ENERGY CONSUMPTION

METER

KILL A WATT™

This allows you to measure energy consumption of appliances simply. Simply connect these appliances to the Kill A Watt™, and it will assess how efficient they really are. Large LCD display will count consumption by the Killowatt-hour, same as your local utility. You can calculate your electrical expenses by the day, week, month, even an entire year. Also check the quality of your power by monitoring Voltage, Line Frequency, and Power Factor.

- Large LCD display
- Cumulative Kilowatt-Hour Monitor
- Forecast Your Costs
- Also display Volts, Amps, Watts, Hz, VA
- 0.2% Accuracy

Part No. 01P4400 • Price: $28.95

VIZATEK

PORTABLE DIGITAL IC TESTER

HAND-HELD UNIT

MODEL VZ4

This unit will readily test TTL, CMOS series ICs. Can identify unknown part numbers.

- Supports the following:
  TTL Series: 7400, 74LS00
  CMOS Series: CD4000, CD4500
- Display: 16 characters in 1 line LCD
- Test Pins: 14 to 24 pins
- Power: 9V battery (included); 5V DC-Adaptor (Optional)
- Weight: 1 lb.
- Size: 6.3" x 4.3" x 1.8"

Part No. Description Price
01VZ4 Digital IC Tester, Portable $225.00

RSR— LINEAR IC TESTER

PORTABLE

MODEL LP2

- Easy to operate tester, specially designed for linear IC’s (op-amps, comparators, opto, regulators, special function devices, transistor arrays).
- Light, compact, low power consumption (battery operated).
- Average Search Time: 0.8 seconds.
- Display: 16 characters in 1 line LCD
- Test Pins: 8 ~ 16 pins.
- Test Voltage: ±5V
- Dimensions and Wt.: 6.3" x 1.8" x 4.4"; 12 oz.

Part No. 01LP2 • Price: $795.00

RSR— LINEAR IC TESTER

MODEL ICT-7A

- Reliable desktop design.
- 16 x 1 character 9 x 7 dot matrix LCD display.
- Built-in 6 functions and 10 numerical keys.
- Test Voltage: ±5 ~ ±24V
- Auto identifies the unknown ICs and lists the same function IC number.
- Dimensions & Wt.: 13" x 4" x 12"; 3.3 lbs.
- Test IC: Timer, Op Amp, Comparator, Regulator, Zener Diode, Photo Coupler, Driver, Communication IC, Switching Power Supply IC.

Part No. 01ICT-7A • Price: $2,500

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

**INDUCTIVE TRACER**

**THE HOUND 3 PROBE**

- New headlights help light your way and reduce fluorescent light noise
- Streamline, shielded design to suppress feedback squeal
- Bandpass filter to suppress 60Hz and high frequency noise
- Earphone jack, improved sensitivity, new conductive bill tip
- Adjustable volume/sensitivity control
- High gain, high impedance amp
- LED intensifies as signal gets stronger

**TONE GENERATOR**

**THE FOX**

- Generates 3 distinct tones usable for wire tracing
- Line powered in Tone Mode
- LED indicator for continuity
- Supplies “Talk Power” to allow communicating between handsets (talksets) or powering a telephone
- Convenient operation from a standard 9V battery
- One year warranty

The FOX is a lightweight, compact, battery powered instrument designed to perform a variety of tests on telephone lines. Alligator clips and a modular plug allow the FOX to be quickly connected to stripped wires, a terminal panel, or a standard modular jack (single line). Two selector switches set the function of the FOX, while an LED acts as a visual indicator.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Price</th>
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<tr>
<td>34TR3392</td>
<td>Hound 3 Probe Only</td>
<td>64.95</td>
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<tr>
<td>34TR3399</td>
<td>Fox 2 &amp; Hound 3 + Case</td>
<td>98.00</td>
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</tbody>
</table>

**TONE GENERATOR & PROBE**

The Tone Generator is designed to perform a variety of tests on network cable, telephone lines. Alligator clips and testing plug allow the tone generator to be connected to stripped wires, wall plates, a terminal panel, or modular single line jacks quickly. The Probe can trace tone generator signals through wall, wood and many other non-metal surfaces.

