HIGH-VOLTAGE GENERATION

www.gernsback.com/poptronics JUNE 2000

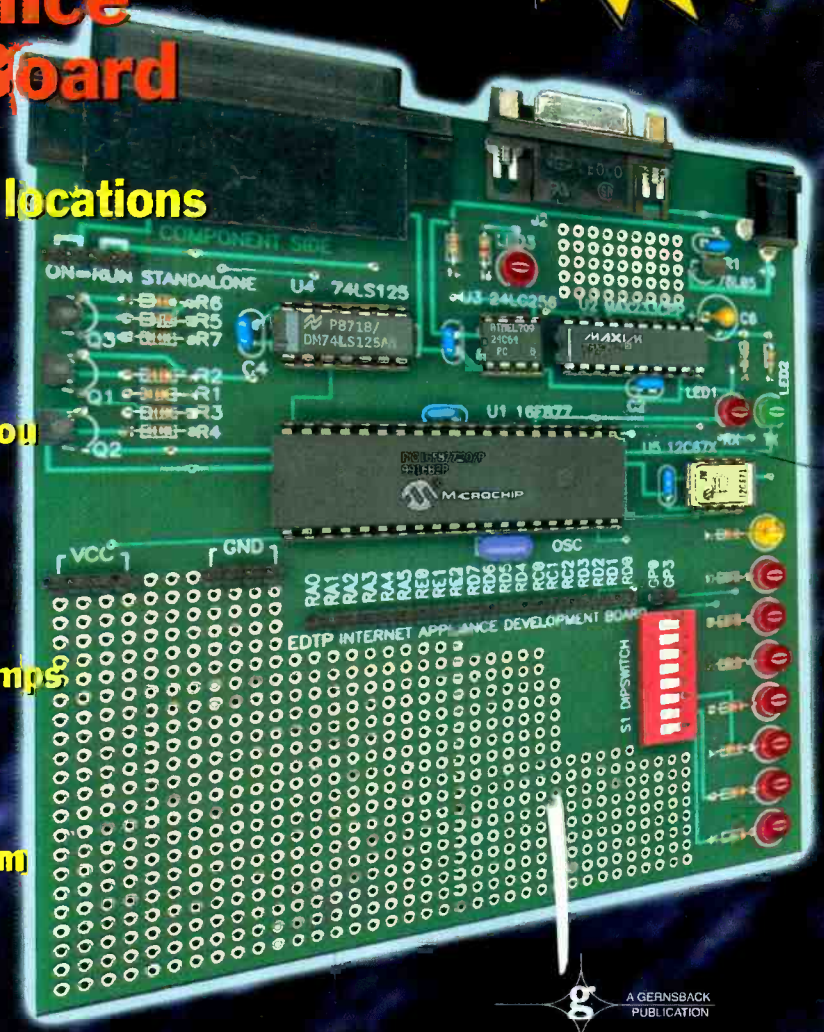
Poptronics®

Formerly Popular Electronics® and Electronics NOW

ProService Review
Follows page 112

Internet Appliance Development Board

Control "everything" in your home from remote locations



Appliances on the Information Highway

Is the electric company helping you save money or spying on you?

Linear ICs in Digital Applications

See what linear devices like op-amps can do in non-linear applications

Kirlian Photography

Making exposures using sheet film and cameras

Also Inside:

- VCR Play and Record Problems
- Experiments with Infrared LEDs
- The BasicX-24 Microcontroller
- Graphics on the Cheap
- Schemes Against Your Business

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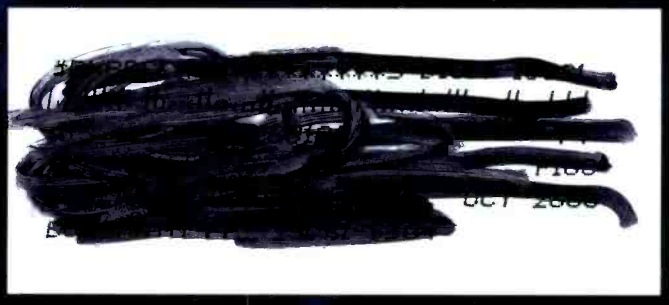

