

# ELENCO<sup>®</sup>

## ELECTRONICS, INC.



**Trainers**



**Oscilloscopes**



**Educational Kits**



**Snap Circuits<sup>®</sup>**



**Multimeters**



**Solder Stations**



**Power Supplies**



**Tool Kits**

**TRAINERS**

**CALCULATORS**

**OSCILLOSCOPES**

**GENERATORS**

**MULTIMETERS**

**POWER SUPPLIES**

**LOGIC PROBES/PULSERS**

**NETWORK CABLE TESTERS**

**FIBER OPTICS**

**BREDBOARD AIDS**

**HVAC / ELECTRICAL**

**TOOLS / TOOL KITS**

**TEST LEADS**

**SOLDERING EQUIPMENT**

**KITS**

**SNAP CIRCUITS<sup>®</sup>**

**Catalog No. 54**





# XK-700 DELUXE DIGITAL / ANALOG TRAINER

## DELUXE COMPLETE MINI-LAB FOR BUILDING, TESTING AND PROTOTYPING ANALOG AND DIGITAL CIRCUITS

Elenco's advanced designed Digital/Analog Trainer is specially designed for school projects. It is built on a single PC board for maximum reliability. It includes 5 built-in power supplies, a function generator with continuously variable sine, triangular and square waveforms. All power supplies are regulated and protected against shorts. The trainer is mounted in a professional technician tool case made of reinforced metal with heavy-duty handles and locks. The removable, dual-sided tool pallet has many pockets and elastic retainers to hold a broad line of tools and devices. A special ramp in the case will hold the meter of your choice.



Dimensions: 13" (H) x 18" (W) x 6 1/2" (D)

### Tools in Case

Model **XK-700T** (shown in photo) is a stock trainer with tools and includes tools shown below (meter, logic probe, & calculator shown are sold separately).

- ET-10 IC puller
- SE-1 Solder ease kit
- SH-1 Soldering iron holder
- SP-4 Desoldering pump
- SR-2B Deluxe soldering iron
- ST-1 Mini diagonal cutters
- ST-2 Mini long nose pliers
- LF-99 Lead-free solder tube
- ST-20 Safety goggles
- ST-30 Premium wire stripper
- ST-75 11 pc. screwdriver bit set
- SW-3 Desoldering wick
- TL-8 Precision screwdriver set

See page 3 for detailed specifications.

When ordering a meter to be used with the XK-700 Trainer, specify the PSV-50 Kit. It will provide you with the needed Velcro to hold the meter in place.



Deluxe Case

- **Model XK-700 Trainer** - Available fully assembled without tools.
- **Model XK-700K Trainer** - Available as kit without tools.
- **Model XK-700T Trainer** - Available with tools as shown - meter, calculator, and logic probe **sold separately**.
- **Model XK-700TK** - Available as a kit with tools as shown - meter, calculator, and logic probe **sold separately**.

Available with Tools & Equipment of Your Choice! Call, Fax or E-mail for Quote.

# XK-550 DIGITAL / ANALOG TRAINER

Same trainer as XK-700, except in our molded organizer case. The tools shown with the trainer are the most commonly used in the educational field or you can make your own selection of tools and meter to go with the trainer.



## Tools in Case

Model **XK-550T** (shown in photo) is a stock trainer with tools shown below (**meter shown is sold separately**).

- **ET-10** IC puller
- **JW-140** Jumper wire kit
- **SP-4** Desoldering pump
- **ST-1** Mini diagonal cutters
- **ST-2** Mini long nose pliers
- **ST-3** Wire stripper
- **ST-5** Screwdriver slotted 3/16"
- **ST-6** Screwdriver #1 phillips
- Anti-static foam pad
- When ordering a meter to be used with the **XK-550 Trainer**, specify a **PSV-50** kit which will provide you with velcro to hold the meter in place and an anti-static foam pad that fits below the meter for storage of ICs. This is supplied **FREE** with meter order.
- When ordering tools, specify a **TM-30** tool mounting kit. When four or more tools are ordered, the tool mounting kit is supplied **FREE!**

**Dimensions:** 12 1/4" (H) x 16 3/8" (W) x 5 1/4" (D)

Elenco® Electronics can supply the **XK-550 Trainer** complete with any combination of tools or any of the meters shown in our catalog. Call or write for more information.



- **Model XK-550 Trainer** - Available fully assembled without tools.
- **Model XK-550K Trainer** - Available as kit without tools.
- **Model XK-550T Trainer** - Available with tools as shown - meter **sold separately**.
- **Model XK-550TK** - Available as a kit with tools as shown - meter **sold separately**.

## Specifications for XK-550 & XK-700 Trainers on Pages 2 and 3

Power Supplies	Analog Section	Digital Section	Fast Track Construction
<ul style="list-style-type: none"> <li>• Variable Power Supply</li> <li>• 0V to 20VDC @ 0.5A (0V to 15VDC @ 1A)</li> <li>• 0V to -20VDC @ 0.5A (0V to -15VDC @ 1A)</li> <li>• +12VDC @ 1A</li> <li>• -12VDC @ 1A</li> <li>• +5VDC @ 1A</li> <li>• +30VAC center-tapped to 15VAC @ 1A</li> </ul>	<ul style="list-style-type: none"> <li>• Function Generator - Sine, Triangular, Square Wave.</li> <li>• Frequency adjustable in five ranges from 1 to 100kHz.</li> <li>• Fine frequency adjust.</li> <li>• Amplitude adjust.</li> <li>• DC offset</li> </ul>	<ul style="list-style-type: none"> <li>• Eight data switches.</li> <li>• Two no bounce logic switches.</li> <li>• Eight LED readouts, buffered.</li> <li>• Clock amplitude 5Vpp square wave.</li> </ul>	Most of the components are on one PC board, eliminating all wires between the PC board, pots, regulators and switches. Makes assembly easier and faster, eliminates errors.
	<b>Potentiometers</b> <ul style="list-style-type: none"> <li>• 2 undedicated potentiometers 1kΩ &amp; 100kΩ.</li> </ul>	<b>Breadboards</b> <ul style="list-style-type: none"> <li>• 2 breadboards, each containing 830 tie points (total 1,660).</li> </ul>	



# XK-150 DIGITAL / ANALOG TRAINER

A low cost, full-function digital/analog trainer that meets the needs of electronic training programs. Rugged construction, can be used as fixed lab equipment or be portable.

Specifications	
Digital Section	Power Supplies
<ul style="list-style-type: none"> <li>• Eight data switches.</li> <li>• Two no bounce logic switches.</li> <li>• Eight LED readouts, buffered.</li> <li>• Clock frequency 1Hz, 60Hz, 1kHz, 100kHz.</li> <li>• Clock amplitude 5Vpp square wave.</li> </ul>	<ul style="list-style-type: none"> <li>• Variable power supply.</li> <li>• +1.25V to 15VDC @ 0.25A.</li> <li>• -1.25V to -15VDC @ 0.25A.</li> <li>• +5VDC @ 0.25A.</li> <li>• +30VAC center-tapped to 15VAC @ 0.25A.</li> </ul>
Analog Section	Case
<ul style="list-style-type: none"> <li>• Function generator - Sine, square wave.</li> <li>• Frequency adjustable in two ranges from 200 - 40kHz.</li> <li>• Amplitude Sine 4Vpp.</li> <li>• Square 12Vpp.</li> </ul>	High impact molded case 2" (H) x 11" (W) x 11" (D). With flow-thru cooling to ventilate the power supply.
Potentiometers	Breadboards
• 2 undedicated potentiometers 1kΩ and 100kΩ.	• 1 breadboard, 830 tie points including two bus strips.



**Model XK-150 Digital Trainer - Fully assembled**

## COMPUTER INTERFACE TRAINERS

### Micro-Master®

### A Basic Computer Training Kit to Learn the Fundamentals of Computers

#### Model MM-8000K

Starting from scratch, you build a complete computer system. Our Micro-Master® Trainer teaches you to write into RAMs, ROMs, and run an 8085 microprocessor. You will write the initial instructions in permanent memory in a 2816E<sup>2</sup>PROM. Teaches all about input and output ports and computer timers. Complete with 128 page lesson manual, instructions, and experiments.



### Microprocessor Training System

#### Model MP-Z80

The trainer and the manuals will guide the user through the studying and understanding of Z80 instruction sets and assembly language programming. The manuals were specifically designed as a learning tool for students and individuals who are interested in practical experiments of assembly language programming.

The manuals contain more than 15 hands-on experiments, covering essential microprocessor course contents. Theory is covered to understand the experiments.

Includes power pack, user manual, and experimentation manual.



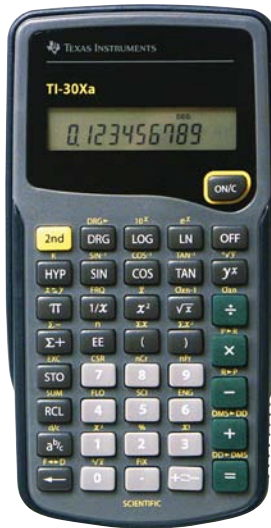


# CALCULATORS

FULL LINE OF TEXAS INSTRUMENTS®, CASIO®, AND SHARP® CALCULATORS

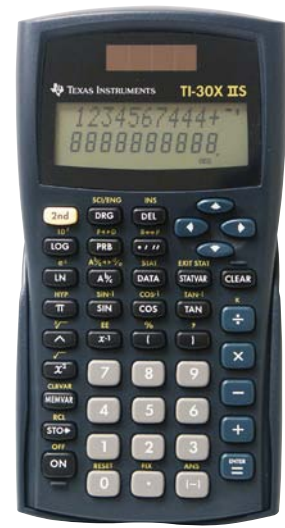
## Texas Instruments® Scientific Calculator Model TI-30Xa

10 + 2 digit display, one variable statistic, three memories, fractions and fraction / decimal conversions, trigonometric functions in degrees, radians, grads and hyperbolic, common and natural logarithms, universal powers and roots, reciprocals and factorials, polar / rectangular conversions, degrees, minutes, seconds, seconds / decimal degrees, conversions. Automatic power down. Durable slide case.



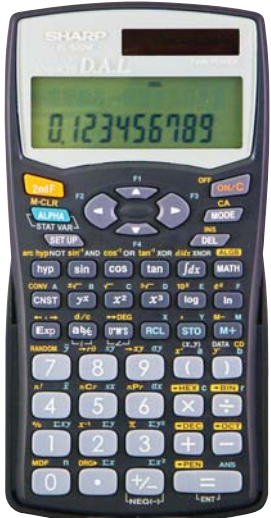
## Texas Instruments® Scientific Calculator Model TI-30X IIs Solar / Battery

Two-line display scientific calculator combines statistics and advanced scientific functions and is a durable and affordable calculator. The two-line display helps students explore math and science concepts in the class room. Automatic power down (APD™). Lithium battery included. Protective slide case.



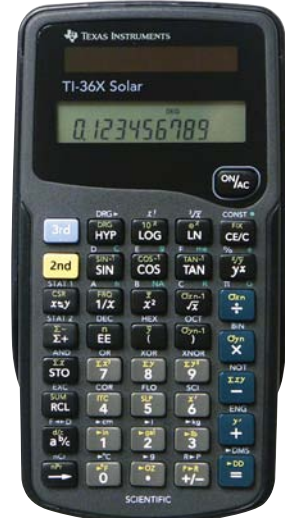
## Sharp® Scientific Calculator Solar/Battery Model EL-520WBBK

Advanced solar scientific calculator Model EL-520WBBK. Ergonomic design; solar and battery powered, two-line, 12-digit display D.A.L. (Direct Algebra Logic). Multi-line playback, complex numbers and calculus functions; 238 total functions. Hard case included.



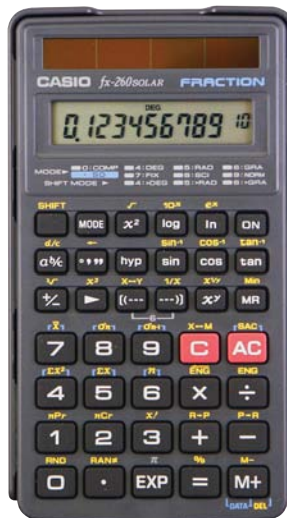
## Texas Instruments® Solar Scientific Model TI-36X SLR

Advanced scientific calculator, 10 + 2 digit display, ideal for use in advanced algebra, trigonometry, geometry, computer science, chemistry, engineering, physics, calculus and statistics. ANYLITE™ solar power. Protective slide case.



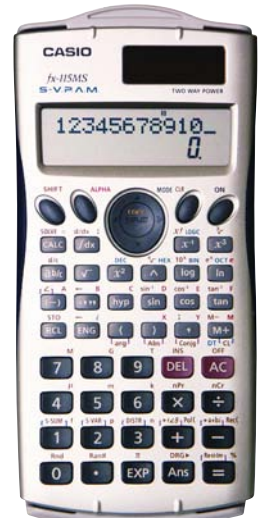
## Casio® Scientific Model FX-260

10 digit display with 12 digit accuracy, one variable statistic, random number generator, trigonometry functions, impact resistant slide-on case with quick reference card, fraction to decimal to mixed numeral to improper fraction toggle.



## Casio® Scientific Calculator Solar/Battery Model FX-115MS Plus

New advanced design with 2-line, 12-digit LCD display. Visually perfect algebraic method 1 and 2, variable statistics, boolean logic and number bases. Preprogrammed scientific constants. Complex number calculations. Snap-on hard case included.

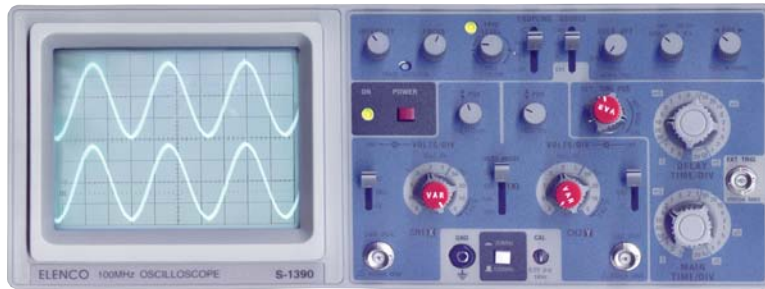


**OTHER ADVANCED CALCULATORS ARE AVAILABLE ...  
CALL FOR INFORMATION & PRICING.**

# ANALOG OSCILLOSCOPES

## 100MHz Model S-1390

Delayed Sweep & Dual Trace



S-1390 Shown

## 60MHz Model S-1360

Delayed Sweep & Dual Trace

**Features**

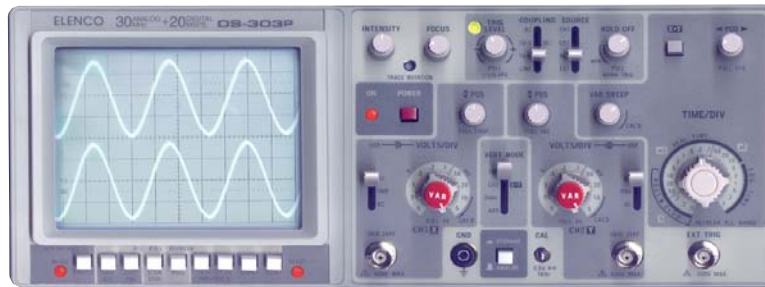
- 1mV/DIV sensitivity
- Sweep to 2ns/DIV (S-1390), 10ns/DIV (S-1360)
- Component tester (S-1360 only)
- Z-axis input
- Single sweep
- Beam finder (S-1360)
- Dust cover included
- 2 free x1, x10 probes

**FREE DUST COVER & PROBES**

**All Scopes  
UL, CSA,  
TUV, GS  
Approved**

Specifications																							
<b>Vertical Amplifiers (CH 1 and CH 2)</b> Sensitivity: 5mV/div - 5V/div (x1 mode) 1mV/div - 1V/div (x5 mode) Attenuator: 1-2-5 sequence, 10 step attenuator, plus vernier control. Rise time: 5.8ns (S-1360), 3.5ns (S-1390) Over shoot: Less than 5% Input impedance: 1MΩ ±2%, 25pF ±10pF Max. input voltage: 400V (DC + AC peak) Operating modes: CH 1, CH 2, DUAL (ALT or CHOP) and ADD Chop frequency: Approximately 500kHz Algebraic addition: CH 1 + CH 2, CH 1 - CH 2 Polarity reversal: CH 2 only <b>Horizontal Amplifier</b> X-Y mode: Switch selectable using X-Y switch CH 1: X-axis CH 2: Y-axis Accuracy: Y-axis ±3% X-axis ±6%	<b>Horizontal Amplifier (continued)</b> Bandwidth: DC - 1MHz (-3dB) X-Y phase difference: Approximately 3° at 50kHz <b>Sweep System</b> Sweep display mode: Main, Mix, Delay Hold off time: 5:1 continuously variable <b>Main Sweep</b> Sweep speed: S-1360: 0.1μs/div - 2s/div in 1-2-5 sequence, 23 steps. S-1390: 20ns/div - 0.5s/div in 1-2-5 sequence, 23 steps. Accuracy: ±3% Variable time control: 5:1, uncalibrated, continuously variable between steps. Sweep magnification: 10X, ±10%, extend sweep speed up to 10ns/div (S-1360), 10X, ±10%, extend sweep speed up to 2ns/div (S-1390).	<b>Delayed Sweep</b> Sweep speed: S-1360: 0.1μs/div - 2s/div in 1-2-5 sequence, 23 steps. S-1390: 20ns/div - 0.5s/div in 1-2-5 sequence, 23 steps. Accuracy: ±3% Delay time position: Variable control to locate desirable waveform for extending. <b>Trigger</b> Trigger coupling: AUTO, NORM, TV-V, TV-H (S-1360) AC, TV-V, TV-H, LINE (S-1390) Trigger source: CH 1, CH 2, ALT (V MODE), LINE, EXT. Slope: ± <b>Trigger Sensitivity (S-1360 / S-1390)</b> <table border="1"> <thead> <tr> <th>Coupling</th> <th>Bandwidth</th> <th>Internal</th> <th>External</th> </tr> </thead> <tbody> <tr> <td>TV-V</td> <td>DC - 1kHz</td> <td>1.0 div</td> <td>0.1Vpp</td> </tr> <tr> <td>TV-H</td> <td>1kHz - 100kHz</td> <td>1.0 div</td> <td>0.1Vpp</td> </tr> <tr> <td>AUTO</td> <td>100Hz-60/100MHz</td> <td>1.5 / 2.0 div</td> <td>0.1 / 0.2Vpp</td> </tr> <tr> <td>NORM</td> <td>100Hz-60/100MHz</td> <td>1.5 / 2.0 div</td> <td>0.1 / 0.2Vpp</td> </tr> </tbody> </table>	Coupling	Bandwidth	Internal	External	TV-V	DC - 1kHz	1.0 div	0.1Vpp	TV-H	1kHz - 100kHz	1.0 div	0.1Vpp	AUTO	100Hz-60/100MHz	1.5 / 2.0 div	0.1 / 0.2Vpp	NORM	100Hz-60/100MHz	1.5 / 2.0 div	0.1 / 0.2Vpp	<b>Component Tester (S-1360 only)</b> Test voltage: Max. 6Vrms (open circuit) Test current: Max. 11mA (shorted) Test frequency: Line frequency Components: Capacitor, inductor, diode, transistor, zener, etc. <b>CH 2 Output</b> Output Level: 100mV/DIV (no load), 50mV/div (50Ω load). Bandwidth: 20Hz - 20MHz (-3dB). <b>Other Specifications</b> CRT: Type: Rectangular with internal graticule. Display area: 8 x 10 div (1 div = 1 cm) Accelerating voltage: 12kV (S-1360), 14kV (S-1390) Phosphor: P31 Z modulation: Positive TTL signal, low level blank intensity at any intensity, high level unblank any intensity. Trace rotation: Adjustable front panel Calibrator: Square wave 1kHz, 2.0Vpp ±3% (S-1360) Square wave 1kHz, 0.5Vpp ±3% (S-1390) Power requirements: 115, 230VAC ±10%, 50/60Hz Power consumption: Approximately 55 watts Dimensions: 5 1/4" (H) x 12 3/4" (W) x 15 5/8" (D) Net weight: S-1360: 17.2 lbs. (7.8kgs.) S-1390: 18.7 lbs. (8.5kgs.) Accessories supplied: Two x1, x10 probes, schematic diagram & parts list, AC power cord, spare fuse, and dust cover.
Coupling	Bandwidth	Internal	External																				
TV-V	DC - 1kHz	1.0 div	0.1Vpp																				
TV-H	1kHz - 100kHz	1.0 div	0.1Vpp																				
AUTO	100Hz-60/100MHz	1.5 / 2.0 div	0.1 / 0.2Vpp																				
NORM	100Hz-60/100MHz	1.5 / 2.0 div	0.1 / 0.2Vpp																				

# DIGITAL STORAGE OSCILLOSCOPES



DS-303 Shown

## 20MHz, 10Ms/s Model DS-203 30MHz, 20Ms/s Model DS-303

Digital Storage / Analog Oscilloscopes

**All Scopes  
UL, CSA,  
TUV, GS  
Approved**

**Features**

- 2-channel
- 2k Memory per channel
- Internally backed-up memory (DS-303)
- 1mV sensitivity
- RS-232 output (DS-303)
- Dust cover included
- 2 free x1, x10 probes

**FREE DUST COVER & PROBES**

Specifications																											
<b>Vertical Amplifiers (CH 1 and CH 2)</b> Sensitivity: 5mV-5V/DIV ±3% (x1 mode) 1mV-1V/DIV ±5% (x5 mode) Attenuator: 1-2-5 sequence, 10-step attenuator, plus vernier control. Bandwidth: DS-203: DC to 20MHz within -3dB DS-303: DC to 30MHz within -3dB Rise time: DS-203: 17.5ns DS-303: 11.7ns Over shoot: 3% or less Input impedance: 1MΩ shunted by 25pF ±10pF Max. input voltage: 400V (DC + AC peak) Operating modes: CH 1, CH 2, DUAL (ALT or CHOP) and ADD. Chop frequency: Approximately 500kHz Polarity selection: CH 2 only	<b>Horizontal Amplifier</b> X-Y mode: Switch selectable using X-Y switch CH 1: X-axis CH 2: Y-axis Accuracy: Y-axis ±3% X-axis ±6% Bandwidth: DC - 2MHz (-3dB) (DS-603) DC - 1MHz (-3dB) (DS-203 & 303) X-Y phase difference: Approximately 3° at 50kHz <b>Main Sweep</b> Sweep speed: 0.1μs/div - 0.5s/div in 1-2-5 sequence, 21 steps. Accuracy: ±3% Sweep magnification: 10X ±6% (DS-203 & 303) 10X ±10% (DS-603) Hold off time: Variable up to 5 times sweep <b>Trigger</b> Trigger coupling: AC, TV-V, TV-H, LINE Trigger source: CH 1, CH 2, ALT (V-MODE), EXT Slope: ±	<b>Trigger Sensitivity (DS-203 / DS-303 / DS-603)</b> <table border="1"> <thead> <tr> <th>Coupling</th> <th>Bandwidth</th> <th>Internal</th> <th>External</th> </tr> </thead> <tbody> <tr> <td>AC (203)</td> <td>30Hz - 30MHz</td> <td>1.0 div</td> <td>0.5Vpp</td> </tr> <tr> <td>AC (303)</td> <td>30Hz - 40MHz</td> <td>1.0 div</td> <td>0.5Vpp</td> </tr> <tr> <td>TV-V</td> <td>20Hz - 30kHz</td> <td>0.5 div</td> <td>0.5Vpp</td> </tr> <tr> <td>TV-H</td> <td>3kHz - 100kHz</td> <td>0.5 div</td> <td>0.5Vpp</td> </tr> <tr> <td>LINE</td> <td>DC - 30MHz</td> <td>1.5 div</td> <td>1.0 Vpp</td> </tr> </tbody> </table> <b>Digital Storage Facilities</b> Memory: 2k words per channel (2 x 2048 x 8-bit). Internally backed-up memory (DS-303/603). Realtime sampling rate: DS-203: 10Msamples/s DS-303: 20Msamples/s Vertical resolution: 8-bit (25 level/div) Horizontal resolution: 2,048 points for 10 div	Coupling	Bandwidth	Internal	External	AC (203)	30Hz - 30MHz	1.0 div	0.5Vpp	AC (303)	30Hz - 40MHz	1.0 div	0.5Vpp	TV-V	20Hz - 30kHz	0.5 div	0.5Vpp	TV-H	3kHz - 100kHz	0.5 div	0.5Vpp	LINE	DC - 30MHz	1.5 div	1.0 Vpp	<b>Digital Storage Facilities (continued)</b> Operating mode: Roll, save ALL, save CH-2, X-Y, single, pre-trig (0%, 25%, 50%, 75%), plot out. Bandwidth: Same as analog Output: DS-203: CH1/CH2 0.2V/div. DS-303: RS-232: 4800, no parity, 8-bit, 1 stop. Plot: Epson (24-pin) compatible printer (DS-203,303) <b>Other Specifications</b> CRT: Type: Rectangular with internal graticule Display area: 8 x 10 div (1 div = 1 cm) Accelerating voltage: 2.1kV (DS-203/303) 12kV (DS-603) Phosphor: P31 Trace rotation: Adjustable front panel Calibrator: Square wave 1kHz, 0.5Vpp ±3% Power requirements: 115, 230VAC ±10%, 50/60Hz Power consumption: Approximately 60 watts Dimensions: 5 1/4" (H) x 12 3/4" (W) x 15 5/8" (D) Net weight: 18 lbs. 11.2 oz. (8.5kgs.) Accessories supplied: User manual, Two x1, x10 probes, AC power cord, spare fuse, and dust cover.
Coupling	Bandwidth	Internal	External																								
AC (203)	30Hz - 30MHz	1.0 div	0.5Vpp																								
AC (303)	30Hz - 40MHz	1.0 div	0.5Vpp																								
TV-V	20Hz - 30kHz	0.5 div	0.5Vpp																								
TV-H	3kHz - 100kHz	0.5 div	0.5Vpp																								
LINE	DC - 30MHz	1.5 div	1.0 Vpp																								

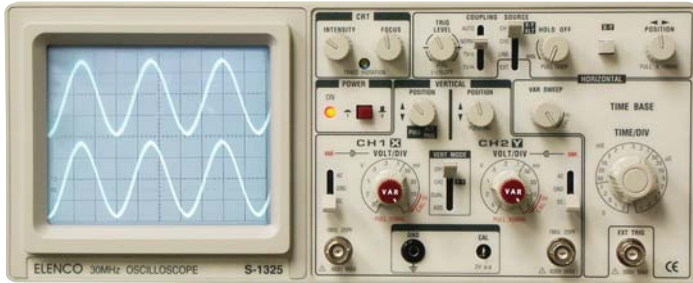


# ANALOG OSCILLOSCOPES



## 30MHz Model S-1330

2-Channel - Delayed Sweep  
Component Tester, Beam Find, Dual Time Base



## 30MHz Model S-1325

2-Channel - Oscilloscope

### Features

- Dual or single trace operation
- Calibrated 20-step time base
- AUTO/NORM triggered sweep operation with AC, TV-H, TV-V and line coupling.
- 1mV/DIV sensitivity
- Z-modulation (S-1330 only)
- Y (CH 2) output (S-1330 only)
- Dust cover included
- 2 free x1, x10 probes

**FREE DUST COVER & PROBES**

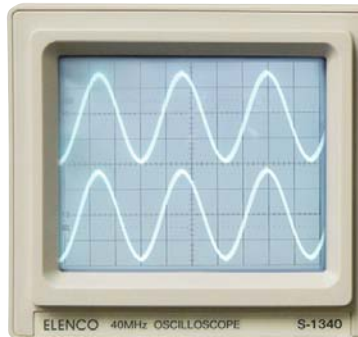
S-1325 Shown

### Specifications

Vertical Amplifiers (CH 1 and CH 2)	Horizontal Amplifier (continued)	Delayed Sweep (S-1330 only) (continued)	Component Tester (S-1330 only)																				
<b>Sensitivity:</b> 5mV/div - 5V/div (x1 mode). 1mV/div - 1V/div (6MHz, -3dB) (x5 mode). <b>Attenuator:</b> 1-2-5 sequence, 10-step attenuator, plus vernier control. <b>Rise time:</b> About 14ns. <b>Over shoot:</b> Less than 5%. <b>Input impedance:</b> 1MΩ ±2%, 25pF ±10pF. <b>Max. input voltage:</b> 400V (DC + AC peak). <b>Operating modes:</b> CH 1, CH 2, DUAL (ALT or CHOP) and ADD. <b>Chop frequency:</b> Approximately 500kHz. <b>Algebraic addition:</b> CH 1 + CH 2, CH 1 - CH 2. <b>Inverter:</b> CH 2 only.	<b>Bandwidth:</b> DC - 1MHz (-3dB) <b>X-Y phase difference:</b> Approximately 3° at 50kHz <b>Sweep System</b> <b>Sweep display mode:</b> Main, Mix, Delay (S-1330 only). <b>Hold off time:</b> 5:1 continuously variable. <b>Main Sweep</b> <b>Sweep speed:</b> 0.1μs/div - 0.2s/div in 1-2-5 sequence, 20 steps. <b>Accuracy:</b> ±3%. <b>Variable time control:</b> 5:1, uncalibrated, continuously variable between steps. <b>Sweep magnification:</b> 10X, ±10%, extend sweep speed up to 10ns/div.	<b>Accuracy:</b> ±3% <b>Sweep magnification:</b> 10X, ±10%, extend sweep speed up to 10ns/div. <b>Delay time position:</b> Variable control to locate desirable waveform for extending. <b>Trigger</b> <b>Trigger coupling:</b> AUTO, NORM, TV-V, TV-H <b>Trigger source:</b> CH 1, CH 2, LINE, EXT <b>Slope:</b> ± <b>Trigger Sensitivity</b> <table border="1"> <thead> <tr> <th>Coupling</th> <th>Bandwidth</th> <th>Internal</th> <th>External</th> </tr> </thead> <tbody> <tr> <td>TV-V</td> <td>20Hz - 1kHz</td> <td>0.5 div</td> <td>0.05Vpp</td> </tr> <tr> <td>TV-H</td> <td>1kHz - 100kHz</td> <td>0.5 div</td> <td>0.05Vpp</td> </tr> <tr> <td>AUTO</td> <td>100Hz - 30MHz</td> <td>1.5 div</td> <td>0.1Vpp</td> </tr> <tr> <td>NORM</td> <td>DC - 30MHz</td> <td>1.5 div</td> <td>0.1Vpp</td> </tr> </tbody> </table>	Coupling	Bandwidth	Internal	External	TV-V	20Hz - 1kHz	0.5 div	0.05Vpp	TV-H	1kHz - 100kHz	0.5 div	0.05Vpp	AUTO	100Hz - 30MHz	1.5 div	0.1Vpp	NORM	DC - 30MHz	1.5 div	0.1Vpp	<b>Test voltage:</b> Max. 6Vrms (open circuit) <b>Test current:</b> Max. 11mA (shorted) <b>Test frequency:</b> Line frequency <b>Components:</b> Capacitor, inductor, diode, transistor, zener, etc. <b>CH 2 Output (S-1330 only)</b> <b>Output level:</b> 100mV/div (no load) 50mV/div (50Ω load) <b>Bandwidth:</b> 20Hz - 30MHz (-3dB) <b>Other Specifications</b> <b>CRT:</b> Type: Rectangular with internal graticule. Adjustable graticule illumination (S-1330 only). <b>Display area:</b> 8 x 10 div (1 div = 1 cm) <b>Accelerating voltage:</b> 2.1kV <b>Phosphor:</b> P31 <b>Z modulation (S-1330 only):</b> Positive TTL signal, low level blank intensity at any intensity, high level unblank any intensity. <b>Trace rotation:</b> Adjustable front panel <b>Calibrator:</b> Square wave 1kHz, 2Vpp ±3% <b>Power requirements:</b> 115, 230VAC ±10%, 50/60Hz <b>Power consumption:</b> Approximately 40 watts <b>Dimensions:</b> 5 1/4" (H) x 12 3/4" (W) x 15 5/8" (D) <b>Net weight:</b> 16 lbs. 12 oz. (7.6kgs.) <b>Accessories supplied:</b> Two x1, x10 probes, schematic diagram & parts list, AC power cord, spare fuse, and dust cover.
Coupling	Bandwidth	Internal	External																				
TV-V	20Hz - 1kHz	0.5 div	0.05Vpp																				
TV-H	1kHz - 100kHz	0.5 div	0.05Vpp																				
AUTO	100Hz - 30MHz	1.5 div	0.1Vpp																				
NORM	DC - 30MHz	1.5 div	0.1Vpp																				
<b>Horizontal Amplifier</b> <b>X-Y mode:</b> Switch selectable using X-Y switch CH 1: X-axis. CH 2: Y-axis. <b>Accuracy:</b> Y-axis ±3%. X-axis ±6%.	<b>Delayed Sweep (S-1330 only)</b> <b>Sweep speed:</b> 0.1μs/div - 0.2s/div in 1-2-5 seq., 20 steps.																						