**TONE GENERATOR:**
- Two position switch for single or multi tone signal
- Tri-color LED for line polarity, continuity and voltage testing
- Testing leads and modular cables for individual wire tests or modular jack tests

**AMPLIFIER PROBE:**
- Non-conductive, inductive tip
- Hi-gain, hi-impedance amplifier
- Sound/visual/both modes for noisy or dark work areas
- Sound with adjustable volume control

**Power:** 9V batteries. Includes custom carrying case

Part No. 34TGP • Price $49.00

**BK PRECISION**

**TONES GENERATOR AND CABLE TRACER KIT**

**MODEL 262**

The Model 262 is a kit that combines the BK Precision Model 260 Tone Generator and Model 261 Cable Tracer.

**Tone Generator Model 260**

The Tone Generator is a hand-held, battery-powered instrument designed to perform a variety of tests on un-energized telephone lines or LAN cables. Alligator clips and a standard RJ11 plug allow the tone generator to be connected to stripped wires, terminal panels, wall plates, or modular single line jacks.

- **Dimensions:** (H x W x D): 7” x 1.87” x 1.12” (177.8 x 47.5 x 28.4 mm)
- **Weight:** 5.8 oz. (164.4 g)
- **Power:** Standard 9-volt battery

**Cable Tracer Model 261**

The Line Tracer is a hand-held inductive tracer that will help to identify wires without piercing the insulation. It can trace Tone Generator signals through dry wall, wood and many other non-metal surfaces.

- **Hi-gain, hi-impedance amplifier**
- **Capable of identifying tones up to 12 inches away (under ideal conditions)**
- **Rugged, moisture resistant, mylar cone speaker**

- **Dimensions:** (H x W x D): 7.37” x 1.87” x 1.12” (187.1 x 47.5 x 28.4 mm)
- **Weight:** 4.9 oz. (138.9 g)
- **Power:** Standard 9-volt battery

Part No. 01BK262 • Price: $74.00
IN-CIRCUIT CapAnalyzer

MODEL 88A

Checks electrolytic caps in-circuit with great accuracy in 3 seconds. Eliminates need to remove caps from board to test. Correctly measures resistance (DCR) and equivalent series resistance (ESR), which is the trick to locating bad caps in-circuit.

- Portable, hand-held, AAA battery operated (included).
- Automatically discharges capacitor.
- Checks for DCR leakage and shorts.
- Range: 0.47 to 2,200 µF electrolytics.
- Measures ESR from 0.1 to 20 ohms.
- Beeps from 1 to 5 beeps depending on quality and ESR of cap.
- Gold plated tweezer probe for radial and surface mount caps.
- Color chart shows typical good, fair, bad readings.

Part No. 01CT88A • Price: $220.00

RSR— RS-232 BREAK OUT BOX

- Provides quick and easy way to troubleshoot or customize any RS-232 data line
- Line powered
- Rewires RS-232 interface
- Dual state LED monitors both positive and negative levels
- Monitors lines 2, 3, 4, 5, 6, 8, 15, 17, 20 and 24
- 48 test points; 20 jumpers included
- Rugged plastic case

Part No. 03BKBX • Price: $26.90

TRIPLETT WireMaster XR-2

LAN CABLE TEST SET WITH TRACER TONE

- Verifies point-to-point wiring of twisted pair LAN cables, telephone cables and other type cables with RJ-45 and RJ-11 connectors.
- Tests LAN crossover and telephone patch cables.
- Generates 2 distinct warble tones usable for cable tracing.
- Checks continuity in cable conductors.
- 8 LED’s identify source and destination of each conductor.
- Checks straight-through, reverse wired and crossover patch cables.
- Remote testing of long cable runs up to 1,000 ft.
- User selectable features include:
  — RJ-11 4 conductor or 6 conductor test.
  — Forward or reverse sequencing on transmitter.
  — High or low pitch tracer tone.
  — Local or remote test mode on receiver.
- Carrying case included.