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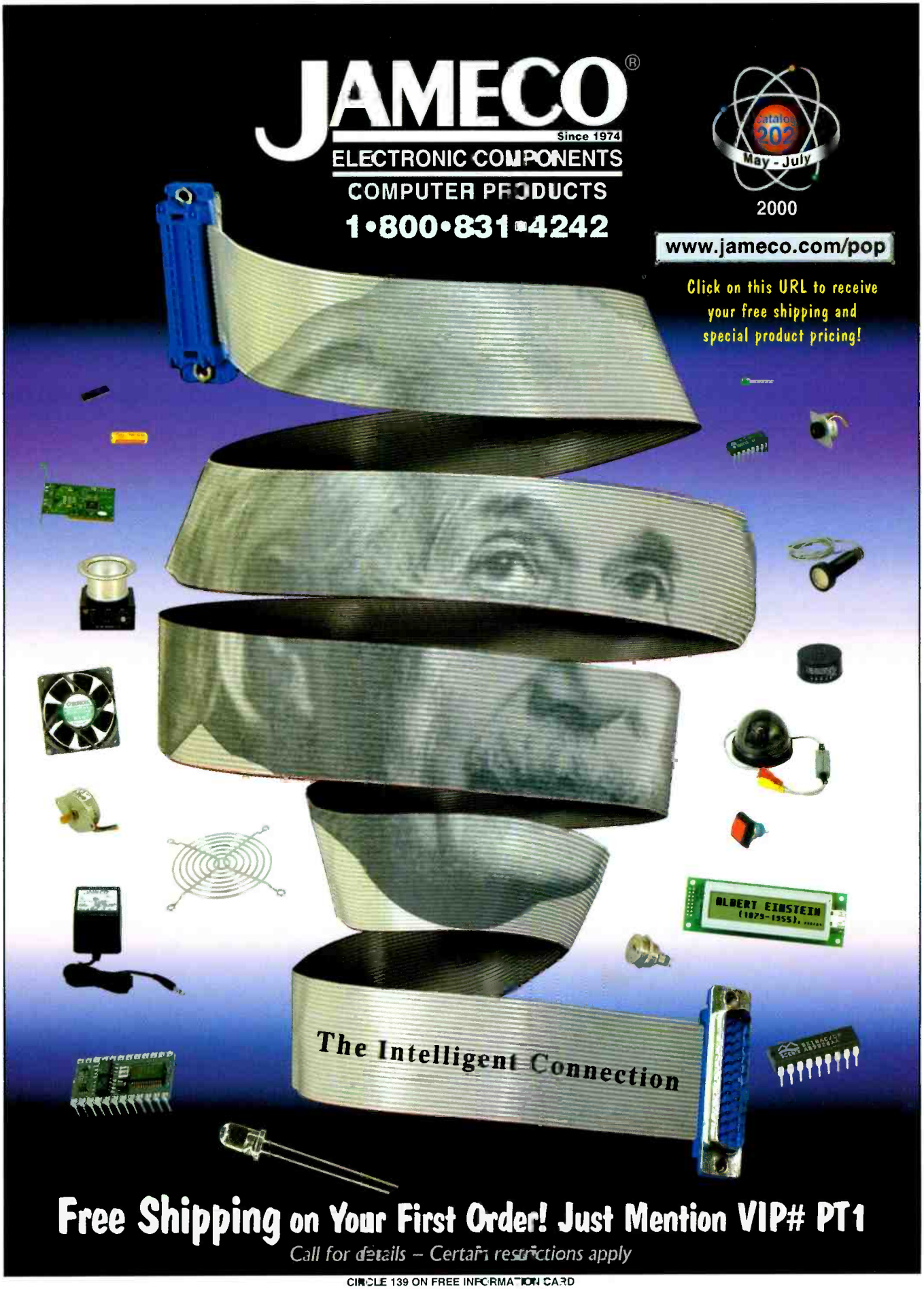

CIRCLE 139 ON FREE INFORMATION CARD

Electronics Now

June 2000, Vol. 1, No. 6

Popular Electronics®

Poptronics®

THE MAGAZINE FOR THE HANDS-ON ELECTRONICS ACTIVIST!

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Take some "free" emWare and Microchip software and integrate it with inexpensive and tricky electronics to build your own development system for controlling appliances in your home from remote locations.
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Editorial

Long-Time Subscriber Makes Good

Where did it all begin? Well, it all started back on a little farm…oh, not that far back?

Actually, it all started back when I decided to get serious about electronics as a hobby. I had picked up a few "how-to" books and started studying data sheets, but I wanted to get a better grounding in the subject.

I wanted to subscribe to an electronics magazine.

The two contenders that I decided to choose from were **Popular Electronics** (back when it was published by Ziff-Davis) and **Radio-Electronics**. Although tempted to flip a coin, I decided on the former of the two. I was just about to send in my subscription card and payment when I heard that Ziff-Davis was changing the title to *Computers & Electronics*. Since I had no money for a computer (we're talking 1981 here, folks. An Apple II cost well over a thousand dollars—almost two months of my salary!), I sent my check to Gernsback Publications.

Flash forward 15 years: The career that I was building in the electronics manufacturing industry had dried up, and the job that I had taken to keep the bills paid wasn't doing as well as expected. Imagine my surprise when I looked in the help-wanted ads and saw, "Electronics magazine looking for technical editor. Electronics knowledge a must." I thought, "What's the worst that could happen?" as I typed up a cover letter, but the address kept sticking in my mind. Where had I seen it before?

Suddenly, it hit me. Grabbing a recent issue of **Electronics Now** I verified my suspicions. I was going to try working for the company whose magazine I had been reading for over a decade.

Obviously, I got the job.

Now that I've been given the chance to "step up to the batter's box," I'd like to remind everyone that first and foremost, I'm a reader just like you. Together, we can make sure that **Poptronics**, the magazine of the hobbyist, by the hobbyist, and for the hobbyist shall not perish from the newsstand!

So strap yourselves in and check that your seat backs and tray tables are in their upright and locked positions—we have quite a ride in store for you!

Now that I've taken care of the old business, let's move onto this month's controversial question. The other day, I was reading an interesting item in a trade journal for the Internet and computer industry. It seems that an interesting interpretation of copyright laws is occurring. You would expect that if you buy a book or magazine, you have the right to sell that item to someone else as long as you don't keep any copies, and that the same goes for software when the license says that it should be treated "like a book."

Apparently, a large software publisher stopped someone from selling their copy of the software on eBay citing copyright violations. It seems the person who bought the software found that it didn't do what they needed, didn't realize until too late that the publisher had a 30-day return policy, and just wanted to "make it go away." The software company felt that selling used software is "distributing copyrighted material without permission of the copyright owner."