## 40MHz Model S-1340

2-Channel - Oscilloscope



## 40MHz Model S-1345

2-Channel - Delayed Sweep Component Tester, Beam Find, Dual Time Base



### General Features

- 1mV/DIV sensitivity
- Variable hold off
- X-Y operation
- TV sync
- Beam finder (S-1345 only)
- Sweep mix (S-1345 only)
- Z modulation (S-1345 only)
- Component tester (S-1345 only)
- Dust cover included
- 2 free x1, x10 probes

S-1340 Shown

### Specifications

Vertical Amplifiers (CH 1 and CH 2)	Horizontal Amplifier (continued)	Delayed Sweep (S-1345 only) (continued)	Component Tester (S-1345 only)																				
<b>Sensitivity:</b> 5mV/div - 5V/div (x1 mode). 1mV/div - 1V/div (6MHz, -3dB) (x5 mode). <b>Attenuator:</b> 1-2-5 sequence, 10-step attenuator, plus vernier control. <b>Rise time:</b> About 8.8ns <b>Over shoot:</b> Less than 5% <b>Input impedance:</b> 1MΩ ±2%, 25pF ±10pF. <b>Max. input voltage:</b> 400V (DC + AC peak) <b>Operating modes:</b> CH 1, CH 2, DUAL (ALT or CHOP) and ADD. <b>Chop frequency:</b> Approximately 500kHz <b>Algebraic addition:</b> CH 1 + CH 2, CH 1 - CH 2 <b>Inverter:</b> CH 2 only.	<b>Bandwidth:</b> DC - 1MHz (-3dB) <b>X-Y phase difference:</b> Approximately 3° at 50kHz <b>Sweep System</b> <b>Sweep display mode:</b> Main, mix, delay (S-1345 only) <b>Hold off time:</b> 5:1 continuously variable (0.1μs/div) <b>Main Sweep</b> <b>Sweep speed:</b> 0.1μs/div - 2s/div in 1-2-5 sequence, 23 steps. <b>Accuracy:</b> ±3%. <b>Variable time control:</b> 5:1, uncalibrated, continuously variable between steps. <b>Sweep magnification:</b> 10X, ±10%, extend sweep speed up to 10ns/div.	<b>Accuracy:</b> ±3% <b>Sweep magnification:</b> 10X, ±10%, extend sweep speed up to 10ns/div. <b>Delay time position:</b> Variable control to locate desirable waveform for extending. <b>Trigger</b> <b>Trigger coupling:</b> AUTO, NORM, TV-V, TV-H <b>Trigger source:</b> CH 1, CH 2, ALT, LINE, EXT <b>Slope:</b> ± <b>Trigger Sensitivity</b> <table border="1"> <thead> <tr> <th>Coupling</th> <th>Bandwidth</th> <th>Internal</th> <th>External</th> </tr> </thead> <tbody> <tr> <td>TV-V</td> <td>DC - 1kHz</td> <td>1.0 div</td> <td>0.1Vpp</td> </tr> <tr> <td>TV-H</td> <td>1kHz - 100kHz</td> <td>1.0 div</td> <td>0.1Vpp</td> </tr> <tr> <td>AUTO</td> <td>100Hz - 40MHz</td> <td>1.5 div</td> <td>0.1Vpp</td> </tr> <tr> <td>NORM</td> <td>100Hz - 40MHz</td> <td>1.5 div</td> <td>0.1Vpp</td> </tr> </tbody> </table>	Coupling	Bandwidth	Internal	External	TV-V	DC - 1kHz	1.0 div	0.1Vpp	TV-H	1kHz - 100kHz	1.0 div	0.1Vpp	AUTO	100Hz - 40MHz	1.5 div	0.1Vpp	NORM	100Hz - 40MHz	1.5 div	0.1Vpp	<b>Test voltage:</b> Max. 6Vrms (open circuit) <b>Test current:</b> Max. 11mA (shorted) <b>Test frequency:</b> Line frequency <b>Components:</b> Capacitor, inductor, diode, transistor, zener, etc. <b>CH 2 Output (S-1345 only)</b> <b>Output level:</b> 100mV/div (no load) 50mV/div (50Ω load) <b>Bandwidth:</b> 20Hz - 20MHz (-3dB) <b>Other Specifications</b> <b>CRT:</b> Type: Rectangular with internal graticule. Adjustable graticule illumination (S-1345 only). <b>Display area:</b> 8 x 10 div (1 div = 1 cm) <b>Accelerating voltage:</b> 2.1kV (S-1340), 12kV (S-1345) <b>Phosphor:</b> P31 <b>Z modulation (S-1345 only):</b> Positive TTL signal, low level blank intensity at any intensity, high level unblank any intensity. <b>Trace rotation:</b> Electrical, adjustable front panel. <b>Calibrator:</b> Square wave 1kHz ±10%, 2Vpp ±3% <b>Power requirements:</b> 115V, 230VAC ±10%, 50/60Hz <b>Power consumption:</b> Approximately 40 watts <b>Dimensions:</b> 5 1/4" (H) x 12 3/4" (W) x 15 5/8" (D) <b>Net weight:</b> 17 lbs. 3.2 oz. (7.8kgs.) <b>Accessories supplied:</b> Two x1, x10 probes, schematic diagram & parts list, AC power cord, spare fuse, and dust cover.
Coupling	Bandwidth	Internal	External																				
TV-V	DC - 1kHz	1.0 div	0.1Vpp																				
TV-H	1kHz - 100kHz	1.0 div	0.1Vpp																				
AUTO	100Hz - 40MHz	1.5 div	0.1Vpp																				
NORM	100Hz - 40MHz	1.5 div	0.1Vpp																				
<b>Horizontal Amplifier</b> <b>X-Y mode:</b> Switch selectable using X-Y switch CH 1: X-axis CH 2: Y-axis <b>Accuracy:</b> Y-axis ±3% X-axis ±6%	<b>Delayed Sweep (S-1345 only)</b> <b>Sweep speed:</b> 0.1μs/div - 2s/div in 1-2-5 seq., 23 steps.																						

# RF & AUDIO GENERATORS

Models **SG-9500** and **SG-9000** are stable high frequency generators capable of AM modulation. They are primarily designed for work on AM and FM radio receivers, but can be used in any project requiring a modulated RF signal.

Model **SG-9200** is a low cost audio generator featuring very low distortion sine wave and a rapid-rise square wave. All models have vernier frequency control for easy tuning and switchable high-low output levels.

Model **SG-9500** has built-in frequency counters which are switchable to measure external frequencies up to 150MHz.

## Wide Band RF Signal Generators



**Model SG-9500**

RF Generator with Frequency Counter

### Features SG-9000 / SG-9500

- RF frequencies continuously variable 100kHz to 450MHz in 6 ranges.
- Output RF voltage variable and has 20dB attenuator switch.
- Internal AM modulation of 1kHz.
- Audio 1kHz signal available at output.
- External crystal locks oscillator to your frequency between 1-15MHz.
- 455kHz, 4.5MHz and 10.7MHz specially noted for easy setting.

### Specifications: SG-9500 Frequency Counter

Frequency range:	10Hz - 150MHz in 2 ranges
Accuracy:	±1 count, ±reference time
Resolution:	1Hz or 10Hz
Gate time:	0.1 sec, 1 sec
Input sensitivity:	Less than 50mVrms
Input impedance:	HF 1MΩ VHF 50Ω
Reference time frequency:	10MHz
Reference time accuracy:	5 x 10 <sup>-5</sup> (50ppm) 0° - 40°C 1 x 10 <sup>-5</sup> (10ppm) 23°C ±3°C
Operation temp:	0-40°C
Digital display:	6 digit 0.56" LED



**Model SG-9000** RF Generator

### Specifications: SG-9000 / SG-9500

<b>Frequency on 6 ranges 100kHz to 150MHz (450MHz on harmonics):</b>	
Band A	100kHz - 300kHz
Band B	300kHz - 1000kHz
Band C	1MHz - 3.2MHz
Band D	3MHz - 10MHz
Band E	10MHz - 35MHz
Band F	32MHz - 150MHz
Harmonics 96MHz - 450MHz	
Frequency accuracy:	(SG-9000) ± 3% dial accuracy (SG-9500) ± count accuracy, ± 1 digit
RF output approximate:	100mV to 35MHz
Crystal output:	1-15MHz uses HC 6/U holder (not included)
Output attenuator:	Hi-Lo Sw with fine adjustment
Modulation internal:	1kHz (AM) 30% approximate
Modulation external:	50Hz - 20kHz at less than 1Vrms input
Audio output:	1kHz min. at 1Vrms
Power:	120V/220V, 50/60Hz
Dimensions:	(SG-9000) 7" (H) x 10" (W) x 6" (D) (SG-9500) 5" (H) x 8 1/2" (W) x 8 1/2" (D)
Weight:	(SG-9000) 5 lbs., 14 oz. (SG-9500) 5 lbs., 12.2 oz.
Accessories:	Detachable line cord, BNC to insulated clip output cable, instruction manual.

## Audio Generator



**Model SG-9200** Audio Generator

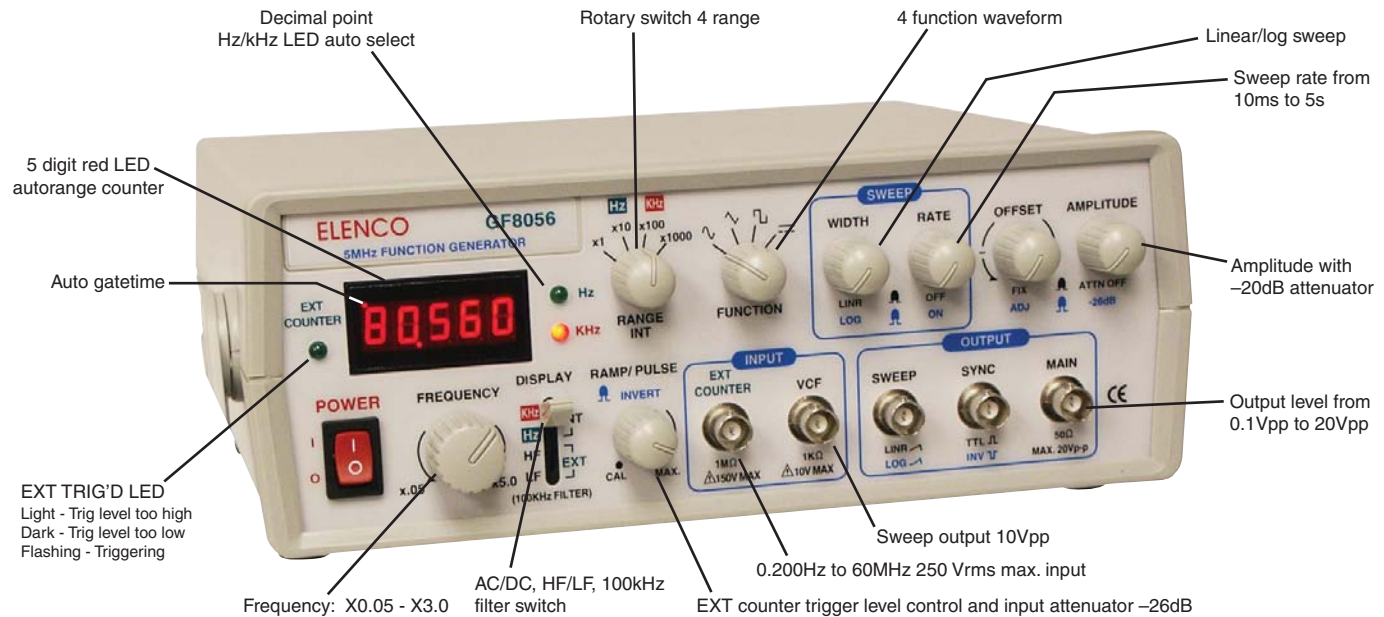
### Specifications: SG-9200

<b>Sine Wave</b>	
Frequency range:	10Hz - 1MHz (5 decade bands)
Frequency accuracy:	±3% +2Hz
Output distortion:	500Hz - 50kHz less than 0.05% 50Hz - 500kHz less than 0.5%
Output voltage:	8Vrms 600Ω impedance
Output flatness:	±1dB (1kHz)
<b>Square Wave</b>	
Frequency range:	10Hz - 10kHz
Output voltage:	10Vpp max.
Rise time:	0.5 μsec.
Power:	120/220VAC, 50/60Hz
Dimensions:	7" (H) x 10" (W) x 6" (D)
Weight:	5 lbs., 14 oz.



# 5MHz SWEEP FUNCTION GENERATOR

## Model GF-8056 with Built-in 60MHz Frequency Counter



Main Output		Sync Output		Counter	
Frequency range	0.5Hz to 5MHz in 8 ranges	Output impedance	50Ω <2% accuracy	Display	5 digit 0.36" red LED display with autorange
Waveforms	4 waveforms (sine, square, triangle, DC)	Output level	TTL level, >3Vpp fixed amplitude	Resolution	0.001Hz
Stability	0.1% for 15 minutes, 0.2% for 24 hours	Fanout	>20	Time base	20MHz
DC offset	Continuously variable ±10V no load	Rise time	<60ns	Accuracy	<0.002%
Symmetry	50% (positive and negative half)	<b>VCF Input</b>		Max. input voltage	250Vrms
Linearity	<1% 1Hz-100kHz for triangle wave	Input voltage	0-10V	Input impedance	1MΩ <2%
Distortion	<1%, 1Hz to 100kHz	Input frequency	DC-1kHz variance 1:1, 1:1,000	Input frequency	0.2Hz - 60MHz
Rise / fall time	<90ns for square wave	<b>Sweep</b>		Attenuator	0dB, -26dB
Output impedance	50Ω <2% accuracy	Output amplitude	10Vpp (no load) or 5Vpp (1kΩ load)	Gate time	0.25s - 10s, auto-setting
Max. output	20Vpp no load, 10Vpp 50Ω load	Output frequency	Continuous adjustment 0.2Hz - 100Hz	Sensitivity	<30mVrms (1MHz)
Min. output	0.1Vpp no load, 0.05Vpp 50Ω load	Sweep speed	10ms - 5s, continuously variable	<b>General</b>	
Attenuator	X20: -26dB (±2% accuracy), X1: 0dB	Sweep width	1:1 - 1:100 continuously variable	Power source	AC 115V / 230V +10%, 50/60Hz, 25W
		Output waveform	Linear or log sweep ramp wave	Dimensions	10 13/16" (W) x 3 1/2" (H) x 11 13/16" (D)
				Weight	5 lbs. 8 oz.
				Safety approvals	UL, CUL, GS, TUV, CE, IEC1010, EN61010

## 20Hz - 150kHz Low Distortion Sine/Square Wave Audio Generator

### Model GF-800/555

- Sine and square wave generator
- Variable output control
- 20Hz to 150kHz in 46 steps
- Low battery indicator
- Low distortion R-C oscillator
- Compact portable, lightweight



Specifications
<b>Frequency range:</b> x1 range 20Hz to 1.5kHz (23 steps), x100 range 2kHz to 150kHz (23 steps)
<b>Accuracy:</b> 20Hz through 100kHz (±3% or less), 120kHz and 150kHz (±5% or less)
<b>Output control:</b> 0dB/-20dB attenuator switch and variable amplitude control
<b>Output impedance:</b> approximately 600Ω
<b>SINEWAVE CHARACTERISTICS</b>
<b>Output voltage:</b> ≥1.2V rms at max. setting (no load)
<b>Output flatness:</b> (short term) 20Hz to 150kHz +0.5dB (reference frequency 1kHz)
<b>Distortion:</b> 200Hz - 15kHz <0.05% 15kHz-150kHz <0.3%
<b>SQUARE WAVE CHARACTERISTICS</b>
<b>Output voltage:</b> ≥5V p-p at maximum setting
<b>Rise &amp; fall time:</b> Less than 0.5μs
<b>Sag:</b> Less than 5% at 20Hz (DC coupled)
<b>Over shoot:</b> <2% from maximum output
<b>Duty ratio:</b> 50% ±5%
<b>SYNCHRONIZATION CHARACTERISTICS</b>
<b>Output voltage:</b> ≥1.2V rms (no load)
<b>Output impedance:</b> 1kΩ ±5%
Other specifications same as sinewave characteristics

## 1MHz Function Generator

### Model FG-500



Specifications
<b>OUTPUT:</b>
<b>Waveforms:</b> Sine, square, triangle
<b>Frequency:</b> 1Hz - 1MHz
<b>Impedance:</b> 600Ω ±10%
<b>Amplitude:</b> Sine/triangle 0-3V at 12VDC input squarewave 8V (no load)
<b>Frequency variable range:</b> 10:1 or more
<b>Frequency multiplier:</b> 6 decade steps
<b>SINE WAVE</b>
<b>Distortion:</b> Less than 1%
<b>Flatness:</b> ±0.5 dB 1Hz-100kHz
<b>SQUARE WAVE</b>
<b>Symmetry:</b> Less than 5% (at 1kHz)
<b>Rise &amp; Fall time:</b> Less than 300ns (at 1kHz)
<b>TRIANGLE WAVE</b>
<b>Linearity:</b> Less than 1% (up to 100kHz)
<b>Power requirements:</b> 9 to 18VDC at input

Available in Kit  
FG-500K

# DIGITAL MULTIMETERS

## Compact Multimeter Model M-1000D



### Features

- 3 1/2 digit, 2,000 count display
- Transistor test
- Audible continuity
- Diode test
- Signal injector
- Overload protection
- Pocket-size
- Low cost

Available as a kit (M-1007K)

### Specifications

AC + DC volts	200mV, 2V, 20V, 200V, 1000V, 200VAC, 750VAC
Accuracy	DC: 200mV $\pm(0.25\% \text{ rdg} + 2 \text{ dgts})$ , 2V-1,000V: $\pm(0.5\% \text{ rdg} + 2 \text{ dgts})$ AC: $\pm(1.2\% \text{ rdg} + 10 \text{ dgts})$ Resolution 0.1mV
Input impedance	1M $\Omega$
DC current	200 $\mu$ A, 2mA, 20mA, 200mA, 10A
Accuracy	200mA, 2mA: $\pm(1.0\% \text{ rdg} + 2 \text{ dgts})$ , 200mA: $\pm(1.2\% \text{ rdg} + 2 \text{ dgts})$ , 10A: $\pm(2.0\% \text{ rdg} + 2 \text{ dgts})$ Resolution 0.1 $\mu$ A
Resistance	200 $\Omega$ , 2k $\Omega$ , 20k $\Omega$ , 200k $\Omega$ , 2M $\Omega$
Accuracy	$\pm(0.8\% \text{ rdg} + 2 \text{ dgts})$ , 2M $\Omega$ : $\pm(1.0\% \text{ rdg} + 2 \text{ dgts})$ Resolution 0.1 $\Omega$
Accessories	Test leads, manual, 9V battery included
Dimensions / weight	5" (H) x 2 29/32" (W) x 1" (D) / 4.5 oz.

## Autoranging Digital Multimeter Model M-2625



### Features

- 3 3/4 digit, 4,000 count display
- Frequency 5Hz to 10MHz
- Temperature to 752 $^{\circ}$ F
- Rel. / reset mode
- Audible continuity / diode test
- Temperature probe included
- Capacitance to 100 $\mu$ F
- Holster included
- Auto power off
- Data hold

### Specifications

AC + DC volts	400mV, 4V, 40V, 400V, 600V
Accuracy	DC: 400mV-400V: $\pm(0.5\% \text{ rdg} + 5 \text{ dgts})$ , 600V: $\pm(0.8\% \text{ rdg} + 5 \text{ dgts})$ AC: 400mV: $\pm(1.5\% \text{ rdg} + 8 \text{ dgts})$ , 4V-400V: $\pm(0.8\% \text{ rdg} + 5 \text{ dgts})$ , 600V: $\pm(1.2\% \text{ rdg} + 5 \text{ dgts})$ Resolution 0.1mV
AC + DC current	40 $\mu$ A, 400 $\mu$ A, 40mA, 400mA, 4A, 10A
Accuracy	DC: $\pm(2.0\% \text{ rdg} + 5 \text{ dgts})$ , 40mA, 400mA: $\pm(1.5\% \text{ rdg} + 5 \text{ dgts})$ AC: 40mA, 400mA: $\pm(2.5\% \text{ rdg} + 3 \text{ dgts})$ , 40mA, 400mA: $\pm(2.0\% \text{ rdg} + 5 \text{ dgts})$ , 4A, 10A: $\pm(2.5\% \text{ rdg} + 5 \text{ dgts})$ Resolution 0.1mA
Resistance	400 $\Omega$ , 4k $\Omega$ , 40k $\Omega$ , 400k $\Omega$ , 4M $\Omega$ , 40M $\Omega$
Accuracy	400 $\Omega$ -4M $\Omega$ : $\pm(1.0 \text{ rdg} + 5 \text{ dgts})$ , 40M $\Omega$ : $\pm(2.0 \text{ rdg} + 5 \text{ dgts})$ Res. 0.1 $\Omega$
Temperature	-58 $^{\circ}$ F - 752 $^{\circ}$ F, probe included
Accessories	Test leads, manual, holster, and two (2) "AA" batteries included
Dimensions / weight	6" (H) x 3" (W) x 1 1/2" (D) / 9.9 oz.

## Model M-1750



### Features

- 3 3/4 digit, 4,000 count display
- Frequency to 10MHz
- Capacitance to 200 $\mu$ F
- Diode and transistor test
- Audible continuity
- AC/DC current to 10A
- 3-Way overload protection
- Holster included
- Relative measurement

### Specifications

AC + DC Volts	400mV, 4V, 40V, 400V, 1000V, 750VAC
Accuracy	DC: $\pm(0.5\% \text{ rdg} + 3 \text{ dgts})$ , 600V: $\pm(0.8\% \text{ rdg} + 2 \text{ dgts})$ AC: 400mV, 600V: $\pm(1.2\% \text{ rdg} + 3 \text{ dgts})$ , 4V-400V: $\pm(0.8\% \text{ rdg} + 3 \text{ dgts})$ Res. 100 $\mu$ V
AC + DC Current	400 $\mu$ A, 4000 $\mu$ A, 40mA, 400mA, 10A
Accuracy	DC: 400 $\mu$ A, 4,000 $\mu$ A: $\pm(1.2\% \text{ rdg} + 3 \text{ dgts})$ , 40mA, 400mA: $\pm(1.5\% \text{ rdg} + 3 \text{ dgts})$ AC: 400 $\mu$ A, 4,000 $\mu$ A: $\pm(1.5\% \text{ rdg} + 5 \text{ dgts})$ , 40mA, 400mA: $\pm(2.0\% \text{ rdg} + 5 \text{ dgts})$ Res. 0.1 $\mu$ A
Resistance	400 $\Omega$ , 4k $\Omega$ , 40k $\Omega$ , 400k $\Omega$ , 4M $\Omega$ , 40M $\Omega$
Accuracy	400 $\Omega$ -4M $\Omega$ : $\pm(1.0\% \text{ rdg} + 3 \text{ dgts})$ , 40M $\Omega$ : $\pm(2.0\% \text{ rdg} + 3 \text{ dgts})$ Resolution 0.1 $\Omega$
Capacitance	4nF, 40nF, 400nF, 4 $\mu$ F, 40 $\mu$ F, 200 $\mu$ F
Accuracy	4nF: $\pm(5.0\% \text{ rdg} + 10 \text{ dgts})$ , 40nF: $\pm(3.0\% \text{ rdg} + 10 \text{ dgts})$ , 400nF-40 $\mu$ F: $\pm(2.0\% \text{ rdg} + 5 \text{ dgts})$ , 200 $\mu$ F: $\pm(4.0\% \text{ rdg} + 5 \text{ dgts})$ Resolution 10pF
Frequency	10Hz - 10MHz autoranging
Accuracy	$\pm(0.1\% \text{ rdg} + 2 \text{ dgts})$ Resolution 1Hz
Accessories	Test leads, manual, holster, and 9V battery included
Dimensions / weight	6 3/8" (H) x 3" (W) x 1 3/4" (D) / 10.56 oz.

