OPTICAL AUDIO LINK

Easy to assemble voice link. Transmitter and receiver on separate PC boards. Great for learning the basics of fiber optic communications. Includes fiber optic devices, cable and connector. Requires 2 – 9V batteries (not included).

Part No. 32000K726 • Price $13.90

LOGIC PROBE KIT

Monitors digital signals. Simple, but essential piece of test equipment. Tests digital circuits at various points and shows whether that point is high, low or constantly changing. Helps troubleshooting logic gates, timers, clocks, counters, prescalers and other digital circuits. Logic probe is powered by the circuit being tested.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>32ERLOG</td>
<td>Logic Probe Kit</td>
<td>$9.90</td>
</tr>
<tr>
<td>32ERLOGSMD</td>
<td>Surface Mount Version</td>
<td>$9.90</td>
</tr>
</tbody>
</table>

Velleman kit  ANIMATED GHOST

MODEL MK166

• Great Halloween gadget
• Greets your visitors
• For shops, parties, events or just for fun

SPECIFICATIONS

• Ghost responds to sudden noises
• Adjustable sensitivity
• Battery operation: 2xAAA battery
• Dimensions: 137x68x50mm

Part No. 32MK166 • Price: $18.95

PINK NOISE GENERATOR KIT

INTERMEDIATE LEVEL

This generator can be used to analyze the acoustic properties of a room.
• 33-bit shift register
• Pink noise filter: –3dB per octave
• Clock frequency from 30KHz and 100KHz
• Output Voltage: 150mV RMS @ 40KHz

Requires: 12V DC Adapter

Part No. 32VK4301 • Price: $14.95

STEPPER MOTOR TRAINING KIT

Kit consists of a breadboard, unipolar stepper motor, driver IC and various components to conduct experiments with stepper motor.

Part No. 32STPKIT • Price: $11.95

LEARN ELECTRONIC COMPONENTS

28 page manual with dozens of illustrations includes detailed description of all parts, their function in a circuit, color codes and five self tests. Over 50 parts with the course!

Part No. 3200ECK10 • Price: $9.95

Call Toll Free: 1 (800) 972-2225 • In NJ: (732) 381-8020 • Fax: (732) 381-1006 (732) 381-1572
### EDUCATIONAL KITS

#### 2 STATION INTERCOM
- Communicate up to 500’ between units
- 2 intercom stations supplied
- Power Requirements: two 9V batteries
- 30’ of hookup wire supplied

**PCB Size:** 1” x 1.75”; **Cabinet Size:** 1.6”H x 2.5”W x 3”D

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>32ERINT2</td>
<td>2 Station Intercom</td>
<td>$29.75</td>
</tr>
<tr>
<td>32ERINT2C</td>
<td>Optional Cases (2 Cases)</td>
<td>$24.85</td>
</tr>
</tbody>
</table>

#### AUDIO STEREO AMPLIFIER
Teaches how amplifiers take a small signal and amplify it to drive two small speakers or headphones. This kit provides up to 1 watt of low-distortion audio power. The Harmonic Distortion is 0.2% and the voltage gain is up to 46dB. Designed around LM386 and LM1458 IC’s.

**Power Requirement:** 5 to 10VDC

**Board Size:** 2.25” x 2.75”

<table>
<thead>
<tr>
<th>Part No. 32EREBST11</th>
<th>Price: $12.40</th>
</tr>
</thead>
</table>

#### TRAFFIC LIGHT CONTROLLER
For the serious hobbyist, this kit will simulate the operation of a Red, Yellow & Green traffic light. Model Railroad is but one of many applications for this kit. Power requirements 7.5V to 15VDC.

<table>
<thead>
<tr>
<th>Part No. 32ERSTOP1</th>
<th>Price: $17.90</th>
</tr>
</thead>
</table>

#### ACTIVE ANTENNA AMATEUR RADIO KIT
- Replace a 60’ long wire antenna with this small unit
- Use it on short-wave, HF and VHF
- Great for scanners, ham receivers, or general coverage receivers
- Complete with a telescoping antenna
- Freq. 1 MHz to 100MHz
- Gain control
- Operates on 9v DC or use a 7 to 15v DC wall transformer

<table>
<thead>
<tr>
<th>Part No. 32ERACA1</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Active Antenna</td>
<td>$44.75</td>
</tr>
</tbody>
</table>

#### STARBURST LIGHTS
BRIGHT LED LIGHTS WILL DANCE IN TIME WITH VOICE OR MUSIC
- Enjoy hours of pleasure watching this dazzling array.
- 65 LEDs in a fire works display of lights.
- Self contained microphone.
- Runs on 9 to 15V DC @ 10mA DC.