Since I haven't verified for myself the facts in this story, I won't mention names, but the concept is a bit chilling. If I buy a piece of software that doesn't do it for me, am I stuck with both it and a bad feeling about the company that published it, or should I be allowed to unload it on someone else that might find it useful? What about magazines? Books? CDs? Paintings? Old computers with bundled software in them? Where will it stop—when we can only sell an old car back to the manufacturer if they feel like it?

Let us know how you feel about this.

Joseph Suda
Managing Editor

New Models with Newly Added Features!!

TOUCH DISPLAY MODULE

CTD1047 COLOR

10.4-inch color TFT

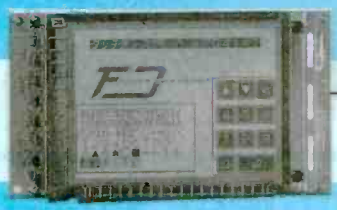
NEW

CTD5741 COLOR

5.7-inch color STN

Model in photograph enclosed in case. (CTD5741-J1)
CTD5741 is 100% compatible with μTD4141.

NEW



μTD4141

5.7-inch monochrome

Development Support Tool

For Windows 98/95

$170

NEW

New Features

Personalized Color Pallets

You can personalize the tone of the built-in 16-color pallet by setting RGB (brightness) level.

Copying

Areas of the screen can be selected and copied onto other screens.

Expanded Flash Memory

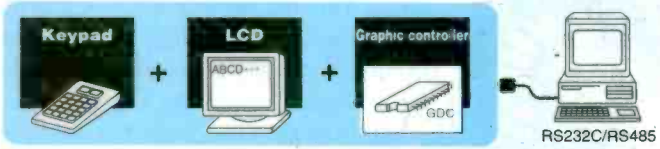
Image Manipulation

Images imported from digital cameras or other sources can be easily bitmapped and registered on screens or keycaps. (The demonstration fish was created with the Development Support Tool.)

Screen-to-Screen Group Move

Screen data can be selected, grouped and moved to other screens.

●System Setup Example



Specification \ Model		μTD4141	CTD5741	CTD1047
Display	LCD	5.7-inch, monochrome	5.7-inch, color STN	10.7-inch, color TFT
	Resolution	320 × 240	320 × 240	640 × 480
	Maximum digits	40 columns × 30 lines	40 columns × 30 lines	80 columns × 60 lines
	Effective display area (mm)	116 × 87	116 × 87	211 × 158
Key matrix input		10 × 6	10 × 6	13 × 10 (640 × 480)
Key size (mm)		12 × 14	12 × 14	15 × 15
Power supply		5V DC 0.8A	5V DC 1A	5V DC 1.2A
Dimensions (mm)		W189 × D112 × H32	W189 × D112 × H32	W272 × D205 × H43
Standard price		**$635**	**$845**	**$1400**

※Escutcheons and cases available for all models.

※Standard prices shown in this table are changed without notice for rate of exchange.

- Via RS-232C communications, simple commands let you easily display characters, draw graphics or collect key-input information.
- The built-in display memory can hold 4 full screens, making paging and other screen operations more convenient. (Up to 54 screens can be added with the Expanded Flash Memory.)
- Expansion features can be easily used with the Development Support Tool optional software.
- A wide array of characters can be displayed including kanji, kana, alphabet, numerals and special patterns.
- Key-input can be selected between polling and interrupt.
- Equipped with buzzer ON/OFF and backlight ON/OFF commands.
- Characters can be displayed as large as 64 × 64 dot.
- Easy backlight replacement (for color LCD models).
- Portrait monitor and RS485 model are available as special specification.

URL = http://www2.dango.ne.jp/onomichi/inh/

E-mail = inh@orange.ocn.ne.jp

INH International Hanbai Co., Ltd
22-30 Kanda-cho, Onomichi, Hiroshima, 722-0016, Japan

GIZMO®

Portable LCD Photo Album

Keep all your memories and important images with you at all times with an electronic *Wallet*, a compact portable digital image photo album from VideoChip Technologies. It measures 4 × 5 × ¾ inches, fits easily into a pocket or purse, and holds up to 200 full-color images on a plug-in Compact Flash or SmartMedia card. The screen is a back-lit 4-inch 24-bit color LCD with 320 × 240 resolution.

To find a specific photo, multiple images are displayed in thumbnail form. The user scrolls through the images and chooses the desired one. Images can be shown in either portrait or landscape formats at the choice of the user. Two slide-show modes can be used to display the stored photos in sequence. The suggested retail price is $349.95.

VideoChip Technologies Inc., 1010 El Camino Real, Suite 330, Menlo Park, CA 94025; 650-470-5130; *www.videochip.com*.

CIRCLE 50 ON FREE INFORMATION CARD

Wireless Inter-tainment System

It's called *Cybiko*—a portable entertainment and communications system that combines instant messaging, interactive gaming, e-mail and personal information manager capabilities in an all-in-one device. Priced between $149 and $179, Cybiko comes in a choice of four translucent colors, has a full QWERTY keyboard with a stylus to compose messages, LCD display, 1-MB memory (expandable to 16 MB), a high-frequency transmitter, and a vibration-alert device. The unit measures 4.8 × 2.8 inches and weighs less than 4 ounces.

