

# ramsey

## Tri-Mode Vehicle Keyless Entry Test Set

Got the wireless entry and key fob blues? Troubleshooting is now a breeze with the WCT3 Keyless Entry Test Set! Detects all keyless signals from the vehicle and the key fob!

(See page 67)

from **\$59.95**

## FM Stereo Transmitter Kit

Become your own do it yourself broadcaster or DJ and play your CD's, MP3 player or your computer media files and other program sources throughout your house or yard!

(Starting on page 4)

from **\$44.95**

## PC Board Antennas

The latest broadband log periodic, yagi, or patch antennas designed to cover the popular services and frequency ranges from 200 MHz all the way up to 11GHz! Great for RF testing as well as communications antennas for wireless networks. (See page 44)

from **\$29.95**

## Broadband RF Preamplifier

This little broadband RF preamplifier covers from 1MHz to 1GHz with a noise figure less than 2.5dB. Provides 25dB gain with up to 100mW of power output!

(See page 63)

only **\$69.95**

## 20W Mini Audio Amp Kit

Delivers 20W of crisp clear stereo power all on a 2 1/2" board! One single SMT device operates at 87% efficiency producing virtually no heat! Selectable gain, automatic protection, and a lot more! Runs on 18VDC. (See page 32)

only **\$39.95**

## A-B-C Vintage Battery Eliminator Kit

Provides the 3 separate A (filament), B (plate), and C (bias) operating voltages required by battery powered vintage radios! Input is 120/240VAC. (See page 67)

only **\$199.95**

[www.ramseykits.com](http://www.ramseykits.com)

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Our 8th year of monthly awards!  
See page 57  
No purchase required

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**Build It, Learn It, Achieve it, Enjoy It!**

Starts on  
page 49



Learn electronics, radio theory, fuel cell technology, how to solder, and a whole lot more!  
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from **\$9.95**





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**FAQ's**  
**All The Answers You Need!!**



**FCC Reference Info**  
**Operational Guidelines!**



**Kit Building Guides**  
**How To Build A Kit!**



**Downloads!**  
**Kit Manuals, Software...More!**

**WHAT'S ON THE COVER?**  
Building one of our TFM3 Tri-Field Meter and "Ghost Detector" kits. Holding the board is our HH3 Helping Hands fixture making it a breeze to solder the board. One of our WLC100 Soldering Stations along with a roll of our RTS12 solder is being used to solder the board.

**www.ramseykits.com**



# Welcome to the Hobby Kit world of Ramsey Electronics...

## ☆ Who is Ramsey Electronics?

Ramsey Electronics was started in the early 70's as a hobby kit business. It is the core value of the company from that day going forward to provide the electronic hobbyist, young or old, an experience of achievement, by not only building a neat electronic product, but understanding the theory behind it, including the how's and why's of the entire circuit. We must be doing it right, because we are nearing our 4th decade of providing some of the greatest hobbyist experiences to our customers. And with that brings you our latest Hobby Kit catalog!

In the 1980's Ramsey Electronics expanded and became one of the largest manufacturers of pager and communications test equipment in the US. At the same time, we developed and received a patent on the first shielded test enclosures that provided hands-on and visual access to the device under test while maintaining RF isolation, and today we are the leading manufacturer in desktop RF isolation chambers for commercial, military, agency, and forensics applications. In the late 90's we designed the first PX series FM stereo broadcast transmitter. While LPFM transmitters were in their infancy, we were one of the first to offer an FCC Certified transmitter to meet the needs of the LPFM market. Our FM broadcast group has rapidly developed and includes a dedicated Military and Government division that provides specialized RIAB and other products exclusively to Military and Government entities throughout the world.

Ramsey Electronics currently includes the following divisions:

**Hobby Kit Products Division** (Visit [www.ramseykits.com](http://www.ramseykits.com))  
**RF Shielded Test Enclosure Division** (Visit [www.ramseytest.com](http://www.ramseytest.com))  
**FM Broadcast Division** (Visit [www.ramseybroadcast.com](http://www.ramseybroadcast.com))  
**Pro Audio Division** (Visit [www.ramseyaudio.com](http://www.ramseyaudio.com))  
**Military and Government Division** (visit [www.ramseygov.com](http://www.ramseygov.com))

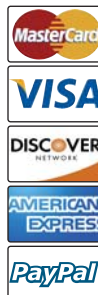
## ☆ Friendly Dedicated People!

Our friendly Hobby Kit staff is just like you, interested in neat electronic products! From the CSR's that take your order to the shipping personnel who confirm it, they are dedicated to one thing... your satisfaction!

## ☆ Easy Ordering!



Ordering from Ramsey is easy, and you've got plenty of options! Order safely and securely 24/7 online at [www.ramseykits.com](http://www.ramseykits.com), or use our stores on eBay or Amazon. Offline, you can call our friendly CSR's toll free and they will answer any questions you may have and quickly guide you through your order. You will also find a convenient mail-in order form in this catalog. All major credit cards, PayPal, checks and wire transfers are accepted. Open accounts are also extended to suitably rated firms and organizations as well as government, municipal, and educational agencies and institutions.



## ☆ Incredible Tech Support!

We consider our Hobby Kit Technical Support Group to be second to none! That's a pretty strong statement, but we have 39 years of satisfied customers to back it up! We feel that buying and building an electronic kit is merely the beginning. We back you up until that final moment when you turn it on and you see the incredible results of your handiwork! Our Tech Support Group handles it all: parts questions, assembly questions, theory questions, schematic questions, troubleshooting problems, plus repair and return procedures. Whether it's a phone call to verify the hookup or an email about a part's value, they are there for you. You will also find a host of resources at [www.ramseykits.com](http://www.ramseykits.com) to assist you with questions. The user forums on our site are another great place to get help and discuss products and applications with fellow Ramsey customers. In addition to our site you can also follow us on the web...



## ☆ Risk Free Return Policy!

Not sure a Ramsey kit or product is exactly what you are looking for? No problem! Order it and examine it (but don't build it if it's a kit!) for up to 10 days. If it's not exactly what you expected, return it for a full refund, no questions asked! Curious about the assembly of a product prior to building it? Got you covered there also; all manuals can be downloaded at [www.ramseykits.com](http://www.ramseykits.com)! (Valid for Ramsey Hobby Kit products only)

<b>AM/FM Broadcasters</b>	<b>4-7</b>
<b>Seasonal Displays</b>	<b>8-9</b>
<b>LED Brain Games</b>	<b>10</b>
<b>LED Displays</b>	<b>11-14</b>
<b>Nixie &amp; LED Clocks</b>	<b>15-16</b>
<b>Sound Effects</b>	<b>17-18</b>
<b>Sensors &amp; Alarms</b>	<b>19-22</b>
<b>Controls &amp; Timers</b>	<b>23-29</b>
<b>DMX Controls</b>	<b>30</b>
<b>Audio Amps &amp; Accys</b>	<b>31-36</b>
<b>Telephone Accys</b>	<b>37</b>
<b>Receivers</b>	<b>38-40</b>
<b>Amateur Radio</b>	<b>41-43</b>
<b>Antennas</b>	<b>44-45</b>
<b>Power Supplies &amp; Solar</b>	<b>46</b>
<b>PIC &amp; USB Boards</b>	<b>47-48</b>
<b>Learning &amp; Educational</b>	<b>49-57</b>
<b>Automotive</b>	<b>58</b>
<b>Fun Stuff</b>	<b>59-61</b>
<b>Test Equipment</b>	<b>62-69</b>
<b>Tools &amp; Accessories</b>	<b>70-72</b>
<b>Video Cameras &amp; Xmtrs</b>	<b>73</b>
<b>Power Supplies &amp; Chgrs</b>	<b>74</b>
<b>Broadcast FM &amp; LPFM</b>	<b>75</b>
<b>Pro Audio</b>	<b>76</b>
<b>RF Test Enclosures</b>	<b>77</b>
<b>Index</b>	<b>78-79</b>



Look for the QR Code tag like this throughout the catalog. Use the Tag App in your smartphone to automatically get more information directly from our website!



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## Digital Controlled FM Stereo Transmitters

- ✓ PLL synthesized for drift free operation
- ✓ Front panel digital control and display of all settings and parameters!
- ✓ Professional metal case for noise-free operation
- ✓ EMI filtering on audio and power inputs
- ✓ Super audio quality, rivals commercial broadcasts
- ✓ Available in domestic kit or factory assembled export versions

**All The Features You Asked For...  
PLUS A WHOLE LOT MORE!**

### THE LEGACY CONTINUES!

For nearly a decade we have been the leader in hobbyist FM radio transmitters. First we came out with our low cost FM10, the tunable FM transmitter that has set records as the most popular school, scouting, and first time hobbyist kit.

Then we introduced the world famous FM25 series of FM transmitters. We took the basic concept of the tunable FM10, made it synthesized for rock solid and stable operation, and gave it the features and performance that made it THE LEADER in low cost FM stereo transmitters. From there we introduced our FM100 series Super Pro FM Stereo Radio Station which became the "gold standard" for professional installations around the world.

### NOW THE BEST OF BOTH WORLDS!

How could we make history better? First, we listened to thousands of our customers who loved the stability of the PLL synthesized FM25 series but wanted easy to change front panel control of the operating frequency and wanted to know what frequency they were transmitting on. They also wanted the capability of controlling the audio levels at the transmitter rather than changing the input levels.



We thought those were very legitimate requests, and our response was to recommend they use the FM100 series. "But I don't need an audio mixer, I don't need all that fancy stuff built-in, I just need a small transmitter I can afford!" Well here you go, designed from the ground up... the FM30 series!

Our RF engineers took it as a challenge and designed not one, but TWO transmitters! The FM30B is designed using through-hole technology and components and is available only as a do-it-yourself kit, with a 25mW output very similar to our FM25 series.

Then they re-engineered their brand-new design using surface mount technology (SMT) for a very special factory assembled and tested FM35BWT version, with 1W output specifically for our export market! Both are designed around an RF tight vinyl clad metal enclosure for noise and inter-

ference free operation.

All settings can be changed without taking the cover off! Enter the setup mode from the front panel and step through the menu to make all of your adjustments. A two line LCD display shows you all the settings! In addition to the LCD display, a front panel LED indicates PLL lock so you know you are transmitting. Besides frequency selection, front panel control and display gives you 256 steps of audio volume (left and right combined) as well as RF output power. A separate balance setting compensates for left/right differences in audio level. In addition to settings, the LCD display shows you "Quality of Signal" to help you set your levels for optimum sound quality. And of course, all settings are stored in non-volatile memory for future use!

The design includes EMI filters on line level audio and power inputs and a state of the art microstrip PCB inductor to reduce microphonics for the ultimate in alignment free operation. RF output is brought out to a professional, well shielded rear panel BNC connector for a perfect antenna match. Standard RCA connectors are used for left and right line level audio inputs. Both the FM30B and FM35BWT operate on 13.8 to 16VDC and include a 15VDC plug in power supply.

The stylish black metal case measures 5.55"W x 6.45"D x 1.5"H. If you're looking for a super performer but don't need the extra features of our FM100B series transmitters, the FM30B is for you! (Note: The FM30B is a do-it-yourself learning kit that you assemble. The end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body. FM35BWT is for export use and can only be shipped to locations outside the continental US or valid APO/FPO addresses or valid customs brokers for documented end delivery outside the continental US).

**FM30B** Digital Synthesized FM Stereo Transmitter Kit, 0-25mW RF Output  
**FM35BWT** Digital Synthesized FM Stereo Transmitter, 0-1W RF Output, Assembled & Tested, Export Only

\$199.95

\$299.95



**KIT** **Wired & Tested**

**Sound Just Like  
The Pros!**

## Stereo Transmitter Companion

- ✓ Make your radio station sound like the pros!
- ✓ Limiter/processor for that high density modulation "punch"
- ✓ 3 band audio processor - separate controls for bass, presence, and brilliance
- ✓ Precision active low-pass "brick wall" audio filter!

The STC1 is the ideal companion for the FM10C or the FM25B. The brick wall filter will ensure that high audio frequencies do not interfere with the transmitter's stereo pilot frequency. TV's, cheaper computer audio cards, and older CD players can have audio garbage above the human hearing range. This high frequency audio garbage can cause nasty whistles and whines in received audio. The STC1's filter will remove these frequencies before that can be a problem. The STC1 is also handy with the FM30 and FM100B. It will allow the user to adjust the low, high, and mid band frequencies while verifying the signals are not clipped! The STC1C connects easily between your CD player, mic mixer, or tape deck and your radio transmitter.

The STC1 receives stereo line level audio into the unit via RCA connectors. The first stage allows the user to set the desired low, mid, and high band audio levels. The audio bands can be either enhanced or suppressed by 12 dB. The next part of the circuit is the clip detector. If the signals are clipped the Left or Right Clip LED's will illuminate notifying the producer so action can be taken to reduce the audio levels. The last stage is the 16 kHz 8th order Butterworth filter which is designed to prevent signals from interfering with the transmitters stereo pilot. The audio is passed on the transmitter via RCA connectors. The STC1 Operates on 9 to 15 volts DC. Sound like the pro's with the STC1C! Attractive case measures 5"W x 1 1/2"H x 5 1/4"D.

**STC1C** Stereo Transmitter Companion Kit With Case  
**STC1WT** Factory Assembled and Tested STC1C With Case And Power Supply  
**AC125** 110VAC Power Adapter

\$84.95

\$129.95

\$9.95







KIT

Wired & Tested  
(Export Only)

## Super-Pro Synthesized FM Stereo Radio Station

*The Complete Station...  
Continues To Be The  
Leader Worldwide!*

- ✓ Built-in mixer - 2 line inputs and one microphone input, line level monitor output!
- ✓ Frequency range 88.0 to 108.0, 100 kHz steps
- ✓ Precision active low-pass "brick wall" audio filter!
- ✓ Clean, filtered RF output suitable for RF amplification
- ✓ Dual LED bar graph audio level meters!
- ✓ Automatic adjustable microphone ducking!



The true professional workhorse of our FM Stereo transmitter line, the FM100B has become the transmitter of choice for both amateurs and professionals around the world. From the serious hobbyist to churches, drive-in theaters, colleges and schools, it continues to be the leader. Not just a transmitter, the FM100B is a fully functional radio station and provides everything but the audio input and antenna system. And now we've added additional features and performance improvements to make the best even better!

This professional synthesized transmitter is adjustable directly from the front panel with a large LED digital readout of the operating frequency. Just enter the setup mode and set your frequency. Once selected and locked you are assured of a rock stable carrier with zero drift. The power output is continuously adjustable throughout the power range of the model selected. In addition, a new layer of anti-static protection for the final RF amplifier stage and audio inputs has been added to protect you from sudden static and power surges.



Audio quality is equally impressive. A precision active low-pass brick wall audio filter and peak level limiters give your signal maximum "punch" while preventing overmodulation. Two sets of rear panel stereo line level inputs are provided with front panel level control for both. Standard unbalanced "RCA" line inputs are used to make it simple to connect to the audio output of your computer, MP3 player, cassette deck or any other consumer audio source. Get even more creative and use the Bullshooter-II below for digital storage and playback of announcements and ID's! In addition to the line level inputs, there is a separate front panel microphone input. All three inputs have independent level controls eliminating the need for separate audio mixer! Just pot-up the source control when ready, and cross fade to the 2nd line input or mic! It's that simple! In addition to the dual stereo line inputs, a stereo monitor output is provided. This is perfect to drive studio monitors or local in-house PA systems.



EASY TO BUILD  
THROUGH-HOLE DESIGN

Not enough? How about unattended microphone ducking! When enabled, the presence of mic audio automatically reduces and overrides the line level input! If you have music playing from one of the line inputs, just start talking into the mic and the cross fading is done automatically! Just like the professional units at a fraction of the cost. To provide a perfect match to any microphone you may use we've added a new highly responsive mic AGC circuit along with a front panel mic duck sensitivity control. This allows you to customize line muting to your exact needs!

The FM100B series includes an attractive metal case, whip antenna and built in 110/220VAC power supply. A BNC connector is also provided for an external antenna. Check out our Tru-Match FM antenna kit, for the perfect mate to the FM100B transmitter. We also offer a high power kit as well as an export-only assembled version that provides a variable RF output power up to 1 watt. The 1 watt unit must utilize an external antenna properly matched to the operating frequency to maintain a proper VSWR to protect the transmitter. (Note: The FM100B and FM100BEX are do-it-yourself learning kits that you assemble. The end user is responsible for complying with all FCC rules & regulations within the US or any regulations of their respective governing body. The FM100BWT is for export use and can only be shipped to locations outside the continental US, valid APO/FPO addresses or valid customs brokers for documented end delivery outside the continental US).

FM100B Super-Pro FM Stereo Radio Station Kit, 5uW to 25 mW Output  
FM100BEX Super-Pro High Power Kit, 5uW to 1Watt Output, Export only  
FM100BWT Factory Assembled & Tested FM100BEX, 5uW to 1 Watt Output, Export Only

\$269.95  
\$349.95  
\$429.95



## The Bullshooter-II Digital Voice Storage

KIT

Wired & Tested

- ✓ Multiple message storage and selection!
- ✓ Built-in mic, external mic and line inputs!
- ✓ Full function controls with 7 segment display!
- ✓ Variable output levels to match your equipment!
- ✓ Great for telephone hold announcements, broadcast announcements, and much more!
- ✓ Single play and programmable repeat modes

*Feature Packed  
Digital Storage!*



Our first generation BS1 Bullshooter digital voice storage recorder provided the proverbial endless tape loop recorder/player without the tape! For the first time ever, the tape, along with the motors, drive belts, and dirty and plugged tape heads were replaced with state-of-the-art digital voice storage! The BS1 became extremely popular to replace tape for basic voice announcements. As digital voice technology improved and came within reach of the consumer, it paved the way for the next generation, the BS2C! Requests came pouring in for longer voice storage, separate voice channels of storage, and different time duration channels of storage. The BS2C Bullshooter-II took care of all that, and a whole lot more!

Storage wise, the BS2C provides up to 8 minutes of digital voice storage. But it only starts there! That total storage capacity can be broken down into a maximum of 8 separate stored messages. In addition, the BS2C features four selectable sampling rates depending on the type and quality of audio being stored. A sample rate of 4kHz provides the full 8 minute storage, while 5kHz provides 6.4 minutes, 6kHz provides 5.3 minutes, and the highest sample rate of 8kHz provides 4 minutes. As an added sample rate feature, you can play back a slow sample rate message at a faster sample rate to achieve a "funny-fast" playback! Likewise playing a higher rate message at a lower sample rate to achieve a "slow" playback effect. And unlike tape, your messages are stored in a non-volatile memory for over 100 years without power!

Recording voice with the BS2C is simple with a built-in front panel mounted electret condenser microphone. Just setup to record, push a front panel button and speak! You can also plug in your own external electret condenser microphone for professional studio-sounding recording. In addition, you can record audio from any audio source that has standard line outputs. Just plug it into the line input of the BS2! Line/mic input switching is provided by front panel control. Both external inputs also feature variable level controls to optimize your recordings.

Playback-wise, the BS2C features adjustable line level outputs (two mono outputs for stereo inputs) to properly feed any application or device! This is perfect for telephone system announcements on hold (MOH source), radio broadcasters, transmitters, and audio/visual displays. You can also directly drive a speaker with the built-in amplified speaker output. A built-in headphone jack is also provided to monitor audio levels. The message number is displayed on the 7 segment LED front panel display!

Recording/playing/stopping is similar to a standard recorder, and you can start/stop/pause your message during both record and playback! Playback modes are selectable for single play and continuous repeat with programmable delays of 0sec, .5sec, 5sec, 1min, 10min, 30min, and 60minutes. Once setup you can also lock the unit with a multiple key code. Whatever your application is, the new BS2 has you covered! Runs on 12-15VDC or optional AC power adapter.

BS2C Bullshooter-II, Multi-Message Digital Voice Recorder Kit With Case Set  
BS2WT Factory Assembled & Tested BS2 with Case Set and Power Supply  
AC125 110VAC Power Adapter

\$89.95  
\$119.95  
\$9.95





**Includes Pre-Installed  
SMT Components!**

## Synthesized FM Stereo Transmitter

- ✓ Synthesized 88 to 108 MHz for no frequency drift!
- ✓ Simple DIP switch frequency setting!
- ✓ Simple connection to your MP3 player, stereo, or computer!
- ✓ Built-in telescoping whip or external antenna operation

Designed to be the heart of a basic FM transmitting system makes the FM25B a solid performer and very economical to build and operate. Just plug in the audio from your MP3 player, CD player, DVD, computer, tape deck, VCR or even a TV and broadcast it on any frequency in the standard FM broadcast band. The sound quality and stereo separation of this little transmitter will keep the pickiest audiophile happy. This unit has many uses! Broadcast your favorite music around your house and yard. Use it to play DJ for your friends. Farmers, broadcast to your tractors in the fields. Used in conjunction with our BS2 Digital Voice recorder makes the FM25B an ideal event broadcaster. Broadcast school events to parents picking up their children from school. Broadcast important messages to a small community. The applications for this kit are limited only by your imagination!

The FM25B brings stereo line level audio into the unit through a 3.5mm stereo phone jack. A loop out is provided at the input for monitoring. The unit features a PIC microprocessor for easy frequency programming through board mounted DIP switches. The transmit frequency is Phase Locked Loop (PLL) controlled for unparalleled stability making frequency drift a thing of the past, extremely critical for digital tuners. The RF output level is adjustable from 5uW to 25 mW via a potentiometer. Use the built-in whip antenna or use an external antenna with the standard "F" external antenna connector on the rear panel. Just plug it in and you're on the air. The unit requires 12 VDC @ 100mA to operate. Kit comes with: matching case set, whip antenna, 110VAC power adapter, and audio patch cable. Case size 5"W x 1 1/2"H x 5 1/4"D. (Note: The FM25B is a do-it-yourself learning kit that you assemble. Please remember that the end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the FM25B).

**FM25B Professional Synthesized FM Stereo Transmitter Kit, adjustable 5 uW to 25 mW Output**

**\$139.95**

## Tunable FM Stereo Transmitter



**Learn The  
Basics Of FM  
Transmitters!**

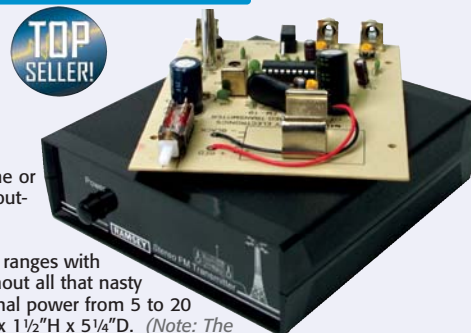
- ✓ Tunable anywhere in standard FM band... 88 to 108 MHz!
- ✓ Operates on 5 to 20VDC
- ✓ Settable pre-emphasis 50 or 75 µSec for use anywhere in the world!
- ✓ Easy to build, low cost transmitter includes matching case set!

Here is a great entry-level kit that will teach the basics of FM Broadcast transmission while finding many uses around the home or dorm room. The FM10C has plenty of power to cover your home, backyard, or city block. Our manual goes into great detail outlining all the aspects of antennas, transmitting range and FCC rules and regulations.

You'll be amazed at the exceptional audio quality of the FM10C. Tunes through the entire 88-108MHz band in three separate ranges with a tuned LC circuit. Re-broadcast your favorite music commercial-free with the dynamic range the musician intended, and without all that nasty compression the big boys use to make their station sound louder than the competition. Runs on a standard 9V battery, external power from 5 to 20 VDC, or an optional 120 VAC adapter. Includes the matching case & knob set for a professional finished look. Case size 5"W x 1 1/2"H x 5 1/4"D. (Note: The FM10C is a do-it-yourself learning kit that you assemble. Please remember that the end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the FM10C).

**FM10C FM Stereo Transmitter Kit With Case**  
**AC125 110VAC Power Adapter**

**\$44.95**  
**\$9.95**



**Be As Stable  
As A Rock!**

## Professional Synthesized AM Transmitter

- ✓ Fully synthesized, no frequency drift!
- ✓ Ideal for schools
- ✓ Microprocessor controlled!
- ✓ Strappable for higher power output where regulations permit
- ✓ Includes AC power adapter and case set

The AM25 is not your ordinary hobbyist AM transmitter! The AM broadcast band is quite alive and well, and is still considered the home of talk radio. For years the AM band has been a popular place for community broadcasts, in-home broadcasts, and other local information broadcasts. Now you can have a professional synthesized AM transmitter at the cost of a hobby unit!

The AM25 operates anywhere within the standard AM broadcast band, and is easily set to any clear channel in your area. The design is similar to that of a commercial radio transmitter, so while you build it you'll learn how the "big guys" operate. It is widely used by schools - standard output is 100mW with range up to 1/4 mile and is jumper settable for higher output where regulations allow. There is no tuning or tweaking involved with the AM25. The PLL synthesized frequency is easily set with dip-switches and is rock solid without any drift, just like our FM25B. This is critical for any digital radio or tuner. The transmitter accepts line level input from any audio source including CD players, tape decks, computers, etc. Includes matching case & knob set and 110VAC power supply. Case measures 5"W x 1 1/2"H x 5 1/4"D. (Note: The AM25B is a do-it-yourself learning kit that you assemble. Please remember that the end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the AM25).

**AM25 Professional AM Synthesized AM Transmitter Kit, Case, and AC Power Supply**

**\$99.95**

## Tunable AM Radio Transmitter



**#1 Scouting Project  
For Years**

- ✓ Tunes entire 550 to 1600 KHz AM band
- ✓ Operates on 9 to 12 VDC, includes case set
- ✓ Standard line level input with RCA phono jack
- ✓ 100 mW output. Range up to 1/4 mile under optimum conditions

The AM1 is a great first kit and a fine low power AM broadcaster for the hobbyist on a budget. It's a great way to learn the basics of AM broadcast technology, not to mention basic soldering and component identification (if you're a beginner!). The transmitter can be tuned to broadcast anywhere in the AM band (550 to 1600 kHz).

Setting frequency is simple - tune a nearby AM radio to the desired frequency, then adjust the AM1 coil to match the radio. With 100 mW of output power, range can be up to 1/4 mile. Connect any line level audio source from your CD player, tape deck, or mic mixer to the RCA input on the rear panel of the AM1C and you'll be on the air. It's that simple! The AM1 has been used by Scout camps, churches, schools, and other organizations to provide easy, low cost communications. Includes the matching case and knob set shown. Measures 5"W x 1 1/2"H x 5 1/4"D. (Note: The AM1C is a do-it-yourself learning kit that you assemble. Please remember that the end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the AM1C).

**AM1C AM Radio Transmitter Kit With Case**  
**AC125 110VAC Power Adapter**

**\$34.95**  
**\$9.95**







KIT

Wired & Tested

*"Clean Up" Your  
FM Broadcasts!*

## External FM Broadcast Low Pass Filter

- ✓ Clean up the output of a low quality FM exciter
- ✓ Designed around our FCC Certified LPFM transmitters
- ✓ Easy to put in line with your transmitter
- ✓ Includes outdoor PVC housing!

The FM Low Pass Filter kit came about while designing the PX1 and the PX50 Professional FM Transmitter. FCC Ruling 99-25 created a class of radio stations designed to serve local communities by authorizing new classes of non-commercial, low power FM radio services (LPFM). In order to meet the stringent guidelines of the FCC the PX1 and PX50 underwent months of design sessions and many hours of painstaking tests.

One of the secrets to its clean output is the FMLP1. If you own one of those spectrally dirty "import" exciters you'll definitely want to add the FMLP1 to clean up the output and properly match your power amplifier. Maximum input power is 50 watts. The kit utilizes surface mount chip caps, so you'll need ultra fine solder and a magnifying lamp! Includes outdoor PVC housing shown above.

FMLP1 FM Low Pass Filter Kit  
FMLP1WT FM Low Pass Filter, Factory Assembled and Tested

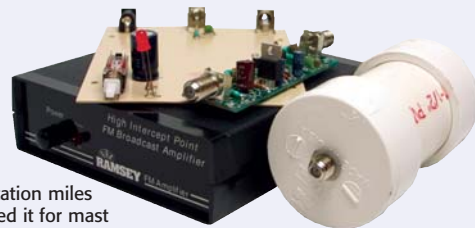
\$29.95  
\$49.95

## High Intercept Point FM Broadcast Amplifier

- ✓ Virtually overload proof
- ✓ Mast mount for best performance and signal to noise ratio
- ✓ Put your power at the antenna not in the feedline
- ✓ Very well filtered with 5 sections of low pass filtering
- ✓ Includes outdoor PVC housing!

TOP  
SELLER!

*Amplify BEFORE  
The Line Loss!*



Discover the 1st rule of amplifiers... do it BEFORE the noise! We developed this amplifier to receive a low power college FM station miles away while we had a nearby 50kw AM station. Standard preamps were simply overloaded. We took our LPA1C and redesigned it for mast mounting, sending power up the coax. Wow, did it work!

As an experiment, we tried using it to boost one of our FM transmitters for a customer overseas. We couldn't believe the increase in transmission range, and the lowpass filtering made us feel pretty good about not futzing up anyone else's reception! Naturally, this is a no-no in the USA, but great for the export markets that allow such equipment. Includes the outdoor PVC enclosure and the matching black case & knob set. (Note: The FMBA1C is a do-it-yourself learning kit that you assemble. Please remember that the end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the FMBA1C).

FMBA1C High Intercept Point FM Amplifier Kit With Case  
AC125 110VAC Power Adapter

\$74.95  
\$9.95



KIT

*Our Famous Broadband  
RF Amplifier!*

TOP  
SELLER!

## RF Broadband Power Amplifier

- ✓ Up to one watt RF power output!
- ✓ Broadband range 300KHz to 1000 MHz!
- ✓ Runs on 12-15 VDC

The LPA1 is the ticket for boosting power up to 1 watt over a frequency range of 300 KHz to over 1000 MHz! It is perfect for use as a broadband amplifier for test equipment to amplify low level signal input. It has been one of the most popular lab amplifiers for years! In addition, many users in foreign countries outside the US use the LPA1 to boost their low power FM stereo transmitters to a watt of power capable of providing radio service through an entire town. This application is limited to international areas not under the jurisdiction of the FCC or other similar agencies limiting the power output of your transmitter. Power required is 12 to 15 volts DC at 250 mA via 2.1mm male power jack. Gain of 38 dB at 10 MHz, 10 dB at 1000 MHz. Includes the custom matching case & knob set for a neat, professionally finished look. Case size 5"W x 1 1/2"H x 5 1/4"D. (Note: The LPA1C is a do-it-yourself learning kit that you assemble. Please remember that the end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the LPA1C).

LPA1C RF Linear Power Amplifier Kit With Case  
AC125 110VAC Power Adapter

\$54.95  
\$9.95

## Tru-Match FM Broadcast Antenna

- ✓ Fully weatherproof - rugged PVC construction
- ✓ Matches 50 or 75 ohm systems!
- ✓ Broadband for perfect match!

*Rugged PVC Construction...  
Keeps The Weather Out!*

KIT

Looking for a perfect low cost FM antenna? Our extremely popular TM100 Tru-Mach antenna will fit the bill! Matching your antenna to your transmitter is the single most important link in your transmitter setup. Without a proper match, power is reflected away from the antenna and back into the transmitter! This can cause the final amplifier stage to be damaged, not to mention spurious signals and (no better way to say it!) lousy range.

The unique design features PVC tubes and fittings to make it waterproof and impervious to rain and snow, which make the TM100 one of the most reliable antennas available for the private broadcaster! Unlike other FM transmitter antennas that need to be tuned to a specific frequency, the TM100 is broadband over the entire 88-108MHz band yet still maintains an excellent match! The antenna terminates with a standard "F" connector for easy connection with standard 75 ohm TV coax to your FM10C or FM25B. See our connectors section to adapt the "F" connector to a "BNC" for easy matching of professional 50 ohm coax or 75 ohm TV coax for use with our FM30 or FM100B series transmitters. Maximum power rating of the TM100 is 25 watts. BTW, also makes a GREAT and easy-to-connect omnidirectional receiver antenna!

TM100 FM Broadcast Low Power Antenna Kit (25W Max)

\$69.95



TOP  
SELLER!

*Precision Tune To Your Exact  
Frequency For A Perfect VSWR!*

## 5/8 Wave Colinear Vertical FM Antenna

- ✓ 5/8 wave for excellent gain and maximum range
- ✓ Field adjustable for a perfect match
- ✓ 3.4 dB gain effectively doubles your power!

This is probably the most popular antenna we sell. Why? Let's start with the proven omnidirectional ground plane design, clean rugged construction, and how about easy mounting? The 5/8 wave design keeps your signal low to the horizon and not uselessly radiating up into space - great if your listeners are on the space shuttle, but the pits for the folks out at the edge of town! Imagine a donut shaped pattern of signal radiating from your antenna. For the most range out to the horizon, we need to "squish" that pattern flatter to squeeze more signal out - and that's exactly what this antenna does!

The antenna is easy to assemble and is adjustable to your specific frequency during assembly. Makes a super match and a perfect VSWR to your transmitter! The base of the antenna mounts on any standard antenna mast or pipe (not included). A professional SO-239 connector is provided at the base of the antenna to match a standard PL-259 connector. A perfect match, easy assembly, and a breeze to mount and connect, it really can't get much better than that! Try one and see if you don't agree that it's one heck of an antenna for the money! Height: 7' 7" 200 watt power rating. Visit [www.ramseyelectronics.com](http://www.ramseyelectronics.com) for matching coax cable assemblies to match up to your transmitter.



FMA200 5/8 Wave Colinear Antenna (200W Max)

\$139.95





# Holiday Favorites!

Electronics Is Fun, Especially At The Holidays

## Animated Ghost

- ✓ Automatically greets your visitors!
- ✓ Responds to sudden noises
- ✓ Built-in microphone
- ✓ Adjustable sensitivity

*Moves, Shakes, Blinks!*



Who says ghosts aren't real? Once your friends see this one they'll think differently! The unique circuit board design includes two ominous blinking eyes that change with various conditions, including sudden changes in ambient noise.

A highly sensitive built-in microphone picks up anything from noises to talking and makes the ghost dance with its built-in motor, make eerie sounds with the built-in speaker, and randomly blink.

A white cloth and a hanger are included as shown to make it look even spookier! Runs on 2 AAA batteries. From Velleman.

MK166 Animated Ghost Kit

KIT

\$21.95

## Animated Holiday Bell

- ✓ 83 LED animated motion!
- ✓ Multiple colors!

*Swings Back And Forth!*

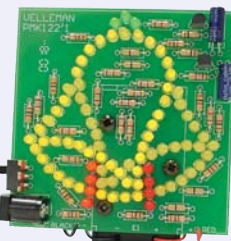
83 LEDs provide a neat looking holiday bell that swings back and forth! Multiple green, red, and yellow LEDs provide you with a festive holiday spirit the moment you see this bell!

A PC board mounted on/off switch and standard power connector are included. Runs on 9-12VDC or a standard 9V battery (not included). Measures 3.2" x 3.5". From Velleman.

MK122 LED Animated Bell Kit  
AC125 110VAC Power Supply

KIT

\$16.95  
\$9.95



## LED Deluxe Christmas Tree

- ✓ 134 random blinking LEDs!
- ✓ Large multi color display!
- ✓ Battery or external power!
- ✓ Built-in on/off switch

*Light Up Your Tree In Style!*

This beautiful electronic Christmas Tree consists of a whopping 134 bright LEDs! Of the 134 LEDs, 18 randomly blinking "candles" give the tree an exciting animated look! Red, green, and yellow LEDs are used to provide a brilliant display.

Runs on an external 9-12VDC supply or a standard 9V battery. Use an external power supply and leave it on continuously! Includes a PC board mounted on/off switch. PC board measures 5.6" x 3.2". From Velleman.

MK117 LED Deluxe Christmas Tree Kit  
AC125 110VAC Power Supply

KIT

\$18.95  
\$9.95



## LED Christmas Tree

- ✓ 16 bright flashing red LEDs!
- ✓ Easy 9V battery operation!
- ✓ Self standing or "hangable"

*Display The Season!*

While a little more basic compared to the others above, this LED Christmas Tree is still a very neat looking self standing attention getter! The green PC board has 16 bright red LEDs mounted in the traditional tree pattern.

A nice 4 transistor circuit is used to make the LEDs blink just like your big tree does! An attached battery pack mounts on the bottom allowing the tree to be self standing or to be hung on your real tree. Runs on a standard 9V battery (not included). Measures 2.4" x 4" x 1". From Velleman.

MK100 LED Christmas Tree Kit

KIT

\$6.95



## LED Halloween Pumpkin

- ✓ 25 bright LEDs!
- ✓ Random flash like a candle!
- ✓ Super bright illumination!

*Spook Them With LEDs!*

You won't be scraping the seeds and guts out of this pumpkin! A six-transistor circuit provides a neat random flash pattern that looks just like a flickering candle, and a super bright LED illuminates the entire pumpkin with a spooky glow!

Runs on a standard 9V battery (not included). Includes an edge mounted on/off slide switch. From Velleman.

MK145 LED Halloween Pumpkin Kit

KIT

\$11.95



## Portable EL Electroluminescence

- ✓ 3.3 feet long!
- ✓ Low power consumption!
- ✓ Highly visible brilliant colors

**Wired & Tested**

*Steady Or Flash!*



Electroluminescent illuminated flexible wire sets can be used for a lot of things but when they're battery powered they're perfect for Halloween and Trick or Treat safety concerns!

Each thin, flexible EL wire set is 3.3' long and runs on two standard AA batteries (not included). Mode settings include steady glow and slow or fast flash! Make it part of a brilliantly lit, custom designed costume or simply add it for illuminated safety while Trick or Treating in the dark. From Velleman. (*Think Tron!*)

NWRR15 EL Illumination Wire Set, Red

\$19.95

NWRG15 EL Illumination Wire Set, Green

\$19.95

NWRB15 EL Illumination Wire Set, Blue

\$19.95



## LED Santa Display

- ✓ 126 LED animated display!
- ✓ Multi-color!

*Here Comes Santa!*

What a way to welcome the holiday season and learn about electronics at the same time!

This animated Santa and reindeer display has 126 dazzling colored LEDs to make a really nice holiday sign. Runs on 9-12VDC so you can use a standard 9V battery or an external power supply so it can be left on continuously. Includes an on/off switch. Measures 3.2" x 5.7". From Velleman.

MK116 Animated Santa Display Kit  
AC125 110VAC Power Supply

KIT

\$16.95  
\$9.95



## 3D LED Christmas Tree

- ✓ Free standing 3D design!
- ✓ 16 flashing LEDs!
- ✓ Customized with extra LEDs!
- ✓ Can be hung on the tree!

*Dazzle Your Friends!*

This Christmas Tree is not your average PC board display! It has 4 "branch" sections giving it a 3D depth look!

Its unique design holds a standard 9V battery at its base as its "trunk" and will stand up on a table or desk with or without the battery. 16 flashing red LEDs are placed on the branches. Extra green and yellow LEDs are included to allow you to customize your tree any way you choose!

Runs on 9-12VDC or the 9V battery (not included) in its base. Measures 3.5" x 4.0". From Velleman.

MK130 3D LED Christmas Tree Kit  
AC125 110VAC Power Supply

KIT

\$7.95  
\$9.95





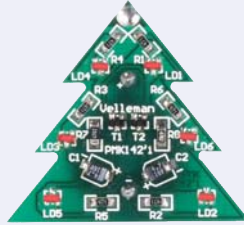


## SMT LED Christmas Tree

- ✓ Alternating flashing 6 SMT LEDs!
- ✓ Great attention grabber!
- ✓ Learn SMT over the Holidays!

### *Wear A Flashing Tree!*

Build this subminiature Christmas Tree and watch it alternately flash red surface mount LEDs! Small enough to wear as a badge or pendant, or to hang on the tree.



Six high intensity SMT LEDs brilliantly light up this tree. People will be amazed seeing the actual components on the tree while it flashes. Plus, you can tell them you built it! SMT components are used throughout the kit to give you a great start in surface mount. We know they are smaller than small, so as always we include extra parts in case you lose or damage any.

Runs on one standard CR2025 or CR2032 Li-Ion button cell. Measures 1.75" x .3". From Velleman.

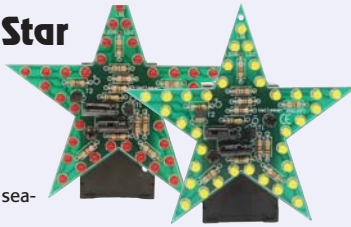
MK142 SMT LED Christmas Tree Kit **KIT** \$10.95

## LED Flashing Holiday Star

- ✓ 35 brilliant red or yellow LEDs!
- ✓ Flashing or steady display!
- ✓ Freestanding or hanging!

### *Brilliant LED Star!*

A great seasonal gadget or gift for the holiday season!



A classic star shaped PC board contains 35 brilliant red or yellow LEDs. The circuit allows you to select either a flashing or steady display of the LEDs.

The built-in battery holder also acts as a freestanding base for table or desktop use, or you can hang it from the tree or ceiling. Runs on a standard 9V battery (not included). Measures 3.54" x 3.54". Makes a great addition to any holiday decoration. From Velleman.

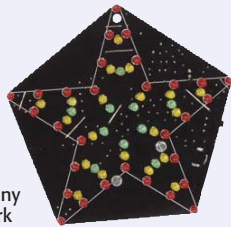
MK169R Flashing Red LED Star Kit **KIT** \$12.95  
MK169Y Flashing Yellow LED Star Kit \$12.95

## LED Sound Actuated Star

- ✓ Acts like a LED Vu Meter!
- ✓ Built-in microphone!
- ✓ Adjustable sensitivity!

### *Is It A Star Or A Meter?*

This is one of the neatest holiday displays that will light up any party! 60 multi-colored LEDs form an attractive star on a dark background PC board.



But it's not just a display... it responds to room audio! That's right, the built-in microphone picks up music and room audio and the LEDs respond just like a professional LED Vu meter!

Adjustable sensitivity allows you to balance the display to any audio level. Great for parties and events. Runs on 9-12VDC. Measures 4.2" x 4.4" x 1.4". From Velleman.

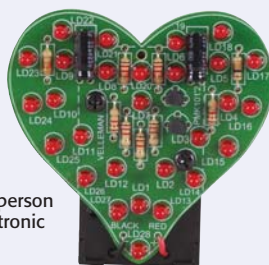
MK172 LED Sound Actuated Star Kit **KIT** \$19.95  
AC125 110VAC Power Supply \$9.95

## Flashing LED Sweetheart

- ✓ 28 brilliant red LEDs!
- ✓ Unique dual heart design!
- ✓ Freestanding mount!

### *The Perfect Valentine!*

What a way to display your feelings to that very special person in your life! Dazzle her with this unique dual heart electronic display.



28 brilliant red LEDs are formed into two separate heart designs on the heart shaped PC board creating a great flashing display.

Built-in battery holder base makes the heart freestanding and perfect for a desk or table. Runs on a standard 9V battery (not included). Measures 2.4" x 2.4" x 1.2". From Velleman.

MK101 Flashing LED Sweetheart Kit **KIT** \$6.95

## Flickering Electronic Candle

- ✓ Yellow high intensity LED!
- ✓ 3 different "flame modes!"
- ✓ Power saver timer!

### *Can't Blow This One Out!*



What a great and safe way to display the traditional flickering candle at the holidays!

In reality, this "candle" is a high intensity Yellow LED, and that means its safe for the kids, pets, and your fingers! The electronic circuit simulates three different modes: realistic flickering flame, steady flame, and slow fade in/fade out. All this without any heat, smoke, or mess! Plus the circuit features an automatic 5 hour power saver timer!

The unique round PC board is designed to drop into a standard 38mm plastic or glass cup. Use a frosted cup for the best display results! Runs on a standard CR2032 button cell (not included). Measures 1.5" x .98". From Velleman.

MK167 Flickering Electronic Candle Kit **KIT** \$9.95

## LED Animated Effects Star

- ✓ 60 brilliant animated LEDs!
- ✓ Microprocessor controlled!
- ✓ 24 different effects with sequencing!
- ✓ Create your own multi-colored display!

### *Dazzling Animated Holiday Display!*

This large star features a whopping 60 LEDs and a microprocessor to provide 24 separate animated effects!



Besides the red LEDs, additional yellow LEDs are also included to allow you to custom build your own multi-colored display! Effects include 3 static displays, 15 blinking displays, and 6 animations complete with fading! In addition, "all effects" sequencing is available.

Runs on your choice of a standard 9V battery or an external 9-12VDC source. Measures 4.13" x 4.33" x 1.38". From Velleman.

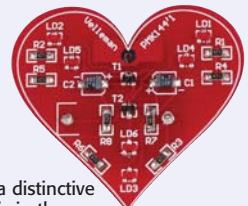
MK170 LED Animated Effects Star Kit **KIT** \$22.95  
AC125 110VAC Power Supply \$9.95

## SMT LED Flashing Heart

- ✓ 6 Alternating flashing SMT LEDs!
- ✓ Learn about SMT devices and design
- ✓ Gets her attention!

### *The SMT Valentine!*

Just like the MK142 Christmas Tree, this little kit gives you a distinctive display using 6 Surface Mount (SMT) LEDs. The PC board is in the shape of a heart and is also red.



The small size makes it perfect to be used as a badge or hanging pendant around your neck. Runs on a small CR2025 or CR2032 button cell (not included). Makes a great SMT learning kit and extra SMT components are included just in case you lose or damage any! Measures 1.9" x 1.7" x .3". From Velleman.

MK144 SMT LED Flashing Heart Kit **KIT** \$11.95

## Electronic "Love Tester"

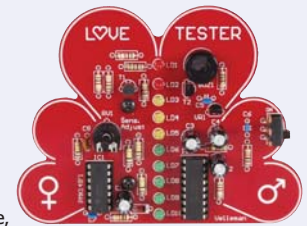
- ✓ 10 LED love scale display!
- ✓ Audible love level sound!
- ✓ Great party fun!

### *Check Your Love Life!*

This uniquely shaped "Love Tester" is the ultimate gag for any couple! Designed to check your love life, each partner holds one end of the tester PCB at the appropriate male and female touch pads. Then they romantically join hands and watch the results on the love meter!

10 green, yellow, and red LEDs act like a scale and just like the carnival, when it hits the top they flash, indicating you're a red hot couple! There is also an audible alarm that changes with the "love level."

Next time you're at a party that just isn't going anywhere, bring out this little tester and the party will come to life! It's a riot! Wide sensitivity range is compatible with all couples. Includes a built-in power on/off switch. Runs on a standard 9V battery (not included). Measures 4.1" x 3.1" x .98". From Velleman.



MK149 Electronic Love Tester Kit **KIT** \$16.95



## Dual Electronic Dice

- ✓ Displays two separate dice!
- ✓ Single or dual selection!
- ✓ Can't cheat with these dice!

A lot of board games require a roll of the dice. And a lot of dice rolls end up on the floor, knocking over the board tokens, the little green houses, or even worse, the red hotels! Not anymore, problem solved! Just hit the switch and the dice randomly cycle and slowly come to rest displaying the number! You can select either one die or a pair of dice, depending on the game. Bright LEDs display the same patterns as regular dice. Great for travel games, not to mention this pair of dice won't allow cheating!

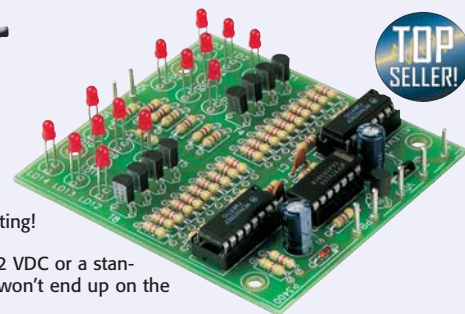
When the game is over, don't worry, the auto power saver switches them off after 30 seconds to save battery life. Runs on 8-12 VDC or a standard 9V battery. Board measures 3" x 2.8" and can be mounted in your own special enclosure. You can be sure that the dice won't end up on the floor! From Velleman. *(Well, when the cheater isn't happy I guess he **could** throw it on the floor!)*

K3400  
AC125

Dual Electronic Dice Kit  
110VAC Power Adapter

KIT

*These Dice Won't Fall  
Off The Table!*



TOP  
SELLER!

\$17.95  
\$9.95



KIT

*Make Up Your Mind Already!*

## Electronic "Decision Maker"

- ✓ No more coin flipping!
- ✓ Ideal for the indecisive!
- ✓ One button operation!

When a decision is simply too important to rationally analyze, let this handy gadget make the tough calls for you with a simple push of a button! One push and the green "Yes" and red "No" LEDs begin to flash. Flashing speed gradually decreases and only one LED remains lit.

What will it be? Yes or No? Push the button and find out! Also features auto power-off to conserve battery life, which, by the way, is a standard 9V battery (not included). Measures 2.2" x 1.2" x 1.4". From Velleman. *(I wonder if these should be on the GSA contract!)*

MK135

Electronic Decision Maker Kit

\$6.95

## Electronic Roulette

- ✓ Spinning sound!
- ✓ Winner tune!

*Easy To Spin This One!*

TOP  
SELLER!



This electronic version of roulette features a neat round PC board with 37 LEDs simulating a real spinning Roulette game! And when it spins, you hear the spinning sound with microprocessor technology! When the spinning stops and there is a winner you hear a winning tune! Easy assembly makes it a cool beginner kit that uses ICs. Runs on 3 AA batteries (not included). Board measures 3.6" diameter. From Velleman.

MK119 Electronic Roulette Kit

KIT

\$16.95

## 4 Player Quiz Table

- ✓ Shows first button pushed!
- ✓ Quizmaster reset!

*The Correct Answer Is?*



Just like the TV game shows, you can have up to 4 players "on the ready" just waiting to be the first one to answer the question. But how do you know who's first? That's simple with the MK133! 4 player push buttons are provided.

The first player to push their button is indicated with a latched on LED. Just like on TV! The "Quizmaster" button resets it for another round! If you have more than 4 players you can even daisy-chain two MK133s together for up to 8 players! Runs on a standard 9V battery (not included). Measures 4.3" x 3.1". From Velleman.

MK133 4 Player Quiz Table Kit

KIT

\$10.95

## Electronic Brain Game

- ✓ Hours of fun with just 4 buttons!
- ✓ 4 difficulty levels!
- ✓ Audio or silent LED operation!
- ✓ Microprocessor controlled!

*You Will Spend Hours!*



The game is simple... repeat a pattern that is randomly generated by the built-in microprocessor. Sound simple? You'll be amazed! At power-up you choose from one of 4 difficulty levels. The pattern is displayed by the 4 LEDs, or by the built-in audible alert, or both.

The speed of the game gradually increases to make it even more challenging! The sleek ergonomic design is easy to hold and the 4 oversized push buttons make it easy and fun to use. You'll find yourself addicted to this little game. Runs on 3 standard AA batteries (not included). Measures 3.3" x 2.6" x 1.6". From Velleman. *(The fun is in the challenge!)*

MK159 Electronic Brain Game Kit

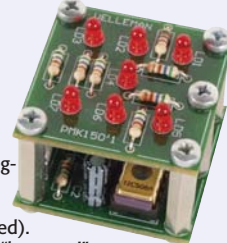
KIT

\$24.95

## Shaking Electronic Dice

- ✓ Just give it a shake like real dice!
- ✓ Microprocessor controlled!

*Shake, Don't Roll!*



You don't have to throw it, just shake it and it acts just like regular dice! It rolls out slowly and flashes the last combination or "winning number!" It's microprocessor controlled circuit is fun to learn! Runs on one 3V Lithium button cell (not included). Get two to simulate a pair of real dice to get "snake eyes" or "box cars!" Measures 1.4" x 1.4" x 1.3". From Velleman.

MK150 Shaking Electronic Dice Kit

KIT

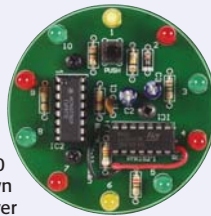
\$13.95

## Wheel Of Fortune

- ✓ Electronic LED spinning action!
- ✓ Spinning gradually decreases!

*Where She Stops...*

TOP  
SELLER!



Acts just like the casino game! Just push the button and the 10 LEDs start showing a spinning action. They gradually slow down until the "winning" one remains lit. Push the button to start over again. Auto on/off assures a long battery life. Measures 2.6" x 1.3". Requires a standard 9V battery (not included). From Velleman.

MK152 Wheel Of Fortune Kit

KIT

\$7.95

## Walking Electronic Bug

- ✓ Avoids obstacles!
- ✓ Steer him with a flashlight!
- ✓ Blinking LED eyes!

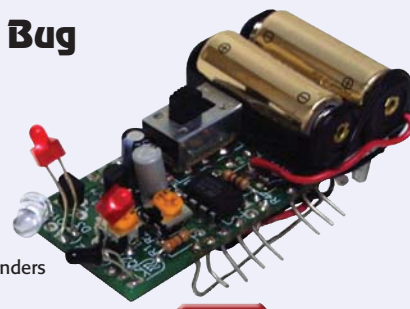
*THIS Bug Doesn't  
Eavesdrop...It Crawls!*

Built around a couple of subminiature vibrating cell phone motors, the bug wanders around looking for things to bump into!

Don't worry though, because sensors below his blinking eyes sense obstacles and make him turn away!

Likewise, you can steer him around with flashlights or laser pointers! Travel direction and pattern are customized with separate speed and sensitivity controls.

Runs on two "N" batteries (not included). Has two brilliant blinking red LEDs as "eyes". This is a fun kit that is guaranteed to keep you amused, at least until the batteries die or the dog kills it! *(The St. Bernard would probably try to make friends with it!)*

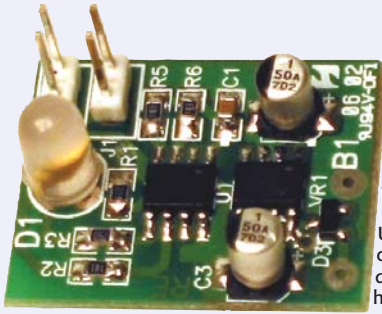


KIT

WEB1 Walking Electronic Bug Kit

\$29.95





**KIT**

### Learn SMT With The Latest Technology LEDs!

Don't let the old "blinky" name scare you away from this marvelous little kit! It was originally designed as a way to show off the latest technology in RGB (Red, Green, Blue) full color LEDs while providing kit builders with a fun and economical SMT practice kit.

Uses PWM methods to generate any color with a simple 8-pin microcontroller, and features switchable speed selection! The dual jumper control system tells the microprocessor what scanning speed is desired for a full cycle of 16,777,216 possible colors from the LED! It randomly selects different color scanning modes to wow any observer to the point of distraction. This little attention getter is fun to build and has loads of possible applications.

The SBRGB is a perfect attention getter for sales displays, name badges, and beanies. Operates from 6VDC to 12VDC and will run continuously on a standard 9V battery for several days! And if you're new to SMT technology, don't worry, we include extra SMT components to cover your mistakes! You may wonder why you would pay 30 bucks for a blinky kit... but wait till you see the LED smoothly change colors in front of your eyes! (Yes, there are over 16 million possible colors, but I didn't count them!)

SBRGB1

SMT Multi Color Microprocessor Blinky Kit

\$29.95

## High Intensity SMT Blinky

- ✓ Super bright SMT LEDs
- ✓ Subminiature board, perfect for displays
- ✓ Operates from 6 VDC with included cells
- ✓ Learn SMT the FUN WAY!

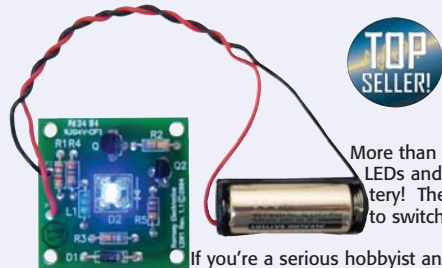
What can be said about a Surface Mount blinky kit? The BL2 is the revival of our classic BL1 blinky kit in a new, modern form! Yes, two LEDs that blink, just like our original blinky kit that has made us famous! This one, however, is subminiature and designed with SMT components! Why, you ask? Besides the obvious, a really neat, super bright attention grabbing display, there's no better way to learn how to work with SMT components! Don't worry, we even include spare SMT chips for when you goof up!

When complete, the BL2 provides alternating super bright red and blue LEDs. Runs on 6VDC and includes two LR55 button cells and a cell holder to mount on the backside of the board. It's one complete unit! If you don't want SMT LEDs you can also use regular T1 3/4 LEDs (included). If you want to learn what SMT is all about, the BL2 is for you! While you're at it, you might want to check out the magnifiers in our tools section, you'll need them! (You'll definitely want to keep your reading glasses handy when you build this one!)

BL2

High Intensity SMT Blinky Kit

\$17.95



**TOP  
SELLER!**

### See... It IS Possible... And Learn How!

More than 30 years ago we came out with our ever famous BL1 Blinky kit. Thousands and thousands were built teaching people exactly how LEDs and transistor circuits work. Now we're going one step further! The LSW1 will show you how to light a 3V LED with a single 1.5V battery! The circuit is actually a very unique "switching power supply" which steps up the 1.5V battery voltage to around 5VDC! If you're new to switching power supplies this is the perfect little kit to get your feet wet!

If you're a serious hobbyist and want to see the neatest little circuit then you're in for a treat too! When you're all done you end up with a super bright Blue Telux™ LED running on 1.5V! But it doesn't blink you say? Sure it does... just at 140kHz! Requires a single AA battery (not included). Board measures 1.5" x 1.5".

LSW1

LED Switcher Blinky Kit

\$14.95

## LED Red Blinky

- ✓ Tweak a child's interest!
- ✓ Perfect 1st learning kit!
- ✓ Thousands and thousands sold!

### Great Starter Kit!

Alternately flashes two jumbo red LEDs. This is the kit you've seen on name badges, buttons, hats, and toys, but there's more to it than that! Add a couple of relays and Christmas light strings and you've got yourself a super light chaser just like the theater marquee. Add a zener diode and make an attention getting overvoltage warning light!

Runs on 3-9 VDC, typically a 9V battery (not included). Used throughout the world as the first learning kit for students young and old. Measures 1" square.

BL1

LED Red Blinky Kit

**KIT**

\$7.95

## SMT LED Smiley Face

- ✓ Alternating flashing SMT LEDs!
- ✓ Can be worn as a pendant!

### Smile...And Learn SMT!

Build this little attention grabber and learn about SMT at the same time! Measuring only 1" this smiley face can be worn as a pendant or just as a conversation piece. And don't worry about losing or damaging the parts, as we give you extras! Requires a 3V Lithium Ion button cell. Measures 1.1" x .3". From Velleman.

MK141 SMT LED Smiley Face Kit

**KIT**

\$9.95



## LED Flickering Tea Lights

- ✓ Simulates a flickering candle!
- ✓ Set of two!

**Wired & Tested**

### Sit Back And Relax To The Flicker!

These little lights simulate the pleasing effect of a flickering candle, but without the smoke, flame, or hot candle wax on your fingers!

They are powered by one Lithium 2032 button cell that's included with the lights. Measure 1.42" x 1.18". Assembled and ready to go. From Velleman. (Recommended for indoor use, not because of the wind outdoors, but because you won't see them in bright sunlight!)

XMCL3 LED Flickering Tea Light, Factory Assembled

\$2.95



## Dual Super Bright LED Display

- ✓ 2 super bright red LEDs!
- ✓ Auto-on at dark!
- ✓ Adjustable sensitivity!

### Grab Their Attention Automatically At Night!

This little kit alternately flashes two super bright red LEDs that are extremely "attention getting"! But it goes beyond that. If desired, a built-in light sensor automatically turns it on at night and off at dawn.

Light sensor is adjustable. Runs on a standard 9V battery or external 9-15VDC power. Measures 2.2" x 1.3" x 1.6". From Velleman.

MK148 Dual Super Bright LED Kit

**KIT**

\$8.95



## Blinky-Eyes Animated LED Display

KIT

- ✓ Blinking Eye display of 66 super bright LEDs!
- ✓ Microprocessor controlled
- ✓ Changes brightness with ambient light levels
- ✓ Animated with constant motion!

*A Real Eye Catcher!*

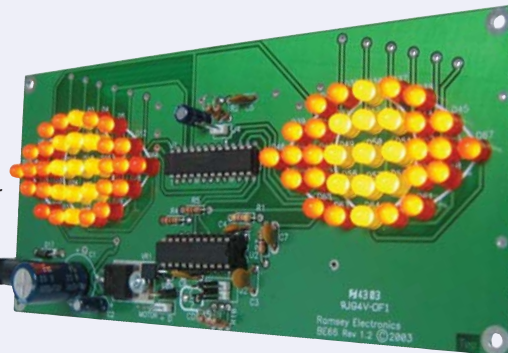
The ultimate animated LED kit that will dazzle you and delight your friends! Uses a microcontroller to randomly select from many different animations such as a long pause before a wink or a twinkle of the eye to startle passers-by. Great for Halloween applications.

Four animation modes: 1. Off for long random periods, then blinks or winks. Designed to scare! 2. On for long periods before performing an animation, perfect for costumes and displays! 3. Animates all the time for constant motion, perfect display attention-getter. 4. Random fire! When placed in a pumpkin, will light the pumpkin like there is a fire within! Truly awesome!

As if all that weren't enough, the BE66 can also control a small hobby motor to shake bushes at random intervals or signal an external player to make a scary sound! Also has a CDS cell to control various modes of automatic light control. Runs on 9-20VDC or optional AC power supply. (No boring twinkle kit here! You have to see it to believe it! If anything will grab your attention, this will!)

BE66 Blinky-Eyes Animated Display Kit  
AC125 110VAC Power Supply

\$59.95  
\$9.95



## Mini LED Light Chaser

- ✓ 6 bright red LEDs!
- ✓ Sequentially flash in order!
- ✓ Great attention grabber!
- ✓ Runs on standard 9V battery!

TOP SELLER!