<table>
<thead>
<tr>
<th>Part No. 32ERSB1</th>
<th>Price: $38.95</th>
</tr>
</thead>
</table>

#### ANALOG GEIGER COUNTER
ASSEMBLED – READY-TO-USE
Primary indicators are an audio click and an LED blink each time a radioactive particle is detected. Count Rate vs Dose Rate chart on front of counter provides an indication of radiation based on clicks per second. External wand houses the Geiger-mueller tube. The GM Tube is a Ne + Halogen filled, with a .38” effective diameter 1.5–2.0 mg/cm2 mica end window.

- Detects alpha above 3.0 MeV
- Detects beta above 50 KeV
- Detect gamma above 7 DeV
- Jack for headphones or analog meter
- **Digital Output Jack** – provides a TTL logic high pulse each time a radioactive particle is detected, may be interfaced to a computer

**Case Size:** 5.6” x 3.2” x 1.5”

<table>
<thead>
<tr>
<th>Part No. 32GCA01</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>External Wand – Assembled</td>
<td>$332.90</td>
</tr>
</tbody>
</table>

#### 100W SUBWOOFER KIT
Kit contains all necessary parts to build your compact but powerful high quality subwoofer. (Wooden panels not included!)

- Bass-reflex system with adjustable tube
- Compact size due to dual-speaker principle
- Adjustable level and filter response
- Auto power-on/off system
- Phase switch (0°-180°)
- Line level and speaker level inputs for maximum compatibility
- ‘Full-range’-option for use in active speaker system
- Separate chamber for electronics avoids air leaks

**SPECIFICATIONS**

| Power output: 100Wrms/ 4ohm (10% THD)
| Filter freq. response:
| Wide: 25 - 110Hz (-6dB)
| Narrow: 18 - 65Hz (6dB)
| Speakers: two 6.5” 8 ohm drivers
| Line level input sensitivity: 500mV
| Auto turn-on level: 5mV
| **Volume**: approx. 20 liter
| Power supply: 120/230VAC
| Dimensions: 460x310x210mm / 18.22 x 12.28 x 8.32”

<table>
<thead>
<tr>
<th>Part No. 32VK8077</th>
<th>Price: $139.95</th>
</tr>
</thead>
</table>
MUSCLE WIRE KITS

GREAT FOR ROBOTICS AND DESIGN APPLICATIONS

CREATE MOTORLESS MOTION!

Muscle wires shorten in length when powered. Capable of lifting thousands of times their own weight!

PROJECT BOOK AND SAMPLE KIT

Contains Muscle Wires Project Book and the following muscle wires: (1) 20 cm low temp (LT) 050 diameter, (2) 20 cm LT 100 diameter and (2) 20 cm LT 150 diameter. 5 separate muscle wires, 50 cm total.

Part No.       Price
32MT3-141  $34.95

SUPER SAMPLE KIT

Wide range of muscle wires including fast acting HT series. 20 cm each 5 diameters in both low temp (LT) and HT (high temp) formulation. Ten separate muscle wires (2 meters total) with crimps and specs for all wires. Contains wires only; no book.

Part No.       Price
32MT3-136  $39.50

PROJECT BOOK AND DELUXE KIT

Includes Muscle Wires Project Book and 1 meter each flexinol 050, 100 and 150 plus crimps and instructions. Enough to build all the projects in the Project Book.

Part No.       Price
32MT3-168  $58.95

MUSCLE WIRE PROJECT BOOK

Everything you need to design, build and operate devices with Muscle Wires. Topics include lever action, ratchets and latches, model railroad, AC power and solar power circuits, paper airplane launcher, proportional control, radio control interface, programmable multiple wire controller and serial port interface, parallel port interface and Boris, a six-legged miniature motorless walking machine.

Part No.       Price
32MT3-133  $17.50

LOW TEMP (LT) MUSCLE WIRES

1 meter lengths. Nickel titanium alloy wires which shorten in length when conducting current. Capable of lifting thousands of times their own weight. Under proper use can run for millions of cycles.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Diameter (Microns)</th>
<th>Recovery Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>32MT025LT</td>
<td>25 (Superfine)</td>
<td>7G</td>
<td>$26.50</td>
</tr>
<tr>
<td>32MT050LT</td>
<td>50</td>
<td>35G</td>
<td>$17.50</td>
</tr>
<tr>
<td>32MT100LT</td>
<td>100</td>
<td>150G</td>
<td>$18.50</td>
</tr>
<tr>
<td>32MT150LT</td>
<td>150</td>
<td>330G</td>
<td>$19.50</td>
</tr>
</tbody>
</table>

Call Toll Free: 1 (800) 972-2225 • In NJ: (732) 381-8020 • Fax: (732) 381-1006

EDUCATIONAL KITS

SPACE WINGS KIT

Excellent hands-on introduction to use of Muscle Wires. Sleek silvery mylar wings flap silently. Great novelty item. (Does not actually get airborne). Assembly requires soldering and 2 AA batteries (not included)

Part No.       Description          Price
32MT3-001  Regular Unit  $19.50
32MT3-619  Solar Version  24.50

NiTi SPRINGS

TENSION

When cool, can be extended to 14 cm. Heated, contracts to 2.9 cm overall. With 350 gms (hanging mass), it shrinks from 6 cm (cool) to 3 cm (heated) with 2 amps. Diameter of spring 6mm, 750 µm wire, activates at 45–55°C. Four pieces per pack. Use several in series for greater distance, or in parallel for greater force.