Part No. 34CTXR2 • Price: $95.00

TRIPLETT CABLE TESTER-5 TYPES WIRE MASTER XR-5

FEATURES

- Tests 5 types of cables RJ-45, RJ-11, BNC, 1394, USB
- Simple one button test
- Ergonomic portable handheld design
- Tests installed wiring or patch cables
- Remote attaches to main unit
- 600 ft. test distance (RJ-45/RJ-11/BNC)
- Built-in battery test
- LED’s indicate connections and faults
- Beeper provides audible annunciation of test results
- Tests shields in 1394 and USB cables
- Test shielded (STP) or unshielded (UTP) LAN cables
- One year warranty

INCLUDES:

- WireMaster XR-5
- BNC terminator
- BNC, RJ-11 and RJ-45 jumper cables
- Carrying case
- 9 volt battery
- Instruction manual

Part No. 34TR3260 • Price: $129.00

TRIPLETT CABLE FAULT FINDER TDR

- Low cost digital cable length meter / TDR
- Find cable length or distance to fault from ONE END
- Built-in tone generator for cable tracing and identification
- Simple operation with automatic distance display
- Internal library of 39 standard cable types
- Suitable for testing all types of communication cables

Part No. 34TR3271 • Price: $225.00

Call Toll Free: 1 (800) 972-2225 • In NJ: (732) 381-8020 • Fax: (732) 381-1006 (732) 381-1572
SUBSTITUTION BOXES, RESISTANCE, CAP AND INDUCTANCE

COST EFFECTIVE

Affordable decade boxes with rugged quality and high precision. Perfect for educational use, R & D, service, production line testing and maintenance.

All Units Feature:
• Sturdy, multi-way binding posts
• Slide switches add/subtract for desired value
• Durable ABS plastic housing case

Model RBOX-408 Resistance Decade Box
• 1 ohm to 11 Meg
• 1 ohm per step, 1% resistors 0.3W
• Seven decades of resistance

Model CBOX-406 Capacitance Decade Box
• 100 pF to 11 fF
• 100 pF per step, 5% caps, 50V
• Five decades of capacitance

Model LBOX-405 Inductance Decade Box
• 10µH to 111.1 mH, wide range and high resolution
• Four decades of inductance
• Slide switches that allow the user to simply add or subtract for desired value.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>1-9</th>
<th>10+</th>
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<td>01RBOX408</td>
<td>Res. Sub. Box</td>
<td>$90.00</td>
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<tr>
<td>01CBOX406</td>
<td>Cap. Sub. Box</td>
<td>$115.00</td>
<td>$110.00</td>
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<tr>
<td>01LBOX405</td>
<td>Ind. Sub. Box</td>
<td>$128.00</td>
<td>$119.00</td>
</tr>
</tbody>
</table>

SUBSTITUTION BOXES, RESISTANCE & CAP

• Convenient selection of standard resistors and capacitor values separately or in series and parallel RC combinations
• 36 resistor ranges in values from 15 ohms to 10M, 1 watt 10%
• 18 capacitor ranges in values from 100pf to .22 µF, 600V 10%
• Perfect for educational experiments and circuit designs.
• Compact design
• Test leads with alligator clip connectors included

Part No. 01RC10 • Price: $170.00
CUSTOM PART & COMPONENT KITS
PACKAGED TO FIT YOUR EXACT NEEDS

YOU ALWAYS
HAVE IT YOUR WAY!

CUSTOM PACKAGING • WIDE SELECTION OF QUALITY, BRAND NAME TOOLS • NUMEROUS OPTIONS...INCLUDING RESISTORS, CAPACITORS, SEMI-CONDUCTORS, WIRE TOOLS, TEST LEADS, PROBES, TEST EQUIPMENT AND MUCH MORE!

NO INVENTORY TO MAINTAIN
Kits are shipped pre-packaged.

ELIMINATES INVENTORY INVESTMENT
Your kits arrive just when you need them.

YOU DON’T HANDLE PARTS OR COMPONENTS
Every kit is custom packaged with the exact parts necessary to meet your individual course objectives.

ELIMINATES PARTS PROCUREMENT
You get all the advantages of our centralized purchasing. These saving are automatically passed on to you without the bother or trouble of procurement.