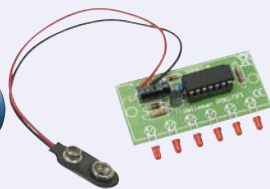
*Just Like Those Classic Turn Signals!*

The K8032 gave us a high level output to sequentially flash incandescent lights but what if you just want a small attention getter to do the same with LEDs? We've got you covered! Remember the sequential flashing turn signals on the classic T-Birds and Cougars? Hey, if you can remember KITT you can also remember these! This little kit flashes 6 high intensity 3mm red LEDs sequentially in order. Great small attention getter for signs in stores, exhibitions, model R/C cars, and a whole lot more. Get flashing with the MK173. (Just like Ritchie's award winning classic T-Bird... What a beauty!)

MK173 Mini LED Light Chaser Kit

KIT

\$15.95



## LED Animated Chevron

- ✓ 28 LEDs create a great animation!
- ✓ Adjustable speed!
- ✓ 10 different animation speeds!
- ✓ Includes front panel faceplate!

*Hey You... Look This Way!*

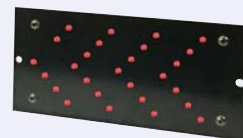
This animated chevron-type arrow display uses 28 bright red LEDs to display a variety of different animations. Rolling, scrolling, inverse scrolling, blinking, partial blinking and more! The choice of animation and the speed can be easily selected from the front panel, and built-in memory stores your choices even when the power is off. A cool way for businesses to highlight sales, etc., use as a pointer to emergency exits, or just as a great attention getter!

Also useful for auto safety applications - tell 'em to move over! You can power it either with an external supply, or use a standard 9V battery for extra versatility. Dimensions: 2.5" x 5.12" x 0.63" From Velleman.

MK176 LED Animated Chevron Kit

KIT

\$22.95



## LED Traffic Signal

- ✓ 4-way traffic signal!
- ✓ Automatic switching!
- ✓ Adjustable delay!

TOP SELLER!

*Sure To Stop The Traffic!*

Impress your friends by building a really neat, simulated 4-way traffic signal light! Bright red, green, and yellow LEDs are positioned just like a 4-way signal and automatically sequence. Adjustable timing allows you to change the delay, something we all wish we could do on the road! Runs on a standard 9V battery (not included) and draws only 15mA for long life. Perfect for model railroads, models, and any hobbyists that just want to build something really neat! Measures 2" x 1.4" x 4.5". From Velleman.

MK131 LED Traffic Signal Kit

KIT

\$7.95



## LED Animated Smiley

- ✓ Choose from 9 expressions to suit any mood!
- ✓ Static and animated expressions!
- ✓ Auto power-off saves battery life

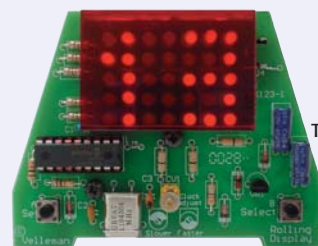
*Hey You... Look This Way!*

This cute little smiley toy is the perfect desk companion! Let everyone know how you're feeling with one of 9 different brightly-lit cartoon faces! You can choose between any of the static expressions, or animate them for a dynamic display. This kit is powered by 3x standard AAA batteries. Dimensions: 3" x 3" x 1.28" From Velleman.

MK175 LED Animated Smiley Kit

KIT

\$19.95



KIT

*Put The Clock In Motion...  
Scroll The Date & Time!*

This scrolling timepiece shows the date and time in alpha numeric characters in a smooth rolling animated display. A typical display would be "Jun-23 12:57".

No external editor is needed to set the date/time. Just select hours, minutes, month or day with the "select" key and enter the values with the "set" key. Time is set in the 24 hour mode and displayed in the 12 hour mode. Runs on 9-12VDC and uses a Type 6LR61/6F22 backup battery if required. Measures 1.8" x 3.5" x 2.6". From Velleman.

MK123

Rolling Clock Display Kit

\$16.95

## Rolling Message Display

KIT

- ✓ 35 LED display!
- ✓ 16 character message
- ✓ Adjustable speed

*Scroll Your Message!*

Create your own scrolling or rolling message with this high visibility LED display! Contains 35 brilliant LEDs to light up each character of your custom message, which can be up to 16 characters.

Built-in message editor is simple to use. Press "set" to change a character, then use the "up/down" key to select the character and end with the "<" key. Includes a standby/run mode to restart the display. Runs on 9-12VDC and uses a Type 6LR61/6F22 backup battery if required. Measures 1.8" x 3.5" x 2.6". From Velleman.

MK124

Rolling Message Display Kit

\$16.95





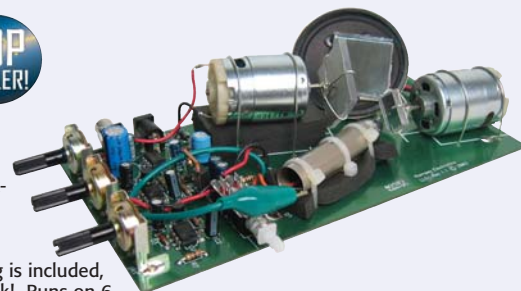


## Laser Light Show

- ✓ Audio input modulates pattern!
- ✓ Adjustable pattern and speed
- ✓ Projects neat motorized patterns



*True Laser Beam Patterns...  
With Audio Modulation!*



You've probably seen a laser show at concerts or on TV. They're pretty impressive to say the least! Knowing that you can't afford a professional laser display we challenged our engineers to design one that's neat and easy to build, yet inexpensive. The result? The LLS1 Laser Light Show! This thing is sweet! It utilizes two small motors and a small standard laser pointer as the basics. Then we gave it variable pattern and speed controls to customize the pattern!

Not enough, you say? How about a line level audio input to modulate the pattern with your music? You bet! Everything is included, even the small laser pointer. And to make the kit absolutely safe we used plastic mirrors instead of glass that could break! Runs on 6-15VDC or our standard 12VDC AC Adapter (not included). If you're looking for a fun and neat little laser kit, the LLS1 is for you! *(Goes well with the CD playing on the front cover!)*

LLS1  
AC125  
**Laser Light Show Kit  
110VAC Power Supply**

**\$49.95  
\$9.95**



*Dance To the Beat!*

Everyone has seen Xenon strobes "stop" a spinning quarter or flash to music. Now you can get the same effect without the expense and hassle of high voltage Xenon tubes! That's right, a strobe without a Xenon flash tube to break! The price of super bright LEDs keeps falling as their light output keeps increasing, making them affordable for everything from traffic signals to vehicle tail lights... and now, flashing strobe lights!

A plug-in 3x3 array of super bright Telux™ LEDs creates a brilliant, sharp flash similar to a Xenon flash tube. The LEDs can also be mounted directly on the main PC Board if desired. In the standard flash mode, a variable rate control varies the flash frequency from approx. 1 to 220 flashes per second. In the audio sync mode, the flash is triggered by any audio input you provide into the standard RCA audio input connector. Built-in low and high pass filters allow you to select either bass or treble music triggering! An external trigger in/out connector lets you connect multiple units together for simultaneous flash.

Optional plug-in display boards with 8 or 20 LEDs are available for even more strobing power! Just imagine surrounding your room with a few of these, triggered to your stereo! Runs on 12-15 VDC and unlike the high voltage Xenon strobes of the past, the LEDS1 is safe for the kids to build! The plug-in display boards may be mounted on top of the case, or remotely located. Be one of the first to experience the new high output LEDs! *(No, an 8-track of disco music and a leisure suit aren't included with this kit!)*

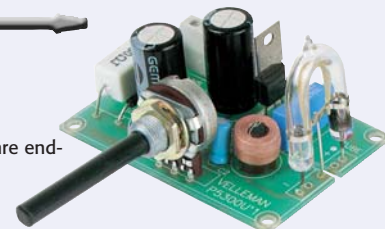
LEDS1C  
LEDS8  
LEDS20  
AC125  
**High Power LED Strobe Light Kit With Case  
Display Board, Inline Array Of 8 LEDs  
Display Board, 5x4 Array Of 20 LEDs  
110VAC Power Supply**

**\$49.95  
\$17.95  
\$29.95  
\$9.95**

## Xenon Tube Strobe Light

- ✓ Ultra bright Xenon flash tube!
- ✓ Adjustable flash rate!
- ✓ Runs on 110-120VAC

*Oh No... We're Back To The 70's!*



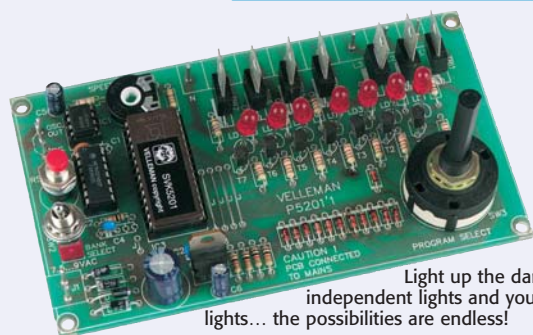
Light up the dance floor, create lightning effects for Halloween, or pretend like you're in a silent film from the 1920s! The possibilities are endless with this compact and easy-to-build strobe kit. All you need is the disco ball, a place to hang it, and some old 8 track tapes!

This kit reminds me of my early Popular Electronics kit days in high school! Yep, one of the projects was a Xenon tube strobe kit and I built it... to go with my polyester leisure suit, paisley shirt, and white shoes! Decades later, these strobes are as popular as ever!

Simple board construction includes a variable flash rate control from 2-20 flashes per second. Runs on standard 110-120VAC. From Velleman. *(Do I still have the leisure suit? No... but it's probably still at the Salvation Army where I last left it!)*

K5300  
K2601  
**Xenon Tube Strobe Kit, 110-120VAC  
Xenon Tube Strobe Kit, 220-240VAC**

**\$19.95  
\$21.95**



*Let There Be Lights!*

## Light Computer Control Module

- ✓ Sixteen different patterns
- ✓ Seven outputs
- ✓ Adjustable speed
- ✓ External oscillator output
- ✓ Daisy-chainable
- ✓ Special two-unit link mode for 14-channel operation
- ✓ Pattern indication via LEDs

Light up the dance floor at a club or brighten up any party with this light control computer module. It's got outputs to control seven independent lights and you can choose from sixteen different programmed patterns! Clubs, parties, advertisements, sign installations, Christmas lights... the possibilities are endless!

The circuit is designed so that once installed, it can easily be controlled from the front panel. You also get on-unit visual feedback with the built-in status LEDs. If you need to control more than seven lights, no problem! The K5201 can be operated in a unique dual-unit mode specially designed to make two modules operate as one, and for additional flexibility an unlimited number of units can be daisy-chained for synchronous operation!

Note, this controller is for use with resistive loads such as regular incandescent light bulbs. Not for use with transformer operated or fluorescent lighting. Dimensions: 5.3" x 3.1". From Velleman.

K5201  
**Light Computer Control Module**

**\$59.95**



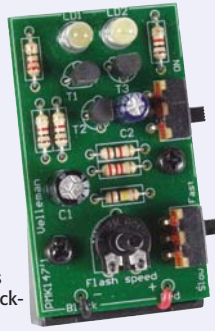
## LED Dual White Strobe

- ✓ 2 super bright white LEDs!
- ✓ Powerful flash effect!
- ✓ Adjustable speed!
- ✓ Includes front panel faceplate!

### OK, You Got My Attention!

This adjustable-speed strobe is great for parties, projects, as attention grabbers, and a whole lot more! The awesome strobe effect is achieved with super-bright LEDs, and you can control the speed of the flashing anywhere from 1-60 flashes per second! Besides an attention getter it makes a great "pocket strobe" to observe moving parts and rotating machinery.

Also features a toggle to switch quickly between fast/slow flashing. Powered by a standard 9V battery (not included). Measures 2.2" x 1.3" x 1.6". From Velleman.



MK147 LED Dual White Strobe Kit

**KIT**

\$10.95

## High Power LED Driver

- ✓ High efficiency switch-mode circuit!
- ✓ Drives the latest high power LEDs!
- ✓ Short circuit protection!
- ✓ Compact size fits any project

### Use Them... The Costs Came Down!

High-power LEDs are quickly finding their way into the mainstream thanks to their ever-lowering cost and high-reliability. Get some into your projects easily with this compact and efficient driver! It may be small, but it features short circuit protection, a built-in rectifier for easy AC source connection, and will deliver the accurate constant current needed to drive high-power LEDs correctly! Use it at home, for a club, on a stage, in education, architectural lighting, science projects, etc... This versatile circuit can even double as a fixed current NiCd/NiMH battery charger!

Delivers 350mA or 700mA at a constant current. Input voltage 6-12VAC or 9-18VDC. Power consumption 650mA max. Measures 1.8" x 1.2" x .64". From Velleman.



K8071 High Power LED Driver Kit

**KIT**

\$14.95



MK155

LED Magic Wand Kit

**KIT**

## LED Magic Message Wand

- ✓ Message floats in air!
- ✓ Fun at concerts, events
- ✓ High visibility red LEDs

This is as close as it comes to a "Magic Wand"! Shake it back and forth and brilliant messages seem to appear in mid-air! Six high intensity LEDs are microprocessor controlled to display messages and graphics that are pre-programmed into the wand.

You can also custom program a message of your choice! From amazing your friends, to making a statement at a concert or simply telling your loved one how you feel, the message wand can't be beat! Runs on two AAA batteries (not included), and the auto power off circuit gives you long battery life. Measures 6.4" x 1" x .9". From Velleman. *(I tried to program it to say "I'm tired of writing catalog copy" but it was too many digits!)*

\$12.95

## Music Lights Controller

- ✓ Controls 3 channels of lights!
- ✓ Plug in your standard 110V lights
- ✓ Different lights flicker to different tone ranges of your audio
- ✓ Easy to connect, just plug in the lights
- ✓ Runs on 110VAC!

### Create A Dazzling Display Of Light!

See your music come alive and set the mood with our infamous music lights kit! This sweet little kit controls up to three separate incandescent light circuits to make them timed directly by the tonal qualities of your music. Set one channel output to respond to the bass beat or "lows" and really kick into the mood with some floods or spots. Set the "Mids" to control ambient lights and the highs to control some secondary lights. Turn your music on and have a party!

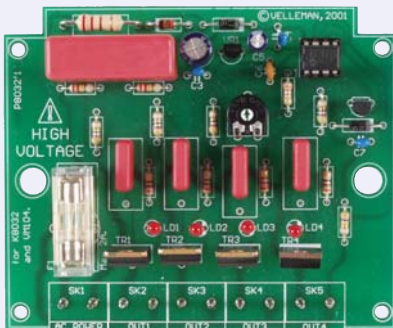
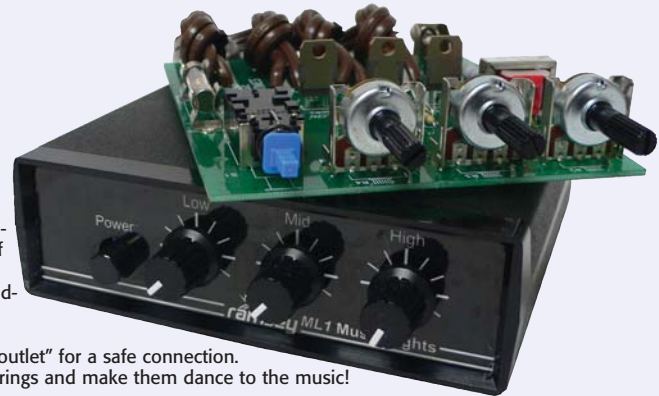
Input is a standard 110VAC plug, and each output is connected to a standard consumer "extension cord outlet" for a safe connection. Each channel load can be a maximum of 300 watts, and that's a lot of light! Plug in your holiday light strings and make them dance to the music! Plug in some strip lights around your room, set the controls and "crank'er up"!

The kit includes a custom case/knob set to give you a great finished look to match your stereo equipment. Can only be used with incandescent bulbs and fixtures, and cannot be used with high efficiency replacements, CFL's, fluorescents, or other non-standard lights. The case size 5"W x 11/2"H x 51/4"D. *(Music lights, polyester leisure suits, and paisley shirts, they were all the rage!)*

ML1C

Music Lights Display Controller, 110VAC

\$59.95



**KIT**

### Run Light, Run!

This neat little running light kit will power four incandescent lighting loads in sequence, so that the light appears to "travel" back and forth (just think of the red lights on the hood of KITT from Knight Rider... the original series of course, not the new one, ugh!).

Use it for a flashy light display on the dance floor or hypnotize unsuspecting victims with its rhythmic display! Speed is adjustable between 0.2Hz and 3.0Hz. to provide the light pattern you desire. Maximum load per channel is a whopping 450W at 240VAC and 230W at 115VAC.

Input AC power is 110-240VAC depending on your output requirement. So it's compatible with standard US households as well as European mains and commercial 208/220/230/240 sources and lighting.

On-board LED indicators show the actual output lighting display. Board measures 3.9" x 3.2" x 1.4" From Velleman. *(Yikes, I remember KITT, watched it every week, maybe that's why all my cars are black! Now he stars in weird videos involving cheesburgers!)*

K8032

4-Channel Running Light Kit

\$38.95



KITT!





## Classic Nixie Tube Clocks

- ✓ .7" bright orange Nixie display
- ✓ Soft fade display!
- ✓ 12 or 24 hour format!
- ✓ Top face or side face Nixie tubes
- ✓ Today's technology with yesterday's display!
- ✓ The ultimate conversation piece!
- ✓ Unique and attractive case designs

**KIT** **Wired & Tested**

*It's Time To Go Back In Time...  
With Time!*



IN14TM



IN12AL

### THE HISTORY

The Nixie tube made its debut in 1954 and quickly found its way as a digital display in high end test equipment, frequency counters, military applications and research projects. Soon they were used as the very first electronic digital display in consumer products like calculators, and the very first digital clocks. For those that were there, who could forget that warm golden glow of digital numbers changing before your eyes!

In the early 70's, seven segment vacuum fluorescent displays quickly replaced the Nixie because they did not require the complex cathode structure and also provided higher resolution graphics. As technology grew, vacuum fluorescent displays were quickly replaced with LED displays because they were much smaller, less fragile, had lower power consumption, and could rival the brightness and intensity of VCDs. Not requiring high voltage, LED seven segment displays quickly became the standard display for virtually all digital display products. Subminiature versions even found their way into the early Pulsar wristwatches!

Ironically, Ramsey Electronics started up in the early 70's and one of our first products was a neat and very high tech 7 segment LED clock kit in a nice extruded aluminum housing. It became extremely popular and we became famous for bringing state-of-the-art IC driven LED display technology to the hobbyist! Now, more than three decades later, we are proud to bring not only a piece of history, but a piece of Ramsey history back to the hobbyist... The Nixie Tube Digital Clocks!

### RETRO AT ITS FINEST!

Designed to pay homage to the era which birthed the Nixie, these clocks won't pick up radio stations, won't dock your iPod, and certainly won't play CDs. They won't even wake you up in the morning! But what they will do is display the time, beautifully and simply, like no other clock today can! Once utilized for military and high-end test equipment, Nixies are now prized for their modern aesthetics. The warm neon glow of a Nixie clock adds a cool retro touch to any office, home or work area.

Since their "demise", Nixie tubes haven't been manufactured domestically for decades. However they were still being manufactured in high volume in the mid 80's in the former Soviet Union. These Nixie tubes are the only ones readily available today and are the tubes used in the clocks. These space-race era Russian manufactured tubes also feature a great conversation starter... the number "5" is an upside down "2" reflecting an efficient and cost effective design philosophy from the cold war superpower! Both unexpected, effective, and thought provoking!

### THE CLOCKS

**IN14TM** Features six IN14 Nixie tubes mounted in a beautiful hand crafted Teak and Maple base. The base finish is hand rubbed varnish and linseed oil. The Hours, Minutes, and Seconds are separated by an NE2 Neon bulb matching the era of the clock. Advanced features include brightness control and auto-dim. From the two setting buttons you can increase or decrease the brightness of the Nixies from 0 (off) to 10 (full brightness). You can also set the clock to lower the brightness between two specified hours in the day (such as 08 to 17 when you are not home) to extend tube life or to customize your display for nighttime use. The IN14 is powered by a provided 110VAC to 12VDC power supply, and utilizes a crystal oscillator for the time base that is accurate to 20ppm. A simple calibration procedure can achieve an accuracy even better than 10ppm! The IN14 can be used overseas with the optional SPS15U power supply. It can also be used with a 12VDC source. Measures 8.25"W x 3"H x 4"D.

**IN12AL** Features six IN12 Nixie tubes mounted in an attractive aluminum housing with black bevels to match any modern desk decor. Dual rear buttons set the time and select your choice of 12 or 24 hour mode. The clock runs on 120VAC, 60Hz. It uses the 60Hz line frequency as the time base, so it cannot be used outside domestic 120VAC/60Hz power sources. Measures 6.5"W x 3"H x 1.75"D.

Both clocks perfectly mesh today's technology with the Nixie era technology of the 60's. The brain of the clock is the MicroChip PIC16FXXX PIC series micro-controller which controls all functions of the clock. The Nixie tube display is driven with a surface mount (SMT) Supertex HV5522 high voltage serial to parallel converter. From there, either "top face" IN12 or conventional "side tube face" IN14 Nixies are used. Both feature a very unique soft fade display for an incredibly smooth transition as the numbers change. They also support 12 or 24 hour display format.

### WHAT IS A NIXIE TUBE?

The Nixie tube is a cold-cathode tube filled with neon gas and equipped with a wire mesh anode and multiple cathodes in the shape of numerals. Applying power to one of the cathodes creates the characteristic and appealing soft orange glow. Although the technology was pioneered in the early 20th century, nixie display tubes weren't brought to market commercially until 1954 by the Burroughs Corporation. The name "Nixie" was derived by Burroughs from "NIX I", an abbreviation of "Numeric Indicator eXperimental No. 1".

Nixie tubes were always designed to have an extended life. It is not uncommon to expect a tube life of 5 years or more. The new Russian Nixie tubes used in these clocks are hand selected and tested for brightness, flaws, and irregularities. They are warranted against failure (not breakage!) for 30 days. If a tube in a new clock fails within 30 days, send us the clock and we will replace it free of charge. Replacement tubes are available with clock purchase, see below for terms. (Note, they are not plug-in like miniature vacuum tubes, soldering/desoldering is required). Beyond the tubes, our standard product warranty applies.

### THE ULTIMATE CONVERSATION PIECE!

Show your nostalgic fondness for yesterday's technology with a Nixie tube clock. It is rather ironic that in their heyday the use of Nixies was considered too expensive for consumer products like clocks, and here we are today! The unmistakable soft orange glow and the remarkable fade display feature in an incredibly beautiful hand rubbed teak and maple base! Then there's the discussion of Russian tubes made during the cold war, with an upside down "2" as a "5"... It just doesn't get any better than that! Get on the retro bandwagon with your very own Nixie classic clock! (*My first frequency counter had Nixie tubes, it was so cool... at the time!*)

### SEE IT IN ACTION!

If you want to see these clocks in action, visit [www.ramseykits.com/nixie](http://www.ramseykits.com/nixie). You will see that warm golden glow of digital numbers changing before your eyes!



IN14TM	Nixie Tube Clock, IN14 Tubes, Teak Maple Base, Kit	\$329.95
IN14TMWT	Nixie Tube Clock, IN14 Tubes, Teak Maple Base, Factory Assembled & Tested	\$369.95
IN12AL	Nixie Tube Clock, IN12 Tubes, Aluminum, Kit	\$169.95
IN12ALWT	Nixie Tube Clock, IN12 Tubes, Aluminum, Factory Assembled & Tested	\$209.95
SPS15U	Optional Switching Power Supply For IN14TM, 80-280VAC, (Required For International Use Only)	\$29.95
IN12	IN12 Spare/Replacement Nixie Tube *	\$9.95
IN126	IN12 Spare/Replacement Nixie Tube, Six Pack *	\$54.95
IN14	IN14 Spare/Replacement Nixie Tube *	\$9.95
IN146	IN14 Spare/Replacement Nixie Tube, Six Pack *	\$54.95

\* Spare Nixie tubes are only available with the purchase of a clock or within 1 year of a purchase (there are only so many!)



## Compact Nixie Tube Clock

- ✓ Microprocessor controlled!
- ✓ 12 or 14 hour selectable display mode!
- ✓ Tube blanking option!
- ✓ Stylish enclosures available

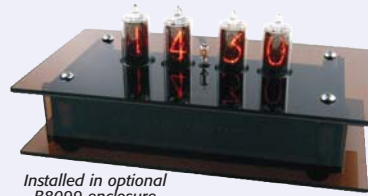
### The Little Brother To Our Classic Nixie Clocks!

This 4 digit Nixie tube clock is the perfect "little brother" to our classic clock on the previous page. If you're not familiar with Nixie tubes or their history, check it out on the previous page. In short, while once the standard for digital displays, they have since (and since meaning a long time ago!) been replaced by LED, LCD, and Vacuum Fluorescent displays. Nixie tubes were considered cold cathode tubes filled with neon gas with a wire mesh anode and a set of very intricate cathodes in the shape each of the numerals to be displayed.

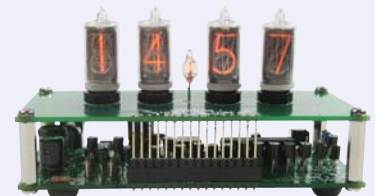
This little clock uses 4 Siemens ZM series nixie tubes that measure approximately a 1/2" in diameter by 1 3/4" high. The hour/minute separator is a classic NE2 style neon bulb. The clock features 12/24 hour selectable operation, and leading zero suppression. The tubes mount in a unique double set of boards that can be easily integrated into your own enclosure or equipment. Unlike today's digital displays that run on a few volts, these Nixie tubes have an anode voltage of 180VDC, and the clock should not be displayed turned on without a suitable enclosure! Ouch! The clock assembly measures 4.33" x 2.16" x 2.36".

A custom designed optional dark tinted plexiglass enclosure for a futuristic look (5.12" x 2.95" x 1.37") is available as shown. This would certainly be an attention getter at anyone's home theatre shelf, desk, or table! Runs on 9-12VAC at 300mA or the optional AC power supply below.

K8099	Compact Nixie Tube Clock Kit	\$139.95
B8099	Plexiglass Clock Enclosure	\$46.95
PWR25	110VAC to 12VAC, 500mA Power Adapter	\$12.95
ZM1336K	Replacement Nixie tube for K8099 Clock Kit (Subject to availability, they don't come easy!)	\$19.95



Installed in optional B8099 enclosure



MK151  
AC125

LED Digital Clock Kit  
110 VAC Power Supply



### Digital Clock Kits Are Back!

Not your everyday clock kit! This digital clock kit features red 7 segment LED displays in a modern attractive case. Automatic time-base selection gives you the option of internal or line-frequency controlled 50/60 Hz.

Internal timebase has a fine tuning adjustment for precision time keeping. It can also be set for either 12 or 24 hour mode and features battery backup (3 AA batteries, not included) in case of a power failure. Runs on 9V AC or DC. Order our AC125 power supply. Comes complete with the custom designed case to give your clock a great finished look. From Velleman.

## LED Digital Clock

- ✓ Automatic timebase selection!
- ✓ 12/24 hour mode
- ✓ Battery backup

\$29.95  
\$9.95

## Jumbo Multifunction Digital Clock

- ✓ Four huge red 7-segment displays
- ✓ Optional temperature sensor available
- ✓ Displays time, temperature, and OPEN/CLOSED
- ✓ Choose between 12 or 24 Hour Time, Celsius or Fahrenheit
- ✓ Enclosure included
- ✓ Battery Backup



### Bright and Bold Time and Temperature!

The Jumbo Single Digit Clock below has always been a fun kit for those looking for a quirky clock, but what if you want the whole clock!? Well we finally have the answer! This kit combines four of the jumbo seven-segment displays below into one giant display perfect for offices, computer rooms, and shop windows! Not only does it display the time in your choice of either 12 hour or 24 hour formats, it can also display temperature in Fahrenheit or Celsius! A bonus mode cycles automatically between your choice of time, temperature and OPEN or CLOSED ("CLOSED" scrolls across the display) or a combination of the three. Easy-to-use controls let you set the time and switch modes. You can even put the OPEN/CLOSED switch in a remote location so you can toggle easily from the other side of your shop! And it even has a secret bonus feature: hold down the "HOUR" button and apply power and it will display the AC frequency of your power grid! The entire clock is ready for easy wall-mounting and measures 9" W x 2.9" H x 1.26" D. From Velleman.

K8089	Jumbo Multifunction Digital Clock Kit	\$84.95
K8067	Temperature Sensor (Kit)	\$19.95
VM132	Temperature Sensor (Assembled)	\$24.95
AC125	110VAC Power Adapter	\$9.95



### The Most Unique Clock You'll Find! But Don't Take Your Eyes Off It!

Now THIS is the ultimate gadget digital clock for the electronic enthusiast! It's just one single digit... but it's a big one! A huge bright red 57mm, 7-segment display brightly displays complete 12-hour time format in a sequence of digits... one digit at a time! And for those that don't know how large a 57mm 7-segment display is, the numeral itself measures 2.25" W x 1.6" H! This clock will definitely be a conversation piece!

But you don't just get a large 7-segment display with some parts on the back of it. The display is mounted in a dark attractive hi-tech enclosure that features a single button to control all the features of the clock! It also includes a "blank display" dark mode. Built-in clock accuracy is 30ppm. Runs on 9-12VDC at 150mA. Finished case measures 2.9" x 2.3" x 1.3". From Velleman. (One, Two, Three, Four... Only you will know the time is 12:34!)

MK153 Jumbo Single Digit Clock Kit

\$26.95

## Jumbo Single Digit Clock

- ✓ One giant red 7-segment display!
- ✓ One button operation!
- ✓ Time is displayed as a sequence of digits!
- ✓ The ultimate gadget!
- ✓ Includes the hi-tech looking enclosure!
- ✓ Dark mode





## Electronic Siren

- ✓ Just like the police cars!
- ✓ 5W audio output!

*Here Come The Cops!*

The SM3 has been one of our most popular mini-kits for decades! It's a great starter kit, and the feeling of achievement is great when you connect a battery and speaker, push the button and hear an electronic police siren!

This little circuit exactly duplicates the upward and downward wail of an electronic police siren. A closure (typically a push button) generates the upward wail, releasing the switch makes it return downward.

Powerful 5 watt audio output drives any speaker but a "horn" type speaker provides the loudest results. Runs on 6-12 VDC, typically a small 9V battery. Great little kit to build into your projects or as a stand-alone fun generating siren!

SM3 Electronic Siren Kit

\$7.95

## Digital Voice Changer

- ✓ Alter your natural voice!
- ✓ Hi pitch, low pitch, vibrato, etc!
- ✓ Built-in microphone!
- ✓ Great for parties!

*You Aren't Who You Are!*

This voice changer kit is a riot! Just like the expensive units you hear the DJ's use, it changes your voice with a multitude of effects! You can sound just like a robot, you can change the pitch of your voice variably from low to high. For even more effect, add vibrato to your voice! Great for parties, recordings, bands, and the ever popular prank phone calls! Not that we endorse those incredibly funny prank phone call CD's, TV shows, and DVD's! Speaker output provides a powerful 1.5W output at 4 ohms. A line output is also provided to interface into your audio equipment... or telephone coupler! Runs on a standard 9V battery (not included). Board measures 3" x 1.8". From Velleman (*No, I only have all those CD's and DVD's for research purposes!*)

MK171 Voice Changer Kit

\$14.95

## Siren Sound Effects Generator

- ✓ Generates 4 separate sounds!
- ✓ Includes on/off switch!
- ✓ Includes PC mounted speaker!
- ✓ Runs on a standard 9V battery!

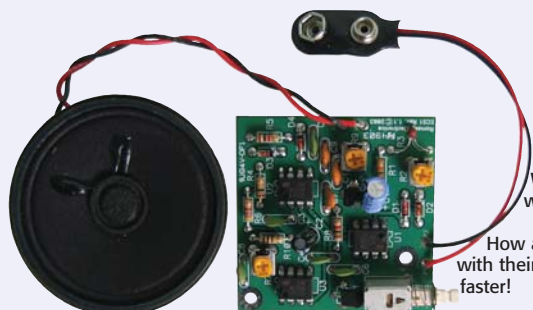
*This Little Kit Is A Riot!*

This fun little sound generator is more than a siren. Once assembled you can create your choice of 4 different sound effects: Police siren, fire brigade, emergency vehicle, and laser gun! Use the laser gun to go on a rampage and then just call in the police and fire vehicles to clean up your mess! Wow, how's that for catalog writing imagination!?

Variable pitch control allows you to customize the sound! Built-in PC board mounted speaker makes this kit ready to go when you're done. Runs on a standard 9V battery (not included). Measures 2.4" x 1.6". From Velleman. (*Did I say imagination?!*)

MK113 Siren Sound Effects Kit

\$12.95



**KIT**

*Doesn't Crawl...  
Just As Annoying!*

With the incredible popularity of the "Electronic Dripping Faucet" kit (EDF1, page 18) we figured we had to come up with something equally unique! Well, this one is unique... to say the least!

How about an electronic cricket? Sounds just like those little black critters that seem to come from nowhere and annoy you with their chirp-chirp! And just like the little critters, we made it sensitive to temperature so when it gets warmer, it chirps faster!

That's right, you can even figure out the temperature by the number of chirps it generates! Just count the number of chirps over a 15 second interval, add 40, and you have the temperature in degrees Fahrenheit! Not as fancy as a digital thermometer but much more unique! And unlike its little black predecessor, the ECS1 operates from around 50°F to 90°F! I don't think there are too many real crickets chirping away at 90°F! A unique thermistor circuit drives a few 555 ICs providing a variable chirp that is guaranteed to annoy everyone around you! But just watch their faces when you tell them the temperature outside!

Runs on 9-12VDC or a standard 9V battery (not included). Includes everything shown, including the speaker and battery clip, to make your cricket project a breeze. (*If it drives you nuts you probably can squish it under your foot to make it stop... but that voids the warranty!*)

ECS1 Electronic Cricket Sensor Kit

\$24.95

## Effects Sound Generator

- ✓ 10 different sound effects!
- ✓ Speaker and line level outputs!
- ✓ 1 watt audio output
- ✓ Runs on 8-10VDC

*Annoy Your Enemies, Amuse Your Friends!*

This pocket-sized kit is a great attention-getter! Just attach to any speaker and select from any of the following sound effects: machine gun, European siren, "phaser" gun, racing car with motor howl, screeching car tires on a curve, explosion, machine gun fire followed by explosion, "wild charge tune," "snake charmers tune," and a US siren! Ideal for DJs, parties, etc.

Powerful 1 watt output drives any speaker and line level output feeds any standard amplifier aux input. Runs on 8-10VDC or a standard 9V battery. From Velleman. Kids love this kit. (*A little more than their parents do after it's completed and operating!*)

K4401 Special Effects Sound Generator Kit

\$29.95

## Pink Noise Generator

- ✓ Pseudo random digital noise!
- ✓ Adjustable from 30-100kHz!
- ✓ Optimize your acoustics
- ✓ Runs on 1-12VAC or 12-15VDC

*Think Pink!*

Pink noise is a great tool for testing and equalizing rooms (especially living/listening rooms) to make sure your sound system is giving you the best possible audio. Using this generator and a spectrum analyzer you can equalize your room to exacting specifications.

Why Pink noise? Unlike white noise, which has equal power per Hz, pink noise is filtered to give equal power per octave or per 1/3 octave. This means pink noise contains more of the frequencies that the human ear is attuned to, making it ideal for acoustic equalization! If desired this kit is easily modifiable to produce standard white noise as well. Dimensions: 2.8" x 1.7". From Velleman.

K4301 Pink Noise Generator Kit

\$19.95

## Electronic Metronome

- ✓ Audible and visual indication!
- ✓ Adjustable volume and BPM!
- ✓ Built-in speaker!
- ✓ Compact size!

*Keep Perfect Time!*

For centuries musicians have used metronomes to keep a standard tempo, but mechanical wind-up metronomes are bulky and require winding. On the flip side, newer pre-assembled electronic metronomes tend to be pricey and cluttered with unnecessary features. This kit is perfect for anyone looking for a simple, compact, and inexpensive metronome that they can build themselves! Features controls for volume and beats per minute. The PC mounted speaker gives you a pleasant timing beat and a board mounted LED gives you visual indication for the "silent mode" of operation. Runs on a standard 9V battery (not included). From Velleman.

MK106 Electronic Metronome Kit

\$10.95

## Electronic Chirping Cricket Sensor

- ✓ Chirps like a real cricket!
- ✓ Senses temperature and changes its chirp accordingly!
- ✓ You can actually determine the temperature and amaze your friends!

## Electronic Watch Dog

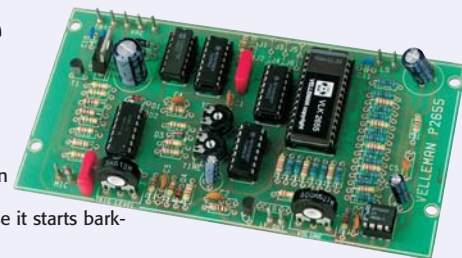
- ✓ A barking dog on a PC board!
- ✓ Two barking sounds!
- ✓ Automatic sound detection!
- ✓ Eats very little and never sleeps!

There are many times when it's nice to have a barking dog react to someone at your door or a strange noise in the house when you're gone, but not all of us can have a dog! The answer... the Electronic Watch Dog! This unique circuit generates two different sounds of barking dogs. You can select which "dog" you would like! Then when your electronic dog "hears" a strange noise it starts barking!

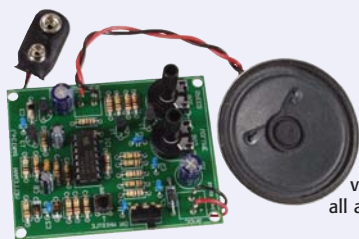
Unlike a real dog, the super sensitive microphone has adjustable sensitivity to control what activates it (I mean makes it bark!). The "dog" produces 2 watts audio output at 4 ohms. This dog doesn't eat dry or moist dog food, instead it eats 2-8VAC or 9-12VDC! And it's a little guy: only 5.6" x 3"! You can order the handy power supply below. If you're not building the doggie into your own case or application you can also order the custom case set below. From Velleman. *(I believe our real watchdog has a bit more than 2 watts output!)*

K2655 Electronic Watch Dog Kit  
WCAH2851 Matching Case Set  
AC125 110VAC Power Supply

*Automatically "Barks" At  
The Sound Of Noise!*



\$39.95  
\$6.95  
\$9.95



*Locomotive Breath!*

This cute little project authentically simulates the sound of a vintage steam engine locomotive and whistle! The unique design also provides variable "engine speed" as well as volume, and at the touch of a button the steam whistle blows! Includes a small 8 ohm speaker so all aboard when you're done building the kit!

Great for model railroads, sound effects for radio and stage, or just plain fooling around! Runs on a standard 9V battery (not included). Measures 3.9" x 3.3". From Velleman. *(Could have used this with my old original Lionel set that was given away and is now worth a fortune!)*

MK134 Steam Engine & Whistle Kit

\$11.95

## Electronic Multi-Tone Chime

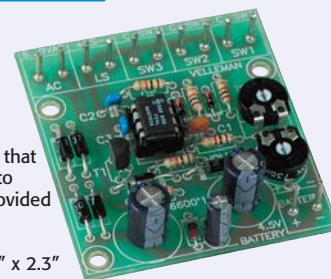
- ✓ 1, 2, or 3 tone selectable!
- ✓ Adjustable tone and volume!
- ✓ Uses batteries or doorbell supply!

*Replace That Old Bell!*

This electronic chime generates three different available chime tones which can be selected by individual switch closures. Perfect for replacing that old doorbell buzzer or bell. It can also handle three separate door sounds! The IC design provides a clean audio output of a third of a watt into any standard 8 ohm speaker (not included). The circuit runs on 4.5VDC (three 1.5V batteries, not included) or 6 to 9VAC which is normally provided by the old doorbell transformers! Just use that if you have one.

Terminals are included for three separate switch contacts, speaker output, AC, and 4.5V battery connections. The compact board measures 2.1" x 2.3" and can easily be installed in any suitable location. For a great finished look, order the recommended case set below. From Velleman.

K6600 Electronic Multi-Tone Chime Kit  
G416 Recommended Case Set For K6600



\$22.95  
\$8.95

## Digital Echo Chamber

- ✓ Mic or line input!
- ✓ On-board mic and amplifier!
- ✓ Adjustable output level, echo, and feedback
- ✓ 40 Kb SRAM-low distortion and high quality output

*Great Effect Tool, Tool, Tool, Tool!*

One of the coolest effects yet! This little kit gives you professional echo chamber results at a fraction of the cost. It features line level inputs as well as an on-board mic for the input. It also features adjustable output gain, echo level, and feedback level to give you the customized sound you're looking for. Output is standard line-level for easy connection to your audio equipment. Runs on a standard 9V battery (not included).

MK182 Digital Echo Chamber Kit

\$22.95



## Mad Blaster Warble Alarm

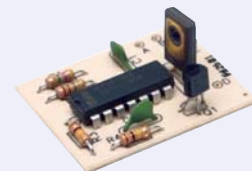
- ✓ Produces a startling warble alarm!
- ✓ 15W of power!
- ✓ Real attention getter!

*Our Original "Mad Blaster"*

Years ago we came out with this little kit that was quickly given the title "The Mad Blaster" because it produced a nasty and extremely loud warble tone. If you need to simply get attention, this little mini-kit producing a LOUD 15W ear shattering raucous racket is certainly the answer! Drives any 4-8 ohm speaker, but if you're looking for maximum volume use a horn type speaker. Drives any speaker but a horn type provides the loudest sound. Runs on 9-12VDC, 12VDC producing the loudest "blast".

MB1 Mad Blaster Warble Alarm Kit

\$9.95



## Classic Ding-Dong Chime

- ✓ Built-in push button!
- ✓ External switch input!
- ✓ Sounds just like the classic door bell
- ✓ Runs on 9-12VDC

*Is There Anybody In There?*

Just like the good old days of the mechanical door bell, this little kit reproduces the classic "ding-dong" sound through its built-in speaker. Plays it twice when triggered.

Use the built-in push button or wire external switches. Runs on 9-12VDC. Measures 2.75" x 3.8" x 1.2".

MK177 Classic Ding-Dong Chime Kit

\$11.95



## Electronic Dripping Faucet

- ✓ Repeated "Plink" sound!
- ✓ A pleasant alarm!
- ✓ Like a drip in a bowl!
- ✓ Runs 4-9VDC

*Drip, Drip, Drip!*

We've been known for decades for coming out with little mini-kits that produce the weirdest sounds! Well, this one is a mere drip in the bucket! Somewhere between a dripping faucet and electronic "chime" in a new car! Just like a drip into a bowl of water! Use it where a unique sound is needed. Learn how a simple oscillator works too! Drives any speaker. Runs on 4-9VDC. *(That O-Ring kit won't fix this one!)*

EDF1 Electronic Dripping Faucet Kit

\$14.95

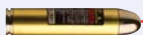






## Laser Light Trip Sensor

**KIT**



- ✓ Set up a security fence for over 500 yards of continuous coverage
- ✓ Includes both audible and visible alert indicators!
- ✓ 5 Amp external trigger relay for custom applications!
- ✓ Detector standby current draw of only 10 uA!!!



**Build It Tonight, Sleep Tight!**

For years hobbyists have been intrigued by the possibility of using a 'beam of light' to control other devices! The abundance of inexpensive laser elements that have now become available has further pushed the demand for useful products and experimental kits. The LTS1 Laser Trip Sensor was developed with the intention of providing a fun and educational kit that can actually be used constructively upon completion.

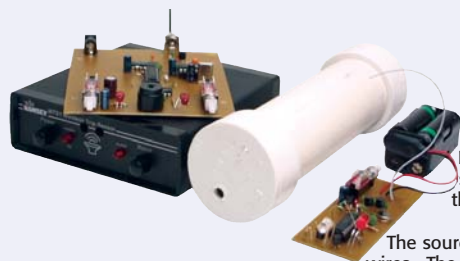
The kit comes with all you'll need to set up your own laser fence: the laser element (small keychain type high power laser pointer!), the PVC enclosure, and the laser detector with built-in Audible and Visible Alert indicators. (And yes, you can put the laser pointer on your keychain instead, and get thrown out of concerts, no problem!)

The LTS1 can be used in a number of different ways. The break-away circuit board gives the user the flexibility of remotely mounting the detector circuit (optionally powered with a standard 9 Volt battery) over 500 yards away without the need for mirrors. If mirrors are used, arrangements in a doorway or as a perimeter fence can almost guarantee detection of any unwanted guests.

For added functionality, the relay output (5 Amp rating) can be used to drive other devices such as an event counter, lights, or even camera modules! Operates from 9 - 18 VDC @ 90 to 100 mA. Detector portion can use a standard 9V battery with long life. Board dimensions: 4" L x 1" W (max component height: 5/8"). Includes a 6" length of 1/4" ID PVC to conveniently house and mount the board assembly. (Now all you need is a fog machine so you can see the laser beams just like those spy movies!)

LTS1  
AC125  
**Laser Light Trip Sensor Alarm Kit**  
110VAC Power Adapter

**\$29.95**  
**\$9.95**



**KIT**

**Wired & Tested**

**Remotely Detect Motion!**

## Wireless Trip Sensor Alarm

- ✓ Our popular Laser Trip Sensor...**NOW WIRELESS!**
- ✓ Remote sensing up to 300' away
- ✓ Provides both audible and visible alarms

Following up on the popular Laser Trip Sensor, we now bring you the Wireless Trip Sensor! We combined a very low power sensor along with a powerful UHF transmitter that can send from over 300 feet away. Each transmitter and receiver can be set for their individual code allowing you to protect various "zones" and telling you which zone was violated!

The source is generally placed near a continuous power source and the remote transmitter can be placed anywhere without running any wires. The transmitter is typically effective for up to 600 feet. The WTS1 will constantly look at the ambient light in the room or area you wish to protect and sense any blockage of the light. Once that happens it sends its wireless signal to the matching receiver to alert you! No definitive trip paths and no wires!

The sensor/transmitter mounts in a standard piece of 1 1/2" PVC pipe (included) for easy and inconspicuous mounting. Being battery powered, there are no wires or plugs attached. The receiver includes a visible LED alarm as well as a built in audible alarm. Once tripped, the alarm remains on until it is reset by the front panel reset switch. Transmitter and receiver work at 433MHz and are designed around our proven RF modules. Receiver includes a built-in wire whip antenna and the attractive black custom case set shown. The transmitter operates on four AA batteries (not included) and the receiver runs on 9-15 Volts DC, or our AC125 power adapter (optional). Case size 5"W x 1 1/2"H x 5 1/4"D. Find out when someone goes into that room with the Wireless Trip Sensor!

WTS1C  
AC125  
WTS1WT  
**Wireless Trip Sensor Kit With Case**  
110VAC Power Adapter  
Factory Assembled & Tested WTS1 With Case And Power Supply

**\$64.95**  
**\$9.95**  
**\$104.95**

## Microwave Motion Detector

- ✓ Great introduction to microwave basics
- ✓ Ideal for home alarms



**Don't Cook... Detect Motion!**

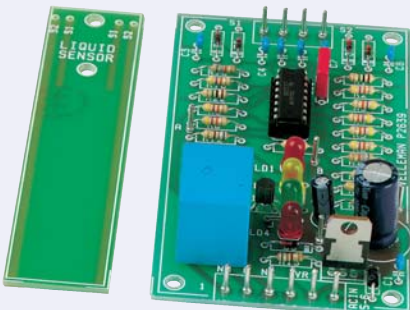
This unit sends out a microwave signal and looks for a return (a moving object that will reflect back some microwave energy) and then detects it. Since microwaves (no, you won't get cooked or burned by them!) are used - heat, light, sound or vibration will not affect the sensor!

This makes it ideal for car and home alarms, outdoor and garage light operators, animal in-your-garbage alarms, and tons more ideas limited only by your imagination. The MD3C is a great introduction to the basic principles of our SG7 "Speedy" Personal Speed Radar Gun and you can use it to investigate the properties of microwaves. Kit includes detailed instructions, theory of operation, the custom case set shown, and lots of applications and hook-ups. Runs on 9 to 15 VDC. Case size: 5"W x 1 1/2"H x 5 1/4"D.



MD3C  
**Microwave Motion Detector Kit**

**\$34.95**



**KIT**

**Check The Water Level Remotely!**

## Liquid Level Controller

- ✓ LED level indicators!
- ✓ Relay switch output!
- ✓ Selectable alarm output!

If you have a reason to monitor the level of water or other liquids, the K2639 Liquid Level Controller is just the kit! Not just an alarm like its little Mini-Kit brother the MK108, it gives you an LED display of LOW, MIDDLE, or HIGH levels. You can also have it turn on a pump or switch open a valve with a 240VAC, 3A relay output. Plus, there is an alarm output that you can selectively set to sound under a HIGH or LOW condition.

Runs on 12-14VAC or 16-18VDC. Relay output is rated 3A at 240VAC. Main controller board measures 4.1" x 2.4". Separate sensor board measures 4.1" x 1.0". If you're looking for a nice matching power supply, get the matching PWR25. Now there are no excuses for a wet basement! From Velleman. (Well, actually there IS an excuse for a wet basement... I never put one of these down there and what a mess!)

K2639  
PWR25  
**Liquid Level Controller Kit**  
12VAC Power Supply

**\$21.95**  
**\$12.95**



*Measure Elevation To A Third Of An Inch And Air Pressure In Nine Formats!*

**KIT**

**TOP SELLER!**

**Wired & Tested**

## High Resolution Air Pressure-Elevation Sensor

- ✓ Pressure resolution greater than 0.0001kPa!
- ✓ Super elevation resolution better than 1/3"!
- ✓ 128 x 64 pixel graphical display!
- ✓ Shows realtime elevation & pressure changes!
- ✓ USB computer interface for easy data transfer!
- ✓ 13,824 samples of FLASH storage available!
- ✓ Small coat pocket size
- ✓ Input for storage of data when YOU want it!
- ✓ Multiple built-in alarms
- ✓ Settable offsets for pressure and elevation
- ✓ Built-in Li-Ion rechargeable battery
- ✓ Built-in charging & power management system
- ✓ Run & charge from internal battery, USB power, or external 6-30VDC source!
- ✓ Runs 2 days on a single charge
- ✓ Simple graphical menu based operation

*The Next Generation Is Here!*

### THE BEST JUST GOT BETTER!

The response to the UP24 was incredible! Customers from professional land surveyors, meteorologists, scientists, pilots and hikers to the curious hobbyist were overwhelmed with its sensitivity and accuracy. Reading realtime elevation to a third of an inch blew their minds! Even with this response we considered it a challenge to make it even better... and we sure did! Introducing the next generation UP24B!

First, for extended field use, we designed an internal lithium ion power cell and a state of the art power management system. Now you can charge the internal power cell from either an external source of 6VDC to 30VDC or a standard 5VDC USB connection from a PC, laptop, or USB charger! The power management system determines the best charging source to use as well as operates the UP24B while keeping the lithium ion cell at full charge. Charging status and battery condition displays are also provided.

Next we added a "MARK" feature. This allows storing a single data point reading when YOU want instead of blindly storing readings at the selected sample rate. A connection jack is provided for a simple contact closure to make a reading. This closure can be a "dry" set of contacts or electronic closure. Data storage is in comma delimited format for easy loading into a spreadsheet. Each time you enter the "MARK MODE" a new data block is started allowing you to easily identify multiple sets of data. Current data is constantly displayed for your convenience in mark mode.

Finally, we streamlined the controls to make a more compact profile. The rotary menu navigation dial has been replaced by contactless proximity buttons for more reliable operation! Just touch your way through the menus without any dials or switches!

### THE ULTIMATE PRODUCT FOR THE SERIOUS, THE CURIOUS, AND THE PROFESSIONAL!

We did it again! The UP24 was one of our most advanced kits to date. Rather than resting on our laurels we made it even better and the new UP24B is an absolute MUST for anyone serious about the environment around us! But the applications only begin there. The unique design allows unprecedented super high resolution measurements and display of absolute atmospheric air pressure and elevation. Hobbyists and weather enthusiasts absolutely love it! Land surveyors, scientists, and pilots have made it a "must have"!

### ELEVATION TO A THIRD OF AN INCH!

I have written a lot of catalog pages and a boatload of specification sheets but this one is a challenge because the applications are endless and the performance characteristics are beyond description! The UP24B senses ambient air pressure and critically calculates elevation with unheard of precision!

Using a highly sensitive sensor and 24-bit A/D converter in a special noise-immune design, less than 1/3 of an inch of elevation resolution is achieved! YES, we said 1/3 of an inch! This high accuracy and resolution opens the door to a host of sophisticated environmental air pressure monitoring applications.

### AIR PRESSURE IN ANY FORMAT!

Unlike your normal run-of-the-mill barometer, air pressure is sensed in Pa's or kPa's. What are those you may ask? Pascals or KiloPascals. However, don't be afraid, for your convenience, and to fit any application you may have, it is also displayed in millibars, bars, PSI, atmospheres, millimeters of mercury, inches of mercury, and feet of water! Take your pick! The range of the UP24B is 15kPa to 155kPa. That also means:

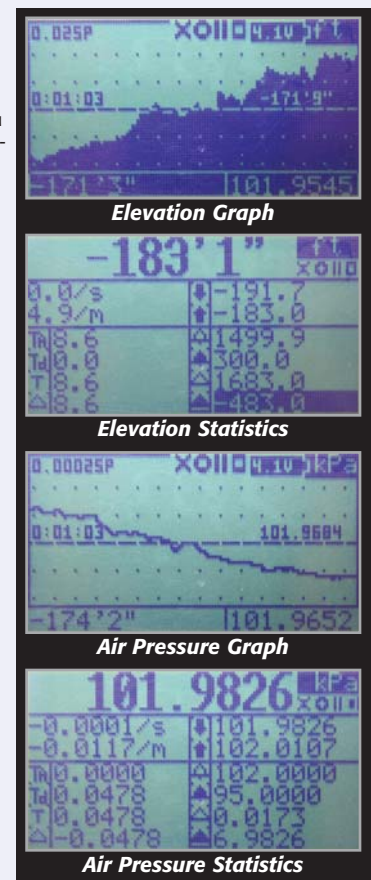
- ✓ 15000 to 155000 Pascal's
- ✓ 150 to 1550 Millibars
- ✓ 0.15 to 1.55 Bars
- ✓ 2.175566 to 22.48085 Pounds per square inch
- ✓ 0.1480385 to 1.529731 Atmospheres
- ✓ 112.5093 to 1162.596 Millimeters of mercury
- ✓ 4.429498 to 45.77148 Inches of mercury
- ✓ 5.02 to 51.9 feet of water

### THE HI-RES REALTIME ATMOSPHERE SENSOR!

Gradual pressure changes, like a barometer, can show you gradual changes in the weather. Instantaneous changes in air pressure can show you a whole lot more! Weather-wise, high resolution pressure changes can be used to anticipate and even estimate related wind gusts and speeds. This together with "on the fly" pressure changes will give you the upper hand in weather monitoring. Part of ARPS (Advanced Regional Prediction System) is to obtain and analyze realtime data to provide a prediction system for weather components. The UP24B is ideal as a source for highly accurate realtime data.

### THEN THE ENGINEER SAID "WATCH THIS!"

But what if the air pressure changes that need to be sensed and recorded are ever so slight? You have the perfect ultra reliable sensor and heart of an alarm system for a building. When I first heard this I questioned it. Then the engineering staff said "watch this..." A hundred feet from the main entrance of Ramsey, they called the front receptionist and asked her to open the front door to the building. WOW! An immediate change in air pressure registered on the UP24B! From an open door, to a broken window, to wind damage, it's all detected and recorded in the UP24B! The built-in alarm settings can be set for high or low limits to trip other equipment.







### THE ULTIMATE ELEVATION METER!

We've talked about air pressure, now let's talk about elevation! The incredibly precise 24 bit A/D converter in the UP24B looks at the air pressure and converts it to elevation above sea level. Once again, there I was standing in the engineering office watching the LCD graph. The text at the bottom of the screen said 472' 3". I said yea, so what? They said raise it up a few inches and watch. As I raised it the display constantly changed... 472' 8"; 473' 1" and so on. I couldn't believe it. The following day I took it to a tower site where I knew the ground elevation and it was dead-on... 1701' 6". Not only did I have the text display of the elevation but a chart graph of the elevation history!

The applications for the super accurate elevation meter are endless. From watching and recording elevations during hiking trips to measuring and recording the wave heights on boats! Let your imagination take over from there!

### MARK MODE!

The special mark mode feature allows you to take readings when you want to. Simply supply a contact closure to the "MARK" input jack with the unit in Mark Mode and the current reading will be stored in internal FLASH memory. You can then download the data using the USB connector. Stored data is in comma delimited format for easy insertion into a spread sheet.

### SPECIAL AIRCRAFT MODE!

What about aircraft? Needless to say, as a handheld device measuring air pressure, aircraft applications are limited to un-pressurized cabins. But the UP24B provides valuable flight assistance in such cabins and smaller aircraft. In fact, a special "Pilots Mode" is included in the menu to set a min/max altitude window setting to use in conjunction with the built in high and low alarms! The window is easily set up by programming in the desired high and low altitudes. If these limits are exceeded the UP24 will sound an alarm.

### LOCAL OFFSETS & ALARMS...NO PROBLEM!

To accommodate site variances, offsets for pressure, elevation, and related hysteresis are also provided as a menu selected operation. Likewise, both high and low alarms can be enabled and set over a wide range of lows and highs for both pressure and elevation!

### SMALL, LIGHTWEIGHT, THE SENSOR OF YOUR DREAMS!

While the UP24B is small enough to be kept in your coat pocket, it boasts a large 2.78" x 1.53" 128x64 pixel LCD display screen making viewing easy. Display modes include both realtime pressure and elevation graphs as well as pressure and elevation statistics. There are 12 user selectable sample rates from 1/10th of a second all the way up to every 15 minutes. The special MARK MODE is also available to allow data collection at your own rate.

What if you're in the field and want to save data captured in your UP24B? No problem there either! The built-in FLASH storage provides 13,824 samples of storage. That's equivalent to 3 hours and 50 minutes at the 1 second sample rate! Of course it's about 20 minutes at 1/10th of a second sample rate but that's probably faster than anybody, other than Wile E. Coyote, would need! When you get back you can transfer your data to your PC through a standard USB interface. A simple set of commands sent via your USB port can be used to set up many of the parameters of the UP24B directly from your computer using a terminal type interface or your own program. The data is comma delimited so it can easily be loaded into a spreadsheet.

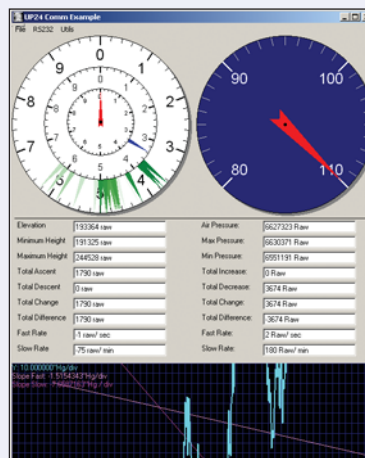
Does all of this sound too good to be true? It comes close! And it all fits in a small handheld case that measures 5.5" x 3.6" x 1.5" and weighs about 4oz with batteries. It runs on a single internal lithium ion battery and includes a built in charger/power management system. The UP24B can be operated on the internal battery, connected USB port on any PC or laptop, or external 6VDC to 30VDC power source. The power management system decides what source to use and also charges the internal battery from the connected source. Operating time on a full charge is over 2 days of continuous operation.

Want to run 24/7 even during power outages? Just connect either external source and turn on the UP24B. It will maintain the battery charge and operate the UP24B as long as necessary. If the power goes off the batteries will take over. Once the power is restored the battery will be recharged for the next time. If you're looking for the finest air pressure and elevation sensor, check out the UP24B, truly a marvel in the industry!

### SIMPLE VISUAL BASIC APPLICATIONS!

A Visual Basic application available on our web site enables you to have a dial type graphic display of pressure, altitude and statistics in real time on your computer and update the data on-the-fly as text data into a custom spreadsheet. Want to design your own interface? We even supply the Visual Basic source code for the graphics display application. You are free to use it to customize your own application. Routinely updated interface software is available FREE at our website 24/7! Got an application you'd like to share? We'll be glad to make it available to other UP24B users!