Part No. 32MT3-642 • Price: $41.50

NiTi SPRINGS

COMPRESSION

When cool, can be pressed down to 16mm. Heated with 3 amps, it extends to 30mm with over 4 Newtons of force. 8mm coil, 950 µm wire, activates at 55–65°C.

Part No. 32MT3-657 • Price: $41.50

FLEXIBLE STRETCH SENSORS

Changes resistance when stretched. Relaxed sensor material has nominal resistance of 1K ohms per linear inch. When stretched, resistance gradually increases. When stretched 50% its resistance will approximately double to 2K per inch. Applications include robotics, biometric displacement reading, VR gloves and VR suits, physics applications and experiments, feedback sensor for air muscles.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>32FLXSTRCH04</td>
<td>4&quot; flexible stretch sensor</td>
<td>$12.95</td>
</tr>
<tr>
<td>32FLXSTRCH08</td>
<td>8&quot; flexible stretch sensor</td>
<td>16.95</td>
</tr>
<tr>
<td>32FLXSTRCH12</td>
<td>12&quot; flexible stretch sensor</td>
<td>20.95</td>
</tr>
</tbody>
</table>
EDUCATIONAL KITS

STEM PLUS PLAYOFF
GAME SOFTWARE WITH COMPUTER INTERFACE

The PicoTurbine STEM Plus Playoff will take learning to the next level. Our new Alternator Interface allows students to prove their skills in building the most efficient wind turbines. The interface allows users to read voltage outputs and RPMs in real time. You can have up to 4 students/learners competing at once. Use hair dryers, fans, or even your own breath to power your turbine.

This was originally built for Savonius Turbines but is compatible with any type of Alternating Current Generators. Engineer your own Horizontal Wind Turbine or Hydro Turbine and compete against each other. We guarantee you will have a blast for hours on end.

This new product is set to redefine Renewable Energy Education in the classroom or even at home. We challenge you to become an armature engineer and take part in our goal to facilitate self-learning.

For Ages 10-adult and can be used by any age with adult supervision.

Part No. 32PTPSTEMPP • Price $99.95

POWER PORT
Energy Harvesting Demonstrating and Experiment Kit - No Soldering, Grab Power from thin air

Energy Harvesting is the process of creating energy from external sources. It is also known as Power Harvesting or Energy Scavenging. The source for Energy Harvesting is ambient background, and it is free. For example, the environment contains large amounts of electromagnetic energy due to radio and TV broadcasts. The POWER PORT kit is a concept demonstrator and experiment platform for radio frequency (electromagnetic radiation), energy harvesting. Kit includes all necessary components and breadboard to construct an ambient power circuit capable of generating up to 1.5 volts. To complete the project, an antenna and ground wire are needed. These are available as an option (part # 32PPANT). Or you may construct your own using instructions provided with the kit

- RF converter operation
- Design based on voltage multiplier circuit
- Includes semiconductors, caps and solderless breadboard
- Demonstrates energy harvesting & provides platform for further experimentation with concept
- Sensor-Antenna Pack contains 50 feet bare copper wire, 25 feet 14awg insulated wire for ground, zip ties and screw eyes for installation

Part No. Description Price
32PWRPORT Energy Harvesting Kit $10.50
32PPANT Sensor-Antenna Pack 39.00

WHIRLYBIRD
3 PHASE WIND TURBINE KIT

Imagine creating a 3-phase wind turbine from a common, everyday roof ventilator along with some magnets and coils of wire. That’s what we’ve created for your study of wind technology. We chose the Whirlybird TM roof ventilator for several reasons.

- First, it has great bearings that simply will not wear out under normal — and even severe — use. Without great bearings your wind turbine is always fighting friction that only serves to slow it down with the attendant loss of power.
- Second, it can be easily constructed with common tools and without soldering or drilling.
- Third, it can be used indoors and especially outdoors where your study of day-to-day and season-by-season wind never stops.
- Fourth, it produces 3-phase power just like the commercial wind turbines, which allows you to study this marvelous electrical principle first hand by using your computer and the 3-phase Bar Graph Board to produce computer plots like this.
- Fifth, you will be able to modify it in order to study the effects of magnetism and how you can optimize the mechanical components to produce maximum power.