## Model LCM-1950



### Features

- Large 1", 3 3/4 digit, 4,000 count display
- Autoranging frequency to 4MHz
- Capacitance to 400 $\mu$ F
- Inductance to 40H
- Resistance to 4000M $\Omega$
- Logic test
- Diode and transistor test
- Audible continuity test
- Holster included

### Specifications

AC + DC volts	400mV, 4V, 40V, 400V, 1000V, 750VAC
Accuracy	DC: $\pm(0.5\% \text{ rdg} + 1 \text{ dgt})$ ; AC: $\pm(1.0\% \text{ rdg} + 4 \text{ dgts})$ on 400mV - 400V ranges, $\pm(2.0\% \text{ rdg} + 4 \text{ dgts})$ on 750V range Resolution 100 $\mu$ V
AC + DC current	40mA, 400mA, 10A
Accuracy	DC: $\pm(1.0\% \text{ rdg} + 1 \text{ dgt})$ on mA range, $\pm(3.0\% \text{ rdg} + 1 \text{ dgt})$ on 10A range AC: $\pm(1.5\% \text{ rdg} + 4 \text{ dgts})$ on mA range, $\pm(3.5\% \text{ rdg} + 4 \text{ dgts})$ on 1A range Resolution 10 $\mu$ A
Resistance	400 $\Omega$ , 4k $\Omega$ , 40k $\Omega$ , 400k $\Omega$ , 4M $\Omega$ , 40M $\Omega$ , 400M $\Omega$ , 4,000M $\Omega$
Accuracy	$\pm(0.8\% \text{ rdg} + 4 \text{ dgts})$ on 400 $\Omega$ range, $\pm(0.8\% \text{ rdg} + 2 \text{ dgts})$ on 4k $\Omega$ to 4M $\Omega$ ranges, $\pm(3.0\% \text{ rdg} + 4 \text{ dgts})$ on 40M $\Omega$ range, $\pm(5.0\% \text{ rdg} - 20 \text{ dgts}) + 10 \text{ dgts})$ on 4,000M $\Omega$ range Res. 0.1 $\Omega$
Capacitance	4,000pF, 40nF, 400nF, 4 $\mu$ F, 40 $\mu$ F
Accuracy	$\pm(5.0\% \text{ rdg} + 10 \text{ dgts})$ on all ranges, $\pm(8.0\% \text{ rdg} + 10 \text{ dgts})$ above 100 $\mu$ F Resolution 1pF
Inductance	4mH, 40mH, 400mH, 4H, 40H
Accuracy	$\pm(5.0\% \text{ rdg} + 20 \text{ dgts})$ on 4mH range, $\pm(5.0\% \text{ rdg} + 10 \text{ dgts})$ on other ranges Resolution 1 $\mu$ H
Frequency	4kHz, 40kHz, 400kHz, 4MHz
Accuracy	$\pm(0.1\% \text{ rdg} + 1 \text{ dgt})$ Resolution 1Hz
Accessories	Test leads, manual, and 9V battery included
Dimensions / weight	7 3/4" (H) x 3 1/2" (W) x 1 1/2" (D) / 10.88 oz.



# DIGITAL MULTIMETERS



**Model M-1700**

### Features

- 3½ digit, 2,000 count display
- Frequency to 20MHz
- Capacitance to 20µF
- Diode and transistor test
- Audible continuity
- AC/DC current to 10A
- 3-way overload protection
- Low cost
- Holster included

### Specifications

AC + DC volts	200mV, 2V, 20V, 200V, 600V
Accuracy	DC: ±(0.5% rdg +1dgt); AC: ±(1% rdg +4dpts) Resolution 100µV
AC + DC current	2mA, 20mA, 200mA, 10A
Accuracy	DC: mA: ±(1.0% rdg + 1 dgt), 10A: ±(3.0% rdg + 1 dgt) AC: mA: ±(2.0% rdg + 4 dpts), 10A: ±(3.5% rdg + 4 dpts) Res. 100µA
Resistance	200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ, 20MΩ
Accuracy	200Ω: ±(0.8% rdg +3dpts), 2kΩ-2MΩ: ±(0.8% rdg +1dgt), 20MΩ: ±(3.0% rdg +3 dpts) Resolution 0.1Ω
Capacitance	2nF, 20nF, 200nF, 2µF, 20µF
Accuracy	±(2.0% rdg + 10 dpts) Resolution 1pF
Frequency	10Hz - 20MHz autoranging
Accuracy	±(0.1% rdg + 1 dgt) (10Hz - 15MHz) Resolution 1Hz
Accessories	Test leads, holster, manual, 9V battery included
Options	C-90 Case, C-17 Holster
Dimensions / weight	6" (H) x 2 ½" (W) x 1 ¼" (D) / 7.4 oz.



**Model M-2795**

### Features

- 3¾ digit, 4,000 count display
- Audible continuity test
- Data hold / rel. value
- Frequency to 15MHz
- Capacitance to 200µF
- Transistor / diode / logic test
- AC/DC current to 10A
- Auto power off
- Holster included

### Specifications

AC volts	400mV, 4V, 40V, 400V, 750V
Accuracy	4V, 40V, 400V: ±(0.8% + 3 dpts) 400mV, 750V: ±(1.2% + 3 dpts)
DC volts	400mV, 4V, 40V, 400V, 1000V
Accuracy	400mV, 4V, 40V, 400V: ±(0.5% + 3 dpts) 1000V: ±(0.8% + 3 dpts)
AC current	40µA, 400µA, 4000µA, 40mA, 400mA, 10A
Accuracy	40µA, 400µA, 4000µA: ±(1.5% + 5 dpts) 40mA, 400mA: ±(2% + 5 dpts) 10A: ±(2.5% + 5 dpts)
DC current	40µA, 400µA, 4000µA, 40mA, 400mA, 10A
Accuracy	40µA, 400µA, 4000µA: ±(1.2% + 3 dpts) 40mA, 400mA: ±(1.5% + 3 dpts) 10A: ±(2% + 5 dpts)
Resistance	400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ, 40MΩ, 400MΩ
Accuracy	400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ: ±(1%+3 dpts) 40MΩ: ±(2%+3 dpts) 400MΩ: ±(3%+10 dpts)
Capacitance	4nF, 40nF, 400nF, 4µF, 40µF, 200µF
Accuracy	4nF: ±(5%+10 dpts) 40nF: ±(3%+10 dpts) 400nF, 4µF, 40µF: ±(2%+5 dpts) 200µF: ±(4%+5 dpts)
Frequency	10Hz - 15MHz ±(0.1% + 5)
Sensitivity	Sine wave 0.6Vrms
Accessories	Heavy-duty test leads, holster, manual, & 9V battery included
Dimensions / weight	7 ½" (H) x 3 ½" (W) x 1 ¾" (D) (without holster) / 10.56 oz. (without holster)

**Software included!**

## Bench Digital Multimeter

**Model M-5500R**



### Features

- Large 3 3/4 digit, 3999 count LCD backlighted display
- Auto / manual ranging
- Capacitance & frequency
- Data hold, min./max
- True rms. / relative display
- Storage data display recall
- 42 segment bargraph display
- Diode / continuity test
- AC or DC power source
- Includes RS-232C interface and software

### Specifications

AC + DC volts	400mV (DC only), 4V, 40V, 400V, 1,000V, 750VAC (True rms)
Accuracy	DC: ±(0.3% rdg + 2dpts), 400mV: ±(0.3% rdg + 5dpts) AC: ±(0.8% rdg + 5dpts) Resolution 0.1mV (DC), 1mV (AC)
AC + DC current	4mA, 40mA, 400mA, 10A
Accuracy	DC: ±(0.8% rdg + 5 dgt), ±(1.5% rdg + 10 dgt) (10A); AC: ±(1.5% rdg + 5 dgt), 10A: ±(2.0% rdg + 10 dgt) Resolution 1µA
Resistance	400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ, 40MΩ
Accuracy	400Ω: ±(0.5% rdg + 5 dpts), 4kΩ - 400kΩ: ±(0.5% rdg + 3 dpts), 4MΩ: ±(1.0% rdg + 5 dpts), 40MΩ: ±(1.5% rdg + 10 dpts) Resolution 0.1Ω
Capacitance	4nF, 40nF, 400nF, 4µF, 40µF
Accuracy	4nF: ±(2% rdg + 40 dpts), 40nF - 40µF: ±(2% rdg + 5 dpts) Resolution 1pF
Frequency	100Hz, 1kHz, 10kHz, 100kHz, 1MHz
Accuracy	±(0.1% + 4 dpts) Resolution 0.01Hz
Power	AC: 120VAC DC: 9V battery & 6 "AA" batteries (not incl.)
Dimensions	3 ¼" (H) x 9 5/16" (W) x 9" (D)
Weight	2 lbs. 11 oz.

# DIGITAL MULTIMETERS



**Model M-2785**

## Features

- 3 1/2 digit, 2,000 count display
- Audible continuity test
- Data hold / peak hold
- Frequency to 15MHz
- Capacitance to 200 $\mu$ F
- Transistor / diode / logic test
- AC/DC current to 10A
- Auto power off
- Holster included

## Specifications

AC + DC Volts / Accuracy	200mV / 0.25% DC, 1% AC; 2V, 20V, 200V / 0.8% DC, 1% AC; 1000VDC / 0.8%; 750VAC / 1.5%	Resolution 0.1mV
AC + DC Current / Accuracy	20 $\mu$ A, 200 $\mu$ A, 2mA, 20mA / 0.8% DC, 1.2% AC; 200mA / 1% DC, 1.5% AC; 10A / 1.5% DC, 2% AC	Resolution 0.01 $\mu$ A
Resistance / Accuracy	200 $\Omega$ , 2k $\Omega$ , 20k $\Omega$ , 200k $\Omega$ / 0.8%; 2M $\Omega$ / 1.5%; 20M $\Omega$ , 200M $\Omega$ / 2%	Resolution 0.1 $\Omega$
Capacitance / Accuracy	2nF, 20nF, 200nF, 2 $\mu$ F, 20 $\mu$ F, 200 $\mu$ F / 3%	Resolution 1pF
Frequency / Accuracy	12kHz, 20kHz, 200kHz, 2MHz, 15MHz / 0.25%	Resolution 1Hz
Accessories	Heavy-duty test leads, holster, manual, and 9V battery included	
Dimensions	7 1/2" (H) x 3 1/2" (W) x 1 13/32" (D) without holster	
Weight	1 lb., 6 oz. including holster, 12 oz. without holster	

## Digital Capacitance Meter

**Model CM-1555**



## Features

- 3 1/2 Digit, 2,000 count LCD readout with unit indicator.
- Measures capacitors from 0.1pF to 20,000 $\mu$ F.
- Zero control for test lead compensation.
- Banana jack and special insertion jack included.
- Compact size with tilt stand and holster.

## Specifications

Range	200pF, 2,000pF, 20nF, 200nF 2 $\mu$ F, 20 $\mu$ F, 200 $\mu$ F, 2,000 $\mu$ F, 20mF
Resolution	0.1pF, 1pF, 10pF, 100pF, 1nF, 10nF, 100nF, 1 $\mu$ F, 10 $\mu$ F
Accuracy	200pF: $\pm(0.5\% \text{ rdg} + 1 \text{ dgt} + 0.5\text{pF})$ , 2,000pF - 200 $\mu$ F: $\pm(0.5\% \text{ rdg} + 1 \text{ dgt})$ ; 2,000 $\mu$ F: $\pm(2.0\% \text{ rdg} + 1 \text{ dgt})$ ; 20mF: $\pm(4.0\% \text{ rdg} + 1 \text{ dgt})$
Accessories	Test leads, manual, holster, and 9V battery included
Dimensions / Weight	6 3/8" (H) x 3" (W) x 1 3/4" (D) / 10.56 oz.

# ANALOG MULTIMETERS

## Compact VOM

**Model M-105**



## Features

- 10,000 $\Omega$ /V DC, AC
- Reads volts, amps, ohms
- 15 ranges
- Pocket size
- Battery test
- Fuse protected
- Safety test leads

## Specifications

DC volts	2.5, 10, 50, 250, 1000 DC volts $\pm 5\%$ Full Scale Reading (FSR)
AC volts	10, 50, 250, 1000, AC volts $\pm 5\%$ Full Scale Reading (FSR)
DC current	10mA, 250mA, DC $\pm 5\%$ Full Scale Reading (FSR)
Ohmmeter	x10, x1k (3.6k $\Omega$ Mid Scale) $\pm 5\%$ Full Scale Reading (FSR)
Battery test	1.5V (250mA), 9V (10mA)
Accessories	Test leads, manual, 1.5V "AA" battery included
Dimensions / weight	4 1/2" (H) x 2 1/2" (W) x 1 5/16" (D) / 4.2 oz.

## 20k/V VOM

**Model M-1250**



## Features

- 20,000 $\Omega$ /V
- 23 ranges
- 3 1/2" meter
- Mirrored scale
- Audible continuity
- Checks transistors/diodes
- 10A DC current
- dB scale
- Battery test
- Safety test leads

**Available as kit  
Model M-1250K**

## Specifications

DC volts	.1, .5, 2.5, 10, 50, 250, 1000, 3% Full Scale Reading (FSR)
AC volts	10, 50, 250, 1kV, 4% Full Scale Reading (FSR)
DC current	50 $\mu$ A, 2.5mA, 25mA, 250mA, 10A 3% Full Scale Reading (FSR)
Resistance	x1, x10, x100, x1k, x10k
Transistor hFE 0-1000	ICEO 150 $\mu$ A, 1.5mA, 15mA, 150mA
Accessories	Test leads, manual, 9V & (2) 1.5V AA batteries included
Dimensions / weight	5 29/32" (H) x 3 23/32" (W) x 1 1/4" (D) / 9.9 oz.



# CLAMP METERS & LEAK DETECTOR TEST EQUIPMENT

## Digital AC Clamp Meter

### Model ST-1012



This meter has been designed according to IEC-1010-2-032 concerning safety requirement for handheld current clamps for electrical measurement and test.

#### Features

- 3½ digit display
- AC current to 1,000A
- AC voltage to 750VAC
- DC voltage to 1,000VDC
- Temperature type K
- Resistance to 2MΩ
- Audible continuity
- Data hold
- Diode test
- Zippered case included

#### Specifications

AC volts	200V, 750V
Accuracy	200V: ±(1.0% rdg + 5dgts) 750V: ±(1.2% rdg + 5dgts)
DC volts	200mV, 2V, 20V, 200V, 1,000V
Accuracy	200mV: ±(0.5% rdg + 1dgt); 2V - 200V: ±(0.5% rdg + 3dgts) 1,000V: ±(0.8% rdg + 3dgts)
AC current	20A, 200A, 1,000A
Accuracy	20A: ±(4.0% rdg + 5dgts); 200-400A: ±(2.5% rdg + 5dgts); 400-1,000A: ±(3.0% rdg + 10dgts)
Resistance	200Ω, 2kΩ, 20kΩ, 200kΩ, 20MΩ
Accuracy	200Ω: ±(1.0% rdg + 5dgts); 2kΩ-20MΩ: ±(1.0% rdg + 5dgts)
Temperature	32°F-753°F: ±(1.0%rdg + 3dgts); 754°F-1,382°F: ±(2.0%rdg + 3dgts)

#### Specifications

AC volts	4V, 40V, 400V: ±1.0%; 400mV/600V: ±0.8%
DC volts	400mV, 4V, 40V, 400V: ±0.5%; 600V: ±0.8%
AC current	400A: ±2.0%; 1,000A: ±2.5%
DC current	400A: ±1.5%; 1,000A: ±2.0%
Resistance	400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ: ±1.0%; 40MΩ: ±2.0%
Capacitance	40nF ±3.0%; 400nF/4μF ±2.5%; 40/100μF ±5.0%
Frequency	10Hz - 10MHz: ±1.0%
Duty cycle	0.1% - 99.9% ±2.0%
Temperature	-58°F - 302°F ±(5% + 2°F) 302°F - 1292°F ±(3% + 2°F)

## Digital AC/DC Clamp Meter

### Model ST-3030

#### Features

- 3¾ digit, 4,000 count display
- AC/DC clamp-on meter
- Auto/manual range
- Capacitance
- Diode check/continuity buzzer
- Relative measurement
- Temperature type K
- Frequency
- Data hold
- Back light
- Auto power off
- Zippered case included



CE/LVD CAT III 600V

This meter has been designed according to IEC-1010-2-032 concerning safety requirement for handheld current clamps for electrical measurement and test.

## Halogen Leak Detector

### Model WJL-6000



#### Features

- Detect all kinds of halogen refrigerants.
- Sensitivity adjusted at any time and it can be adjusted automatically to the best state of detecting.
- Audible and visual leak indicators
- Inner precise IC with Ultra-Low consume circuit design, more stable, longer battery time.
- Tri-color visual display of battery voltage
- Excellent sensor, high sensitivity, longer use time
- Storage pouch included

## Digital Clamp Meter

### Model DL-379



#### Features

- Dual display
- 3¾ digit, 4,000 count display
- AC current - 400A
- AC voltage - 750VDC
- DC voltage - 1,000VDC
- AC/DC microamps - 2,000μA
- Resistance - 40MΩ with continuity buzzer
- Capacitance - 4,000μF
- Temperature Type K - -40°F - 752°F
- Frequency - 10Hz to 100kHz
- Diode test
- Data hold
- Auto power off
- Zippered case included

Other models available

# VARIABLE VOLTAGE POWER SUPPLIES

## Triple Output Power Supply

### Model XP-770



The XP-770 is a triple-output regulated power supply providing two variable outputs (0-20VDC @ 2A) and one fixed (5VDC @ 3A). Four LCD displays allowing the output voltages and currents to be displayed simultaneously. The variable outputs can work independently, in series, or in parallel modes. The highest output voltage is the sum of twice the voltage value in series mode and the highest output current is the sum of twice the current value when in parallel mode.

#### Specifications

Input voltage	120/220VAC, 50/60Hz
Output voltage	Dual 0-20VDC @ 2A
Output voltage	5V @ 3A
Dimensions / weight	10¼" (H) x 6½" (W) x 14" (D) / 12 lbs. 14 oz.

## 0-50VDC @ 3A Power Supply

### Model XP-752

The **XP-752** has an output of 50VDC @ 3A. Its features include fine and coarse controls for voltage and current, and contains two 3 digit LED Volt / Current meters.

The supply incorporates an externally controlled current cutoff circuit with an LED indicating current overload. Protected against short circuits and overloads.



#### Specifications

Input voltage	120/220VAC, 50/60Hz
Output voltage	0-50VDC @ 3A
Dimensions	5 13/32" (H) x 11½" (W) x 6½" (D)
Weight	13 lbs.

## 0-30VDC @ 5A Power Supply

### Model XP-605

The **XP-605** has an output of 30VDC @ 5A. Its features include fine and coarse controls for voltage and current, and contains two analog Volt / Current meters.

The supply incorporates an externally controlled current cutoff circuit with an LED indicating current overload. Protected against short circuits and overloads.



#### Specifications

Input voltage	120/220VAC, 50/60Hz
Output voltage	0-30VDC @ 5A
Dimensions	5 13/32" (H) x 11½" (W) x 6½" (D)
Weight	13 lbs.



# POWER SUPPLIES

## 4 Fully Regulated Power Supplies in One Unit

### Model XP-581A



The **XP-581** is our most popular power supply. It is ideally suited for laboratories, classrooms, and hobbyist use. It features 3 fixed DC voltages: +5V @ 3A, +12V @ 1A, -12V @ 1A and variable DC voltage: 0V - 20V @ 2A. Housed in a rugged steel case, it is the perfect combination of versatility and high value.

### Features

- 4 DC voltages:
  - 3 Fixed: +5V @ 3A
  - +12V @ 1A
  - 12V @ 1A
  - 1 Variable: 0 - 20V @ 2A
- Fully regulated and short protected
- Voltage and current meters
- All metal case
- Ideal for laboratory, service shops and hobbyists
- Low cost and high value

### Specifications

Input voltage	120VAC 60Hz			
Current protection	2A fuse			
Output voltage	Fixed +5V	Fixed +12V	Fixed -12V	Variable 0 - 20V
Output current	3A	1A	1A	2A
Load regulation	.1V	.1V	.1V	.1V
Line regulation	.1V	.1V	.1V	.1V
Ripple rms	.01V	.01V	.01V	.01V
Current protection	Thermal	Thermal	Thermal	Current limit
Dimensions	3 5/8" (H) x 10 3/8" (W) x 10 1/4" (D)			
Weight	7 lbs. 11.2 oz.			

## AC/DC Variable Power Supply

### Model XP-625



The **XP-625** is an ideal power supply for your school lab. It contains three voltages: 0-30VDC @ 5A, 0-40VAC @ 5A, and 0-110VAC @ 2.5A. All three supplies are controlled by the voltage adjust knob on the front panel. The unit contains a voltmeter and an ammeter. The voltmeter is used for both 30VDC and 40VAC output voltages. The ammeter only registers the DC output current. The outputs are fuse protected from overload or shorting.

### Specifications

Input voltage	120VAC
Output voltage DC	0-30VDC, 5A max.
Output voltage AC	0-40VAC, 5A max.
Output voltage	0-110VAC, 2.5A max.
Dimensions / weight	5 3/8" (H) x 7 3/4" (W) x 9 1/2" (D) / 14 lbs. 14 oz.

## Fixed Voltage Supply

### Model XR-38

**Model XR-38** is a 13.8VDC regulated power supply capable of delivering up to 3A of continuous current.

It is ideal for mobile radio, cellular phones, CB or ham radio equipment.

### Specifications

Input voltage	120VAC
Output voltage DC	13.8VDC
Output current	3A continuous, 5A surge
Dimensions	4 5/16" (H) x 6" (W) x 8 3/16" (D)
Weight	5 lbs. 8 oz.



# POWER SUPPLIES

## Deluxe Battery Eliminator

Model XP-100

Made in USA

This power supply is an ideal bench top battery eliminator. Substitutes a wide variety of batteries including AA, AAA, C, D, and 9V types. The voltage is conveniently selected by a rotary switch. Advanced, solid-state electronics provide both LINE and LOAD regulation of the output voltage. The voltage selector switch is precision-designed so that the output voltage does not increase during adjustment between voltage ranges.

### Specifications

Input voltage	120VAC
Output voltage	1.5, 2.2, 3, 4.5, 5, 6, 7.2, 9, 10, 12, 13.8, 15VDC
Output current	1A max.
Accuracy	±5%
Dimensions / weight	3 3/4" (H) x 8 1/4" (W) x 7" (D) / 5 lbs.



Available in kit XP-100K

## Triple Output AC/DC Power Supply

Made in USA

Model XP-720

The Model XP-720 has 3 fully regulated supplies; 1.25-15V @ 1A, -1.25 to -15V @ 1A, or (3-30V @ 1A) and 5V @ 3A. It also has 6.3VAC @ 1A and 12.6VAC center-tapped @ 1A.

It features short circuit protection on all supplies.

Available in kit XP-720K



### Specifications

Input voltage	120VAC, 60Hz
Output voltage	1.25VDC - 15VDC @ 1A; -1.25VDC - -15VDC @ 1A; 5VDC @ 3A Dual 6.3VAC @ 1A, 12.6VAC @ 1A (center-tapped)
Dimensions / weight	3 1/2" (H) x 8" (W) x 6 1/2" (D) / 7 lbs.

## Spectrum Tube Power Supply

Model STPS-1

This power supply provides safe and reliable operation for 10" spectrum tubes. The unique design supplies a voltage that prolongs the life of the spectrum tubes. Specially designed sockets eliminate electrical shock hazards. The unit operates at 120V @ 60Hz.

(Tube not included).

Made in USA

### Specifications

Input voltage	120VAC, 60Hz
Output voltage	5,000V without spectrum tube. 1,000V @ 10mA with spectrum tube.
Operating temperature	10°C to 50°C
Storage temperature	-20°C to 60°C
Dimensions / weight	13 3/4" (H) x 4 5/8" (W) x 3 1/2" (D) / 4 lbs. 12.8 oz.





# DIGITAL LOGIC & PULSER PROBES

## Logic Probe & Pulser Combo Model LP-900/625

A unique two-in-one logic probe & pulser that simplifies troubleshooting and analyzing digital circuits.



### Specifications - Logic Probe

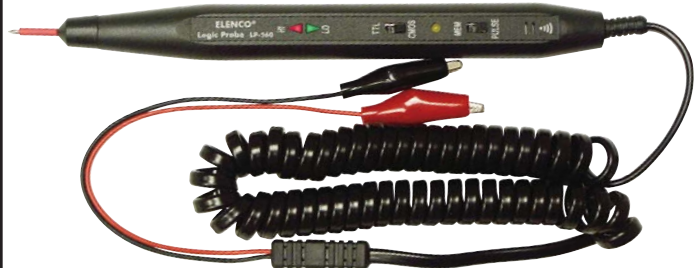
Frequency Response.....	50MHz
Detectable Pulse Width.....	10ns
Logic Threshold.....	TTL Hi 3V, Lo 0.75V CMOS Hi 60% Vcc, Lo 15% Vcc
Input Impedance.....	120kΩ
Operating Supply Voltage.....	4-18V
Max. Input Protection.....	±70VAC/DC @ 15 s.
Power Supply Protection.....	±20V

### Specifications - Logic Pulser

Pulse Repetition Rate.....	0.5/400Hz
Pulse Width.....	10μs
Output Current:	
Pulser Mode @ 0.5Hz.....	100mA sink/source
Square Wave Mode @ 500Hz.....	5mA sink/source
Sync Input Impedance.....	1MΩ
Operating Supply Voltage.....	5-15V
Max. Sync Input Protection.....	±120VDC @ 30 s.
Output Protection.....	±35VDC @ 30 s.
Power Supply Protection.....	±20VDC @ 30 s.

## Logic Probe Model LP-560

The LP-560 Logic Probe provides convenient and precise use in the measurement of logic circuits. It displays logic levels (high or low), pulses and voltage transients down to 25 nanoseconds. High intensity LED readouts provide instant response to the logic state.



### Specifications

Working voltage.....	4-18VDC
Frequency response.....	20MHz
Minimum detectable pulse width.....	25ns
Input impedance.....	1MΩ
Input overload protection.....	±220VAC/DC 15s
Supply voltage protection.....	±20VDC
Pulse indicator flash time.....	500ms
Operating temperature.....	32° - 122°F (0° - 50°C)

### Features

- Tests all logic families (TTL, LSI, CMOS, ECT)
- Captures pulses to 25ns (20MHz)
- Audio beeper, two sounds HI and LOW
- Memory function
- Colored LED's for different functions
- Input overload protection
- Logic probe is circuit powered
- Reverse polarity protection

## Logic Pulser Model LP-425K (kit)



The Logic Pulser Kit is a desirable device in the troubleshooting of logic circuits and compliments the logic probe in pulse tracing signals in complex circuits. It injects a signal directly into a circuit without having to disconnect components. It is circuit powered and has a switchable output of 0.5 or 400Hz at 100mA. Designed for easy construction.

## Logic Probe Model LP-525K (kit)



Digital Logic Probe in kit form provides convenient and precise use in measurement of logic circuits. It displays logic levels (high or low), pulses and voltage transients down to 25 nanoseconds and a maximum input of 20MHz. Large PC board and detailed manual for fast construction.

## Frequency Counter 1MHz - 3GHz Model F-2800



### Features

- 10-digit liquid crystal display
- Hold switch to lock display
- Ultra-sensitive, synchronous detector - 16-section bar graph to show RF signal strength.
- High-speed 300MHz direct counter with 0.1Hz resolution.
- Four selectable gate speeds
- Low power consumption (average 6 hour battery life).
- Supplied with NiCd pack, AC wall charger, 7-section telescopic antenna.
- Low battery indicator

### Specifications

Frequency range	1MHz - 3GHz
Impedance	50Ω (BNC socket)
Case	Stamped aluminum w/ black anodized finish
Power	9VDC, 300mA
Battery	Internal 4 x "AA", 600mAH NiCd pack
Dimensions / Weight	3 3/16" (H) x 2 11/16" (W) x 1 1/4" (D) / 7.5 oz.

## Frequency Counter 10Hz - 3GHz Model F-2850



### Features

- 10-digit liquid crystal display
- Ultra-sensitive, synchronous detector - 16-section bar graph to show RF signal strength.
- High-speed 300MHz direct counter with 0.1Hz resolution.
- Filter to prevent display of random noise.
- Hi-Z low range
- Automatic hold, LED back light, beeper.
- Four selectable gate speeds
- Low power consumption (average 6 hour battery life).
- Supplied with NiCd pack, AC wall charger, 7 section telescopic antenna.
- Low battery indicator

### Specifications

Frequency range	10Hz - 3GHz
Impedance	One dual-purpose BNC socket 50Ω input for range 1MHz to 3GHz 1MΩ input for range 10Hz to 50MHz
Power	9VDC, 300mA
Battery	Internal 4 x "AA", 600mAH NiCd pack
Dimensions / Weight	3 15/16" (H) x 2 11/16" (W) x 1 1/4" (D) / 8.8 oz.

# DATAKOM TESTERS

## Tone Generator / Probe Set

### Model TPG-70

The Model TPG-70 includes both TP-20 (probe) and TG-50 (generator).

Technicians and installers can quickly locate wires in applications such as **TeleCom, Networking, CATV, HVAC, Electrical, and Automotive Circuits.**



Probe

#### Features

- Use to locate termination point of all types of communication cables.
- Single or dual tone with adjustable volume.
- Audible continuity on telco and bare wires.
- LED signal confirmation.
- Probe works with any tone generator.
- Non-conductive plastic tip for safety.
- Low battery indicator.

Also Sold Separately (TP-20 Probe) (TG-50 Generator)



Generator

## Telephone Test Set Model BSM-200

The Model BSM-200 is a pocket-size test set used by telephone technicians and installers.



Carrying Case Included

#### Features

- Mega ohm mW meter for testing insulation resistance and determining line conditions without help from the central office.
- High impedance monitor mode so not to disrupt conversation or data transfer.
- Other convenient functions include: Last number redial, hook and flash, speaker phone, mute, polarity check, battery check, touch tone, and pulse dialing.
- Model BSM-200 features ear microphone for hands-free operation.
- Made of high impact material for shock resistance.
- Tests cords use piecing pin and Angled Bed of Nails (ABN) connectors.
- 9V battery included.