Communication range is 150 to 300 feet depending upon the environment—and potentially much farther as multiple devices link and expand the range—creating their own virtual community. Users can set up their own CyPage, a personal profile. Cybiko will then alert users when a friend is within range or allow them to browse the virtual network to connect with everyone in the area. CyLoader allows users to synchronize the device to their PC and send and receive e-mail.

Cybiko, Inc., 1582 Lenox Ct., Bartlett, IL 60103; 630-540-1961; *www.cybiko.com*.

CIRCLE 51 ON FREE INFORMATION CARD

CD Recorder

Yamaha's first entry into the popular CD-recorder market is the *CDR-S1000* ($599). The single-play recorder is said to provide excellent reproduction and duplication.

The CDR-S1000 is equipped with coaxial digital and optical digital inputs and outputs. It also has a line-level analog input/output. The recorder's other features include analog and digital record-level controls, a headphone jack, headphone-level control, and automatic and manual track marking. With its 24-bit digital-to-analog converter and sampling rate converter, it can accommodate a variety of sampling rate standards. Recordings are finalized at 4X speed.

Yamaha Electronics Corporation, USA, 6660 Orangethorpe Ave., Buena Park, CA 90620; *www.yamaha.com*.

CIRCLE 52 ON FREE INFORMATION CARD

e-Mail Traveler

Combining the convenience of a personal digital assistant (PDA) device and a portable e-mail appliance, the *e-Mail Traveler* ($149.99) from VTech is a stand-alone, pocket-sized device. It allows you to send and receive e-Mail without having to connect to a PC. With its built-in modem, the e-mail Traveler can be used anywhere. Information is entered using the included stylus pen and the 13-line × 25-character LCD touch-screen display. For use back home, the unit comes with a docking station with a full-sized keyboard and a printer port.

The e-Mail Traveler provides popular electronic-organizer functions, including an address book, a to-do list, a calendar, a memo pad, and games. It measures 5.5 × 3.4 × .86 inches, weighs about six ounces with batteries, and can store up to 400 e-mail messages.

VTech Industries, LLC, 101 East Palatine Road, Wheeling, IL 60090-6500; 888-GO-VTECH; *www.vtechworld.com.*

CIRCLE 53 ON FREE INFORMATION CARD

High-Tech Mobile Scanner

The *BC780XLT* ($379.99) from Uniden America Corporation is a mountable radio scanner that is equipped with TrunkTracker III and SmartScanner technologies. TrunkTracker III allows the radio to track Motorola, EDACS, and LTR (Johnson) trunked radio systems. The scanner can detect when a transmission on any of those radio systems changes frequency and then automatically follows the transmission, allowing you to listen to entire conversations on a trunked radio system.

SmartScanner technology downloads local and national frequencies into the channels available in your zip code, through the use of an external modem or a PC. Using software downloaded from Uniden's Web site, the scanner can dial into a pre-programmed 900 number that identifies and automatically downloads the closest frequencies into channels. The LC780XLT offers 500 channels and an alphanumeric display.

Uniden America Corp., 4700 Amon Carter Blvd., Ft. Worth, TX 76155; 817-858-3300; *www.uniden.com.*

CIRCLE 54 ON FREE INFORMATION CARD

In-Dash MiniDisc Receiver

The *Dallas* ($569.95) car stereo receiver from Blaupunkt features a MiniDisc (MD) deck mechanism hidden behind a protective, flip-down faceplate. The MD drive system has 10-second anti-shock memory to avoid music skips when traveling on bumpy roads. The Dallas displays the disc name, allows tracks to be programmed for play sequence, and offers random and repeat functions.

The Dallas includes a DigiCeiver AM/FM digital tuner with RDS, a 4 × 40-watts power amplifier, high-voltage pre-amp and subwoofer outputs; and it also has controls for an outboard CD changer. It can be used with Blaupunkt's CDC A08 10-disc changer or the IDC-A09 in-dash five-disc changer.

The "true-digital" DigiCeiver is the only radio tuner that actually converts radio waves into digital data. That allows it to perform all radio and audio processing—such as Direct Software Control and digital signal processing (DSP)—in the digital domain and to provide exceptionally clear reception. DSP sound management features allow you to modify and fine-tune audio characteristics. The two-band digital parametric equalizer can be used to create a vehicle-equalization curve to correct for standing waves and cavity resonances. The Dallas also has preset curves for rock, jazz, disco, classical, and vocal genres. It offers bass and treble controls, along with a six-level loudness control and a three-level high-cut filter.

Blaupunkt, Robert Bosch Corp., 2800 South 25th Ave., Broadview, IL 60153; 800-950-BLAU; *www.blaupunkt.com.*

CIRCLE 55 ON FREE INFORMATION CARD

Feature-Rich DVD Player

The *DVD-N2000* ($499) from Samsung incorporates VM Labs' NUON video-processing technology for enhanced picture quality and increased functionality and interactivity. NUON technology is said to eliminate jitter and jumps during scan and slow modes.

The technology also enables features such as "infinite zoom," which allows up to 20X zoom during playback without distorting the picture. One interactive feature displays around the edge of the screen thumbnail images of adjacent angles. Highlight a thumbnail and view the movie from a different angle (if the software includes such scenes).

NUON adds a new dimension to CD playback with an on-screen spectrum-analyzer display that shows the changing musical content on screen as a visual display of musical energy. The Virtual Light Machine feature lets you choose from several vibrant design themes that NUON paints across the screen in real-time response to the rhythm of the music.

