	372.58
PAFS13/BL/50M	Black	50m	162-1317	99.67	96.68	91.85
PAFS16/BL/50M	Black	50m	162-1318	151.74	147.18	139.82
PAFS21/BL/50M	Black	50m	162-1320	177.27	171.95	163.36
PACS28/BL/50M	Black	50m	162-1321	258.53	250.78	238.25
PACS34/BL/50M	Black	50m	162-1323	318.46	308.91	293.46
PAFS13/GR/50M	Grey	50m	162-1325	100.95	97.92	93.03
PAFS16/GR/50M	Grey	50m	162-1326	153.68	149.06	141.60
PAFS21/GR/50M	Grey	50m	162-1327	177.27	171.95	163.36
PACS28/GR/50M	Grey	50m	162-1328	263.39	255.48	242.72
PACS34/GR/50M	Grey	50m	162-1329	324.52	314.79	299.05

See the website for a range of accessories

Betaduct LFH Noryl



The Noryl Betaduct range is free from toxic halogens, has excellent low smoke characteristics and high operating temperatures. It is designed to satisfy the demand for "Low Fire Hazard" products.

Betaduct Noryl is approved and specified by a number of rail industry manufacturers.



Wiring Ducts



- Choice of open slot or narrow slot
- Wide range of sizes
- Flame retardant to **UL94 V-0**
- Operating temperature -15°C to 65°C
- Colour: Grey (RAL 7030)
- Manufactured in self extinguishing lead free PVC
- Supplied in 2m lengths
- UL and CSA approved

Iboco is a metric standard control panel ducting, featuring excellent assembly functionality. It is ideal for any type of power and control panel where performance remains unaltered over time, even under the heaviest operating conditions. Available in open and narrow slot configurations in a range of sizes.

Width (mm)	Height (mm)	Slot Width (mm)	Pack Qty	Order Code	Price Per Pack		
					1+	5+	10+
Open Slot							
25	40	8	36	163-0217	192.33	186.56	177.24
25	60	8	24	163-0218	166.85	161.85	153.75
25	80	8	24	163-0219	220.26	213.64	202.97
40	40	8	20	163-0220	143.64	139.33	132.36
40	60	8	18	163-0221	165.17	160.22	152.21
40	80	8	16	163-0222	170.54	165.42	157.15
60	40	8	24	163-0224	115.94	112.46	106.84
60	60	8	12	163-0225	139.87	135.67	128.89
60	80	8	12	163-0226	169.64	164.54	156.32
60	100	8	4	163-0227	71.37	69.22	65.77
80	80	8	12	163-0228	199.39	193.41	183.74
80	100	8	4	163-0229	75.87	73.60	69.92
100	80	8	8	163-0230	161.75	156.90	149.06
100	100	8	4	163-0231	93.24	90.44	85.92
Narrow Slot							
25	40	4	36	163-0232	178.52	173.16	164.51
25	60	4	24	163-0233	172.38	167.20	158.84
40	40	4	20	163-0235	155.95	151.27	143.72
40	60	4	18	163-0236	155.95	151.28	143.71
40	80	4	16	163-0237	170.54	165.42	157.15
60	60	4	12	163-0238	136.79	132.69	126.04
60	80	4	12	163-0239	169.64	164.54	156.32
80	80	4	12	163-0240	199.39	193.41	183.74
80	100	4	4	163-0241	77.80	75.45	71.69
100	100	4	4	163-0242	86.41	83.81	79.63

IEE Wiring Regulations

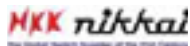
17th Edition



The IEE Wiring Regulations (BS 7671) are the national standard to which all domestic and industrial wiring must conform. The 17th Edition reflects significant changes to both the technical content and structure of the book. Key changes in the volume include: a change allowing a socket outlet in bathrooms extension of the Regulations to cover new special locations: exhibition shows, photovoltaic (pv) power supply systems, floor and heating systems, marinas and fairgrounds and amusements parks; and, re-numbering and re-structuring of chapters to align with international standards.