## Multi-Network Cable Tester

### Model TCT-355

The TCT-355 Cable Tester is a convenient instrument for testing different shielded/unshielded wiring schemed communication cable with RJ11 and RJ45 connectors and coax cables with F and BNC connectors.

#### Features

- Tests RJ45 TIA568A/B (AT&T 258A), 10 Base-T, token ring, RJ11/RJ12, USOC and coaxial BNC cable.
- Automatically check cable for continuity, shorted, open and crossed wire pairs.
- Coaxial cable port identifies cable conditions including shorts, shield opens, and center conductor breaks.
- Main unit and remote allow one person testing.
- Terminator and carrying case included.

Requires one (1) 9V battery (part # 590009)



Cable Tester

Remote

Terminator

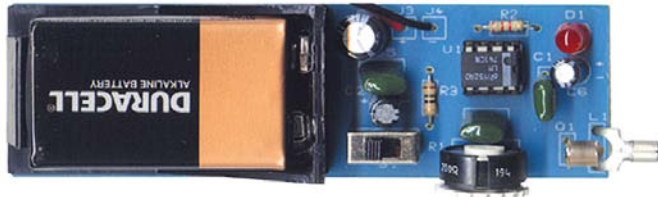


# FIBER OPTICS

## Fiber Optics Voice & Data Kit

w/ training course **Model FO-30K**

Learn the basics of fiber optics communications while you build this exciting kit. Transmit your voice or a 1kHz signal through the fiber optic cable to a fiber optic receiver. Comes complete with all of the necessary components, including PC boards, microphone, speaker and fiber optic cable. Transmitter and receiver on separate boards, can be located hundreds of feet apart. Use for science projects.



Requires two (2) 9V batteries (part # 590009).

P/N 810020 - **Fiber Optic Cable** - Sold in spools of 10 feet.

## Fiber Optics Tool Kit

**Model TK-5000**

### Includes

- C-200 - Case
- ST-92 - Viewing microscope
- C-10 - Parts case
- ST-90 - Fiber continuity tester
- ST-88 - Fiber optical stripper
- ST-91 - Carbide fiber scribe
- ST-340 - Kevlar® scissors
- ST-950 - Hex-type crimping tool
- ST-86 - Polishing pad SC (37.8mm)
- ST-87 - Polishing pad ST (32.8mm)
- ST-89 - Foam swab cleaning kit



### Fiber Continuity Tester

**Model ST-90**

Powerful Krypton light source provides long range over multimode fiber.



Requires two (2) "AA" batteries (included)

### Fiber Optic Viewing Scope Kit

**Model ST-92**

This fiber optic viewing scope kit makes it simple to view ST/SC/FC - supplied with dual face plates.

Zoom lens: 160X, 180X, and 200X



Requires two (2) "AA" batteries (included)

### Carbide Fiber Scribe

**Model ST-91**

Wide inclined carbide tip for easy cleaving. Lightweight, pen-size body clips to shirt pocket.



### Fiber Optical Stripper





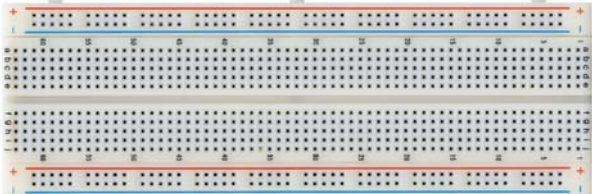
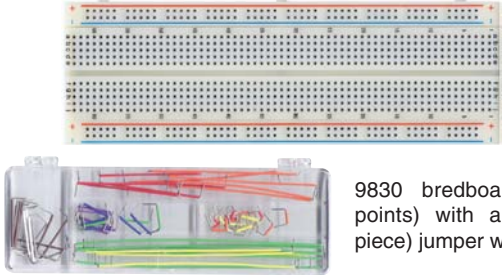


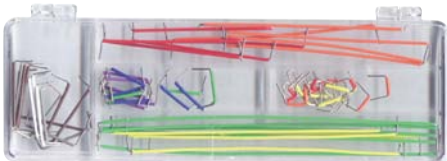
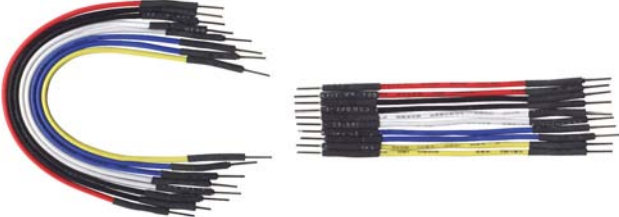
**Model ST-88**

Strips 125 micron fiber with 250 micron buffer coating without scratching or nicking fiber.



# BREDBOARD - PROTOTYPE DESIGN AIDS

A broad array of breadboards that provide unlimited freedom in laying out circuits and prototyping. Breadboards are arrayed from 830 tie points up to 3,220 tie points with colored binding posts that simplify identification of voltage points. Base material heavy aluminum, black anodized.

 <p><b>Model 9440 *</b></p> <p><b>Terminals:</b> 3,220 tie points, 504 separate 5 point terminals, plus 14 horizontal bus lines.</p> <p><b>Binding Posts:</b> Four coded black, red, yellow, and green.</p> <p><b>Dimensions:</b> 8 1/4" wide, 9 1/2" long.</p> <p><b>Model 9480WK</b> - 9440 breadboard with a JW-350 Jumper Wire Kit.</p>	 <p><b>Model 9438 *</b></p> <p><b>Terminals:</b> 2,390 tie points, 378 separate 5 point terminals, plus 10 horizontal bus lines of 50 test points each.</p> <p><b>Binding Posts:</b> Four coded black, red, yellow, and green.</p> <p><b>Dimensions:</b> 7" wide, 9" long.</p> <p><b>Model 9488WK</b> - 9438 breadboard with a JW-140 Jumper Wire Kit.</p>
 <p><b>Model 9433 *</b></p> <p><b>Terminals:</b> 1,660 tie points, 252 separate 5 point terminals, plus 8 horizontal bus lines of 50 common tie points each.</p> <p><b>Binding Posts:</b> Three coded black, red, and green.</p> <p><b>Dimensions:</b> 5 1/4" wide, 8 1/2" long.</p> <p><b>Model 9483WK</b> - 9433 breadboard with a JW-70 Jumper Wire Kit.</p>	 <p><b>Model 9425 *</b></p> <p><b>Terminals:</b> 830 tie points, 126 separate 5 point terminals, plus 4 horizontal bus lines of 50 tie points each.</p> <p><b>Binding Posts:</b> Three coded black, red, and green.</p> <p><b>Dimensions:</b> 7 1/4" wide, 3 3/4" long.</p> <p><b>Model 9485WK</b> - 9425 breadboard with a JW-70 Jumper Wire Kit.</p>
<p><b>Model 9830 *</b></p>  <p>Our top quality breadbox contains 830 tie points including four independent common bus lines for easy connections to common lines. Blox have interlocking features. <b>Dimensions:</b> 2 1/8" (H) x 6 1/2" (W).</p>	<p><b>Model 9880WK *</b></p>  <p>9830 breadboard (830 tie points) with a JW-70 (70 piece) jumper wire kit.</p>
<h2>Jumper Wire Kits for Breadboarding</h2>	
<p><b>Model JW-350 *</b></p> <p>Contains 350 lengths of pre-stripped, pre-formed #22 solid wire in various colors. 14 different lengths of 25 pieces each. Contained in a large 14 compartment plastic case.</p>  <p><b>Dimensions:</b> 5" (H) x 10 1/2" (W) x 1 1/4" (D).</p>	<p><b>Model JW-140 *</b></p>  <p>Contains 140 lengths of pre-stripped, pre-formed #22 solid wire in various colors. Contains 14 different lengths of 10 pieces each. Contained in a plastic case. <b>Dimensions:</b> 2" (H) x 6 1/2" (W) x 1/2" (D).</p>
<p><b>Model JW-70</b></p>  <p>Contains 70 lengths of pre-stripped, pre-formed #22 solid wire in assorted colors and lengths.</p> <p><b>Dimensions:</b> 2" (H) x 6 1/2" (W) x 1/2" (D).</p>	<p><b>Model JW-30</b></p>  <p>Contains 30 pieces of reinforced, male to male jumpers - 10 pieces each of 2", 4", and 6". Assorted colors.</p>

As the primary manufacturer, we can design and manufacture Breadboards with an unlimited number of test points and special connectors. Call us for further information and cost.

\* Available in retail packaging - See price sheet



# TRAINING COURSES & PROTOTYPING

## Basic Electronic Experiments Model PK-101

Transforms any Standard Breadboard into an Electronic Learning Center!

### Perform 50 Experiments

- Electronic keyboard
- Water alarm
- Finger touch lamp
- Electronic kazoo
- Battery tester
- Magnetic bridge
- Voltmeter
- Morse code

\* And a Lot More! \*

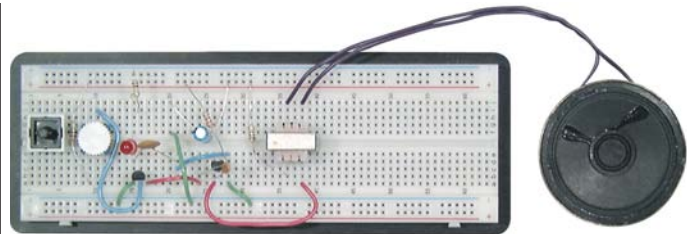
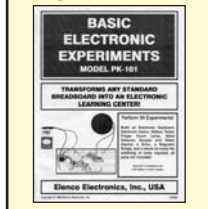
### Ordering Information:

**Model PK-101:** Includes 72 page manual and all parts to perform 50 experiments.

**Model PK-101B:** Same as PK-101, but includes our 9830 Breadbox (shown on page 6 and a 9V battery).

The experiments in Model PK-101 require a breadbox (version PK-101B) or can be done on the Elenco® XK-150, XK-550 or XK-700 Trainers. No soldering or tools required, all parts included.

72 Page Manual Included



## Basic Electronics with Computer Interface

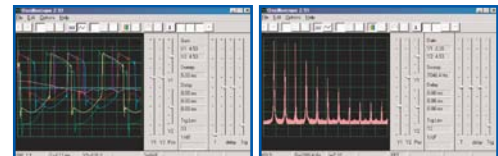
### Model PK-201

### Over 50 Experiments

- Audio amplifiers
- Oscillators
- Siren
- Space gun
- Burglar alarm
- Speaker microphone

\* And a Lot More! \*

Computer interface turns your PC into an oscilloscope and spectrum analyzer. See visually how oscillators and amplifiers work. Analyze your own voice on the monitor.



Sample Screen in Oscilloscope Mode.

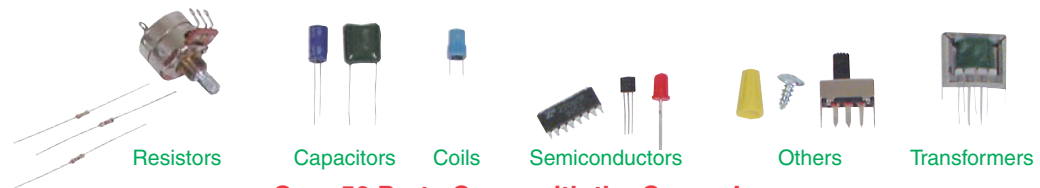
Sample Screen in Spectrum Analyzer Mode.

Requires one (1) 9V battery (part # 590009) or power supply.

## Before You Learn Electronics, Learn About Electronic Components!

### Model ECK-10

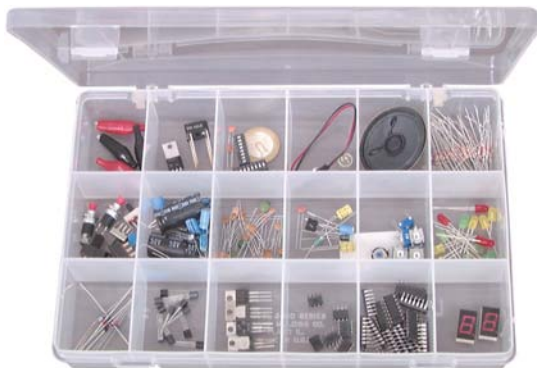
28 page manual with dozens of illustrations includes detailed descriptions of all parts, their functions in a circuit, color codes, and five self tests.



Over 50 Parts Come with the Course!

## Basic Parts Kit

### Model CK-1000



#### Plastic Parts Container

11" x 7" x 1 1/2" - 18 divisions

#### Resistors: 1/4W - 5 each

100Ω, 100Ω, 470Ω, 1kΩ, 2.2kΩ, 4.7kΩ, 8.2kΩ, 10kΩ, 18kΩ, 27kΩ, 47kΩ, 82kΩ, 100kΩ, 220kΩ, 330kΩ, 470kΩ, 1MΩ

#### Electrolytic Capacitors: 50V Radial - 2 each

1μF, 4.7μF, 10μF, 47μF, 100μF, 470μF, 1000μF

#### Mylar Capacitors: 100V Radial DIP - 2 each

.001μF, .0047μF, .01μF, .047μF, .1μF, .33μF

#### Ceramic Disc Capacitors: 500V - 2 each

2.2pF, 4.7pF, 10pF, 1pF, 22pF, 47pF, 100pF, 220pF, 470pF, 680pF

#### Inductors: 1 each

4.7μH, 10μH, 47μH, 100μH, 470μH, 1mH, 10mH, 33mH

#### Trimpots: Single Turn - 1 each

500Ω, 1kΩ, 5kΩ, 50kΩ, 100kΩ, 500kΩ, 1MΩ

#### Switches: 2 each

Push-button, SPDT slide, DPDT slide, 8-position DIP

#### LEDs: Standard T 1 3/4 size - 5 each

Red, green, yellow

#### Displays: 2 each

7-segment common cathode, 7-segment common anode

#### Integrated Circuits: 2 each

7805, 7812 regulators, LM386 audio amp, 555 timer, 741 Op-amp, 74LS00, 74LS02, 74LS08, 74LS10, 74LS47, 74LS74, 74LS86, CD4013, CD4017

#### Transistors: 2 each

PN2222, PN2907, 2N3055, 2N3904, 2N3906, 2N5457

#### Diodes: 2 each

1N4148, 1N4001, 1N34, 1N4728, 1N4733, 1N4739, 1N4743, 1N4747

#### Miscellaneous:

25' 22AWG Hook-up wire, Alligator lead sets (red and black), 5V DIP relay, Photo cell, Microphone, Speaker, Buzzer, 9V battery snap, 1.5A 100V bridge, 4A 200V SCR



## Hook-Up Wire on Spools

#22 Gauge Solid 25ft.

Black	Part #: 884410
Red	Part #: 884420
Yellow	Part #: 884440
Green	Part #: 884450
White	Part #: 884490

#22 Gauge Stranded 25ft.

Black	Part #: 885210
Red	Part #: 885220
Yellow	Part #: 885240
Green	Part #: 885250
White	Part #: 885290

Lead-free Solder - 99.3/.07 rosin core .032" dia.

1lb. spools part #: 551136 - 1LB

Wire in 1,000 and 5,000 ft. spools (20, 22, and 24 gauge) solid or stranded - all colors - available upon request.

## Resistor Kit

365 Total Pieces Model RK-365



Contains five (5) each of 73 standard values from 1Ω to 1MΩ, 1/2W.

# HVAC ELECTRICIAN TOOL KITS

## Electricians General Purpose Tool Kit

### Model TK-8000

A heavy-duty tool pouch, designed for electricians and maintenance people, made from a heavy-duty polypropylene material. Includes an adjustable quick-release belt.



#### Includes the following:

- C-170 Tool pouch
- ST-36 Electrician knife
- ST-30Y Wire stripper
- ST-26 Diagonal pliers
- ST-34 Long nose pliers
- ST-71A #2 phillips screwdriver
- ST-72A 1/4" slotted screwdriver
- ST-70 Linesman pliers
- ST-95 8" groove pliers
- ST-38G AC receptacle tester

## HVAC Electricians Master Tool Kit

### Model TK-8200

A complete tool kit for the troubleshooting of HVAC systems includes two meters for making all critical voltage, current and temperature measurements. Also includes quality, heavy-duty, large durable tool bag featuring 18 pockets of every conceivable size. It is designed with an open top for ease of access, triple-bottom construction and sturdy handles.



Bag Dimensions: 7" (H) x 16" (W) x 9 1/2" (D)

#### Includes the following:

- C-180 Portable tool bag
- M-2625 Autoranging meter
- ST-1012 Clamp meter
- ST-95 8" groove pliers
- ND-3 Nut drivers 3/16", 1/4", 5/16"
- ST-34 Long nose pliers
- ST-125 6 pc. Screwdriver set with temperature
- ST-74 AC line splitter
- ST-73 AC voltage detector probe
- ST-32 Inspection flashlight
- ST-38G AC receptacle tester

### AC Voltage Detector Probe

#### Model ST-73



Detect AC voltages 120/240VAC without contact. Visual and audible indicators. Excellent for voltage tracing circuits.

### AC Line Splitter

#### Model ST-74



For measuring current in plug-in appliances and air conditioners. Splits two conductor line cord for reading at outlets under load. Permits voltage measurements at outlet under active conditions. Direct and 10X sensitivity.

### AC Receptacle Tester w/ Built-in GFCI Tester

#### Model ST-38G

UL listed. Gives instant display of wiring conditions of any standard 3-wire 110VAC outlet. Also tests GFCI.



### Circuit Tester

#### Model ST-37

AC/DC 80-500 volts. Bright neon indicator, pocket clip, insulated case.





# NETWORK & COMPUTER TOOL KITS

For A+ Certification Programs



**C-200 Large Zipper Case**  
(14 3/4" x 9" x 2 1/4")

## Network Service Tool Kit

**Model TK-4000**

A service and installation tool kit for networks, modems, and telephones. Includes quality, heavy-duty tools and a tester that will handle telephone cables with RJ-11 and RJ-45 connectors and coaxial cable with F or BNC connectors.

### Includes the Following:

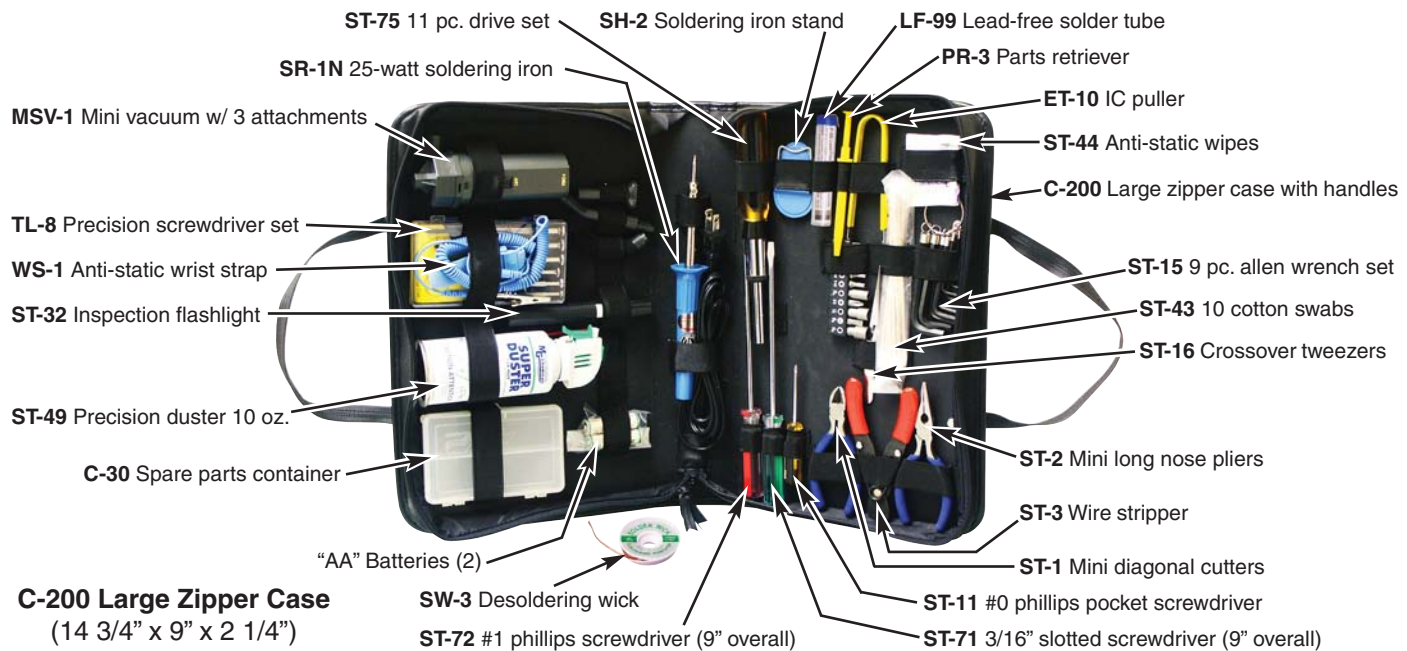
- TCT-355 Phone/coax cable tester
- ST-38G AC receptacle tester
- TWT-1 Telephone line analyzer
- ST-35 Coaxial cable stripper
- ST-568 Modular crimping tool
- ST-60 Hex-type crimping tool
- ST-75 11 pc. screwdriver bit set
- ST-620 Punch down tool w/ blade
- ST-211 Round cable cutter
- C-30 Parts box
- C-200 Carrying case

**A+** We will custom pack a tool kit to fulfill your certification program.

## Deluxe 50pc. Computer Technician Service Tool Kit

**Model TK-1700**

A complete tool kit for the repairing and maintaining of computers and electronic devices. Included in this kit is a powerful mini vacuum with attachments and a pressurized canned-duster to remove debris or dust. **OVER 50 ITEMS.**



**C-200 Large Zipper Case**  
(14 3/4" x 9" x 2 1/4")

## 12pc. Computer Service Tool Kit

**Model TK-1100**



**Dimensions: 8 3/8" x 6" x 1 3/8"**

**All contained in a black vinyl zippered case.**

### Includes the following:

- 3/16" nut driver
- 1/4" nut driver
- Driver handle - Fits all bits
- Reversible screwdriver bits T10 & T15.
- Reversible screwdriver bits 3/16" & 1/4"
- Reversible screwdriver bits #1 & #2 phillips
- ST-17 Tweezers
- ET-14 IC inserter 14-16 pin
- ET-10 IC puller
- ST-101A 1/8" slotted screwdriver
- ST-101B #0 phillips screwdriver
- PR-3 3-prong parts retriever

**Model TK-1100A** - Same TK-1100 with spare parts tube, but without the IC inserter.

**2-Year Warranty on all tools.**

# DELUXE ELECTRONIC TOOL KIT

## Tool Kit Model TK-3000



Dimensions: 13" (H) x 18" (W) x 6 1/2" (D)

A professional technician service tool kit in a metal reinforced tool case with heavy-duty handle and locks. A removable, double-sided pallet handles most of the tools listed below with more room for tools and parts in the lower half. A special ramp in the tool case will lock your meter of choice in place.

### Tools Included in Case:

- **SR-2B** Deluxe 25W soldering iron
- **SH-1** Soldering iron holder
- **ST-1** Mini diagonal cutters
- **ST-2** Mini long nose pliers
- **ST-30** Premium wire stripper
- **SE-1** Solder ease kit (4 pc.)
- **TL-8** Precision screwdriver set  
(6 precision screwdrivers)
- **SW-3** Desoldering wick
- **ST-72** Screwdriver slotted 3/16"
- **ST-71** Screwdriver #1 phillips
- **ET-10** IC puller
- **SP-4** Desoldering pump
- **ST-20** Safety goggles
- **ST-9** Pocket screwdriver
- **LF-99** Lead-free solder tube
- **ST-75** 11 pc. screwdriver bit set  
(3 nut drivers, 2 slotted, 2 phillips, & 3 star bits)
- **Meter and calculator shown are sold separately.**



New in the electronics educational field. A professional organizer tool kit at affordable prices. No technician should be without this unique tool kit that holds all of the tools you need (meter, experiments, etc.).

## Tool Kit Model TK-1001

### Tools Included in Case:

- **C-800** Deluxe heavy-duty large zipper case
- **ET-10** IC puller
- **SE-1** Solder ease kit (4 pc.)
- **SH-3** Soldering iron holder
- **SP-4** Desoldering pump
- **SR-2B** Deluxe 25W soldering iron
- **ST-1** Mini diagonal cutters
- **ST-2** Mini long nose pliers
- **ST-3** Wire stripper
- **LF-99** Lead-free solder tube
- **ST-20** Safety goggles
- **ST-75** 11 pc. screwdriver bit set  
(3 nut drivers, 2 slotted, 2 phillips, & 3 star bits)
- **SW-3** Desoldering wick
- **TL-8** Precision screwdriver set  
(6 precision screwdrivers)
- **Meter shown is sold separately.**



Dimensions: 12" (H) x 17" (W) x 4" (D)

**2-YEAR WARRANTY  
ANY TOOL IN THESE KITS**

**Other Tool Kit packages available -  
custom made to your specifications  
at the same low prices.**



# ELECTRONIC TECHNICIAN TOOL KITS

## Deluxe 25 pc. Electronic Technician Tool Kit

Model TK-2000

An electronic technician tool kit designed for the educational field. Heavy-duty deluxe tool box comes with two cantilever trays having 18 component trays. Deep bottom storage area for bulky items. 25 quality tools to meet most educational requirements.

2-Year  
Warranty



**C-500 Case**  
13 3/4" (H) x  
8 1/4" (W) x  
6 3/4" (D)

- Tools in Case**
- **SR-2B** Soldering iron, 25W, 3-wire grounded plug
  - **ST-1** 4 1/2" diagonal cutters, return spring, cushion grip
  - **ST-2** 5" long nose pliers, return spring, cushion grip
  - **ST-3** 5" adjustable wire strippers, cushion grip
  - **SH-1** Soldering iron holder with sponge
  - **SP-4** Desoldering vacuum pump
  - **SE-1** Solder ease kit (4 pcs.)
  - **TL-8** Precision screwdriver set (6 pcs.) in case
  - **ST-5** Slotted 3/16" screwdriver, chrome vanadium
  - **ST-6** Phillips #1 screwdriver, chrome vanadium
  - **ND-3** 3-piece nut driver set, 3/16", 1/4", and 5/16"
  - **ET-10** IC puller, stainless steel, vinyl grip
  - **ST-20** Safety goggles
  - **LF-99** Lead-free solder tube
  - **SW-3** Desoldering wick



## Deluxe 32 pc. Technician Tool Kit

Model TK-1500



**C-200 Large Zipper Case**  
9" (H) x 14 1/2" (W) x 3" (D)

**Includes the following:**

- **M-1000D** Digital multimeter
- **SR-2B** Soldering iron, 25W, 3-wire grounded plug
- **SE-1** Solder ease kit (4 pcs.)
- **SP-4** Desoldering vacuum pump
- **ST-1** 4 1/2" diagonal cutters, return spring, cushion grip
- **ST-2** 5" needle nose pliers, return spring, cushion grip
- **ST-30** Premium wire stripper, cutter, pliers, & crimper. Cushion grip.
- **ET-10** IC puller, stainless steel, vinyl grip
- **C-10** Parts box
- **SH-2** Soldering iron stand (wire form)
- **TL-8** 6 pc. precision screwdriver set
- **LF-99** Lead-free solder tube
- **SW-3** Desoldering wick
- **ST-75** 11 pc. screwdriver bit set (3 nut drivers, 2 phillips, 2 slotted, & 3 star bits)

Model TK-1600 - Same as above but without meter.

## 15 pc. Basic Technician Tool Kit

Model TK-1350

**Includes the following:**

- **SR-2B** Deluxe soldering iron
- **ST-1** 4 1/2" diagonal cutters
- **ST-2** 5" needle nose pliers
- **ST-30** Premium wire stripper
- **ST-5** 3/16" slotted screwdriver
- **ST-6** #1 phillips screwdriver
- **SP-4** Desoldering pump
- **ST-101A** 1/8" slotted screwdriver
- **ST-101B** #0 phillips screwdriver
- **SH-2** Soldering iron stand (wire form)
- **LF-99** Solder tube
- **ND-3** Nut driver set, 3/16", 1/4", & 5/16"

High quality tools in black vinyl zippered case.