The DVD-N2000 can also play NUON educational and entertainment software that are currently being developed, including video games. Ports are available to accommodate planned NUON peripherals such as joysticks and driving wheels.

Samsung Electronics America, 105 Challenger Road, Ridgefield Park, NJ 07550-0511; 201-229-4000; *www.samsungdigital.com.*

CIRCLE 56 ON FREE INFORMATION CARD

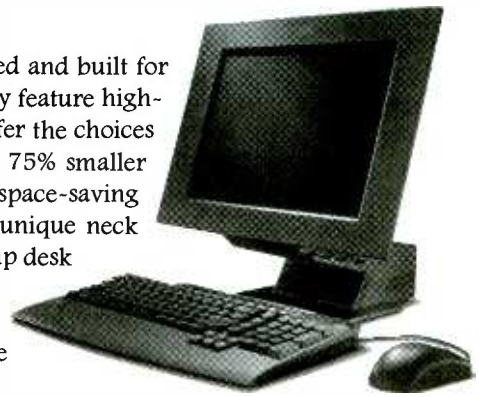
Human-/Solar-Powered Radio

Freeplay Energy has added to its roster of human-powered devices the *Model S360* ($69.95), a portable radio small enough to take anywhere without having to worry about batteries or electricity. Measuring approximately 4 × 8 inches and weighing just over two pounds, the water-resistant S360 can be carried easily when hiking, boating, camping, or just around town. Winding the unit's handle for about 30 seconds will provide up to 45 minutes of play time. The radio's internal power storage system automatically saves all available spring and solar energy, giving 15 hours of play time when fully charged. It also accepts a charge through an AC/DC adapter to provide hours of continuous music.

Freeplay Energy USA Inc., One Ramland Road, Orangeburg, NY 10962; 914-680-2233; *www.freeplay.net.*

CIRCLE 57 ON FREE INFORMATION CARD

New Desktop Computers



NetVista is IBM's new line of desktop computers, specifically designed and built for fast, high-bandwidth Internet access, easy setup, and simplified use. They feature high-resolution flat-panel screens, include USB (Universal Serial Bus), and offer the choices of 256-bit encryption and wireless LAN capability. The computers are 75% smaller than the typical home or office PC—just 16 × 16 × 10 inches, in a space-saving design. The CD/DVD-ROM and floppy drive tuck neatly away and a unique neck design allows the rapid access keyboard to fit under the monitor to free up desk space. Several different models and a variety of features make it easy for users to select those that they need most.

International Business Machines Corp., 1133 Westchester Ave., White Plains, NY 10604; *www.pc.ibm.com/ww/netvista/index.html.*

CIRCLE 58 ON FREE INFORMATION CARD

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A Hands-on Electronics REPORT

Night Owl Optics Explorer NOCX3 Starlight Amplification/Infrared Monocular

Stay up at night and watch how the other half lives!

Every so often, a product crosses the *Hands-On Report* desk that has the right combination of design, function, and usability, eliciting comments from other staff members like "Cool," "Neat," and, most importantly, "Oh, wow! Can I try it?" Such a product is the subject of this month's report, the *Explorer NOCX3* from Night Owl Optics.

While night-vision devices have traditionally been in the realm of the military and law enforcement, older-generation technology has dropped in price enough to become affordable to the average consumer. The Explorer is based on what is called "Generation I" technology. Light (either visible or infrared) is gathered by an objective lens and focused on the front surface of an electronic intensifier tube, or EIT. The front surface is a *photocathode screen*, where the photons strike elements that release electrons. The electrons are accelerated to the rear of the tube, illuminating a phosphorescent screen much like a television picture tube. An eyepiece lens focuses on the phosphorescent image for viewing.

Generation II technology uses a micro-channel plate for lower image distortion and higher light amplification. Generation III increases tube life by adding a gallium-arsenide layer as well as special protective coatings to the microchannel plate.

That's the good news. The bad news is that Generation II and III units can cost from $1500 to a whopping $10,000—not a price that the average consumer is willing to pay for a special-use toy.

Although the Explorer's technology is interesting, the factory location is sure to raise a few eyebrows. All of Night Owl Optics' products are made in a Russian factory that used to supply night-vision equipment to the Soviet Army. With the collapse of the Soviet Union, the Commonwealth of Independent States are taking their first steps in providing their manufacturing abilities to the world market—the Explorer is just one example. Indeed, the bottom of the Explorer's case sports a sticker that proudly proclaims "RUSSIA" in 1/8-inch letters.

Before we descend to the depths of a debate on world politics, let's take a closer look at the unit itself. The Explorer feels like a slightly oversized tube that's suprisingly comfortable in the hand, much like the current generation of hand-held video recorders. The 2.3 × 3.3 × 7.2-inch monocular weighs in at a paltry 16 oz. The $300 package includes a nylon-cloth-covered carrying case with reinforced sides, a lens cap with pinhole, an instruction manual in five languages (English, French, German, Italian, and Spanish), and an instructional video tape for those that believe that "manuals are for wimps."

The manual and tape are well done and informative. Both warn you of the pitfalls of owning and operating a night-vision device. As much fun as they are to work with, these units are not toys. Handling them roughly or removing the lens cap in bright light can cause problems. At best, the life of the EIT will be shortened; at worst, you'll break it. In either case, treating the unit badly will void the one-year warranty, so handle the Explorer like a high-end camcorder or photographic camera.