Order Code	Price Each
154-2083	1+
	76.12

Illuminated Miniature Push Button Switches



1A @ 125V ac/250V ac or 1A @ 30V dc



- Super bright LED illumination
- Audible and tactile feedback with responsive action
- Long life, snap-action mechanism
- 12mm body diameter
- Molded-in terminals lock out flux, dust and other contaminants
- 8mm panel thickness
- **CSA Approved, UL Recognised**



Round - H = 30mm, Bezel Dia = 14mm

Square - H = 30mm, Bezel = 14 x 14mm

Switch Specifications

Electrical capacity	1A @ 125V / 250V ac or 1A @ 30V
Electrical life	50000 Cycles
Contact resistance	50mohm
Insulation resistance	1000Mohm @ 500V dc
Dielectric strength	1000V ac between contacts for 1 minute minimum
Operating temperature	-25°C to 50°C

LED Colour & Switch Type	Mfrs. List No.	Order Code	Price Each			
			1+	10+	25+	50+
Round Bezel						
White - SPDT On-On	KB16CKW01-6B-JB	152-4299	8.95	8.24	7.52	7.17
Blue - SPDT On-On	KB16CKW01-6G-JB	152-4300	8.95	8.24	7.52	7.17
White - SPDT On-Mom	KB15CKW01-6B-JB	152-4301	8.61	7.93	7.25	6.90
Blue - SPDT On-Mom	KB15CKW01-6G-JB	152-4302	14.36	13.22	12.07	11.49
White - DPDT On-On	KB26CKW01-6B-JB	152-4303	10.17	9.36	8.55	8.14
Blue - DPDT On-On	KB26CKW01-6G-JB	152-4304	10.17	9.36	8.55	8.14
White - DPDT On-Mom	KB25CKW01-6B-JB	152-4305	9.80	9.02	8.24	7.84
Blue - DPDT On-Mom	KB25CKW01-6G-JB	152-4307	16.33	15.03	13.73	13.06
Square Bezel						
White - SPDT On-On	KB16SKW01-6B-JB	152-4308	14.92	13.73	12.52	11.94
Blue - SPDT On-On	KB16SKW01-6G-JB	152-4309	14.92	13.73	12.52	11.94
White - SPDT On-Mom	KB15SKW01-6B-JB	152-4310	14.36	13.22	12.07	11.49
Blue - SPDT On-Mom	KB15SKW01-6G-JB	152-4311	8.61	7.93	7.25	6.90
White - DPDT On-On	KB26SKW01-6B-JB	152-4312	16.96	15.61	14.25	13.57
Blue - DPDT On-On	KB26SKW01-6G-JB	152-4313	16.96	15.61	14.25	13.57
White - DPDT On-Mom	KB25SKW01-6B-JB	152-4314	16.33	15.03	13.73	13.06
Blue - DPDT On-Mom	KB25SKW01-6G-JB	152-4315	16.33	15.03	13.73	13.06

Vandal Resistant - IP66



50mA @ 24V dc



L(Tab) = 32.7mm, Bezel = 22mm dia., Panel cut-out - 19.2mm

L(Screw) = 31.0mm, Bezel = 22mm dia., Panel cut-out - 19.2mm

- Stainless steel body
- Front panel sealed to **IP66**
- Dot and ring illumination styles,
- choice of illumination colours.
- Bright daylight LED's
- Momentary action, tactile feel
- Choice of screw or 2.8mm tab termination

Contacts	SPNO	LED intensity	Amber 220 mcd
Switch rating	50mA @ 24V dc	LED intensity	White 900mcd
LED Rating	1.85V dc, 20mA	Contact resistance	100mohm
LED intensity	Red 900mcd	Insulation resistance	1000Mohm
LED intensity	Green 1500mcd	Temperature range	-30°C to 70°C
LED intensity	Blue 1500mcd		