**Aviation... Mountain Climbing...  
Hiking... Wave Heights, Land  
Elevations... Pressure Alarms...  
Burglar Alarms... Air Movement  
Detection... Structure Heights,  
Weather Changes...  
And a Whole Lot More!**



UP24B Visual Basic software application screen display

### SPECIFICATIONS

Pressure Range:	15kPa to 155kPa
Pressure Units:	KiloPascals, pascals, millibars, bars, pounds per square inch, atmospheres, millimeters of mercury, inches of mercury, feet of water
Elevation Range:	-1,000 feet to 44,300 feet (-308.4 to 13,504 meters)
Elevation Units:	Feet/inches, meters, kilometers
Display Modes:	Pressure graph, pressure stats, elevation graph, elevation stats
Resolution:	Better than 1/3 of an inch (8.5 mm)
Sample Rates:	12 selectable rates: 1/10 sec, 1/5 sec, 1/2 sec, 1 sec, 10 sec, 15 sec, 30 sec, 1 min, 5 min, 10 min, 15 min
Offsets:	Selectable pressure, elevation, pressure hysteresis, elevation hysteresis
Offset, pressure:	14kPa to 114kPa in 0.1Pa increments
Offset, elevation:	-3,298.4' to 45,639.4' in 0.1' increments
Offset, pressure hysteresis:	0Pa to 10Pa in 0.1Pa increments
Offset, elevation hysteresis:	0' to 32.8' in 0.1' increments
Alarms menu:	Low and High Pressure, Low and High Elevation, low/high on/off
Alarm, high pressure:	100kPa to 114kPa in 0.1Pa increments
Alarm, low pressure:	14kPa to 100kPa in 0.1 increments
Alarm, high elevation:	158.6' to 45,639.4' in 0.1' increments
Alarm, low elevation:	-3,298.4' to 45,639.4' in 0.1' increments
Storage:	13,824 samples or 3 hours 50 minutes at 1 second sample rate
Mark mode:	Stores single realtime event upon external contact closure
Pilot elevation window:	0.0' to 45,639' in 0.1' increments
User interface:	Contactless proximity touch switches with graphical drop down menus, power on/off switch
Computer interface:	USB 2.0 Mini USB Type-B
Utility menu, calibrate:	-1,000Pa to 1,000Pa in 0.1Pa increments
Utility menu, resets:	Reset stats, reset chart data, reset to default settings
Display:	LCD, 128W x 64H pixels Viewing Area: 2.78"W x 1.53" H (70.7mm x 38.8mm) Dot Pitch: 0.02" W x 0.02"H (0.52mm x 0.52mm) Dot Size: 0.019" W x 0.019"H, (0.48mm x 0.48 mm)
Power Requirements:	Internal Li-Ion battery, charges/operates from 5V USB port or external 6-30VDC source via standard 2.1mm power connector
Color:	Black
Dimensions:	5.5"L x 3.6"W x 1.5"H, (139.5mm x 91.4 mm x 38.1mm)
Weight:	4 oz, 0.12 kg including battery

### Command Description

G EL	Get elevation
G PR	Get pressure
G OP	Get offset pressure
G OE	Set offset elevation
G VB	Get supply voltage
G CH	Get entire chart (in CSV format)
G PS	Get pressure stats (in CSV format)
G ES	Get elevation stats (in CSV format)
G PU	Get Pressure Units and index
G EU	Get Elevation Units and index
G SR	Get Sample Rate and index
G SD	Get Screen dump
S PU #	Set pressure units index
S EU #	Set elevation units index
S RE	Set reset elevation stats
S RP	Set reset pressure stats
S SR #	Set sample rate index
S RM #	Set report mode (send data per sample mode, 0 off, 1 on)

### UP24B GET and SET commands


**KIT**

**Don't Hit It...  
Detect It!**

If you have problems parking your vehicle without running into things (like the garage, another car, a wall, etc!) then the Parking Radar kit is for you! Mount the sensor board on the rear of your car, truck, or trailer and it will detect the proximity of whatever you're getting close to!

Ultrasonic audio waves, outside the range of human hearing, are used to "measure" the distance! The sensor board is connected to the detector that includes an audible alarm. The proximity can be adjusted anywhere from 2" to 5' and has a detection angle of 5 degrees. The uses of this handy little detector are endless, and it will save you a lot of crumpled metal!

Running on 10-15VDC the Parking Radar is ideal for 12VDC vehicle power. Just connect a lighter plug cord and you're all set! The small sensor board measures 1.1" x 3.7". The main board measures 1.9" x 4.9". The boards can be custom installed in your vehicle, in your own case, or you can order the recommended enclosures below. From Velleman. (My daughter needs one of these on both sides plus the front and rear bumpers of her car!)

K3502  
G416  
G407

**Ultrasonic Parking Radar Kit**  
**Recommended Case Set For Main Board**  
**Recommended Case Set For Sensor Board**



\$34.95  
\$8.95  
\$6.95

## Voltage Wire Detector

- ✓ Find wires up to 4" away!
- ✓ LED indicator shows wire proximity!
- ✓ Compact PC board
- ✓ Runs on a standard 9V battery

**Find It Before The Nail Does!**

How many times have you driven a nail or screw into a wire behind a wall? Well, I don't know about you, but I certainly have! Especially those long drywall screws that love to cut right through a chunk of romex cable!

SPECIFICATIONS	
Indication:	Flashing LED, buzzer optional
Sensitivity:	Adjustable, up to 3.9"
Supply Voltage:	9V battery
Dimensions:	2.2" x 2.5"

Been there, done that!

This detector kit will let you easily search for wires inside or behind walls, as well as track down interruptions. Simply hold the device around the area you wish to check and the LED will begin to flash when it gets near a wire with supply voltage. The faster the flashing, the closer you are to the wire!

If you would prefer an audible cue, the kit is built to work with an optional PC mounted buzzer as well. Board measures 2.2" x 2.5". From Velleman. (Yes, the wall was just finished, and yes, it was a 220V line for a baseboard heater, and yes, I had to open up the wall!)

K7101 **Voltage Wire Detector Kit**  
SV412S **Optional PC Board Buzzer**  
G407 **Recommended Case Set for K7101**

**KIT**

\$12.95  
\$4.95  
\$6.95

## Water Sensor Alarm

- ✓ Sounds alarm when water is present!
- ✓ Can be remotely located!
- ✓ Includes buzzer alarm
- ✓ Runs on a 9V battery

**Find Out BEFORE You're Flooded!**

We've recently heard people say "what can you get for 10 bucks these days?" How about "peace of mind"! Pretty cheap price to pay for that, yet this little kit does just that!

Some of us have been there... the sump pump quits for whatever reason (it fails, the breaker blows, there are a lot of reasons) and because you don't live in your basement you're none the wiser. You just keep on putting around upstairs like nothing is wrong! Then you have to run downstairs to get something, and bingo, you step in a foot of water! The result? A flooded basement and a lot of damaged things that are in the basement! And once that happens, things never seem to be the same. Stored pictures are ruined, electronic things are ruined, and everything is musty and moldy.

Now build a cute little water sensor alarm to let you know! Simply mount the alarm in the area you want to sense water and the moment it touches the contacts the included alarm will sound. No wires, no external alarm system, nothing but this tiny little board just waiting to alert you! The sensor can be remotely located by cutting that section of the board if desired. I'm thinking 7 bucks is pretty cheap insurance! Runs on 9V battery (not included). Size: 1.8" x 2.8". From Velleman.

MK108 **Water Sensor Alarm Kit**

**KIT**

\$6.95



## Temperature Sensor Module

- ✓ Measures -4° to +158° Fahrenheit!
- ✓ Highly accurate!
- ✓ Simple adjustment

**Quick & Easy  
Temperature Sensor!**

Looking for a general purpose, easy to interface temperature sensor for your projects? This is it! Whether you need to control heating and cooling of rooms or equipment, monitor temperatures in circuits, monitor your pool temperature, or simply put a temperature readout on your website, the K8067 fits the bill. With an accuracy of 2° over the full range!

The small board makes integration into your project or equipment simple, and the sensor device can be board-mounted or placed remotely. The temperature range is -20°C to +70°C (-4°F to +158°F). The output is a standard 0-20mA current loop for easy interfacing. Input voltage of 12VDC provides 0-5V output while an input voltage of 15VDC provides 0-10V output. Current consumption is 30mA max. Board measures 2.2" x 1.4" x 0.6". From Velleman. (If it's -4°F then what's the wind chill? I'm moving to Florida!)

K8067 **Temperature Sensor Module Kit**

**KIT**

\$19.95



- ✓ Easy contact-free temperature measurement
- ✓ Momentary or continuous measurement
- ✓ Last measurement data hold/display
- ✓ Large backlit LCD display

**Need The Temperature?  
Ready, Aim... And Measure!**

This beauty is one of the neatest thermometers we've ever seen! You can measure the temperature of anything merely by pointing an IR beam of light at it! That's right, no contact, no sensors, no wires, no glass, nothing but a beam of IR light!

Is your motor running hot? Is your refrigerator cold enough? How cold is that bottle of soda? If you want to know, just aim and push the button. The temperature is immediately displayed on the backlit LCD display! Check the temperature of your oven and stovetop for perfect cooking results! The last measurement is automatically held and stored until power-off. Measurements can be momentary or continuous with minimum and maximum temps held during measurement! You can't ask for much more than that in a handheld thermometer that is contact-free besides! Runs on 4 LR44 cells (included) for a long life. If you want to know what the temperature is, check it out with the IR101! (The bartender didn't care when I told him my "ice cold beer" was 47.3° so I showed him... he still didn't care, he just wanted my money!)

## Infra-Red Thermometer

**Wired & Tested**

### SPECIFICATIONS

Range:	-5°F to 575°F
Resolution:	0.1°F
Accuracy:	±4°F
Units:	°F or °C
Dist to measurement spot:	6:1
Ambient temp range:	32°F to 104°F
Emission factor:	0.95
Power supply:	4 x LR44 cells
Battery life:	2000 measurements approx.
Dimensions:	2.25" x 1" x 4"

IR101

**Infra-Red Thermometer**

\$39.95





### No More Guessing... KNOW The Wind Speed!

Wired &amp; Tested

## Handheld Wind Speed Anemometer



We've all seen them on TV... the professional weather talent (now known as meteorologists!) standing in the middle of the hurricane report holding up their wind meter clocking the fastest wind gusts. Usually that's just before they get blown to the ground along with their producer and camera crew! Well now you can have the same professional wind speed meter on a hobbyist budget!

This meter goes beyond just displaying the current wind speed! Besides displaying the realtime instantaneous wind speed it also stores and records the maximum gust AND average since it was powered up! Realtime wind speed is also displayed on a Beaufort wind scale ranging between 0 and 12. Whether in the middle of a storm, on your boat, hiking, the EA3010 is your answer.

#### SPECIFICATIONS

- ✓ Wind speed range: 0.44 to 67.0 mph
- ✓ Wind speed resolution: 0.1 for all units of measure
- ✓ Temperature range -21.8 to 138.2 °F (-29.9 to 59 °C)
- ✓ Temperature resolution: 0.2°F (0.1°C)
- ✓ Records and displays max and average wind speed since power up
- ✓ Beaufort scale bar graph, 0-12
- ✓ Wind chill display in °F or °C
- ✓ Runs on one CR2032 lithium button cell for 12 months life
- ✓ Measures 7" x 4" x 1.63"

EA3010

Handheld Wind Speed Anemometer

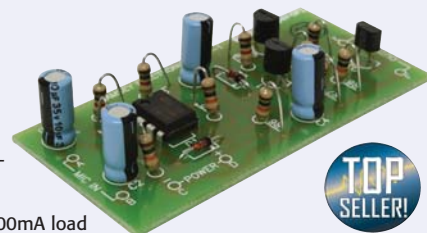
\$34.95

## Automatic VOX Voice Switch

KIT

- ✓ Use your voice or noise to control!
- ✓ Directly switches relays or low voltage loads up to 100mA!
- ✓ Endless applications!

### Automatic Voice Control!

TOP  
SELLER!

Our most popular Mini-Kit, the VS1 Voice Activated Switch (VOX) will provide a switched output when it "hears" sound. Use it to key a transmitter for hands-free PTT, turn on a tape recorder automatically when people are talking in a room, turn on lights, or anything else you can imagine... all controlled by the sound of your voice!

How about having your garage lights turn on when you beep your horn? The possibilities are endless! The output drives up to a 100mA load such as a relay, tape recorder control line, transmitter PTT line, etc. Runs on 6-12VDC for easy integration into any equipment. Board measures 2 1/2" x 1 1/2" x 1 1/4".

VS1

Automatic Voice Activated VOX Switch Kit

\$9.95



KIT

### The Ultimate Dimmer... With EPROM Backup!

## Multifunction Dimmer

- ✓ Microcontroller technology!
- ✓ 13 different functions!
- ✓ Works with resistive & inductive loads!
- ✓ Soft start prolongs the life of bulbs!

#### SPECIFICATIONS

Operating voltage:	110-125VAC or 220-240VAC
Frequency:	Automatic detection 50/60Hz
Maximum load:	2.5A (300W/120VAC)
Dimensions:	3.9" x 3.2" x 1.4"

Impulse switch, staircase light control, slow on/off dimmer, interval timer, and speed adjustment for fans are just some of the features you'll have at your fingertips when you build this dimmer kit!

Works with both resistive and inductive loads so you can control light bulbs, high-voltage halogen lighting, or low-voltage halogen lighting with a ferromagnetic transformer. Also

includes soft-start technology to prolong the life of bulbs, fault protection, independent delay times, and EEPROM memory backup to save settings in case of power failure. 2 delay times (5 seconds to 2 hours) can be programmed through the learning mode. Board measures 3.9" x 3.2" x 1.4". From Velleman.

K8028

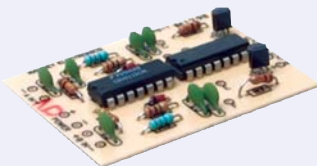
Multifunction Dimmer Kit

\$32.95

## Touch Switch

- ✓ Touch on, touch off, or momentary!
- ✓ Two circuits on one board
- ✓ Great CW Keyer

### 2 Separate Circuits!



The ultimate touch switch! Touch once - it's on, touch again - it's off, or use the momentary outputs that stay on only as long as touched.

Uses low power CMOS circuitry and functions on the principle of hum and noise pick-up when input is touched. There are two completely independent touch switch circuits on each board. It's like getting two for the price of one!

Will drive loads up to 100 mA such as a relay, bell, siren, etc. Includes project info for use as a CW keyer. Runs on 6-12VDC.

TS1

Touch Switch Kit

KIT

\$9.95

## Light Actuated Switch

- ✓ On-board SPDT relay!
- ✓ On at dusk, off at dawn
- ✓ Adjustable sensitivity

### Fully Automatic!



Tired of turning your lights on and off? Tired of paying the ever increasing cost of electricity because you forgot to turn them off in the morning? Consider it solved! The MK125 is a simple little kit that automatically senses light and automatically closes the on-board SPDT relay.

Light sensitivity is adjustable over a wide range, and a delay circuit prevents recycling. Relay contacts rated at 5A. Runs on 12VDC. Board measures 2.6" x 2". From Velleman.

MK125 Light Actuated Switch Kit  
AC125 110VAC Power Adapter

KIT

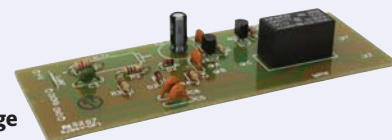
\$8.95

\$9.95

## RF Actuated Relay

- ✓ Automatically senses presence!
- ✓ On-board DPDT relay
- ✓ Protects against RF input damage

### Senses RF BEFORE The Damage!



This is just the unit you need when adding a preamp or power amp in line with an existing antenna.

It senses the RF power and closes an on-board DPDT relay which can be used to automatically switch in your added power amp or preamp. The relay is good up to UHF at 100W! Besides radios, many folks use one of these "lifesavers" in front of their expensive test equipment to prevent RF input damage!

Runs on 10-15VDC and senses power as low as 50 mW. Size: 1 1/2" x 1 1/2" x 4".

RFS1

RF Actuated Relay Kit

KIT

\$19.95

## Multifunction Relay Switch

- ✓ 14 different functions!
- ✓ 2 pre-programmed delays!
- ✓ Push button control!
- ✓ EEPROM storage!

KIT

#### SPECIFICATIONS

Operating voltage:	9-12VAC or 12VDC
Max load:	2.5A (275W at 110VAC)
Dimensions:	3.4" x 1.5" x 1.0"

### Build Your Own Switches!

This versatile relay switch is packed with features and can be used for a variety of control applications, timers, switching, flashing, interval, random switching, and more! Other features include learning mode for delays anywhere from 2s to 12 days, EEPROM for delay time storage in case of power failure, and on-board transient filter for the relay contacts! From Velleman.

K8015 Multifunction Relay Switch Kit  
G410 Recommended Enclosure

\$22.95

\$6.95



## Ultimate 555 Timer/Oscillator

KIT

- ✓ Unlock the full potential of the classic 555 timer IC!
- ✓ Available in through-hole or SMT versions!
- ✓ Onboard output drivers
- ✓ Onboard Start and Reset switches
- ✓ Onboard Pulse Width control
- ✓ Onboard Rest Time control
- ✓ Interfaces with the R11 for "real-world" switching applications

*The BEST 555 timer kit on the market!*

First brought to market in 1971, the 555 timer has been a staple in the electronics world ever since, and the Ramsey UT5 timer kit has always been one of our top sellers. The UT5 provided a quick and easy way to harness the power of the 555 timer IC - a valuable tool for any electronics hobbyist! But there is only so much you can do with the UT5 before you start running into its limitations. We knew people wanted a kit that would let them do more with the 555 timer, so to that end, we present the brand new UT5A series kit.

This new series builds on the classic UT5 kit, but takes it to a whole new level! We've packed it with tons of features that you won't find in any other 555 timer kit on the market. You can configure it on the fly with easy-to-use jumper settings, drive relays, and directly interface all timer functions with onboard controls or external signals. All connections are easily made through terminal blocks. Plus, we've replaced the ceramic capacitor of other timer kits with a Mylar capacitor which keeps your timings stable over a much wider range of voltages!

Feature	K2579	UT5	UT5A
On Board Start Switch	Yes	No	Yes
On Board Reset Switch	Yes	No	Yes
Negative Signal Input	No	Yes	Yes
Negative Signal Input pull up resistors	No	No	Yes
Positive Signal Input	No	Yes	Yes
External Reset Input	No	Yes	Yes
External Control Voltage Input	No	No	Yes
On Board Pulse Width Control	Yes	Yes	Yes
On Board Rest Time Control	No	No	Yes
On Board Control Voltage Adjust	No	No	Yes
Output Buffer Circuits	No	No	Yes
Output Inductive Kick protection	No	No	Yes
Timer Output Inversion Select	No	No	Yes
Selectable Independent 3 to 24V Output	No	No	Yes
Multiple Components for Accurate Timing	No	No	Yes
Detailed Theory of Operation	No	Yes	Yes
5 to 15 Volt Supply Voltage	No	Yes	Yes
Terminal Blocks For Inputs and Outputs	No	No	Yes
Outputs	Single Pole Double Throw Relay, Dry Contact	Timer IC output, 5 to 15 Volts 100mA continuous	Buffered, 3 to 24V 200mA continuous, Invert Selectable
Output Interfaces w/R11	120/240V 10Amps	Yes	Yes

Then, to separate the hobbyist from the advanced hobbyist (or the wanting to learn more hobbyist!) we duplicated the through-hole UT5A in a surface mount (SMT) version! If you want to learn SMT construction, or polish up your existing SMT techniques while exploring the ever popular 555 timer, the UT5AS is for you! Just check out the comparison table to see everything that's new and improved in the UT5A series!

SPECIFICATIONS	
<b>Input Requirements</b>	
Timer Power:	5 to 15 VDC
Output Circuit Power	3 to 24 VDC or Timer Power
<b>Modes of Operation</b>	
Monostable	Most Pulse Widths from 110uS to 27.5 Minutes with included parts
Astable	Most Time Cycles from 210uS to 57 Minutes with included parts
Maximum Load:	200mA Inductive kick protected
Dimensions-UT5A:	2.5in (W) X 2.5in (L) X 1.0 (H); 63.5mm (W) X 63.5mm (L) X 25.4mm (H)
Weight-UT5A:	1.1 Oz, 0.0312 Kg
Dimensions-UT5AS:	1.5in (W) X 2.5in (L) X 1.0 (H); 38.1mm (W) X 63.5mm (L) X 25.4mm (H)
Weight-UT5AS:	0.8 Oz, 0.023 Kg

UT5A  
UT5AS

Ultimate 555 Timer/Oscillator Kit, Through-Hole Version  
Ultimate 555 Timer/Oscillator Kit, SMT Version



\$24.95  
\$26.95

## Electronic Kitchen Timer

- ✓ 1 minute to 1 hour timing!
- ✓ Simple one button operation!
- ✓ Audible and visual alarm!
- ✓ Discrete pre-alarm!



*For The Cookies We DO Like!*

What good is the built-in timer on your stove if you're not there in the kitchen? It isn't, and the cookies will be burnt! Exactly!

This modern kitchen timer will not only save the cookies but will be a fun project to build and use. Times anywhere from 1 minute to 1 hour. Single button makes it a breeze to use with the following settings: 1 to 10 minutes in one minute steps; 10 to 30 minutes in five minute steps; 30 to 60 minutes in 15 minute steps. Measuring a mere 3" x 1.3" this little timer can go in your pocket outside with you while the cookies are in the oven! Even includes a pre-alarm to get you back inside in time! Runs on 3 AAA batteries (not included). From Velleman. (Sorry, does not include the recipe for Ma Leo's famous chocolate chip cookies... that's a secret!)



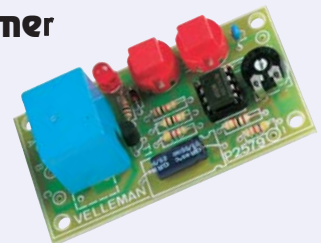
MK128 Electronic Kitchen Timer Kit

KIT

\$17.95

## Universal Start/Stop Timer

- ✓ Delay up to 60 minutes!
- ✓ On-board relay
- ✓ Runs on 12VDC



*Start & Stop With Delay!*

The K2579 is a miniature timer for any application that requires a start and stop function with a delay. Board mounted switches are provided for both start and stop.

Time interval is variable and adjustable from 0 to 15 minutes, and extendable to 60 minutes with a modification. LED status indicator is provided.

Relay is rated at 2A/240VAC max. Runs on 12VDC. Board measures 1.5" x 2.7". From Velleman.

K2579 Start/Stop Timer Kit  
AC125 110VAC Power Adapter

KIT

\$13.95  
\$9.95

## Universal Timer

- ✓ Trigger or oscillator
- ✓ 555 timer IC design

*Learn & Use IC Switching...For \$10!*

Add a time delay, keep something on for a preset time, provide timing or clock pulses, or provide an audio tone. The UT5 does it all using the famous 555 timer IC. It uses it in three modes:

The Monostable mode can be used to provide a delay, turn a device on or off for a pre-determined period of time, or various timing signals. Bistable mode can be used to toggle a device between on and off or be used as a divide by two circuit. Astable mode is basically a square wave generator. It can be used for clock signals or even provide audio tones. The applications for this little gem are limited only by your imagination.

The UT5 operates on 5-15VDC and controls up to 100mA. Detailed manual included.

UT5 Universal Timer Kit

KIT

\$9.95

## Power Saver & Timer

- ✓ Single button operation!
- ✓ 1H, 2H, 4H, 8H, 24H options!
- ✓ On-board LED indicator!
- ✓ 10 amp relay output!

*Set It, And Forget It!*

This little timer kit can be easily added to any existing project to allow for automatic shutoff. Tons of applications like heating, cooling, lighting, entertainment systems, fans, pumps, sprinklers, cryogenic stasis tubes... well maybe not that last one!

Just set the jumper for short or long timers, use the push button to select your desired timer and the LED indicator will blink faster for the shorter timer, slower for the longer timer. It's that easy! 10A suppressed relay output, 100-240VAC power supply. Board measures 2.6" x 2" x 1". From Velleman. (We're not responsible for family members or pets lost due to cryogenic stasis failure!)

K8075 Power Saver & Timer Kit

KIT

\$26.95





## Enhanced DTMF Control Interface

KIT

- ✓ 6 user configurable modes
- ✓ Crystal controlled DTMF decoder
- ✓ Continuous 1 of 16 lines decoding of all 16 DTMF tone pairs
- ✓ Security feature for BCD output decoding of all DTMF tone pairs
- ✓ BCD output configurable to latch on tone reception or active only with tone in either secure or non-secure mode
- ✓ Input may be from any DTMF tone source (phone line or other clean audio source)
- ✓ Audio filtering to reject normal telco signals (ignores non-DTMF tones)
- ✓ Special configuration mode to provide remote control of our DVMS voice messaging system



*Encode, Control, Create... All From DTMF Tones!*

What do you get when you combine our popular DCI1 DTMF Remote Control Interface and top selling TT7 Touch Tone Decoder? The most versatile DTMF control kit yet, that's what! We took the functionality of both these classic Ramsey products and joined them together in one great kit... and then we packed in even more new features exclusive to the DCI2!

While there are no power relays on the DCI2, you can now easily control up to 16 different devices using DTMF tones in a secure environment. The DCI2 also provides continuous decoding of all 16 tone pairs regardless of the security mode. With the addition of a few simple circuits (instructions included, of course!) you can control practically any device imaginable!

The DTMF is also the perfect companion to our DVMS8BCD Digital Voice Messaging System (Page 36). The DVMS8BCD is our souped-up successor to the popular BS2 Bullshooter kit (Page 35) allowing playback of up to 8 different prerecorded messages. When you combine it with the DCI2, you've got an easy-to-use play-on-demand audio setup that doesn't require complicated and expensive computer systems! The DCI2 is a highly adaptable product that is limited only by your imagination. Combined with an inexpensive answering machine, it gives you an elegant but powerful remote control system. Available as a kit, or factory assembled & tested.

DCI2  
DCI2WT  
AC125

DTMF Touch-Tone Control Interface Kit  
DTMF Touch-Tone Control Interface Kit, Wired and Tested  
110VAC Power Adapter

\$62.95  
\$109.95  
\$9.95

## DTMF Touch Tone Decoder

- ✓ Decodes DTMF Touch Tones from telephones, radios, etc!
- ✓ 20mA output drives relays, LEDs, digital devices and more!
- ✓ Decodes 0 through 9, \*, #, plus A, B, C, D



TOP  
SELLER!

*Your Phone Is Your Encoder!*

You can set up the TT7 for detection of any single digit, including the secondary A,B,C,D digits. When the decoder detects the selected digit it will provide a closure to ground for driving a relay, lamp, sounder, or other load of up to 20 mA. A commercial central office quality decoder IC chip is used, which means the TT7 is extremely reliable, fast, and sensitive! You may connect the TT7 directly across the speaker or detector output on any receiver, and we even detail how it may be connected directly to a telephone line.

If your needs are single function remote tone control, the TT7 is for you. (For digital display of dialed touch-tone numbers, use our TG2 Tone Grabber, for remote control use our DCI series.) Runs on 5VDC. PC board measures 1 1/2" x 7/8" x 2 1/4".

TT7 DTMF Touch Tone Decoder Kit **KIT** \$24.95



MK138

Thermostat Control Module Kit

## Tone Encoder/Decoder

- ✓ Encodes and decodes 40 to 5000Hz!
- ✓ Drives any load up to 100mA!
- ✓ Compact size and easy installation

The TD1 was engineered to provide all your tone control needs on a single PC board! The unique design will simultaneously encode and/or decode any audio frequency between 40Hz and 5000Hz. If you want to go even lower, we provide the documentation to change one capacitor to go down to 10Hz! This little board is great for 2-way radio "PL" tones, remote controls, tone burst FSK or anywhere tones are involved. Frequency is easily set with the precision 20 turn trimpot and the circuit uses a voltage regulator and Mylar cap for the ultimate in stability. The decoder output will drive any load up to 100mA, making it simple to connect to your equipment. Runs on 5-12 VDC, will drive up to 100 mA load. Encoder output provides approximately 1V P/P output to easily drive your application. PC board measures 1 1/4" x 1/2" x 1 1/2".

TD1 Tone Encoder/Decoder Kit

\$9.95

## DTMF Remote Control Interface

- ✓ User configurable security codes
- ✓ Control household lights from your cell!
- ✓ Confirmation tones for each command!
- ✓ Remote control from any DTMF device!



TOP  
SELLER!

*Full Control From Any Telephone Or Cell Phone!*

This microprocessor controlled DTMF decoder fits the bill for multiple applications. Remotely control almost any device with the built-in relay circuitry. The DCI series unit continually monitors your phone line and looks for the proper user programmed security code. Once it is heard, the user may select which of the trigger relays to turn on or off. For your convenience, the DCI1C features four outputs.

Feedback tones from the DCI are then sent back over the line to confirm your selection. No more wondering if your commands are carried out as is commonly found with other similar devices! Now you can call home and when your answering machine picks up, control lights, security systems, or just about any number of other custom applications! Provides four 5 Amp (1250VA AC/150W DC) relay outputs, each with its own sure grip screw terminal. Requires 9-18VDC at 300 mA. Our standard AC125 110VAC power adapter is available.

DCI1C DTMF Controller Interface Kit With Case  
AC125 110VAC Power Adapter

\$52.95  
\$9.95

## Thermostat Control Module

- ✓ Temperature range 41°F to 86°F
- ✓ Relay output switching, 24V at 3A
- ✓ Runs on 12VDC at 100mA

If you're looking for an easy way to control the temperature of anything from a circuit, a heatsink, to a room, this little thermostat control module will do the trick! A built-in NTS temperature sensor is included, and can either be board mounted or remotely connected via the built-in terminal strip. The temperature range is 41°F to 86°F. Once adjusted to the desired temperature a built-in relay provides the control circuit. In addition a bright red LED indicates the state of the thermostat. The module runs on 12VDC at 100mA. The control relay is rated at 24V at 3A making it easy to interface with any of your circuits. The board measures 2.1" x 2.4" x 1.1". Temperature control is normally a hassle, use this little module and make it a breeze! From Velleman.

MK138

Thermostat Control Module Kit

\$8.95

*Control Temperature The Easy Way!*

*Encode and Decode With The Same Kit!*

KIT





## DC Motor Speed Control

KIT

- ✓ Real pulse width modulation for accurate, stable motor control
- ✓ Controls DC motors from 3 to 50 volts - up to 10 Amps!

Full Power...  
Any Speed!

Controlling a DC motor's speed is not as easy as just varying its supply voltage. The motor loses torque (power) as the voltage is lowered and it finally stops rotating. The MSC1C uses a technique known as "Pulse Width Modulation" - PWM - to control speed. This is the same system used on electric cranes, buses and subway cars. With PWM the motor receives full voltage whenever energized - however, the duration of the voltage changes; it's sort of like flipping an on/off switch very rapidly! The motor rotates smoothly and with full power - no matter what the speed.

The MSC1C will control DC motors from 3 to 50 volts at up to 10 amps! Complete instructions detail how the PWM circuitry operates and some hook-up ideas. Assembly takes only an hour or two. Kit operates on 6 to 15VDC and controls motor supply of 3 to 50 volts. Includes our custom case set measuring 5"W x 1 1/2"H x 5 1/4"D. (To our friend that tried to use this to control 480V/100A industrial motors... sorry about the melted case!)

MSC1C

DC Motor Speed Control Kit With Case

\$34.95



KIT

Finally...A Stepper For All  
Those Surplus Motors!



## Stepper Motor Controller-Driver

- ✓ Controls direction, step size, and power to the motor
- ✓ Output drives 5 to 15 volts
- ✓ Uses Motorola Stepper Motor Driver IC Chip

The motors are top quality but how the heck do you drive them without shelling out a fortune? Easily, with the Ramsey Super-Stepper! Build an accurate positioner, X-Y controller, plotter or even a Robot!

The Super-Stepper will drive almost any stepper from 5 to 15 volts. You'll be able to control direction, speed, step size (rotational increment), and even power-down the motor after rotating it. An on-board clock generator is provided for easy hook-up-and-go operation or you can externally drive the kit for more exotic control.

We give complete details and ideas for additional uses. Put those versatile, first rate (and cheap!) motors to work with this exciting kit. Includes the matching black custom case set. Operates on 5 to 15 VDC. Case size 5"W x 1 1/2"H x 5 1/4"D.

SMD1C  
AC125Stepper Motor Driver Kit With Case  
110VAC Power Adapter\$39.95  
\$9.95

## AC Motor Speed Controller

KIT

- ✓ Load 24-240VAC at 5.5 amps!
- ✓ Input voltage 110-240VAC!
- ✓ Speed range 5-95%
- ✓ Low RFI

Adjust Speed But Maintain Torque!



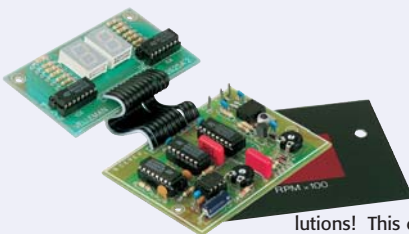
This controller was designed to control AC motors with carbon brushes, anything from drills to vacuum cleaners to saws. Unlike normal dimmers there is a phase-cut only once per period.

The moment of cutting determines the speed, which can be adjusted from 5-95%. Thanks to this control, this kit provides high torque even at low speeds! Not just for 110VAC and 220VAC motors, this kit can also be used for low voltage (24VAC) AC motor loads. The supply and load circuits are electrically isolated from each other for both safety and reliability. Unlike a lot of AC controllers, RFI is suppressed to eliminate noise and interference. AC power input is 110-240VAC. Load voltage is 24-240VAC. Measures 5.1" x 3.0". From Velleman.

K2636

AC Motor Speed Controller

\$38.95



KIT

The Easy Way To Display RPM...  
Or Simply Revolutions!

## Digital Tachometer

- ✓ 100 to 9900 RPM!
- ✓ 2 digit display
- ✓ Easy calibration!
- ✓ Includes front bezel
- ✓ Runs on 10-15VDC@200mA

What a simple, neat, and "custom" way to add a tachometer to your vehicle or any other application where you need to count revolutions! This digital tachometer includes two interconnected boards. One contains two bright 7 segment LED displays to provide a unique digital display of your RPM! The 2nd board is connected with a flexible ribbon cable to make installation a breeze in any vehicle or application. Range is 100 to 9900 RPM to cover anywhere from a slow idle to a lead foot (usually followed by a blown engine!). An attractive red filter front bezel is included to give you a perfect custom "built-in" look! Runs on vehicle voltage (10-15VDC) at 200mA.

The small main board measures 3.2" x 2.4" and the display PCB measures 3.2" x 1.8". The matching red filter bezel measures 2.8" x 3.5". If you're looking for a super looking tachometer for your vehicle, the K2625 does the trick. From Velleman.

K2625

Digital Tachometer Kit

\$32.95

## Optically Isolated Interface Module

KIT

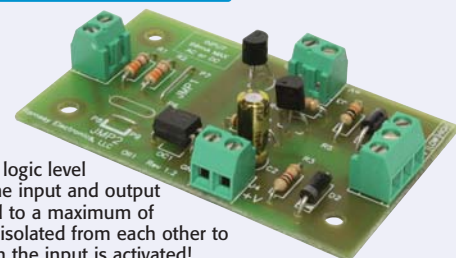
- ✓ 5000 VAC of isolation!
- ✓ Drives up to 150mA at up to 40VDC
- ✓ Works with your existing projects and applications

The OM2 provides an optically isolated interface between two devices. It can be used to convert nearly any AC or DC signal to logic level signals. It can also be used to activate a relay upon detection of an input signal. BUT the really great thing about the OM2 is the input and output are **totally isolated** from each other! Use virtually any voltage input level above 1.5 volts (as long as the input current is limited to a maximum of 60mA). The input can be a simple DC level or an AC signal with a frequency up to 250KHz. The input and output are optically isolated from each other to 5000 volts AC (rms), and the output can drive up to 150mA at up to 40VDC. It even provides active low and high outputs when the input is activated!

OM2

Optically Isolated Interface Module

\$12.95







## Logic Interface Module

**KIT**

- ✓ Use your kits for real world applications!
- ✓ Connects a SPDT Relay to almost any digital output
- ✓ Works with your existing projects and applications
- ✓ Switches up to 240 Volts at 10 Amps
- ✓ Digital Low less than 0.5 Volts, Digital High 1 to 12 Volts
- ✓ Easily interfaces to your project through terminal blocks

The RI1 is designed to be a simple and practical interface between different types of electronic circuits. It's the perfect tool for interfacing a typical logic (or other DC) level to an onboard SPDT relay, which means it's a snap to connect almost any digital output to lights, motors, or any other electrical devices that require load switching of up to 240 Volts AC or DC and 10 Amps of current!

It takes a digital low (0.5 VDC or less) and high (+1 to +12VDC) and provides relay contact closures (SPDT) that can be either active high or active low. The RI1 can be used in conjunction with almost any digital kit, including the **TS1**, **VS1**, **UT5**, **TT7**, **TD1**, **ICI16**, **Ramsey RF Wireless Link Modules**, **BD416**, **OM2**, **MD3**, and the **WTS1** just to name a few! It also works with many Velleman digital products, as well as countless other kits. There are literally millions of additional real world applications!

The output of the RI1 is a high current, normally-open/normally-closed set of dry contacts. The input signal can be nearly any type of logic level or other voltage level between 0 and 12VDC. Input level pull-up, pull-down, and current limiting resistors are available to meet the needs of almost any project. The RI1 requires 12VDC at less than 60mA to operate. Relay contacts are rated 12A at 120VAC, 10A at 240VAC, 10A at 28VDC. Measures 1.5" x 2.5" with mounting provided on a 1" x 2" grid.

*Convert The Digital  
World To The Real  
World With Ease!*



RI1

Logic Interface Module

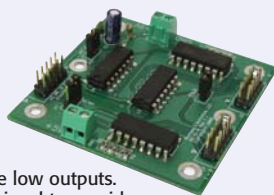
\$14.95

## 4-to-16 Line Decoder

- ✓ Jumper configurable
- ✓ Active high, active low, or both
- ✓ Works with your existing projects and applications

The BD416 is a 4 bit binary to 16 line decoder with active low outputs. Use it to interface to any 5 volt 4 bit binary output logic signal to provide a one of 16 line output signal. The output may be configured to either directly follow the binary input or to latch when the valid data signal input is applied. The valid data signal may be configured to be either active high or low. In the latched output configuration the BD416 may be configured to initialize in either a set, low output, or reset, high output, state. Configuration is accomplished using simple jumper block settings!

The BD416 may also be used with the RXD433A and RXD916 wireless receiver modules to provide a 1 of 16 output from the binary output. Each of the outputs is an active low, open collector signal able to drive an LED indicator or you can use our new RI1, or OM2 interface circuits and drive relays, or other high power loads. The BD416 operates on 5VDC and is 2.5" x 3.75" with mounting holes on a 2" x 3" grid.



BD416 4-to-16 Line Decoder

**KIT**

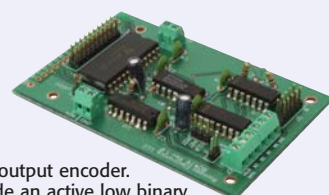
\$24.95

## 16-to-4 Line Encoder

- ✓ Drive loads up to 150mA at 40VDC
- ✓ Active high, active low, or both
- ✓ Works with your existing projects and applications

The BE164 is a 16 to 4 line or 8 to 3 line binary output encoder. The encoded output may be configured to provide an active low binary signal that continuously follows the input or is active only when data valid signal is activated. All inputs are active low and the output is configurable to be either active high or active low. An active high data valid signal is provided at the output. Input and output connections are via three 10 pin 0.1" DIP connectors.

The BE164 may be used with our TXE433 and TXE916 Wireless transmitters to provide encoded data inputs. You may also use it to provide a binary encoded signal to any device such as a computer that uses a 5 volt binary logic level. It is also designed to operate with our Digital Voice Messaging System, DVMS8BCD. A simple direct connection to the DVMS8BCD provides direct access to any of the up to 8 stored voice messages. All configuration is done using simple on-board jumper blocks. Runs on 5VDC and is 2.5" x 2.5".



BE164 16-to-4 Line Encoder

**KIT**

\$24.95

## Infra-Red Switch Remote Control Interface

- ✓ "Learns" the signal from your existing IR remote controls!
- ✓ Controls up to 4 separate relay outputs at 3 amps!
- ✓ Provides latch on/latch off functions
- ✓ Includes matching case set

*Push On, Push Off...  
ANYTHING!*

One of the latest in the series of ICI Infra-Red interfaces from Ramsey! Now it's a breeze to control any on/off function with any button of your existing IR remote control! That's right, any button of your EXISTING 38 kHz remote control!

Using the latest Motorola microcontroller as its "brain," the ICI1 learns the IR code from any existing IR remote controller. An IR photodiode detects the IR remote and controls up to 4 separate relays. The relays turn on and turn off with a simple push of the remote control button programmed! The heavy duty relays are rated to switch up to 3A, so the control capabilities are endless! The relay outputs are brought out to 2-pin headers on the rear of the case to accept standard wire connections. Operates on 7-15VDC or our optional AC125 power adapter. (*push on, push off... the pusher!*)



ICI1C  
AC125

Infra-Red Switch Control Interface Kit With Case  
110VAC Power Adapter

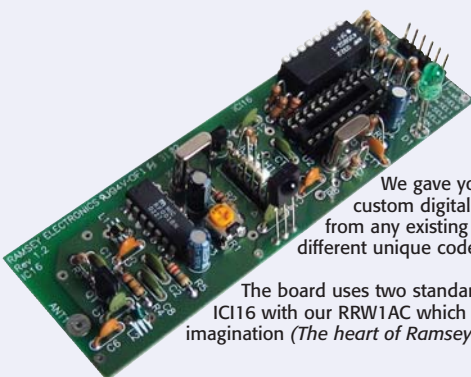
\$45.95  
\$9.95

**KIT**

*Create Any  
Digital Output!*

## Infra-Red Digital Remote Control Interface

- ✓ Generates a digital output from any IR remote button!
- ✓ "Learns" the signal from your existing IR remote controls!
- ✓ Plugs into your existing projects and applications
- ✓ The perfect experimenters kit!



We gave you on/off switch control with our ICI1 (above) but now we've taken IR remote control one step further! The ICI16 gives you a custom digital output from your IR remote control buttons! Using the same Motorola microcontroller brain as the ICI1, it learns the IR code from any existing 38 kHz IR remote controller. Once learned, a push of the button generates a 0-15 coded output on 4 lines depending on 16 different unique codes learned from the IR controller!

The board uses two standard 6-pin 0.1" center connectors for easy mounting, plug-in, and wiring. Out of IR range and want to get really creative? Use the ICI16 with our RRW1AC which converts your IR to RF. The ICI16 receives the RF and converts it to a 1 of 16 digital signal output! Just use your technical imagination (*The heart of Ramsey's 39 year history!*). Operates on 7-15VDC.

ICI16

Infra-Red Digital Remote Control Interface Kit

\$45.95



KIT

**Don't Be A  
Control Freak!**

Have you ever been frustrated with the range of your remote controls? Tired of having to bounce your IR remote off ceilings and walls? Do you want to run your system from another room or floor? This is the answer to your prayers! Extend the range of your remote controls through walls, around corners, and even from outdoors. Unlike store bought units, error correction can be turned on for pulse width regeneration. The foolproof IR repeater!

Take advantage of wireless technology with this practical kit that almost anyone can use! The RRW1A and RRW1B pair allow you to rebroadcast your AV Infrared 38 kHz remote controls wirelessly on 433 MHz up to 100 feet. Broadcast through walls, doors, floors, and ceilings. Use the pair to control the satellite receiver downstairs and watch it upstairs! Be outside and control the tunes on your stereo system in the living room!

Use multiple RRW1As to broadcast from multiple locations in the house to the single RRW1B receiver near your equipment. Feed the control freak in all of us! Both units operate on 7-18V AC or DC. For continuous operation, use our AC125 AC power adapter. Sleek matching cases measure 5"W x 1 1/2"H x 5 1/4"D.

## Wireless IR Remote Control Repeaters

- ✓ Works with almost any remote control, does not need to be programmed!
- ✓ Transmitter converts your IR remote to RF
- ✓ Receiver converts transmitted RF back to your IR signal
- ✓ Operate from 7V to 18V AC or DC

RRW1AC  
RRW1BC  
AC125  
RRW1P

Wireless IR/RF Transmitter Kit With Case  
Wireless RF/IR Receiver Kit With Case  
110VAC Power Adapter  
Complete Package, RRW1AC, RRW1BC, And Two AC125 Power Adapters (\$99.80 Value)

\$34.95  
\$44.95  
\$9.95  
\$79.95

## Wired IR Remote Receiver/Repeater

- ✓ Control those components anywhere in the house
- ✓ Works with any 38 KHz carrier IR remote
- ✓ Indicator shows IR reception
- ✓ Operates from 6V to 16V AC or DC

**Don't Rearrange  
Your Room!**

Have you ever been so frustrated with the range of your remote that you have to go through the effort of rearranging your entertainment room? Tired of having to bounce your IR remote off ceilings and walls? Do you want to control your system from another room?

The RR1 is the answer for you. We use a super integrated IR detector with bandpass filtering, AGC, and RFI shielding. Receiving range is easily over 35 feet! It extends the range of your IR remote controls to distances limited only to the wire length you use!

Locate the IR receiver in a convenient location reachable with your existing remote control and run the IR LED extender cable near the front of the equipment you wish to control. It's that easy! Keep your expensive components safely locked away and let the RR1 be the key to control them! While you're building this kit, learn the theory of how IR remotes work and how we use the power of a microprocessor to provide you with flawless performance and the added benefit of error correction! The included matching case set measures 5"W x 1 1/2"H x 5 1/4"D.



KIT

RR1C  
AC125

Wired IR Receiver/Repeater Kit With Case  
110VAC Power Adapter

\$34.95  
\$9.95



KIT

**Just Break The Beam!**

Create an invisible beam of light that will sound (and light) an alert whenever it is broken! Uses IR emitting LEDs for the transmitter to send a powerful beam up to 13 feet! Once setup and armed, a break in the IR beam will sound a built-in 85dB audible alarm and illuminate a red alert LED on the receiver.

Separate transmitters and receivers are provided and both run on standard 9V batteries (not included). Great for store entrances, setting boundaries, and science fair projects to demonstrate how IR light works.

## IR Light Barrier Alarm

- ✓ Up to 13' range!
- ✓ Invisible light beam!
- ✓ Audible and visible alert

Transmitter measures 2.2" x 1.6". Receiver measures 3.9" x 2.0". On/off switches are included on both. Because IR light is used, this is not recommended for outdoor use. From Velleman. (I'm putting one by my office door so I can look busy writing catalog copy when the boss walks in!)

MK120

IR Light Barrier Alarm Kit

\$8.95

## IR Remote Control Checker

KIT

- ✓ Just point and check!
- ✓ Confirms IR signal generation!
- ✓ Provides peace of mind!
- ✓ Runs on a standard 9V battery!

**Check It Before You Wreck It!**

We've all been there, sitting on the couch or easy chair and the TV doesn't seem to respond to your remote control. First you smack it, then you hold it in the air and aim it closer to the TV... but the channel still won't change! At that point there's three options: get up and change the channel (ha, that will never happen), change the batteries and see if that works, or take another Xanax!

Before you go through all that, give yourself a treat and check the remote with this handy IR tester. Simply point your IR remote at the board, press a function button, and the 4 LEDs confirm proper IR receive! Runs on a standard 9V battery (not included). Measures 2.2" x 1.2" x 1.3". From Velleman. (I guess I forgot about option #4, throw the remote at the wall!)



MK137

IR Remote Control Checker Kit

\$6.95





### Control Line Level Stereo Levels Between Units!

## IR Stereo Volume Control

- ✓ Control line level stereo audio!
- ✓ Range 0dB to -78dB in 62 steps!
- ✓ Mute, up, down, and auto fade-in
- ✓ LED volume indication

Even when you have a coffee table full of IR remotes for all of your components, there are still those few items that don't have IR remote volume controls. A great example is a PC. You can have it fed into an aux input of your stereo system, but unless it's a Media computer, there's no IR remote to control the audio output. Sure, you can pot down the stereo's master volume but then the levels won't match your other components when you switch to them. Or, you could actually get up, go to your keyboard/mouse, and control the output there, but who wants to do that!

Now that you have your K8049 remote control, look how simple it is to control stereo audio levels between, let's say, your PC described above and your stereo amplifier! Just put this little enclosed IR controller between the line level output of your PC to the Aux input of your amplifier, program it, and you're all set! Provides continuous "up" and "down" control from 0dB to -78dB attenuation in 62 steps! Also features audio "mute" with "auto fade-in". Runs on 9-12VDC for easy connection to existing power supplies or AC125 below. Includes a sweet little custom enclosure with an IR viewing window, power input, and audio in/out jacks. The stylish black case with the red IR window makes a cool looking addition to any component shelf! Measures 3.2" x 2.2" x 1.3". From Velleman. *(My coffee table... TV, stereo, cable box, DVD player, Blu-ray player, VHS deck, and MCE remote!)*

**MK164** IR Stereo Volume Control, External Kit With Enclosure  
**AC125** 110VAC Power Adapter

**\$29.95**  
**\$9.95**

## 15 Channel IR Hand Held Remote Transmitter

- ✓ 15 channels with 4 separate addresses!
- ✓ Professional rubber keypad!
- ✓ Compatible with multiple receiver kits
- ✓ Includes stylish case



Control A LOT of Stuff!



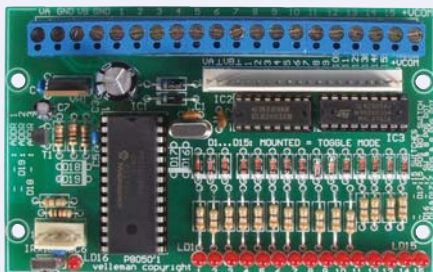
IR remote control is here to stay! Virtually all consumer electronic equipment is equipped with its own IR remote. So why not use IR to control your own projects, circuits, or household functions? Well, up to now there was no easy and "stylish" way to have a consumer attractive remote to use with your equipment. Consider that problem solved with the K8049 remote!

It features 15 separate channels that can be programmed to control anything using compatible receivers and receiver circuits. In addition, the K8049 features 4 separate addresses to allow the use of multiple receivers in one room!

You can use this single receiver with the MK161, MK163, M164, K6712, and K8050 receivers featured on the following pages. It really doesn't get much easier than that! Includes built-in LED function indicators and runs on three standard AAA batteries (not included). From Velleman.

**K8049** 15 Channel IR Transmitter Kit

**\$46.95**



15 Channels, 3 Addresses...  
In A Single IR Receiver!

## 15 Channel IR Receiver

- ✓ 15 separate open collector outputs!
- ✓ 3 separate addresses!
- ✓ LED indicator of each output
- ✓ 4 separate modes
- ✓ Small compact board

Runs on 8-14VDC, 10mA all outputs off, 150mA all outputs on. Comes complete with one LED IR sensor. Order up to two additional LED IR Sensors below for up to 3 separate receive locations. PC board measures 2.8" x 4.5" and has easy to connect terminals for all outputs. From Velleman.

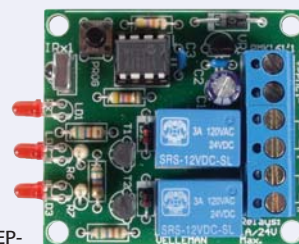
**K8050** IR 15 Channel Receiver Kit  
**IR38DM** LED IR Sensor

**\$32.95**  
**\$3.95**

## 2 Channel IR Remote Receiver

- ✓ Two channel relay output!
- ✓ 'Learn mode' settings are stored in EEPROM
- ✓ Toggle or pulse selection for each channel

Program Two Functions!



Use the sleek K8049 as the main remote for your IR control. Perhaps add an automatic light dimmer with the K6712. With 15 channels available on your remote, you'll have plenty of control room to spare! This tiny little receiver gives you two separate channel functions, providing relay closures for each!

Each control function can be set for either toggle or pulse mode to fit your specific application. Plus, all settings are stored forever in the built-in EEPROM! Channel and acknowledgement of reception are indicated on the attached LEDs. Relay outputs are rated at 24VAC/VDC at 1A. Runs on 12VDC at 0.75mA and measures a small 1.7" x 1.9" x .6". From Velleman.

**MK161** IR 2 Channel Remote Receiver Kit

**\$19.95**



Update Your Equipment To Use KeyFobs!

## 2 Channel Mini IR KeyFob

- ✓ Compact 2-button IR keychain!
- ✓ Dual LED's indicate operation and programming!
- ✓ Up to 50' range!

Bring the convenience of key fob control to any application with this awesome kit! The tiny handheld transmitter fits on your keychain (or anywhere else you need it) and can control any of the IR receivers above. Easy channel switching (just hold down both buttons) lets you use multiple transmitters in the same area - up to 16 separate channels! A standard red LED lets you know when you are transmitting or switching channels. Powered by a 12V battery (e.g. VG23GA, GP23GA, etc. not included). Dimensions: 2.3" x 1.6" x 0.5". From Velleman.

**MK162** IR 2 Channel Mini KeyFob Kit

**\$17.95**



KIT

Wired &amp; Tested

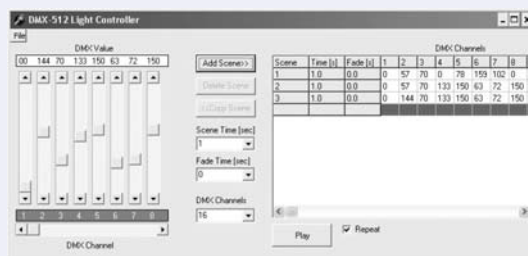
### 512 DMX Channels Over An XLR Cable!

At this point some of you may be wondering... "um, what is a DMX interface?" While it's not something you would find in a typical home, it's widely used in stage and music productions. DMX is short for an EIA-485 based communications protocol that is commonly used for stage lighting and stage effects. If you ever wondered how do they control all those stage lights, lasers, and other effects remotely from a single control point, now you know!

This little controller is USB controlled via a PC or laptop. "DMX Light Player" software is included to give you flexible control of up to 512 DMX channels, each channel with 256 levels! Now you're starting to get it! DMX fixtures are connected to the controller via standard XLR cables. Multiple fixtures are simply "daisy-chained" together giving you one final connection to the controller.

In addition to the Light Player software, test software is included to test all fixtures and a custom DLL is also provided allowing you to write your own software. Any PC compatible with USB1.1 is compatible with the controller. The controller is powered via the USB cable connection, however an optional 9VDC battery can also be used for stand-alone testing. This is handy when using the built-in test mode that outputs to all 512 channels with adjustable levels without a USB connection or external software!

The controller is available as a do-it-yourself kit, or factory assembled and tested ready to operate. It comes complete with a professional enclosure, USB cable, and installation CD that includes test software, DLL, and DMX Light Player. If you need to control multiple stage lights and effects that have DMX control, but don't want to spend a fortune for a commercial controller, this USB controller fits the bill! Take total control of your lights with DMX! From Velleman.



**K8062** USB Controlled DMX Interface Kit  
**VM116** USB Controlled DMX Interface, Factory Assembled & Tested

**\$67.95**  
**\$78.95**

## DMX Controlled Power Dimmer

KIT

- ✓ Dim standard incandescent and halogen lights
- ✓ Handles a 500W load at 110VAC
- ✓ Dip switch programming to any of 512 DMX addresses
- ✓ Stand-alone test mode

No DMX Lights?  
No Problem!



OK, so you got the introduction to DMX control above, so at least you know what the basics are. Get a commercial controller, or the inexpensive USB controller above, plug in a daisy-chain of XLR cables to a number of lights and fixtures that have a standard DMX input, set and map the addresses, and you're all set! Sounds simple, huh? Well, here's the next problem! What happens when you want to control standard incandescent lighting fixtures that don't have a DMX control? It's simple, use this simple single channel dimmer!

This little dimmer circuit allows you to control a lamp or group of lamps with your DMX controller. It is designed to dim resistive loads such as incandescent lamps and line operated halogen lamps (not low voltage halogen's!). The controller has a primary power input of 115/230VAC so it can be used with either primary power mains. Likewise, the output follows the input voltage to power the light(s) you connect.

110VAC input will power 110VAC lights, 230VAC input will power 230VAC fixtures. The maximum resistive load is 1000 watts at 230VAC, or 500W at 115VAC. The dimmer can be programmed to any of the 512 DMX addresses with a simple dip switch. It also features a status LED for power and DMX error detection, toroidal filtering for low noise, and a stand-alone test mode. The DMX input is a standard XLR connector. The board measures 5.9" x 2.3" x 1.8". From Velleman.

**K8039** DMX Controlled Power Dimmer Kit

**\$54.95**



KIT

Wired &amp; Tested

Turn It On...  
Turn It Off!

What if you need to do more than dim a resistive incandescent light in your DMX control chain? What if you need to provide an on/off function? Just like the dimmer above, if you are switching a device that doesn't have a standard DMX control input, you're pretty much out of luck... unless you have this handy little relay board!

Here's how it works: First we plug this relay board into the DMX control daisy-chain (or directly to a controller if that's all you're controlling). Next, set the dip switches to the desired DMX address. There can be up to 512 addresses in a single DMX chain, so you've got plenty of room to add more devices later! Finally, map that address in your controller, and you're now "talking" to the relay switch with the controller, and can enable the on/off function of the relay. It's that simple!

The switch is actually a bus-controlled power driver. The on-board relay will be activated when the DMX value of the set channel equals 140 or more, and will shut off when the value is 120 or less. LED indication is provided on the board for power supply and DMX error detection.

In addition, "Safe DMX Data Stream" mode is used to reduce interference. If the DMX signal is lost (i.e. somebody trips on the cable!) the "Relay Hold" function will continue to latch the relay. DMX input is via a standard XLR connector. Relay switching capacity is 8A. The board runs on any 12VDC unregulated power supply or source. Available as a do-it-yourself kit or factory assembled & tested for immediate use. Board measures 4.1" x 2.4" x 1.2". From Velleman.

**K8072** DMX Controlled Relay Kit  
**VM138** DMX Controlled Relay, Factory Assembled & Tested

**\$39.95**  
**\$52.95**

## DMX Controlled Relay Switch

- ✓ 8 Amp switching capacity!
- ✓ 512 DMX channel addressability!
- ✓ Relay hold in case of DMX signal loss
- ✓ Runs on 12VDC

## DMX CONTROL... What is it?

"DMX512 was originally intended as a 'lowest common denominator' protocol for use between interfaces supporting proprietary protocols. However, it soon became the primary method for linking not only controllers and dimmers, but also more advanced fixtures and special effects devices such as fog machines and moving lights."







KIT

Wired & Tested



## 42W Universal Stereo Amplifier System

- ✓ 42 watt class D amplifier spread spectrum design!
- ✓ Highly efficient heat-free operation!
- ✓ Built-in click and pop suppression!
- ✓ 0.1% distortion!
- ✓ Balanced and unbalanced audio inputs!
- ✓ All DC digital controls for noise-free operation!
- ✓ Selectable pre/post process line outputs!
- ✓ Short circuit proof!
- ✓ Operates on 12-18VDC at a mere 3.3A!
- ✓ Compact and attractive shielded aluminum case!

*The Ultimate High-Tech  
Super Efficient Amplifier Solution!*

First we designed the UAM2, the extremely popular audio amplifier module that provides 20 watts of clean audio with virtually no heat... or heatsink! People loved it, and "stuck" them everywhere, from the back of speakers to inside their custom equipment to drive speakers. Last year saw the introduction of the "big brother" of the UAM2, our UAM4. The UAM4 upped the ante; this little 2.5" board provided 42 watts of stereo from a single SMT device! Just like the UAM2, people fell in love with it, and then they suggested we put together a complete audio amplifier system based on the UAM4 design. Their requests seemed like a great idea, so the UAM4SYS was born!

### SPECIFICATIONS

Audio Output:	2 x 21W stereo mode, 8 ohms 1 x 42W mono mode, 4 ohms
Signal/Noise:	91dB into 8 ohms, 22Hz-22kHz
THD+N:	0.1%
Audio Input:	Balanced, unbalanced, hi-Z
Gain Adjust:	Jumper settings, +22dB, +25dB, +29.5dB, +36dB
PSRR:	90dB at 1kHz
Efficiency:	Up to 87%
Protection:	Short circuit, thermal overload, Auto short shutdown Auto thermal shutdown
Modulation Scheme:	Spread-spectrum (SSM) Clock frequency 200kHz $\pm$ 4kHz
Line Outputs:	Selectable pre/post processing, dual RCA unbalanced
Headphone Out:	64 step digital level control with memory, 3.5mm front panel
Speaker Out:	Spring clamp terminal block, 14- 28AWG, rear panel
Front Panel Controls:	Volume, bass, treble, balance, dig- ital DC controls
Mute:	Digital push button with LED
Loudness:	Digital push button with LED
Power:	On/off with LED
Over Temp:	LED indicator
Audio Input:	3.5mm stereo unbalanced 3.5mm balanced/unbalanced each channel, 10K impedance
Case:	Anodized aluminum
Power Supply:	12VDC to 18VDC, 3.3A at 18VDC, 2.1mm center positive rear panel
Dimensions:	5.28" x 6.2" x 1.2" board 5.6" x 6.6" x 1.6" case
Weight:	1.24 lbs

Our goal was to make a universal amplifier that is both compatible with anyone's system requirements, and could be simply plugged in and used. Sounds simple, but it took some serious design work, and resulted in a lot of seriously awesome features! Like the UAM4, the amplifier is based on a single SMT device that runs in class D, which means it's highly efficient (up to 87%) and produces very little heat. It provides stereo audio power of 21 watts per channel, or 42 watts total audio power!

Easy-to-use board jumpers offer selectable gain of +22dB, +25dB, +29.5dB or +36dB to match your input levels. Board jumpers also enable protection and shutdown options as well as stereo/mono/bridge mode. The amplifier also features built-in click and pop suppression to protect not only your ears and sanity, but your speakers and equipment!

Construction wise, the entire amplifier assembly is nicely designed around a main board and a front panel control board. The micro-miniature SMT amplifier and related SMT components are pre-installed on the main board. The remaining parts are through-hole to make construction simple. Look at the front and rear view of the boards... what's missing? Yep, no heatsinks! The amplifier runs 87% efficient, and produces little (if any) heat!

The high impedance input is designed to use your choice of either a balanced line input or an unbalanced signal source. A single stereo 3.5mm input can be used for a single stereo unbalanced input (i.e. a typical computer audio stereo cable) and there are separate 3.5mm left and right audio inputs that can be used as balanced (TRS) or separate unbalanced inputs. It's your choice!

Speaker outputs are provided on the rear panel via spring clip terminal blocks compatible with 14-28AWG speaker wire. Separate left and right line outputs are also provided on the rear panel via RCA unbalanced connectors. Best of all, you can select these outputs to be either pre or post processing!

Front panel controls are all DC or digital, giving you noise-free operation. No noisy/touchy volume pots ever again! Volume, bass, treble, and balance controls are provided to let you configure the audio exactly to your personal preferences. In addition, mute and loudness on/off's with matching LED indicators are provided on the front panel.