**C-200 Case** 9" (H) x 14 3/4" (W) x 2 1/4" (D)

# TOOLS FOR THE ELECTRONIC & ELECTRICAL INDUSTRY

## PLIERS / TOOL KIT

<p><b>Mini Diagonal Cutters</b> Drop forged steel, return spring, cushion grip. 4 1/2" long.</p>  <p><b>ST-1 *</b></p>	<p><b>Mini Long Nose Pliers</b> Drop forged steel, return spring, cushion grip. 5" long.</p>  <p><b>ST-2 *</b></p>	<p><b>Diagonal Cutters</b> Drop forged steel, cushion grip. 6" long.</p>  <p><b>ST-26</b></p>	<p><b>Long Nose Pliers</b> Drop forged steel, cushion grip. Two sizes.</p>  <p><b>ST-34 - 6"</b> <b>ST-145 - 8"</b></p>
<p><b>Wire Stripper</b> Adjustable wire stripper, return spring, cushion grip. 5" long.</p>  <p><b>ST-3</b></p>	<p><b>Premium Wire Stripper</b> 7-in-1 all-purpose wire stripper, cutter, pliers, and crimper. Cushion grip. Strips AWG16 - 26. 6" long.</p>  <p><b>ST-30</b></p>	<p><b>Deluxe Wire Stripper</b> Knife-type blade cuts, strips AWG 12 - 24; cushion grip, return spring. 6" long.</p>  <p><b>ST-30Y</b></p>	<p><b>Professional Wire Stripper/Crimper</b> Multi-purpose wire stripper, cutter, crimper, &amp; pliers. Cushion grip. Strips AWG 10-22. 8" long.</p>  <p><b>ST-170</b></p>
<p><b>Linesman Pliers</b> Drop forged, fully polished, cushion grip. 8" long.</p>  <p><b>ST-70</b></p>	<p><b>Slip Joint Pliers</b> Drop forged steel, chrome plated, cushion grip. Three sizes.</p>  <p><b>ST-8 - 6 1/2"</b> <b>ST-127 - 8"</b> <b>ST-148 - 10"</b></p>	<p><b>Locking Pliers</b> Drop forged, fully polished, cushion grip. Three sizes.</p>  <p><b>ST-200 - 6"</b> <b>ST-95 - 8"</b> <b>ST-97 - 10"</b></p>	<p><b>Wire Stripper/Cutter Romex</b> Used to strip, cut and loop 12 &amp; 14 AWG Romex (NM-B non-metallic sheathed cable). Cushion grip, 8" long.</p>  <p><b>ST-153</b></p>

<p><b>Hand Tool Kit</b> <b>Model ST-10 *</b></p> <p><b>Includes</b></p> <ul style="list-style-type: none"> <li>• ST-1 4 1/2" diagonal cutters</li> <li>• ST-2 5" needle nose pliers</li> <li>• ST-3 Wire stripper</li> <li>• ST-5 3/16" slotted screwdriver</li> <li>• ST-6 #1 phillips screwdriver</li> </ul> 	<p><b>9 Piece Electronic Technician Starter Tool Kit</b> <b>Model TK-14</b></p> <p><b>Includes</b></p> <ul style="list-style-type: none"> <li>• SR-1N Standard 25W soldering iron</li> <li>• SH-2 Soldering iron stand</li> <li>• ST-2 5" needle nose pliers</li> <li>• ST-3 Wire stripper</li> <li>• LF-99 Lead-free solder tube</li> <li>• ST-5 3/16" slotted screwdriver</li> <li>• ST-6 #1 phillips screwdriver</li> <li>• ST-23 Heat sink</li> <li>• SW-3 Desoldering wick</li> </ul> 
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### Solder Tool Kit Model ST-12 \*

**Consists of:**

- SR-1N** - Standard soldering iron
- SP-4** - Desoldering pump
- SW-3** - Desoldering wick
- LF-99** - Lead-free solder tube
- SH-2** - Soldering iron stand



\* Available in retail packaging - See price sheet



# SCREWDRIVERS & NUT DRIVERS

## 6 pc. Mechanics Screwdriver Set

### Model ST-125

Hardened and tempered chrome vanadium steel shafts. Hex bolster for wrench assisted torque; magnetized tips.

- ⊖ Slotted - 3/16"  
1/4"  
5/16"  
3/8"
- ⊕ Phillips - #1 & #2



## 7 pc. Professional Screwdriver Set

### Model ST-121

Chrome vanadium steel shafts. Color line handles for comfort and identity; vapor blasted magnetized tips.

- ⊖ Slotted - 1/8"  
5/32"  
1/4"
- ⊕ Phillips - #0  
#1  
#2  
#2



### Pocket Screwdriver

Slotted 1/8" x 2" with clip. Overall 4 1/4".



ST-9

### Screwdriver

Slotted 1/8" x 3". Overall 5 1/4".



ST-101A

### Screwdriver

Slotted 3/16" x 3" chrome vanadium. Overall 6".



ST-5

### Pocket Screwdriver

Phillips #0 x 2" with clip. Overall 4 1/4".



ST-11

### Screwdriver

Phillips #0 x 3". Overall 5 1/4".



ST-101B

### Screwdriver

Phillips #1 x 3" chrome vanadium. Overall 6".



ST-6

### Screwdriver

Shock-proof, cellulose acetate plastic handles. Chrome vanadium blade. Overall 9".



ST-71: #1 Phillips x 6" ⊕

ST-71A: #2 Phillips x 6" ⊕

### Screwdriver

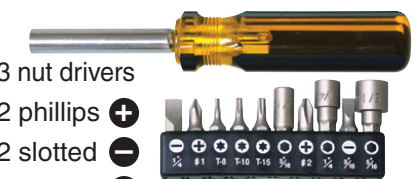
Shock-proof, cellulose acetate plastic handles. Chrome vanadium blade. Overall 9".



ST-72: Slotted 3/16" x 6" ⊖

ST-72A: Slotted 1/4" x 6" ⊖

## 11 Piece Screwdriver Bit Socket Set



- 3 nut drivers
- 2 phillips ⊕
- 2 slotted ⊖
- 3 star ☆

ST-75

## Six Piece Precision Screwdriver Set

Swivel heads, packaged in storage case.



TL-8

## 5-in-1 Driver Set

- 2 Phillips (#1 and #2)
- 2 Slotted (3/16" and 1/4")
- 1 Nut driver (5/16")



ST-85

## Nut Driver Set

3 pc. set - 3/16", 1/4", and 5/16".

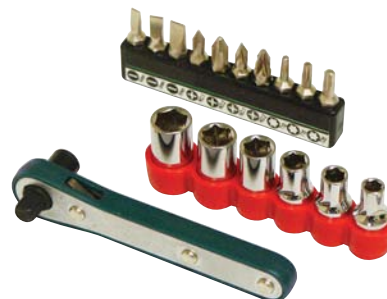


ND-3

## 17 pc. Offset Ratchet & Socket Driver Set

### Model ST-151

This screw and socket driver set comprises six hexagon sockets made from good quality carbon steel. The screwdriver has a 1/4" hexagon drive to accommodate ten 1/4" bits: slotted, phillips, and star.



## 15 pc. Precision Quality Screwdriver Set

### Model ST-152

- Vanadium blades, plastic handles
- Star: #T6, #T7, #T8, #T9, #T10, #T15, #T20 ⊕
- Flat: 0.08", 0.10", 0.12", 0.16" ⊖
- Phillips: #000, #00, #0, #1 ⊕



# SPECIAL TOOLS

<p><b>Crimping Tool/Wire Stripper</b> Cuts, strips, and crimps 10 - 22 gauge wire. Cushion grip. 8" long.</p>  <p><b>ST-24</b></p>	<p><b>Adjustable Wrenches</b> Drop forged, chrome plated, max. jaw opening. Three sizes:</p>  <p><b>ST-63 - 4"</b> <b>ST-62 - 6"</b> <b>ST-59 - 8"</b></p>	<p><b>PLCC Extractor</b> A spring-assisted extraction tool designed for the removal of PLCC's from sockets.</p>  <p><b>ST-96</b></p>	<p><b>IC Puller</b> Stainless steel construction for removing IC's. Insulated vinyl grip.</p>  <p><b>ET-10</b></p>
<p><b>IC Inserter</b> 14/16-pin.</p>  <p><b>ET-14</b></p>	<p><b>Parts Retriever</b> 3-prong. Pick up parts in hard-to-reach places.</p>  <p><b>PR-3</b></p>	<p><b>Tweezers Crossover</b> With pointed tip. 4 1/2" long.</p>  <p><b>ST-16</b></p>	<p><b>Lighted Magnifier</b> Requires 2 "AAA" batteries.</p>  <p><b>ST-25</b></p>
<p><b>Electrician Knife</b> 2 blades, spear and screwdriver with shackle at end.</p>  <p><b>ST-36</b></p>	<p><b>Allen Wrench Set</b> 8 pc. Ring set with springs - Twist off, twist on.</p>  <p><b>ST-15</b></p>	<p><b>13 pc. Long Hex Key Wrench Set - SAE</b> Chrome vanadium steel. Hardened and tempered.</p>  <p><b>ST-67</b></p>	<p><b>6" Ruler</b> Etched metal. Inch and metric divisions with pocket clip.</p>  <p><b>ST-14</b></p>
<p><b>Inspection Mirror</b> All-angle, telescoping inspection mirror.</p>  <p><b>ST-55</b></p>	<p><b>Inspection Flashlight</b> 6" Inspection light. Bright bulb. Requires 2 "AA" batteries, part # 590001.</p>  <p><b>ST-32</b></p>	<p><b>Deluxe Alignment Tool</b> Metal non-magnetic tip.</p>  <p><b>ST-41</b></p>	<p><b>Magnetic Pick-up Tool</b> Telescopic pick-up tool with pocket clip.</p>  <p><b>ST-45</b></p>
<p><b>Electricians Scissors</b> Hot forged - scraper and file on back edge of blade. Double stripping botch. 5" long.</p>  <p><b>ST-68</b></p>	<p><b>Hemostat</b> Straight 6" insulated handle Use as a clamp to hold parts in place.</p>  <p><b>ST-19</b></p>	<p><b>Mini-Vacuum Cleaner</b> Includes three attachments. Requires 4 "AA" batteries (part # 590001).</p>  <p><b>MSV-1</b></p>	<p><b>Precision Duster</b> Pressurized blaster removes microscopic dust, lint, and other particles. Net weight: 10 oz.</p>  <p><b>ST-49</b></p>

\* Available in retail packaging - See Price Sheet



# DATACOM TOOLS

## Universal Stripping Tool Model ST-350



Strips outer jacket of UTP and STP cable and CAT 5 round. Strips RG 59/6/11/7 coaxial cable. Strips flat telephone cable. Cable cutter function.

## Multi-Function Wire Stripper Model ST-302



Cuts, strips RG-58, RG-59, and RG-62. Precision strips 16 to 26 gauge wire.

## Coaxial Cable Stripper Model ST-35



Three-step coaxial cable stripper. Strips RG/U 6, 58, 59, 62 and 3C2V, 5C2V. Replacement blade cartridge - part # **ST-331**.

## Ceramic Kevlar® Cutter Model ST-340

Easily trim Kevlar® strength member in fiber optic cable. The ceramic blades cut Kevlar® quickly and precisely.



*Kevlar® is a registered trademark of the E.I. DuPont Company.*

## Cable Tie Gun Model DCT-300V / ST-375



Speeds up cable tie applications. Insures correct tension and provides automatic cutoff.

## Round Cable Cutter Model ST-211



The 100 pair group cutter is rated for ethernet, 100 pair group telephone cable, and RG-174 / RG-9 coax. Spring return with safety lock.

## Die Sets

The following die sets are for the Model ST-950 Crimp Tool.



DS-803 shown

### Model DS-803:

For RG-59, RG-6, F-type CATV, BNC/TNC. 0.350", 0.320", 0.255".

### Model DS-808:

For RJ-45 Eight-position Modular Plugs.

### Model DS-806:

For RG-58 & RG-59/62 AU BNC/TNC. 0.213", 0.255", 0.068".

### Model DS-810:

For RJ-45 10-position TeleCom Plug.

## Universal Crimp Tool Model ST-950



Ratchet crimp action provides repeatable and reliable terminations. Pressure adjustment for activation force. Dies change quickly - 10 dies available (sold separately). Cushion grip; length 9".

## Hex-Type Crimping Tool Model ST-60



For use on RG-58 and RG-59 connectors. Cushion grip; length 9".

## Multi-Function Telephone Tool Model ST-500



Crimps, cuts, and strips. Steel frame gives long term durability. Ratchet construction for RJ-45/11/12 modular plugs. Cushion grip; length 8 1/2".

## Modular Crimping Tool Model ST-568



Cuts, strips, and crimps modular plugs 8P/RJ45 and 6P/RJ12, RJ11. Cushion grip; length 7 1/2".

## Economy Crimping Tool Model ST-560



Multi-function telephone tool crimps, cuts, and strips for 4, 6, and 8 pole modular plugs. Plastic construction; length 8".

## Deluxe Punch Down Tool Impact Type Model ST-630



Adjustable pressure control. Suitable for 66 & 110 or KRONE terminal blocks. Includes (1) combination 66 & 88/110 blade. Storage for 1 spare blade in handle.

**Replacement Blades:** Type 66 (**ST-601**), KRONE Type (**ST-603**), Type 66 & 88/110 (**ST-604**)

## Punch Down Tool Model ST-620



Non-impact tool includes (1) combination 66 & 88/110 blade. Spare blade storage in handle included.

**Replacement Blades:** Type 66 (**ST-601**), Type 66 & 88/110 (**ST-604**), KRONE Type (**ST-603**)

## Can Wrench Model ST-670



An easy-to-use tool that allows access to telephone boxes and pedestals. 3/8" and 7/16" hex double end, plastic handle.

# TOOL CASES / PARTS BOXES

Top quality cases to meet your educational requirements.



**C-200 Large Zipper Case with Handles**  
**Dimensions:** 9" (H) x 14 1/2" (W) x 3" (D)

[See TK-1500 for suggested tool array.](#)



**C-800 Deluxe, Heavy-duty, Black Canvas Zipper Case** - Three outside pockets for meters, testers, and manuals.  
**Dimensions:** 12" (H) x 17" (W) x 4" (D)

[See TK-4000 for suggested tool array.](#)



**C-400 Deluxe Case** - Metal reinforced with handle and locks. Includes double-sided tool pallet, meter ramp and dividers.  
**Dimensions:** 13" (H) x 18" (W) x 5 1/2" (D)

[See TK-3000 for suggested tool array.](#)



**C-575 Plano Molded Tool Case** - Heavy-duty, extra-large molded tool case with organizer tray that provides the extra tool space that may be required. Other sizes available.

**Dimensions:** 11 1/4" (H) x 10 7/8" (W) x 20 1/4" (D)



**C-500 Heavy-duty, Deluxe Plano Tool Box** - Two cantilever trays with a total of 18 compartments. Deep bottom storage.

**Dimensions:** 8 1/4" (H) x 13 3/4" (W) x 6 3/4" (D)

[See TK-2000 for suggested tool array.](#)



**C-520 Plano Tool Box** - Top access area; full-size, lift-out tray and bulk storage area.

**Dimensions:** 7 1/2" (H) x 13" (W) x 5" (D)

**C-400B** - Deluxe case shown above but with interior filled with pre-cut foam. Bottom with 1/2" cushion and lid with 3" convoluted (egg crate) type foam. Pallet and dividers are optional.



**C-180 Deluxe Heavy-duty Tool Bag** - Ruggedly constructed with heavy-duty zipper and padded handles, a hard bottom to keep shape. Includes 18 pockets.  
**Dimensions:** 10" (H) x 15" (W) x 9 1/2" (D)

[See TK-8200 for suggested tool array.](#)



**C-170 General Purpose Pouch** - Ideal for electricians and maintenance people. Made from heavy-duty, green canvas material with adjustable quick release belt. Pouch 11" x 10" with multiple pockets.

[See TK-8000 for suggested tool array.](#)



**C-20 Small Zipper Case**

**Dimensions:** 8 1/2" (H) x 12 1/2" (W) x 1 1/4" (D)

[See TK-1100 for suggested tool array.](#)



**C-570 Plastic Case** - Built-in handles provide a large gripping area for easy carrying. Large sliding closures, lock lid into place.

**Dimensions:** 10 1/2" (H) x 8" (W) x 3 3/16" (D)

## Molded Cases



**C-40** - Plastic case with pin hinge, latch and side handle.  
**Dimensions:** 8" (H) x 10" (W) x 3" (D)

**C-50** - Plastic case with built-in hinge and latch.  
**Dimensions:** 7 1/2" (H) x 10" (W) x 3" (D)

## Parts Boxes



**C-10** - Five fixed compartments.  
**Dimensions:** 3 3/4" (H) x 6 1/2" (W) x 1 1/8" (D)

**C-30** - Four fixed compartments.  
**Dimensions:** 2 7/8" (H) x 4 5/8" (W) x 1" (D)

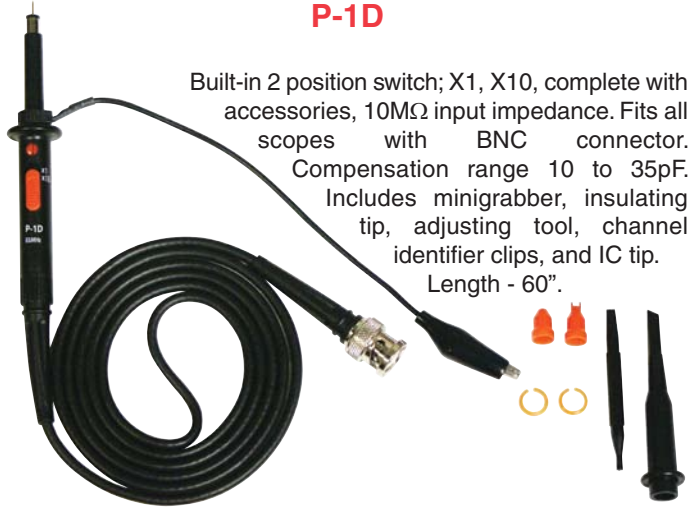
**C-900** - 6 to 18 adjustable compartments.  
**Dimensions:** 7 1/4" (H) x 11" (W) x 1 3/4" (D)



# PROBES & TEST LEADS

## 65MHz Scope Probe, Switchable

**P-1D**



Built-in 2 position switch; X1, X10, complete with accessories, 10MΩ input impedance. Fits all scopes with BNC connector. Compensation range 10 to 35pF. Includes minigrabber, insulating tip, adjusting tool, channel identifier clips, and IC tip. Length - 60".

## 250MHz Scope Probe, Switchable

**P-3D**



Built-in 3 position switch; X1, X10, ref. Complete with accessories. 10MΩ input impedance. Fits all scopes with BNC connector. Compensation range 10 to 35pF. Length - 60".

## 100MHz Scope Probe, Switchable P-2D

**TL-3 \***

### BNC Test Lead Set

BNC to minigrabber. Length - 48"



**TL-4 \***

### Test Lead Set

Banana to test probe lead set. Length - 36"



**TL-5 \***

### Banana to Alligator Lead Set with Small Alligator Clips

Stackable banana to alligator clip. Length - 36"



**TL-6 \***

### Alligator Lead Set with Small Alligator Clips

Jumper clip lead set (10 pieces, 5 colors). Length - 14"



**TL-6LG \***

### Alligator Lead Set with Large Alligator Clips

Jumper clip lead set (10 pieces, 5 colors). Length - 36"



**TL-7 \***

### BNC Cable

BNC male to BNC male. 50Ω. Length - 36"



**TL-9 \***

### Minigrabber to Minigrabber

IC clip test lead set. Length - 36"



**TL-12 \***

### Banana to Minigrabber Set

Stackable banana to minigrabber. Length - 36"



**TL-13 \***

### Component Test Lead

Banana to alligator for testing capacitors, inductors, and resistors. Length - 7"



**TL-15 \***

### Heavy-Duty Test Lead Set

Insulated banana to test probe lead with screw-on alligator clips. Length - 36"



**TL-16 \***

### Banana to Alligator Lead Set with Large Alligator Clips

Stackable banana to alligator clip. Length - 36"



**TL-17 \***

### BNC Test Lead Set

BNC to alligator clips. Length - 48"



**TL-18 \***

### Banana to Banana Lead Set

Stackable 3-way banana plugs. Length - 36"



**TL-21 \***

### Minigrabber to Minigrabber IC Test Lead Set

Jumper minigrabbers. 5 pieces, 5 colors.



**TL-22 \***

### Banana to Probe Heavy-duty Test Lead Set

Rated max 1,000V & 10A (CAT III) Protective covers for tips. Length - 36"



**TL-30 \***

### Push-on Alligator Test Lead Set

Extra-large red and black insulated boots. Slips onto most 0.08" diameter test lead tips.



\* Available in retail packaging - See Price Sheet

# SOLDER STATION & SURFACE MOUNT SOLDERING

## Model SL-5 Series Soldering Stations



The **SL-5 Soldering Station** is electronically controlled to provide 5 to 40 watts and is ideal for professionals, students, and hobbyists. The unit includes a holder funnel for the iron, sponge pad for cleaning the tip and an on/off indicator light. It is available assembled or in kit form.

### ASSEMBLED SOLDERING STATIONS

**Model SL-540** - This station comes complete with a 40-watt soldering iron providing you with variable heat - 5 watts to 40 watts. For general soldering requirements.

**Model SL-5** is the station that comes without a soldering iron. You may plug in any iron and obtain variable heat. It is suggested that you use 40-watt or 60-watt irons.

### SOLDER STATION KITS

**Model SL-5K40** - A solder station in kit form using a 40-watt soldering iron that is included to build the station. The 40-watt soldering iron then becomes part of the station.

**Model SL-5K** is a solder station in kit form. The soldering iron is not included. You build the station with your own soldering iron (40-watt iron suggested). Ideal for student projects.

## Temperature Controlled Soldering Stations

### Model SL30A Digital Display



LED readout for greater accuracy (SL-30 only) • Temperature range 300°F to 900°F

This hi-tech soldering station incorporates a sophisticated electronic circuit that enables the user to change the tip temperature from 300°F (150°C) to 900°F (480°C). The temperature is maintained within  $\pm 10^\circ\text{F}$  of its preset temperature. The tip is isolated from the AC line by a 24V transformer. The tip is grounded to eliminate static charges.

#### Replacement Tips:

<b>Conical - 600020</b>	1/32"
<b>Conical - 600021</b>	1/64"
<b>Wedge - 600022</b>	3/32"
<b>Screwdriver - 600023</b>	3/32"

### Model SL10A



## Temperature Controlled Soldering Station

### Model SL-75

Low-cost solder station features manual temperature settings.



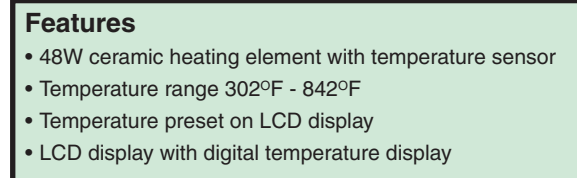
#### Features

- 48W heater power
- Temperature range 350°F - 900°F
- Electronic temperature control
- Power on LED
- Anti-static ground output

## Deluxe Temperature Controlled Soldering Station w/ Ceramic Heater

### Model ZD-931

Ideal for applications requiring temperature stability when working with sensitive components.



#### Features

- 48W ceramic heating element with temperature sensor
- Temperature range 302°F - 842°F
- Temperature preset on LCD display
- LCD display with digital temperature display



# SOLDERING EQUIPMENT

## Deluxe 25W Soldering Iron Model SR-2B \*



3-wire grounded plug • Screw-in tip • Rubber sleeve handle with long-life plated tip • Replacement tips: Conical - SR-2BT2, Fine (1/64") - SR-2BT3, Wedge - SR-2BT

## Standard 30W Soldering Iron Model SR-1N \*



25W Pencil soldering iron  
Stand included

Conical replacement tip SR-1T1

## Professional Soldering Iron Model SR-3B \*



25 watts • Ceramic element • Long-life tip • Lightweight • Rubber sleeve • Conical replacement tip: SR-3T

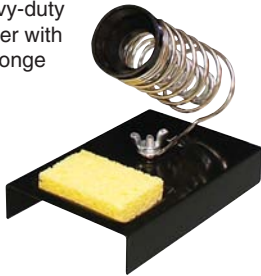
## Deluxe 40W Soldering Iron Model SR-6



3 wire grounded plug • Screw-in tip  
Rubber sleeve handle with long-life plated tip  
Replacement tips: Conical - SR-2BT2, Wedge - SR-2BT

## Soldering Iron Stand Model SH-1

Heavy-duty holder with sponge



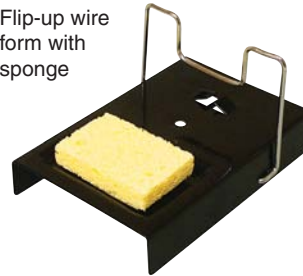
## Soldering Iron Stand Model SH-2 \*

Small stand w/ flip-up form



## Soldering Iron Stand Model SH-3

Flip-up wire form with sponge

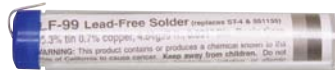


## Desoldering Pump Model SP-4

Deluxe, high-vacuum pump  
Anti-static tip



## Lead-free Solder Model LF-99 \* - 5 ft. Rosin core, 0.031" dia.



Model 551136 - 1 lb.  
Rosin core,  
0.032" dia.  
99.3% tin,  
0.7% copper



## Desoldering Wick Model SW-3 \*



Solder removal braid removes solder from all types of connections. 5 ft. roll in handy dispenser.

## Tip Tinner, Cleaner Model TTC-1



Prevents oxide build-up. Prolongs tip life and heat transfer.

## Soldering Tip Cleaner Model SH-1025

### Features

- Made of low abrasive brass shavings.
- No water necessary
- No temperature drop
- Cleans better than conventional sponges.



Golden Curis Refill Model 556006

## Helping Hands w/ Magnifying Glass Model HH-55

For soldering or making fine adjustments. Adjustable arms can hold objects in any position.



## Solder Ease Kit Model SE-1



4 pc. Set:  
Brush, scraper, probe, and ST-23 heat sink in pouch



## Safety Goggles Model ST-20



Contours to head  
Soft vinyl frame ventilated  
(Safety approved)

## Safety Spectacles Model ST-22



Features wide upper frame. It can also fit over prescription glasses.  
(Safety approved)

## Soldering Iron Tip Package Model TIPK-1

For SR-2B and SR-6



\* Available in retail packaging - See price sheet

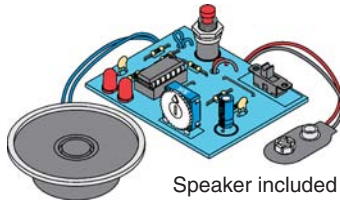
# EDUCATION KITS

Complete with PC Board and Instruction Book

## Space War Gun

**K-10**

This gun gives you realistic sounds and flashes you expect in a Space Gun. Produces rapid fire or single shot with two flashing LED's.



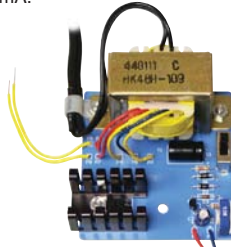
Speaker included

Requires one (1) "9V" battery (part # 590009)

## 0-15V Power Supply

**K-11**

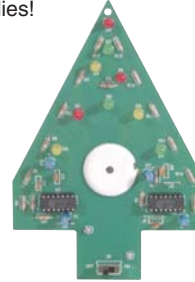
This kit is one of the most useful, low-cost power supplies you can build. It supplies voltage to transistor radios, tape recorders, and electronic games. Output: 0-15VDC @ 250mA, 8.5VAC @ 500mA.



## Christmas Tree

**K-14**

Produces flashing colored LED's and three popular Christmas melodies!

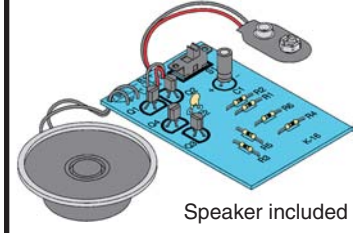


Requires one (1) "9V" battery (part # 590009)

## Electronic Cricket

**K-16**

The Electronic Cricket is the perfect project and fun game for family and friends. You will drive your friends crazy trying to find it!



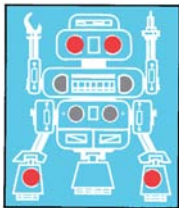
Speaker included

Requires one (1) "9V" battery (part # 590009)

## LED Robot Blinker

**AK-400/K-17**

With the LED Robot Blinker, you will learn about free-running oscillators. You'll have fun building, displaying and learning about the LED Robot Blinker.

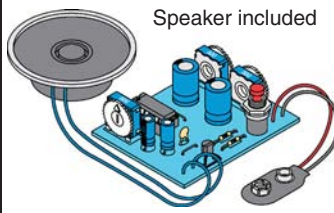


Requires one (1) "9V" battery (part # 590009)

## Digital Bird

**K-19**

There are all kinds of birds in this world, singing all kinds of songs. But neither you nor they probably have heard anything quite like this!



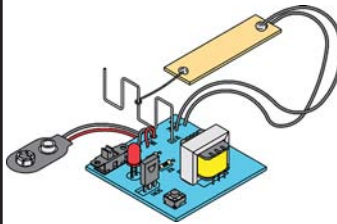
Speaker included

Requires one (1) "9V" battery (part # 590009)

## Nerve Tester

**K-20**

Test your ability to remain calm. Indicates failure by lit LED or mild shock.



Requires one (1) "9V" battery (part # 590009)

## Yap Box

**K-22A**

Makes six exciting sounds:

- Laser Gun
- Siren
- Puppy Bark
- Diesel Horn
- Wolf Whistle
- Machine Gun

Case Included.