Colour Illumination	Mfrs. List No.	Order Code	Price Each			
			1+	25+	100+	250+
Dot Illumination						
Red 2.8mm x 0.8mm	MPI001/28/RD	324-8859	15.98	15.22	13.88	12.00
Amber 2.8mm x 0.8mm	MPI001/28/AM	765-9008	15.98	15.22	13.88	12.00
Green 2.8mm x 0.8mm	MPI001/28/GN	324-8860	15.98	15.22	13.88	12.00
Blue 2.8mm x 0.8mm	MPI001/28/BL	430-3052	16.63	15.85	14.48	12.49
White 2.8mm x 0.8mm	MPI001/28/WH	145-4955	15.22	14.50	13.20	12.00
Red Screw	MPI001/TERM/RD	324-8872	14.49	13.55	12.51	10.25
Green Screw	MPI001/TERM/GN	324-8884	15.98	15.22	13.36	12.00
Blue Screw	MPI001/TERM/BL	430-3064	16.63	15.85	14.48	12.49
White Screw	MPI001/TERM/WH	145-4956	15.22	14.50	13.20	12.00
Ring Illumination						
Red 2.8mm x 0.8mm	MPI002/28/RD	324-8896	15.98	15.22	13.88	12.00
Amber 2.8mm x 0.8mm	MPI002/28/AM	765-9024	15.98	15.22	13.88	12.00
Green 2.8mm x 0.8mm	MPI002/28/GN	324-8902	15.98	15.22	13.88	12.00
Blue 2.8mm x 0.8mm	MPI002/28/BL	430-3076	16.63	15.85	14.48	12.49
White 2.8mm x 0.8mm	MPI002/28/WH	145-4958	15.22	14.50	13.20	12.00
Red Screw	MPI002/TERM/RD	324-8914	15.98	15.22	13.88	12.00
Amber Screw	MPI002/TERM/AM	733-7024	15.98	15.22	13.88	12.00
Green Screw	MPI002/TERM/GN	324-8926	15.98	15.22	13.88	12.00
Blue Screw	MPI002/TERM/BL	430-3088	16.63	15.85	14.48	12.49
White Screw	MPI002/TERM/WH	145-4959	15.22	14.50	13.20	12.00

PCB Mount SPNO, Momentary



D6 Series, 100mA @ 100V ac

D6 square 151-137 to 151-144
H above PCB=11.5, Max. dia.=12
Button size= 7.7 x 7.7 square, Lead pitch=5 x 5



D6 round 151-145 to 151-152
H above PCB=14.5, Max. dia.=12
Button size=9.0 dia round, Lead pitch=5 x 5

- Tactile feedback contact operation
- Minimum centre spacing of 12.7mm
- Specially designed for digital electronic controls
- Strapped terminals permit X, Y coding
- Round or square styles in a choice of 8 colours

Max. breaking power	6VA	Operating force	1.3N ±30%
Contact resistance	<100mR	Travel	0.8mm ±0.2mm
Insulation resistance	100000MR	Contact bounce	<3ms
Operating life	250000 ops	Operating temperature	-20°C to +85°C

	D6 with Square Button		D6 with Round Button	
	Mfrs. List No.	Order Code	Mfrs. List No.	Order Code
Black	D6C90LFS	120-1367	D6R90LFS	120-1375
Yellow	D6C30LFS	120-1368	D6R30LFS	120-1376
White	D6C00LFS	120-1369	D6R00LFS	120-1377
Green	D6C50LFS	120-1370	D6R50LFS	120-1378
Red	D6C40LFS	120-1371	D6R40LFS	120-1379
Blue	D6C60LFS	120-1373	D6R10LFS	120-1381
Grey	D6C10LFS	120-1374	D6R10LFS	120-1381

Order Code	Price Each				
	1+	25+	100+	250+	1K+
All Order Codes	1.15	1.00	0.84	0.66	0.60