But How Well Does It Work? The day after the Explorer arrived at the office, I arrived before the rest of the staff. With the office dark and quiet, I could put the Explorer to the test without disturbing anyone else.

The first step was to install the battery. You have to supply your own (the familiar "batteries not included" chant), but Night Owl Optics thoughtfully supplied one with the review unit. A 3-volt lithium battery powers the Explorer, although some other models use a pair of AA batteries. I confidently twisted open the battery door on the rear of the Explorer, grabbed the battery...and immediately noted that there were no indications as to the proper direction to insert the battery!

A quick glance through the manual revealed that while it was clear and concise on operation, care, and troubleshooting of the Explorer, there was not one single picture that showed which end of the battery to drop in first. Never in my career in high technology was I as embarrassed as I was at that moment. After all, how difficult could it be to stick in a battery?

A closer examination of the battery compartment revealed a spring at the bottom of the hole. The cover is a single metal casting with a rectangular protrusion that doubles as both cover latch and battery contact. That contact couldn't possibly touch the negative terminal of the CR123A battery because of the battery's design.

With a deep breath, I inserted the battery negative end first. Closing the cover and pressing one of the control switches lit up one of

the LED indicators on the back of the unit. If the Night Owl Optics people are reading this, it would be a good idea to engrave a great, big "+" on the inside of the battery cover! Now that the Explorer was working, it was time for some fun—er, initial tests.

Stepping into the office network room and closing the door left me in a place whose only illumination came from the plethora of LEDs on the computer equipment, power supplies, and network hubs. Pressing the "POWER" button and looking through the eyepiece was an experience that, to the first-time user, is nothing short of amazing. The view is like a black-and-white television with green phosphors. However, you shouldn't expect the scene to look like the latest Hollywood special effect with crisp, sharp detail. Remember, this is a Generation I device; slight distortions and an overall "grainy" look are normal; distortions are mostly located in the periphery of the viewable area.

The Explorer has a second switch marked "IR LED." As amazing as viewing scenes in low-light conditions is, turning on the built-in infrared flashlight is breathtaking. Whereas before I could easily identify the network server's keyboard, I could now easily read every legend printed on the keys. Of course, the IR illuminator is best used in a room or other enclosed area. With a range of about 75 yards, you won't light up distant objects in an open field as well as you might hope.

Environmental Limits. On the subject of open fields, another limitation of the Explorer is its ability to withstand weather exposure. Most of the Night Owl Optics line is "weatherproof," but that means that brief exposure to light rain or high humidity won't harm the unit. Indeed, the manual warns that if humidity condenses on the Explorer, don't use it for at least five hours.

As I write this, it's still early spring, and I'm looking forward to my friend putting his sailboat back in the water so we can try out the Explorer during some evening sailing. Rest assured that I will have a firm grip on the Explorer so that it doesn't end up at the bottom of the bay. If you want to use a night-vision system for activities like night fishing, Night Owl Optics has a 100% waterproof version that floats if you drop it overboard.

Watch What You're Doing. After that first experience with the unit, I put it back in its carrying case and set it aside. The next day, I was showing it to one of the higher-ups and was again embarrassed when the Explorer wouldn't cooperate. Popping out the battery and checking it with a voltmeter showed that the fresh, new 3-volt battery only measured 0.52 volts!

Fortunately, CR123A batteries are no farther away than the closest RadioShack. In fact, they sell a pair of CR123As for about $13. With a new battery in place, the Explorer came back to life.

When I put it away the second time, I carefully watched what I did to confirm my suspicions. Sure enough, it's easy to accidentally press one of the switches without realizing. No wonder I had a dead battery—the Explorer was dutifully flooding the inside of the carrying case with infrared light! The bottom line is to take a quick look at the LED indicators on the back of the Explorer before zipping up the bag, or you'll pay for your haste at $6.50 per incident.

Further Tests. The world of infrared light is an incredible place to explore; seemingly simple things take on a new look when exposed to "invisible" light. At home, I was surprised by the amount of infrared light put out by a red LED power indicator in a set of cheap multimedia speakers. Although a friend's pair of sneakers didn't reflect very much infrared light, the shoelaces shone like neon lights. Even more startling is the fact that the human eye reflects infrared light like a mirror. With the Explorer, everyone can look like they're wearing the special contact lenses worn by actor Gary Lockwood in "Where No Man Has Gone Before," the second *Star Trek* television pilot filmed back in the mid 1960s!

When operating, the review unit makes a slight buzzing noise that comes from its high-voltage power-supply circuit. Night Owl Optics assures us that's perfectly normal, which is logical for a unit that uses a 3-volt battery and needs thousands of volts to operate.

One issue that might confuse and disappoint people has to do with the infrared aspect of the Explorer's capabilities. Infrared light is the portion of spectrum that we can't see. As you go further down the electromagnetic spectrum, you come to the thermal portion. The Explorer can't do thermal imaging. Don't confuse infrared with heat—the frequencies are too far apart.

Extending the Play Value. The NOCX3 supports two accessories from Night Owl Optics. You can add a Lens Doubler to the standard 3.1X lens, boosting the magnification level to 5X. Additionally, a camera adapter is also available. If you have a 35mm or other photographic camera with a removable lens, simply replace the camera lens with a T-Mount adapter. Hook that adapter to the Explorer's camera adapter and you're ready to take pictures through the Explorer's "eye." Unfortunately, the camera adapter can't be used with camcorders. Both accessories retail for $50.