We're especially proud of the headphone output circuit on the UAM4SYS. The standard 3.5mm stereo headphone jack on the front panel is controlled with digital up/down push button controls. This gives you 64 steps of audio level, and even stores your last setting so your headphone level will remain the same! The headphone jack is also pre-mute to allow monitoring while the speakers are muted. It also makes it possible to have a "single master" unit with remote amplifiers daisy-chained or bridged together with the ability to turn one off individually without disturbing the others downstream. That's just one of the many systems you can implement with the UAM4SYS - the only limit is your creativity and imagination!

An over-temp LED is provided on the front panel to indicate problems like shorted outputs. The amplifier also detects this condition and automatically shuts down for protection until the short is cleared. Considering all these features, you may be surprised to learn that we managed to fit the whole thing in a compact anodized aluminum case that is a mere 1.6" high! It makes an attractive addition to any equipment stack or computer setting.

If you're looking for a great way to properly drive speaker monitors from the line out of your computer, the UAM4SYS is perfect. One single stereo input cable between the computer and the UAM4SYS, a pair of decent nearfield monitor speakers, and you're all set. This is great for people that use their PC for audio and video editing. It's also the perfect choice for anyone looking for a high quality amplifier for an iPod or MP3 player.

Input power is 12-18VDC. At 18VDC and providing maximum power output, the high efficiency amplifier only draws 3.3A! The broad power input range also makes it perfect for automobile use. Just plug it into an accessory power plug (formerly known as a cigarette lighter plug!).

A lot of customers use their own power supplies or use the UAM4SYS in a mobile environment, so we do not include a power supply. The optional SPS183 is a compact desktop switching power supply that provides 18VDC to produce the maximum output power of the amplifier. It has a wide input range of 100-240VAC so it's compatible with domestic or international mains. (If you order the factory assembled and tested version, we include the power supply so you can plug it in and crank it up!) The complete amplifier measures 5.6" x 6.6" x 1.6". If you've been looking for the perfect audio amplifier, look no further!

UAM4SYS  
UAM4SYSWT  
SPS183

42 Watt Stereo Amplifier Kit  
42 Watt Stereo Amplifier, Factory Assembled & Tested, With SPS183 Power Supply  
18VDC, 3.3A Switching Power Supply, 100-240VAC, 50/60Hz

\$169.95  
\$249.95  
\$59.95

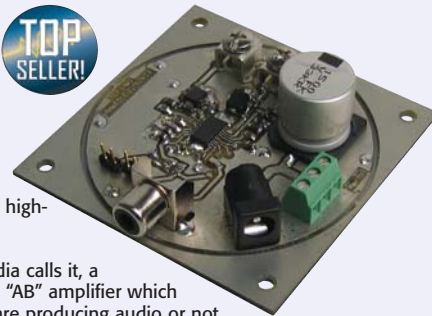
## Subminiature 20W Amplifier

- ✓ 20 Watts from one SMT package!
- ✓ Super efficient Class D design!
- ✓ Super clean output!
- ✓ No heat/heatsink concerns!

**KIT**

**22 Watts..And NO Heat!**

**TOP  
SELLER!**



### SPECIFICATIONS

Audio Output:	20W max
Signal/Noise:	102dB into 8 ohms
Total Harmonic Distortion:	Less than 1%
Audio Input:	Line level 10K unbalanced
Gain Adjust:	4 input gain settings
Protection:	Auto short to ground shutdown Auto short to Vcc shutdown Auto short shutdown Auto thermal shutdown
Power Input:	8-18 VDC, 2.1mm connector (18VDC for full rated output)
Dimensions:	2.6" square, 1.43" diameter

The UAM2 is probably the neatest audio kit to come along in quite a while! It uses the latest amplifier technology to bring you clear, crisp, high-power audio without any of the heat which is normally generated!

Lesson time: This is what is called a class "D" amplifier or as the media calls it, a "Digital" amplifier. Instead of operating like a classic class "A" or class "AB" amplifier which leaves transistors biased on all the time, losing energy whether they are producing audio or not, the class "D" amplifier only produces power into the load of your speaker! This means that the amplifier device can deliver a full 20 watts of power without getting so much as warm! Now it gets even better... The entire 22 watt amplifier device is a single SMT component! YES, I said SMT or Surface Mount!

We designed the amplifier around the device to provide all the necessary interfaces, inputs and outputs in a convenient mounting package. Audio input is standard unbalanced line level at 10K brought out to an RCA jack. Speaker output is brought out to convenient board mounted screw terminals. The amplifier has selectable gain of 12dB, 18dB, 23.6dB, and 32dB. This is selected via board jumpers. A amplifier shutdown terminal is also brought out to the Euroblock. You can use that to switch the amplifier on/off by taking it to ground.

The UAM2 runs on 8-18VDC, and is brought out to a standard 2.1mm power jack AND two terminals on a Euroblock. Therefore if you're hardwiring it, you don't need to use a plug from a separate power supply! Full rated output will be achieved at 18VDC, but will operate all the way down to 8VDC! And that means it works great in a vehicle at 12VDC! Just think of the applications!

The entire amplifier board is 2.6" square and can be easily installed inside your speaker enclosures, or other components. We made it even easier with a unique board that can be "snapped" out into a small circle to be double face tape mounted directly to the back of a speaker! And however or wherever it's mounted there is no concern for heat, ventilation, or the need for a heatsink!

This IS a Surface Mount (SMT) kit, so you will need fine tweezers, magnifier, and a decent fine tip soldering iron! See assorted tools and accessories in the tools section. (Who ever imagined 20 watts in a single SMT device; I still remember fighting with vacuum tubes to get 20 watts!)

UAM2  
SPS18

20 Watt Audio Amplifier Module Kit  
18VDC Switching Power Supply, 1.7A

\$39.95  
\$39.95



**KIT**

**TOP  
SELLER!**

**42 Watts, 87% Efficient,  
No Heat, All On A 2½" Board!**

## Subminiature 42W Stereo Amplifier

- ✓ The EXTREME big brother of the UAM2 in stereo!
- ✓ 2 independent 21W amplifiers in one SMT package!
- ✓ Super efficient Class D spread spectrum design!
- ✓ Built-in click and pop suppression!
- ✓ Balanced & unbalanced hi-Z inputs!
- ✓ Logic level mute and shutdown functions!
- ✓ Selectable gain from +22dB to +36dB!
- ✓ Built-in thermal protection!
- ✓ Programmable device shutdown with LED indicator!
- ✓ Runs cool, no heat sink required!
- ✓ All this on a 2½" square board!

### SPECIFICATIONS

Audio Output:	2 x 21W stereo mode, 8 ohms 1 x 42W mono mode, 4 ohms
Signal/Noise:	91dB into 8 ohms, 22Hz-22kHz
THD+N:	0.1%
Audio Input:	Balanced, unbalanced, hi-Z
Gain Adjust:	Jumper settings, +22dB, +25dB, +29.5dB, +36dB
PSRR:	90dB at 1kHz
Efficiency:	Up to 87%
Protection:	Short circuit, thermal overload Programmable thermal flag Auto short shutdown Auto thermal shutdown
Power Input:	10-18 VDC, 2.1mm connector (18VDC for full rated output)
Dimensions:	2.5" square

When we released the UAM2, it became the most popular audio amplifier product in our history. The novel Class D design, providing a clean 20 watts in such a tiny package, set the hobbyist world on fire! And that's a pretty tough task when it didn't even produce any heat at its full output! Because of the popularity of the UAM2, we put the engineering staff into overdrive and the result is the UAM4!

The UAM4 is the big brother to the extremely popular UAM2. It uses the latest spread spectrum amplifier technology to bring you clear, crisp, high-power audio without any of the heat which is normally associated with such an amplifier. It's extremely clean Class D design produces two independent 21 watt outputs! This can also be bridged to an extremely efficient (87%!) single channel (mono) 42 watt amplifier.

And at 42 watts, you're probably already wondering about the heatsink requirements to dissipate the heat, right? Stop wondering, there's no heat, so there is no heatsink required! And all that power is generated in a single SMT device the size of your thumbnail on a small 2½" square board! For a quick tutorial on Class D amplifiers, see the description of the UAM2 above!

The high impedance input is designed to use your choice of either a balanced line input or an unbalanced signal source using easy to connect Euroblock terminals. No more concerns about having a matching input connector or plug or whether it's balanced or unbalanced! Audio speaker output is brought out to simple screw terminals. It doesn't get much easier than that. Logic connections to ground are also provided to mute and/or shut down the amplifier. You can also enable the built-in over temperature signal to activate one of these controls automatically!

Easy to use board jumpers offer selectable gain of +22dB, +25dB, +29.5dB or +36dB to match your input levels. Board jumpers also enable protection and shutdown options as well as stereo/mono/bridge mode. The amplifier also features built-in click and pop suppression to protect not only your ears and sanity, but your speakers and equipment! Power input for maximum rated output is 18VDC at 2.64A. Input voltage can be reduced to a minimum of 10VDC with reduced output. If required, use our switching power supply below which provides 18VDC at 3.3A with an input of 100-240VAC, 50/60 Hz.

As a result of customer requests, we have also designed this amplifier circuit into a complete 42 watt stereo amplifier system! Check out the UAM4SYS on the previous page, it's a complete system amplifier in a compact aluminum case. Gives you the performance of a component system amplifier with no heat and in a compact form factor!

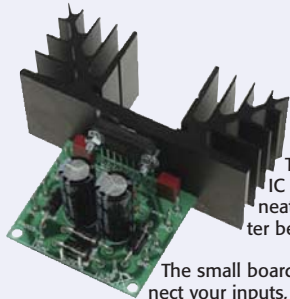
If you're looking for an incredible stand-alone stereo (or mono) amplifier to build into your equipment, speakers, or application, the UAM4 is the latest and the greatest! Remember, this is an SMT kit so you will need tweezers, a magnifier, some pretty good eyes, and a fine tip soldering iron or station. Check out SMT related tools in our Tools section. (Think back to the components, power supplies, and heatsinks it used to take to get 40 watts!)

UAM4  
SPS183

42 Watt Audio Amplifier Module Kit  
18VDC, 3.3A Switching Power Supply, 100-240VAC, 50/60Hz

\$69.95  
\$59.95





**KIT**

### The Super Easy Stereo Power Amplifier!

This unique small audio power amplifier is designed around the TDA1521 IC. The IC is thermal, short circuit, and overload protected for reliable operation. One of the neat features of this amplifier is that it needs no additional rectifier and smoothing filter because it can also run on AC!

The small board and custom heatsink design make installation and connection a breeze. Just connect your inputs, your speakers (4 or 8 ohm) and power. Don't worry about overloads, or shorts on your outputs because it has automatic protection.

In addition, transient suppression is switchable on/off as desired. If you're looking for a sweet little inexpensive stereo amplifier, this is for you! Board, less heatsink, measures 2.8" x 2". From Velleman.

**K4003** **2x30 Stereo Audio Power Amplifier Kit** **\$27.95**

## 2 x 30 Watt Audio Power Amplifier

- ✓ Dual channel, 30W max per channel!
- ✓ Latest IC circuitry, fully protected
- ✓ Includes heatsink
- ✓ Perfect drop-in power amplifier

#### SPECIFICATIONS

Audio Output:	2x30W max (2x15W RMS)
Signal/Noise:	98dB into 4 ohms
Total Harmonic Distortion:	Less than 0.07%
Channel Separation:	70dB
Frequency Response:	7Hz to 60kHz
Audio Input Sensitivity:	300mV/150k ohm
Protection:	Transient suppression on/off Auto overload protection Auto short circuit protection Auto thermal shutdown
Power Input:	2x12V AC/DC @ 50W/2A
Dimensions:	2.6" square, 1.43" diameter

## 7 Watt Audio Power Amplifier

- ✓ 7 Watts output maximum power
- ✓ Overload and short circuit protected
- ✓ Includes heatsink

A super amplifier to use stand-alone or as part of a system. The small circuit board and heatsink make it easy to integrate this into any of your applications requiring a good amplifier. 7 watts maximum audio output (3.5W RMS into 4 ohm) provides a Total Harmonic Distortion of .05% with a Frequency Response between 20Hz and 20kHz. Input sensitivity is 40mV at 150k ohm.

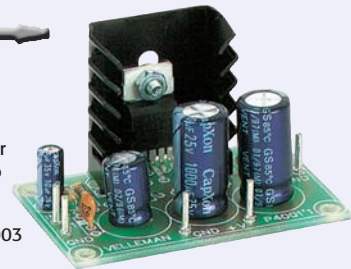
Supply voltage is 8 to 18VDC at .5A (15VDC for rated output). Automatic protection for shorted output and overload. Uses the newest TDA2003 IC for ultimate reliability. Includes the small but efficient heatsink shown. Board measures 2.2" x 1.4". From Velleman.

**K4001** **7 Watt Audio Power Amplifier Kit**

**\$14.95**

**KIT**

### The Easy Audio Amplifier!



**Wired & Tested**

**KIT**

*Crank It Up Baby...  
Crank It!*



## Personal Practice Guitar Amplifier & DI

- ✓ Practice your guitar or bass without disturbing others!
- ✓ Standard 1/4" guitar audio plug input!
- ✓ CD/MP3 player audio headphone input to practice to your favorite music!
- ✓ Switchable bass boost!
- ✓ Great as a DI to your home stereo amplifier!
- ✓ Standard 3.5mm "Walkman" headphone jack!
- ✓ Uses a standard 9V battery

### CRANK UP THE AUDIO AS LOUD AS YOU NEED!

So you're a guitar player, and you live in an apartment... need we say more?! You would love to plug into your 100 watt HiWatt (my favorite!) amplifier and let it crank, but the neighbors probably wouldn't share your enthusiasm! The PGA1 was designed to give you hours of enjoyment playing your favorite electric guitar while isolating your family, friends, and neighbors from your music and your passion.

### FOR USE WITH ALL TYPES OF GUITARS!

Whether you use an acoustic electric, electric, or bass guitar, the PGA1 gives you an adjustable volume output to your favorite headphones. Unlike a lot of practice amps, the PGA1 has a special bass boost to enhance bass guitar use. One practice amp for all your guitars! If you want to practice to your favorite music, the PGA1 has a standard style audio input to play to your favorite music! Just plug in your Walkman style CD player, MP3 player, or even the headphone output on your mixer board and you'll hear both your music source and your guitar in your headphones!

### ONE WATT OUTPUT!

The PGA1 uses a powerful LM386 power amplifier to provide one watt of power to your headphones or even a small speaker! It gets even better...use the PGA1 as a cheap and easy direct inserter box to match your guitar into an aux input of a stereo receiver amplifier or PA amplifier! It sounds great! A standard 1/4" audio input connector is used for your guitar input, matching your standard guitar cables. A top mounted on/off/volume control adjusts the headphone output level through the full range. The small belt clip pocket size device runs on a standard 9V battery (not included). An LED indicates power-on and relative battery condition. The attractive compact case measures 4.5"W x 2.7"W x 1.1"D and can be worn on your belt or carried in your pocket. Available in kit to "learn as you build" or factory assembled and tested to get playing right out of the box! (My son keeps one of these tucked in the case of his new Gilmour Black Strat!)

**PGA1** **Personal Practice Guitar Amplifier Kit**  
**PGA1WT** **Personal Practice Guitar Amplifier, Factory Assembled & Tested**

**\$64.95**  
**\$99.95**

## Stereo Headphone Amplifier

- ✓ Make your headphones sound GREAT!
- ✓ Use with table radios, CD players, tuners, and more
- ✓ Great as a basic preamp for any line level signal

**KIT**

**Wired & Tested**

*No Headphone Jack?  
NO Problem!*



So, you buy a really good radio or CD player, go to plug in your headphones, and there isn't a headphone jack! You find a line level jack, plug in your headphones, and they sound terrible. Sound familiar?

Most good quality gear lacks an earphone output, or if there is one, it is woefully poor quality. We developed this kit to help us listen to our mixers, reverbs, voice recorders and other audio goodies. We took a pair of LM-386 250 mW audio amplifiers, added volume controls, power supply and a handy, switchable, high-cut filter. A common 1/4" stereo earphone jack is used for the output - assuring compatibility with all stereo headphones - and RCA phono jacks accept standard line level input signals. There's plenty of volume and of course, the "Fi" is quite "Hi". Available in money saving kit form or fully wired and tested. Runs on 9 to 15 VDC. Includes an attractive matching case measuring 5"W x 1 1/2"H x 5 1/4"D. (Did you know the leading and most well known manufacturer of high-end table radios recommends the SHA1 to all of their customers?)

**SHA1C** **Stereo Headphone Amplifier Kit With Case**  
**SHA1WT** **Factory Assembled & Tested SHA1 With Case And Power Supply**  
**AC125** **110VAC Power Adapter**

**\$32.95**  
**\$64.95**  
**\$9.95**



## Super Stereo Headphone Amplifier

KIT

Wired &amp; Tested

- ✓ The next generation headphone amp!
- ✓ Separate volume, treble, bass, balance and loudness controls!
- ✓ Signal level clipping indicator LED!
- ✓ Stereo loop-through for multiple feeds with separate controls
- ✓ CD quality audio!

*The New Generation  
Stereo Headphone  
Amplifier!*



A few years ago we designed the SHA1 stereo headphone amplifier to provide an audiophile quality headphone signal from a radio or amplifier that only had a line output. The success was overwhelming! As described in previous catalogs and on our website, the largest manufacturer of high quality table radios recommended the SHA1 to their customers who wanted to use headphones with their radio.

Well, it's been a couple of years and the need has been proven so we decided not to rest on our laurels with the success of the SHA1. We put our engineers to work, asking them questions like... what if a band wanted multiple headphones with separate level controls? And what about controls... how about the ability to tailor the audio characteristics to each user's preferences? What about multiple headphones from just one unit? When they got tired of all our questions they said "OK... you've got it, the new SHA2... the next generation headphone amplifier kit!"

Standard 3.5mm stereo audio headphone connectors are used for both looping input and dual outputs for simple Walkman style headphones. That was decided when I recently bought a hundred dollar set of Sony professional headphones that had the 3.5mm plug on them and an included 1/4" adapter. I figured it's time to concede to 3.5mm! And before you ask, we provide a dual RCA to 3.5mm stereo input cable with the SHA2 to match up with your standard unbalanced RCA line out connectors!

From there LM386's and LM1036's are used for audio processing providing nearly 1 watt of output to the normal 4-40 ohm headphones or speaker circuits. The loop-through inputs are properly isolated to prevent ground loop and hum problems when daisy chained or used in multiples. The dual outputs are great for that other person that just has to listen in too! We covered it all with the SHA2!

Runs on a built-in standard 9VDC battery and also has a rear power jack for 12-20VDC if you don't want to bother with a battery! If you're looking for a great headphone amplifier to simply listen to the line output of a radio, CD player, tape player, or receiver, our proven SHA1 is the answer. BUT... if you're looking for multiple outputs, looping inputs, daisy chained amplifiers, and bass, treble, loudness control, then try the SHA2, the next generation stereo headphone amplifier! Like the SHA1, it includes an attractive matching case measuring 5"W x 1 1/2"H x 5 1/4"D.

**SHA2**  
**SHA2WT**  
**AC125**  
**Super Stereo Headphone Amplifier Kit With Case**  
**Factory Assembled & Tested SHA2 With Case And Power Supply**  
**110VAC Power Adapter**

**\$64.95**  
**\$109.95**  
**\$9.95**

## Super Snoop Amplifier

- ✓ High sensitivity, long distance listening!
- ✓ Powerful 2W audio output!

*Super High Gain!*



Here's a super sensitive amplifier that will pick up a pin drop at 15 feet (with a proper microphone attached)! It's also an ideal general purpose amplifier to simply boost the signal level of any audio source. The device is rated 2 watts audio output which relates to lots of gain!

When wired for high gain, makes an excellent room monitor. Simply connect one of our MC1 mini electret condenser mics. Likewise, this little amplifier is perfect to build a "big ear" high gain mic to listen in on the "wildlife" both in the field and in the city! Just like the ones the networks use at football games to listen to the players! Runs on 6-15VDC at 500mA. Drives any speaker or coupled headphones and runs on a standard 9V battery or anywhere from 9-15VDC. The tiny board measures 1 1/2" x 1/2" x 1 1/2".

**BN9** **Super Snoop Amplifier Kit**

KIT

\$9.95

## Mini Electret Condenser Microphone

- ✓ Extremely sensitive!
- ✓ Built-in FET preamplifier!
- ✓ Super small size, great fidelity!
- ✓ Runs on 3 to 15 VDC

*You CAN Hear Me Now!*

**TOP  
SELLER!**



This little subminiature condenser microphone element kit is great as a replacement microphone in tape recorders, walkie-talkies, radios, CB microphones, telephones, and other audio products. Extremely sensitive element has a built-in high gain FET preamplifier. A lot of customers use these microphone elements together with our BN9 Super Snoop Amplifier to build super sensitive "electronic ears".

The preamp is powered from 3 to 15 VDC on the audio line to the microphone. The kit includes a coupling capacitor and current limiting resistor to make the connection to your circuit a breeze! Comes complete with detailed connection details, schematic, and diagrams. The microphone element measures 3/8" diameter x 3/8" high! And THAT is small!

**MC1** **Mini Electret Condenser Mic**

KIT

\$3.95



**TOP  
SELLER!**

KIT

*What Did He Say?  
You'll Find Out!*

The "Stereo Ear" is an ultra high gain stereo audio amplifier! And when we say high gain, we mean it! It boosts audio 50 times and you can listen to it in stereo besides! Miniature high sensitivity microphones are placed at 45 degree angles to give you maximum separation.

This little kit also includes an on/off switch, volume control and audio output connector. Runs on 3 AAA batteries (not included). Measures 2.4" x 2.1". From Velleman. (Noisy tenants? Plug this into your PC audio in and record it all night, burn a CD, give it to your landlord... it works!)

**MK136** **Stereo Ear Super Stereo Amplifier Kit**

**\$9.95**

## Pocket Audio Generator

- ✓ Digital waveform generation
- ✓ Stereo out, dual RCA plugs

*Test Those Inputs!*

A perfect test source for stereo line inputs on any amplifier or mixer. Provides 50Hz, 100Hz, 1kHz, 10kHz, & 20kHz tones, plus 32 bit digital pink noise. Great to help you identify cables or left/right reversals!

Output is line level to two standard RCA plugs. Runs on two CR2016/2025 batteries not included. Measures 3.4" x 2" x 1". From Velleman.



**K8065** **Pocket Audio Generator Kit**

KIT

**\$29.95**

## Pocket Vu Meter

- ✓ LED bar graph display
- ✓ Built-in microphone

*Watch That Music!*

Hand held audio level meter that fits in your pocket! Built-in mic picks up music and audio and displays it on an LED bargraph. Includes enclosure shown. Runs on one 3V Li-Ion button cell, not included. From Velleman.



**MK146** **Pocket Vu Meter Kit**

KIT

**\$8.95**





## Rat Blaster Varmint Repeller

- ✓ Covers over 3,000 square feet
- ✓ Programmable frequencies for optimum repulsion
- ✓ Comparable to commercial units costing \$150!
- ✓ Build in your own case or wall, or use our custom case!
- ✓ Runs on 9-15 AC or DC, or our 110VAC power supply

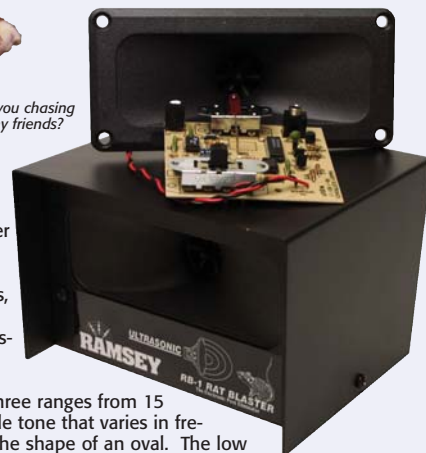
**KIT**



*Eliminate Them...  
Without Any Harm!*



*Why are you chasing  
away my friends?*



Sure, you've seen these things advertised before. Big claims and a huge price! Well we won't carry on about how you'll be able to keep Godzilla out of your garbage cans but we will say that this unit will do a nice job of keeping the neighborhood dog, cat, or deer away!

Here's the story. We had a problem at the boss's housekeeping the deer out of the garden. The boss, being the electronic nut he is, bought one of these things and tried it. It worked pretty well so he planned to get another for protecting the shrubs but at \$150 a box he figured it was cheaper to build his own. Here it is, cheaper and better! We've increased the power, put in a top-quality transducer (by Motorola), upgraded the frequency range, and made it affordable!

The RB1 produces approximately four watts of high frequency audio. The output frequency is selected via a front panel control in three ranges from 15 kHz to 30 kHz. Instead of just generating a single constant tone like many competitive units on the market, the RB1 creates a warble tone that varies in frequency which really annoys those pests. This unit is set outside facing the area desired to be protected. It then covers an area in the shape of an oval. The low frequency setting will cover an area of approximately 4000 square feet and is the best range for dogs. The high frequency setting, it covers an area of around 2,500 square feet and is the best range for cats. Deer respond well to the middle setting. As for Big Foot, we're not sure, other than he will be blurry, and that's a guarantee!

A lot of customers prefer to build it into their own case (or even a garage, shed, or barn wall!) so we offer the custom metal case shown as a separate option. We're not thrilled by the price increase in the custom case... but the manufacturing costs skyrocketed for this! Sorry! Runs on 12 to 15 volts AC or DC, or use our AC adapter below.

RB1  
CRB  
AC125  
**Rat Blaster Rodent and Animal Repeller Kit**  
Matching Case & Knob Set for RB1  
110VAC Power Adapter

\$59.95  
\$49.95  
\$9.95



**Wired & Tested**

**KIT**

## Bullshooter-II Digital Voice Storage

*Feature Packed  
Digital Storage!*

- ✓ Multiple message storage and selection!
- ✓ Built-in mic, external mic and line inputs!
- ✓ Variable output levels to match your equipment!
- ✓ Great for telephone hold announcements, broadcast announcements, and much more!
- ✓ Single play and programmable repeat modes

Our first generation BS1 Bullshooter digital voice storage recorder provided the proverbial endless tape loop recorder/player without the tape! For the first time ever, the tape, along with the motors, drive belts and dirty and plugged tape heads were replaced with state-of-the-art digital voice storage! The BS1 became extremely popular to replace tape for basic voice announcements. As digital voice technology improved and came within reach of the consumer, it paved the way for the next generation, the BS2C! Requests came pouring in for longer voice storage, separate voice channels of storage, and different time duration channels of storage. The BS2C Bullshooter-II took care of all that, and a whole lot more!

Storage wise, the BS2C provides up to 8 minutes of digital voice storage. But it only starts there! That total storage capacity can be broken down into a maximum of 8 separate stored messages. In addition, the BS2C features four selectable sampling rates depending on the type and quality of audio being stored. A sample rate of 4kHz provides the full 8 minute storage, while 5kHz provides 6.4 minutes, 6kHz provides 5.3 minutes, and the highest sample rate of 8kHz provides 4 minutes. As an added sample rate feature, you can play back a slow sample rate message at a faster sample rate to achieve a "funny-fast" playback! Likewise playing a higher rate message at a lower sample rate to achieve a "slow" playback effect. And unlike tape, your messages are stored in a non-volatile memory for over 100 years without power!

Recording voice with the BS2C is simple with a built-in front panel mounted electret condenser microphone. Just setup to record, push a front panel button and speak! You can also plug in your own external electret condenser microphone for professional studio-sounding recording. You can also record audio from any audio source that has standard line outputs. Just plug it into the line input of the BS2! Line/mic input switching is provided by front panel control. Both external inputs also feature variable level controls to optimize your recordings.

Playback-wise, the BS2C features adjustable line level outputs (two mono outputs for stereo inputs) to properly feed any application or device! This is perfect for telephone system announcements on hold (MOH source), radio broadcasters, transmitters, and audio/visual displays. You can also directly drive a speaker with the built-in amplified speaker output. A built-in headphone jack is also provided to monitor audio levels. The message number is displayed on the 7 segment LED front panel display! Recording/playing/stopping is similar to a standard recorder, and you can start/stop/pause your message during both record and playback! Playback modes are selectable for single play and continuous repeat with programmable delays of 0sec, .5sec, 5sec, 1min, 10min, 30min, and 60minutes. Once setup you can also lock the unit with a multiple key code. Whatever your application is, the new BS2 has you covered! Runs on 12-15VDC or optional AC power adapter.

BS2C  
BS2WT  
AC125  
**Bullshooter-II, Multi-Message Digital Voice Recorder Kit With Case Set**  
Factory Assembled & Tested BS2 with Case Set and Power Supply  
110VAC Power Adapter

\$89.95  
\$119.95  
\$9.95

## Karaoke Audio Interface

- ✓ Sing along with your favorite music!
- ✓ Easy connections to your equipment!
- ✓ Automatic vocal reduction!
- ✓ Runs on a standard 9V battery!

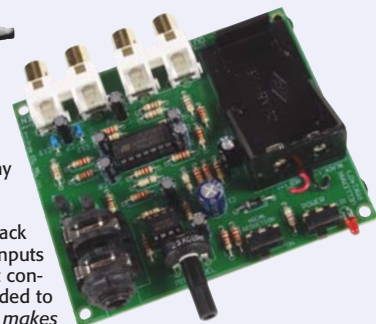
*How Do You Think All  
Those Idols Started!*

Get in tune with this simple yet full featured Karaoke "machine"! Just hook it between your amp and your CD player (or MP3 player, or any other line level source...) and get ready to sing!

Built-in vocal reduction circuit lowers the vocal tracks of most recordings automatically! That means you don't have to buy special soundtrack only CD's! Use any music from your existing library! Connections are simple. Standard RCA connectors are used for left and right music inputs as well as left and right outputs to your amplifier or receiver aux input. A standard 1/4" microphone jack is used that is common with most consumer microphones. Just hook it up, plug your microphone in, and start singing! A board mounted microphone level control is also provided to match your levels to the music. Measures 3.9" x 3.3" x 1". From Velleman. (Note: it has been proven that beer and alcohol consumption makes everyone sound better... at least in their own minds!)

MK140  
**Karaoke Audio Interface Kit**

**KIT**



\$13.95

## Digital Voice Messaging System

- ✓ Up to 8 minutes of total message time!
- ✓ 2, 3, or 8 separate message versions available
- ✓ Automatic or manual message playback
- ✓ DTMF BCD controlled remote operation available
- ✓ Line level and speaker level playback audio outputs
- ✓ Line level and mic level record audio inputs
- ✓ Easy push button control
- ✓ All controls and status indicators can be remoted with one DB25
- ✓ Non volatile message memory
- ✓ Great for one-touch on-demand message announcements, museum displays, product kiosks, trade shows, emergency messages, and a whole lot more!

*Incredible Versatility That Even Pleased The Bean Counters!*

### THE THIRD GENERATION!

A few years ago we brought the emerging technology of digital voice storage to the hobbyist with the Bullshooter digital voice storage kit. Then, as the technology improved, so did ours when we introduced the next generation, the Bullshooter-II. To this day it remains extremely popular for digital voice storage for messages, endless "tape loops" and radio broadcast announcements. But when a number of major museums came to us to develop a similar low-cost unit for on-demand multi-language voice storage for diorama displays, we figured it was time to really get creative. In response, the DVMS series was created that not only met all of their requirements, but also kept their bean counters happy with the low cost!

### MUSEUM QUALITY AND VERSATILITY!

When the museums came to us the intent sounded simple enough... to be able to record and playback a few digitally stored voice messages with the press of a single button. But then the variables came into play! Sometimes there needed to be fewer but longer messages. Other times there needed to be multiple language versions of the same message. Some needed automatic unattended playback while others needed on-demand realtime playback. To top it off, some needed to remote control the unit for integration into their exhibits and displays. It was a pretty tall order, but our engineering staff likes challenges, so they went to work!

Let's look at a typical museum diorama display. A detailed description is present on a plaque, but there is simply too much information to have printed. Plus, what about different languages? All of a sudden there would be signs, signs, everywhere signs! It just doesn't work. But what if there was a basic sign or plaque identifying the object, followed by push buttons properly labeled for each language desired? It's intuitive to push the button labeled "English" or "Espanol," and a nice narrative can start in any language selected! Some of the museums built the DVMS into their main display sign, others remoted the switches to a bank of units for easy recording and maintenance at one common location.

### THE LATEST TECHNOLOGY!

We started with the latest digital voice storage technology. It provides up to 8 minutes of digital storage at a frequency response up to 3.5 KHz. (Total message time and frequency response is dependant on selected internal sampling rate.) And then through firmware we segmented those 8 minutes into several different versions to allow your choice of 1-2 channels, 1-3 channels, or 1-8 channels. Once recorded, messages are available for playback on-demand or automatic continuous looping. For continuous loop playback we even gave the DVMS programmable delays of 0, 0.5, 5, and 30 seconds as well as 1, 10, 30, and 60 minutes! The main unit has all the functions and display controls on the front panel which can be disabled with a lock code to prevent unauthorized tampering.

Remote control of the Play, Pause, Stop and Message Selection is standard on the remote control DB25 connector. The remote connector also provides signals indicating the current play status and message selection which may be used to directly drive LED's or for use as indicators and a speaker output for use on your own custom control system. Additional remote functionality, such as record, may be customized if required. There is also a special version available specifically designed for keying on a transmitter when a message is played. Contact the factory for additional information.

### MULTIPLE INPUTS AND OUTPUTS!

Standard RCA unbalanced line level output is provided for easy connection to any amplifier, amplified speaker, mixer, or sound system. In addition, a standard 4-8 ohm speaker output is provided to directly drive a monitor speaker. This output is frequently connected to built-in speakers in the museum or kiosk control panel. Audio input for recording is provided for either a standard line level such as a mixer or a direct microphone input with a built-in AGC (Automatic Gain Control)! Recording is controlled from the main front panel but may be added as a custom remote function. Contact the factory for more information.

### WE MAKE REMOTE CONTROL A BREEZE!

With the various applications the DVMS system is designed around, we also came up with a series of accessory products to enhance the remote control versatility of the system. All standard functions can be remotely controlled via the built-in DB25 connector, but we didn't stop there! The DVMS8BCD version provides a 3 wire BCD interface that also allows you to use the standard remote control signals. Using the DVMS8BCD version you can use your computer to directly access any of the 8 messages or with the use of our new DCI2 or BE164 interfaces you can have a standalone system. Here's what they offer:

You say you would like to select and control messages from a touch-tone phone. The DCI2 (see page 25) provides the ability to control the DVMS8BCD from any touch-tone phone. It provides selection of the message to play as well as the ability to stop the current message at any time. There is even a security feature that requires entry of a 4 digit code before access to the DVMS8BCD is allowed. All you need to provide is the phone line and an answering device such as an answering machine to answer the phone. From there simply connect the DCI2 to the RJ11 phone jack and you're ready to go. The BE164 (see page 27) provides the ability to access any of the 8 messages on the DVMS8BCD with the simple press of a single button. Simply connect the optional cable between the DVMS8BCD and BE164 and you're in business.

The various DVMS versions are determined solely by microcontroller firmware, and can be easily changed in the field by installing the correct microcontroller. Additional microcontrollers are available for purchase by contacting the factory. So, whether you're the curator of a large museum, have a trade-show exhibit that needs an on-demand or auto-repeating voice message, or simply a hobbyist that would like to integrate high end digital voice storage in your project, the DVMS system is your answer.

Suggested possible uses of the DVMS systems include automatic control of a radio repeater system to indicate loss of main power, amusement ride safety messages played on demand or periodically, multi-lingual messages on demand for displays, alarm systems, message-on-hold systems, or any other prerecorded message. Let your imagination run wild!



DVMS2	Digital Voice Message System Kit, 1-2 Channels	\$99.95
DVMS2WT	Digital Voice Message System, Factory Assembled & Tested, 1-2 Channels, With Power Supply	\$149.95
DVMS3	Digital Voice Message System Kit, 1-3 Channels	\$99.95
DVMS3WT	Digital Voice Message System, Factory Assembled & Tested, 1-3 Channels, With Power Supply	\$149.95
DVMS8	Digital Voice Message System Kit, 1-8 Channels	\$99.95
DVMS8WT	Digital Voice Message System, Factory Assembled & Tested, 1-8 Channels, With Power Supply	\$149.95
DVMS8BCD	Digital Voice Message System Kit, 1-8 Channels, With BCC Interface	\$99.95
DVMS8BCDWT	Digital Voice Message System, Factory Assembled & Tested, 1-8 Channels, With BCC Interface, With Power Supply	\$149.95
AC125	110VAC Power Supply	\$9.95
DCI2	DTMF Touch-Tone Control Interface Kit	\$62.95
DCI2WT	DTMF Touch-Tone Control Interface, Factory Assembled & Tested	\$109.95
BE164	16-to-4 Line Encoder	\$24.95
DVMSCI	Interface Cable for connecting Remote Interfaces to the DVMS	\$19.95
DVMSCI2	Interface Cable for connecting DCI2 and DVMS8BCD	\$19.95





Wired & Tested

**Fully Automatic, Just  
Go Off-Hook!**

## Automatic Telephone "Ring Down"

- ✓ Instant off-hook ringdown access between two telsets
- ✓ Private full duplex intercom with selectable ringdown
- ✓ Instantly generates call on offhook, no dialing!
- ✓ Test ringing, answering, and signal-path functions of any telecom device

What is a telephone ring down, you may ask? They have been used for years as dedicated communications paths between two standard telephone sets. Over a single pair, with a phone at either end, merely going off hook with one phone immediately rings the other phone. When picked up you have a complete intercom path to talk. No dialing necessary! What are they used for?

Well, on the intercom or communications side they are commonly used for elevator phones, guard post hotlines, door entry phones in homes and offices, and on commercial job sites for rugged intercoms. But that's just the beginning!

They can also be used to test ringing, answering, and signal path conditions of devices, two-wire off premises extensions, PABX to Key System tie lines, and more. Ringing pattern is selectable to continuous ring; 1 on 1 off; 2 on 2 off; 2 on 4 off. Runs on 12 VAC at 500 mA (Power Transformer is included) or 20-28 VDC at 300 mA.

If you work on telephone equipment or are just looking for an ultra reliable telephone, the QLRD1 can't be beat! Measures 5/8 x 4 1/4 x 2 1/2 inches and is totally encapsulated in UL 94V-0 flame-resistant epoxy resin for long, reliable operation. (I used to install ring-downs with rotary dial 500's! I guess I'm REALLY dating myself!)

QLRD1

Automatic Telephone Ring Down, Factory Assembled & Tested

\$89.95

## Call-All-Stations "Ring Down" Extender

- ✓ Extends your ring down to multiple stations
- ✓ Any off hook rings all stations
- ✓ Meets legal requirements for backup communications!
- ✓ Compatible with standard and electronic telephones
- ✓ Runs on 24 VDC or 12VAC

Wired & Tested

**Calling All Stations...  
Calling All Stations!**



The QLRD1 above is the ultimate (and very popular) telephone ring down. As described, it provides an ultra reliable dedicated communications path between two standard telephones while providing an automatic ring of the called station by merely going off hook with the calling station. These 2-station ring downs have been used for years.

But now the plot thickens! What if you needed to have multiple stations in the path? What if you needed up to 4 stations to simultaneously ring with an off hook of any one station? No problem with the new QLRD4 Call-All-Station Extender! Add it to the QLRD1 Ring Down and you now have a complete 4 station automatic ring down. If any station of the 4 goes off hook, it rings the other three stations. When a ringing station goes off hook to answer, a full duplex intercom path is established between all 4 stations!

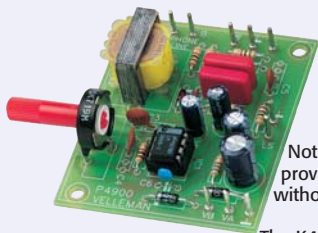
It gets even better! With both units designed to run on 24VDC, the pair can provide the legal requirement for some public locations (ski lodges, etc.) to have a battery backed emergency communications system between several points. Use standard gel cells, telco batteries, even two car batteries in series to provide a complete stand-alone system. Use AC chargers or even solar chargers to keep the system charged. The extender can also be run on the 12VAC power source from the QLRD1!

The extender is compatible with standard and electronic telephone sets. Just connect the stations, use modular RJ-11 cables to connect to the QLRD1, provide 24 VDC, and you're all set. Just like the QLRD1, the extender measures 5/8 x 4 1/4 x 2 1/2 inches and is totally encapsulated in UL 94V-0 flame-resistant epoxy resin for long, reliable operation. Makes it easy to mount in a small outdoor call box or other suitable enclosure.

QLRD4

Call-All-Stations Ring Down Extender, Factory Assembled & Tested

\$99.95



**Drives Speakers Or Mixers!**

Not a speakerphone, but a high performance isolated input amplifier that connects directly to a telephone line. Unlike a lot of amplifiers, this one provides both speaker output and line output. Speaker output is perfect for "group listen" applications with standard telephones for group gatherings without the inconvenience and interruption of vox operated speakerphones.

The K4900 also features line level output designed to be connected to the aux input of any standard audio mixer or amplifier. This makes it perfect for radio stations, home broadcasters, and larger applications that need to connect their phone line into their systems. Features a standard isolation transformer input for zero loading of the phone line. Speaker output is a half watt into 8 ohms. Line output is 0dB (.775Vrms). The circuit runs on 7-10VAC or 9-12VDC at 150mA. Board measures 2.5" x 2.1". This unit can be built into existing equipment, or as a stand alone amplifier with the optional G416 housing. From Velleman. (Group listen is great, no speakerphone interruptions yet everyone in my office can hear!)

K4900  
G416

Telephone Amplifier Kit  
Recommended Case/Housing For K4900

\$14.95  
\$8.95

## Phone Recorder Controller

- ✓ Undetectable on phone line
- ✓ Needs no battery, operates on telephone line power



Wired & Tested

**Telephone Line Powered  
Automatic Control!**

Keep a record of all your telephone calls - automatically. The TT1 connects anywhere on the phone line and will control any battery powered tape recorder that has standard microphone and control jacks. The recorder automatically starts and stops whenever the phone is used and records both sides of the conversation with excellent fidelity. Simply plug the TT1C into your recorder's microphone/control jacks, push "record" and you're all set. The moment there is activity on the phone line your recorder will start up and record both sides of the conversation. When the conversation is over, it will automatically stop your recorder!

Super-easy one hour assembly and a manual that tells you not only how to build the kit, but how it works as well. The controller is easy to use and looks great in the included custom case shown. Case size: 5"W x 1 1/2"H x 5 1/4"D. The TT1C is also available factory assembled and tested and ready-to-go! (I had something like this connected to my 3" reel-to-reel portable recorder from Lafayette... Yikes am I old!)

TT1C  
TT1WT

Tattle-Tale Recorder Controller Kit With Case  
Factory Assembled & Tested TT1 With Case

\$29.95  
\$59.95





**KIT** **Wired & Tested**

***Monitors The Entire  
Aircraft Band For Activity...  
Without Any Tuning!***

### INCREDIBLE PATENTED DESIGN!

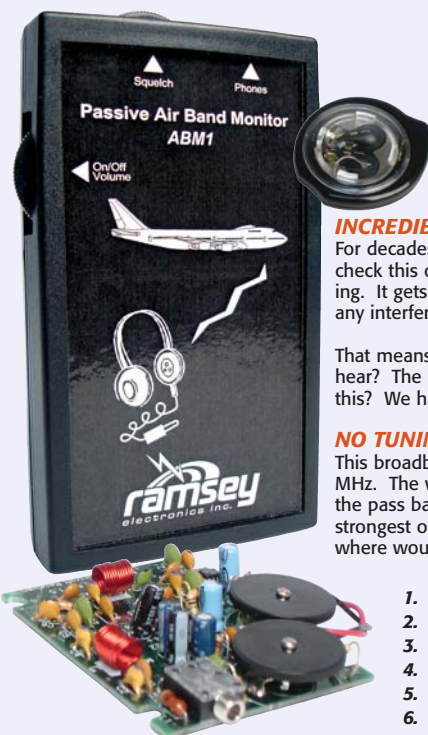
For decades we have been known for our novel and creative product designs. Well, check this one out! An aircraft receiver that receives all nearby traffic without any tuning. It gets better... there is no local oscillator so it doesn't produce, and can't produce, any interference associated with all other receivers with an LO.

That means you can use it onboard aircraft as a passive device! And what will you hear? The closest and strongest traffic, i.e. the plane you're sitting in! How unique is this? We have a patent on it, and that says it all!

### NO TUNING, MONITORS THE ENTIRE BAND!

This broadband radio monitors transmissions over the entire aircraft band of 118-136 MHz. The way it works is simple. Strongest man wins! The strongest signal within the pass band of the radio will be heard. And unlike the FM capture effect, multiple aircraft signals will be heard simultaneously with the strongest one the loudest! And that means the aircraft and towers closest to you! All without any tuning or looking up frequencies! So, where would this come in handy?

1. *At an air show! Just imagine sitting there listening to all the traffic as it happens, even the unknown frequencies!*
2. *Onboard aircraft to listen to that aircraft and associated control towers*
3. *Private pilots to monitor ATIS and other field traffic during preflight activities (saves Hobbs time!)*
4. *Commercial pilots to monitor ATIS and other field traffic as needed at their convenience*
5. *General aircraft monitoring enthusiasts*
6. *Avionics service technicians to quickly verify transmitter go/no-go operation*



### NO LOCAL OSCILLATOR, NO INTERFERENCE!

Wait, you can't use a radio receiver onboard aircraft because they contain a local oscillator that could generate interfering signals. We have you covered on that one. The ABM1 has no local oscillator, it doesn't, can't, and won't generate any RF whatsoever! That's why our patent abstract is titled "Aircraft band radio receiver which does not radiate interfering signals." It doesn't get any plainer than that!

### THE HIT AT THE AIR SHOW!

What about an air show? The ABM1 is the perfect solution to communications monitoring! A lot of unknown frequencies are used between the ground and each plane flying. Listen to air-to-air, the air boss, PA talkthrough and the stunt planes with ease! With a normal receiver you need to know the frequency and tune into it. The ABM1 simply hears the activity as it occurs, perfect for an air show... should be standard equipment for all the spectators!

### THE PILOT'S DREAM COME TRUE!

Then there are the private and commercial pilots! A lot of private pilots rent aircraft. With an ABM1 they can listen to field traffic and ATIS broadcasts before firing up the aircraft avionics; this saves on Hobbs time (inactive rental time!) and is convenient! Same with commercial pilots. Your access to ATIS and other broadcasts can be as close as your flight bag, briefcase, or pocket!

### SIMPLE TO USE!

The receiver is in a compact case complete with a belt clip. Just plug your favorite pair of headphones or the provided set of ear buds into the receiver, turn it on, and you are now monitoring all local aircraft! A squelch control is even provided to mute background noise and interference! The receiver runs on a standard 9VDC battery (not included). You will hear all nearby aircraft, ground transmissions, local control towers, and any other traffic within the frequency range! Here in Rochester while I'm writing this catalog page I'm hearing local aircraft overhead calling Rochester Approach and Cleveland Center, and just heard the local News Chopper!

### EVERYTHING INCLUDED, AVAILABLE AS A KIT OR READY TO GO!

Even with its compact design, we engineered the ABM1 kit version for easy construction by the electronic hobbyist. Through-hole parts are used for all customer assembly. Several SMT components are part of the circuit, and they are pre-installed at the factory! We also realized that this receiver will be popular with aircraft enthusiasts that really don't have the time or ability to build an electronic kit. Therefore our engineering staff went into overdrive and designed a similar version using an all-SMT design as a factory assembled and tested unit. This unit features additional shielding only available with SMT design to reduce adjacent channel overloading. Whatever your choice is, both versions keep you in touch with the entire band with flying colors!

Where's the antenna you ask? The headphone wire is your antenna! We even discuss a couple of component changes you can make to optimize performance with other than normal lengths of headphone wires. A professional set of stereo ear buds is included with the ABM1 to get you listening quick! You can also use your favorite set of Walkman type headphones with the ABM1.

If you're a private pilot, commercial pilot, airport worker, aircraft enthusiast, attend air shows, or spend a lot of time in airports or onboard aircraft, the ABM1 is for you. The handy case has a built-in belt clip and measures 2.5" x 4.6" x .9". (If I had an Icon for "Super Top Seller" it would be right here!)

## Passive Aircraft Monitor Receiver

- ✓ **Monitors the entire aircraft band without tuning!**
- ✓ **Passive design, can be used onboard aircraft, no local oscillator, generates and creates no interference whatsoever!**
- ✓ **Great for air shows!**
- ✓ **Patented circuit and design!**

**TOP  
SELLER!**

### SPECIFICATIONS

Frequency Range:	118 MHz to 136 MHz
Receiver Type:	Patented Passive Detector
IF Frequencies:	None!
Receiver Sensitivity:	Less than 2 uV for detectable audio
Audio Output:	700mW, 8-24 ohms
Headphone Jack:	3.5mm stereo phone
External Antenna:	Headphone cord coupled
Power Requirement:	9VDC battery
Dimensions:	2.25" x 2.8" PC Board 2.5" x 4.6" x .9" Case
Weight:	4 oz. with battery



**Monitoring  
Times**

**The ABM1...Reviewed in the November 2006 Issue of Monitoring Times**  
Author Bob Grove reviews the Ramsey ABM1 Passive Airband Monitor...

*"I can't see the planes anywhere, but the ABM1 can hear them, and obviously from many miles away"*

*"Ramsey provides a nice manual with an introduction to air-band monitoring, which contains a complete schematic diagram of the monitor, along with stage identification"*

For information on this article, visit [www.monitoringtimes.com](http://www.monitoringtimes.com)



ABM1  
ABM1WT

Passive Air Band Monitor Kit  
Passive Air Band Monitor, SMT Version, Factory Assembled & Tested

\$89.95  
\$159.95





## Digital Tuned High Performance Aircraft Receiver

- ✓ Rock solid dual conversion PLL receiver!
- ✓ Airport runway lighting controller output!
- ✓ Full band scanner mode
- ✓ 4 user memory scanner banks, 20 frequencies each
- ✓ Full band skip scanner mode
- ✓ Adjustable skip scanner timing
- ✓ Internal front panel speaker
- ✓ External antenna input, speaker out, headphone out
- ✓ Stylish and shielded metal enclosure

Wired & Tested

KIT

TOP  
SELLER!



*The Ultimate & Affordable Aircraft Receiver...  
Even Controls Runway Lights!*

### THE LEGACY CONTINUES!

Continuing the legacy of our famous AR1 we decided to design the ultimate aircraft receiver kit. Now you're not limited to an all band receiver or scanner that has substandard performance in the AM aircraft band. Instead, you can have a super performance receiver designed specifically for the best aircraft reception possible! To begin with, we designed it with the latest technology, utilizing a rock stable synthesized PLL dual conversion receiver. We gave it superb image and adjacent channel rejection to allow you to lock onto the signals you want and not to be bothered by those you don't!

### ADVANCED FEATURES!

Once we got the RF portion designed we took a close look at the features desired in such a receiver. We gave it a neat 2x8 line LCD display to show you all the functions. Control of modes and setups is obtained through the front panel controls and confirmed on the LCD display. On/Off/Volume and Squelch controls are also provided on the front panel. We even gave it a front panel speaker in case you stack the lighting controller or something else on top of it!

So far we've described the ultimate aircraft receiver that's not only the perfect field monitor for a hangar or airport manager's office but for the serious enthusiast as well. Can it get any better than that? It sure can!

### CONTROL RUNWAY LIGHTS!

The top request we've had for a professional aircraft receiver was to embed automatic runway lighting control. Consider it done! The lighting controller follows the standard protocol for remote runway lighting. The pilot "keys" his microphone on the local CTAF channel for the specified number of times. All you need to do is set the receiver for the lighting control mode and then make sure the squelch is closed and will open on a suitably strong signal. Typically the number of "keys" or "events" according to the receiver control the lighting as follows: 3 events, 25% brightness; 5 events, 50% brightness; and 7 events, 100% brightness. The AR2's adjustable lighting timer sets turn-on duration to your needs.



And what happens in the event of a local power failure or interruption to the AR2? Absolutely nothing! All receiver settings and all lighting control settings are saved in the internal memory. The rear panel lighting control output of the AR2 connects to our AR2L to interface with individual runway lighting control circuits.

As we do with all of our kits, a detailed instruction manual not only leads you through the step-by-step construction and assembly procedures, it teaches you the circuit theory as well. Learn all about RF receivers and how a dual conversion PLL radio works! You'll be proud to tell your friends that you built this outstanding aircraft receiver!

Includes the matching case and knob set, plus power supply. For the aviation professional that is not interested in building the receiver, the AR2 and the lighting controller are also available factory assembled and tested, ready to go. Just plug it in and you're all set. (I can't get this thing off my desk, now I'm addicted to listening to Rochester approach!)

AR2	Synthesized Aircraft Receiver Kit With Case and AC Power Supply	\$199.95
AR2WT	Factory Assembled AR2C With Case and AC Power Supply	\$269.95
AR2L	Plug-In Runway Lighting Controller Interface Kit With Case & Power Supply	\$59.95
AR2LWT	Factory Assembled AR2LC With Case and AC Power Supply	\$99.95

### SPECIFICATIONS

Frequency Range:	117.975 MHz to 137.000 MHz 25kHz steps
Receiver Type:	Dual Conversion PLL
IF Frequencies:	10.7 MHz & 450 kHz
Receiver Sensitivity:	Less than 1 uV across the band
Image Rejection:	Greater than -80 dB
Adjacent Ch. Rejection:	Greater than -40dB
Scanner Banks:	4, 20 frequencies each
Audio Output:	1 watt, 8 ohms
Light Controller Output:	3 events, 5 events, 7 events output to controller
Power Requirement:	13.8-15VDC, 500mA
External Antenna:	BNC female, rear panel
Dimensions:	5.55"W x 6.45"D x 1.5" H

## Ramsey AR2 In Action!

Dan Lipko of Pine Bottom Aviation in Pennsylvania has put the AR2 and AR2L to good use – landing his helicopters! Here you can see where Dan has mounted his AR2 and AR2L units in a weatherproof housing panel box "to keep the snow and the PA Whitetail's out"!

The AR2L activates the landing lights through the 110VAC/40A light relay on the right. A mobile antenna on the top of the box enhances the reception. Says Dan: "The timing function is really nice, as I've set mine to 6 minutes (save those \$11.00 bulbs!). Also, the pulsing at the end is nice and gives you the time to ask for six more minutes... squelch is set to quieting and a nudge... my range is 3 miles out they light up." (for more information visit [www.pinebottomaviation.com](http://www.pinebottomaviation.com))



Runway and landing area,  
marker lights controlled  
remotely from the air!



Landing a Robinson  
R44 Raven II



AR2 & AR2L Mounted in an  
outdoor enclosure with  
110V lighting relay controls





KIT

*Kit Planes Magazine...  
"Puts You In The Pilot's Seat!"*

TOP  
SELLER!

## Aircraft Band Receiver

- ✓ Picks up aircraft, control towers, and more!
- ✓ Tunes entire 118 MHz to 136 MHz Aircraft band
- ✓ Automatic gain and squelch controls

Tune into the exciting world of aviation and learn the circuits at the same time with the AR1C Aircraft Receiver! As the feature article in Kit Planes Magazine said "It Puts You In The Pilot's Seat"! Listen to the airlines, big business corporate jets, hotshot military pilots, local private pilots, control towers, and other interesting and fascinating air-band communications. You'll hear planes miles away as well as all local traffic and control towers.

The AR1C features smooth varactor tuning of the entire air band from 118 to 136 MHz. An extremely effective AGC and superheterodyne circuitry make it a super performing unit. Variable squelch mutes the receiver between conversations. Audio output jack drives any standard speaker or headphone. Includes our custom case & knob set as shown for a great looking finished receiver! Operates on 9 VDC battery (not included). Case measures 5"W x 1 1/2"H x 5 1/4"D.

AR1C

Aircraft Receiver Kit With Case

\$49.95

## FM Broadcast Band Receiver

- ✓ Standard FM receiver with larger tuning range of 70 to 110 MHz!
- ✓ Ideal for FM wireless mics, SCA programming, or standard FM broadcasts
- ✓ Demodulated audio output for driving our SCA1C decoder

With a frequency range of 70 MHz to 110 MHz, the FR1C has become extremely popular for receiving the standard FM broadcast band (88-108 MHz) as well as large portions on each side. It's great for bug monitoring or detection and receiving SCA broadcast outside of the band. Unlike most FM receivers, the FR1C includes a separate demod output (unfiltered) to drive SCA decoders including our SCA1C SCA Decoder below.

The sensitive front-end features one microvolt sensitivity with a standard 10.7 MHz IF. An FM detector IC is used along with varactor diode tuning for optimum performance. Audio output is rated at 250mW and will drive any 4-45 ohm speaker or headphone (not included). Runs on a standard 9VDC battery (not included). Includes our matching custom case set, measuring 5"W x 1 1/2"H x 5 1/4"D.

FR1C

FM Broadcast Band Receiver Kit With Case

\$42.95



KIT

*How Do They Get That  
Commercial Free Music?*

Believe it or not, they get it off the local FM radio station with a special decoder! Now you can build your own decoder and tap into the wealth of programming available to those "in-the-know"! Programming available runs the gamut from stock quotes to rock music, from easy listening to all news. These services are "hidden" in subcarriers riding along with the standard FM radio station's usual programming. The decoder connects to the detector output (unfiltered audio) on an FM receiver. If your receiver does not have such an output, consider our FR1C FM Receiver above! Tune into what you've been missing, try the SCA1C. Includes a custom case set to match the FR1C receiver above. Runs on a standard 9VDC battery. Case measures 5"W x 1 1/2"H x 5 1/4"D.

## SCA Subcarrier Decoder

- ✓ Tunes entire SCA subcarrier band, 50 to 100 KHz
- ✓ Features both speaker and line level audio outputs
- ✓ Simply plugs into our FR1 FM broadcast receiver or tap into the detector in any FM receiver

SCA1C

SCA Decoder Kit With Case

\$39.95

## Speech Scrambler & Descrambler

- ✓ Full duplex operation allows scrambling and descrambling at the same time
- ✓ Bypass mode provides quick change from direct audio to descramble

Communicate in total privacy over your radio! This is the popular SS70C descrambler/scrambler that you've read about in all the Scanner and Electronic magazines. The technology used within the unit is known as speech inversion which is compatible with many police department systems; hook it up to your scanner speaker terminals and you're in business. (However, always be sure to check with your local authorities to ensure that you're not straying into any unlawful communications reception.)

The SS70C is full duplex in operation - you can scramble and unscramble at the same time. Easily configured for any use! Easy to build since all complex circuitry is contained in a custom ASIC chip which provides clear, clean audio. Powered by 9 to 15VDC, with 3.5mm mini phone type input/output jacks. The included case measures 5"W x 1 1/2"H x 5 1/4"D.

SS70C  
SS70WT  
AC125

Speech Scrambler/Descrambler Kit With Case  
Factory Assembled & Tested SS70C With Case And Power Supply  
110VAC Power Adapter

\$49.95  
\$79.95  
\$9.95

KIT

Wired &amp; Tested

*Decode That  
Garbled Gibberish!*



KIT

*Learn It, Build It...  
Then Listen To It!*

The greatest part of building a kit is the enjoyment afterwards when you see and hear the results of your work! Now you can build yourself a little FM radio receiver, learn about FM receivers, and have a neat little radio in the end! The RF front end is preassembled to make it simple. Receives the whole FM broadcast band of 88-108 MHz. Includes an on/off switch, volume control, speaker, and LED indicator. Runs on 12VDC. Measures 4.8" x 3.3". From Velleman.

## Portable FM Radio Kit

- ✓ Preassembled front end!
- ✓ No coils to wind!
- ✓ Includes everything!

MK118  
AC125

Portable FM Radio Kit  
110VAC Power Supply

\$21.95  
\$9.95





KIT

Wired & Tested



Track Them Down...  
Quick!

Get in on the fun of radio direction finding (RDF) with this super kit! The latest in affordable Doppler direction finding equipment available in a complete kit form...this one even includes the receiving antenna assembly!

A must for the "fox hunter" at an unheard of price! Radio direction finding is a fascinating hobby and is becoming more and more popular in today's portable world.

## Doppler Direction Finder

- ✓ Track down jammers and hidden transmitters with ease!
- ✓ Elegant and cost effective design thanks to WA2EBY!
- ✓ Featured in QST Magazine
- ✓ Convenient LED 22.5 degree bearing indicator
- ✓ Adjustable damping rate, phase inversion, scan enable/disable
- ✓ Utilizes high speed CMOS technology for signal conditioning and audio processing!



With the increasing number of intentional jammers and other unknown transmitters around, Doppler DF locators have become the rage with a display that gives you a direct bearing on the location of the transmitter. Pretty neat trick considering you don't need multiple separate receivers at different locations to triangulate on the mystery transmitter!

The kit includes the Doppler Direction Finder display unit and all the parts necessary to build your own four point, 5 piece magnetic antenna assembly for easy setup and use. Operates on 12-15VDC and includes a matching 12VDC power plug for custom integration and connection into your vehicle or portable power supply. Easy to hook up to any FM receiver. Transmitter (the object of your DF'ing) need not be FM, it can be AM/FM or CW.

Requires only a connection to your receiver's speaker jack and radio's antenna. The whips can be cut and optimized for any frequency from 85-1000 MHz. An easy to build, reliable kit that compares most favorably to commercial units costing upwards of \$1000.00! Comes complete with matching case, 12VDC plug, magnetic antenna kit with cables, and a comprehensive instruction manual. (Editors rule of thumb: always look across the street for a guy on a lawnmower before you take the picture!)