Push Button Switches - Momentary



3A @ 125V ac, 1.5A @ 250V ac



- Black base
- Buttons available in either black or red
- Two button sizes available, 8 x 5.6 and 10 x 8.5mm
- NO or NC versions available
- Nickel plated brass body
- PBT actuators, phenolic base



Body - H (NO) = 9.1, H (NC) = 9.4, Button - Dia. = 6mm
L (Thread) = 6, (Button & stem) - 8.6mm
Dia. cut-out = 7.2mm

Rating	3A @ 125V ac	Insulation Resistance	100Mohm @ 500V dc
Rating	1.5A @ 250V ac	Dielectric Strength	1000V ac
Contact Resistance	50mohm		

ButtonSwitch Colour/Function	Mfrs. List No.	Order Code	Price Each				
			1+	50+	100+	500+	1K+
6 x 5.6mm Button							
Black SPNO	R13-24A-05-BB	163-4687	0.47	0.44	0.41	0.38	0.34
Black SPNC	R13-24B-05-BB	163-4688	0.47	0.44	0.41	0.38	0.34
Red SPNO	R13-24A-05-BR	163-4691	0.47	0.44	0.41	0.38	0.34
Red SPNC	R13-24B-05-BR	163-4692	0.47	0.44	0.41	0.38	0.34
10 x 8.5mm Button							
Black SPNO	R13-24AL-05-BB	163-4693	0.49	0.47	0.44	0.40	0.37
Black SPNC	R13-24BL-05-BB	163-4694	0.49	0.47	0.44	0.40	0.37
Red SPNO	R13-24AL-05-BR	163-4695	0.49	0.47	0.44	0.40	0.37
Red SPNC	R13-24BL-05-BR	163-4696	0.49	0.47	0.44	0.40	0.37

SPNO Momentary



0.125A @ 125V ac, 0.4A @ 32V ac, 0.1A @ 50V dc IP67 Sealed



Round Bezel L=20.0, Bezel dia.=17.45
Square Bezel L=20.0, Bezel=17.45 x 17.45
All Switches Panel cut-out (single flat)=13.65 x 12.90, Max. panel thickness=3.0mm, Depth behind panel=13.0mm

- Panel sealed to **IP67**
- Small size, robust construction
- Constructed from **NCB 481/1965** approved non-sparking zinc alloy or PBT
- Choice of 6 actuator colours, round, square and PBT round bezel



Contacts	Palladium Nickel, Gold plated	Electrical life	500000 ops
Contact resistance	50mR	Mechanical life	1000000 ops
Dielectric strength	1000V ac	Operating temperature	-55°C to +125°C
Insulation resistance	1000MR		

Metal round bezel switches:
 Black = 519-315 Red = 519-327 Green = 519-339
 White = 519-340 Yellow = 519-352 Blue = 519-364

Metal square bezel switches:
 Black = 519-376 Red = 519-388 Green = 519-390
 White = 519-406 Yellow = 519-418 Blue = 519-420

Plastic round bezel switches:
 Black = 443-4390 Red = 443-4407 Green = 443-4419 Orange = 443-4456
 White = 443-4420 Yellow = 443-4432 Blue = 443-4444

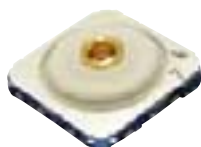
Mftrs. List No. Bezel: Std Round=59-11+colour, Std square=59-21+colour PBT round bezel: 59-51+colour

Order Code	Price Each				
	1+	25+	50+	100+	250+
Metal Bezel Switches	5.38	5.06	4.84	4.65	4.46
Plastic Bezel Switches	4.29	3.99	3.82	3.65	2.81

9 Way Navigation Switch

ALPS

SSAF Series



Dimensions (mm): H=1.4, W=10.85, D=10.5

- A centre push switch built into an 8 directional switch
- Slide operation has soft feeling made of rubber
- Push travel only 0.25mm
- Reflow solderable
- Operating temperature -10 to 60°C