SELECT THE EXACT EQUIPMENT YOU NEED:

CAPACITORS
Ceramic Disc
Mylar
Tantalum
Electrolytic

ELECTRICAL HARDWARE
Wire
Fuses
Jacks
Banana Plugs
Binding Posts
Connectors
Sockets
Breadboards
Test Leads

ELECTRONIC EQUIPMENT
Logic Probes
Power Supplies
Multimeters
Oscilloscopes
Educational Trainers

INTEGRATED CIRCUITS
TTL
CMOS
Linear
Memory
Microprocessor
Peripheral Components

MAGNETIC PRODUCTS
Power
Transformers
Audio
Transformers
Inductors
Cores

OPTO DEVICES
LEDs
Displays
Bar Graphs
Arrays
Dot Matrix
Fiber Optic Devices

POTENTIOMETERS
Single Turn
Multi Turn
Panel Mount

RESISTORS
Carbon Film
Metal Film
Wire Wound
Networks

SEMICONDUCTORS (DISCRETE)
Diodes
Transistors
Diacs
SCRs
Triacs

SWITCHES
Toggle
Slide
Push Button
Rotary
Dip

You get all the advantages of our centralized purchasing. These saving are automatically passed on to you without the bother or trouble of procurement.

CUSTOM KITS
TRAINERS

PC INTERFACE TRAINER
A RUGGED YET LOW-COST INTERFACE TO THE PC
MODEL MDE8255LPT

This Trainer provides a means of interfacing with the PC via the LPT port. The 8255 Trainer is perfect for both desktop and laptop computers. All it needs is a 9V DC adapter.

Due to the internal structure of MS Windows, separate drivers are required for both Assembly language and Visual C++ environments. To download these drivers, visit the following site: http://www.microdigitaled.com/

TRAINER FEATURES

- Can be used for both Desktop / Laptop PCs
- Single 8255 chip
- Ports A, B, C available via terminal blocks
- Onboard TTL power supply
- 8 TTL compatible switches
- 8 LEDs for reading outputs

TEXT BOOK
THE X86 PC: ASSEMBLY LANGUAGE, DESIGN AND INTERFACING

Easy to understand, step-by-step approach to teaching the fundamentals of 80X86 assembly language and PC. This edition has been updated to include coverage of 64-bit microprocessors. Lab experiments can be downloaded from website. Authors Muhammad Mazidi and Janice Mazidi

Part No. Description Price
01MDE8255LPT Trainer MDE8255LPT $75.00
045USB-SERIAL with Cable and Voltage Adapter 9.95

TEXT BOOK
31PCC1-010 The x86 PC: Assembly; 5th Edition 130.00

INDUSTRIAL ELECTRONIC CONTROLLER – MODEL MIAC-01

This can be used to control a wide range of electronic systems. Operates off 12V or 24V. It has 8 analog or digital inputs, 4 high current relay outputs and 4 motor outputs. 4 line LCD display and control keys.

- Programmable from PC using USB port
- Easy to program with flow charts, C or Assembly code
- Free copy of Flowcode (for flow charts)
- LabView and Visual Basic compatible

Part No. 01MIAC01 • Price: $209.40

8051 SINGLE BOARD COMPUTER TRAINER
BASED ON DS89C430 (DALLAS SEMI)
MODEL MDE8051

This development board has a Maxim Semiconductor’s ultra-high-speed DS89C450 (64Kbytes) flash memory based 8051 (80C52 compatible) microcontroller installed on a DIP socket. Through the use of an USB connection, a terminal program such as hyperterminal can download the assembled or compiled hex file directly into the DS89C450 and the code you have developed can start running in the trainer right away.

MDE-8051 allows beginners to learn 8051 based microcontrollers in a convenient way by providing female and male headers connecting to the I/O ports. It is very easy to prototype with a breadboard.

MDE-8051 provides 8 LEDs and a driver to allow users to test I/O port output with minimum effort. In addition, MDE-8051 has 8 DIP slider switches to let users input logic signals with simply flipping switches.

Using a terminal program, one can program the microcontroller by flipping the slide switch to program or run. A DIP socket allows the programmed microcontroller to be removed for its ultimate application and re-program another chip repetitively.