**DDF1** Doppler Direction Finder Kit, With Case, Power Cable, And Magnetic Antenna Kit  
**DDF1WT** Factory Assembled & Tested DDF1 With Case, Power Cable, And Magnetic Antenna Kit

\$169.95  
\$269.95

## Mini VHF Series Receivers

- ✓ Tunes any 5MHz portion of selected receiver band
- ✓ Excellent performance, less than 1µV sensitivity
- ✓ True Superhet Receiver with sharp ceramic IF filters
- ✓ Front panel volume, squelch, and tuning controls

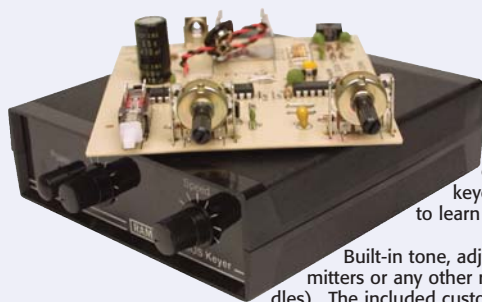
Low Cost...  
Easy To Build!

There are no short cuts taken in the design of these units-sensitivity is equal to full size monitor receivers or scanners. Schools, scout troops, clubs and hobbyists use these receivers for teaching, monitoring, and just plain building enjoyment. Any one of these little receivers is ideal for easy chair listening and with no big clunky box and wiring to aggravate the XYL!

All four receivers can be tuned outside of the intended amateur bands. For example, the FR146 two meter receiver will tune any 5 MHz segment from 130 to 180 MHz. Choose your band and enjoy FM repeater and simplex monitoring on a budget! Help a newcomer discover the 220 MHz novice band. Listen in on exciting 10 Meter international FM action. Rediscover the fascination of 6 Meter sporadic E band openings and uncrowded new FM repeaters. For a professional finished look, our matching case and knob set is included. Kit includes detailed step-by-step manual that carefully guides you to a finished working radio. Runs on a standard 9VDC Battery. Case measures 5"W x 1 1/2"H x 5 1/4"D.

**FR146C** 2 Meter Receiver Kit With Case  
**FR6C** 6 Meter Receiver Kit With Case  
**FR10C** 10 Meter Receiver Kit With Case  
**FR220C** 220 MHz Receiver Kit With Case

\$49.95  
\$49.95  
\$49.95  
\$49.95



KIT

Works With Any Rig!

Add to your CW fun with our low cost CMOS Keyer Kit. You'll send clean code that's a pleasure to copy; self completing dots and dashes with properly weighted spacing and timing are all programmed into the CW7C's design. Assembly of the keyer is fast, easy, and fun. Our step-by-step instructions lead you to a finished unit in only one evening. Great for beginners to learn proper and perfectly formed CW right from the start!

Built-in tone, adjustable pitch, and front panel speed and volume controls are featured. The CW7 is the ideal companion to our QRP transmitters or any other rig you may own. You need to supply an external set of paddles (Manual includes details on constructing economical paddles). The included custom case and knob set matches our QRP receivers and transmitters and gives your keyer a nice attractive finished look. Runs on a standard 9VDC battery. Case measures 5"W x 1 1/2"H x 5 1/4"D.

**CW7C** CW Keyer Kit With Case

\$34.95

## Code Practice Oscillator

- ✓ Great starter kit for young or old!
- ✓ Ideal scouting project
- ✓ Practice your code anywhere!



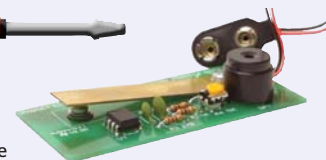
Learn Code The Simple Way!

Looking for a great starter kit to spark the interest of a future engineer? Looking for an easy way to either learn or practice your code? This little code practice oscillator is inexpensive, easy to build, easy to use, and features an audio tone adjustment for your listening pleasure. The unique "key" built on the board simulates a standard CW key making it unnecessary to connect an external key. A small built-in speaker provides you a clear audible tone complete with adjustable pitch. Uses the ever popular 555 timer IC with full theory of operation to guide you through the construction. Handy 9 VDC battery operation insures hours of enjoyment and the chance to practice your CW code anywhere you go. Size: 3 1/2" X 1 1/2" X 3/4".

**CP03** Code Practice Oscillator Kit

\$14.95

KIT





*Get On The Air...  
For Under \$40!*

These little rigs are burning up the airwaves as young and old alike are rediscovering the fun in building their own equipment! Our detailed, step-by-step instruction manuals make building an enjoyable and rewarding experience. You're guided carefully to the completion of a unit that not only works but will provide hours of operating pleasure. These trusted and proven Ramsey all-mode mini rigs are routinely used worldwide by Hams of all ages.

You'll find you don't need high power - K71RK worked and QSL'd all states, plus global DX QSOs from Argentina to the former USSR—with only 2 mW! You don't need hundreds of watts, thousands of dollars or massive equipment; you'll find it's more fun with less!

These little receivers are based upon the SA-602 that we read about in Ham magazines and handbooks. Available in 20 meter, 30 meter, and 40 meter versions, the receivers are true superheterodyne direct conversion - a simple design that does not require the use of fancy IFs, RF filters, or exotic mixers. In short, the ideal design for easy hobby building. Only recently have high performance ICs become available that enable such circuitry to be constructed. Beginners can easily build these receivers, and experienced amateurs and QRP enthusiasts can use them as a reliable, economical, basic foundation for modifications.

Our single PC board has plenty of room for lots of modifications and hook-ups - tinker to your heart's content! Suggestions and technical info are included in every receiver manual. Isn't this what Ham radio is all about? Operates on 9 V battery (not included). Included case measures 5"W x 1 1/2"H x 5 1/4"D".

HR20C	20 Meter Receiver Kit With Case
HR30C	30 Meter Receiver Kit With Case
HR40C	40 Meter Receiver Kit With Case

\$39.95
\$39.95
\$39.95

## QRP Amateur Radio Mini-Transmitters

- ✓ Four transistor circuit, oscillator, RF amplifier chain, and clean keying stage
- ✓ RF output of approximately one watt (3/4 W for QRP20)
- ✓ Pi-network output for good matching and harmonic suppression
- ✓ Provision for two internal crystals (one crystal provided), front panel switching
- ✓ VCXO tuning, frequency can be tuned approximately 7 KHz around XTAL frequency
- ✓ Available in 20 meter, 30 meter, or 40 meter versions

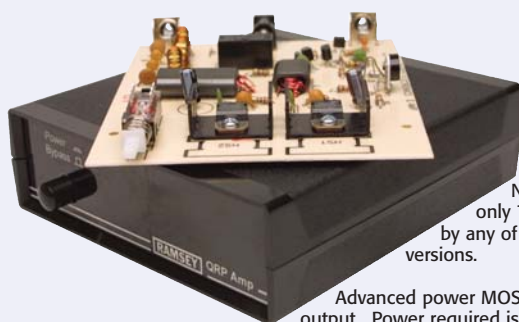
These nifty little CW transmitters are practical and economical take-along rigs for trips, camping, teaching or just amazing yourself with what a watt will do! With an exceptional manual of over 20 pages, the detailed step-by-step instructions guide you to a perfectly operating finished transmitter. They are available in 20 meter, 30 meter, and 40 meter models.

The rigs use a standard crystal that is connected into a VCXO circuit - which means that you can tune around the crystal's frequency by up to 20 KHz - thus giving you stable crystal control while still being able to tune around! A front panel switch lets you choose between two crystals; we include one, you can add another of your choice. A built-in T-R switch allows break-in operation.

Of course, these transmitters interface perfectly with our QRP Mini-rig receivers and our CMOS CW keyer! And for the real Ham, there's plenty of room inside the included case for your own circuit modifications and experiments. These little rigs are often the heart of many QRP operator's stations. Modify "til the cows come home" or just use them as they are - these little rigs pack a lot of performance into an economical package. Runs on 12-15VDC at 200 mA. Included case measures 5"W x 1 1/2"H x 5 1/4"D".

QRP20C	20 Meter Transmitter Kit, Includes 14.060 MHz Xtal And Case
QRP30C	30 Meter Transmitter Kit, Includes 10.108 MHz Xtal And Case
QRP40C	40 Meter Transmitter Kit, Includes 7.040 MHz Xtal And Case
AC125	110VAC Power Adapter

\$44.95
\$44.95
\$44.95
\$9.95



*Cut Through The QRM  
With 20 Watts!*

Need a little extra boost for your QRP rig? This nifty little amplifier may be all you need. Believe it or not, 20 watts is only 7db (about one S unit!) less power than a full sized commercial transceiver. These compact amplifiers are easily driven by any of our QRP transmitters or any other unit in the 1/2 - 2 watt range and are available in 20 meter, 30 meter, and 40 meter versions.

Advanced power MOSFETs are used for the utmost in efficiency and purity while a multistage low pass filter is used to assure a clean signal output. Power required is only 12-15VDC at 2 to 4 amps, depending upon power output. Complete step-by-step instructions are provided which make building the kit a breeze. The amplifier works well for all modes: CW, SSB and AM. Included case measures 5"W x 1 1/2"H x 5 1/4"D".

QAMP20C	20 Meter QRP Amplifier Kit With Case
QAMP30C	30 Meter QRP Amplifier Kit With Case
QAMP40C	40 Meter QRP Amplifier Kit With Case

\$44.95
\$44.95
\$44.95

## QRP Amateur Radio Linear Amplifiers

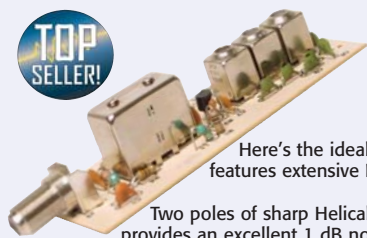
- ✓ Works great with Ramsey QRP rigs or any other 1-2 watt transmitter
- ✓ Built-in T/R relay automatically switches between receive and transmit
- ✓ Operates all modes; CW, SSB, or AM

### What is QRP all about?

"People like to overcome challenges; it's part of our nature. I lack the physical skills to be a mountain climber, so I have instead chosen to challenge the fickle layers of the ionosphere with a transmitter that runs milliwatts. It's my way of riding the knife-edge of what can be done."

Ed Hare, W1RFI





**Great Gain And  
Super Selectivity!**

**KIT**

## 2-Meter Receiver Preamplifier

- ✓ 2 Meter Preamp with the sharpest filtering available!
- ✓ Can be powered up the signal coax (9 to 15 VDC)
- ✓ Helical filter for fantastic intermod rejection

Here's the ideal preamp for repeaters, base stations, mobiles - anywhere a selective, low noise signal boost is needed. Unlike other preamps the PR100 features extensive RF filtering to crush intermod before it reaches your radio.

Two poles of sharp Helical filtering combined with a 3 pole L-C tank allow only signals of interest to reach your receiver. A low noise microwave bipolar transistor provides an excellent 1 dB noise figure while remaining ruggedly insensitive to static and strong signals. Preamp is easily configured to be powered via the coax (for most mount applications) or powered through a separate power cable. Kit is designed to fit snugly into a 3" long piece of 1 1/2" PVC pipe with end caps, making an ideal outdoor enclosure. Runs on 9 to 15 VDC. Size: 4"W x 7/8"H x 1 3/8"D.

PR100

2 Meter Receiver Preamp Kit

\$34.95

## Low Cost Receiver Preamps

- ✓ Low noise (typically < 1 to 1.5 dB)
- ✓ High Q tuned circuits (very narrow band) prevent out-of-band signals from overloading front-end
- ✓ Available in 2 meter, 220 MHz, 440 MHz

**The Quick And Easy  
Preamplifier!**

**KIT**



PR10



PR20



PR40

Put some new "ears" on your rig with one of these hot little preamp kits. Their high gain combined with low noise will improve most any receiver. Fully protected against overload and designed for low current and stable operation, these preamps employ high Q tuned circuits which restrict out-of-band signals which can cause intermod blanking and overload of your radio's front-end.

Don't be misled by GaAs FET claims! The cheap dual-gate FETs (manufactured for TV tuner usage!) used by others just don't come close to the performance of these preamps designed with NEC microwave transistor devices. Gain is typically 16 to 20 dB and noise figure is 1 dB @ 2 Meters, 1.2 dB @ 220 MHz, and 1.4 dB @ 440 MHz. Compact design for easy installation into most any rig. Operates on 12 to 15 VDC. Size: 1" x 3/8" x 1 1/2".

PR10

2 Meter Receiver Preamp Kit

\$14.95

PR20

220 MHz Preamp Kit

\$14.95

PR40

440 MHz Preamp Kit

\$14.95



TX Data Transmitter



RX Data Receiver



RXD Receiver/Decoder



TXE Transmitter/Encoder



RXDA Receiver/Decoder



TXEA Transmitter/Encoder

**Wired & Tested**

**Let These Modules Do All The  
Work In YOUR Next Project!**



## RF Wireless Link Modules

- ✓ The EASY way to send and receive data!
- ✓ 433MHz and 916 MHz units available!
- ✓ Transmitters, receivers, encoders, decoders
- ✓ Factory assembled & tested SMT design

Now you can build those special remote control projects in a flash and have the ultimate in reliability... and security! Unlike other units on the market, these units are crystal controlled for no frequency drift, yet are ultra small and very low power. The decoder output provides +5VDC or 0 (1 or zero) switch output that is CMOS compatible. Encoder data enable input also accepts the same standard CMOS compatible input.

To give these little boards even more versatility, they can be easily interfaced to the outside world by using other Ramsey kits. Simple switches can be used on the inputs of the TX and TXE modules to control one (RX) or up to four output circuits (RXD) connected to the receiver modules. The BE164 can be used with the TXE modules along with the BD416 on the RXD modules to control any 1 of 16 output circuits. The RI1 can be added to the output of the RX, RXD, or BD416 to provide a switch relay to control devices like house lighting, motors, or other high voltage or current devices.

These wireless RF link boards are perfect for any wireless application - sending data, car alarms, door openers, home security, electronic monitoring... you name it! You can also monitor a test point or an alarm point on a circuit and have it alert you remotely. The applications are endless! Thousands of these have been provided to manufacturers for their OEM use! You may already have one of these and not know it!

The basic TX/RX models transmit one bit of insecure information. Great for when you only need to turn one device on or off. Easy to connect, just solder your inputs and outputs to the provided pads.

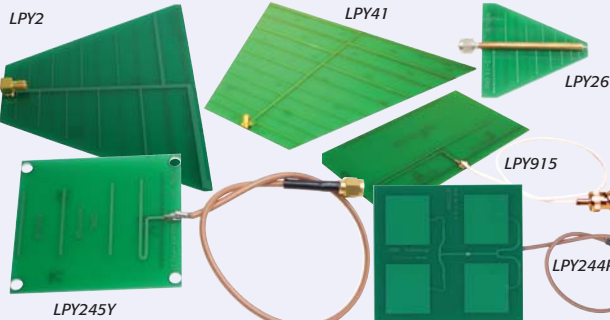
The encoder/decoder models allow you to program each unit so that they only respond to your set address code, 256 different addresses possible. These units have four separate data lines for either sending four bit data or controlling four separate devices. No processor or computing required! The TXE/RXD use the same single input and output solder connections as the TX/RX units, for the addressing simply solder desired address pads to ground. The A-Series modules include a programmable dip switch for encoder/decoder address settings and common dual row pin-outs for easy integration into your equipment!

Two versions are available - 433 MHz and 916 MHz. 916 units can use shorter antennas (3 inches) and are better in high RF environments while the 433 units have better range but need larger antennas (7 inches). All units will operate on 5 volts DC. Depending on model other voltages are available. Worst case 20mA operating current, stand-by current in the low micro amps.

Because these are subminiature SMT designed circuits and boards, they are factory assembled and tested at Ramsey! Not a kit, these are immediately ready to use or integrate with your project! (No, these do NOT send audio or video, they send data!!! There, saved you the email!)

RXD433A	433 MHz Receiver/Decoder Module w/Dip Switch	\$39.95
TXE433A	433 MHz Transmitter/Encoder Module w/Dip Switch	\$37.95
RXD433	433 MHz Receiver/Decoder Module, Assembled	\$34.95
TXE433	433 MHz Transmitter/Encoder Module, Assembled	\$32.95
RX433	433 MHz Data Receiver Module, Assembled	\$29.95
TX433	433 MHz Data Transmitter Module, Assembled	\$24.95
RXD916	916 MHz Receiver/Decoder Module, Assembled	\$34.95
TXE916	916 MHz Transmitter/Encoder Module, Assembled	\$32.95
RX916	916 MHz Data Receiver Module, Assembled	\$29.95
TX916	916 MHz Data Transmitter Module, Assembled	\$24.95

**Make it easy!**  
Use our BE164 and  
BD164 boards on  
page 27 to interface  
with these RF  
Modules!



Wired &amp; Tested



**Broadband  
Coverage And  
NO TUNING!**

## Precision PC Plane Antennas

- ✓ Small thin size with excellent performance
- ✓ Very directional—ideal for transmission or reception use
- ✓ No tuning needed!
- ✓ Rugged FR-4 construction
- ✓ Available log periodic, yagi, or patch!

This series of Log Periodic and Yagi PCB Antennas allows you to cover the entire spectrum from 400 MHz to 11.0 GHz! If you want to get the maximum performance out of your UHF to low frequency microwave wireless system, one of these little babies is the answer! Their directional property "compresses" the signal into a strong beam that is 4 times more powerful in the desired direction.

They are the ideal antennas for scanners, wireless LAN's, and other wireless devices. When you need a dedicated point-to-point link, they have no equal! Maintenance free construction on rugged FR-4 material boasts the added advantages of no tuning and no fragile antenna elements to break or twist! The small size and wide bandwidth make them ideal for feeding reflector antennas such as easily constructed corner reflectors or parabolic grids. Pick the one that's right for you and start enjoying the fruits of a well designed system!

The Log Periodic models easily interface to your system via the provided connectors. The wide bandwidth characteristics of the Log Periodic design ensure total reliability within their respective ranges. The Yagi model is a patented design perfect for directionally extending the range of your cordless phone or other 915 MHz wireless device. Finally, the answer to those poor range blues!

- LPY41 (400-1,000 MHz, SMA-female)
- LPY2 (900-2,600 MHz, SMA female)
- LPY26 (2,100-11,000 MHz, SMA-male)
- LPY244P (2.4GHz WiFi Patch, SMA male)
- LPY245Y (2.4GHz WiFi yagi, SMA male)
- LPY915 Yagi (915 MHz, BNC-male)

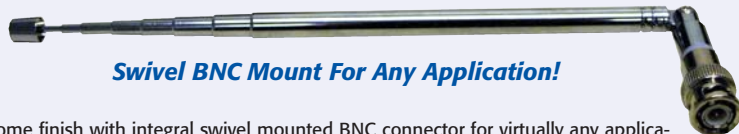
LPY41	Logi Log Periodic PCB Antenna, 400-1,000 MHz, Factory Assembled & Tested	\$42.95
LPY2	Logi Log Periodic PCB Antenna, 900-2,600 MHz, Factory Assembled & Tested	\$34.95
LPY26	Logi Log Periodic PCB Antenna, 2.1-11.0 GHz, Factory Assembled & Tested	\$29.95
LPY915	Directional Yagi PCB Antenna, 915 MHz, Factory Assembled & Tested	\$29.95
LPY245Y	Directional Yagi PCB Antenna, 2.4GHz WiFi, 8.5dBi Forward Gain, Assembled & Tested	\$32.95
LPY244P	PCB 4-Bay Patch Antenna, 2.4GHz Wireless LAN, 12dBi Gain, Assembled & Tested	\$34.95

## Telescopic Whip Antenna

- ✓ High quality with BNC connection
- ✓ Covers VHF and UHF bands



**Swivel BNC Mount For Any Application!**



Ideal for handheld portables, receivers, and communications test equipment. Professional chrome finish with integral swivel mounted BNC connector for virtually any application! From the top of equipment to 90 degrees on the back of equipment, it will work like a champ! Whip extends 5.25" to 27.75" to cover a wide variety of ranges with ease!

WA10

Telescopic Whip Antenna

\$14.95



## Tru-Match FM Broadcast Antenna

**Rugged PVC Construction...  
Keeps The Weather Out!**

- ✓ Fully weatherproof - rugged PVC construction
- ✓ Matches 50 or 75 ohm systems!
- ✓ Broadband for perfect match!

Looking for a perfect low cost FM antenna? Our extremely popular TM100 Tru-Mach antenna will fit the bill! Matching your antenna to your transmitter is the single most important link in your transmitter setup. Without a proper match, power is reflected away from the antenna and back into the transmitter! This can cause the final amplifier stage to be damaged, not to mention spurious signals and (no better way to say it!) lousy range.

The unique design features PVC tubes and fittings to make it waterproof and impervious to rain and snow, which make the TM100 one of the most reliable antennas available for the private broadcaster! Unlike other FM transmitter antennas that need to be tuned to a specific frequency, the TM100 is broadband over the entire 88-108MHz band yet still maintains an excellent match! The antenna terminates with a standard "F" connector for easy connection with standard 75 ohm TV coax to your FM10C or FM25B. See our connectors section to adapt the "F" connector to a "BNC" for easy matching of professional 50 ohm coax or 75 ohm TV coax for use with our FM30 or FM100B series transmitters. Maximum power rating of the TM100 is 25 watts. BTW, also makes a GREAT and easy-to-connect omnidirectional receiver antenna!

TM100

FM Broadcast Low Power Antenna Kit (25W Max)

\$69.95

## 5/8 Wave Colinear Vertical FM Antenna

- ✓ 5/8 wave for excellent gain and maximum range
- ✓ Field adjustable for a perfect match
- ✓ 3.4 dB gain effectively doubles your power!

**Precision Tune To Your Exact  
Frequency For A Perfect VSWR!**



This is probably the most popular antenna we sell. Why? Let's start with the proven omnidirectional ground plane design, clean rugged construction, and how about easy mounting? The 5/8 wave design keeps your signal low to the horizon and not uselessly radiating up into space - great if your listeners are on the space shuttle, but the pits for the folks out at the edge of town! Imagine a donut shaped pattern of signal radiating from your antenna. For the most range out to the horizon, we need to "squish" that pattern flatter to squeeze more signal out - and that's exactly what this antenna does!

The antenna is easy to assemble and is adjustable to your specific frequency during assembly. Makes a super match and a perfect VSWR to your transmitter! The base of the antenna mounts on any standard antenna mast or pipe (not included). A professional SO-239 connector is provided at the base of the antenna to match a standard PL-259 connector. A perfect match, easy assembly, and a breeze to mount and connect, it really can't get much better than that! Try one and see if you don't agree that it's one heck of an antenna for the money! Height: 7' 7" 200 watt power rating. Visit [www.ramseyelectronics.com](http://www.ramseyelectronics.com) for matching coax cable assemblies to match up to your transmitter.



FMA200

5/8 Wave Colinear Antenna (200W Max)

\$139.95





**KIT** **Wired & Tested**

*Remove The Noise Automatically!*

## Signal Magnet Ferrite Rod Antenna

- ✓ Outstanding results from 500 KHz to 15 MHz
- ✓ High-Q Ferrite Rod antenna with Faraday shield eliminates noise from power lines, light dimmers, most static crashes, and more!

This antenna responds only to the magnetic field of the desired station and ignores the electrostatic field where most interference is found. It does a remarkable job pulling in stations lost down in the noise of power line crud, fluorescent lamp buzz, and light dimmer hash. Plus, it's very directional, able to null strong stations on the same or nearby frequencies!

Being in Rochester NY, we developed this antenna to pull in the Buffalo AM station more than 75 miles away, so we could listen to Buffalo Bills talk radio during the night. You can imagine all the power line and equipment noise we have here at the factory. So, we came up with this ferrite rod, varactor tuned active antenna that's Faraday shielded - it only responds to the magnetic field - and boy does it do the job!

Enough of why the SM100 was developed. Now for the specs! The SM100 is designed to cover the AM broadcast band but includes details on building for any frequency range up to 15 MHz (works gang-busters on Shortwave)! The antenna portion works indoors or out and is contained in rugged PVC pipe with a single F-type coax cable connector. Operates with up to 500 feet of coax cable (not provided!) between antenna assembly and control box.

This compact antenna has remained a favorite with low frequency receiver enthusiasts, and in fact is used frequently to pick up the WWV and WWVB low frequency signals for instrument grade 10MHz reference systems in labs throughout the world! It works equally well as the long wire antenna options provided with these systems at a fraction of the price!

Includes all parts, matching case set and precut PVC materials. Operates on an external 120 VAC power adapter that is included. Antenna is 9 1/2" x 9" long, L-Shaped 1" PVC pipe with end caps. Control box case measures 5"W x 1 1/2"H x 5 1/4"D. (It worked just great to listen to the Bills players explain for 4 straight years why they lost the Super Bowl!)

**SM100** **Signal Magnet Noise Reduction Antenna Kit With Case**  
**SM100WT** **Factory Assembled & Tested for AM Band**

**\$89.95**  
**\$134.95**

## Active Receive Antenna

- ✓ Works with HF or VHF/UHF
- ✓ Performs like a 60' Long Wire!
- ✓ Operates as a stand-alone antenna or in conjunction with an existing antenna

*The Easy Antenna...  
Regardless Of Frequency!*

Our AA7C has been a favorite for the serious DX'ers, and now it's even better! It works on all bands - shortwave, HF, VHF and UHF! Imagine a self-contained unit just 4 inches square that pulls in the signals like a 60 foot long wire; that's the advantage of an active antenna! For jazzing up VHF/UHF receivers and scanners the AA7B has you covered too. Over 15 dB of gain pulls in the weak ones whether you use the included telescopic whip or an outside antenna.

Unlike it's predecessor, the AA7B requires no band switching to cover the range of 1MHz to 800MHz. That's right, it has a bandwidth of 800MHz with up to 20 dB of gain at an input signal level up to -20dBm. A pair of N-Channel MOSFET tetrode transistors provide the gain. Because they are tetrode MOSFET devices, the gain adjustment is accomplished using a variable DC control voltage so the gain control potentiometer won't cause any noise if it gets "dirty." The transistors and solid state relays are surface mount devices, so the signal path (and therefore a lot of potential signal loss!) is minimized.

What if you don't need any gain? No problem! Just turn the AA7B off and the solid state relays automatically route the signal directly through with no amplification and a very minimum, 1dbm or less, of signal loss. There are no mechanical switches in the signal path to get dirty and degrade the signal levels. High quality BNC connectors provide input and output connections to your antenna and receiver.

You can power the AA7B from a standard 9 volt battery for portable operation or plug in an external power supply between 7 and 15 VDC. The battery will be automatically disconnected when you use an external power source. There's even an LED indicator to show you the AA7B is turned on and ready to go.

Features of the AA7B include: Front panel RF gain control, power switch with preamp bypass switching, rear panel input and output connectors, convenient 9 volt battery operation and telescopic whip antenna (or connect your own antenna with the BNC connector). We think you'll agree that the AA7B is simply the most practical and best value of any active antenna on the market! Includes whip antenna and matching case set. Operates on a standard 9VDC battery (not included). Case size 5"W x 1 1/2"H x 5 1/4"D.

**AA7B** **Active Antenna Kit With Case**

**\$49.95**

## RF Preamplifier

- ✓ Broadband from 100 KHz to 1000 MHz!
- ✓ High Gain: 16 db
- ✓ Low noise, less than 4dB!

*We're Talking Broadband!*

This is the famous preamp that's been written up in all the radio and electronics magazines. New low-cost microwave transistors make it possible to give performance unheard of a few years ago!

Provides 16dB gain from 100kHz to 1GHz and is unconditionally stable! Runs on 12-15VDC at 15mA. Input and output impedance is 50-75 ohm. Measures 1" x 3/8" x 1 1/2".

**SA7** **RF Preamp Kit**

**KIT** **\$19.95**

## AM/FM RF Preamplifier

- ✓ 10MHz to 150MHz!
- ✓ Shielded metal housing
- ✓ Direct or line fed DC supply

*Amplify Those Signals!*

Designed specifically for AM/FM radio reception, the K2622 provides 22dB gain between 10MHz and 150MHz. The sleek metal housing provides the necessary shielding and assures you of the least amount of interference.

Input power is 12-15VDC at 2mA and can be powered directly or up the coax. Input/output impedance is 50-75 ohm. Measures 3.4" x 1.4" x .9". From Velleman.

**K2622** **AM/FM Preamp Kit**

**KIT** **\$18.95**



## DOPPLER DIRECTION FINDER... Find That Transmitter Quick!

Track down jammers and hidden transmitters from with a built-in compass heading display!

**from \$169.95**  
See Page 41





KIT

Wired &amp; Tested

## Universal Li-Ion Battery Pack

- ✓ Run and charge any USB device or cell phone for hours and hours!
- ✓ Provide up to 11.1VDC@1A regulated output
- ✓ Provides 5VDC USB power output at 1A
- ✓ Latest Li-Ion battery technology
- ✓ Smart charger protects the battery
- ✓ Input charging voltage 15-30VDC

**Keep Your Battery Charged!  
Power Your USB Device!**

A lot of us have been there, you're on a trip, you're on an extended weekend, you're simply on the beach or on your boat... and your portable electronic device battery died. Whatever it may be, your MP3 player, your iPod, your cell phone, you're pretty much hung out to dry until you get back, find your charger, plug it in, and wait! Now, after many suggestions from our customers, we introduce the Universal Battery Pack UB1! Easy to plug into any USB charger or external power supply input!



The heart of the UB1 is the custom designed Li-Ion battery pack. It is ultra-thin yet produces a whopping 11.1VDC at 1.8Ah! Having a custom highly efficient battery pack designed for us was the first difficult task. Next comes the charging circuit. As some of you know, Li-Ion battery charging circuits are critical for proper battery life as well as battery safety. We have all heard the stories of the exploding laptop Li-Ion batteries. We don't want that to happen, so a lot of work went into a flawless charging circuit for the UB1. The charging procedure for a Li-Ion cell requires careful attention to a charging rate controlled by voltage, current and time. The UB1 handles all that. The UB1 accepts any input voltage from 15-30VDC to properly charge a fully discharged battery pack in a few hours. The input is a standard 2.1mm power connector. Use any standard accessory charger within that voltage range, or order our PS27 power supply. You can also use 12-13.6VDC from a vehicle accessory plug to a standard 2.1mm plug to charge the UB1 while you're driving!

There are two power supply outputs - a standard USB connector to provide a regulated 5VDC USB charging power to any device (iPod, cell phone, MP3 player, etc.) and 11.1VDC fixed or variable 1.2VDC to 10.7VDC at 1A provided at the 2.1mm connector. LEDs are provided to indicate charge/operate mode. Measures 5.5" x 3.5" x 1.13".

UBP1	Universal Li-Ion Battery Pack Kit	\$129.95
UBP1WT	Universal Li-Ion Battery Pack, Factory Assembled & Tested With PS27 Power Supply	\$169.95
PS27	Universal AC Power Supply, 120/240VAC Input, 15V Regulated 1A Output	\$17.95

## Solar Generator Briefcase

Wired &amp; Tested

- ✓ Powerful 13W generators!
- ✓ 14VDC, 750mA
- ✓ Folding briefcase design

**Steal From  
The Sun!**

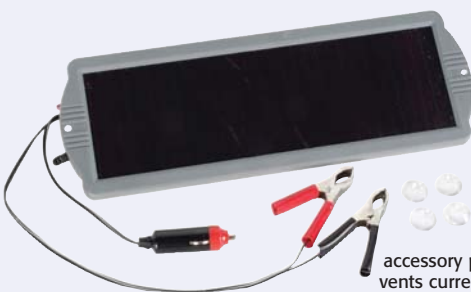
So you're outdoors away from the nearest electrical outlet and you need power. What do you do? Until now you had to have a small gas powered generator. That gets a tad bit bulky, heavy, and with the fuel needed, dangerous. Those days are long gone! Carry along your Solar Briefcase and capture the power from the sun... it's free!

This incredibly handy package of power is great to run laptops, small electric hand tools, DC refrigerators, GPS systems, portable electronics, and a whole lot more! It's also great to charge your batteries. The two powerful solar panels generate 13 watts of power. That's 14VDC at a working current of 750mA! That's more than the average plug-in power supply!

Detachable connectors are provided for a variety of applications. The briefcase design measures 20.1" x 14.7" x 1.6" and weighs a scant 9.7 lbs.



SOL8	Solar Generator Briefcase, Factory Assembled & Tested	\$149.95
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Wired &amp; Tested

## Solar Vehicle Trickle Charger

- ✓ Works with any vehicle!
- ✓ Easy window or visor mounting!
- ✓ Easy connections

**Keep Your Battery Charged!**

We've all been there; your car sat in a parking lot for a week or so, you came back and the battery was flatter than a pancake! It doesn't take much to drain a battery down if the vehicle is not run, and today's vehicles have electronics draining the battery 24/7 whether the car is on or off!

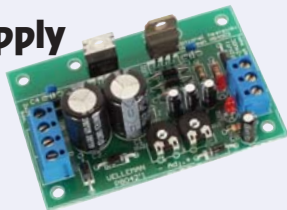
Now you can rest assured you will never have a dead battery! Just keep this handy solar trickle charger plugged into your accessory power jack (cigarette lighter plug for those of you that don't know the new name!) and you are all set. Built-in protection prevents current reversal. Provides 14.5VDC at 125mA. Comes complete with cigarette lighter plug, battery clamps, and window suction cup mounts. If your car sees the sun, your car's battery will never be dead! Measures 13.4" x 4.7" x 0.6", perfect for a sun visor. (I keep one of these in the "seasonal vehicle" that just sits because I'm too busy writing ad copy for catalogs! The one time I drove it this year, it started right up! Editor...)

SOL5N	Solar Vehicle Trickle Charger, Factory Assembled & Tested	\$29.95
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## Symmetric 1A Power Supply

- ✓ Plus & minus 1.2V to 24VDC!
- ✓ Thermal protection
- ✓ Just add a transformer & heatsink

**Low Cost, Easy to Build!**



The K8042 is a great little symmetric power supply designed to provide  $\pm 1.2$  to 24VDC regulated at 1A. Perfect for amplifiers, op-amps, and other applications requiring a nice-regulated  $\pm$ DC source. The circuit provides short circuit and thermal protection.

Just provide a suitable power transformer or AC source (up to 24V) and heatsink and you're all set. Features LED status indicators. Board measures 3.1" x 2" x .9" From Velleman.

## Regulated 1A Power Supply

- ✓ 1.5 to 35VDC at one amp!
- ✓ LM317 regulator circuit
- ✓ Current and thermal overload protection

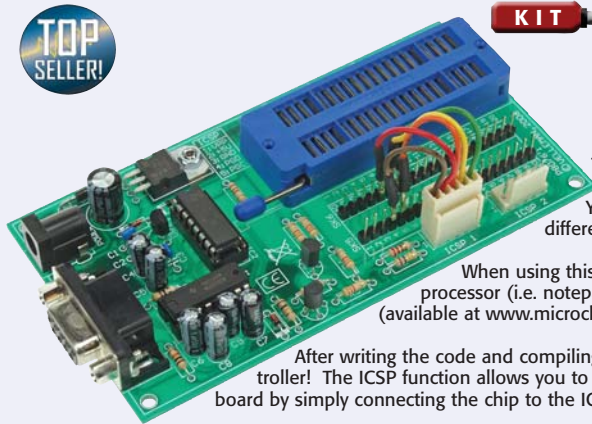
**1 Amp Up To 35 Volts!**



If you're looking for a small power supply regulator and don't want to build it up from scratch, the K1823 is just for you! Designed around the LM317 regulator, it will provide a variable regulated output between 1.5 and 35VDC. Continuous output current is conservatively rated at 1A with a maximum output current of 1.5A. Maximum input voltage is 40VDC for rated output. Both current and thermal overload protection is provided by the LM317. Heatsink is not included and is required for maximum rated output. Board measures 2.1" x 2.1". From Velleman.

K8042	Symmetric 1A PS Kit	KIT	\$15.95	K1823	1A Power Supply Board Kit	KIT	\$12.95
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**KIT**

**Wired & Tested**

## Program Your Own Flash Microcontrollers!

This multifunctional programmer for PIC microcontrollers will let you take advantage of their flexibility. You can reprogram them up to 1000 times to perform different functions, upgrade device firmware, or just play!

When using this programmer, code can be created in any ASCII word processor (i.e. notepad) or using Microchip's MPLAB development package (available at [www.microchip.com](http://www.microchip.com)).

After writing the code and compiling, your code can be written directly to the microcontroller! The ICSP function allows you to reprogram controllers still in-use/powerd by another board by simply connecting the chip to the ICSP bus on the programmer!

## PIC Programmer Board

- ✓ Configurable 40 pin ZIF socket!
- ✓ Supports multiple PIC controllers!
- ✓ DB9 serial interface for PC's!
- ✓ Includes PICprog2006 software!

SPECIFICATIONS	
Supported Controllers:	PIC10F200, PIC12C508A, PIC12CE518, PIC12F629, PIC12F675, PIC16F54, PIC16F84A, PIC16F870, PIC16F871, PIC16F872, PIC16F873, PIC16F874, PIC16F876, PIC16F877, PIC16F627, PIC16F627A, PIC16F628, PIC16F628A, PIC16F648A, PIC16F630, PIC16F676, PIC18F2550, etc.
Serial Connection:	DB9
Power supply:	12-15VDC, 300mA
Dimensions:	5.23" x 2.57" x .79"

All the software you need to get started is included and with a basic knowledge of ASM and this kit, the possibilities are endless! To get more hands-on training and experience with PIC controllers, check out the K8048 programmer and experimenters board above, it gives you all the programming capabilities plus extra onboard experimentation capabilities. From Velleman. *Note: this product requires a standard RS232 serial connection, and is NOT compatible with some USB to RS232 serial adaptors or converters.*

K8076	PIC Programmer Board Kit	\$47.95
VM134	PIC Programmer Board, Factory Assembled & Tested	\$74.95
AC125	110VAC Power Supply	\$9.95

## PIC Programmer & Experimenter

**KIT**

**Wired & Tested**

- ✓ Supports 8, 14, 18, & 28 pin PICs
- ✓ Includes a PIC16F627 Microcontroller!
- ✓ On-board programming switches and LEDs!
- ✓ Software included!

## Don't Just Program Them... Learn All About Them!

Unlike the stand-alone programmer K8076 above, this programmer also acts as an advanced experimenters board for PIC microcontrollers. Separate 8, 14, 18, and 28 pin sockets accommodate a wide variety of controllers. This eliminates the need for patching a universal ZIF socket.

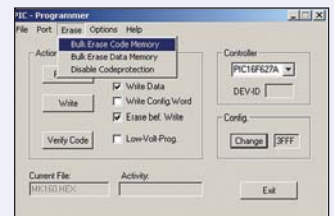


SPECIFICATIONS	
Supported Controllers:	PIC12F629, PIC12F675, PIC16C83, PIC16CR83, PIC16F83, PIC16C84, PIC16CR84, PIC16F84, PIC16F84A, PIC16F870, PIC16F871, PIC16F872, PIC16F873, PIC16F873A, PIC16F874, PIC16F874A, PIC16F876, PIC16F876A, PIC16F877(A) (ICSP only), PIC16F627, PIC16F627A, PIC16F628, PIC16F628A, PIC16F648A, PICF630, PIC16F676, PIC16F818, PIC16F819, etc.
Serial Connection:	DB9
Power supply:	12-15VDC, 300mA
Dimensions:	5.75" x 4" x .79"

In addition, programming switches and LED status and feedback indicators help you with your programming, so there's no need to move the PIC to another board to test it. This makes the K8048 a great teaching tool for PIC programming. Also includes a standard PIC 16F627 PIC to experiment with over and over again!

Code can be created in any ASCII word processor (i.e. notepad) or using Microchip's MPLAB development package (available at [www.microchip.com](http://www.microchip.com)). After writing and compiling, your code can be written directly to the microcontroller! The ICSP function allows you to reprogram controllers still in-use/powerd by another board by simply connecting the chip to the ICSP bus on the programmer!

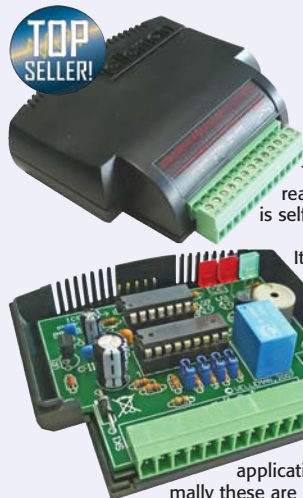
All the software you need to get started is included, and with a basic knowledge of ASM and this kit, the possibilities are endless! Check out the screen shot of the included software, which is compatible with Win95/98/ME/NT/2K/and XP. If you are looking for a quick PIC microcontroller programmer only, without the advanced experimenter features, check out the K8076 below. From Velleman. *Note: this product requires a standard RS232 serial connection, and is NOT compatible with some USB to RS232 serial adaptors or converters.*



K8048	PIC Programmer & Experimenters Board Kit	\$34.95
VM111	PIC Programmer & Experimenters Board, Factory Assembled & Tested	\$69.95
AC125	110VAC Power Supply	\$9.95

**Wired & Tested**

## Integrate PIC Micros Without Building The Hardware!



This "cute" little module is designed for the hobbyist that would like to control their project or application with a custom PIC microcontroller but really doesn't want to build the hardware associated with it, whether it be the lack of time, ability... or both! The module (which is less than 3" x 3") is self enclosed, factory assembled and tested, and ready for your integration into your application. It even includes a PIC16F630 micro on board!

It features 4 buffered voltage sensing inputs from 5-24VDC at 47K. Output wise, it provides 4 NPN open collector outputs plus a relay output. The relay can be directly driven by an output and provides NO/NC contacts rated at 2 amps.

Besides the built-in relay, the module also contains dual LED indicators for power supply and relay operation as well as an on-board buzzer for programmable audible indication. A 13 pin plug-in Euroblock style connector is also provided for easy connection and removal to your application or circuit. The socket mounted on-board PIC can be removed for programming with the K8076, VM134, or any other suitable programmer. It can also be programmed in-circuit via the plug-in programming connector. If you are looking to integrate PIC controlled functions to your application and just don't have the time to build up the circuit, this module is for you! Does not include software development tools or assemblers (normally these are provided with the PIC programmers and experimenters). Factory assembled and tested for immediate use. From Velleman.

## PIC-PLC Application Mini Module

- ✓ 9 Free programmable I/O's!
- ✓ Includes a PIC 16F630 microcontroller!
- ✓ On-board buzzer and LED for signal indication!
- ✓ Includes an on-board 2A relay!

SPECIFICATIONS	
Power Supply:	12VDC unregulated, 100mA
Inputs:	(4) voltage sensing inputs, 5-24VDC
Outputs:	(4) NPN transistor outputs, open collector, sink outputs
Output Relay:	12V driven from outputs, NO/NC contacts rated at 2A
MCU Speed:	Fixed 4MHz internal oscillator
Dimensions:	3.15" x 2.75" x .98"

VM142	PIC-PLC Application Mini Module, Factory Assembled & Tested	\$52.95
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5 Digital Inputs:  
2 Analog Inputs:  
8 Digital Outputs:  
2 Analog Outputs:  
Gen Conv. Time:  
Power Supply:  
Software:  
PC Requirements:  
Dimensions:

#### SPECIFICATIONS

0=ground; 1=open, on board test buttons  
Attenuation and amplification, internal test  
Open collector, 50V/100mA, LED indication  
0-5V at 1K $\Omega$  PWM 0-100% open collector  
20ms per command  
Through USB, 70mA approx.  
Diagnostic Windows software with DLL  
Pentium class or higher, USB1.0 or higher,  
Win98SE, WinME, Win2K, XP  
5.7" x 3" x .8"

K8055  
VM110

USB Experimenter's Interface Board Kit  
USB Experimenter's Interface Board, Factory Assembled & Tested

\$49.95  
\$82.95

## Extended USB Experimenter's Interface Board

- ✓ 33 total inputs and outputs!
- ✓ Digital, analog, & PWM
- ✓ Isolated computer connection!
- ✓ Communications routines!
- ✓ 0-10V or 0-5V selection per input/output
- ✓ Includes diagnostic and testing software
- ✓ Advanced features

8 analog 10 bit inputs:  
8 analog 8 bit outputs:  
8 digital inputs:  
8 digital outputs:  
1 PWM output:  
General response time:  
USB port:  
USB cable:  
USB power:  
External power:  
Software:  
PC Requirements:  
Dimensions:

#### SPECIFICATIONS

0-5 or 0-5V at 20k $\Omega$ m  
0-5 or 0-10V at 47  $\Omega$ m  
Open collector, gnd=0, LED indication  
Open collector, 50V/100mA, LED indication  
0-100% open collector, 40V/100mA, LED  
4ms per command  
USB1.1 and USB2.0 compatible  
Included A-B  
60mA, up to 8 cards to one PC  
12VDC at 300mA (not included)  
Diagnostic Windows software with DLL  
Pentium class or higher, USB1.1 or 2.0,  
Win98SE, WinME, Win2K, XP, Vista  
2.7" x 5.6" x 0.8"

Connection between the interface board and your computer is galvanically-optically isolated so damage to the computer is impossible. This provides an even greater level of secure implementation. Get ready to take your USB development to the next level. From Velleman.

K8061  
VM140

Extended USB Experimenter's Interface Board Kit  
Extended USB Experimenter's Interface Board, Factory Assembled & Tested

\$149.95  
\$169.95



K8045  
B8045

Programmable LCD Message Board Kit  
Custom Enclosure With Matching Bezel

\$49.95  
\$23.95

KIT

Wired & Tested

Learn How USB Works...  
Then Put It To Work!

## USB Experimenter's Interface Board



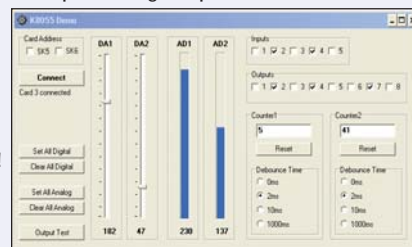
- ✓ 5 digital input channels!
- ✓ 8 digital output channels!
- ✓ 2 analog inputs and outputs!
- ✓ Diagnostic software & DLL included!

Not so long ago the universal answer for external control from a PC was the serial port. It was easy, it was simple, and you really couldn't mess anything up! Then came parallel port outputs for higher speed connections and transfers. What came next? The "Universal Serial Bus" or USB.

Everything has gone to USB connections due to the speed, reliability, and plug and play simplicity. In fact, go to an office store and try to find a printer with a parallel port these days! They call those legacy products... and legacy technology!

Well it's time to get hands-on experience developing USB interfaces! This board provides everything needed. All communication routines are contained in a Dynamic Link Library (DLL) that is provided along with Windows based diagnostic software.

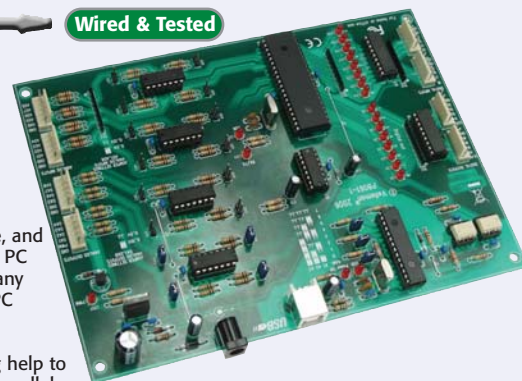
You can also write custom Windows applications in Delphi Visual Basic, C++, or any other 32-bit Windows development tool that supports calls to a DLL. A variety of inputs and outputs are provided that are controlled and monitored with the diagnostic software. Learn USB the fun way, and watch it work! From Velleman. (No dreaded blue screen of death with this one!)



KIT

Wired & Tested

Go To The Next Level Of  
USB Experimenting!



This interface board is the big brother of the K8055 above, and is packed with even more features, making it the ultimate PC interface tool for hobbyists. The ability to control almost any device imaginable and get real-time feedback from your PC means virtually unlimited possibilities!

The high throughput possible with this board will be a big help to anyone working with bandwidth limitations of serial and parallel port interfaces, and since the USB is handled in hardware, communication between your computer and the device generates very little CPU overhead!

Like the K8055, all communication routines are contained in a Dynamic Link Library (DLL) that is provided along with Windows based diagnostic software. You can also write custom Windows applications in Delphi Visual Basic, C++, or any other 32-bit Windows development tool that supports calls to a DLL. This advanced interface has a total of 33 inputs and outputs that include both digital and analog inputs and outputs as well as one PWM output.

KIT

Add A High Tech Display To  
Your Own Project!

## Programmable Message Board

- ✓ Includes backlit LCD display!
- ✓ Serial interface!
- ✓ 8 inputs!
- ✓ Non-volatile EEPROM memory!
- ✓ No programming skills needed!

#### DISPLAY MODES

1. Display the status of all inputs simultaneously
2. Display all active inputs
3. Display active input with highest priority
4. Display text messages in a "tickertape" display

If you have never experimented or used an LCD message display, this kit is for you! You can use this as a stand-alone display that is remotely programmed or as an integral display for one of your own projects! With a very nice supertwist backlit 16 character LCD display, you can provide alphanumeric displays in four display modes.

There are 8 separate inputs and each input accepts dry contacts, open collectors or logic levels. The non-volatile EEPROM memory can store up to 9 sixteen character messages! A default message can be displayed to signal that no inputs are active. RS232 interface is based on 2400/N/8/1 with no handshaking to make for a simple interface.

Message transfer software is available online to transfer messages from your PC to the message board. Messages can be recalled by a simple pushbutton. This is the perfect kit to get your hands dirty with alphanumeric displays and their control circuits. It's fun, you learn, and you have a really great display when it's built!

Board measures 4.9" x 2.9" x 1.2". If you're looking for a really nice finished display, order the custom case/bezel kit. From Velleman.





## Easy To Learn 130 In 1 Electronics Lab

- ✓ No prior knowledge of electronics needed!
- ✓ Solderless connections for safe assembly
- ✓ Build 130 different circuits and see them work!
- ✓ Includes a comprehensive instruction & theory manual written for the youngest novice to understand!

**A Great Start To Electronics...  
With 130 Separate Projects!**

For over three decades, Ramsey has provided educational hobby kits that give thousands and thousands of kids their start in electronics. We've searched and searched for an Electronics Lab specifically designed to teach the youngest experimenter the fun and excitement of electronics.

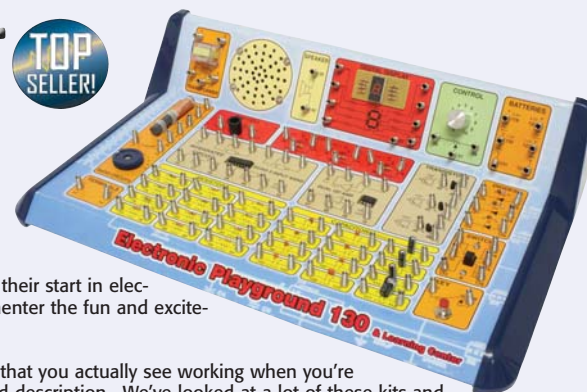
The PL130A does just that! Learn the basics and theory of electronics the fun way while building 130+ projects that you actually see working when you're done! The detailed instruction manual covers the hows and whys of every circuit, theory, parts identification, and description. We've looked at a lot of these kits and have turned them down because of the documentation. This one is a winner!

**LOTS OF PROJECTS? YOU BET! Check them out!**

Electronic Woodpecker  
The Chirping Bird  
Electronic Cat  
Sonic Fish Caller  
Machine Gun Pulse Oscillator  
Electronic Motorcycle  
Two-Tone Patrol Car Siren  
Electronic Siren  
Electronic Metronome  
Electronic Grandfather Clock  
Light-Controlled Electronic Harp  
Horror Movie Sound Effects  
Strobe Light  
Rapid LED Display Switching (Persistence Vision Test)  
Capacitor Discharge/High Voltage Generator  
Capacitors in Series and Parallel  
Resistors in Series and Parallel  
Light Dimmer  
Transistor Switcher  
Transistor Circuit Action  
Sound Amplifier  
Flip-Flop Multivibrator with LED Display  
Seven-Segment LED Digital Display Circuit  
Basic LED Display  
Transistor Control Switching of the LED Display  
Transistor, CDS Cell and LED Display Circuit  
Diode-Transistor Logic AND with LED Display  
DTL OR Circuit with LED Display  
DTL NAND Circuit with LED Display  
DTL Exclusive OR Circuit  
Transistor NOR Circuit with LED Display  
Transistor Flip-Flop Circuit  
Transistor Toggle Flip-Flop  
Transistor-Transistor Logic Buffer Gate  
TTL Inverter Gate  
TTL AND Gate  
TTL OR Gate  
TTL Exclusive OR Gate  
TTL NOR Gate  
TTL Three-Input AND Gate  
TTL AND Enable Circuit  
TTL OR Enable Circuit  
TTL NAND Enable Circuit  
TTL R-S Flip-Flop

Toggle Flip-Flop Circuit Made from NAND Gate  
TTL Line Selector  
TTL Data Selector  
TTL Astable Multivibrator  
TTL Tone Generator  
Winking LEDs  
A One-Shot TTL  
Transistor Timer with TTL  
Buzzin' LED  
Son of Buzzin' LED  
Set/Reset Buzzer 1  
Set/Reset Buzzer 2  
Sound Machine  
Big Mouth  
Shot in the Dark  
Variable R-C Oscillator  
Oscillator with Turn-Off Delay  
Temperature-Sensitive Audio Oscillator  
Two-Transistor, Directly Connected Oscillator  
Push/Pull Square Wave Oscillator  
Pencil Lead Organ  
LED Strobe Light  
Electronic Organ  
Daylight Early Bird  
Intermittent Alarm Generator  
Comparator  
Basic Increase in DC Voltage  
Constant-Current Source  
Integrating Circuit  
Schmitt Trigger Circuit  
Noninverting Two-Power Supply Amplifier  
Inverting Two-Power Supply Amplifier  
Noninverting Single-Power Supply Amplifier  
Two-Power Supply Differential Amplifier  
Tone Mixing Amplifier  
Power Amplifier Using Operational Amplifier  
Voltage Controlled Oscillator Circuit  
Operational Amplifier Buzzer  
Burglar Alarm  
Hand-Operated Sweep Oscillator  
Falling Bomb Sound  
Emergency Siren  
First Aid Siren

Musical Tempo Generator  
Operational Amplifier Winking LED  
LED Flashing Light  
Two-LED Winker  
One Shot Light  
LED Initials  
Wake Up Siren  
Voice-Activated LED  
Logic Tester  
Alternating Current Sound  
Light Control Sound Circuit  
Sound Alarm Circuit  
Study Timer  
Kitchen Timer  
Three-Input AND Gate Using Operational Amplifier  
Voice Level Meter  
Power-On Reset Circuit  
Delayed Timer  
Pulse Frequency Doubler  
White Noise Generator  
DC-DC Converter with Operational Amplifier  
Code Practice Oscillator with Tone Control  
Crystal Set Radio (Simple-Diode Radio)  
Two-Transistor Radio  
Wireless Code Transmitter  
AM Radio Station  
Operational Amplifier Radio  
Aural Continuity Tester  
Conductivity Tester  
Transistor Checker  
Sinewave Audio Oscillator  
Low Distortion Sinewave Oscillator  
Twin-T Audio Oscillator  
Pulse Oscillator Tone Generator  
Audio Signal Tracer  
Radio Frequency Signal Tracer  
Square Wave Audio Oscillator  
Sawtooth Wave Oscillator  
Rain Detector  
Water Level Buzzer with Operational Amplifier  
Metal Detector  
Water Level Alarm  
Three-Step Water Level Indicator



Start today and learn the exciting world of electronics with this excellent starter learning lab. Just imagine, build an electronic metronome, a light dimmer, a voice actuated LED light! Or go back in time and learn all about how radio started by building yourself a Crystal Set radio... or take it one step forward and build an actual radio station!

For more advanced Electronics Labs, check out the following:

- PL200 200 In One Electronics Lab
- PL300 300 In One Electronics Lab
- PL500 500 In One Electronics Lab

This 130A In One Lab is a perfect start to a great new hobby in electronics, whether it's for you, your kids, or your friends. The 130 electronics projects are sure to excite the "student" young or old. And if it is even your first experience with electronics, the comprehensive training manual will guide you through each project, and explain exactly how and why it works! If you have a budding electronics hobbyist in your family, the 130-In-One lab is the perfect starter!



## KIT

### 200 New Projects In A New Super Fun-To- Use Package!

It's back and even better! The new 200 in 1 learning lab contains 200 fun and exciting projects to spark the interest of anyone wanting to explore electronics... young or old!

The exclusive front panel contains a built-in speaker, earphone, meter, 7-segment LED digital display, two controls and more to make the finished projects fun to use. Now you can build your own AM broadcast station, burglar alarm, telegraph, sound effects, radios, and other interesting circuits that give you hands-on fun when done!

The unique front operating panel and special projects make this the popular choice for entry level learning labs. Requires 6 standard AA batteries, not included.

## Super-Fun 200 In 1 Electronics Lab

- ✓ Build 200 very special and super-fun projects!
- ✓ Front panel speaker, meter, controls, and more!
- ✓ No tools required!
- ✓ Comprehensive instruction & theory manual!

### Includes the following super-fun learning projects:

#### Surprise and Game Projects

Wheel of Fortune  
The Noisy Light  
Electronic Candle  
Rain Detector  
Ear splitter  
Pencil Lead Organ  
The Electric Human  
The Electrosonic Human  
Electric Birthday Cake  
Quick Draw  
Quick Draw II  
Electronic Safecracking  
UFO Invasion  
Tug of War  
Shot in the Dark  
Burglar Alarm  
SOS Alert  
Target Range  
"Catch" the Eight  
Marching LEDs  
Turn Signal Flasher  
Leapin' LEDs!  
Lights Out

#### Back to the Basics

Light Telegraph  
Frontier Telegraph  
Introducing the Resistor  
Parallel Resistors  
Secret Resistance  
A Variable Resistor  
Capacitors in Series and Parallel  
The Electronic Gas Tank  
Discharge Timer  
Light Dimmer  
The Quick Capacitor  
Electronic Timer  
Capacitors and Oscillators  
A Variable Capacitor  
Resistors and Capacitors Together  
Resistors and Capacitors Together II  
Meet the Diode  
Voltage Drop  
Voltage Regulator  
LED - A Special Diode  
How a Transformer Works  
A Chopper Circuit  
An AC Simulator  
Electronic Buzzer  
Photometer  
Electronic Jigsaw Puzzle  
Night Light  
The Light Switch  
Electronic Elephant  
Capital Letter Displays

Small Letter Displays  
Numeric Displays  
Meet the Transistor  
Transistors as Switches  
Electricity from Sound  
Electric Money

#### Electronic "Building Blocks"

A Push-Pull Amplifier  
Understanding Oscillators  
A Push-Pull Oscillator  
An Inverter Circuit  
Meet the OR Circuit  
Introducing the AND Gate  
Using the NOR Gate  
Meet the NAND Gate  
How a Multivibrator Works  
A "One-Shot" Multivibrator  
An R-S Flip-Flop

#### Putting Electronics to Work

Sound Scooper  
Liquid Conductivity Tester  
Super-Sensitive Photometer  
Motion Detector  
Two-Tone Buzzer  
Variable Capacitor Oscillator  
Variable RC Oscillator  
Electronic Metronome  
Door Alarm  
Frequency Shift Oscillator  
Code Practice Unit  
Light/Sound Code Practice Unit  
Strobe Light  
Noisy Strobe Light  
CdS-Controlled Oscillator  
Shot in the Dark II  
Does Money Talk?

#### Radio Circuits

"Crystal Set" Radio  
"Funny" Transistor Radio  
One Transistor Radio  
Spark Gap Transmitter  
Morse Code Transmitter  
Remote Water Level Detector  
AM Broadcaster

#### Sonic Zoo and Sound Factory

Basic Audio Oscillator  
Light-Controlled Bird  
Electronic Motorcycle  
Chirping Bird  
Electronic Siren  
Fish Caller  
Plant Growth Stimulator

Electronic Organ  
Electronic Raindrops  
Electronic Cat  
Electronic Bird  
Digital Rhythm  
Sound Machine I  
Sound Machine II  
Sound Machine III

#### Electronic Decision-Makers

Electronic Coin Toss  
Electronic Coin Toss II  
Even or Odd  
Electronic Roulette  
Electronic Dice  
Roulette with Sound  
The Light Fantastic  
ESP Tester  
Close-In

#### A Trip to Digital Land

Three-Input OR Circuit  
Three-Input AND Circuit  
RTL Inverter  
RTL Buffer  
RTL OR Gate  
RTL AND Gate  
DTL OR Gate  
DTL AND Gate  
DTL NOR Gate  
DTL NAND Gate  
DTL Exclusive OR Gate  
TTL Inverter  
TTL Buffer  
TTL OR Gate  
TTL AND Gate  
TTL 3-Input AND Gate  
TTL NOR Gate

#### More Adventures in Digital Land

TTL XOR Gate  
TTL NAND Enable Circuit  
TTL AND Enable Circuit  
TTL OR Enable Circuit  
TTL Line Selector  
TTL Data Selector  
TTL R-S Flip-Flop  
TTL R-S Flip-Flop II  
Transistorized Toggle Flip-Flop  
NAND Toggle Flip-Flop  
J-K Toggle Flip-Flop  
TTL Astable Multivibrator  
TTL J-K Flip-Flop  
TTL D Flip-Flop  
TTL Latch Circuit  
Shift Register

#### Circuits That Count

Basic Counter Circuit  
Synchronous Counter  
Asynchronous Counter  
Counter with Line Decoder  
Divide by 4 Counter  
Divide by 4 Counter with Line Decoder  
How a Line Decoder Works  
Multiple Counter  
Binary Counter with Display  
Divide by 3 Counter with Display  
Divide by 4 Counter with Display

#### Some Silly Circuits

Light or Sound  
Be Your Own Multivibrator  
Anticipation  
Big Mouth!  
Sound Stop  
Multivibrator Switching  
Winking LEDs  
A Phony Counter?  
Alphabet Flasher  
A One-Shot TTL  
Winking LEDs II  
Transistor Timer  
TTL Tone Generator  
Meet the VCO  
Sound Out Timer  
Buzzin' LED  
Son of Buzzin' LED  
Octave Generator  
Crossing Signal  
Digital Timer  
Set / Reset Buzzer I  
Set / Reset Buzzer II  
Set / Reset Buzzer III  
Optical Counter  
LED Sound Meter  
Shot in the Dark III  
Set / Reset Match  
Number Displays

#### Testing and Measuring Circuits

Circuit Continuity Checker  
Acoustic Ohmmeter  
DC Voltmeter  
Voltage Level Detector  
AC Voltmeter  
Audio Signal Generator  
Volume Level Meter  
Capacitance Checker  
Diode Tester  
Transistor Checker

For more advanced Electronics Labs, check out the following:

- PL300 300 In One Electronics Lab
- PL500 500 In One Electronics Lab





300 Projects  
Plus Theory!

## Complete 300 In 1 Electronics Lab

- ✓ Build 300 exciting electronic projects
- ✓ Solderless connections for safe assembly
- ✓ No tools required!
- ✓ 165 page comprehensive instruction & theory manual!