Here is what is included in the Whirlybird TM Wind Turbine Kit:

- 12 Wire Coils
- 16 Bar magnets
- 1-6-position terminal block
- 1-8” diameter round metal rotor disk
- 1-8” diameter round Plexiglas stator disk
- 1-5/16”, 7/8” long threaded rod extender
- 1-5/16”, 1 1/2” long bolt
- 10-5/16” flat washers
- 3-1 “flat washers
- Roof Ventilator not included

Part No. 32PTWBTWTK • Price $109.95

STORAGE BOXES
Attached Lid Containers (ALCs)

Reusable shipping, distribution and storage containers. ALCs are ideal for use in order picking, closed-loop distribution, and storage applications. ALCs are ideal for use in order picking, closed-loop distribution, and storage applications. Attached lids snap securely closed to protect contents from dust or damage. They stack for maximized storage and nest when empty saving space. Textured bottoms provide a sure grip on conveyor belts. Strong molded-in handle grips are ergonomically designed for easy lifting and carrying. Padlock eye provides security option. Reinforced hinge pins for years of smooth lid operation.

Dimensions: 21-1/2 x 15 x 12-1/2

Part No. Description Color Price
90AM39120GY Attached Lid Container Grey $27.75
90AM39120BL Attached Lid Container Blue $27.75
90AM39120RD Attached Lid Container Red $27.75
90AM39120GN Attached Lid Container Green $27.75

Electronix Express / RSR • 900 Hart Street, Rahway, NJ 07065
**Educational Kits**

**Velleman MINI-6-LED CHASER**
- 1 LED scans from side to side
- As attention grabber in stores, at exhibitions, etc...
- As seen in classic TV series...
- Applications:
  - Toys
  - Scale and RC models
  - As gadget
  - For stage, plays, movies, etc...
- 6 high-intensity 3mm red LEDs

**Specifications**
- Power supply (required): 4-15VDC (20mA at 12VDC)
- Fixed scan speed (side to side): 0.5s
- Dimensions: 55 x 25 x 10mm / 2.18 x 0.99 x 0.39"

Part No. 32VKMK173 • Price: $12.95

**SPACE REVOLVER**
When you push the button on this kit, it generates an electric rapid fire effect. The firing frequency can be adjusted by use of a potentiometer. An LED also blinks with the pulses of sound.

**Principles Taught:** 555 oscillator, sound modulation

Part No. 32EKI2108 • Price: $9.25

**Audio Amp / Signal Tracer**
This kit will amplify an audio signal to 0.3 W. Use for boosting preamplified signals, sirens, or as a signal tracer for repairing radios and audio amplifiers.

**Principles Taught:** Audio, operational amplifiers

Part No. 32EKI2114 • Price: $8.70

**Digital Locks**
2051: A system for opening garage doors, solenoid locks, or to prevent unauthorized use of electronic equipment.
2052*: For a high-tech alarm system for home or car. You can choose the combination and select which key arms the alarm.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>32EKI2051</td>
<td>Digital Entry Lock</td>
<td>$26.00</td>
</tr>
<tr>
<td>32EKI2052</td>
<td>Combo Lock/Alarm Control</td>
<td>$21.65</td>
</tr>
</tbody>
</table>

*FREE SOFTWARE: Free Kit Prep™ software—one disc per type of kit with purchase of the Combo Lock / Alarm Control (2052) Kit.

**LED PENDULUM METRONOME**
Uses the sequential lighting of ten LEDs set in an arc to form the swinging arm. A speaker produces the rhythmic clicking sound of the metronome.

Part No. 32EKI2009 • Price: $21.65

**Motor Speed Control / Light Dimmer**
Vary the speed of a hand drill or other small "brush" type motor. Makes an excellent light dimmer.

Part No. 32EKI2062 • Price: $8.00

---

**AmeriKit**

**AM RADIO KIT**

**MODEL AM-550**

10 1/2" x 3 1/2" PC board, 28-page manual divided into 54 sections; RF, 1F, oscillator, detector and audio circuits.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>32AMR</td>
<td>With Trans Amp</td>
<td>$18.95</td>
</tr>
</tbody>
</table>

**AM/FM SUPERHET RADIO KIT**
**MODEL AM/FM108CK**
CONTAINS TWO SEPARATE AUDIO SYSTEMS:
- IC & TRANSISTOR
  - Advanced kit, requires soldering
  - 63-page educational instruction manual complete with quiz questions, soldering tips, component identification, conversion charts
  - Coverage includes but not limited to: alignment, static and dynamic measurement,
  - Bandwidth tests conveniently features two separate audio sections to accommodate instructors who prefer either IC or transistor design

Part No. 32AMFM108CK with IC & Transistor $26.95

**Digital Clock Kit**
**Intermediate Kit**

Has many special features; 12 or 24 hour mode, slow, fast and hold buttons for easy setting, seconds display, color LEDs to separate hours and minutes.