Applications

- Portable electronic devices
- Mobile phones
- PDAs



Mftrs. List No.	Rating max (V / mA)	Operating Life	Insulation Resistance (mΩ)	Operating Force (N)
SSAF120100	5 / 20	500000	10	0.5
SSAF220100	5 / 20	500000	10	0.5

Mftrs. List No.	Location Lug	Order Code	Price Each			
			1+	50+	100+	500+
SSAF120100	Without	165-6439	7.50	6.90	6.31	6.00
SSAF220100	With	165-6440	7.50	6.90	6.31	6.00

Low Profile - A6SR / A6TR Series

OMRON

25mA @ 24V dc



H=5mm, D=6mm

- Low profile of 5mm and 2.54 pitch
- Gold plated twin contact
- Self cleaning mechanisms
- Choice DIP or SMD terminals



Contacts	Gold	Dielectric strength	500V dc
Contact resistance	200mohm max	Operating temperature	-20°C to 70°C
Insulation resistance	100Mohm @ 250V dc	Mechanical life	1000 ops min

No. of Ways	Length	Mftrs. List No.	Order Code	Price Each				
				1+	50+	100+	500+	500+
DIP - Short Lever								
2	4.98	A6SR-2101	169-5838	1.43	1.32	1.23	1.12	0.99
4	10.06	A6SR-4101	169-5840	1.43	1.32	1.23	1.12	0.99
6	15.14	A6SR-6101	169-5842	1.55	1.42	1.32	1.21	1.06
8	20.22	A6SR-8101	169-5844	1.65	1.52	1.41	1.29	1.11
10	25.3	A6SR-0101	169-5835	1.76	1.62	1.51	1.38	1.22
DIP - Long Lever								
2	4.98	A6SR-2104	169-5839	1.46	1.34	1.25	1.14	1.01
4	10.06	A6SR-4104	169-5841	1.43	1.32	1.23	1.12	0.99
6	15.14	A6SR-6104	169-5843	1.57	1.44	1.34	1.23	1.09
8	20.22	A6SR-8104	169-5845	1.65	1.52	1.41	1.29	1.11
10	25.3	A6SR-0104	169-5837	1.79	1.65	1.53	1.40	1.24
SMD - Short Lever								
2	4.98	A6TR-2101	169-5849	1.43	1.32	1.23	1.12	0.99
4	10.06	A6TR-4101	169-5852	1.43	1.32	1.23	1.12	0.99
6	15.14	A6TR-6101	169-5854	1.55	1.42	1.32	1.21	1.06
8	20.22	A6TR-8101	169-5856	1.65	1.52	1.41	1.29	1.11
10	25.3	A6TR-0101	169-5846	1.76	1.62	1.51	1.38	1.22
SMD - Long Lever								
2	4.98	A6TR-2104	169-5851	1.46	1.34	1.25	1.14	1.01
4	10.06	A6TR-4104	169-5853	1.46	1.34	1.25	1.14	1.01
6	15.14	A6TR-6104	169-5855	1.57	1.44	1.34	1.23	1.09
8	20.22	A6TR-8104	169-5857	1.65	1.52	1.41	1.29	1.11
10	25.3	A6TR-0104	169-5847	1.79	1.65	1.53	1.40	1.24

Sealed PCB Mounting



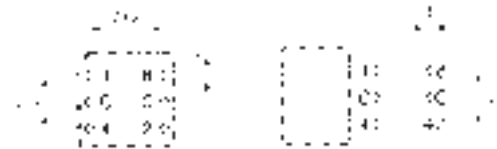
400mA @ 24V dc (non-switching),
 150mA @ 24Vdc (switching)



Horizontal screwdriver H=6.5, W=10, D=10
 Right angle screwdriver H=10, W=10, D=11.9
 Spindle H=13.8, W=10, D=10