ADDITIONAL WEB RESOURCES
How to test and program MDE8051
http://www.microdigitaled.com/hardware/8051/using.html
Information about DS89C420:
http://www.maxim-ic.com/quick_view2.cfm/qv_pk/2963
Software Downloads
http://www.microdigitaled.com/software_8051_html.html

TEXT BOOK
THE 8051 MICROCONTROLLER AND EMBEDDED SYSTEMS

This book uses a step-by-step approach to teaching the fundamentals of assembly language programming and interfacing of the 8051 microcontroller. Simple, concise examples are utilized to show what action each instruction performs, then a sample is provided to show its application. For anyone interested in learning about the 8051 microcontroller.

Included accessories: Power supply, serial cable for connection to the computer

Part No. Description Price
32MT8051 8051 Single Board Computer Trainer $75.00
31M8051 TEXT BOOK - The 8051 Microcontroller and Embedded Systems 136.50
## RSR™— DIGITAL I/O MODULE

### KIT / ASSEMBLED

This trainer comes in kit form. It provides all necessary features for experimentation and prototyping of digital circuits. This trainer includes 8-SPDT toggle DIP switches, 8-LED indicators, clock conditioning circuit, two pulse switches, and 26 screwless terminal blocks for easy circuit connection. The kit comes with easy to follow instructions.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>3200DIGKIT</td>
<td>$27.95</td>
</tr>
<tr>
<td>3200DIGASSMB</td>
<td>$38.95</td>
</tr>
</tbody>
</table>

## ANALOG-DIGITAL TRAINER

### SINGLE BOARD

Compact, affordable and practical. Offers all the necessary features for any curriculum requiring electronic lab training and experimentation. Includes a multiple output power supply, signal generator, independent clocks, logic switches, tri-state LED indicators, frequency function and more. This is a powerful training and prototyping tool. Comes complete with 12vdc adapter with din connector to mate directly to board, plus operation manual.

- **Portable**: Easily transported. Large solderless breadboard area (1,640 tie points)
- **Power Supply**: ±9V and ±5V @ 500mA
- **Digital**: 16 tri-state multi-color **LED indicators** which remain in a normally lit pattern which alerts user that the LED is functioning (color then changes when in operation). Two **independent clocks**, 16 **logic switches**, 2 **momentary switches**.
- **Analog**: Sine and Square wave generator. Variable amplitude, variable offset, variable frequency to 20K
- **Operation manual and power adapter (±12V) included**
- **Optional** – 344 page circuit experiment and training book used by leading technical colleges. Emphasizes the relationship between design, analysis and testing. To fully utilize optional Experiment Book including circuit analysis, some additional hardware items (available from ELECTRONIX EXPRESS) and software may be needed.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
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<tr>
<td>01ADASM</td>
<td>Single Board Analog-Digital Trainer</td>
<td>$74.95</td>
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<tr>
<td>2700MJW70</td>
<td>140 Piece Jumper Wire Kit</td>
<td>3.90</td>
</tr>
<tr>
<td>31WI470474341</td>
<td>344 Page Experiment/Training Book</td>
<td>42.95</td>
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</table>

## velleman USB EXPERIMENT INTERFACE BOARD

The K8055 interface board features 5 digital input and 8 digital output channels. There are also 2 analog inputs and outputs with 8 bit resolution. Number of inputs/outputs can be expanded by connecting up to a maximum of four cards the PC’s USB connectors. All communication routines are contained in a Dynamic Link Library (DLL). Write custom Windows (98SE, 2000, Me, XP) applications in Delphi, Visual Basic, C++ Builder or any other 32-bit Windows application development tool that supports calls to a DLL.