*Free Software: Free Kit Prep software— one disc per type of kit with purchase of above kit.

Part No. 32EKI2076 • Price $33.40

**Telephone Line Analyzer**
A telephone analyzer that provides fast indication of telephone line polarity, ring and line voltage levels, condition of the telephone line from user's telephone to central telephone office. Also can check basic telephone functions and condition of telephone line.

Part No. 32TLA (Kit) • Price: $21.95

---

Call Toll Free: 1 (800) 972-2225 • In NJ: (732) 381-8020 • Fax: (732) 381-1006 (732) 381-1572
## EDUCATIONAL KITS

### FOLLOW ME
#### SOUND DETECTING ROBOT KIT

**NO SOLDERING**

A very interesting sound detecting robot kit. The robot has a sound sensor that enables the robot to respond to claps in any direction. Turn the switch to "ON", the robot eyes start flashing, plays "Do, Re, Mi ..." and turn right and left. The effective distance for the robot to respond is within 1 meter.

- Flash LED
- 4 pieces built-in microphone
- Buzzer
- Master PCB
- Gear motor
- Power source – 1.5V “AAA” x 4 (not included)

Part No. 3221887 • Price $20.95

### SWEET 16 TONE DECODER

**OPERATES THROUGH PHONE LINES, RADIOS OR SCANNERS**

The Sweet 16 Tone Decoder detects (DTMR) “Dual Tone Multi-frequency” data (those sounds you hear when pushing buttons on your phone), and when each individual button is pressed it sends a unique voltage to the electronics on the printed circuit board which activates a circuit on or off. There are 16 different touch tones, 12 of which are on a normal phone; special key pads have 4 additional buttons (A, B, C, D). This decoder gives an output voltage for all 16 touch tones. The Sweet 16 Tone Decoder has on the printed circuit board one (1) relay and driver circuit. If you want to use all 16 you can build your own board with 16 relays and driver circuits on it, or to get fancier, use a flip-flop IC to achieve a “toggle” effect (push ON, push OFF), or a 555-timer to provide a timing effect (on for 5 minutes, then off — the choices are unlimited. Any one output may be connected to the onboard relay circuit. Size: 2.2” x 2.8”.

Part No. 32ERTT16 • Price: $34.75

### JUMBO CARTOON LED KITS

Large dome (10 mm) jumbo LEDs alternate flashing. Kit comes with 4 cartoons designed to slip easily over the LEDs.

**Size:** .75” x 1” x 1”. **Power Requirement:** 9-12VDC (not included).

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>32ERDJRDB-2</td>
<td>Red</td>
<td>$5.90</td>
</tr>
<tr>
<td>32ERDJGB-2</td>
<td>Green</td>
<td>5.90</td>
</tr>
</tbody>
</table>

### FAN CONTROLLER

Use this kit to control cooling fans, or any device that is temperature activated. Output is 100mA. For a 3 Amp application use the Relay Power Kit (Part No. 31ERRP1) or the Micro-controlled PIC Relay Controller Kit (Part No. 32ERPRC1). Temperature probe included.

**Operating Voltage:** 7.5 to 18VDC; **Size:** 1.5” x 1/2”

Part No. 32ERFC1 • Price: $14.75

### DIGITAL THERMOMETER KIT

Sensor is only 1/4” sq. and can be remotely located. Circuit designed to turn your digital multimeter into an accurate thermometer with .1 degree resolution. 250 degree span covering from -40 to 300°F. Requires a 9V battery.

Part No. 31ERDT3 • Price: $8.50

### INDUCTION METER

Use your volt ohm meter to read those unmarked inductors. Measures chokes from 3 µH to 7 mH. Requires a 9-volt battery.

Part No. 31ERIA1 • Price: $14.50

### WATER DETECTOR KIT

555 Oscillator circuit drives speaker (included) to sound alarm when water level rises on remote detector board and changes conductivity between two contacts. Operates on 6-12 VDC.

Part No. 31ERWD2 • Price $9.75

### WIDE BAND PREAMP

**1 MHZ TO 2.5 GHZ**

1 MHz to 2.5 GHz 2.8 dB NF, 1 db compression = +0 dBM, Gain 1 MHz - 20 db, 2.5 GHz - 6 db. Ideal preamp for scanners, freq. counters & satellite receivers. Amplifies low or weak signals to a usable level. Two may be used in series for extremely low signals. Operates on 12 VDC @ 16 mA.