Knurled wheel H=9.2, W=10, D=10
 Segment wheel H=10.9, W=10, D=10



Standard mounting (except right angle) PCB drilling plans

Right angled mounting

- Wide variety of styles
- Gold plated terminals
- All types solder flux sealed and washable

Initial contact resistance	<80mohm	Mechanical life	10000 operations
Insulation resistance	>100Mohm	Operating temperature	-20°C to 70°C
Mftrs. List No.	PT65-101 = 108-2476 PT65-102 = 108-2478 PT65-103 = 108-2479 PT65-106 = 108-2481	PT65-121 = 108-2482 PT65-101-L508 = 108-2477 PT65-103-L508 = 108-2480 PT65-301 = 108-2483	PT65-303 = 108-2484 PT65-401 = 108-2485 PT65-501 = 108-2487 PT65-503 = 108-2488

	Order Code	Price Each				
		1+	25+	100+	250+	500+
Horizontal Screwdriver						
BCD	108-2476	2.51	2.28	2.02	1.67	1.53
BCD complement	108-2478	2.80	2.63	2.30	1.90	1.76
Hex	108-2479	2.80	2.63	2.43	2.30	2.12
Hex complement	108-2481	2.80	2.61	2.39	2.28	2.12
Decimal 4 position	108-2482	2.80	2.61	2.40	2.17	2.12
Right Angle Screwdriver						
BCD	108-2477	3.73	3.32	2.88	2.41	2.22
Hex	108-2480	4.12	3.68	3.23	2.63	2.49
Spindle						
BCD	108-2483	3.30	3.11	2.97	2.83	2.68
Hex	108-2484	3.30	2.89	2.74	2.61	2.49
Knurled Wheel						
BCD	108-2485	4.12	3.68	3.23	2.63	2.49
Segment Wheel						
BCD	108-2487	3.92	3.72	3.54	3.30	3.19
Hex	108-2488	3.92	3.68	3.52	3.07	2.95

2 Position - SRL Series

LORLIN

5A @ 115V ac, 3A @ 50V dc



Dia (bezel) = 22.0
 D behind panel = 29.7 (SPDT), 30.7 (DPDT)
 Max panel thickness = 4.5 (SPDT), 5.0 (DPDT)

- Silver plated brass contacts
- Spare keys are available for common key profile
- Each keyswitch is provided with two keys, random or common profile

Proof voltage	750V dc	Insulation resistance	100MR
Current rating (non switching)	5A	Contact resistance	20mR max.
Operating life	>50000 ops	Operating temperature	-20°C to +65°C
Indexing	90° (SPDT), 60° (DPDT)		

Mftrs. List No:	SRL-5-E-D-2 = 112-3677	SRL-5-D-S-2 = 112-3682	SRL-5-L-D-2 = 112-3680
	SRL-5-E-S-2 = 112-3681	SRL-5-M-D-2 = 112-3679	SRL-5-L-S-2 = 112-3685
	901 = 112-3686	SRL-5-M-S-2 = 112-3684	SRL020 = 136-0558
	SRL-5-D-D-2 = 112-3678		

Random Key Profile	Order Code	1+	Price Each		
			25+	100+	250+
SPDT					
Key removable in 1 position	112-3677	4.79	4.57	4.29	3.91
Key removable in 2 positions	112-3678	4.79	4.57	4.29	3.91
DPDT					
Key removable in 1 position	112-3679	4.79	4.57	4.29	3.91
Key removable in 2 positions	112-3680	4.14	3.94	3.71	3.38
Common Key Profiles, SPDT					
Key removable in 1 position	112-3681	4.75	4.52	4.27	3.89
Key removable in 2 positions	112-3682	4.75	4.52	4.27	3.89
DPDT					
Key removable in 1 position	112-3684	4.75	4.52	4.27	3.89
Key removable in 2 positions	112-3685	4.75	4.52	4.27	3.89
		1+	25+	100+	250+
Spare common keys (pair)	112-3686	3.49	3.16	2.80	2.67
Dust Cap	136-0558	0.75	0.67	0.64	0.58