After we introduced our PL130 lab kit we were amazed at the customer response. Hundreds and hundreds were ordered, and re-ordered by everyone you could imagine! From parents for their kids, to grandparents for THEIR kids and grandkids, the response has been the same... "THEY LOVE IT!"

We've expanded our line to include this 300-in-one lab kit! Just like the PL130, this lab includes an incredible 165 page comprehensive manual covering the construction of EACH project and the theory behind it.

**Includes ALL of the projects in the PL130 PLUS THE FOLLOWING PROJECTS:**

### Surprise and Fun

Light-Controlled Bird  
A Transistor Radio  
Sound Scooper  
American Patrol Car Siren  
Digital Roulette  
IC Organ

### Back to the Basics

Light Telegraph  
Introducing the Resistor  
Parallel Resistor  
Meet the Diode  
The LED-a Special Diode  
The Electronic Gas Tank  
Meet the Transistor  
Transistor as switches  
PNP Transistor Switch  
NPN Transistor Switch  
Delay Light  
Night Light  
Electronic Timer  
Capital Letter Display  
Small Letter Display  
Number Display

### Electronic "Building Blocks"

An Inverter Circuit  
Meet the OR Gate  
Introducing the AND Gate  
Using the NOR Gate  
Meet the NAND Gate  
How a Multivibrator Works  
A "One-Shot" Multivibrator  
An R-S Flip Flop  
Meet the Oscillator  
Changing Oscillation with Capacitor  
Changing Oscillation with Foreign Substance  
More about Oscillator  
A Push-Pull Oscillator

### Putting Electronics to Work

CdS Controlled Oscillator  
Frequency Shift Oscillator  
Motion Detector  
Door Alarm  
Rapid LED Display Switching  
Code Practice Unit  
Current Switch  
Two-Tone Buzzer  
Astable Multivibrator  
Monostable Multivibrator  
Code Practice Unit  
The Noisy Light  
Hearing Aid Amplifier  
Light/Sound Code Practice Unit  
Light Controlled Burglar Alarm  
DC-DC Converter  
Count Down Timer  
Transistor Frequency Doubler  
One Transistor Full-Wave Rectifier

### Radio Circuits

"Crystal Set" Radio

"Funny Transistor" Radio  
Remote Water Level Detector  
IC Radio  
Morse Code Transmitter  
AM Transmitter  
Broadcasting Organ

### Sonic Zoo and Sound Factory

Plant Growth Stimulator  
Electronic Woodpecker  
Fish Caller  
Electronic Raindrops  
Machine Gun Pulse Detector  
Chirping Bird  
Electronic Bird  
"Horror Movie" Sound Effect  
Sound Machine I  
Sound Machine II  
Multi-Tone Siren  
Digital Rhythm  
Two-IC Electronic Organ

### Electronic Decision-Makers

Majority Logic Gate  
Electronic Coin Toss  
Electronic Coin Toss II  
Electronic Coin Toss III  
Even or Odd  
Quick Draw Game  
Close-In  
ESP Tester  
The Light Fantastic  
Shooting Game  
Marching LEDs  
Electronic Dice  
Electronic Roulette

### Operational Amplifier IC Can Do Many Things

Meet the VCO  
Silicon Diode Solar Cell  
Astable Multivibrator Using OP Amplifier  
Pulse Generator  
Experiment of Comparator  
Comparator with Hysteresis  
Constant Current Sources by OP Amplifier  
Non-Inverting Adder  
Touch Switch Using OP Amplifier  
Early Bird  
DC-DC Converter by OP Amplifier  
Inverting Amplifier  
Non-Inverting Amplifier  
Differential Amplifier  
Differential Output Amplifier  
Power Amplifier Using OP Amplifier  
Balanced Transformerless Amplifier  
Three-Stage Differential Amplifier  
VCO Using OP Amplifier  
Voltage Controlled Amplifier  
V-F Converter  
F-V Converter  
Sweep Generator

Multiple-Function IC Project  
Sound Alarm  
Photo Organ  
Vibrato Organ

### Introducing the Power Amplifier IC

IC Power Amplifier  
IC Power Amplifier II  
Oscillator Using Power Amplifier IC  
CdS Controlled IC Oscillator  
Phase Shift Oscillator  
Intercom  
A Water Service Pipe Sound  
Electronic Klaxon  
Wide Range Audio Frequency Oscillator

### A Trip to Digital Land

Switching Circuit  
RTL Inverter  
RTL Buffer  
RTL OR Gate  
RTL AND Gate  
Transistor OR Gate  
Transistor AND Gate  
Transistor XOR Gate  
Special NAND Gate  
DTL OR Gate  
DTL AND Gate  
DTL NOR Gate  
DTL NAND Gate  
DTL Exclusive OR Gate  
C-MOS Inverter  
C-MOS Buffer  
C-MOS OR Gate  
C-MOS AND Gate  
C-MOS 3-Input AND Gate  
C-MOS NOR Gate  
C-MOS 4-Input NOR Gate  
C-MOS 4-Input NOR Gate II  
DeMorgan's Theorem  
Experiment of Threshold Voltage  
NAND/NOR and Transistor Switch

### More Adventures in Digital Land

C-MOS XOR Gate  
C-MOS NAND Enable Circuit  
C-MOS AND Enable Circuit  
C-MOS OR Enable Circuit  
A One-Shot NAND Gate  
C-MOS Line Selector  
C-MOS Data Selector  
C-MOS R-S Flip Flop  
C-MOS Flip Flop II  
Set/Reset Buzzer  
Set/Reset Buzzer II  
Set/Reset Buzzer III  
Transistorized Toggle Flip Flop  
NAND Toggle Flip Flop  
J-K Toggle Flip Flop  
C-MOS Astable Multivibrator  
C-MOS J-K Flip Flop  
C-MOS D Flip Flop

C-MOS D Flip Flop II  
R-S-T Flip Flop  
T Type Flip Flop  
C-MOS Latch  
Shift Register  
Touch Switch Using NAND Gate  
Half Adder  
D-Latch  
2-Line to 4-Line Decoder  
Multiplier  
Dual 2-Input Multiplexer  
Two-Stage Frequency Divider

### Circuits That Count

Basic Counter  
Synchronous Counter  
Asynchronous Counter  
Counter with Line Decoder  
Divide by 4 Counter  
Divide by 4 Counter with Line Decoder  
How a Line Decoder Works  
Multiple Counter  
Binary Counter with Display  
Divide by 3 Counter Display  
Divide by 4 Counter Display  
Up/Down Counter  
Down Counter  
Decade Down Counter  
Decade Down Counter with Display  
Presettable Counter  
Hexadecimal Counter  
Octal Counter  
Random Access Display  
Decade Counter  
BCD Counter with Display  
Octal Counter with Line Decoder  
Octal Counter with Display  
Decade Counter with Display  
Decade Counter with Display II

### Getting Closer to Computers

BCD to 7-Segment Decoder  
Full Adder  
Decimal to Binary Encoder  
Binary to BCD  
Octal to BCD  
Hexadecimal to BCD  
3-Bit Shift Register

### Amusement in Digital Land

VCO by NOR Gate  
Pulse-Delayed Circuit  
NAND Gate Tone Generator  
Transistor Timer  
Noise-Signal Discriminator  
Pulse Stretcher  
Bidirectional Buffer  
Various Inverters  
Electronic Switch  
Tone Burst Generator  
Digital Timer  
Digital Timer II  
Ten Count Buzzer  
Press First

Target Range  
Catch the Eight  
SOS Alert  
Wheel of Fortune  
Leapin' LEDs

### Shakehands of Analog and Digital

Pulse Number Modulation Light Dimmer  
Pulse Width Modulation Light Dimmer  
DC-DC Converter Using the C-MOS Oscillator  
Absolute Value Amplifier  
Window Comparator  
Digital Light Dimmer  
A-D Converter  
D-A Converter  
Photometer with Digital Display  
Surprise and Fun Revisited  
Experiment of Electromagnetic Induction  
Electronic Candle  
Constant Current Circuit  
A Phony Counter  
Alphabet Flasher  
Winking LEDs II  
Delayed Timer II  
Crossing Signal  
Octave Generator  
Sound Out Timer  
Sound Stop  
Big Mouth!  
Light or Sound  
Be Your Own Multivibrator  
Anticipation  
Set/Reset Match

### Testing and Measuring Circuits

Circuit Continuity Checker  
Acoustic Ohmmeter  
Audio Signal Generator  
Temperature-Sensitive Audio Amplifier  
Water Level Detector  
Battery Checker  
IC Oscillator/Component Tester  
Voltage Drop Alarm  
Current Shut-Down Circuit  
Logic Checker  
Logic Checker II  
Temperature Alarm  
Function Generator

For more advanced Electronics Labs, check out the following:

- PL500 500 In One Electronics Lab

For beginners Electronics Labs, check out the following:

- PL130 130 In One Electronics Lab
- PL200 200 In One Electronics Lab

## Advanced 500 In 1 Electronics Lab

KIT

- ✓ 152 page starter course manual!
- ✓ 78 page advanced course manual!
- ✓ 140 page programming course manual!
- ✓ Quality hinged case construction

Advanced Learning Courses Plus 500  
Separate Projects!

TOP  
SELLER!

We went one step beyond our 300-in-one lab kit! Yes, 500-in-one, PLUS comprehensive learning course manuals! Build 500 exciting projects, learn schematics, build and learn both analog and digital circuits, and even get into digital programming. 500 projects, 370 pages of comprehensive course manuals, and LOTS OF FUN! (*I'd say a lot more... but I don't have the room! WOW, 500 projects!*)

If you're looking for smaller Electronics Labs, check out the following

- PL130 130 In One Electronics Lab
- PL200 200 In One Electronics Lab
- PL300 300 In One Electronics Lab

**Includes ALL of the projects in the PL130... AND  
ALL the projects in the PL300... PLUS  
THE FOLLOWING PROJECTS:**

### Back to the Basics

Capacitors in Series and Parallel

### Electronic "Building Blocks"

Low Distortion Sinewave Oscillator

### Putting Electronics to Work

Strobe Light

Electronic Grandfather Clock

Electronic Metronome

Twin-T Audio Oscillator

Current Switch

Shot in the Dark

Variable R-C Oscillator

Two-Tone Buzzer

Sawtooth Wave Oscillator

### Radio Circuits

Wireless Code Transmitter

### Sonic Zoo and Sound Factory

Two-Tone Patrol Car Siren

Pencil Lead Organ

Electronic Motorcycle

Machine Gun Pulse Detector

Electronic Siren

Electronic Cat

Electronic Organ

### Electronic Decision-Makers

Majority Logic Gate

Electronic Coin Toss

Electronic Coin Toss II

Electronic Coin Toss III

Even or Odd

Quick Draw Game

Close-In

ESP Tester

The Light Fantastic

Shooting Game

Marching LEDs

Electronic Dice

Electronic Roulette

### Operational Amplifier IC Can Do Many Things

Integrating Circuit

Pitch Doubling Circuit

Pitch Doubling Circuit II

Comparator

Schmitt Trigger Circuit

Delayed Timer

Pulse Frequency Doubler

Touch Switch Using OP Amplifier

### Surprise and Fun Revisited

Experiment of Electromagnetic Induction

Winking LEDs

Voice Level Meter

Buzzin' LED

Son of Buzzin' LED

### Testing and Measuring Circuits

Audio Signal Tracer

Metal Detector

Rain Detector

Burglar Alarm

Temperature-Sensitive Audio Amplifier

### Learn Basics More

A Basic of Control Volume

Emitter Follower

Basic Operation of Zener Diode

Zener Voltage Checker

Zener Voltage Checker II

Basic Photo-Transistor Operation

Voltage Drop Circuit by Means of Diodes

Experimentation of Capacitor

Temperature Characteristic

Darlington Circuit (Touch Sensor)

Edge-Trigger Circuit

RC Type Differentiating Circuit

Switch Matrix Circuit

Memory Backup Circuit

Power on Reset Circuit

Constant-Voltage Circuit (Fixed Output)

Constant-Voltage Circuit (Variable Output)

A Rectifier Circuit by Diode Bridge

AGC Circuit Using a Single Transistor

Upper/Lower Limiter Circuit Using OP

Amplifier

Window Comparator II

### Amusement on Sound

Multi-Tone Siren

Digital Rhythm

Two-IC Electronic Organ

A Water Service Pipe Sound

Electronic Klaxon

Sound Machine III

Sound Wave Varying with Light Intensity

Player Organ

Sound of Passing Siren

Light Source Sensing Circuit by Sound

Electronic Piano Circuit

Whistle Generating Circuit

Space Gun

Car Horn

### More Radio Circuits

Morse Code Transmitter

Broadcasting Organ

FM Transmitter (FM Wireless Microphone)

### To The Game World

Quiz Winner Detector

Reflex Nerve Test Game

Shooting Game II

Shot In The Dark II

Sound Quiz

Stop the Seven

High-Power Switch

"Lockout, Mr. Blackbeard!" Game

Russian Roulette

Male Hitting Game

"Janken" Game

Ping-Pong Game

### More Adventures in OP Amplifier Circuits

Voltage Controlled Amplifier

V-F Converter

F-V Converter

F-V Converter II

White Noise Generator

Sweep Generator

Multiple-Function IC Project

Sound Alarm

A Sound of Ripples

Photo Organ

Vibrato Organ

### More About Oscillation

Phase Shift Oscillator

Wide Range Audio Frequency Oscillator

Sawtooth Wave Oscillator II

Three Phase Oscillator

Wien-Bridge Oscillator

Ramp Wave Generator

Digital Sine Wave Generator

Frequency-Variable Sine Wave Generator

Sine Wave Oscillator Using D-A Converter

RC Phase-Shift Oscillator

Two Sine Waves with Different Phases

One-Shot Multivibrator Using IC 555

One-Shot Multivibrator Using J-K Flip-Flop

One-Shot Multivibrator Using OP

Amplifier

Shakehands of Analog and Digital

Pulse Number Modulation Light Dimmer

Pulse Width Modulation Light Dimmer

DC-DC Converter Using the C-MOS

Oscillator

Photometer with Digital Display

Pulse Width Modulation Light Dimmer II

Voltmeter

### Getting Closer to Computer

Full Adder

Decimal to Binary Encoder

Binary to BCD

Octal to BCD

Hexadecimal to BCD

3-Bit Shift Register

BCD-To-Decimal Decoder

More Digital Circuits

4-Input Data Selector

AND/OR Circuit Using OP Amplifier

XOR Using OP Amplifier

Time Sharing Display of LEDs

LED Lighting-Duty Varying Circuit Using

One-Shot Multivibrator

LED Blinking-Cycle Varying Circuit Using

Astable Multivibrator

LCD Static Drive Circuit

LCD Dynamic Drive Circuit

Testing LCD Display Response

LED Drive by 4 Switches

Flashing LED by Preset Number

Digital Timer (1 to 7 Minutes)

Sound Timer

Programmable Timer with Down Counter

### Amusement in Electronic Circuits

Revolving Light

Photo Switch

Door Chime

Visitor Sensing Chime Using Photo-

Transistor

Touch VCO

Sound Tuning Circuit

Crossing-Bell Sound Generator

Turn Indicator

Staircase Light Switching Control Circuit

Pseudo Candle Circuit

Lie Detector

Light Sensing Circuit

Automatic Lighting LED

Sound Sensing LED

Illumination Lamp

Intercom

PIP Sound Interphone

Electronic Volume

Pedestrian Signal

Time Counter

LED Display Counting Up/Down Circuit

An Electronic Pendulum

Staircase Light Switching Control Circuit II

Lamp Brightness Control Circuit

Illumination Circuit with 4-LEDs

A Simulated Car Winkers

### Testing and Measuring Circuits

Battery Checker

Conductivity Tester

Transistor Checker

Three-Step Water Level Indicator

Tachometer

Battery Checker II

Digital Illuminometer

### Software Projects

Light LEDs

Light On/Off LEDs

A Binary Counter-Increment Value by ADD

Instruction

A Binary Counter-Decrement Value by

SUB Instruction

Light LEDs Sequentially with AND

Instruction

Light LEDs Sequentially with OR

Instruction

Turn On and Off LEDs Sequentially with

XOR Instruction

Moving LEDs Light with ROL Instruction

Moving LEDs Light with ROR Instruction

Night Rider's LEDs with ROL/ROR

Instructions (1)

Night Rider's LEDs with ROL/ROR

Instructions (2)

Binary Counter with INC Instruction

Binary Counter with DEC Instruction

Sound Do as Do, Re, Mi

Sound a Series of Musical Scale

Let's Input Data to Program

Hidden Key Triggers Sound and Turns All

LEDs On

Stacked MOV Instructions

Changing Order of LEDs by Switch

A Musical Scale Sound by S1 Key

Arithmetic Addition of Two Binary

Values

Arithmetic Subtraction of Two Binary

Values

Arithmetic Multiplication of Two Binary

Values

Arithmetic Division of Two Binary Values

Displays Number 0 to 9 on 7-Segment

LED (2)

Change Order of Numbers Display on 7-

Segment LED (2)

Switches S1-S4 Light Hex Number On 7-

Seg LED

8-Key Organ

Lighting Spade, Diamond, Heart, and

Club on the LCDs Display (Basic)

Lighting Spade/Heart and Diamond/Club

on the LCDs Display

Lighting Spade, Diamond, Heart, and

Club by Static Drive Circuit

Lighting Spade, Diamond, Heart, and

Club by 1/2 Duty-1/2 Bias Circuit

Lighting Spade/Diamond and Heart/Club

Alternately by 1/2 Duty-1/2 Bias Circuit

Lighting Spade, Diamond, Heart, and

Club by 1/2 Duty-1/2 Bias Circuit

Results of Logical Operations AND, NAND,

OR, and NOR

Results of Logical Operations XOR and

XNOR

Results of Logical Operations AND/NAND

with 4-Switch Entry

Results of Logical Operations with</





## AM/FM/SW Radio Learning Kits

- ✓ Learn to build your own AM, AM/FM or SW radio!
- ✓ Discover how radios work!
- ✓ Listen to the results!
- ✓ Safe solderless assembly!



As the "Little Brothers" to our Lab Kits, our Radio Learning Kits teach you the fundamentals of modern radio theory and operation, and give you a working radio when you're finished! There's nothing like the feeling of accomplishment when you finish the kit, plug in the battery, and hear it work! Yes, you did it yourself! Our Radio Kits are available in AM Broadcast, AM/FM Broadcast, and AM Shortwave models. Take your pick! All operate on a standard 9V battery.

### AM RADIO

Our AM2 AM Radio kit uses two transistors, 4 resistors and 5 capacitors including a variable capacitor to provide a highly sensitive AM Broadcast Radio. It covers 520 KHz to 1625 KHz and is easy to assemble with safe, solderless connections. The 18 page comprehensive learning and assembly manual covers everything from theory to parts identification and operation.

### AM/FM RADIO

Our AMFM7 AM/FM Radio kit is the next step up from our AM2 kit above. It features the same quality AM radio and adds a factory assembled and aligned FM tuner to cover the 88 MHz to 108 MHz FM broadcast band. Utilizes 2 transistors, 5 resistors, 6 capacitors, 1 diode, and 1 coil to provide reception in either band. The AMFM7 is easy to assemble with safe, solderless connections. The 20 page comprehensive learning and assembly manual covers everything from theory to parts identification and operation.

### AM SHORTWAVE

Our SR3 Dual Band AM Shortwave Radio Kit takes you away from the local AM/FM broadcasters and brings you into the exciting world of Shortwave Radio Listening (SWL)! The preassembled and aligned tuner section adds to the 2 antennas, 4 capacitors, 4 resistors, 1 transistor, and 1 variable capacitor to provide a sensitive Shortwave Radio covering 6 MHz to 8 MHz and 12 MHz to 18 MHz. The SR3 is easy to assemble with safe, solderless connections. The 20 page comprehensive learning and assembly manual covers everything from theory to parts identification and operation. Operates on a standard 9V battery (not included).

AM2  
AM/FM7  
SR3

AM Radio Kit With Comprehensive Learning Manual  
AM/FM Radio Kit With Comprehensive Learning Manual  
AM Dual Band Shortwave Radio Kit With Comprehensive Learning Manual

\$12.95  
\$14.95  
\$14.95



*Start With The Basics...  
And Have Fun Doing It!*

Go back in time and discover how radio was first received! Learn the basics of electric motors including forward and reverse action. Plus, while everyone has heard them, learn exactly how an alarm bell works and then build one yourself! These beginner kits are ideal for the inquisitive mind that wants to know "how and why it works". No previous experience in electricity or electronics is required and all kits use safe, solderless connections.

### CRYSTAL RADIO SET

The crystal radio was invented in 1901. It is still the basis of modern-day radio and communications equipment and lives on in a wide variety of radio systems. Go back in time, and learn how radio detection was first done! Without a battery or power supply, you will hear AM broadcasts with your Crystal Radio Set! They contain few parts yet teach many concepts. The comprehensive 16 page manual covers everything from how it works to why it works, with illustrated assembly instructions. Assembly is easy with solderless connections, and no previous electronic experience is necessary. Relive history with a Crystal Set today!

### MOTOR ACTION KIT

Learn the basics of an electric motor with our MA1 Motor Action Kit. Learn what makes motors spin, how to control forward and reverse in a motor, and then build one that works! Includes a fan blade and a color disk to learn how to mix color with a spinning disk! This is a great kit for the kids and for the beginner to learn just what makes the world go round! Easy assembly with solderless connections. Requires two AA batteries (not included).

### BELL ACTION KIT

Ding-a-ling... is that a bell? Yep, we've all heard them but do you know exactly how they work? Our BA1 Bell Action Kit is a perfect learning kit for the beginner or the curious! Learn what makes an electronic alarm bell ring, explore how electromagnetism is used, and how you can change the ringing characteristics of a bell! This kit is fun and safe, using solderless connections. Requires two AA batteries (not included).

CS2  
MA1  
BA1

Crystal Radio Kit  
Motor Action Kit  
Bell Action Kit

\$9.95  
\$9.95  
\$8.95

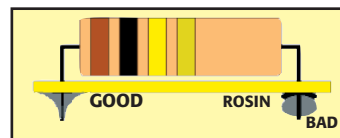
## Entry Level Learning Kits

- ✓ Learn the basics of electronics and electricity!
- ✓ Discover how to listen to AM radio without a battery!
- ✓ Understand and build a working motor!
- ✓ Learn how and why alarm bells work... and build one!

### RAMSEY'S TEN COMMANDMENTS OF GOOD PC-BOARD SOLDERING

1. If the soldering iron tip is covered with burned rosin, it can't heat your connection very well.
2. If you heat only the wire and not the wire and PC trace together, a cold, bad connection is likely.
3. If your soldering tip is big enough to bridge two adjoining connections, it probably will!
4. Dirty, grubby solder will contribute to dirty, grubby connections.
5. Any use of acid core (plumbers!) solder in electronics work will destroy everything... DON'T USE IT!
6. A connection in a large area of PC-board copper requires more heat than one pin of an IC.
7. If your connection looks dull or brittle, it's no good.
8. If your connection looks like a ball instead of a shiny cone, it's no good.
9. Thin fresh shiny rosin core solder is easier to use for PC-board work than thicker "hardware store" solder.
10. Pre-tin any stranded wires leading in and out of your PC-board kit project. It will prevent problems later!

Through Hole  
Soldering



Surface Mount  
Soldering



## Fuel Cell Car

- ✓ PEM reversible fuel cell module!
- ✓ Automatic barrier avoidance steering!
- ✓ Flashing LED lights!

*Learn Tomorrow's Technology Today!*

This incredible Fuel Cell Car science kit uses a reversible PEM fuel cell that combines electrolysis and power conversion into one single device... a car! Watch in amazement as oxygen and hydrogen gases are formed in two transparent water containers to power the built-in motor. As the car takes off, the automatic barrier avoidance system steers independently of the user, and when it hits a barrier, it will automatically find its way by reversing away 90 degrees! This fun science kit combines cutting-edge science, education and fun for all! recommended for ages 12 and up. Requires two AA batteries not included. From Velleman.

KNS10 Fuel Cell Science Kit

\$82.95

## Bio-Energy Discovery Kit

- ✓ Direct ethanol PEM fuel cell module!
- ✓ Ethanol storage tank!
- ✓ Electric motor and propeller

*Convert Ethanol To Electricity!*

A word we've started seeing in today's vehicles and fuels... Ethanol! Now you can learn all about it with this fun discovery kit. Bioethanol, unlike petroleum, is a form of renewable energy that is produced from agricultural feedstocks. This fuel cell kit converts ethanol alcohol to electricity silently and without any combustion.

The propeller device runs nonstop for day, providing an amazing demonstration of the rapidly growing fuel cell technology of today... and tomorrow. Includes ethanol storage tank, purge valve, housing, electric motor and propeller, ethanol PEM fuel cell module, and all the cables and test strips needed. Ethanol alcohol is not included. Recommended for ages 12 and up. From Velleman.

KNS13 Bio-Energy Discovery Science Kit

\$129.95

## Solar Powered "Bug"

- ✓ Solar powered, they come to life in daylight!
- ✓ Realistic cricket chirp!
- ✓ Slow fading green LED illumination!

*What IS That Thing?!*

These "cute" little "bugs" are solar powered and resemble some sort of cricket you would find in a futuristic disaster "B" movie! When constructed, they stand on their own through hole component feet and are ready for you to wake it up by taking it outside in the sun! The 4.5VDC 23mA solar power provides a realistic cricket sound while the slow fading green LED illumination simulates the look of a glow worm! Get even more creative, and connect a small pair of NiCad or NiMH rechargeable batteries to it and the solar cell will charge them to keep your bug awake at night! (Batteries not included). From Velleman.

MK185 Solar Powered Bug Kit

\$16.95

## Trainmech

- ✓ Fun no solder mechanical wooden kit!
- ✓ Gear driven train!
- ✓ Pre-punched boards make it simple

*I Knew It Could, I Knew It Could!*

The Mechanical or "Mech" series of kits are the ideal first kit for the future engineers in your life! The builder will quickly learn the operation of transmissions steered through gears or pulleys. In this case you will be building an 8-wheel railroad engine. The completed kit is sure to thrill the young train enthusiast in your family! Like all Mech kits there is no soldering or gluing required. Each kit is provided with pre-punched boards, gearbox, gears, shafts, switch, motor, battery holder, and all the necessary parts. Each kit comes with easy-to-follow instructions. Measures 8.6" x 3.7" x 5.9". Runs on 2 AA batteries not included. From Velleman.

KNS6 Trainmech Motorized Kit

\$18.95

## H-Racer Fuel Cell Car Kit

- ✓ Includes remote control fuel cell car and refueling station!
- ✓ Understand the how's and why's!

*Alternative Energy & Automotive Techniques!*

If you want to get a heads start learning alternative energy and how it can interact with automotive technologies, this is the place to start! Start with an IR remote control car, whose partially transparent body shows you the inner workings. Then add the ultimate alternative energy "refueling station" that features fuel cell system components AND solar panels.

Includes the sleek H-Racer body and chassis, IR remote control, and the refueling station. Requires 2 AA and 2 LR44 batteries, not included. Ages 12+. From Velleman.

KNS11 H-Racer & Refueling Station Science Kit

\$144.95

## Solar Hydrogen Discovery Kit

- ✓ Reversible PEM fuel cell module!
- ✓ Water/gas storage tanks module!
- ✓ Solar panel, electric motor and propeller

*Discover Electrolysis!*

This learning kit will start you at the beginning of the process called electrolysis, and guide you step-by-step to produce, store, and use one of the cleanest alternative energies of the future! You will learn how to convert water into hydrogen and then how it is transformed into electrical energy by use of a fuel cell. From there, this power can be used to power anything from vehicles to electronic devices. In this kit, the transformed power is used to power a small electric motor and propeller. Includes a reversible PEM fuel cell module, water & gas storage tanks module, solar panel, electric motor and propeller, and all the tubes and accessories needed. A user manual and experiment guide is also provided on a CD. Requires AA batteries. For ages 12 and up. From Velleman.

KNS9 Solar Hydrogen Discovery Kit

\$87.95

## Tyrannomech

- ✓ Fun no solder mechanical wooden kit!
- ✓ Gear driven operation!
- ✓ Pre-punched boards make it simple

*Learn Mechanical Motors & Gears!*

The Mechanical or "Mech" series of kits are the ideal first kit for the future engineers in your life! The builder will quickly learn the operation of transmissions steered through gears or pulleys. In this case you will be building a neat Tyrannosaurus complete with its familiar massive skull balanced by its long heavy tail. The completed kit is sure to thrill any dinosaur enthusiast young or old. Like all Mech kits there is no soldering or gluing required. Each kit is provided with pre-punched boards, gearbox, gears, shafts, switch, motor, battery holder, and all the necessary parts. Each kit comes with easy-to-follow instructions. Measures 16.14" x 6.9" x 2.9". Runs on 2 AA batteries not included. From Velleman.

KNS1 Tyrannomech Motorized Kit

\$17.95

## Coptermech

- ✓ Fun no solder mechanical wooden kit!
- ✓ Gear driven train!
- ✓ Pre-punched boards make it simple

*Your First Helicopter!*

The Mechanical or "Mech" series of kits are the ideal first kit for the future engineers in your life! The builder will quickly learn the operation of transmissions steered through gears or pulleys. In this case you will be building motorized helicopter. The completed kit is sure to thrill the young copter and aviation enthusiast. Like all Mech kits there is no soldering or gluing required. Each kit is provided with pre-punched boards, gearbox, gears, shafts, switch, motor, battery holder, and all the necessary parts. Each kit comes with easy-to-follow instructions. Measures 14" x 10.4" x 4.9". Runs on 2 AA batteries not included. From Velleman.

KNS4 Coptermech Motorized Kit

\$17.95

**"You'll always get top notch technical support from Ramsey!"**

Here at Ramsey, we are very dedicated to customer service and response. In the interest of fast, comprehensive, and accurate service, feel free to contact the factory directly with your questions and requests. Please call our toll-free support number at 866-446-0809 so you can speak in real-time, to service, and tech support personnel for a prompt and immediate answer to your questions!





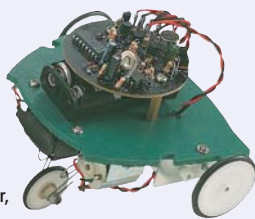


## Auto-Turning Frog Robot

- ✓ Two sets of Gear Motors (unassembled)
- ✓ Moves when detecting sound

### Perfect for the Future Engineer!

Once this interesting robot kit has been soldered together, the fun begins! When it detects sounds, it will move and repeat the following steps sequentially: Start (move forward), Stop, Left Turn, Stop, Right Turn, Stop. These kits are a great way to introduce students to electronics and give them an interesting novelty once they are done. Comes complete with detailed instructions. A great class project for beginners! Recommended for ages 12 & up. Power Source: Mechanical - Two "AA" batteries (not included); Electronic - 9V Battery (not included). Measures 3.5 x 4.9 x 3.9"



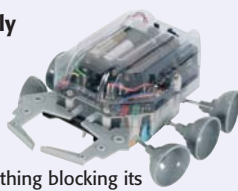
KSR2 Auto-Turning Frog Robot Kit **KIT** \$23.95

## "Scarab" Robot

- ✓ No soldering required, all mechanical assembly
- ✓ Five-switch hardwired control unit
- ✓ Includes two sets of distinct legs

### This Scarab Won't Eat Your Plants!

This scarab beetle-inspired robot uses 2 touch sensors to detect obstacles. When its sensitive antennae detect something blocking its path, the scarab will first step back, and then automatically execute a two-step maneuver to skirt the obstacle. The maneuver is a combination of "left turn", "right turn", "reverse" or "stop" and the robot can also be configured with different sets of movements! Powered by 4 AAA batteries (not included). Measures 6.9 x 5.7 x 3.3"



KSR5 Scarab Robot Kit **KIT** \$34.95

## Super Chemistry Lab

- ✓ Kitchen chemistry fun!
- ✓ 100 fun activities!
- ✓ From electricity to magnetics

### Your Kitchen Is Your Lab!



What a great place for youngsters to learn the basics of chemistry... their kitchen! And mom and dad will enjoy the fun too!

Over 100 kitchen activities relating to chemistry to keep your imagination wandering with excitement! Includes such fun activities as balloon tricks, gas canoe, making a geyser, cleaning old coins, cola volcano, removing an egg's shell without touching it, making invisible ink, cheese, finding iron in cereal and many more! From Power Tech.

EDU8350 Super Chemistry Lab Kit \$24.95

## Deluxe Solar Kit

- ✓ Includes 8 solar panels
- ✓ Comprehensive training manual included
- ✓ Starts at the beginning of solar power technology

### Put The Sun To Work!

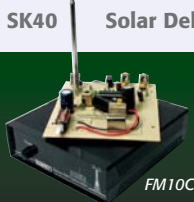


A great hands-on educational kit to learn exactly how Solar Energy works. Provides a neat bank of solar cells and all the related experiment materials to put the energy to work.

A unique solar cell "unit" provides a bank of solar cells that provide three independent 1.5VDC sources of power. Jumper connections with EZ connections are provided to wire up any of your experiments. Includes a motor, lamp, buzzer, tools, optical disks, and other accessories. You can easily learn how to make a solar circuit and how to increase/decrease voltage or current using series and parallel circuits.

You will be amazed when you produce power to run your small radio, calculator, cassette player and more!

SK40 Solar Deluxe Educational Kit **KIT** \$17.95



## "Escape" Robot

- ✓ Artificial Intelligence!
- ✓ Detects and avoids obstacles
- ✓ Includes two sets of distinct legs

### Escape From Boredom!

The Escape Robot Kit uses basic artificial intelligence to navigate, and it never fails to find its way out of a maze! Using three IR emitting diodes and one IR receiving module, it sends and receives signals to detect obstacles in its path. The Escape Robot's built-in microprocessor enables it to "think" on its own: it gathers and processes information on its environment! The Escape Robot crawls around on 6 legs, and even comes with another set of differently designed legs that move in their own unique way. Powered by 4 AAA batteries (not included). Measures 5.5 x 5.9 x 3.9"



KSR4 Escape Robot Kit **KIT** \$34.95

## "Ladybug" Robot

- ✓ No soldering required, all mechanical assembly
- ✓ Five-switch hardwired control unit
- ✓ Includes two sets of distinct legs

### Buggin' Out!

The Ladybug Robot walks on 6 legs and uses infrared emitting diodes for "eyes" in order to avoid obstacles. The bot will walk straight ahead until it "sees" an obstacle. Then, it automatically makes a left turn and goes along its merry way!

Let it loose and watch it wander! Comes complete with detailed instructions. Powered by 4 AAA batteries (not included). Measures 4.7 x 5.9 x 3.3" (feelers length: 1.6").



KSR6 Ladybug Robot Kit **KIT** \$29.95

## Telephone Kit

- ✓ See-through case!
- ✓ Detailed training course included!
- ✓ Full featured tone/pulse phone

### Learn How You Make That Call!

A very popular learning kit for young and old...or for anyone in between that uses a telephone and wants to know how they work!

The full-featured push button electronic telephone is housed in a transparent case to see the inner workings. Features pulse/tone dialing, automatic redial, ringer on/off, and neon bulbs that light up when it rings! A complete training course is included with detailed theory, assembly and testing sections. Can be desk or wall mounted. Soldering is required. From AmeriKit.



AK700 Telephone Kit **KIT** \$23.95

## Radio Controlled Car

- ✓ 7 remote control functions!
- ✓ Includes remote control!
- ✓ Full color assembly manual

### Build It From The Ground Up!

One of the neatest and most exciting learning kits for the kids! You will be building the Turbo King R/C speedster from the ground up, ending up with a super fast car!

The detailed theory, assembly, and testing manual guides you through basic transmitters, receivers, and electronic switching theories. You'll also learn about gears, motors, integrated circuits, and printed circuit boards! You will construct each segment, explore the circuitry used, and test and troubleshoot it.

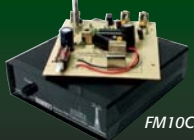
The end result? Turbo King with 7 remote functions, flashing top light and a full feature remote control! Electronics runs on a standard 9VDC battery and mechanics run on 4 standard AA batteries, not included. From AmeriKit. (What a fun way to learn electronics and R/C cars at the same time!)



AK870 R/C Car Kit **KIT** \$29.95

## Learn How AM & FM Transmitters Work!

Learn the theory of AM and FM broadcast transmitters the easy way, and then have a fun with your very own station! Check them out on page 6!





## Practical Soldering Kit

- ✓ Learn soldering and PC boards!
- ✓ Includes practice exercises!
- ✓ Comprehensive training manual

*Learn To Solder!*



This is a beginner's project specifically designed to teach you the fundamentals of soldering and working with printed circuit boards.

Like any skill, good soldering requires practice as well as an understanding of the principles involved. You will become familiar with PC boards, the hows and whys of soldering, components, component installation, and troubleshooting soldering problems (including solder bridges!). Project runs on a standard 9VDC battery, not included.

SP1A Practical Soldering Kit

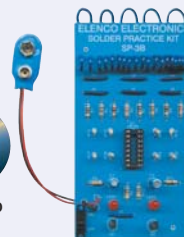
**KIT**

\$9.95

## Practical Solder & Parts Kit

- ✓ Learn soldering, boards, and components!
- ✓ Learn color codes!
- ✓ Comprehensive course and exam included

*Learn Soldering & Components!*



Not only will you learn soldering and desoldering but you will also learn component identification and color codes.

With 163 solder points, you will learn and practice standard soldering, close tolerance soldering, tack soldering and desoldering. Plus you will learn component identification and complete color codes. Even includes a color code calculator! Plus you'll learn voltage and resistance analysis in circuits. Comprehensive manual includes written and visual exams. Project runs on a standard 9VDC battery, not included.

SP3B Practical Soldering & Parts Kit

**KIT**

\$9.95

## Practical Fiber Optics Voice & Data Kit

- ✓ Send voice over fiber optic cable!
- ✓ Includes transmitter, receiver, and fiber optic cable!
- ✓ Learn the theory and exactly how it works!
- ✓ Fiber length can be extended

*Fiber Optics, Used For More Than Holiday Decorations!*

Have an adventure with Fiber Optics and learn at the same time! At one time, fiber optics technology was just used for those cute little holiday trees you see at the stores. Then they realized that fiber can be used for communications and data transmission without the problems or line loss of conventional copper wires. Today fiber networks carry the bulk of the telephone, CATV and broadcast television programs. They are quickly replacing land lines, microwave, and satellite communications. Just like SMT, fiber optic technology is the wave of the future!

While this project and course will not build you a nationwide fiber communications network, you WILL learn the basics of fiber optics and its use in telecommunications. The learning kit includes a transmitter board, receiver board, fiber optic cable, and a comprehensive learning course. The transmitter converts an audio signal into a light signal. The receiver accepts the light and converts it back into an electrical signal. You will learn how the converted signal is then reshaped into the proper form to be heard.

Fiber optic cable, its protective covering, and connectors to attach the cable to the transmitter and receiver are also included. PC board soldering is required. The transmitter and receivers both utilize a standard 9VDC battery, not included. FO25 is a great project kit to learn about Fiber Optics (*there, I spelled Fiber the way I like it!*)

FO30K  
FOC20

Fiber Optics Voice & Data Learning Kit  
Fiber Optic Cable, 1,000µm (sold by the foot)

\$20.95  
\$.85/ft



*Learn & Practice SMT Component Soldering!*



## Practical SMT Soldering Course

- ✓ Learn all about those tiny little parts!
- ✓ Develop and practice your SMT soldering skills!
- ✓ Includes SMT training sessions
- ✓ End up with a neat "Decision Maker" project



Surface Mount Technology (SMT) has become a way of life for electronics. Virtually all new high tech products utilize SMT design and components. Even our latest Ramsey kits include various SMT components. There are two problems with SMT: First, the parts are extremely small, at times the size of a pin head! Therefore, you need to have the proper tools, not only to hold them and solder them, but to see them! (Check out the tools section for help!) Secondly, unlike "through hole" parts, SMT components are soldered directly on the surface of the PC board (hence the name SMT!). This is an entirely new method of soldering and it takes practice to get it right. Trust me, I've created a number of solder bridges myself when I first started soldering SMT components!

Taking this course and practicing on the neat little kit will prepare you for the future in electronics. Includes the PC board, all the SMT and other components required, and a comprehensive training course covering all aspects of SMT soldering, desoldering, removing, and component placement. The finished project is a neat little "Decision Maker" that includes 6 flashing SMT LEDs, complete with a professional overlay panel. The finished Decision Maker runs on a standard 9VDC battery, not included. (*Hey, I mentioned that I created solder bridges when I first soldered SMT... now I can't even see them without my reading glasses!*)

SM200K Practical SMT Soldering Course

\$22.95

## WELCOME TO THE WORLD OF SURFACE MOUNT COMPONENTS

Welcome to the latest innovation in electronics: **Surface Mount Technology**, or **SMT**. Just as the transistor revolutionized the amount of space required to construct electronic circuits, the advent of surface mount components has further "shrunk" the dimensions of the space needed for modern day circuits. These "chip" components are commonly used in everything from camcorders to high speed computers. They are also used in a number of Ramsey Kits!

While the components may look strange at first (where are the leads?!) rest assured that they are not too difficult to install. You'll want to have some special equipment to solder these parts, nothing fancy or expensive, just things you'll want to have handy before beginning. A small pair of tweezers and good eye to hand coordination are necessary for proper SMT assembly. A magnifying lens is a MUST to check solder connections! And of course, a soldering iron.

A friendly warning for you: don't pull out your trusty soldering gun for surface mount projects as the gun generates too much heat for the tiny solder "tabs" on the component ends. A standard pencil type iron will work just fine. SMT parts are also identified differently than standard components so you'll want to familiarize yourself with what's what and who's who in the world of these tiny components. And while you may not be interested in working with them now... you will be forced to at some point since nowadays many manufacturers are making parts only in SMT packages! (*Now I'm thinking back at the good old 5U4 vacuum tubes I used to use in kits... quickly replaced with a couple 1N2071 diodes! Wonder if anyone knows what the "getter" is? No it's not the guy you send to get your lunch!*)

For the perfect surface mount installation helpers, check out the OptiVisor magnifiers and assorted tweezers in the Tools section!



**OptiVisor Magnifiers**  
(See page 71)

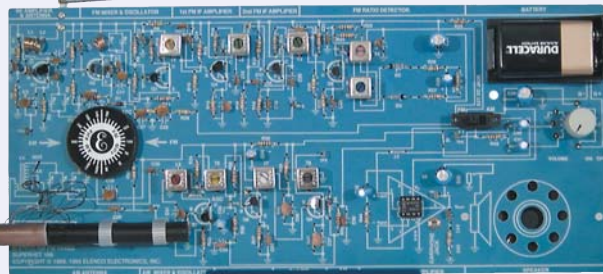


**Magnifier Tweezers**  
(See page 71)



**Non-Conductive Tweezers**  
(See page 72)





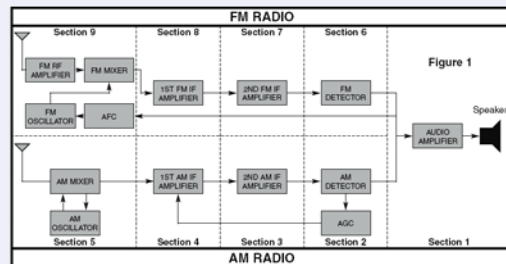
## AM/FM Integrated Circuit Radio & Training Course

KIT



Learn & Build A Superhet IC  
Based AM/FM Radio Receiver!

- ✓ Learn all about AM/FM radio design & theory!
- ✓ Build a high performance radio with an IC!
- ✓ Step-by-step assembly and test procedures
- ✓ Great for student projects



### LEARN ALL ABOUT AM/FM AND IC THEORY!

This Superhet 108 AM/FM Radio Kit is a "superheterodyne" receiver of the standard AM (amplitude modulation) and FM (frequency modulation) broadcast frequencies. The unique design of this kit allows you to place the part over its corresponding symbol in the schematic drawing on the surface of the PC board during assembly. This technique maximizes the learning process while keeping the chance of an assembly error at a minimum. The latest IC design is used to bring you up to speed with today's technology. These specific kits are available in both AM and AM/FM radios.

### HI-TECH CIRCUIT DESIGN!

The unique design of the Superhet 108 includes an integrated circuit (IC), 9 transistors, 4 diodes, and other related resistors, capacitors, coils, and misc. parts. Because good soldering practices are important, a soldering guide is also provided as well as a component color code and pictorial identification chart. The radio kit includes a hi-tech blue PC board with the schematic printed on the top surface. The manuals are easy to understand without any previous electronics experience.

### LEARN WHILE BUILDING!

The actual assembly is broken down into 9 sections. The theory of operation for each section, or stage, should be read before the assembly is started. This will provide the student with an understanding of what that stage has been designed to accomplish and how it actually works. After each assembly you will be instructed to make certain tests and measurements to prove that each section is functioning properly. If a test fails to produce the proper results, a troubleshooting guide is provided to help you correct the problem. Each radio PC board has been designed so that no cabinet or enclosure is necessary. A special molded plastic base provides the necessary support to use the radio in any location, properly displaying the work achievement of the student or builder! After all of the stages have been built and tested, a final alignment procedure is provided to peak the performance of the receiver and maximize the Superhet 108's reception capabilities. Runs on a standard 9VDC battery, not included.

AMFM108K

AM/FM Integrated Circuit Radio Kit And Training Course

\$34.95



### Integrated Circuit (IC)

Function: noun

A tiny complex of electronic components and their connections that is produced in or on a small slice of material such as silicon.  
(More from the "need to know" department here at Ramsey!)

**WIN!**  
**Monthly!**

OUR 8TH YEAR OF GIVEAWAYS!

Register with your E-Mail address to win MONTHLY drawings for equipment valued up to \$300 or more! Each month we award a value package to one lucky person!

**Next month...**  
**IT COULD BE YOU!**



[www.ramseykits.com/win](http://www.ramseykits.com/win)

### TERMS AND CONDITIONS, AKA: THE FINE PRINT!

All of this is printed on saddlestitched envelope/order form, but just in case someone boosted it from this catalog, here it is...again!

**Payment** – Check, money order, and credit card (MC, VISA, American Express, Discover) are all accepted. If paying by credit card, please include the full card number, CVV2 number, and the expiration date. If you are paying by credit card, you must provide the billing address exactly as it appears on your credit card statement.

**Sales Tax** – NY residents must add appropriate sales tax unless a signed resale certificate accompanies your order.

**Prices** – Prices shown are those in effect at the time of publication. We work to hold prices firm, however prices are subject to change without notice. Current prices will prevail at the time an order is placed. Visit [www.ramseykits.com](http://www.ramseykits.com) for any last minute updates!

### Shipping –

**Continental U.S. customers** – We normally ship via UPS or USPS depending on the size and value of the order. If we are shipping via UPS you must provide a physical address, as UPS will not deliver to P.O. Boxes. Add \$7.95 for shipping, handling, and insurance on all orders. Premium 3rd day, 2nd day, Overnight, Overnight AM, and Overnight Saturday shipping is available. CALL 800-446-2295 FOR CURRENT RATES.

**Alaska, Hawaii, Puerto Rico, and APO's & FPO's** – Shipping methods and rates for these locations frequently vary. CALL 800-446-2295 FOR CURRENT RATES.

**Canadian customers** – Shipping methods, Customs requirements, and rates for Canada frequently vary. CALL 800-446-2295 FOR CURRENT RATES. Be aware, UPS shipments may be delayed in customs, therefore USPS is the preferred carrier. **Shipping rates do NOT include any international duty charges.**

**Overseas customers** – There are many shipping options, PLEASE CALL 800-446-2295 FOR CURRENT INFORMATION AND RATES.

**Oversized & Heavy** – Items designated as Oversized & Heavy require additional shipping charges, PLEASE CALL 800-446-2295 FOR CURRENT INFORMATION AND RATES.

**Returns** – Examine (do not build) any kit for up to 10 days. If not completely satisfied, return in the original packaging for a full refund. Kits that are partially built cannot be returned or refunded. Wired and tested items can also be returned if in their original packaging, suitable for resale within 10 days. Returns received after 10 days will be subject to a restocking fee.

**Manual Preview** – Looking at a kit and want to review it more closely? Our manual preview policy lets you purchase most of our manuals for \$5.00 (a few are more). Purchase price of the manual will be credited against your future associated kit purchase. You can also download most manuals (excluding the schematic!) at no charge from [www.ramseykits.com](http://www.ramseykits.com).





## OBDII CarChip Pro Vehicle Data Logger

- ✓ Monitor complete vehicle performance to save gas!
- ✓ Stores up to 300 hours of trip details!
- ✓ Monitor and check for emission issues to help the environment!
- ✓ View and reset engine diagnostic trouble codes and "check engine" lights!
- ✓ Record extreme acceleration and braking!
- ✓ Audible alarms with user-set thresholds for speed, acceleration and braking!
- ✓ Automatic accident log records the last 20 seconds before impact!
- ✓ Simple USB connection to retrieve all stored data
- ✓ Detailed intuitive software is included to review and clear all diagnostic codes, build reports, and export data into spreadsheets or other applications.

Wired &amp; Tested

TOP  
SELLER!

Record speed every second of every trip, keep your car in peak condition, teach your kids safe driving habits... and **SAVE GAS** while you're doing it!



There couldn't be a better time to look into this tiny little OBDII vehicle data logger for your car! It can seriously help your car's performance, teach and enforce good driving habits, help with the environment, and put a good size dent in your fuel costs! Those are some pretty incredible results for a 99 buck part!

What is it you ask? I'm sure by now you've see your repair shop "plug-in" their test set to check your vehicle status. Likewise with annual inspections. The diagnostic connector in your vehicle is called the OBDII port and it is always located on the driver's side of the passenger compartment near the center console. It provides access to a lot of data from the vehicle's ECU (Electronic Control Unit). The OBDII connector is standardized and was made mandatory in 1996 for all cars sold in the US.

The CarChip Pro is an incredible little plug-in data logger that stores and records up to 300 hours of trip details! Just plug it into your OBDII connector and it starts logging time and date for each trip, distance traveled, speed, idle time, hard and extreme accelerations and brakings, and engine diagnostic trouble codes status. Plus you can choose up to 4 additional parameters to log, including RPM, throttle position, engine load, fuel pressure, fuel system status, short term fuel trim, long term fuel trim, battery voltage, timing advance, coolant temperature, air flow rate, intake air temperature, intake manifold pressure, and oxygen sensor! Plus, on top of all that, there is an automatic accident log that stores and records all critical data 20 seconds before any impact! Yep, it's like the black box in the airplanes!

Can it get any better than that? You bet! You know that annoying "check engine light" (multifunction indicator light) that comes on? You will be able to read the diagnostic trouble codes (DTC's) get the status, date, and time of each trouble code, and reset the light!

	Start Time	Duration	Distance Miles	Maximum Speed MPH	Time in Top Speed Band	Brakes Hard Extreme	Accelerations Hard Extreme	Driver	Vehicle		
Trip 1	10/9/2007 11:39 AM	0:42:46	22.0	72	0:00:00	1	0	2	0	Mike	Dodge Magnum
Trip 2	10/9/2007 1:22 PM	0:09:02	2.3	40	0:00:00	0	0	1	0	Mike	Dodge Magnum
Trip 3	10/9/2007 1:33 PM	0:23:29	12.5	65	0:00:00	1	0	1	0	Mike	Dodge Magnum
Trip 4	10/9/2007 2:34 PM	0:15:35	13.3	66	0:00:00	0	0	1	0	Mike	Dodge Magnum
Trip 5	10/9/2007 7:23 PM	0:06:06	3.6	60	0:00:00	1	0	3	0	Mike	Dodge Magnum
Trip 6	10/9/2007 7:35 PM	0:03:04	2.0	74	0:00:00	1	0	2	0	Mike	Dodge Magnum
Trip 7	10/10/2007 8:01 AM	0:03:56	1.8	49	0:00:00	1	0	0	0	Mike	Dodge Magnum
Trip 8	10/10/2007 7:40 PM	0:02:48	0.6	35	0:00:00	0	0	0	0	Mike	Dodge Magnum
Trip 9	10/10/2007 8:15 PM	0:03:44	2.0	50	0:00:00	1	0	1	0	Mike	Dodge Magnum
Trip 10	10/11/2007 8:23 AM	0:03:32	1.8	49	0:00:00	0	0	0	0	Mike	Dodge Magnum
Trip 11	10/11/2007 8:54 AM	0:05:28	1.9	53	0:00:00	1	0	2	0	Mike	Dodge Magnum
Trip 12	10/11/2007 10:22 AM	0:03:26	1.9	56	0:00:00	1	0	0	0	Mike	Dodge Magnum
Trip 13	10/11/2007 7:51 PM	0:03:38	1.9	52	0:00:00	0	0	2	0	Mike	Dodge Magnum
Trip 14	10/12/2007 8:16 AM	0:03:54	1.8	52	0:00:00	1	0	0	0	Mike	Dodge Magnum
Trip 15	10/12/2007 11:57 AM	0:07:43	2.3	52	0:00:00	1	0	0	0	Mike	Dodge Magnum
Trip 16	10/12/2007 12:48 PM	0:10:42	3.0	63	0:00:00	0	0	1	0	Mike	Dodge Magnum
Trip 17	10/12/2007 1:02 PM	0:03:38	1.8	60	0:00:00	0	0	0	1	Mike	Dodge Magnum

To access the data, you don't have to bring a laptop or computer to your car, you simply pull the CarChip Pro, and take it to your PC! With the included software and a simple USB connection you can easily view all of this graphically on your computer screen, giving you a moment-by-moment picture of how you (or your employees or kids!) are driving! You can also set thresholds and alarms for speed, acceleration and braking, as well as view the number of times those thresholds were exceeded! Alarms are in the form of an audible beep inside the car! Comprehensive reports are available to view, store, and even copy to spreadsheets and text documents for further analysis.

The CarChip Pro includes the CarChip Pro plug-in data logger, software, USB cable, and detailed instructions. Requires a PC compatible with USB. From Davis Instruments. (One of my kids asked to borrow the Magnum Hemi, he didn't know it had one of these in it, read the data when it was returned... no more borrowing that vehicle! See the Summary!)

8226

Davis OBDII CarChip Pro

\$99.95



Motor vehicle crashes are the number one killer of teenagers and young adults.

Don't wait for a speeding ticket—or worse—to find out how your teen is driving. You can't be with your teens on every trip they take. But CarChip Pro can.

Use CarChip Pro to set up your own graduated licensing program. Designate the number of driving hours and specific performance required for advancement to the next level. Review speed, accelerations, and decelerations for each trip, with quick starts and hard brakings highlighted in red. All the information you need is just a mouse-click away.

As your teens improve, lift restrictions as a reward, or reinstate them if they need more practice.

And just in case your teen is tempted to sneak in a few rides without CarChip Pro, the unit will log the time and date every time it is disconnected.

Bill originally installed CarChip Pro to troubleshoot the check engine light, only to find out that someone had been driving at high speeds through the local residential neighborhoods. One father-son talk later, and the kid was busted!



Old spark plugs can reduce fuel economy by 30%; a faulty oxygen sensor by 40%.

Save money and time by keeping your car in peak running condition. CarChip Pro can help by detecting malfunctions early and taking the guesswork out of diagnosing problems.

CarChip Pro records data from the car's computer control sensors every few seconds, on each and every trip. With CarChip Pro, you can log any 4 out of 23 possible engine parameters, all of which can affect operation, emissions, and fuel economy.

If your car's check engine light comes on, use the software to view the trouble code, its description, and the freeze-frame sensor readings. You'll have the information you need to diagnose and fix the problem. And, CarChip Pro will even let you turn the check engine light off when you're done!

Using CarChip Pro, Henry discovered that his coolant temperature was running low. After replacing the engine's thermostat, Henry found that his average fuel economy went up—saving hundreds of dollars a year!



50% of the emissions from late-model vehicles are due to malfunctions.

A smoothly running engine not only saves money, it also helps save the environment. Your car's check engine light comes on whenever emissions exceed 1½ times the federal standards for that model-year.

But don't wait for the check engine light to come on. When there's a malfunction in your car's sensors, the engine burns more gas and exhausts more pollutants. With CarChip Pro, you can keep an eye on selected engine parameters—so you'll always know whether or not your car is running cleanly.

For example, you can tell how efficient your catalytic converter is by keeping an eye on oxygen sensor voltage. Replacing a bad converter can reduce hydrocarbon emissions by 33% or more.

After repeated failed smog checks, David replaced his oxygen sensor—again! Too bad David didn't have CarChip Pro. He would have known about the faulty sensor sooner, saving hundreds of dollars in unnecessary repairs.



A single at-fault accident can raise insurance premiums dramatically.

Not at fault? CarChip Pro can give you the information you need to settle a contested insurance claim. Most cars sold today are equipped with "black boxes." But there's no simple way for you to access the information they record.

CarChip Pro puts this information into your hands, instead of the hands of the automaker or some big insurance company. Whenever there's an accident, CarChip Pro automatically logs the last critical 20 seconds of speed.

You can also see when the brakes were applied. And, if you're monitoring throttle position, you'll see that, too. But don't wait for an accident. By showing exactly how your car is being driven, CarChip Pro can help convince drivers to change their habits. Or it just might be an eye-opener for yourself!

After the radar gun tagged his car, Duncan went to traffic court to fight the ticket. Armed with CarChip Pro's printouts showing the exact speeds he was driving, he convinced an initially skeptical judge to dismiss the ticket.





Cover Story!

TOP SELLER!

KIT



As Seen on CBS's  
Ghost Whisperer!

## Tri-Field "Sci-Fi" 3-Way Meter

- ✓ SEE RF, electric, and magnetic fields!
- ✓ Watch the magnetic field of the earth!
- ✓ Sense different magnetic poles!
- ✓ Detect RF transmitter fields
- ✓ Graphical display "sees" invisible fields

The TFM3C has three separate field sensors that are user selectable to provide a really cool readout on two highly graphical LED bargraphs! Utilizing the latest technology, including Hall Effect sensors, you can walk around your house and actually "SEE" these fields around you! You will be amazed at what you see. How sensitive is it? Well, you can see the magnetic field of the earth... THAT'S sensitive! The technical applications are endless. Use it to detect radiation from monitors and TV's, electrical discharges from appliances, RF emissions from unknown or hidden transmitters and RF sources, and a whole lot more! If you're wondering whether your wireless project or even your cell phone is working, you can easily check for RF! A 3-position switch in the center allows you to select electric, magnetic, or RF fields. A front panel "zero adjust" allows you to set the sensors and displays to a known clean "starting point".

If the TFM3C looks familiar, it's probably because you saw it in use on the CBS show Ghost Whisperer! It was used throughout one episode (#78, 02-27-2009) to detect the presence of ghosts! In the electric mode, the TFM3C's displays will wander away from zero even though there isn't a clear reason for it. What it was in the Ghost Whisperer was a friendly ghost. What it will be in your house... who knows! Runs on 4 AAA batteries. (See the TFM3C being built on the cover!)

TFM3C

Tri-Field Meter Kit With Case

\$74.95

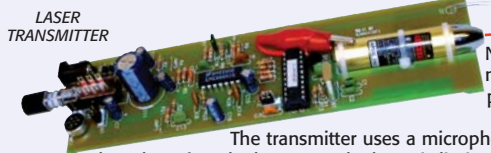
## Laser Beam Audio Communicator

KIT

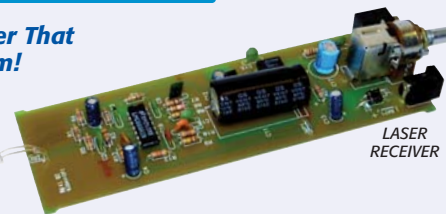
Send Audio Over That  
Laser Beam!

- ✓ Modulated at more than 16kHz for excellent voice audio fidelity
- ✓ Uses standard pocket laser module for 1/4 mile maximum range (included)
- ✓ Each kit includes one transmitter and one receiver
- ✓ Includes microphone and digital AGC circuit for full audio range control

TOP SELLER!



Now you can talk to your friends over one of the most secure long-distance transmission types available, a laser beam! Our new laser beam communicator allows you to talk with pretty good fidelity to your friends up to 1/4 mile away just using a pocket laser pointer.



The transmitter uses a microphone or external audio to modulate a laser beam on and off at a rate of more than 16kHz so the audio fidelity is much better than that of a telephone. A telephone is limited to 3kHz, but the LBC6K is limited to 6kHz. The receiver includes filtering to remove the 16kHz carrier and leave behind the high quality audio, and then boost its level for use with earphones. To improve the fidelity of the system, the transmitter employs audio AGC on the microphone to boost weak audio, and reduce loud audio so that the listener never misses a word.