Part No. 31ERWBA6 • Price: $19.50

### CHASER LIGHTS

Use this kit like a theater marquee. Every fourth LED chases around the display to give you a dazzling effect. You can use 40 LEDs around badges, pictures, hats, belts, signs. Only your imagination limits the possibilities. Kit supplied with 16 LEDs. Power requirement 5 to 15 v DC. Size: 1.5” x 1.7”

Part No. 31ERCL1 • Price: $14.95
DC VOLTAGE MONITOR
If battery status is important, you need this kit. This kit uses 7 LEDs; monitor 12v DC, 1v, 1/4v, or 1/4v steps. Monitor 8v or 5v in 1/4v steps. Great for boats, motor homes, model planes or racing cars. All parts and instruction are included. Size: 1.3" x 2.7".

Part No. 31ERVVM1 • Price $7.75

CABLE FILTER KIT
Multi-pole four stage notch filter eliminates picture distortion and the annoying “beep...beep” found on premium cable channels between 2 and 22. Connect between incoming cable or converter and TV/VCR. Works with or without a cable converter. Can be used on standard 75 ohm antenna systems to remove any single channel (requires 2 filters). This kit sold for educational purposes only. Requires permission of local cable co. to use.

Part No. 31ERDF222 • Price $14.75

RELAY POWER KIT
INCREASE THE OUTPUT OF ANY KIT FROM 100 MA TO 3 AMPS
If you need to switch more power, up to 300 Watts, with the Light Genie, Temperature Genie, Timer or Vox kits, use the Relay Kit. We supply a two pole relay 1.5 Amps ea. Tie both poles together and get 3 Amps. Size .75" x 2".

Part No. 31ERRP1 • Price: $9.75

SUPER BIG EAR AMP
Listen through walls, hear conversations across the room. Add a parabolic reflector and hear blocks away. The BIG EAR can be hidden anywhere. Makes an ultra sensitive intercom. Can also be used as a 1.5W AMP. We supply a mini-electret mike in the kit. Power requirement 6 to 12v DC. Size: 1.75" x 1".

Part No. 31ERAA1 • Price $10.50

LIE DETECTOR
This kit can be great fun at parties. Lie and an audible tone will change. The more you lie the louder the tone. When you lie your hands sweat. This kit allows you to measure these changes; only a very slight amount of change will cause the tone to increase in frequency. Power requirement 6 to 12 v DC. Size: .8" x 1.2".

Part No. 31ERLD1 • Price $9.75

BUSY PHONE LIGHT
Add this little kit to any or all of your telephones. When one phone is used, a red LED will light on the other extension. This lets everyone know when your computer modem is in use. Power requirement 9v DC. Size: 1.1" x .6"

Part No. 31ERTELLITE • Price $9.75

TERMINAL GENERATOR
With the Terminal Generator (sold separately) you can measure voltage, current, and resistance. Power requirement 9v DC. Size: 1.1" x .6".

Part No. 31ERTG1 • Price: $9.75

PHONE RECORDING SWITCH
This phone line powered switch is small enough to be installed anywhere. Every time the phone is picked up the recorder will record both sides of the conversation automatically. Use it in your office to record all phone calls so you don't lose important information. Size: 1" x .6".

Part No. 31ERTEKSW1 • Price $12.50

PHONE RECORDING LIGHT
Use this kit in A-STABLE (continuous train of pulses) or in the MONO-STABLE (triggered time delay). Times circuits from nano-sec. to 30 min. Comes with variety of resistors and capacitors suitable for most applications. Power requirement: 4.5 to 12v DC. Size: 9" x 1.2".

Part No. 31ERBTD-9 • Price $11.50

LIGHT GENIE
Turn anything on or off with light. Turns on at night, off at daylight automatically. As the light touches or leaves the sensor it delivers 100mA of output to run a relay. Size: 1.5" x 1.2". Power requirement 6 to 15v DC.

Part No. 31ERLG2 • Price $7.50

TEMPERATURE GENIE
Ever lost frozen food because your freezer stopped? The TC-2 kit would have saved you money. An alarm activates when the temperature reaches a critical point. Turn ceiling fans on automatically when it gets too hot. This kit gives you 100mA of output. Size: 2" x 1/4". Power requirement 6 to 15v DC.

Part No. 31ERTC2 • Price $7.50

Call Toll Free: 1 (800) 972-2225  •  In NJ: (732) 381-8020  •  Fax: (732) 381-1006 (732) 381-1572
3 1/2 DIGIT LCD THERMOMETER WITH DUAL TEMPERATURE PROBES

- Indoor/Outdoor temperature (-20° to +199.9°)
- Temperature of electronic equipment vs. room temperature.
- Furnace or Air Conditioner efficiency (return air vs. output air)
- Temperature inside car / outside car
- Attic temperature / outside temperature
- Requires 9V battery (not included)
- Size: 2 3/4”W x 1 5/8”H x 1”D