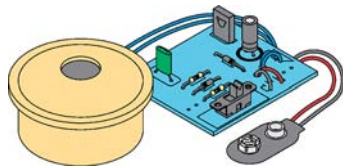


Requires one (1) "9V" battery (part # 590009)

## Burglar Alarm

**K-23**

The Burglar Alarm is an easy-to-build alarm control for your car, house, room, or closet. After the alarm is on, the only way to turn it off is to open the switch.



Buzzer included

Requires one (1) "9V" battery (part # 590009)

## Whooper Alarm

**K-24**

The Whooper Alarm makes an excellent alarm device for the Combination Lock/Alarm Control. It can also be used independently as a sounder or siren.



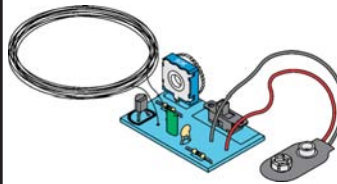
Speaker included

Requires one (1) "9V" battery (part # 590009)

## Metal Detector

**K-26**

Find new money and old treasure. Get started in the fascinating hobby of metal detecting.

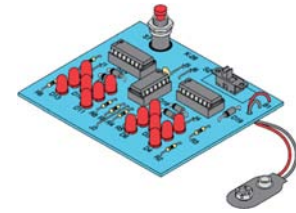


Requires one (1) "9V" battery (part # 590009)

## Pocket Dice

**K-28**

The Pocket Dice is a handy little project to be used with any game of chance. Since it uses CMOS circuitry, it has the advantage of operating off a 9-volt battery.



Requires one (1) "9V" battery (part # 590009)

## One Button Bandit

**K-34**

Press the button and away she goes. If three LEDs light, you win! Our version of Vegas' one arm bandit.

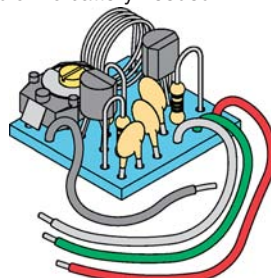


Requires one (1) "9V" battery (part # 590009)

## Telephone Bug

**K-35**

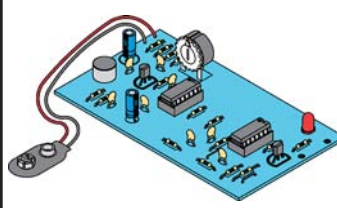
Our bug is only the size of a quarter, yet transmits both sides of a telephone conversation to any FM radio. No battery needed.



## Sound Activated Switch

**K-36**

Clap your hands and the light comes on . . . clap again and off it goes. Many other uses. Complete with microphone.

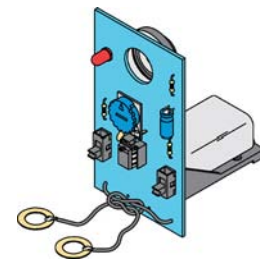


Requires one (1) "9V" battery (part # 590009)

## Lie Detector

**K-44**

The sound will tell if you are lying. The sound gets louder the more you lie. Fun at parties!



Requires one (1) "9V" battery (part # 590009)



# EDUCATION KITS

Complete with PC Board and Instruction Book

## Digital Roulette AK-300

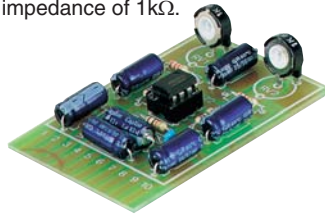
The Digital Roulette will be a sure winner with you, your friends and your relatives. Thirty-eight LEDs are arranged in a five inch diameter circle.



Requires one (1) "9V" battery (part # 590009)

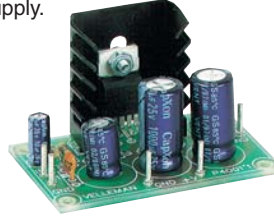
## Universal Stereo Pre-Amplifier K2572

This kit has a frequency range of 40Hz to 30kHz (-dB), 40dB gain with 40dB maximum adjustable gain. It has a maximum input voltage of 50mVrms and an output impedance of 1kΩ.



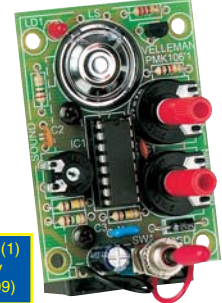
## 7W Amplifier K4001

This small amplifier is constructed around the TDA2003 IC, capable of delivering 4Wrms at 4Ω. The IC is completely thermally and short-circuit protected. A conventional direct current can be connected as supply.



## Metronome MK106

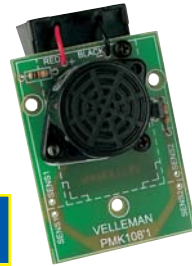
Speaker included. LED beat indication. Adjustable volume and beats / minute with potentiometers. On / off switch on board.



Requires one (1) "9V" battery (part # 590009)

## Water Alarm MK108

Gives alarm sound when water is detected. Incorporated alarm buzzer. Water sensor can be placed at a distance by cutting the board and using wires to connect the sensor.



Requires one (1) "9V" battery (part # 590009)

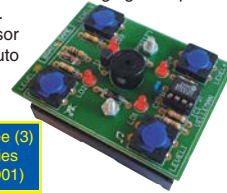
## Interval Timer MK111

For intermittent operation of circuits and equipment. Blinking light, video/photo single frame shooting, slide projector control, miniature models.



## Brain Game MK112

Just 4 LEDs and 4 push buttons provide hours of fun. The aim-of-the-game is to repeat a pattern, which is generated at random. The pattern is played both visually and audible or visually only (selectable). It features 4 difficulty levels, which can be selected at start-up. The replay speed gradually increases during the game, to make it even more challenging. Low power consumption. Microprocessor controlled. Auto power off.



Requires three (3) "AA" batteries (part # 590001)

## Light Barrier MK120

Applications: announce visitors, warn against burglars, set boundaries, for science projects, etc.



Requires three (3) "AA" batteries (part # 590001)

## Traffic Light MK131

Miniature traffic light as used on four-way junctions. Realistic operation with adjustable delay. 12 LEDs. Great for model railroads, exhibitions, as a toy, etc.



Requires one (1) "9V" battery (part # 590009)

## Steam Engine Sound Generator w/ Whistle MK134

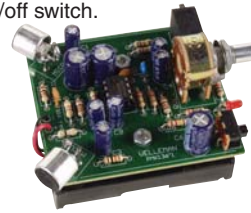
Generates sound of a vintage steam engine. Adjustable "speed" and volume. Great for model railroads, radio plays, stage, or as a gadget. With "steam whistle" push-button.



Requires one (1) "9V" battery (part # 590009)

## Super Ear Amplifier MK136

Stereo audio amplifier boosts sound 50 times. Great for the hearing impaired (e.g. when watching TV), as a gadget, science project, etc. With volume control and on/off switch.



Requires one (1) "9V" battery (part # 590009)

## Dual White LED Stroboscope MK147

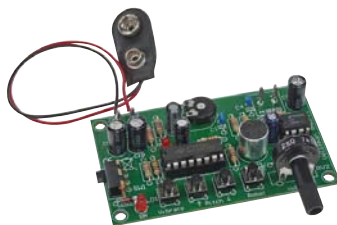
Two super bright white LEDs, powerful flash effect, great for parties, in scale models, to observe moving parts, slow/fast selector, and speed adjust trimmer, speed adjustable between approx. 1 to 60 flashes per second.



Requires one (1) "9V" battery (part # 590009)

## Voice Changer MK171

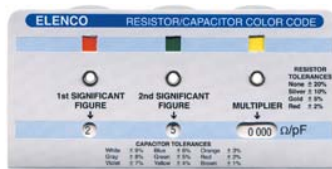
Make your voice sound like a robot. Add vibrato effect. "Pitch" buttons make your voice sound lower or higher. Built-in microphone and power amplifier with volume control, just add a speaker.



Requires one (1) "9V" battery (part # 590009)

## Color Code Calculator for resistors, capacitors, and inductors CC-100

Pocket-sized calculator is easy-to-use in determining values of resistors, capacitors, and inductors. Match colors and get a fast reading of values.



## Telephone Line Analyzer TWT-1K

A telephone line analyzer kit that tests active phone lines with RJ-11 or RJ-45 modular jacks.



## Batteries



- AA**
- General-purpose.....590001
- Alkaline.....590002
- AAA**
- General-purpose.....590003
- Alkaline.....590015
- D**
- General-purpose.....590005
- Alkaline.....590006
- 9V**
- General-purpose.....590009
- Alkaline.....590011

# SPECIAL TEST EQUIPMENT

## Diode / Transistor Tester

**Model DT-100**

Checks transistors and diodes in circuit.

Identifies NPN or PNP transistors.

Checks small or large power types.

Available in kit  
Model DT-100K

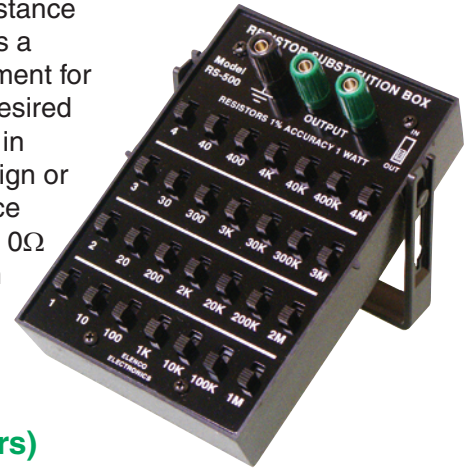


## 1% 1W Resistor Substitution Box

**Model RS-500**

The RS-500 Resistance Substitution Box is a convenient instrument for determining the desired resistance values in circuits under design or test. The resistance obtainable is from  $0\Omega$  to 11,111,110 $\Omega$  in 1 $\Omega$  increments. All resistors are 1% precision.

(1 watt resistors)



## Resistor Substitution Box

**Model RS-400**

Contains 24 standard value resistors from 10 $\Omega$  to 1M $\Omega$ .

Available in kit K-37



## Capacitor Substitution Box

**Model CS-440**

Contains 24 different value capacitors from 100pF to 0.1 $\mu$ F.

Available in kit K-38



## Telephone Line Analyzer

**Model TT-400**

A telephone line analyzer that provides fast indication of telephone line polarity, ring and line voltage levels, and the condition of phone line from user's telephone to central telephone office. It can also check basic telephone functions and condition of telephone line cord.



Available in kit  
Model TT-400K

## Telephone Line Analyzer

**Model TWT-1**

A telephone line analyzer that tests active phone lines with RJ-11 or RJ-45 modular jacks.

Available in kit  
Model TWT-1K





# TESTERS - KITS

## Multi-Network Cable Tester Kit

**Model TCT-255K**



This tester is a convenient instrument for testing different unshielded wiring schemes telephone cables with RJ-11 and RJ-45 connectors and coax cables (F and BNC connectors). Cables can be tested before and after they are installed.

**Soldering required.**



Requires one (1) 9V battery (part # 590009).

### Features

- Testing cables before or after their installation.
- Mapping function.
- Cable identification (straight or cross-pinned).
- Open or short testing.
- F to BNC connectors included.
- Low battery indicator.
- Auto power-off function (30 s.).
- 9V battery (part # 590009) included.

## Function Generator

**Model FG-500K**

Provides sine, square or triangle waveforms continuously variable 1Hz to 1MHz. Amplitude adjustable to 3V peak-to-peak. Complete with all parts, PC board, schematic, deluxe case and extensive assembly manual.

**Soldering required.**

Available Assembled  
Model FG-500



## Diode/Transistor Tester Kit

**Model DT-100K**

This dynamic tester allows the checking of transistors and diodes in circuit. Identifies NPN or PNP transistors. Checks all types: small or large power. Identifies anode or cathode of diodes.

**Soldering required.**

Available Assembled  
Model DT-100



## Telephone Line Analyzer Kit

**Model TT-400K**



A telephone line analyzer that provides fast indication of telephone line polarity, ring and line voltage levels, condition of phone line from user's telephone to central telephone office - also can check basic telephone functions and condition of telephone line cord.

**Soldering required.**

Available Assembled  
Model TT-400

## Resistor Substitution Box

**Model K-37**

Contains 24 different value resistors from 10Ω to 1MΩ. **Soldering required.**



Available Assembled Model RS-400

## Capacitor Substitution Box

**Model K-38**

Contains 24 different value capacitors from 100pF to 0.1μF. **Soldering required.**



Available Assembled Model CS-440

## Anti-Static Wrist Straps

Protects ICs and other equipment from static discharges. *Adjustable.*

**WS-1** (elastic band)



**WS-1Y** (velcro band)



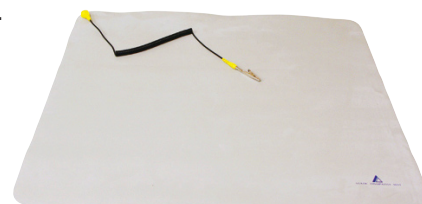
## Anti-static Work Mat

**Model WS-2**

Protects your workstation from static discharge. Made of semiconductive vinyl. Size: 11" x 22".

**Model WS-3**

Size: 19" x 23"



# POWER SUPPLY KITS

The largest selection of variable and fixed voltage power supply kits in the electronics industry. Ideal as school projects for breadboarding, prototyping, and training. The regulated supplies are protected against damage from short circuits.

## Power Supply Kit Model XP-720K



Model **XP-720K** has 3 fully regulated DC supply outputs, two outputs are continuously variable and one is fixed, plus a 12.6VAC output center-tapped to 6.3VAC.

### Specifications

Input Voltage	120VAC
Output Voltage	1) 1.25VDC - 15VDC @ 1A 2) -1.25VDC - -15VDC @ 1A 3) 5VDC @ 3A 4) 6.3VAC @ 1A and 12.6VAC center-tapped @ 1A
It features short circuit protection on all supplies.	
<b>Note:</b> Variable outputs can be stacked to get 3 - 30VDC @ 1A.	

Available Assembled Model XP-720

## Deluxe Battery Eliminator Kit Model XP-100K

This power supply is an ideal bench top battery eliminator. Substitutes a wide variety of batteries including AA, AAA, C, D, and 9V types. The voltage is conveniently selected by a rotary switch. Advanced, solid-state electronics provide both LINE and LOAD regulation of the output voltage. The voltage selector switch is precision-designed so that the output voltage does not increase during adjustment between voltage ranges.



### Specifications

Input voltage	120VAC
Output voltage	1.5, 2.2, 3, 4.5, 5, 6, 7.2, 9, 10, 12, 13.8, 15VDC
Output current	1A max.
Accuracy	±5%
Dimensions / weight	3 3/4" (H) x 8 1/4" (W) x 7" (D) / 5 lbs.

Available Assembled Model XP-100

## Variable Voltage Power Supply Kit Model XP-15K

A handy portable power supply with a variable output voltage of 15VDC. Mounted in a rugged bakelite case.

### Specifications

Input Voltage:	120VAC
Output Voltage:	1.25 - 15VDC
Output Current:	0.5A @ 8V; 0.3A @ 12V 0.2A @ 15V
Short Protected IC Thermo	



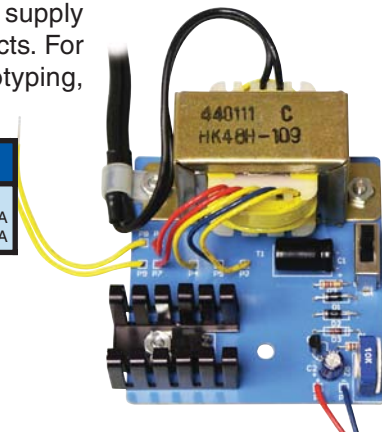
## Variable Voltage Power Supply Kit Model K-11

A low cost way to supply voltage to school projects. For breadboarding, prototyping, and training.

### Specifications

Input voltage:	120VAC
Output voltage:	0 - 15VDC @ 250mA AC: 8.5V @ 500mA

Ideal for  
School  
Projects!





# MULTIMETER KITS

If you are using or planning to use a digital or analog meter in your training programs, consider one of the meter kits below - easy construction, detailed assembly manuals.

## Deluxe Full Function Digital Multimeter Kit

### Model M-2666K

#### Features

- Extra-large 1", 3 1/2 digit display
- Transistor tester
- Overload protection
- Capacitance to 200µF
- Diode test
- Audio continuity
- AC/DC current to 20A
- Low battery indication
- Rubber holster
- Tilt stand
- Safety input sockets & test leads.

#### Specifications

AC + DC Volts	200mV, 2V, 20V, 200V, 1,000V, 750VAC
Accuracy	DC: $\pm(0.5\% \text{ rdg} + 2\text{dgt})$ , 1,000V: $\pm(0.8\% \text{ rdg} + 2\text{dgt})$ AC: 200mV, 750V: $\pm(1.5\% \text{ rdg} + 2\text{dgt})$ , 1mV-100mV: $\pm(1.0\% \text{ rdg} + 2\text{dgt})$ Resolution 100µV
AC + DC Current	200µA, 2mA, 20mA, 200mA, 20A
Accuracy	DC: 200µA-20mA: $\pm(1.5\% \text{ rdg} + 2\text{dgt})$ , 200mA: $\pm(2.0\% \text{ rdg} + 2\text{dgt})$ , 20A: $\pm(2.5\% \text{ rdg} + 3\text{dgt})$ AC: 200µA-20mA: $\pm(1.0\% \text{ rdg} + 3\text{dgt})$ , 200mA: $\pm(1.5\% \text{ rdg} + 3\text{dgt})$ , 20A: $\pm(2.0\% \text{ rdg} + 3\text{dgt})$ Resolution 0.1µA
Resistance	200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ, 20MΩ
Accuracy	200Ω: $\pm(1.0\% \text{ rdg} + 2\text{dgt})$ , 2kΩ - 2MΩ: $\pm(0.8\% \text{ rdg} + 3\text{dgt})$ , 20MΩ: $\pm(2.0\% \text{ rdg} + 4\text{dgt})$ Resolution 0.1Ω
Capacitance	2nF, 20nF, 200nF, 2µF, 20µF, 200µF
Accuracy	2nF - 20µF: $\pm(2.5\% \text{ rdg} + 3\text{dgt})$ , 200µF: $\pm(5.0\% \text{ rdg} + 3\text{dgt})$ Resolution 1pF
Size / Weight	7 1/2" (H) x 3 1/2" (W) x 1 13/32" (D)
Accessories	Test leads, Manual, 9V Battery included



## 20K/V VOM Model M-1250K



#### Features

- 20,000Ω/V
- 23 ranges
- 3 1/2" meter
- Mirrored scale
- Audible continuity
- Checks transistors / diodes
- Safety input sockets and test leads
- 10A DC current
- dB scale
- Battery test
- Tilt stand

#### DSR-85

Dial Scale Reading Kit Included

Available assembled as Model M-1250

#### Specifications

DC Volts	0.1, 0.5, 2.5, 10, 50, 250 - 3% FSR / 1k - 5% FSR
AC Volts	10, 50, 250 - 4% FSR / 1kV - 5% FSR
DC Current	50µA, 2.5mA, 25mA, 250mA - 3% FSR / 10A 5% FSR
Resistance	x1, x10, x100, x1k, x10k - 3% of ARC
Transistor h <sub>FE</sub> 0-1000	ICEO 15mA, 150mA
Size	5 29/32" (H) x 3 23/32" (W) x 1 1/4" (D)
Accessories	Test leads, Manual, 9V and (2) 1.5V AA batteries

## Digital Multimeter Kit Model M-1007K



#### Features

- Low cost
- 3 1/2 digit LCD
- 19 ranges
- Transistor test
- Diode test
- Overload protection
- Pocket-size

Available assembled as Model M-1000D

#### Specifications

DC Volts	200mV, 2V, 20V, 200V, 1,000V
AC Volts	200V, 750V
Accuracy	DC 1/2%, AC 1.2%
Input Impedance	1MΩ
DC Current	200µA, 2mA, 20mA, 200mA, 10A
Accuracy	$\pm 1.2\% \text{ rdg} + 2 \text{ digits}$
Resistance	200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ
Accuracy	$\pm 1\% \text{ rdg} + 2 \text{ digits}$
Size	5" (H) x 2 29/32" (W) x 1" (D)
Accessories	Test leads, Manual

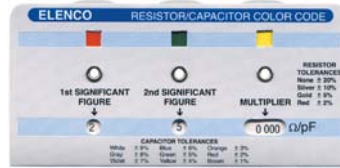
# SOLDER PRACTICE KITS & SURFACE MOUNT TECHNOLOGY

## Practical Soldering Project Kit

### Model SP-3B

Elenco® Electronics is proud to present another superb solder practice kit designed to meet the ever-increasing demands on proper soldering procedures. Some of the features of this kit are as follows:

- Identifying components
- Color-code reading exercises, resistors, capacitors, and inductors. **Includes color code calculator (Model CC-100).**
- 163 solder points, standard soldering connections, close-tolerance soldering, and tack soldering.
- Evaluation exam of performed soldering connections. Written & visual.
- Complete voltage and resistance analysis of circuit.
- Desoldering exercise



Requires one (1) 9V battery (part # 590009).

## Practical Soldering Project Kit

### Model SP-1A

Working with printed circuit boards is in the future of every electronic technician. Almost every electronic device today has a printed circuit board and whether you are assembling a PC board or repairing it, you must understand the basics of working with these boards.

Good soldering requires practice and an understanding of soldering principles. This solder practice project will help you achieve good soldering techniques, help you become familiar with a variety of electronic components, and provide you with dynamic results.



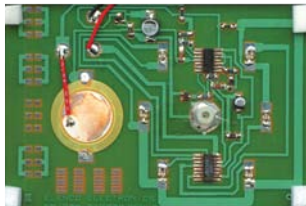
Requires one (1) 9V battery (part # 590009).

SP-1A Solder Kit w/ Soldering Iron & Side Cutters - AK-100

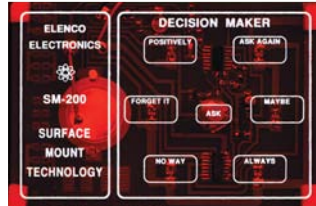
## Surface Mount Technology Solder Practice Kit

### w/ Training Course Model SM-200K

The future of electronics is headed for miniaturization through surface mount technology (SMT). Taking our course of training will prepare you for the future. Includes all parts and instructions to give you experience on working with surface mount components. The finished project is a decision maker with 6 flashing LED's to help you make vital decisions.



SM-200K PC board showing practice areas & mounted components



SM-200K in its final assembly as a decision maker

Requires one (1) 9V battery (part # 590009).

## Learn Surface Mounting Techniques Function Generator Kits

### w/ Training Courses Model FG-600K

These versatile function generators include surface mount components such as IC's, resistors and capacitors. When completed, they provide Sine, Square and Triangle waveforms, continuously variable to 1MHz. Amplitude adjustable. Complete with all parts and PC board. Both include case and extensive training manual.

#### Specifications

##### Output

Waveforms: Sine, square, triangle  
 Frequency: 1Hz - 1MHz  
 Impedance: 600Ω ±10%  
 Amplitude: Sine/triangle: 0-3V; Square wave: 8V  
 Frequency variable range: 10:1 or more  
 Frequency multiplier: Six decade steps

##### Sine Wave

Distortion: Less than 1% (at 1kHz)  
 Flatness: ±0.05dB (1Hz - 100kHz)

##### Square Wave

Symmetry: Less than 5% (at 1kHz)  
 Rise / fall time: Less than 50/30ns (at 1kHz)

##### Triangle Wave

Linearity: Less than 1% (up to 100kHz)  
 Power requirements: 9V battery

Requires one (1) 9V battery (part # 590009).





# RADIO KIT WITH TRAINING COURSE

## MAKES AN EXCELLENT PROJECT FOR CLASSROOM STUDIES

The unique design of these kits allows you to place the parts over its corresponding symbol in the schematic drawing on the surface of the printed circuit board during assembly. This technique maximizes the learning process while keeping the chances for an assembly error at a minimum.

Both kits include an assembly, lesson and theory of operation manual. The actual assembly is broken into simple sections. Each section should be completely tested before moving on. This reduces difficult troubleshooting associated with many similar kits. Both include practical hi-tech blue PC boards with the schematic printed on the surface. The manuals are easy to understand. Each radio kit PC board has been designed so that no cabinet is necessary. A special molded plastic base provides the necessary support to use the radio in any location, displaying the work achievement of the student.

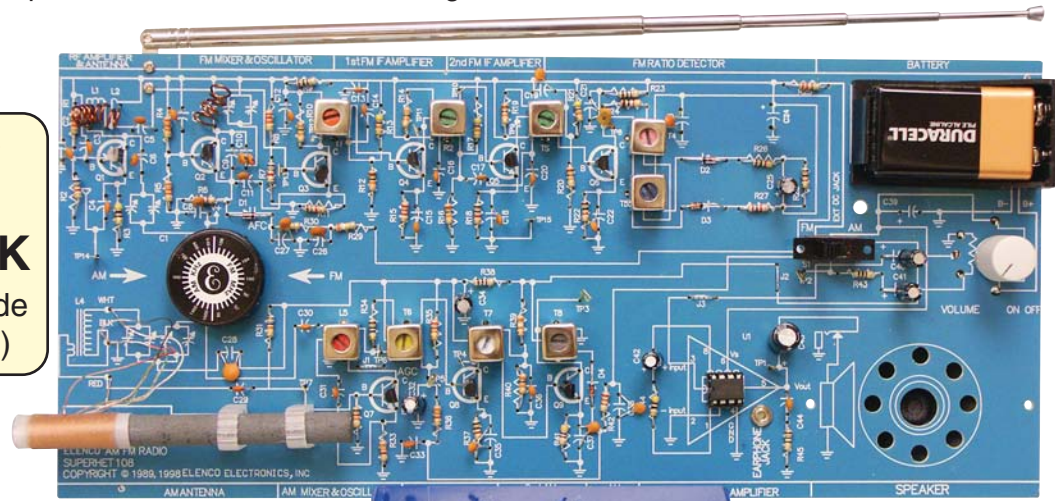
### Model AM/FM-108K

#### AM/FM Radio Kit and Training Course

##### 1 Integrated Circuit, 9 Transistors and 4 Diodes

Training course of 56 pages is divided into 9 lessons; Audio Amplifier, AM Detector, AM IF, AM Amplifier, AM Mixer & Oscillator, FM Detector, 1st FM IF, 2nd FM IF, FM RF Stages. Integrated circuit technology now included. "Superheterodyne" designed to receive standard AM (amplitude modulation) and FM (frequency modulation) broadcast frequencies. Includes radio mounting stand.

**Also Available**  
**Model**  
**AM/FM-108TK**  
14-Transistor, 5-Diode  
Version (without IC)



Requires one (1) 9V battery (part # 590009)

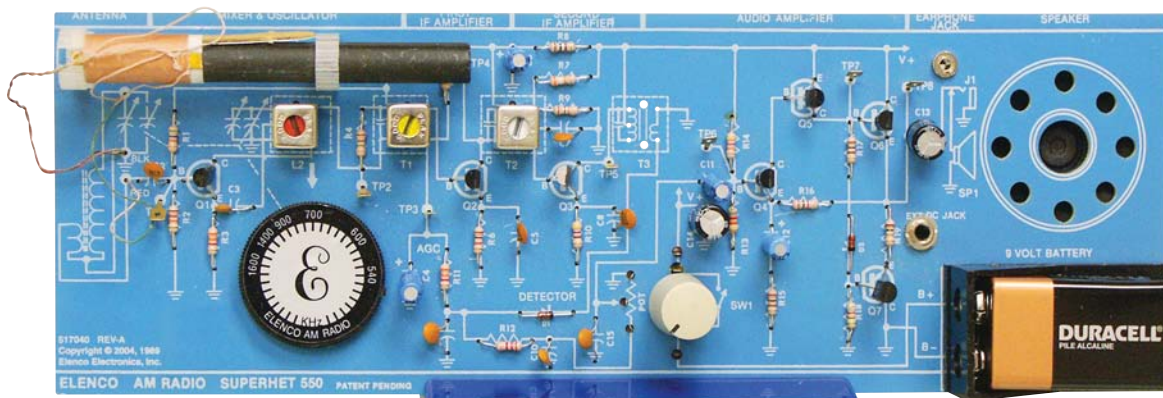
PC Board 5 1/4" (H) x 11 5/8" (W)

### Model AM-550TK

#### AM Radio Kit and Training Course

##### 7 Transistors and 2 Diodes

Training course divided into 5 lessons: Audio Amplifier, Detector, IF Amplifier, Oscillator, and Mixer. "Superheterodyne" designed to receive standard AM (amplitude modulation) broadcast frequencies. Includes radio mounting stand.



Requires one (1) 9V battery (part # 590009)

PC Board 3 1/2" (H) x 10 1/2" (W)

The following warning pertains to all products on this page.

**WARNING: CHOKING HAZARD**  
Small parts. Not for children under 3 years.

# DELUXE KITS

## FM Wireless Microphone Kit

**Model AK-710**

Now you can hear your voice on the radio! This kit will have you singing in no time at all. After following our easy assembly manual, you'll be ready to transmit your voice on an actual FM Radio. Range up to 100 feet.