Each kit includes a transmitter, receiver, and pocket laser pointer. This gives you a complete one-way audio path. If you need full duplex, or two way, buy two at the special price! Receiver and transmitter are designed to fit in two pieces of 2" PVC pipe for easy mounting and alignment. Each runs on a standard 9V battery, DC adapter or AC adapter (not included). Audio output drives a standard personal stereo headset. Your friends will be amazed when they see you talking over that red laser beam! (My kids built a couple of these and were really amazed! But then they asked me why they couldn't see their voice change the laser beam light... I told them "Um... ask your Mom!")

LBC6K  
LBC6K2

Laser Beam Communicator Kit (Includes Receiver, Transmitter and Pocket Laser Pointer)  
TWO Laser Beam Communicator Kits, for Duplex or Two-Way Audio (Save \$10.00!)

\$54.95  
\$99.95



KIT

Voice Over An IR Beam!

## Infrared Light Beam Communicator

- ✓ Send your voice over light - even through windows!
- ✓ 30' to 1/4 mile range!
- ✓ Receiver drives a speaker or earphone!

Transmits a modulated infrared light beam up to 30 feet without lenses, up to 1/4 mile using simple lenses. Since the beam is modulated with a 30 KHz carrier (like AM radio) there is no effect from 60 Hz hum that is produced by indoor lighting. Easily transmits through windows - ideal for "bugs" or listening to IR television remote controls. The transmitter can use any type of mic and is very sensitive. The receiver employs an IR PIN diode detector and there is enough power to drive any loudspeaker or earphone.

The PC board is cleverly "scored" so you can easily separate the Transmit and Receive sections so they can be used individually to transmit at one location and receive at another. Units run on 9 to 12 VDC and will use a standard 9V battery. The LB56 has been a popular kit for years and makes a great science fair project to show how you can send audio over Infrared! Custom case set measures 5"W x 1 1/2"H x 5 1/4"D. (First, two paper cups & string, then soup cans, now IR beams!)

LB56C

Infrared Light Beam Communicator Kit With Case

\$34.95

## Speedy Personal Speed Radar Gun

KIT

TOP SELLER!

- ✓ Direct readout in miles/hour, kilometers/hour or feet/second
- ✓ 1/8 mile range for average car-sized object
- ✓ Earphone output to hear actual Doppler shift
- ✓ The nation's #1 science fair project!

YOU Be The Cop!  
How Fast Was HE Going!

Here's a kit that's not only a ton of fun for everyone, but is useful too! This low cost microwave radar uses the same principle found in police units costing thousands more. You'll turn heads when you clock cars, planes, runners, boats, horses, bikes, races, or virtually any large object that moves.

Speed readout is on two LED displays which can be set accurately (better than 1%) to show MPH, kilometers-per-hour, or even feet-per-second. An earphone output allows you to hear the actual Doppler frequency shift of moving objects, the theory upon which all radars operate.

Uses two 13 oz. coffee or juice cans for antenna (not included)... so start drinking! Antenna unit can be remotely placed up to 300 feet away. The SG7 is easy and informative to build, with a detailed manual that not only carefully guides you to a finished unit but also tells you the hows and whys of Doppler radar. Even though the kit employs microwave circuitry, no exotic tuning is needed. All critical sections are PCB stripline and calibration is as easy as pointing the SG7 at a fluorescent lamp! Your Speedy kit includes a deluxe black ABS plastic case with SPEEDY graphics for a neat professional look. Operates on 12-15VDC. Electronics case: 3 5/8" x 5 3/4" x 1 1/8". (Yes, the coffee needs to be in cans!)

SG7  
AC125

Speedy Personal Speed Radar Gun Kit  
110VAC Power Adapter

\$69.95  
\$9.95



## 200 kV Van de Graaff Generator

- ✓ 200,000 volt potential!
- ✓ Sparks up to 5"!
- ✓ Operates in high humidity!
- ✓ Available kit or assembled & tested

Wired &amp; Tested

KIT

*Dazzle Them With Huge Sparks!  
Make Their Hair Stand Up On End!*

Create your own lightning with these time-tested devices that have delighted students for decades! Named after the inventor Van de Graaff, a physicist who built the first generator in 1929 at Princeton University. This machine produces low-amperage static electricity that can be "shocking" but perfectly safe. Two different pulleys with 2 neoprene belts inside a 1 3/4" plastic column create and carry a static charge up to the 7" polished aluminum collector globe. You can draw out this static charge in a burst of lightning, sparks, or you can even set each hair on your head on end! It's an incredible display!

The entire unit is 18" tall, runs on 110VAC, and includes a ground clip for discharge wands. Our comprehensive instruction book tells you how to raise hair, produce lightning and electric wind, experiment with St. Elmo's fire or electrostatic attraction and repulsion. For a stunning display, use the matching "discharge wand" with your VG200 and watch the sparks fly between the two globes!

If you're looking for a really neat experience and want to learn the basics at the same time, the Van deGraaff generator kit is for you. If you can't wait to build it and just want to have a ball with the sparks, we even offer it factory assembled and tested! Your choice! If

200 kV isn't enough zap for you, check out our VG400 below! (So we got these in, our techs set one up, and they called me to make my hair stand up on end....wait, my hair fell out when I was 22!)

VG200  
VG200WT  
VG200W

200 kV Van deGraaff Generator Kit  
Factory Assembled & Tested VG200  
Matching Discharge Wand, 1.3' Rod

\$129.95  
\$139.95  
\$69.95

Wired &amp; Tested

*When 200,000 Volts...  
Just Isn't Enough!*

## 400 kV Van de Graaff Generator

- ✓ Super high output, 400,000 volt potential!
- ✓ Generates sparks up to 12"!
- ✓ Heavy duty construction throughout
- ✓ Factory assembled & tested

What's the matter, our 200 kV Van deGraaff doesn't have enough "stooch" for you? You want even more of your hair to stand straight up? You want foot long sparks? Well, for you die-hard shock fans, here you go; how does 400 kV sound? Just like its little brother the VG200, it can create lightning and make hair literally stand up on end! The VG400 produces up to 400,000 volts with special neoprene belts inside a 3" diameter transparent butyrate column to carry the 10 microamp charge up to the whopping 13" polished aluminum globe! It proudly stands 35.5" tall with a very heavy metal base for rock stable operation.

The foolproof brush assembly never needs adjustment to guarantee flawless operation... and lots of sparks! The VG400 runs on 110VA and includes a power cord, on/off switch, and a grounding terminal for discharge wands. Just like the VG200, we include a comprehensive instruction book that nicely describes all the experiments and displays you can produce.

If you really want to put on a show use the heavy duty matching VG400W discharge wand and watch the action between them! Grounded to the VG400WT the sparks really fly! It's incredible and produces a fantastic display! The high power VG400 is available factory assembled and tested only to assure you perfect and safe operation. When you receive it, just plug it in and you'll have a hair-raising experience... we guarantee it! If you have a hankering to safely play around with 400,000 volts, check out this high-power Van deGraaff generator!

VG400WT  
VG400W

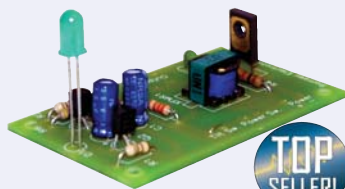
400 kV Van deGraaf Generator, Factory Assembled & Tested  
Matching Discharge Wand, 2.6' Rod

\$469.95  
\$72.95

## Tickle-Stick Shocker

- ✓ Shocking but harmless fun!
- ✓ You'll let go quick
- ✓ Teasing LED indicator!

*Get The Shock Of Your Life!*



TOP  
SELLER!

Tickle or stimulator - take your pick... once you grab it, you'll let go quick!! Mount this little kit plus a secret switch - like a mercury tilt switch - in an ingenious can or box and watch the fun. Adding a bright ribbon bow is remarkably effective at baiting the unwary! The kit has a pulsing 80 volt tickle output and a mischievous blinking LED. And who can resist a blinking light!

Great fun for your desk, workbench, or coffee table... "Hey, I told you not to touch!" Runs on 3-6 VDC battery power (not included). This kit has become a fixture at our Hamfest displays, providing us, and others who are in the know, hours of fun! Measures 1 1/2" x 3/4" x 2 1/2".

TS4 Tickle Stick Kit

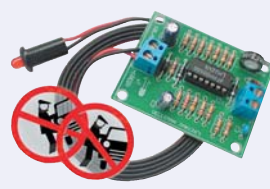
KIT

\$12.95

## Car Alarm Simulator

- ✓ Activates automatically when engine is off!
- ✓ Easy to install, just two wires!
- ✓ Adjustable sensitivity!
- ✓ Includes pre-wired LED holder and labels!

*Keep Them Away From Your Car!*



When car thieves are scoping out prospective targets, sometimes all it takes is the appearance of an alarm system to deter them... and its certainly a heck of a lot cheaper than the real thing! With this nifty kit you can put your own "dummy" alarm together to save yourself some cash, and maybe your car in the process!

This little kit gives you a realistic-looking flashing LED sequence that simulates the appearance of an active car alarm system! For added convenience, it also hooks directly into your cars electrical system to automatically enable the alarm simulation when you shut your engine off! Give yourself a little extra insurance with this affordable kit from Velleman!

MK126 Car Alarm Simulator Kit

KIT

\$79.95

## Classic Table Tennis Video Game

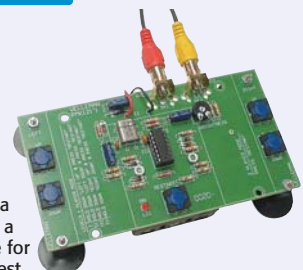
- ✓ Build the classic game that started it all!
- ✓ 2-player head to head mode!
- ✓ Single player with 4 levels!
- ✓ RCA video and audio outputs!

*Go Back In Time, After You Build It!*

Today, videogames are a 10 billion dollar industry, generating even more revenue than the Hollywood film business, but it all started in 1972 with a simple table tennis simulation that soon found its way into bars, and later homes, all over the country! Now with the MK121 you can put together a fun kit that harkens back to the early days of gaming! Once complete, you can plug this kit directly into your TV for a fun retro gaming experience for the whole family! Control the paddles with one of four movement buttons, and your score is displayed on screen! Test your soldering skills then test your ping-pong skills! Powered by 3 AA batteries (not included). Measures 2.9" x 5.5". From Velleman.

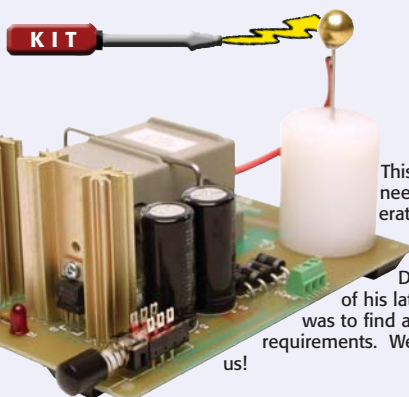
MK121 Table Tennis Video Game Kit

KIT



\$17.95





### Shocking Results... Literally!

This new kit was conceived by one of our engineers that likes to play with things that can generate large, loud sparks, and other frightening devices.

During the process of looking for parts for one of his latest experiments he discovered how difficult it was to find a high voltage transformer that met his requirements. Well, we had a super unit designed expressly for us!

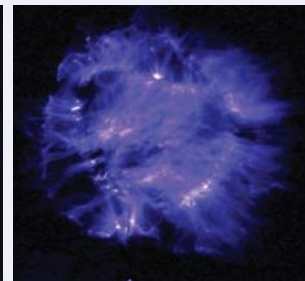
This is one heck of a neat kit! It really serves no purpose other than producing stunning lighting displays, drawing big sparks, scaring the neighbors and performing lots of high voltage experiments. But sometimes that's a great purpose for a kit!

In the picture to the right we took a regular clear "Decora" style light bulb and connected it to the PG13. WOW! A storm of sparks, light tracers and plasma filled the bulb! Holding your hand on the bulb doesn't hurt a bit and you can control the discharge!

It can also be used for powering other experiments... let your imagination be your guide! The high voltage at the terminal won't electrocute you, so it's relatively safe, but it can burn you, so use caution. Can also be run from 5-24VDC so the output voltage can be directly adjusted by simply adjusting the input voltage! This is for advanced experimenters only and not for the faint of heart! (Unless you buy the ECG Kit, then it's OK!)

## Spark Generating HV Plasma Generator

- ✓ Generate 2" sparks to a handheld screwdriver!
- ✓ Light fluorescent tubes without wires!
- ✓ Build your own Plasma Balls!
- ✓ Generates up to 25kV @ 20 KHz from a solid state circuit!



PG13  
PS21

Plasma Generator Kit  
16VAC Output Power Adapter

\$64.95  
\$19.95

## Air Blasting Ion Generator

- ✓ Generate negative ions along with a blast of fresh air without any noise!
- ✓ Generates a steady state DC voltage at a constant current, not pulsed!
- ✓ Generates 7.5kV DC negative, 400uA. That's a lot of ions!

This nifty kit includes a pre-made high voltage ion generator potted for your protection, and probably the best one available for the price. It also includes a neat experiment called an "ion wind generator". This generator works great for pollution removal in small areas (like after grandpa gets done in the bathroom!) and moves the air through the filter simply by the force of ion repulsion!

No fan blades, no noise, just swiftly moving, charged air! Gee, have we heard of this technology on a boatload of air cleaner infomercials lately? It's amazing when you get this built and actually feel the air flow and smell the very special clean ion smell. The first engineering prototype quickly went into the Ramsey employee restroom!

Learn how modern spacecraft use ions to accelerate through space and why ion engines are ideal for long-distance space travel. Includes ion power supply, 7 ion wind tubes, and mounting hardware for the ion wind generator. Runs on 12-15VDC at 500mA. (Caution...do not grab the output of the transformer, all the ions may be sucked out of your body! And don't you just hate it when that happens!)

IG7  
AC125

Ion Generator Kit  
110VAC Power Adapter

\$64.95  
\$9.95



Wired & Tested



Check Your  
Own Heart &  
Stay Healthy!

## Electrocardiogram ECG Heart Monitor

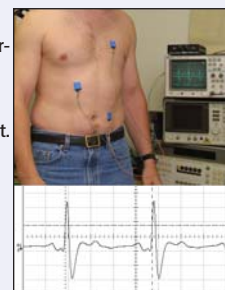
- ✓ Visible and audible display of your heart rhythm
- ✓ Re-usable sensors included; just like visiting the lab at the hospital!
- ✓ Bright LED "Beat" indicator for easy viewing
- ✓ Monitor output for professional display on your oscilloscope
- ✓ Simple and safe 9V battery operation

One of the main reasons we designed the ECG1 was to answer a long running debate here in the engineering department. We wired up the "Boss" and finally confirmed he does not have a heart! Use the ECG1 to astound your physician with your knowledge of ECG/EKG systems.

Enjoy learning about the inner workings of the heart while at the same time covering the stage-by-stage electronic circuit theory used in the kit to monitor it. The three probe wire pick-ups allow for easy application and experimentation without the cumbersome harness normally associated with ECG monitors.

The documentation with ECG1 covers everything from the circuit description of the kit to the circuit description of the heart! Multiple "beat" indicators include a bright front panel LED that flashes with the actions of the heart, an adjustable level audio speaker output supporting mono or stereo hook-ups, and a monitor output to view the traditional style ECG/EKG waveforms you see on Gray's Anatomy... or in the ER!

The fully adjustable gain control on the front panel allows the user to custom tune the differential signal picked up by the probes giving you a perfect reading every time! Includes the matching custom case set shown and operates on a standard 9VDC battery (not included). This is NOT a medical device; it is intended for hobbyist usage only. If you experience any symptoms, seek medical help immediately! (Editors note: This kit is not intended for catalog editors and webmasters of Ramsey Electronics; it's just way too late for us!)



ECG1C  
ECG1WT  
ECGP10

Electrocardiogram Heart Monitor Kit With Case  
Factory Assembled & Tested ECG1 With Case And Power Supply  
Set of 10 Replacement Reusable Probe Patches

\$44.95  
\$89.95  
\$7.95



## COM3010 Communications Service Monitor

- ✓ 100 kHz to 1.0 GHz frequency range, full duplex!
- ✓ Built-in power meter & 100 watt dummy load!
- ✓ Built-in frequency counter!
- ✓ Built-in sweep generator
- ✓ Built-in SINAD meter
- ✓ Built-in calibrated RSSI meter
- ✓ Built-in RS232 control
- ✓ Built-in Li-Ion battery packs, up to 3 hours operation

**Full Duplex, Loaded With Features... At A Sensible Price!  
The Service Monitor That Simply Makes Sense!**

### THE RIGHT CHOICE!

The COM3010 is a full featured communications service monitor engineered and designed to provide highly accurate measurement and monitoring of communications equipment from 100kHz to 1.0GHz with 0.1ppm accuracy. Full duplex design enables independent and separate measurement and testing of transmitter and receiver circuits simultaneously making it the ideal service monitor for the radio technology of today...and tomorrow!

All functions are selected with simple commands and selections on the Elastomeric touch keypad and are displayed on high contrast dual vacuum fluorescent graphical displays. For those on-site measurements, all graphical displays can be "zoomed" to full size to see them across the room! Of course, battery operation is standard to make field use a breeze!

### BUILT-IN POWER METER, FREQUENCY COUNTER, AND A LOT MORE!

Perfect for the two way radio user. Simply key the transmitter while the radio is connected to the generator output for an instantaneous reading of RF output power in either watts or dBm. Yes, we said key the radio into the generator output! The COM3010 incorporates automatic reverse power protection rated at 100 watts with a built-in dummy load. No more burned up pads, no separate wattmeter, and no more worries.

Not sure of the radio frequency? Don't want to plug it into a programmer to interrogate the memory? Even worse, don't want to take it apart to look at the channel elements or crystals? No problem, just key the transmitter. The built-in frequency counter will display the frequency! Counter range is 100kHz to 1.0GHz!

### AUTOMATIC SINAD AND RSSI MEASUREMENTS!

Working on a receiver? Check the true SINAD sensitivity of the receiver with the built-in SINAD meter. Also provides audio loop-back for the equipment being tested. A separate SINAD meter is no longer required! It gets even better! A calibrated Receive Signal Strength Indicator meter makes the COM3010 perfect for testing filter designs and performance as well as cable characteristics.

Such tests are made simple with the availability of user memories. 100 groups of 100 memories allow the storage of a large number of test setups for quick and easy retrieval. See detailed specifications below. *(In my previous life I was the first to buy a Cushman CE3 and CE5 for two-way use... If these were only available then I never would have had to change all those small light bulbs in the dials... all the time, and again, and again!)*

### SPECIFICATIONS

#### FEATURES

Display: 2 vacuum fluorescent graphical displays, 16x140 pixels  
 Memories: 100 sequences of 100 registers plus system memories  
 Sweep Features: Linear, octave, and decade of up to 10,000 points  
 Scanner Mode: Allows scanning through a sequence of 100 stores  
 SINAD Meter: Displays reading from -30dB to 0dB of SINAD  
 Freq. Counter: Measures frequency error to 1 Hz. Three counter modes  
 Battery Meter: Displays charge left in batteries  
 Reverse Protection: Generator output protected, switches into 100W internal load and automatically displays power in dBm or watts  
 Power Meter: Displays power from +23dBm to +50dBm,  $\pm .5$  dB (200mW-100W)  
 Attenuator Output: -30dB sample port from load for external equipment  
 RSSI Meter: 80dB of range on receiver side, -40dBm to -120dBm  
 Warranty: One-year parts and labor with extended Ramsey Technical Support and dedicated COM3010 user forum access

#### GENERATE MODE

Frequency: 100kHz to 1.0GHz in 1Hz steps  
 Freq. Accuracy:  $\pm 0.1$ ppm standard  
 RF Output Level: -140dBm to 0dBm in 0.1dBm steps  
 Level Accuracy:  $\pm 1$ dB, 500kHz to 1GHz,  $\pm 2$ dB 100kHz to 500kHz  
 Units: dBm, uV, mV  
 Leakage: Better than 1uV, 2 turn loop, 1" diameter at 1"  
 Spurious Harmonics: -30dBc typical  
 Non-harmonics: -50dBc typical  
 FM Modulation:  $\pm 75$ kHz max in 0.1Hz steps  
 FM Bandwidth: 0.1Hz - 75kHz  
 Accuracy:  $\pm 0.1$ ppm (inherently tied to reference frequency)  
 AM Modulation: 0 - 75% in 1% steps to -100dBm, 0-50% to -140dBm  
 AM Bandwidth: 10Hz - 10kHz  
 Accuracy:  $\pm 5\%$   
 Distortion: Less than 5%  
 Modulation Internal: 0.1Hz - 3kHz  
 Modulation External: 0.1Hz - 3kHz digital and analog selectable, auto leveling.  
 CTS Encode: 0.1Hz to 999.9Hz at  $\pm 75$ kHz default deviation, variable from .1Hz to 2.5kHz deviation  
 DPL Encode:  $\pm 500$ Hz, Variable from 0.1Hz to 2kHz  
 Two Tone Paging: 0.1Hz - 3kHz, group, voice, tone, battery save modes

#### RECEIVE MODE

Frequency: 100kHz to 1.0GHz in 10Hz steps  
 Sensitivity: Less than 2uV below 512MHz  
 Less than 3uV above 512MHz  
 FM Demod: 0 - 6kHz, 0 - 4kHz  
 AM Demod: 0-100%  
 CTS Decode: In AF frequency count  
 Frequency Error: 0-1MHz, two methods of bargraph and count  
 AF Demod output: 1Vp-p for 5kHz deviation  
 Gates: 0.1 sec, 1 sec

#### FREQUENCY COUNTER

Frequency Range: 100kHz - 1GHz  
 Low Band Sensitivity: Less than 10mV under 70MHz, 1Hz and 10Hz resolutions  
 High Band Sensitivity: Less than 10mV, 70MHz - 1GHz, 10Hz and 100Hz resolutions with divide by ten prescaler  
 IF Frequency: Receiver sensitivity, range limited to bandwidth of current set receiver frequency  $\pm 10$ kHz, 1Hz, and 10Hz resolutions

#### AUDIO COUNTER

Frequency Range: 60Hz - 3000Hz  
 Gates: 10 Sec variable gate for 1 sec quick updates  
 Sensitivity: 35mV at demod audio, ( $\pm 750$ Hz deviation)

#### GENERAL

Receiver input: Has diode protection and fused components  
 Controls: Elastomeric keypad  
 Dummy Load: 100W 30dB feed-through attenuator with sample port on rear, 25% duty cycle full power  
 RS232 Control: Serial interface provides external function control and automated calibration  
 Primary power: 100-240VAC, .6A, 50/60Hz; built in Li-Ion battery  
 Stand: Standard push to lock handle/stand  
 Case Color: Mist gray epoxy powder coat  
 Supplied Accessories: 110VAC EIA cord, BNC-BNC test cable, whip antenna, one BP3010 Li-Ion battery  
 Dimensions: 6" H x 11.9375" W x 14.75" D (152.4mm H x 303.31mm W x 374.65mm D)  
 Weight: 14 lbs (6.5kg)

COM3010  
BP3010  
CC3010

Communications Service Monitor, 100kHz-1GHz  
 Additional Li-Ion Battery Pack, Extends Operation by 1 Hour Approx (Max 3 Packs Total)  
 Matching Black Padded Cordura Carrying Case With Strap

\$3995.00  
\$89.95  
\$129.95





## Audio/RF DDS Signal Generator

- ✓ DDS and SMT technology!
- ✓ Frequency range 0 Hz to 5 MHz with 0.1Hz resolution!
- ✓ 0 to 10V peak to peak output level
- ✓ Sine, Square, or Triangle waveform output!
- ✓ Non-volatile memory
- ✓ Factory assembled and tested

Wired & Tested



*The Super Signal Generator...  
DC To 5 MHz In 0.1 Hz Steps!*



SPECIFICATIONS	
Frequency Range:	0.0 Hz to 5 MHz
Frequency Resolution:	0.1 Hz
Stability:	±15 ppm
Output Amplitude:	0 to 10 Vp-p
Amplitude Resolution:	10 mV
Amplitude Accuracy:	±0.1 dB from 0 to 3 MHz +0.1 to -1.5 dB from 3 to 5 MHz
Output Waveforms:	Sine, Square, Triangle
Output Impedance:	50 ohm, 25 ohm, 0 ohm (current limited) internally selectable
DC Offset:	0.0 V to 5.0 VDC
Offset Resolution:	10 mV
Display:	High contrast LCD
Entry Method:	Direct entry numeric keypad, incremental rotary encoder
Memory:	6 non-volatile memory locations
Power Requirements:	8 to 16 VDC @ 600mA max. 110VAC power adapter included
Dimensions:	9.625" W x 3.625" H x 5.875" D 244.4mm W x 92mm H x 149.2 mm D

### THE ULTIMATE AUDIO SIG GEN...TO 5 MHz!

The SG560 is more than an audio generator. It is also a signal generator that produces AC signals with DC coupling at the output jacks like a digital signal generator. The versatility of the SG560 will allow you to recreate many basic signals used in testing situations.

The SG560 allows you to generate square waves, sine waves, and triangle waves of any frequency from 0 Hz to 5 MHz in 0.1 Hz steps. The frequency accuracy is tied to a crystal reference with an accuracy of ±15ppm over its full temperature range. You can also step the frequency at any arbitrary increment. For example a step of 37.5kHz can be entered and the dial or shift arrows can be used to step the frequency up and down by this amount.

The SG560 uses a robust output stage for the final driver. It is derived from DSL modems and is essentially a high power opamp. The opamp is capable of delivering 2.5W to a load before going into protective shut-down. It is being used in a differential fashion which means that any common mode noise is cancelled on the output. The output voltage can swing from 10V peak to peak with a 5V DC offset without clipping. For a negative DC voltage output, swap the polarity of the cables attached to the jacks.

The SG560 allows digital entry of the output level with a resolution of 10mV. For example, if you enter 5.55, the SG560 will generate a 5.55V peak to peak waveform at the jacks. The SG560 has an additional option which allows the user to set the output impedance. It can be 50 ohms, 25 ohms, or 0 ohms impedance at the output jacks. With a 50 ohm output impedance a 50 ohm load will drop the output signal level by 1/2 of the value entered. With 0 ohms a 50 ohm load will not drop the level at all. The 25 ohm output setting can help when driving a capacitive load; the 0 ohm setting should never be used with this type of load.

### ADVANCED FEATURES!

A DC offset may be entered; this is added (or subtracted if the jack connections are reversed) to the AC signal. Rather than the output AC waveform being centered on 0VDC, a set DC voltage can be added to your signal. This allows the performance of tests that are not possible with a basic audio signal generator. For example, a small circuit can be powered by the DC offset as long as it requires less than 2.5W of power and AC signals can be used to check for noise or EMI immunity. The DC offset can also be used to recreate digital signals in the square wave mode. For example, to create TTL square waves, enter 5V for the level and 2.5V for the offset. This will create the 5V (digital '1') and the 0V (digital '0') levels needed for testing and clocking digital circuits. With a signal range of up to 10V peak to peak and 5V of offset, even old 4000 series CMOS signal levels can be recreated! Additionally the SG560 contains 6 non-volatile memory units which save the full system settings: frequency, level, shape, and offset. This allows you to frequency hop or use the memories to "script" repair, testing, and alignment procedures.

### EXTREMELY RELIABLE!

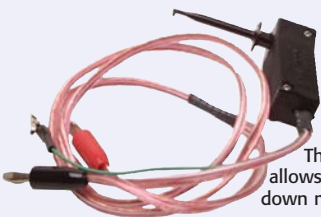
Surface mount technology is used throughout the SG560 making it extremely reliable and accurate. Frequency is entered directly on the sealed membrane key-board and adjusted with a precision rotary encoder with an oversized knob. Both frequency and output level are displayed on a high contrast, two-line LCD display. The SG560 operates on 8 to 16VDC and includes a standard 110VAC power adapter. Because of the surface mount design the SG560 is only available factory wired and tested. If you are looking for a lab quality signal generator at a super price, the SG560 fits the bill... and a whole lot more!



SG560WT

Audio/RF Signal Generator, Factory Assembled & Tested

\$329.95



Wired & Tested

*Measure RF With A  
Standard VOM!*

The RF1 is a very sensitive RF detector probe that connects to any digital multimeter and provides a DC voltage output from weak RF signals. This allows very easy tracing of low level RF signals that a counter can't pick up. Wide frequency coverage of 100 KHz to over 1000 MHz lets you track down most any problem in transmitter chains, receiver stages, or even complex PLLs.

Uses exotic, low barrier microwave detector diodes to give exceptional sensitivity which can see signals down to microwatt levels! A great low cost way of checking for RF. Fully assembled and tested, with standard banana plugs for use with any standard VOM, DMM or voltmeter. If you need to measure RF and don't want to spend big bucks, here you go!!

RF1

RF Sniff-It Probe, Assembled & Tested

\$27.95

## Broadband RF Preamplifier

- ✓ Broadband from 1 MHz to 1000 MHz, usable to 2000 MHz!
- ✓ Low noise figure, less than 2.5dB
- ✓ Improves AM, FM, VHF TV, UHF TV, and HF reception. 50 – 75 ohm imp.
- ✓ Over 25 dB Gain with up to 100 mW of power output!

Ever wish you could "perk-up" your counter or scanner to read weak signals? Or how about boosting that cable TV run to drive sets throughout the house or maybe preamping that TV antenna to bring in that blacked out football game from a distant city? The PR2 broadband preamp is the answer to all these needs as well as many others!

Since the PR2 has such a high compression point of almost 100 milliwatts, you can even use it to boost the power of small, micro transmitters! Microwave MMIC chips from NEC Japan enable the PR2 to have gain up to 2 GHz although we only spec the PR2 to 1 GHz. Runs on 12 VAC/DC or 120 VAC using the included wall adapter. Size: 4" x 2" x 1".

PR2

Broadband Preamp, Factory Assembled & Tested

\$69.95

Wired & Tested

*Broadband, Low Noise...  
And 25dB Gain!*



## 40 MHz Personal Oscilloscope USB

- ✓ Digital waveform & measurement display!
- ✓ Ultra-fast full auto set up
- ✓ High resolution 192x112 backlit LCD display
- ✓ Galvanically isolated USB output for PC

### THE LATEST GENERATION PORTABLE STORAGE SCOPE!

The latest and most versatile portable oscilloscope on the market is here! The Velleman HPS50 is designed to make using your oscilloscope anywhere you need it easier than ever before. You can now fit the ultimate troubleshooting tool in the palm of your hand! The HPS50 features an ultra fast full

*You'll Wonder How You've Ever Gotten Along Without It!*

Wired & Tested



SPECIFICATIONS	
Sampling Rate	40MHz
Analog Bandwidth	12MHz
Time Base	50ns to 1 hour/div in 34 steps
Sensitivity	.1mV
Display Modes	Normal screen view Wide screen with DVM Normal screen with large DVM Wide screen with large DVM
Power Supply	Li-ion battery: 7.4V/1050mAh (Included)
Weight	15.52oz.
Dimensions	4.3 x 6.9 x 1.6"
Included Accessories	Charging Adaptor, insulated probe x1/x10, USB Cable

### BUILT-IN DVM AND USB INTERFACE!

The adjustable trigger level means you can easily filter noise and avoid false triggers. It also boasts X and Y position signal shift, and audio power calculation (rms and peak) in 2, 4, 8, 16 & 32 ohm, dBm, dBV, DC, rms ...measurements! Plus signal markers for voltage and time, frequency readout (through markers), a recorder function (roll mode), two memories for signal storage... and more! Multiple screen modes let you choose the ideal display for your application, and the USB connection lets you transfer data in realtime as well as copy bitmap images of waveforms directly to your computer! With ease-of-use and specs like these, you'll wonder how you got along without the HPS50!

HPS50  
PSU03RUSA 40MHz Personal Scope w/USB AC Adapter

\$299.95  
\$12.95

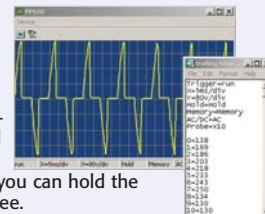
Wired & Tested



## 10MHz Pocket Oscilloscope

- ✓ Digital waveform & measurement display!
- ✓ Innovative thumbstick operation for one-handed control
- ✓ Full Auto Setup
- ✓ Backlit LCD display
- ✓ Optically isolated RS232 output for PC
- ✓ Measure up to 2MHz with a sensitivity down to 0.1mV

*Your Own Personal Handheld Scope!*



### SPECIFICATIONS

Sampling Rate	10MHz
Analog Bandwidth	Up to 2MHz
Time Base	200ns to 1 hour/div in 32 steps
Sensitivity	.1mV
LCD	128 x 64 pixels / high-contrast
Power Supply	5 x 1.5V AAA Batteries or Nicd/NiMH (not included) Includes Battery charging Circuit Optional AC Adapter: 9V/300mA (PSU3RUSA)
Dimensions	155x100x45mm / 6.10 x 3.9 x 1.78"
Weight	395g / .87lbs
Included Accessories	Insulated safety probe, user manual, RS232 Cable

### SMALL ENOUGH FOR YOUR TOOL KIT

The PPS10 scope from Velleman is a breakthrough in portable scope technology - in more ways than one! The ultimate package for convenient handheld measurement and testing is here! The first thing you'll notice about the PPS10 is the intuitive and innovative control scheme. Using the thumbstick, you can hold the scope in one hand and still access all its functions, leaving your other hand free.

### IT DOES IT ALL!

The PPS10 also has everything you need in a portable scope, including Trigger mode (run, normal, once, roll, slope +/-), X and Y position shift, audio power calculation (rms and peak), signal markers for voltage and time, frequency readout (through markers), recorder function (roll mode), signal storage (2 memories), and more! Take measurements in dBm, dBV, DC, and rms, then connect to your PC for easy data storage. The perfect solution for the hobbyist or the professional on the move! From Velleman.

PPS10  
PSU03RUSA 10MHz Handheld Personal Scope w/RS232, Assembled & Tested AC Adapter

\$179.95  
\$12.95

## 40 MHz Portable Digital Oscilloscope

- ✓ Digital waveform & measurement display!
- ✓ 40 MHz sample rate
- ✓ Backlit LCD display

This is the original Velleman "Personal Scope" that put a handheld digital scope within reach of the hobbyist, student, and technician! With today's technology, merely measuring voltage isn't enough. Whether you're an auto mechanic looking for electrical noise, working with audio equipment, or a student working on lab projects, a scope is a must! Instead of carrying around a digital multimeter you can actually have your own personal scope at about the same price! And besides a scope the display has a DVM readout for dBm, dBV, DC, and True RMS! Frequency readout is also displayed on the screen through markers. Runs on 5 standard AA Alkaline batteries (not included) which provide up to 20 hours of use. Rechargeable AA NiMH batteries can be used in place of standard Alkaline batteries and will be automatically charged with the included AC power supply adapter and charger. The HPS40 includes an RS232 interface cable for PC connectivity. A simple serial DB9 RS232 connection to your PC provides you with a high resolution bitmap display of your screen at the touch of a button! Perfect for recording measurement results. Windows based software is included.

We all carry a DMM in our tool boxes and would be lost without it. After all, how could you possibly measure voltage, current, and continuity in every-day service calls. Well, take it one step further, and have your own personal storage scope in your tool box, ready to tackle those "difficult" problems. If you're working with electronic circuits, automotive applications, audio and stereo applications or any other type of electronic applications, the Personal Scope belongs in YOUR toolbox, at a price that can't be beat! (Editors note, I carry one of these in my tool box and it is the handiest thing in there! From audio hum to DC measurements, I'm always the guy that can find it... and then they assume the same guy can fix it... grrrrrrr!)

*Professional Handheld Testing at Your Fingertips!*

Wired & Tested



### SPECIFICATIONS

Max Sample Rate:	40MHz (10MHz single shot)
Max Input Bandwidth:	5MHz (-3dB at 5mV/div to 12MHz at 1V & 20V/div)
Input Impedance:	1M ohm, 20pf standard scope probes
Input Coupling:	DC, AC, and ground (zero reference)
Vert Resolution:	8 bit, ±1 bit linearity
Trigger Modes:	Run, normal, once, roll mode for 1s/div and slower timebase
LCD Graphics:	112 x 192 pixel, white backlit
Signal Storage:	256 samples with 2 memories, max 179 visible samples, 256 using X shift
dBm Measurement:	-73dB to +40dB, ±0.5dB accuracy (0dBm=0.775V at 600 ohm)
dBV Measurement:	-75dB to +38dB, ±0.5dB accuracy (0dBV=1V)
True RMS Measurement:	.1mV to 80V, ±2.5% accuracy
P/P AC Range:	0.1mV to 160V, ±2.0% accuracy
Timebase Ranges:	50ns to 1hr/div, 32 steps
Input Sensitivity Range:	5mV to 20V/div at time 1, 50mV to 200V/div at times 10, 12 steps
Probe Calibration Output:	2KHz/5Vpp approx

HPS40  
PS28 Personal Scope, 40MHz, Case, Probes, Power Supply, RS232 Out, Assembled & Tested 9VDC Power Supply, 500mA

\$289.95  
\$9.95





Wired & Tested

*The Next Step In  
Function Generators!*



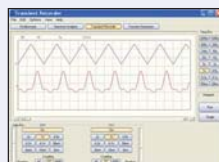
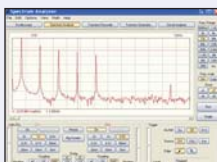
The PCGU1000 is the latest and greatest in function generators! Imagine a digital function generator that harnesses the power of your PC to bring you a great combination of affordability and versatility... well it's here! It's got everything you need in a function generator and more. Low sine wave distortion, TTL-level synchronization output, automated wave sequence generation via file or RS232 input, and lots more! All these great features are packed into a space-saving and stylish design that won't clutter up your desk and is a great companion to the PCSU1000 USB scope (see page 66).

Not only does the PCGU1000 include preset standard waveforms for sine, square and triangle waves, but it also comes with a powerful custom signal wave editor to create your own waveforms! The possibilities are endless! How does it work? The signal waves are created in your PC and then produced by the function generator via DDS (Direct Digital Synthesis)! Combine this with crystal-based stability and you get rock solid results every time! The included software gives you plenty of options, and lets you create extended bode plots with the use of one of Velleman's PC scope series (like the PCSU1000). For even greater control, the windows DLL is included to give you all the freedom you need to build your own custom software.

The PCGU1000 features 2 equal outputs and a TTL sync output, and will deliver output voltage of 1mVtt up to 10Vtt at 600 ohms. All the outputs are galvanically separated from the PC in order to avoid measuring problems. Power supply included. From Velleman Instruments.

System Requirements:

- ✓ IBM compatible PC
- ✓ Windows™ 98SE, ME, 2000, XP, Vista
- ✓ SVGA display card (min. 800x600)
- ✓ Mouse
- ✓ Free USB port
- ✓ CD Rom drive



- ✓ 0.1Hz to 2MHz frequency range
- ✓ Crystal-based for stability
- ✓ Low sine wave distortion
- ✓ 50MHz sample rate
- ✓ With internal 40 dB attenuator (output divided by 100)
- ✓ Direct digital wave synthesis (DDS) stores up to 8192 waveform points

**SPECIFICATIONS**

Frequency Range:	from 0.01Hz to 2MHz
Standard Waveforms:	Sine, square, triangle
Predefined Library Waveforms Included:	Noise, sweep, and more
Sweep Frequency Range:	0.0001Hz to 25MHz
Sweep Time:	1ms to 10 hours
Noise Mode Bandwidth:	25MHz
Amplitude Range:	100mVpp to 10Vpp @ 1KHz// 600ohm load / 0V offset
Frequency Setting Resolution:	0.01%
Amplitude resolution:	0.4% of full scale
Offset:	from 0 to -5V or +5V max. (resolution 0.4% of full scale)
Vertical resolution:	8 bits (0.4% of full scale)
Sample rate:	50MHz
Typical sine wave distortion (THD):	< 0.08%
Output impedance:	2 x 50ohm
Power supply:	standard 9V DC adapter, 600mA (included)
Dimensions:	55 x 190 x 200mm

PCGU1000 2MHz USB Function Generator

\$199.95

## USB 2 Channel PC Scope & Analyzer

Wired & Tested

*The Next Generation  
Of Scopes & Analyzers!*

- ✓ Scope, Spectrum analyzer, & transient recorder!
- ✓ 0.15mV resolution!
- ✓ 1GHz sampling frequency!
- ✓ Runs on USB power, no external power supply needed!

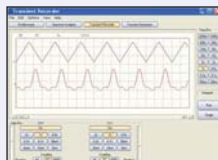
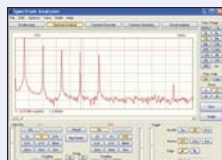
This versatile and powerful "scope" harnesses the power of your pc or laptop to drive its software, eliminating the need for bulky stand-alone oscilloscopes, analyzers, and transient recorders! Just attach it to your laptop for easy troubleshooting readings in the field, or set it up on your workbench at home or the office.

Powerful software is included along with a DLL giving you the ability to create customized applications to meet any additional needs! Its highly sensitive display resolution, down to 0.15mV, combined with a high bandwidth and a sampling frequency of up to 1GHz give this unit all the power you need. The USB connection makes this unit a snap to set-up, no external power required! In the field, measurements using a laptop computer have never been this easy, and the readings are automatically stored for your future analysis and comparison.

There are many advantages to using a PC based oscilloscope, including custom software, larger/high resolution/color display, lower cost, easy data export, and networking/storage functions. Take advantage of your PC and the convenience of this feature-packed multifunction scope. Includes two 60MHz professional scope probes, USB cable, software and comprehensive manual. Requires Windows 98SE or newer OS that supports USB. Compatible with USB1.1 or USB2.0. From Velleman Instruments.



GENERAL		OSCILLOSCOPE	SPECTRUM ANALYZER	TRANSIENT RECORDER
Inputs:	2 channels, 1 trigger input	Timebase:	Frequency range:	Time scale:
Input impedance:	1Mohm, 30pF	Trigger source:		max. recording time:
Bandwidth:	DC to 60MHz $\pm$ 3dB	Trigger edge:		Storage:
Max input:	30V AC or DC	Trigger level:	Operating principle:	Storage time:
Input coupling:	DC, AC, and ground	Step interpolation:		
Power supply:	USB power, 500mA	Markers for:	FFT resolution:	max. number of samples:
PC compatibility:	Win98SE or newer	Input range :	FFT input channel:	min. number of samples:
	800x600 minimum resolution, 1024x768 recommended	Input sensitivity:	Additional feature:	Markers for:
			Markers for:	Modes:
USB port:	USB 1.1 or 2.0	Readouts:		
Includes:	Scope, two 60MHz scope probes, USB cable, software CD, manual	Recording length:		
Dimensions:	8.2" x 2.2" x 7"	Real time sampling freq:		
		Sampling freq for rep. sig:		



PCSU1000 USB 2 Channel PC Scope & Analyzer, Factory Assembled & Tested

\$369.95



## Wired &amp; Tested

## Multimeter With Temperature, Capacitance, &amp; Frequency

## SPECIFICATIONS

Display: 3½ Digit LCD, 31 x 61 mm  
 DC Volt: 200mV/2/20/200/1000V ±0.5%  
 DC Amp: 2m/20m/200m/20A ±0.8%  
 AC Volt: 2/20/200/700V ±0.8%  
 AC Amp: 20m/200m/20A ±0.8%  
 Ohms: 200/2K/20K/200K/2M/20M/200M ohm, ±0.8%  
 Continuity buzzer  
 Cap: 2000pf/20nf/200nf/2uf/20uf ±2.5%  
 Freq: 20KHz ±1.0%  
 Temp: -50°C to 1000°C ±0.75%  
 Continuity buzzer, hFE & diode test  
 Size: 88mm x 170mm x 38mm  
 Battery: Standard 9V, included



- ✓ 30 ranges
- ✓ Temperature range: -50°C to 1000°C
- ✓ Capacitance range: 2000pf - 20uf
- ✓ Diode, transistor, & continuity test
- ✓ Overload protection
- ✓ Includes temperature probe

## This is NOT Your Ordinary DMM!

Great for the technician, builder, hobbyist, or auto mechanic, this little DMM is not your typical digital multimeter! Measures DC Volts and AC Volts at 10M ohm impedance. Measures DC and AC current, resistance up to 200M ohm and it doesn't stop there! It also measures capacitance up to 20uF, frequency up to 20 KHz, and temperature all the way up to 1000°C with the included K-type thermocouple.

Of course, it also includes a dedicated transistor socket for NPN and PNP transistor testing, auto power off to save batteries, audible continuity and diode testing, and an oversized display. Sound too good to be true for 40 bucks?

We thought so too! That's why they're here! Comes complete with a professional rubber holster, standard & temperature test probes, user's manual, and a standard 9V battery.

DVM890F

Multimeter With Temp, Capacitance &amp; Frequency

\$34.95

## Compact Multimeter With Data Hold

- ✓ Backlit display
- ✓ Display Hold
- ✓ Auto polarity
- ✓ Diode, transistor, & continuity test

## Perfect For Your Tool Box!

If you're looking for a nice little DMM to keep in your tool box, this one's for you! Small and inexpensive, yet packed with great functions and features. Has all the normal ranges of a pocket DMM plus a plug-in transistor tester socket for quick transistor testing. A built-in continuity test provides an audible buzzer for eyes-off testing.

The oversized 3½ digit display has a selectable backlight feature which illuminates the display in the dark. Besides all this, there is a professional "data hold" feature to hold and store a reading. Also features a high impact rubber holster just like the big boys! Includes a great set of test probes and even has the 9V battery installed. All this for under \$20! (That's why there's one in my tool box!)

DVM850BL

Compact Multimeter With Data Hold

\$12.95



## Wired &amp; Tested

## Multimeter With Temperature, Capacitance, Frequency, &amp; Data Hold

## The Latest and Greatest DMM!

- ✓ 30 ranges
- ✓ Low-battery indication, overload protection and automatic deactivation
- ✓ Diode, transistor, & continuity tests
- ✓ Includes temperature probe, leads, battery and holster

New for 2008, Velleman has streamlined their DMM offerings with some great new models! The DVM8264 includes all the features you could ask for in a multimeter and more, at a rock bottom price!

Automatic low-battery indication, automatic deactivation, data hold, and the most robust overload protection of any DMM around! Audible continuity alarm lets you check circuits quickly and easily, and the large .7" LCD display is backlight for trouble-free operation under any lighting conditions!

The DVM8264 weighs in at only 12oz including the 9VDC battery! (Not to mention it's the longest title head in the entire catalog!)

## SPECIFICATIONS

Display: .7" LCD  
 DC Volt: 200mV/2/20/200/1000V ±0.5%  
 DC Amp: 20m/200m/10A ±1.5%  
 AC Volt: 2/20/200/750V ±0.8%  
 AC Amp: 2m/200m/10A ±1%  
 Ohms: 200/2K/20K/200K/2M/20M/200M ohm, ±0.8%  
 Continuity buzzer  
 Cap: 20n/200n/2μ/20μF ±4%  
 Freq: 200KHz ±1.5%  
 Temp: -20°C to 1000°C ±5%  
 Continuity buzzer, hFE & diode test  
 Size: 7.5" x 3.3" x 2.2"  
 Battery: Standard 9V, included

DVM8264

Multimeter With Temp, Capacitance &amp; Frequency

\$39.95

## Dual Display DMM With RS232 Output

- ✓ RS232 output to your PC!
- ✓ Manual/auto range
- ✓ Temperature range
- ✓ Capacitance range
- ✓ Diode, transistor & continuity
- ✓ Analog bar graph
- ✓ Full 3¾ digit display

## Digital Readout, Analog Bargraph, PLUS RS232 Output!

We gave you an inexpensive pocket DMM for under 20 bucks... Then we gave you a super multi-purpose professional multimeter that measured virtually everything for 40 bucks... What's next you ask? You won't believe it!

Everything PLUS RS232 serial data output for connection to your PC! That's right, now you can measure, control, and store your DMM and its readings on a graphical display on your PC!

Features both auto and manual ranging with a large 3¾ digit display with a 38 segment analog bargraph. RS232 connection requires a standard serial port on a PC. Includes all software, cable, probes, battery, and case.

DVM345DI

Dual Display Multimeter With RS232 Output

\$74.95

## Wired &amp; Tested

## SPECIFICATIONS

Display: 3¾ Digit LCD, backlight, 38 segment analog bar graph, with data hold  
 DC Volt: 4/40/400/1000V ±0.5%  
 DC Amp: 4mA/400mA/10A ±1.2%  
 AC Volt: 4/40/400/750V ±1.2%  
 AC Amp: 4mA/400mA/10A ±1.5%  
 Ohms: 2400/4k/40k/400k/4m/40m ohm ±1.2%  
 Continuity buzzer, diode test, hFE test  
 Cap: 4nf/400nf ±4.0%  
 Temp: 0-400°C, 401 to 750°C ±3.0%  
 RS232: DB9 serial with Windows software  
 Size: 78mm x 186mm x 35mm  
 Battery: Standard 9V, included







**NEW!**

**KIT**

Wired & Tested  
(Export Only)

Today's Conveniences...  
Tomorrow's New Headaches!

## Tri-Mode Vehicular Keyless Entry Test Set

- ✓ Troubleshoot vehicular keyless entry systems!
- ✓ Detects and verifies keyfob to vehicle signals as well as vehicle to keyfob signals!
- ✓ Separate visual indicators for the presence of all three signals!
- ✓ Can also test building entry systems and wireless IR/RF controls!

Ahh... the conveniences of today's technology in our vehicles! Voice recognition, LED's instead of incandescent bulbs, on-board computers, on-board hard drives, automatic parallel parking, automatic radar cruise control, and of course, keyless entry! They make it so simple, just have the "key" (called a key fob) somewhere in your pocket or purse, get near the vehicle, it knows that you are you! Touch the door handle and the vehicle unlocks. Get in and just touch the start button and the vehicle starts. You have yet to use a key through the whole process! It's so great... until it doesn't work!

First, let's cover a few basics about vehicular keyless entry. In general (and there are some exceptions), the vehicle itself generates a signal at 125 kHz. This is the signal that is used to "talk" to your individual key fob. In regards to automatic touch unlocking of the vehicle, your key fob detects the vehicle's signal at 125 kHz and "returns" the signal with its own signal at 315 MHz. If the embedded codes of the vehicle and your key fob match, you're in! Once you have "unlocked" the vehicle, and are inside the vehicle, the presence of your 315 MHz key fob is received by your vehicle, and once again, if the codes match, you can start the vehicle. Some manufactures also use Infrared (IR) control in their key fobs to add additional user control functions to the vehicle. In that case, the key fob generates a modulated IR signal that is received by the vehicle's IR detectors placed throughout the perimeter of the vehicle.

Just like the days of "plugs, points, and condenser" are over, so are the days of having the hardware store grind out a spare key for your car! Now when your keyless access system doesn't work, you need to accurately detect what part of the system is malfunctioning. This could be anything from a dead battery in the key fob, a "brain-dead" key fob, to malfunctioning sensors or system components in the vehicle. The WCT3 was designed for both the car dealer service shops as well as the consumer. Until now there was no way to determine where the system was failing.

Testing your system is easy. To test the complete 125 kHz/315 MHz communications path just stand close to the vehicle with the WCT3 and your key fob in hand. One push to the test button on the WCT3 will detect and display the presence of the vehicle's 125 kHz signal, and if they "handshake" will also detect and display the presence of your key fob's 315 MHz return signal. You can independently test key fob only signals (panic, lock, trunk, etc.) by holding the key fob near the WCT3, holding the test button, and pushing the function button on the key fob. The same functionality testing can be done with IR key fobs. The modulated IR signal is detected and will illuminate the IR test LED on the test set. It can also be used to test other non-vehicular access systems. The majority of building key fob access systems also utilizes 125 kHz. Just hold the test set near the building access sensor and you should detect the presence of the 125 kHz signal. That will help you troubleshoot door access locations that are not working. It gets even better... you can even use the WCT3 to test other 315 MHz, 433 MHz, and IR remote controls to verify signal output of the remote. We should rename this the handy dandy full function remote control tester!

The WCT3 test set is housed in a compact 2.25" x 4.6" x 9" case and is powered by a standard 9DC battery. The WCT3 test set is available as a do-it-yourself hobby kit or factory assembled and tested. If you're a car dealer, independent service shop, or simply an owner of a newer vehicle with keyless entry, you can't afford not to have a WCT3! (Our next kit should be a sensor and alarm that says "hey dummy, you left your key fob in the cup holder of the vehicle and are about to lock your keys inside!")

WCT3  
WCT3WT

Tri-Mode Keyless Entry Test Set Kit  
Tri-Mode Keyless Entry Test Set Kit, Factory Assembled & Tested

\$59.95  
\$99.95

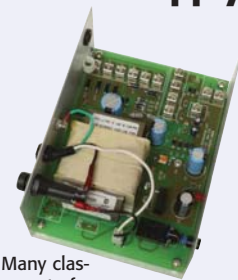


**KIT**

## Vintage Radio Battery Eliminator Power Supply

- ✓ Powers virtually all antique battery-powered radios
- ✓ Easy connections to your equipment!
- ✓ Runs on either 120VAC at 60Hz or 240VAC at 50Hz

Bring Your Classic  
Battery-Powered Radios  
Back From the Dead!



Collectors often come across great deals on antique battery-powered radios, but then find themselves faced with the challenge of how to power them. Many classic radios operated on batteries only, and in many cases a series of three batteries for each radio were required! The A battery provided power to the filament of a vacuum tube, the B battery provided the plate voltage for the tube, and the C battery provided bias to the control grid of the tube. The new ABCE1 Battery Eliminator gives you an easy way to replace all these batteries with a simple household AC power connection (choose between 120VAC or 240VAC with a simple jumper selector) and resurrect your vintage antique radios! The ABCE1 provides the required operating voltages, and all supplies are isolated from each other and input line voltage, allowing for easy interconnection for virtually any required configuration. All output voltages can be connected using convenient screw terminals, making hooking up your equipment a snap! For added protection, the input line is fused for 1A with an externally accessible fuse.

The ABCE1 is housed in a sturdy, fully enclosed, 3"x5"x7", aluminum case and weighs only 2.75lbs. (Before you ask, you wouldn't believe what just the custom transformer costs!)

ABCE1

Vintage Radio Battery Eliminator Kit

\$199.95

## Protolab Circuit & Test PC Simulator

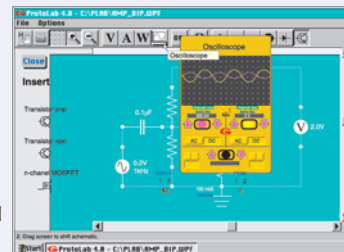
- ✓ Simulate a circuit BEFORE building it!
- ✓ Simple computer interface and operation!
- ✓ Loads of sample circuits to simulate!
- ✓ Great learning tool for engineers!
- ✓ Professional CAD features at a hobbyist price!

Create And Test That Circuit...  
WITHOUT Building It!



Easy to use PC interface. Easily create AC & DC circuits moments after installation with ProtoLab's easy "click and drag" component placement and on-line help. You choose from a complete list of active and passive components, all of which are included. Once built, you can test and analyze your circuit with five virtual instruments (also included).

ProtoLab 4.0 is designed to work as a simulated prototyping lab. Insert components on a grid (similar to a breadboard) then test the circuit using the appropriate test instrument from the tool bar. ProtoLab's prototyping grid area is extensive and can handle a vast array of active and passive components. ProtoLab's pre-designed circuit library includes: MOSFET & transistor amplifiers, bridges, sinewave oscillators, squarewave oscillators, phase shift oscillators, current mirrors, integrators, differentiators, transistor & MOSFET monostables, LC oscillators, tuned collector amplifiers, LC tuned circuits, power supplies, and voltage stabilizers. Components include wires, junctions, grounds, resistors, capacitors, inductors, DC voltage sources, AC voltage sources, DC current sources, AC current sources, diodes, zener diodes, transistors, and MOSFETs. Including: Voltmeter, ammeter, wattmeter, oscilloscope, and ohmmeter. Requires PC based computers. (Not Mac!)



PLAB4

Protolab 4.0 Test Simulator Software

\$49.95



Wired &amp; Tested

### Put A Lab Quality Supply On YOUR Bench!

There's nothing handier than a decent variable DC power supply for the bench. Now you can have a professional lab quality regulated DC supply on a hobbyist budget!

This supply provides a continuously variable DC output of 0-15 volts with a continuously variable DC current limiter up to 3 amps! Dual easy to read backlit displays are provided for both voltage and current. The power supply has low voltage and current ripple for an extremely clean output to power your projects.

Outputs are brought out to standard IEC1010 connectors to allow easy connections to your favorite test probes or clip leads. Besides current regulated, the output is also fuse protected.

## 0-15 VDC 3A Lab Power Supply

- ✓ Variable output, 0-15VDC!
- ✓ Variable current limit up to 3A!
- ✓ Precise backlit LCD displays

#### SPECIFICATIONS

Output voltage:	0-15VDC, adjustable
Output current:	0-3A, adjustable limit
Ripple voltage:	100mV
Ripple current:	5mA
Input power:	110/120VAC, 60Hz
Output connections:	IEC1010 universal
Protection:	Current limit and fuse
Dimensions:	8 7/16" x 6 3/4" x 3 3/4"
Weight:	7.75 lbs
Case:	Heavy duty steel, gray/white

PS1503SBU

0-15 VDC 3A DC Lab Power Supply

\$82.95

## Analog Sound Level Meter

- ✓ Measures 50 to 126 dB!
- ✓ 7 separate ranges!
- ✓ ±2dB accuracy!

So, How Loud Is It... Really!

Wired &amp; Tested

SPECIFICATIONS	
Range:	up to 126dB
Positions:	60, 70, 80, 90, 100, 110, 120dB
Load impedance:	1kohm min.
Distortion:	Less than 2% at 1kHz, 0.5V
Microphone:	electret condenser microphone, omnidirectional
Precision:	± 2dB at 144dB
Weighting:	A or C
Response:	slow or fast
Output signal:	max. 1V deviation at 1kHz for the entire range
Power supply:	1 9V battery (included)
Battery test:	OK indication between 7 and 10.5V
Battery life:	110 operating hours (alkaline batteries)
Dimensions:	6.3" x 2.4" x 1.7"
Weight:	6.5oz

So you're at a concert and you want to know exactly how loud it is... You're at work and you're wondering if the ambient noise is below the safe level... You're really wacked out and you want to know if a jet engine at 10 feet really exceeds the threshold of pain... This little analog sound level meter is for you!

It uses A and C weighting filters to accurately simulate the actual listening capability of the human ear! The easy-to-read analog display allows for accurate measurement of environmental noise across a wide range (50 to 126dB).

Useful to measure sound levels in industrial and office settings, traffic/noise reduction studies, or to ensure your noise generation is in compliance with local ordinances. This meter features an omnidirectional condenser microphone with +/- 2dB precision at 144dB. Over 100 hours of operation from one 9V battery (included). From Velleman. (Also helpful in proving to your landlord exactly how annoying the tenants upstairs are!)



AVM2050

Analog Sound Level Meter

\$38.95

Wired &amp; Tested

Digital Precision Accuracy... Yet Affordable!

## Digital Sound Level Meter

- ✓ Measures 30 to 130 dB!
- ✓ ±1.5dB accuracy!
- ✓ Precise digital readout!

SPECIFICATIONS	
Level range:	low: 30-100dB, high: 60-130dB
Accuracy:	±1.5dB 94dB @1kHz
Frequency range:	31.5Hz to 8kHz
Frequency weighting:	A, C
Time weighting:	fast, slow
Power supply:	1 x 9V battery (6LR61, included)
Operating temperature:	0°C ~ +40°C (Less than 80% RH)
Storage temperature:	-10°C ~ +60°C (Greater than 70% RH)
Dimensions:	8.27 x 2.17 x 1.26"
Weight:	8.11oz

When you have to go the next step up from the inexpensive AVM2050 analog meter, here you go! Designed for industrial and professional use to meet or exceed IEC651 type 2 standards.

Great for measuring sound levels when you need that extra digital precision, whether its industrial or office, an official survey, or you just want to make sure you are in compliance with local ordinances. This digital meter will give you high quality readings anywhere in the 30-130dB range.

The digital max hold and data hold display features will come in handy when logging your readings for compliance reports. Don't be fooled by its small ergonomic design, the DVM805 is a high quality meter designed for the most stringent applications. Includes A and C frequency weighting, fast and slow time response, and .1dB of resolution. Powered by one 9V battery (included), from Velleman. (Now, if he still doesn't believe it, you can even peak hold the noise from upstairs and show the landlord!)

DVM805

Precision Digital Sound Level Meter

\$109.95

## Prototype Design Breadboards

- ✓ Color coded design for easy breadboarding!
- ✓ Guaranteed for 5,000 insertions!
- ✓ Aluminum ground plates for high speed and low noise designs!
- ✓ Additional jumper wire kit available

Prototype it without Soldering it!

If you're looking for prototype breadboards for your design and engineering projects, we've got you covered! These breadboards are the highest quality design that are guaranteed for 5,000 wire and component lead insertions!

Each block is a premium non-warping design with non-conductive self adhesive backing. Aluminum ground plates are used to provide the best prototyping of high speed and high frequency designs while maintaining low noise. Each breadboard has an easy to read color coded letter/number matrix to make tie point connection a breeze. Designed for components and wire jumpers with 20-29 AWG (0.3-0.8mm) wire leads.

The WBU206 is mounted on an aluminum back plane with rubber bench top rubber feet. 4 coded binding posts are provided for power or signal connections of your choice. 3 terminal strips, 5 bus strips, 2,390 tie points are included and provide a breadboarding area of 6.9" x 5.8".