Part No. 32ERLCDT1 • Price: $34.75

AMATEUR RADIO

2 METER, 10 METER, 220 MHZ FM COMMUNICATION RECEIVER

We use the new Motorola FM receiver MC3362 IC. The receiver is a dual conversion (10.7MHz tuned IF), with 1µV sensitivity and bandwidth of 5KHz. It has 400mw of output. The only adjustments are easily tuned using one of these items — TV, cable converter, frequency counter, or a service monitor. The kit is Varactor tuned with volume and squelch controls. All of the parts are included for each frequency. You choose what frequency to build. Power requirements 9 volt DC.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>32ERREC2</td>
<td>Communication Receiver</td>
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<tr>
<td>32ERCASE1</td>
<td>Outer Case</td>
<td>12.95</td>
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</tbody>
</table>

DUAL H-BRIDGE BOARD

Ideal for robotics applications. Allows independent control of two separate DC motors in the range of 8 to 24 Volts at up to 1 Amp of current. Can be pulse-width modulated to control speed. Two optically isolated inputs for each motor: RUN/STOP and FORWARD/REVERSE. Inputs can be made non-isolated via jumper. Built-in thermal shutdown protection.

Part No. 01DHBRBD • Price: $25.95

STEPPER MOTOR TRAINING KIT

Kit consists of a breadboard, unipolar stepper motor, driver IC and various components to conduct experiments with stepper motor.

Part No. 32STPKIT • Price: $11.95

SURFACE MOUNT SOLDERING PRACTICE KIT

PC board showing practice areas & mounted components

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

This kit / course provides all parts and instructions to give you experience on working with surface mount components. The finished project is a decision maker with 6 flashing LEDs.

Part No. 3200SM200K • Price: $16.50

INFRA-RED TRANSDUCER BOARD

Great for robotics applications. This board is designed to interface with the SHARP GP2D12 analog-output infra-red range sensor. Our board has a comparator and a 10-turn trim-pot to set a specific range. When target comes within range, an open-collector output goes low and an on-board LED lights. Gives more flexibility compared to the fixed-range digital-output version of the SHARP transducer.

<table>
<thead>
<tr>
<th>Part No.</th>
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<th>Price</th>
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<tr>
<td>01INFRDTRASSM</td>
<td>Assembled</td>
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RESISTOR SUBSTITUTION BOX

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 ohm to 11, 111, 110 ohms in 1 ohm steps. All resistors are precision 1% accuracy 1 watt.

Part No. 32RS500 • Price: $24.95
### EDUCATIONAL KITS

#### LIE DETECTOR
This circuit is a simple skin resistance monitor. Have the "subject" place a finger on each of the contacts. When the subject becomes nervous or uncomfortable, skin resistance changes and the frequency heard through the speaker goes higher. Teaches transistor oscillator.

**Part No. 32EKI2013 • Price: $6.49**

#### WAKE-UP ALARM
This circuit turns on when light hits the photocell. Teaches 555 programming and photocell.

**Part No. 32EKI2039 • Price: $6.49**

#### ULTRASONIC PEST REPELLER
This kit generates a signal that oscillates between about 18KHz and 80KHz every few seconds. This is irritating to many bugs, etc. and drives them away. Teaches 555 programming and transistor oscillator.

**Part No. 32EKI2025 • Price: $6.49**

#### DIGITAL ROULETTE
Will be a sure winner with you, your friends and your relatives. Thirty-two LEDs are arranged in a five-inch circle.

**Part No. 32EKI2058 • Price: $24.64**

#### DOUBLE DECISION MAKER
The deluxe heads or tails game. Green = heads, red = tails, both or neither = maybe. Teaches 555 programming and counters.

**Part No. 32EKI2011 • Price: $5.75**

#### POCKET DICE*
A handy device to be used with any game of chance. This project is fun and useful and everyone will love to use it.

*FREE SOFTWARE: Free Kit Prep™ software – one disc per type of kit with purchase of above kit.

**Part No. 32EKI2001 • Price: $14.30**

#### REACTION TESTER
Test your timing by trying to hit the button while the LED is lit. Since the LED is lit only 1/10 second at a time, you must anticipate the LED. Runs on 9V battery (not included). Teaches 555 timer programming.

**Part No. 32EKI2007 • Price: $5.75**

#### AUTOMATIC NIGHT LIGHT
This circuit automatically turns on when it gets dark. Use the potentiometer to adjust how dark it needs to get before it turns on. Teaches photocell and transistor.

**Part No. 32EKI2010 • Price: $6.49**

#### HEADS OR TAILS
Turn the circuit on and the red and green LEDs begin to flash. Push the button and the circuit stops with one LED held on. Green = heads, red = tails. Teaches 555 programming.