**Soldering required.**



Requires two (2) "AA" batteries (part # 590001)

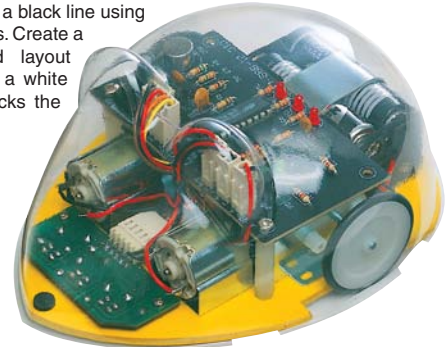
## Line Tracking Mouse Kit **Model 21-880**

A smart Robot Mouse tracks a black line using a photo interrupter for its eyes. Create a twisting and turning road layout yourself with black tape on a white background. See how it tracks the black line to find the target.

**Soldering required.**

### Features

- Sound activated.
- Uses three photo interrupters to detect a black line.
- Two sets of gear motors (unassembled).
- Programmed IC.



Requires four (4) "AA" batteries (part # 590001)

## Motion Detector Kit

**Model AK-510**

Learn the basics of motion detector technology while building this motion detector kit that uses an infrared sensor. Use as a burglar alarm, message minder, room detector, or entry to home or business.

**Soldering required.**

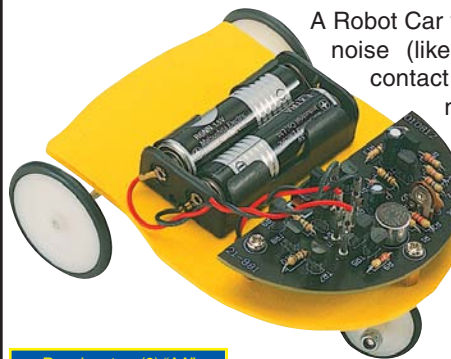


Requires one (1) 9V battery (part # 590009)

## Sound Reversing Car Kit **Model 21-881**

A Robot Car with a sensor to detect noise (like a clap) or physical contact for its reaction. It moves forward when it detects noise and reverses when it touches obstacles.

**Soldering required**



Requires two (2) "AA" batteries (part # 590001)

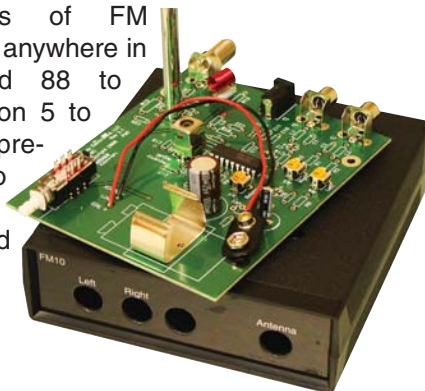
### Features

- Uses a microphone as a sound sensor.

## Tunable FM Stereo Transmitter **Model FM10CK**

Learn the basics of FM transmitters. Tunable anywhere in standard FM band 88 to 108MHz. Operates on 5 to 15VDC settable pre-emphasis 50 to 75µsec. Includes matching case and knobset.

**Soldering required.**



Requires one (1) 9V battery (part # 590009)

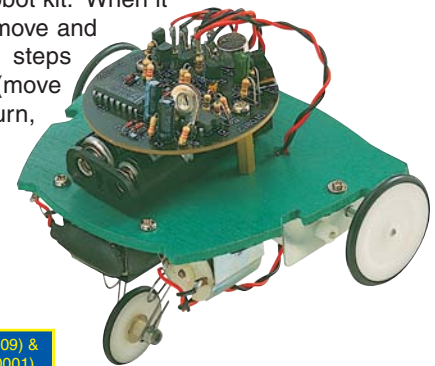
## Turning Frog Kit **Model 21-882**

This is an interesting robot kit. When it detects sounds, it will move and repeat the following steps sequentially: Start (move forward), Stop, Left Turn, Stop, Right Turn, Stop.

**Soldering required.**

### Features

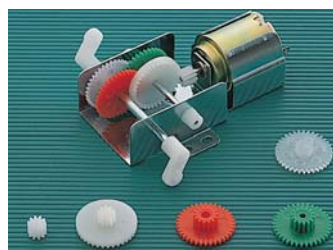
- Two sets of gear motors (unassembled).



Requires one (1) 9V (part # 590009) & two (2) "AA" batteries (part # 590001)

## 2-in-1 Gearbox (unassembled) **Model 21-130**

We provide the motor, two sets of gears, metal shafts, gearbox, and other accessories in this kit. Use a different gear setting and you will have a different speed (see the table for details).



### Gear Set 1:

Gear Ratio	Gear	Teeth	I.D.
1:60	Pinion Gear	10T	1.9mm
	Face Gear	36T/14T	2.05mm
	Double Spur Gear	36T/14T	3.05mm
	Double Spur Gear	36T/14T	2.05mm
	Spur Gear	36T/0T	2.9mm
Reduction RPM		41.6	

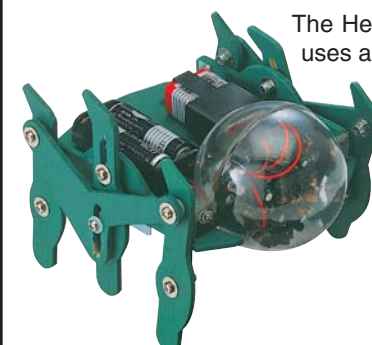
### Gear Set 2:

Gear Ratio	Gear	Teeth	I.D.
1:288	Pinion Gear	8T	1.9mm
	Face Gear	36T/10T	2.05mm
	Double Spur Gear	40T/10T	3.05mm
	Double Spur Gear	40T/10T	2.05mm
	Spur Gear	40T/0T	2.9mm
Reduction RPM		41.6	

## Hexapod Monster Kit **Model 21-883**

The Hexapod Monster is a robot that uses an infrared emitting diode for its eyes, and moves by its six legs. It turns left when it detects obstacles, and keeps moving forward if there is no shade in front of the sensor.

**Soldering required.**



Requires one (1) 9V (part # 590009) & two (2) "AA" batteries (part # 590001)

### Features

- Uses an infrared emitting diode as its sensor.
- Two sets of gear motors (unassembled).



The following warning pertains to all products on this page.

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Small parts. Not for children under 3 years.

# DELUXE KITS

## Telephone Kit

**Model PT-323K**

**Clear, See-Through Case with Training Course**



The Elenco® PT-323K is a push button electronic telephone. It is equipped with the following features: Pulse/tone dialing, automatic redial, a ringer turn off switch, 4 neon bulbs for visual indication of telephone ringing, and a clear see-through case to show the total inner workings of the phone. A detailed, easy-to-follow 36 page manual included. Sectionalized construction and testing makes construction easy. Wall mounting cradle included.

Now available in non-soldering version: **Model FUN-875** with training course.

## Radio Controlled Race Car

**Model RCC-7K**

**with Training Course**

The purpose of this project is to expand your understanding of basic transmitters, receivers and electronic switching theories. Your Turbo King Car will be built from the ground up. You'll learn all about gears, motors, printed circuit boards, and integrated circuits from our detailed assembly and training manual. You will construct each section, explore the circuitry and troubleshoot it.



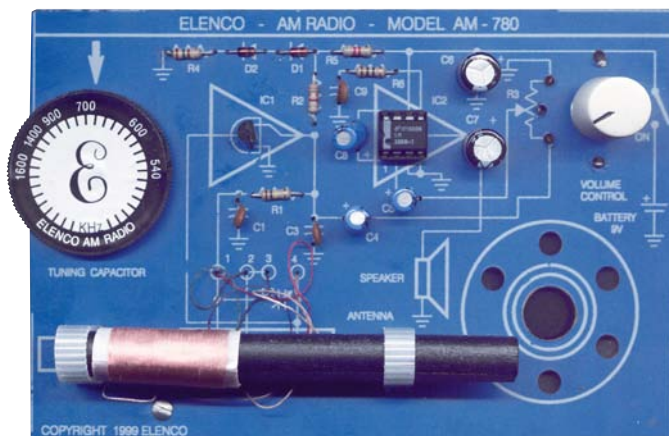
### Features

- 7 Remote Functions
- Single Channel Operation
- Flashing Top Light
- Remote Control Included

Requires one (1) 9V (part # 590009) and four (4) "AA" batteries (part # 590001).

## Two IC AM Radio Kit

**Model AM-780K with Training Course**



New Design - Easy-to-Build complete radio on a single PC board. Unique design allows you to place parts over its corresponding symbol on the PC board. Teaches the basic theory of AM radio operation. Detailed instructions and illustrations make it an easy and educationally sound project.

Requires one (1) 9V battery (part # 590009).

The following warning pertains to all products on this page.



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Small parts. Not for children under 3 years.

# OWI ROBOT KITS

None of our OWI Kits require soldering (unless otherwise noted).

## MOON WALKER II MV-979 (Light & Sound Sensor)

Moon Walker II begins to walk when it detects a change in light intensity or sound commands, and continues its four-legged voyage until instructed by an internal timer to stop. This kit presents an engaging opportunity to learn about some of the mechanics, operation and history of robots. When assembled, this robot uses a phototransistor to sense changes in light (such as turning on a lamp) and a condenser microphone to sense changes in sound (such as clapping). It converts those stimuli into electrical signals to power a motor, and the robot walks forward for a preset time. When it stops, affecting another change in area light or sound may activate it again. The sensors may be adjusted for different sensitivity levels. Printed circuit board pre-assembled.



Requires one (1) "AA" battery (part # 590001)

OWI-979K (PCB Unassembled) - Soldering Req'd

## SUMO ROBOT OWI-9647 (Infrared Sensor)

Now OWIKIT brings the Sumo tradition to your home. The super warrior, SUMO ROBOT, can be controlled to assault and overpower its opponent or retreat to prepare for battle. An infrared sensor beam is emitted when detecting an opponent. Upon detection, it instructs the brain of SUMO to "charge", thereby creating a bona fide wrestling match!



Requires four (4) "AA" batteries (part # 590001)

Movement: 2 tractor style wheels powered by 1 DC motor. Control: Infrared sensor/detectable range: approx. 350mm (max.).

## SPIDER III OWI-9727 (Infrared Beam)

With its radical walking style, this intelligent robot avoids interference by emitting an infrared beam which detects obstacles in its path. It then sends command signals in the form of electronic pulses to alter the rotating direction of its motor to evade these obstacles.



Requires one (1) 9V (part # 590009) and two (2) "AA" batteries (part # 590001)

Printed circuit board pre-assembled.

OWI-972K (PCB Unassembled) - Soldering Req'd

## HYPER LINE TRACKER OWI-9737 (Infrared Sensor)

This cyber bug possesses a sonic tracking system, and is fortified with a multitude of sensors: photo transistors to detect a black line, tracking memory to memorize its last track of the black line, and two red LEDs that to tell you which side of the light sensor is activated.



Requires four (4) "AA" batteries (part # 590001)

Hyper Line Tracker follows a designed course. By using an infrared emitter, light sensor circuitry, and tracking memory, it demonstrates how robots "see" a pathway. Make a path with a black felt tip marker or black tape and watch how infrared sensors enable the robot's motors to make course corrections. Printed circuit board pre-assembled.

OWI-973K (PCB Unassembled) - Soldering Req'd

## SOLAR CAR OWI-685 (Triple Action)

Sleek, powerful, unearthly, and very cool . . . this futuristic solar car is an exciting way to demonstrate the use of alternative energy. It features an aerodynamic sports car shell design, a 4-wheel chassis, a powerful 1.4V, 350mA solar cell (included) and a transparent plastic body that can be painted or left clear to display the car's inner mechanical construction. The steerable front axle, rear wheel and adjustable (directional/angle) solar panel mount are all independent parts, allowing for separate solar projects.



Requires one (1) "AA" battery (part # 590001)

The Triple Action Solar Car Kit is also available: (1) The two-way battery source allows for battery or solar power; (2) the kit design is an aerodynamic racer or tractor; and (3) it features a multi-speed transmission.

## ROBOTIC ARM TRAINER OWI-007 (Wired Control)

The Robotic Arm Trainer teaches the basic robotic sensing and locomotion principles while testing your motor skills as you build and control the arm. You can command this unit with its five switch wired controller with lights to grab, release, lift, lower, rotate wrist, and pivot sideways 350 degrees. After assembly, observe the dynamics of gear mechanisms through the transparent arm. Five motors and five joints allow for flexibility and fun! For educators and home schoolers, you'll find the robotics technology curriculum and personal computer interface useful tools.



Requires four (4) "D" batteries (part # 590005)

PC Interface - (0762-USB) • Curriculum - (RTC-007)

## WAO KRANIUS OWI-9762 (Limited Edition)

"PUSH MY BUTTONS AND WATCH ME GO!" The 4th generation of WAO programmable robot kits. WAO Cranium is a 2-wheeled robot that you can program to follow an interesting path "WITHOUT" a personal computer. The brain is an 8-bit micro-controller and keyboard with 33 tactile buttons. Stores up to 60 programming steps and 30 FOR-NEXT multiplex loops. 6 vision sensors (two infrared light sensors to detect obstructions and four floor light sensors enables it to detect a contrast of light like an edge of a table). Programming makes you plan ahead, think systematically and logically, develop problem-solving skills, and challenge you to think creatively. Easy to assemble. Intermediate level kit.

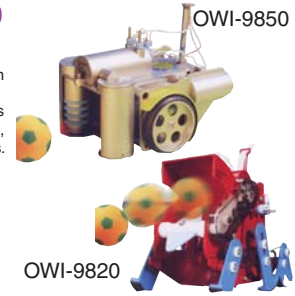


Requires two (2) "AA" batteries (part # 590001)

PC Interface - (0762-USB)

## SOCCER PRO OWI-9850 (Wired Control)

There will be many hours scoring goals on the living room coffee table with SOCCER ROBOT. SOCCER ROBOT has six operational kicking mechanisms and includes a control box and ball. It runs forward, backward, turns left or right, and executes 360-degree turns. It will even help develop your hand/eye coordination skills. Assembled Electronic Printed Circuit Board. Movement: 6 legs driven by 2 DC motors in a crank motion. Control: Wire remote.



Requires four (4) "AA" batteries (part # 590001)

OWI-9820 Soccer Jr.

## JUNGLE ROBOT OWI-9870 (Sound Sensor)

Jungle Robot traverses "hand over hand" like an orangutan or walks on the ground like a gorilla. Amaze and surprise your friends with its ape like animation. A condenser microphone and printed circuit board controls your multi-function friend. When you think jungle robot is asleep, just cry "Wake UP!" Your robot will immediately start climbing or walking for a pre-set time and reset itself waiting for another command.



Requires one (1) "AA" battery (part # 590001)

## ROCKIT ROBOT OWI-7769 (Sound/Touch Sensor)

OWI introduces to their award winning Beginner Series of educational electronic robot and science kits...RockIt Robot! The new futuristic style includes high performance and superior materials. RockIt Robot evolves as a spunky little robot that you can build. Explore the fundamentals of robotics with this informative and entertaining robot kit. Appropriate for ages 10 and up, RockIt Robot is an intelligent robot with a touch/sound sensor. If it comes in contact with an object or hears a loud noise (such as hands clapping), RockIt Robot automatically reverses, then turns left before embarking on a new course. RockIt Robot is lots of fun from the moment it arrives. Requiring only basic hand tools, it contains step-by-step instructions, pre-assembled printed circuit board, condenser microphone, and an easy-to-assemble mechanical drive system. It's an ideal gift for the educator, hobbyist or budding scientist.



Requires two (2) "AA" batteries (part # 590001)

OWI-769K (PCB Unassembled) - Soldering Req'd

## KNIGHT INVADER III OWI-6573 (Optional Solar Power)

The Knight Invader is a super race car that includes mini-construction projects, teaches the basic principles of electricity, gear mechanisms, and demonstrates two different modes of propulsion. Available with optional solar cell.



Requires two (2) "AA" batteries (part # 590001)

## ROBOTIC ARM EDGE OWI-535 (Wired Control)

Riding the wings of the award winning Robotic Arm Trainer, OWI has made robotic arm technology more affordable without compromising quality. With Robotic Arm Edge, command the gripper to open and close, wrist motion of 120 degrees, an extensive elbow range of 300 degrees, base rotation of 270 degrees, base motion of 180 degrees, vertical reach of 15 inches, horizontal reach of 12.6 inches, and lifting capacity of 100g. WOW! Some of the added features include a search light design on the gripper and a safety gear audible indicator is included on all five gear boxes to prevent any potential injury or gear breakage during operation. How does this equate to fun? Total command and visual manipulation using the 5s: five switch wired controller, five motors, and five joints. Night time play is possible and extended life on the gearbox to prolong your control and predictions of the robot's behavior. 9in x 6.3in x 15in



Requires four (4) "D" batteries (part # 590005)

PC Interface - (535-USB)



The following warning pertains to all products on this page.



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Small parts. Not for children under 3 years.

# OWI ROBOT KITS

None of our OWI Kits require soldering (unless otherwise noted).

## BINARY PLAYER ROBOT OWI-9875 (Programmable, Infrared Sensor)

Binary Player Robot is controlled by black and white patterns on a disk, which are read by an infrared sensor. Particular patterns activate either of two wheels to turn left, right, forward, or pause. These on/off commands illustrate the basic principles of binary coding. To change a movement program, the operator simply creates a new disk pattern. Set your course and explore the fascinating world of Binary Player Robot! Ages 10 & up.



Requires two (2) "AA" batteries (part # 590001)

## WEASEL OWI-9910 (Touch/Light Sensors)

"THERE GOES... WEASEL!" Weasel has two sensors that allow it to "see" a line or "feel" its way along walls and around corners. The two motors and contact sensor activate the wall sensing micro switch to control the motors' on/off operation that determines the path of a wall. It is the classic robot design using the "Left Hand Rule" to escape mazes. Imagine the endless mazes that can be set up for Weasel to try to escape! With OWI's™ continued pursuit in making robots "smart", they have added another feature to this little bundle of energy... a sonic tracking system. Discover and learn about the phototransistors underneath Weasel that enable it to detect and follow a black line. Want speed? Its three-speed gearbox will help navigate at the velocity you determine. Quick and easy to assemble, this is a beginner robot that makes great entrants for robotic competitions, robotic workshops, after-school programs, special events, gifts, science enrichment camps, and classroom activities. Ages 10 & up.



OWI-991K (PCB Unassembled) - Soldering Req'd

Requires two (2) "AA" batteries (part # 590001)

## 4-in-1 ROBOT KIT OWI-9874 (Sound Sensor)

4-in-1 Robot Kit features 4 different methods of movement: Traversing - hand over hand (Orangutan mode), 2 legged walking (Gorilla mode), 4 legged walking (Centaur mode) and 6 legged walking (Spider mode). Discover the dynamics of animal locomotion. This is an excellent beginner series robot. This battery-controlled kit can teach the basic principles of robotic sensing and locomotion. It features a pre-assembled printed circuit board, hardware, and mechanical drive system that can be handled by almost anyone from ages 10 & up.



Requires one (1) "AA" battery (part # 590001).

## ROLY POLY ROBOT OWI-9855 (Gear Technology)

Roly Poly Robot will tumble, fumble, stumble but will find a way to right itself up. The moment you turn it on, Roly Poly will speed away on its two cyclonic wheels. The engineering genius behind this well thought-out machine enables it to get on its 'feet' whenever it tumbles and then will continue on its new path of exploration. After assembling one worm gear and less than 20 parts, your mechanical marvel is ready to amuse any household pet. Ages 10 & up.



Requires one (1) "AA" battery (part # 590001).

## TURBO 3000 OWI-8606 (Optional Solar Power)

TURBO 3000 will amaze children nine years and older. This monster vehicle with oversized tires and independent suspension is "tricked-out". It features three modes of propulsion: direct motor drive, air propulsion, and solar power (optional). The kit includes electricity experiments involving series and parallel circuits and a high powered miniature light bulb. The special air-blowing compartment allows the styrofoam ball (included) to magically float into the air while the car is running. No tools are required for this easy to assemble and disassemble magical beastly beauty. If that's not enough, some of its transparent parts allow you to view and study the inner mechanics of the product. Ages 9 & up.



## AMPHIBIOUS SOLAR VEHICLE OWI-688 (Solar Power)

This kit introduces the fundamentals of solar power through hands-on experiments. The sun or any intense mobile light can power the solar battery (included). A multiple function switch (solar [1.4V, 350mA] or battery) allows this kit to be energized day or night, indoors or outdoors. The user can explore different types of energy and energy conversion with this land and water vehicle. Learn what materials solar batteries are made from and the characteristics of solar batteries, advantages, and disadvantages of solar power. Ages 10 & up.



## KABUTO MUSHI ROBOT OWI-8800 (Infrared Sensor)

The Kabuto Mushi (Rhinceros Beetle) Robot is an infrared remote controlled robot with caterpillar traction. The infrared remote control handset has 8 channels, each channel controls 4 motors. This easy-to-build kit will provide students, teachers, and hobbyists (with little or no experience), a fun and informative building session. Ages 10 & up.



Requires four (4) "AA" batteries (part # 590001) and three (3) "AAA" batteries (part # 590003).

## 6-in-1 SOLAR KIT OWI-MSK610 (Solar Power)

Mini Solar building kits teach children the benefits of solar energy while they create a toy that is both fun to play with and requires no batteries. Newest member of this popular line is the 6 in 1 Educational Solar Kit, an excellent beginner building kit designed to teach how solar power is used to drive a small motor. Children use the 21 snap together parts (no tools required) to build six different working models including an airboat, windmill, puppy, and two different planes. Ages 8 & up.



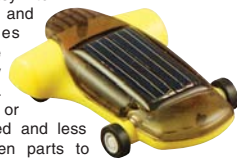
## WALKING KING CRAB OWI-MSK-669 (Solar Power)

Methodically, eight legs work in harmony to create a ballet style "tippy-toe" movement. Similar to its cousin from Alaska, the sun's rays will make it scurry along to safe passage. Ages 9 & up.



## SUPER SOLAR RACE CAR OWI-MSK-671 (Solar Power)

One source of such power is derived from the sun's powerful rays of light. Super Solar Racing Car is easy to assemble and demonstrates alternative energy principles. No batteries or tools required and less than a dozen parts to assemble. Ages 9 & up.



## HAPPY HOPPING FROG OWI-MSK-672 (Solar Power)

Using its hind legs and rubber feet, Happy Hopping Frog jiggles its eyes as a dog would wag its tail acknowledging its love and appreciation to its owner. The tailless, leaping mini solar kit is activated by the power of the sun's rays; no batteries required. Ages 9 & up.



## SONIC F1 OWI-MSK-674 (Solar Power)

When equipped with the most power engine, the sun, Sonic F1 races at amazing speeds. Easy to build and fun to play. Have hours of fun experimenting with it in the sun. No batteries required and eight plastic parts to assemble.



Ages 9 & up.

## OWIKIT TEACHKIT OWI-RET

A complete teacher resource written by teachers for student experimentation with all OWIKIT robots (except 007 Arm)! Capture students' interest in simple and advanced robotics. Over 110 pages long, complete with answer keys, appendix and teacher guides.



## ELEMENTARY TECHNOLOGY CURRICULUM OWI-ELEM2 (Beginner Experience Series Only)

A "teacher-friendly" learning guide about robotics and/or electrical technology that provides activities, concepts, and research assignments. Over 30-page curriculum.



## SOCIETAL IMPACTS OF COMPUTERIZATION TEACHKIT OWI-SIC

A must for grades 6-12 computer teachers who try to help their computer students understand value conflicts and ethical choices associated with electronics communication. Over 40 pages & 1 diskette that is PC/PowerMac compatible.



## SOLAR BATTERY OWI-608 (Solar Power)

Have fun in the sun with our safe, encapsulated mini-solar panel. This sturdy panel will endure handling without breakage or cell damage traditionally associated with solar cells. Create various experiments by exposing and positioning the panel at the energy source. Intended for use to familiarize students or hobbyists with fundamental silicon solar cell principles, and practical applications of solar cells. Mounting bracket not included. Current: 350mA. Voltage: 1.4V. Compatible with: OWI-685, OWI-688, OWI-6573, & OWI-8606.



The following warning pertains to all products on this page.

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Small parts. Not for children under 3 years.

# NON-SOLDERING KITS

## Solar Deluxe Educational Kit

**Model SK-40**

- By solar power, harness the power of the sun with this environment-friendly D.I.Y. kit!
- Children can do a series of do-it-yourself experiments to acquire the basic knowledge of solar energy.
- Children can learn how to make an electrical circuit, make a solar circuit, how to increase voltage and current, and how to use solar power to produce energy for a radio, calculator, battery charger, a cassette player and more!



## Radio Controlled Car Kit

**w/ Training Course Model FUN-875**

The purpose of this project is to expand your understanding of basic transmitters, receivers and electronic switching theories. Your Turbo King Car comes with the PC board already built. There is no soldering required! You'll learn all about gears, motors, printed circuit boards, and integrated circuits from our detailed assembly and training manual. You will construct each section, explore the circuitry, and troubleshoot it.

Now available in soldering version: Model RCC-7K with training course



- Features**
- 7 remote functions.
  - Flashing top light.
  - Single channel operation.
  - Remote control included.
  - Full color assembly instructions.

Requires one (1) 9V (part # 590009) and four (4) "AA" batteries (part # 590001).

## Photon Solar Racer Kit

**Model AK-590**

Learn all about solar energy and how to convert it to useful applications. You will build this exciting sleek solar car that runs on a high efficiency solar cell. Have your friends build one too and have fun racing them. No soldering required.

The solar car comes in clear plastic. The car can be painted any color scheme that you desire (paint is not supplied). Photo is painted to illustrate how your car could look.



## Cola Clock Kit

**Model FUN-285**

Cola not only quenches your thirst, but can power a clock too! Build this kit and amaze your family and friends with this cola-powered clock.

Learn how batteries work when you use cola to make a chemical reaction that powers a clock. Completely safe and doesn't require batteries! Parts are easily identified and assembled with full color manual.



No Batteries Required!



The following warning pertains to all products on this page.

**WARNING: CHOKING HAZARD**  
Small parts. Not for children under 3 years.

# NON-SOLDERING KITS

## Electronic Crystal Radio Kit

**Model MX-901C**

### Features

- Safe, solderless, educational, and fun!
- Easy-to-read instructions included
- Crystal diode converts RF to audio
- Tune in your favorite AM radio stations!
- Learn how radios work
- Includes earphone
- For ages 10 and up

No batteries required!



## Electronic AM/FM Radio Kit

**Model MX-901AF**

### Features

- Learn and build your own AM/FM radio kit - it's easy, it's fun, and it's safe!
- Tune in your favorite AM/FM radio stations - receives 520-1650kHz band and 88-108MHz band.
- Easy-to-read illustrated operating manual included.
- Safe, solderless, exciting, educational, and fun!

Requires one (1) 9V battery (part # 590009)



## Electronic AM Radio Kit

**Model MX-901A**

### Features

- Learn and build your own AM radio kit - it's easy, it's fun, and it's safe!
- Tune in your favorite AM radio stations - receives 520-1650kHz band
- Easy-to-read illustrated operating manual included
- Safe, solderless, exciting, educational, and fun!

Requires one (1) 9V battery (part # 590009)



## Electronic FM Radio Kit

**Model MX-901F**

### Features

- Learn and build your own FM radio kit - it's easy, it's fun, and it's safe!
- Tune in your favorite FM radio stations - receives 88-108MHz band
- Easy-to-read illustrated operating manual included
- Safe, solderless, exciting, educational, and fun!

Requires one (1) 9V battery (part # 590009)



## Electronic Short Wave Radio Kit

**Model MX-901SW**



### Features

- Learn and Build Your Own Short Wave Radio Kit - It's easy, It's Fun, and It's Safe!
- Explore the Fascinating World of Short Wave Radio!
- Receives Band from 6 - 8MHz (SW1) and 12 - 18MHz (SW2).
- Easy-to-read Illustrated Operating Manual Included.
- Safe, Solderless, Exciting, Educational, and Fun!

Requires one (1) 9V battery (part # 590009)

## 4-1 Action Kit Lab

**Model MX-902**



Motor

Bell



Meter

Generator

### Features

- Safe, solderless, educational, and fun!
- Easy-to-read, illustrated, lab-style manual included.
- Discover how an electric bell is constructed and how it's made to ring.
- Build your own operating motor - It's easy, it's fun, it's safe!
- Find out how a generator makes the electricity that makes things work.
- Meter measures the amount of electricity used in your experiments.
- For ages 10 and up.

Requires two (2) "AA" batteries (part # 590001)

### Just a Few of the Many Exciting Experiments

- Controlling motor's forward/reverse rotation with generator.
- Fan using motor and generator.
- Electromagnet and reverse polarity.
- Operating the electric bell with generator.
- Color mixing with rotating color disc.