The Explorer, incidentally, is just one in a series of night-vision systems in various price ranges and capabilities. Several types of monoculars are available with different levels of weight, magnification, and features. There are also two types of binoculars and even a full-featured hands-free head-mounted system—perfect for those that take their night-vision hobby *seriously!*

The Explorer is one of those high-tech toys that, while you can't think of a reason to own one, you want it anyway. Once you start experimenting with it, you'll find yourself exploring the world around you in ways you never imagined. You spend half your life in the dark—why do that at night as well?

For more information, contact Night Owl Optics, 307 Seventh Ave., New York, NY 10001; 212-229-0297; *www.nightowloptics.com*; or circle 80 on the Free Information Card. P

TED NEEDLEMAN

Graphics On The Cheap

Most of these columns have taken a similar approach. I like to talk about products you might find interesting, but in the context of solving a particular problem or accomplishing a specific project. For this column, I'm going to deviate a bit from that format and talk about several different products in a common context. Next time, its back to the project-oriented approach.

If you've been reading this column for a while, you know that I'm pretty involved with graphics. In a sense, that's kind of ironic, as I have absolutely no artistic ability whatsoever. I tend to think visually, but in the process of putting what I see in my mind's eye down onto paper, something usually gets a bit jumbled. Back in the days when I was running a magazine, the Art Director and the rest of the staff used to look forward to our monthly art meetings, since I generally had an idea of what I wanted for each article's art. They would pass around my hand-drawn roughs as sort of an impromptu inkblot test. It's a good thing that I had a fairly thick skin, so comments on my hand-drawn sketches like "It looks like Samurai Butterflies with swords" and "No, it's a pair of pigs doing the Samba" didn't really bother me much.

They did hasten, however, my adoption of graphics software, especially large collections of clip art. These made it easy for me to quickly put together roughs that didn't look like the Ninja Turtles at a car wash. Art meetings, however, were never quite as much fun after that.

What I love about the technology that's evolved in the years since then is that it's become ever easier for me to get closer to what I can see in my mind's eye. I suppose that it's the difference between an artist and technician. A photographic artist, for example, composes in the camera. A technician, such as myself, shoots as many images as he can and composes in the darkroom or, more recently, on the computer using an image-editing application.

The inexpensive IXLA camera and Pablo graphic tablet are plugged into a Xircom PortStation.

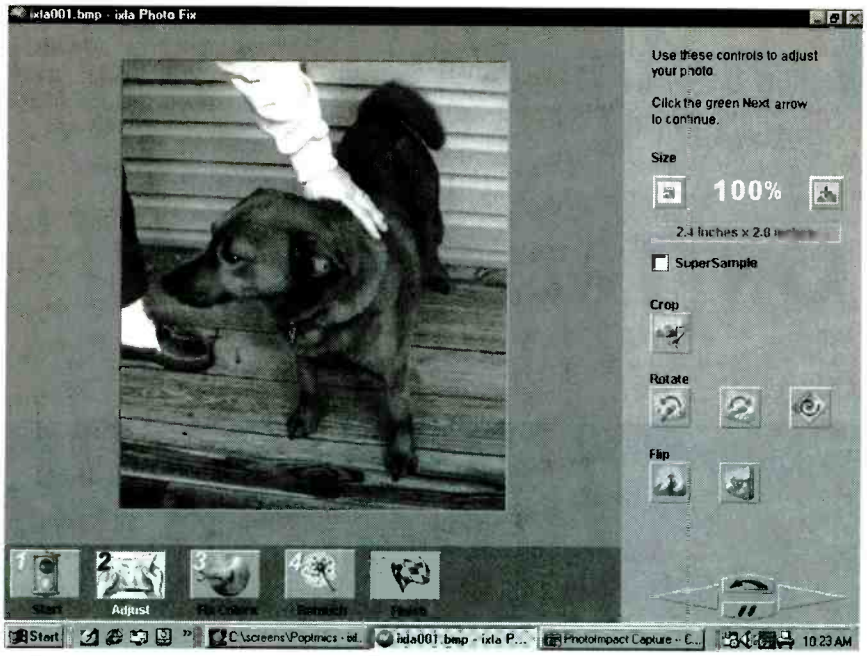
Not only has the technology become more accessible and easier to use, it's also become a lot more affordable. For example, many of the projects we've covered in previous columns have used a scanner at some point. You don't, however, need to spend a fortune to buy a scanner. In fact, I routinely notice scanners on sale for less than $75 in the ads in the Sunday papers. Last week, while shopping at a nearby Costco/Priceco store, I walked past an Agfa SnapScan 1212U scanner that was selling for $68.

WHAT YOU PAY FOR IS WHAT YOU GET

Starting to play with graphics doesn't mean that you need a huge budget. It really depends on exactly what you want to accomplish. For example, most of the photos I take for this column are snapped using a megapixel digital camera that I may have in my office for review. If you are interested in digital photography, perhaps to enhance a Web site that you're building, you can get by with spending a lot less money on a digital camera. For this type of application, you don't need the 1600 × 1200 pixel resolution that a 2+ megapixel camera offers. A more modest 640 × 480 resolution will be fine in many cases.

That's where the *Photo Easy Deluxe*, from IXLA comes in. IXLA is an Australian company that has a major presence here in the US, and it has built a great reputation for its digital photography software over the last several years. *Photo Easy Deluxe* is basically a collection of the vendor's best image-oriented software, with a moderately good digital camera included in the package. What I find amazing about the package is that it's priced at about $100. With a mail-in rebate offer, however, it was recently on special at CompUSA for $50. That price was for the software *and* the camera!