Miniature T5



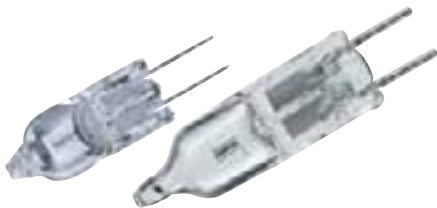
- Miniature fluorescent tubes commonly used in display cabinets, effects lighting, vending and amusement machines
- G5 fitting
- 3500K white colour temperature
- 16mm tube diameter

Wattage	Length	Order Code	Price/Pack	
			1+	25+
4W	150	471-7934	1.60	1.55
6W	225	471-7946	1.47	1.41
8W	300	471-7958	1.74	1.66
13W	525	471-7960	2.52	2.42

Low Voltage Halogen Capsule Lamps



CAPSULEline Pro



- Single-ended low voltage halogen capsule lamps, giving crisp white halogen light of professional quality
- Ideal for task lighting and decorative applications in homes, shops, hotels and restaurants

- 3000 hours average life
- Suitable for use in open luminaires
- Low pressure standard with UV-Block glass

Voltage	Watts	LIF Code	Order Code	Price Each			
				1+	5+	10+	25+
G4 Fitting							
12V	10W	M91	130-3434	2.72	2.53	2.39	2.18
12V	20W	M86	130-3435	2.72	2.53	2.39	2.18
24V	20W	M88	130-3436	2.72	2.53	2.39	2.18
GY6.35 Fitting							
12V	20W	M76	130-3437	2.72	2.53	2.39	2.18
12V	35W	M75	130-3438	2.72	2.53	2.39	2.18
12V	50W	M74	130-3439	2.72	2.53	2.39	2.18
12V	75W	M73	130-3440	2.72	2.53	2.39	2.18
12V	100W	M180	130-3441	2.72	2.53	2.39	2.18
24V	50W	M89	130-3443	2.72	2.53	2.39	2.18
24V	100W	M90	130-3444	2.72	2.53	2.39	2.18

Fluorescent Tube Starter Switches



- High quality two pin glowstarters
- Housed in high impact polycarbonate
- Solderless interior junctions give very high reliability
- Fitted with an internal radio interference suppression capacitor

Supply voltage 220V ac 50Hz Dimensions: L = 36.0 (40.3 including pins), Dia=21.5

Tube Rating	Mfrs. List No.	Order Code	Price Each			
			5+	10+	50+	100+
65W and below	155/500	107-034	0.50	0.46	0.40	0.35
70W - 125W	155/800	107-035	1.74	1.37	1.12	0.96

Over 480,000 products online



Mini-Maglite®

2 cell AA



L=145, D=22

- Made from machined aluminium
- Pocket torch with key-ring hole in tail cap
- Supplied in presentation case with 2 AA batteries

Colour	Order Code	Price Each		
		1+	5+	10+
Black	316-1377	14.16	13.45	12.89
Red	315-5079	14.16	13.45	12.89
Silver	315-5080	14.16	13.45	12.89
Blue	315-5092	14.16	13.45	12.89
		Price Per Pack		
Replacement bulb (pk of 2)		426-8416	3.06	2.82
			5+	10+
			2.82	2.71

AA Maglite® LED Upgrade Kit



NB. Torch not provided

- An LED upgrade for any AA Maglite®
- Replaces conventional bulbs with the latest LED technology
- LED module extends battery life by up to 4 times
- Push-button tail cap
- Provides a brilliant white light
- 10 year LED life (100,000 hours burn time)
- Simply slots into the torch
- Available either on its own or with a handy

Description	Order Code	Price Each	
		1+	5+
LED Module	109-7700	10.35	9.80
LED Module + Tail Cap	109-7699	10.71	10.10