### DIAGNOSTIC/TEST SOFTWARE:
- Separate output / input test
- Clear all / set all function
- Counter function on inputs
  - 1 and 2
- Analog output set sliders
- Analog input bar-graph indicator
- Conversion time 20ms per command

### SPECIFICATIONS:
- 5 digital inputs, 8 outputs
- 2 analog inputs and outputs
- Power supply through USB Diagnostic software with DLL included

### Requirements
- Pent. CPU, SB1.0, Windows 98SE, CD ROM player & mouse

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>1-4</th>
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<tr>
<td>32VK8055</td>
<td>Kit Version</td>
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<td>32VKMV110</td>
<td>Assembled Version</td>
<td>79.00</td>
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</table>

## MATRIX EDUCATION SERIES

### “C” FOR PICmicro® MICROCONTROLLERS CD

The C for PICmicro microcontrollers CD ROM is designed for students and professionals who need to learn how to use C to program embedded microcontrollers. It also provides all the software tools needed to actually program a PIC16F84 – including a full C compiler and device programmer that is compatible with the Matrix PICmicro development board. Although the course focuses on the use of the PIC series of microcontrollers, this CD ROM will provide a relevant background in C programming for any microcontroller. The CD ROM assumes no previous experience of C programming – the only assumed knowledge is an ability to use a web browser and an understanding of basic digital electronics. In addition to the required underpinning knowledge PIC-C includes 9 complete projects, each of which has up to 5 subsections, that take users through the material in a relevant context.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Price</th>
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<tr>
<td>01ELPCST3</td>
<td>“C” PICmicro® Student Vers.</td>
<td>$68.00</td>
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<tr>
<td>01ELPCS13</td>
<td>“C” PICmicro® Single User Vers.</td>
<td>115.00</td>
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<tr>
<td>01ELPC103</td>
<td>“C” PICmicro® 10 User Vers.</td>
<td>420.00</td>
</tr>
</tbody>
</table>

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PC TRAINERS

RSR<sup>™</sup>— PLDT-2 PROGRAMMABLE LOGIC DEVICE PROTOTYPING BOARDS

WHY USE OLD, OBSOLETE TTL GATES TO IMPLEMENT COMPLEX LOGIC & STATE MACHINE DESIGNS?

with the ALTERA<sup>®</sup> EPM7128SLC™ CPLD

User design software available from the chip manufacturer.* Then download your design from the PC with the parallel port cable (included). Each comes with a user’s manual containing a complete description of the board together with Lab experiments, power supply and cable.

• Design software is available at the following chip manufacturer websites: For the Altera chip: http://www.altera.com. You can also go to the PLDT page on the Electronix Express website at http://www.elexp.com/tst_pldt.htm which has links directly to the software pages.

HAS THE ON-BOARD I/O CAPABILITY YOU NEED:

• DIP Switches
• De-bounced Momentary Switches
• LEDs
• 7-Segment Displays
• Numerous Connectors for Jumper-Wires and Ribbon Cables

ACCESSORY KIT (32RSRFPGAACC)

INCLUDES: 1 RSR MB-102 Breadboard with Wire Kit
1 RSR LP-610 Logic Probe
50 Breadboarding Pins

Part No. Description Price
01PLDT2 PLDT-2 Board $79.00
31CPLD CPLD Programming Lab Manual 77.95
31P0130453056 Experiments In Digital Fundamentals With VHDL 81.95
311401840302 Digital Design With CPLD Applications & VHDL, 2Ed. 190.95
32RSRFPGAACC Accessory Kit 19.95

RSR<sup>™</sup>— PLDT-3 PROGRAMMABLE LOGIC DEVICE PROTOTYPING BOARDS

WHY USE OLD, OBSOLETE TTL GATES TO IMPLEMENT COMPLEX LOGIC & STATE MACHINE DESIGNS?

with the XILINX® XC95108™ CPLD

User design software available from the chip manufacturer.* Then download your design from the PC with the parallel port cable (included). EACH comes with a user’s manual containing a complete description of the board together with Lab experiments, power supply and cable.

HAS THE ON-BOARD I/O CAPABILITY YOU NEED:

• DIP Switches
• De-bounced Momentary Switches
• LEDs
• 7-Segment Displays
• Numerous Connectors for Jumper-Wires and Ribbon Cables

ACCESSORY KIT (32RSRFPGAACC)

INCLUDES: 1 RSR MB-102 Breadboard with Wire Kit
1 RSR LP-610 Logic Probe
50 Breadboarding Pins

Part No. Description Price
01PLDT3 PLDT-3 Board $79.00
31DELE Digital Electronics Laboratory Experiments 84.05
32RSRFPGAACC Accessory Kit 19.95

CPLD PROGRAMMING & DIGITAL LOGIC SIMULATION – By Steve Waterman

A lab manual to accompany any digital electronics textbook. This lab manual can help you learn how to use Max+PlusII software by Altera Corporation. This manual starts with fundamentals of logic gates, then progresses to MSI devices, latches and flip flops. Then it moves on to clock dependent circuits including counters and registers, memory addressing, and converters.