The software in the package alone is easily worth the 50 bucks. It provides



IXLA's utility software makes it easy to fix up and crop the photos taken with the camera.

good basic image editing and effects and includes a "fun" selection that lets you apply effects, like stretching someone's nose, to your photo. There's even a button on the excellent IXLA interface that lets you e-mail a photo to a friend. Other programs included make it easy to add fancy frames to your photos and create projects such as cards and "magazine" covers. You can use the camera included in the package or any other source of images, such as stock or clip art or a scanner.

The *Digital SuperPro 640* camera that's included in the package is pretty basic; but while it doesn't allow you to use removable media memory cards, the 2MB of RAM built into the camera lets it store up to 30 images. Unlike many of the other inexpensive cameras I've seen, the IXLA camera has a flash, so you can take photos indoors. It even includes a USB cable to make downloading a lot faster and easier than with those cameras that use a serial connection.

To be honest, a camera such as IXLA's and other similar 640 × 480 models is not going to let you make 5 × 7 prints. There's just not enough data in the image to blow it up that much. A package such as the *Photo Easy Deluxe*, however, is a terrific and affordable way to get your feet wet.

A LOT FOR THE MONEY

Costing a little bit more, *Pablo Internet Edition*, from KB Gear Interactive, is another terrific graphic device. Its list price of $99 goes down to $79 with the $20 mail-in rebate coupon.

Pablo is a large surface graphic drawing tablet. Unlike some of the tablets more oriented to the graphic artist or professional, Pablo's drawing pen is not wireless; it's attached by a small cable that plugs into a jack on the right side.

In just about every other way, however, Pablo holds its own very well against much more expensive tablets. It is pressure sensitive, providing up to 256 levels, with those drawing applications, including *CorelDRAW!*, that support this feature. The drawing surface measures a large 8 × 6 inches. And there's a handy tracing flap for klutzes like me. Lift up the transparent plastic flap, slip in an image, and it's easy to trace an image. *SmartTrace*, which smoothes out the jerkiness that's natural when you're trying to follow a line, makes the traced images look a lot better.

Here's a snap of Sparky, my trusty canine companion, taken with the IXLA camera.

What really knocks me out about Pablo, however, is the software that comes bundled with it. For starters, there's a copy of Adobe *Photoshop 5 LE*, one of the most powerful (and widely used) image editing packages on the market. This edition has been whittled down a bit from the full package, but that only makes it easier for a novice to learn and use. The other packages, as you surmise from the "Internet Edition" tagline, are Web-oriented. Also from Adobe is a copy of *PageMill 3.0*, which makes it easy to create Web sites. A copy of Totally Hip's *WebPainter 3*, a utility for creating animations for a Web site, is the third package in the bundle.

VENDOR INFORMATION

IXLA USA Inc.
17 Jansen St.
Danbury, CT 06810
203-730-8805
www.ixla.com
CIRCLE 101 ON FREE INFORMATION CARD

KB Gear Interactive
1414 Washington Avenue S.
Eden Praire, MN 55344
612-941-1905
www.kbgear.com
CIRCLE 102 ON FREE INFORMATION CARD

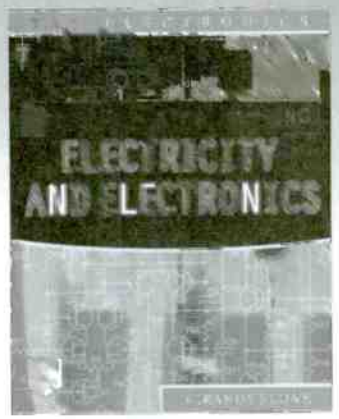
Xircom, Inc.
2300 Corporate Center Dr.
Thousand Oaks, CA 91320
805-376-9300
http://portstation.Xircom.com
CIRCLE 103 ON FREE INFORMATION CARD

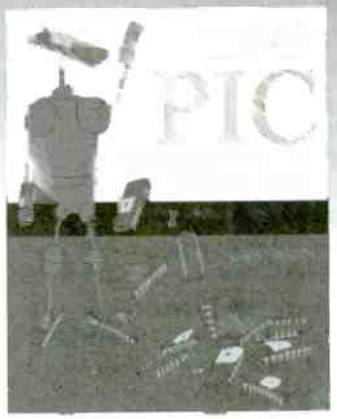
Unlike a digital camera, a graphics tablet like Pablo isn't universally interesting. And, of course, the better you are at drawing and illustrating, the more it will merit your interest and consideration. If you can use it, though, it certainly meets my standard for a budget graphics value. As with the IXLA camera, Pablo can be connected via a serial port or simply be plugged into a USB port.

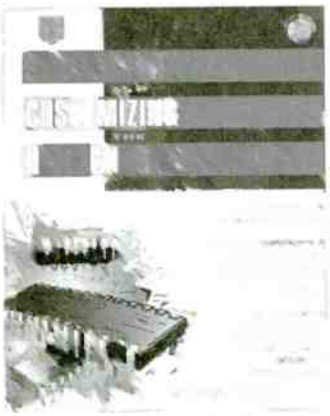
By the way, if you look closely at one of the photos that accompany this

(Continued on page 56)

ARE YOU A PROFESSIONAL OR JUST TINKERING?







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