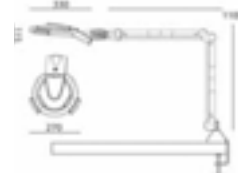
Tikka Headtorch



- Extremely small headlamp
- Very long burn time (150+ hours)
- LED technology
- Emits even, clean, white beam
- Ideal for close-up work
- Only 70g in weight
- Requires 3 x AAA batteries (included)

Order Code	Price Each	
	1+	5+
471-5913	24.49	24.33

22W Professional Grade Illuminated Magnifier



Mfrs. List No. = 8310-122-3-G

- 3 dimensional neck joint for easy positioning
- 22 watt circular light source (supplied)
- 1040mm spring balanced arm
- 3 diopter (175%) lens supplied - auxiliary 8D lens available
- Supplied with desk clamp, surface or wall mounting option available

Description	Order Code	Price Each	
		1+	4+
Illuminated Magnifier	433-1620	193.65	174.89
Additional Accessories			
8D Lens	433-1930	47.76	45.09
Tube Protector	433-1631	11.73	11.05
Wall Mounting Base	433-1898	8.22	7.75
Surface Mounting Base	433-1916	8.22	7.75

Get off the blocks
quicker...



...Boost your soldering and rework performance from start to finish with Metcal's next generation MX-5000 Series.

To successfully compete, you need to continuously increase productivity and keep processes in control. When it comes to soldering and rework, thermal demands of lead-free solders and high mass boards challenge throughput and operator skill. But the new Metcal MX-5000 Series Soldering and Rework System changes that:

- Accelerated power for enhanced soldering, desoldering and rework capabilities
- SmartHeat® Technology generates fixed temperature and power-on-demand precision control
- Virtually no operator training required

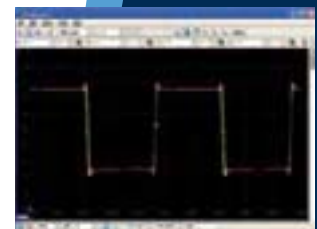
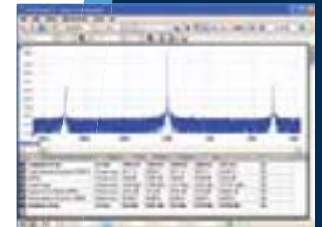
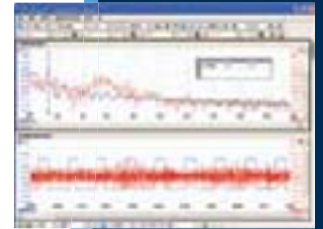
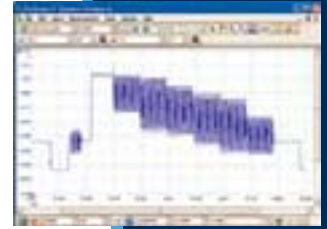
Looking for higher productivity, a way of tackling a wide range of applications while keeping training costs minimized? Contact us today and put a system in your hands.

Visit: www.metcal.com for more information including product video.

okinternational

METCAL

The new PicoScope 4000 Series high-resolution oscilloscopes



The PicoScope 4224 and 4424 High Resolution Oscilloscopes have true 12-bit resolution inputs with a vertical accuracy of 1%. This latest generation of PicoScopes features a deep memory of 32 M samples. When combined with rapid trigger mode, this can capture up to 1000 trigger events at a rate of thousands of waveforms per second.

- **PC-based** - capture, view and use the acquired waveform on your PC, right where you need it
- **Software updates** - free software updates for the life of the product
- **USB powered and connected** - perfect for use in the field or the lab

Resolution	12 bits (up to 16 bits with resolution enhancement)
Bandwidth	20 MHz
Buffer Size	32 M samples shared between active channels
Sample Rate	80 MS/s maximum
Channels	PicoScope 4224: 2 channels PicoScope 4424: 4 channels
Connection	USB 2.0
Trigger Types	Rising edge, falling edge, edge with hysteresis, pulse width, runt pulse, drop out, windowed