**Part No. 32EKI2008 • Price: $5.35**

#### POT SHOT
8 LEDs light sequentially. Hit the button on the top LED and the light stays on, you win. Hit the button another time and all the lights go off. Adjustable frequency.

**Part No. 32EKI2017 • Price: $6.49**

#### DIGITAL DICE
This single dice is fun to build, and fun to display and play.

**Part No. 32EKI2068 • Price: $10.60**

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Call Toll Free: 1 (800) 972-2225 • In NJ: (732) 381-8020 • Fax: (732) 381-1006 (732) 381-1572
EDUCATIONAL KITS

DIGITAL LED CLOCK
- Clock with red 7-segment displays in an attractive enclosure
- Automatic time base selection (internal or net-frequency controlled 50/60Hz) Internal time base with fine-tuning adjustment
- Internal time base with fine-tuning adjustment
- Select 12h- or 24h-mode for the time display
- Equipped with backup battery (3 x AA) in case of power failure
- Clock still displays the time in case of power failure
- Power supply: 9V AC/DC
- Dimensions: 3.6 x 1.8 4”

Part No. 32VKMK151 • Price: $35.00

ROBOT BLINKER*
Two super-diffused LEDs pulse for hours. Easy to assemble and fun to use.

*FREE SOFTWARE: Free Kit Prep™ software – one disc per type of kit with purchase of above kit.

Part No. 32EK12014 • Price: $6.50

SHOCKER GAME
Is actually two projects in one, both designed to test your ability to remain calm. One circuit will indicate failure by turning on an LED, the other by giving an adjustable shock.

Part No. 32EK12070 • Price: $8.80

VARIABLE POWER SUPPLIES
0-9 Volt • 0-15 Volt • 5-24 Volt
Just what you need to meet the wide range of power requirements necessary for experimenting, project building and electronics repairs

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Price</th>
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<td>32EK12060</td>
<td>5-24 Volt</td>
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*FREE SOFTWARE: Free Kit Prep™ software – one disc per type of kit with purchase of the 5-24 Volt Variable Power Supply.

STROBE LIGHT*
The speed or flash rate can be varied from one to two per second to twelve or more per second

*FREE SOFTWARE: Free Kit Prep™ software – one disc per type of kit with purchase of above kit.

Part No. 32EK12040 • Price: $20.50

COLOR ORGANS
1-Channel* - It produces a dramatic effect by flashing a light or string of lights to the frequency of music. Plug them in and watch them keep time to the music. 12 Volt - Is ideal for use with 12-volt battery systems. This kit flashes 9 LEDs in three different frequency ranges to the beat of the music. Connect to any 8 ohm speaker output. 3-Channel 1 Control* This kit drives three different strings of light (up to 150 watts each). Each output uses a different frequency range to produce a fascinating light effect. Has main sensitivity control and connects to an 8 ohm speaker output. 3-Channel 4 Control* Connect this kit to any 8 ohm speaker output and run three different strings of blinking lights (up to 150 watts each) for base, middle, and treble ranges. Each channel has its own sensitivity control plus a master control.

Power Blaster* - 4-channel, 5-control-light activated device that can handle up to 1000 watts in input. The color organs uses both sides of the stereo output, mixes them together, and divides the music into four separate frequency ranges. It includes a microphone input. Each channel has its own sensitivity control plus a master control. Operates on 110AC.

Sound Activated - Is similar to all other color organs except for the fact that no electrical connection is made directly to the sound source. You just set the crystal microphone, hear a sound and adjust the sensitivity to get the light effect you want. Plug any light into the socket (up to 150 watts). It has a variety of uses.

Part No. | Description                  | Price  |
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>32EK12022</td>
<td>1-Channel</td>
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<td>32EK12042</td>
<td>12 Volt</td>
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<td>3-Channel 1 Control</td>
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<td>32EK12084</td>
<td>Sound Activated</td>
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</tbody>
</table>

*FREE SOFTWARE: Free Kit Prep™ software – one disc per type of kit with purchase of the 1-Channel, 3-Channel 1 Control, 3-Channel 4-Control, and Power Blaster Kits.

CHRISTMAS TREE
Perfect for the holiday season. Use it as a Christmas ornament, in a window, or as a center piece on a table.

Part No. 32EK12021 • Price: $10.95

ELECTRONIC TURKEY
A seasonal novelty sure to please Mom. Pre-cut in the shape of a turkey, with flashing rows of LEDs on the tail feathers.

Part No. 32EK12019 • Price: $10.30

SHIMMER LIGHTS
Makes a string of Christmas lights or a regular light bulb “shimmer.” Great as a window display, holiday decoration, or exciting attention-getter

Part No. 32EK12020 • Price: $10.45

BINARY CLOCK
Looks great, keeps good time and fortunately not everyone can read it. You have to know about the binary number system to be able to tell the time.

Part No. 32EK12098 • Price: $53.95