Its smaller brother, the WBU202 breadboard block, consists of 1 terminal strip, 2 bus strips, 830 tie points, and provides a breadboarding area of 6.5" x 2.1". Order jumper wire kit WJW70 that includes 140 various jumper wire pieces in 5 different sizes. Each jumper is color coded and insulated with preformed ends.

WBU202  
WBU206  
WJW70

Prototype Breadboard, 1 Terminal Strip, 2 Bus Strips, 830 Tie Points  
Prototype Breadboard, 3 Terminal Strip, 5 Bus Strips, 2,390 Tie Points  
Jumper Wire Kit, 140 Pieces

\$8.95  
\$29.95  
\$6.95



WBU202

WBU206



WJW70





## Cable Polarity Checker



- ✓ Checks continuity & polarity!
- ✓ Auto power off!
- ✓ Pushbutton operation!

*Which Way Should It Go?*



We've all been there. You're running speaker wires through your house and you don't know which wire is which for polarity. Well, this neat little kit takes care of it! Simply hook up the remote board to one end and the main board to the other end. LEDs show you opens, shorts, polarity OK, and polarity reversed!

It's that simple! A lot of uses besides speaker cables, think about it! Runs on a standard 9V battery (not included). Features auto power-off for long battery life. Main board measures 2.2" x 1.6" while the remote board measures 1.6" x .3". From Velleman.

MK132

Cable Polarity Checker Kit

\$8.95

## Audio Signal Generator

- ✓ Quick and easy signal generator!
- ✓ Sine, triangle, square, and integrator signals!
- ✓ Standard 1kHz signal
- ✓ Adjustable output level
- ✓ Simple 9V battery operation

*The Quick Answer That Works Great!*



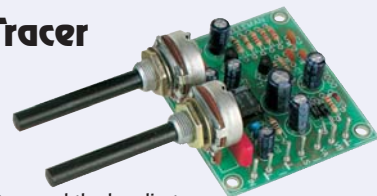
If you've ever worked on amplifier circuits, troubleshooting them is nearly impossible without a signal generator to inject a signal to the input of a stage or device in a circuit. There are expensive lab quality signal generators out there that work very well. But this little generator gets the job done at less than a fraction of the price!

A quick and easy generator provides approximately 1kHz fixed waves with output adjustable from 0 to 100mVrms. Choose sine wave, triangle wave, square wave, or integrator. Powered by a standard 9V battery (not included). Measures 2.2" x 1.6". From Velleman.

## Signal Generator & Tracer

- ✓ Audio generator and tracer!
- ✓ Adjustable output!
- ✓ Adjustable gain sensitivity!

*Generate AND Trace!*



This little circuit is the ultimate troubleshooter... and the handiest thing to have around on your bench! It makes it a breeze to inject a signal into any amplifier in repair to trace the circuit. Likewise, it makes it easy to trace a signal to hear it in a speaker!

The generator portion generates a 1kHz tone with an output impedance of 1.5K ohm. The output level is adjustable from 0-2.5Vrms. The tracer is a high gain amplifier that has an input impedance of 50K ohm with a gain of 40dB! It has an adjustable sensitivity from 3.5mV to 10Vrms. It can also be used as a stand-alone monitor amp. Audio output is half a watt into an 8 ohm speaker. Runs on 7-9VAC or 9-12VDC. Measures 2.4" x 2.1". From Velleman.

MK105 Audio Signal Generator Kit



\$6.95

K7000 Signal Generator & Tracer Kit



\$21.95



*The Handiest Light You Will Ever Have!*



Flex your kit building skills with this quick and easy little kit, and you'll be rewarded with a super-cool high-powered LED flashlight that is small enough to fit on your keychain! With 2 extra bright high-power white LEDs this little kit packs a punch! Use it to find elusive keyholes in the dark, or anytime you need to brighten up the situation. This kit also boasts a built-in strobe light effect in case you need to draw attention to yourself fast! Use it in case of emergencies or simply to annoy co-workers. Efficient operation means ultra-long battery life, up to 10 hours of continuous operation on a single 12V battery! (V23GA or compatible battery, not included.) To further conserve power, the unit features auto-battery timer shutoff, and a red warning LED when the battery gets low! Dimensions: 2.4" x 1.6" x 0.6" Weight: 1.1oz. (with battery). From Velleman.

## Bright LED Keychain Light

- ✓ Bright white LED technology!
- ✓ 2 high power LED's!
- ✓ 11 year LED life!
- ✓ Automatic battery management!

MK143

Bright LED Keychain Light Kit

\$12.95

## Professional Audio Cable Tester

- ✓ Tests virtually all audio cables!
- ✓ Tests each conductor!
- ✓ LED and buzzer continuity test function!
- ✓ 9-way selector switch for cable types
- ✓ Runs on standard 9V battery
- ✓ Built-in battery check
- ✓ Extremely rugged metal case resists field abuse

**Wired & Tested**

*Solve A Lot Of Problems...  
And Put Away Your Multimeter!*



Audio cables, man if there was only a standard! It used to be a breeze, XLR for professional balanced audio, 1/4" for mono audio and headphones, and RCA for line level unbalanced audio. Technology changes, and so did connector types!

Jack	Speakon®	Phono
1=Sleeve 2=Tip 3=Ring four remove	1=1 2=+1 3=-2 4=+2	1=Screen 2=Hot
1/4" TS Mono to 1/4" Mono	1/4" TRS to 1/4" TRS	
1 Sleeve 2 Tip 3 Ring	1 Sleeve, 3 Ring 2 Tip 1 Sleeve, 3 Ring (Shorted with sleeve)	1 Sleeve 2 Tip 1 Sleeve, 3 Ring
XLR Balanced to XLR Balanced	XLR Unbalanced to XLR Unbalanced	
Pin 1 Pin 2 Pin 3	Pin 1 Pin 2 Pin 3	Pin 1, Pin 3 Pin 2 Pin 1, Pin 3
1/4" TS Mono to XLR Unbalanced	1/4" TRS to XLR Balanced	
1 Sleeve 2 Tip 3 Ring	Pin 1, Pin 3 Pin 2 Pin 1, Pin 3 (Shorted with sleeve)	1 Sleeve 2 Tip 3 Ring

The days of standard zip cord for speakers is gone, 1/4" headphone jacks are rare, balanced audio has to plug into unbalanced audio and vice versa, and then of course there are DIN plugs, Speakon® connectors, and various other connectors! It may never end, but this handy audio cable tester will make sure your connections are proper every time!

Testing a cable is a breeze! Plug one end of it into the appropriate jack on the left side of the test box. Plug the other end of the cable into the other appropriate jack on the right side. Then select the rotary switch to "1" to test the connection of pin-1 of the cable. If a green LED lights there is a good connection of pin-1 with a yellow LED lighting above the connector used on the right side. No LED's indicate an open or floating pin-1.

Continue the same procedure by selecting "2" for pin-2, etc. until all contacts have been checked. If the Ground LED illuminates there is a connection from the selected pin to ground/shield/chassis. Two banana jacks are also provided to check test probes, AND to use the box as a continuity tester for other cables. Test probes are included! Runs on a standard 9V battery. Measures 7.5" x 3.5" x 1.5". From Velleman.

VTTEST15

Audio Cable Tester

\$44.95



Wired &amp; Tested

**We Just Made  
Space On Your Bench!**

## 3-In-1 Multifunction Lab Unit

- ✓ Digital multimeter!
- ✓ Regulated power supply!
- ✓ Temperature controlled soldering station!
- ✓ RoHS lead-free soldering compatible!
- ✓ Everything all in one unit!

Anyone who has worked with electronics knows the hassle of dealing with various bulky devices needed to get the job done. This brand new 3-in-1 lab kit gives you the most commonly required tools in one amazing compact package!

Great for your home bench where there's just so much space to go around! For the school or technical institute that needs to equip multiple benches with the basics, the 3-in-1 lab can't be beat! Not only for size and efficiency, but for cost as well!

Take a close look! On the left is a multi-function 3 1/2 digit digital multimeter. Its large backlit LCD display can be seen from anywhere on your bench while you're working. The DMM also features built-in transistor, diode, and continuity testing, data hold, and audible alarm. A great DMM that any bench could benefit from.

Next up, the regulated lab DC power supply. Switch selectable ranges of 3V, 4.5V, 6V, 7.5V, 9V, and 12V provide a continuous duty current of 1.5 amps with a 2 amp peak! Features both overload protection and overload indication. Full size color coded binding posts are provided front and center for connection to your project under test.

To the right we have a high quality temperature regulated soldering station. One would think there's not much to say about a soldering station, but that's not the case here. The 24V low voltage iron features an isolated ceramic 48 watt temperature controlled element. Front panel control gives you variable tip temperature control from 150°C to 450°C (300°F to 840°F) and LED indication of power-on and heating-on. A pull-out tip cleaning sponge is conveniently located right up front. Unlike stand alone soldering irons, a protected iron holder/stand is attached to give you a convenient place to store the iron without the possibility of burning yourself! It gets even better... this soldering station is RoHS or Lead-Free compatible! What does that mean? Lead-Free solder requires a higher melting and flow point and requires the soldering station to maintain that temperature throughout the soldering task. Just set it for the higher temperature (typically 350 to 400°C) and this station is designed to maintain that temperature. Replacement tips and irons are also available.

DIGITAL MULTIMETER	SPECIFICATIONS	SOLDERING STATION
<ul style="list-style-type: none"> <li>• 3 1/2 digit backlit LCD</li> <li>• Automatic polarity indication</li> <li>• DC voltage: 200mV to 600V in 5 steps</li> <li>• AC voltage: 200V and 600V</li> <li>• DC current: 200µA to 10A in 5 steps</li> <li>• Resistance test: 200 ohm to 2Mohm</li> <li>• Diode, transistor and continuity test</li> <li>• Data-hold function and buzzer</li> <li>• Input power: 9V battery, included</li> </ul>	<ul style="list-style-type: none"> <li>• Selectable output voltages: 3, 4.5, 6, 7.5, 9, 12 VDC</li> <li>• Output: 1.5A (2A peak)</li> <li>• LED overload indication</li> <li>• Output on/off switch</li> <li>• Very low ripple</li> <li>• LED power indication</li> <li>• Input power: 110VAC, isolated power supply</li> </ul>	<ul style="list-style-type: none"> <li>• Low-voltage iron: 24V ceramic 48W heating element with temperature sensor</li> <li>• Temperature range: 150-450°C</li> <li>• Lead-free soldering possible</li> <li>• Sponge and spare bit included</li> <li>• Input power: 110VAC, isolated power supply</li> </ul>

It gets even better! Although the 3-in-1 lab is a multi-function unit, each component is electrically isolated and utilizes a separate power supply, for the ultimate in safety, circuit protection, and reliability! The DMM features its own battery supply to keep it totally isolated from the AC supply!

What's included? The 3-in-1 lab, high quality test probes for the DMM, 9V battery for the DMM, solder sponge, spare solder tip, AC power cable, and a comprehensive user manual. It simply includes everything you need to get started! From Velleman Instruments.

LAB1U	3-in-1 Multifunction Lab, Factory Assembled & Tested	\$134.95
B1TC10N1	Replacement Solder Tip, 1.6mm Round	\$2.95
B1TC10N2	Replacement Solder Tip, .8mm Round	\$2.95
B1TC10N3	Replacement Solder Tip, 3.0mm Slant Edge	\$2.95
B1TC10N4	Replacement Solder Tip, 2.0mm Slant Edge Pointed	\$2.95
LAB1SCS	Replacement Plug-In Soldering Iron Unit	\$13.95

## Temperature Controlled Soldering Station & Fume Extractor

- ✓ Integral fume extractor quickly removes smoke and fumes.
- ✓ Built-in high efficiency, low noise brushless exhaust fan
- ✓ Easy to replace activated carbon filter absorbs noxious flux and lead fumes
- ✓ Variable electronic temperature controlled soldering station attached
- ✓ Ergonomic mini-handle soldering iron
- ✓ ESD safe, insulated ceramic heater, spike free zero voltage switching
- ✓ All-in-one extremely convenient package, ready to use on your bench

**Automatic Fume  
Extraction At  
EVERY Work  
Station!**

We've all sat at the bench and soldered some quick circuits. We have also sat at the bench and worked on a big project, soldering for hours at a time, not thinking twice about the fumes. The big culprit is the rosin core center in electronic solder. This flux is an integral part of the soldering process to prepare the work surface and the components being soldered.

Without getting overly technical, flux is composed of rosin-resin and mixed with an activator (halogen organic agent) that, as the temperature increases, generates noxious components such as salicylic acid and pinene commonly seen as smoke rising from the work area. High content ratios of resin generate phenol (C6H5OH) and the activators can emit hydrogen chloride (HCL) and other compounds. This is stuff you really don't want to constantly breathe while you're soldering! Not only do you not want to but there are occupational hazard standards controlling the permissible amounts of such compounds in the work area. The 456DLX can not only save you and your health from the fumes, but help you meet these standards!

Designed for use on the factory floor, in R&D, and by hobbyists in their homes, the 456DLX provides an economical, space saving, and super efficient method to eliminate the hazard of solder fumes. It also improves the work place by eliminating headaches, nausea and eye irritations often associated with exposure to these fumes. A high performance fan together with an easy to replace activated carbon filter does a super job. The activated carbon has a surface area of 1250 m square/gram and the total weight of the filter is 500 grams/meter square. The dust collection efficiency of the filter is 30% while the carbon filter can absorb up to 30% of its carbon weight in noxious components. In other words, it works! When we looked for an ideal solution we were extremely conscious of limited bench space. Therefore, the fume extractor couldn't take up much more space than the soldering station we were using. The answer was simple...have both units in one! The 456DLX features a variable electronic temperature controlled soldering station built right in!

Variable control gives you a wide temperature of 500-800° F. The iron has a new ergonomic mini-handle for comfort and ease. Comes complete with a precision 1/32" soldering tip. Additional interchangeable tips are available in a variety of sizes. That's right, put your old soldering station or soldering iron away and use just one product for both soldering and fume extraction.

A protected iron holder and sponge tip cleaner are also attached to the side of the station making it the perfect all-in-one soldering tool. If you're looking to control the hazardous fumes of soldering, looking for a super high quality temperature controlled soldering station, and staying on a budget, the 456DLX is for you! From Xytronic. (You will be amazed when you see the fumes from each solder connection get sucked away from your face!)

456DLX	Temperature Controlled Soldering Station/Fume Extractor Station	\$119.95
98804	Replacement Interchangeable Tip, 1/32" For 456DLX and 137ESD	\$7.95
98805	Replacement Interchangeable Tip, 1/64" For 456DLX and 137ESD	\$7.95
98806	Replacement Interchangeable Tip, 1/16" For 456DLX and 137ESD	\$7.95
98807	Replacement Interchangeable Tip, 5mm Right Angle Chisel For 456DLX and 137ESD	\$11.95







## Variable Temperature Soldering Station

- ✓ Variable temperature controlled!
- ✓ 5 to 40 Watt
- ✓ Built-in holder and tip cleaner
- ✓ Interchangeable tips

Here's the ideal entry level soldering station for building your Ramsey kit - and for your bench! Made by Weller, the leader for decades in electronic soldering equipment. The WLC100 is the perfect soldering station for the professional or serious hobbyist who requires higher performance than a standard soldering iron but doesn't want to pay a fortune! The WLC100 soldering station provides variable power from 5 to 40 watts for precise tip temperature control.

Just like the expensive industrial soldering stations! A built-in holder and tip cleaning sponge are included. A pre-tinned 1/8" screwdriver tip comes with the station. If you're looking for quality on a shoestring budget, the WLC100 is for you! Operates on 120VAC, 60Hz. From Weller.

*Don't Damage Your Board...  
Control The Temperature!*



### WLC100 Weller Soldering Station, 5-40 Watt Temperature Controlled

ST2	3/32" Screwdriver Tip	\$54.95
ST3	1/8" Screwdriver Tip	\$6.95
ST4	3/16" Screwdriver Tip	\$6.95
ST6	1/32" SMT Screwdriver Tip	\$6.95

## Technician's Solder

- ✓ Standard Electronics 60/40 blend!
- ✓ Lead-Free RoHS 96.5/3.5 blend
- ✓ .032" diameter, 1 pound spool

Whether it's for building your new kit or just for your bench, this is the perfect solder. Don't destroy your kit investment by using the wrong solder or solder with low quality flux core. This solder is made exclusively for electronic applications by one of the leading manufacturers. The size is perfect for board soldering, thru-hole, SMT and more. Available standard or RoHS lead-free compliant. Lead-free is 96.5%TN, 3%AG, .5%CU (not just TN/CU!). 1 lb spools.

RTS12	60/40 Electronics Solder, 1 Pound	\$24.95
RTS16	96.5/3.5 RoHS Lead-Free Solder, 1 Pound	\$59.95



## Solder Sucker

- ✓ Eliminate PC board damage!
- ✓ Cleans out holes with ease!

For 5 bucks, this will probably be the most valuable tool you've ever bought! Even the most experienced solderer has problems removing components from PC boards without one! One hand loading and one hand operation. Just heat up the joint, place the special tip over the joint, and squeeze the trigger. Solder is sucked right from the board and even plated-through holes! It's that easy!

SS01	Solder Sucker	\$4.95
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## Helping Hands & Magnifier

- ✓ Built-in magnifier!!
- ✓ Alligator clip holders grip anything!

So you're trying to hold that small board, while holding the transistor you're trying to solder in, and holding the soldering iron, and holding the solder. Wait a minute, that's 4 hands! Not a problem! Just clip the board, junction or component you're working on onto the bench holder, swivel it wherever you want it, and go to work! What, you can't see? It even has a built-in magnifier!

HH3	Helping Hands & Magnifier	\$6.95
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## Bench Gooseneck Magnifier

- ✓ 3 1/2" magnifier!
- ✓ 19" flexible gooseneck!

When you're working with small surface mount components (SMT) there's nothing like a stronger set of eyes! Well we found the perfect, and incredibly economical solution! This large 3 1/2" magnifier is attached to a 19" gooseneck that stays right where you put it. And that is usually between your eyes and the PC board you're soldering! Heavy duty cast bench clamp mounts to any bench, desk, or counter top.

VTMG5	Bench Gooseneck Magnifier	\$8.95
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## Magnifier Tweezers

- ✓ The perfect 2-in-1 tool for SMT!
- ✓ Great for your tool box!

When working with SMT components a good pair of tweezers is a must. And as you know, a good magnifier is also a must. So what do you keep in your tool box to solve THAT problem? Simple, this super handy combination tweezers and magnifier!

The 1" magnifier is mounted on a slick 2 1/2" chrome handle with a fold-out precision tweezers. Focal point for the magnifier is matched to the tweezers point for easy use.

VTMG7	Magnifier Tweezers	\$2.95
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VisorLight

OptiLoupe

OptiVisor

*See Those Small Parts...  
With Ease!*

## OptiVisor Headband Magnifiers

- ✓ See those tiny parts with ease!
- ✓ Professional quality
- ✓ Add-on light and swivel eye loupe
- ✓ A must-have for SMT components!



Probably the handiest helper you can have for working with small electronic parts. When you need to see a close-up view, simply flip the visor down. When done, flip it back up! Fits over your standard glasses. Made in the USA by Donegan Optical and available in 2.5x or 3.5x diopter power.

Additional 2.5x flip up OptiLoupe attaches to one side to provide an additional 2.5x magnification for those really hard to see items! Left in the dark? No problem, the VisorLight clamps to the OptiVisor to provide 6,000 candlepower of Xenon light (operates on 2 standard AA batteries not included) in a battery pack that can either be headband or belt-clip mounted. (I'm over 40, and therefore...these are the greatest things ever invented!)

RTS26	OptiVisor 2.5x Headband Magnifier	\$38.95
RTS25	OptiVisor 3.5x Headband Magnifier	\$39.95
RTS24	OptiLoupe Additional 2.5x Flip Up Screw-On Eye Loupe For OptiVisor	\$9.95
RTS23	VisorLight For OptiVisor, 10" Cord For Headband Mounting	\$22.95
RTS22	VisorLight For OptiVisor, 42" Cord For Belt-Clip Mounting	\$22.95



### Working With SMT? Protect Those Components!

We've discussed tweezers and magnifiers while working with SMT components. Working with some highly sensitive components, our engineers asked for some ESD safe tweezers. We looked, we found, and now that they're all set, here they are for you! This set of 4 non-conductive tweezers are perfect for any static sensitive devices you may be working on. And...they are priced right! (These are way beyond Top Sellers! Even beyond way beyond!)

VTTWSET2

Non-Conductive Tweezers Set

\$3.95

## Magnetic "Pick-Up" Tool

- ✓ Screwdriver-style handle
- ✓ Extends to 16"
- ✓ Pick up those dropped parts!



We've all been there: you drop something through a grating, in a small crack, etc. You strain and stretch but your prize is just out of reach! Well strain no more true believer, here is your solution!

This handy tool stretches out to approximately 16" and is tipped with a powerful magnet, allowing you to retrieve your lost metal items! (Remember that MacGyver episode where he magnetized a metal pole to retrieve some lost keys when they fell through a sewer grate?!)

900017

Magnetic Pick-Up Tool

\$3.95

## 5" Precision Flush Cutters

- ✓ Micro tips for precision cutting!
- ✓ Copper: 16 AWG
- ✓ Get those hard-to-reach leads!
- ✓ Ergonomic cushioned grips



Normally I wouldn't spend much time writing up a 6 buck pair of dikes, but these are an incredible bang for the buck! When working with PC Boards it's not only important to have a pair of cutters that are sharp, but that cut flush to the edge. Extremely narrow tip reaches into highly restrictive areas and cuts cleanly every time! Features ergonomic green cushioned grips for easy cutting. These are durable enough for a long life of cutting! (Compare to the \$45 name brand!)

200071

5" Precision Flush Cutters

\$5.95

## Student Tool Kit

- ✓ Great for Tech School!
- ✓ Easy-to-carry case!
- ✓ All the basics!



This tool kit has all the basic tools for working with electronics. Great for students or beginning hobbyists!

Includes cutter, pliers, tweezers, IC extractor, utility knife, brush, desoldering pump, hex key wrench set, soldering iron, 3 Phillips screwdrivers, and 3 slotted screwdrivers! All this in an attractive and handy zippered case! And most important, unlike the junk tools found in dollar stores, these are high quality! (The screwdrivers don't strip out!)

500016

Student Tool Kit

\$54.95

## 33 Piece Security Bit Set

- ✓ 33 pieces total!
- ✓ The most popular formats!
- ✓ 5 different types of security bits!
- ✓ Handy case included!

**The Handy Bit Set...  
Perfect For Your Tool Box!**



We've all run into them. Those special little screw heads that you can't remove! They are frequently used in electronic equipment to keep you out of it!

Now with this 33 piece set of bits your headaches are gone! Includes standard 1/4" driver bits for secure torx/star, secure hex, secure tri-wing, secure fork and secure four wing, in all common sizes.

Includes a handy carrying case to keep your bits in order. (Now you can remove those "special" screws they don't want you to!)



VTBT5

33 Piece Security Bit Set

\$7.95

## 4 Piece Pick Set

- ✓ Stainless steel
- ✓ Durable construction
- ✓ Easy-grip textured handles



The pick is the most ignored tool in the tool box until you need it, then it's worth its weight in gold! For general electronics they are ideal for separating wires, removing small fuses and "O" rings as well as retrieving washers and loose parts too small to pick up with fingers. But it just starts there! These ultra-sharp picks are perfect for working on PC boards, whether it's scraping off the mask, cleaning out holes, and even cutting traces! Includes one straight tip, one curved tip, and two different angles of hook tips. (These are for circuit boards, electronics, etc. and not for use on your teeth... unless you're Orin Scrivello and have a rather large plant that eats people!)

900205

4 Piece Pick Set

\$5.95

## Needle-Nosed Pliers

- ✓ Extra-thin tapered nose
- ✓ Cushioned grip handles
- ✓ Great for SMT
- ✓ Extra fine tips



Are you working with wires, PC boards or components and need a really good grip?

These pliers will get the job done, even if it's inside a very tight opening! The extremely narrow and thin nose close tight throughout their length. The ultra-thin tip is perfect for working with SMT components. Cushioned green grips mean easy handling and comfort. (The perfect companion to a nice pair of dikes!)

100042

Needle-Nosed Pliers

\$4.95

## Computer Service Tool Kit

- ✓ Includes most computer service tools!
- ✓ Everything you need
- ✓ Zippered carrying case



This tool kit is specifically designed for general electronics as well as computer maintenance! And as we all know, there's nothing more frustrating than pulling a PC apart and not having the proper tools handy!

Includes 5" diagonal cutter, 5" long-nose, multi-crimp tool, tweezers, IC extractor/insertor, soldering iron, desoldering braid, solder, assorted screwdrivers, 8-bit pack, and much more. Tools are high quality and not the duds found in discount stores!

500003

Computer Service Tool Kit

\$52.95

## 100 Piece Security Bit Set

- ✓ Expanded security bit selection!
- ✓ All common standard bits!
- ✓ 2 bit holders and 2 extensions!

With the extreme popularity of the VTBT5 33 piece kit, we went one step further! This set contains 100 pieces and includes all the security bits in the VTBT5 kit and a lot more! Includes the following:

- |                         |                                   |
|-------------------------|-----------------------------------|
| • Phillips bits         | • Clutch bits                     |
| • Pozzi bits            | • Fractional hex bits             |
| • Square bits           | • Dodecagonal star bits           |
| • Flat bits             | • Metric hex with center bits     |
| • Antenna remover bits  | • Fractional hex with center bits |
| • Star bits             | • Wing nut driver                 |
| • Tri-wing bits         | • Socket bit holder               |
| • Star with center bits | • Magnetic bit holder             |
| • Four-wing bits        | • 1" extension                    |
| • Metric hex bits       | • 2" extension                    |



All bits are chrome vanadium construction for long life, and include a very handy custom case. (This 100 piece set took over Top Seller from the 33 piece set!)

VTBT11

100 Piece Security Bit Set

\$12.95





Wired & Tested

*The Size Of A Quarter?  
You Bet!*

Perfect video transmission from a transmitter you can hide under a quarter and only as thick as a stack of four pennies! Transmits color or B&W with fantastic quality - almost like a direct wire connection to any TV tuned to cable channel 59. Crystal controlled for no frequency drift with performance equal to law enforcement models that cost hundreds more!

## The Cubes! Mini Video Transmitters

- ✓ Crystal clear transmission
- ✓ Transmits on CATV channel 59
- ✓ Ultra small for ANY application!

C2000  
C2001

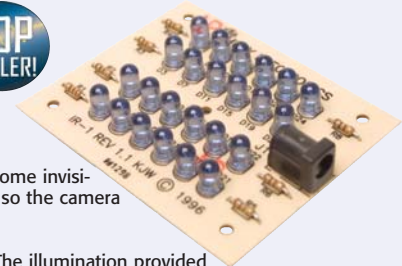
Cube Video Transmitter, Factory Assembled & Tested  
High Power Cube Video Transmitter, Factory Assembled & Tested

\$39.95  
\$49.95

## Infrared (IR) Camera Illuminator

- ✓ Allows you to "See In The Dark"!
- ✓ Amazing illumination!
- ✓ Works with B&W CCD camera
- ✓ Operates on 12-15VDC

*Don't Let Darkness  
Dim Your View!*



Imagine being able to see in total darkness! Well, while you can't, virtually any black & white CCD camera can... with a little help from some invisible infrared light! It's easy with our IR1 Infrared Illuminator! A huge array of 24 high intensity infrared LEDs illuminate a good size area so the camera "thinks" it's daylight!

There's nothing magical about it; CCD sensors are sensitive to IR light that you can't see so to the camera the area seems lit perfectly! The illumination provided is about the same as you would expect from a very bright wide beam flashlight. The illuminator runs on 12-15VDC and is built on a convenient PCB ready to install wherever you need it. One of the neatest things about IR illumination is that it's invisible to the human eye. The illumination will not be detected and can be easily disguised! Order our AC125 power adapter for a simple plug-in connection. Board measures 3" x 2.25".

IR1  
AC125

IR Illuminator Kit  
110VAC Power Supply

\$29.95  
\$9.95



*Don't Miss A Beat...  
Watch 4 Cameras At Once!*

## Automatic Sequential Video Switcher

- ✓ Automatic switching of 4 video sources
- ✓ Variable speed
- ✓ Manual camera selection

Now you can monitor up to four video cameras or other video sources on one video monitor. The AVS10 will sequentially switch between inputs one through four automatically and display the output on a video monitor. Perfect for multiple video camera installations, stores, household surveillance systems, and more. It has (4) RCA inputs for video input and one RCA output connector, so you can use standard consumer video cables. Variable front panel timing control allows you to change the viewing time for each sequential view. Change it from fast to slow depending on your requirements! If you see a view you need to study you can manually select that input for constant monitoring. Operates on 12-15VDC or the power adapter below. Case measures 5"W x 1 1/2"H x 5 1/4"D.

AVS10C  
AC125

Automatic Video Sequencer Kit With Case  
110VAC Power Supply

\$44.95  
\$9.95

## VHF TV Transmitter

- ✓ Transmits on analog TV channel 2-6
- ✓ Broadcast your VCR, DVD player, or CCTV camera throughout your house
- ✓ Learn TV theory while building!
- ✓ Extremely popular TV starter kit!



*Learn How A TV  
Transmitter Works!*



This great little kit allows you to send any audio and video source (like a VCR or TV camera) to any TV set for up to 300 feet. Have your own TV station with YOU playing producer and YOUR selection of programming! And, the nice feature of this kit is that you'll learn just how a TV transmitter works; we explain every part of the circuit from A to Z.

The transmitter is tunable to operate on any standard analog TV channel 2-6. Rear panel RCA connectors accept standard composite video and line level audio. Runs on 12-15VDC or the power adapter below. Includes an attractive custom case for a finished look! Case measures 5"W x 1 1/2"H x 5 1/4"D.

TV6C  
AC125

VHF TV Transmitter Kit With Case  
110VAC Power Supply

\$39.95  
\$9.95



CCD309

*Welcome To The Super  
Resolution Department!*

## Hi-Res Weatherproof Cameras

- ✓ Small super EX-View lipstick or IR Illuminated bullet
- ✓ Universal mounting brackets
- ✓ Weatherproof and easy to connect

The Sony EX-View color CCD sensor in the CCD340 provides the highest resolution and sensitivity available. Formerly only available in larger and much more expensive cameras, the EX-View is perfect when you want the finest picture quality possible. Great for medical coverage, precision inspection, or detailed surveillance use. You've seen bullet cameras before, but never like this! Yes, it's a high quality color CCD camera during the day, but once the light level falls below minimum requirements it automatically changes to an IR B&W camera, and turns on the built-in TEN IR illuminating LED's to see in the dark! Now you don't have to sacrifice color operation because you need total darkness coverage at night. You can have both in one camera! That's not all! Just look at the case. Jet black solid aluminum case that's WATERPROOF to IP57 standards! Yes, that includes temporary complete immersion in water! That means you can mount it outdoors without one of those expensive environmental housings! And that saves a LOT of money! Whether you're looking for a tiny high quality lipstick camera or a waterproof IR illuminated camera, we've got you covered.

CCD340  
CCD309

Color Super Hi-Res Lipstick Camera, EX-View CCD Sensor  
Weatherproof Call Hi-Res IR IR Illuminated Camera

\$189.95  
\$129.95

## POWER ADAPTERS AND POWER SUPPLIES

Power supplies, the one component often taken for granted! They usually come with the equipment, but what happens when they need to be replaced... or you need a second one? Trying to find the direct replacement from the manufacturer is often impossible. Check them out, the handiest selection around!

### AC125 120VAC to 12VDC

- ✓ Input: 120VAC @ 60Hz, 15W
- ✓ Output: 12VDC, 500mA, unregulated
- ✓ Connector: 2.1mm power plug female (C+)
- ✓ For use with most Ramsey kits



AC125 12VDC 500mA Power Adapter

\$9.95

### FMAC 120VAC to 12VDC

- ✓ Input: 120VAC @ 60Hz, 6W
- ✓ Output: 12VDC, 200mA, unregulated
- ✓ Connector: 2.5mm x 12.5mm phone (T+)
- ✓ Uses hard to find connector



FMAC 12VDC 200mA Power Adapter

\$11.95

### PS11 120/240VAC to 15VDC

- ✓ Input: 120-240VAC @ 50/60Hz, .7A
- ✓ Output: 15VDC, 1.6A, 25W, regulated
- ✓ Connector: 2.1mm pwr plug female (C+)
- ✓ Used with Ramsey SGMEVM, FMRMEVM



PS11 15VDC 1.6A Power Supply

\$29.95

### PS21 120VAC to 16VAC

- ✓ Input: 120VAC @ 60Hz, 80W
- ✓ Output: 16VAC, 4A, 64VA, unregulated
- ✓ Connector: 2.1mm pwr plug female (C+)
- ✓ Used with Ramsey PG13



PS21 16VAC 4A Power Adapter

\$19.95

### PS27 120/240VAC to 15VDC

- ✓ Input: 120-240VAC @ 50/60Hz, .5A
- ✓ Output: 15VDC, 1A, regulated
- ✓ Connector: 2.1mm pwr plug female (C+)
- ✓ Used with Ramsey AR2, FM30, FM35



PS27 15VDC 1A Power Supply

\$17.95

### PS28 120VAC to 9VDC

- ✓ Input: 120VAC @ 60Hz, 8.5W
- ✓ Output: 9VDC, 500mA, unregulated
- ✓ Connector: 2.1mm pwr plug female (C+)
- ✓ Used with HPS10SE, HPS40 scopes



PS28 9VDC 500mA Power Adapter

\$9.95

### PS4 120VAC to 15VDC

- ✓ Input: 120VAC @ 60Hz, 22.5W
- ✓ Output: 15VDC, 1A, unregulated
- ✓ Connector: 2.1mm pwr plug female (C+)
- ✓ Used with Ramsey AM25



PS4 15VDC 1A Power Supply

\$17.95

### PWR25 120VAC to 12VAC

- ✓ Input: 120VAC @ 60Hz, 15W
- ✓ Output: 12VAC, 500mA, unregulated
- ✓ Connector: 2.5mm x 11.25mm phone (T+)
- ✓ Used with K2639



PWR25 12VAC 500mA Power Adapter

\$12.95

### SPS18 100/240VAC to 18VDC

- ✓ Input: 100-240VAC @ 50-60Hz, 1A
- ✓ Output: 18VDC, 1.67A, regulated
- ✓ Connector: 2.1mm pwr plug female (C+)
- ✓ For use with the UAM2



SPS18 18VDC 1.67A Switching Power Supply

\$39.95

### SPS183 100-240VAC to 18VDC

- ✓ Input: 100-240VAC @ 50-60Hz, 1A
- ✓ Output: 18VDC, 3.3A, regulated
- ✓ Connector: 2.1mm pwr plug female (C+)
- ✓ For use with the UAM4



SPS183 18VDC 3.3A Switching Power Supply

\$59.95

### PS29 100/240VAC to 12VDC, 1.25A Regulated World Wide

- ✓ Input: 100-240VAC @ 50/60Hz world wide!
- ✓ Output: 12VDC, regulated, 1.25A
- ✓ Connector: 2.1mm pwr plug female (C+)
- ✓ Includes input adapters for world wide power formats!



PS29 12VDC World Wide Switching Power Supply

\$19.95

### SPS15U 100/240VAC to 15VDC, 1A Regulated World Wide

- ✓ Input: 100-240VAC @ 50/60Hz world-wide!
- ✓ Output: 15VDC, 1A, regulated
- ✓ Connector: 2.1mm pwr plug female (C+)
- ✓ Used with most Ramsey kits for overseas use, great world-wide power supply



SPS15U 15VDC World Wide Switching Power Supply

\$29.95

### PSUC100 110VAC to 230VAC Step-Up

- ✓ Input: 110VAC @ 60Hz
- ✓ Output: 230VAC @ 50Hz, 45W
- ✓ Connector: Euro VDE
- ✓ Makes it easy to run your 230VAC equipment with standard 110VAC sources. 100 watts maximum



PSUC100 15-24VDC 70W Regulated Switching Power Supply

\$21.95

### PSS1255 90/264VAC to 12VDC

- ✓ Input: 90-264VAC @ 47/63Hz, 70W
- ✓ Output: 12VDC, 5.8A, regulated
- ✓ Connector: 2.1mm pwr plug female (C+)
- ✓ Great for general purpose 12V high current use



PSS1255 110VAC To 230VAC 100W Step-Up

\$54.95

### PS5U 110/250 Micro 5VDC 1A iPod and USB Charger

- ✓ Input: 110/240, 50/60Hz
- ✓ Output: 5VDC, 1A, regulated
- ✓ Connector: USB-A jack
- ✓ For USB devices, iPods, iPads, cellphones, MP3 players and other devices that use USB power
- ✓ Why pay the big bucks! Device cable not included



PS5U 5VDC 1A iPod and USB Charger

\$5.95

### PSU03RUSA 110VAC to 3, 4.5, 6, 7.5, 9, 12VDC

- ✓ Input: 110VAC
- ✓ Output: 3, 4.5, 6, 7.5, 9, 12VDC, 300mA max, regulated
- ✓ Connector: 2.5 x 3.5, 2.35 x .75, 3.5 x 1.35, 4 x 1.7, 5 x 2.1, 5.5 x 2.5mm
- ✓ Switchable output voltages and universal assortment for general replacement



PSU03RUSA 300mA Multi-Voltage Power Adapter

\$12.95





## 50 Watt FM Stereo Transmitter

- ✓ 50W RF output, continuous duty!
- ✓ FCC Certified under parts 2, 73, and 74!
- ✓ Automatic monitoring!
- ✓ Automatic VSWR protection!
- ✓ Automatic temperature protection!
- ✓ Automatic battery backup!
- ✓ Digital display of all parameters!
- ✓ Runs on 85 to 264 VAC primary power
- ✓ Super efficient yet quiet forced air cooling!
- ✓ Low profile, only two rack units high



*Get On-The-Air... Stay On-The-Air With The PX50!*

### WE LISTENED!

What did we hear? You wanted an ultra-reliable transmitter with automatic protection circuits that would keep you on the air rather than shut you down. You asked for constant diagnostics on all critical circuits and functions. You wanted to use it anywhere in the world, regardless of input voltage or frequency plan. You wanted to have automatic battery backup to eliminate costly standby generators. You asked for more power than 35 watts but wanted it to run extremely cool while remaining extremely quiet. You wanted full digital display of all functions, parameters, settings and alarms.

### FCC CERTIFIED!

Because of the confusion with the FCC equipment requirements you wanted an **FCC CERTIFIED** transmitter, not just a verified transmitter. You told us what you wanted... **CONSIDER IT DONE!** The PX50 Professional LPFM transmitter, designed specifically to **YOUR** specs!

### USE IT ANYWHERE IN THE WORLD!

We made the primary input power universal for virtually any location worldwide. Give it anything from 85-264VAC between 47-63Hz, or 120-370VDC and you're all set. It doesn't get much easier than that! You can also run the PX50 primary power from 12-14VDC. You can even provide 12-14VDC from a battery (or vehicle) and have automatic backup in case of a power failure! Your listeners will never miss a beat! Using it out of the country with different frequency plans? No problem, with the 100kHz spacing, you are good to go with the PX50!

### SIMPLE TO INSTALL AND OPERATE!

Operation of the PX50 is simple and intuitive via the front panel navigation switch matrix. All functions, controls, and status messages are displayed on the 2 line by 20 character vacuum fluorescent display. Installation of the PX50 is a breeze. A standard Type-N connection is provided for RF Output. Balanced (XLR) left and right audio inputs are provided to properly interface with any audio source you have. In addition, BNC SCA/Digital/RDS inputs are provided along with a quick disconnect connector for a 12 VDC standby/back-up power input. It's simple! Just connect your audio sources and antenna, power it up, set frequency and power level via the front panel navigation switch matrix, and you're on the air! It doesn't get any easier!

### KEEPS YOU ON THE AIR!

The PX50 constantly monitors all of the critical circuits within the transmitter and makes subtle adjustments to various circuit parameters depending upon frequency, temperature, power, audio level, and deviation - in short, it's like having a station engineer constantly monitoring and adjusting on-the-fly! Automatic VSWR protection automatically reduces power output until the VSWR problem is cleared. Likewise, if the power amplifier temperature exceeds 70°C, the transmitter will reduce power output until it cools down below 60°C. You can set automatic Power Reduction On Error (VSWR & Temperature errors) to 85%, 75%, 50%, 25% or full disable of the set power. Full power is restored when the error is cleared. You can also set the Power Restoration Timer for the error testing time to match your specific site environment. If the error is cleared within this time, the transmitter is restored to full power for uninterrupted operation! Your station stays on the air, and needless trips to your tower site are eliminated!

### SPECIFICATIONS

Frequency Range:	87.5 to 108.1 MHz
Primary Power Input:	85-264 VAC, 47-63 Hz; 120-370 VDC
Backup Power Input:	12-14 VDC
Broadcast Modes:	Stereo/Mono + SCA and Digital RDS Inputs.
Bandwidth:	±75 kHz when properly adjusted, auto adjust feature prevents overmodulation.
Separation:	Better than 50 dB (typical 60-70 dB)
Crosstalk:	Better than 50 dB.
Asynchronous:	Better than 60 dB.
THD:	Better than 0.3% with processing.
Audio Inputs:	Standard Balanced Inputs +4 dBu/1.228V rms/3.47 V p-p; -10 to +10 dBm range.
Audio Input Impedance:	22K Ohms
SCA and Digital Inputs:	BNC (50 Ohms)
RF Output:	50W Continuous into a 50 ohm load. Fully adjustable from 1 watt to full power.
Harmonic Suppression:	Better than -81 dBc
Display:	2 lines x 20 characters vacuum fluorescent display.
Controls:	5 navigation controls (Up, Down, Left, Right, Enter)
Cooling:	High CFM Fan, dual filtered front intake, rear exhaust.
Over-Power Protection:	Continuously checks for proper power output to within 5%.
VSWR Protection:	Continuous VSWR monitoring, controlled via Power Reduction On Error and Power Restoration Timer settings.
Over-Temperature Protection:	Auto over-temperature control, 70°C max. fixed, controlled via Power Reduction On Error and Power Restoration Timer settings.
Auto Power Reduction On Error:	Automatically reduces power output to 85%, 75%, 50%, 25% or full disable of set power level.
Auto Power Restoration Timer:	Sets the time interval for automatic error checking to clear reduced power modes and to restore full set power level.
Overmodulation Protection:	Auto control of audio modulation levels, on/off.
Audio Frequency Range:	20 Hz to 16 kHz ±1 dB. Steep "brick wall" 16 kHz low phase shift, low pass filter, down 68 dB @ 19 kHz and above.
Adjustments:	Audio input levels, Modulation Level, Power Level, Frequency (in 100 kHz steps), Stereo/Mono mode, Auto Adjust Modulation mode (On/Off)
Regulatory Approval:	Meets or exceeds FCC 47CFR Parts 15.107(b), 15.109(b); FCC CERTIFIED FCC 47CFR Parts 2, 73, and 74 (ID: PF3PX50)
Dimensions:	Standard 2-unit rack-mount case, 19" wide, 14.25" deep, 3.5" high. (Note: The end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the PX50).



PX50

Professional 50W LPFM Stereo Transmitter

\$1995.00

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## Professional FM Broadcast Transmitters & Stations

For years, Ramsey Electronics has been a leading provider of FM and LPFM broadcast transmitters with our PX series. In addition, hundreds of our extremely popular PXB series "Station-In-A-Box" portable FM stations have been deployed around the world. Commercial versions are available for licensed broadcast entities. Visit [www.ramseybroadcast.com](http://www.ramseybroadcast.com). In addition, over 25 custom military and government models are also available directly from Ramsey's Military and Government Division. Visit [www.ramseygov.com](http://www.ramseygov.com) for more information.





# Looking For Pro Audio Equipment?



## ***We've Got It!***

Ramsey Electronics pro audio division is a stocking dealer for the leading manufacturers of professional audio products. From Tascam, Teac, Denon, Furman, Marantz, Allen & Heath, Samson, Shure, Zoom, Galaxy, Sennheiser, Audio-Technica, SKB, Gator, Hartke, Rolls, and everything in-between, we have the latest equipment at the greatest prices around.

In addition, any of our Pro Audio equipment can be integrated into our PXB series FM Stereo Radio Stations making customization a breeze without any delivery delays!

For additional information or to request a full-line Pro Audio catalog, visit [www.ramseyaudio.com](http://www.ramseyaudio.com) or call us at 800-446-2295.

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**For Complete Information!**







# When Your Success Relies On RF Isolation Testing... **Accept No Substitutes!**



- ✓ Over 25 Stock Models With Thousands of Configurations
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## Trust YOUR RF Testing To Our Proven & Patented Technology!

RF isolation is nothing new for Ramsey Electronics. In the early 90's Ramsey took the technician out of the large expensive shielded screen room and put their hands and eyes into a portable "RF Benchtop Screen Room" with our patented STE series RF Shielded test enclosures. With tens of thousands placed in service worldwide, our STE technology has become *the standard* for efficient and cost effective RF testing for practically all wireless components and devices that need to be isolated from the outside RF world.

From the earliest RF pagers of yesteryear to the latest 3G, UMTS, and 4G devices of today, our enclosures have been front row center throughout their development and testing. Our unique engineering designs have met your latest requirements time and time again. *And that's something you don't achieve overnight, or in a month, or even in a year. It takes decades... and years of customer trust.*

With a broad product line of over 25 stock models and our original, and often copied, universal I/O panel, we give YOU the configuration options you need while still maintaining near off-the-shelf delivery. Plus, if you have a unique requirement, our custom shop can take it all the way from concept to delivery in record time. All of this within a budget you can live with!

There is no room for error or lack of experience with RF isolation. If YOUR future relies on absolute RF isolation and testing, we've got you covered! Browse our on-line configurator at [www.ramseytest.com](http://www.ramseytest.com) today, and put your trust in the hands of our decades of experience.



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## HOBBY KIT PRODUCT INDEX

Aircraft Lighting Control .....39	FM Broadcast Amplifier .....7	LED Santa .....8	Sequential Video Switcher .....73
Aircraft Receivers .....38-40	FM Broadcast Receiver .....40	LED Smiley .....11	Signal Generator .....63
AM Transmitters .....6	FM Low Pass Filter .....7	LED Stars .....9	Siren .....17
AM/FM Radio IC Training Course ...57	FM Radio - Portable .....40	LED Superbright Display .....11	Solar Generator Briefcase .....46
AM/FM RF Preamp .....45	FM Stereo Transmitter (Pro) .....75	LED Tea Lights .....11	Solar Labs .....54, 55
Amplifier - 5.8Ghz 1-Watt .....77	FM Stereo Transmitter Kits .....4-6	LED Traffic Signal .....12	Solar Vehicle Trickle Charger .....46
Amplifiers - General Audio .....33	Function Generator - USB .....65	Light Actuated Switch .....23	Solder .....71
Antennas .....44	Guitar Amplifier (Pocket) .....33	Light Computer Control .....13	Solder Sucker .....71
Antennas - Active .....45	Headphone Amplifiers .....33-34	Liquid Level Controller .....19	Soldering Iron Tips .....70-71
Audio Amplifier - 2x30W .....33	Hi-Res Pressure/Elevation Sensor .20-21	Logic Interface Module .....27	Soldering Kits/Courses .....56
Audio Amplifier - 7W .....33	Interface Module, Optically Isolated .26	Love Tester .....9	Soldering Stations .....70-71
Audio Amplifier Modules .....32	Ion Generator .....61	Magnetic Pick-up Tool .....72	Solderless Kits .....54
Audio Amplifier System - 42W .....31	IR Digital Remote Control Interface .27	Magnifiers .....71	Sound Effects Generators .....17
Audio Cable Tester - Professional ...69	IR Handheld Remote .....29	Metronome .....17	Speech Scrambler/Descrambler ....40
Audio Level Meters .....68	IR Illuminator for Cameras .....73	Microphone - Mini-Electret .....34	Steam Engine & Whistle .....18
Audio Pocket Generator .....34	IR Light Audio Communicator .....59	Motion Detector .....19	Stereo Transmitter Companion .....4
Audio Signal Generators and Tracer .69	IR Light Barrier Alarm .....28	Motor Speed Control .....26	Table Tennis Video Game .....60
Battery Pack - Li-Ion .....46	IR Mini Key Fob .....29	Multimeters .....66	Tachometer .....26
Bit Sets .....72	IR Reciever (15-Channel) .....29	Multi-Tone Chime .....18	Telephone Amplifier .....37
Brain Game .....10	IR Remote Control Solutions ....27-29	Music Lights Controller .....14	Telephone Automatic Ring-Downs ...37
Breadboards .....68	IR Thermometer .....22	Nixie Tube Clocks .....15,16	Telephone Kit .....55
Bullshooter-II Digital Voice Storage ...5	Jumper Wires .....68	Oscilloscope - USB PC .....65	Telephone Recorder/Controller ....37
Cable Polarity Checker .....69	Karaoke Audio Interface .....35	Oscilloscopes - Portable .....64	Temperature Sensor .....22
Call-Code Activated Switch .....25	Keyfob Tester .....67	Parking Radar .....22	Tickle-Stick Shocker .....60
Cameras - Sony .....73	Kitchen Timer .....24	PIC Programmers/Experimenters ...47	Timers .....24
Car Alarm Simulator .....60	Lab Unit 3-in-1 DMM/Power/Solder .70	Picks .....72	Tone Encoders/Decoders .....25
CarChip Vehicle Logger .....58	Laser Beam Audio Communicator ..59	Pink Noise Generator .....17	Tool Kits .....72
Chirping Cricket .....17	Laser Light Show .....13	Plasma Spark Generator .....61	Touch Switch .....23
Circuit Test/Simulator Software .....67	LCD Message Board .....48	Pliers .....72	Tri-Field Sci-Fi Meter .....59
Clock, Jumbo Multifunction .....16	Learning Kits/Labs .....49-57	Power Adapters and Supplies .....74	Trip Sensors .....19
Clock, Jumbo Single Digit .....16	LED Animated Bell .....8	Power Saver/Timer .....24	Tweezers .....71-72
Clocks, Nixie Tube .....15, 16	LED Animated Chevron .....12	Power Supply Kits .....46	Universal Timers .....24
Communications Service Monitor ...62	LED Animated Ghost .....8	Power Supply, Vintage Radio .....67	USB Experimenter Boards .....48
Cutters .....72	LED Animated Smiley .....12	QRP Amateur Radio Gear .....42	Van de Graaff Generators .....60
CW Code Practice Oscillator .....41	LED Blinky Eyes .....12	Quiz Table .....10	VHF Recievers (Mini) .....41
CW Keyer .....41	LED Blinky Kits .....11	Radar Gun Kit .....59	VHF Transmitter .....73
Decision Maker .....10	LED Christmas Trees .....8-9	Radio Controlled Car Kit .....55	Vices/Helping Hands .....71
Digital Voice Changer .....17	LED Clocks .....15	Rat Blaster Varmint Repeller .....35	Video Transmitter - Micro .....73
Dimmer .....23	LED Dice .....10	Receiver/Preamps .....43	Voice Activated Switch .....23
DMX Solutions .....30	LED Dual Strobe .....14	Relay Switch-Multifunction .....24	Voice Messaging System - Digital ...36
Doorbell Chime .....18	LED Flickering Candle .....9	RF Actuated Relay .....23	Walking Bug .....10
Doppler Direction Finder .....41	LED Halloween Pumpkin .....8	RF Broadband Amplifier .....7	Warble Alarm (Mad Blaster) .....18
Dripping Faucet Noisemaker .....18	LED Hearts .....9	RF Detector Probe .....63	Watch Dog Audio Alarm .....18
DTMF Remote Control Interfaces ...25	LED High-Power Driver .....14	RF Preamp .....45	Water Sensor Alarm .....22
Electrocardiogram ECG Monitor ....61	LED High-Power Strobe .....13	RF Preamplifier (Assembled) .....63	Wheel of Fortune .....10
Electroluminescent Rope .....8	LED Keychain Light .....69	RF Wireless Link Modules .....43	Wind Speed Anemometer .....23
Electronic Learning Labs .....49-52	LED Light Chaser .....12	Robot Kits .....55	Wire Detector .....22
Encoders, 4-to-16/16-to-4 .....27	LED Magic Message Wand .....14	Roulette .....10	Xenon Tube Strobe .....13
Fiber Optics Voice & Data Kit .....56	LED Rolling Clock .....12	Running Lights Controller .....14	
FM Antennas .....7	LED Rolling Message .....12	SCA Subcarrier Decoder .....40	

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## HOBBY KIT NUMERICAL INDEX

8226 .....58	DVM890F ....66	K3400 .....10	MK108 .....22	PLAB4 .....67	SPS183 .....74
98804 .....70	DVMS2 .....36	K3502 .....22	MK113 .....17	PPS10 .....64	SR3 .....53
98805 .....70	DVMS2WT ....36	K4001 .....33	MK116 .....8	PR10 .....43	SS01 .....71
98806 .....70	DVMS3 .....36	K4003 .....33	MK117 .....8	PR100 .....43	SS70C .....40
98807 .....70	DVMS3WT ....36	K4301 .....17	MK118 .....40	PR2 .....63	SS70WT .....40
100042 .....72	DVMS8 .....36	K4401 .....17	MK119 .....10	PR20 .....43	ST2 .....71
200071 .....72	DVMS8BCD ...36	K4900 .....37	MK120 .....28	PR40 .....43	ST3 .....71
500003 .....72	DVMS8CDWT .36	K5201 .....13	MK121 .....60	PS11 .....74	ST4 .....71
500016 .....72	DVMS8WT ....36	K5300 .....13	MK122 .....8	PS21 .....74	ST6 .....71
900017 .....72	EA3010 .....23	K6600 .....18	MK123 .....12	PS27 .....74	STC1C .....4
900205 .....72	ECG1C .....61	K7000 .....69	MK124 .....12	PS28 .....74	STC1CWT .....4
456DLX .....70	ECG1WT .....61	K7101 .....22	MK125 .....23	PS29 .....74	SV4125 .....22
AA7B .....45	ECGP10 .....61	K8028 .....23	MK126 .....60	PS4 .....74	TD1 .....25
ABCE1 .....67	ECS1 .....17	K8032 .....14	MK128 .....24	PS5U .....74	TFM3C .....59
ABM1 .....38	EDF1 .....18	K8039 .....30	MK130 .....8	PSS1255 ....74	TM100 .....7
ABM1WT ....38	EDU8350 ....55	K8042 .....46	MK131 .....12	PSU03RUSA .74	TM100 .....44
AC125 .....74	FM100B .....5	K8045 .....48	MK132 .....69	PSUC100 ....74	TS1 .....23
AK700 .....55	FM100BEX ....5	K8047 .....67	MK133 .....10	PWR25 .....74	TS4 .....60
AK870 .....55	FM100BWT ....5	K8048 .....47	MK134 .....18	PX50 .....75	TT1C .....37
AM/FM7 ....53	FM10C .....6	K8049 .....29	MK135 .....10	QAMP20C ....42	TT1WT .....37
AM1C .....6	FM25B .....6	K8050 .....29	MK136 .....34	QAMP30C ....42	TT7 .....25
AM2 .....53	FM30B .....4	K8055 .....48	MK137 .....28	QAMP40C ....42	TV6C .....73
AM25 .....6	FM35BWT ....4	K8061 .....48	MK140 .....35	QLRD1 .....37	TX433 .....43
AMFM108K ...57	FMA200 .....7	K8062 .....30	MK141 .....11	QLRD4 .....37	TX916 .....43
AR1C .....40	FMA200 .....44	K8065 .....34	MK142 .....9	QRP20C ....42	TXE433 .....43
AR2 .....39	FMAC .....74	K8067 .....16	MK143 .....68	QRP30C ....42	TXE433A ....43
AR2L .....39	FMBA1C .....7	K8067 .....22	MK144 .....9	QRP40C ....42	TXE916 .....43
AR2LWT ....39	FMLP1 .....7	K8071 .....14	MK145 .....8	RB1 .....35	UAM2 .....32
AR2WT .....39	FMLP1WT ....7	K8072 .....30	MK146 .....34	RF1 .....63	UAM4 .....32
AVM2050 ....68	FO30K .....56	K8075 .....24	MK147 .....14	RFS1 .....23	UAM4SYS ....31
AVS10C .....73	FOC20 .....56	K8076 .....47	MK148 .....11	RI1 .....27	UAM4SYSWT .31
B8045 .....48	FR10C .....41	K8089 .....16	MK149 .....9	RR1C .....28	UBP1 .....46
B8099 .....16	FR146C .....41	K8099 .....16	MK150 .....10	RRW1AC ....28	UBP1WT ....46
BA1 .....53	FR1C .....40	KNS1 .....54	MK151 .....16	RRW1BC ....28	UP24B .....21
BD416 .....27	FR220C .....41	KNS10 .....54	MK152 .....10	RRW1P .....28	UP24BWT ....21
BE164 .....27	FR6C .....41	KNS11 .....54	MK153 .....16	RTS12 .....71	UT5/UT5AS ..24
BE66 .....12	G407 .....22	KNS13 .....54	MK155 .....14	RTS13 .....71	VG200 .....60
BITC10N[X] ..70	G410 .....23	KNS4 .....54	MK159 .....10	RTS16 .....71	VG200W ....60
BL1 .....11	G416 .....18	KNS6 .....54	MK161 .....29	RTS22 .....71	VG200WT ....60
BL2 .....11	G416 .....22	KNS9 .....54	MK162 .....29	RTS23 .....71	VG400W ....60
BN9 .....34	G416 .....37	KSR2 .....55	MK163 .....29	RTS24 .....71	VG400WT ....60
BP3010 .....62	HH3 .....71	KSR4 .....55	MK166 .....8	RTS25 .....71	VM110 .....48
BS2C .....5	HPS40 .....64	KSR5 .....55	MK167 .....9	RTS26 .....71	VM111 .....47
BS2WT .....5	HPS50 .....64	KSR6 .....55	MK169R .....9	RX433 .....43	VM116 .....30
C2000 .....73	HR20C .....42	LAB1SCS ....70	MK169Y .....9	RX916 .....43	VM132 .....16
C2001 .....73	HR30C .....42	LAB1U .....70	MK170 .....9	RXD433 .....43	VM134 .....47
CC3010 .....62	HR40C .....42	LB56C .....59	MK171 .....17	RXD433A ....43	VM138 .....30
CCD309 .....73	ICI16 .....27	LBC6K .....59	MK172 .....9	RXD916 .....43	VM140 .....48
CCD340 .....73	ICI1C .....27	LBC6K2 .....59	MK173 .....12	SA7 .....45	VM142 .....47
COM3010 ....62	IG7 .....61	LED51C .....13	MK175 .....12	SBRGB1 .....11	VS1 .....23
CP03 .....41	IN12 .....15	LED520 .....13	MK176 .....12	SCA1C .....40	VTBT11 .....72
CRB .....35	IN126 .....15	LED58 .....13	MK177 .....18	SG560WT ....63	VTBT5 .....72
CS2 .....53	IN12AL .....15	LLS1 .....13	MK182 .....18	SG7 .....59	VTMG5 .....71
CW7C .....41	IN12ALWT ....15	LPA1C .....7	MK185 .....54	SHA1C .....33	VTMG7 .....71
DCI1C .....25	IN14 .....15	LPY2 .....44	ML1C .....14	SHA1WT ....33	VTTEST15 ....69
DCI2 .....25	IN146 .....15	LPY244P ....44	MSC1C .....26	SHA2 .....34	VTTWSET2 ....72
DCI2WT ....25	IN14TM .....15	LPY245Y ....44	NWRB15 .....8	SHA2WT ....34	WA10 .....44
DDF1 .....41	IN14TMWT ...15	LPY26 .....44	NWRG15 .....8	SK40 .....55	WBU202 ....68
DDF1WT ....41	IR1 .....73	LPY41 .....44	NWRR15 .....8	SM100 .....45	WBU206 ....68
DVM34SDI ....66	IR101 .....22	LPY915 .....44	OM2 .....26	SM100WT ....45	WCAH2851 ...18
DVM805 .....68	IR38DM .....29	LSW1 .....11	OS1503SBU ..68	SM200K .....56	WCT3 .....67
DVM8264 ....66	K1823 .....46	LTS1 .....19	PCGU1000 ...65	SM3 .....17	WCT3WT ....67
DVM850BL ...66	K2579 .....24	MA1 .....53	PCSU1000 ...65	SMD1C .....26	WEB1 .....10
	K2601 .....13	MB1 .....18	PG13 .....61	SOL5N .....46	WJW70 .....68
	K2622 .....45	MC1 .....34	PGA1 .....33	SOL8 .....46	WLC100 .....71
	K2625 .....26	MD3C .....19	PGA1WT ....33	SP1A .....56	WTS1C .....19
	K2636 .....26	MK100 .....8	PL130 .....49	SP3B .....56	WTS1WT ....19
	K2639 .....19	MK101 .....9	PL200 .....50	SPS15U .....15	XMCL3 .....11
	K2650 .....25	MK105 .....69	PL300 .....51	SPS15U .....74	ZM1336K ....16
	K2655 .....18	MK106 .....17	PL500 .....52	SPS18 .....74	





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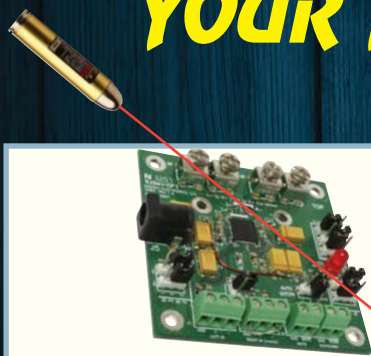
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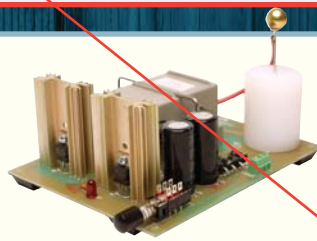
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