### Ordering Information

**MX-902** - 4 pc. set: Includes motor, bell, meter, and generator.

**MX-902T** - 2 pc. set: Includes motor and generator.

**MX-510B** - 1 pc. set: Includes bell.

**MX-510L** - 1 pc. set: Includes light.

**MX-510G** - 1 pc. set: Includes generator.

**MX-510M** - 1 pc. set: Includes motor.

The following warning pertains to all products on this page.

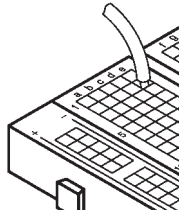


**WARNING: CHOKING HAZARD**  
Small parts. Not for children under 3 years.

# PROJECT LABS

## Breadboard Method:

Featured in our advanced kits, this system is used by professionals and engineers. Just plug the components and wires into the special breadboard socket holes.



**No soldering is required.** Everything uses safe battery power - no dangerous AC is required, so it's

safe for all ages. Labs come with all components and wires needed to build each project. **NO TOOLS ARE REQUIRED.** No prior knowledge is needed to assemble and build these exciting projects. Easy-to-read, illustrated, lab-style manuals take you through each electronic experiment step-by-step. All are designed for ages 10 & up, so these are ideal for **MIDDLE SCHOOLS** and **HIGH SCHOOLS**.

## 500-IN-ONE Electronic Project Lab

**Model MX-909**

### Features

- Everything you need to build 500 Exciting Electronic Projects.
- Learn the basics of electronics and put your knowledge to work creating 500 different electronic experiments, special lighting effects, radio transmitter and receivers, amazing electronic sound effects, cool games and MORE!
- Includes built-in breadboard for easy wiring and connection of components, and an LCD (Liquid Crystal Display) indicates the information during the experiments in process!
- Build your knowledge by exploring amplifiers, analog and digital circuits plus how to read schematic diagrams.
- Includes transistors, transformers, diodes, resistors, capacitors, phototransistors, CDs, integrated circuits, speaker, earphone, LEDs, LED digit display!
- Fact-filled, illustrated, lab-style manual included.



**Uses breadboard and spring hook-up methods**

**Requires six (6) "AA" batteries (part # 590001).**



**Uses spring and breadboard hook-up methods**

## 300-IN-ONE Electronic Project Lab

**Model MX-908**

### Everything You Need to Build 300 Exciting Electronic Projects:

- |                      |                        |                                |
|----------------------|------------------------|--------------------------------|
| • A Transistor Radio | • Multiple Counter     | • Rain Detector                |
| • IC Organ           | • Digital Light Dimmer | • Voltage Drop Alarm           |
| • Burglar Alarm      | • Tone Burst Generator | • Logic Checker                |
| • Delayed Timer      | • Audio Signal Tracer  | • Function Generator           |
| • Electronic Game    | • Electronic Candle    | • Voltage Controlled Amplifier |
| • Optical Volume     | • Voice Level Meter    | • AND MANY, MANY MORE!         |
| • Multiplier         | • Metal Detector       |                                |

*Easy-to-read, illustrated, lab-style manual included.*

**Requires six (6) "AA" batteries (part # 590001).**

## 200-IN-ONE Electronic Project Lab

**Model MX-907** **Requires six (6) "AA" batteries (part # 590001).**

### Features

- Easy-to-read, illustrated, lab-style manual included.
- Learn about transistors, transformers, diodes, capacitors, oscillators, basic electronic circuits, and schematic symbols.
- Build your own Radio, AM Broadcast Station, Burglar Alarm, Electronic Game, Ohmmeter, Telegraph, Rain Detector, Amazing Sound Effects, and Much More!
- With built-in speaker, earphone, meter, seven-segment LED digital display, out-front controls, and more!



**Uses spring hook-up method**



The following warning pertains to all products on this page.



**WARNING: CHOKING HAZARD**  
Small parts. Not for children under 3 years.

# PROJECT LABS

## NO TOOLS OR SOLDERING REQUIRED!

These “Electronic Science Labs” will teach you about electronics from A-Z. With these all-in-one labs, you’ll learn about electronic parts, how to read schematics, and wiring diagrams. All this while building up to **500** different projects. These kits use two quick and easy hook-up methods:

## Spring Method:

Simply slip pre-cut wires and components into special springs for a safe, secure connection.



## Electronic Playground

### Model EP-50

Over 50 Electronic Projects

#### Build these exciting circuits:

- Finger touch lamp
- Magnetic bridge
- Voltmeter
- Morse code
- Alarm
- Electronic noisemaker
- Electronic kazoo
- Electronic keyboard
- Transistor radio
- Radio announcer
- Metal detector

#### Learn about:

- Voltage
- Current
- Resistors
- Capacitors
- Transistors
- Diodes
- Transformers
- Speakers
- Antennas

Ideal for Middle Schools!



#### OVER 50 EXPERIMENTS

Specifically Designed for Beginners.

(Spanish Manual Available)

Requires one (1) 9V battery (part # 590009).

Uses spring hook-up method



## 75-IN-ONE Electronic Project Lab

### Model MX-905

- Easy-to-read, illustrated, lab-style manual included.
- Learn basic principles of electricity, electronics, physics and magnetism!

Uses spring hook-up method

Requires four (4) “AA” batteries (part # 590001).

#### Everything You Need to Build:

- |                        |                          |                         |
|------------------------|--------------------------|-------------------------|
| • Timer Buzzer         | • Electronic Organ       | • Sound-sensor Timer    |
| • Sound Alarm          | • Motion Detector        | • Four-level Photometer |
| • Burglar Alarm        | • First-Aid Siren        | • Two Stage Timer Sound |
| • Photo-level Alarm    | • Pulse Width Modulation | • Voltage Detector      |
| • Logic Tester         | • Water Level Alarm      | • Conductivity Tester   |
| • Electronic Coin Toss | • Sound Level Meter      | • Optical Volume        |
| • Motion LED           | • DC-to-DC Converter     | • AND MANY, MANY MORE!  |

## 130-IN-ONE Electronic Project Lab

### Model EP-130

- Easy-to-read, illustrated, lab-style manual included.
- Learn basic principles of electricity, electronics, physics and magnetism!
- Comes with built-in speaker, 7-segment LED display, two fully integrated circuits and rotary controls.

Requires six (6) “AA” batteries (part # 590001).

#### Everything You Need to Build:

- |                        |                  |
|------------------------|------------------|
| • AM Broadcast Station | • Timer          |
| • Electronic Organ     | • Logic Circuits |
| • Strobe Lights        | • AND MUCH MORE  |



Uses spring hook-up method

The following warning pertains to all products on this page.

**WARNING: CHOKING HAZARD**  
Small parts. Not for children under 3 years.

# SNAP CIRCUITS® GREEN

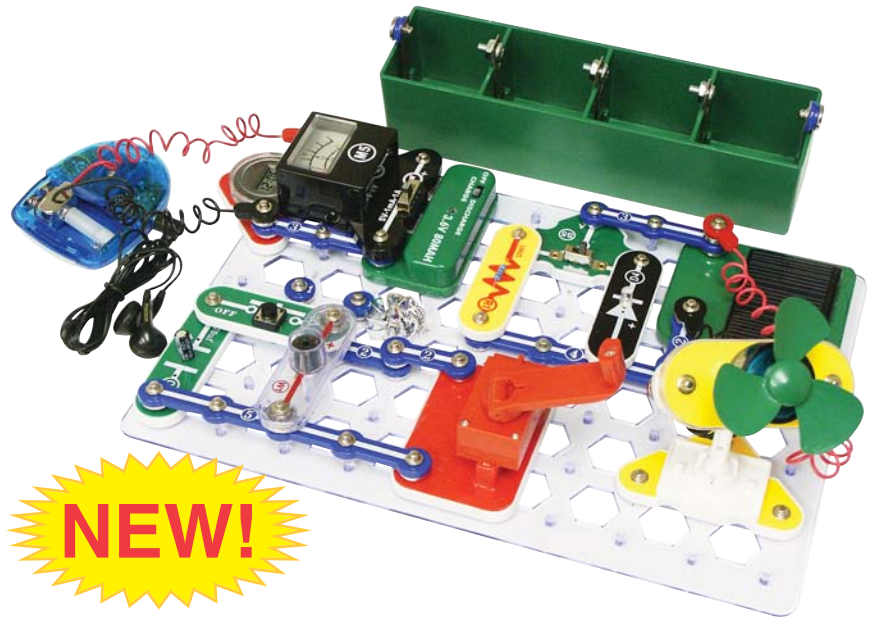
## Alternative Energy Kit

**Model SCG-125**

Learn about energy sources and how to “think green”. Build over 125 projects, using the flexibility of our award-winning Snap Circuits®, to have loads of fun learning about environmentally friendly energy and how the electricity in their home works. Includes full-color manual with over 100 pages and separate educational manual. This educational manual will explain all the forms of environmentally friendly energy including: geothermal, hydrogen fuel cells, wind, solar, tidal, hydro, and others. Contains over 40 parts.

### Topics Covered:

- Solar Energy
- Wind Power
- Hydro Power
- Generators
- Chemical Power
- Rechargeable Batteries
- Analog Meters



## SNAP-MICRO™ I

Snap-Micro™ I is an easy way to learn about micro-controllers and how they are used in the world around us. Our easy-to-follow instructions will guide you through the programming of basic commands by using flow charts to operate the micro-controller. After a brief intro, Snap-Micro™ I will have you programming over 25 projects such as data loggers, A/D converters, DC motors and much more using Snap Circuits® components. No prior understanding of micro-controllers required.

Snap-Micro™ I comes with all the components and software you need to get started. All that is required is a computer with Windows®-based system. The 86 page instruction manual is divided into 4 sections: ① Getting Started (electronic components), ② Flow Chart Programming and Snap Circuits® Basics, ③ Programming for Snap Circuits®, and ④ Audacity®\* Sound Circuits. After the course is completed, you will have a better understanding of programming a micro-controller and how you can use them for real world applications.

### Snap-Micro™ I Deluxe Model SCM-450



### Learn About:

- Micro-controllers
- Flow charts
- Basic commands
- Electronic components
- Programming
- Data logging
- Sensors
- Analog to digital conversion

### Snap-Micro™ I Standard

**Model SCM-400**



**UC-100 Upgrade Kit - Converts SC-300 to SCM-400. SNAPCASE7 sold separately, see page 8.**

\* Audacity® is a registered trademark of Dominic M. Mazzoni, South Pasadena CA 91030



The following warning pertains to all products on this page.

**WARNING: CHOKING HAZARD**  
Small parts. Not for children under 3 years.

# DELUXE SNAP ROVER®

## RADIO CONTROLLED VEHICLE

### Model SCROV-50

Introducing the next generation of the RC Snap Rover®! This version includes a disc shooter, digital voice recorder, and music sounds. Over 50 parts allow you to complete over 40 additional projects.



#### Features

- Disc shooter
- Digital voice recorder
- Music sounds
- Over 40 additional projects
- Over 50 parts
- Left & right turning control
- Goes forward & backward
- Headlight
- Red & blue side lights
- Wireless remote control
- Run up to three Rovers at once
- No soldering required



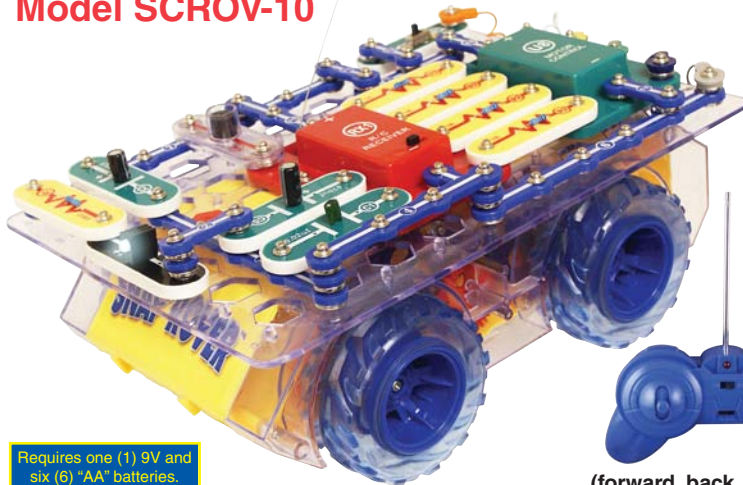
**NEW!**

(forward, back, left & right)

Requires one (1) 9V and six (6) "AA" batteries.

# SNAP ROVER® RADIO CONTROLLED VEHICLE

### Model SCROV-10



Requires one (1) 9V and six (6) "AA" batteries.

(forward, back, left & right)

Have FUN building your own RC Snap Rover® using the colorful Snap Circuits® parts that come with this kit. There is no soldering required as all the parts snap together with ease.

Once completed, you will be able to navigate your surroundings going left, right, forwards and backwards with the easy-to-use Snap Rover® remote control. The remote is a 27MHz multi-channel that allows you to run up to three cars at the same time!

Snap Rover® includes a headlight and red & blue side lights that allow you to operate it in the dark. Build over 20 projects. Includes over 30 parts.

### Deluxe Snap Rover® Upgrade Kit Model UC-90

Upgrade your Snap Rover® to a Deluxe Snap Rover®! Includes the disc launcher, parts, and manual for over 40 new projects.



# MINI SNAP CIRCUITS®

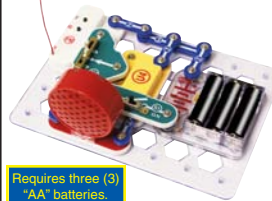
### Musical Recorder Model SCP-01



Requires three (3) "AA" batteries.

- Records up to 8 seconds.
- Plays music after your recording.
- Easy to build.
- Fun to use!

### FM Radio Model SCP-02



Requires three (3) "AA" batteries.

- Have fun building this kit and tune it to your favorite FM station when you are finished!
- Easy to build.
- Fun to use!

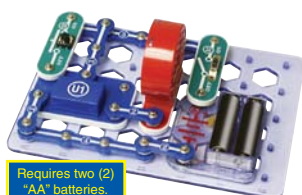
### Motion Detector Model SCP-03



Requires one (1) 9V battery.

- Whenever somebody walks in front of the Motion Detector, the sound of a laser comes out of the speaker!

### Music Box Model SCP-04



Requires two (2) "AA" batteries.

- Push the button and music plays.
- Easy to build.
- Fun to use!

### Space Battle Model SCP-05



Requires two (2) "AA" batteries.

- Amuse yourself and your friends with exciting space battle sound effects!
- Laser ray and explosion sound effects.
- Fun to use!

### Flying Saucer Model SCP-06

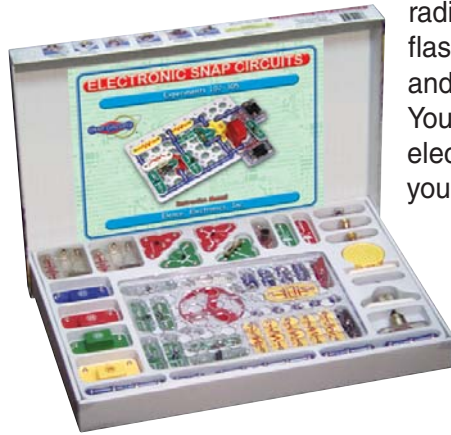


Requires three (3) "AA" batteries.

- Press & release the switch and watch the saucer rise into the air!
- Easy to build.
- Fun to use!

# SNAP CIRCUITS® EDUCATIONAL KITS

Elenco®'s new Snap Circuits® Kits make learning electronics a "snap". Just follow the colorful pictures in our manual and build over 750 projects, such as AM/FM radios, burglar alarms, flashlights, door-bells, and much more. You can even play electronic games with your friends!



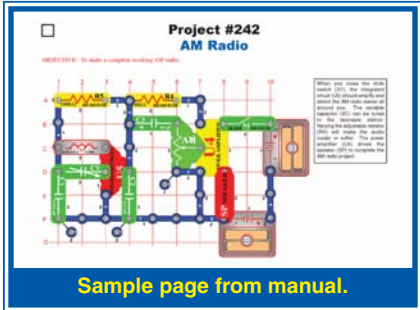
Contains over 80 parts that are mounted on plastic modules and snap together with ease. Enjoy hours of educational fun while learning about electronics. With our deluxe version, you will also learn about and use an oscilloscope and spectrum analyzer, as you build over 73 bonus experiments using your Windows-based PC. Comes with all of the interface parts you need and the software. Great for introducing electronics through a computer. No tools required. Uses "AA" batteries.



Create Your Own Exciting Experiments!

Deluxe Versions Contain Over 73 "Bonus" Computer Interfaced Experiments!

Ideal for Middle Schools, High Schools, and Vocational Institutions.



Sample page from manual.

### Models Available

**SC-750 - Extreme Version**, contains over 80 parts to build over 750 experiments. Includes everything from SC-500 plus experiments in solar, electromagnetism, vibration switches, and 70 computer interfaced experiments.

**SC-500S - Deluxe Version**, same as SC-500 plus 73 bonus computer interfaced experiments.

**SC-500 - Snap Circuits® Pro**, contains over 75 parts to build over 500 experiments. Includes voice recording IC, FM radio module, analog meter, transformer, relay, 7-segment display and SCR.

**SC-300S - Deluxe Version**, same as SC-300 plus 73 bonus computer interfaced experiments.

**SC-300 - Standard Version**, contains over 60 parts to build 300 experiments using resistors, capacitors, LED's, switches, speaker, transistors, integrated circuits, and more.

**SC-100 - Snap Circuits® Jr.**, Contains over 30 parts. Build over 100 experiments.



The following warning pertains to all products on this page.



**WARNING: CHOKING HAZARD**  
Small parts. Not for children under 3 years.

# SNAP CIRCUITS® UPGRADES & PARTS

## Custom Storage Case

### Model SNAPCASE7

Parts sold separately



Heavy duty plastic case with 2 custom foam inserts for housing your Snap Circuits® parts. Easy to identify missing components. Also includes a separate small case to hold the smaller loose parts.

## Snap Circuits® Battery Eliminator

### Model AC-SNAP

Works on all models of Snap Circuits®.

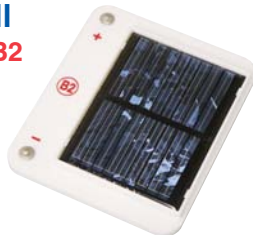


## Create your own experiments!

All Snap Circuits® replacement parts are available on our website: [www.elenco.com](http://www.elenco.com)

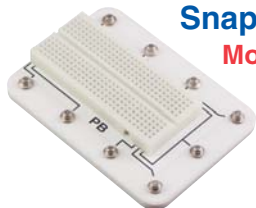
## Solar Cell

### Model 6SCB2



## Snap Protoboard

### Model 6SCPB



## Motion Detector IC

### Model 6SCU7



## Upgrade Kits Available

Get the additional parts and manuals to take your Snap Circuits® set to the next level!



### Model UC-30

#### Converts SC-100 Snap Circuits® Jr. into SC-300 Snap Circuits®

includes 30 new parts (AM radio components, transistors, ICs, capacitors, resistors, & more) and 200 projects!

### Model UC-40

#### Converts SC-100 Snap Circuits® Jr. into SC-500 Snap Circuits® Pro

includes 42 new parts, AM/FM radio, recorder, meter & more, and 400 projects!

### Model UC-50

#### Converts SC-300 Snap Circuits® into SC-500 Snap Circuits® Pro

includes 12 new parts (recording IC, transformer, FM radio, meter, & more) and 200 projects!

### Model UC-60

#### Converts SC-100 Snap Circuits® Jr. into SC-750 Snap Circuits® Extreme

includes 52 new parts, CI-73 computer interface, solar panel, and more than 650 projects!

### Model UC-70

#### Converts SC-300 Snap Circuits® into SC-750 Snap Circuits® Extreme

includes 22 new parts, CI-73 computer interface, solar panel, and more than 450 projects!

### Model UC-80

#### Converts SC-500 Snap Circuits® Pro into SC-750 Snap Circuits® Extreme

includes 10 new parts, CI-73 computer interface, solar panel, and more than 250 projects.

## Computer Interface for Snap Circuits®

### Model CI-73

The CI-73 allows the SC-300 or SC-500 set to interface with a computer! With this module, you will learn about and use an oscilloscope and spectrum analyzer, as you build over 73 BONUS PROJECTS using your Windows-based PC (32 projects require the SC-500). Comes with all of the interface parts you need and the software. Great for introducing electronics through a computer. Acts as a scope and allows you to see the signals in the circuit. **Included FREE with SC-750!**

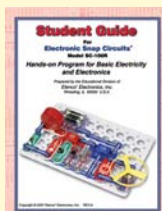
## Teaching Aids for the Homeschooler - Student Guides

Educational Series - Teaches about Basic Electricity & Electronics in the everyday world using our Learn By Doing® concept!

### Junior Student Guide

753294

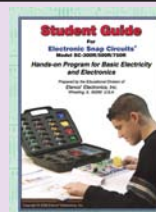
48 full color pages  
(Covers experiments 1-101)



### Student Guide

753307

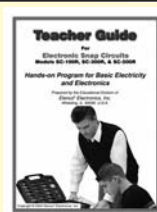
Enhance your learning with detailed explanations and quizzes. 137 full-color pages covering all 750 Snap Circuits® projects! Ideal for ALL Snap Circuits® models. One book covers them all!



### Teacher Guide

753290

The Teacher Guide is meant to prepare educators for proper introduction of Snap Circuits® and guide them through each chapter with quizzes for the students to test their knowledge.



The following warning pertains to all products on this page.



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Small parts. Not for children under 3 years.

# SNAP CIRCUITS® EDUCATIONAL KITS

## Snap Circuits® Training Program

**Model SC-300R** Includes student & teacher guides

The Model SC-300R contains over 60 modular snap-together parts that will allow students to build over 300 experiments. With an easy-to-read color manual, students can jump right in and start building projects that teach about motors, batteries, lamps, speakers, resistors, capacitors and switches . . . just to name a few. Students as early as the 4th grade on up to high school will enjoy learning and have fun working with Snap Circuits®.



### Topics Covered:

- Resistors
- Capacitors
- Transistors
- Motors
- Integrated Circuits
- Series Circuits
- Parallel Circuits
- Switches
- Batteries

Requires four (4) "AA" batteries (part # 590001).



## Snap Circuits® Training Program

**Model SC-100R**

Includes student & teacher guides

The Model SC-100R contains over 30 parts to introduce students at the elementary level to the world of electricity and electronics. Build over 100 experiments from the easy-to-follow color manual by simply snapping all the parts in place. No tools needed. Student will learn about resistors, capacitors, motors, batteries, series/parallel circuits, and much more.



*Case included*

Requires two (2) "AA" batteries (part # 590001).



### Topics Covered:

- Resistors
- Capacitors
- Transistors
- Motors
- Switches
- Series Circuits
- Parallel Circuits



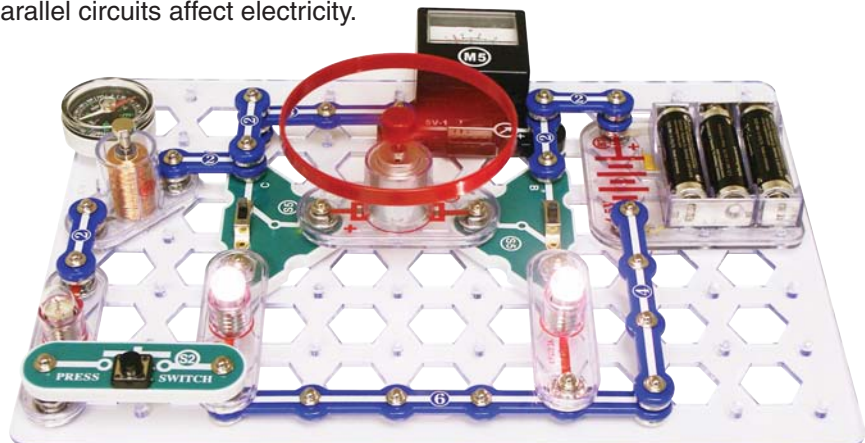
### Features

- Over 40 parts
- Includes: Meter, electromagnet, motor, lamps, switches, fan, compass, and electrodes
- Educational toy: Projects that relate to electricity in the home and magnetism and how it is used.
- Build over 75 projects!

Requires three (3) "AA" batteries (part # 590001) or AC adapter (see page 45).

## Snaptricity® Model SCBE-75

Learn how **electricity** and **magnetism** can be used to make each other. Learn about magnetic fields, how the electricity in your home works, how switches control the electricity to the lights in your home, and how series and parallel circuits affect electricity.





The following warning pertains to all products on this page.



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Small parts. Not for children under 3 years.

# SNAP CIRCUITS® EDUCATIONAL SERIES

**Ideal for Middle Schools, High Schools, and Vocational Institutions.**

Elenco® Electronics is proud to present four training programs to introduce your students to basic electricity and electronics. Through the development of Snap Circuits®, Elenco® has revolutionized the approach educators use in the teaching of basic electronics. Through the safe use of modules

that easily snap together, students can construct hundreds of projects from simple light circuits to radios, burglar alarms, and much more. The teachers guide and student guide booklets make the administration of the program not only educational, but easy and fun.

## Snap Circuits® Training Program

### Model SC-750R Includes student & teacher guides

The Model SC-750R is an in-depth exploration of the electronic components included with the SC-750 Snap Circuits® Extreme. Ideal for use in home schooling, middle schools and high schools, where students will grasp the basic principles of electronics.

The **Student Guide** for the SC-750R includes 137 pages of educational curriculum. Written with the help of educators, the Student Guide is essential in covering all topics related to electricity and electronics being taught in middle schools and above. Includes real world applications and problem solving quizzes.

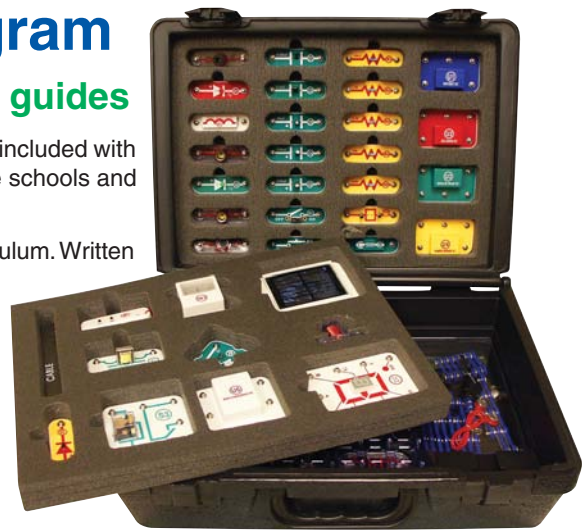
The teacher guide is meant to prepare educators for proper introduction of Snap Circuits® and guide them through each chapter with quizzes for students to test their knowledge.

#### Topics Covered:

- Resistors
- Capacitors
- Transistors
- Motors
- Integrated Circuits
- Diodes
- Series Circuits
- Parallel Circuits
- Motors
- Relays
- Transformers
- Digital Recording
- 7-segment Displays
- Solar Energy
- Electro-magnetism

Requires four (4) "AA" batteries (part # 590001).

Includes **CI-73 Computer Interface** to perform **73 projects** on your PC based computer!



#### Custom Storage Case

Each SC-750R comes with a lightweight, durable case with custom foam inserts to store all Snap Circuits® parts. Easy to identify missing components.



## Snap Circuits® Training Program

### Model SC-500R Includes student & teacher guides

The Model SC-500R is an in-depth exploration of the electronic components included with the SC-500 Snap Circuits® Pro. Ideal for use in home schooling, middle schools and high schools, where students will grasp the basic principles of electronics.

The **Student Guide** for the SC-500R includes 137 pages of educational curriculum. Written with the help of educators, the Student Guide is essential in covering all topics related to electricity and electronics being taught in middle schools and above. Includes real world applications and problem solving quizzes.

The teacher guide is meant to prepare educators for proper introduction of Snap Circuits® and guide them through each chapter with quizzes for students to test their knowledge.



#### Custom Storage Case

Each SC-500R comes with a lightweight, durable case with custom foam inserts to store all Snap Circuits® parts. Easy to identify missing components.

Requires four (4) "AA" batteries (part # 590001).



#### Topics Covered:

- Resistors
- Capacitors
- Transistors
- Motors
- Integrated Circuits
- Diodes
- Series Circuits
- Parallel Circuits
- Motors
- Relays
- Transformers
- Digital Recording
- 7-segment Displays



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# Elenco<sup>®</sup> Electronics, Inc.

150 Carpenter Ave.

Wheeling, IL 60090 U.S.A

Phone: 847.541.3800 Fax: 847.520.0085

Website: [www.elenco.com](http://www.elenco.com)

e-mail: [elenco@elenco.com](mailto:elenco@elenco.com)

**For all international inquiries, please  
contact our International Department.**

Elenco<sup>®</sup> specializes in building kits for many of the largest schools in the country. Tell us what PC board, transformer, resistors, capacitors, semiconductors and hardware your school needs and we will package them for you. We also do custom design, complete with PC board layout and special cabinet or case.

## WARRANTY

All Elenco<sup>®</sup> models are guaranteed for two full years on all parts and service. For the first three months, you receive full coverage at absolutely no charge. For the remaining 21 months, a nominal service charge is required to cover mailing and handling.

**New and Larger Facility to Serve You Better Since 1972!**



**Distributor:**