Provides laboratory exercises that support Digital Fundamentals with VHDL by Tom Floyd. The manual supports the PLDT-2 and PLDT-3 boards from RSR Electronics, as well as the DeVry University board, and the Altera University Program board.

DIGITAL DESIGN WITH CPLD APPLICATIONS & VHDL, 2ED

2nd edition; 896 pages. Updated Altera’s Quartus II software and Lab.Source CD included with book. Thorough coverage of basic techniques and fundamentals to advanced principles.
### FPGA ALTERA BOARD WITH USB

Provides ideal vehicle for advanced design prototyping in the multimedia, storage, and networking. The board offers a rich set of features that make it suitable for use in a laboratory environment for university and college courses, for a variety of design projects, as well as for the development of sophisticated digital systems. Altera provides a suite of supporting materials for the DE1 board, including tutorials, "ready-to-teach" laboratory exercises, and illustrative demonstrations.

**Altera DE1:** Available on the Altera website (http://university.altera.com/materials/unv-dev-edu-boards.html)

**FEATURES**

- Altera Cyclone II 2C20 FPGA with 20000 LEs
- Altera Serial Configuration devices (EPCS4) for Cyclone II 2C20
- USB Blaster built in on board for programming and user API controlling
- JTAG Mode and AS Mode are supported
- 8Mbyte (1M x 4 x 16) SDRAM
- 4Mbyte Flash Memory
- 512Kbyte (256K x 16) SRAM
- SD Card Socket
- 4 Push-button switches
- 10 SPDT switches
- 8 Green User LEDs
- 10 Red User LEDs
- 4 Seven-segment LED displays
- 50MHz oscillator, 24MHz oscillator, 27MHz oscillator and external clock sources
- 24-bit CD-Quality Audio CODEC with line-in, line-out, and microphone-in jacks
- VGA DAC (4-bit R-2R per channel) with VGA out connector
- RS-232 Transceiver and 9-pin connector
- PS/2 mouse/keyboard connector
- Two 40-pin Expansion Headers
- DE1 Lab CD-ROM which contains many examples with source code

**Part No. 01FPGA4 • Price: $149.00**

### FPGA BOARD WITH USB PORT

**FEATURES**

- Provides means of learning and prototyping digital logic, computer systems and FPGA code. This board provides a complete low cost platform using Altera Cyclone II (EP2C8) chip connected to various LEDs, switches and 7-segment displays. One can use web edition of Altera Quartus II to design FPGA code using Verilog HDL, VHDL as well as other design methods
- USB port for transferring FPGA to chip configurations
- 8 red LEDs, 8 green LEDs
- 2 sets of 4 SPDT switches
- 2 debounced, 4 non-debounced switches
- 40 pin and 2 DB-9 I/O connectors for interfacing
- 24MHz clock; can be multiplied or divided using internal PLL

**Part No. 01FPGA2 • Price: $150.00**

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**Model DL-030**

A highly rated 137 page Lab Manual written by a major U.S. university Professor is included with this trainer. Altera Cyclone ® II FPGA based, this unit is capable if integrating seamlessly into both Quartus ® II FPGA design framework and NOIS ® II GNU based development environment. While is is advanced enough to design and prototype complex embedded systems, students are able to create and implement designs in a little as one hour.

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- Well written 137 page Student Trainer Lab manual with experiments
- Altera Cyclone ® III, EP3C16F256C8N FPGA
- USB interface cable, Software CD, sturdy jumpers for breadboards
- 270 tie point breadboard, 3 pushbutton switches
- LED's, 3 seven-segment displays requires Windows XP or higher, 10 Gb for installation and 4 Gb to run post installation

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- **01ELECCSI2**
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- **CIRCUITS AND COMPONENTS – VER. 2**
- **01ELEPS10**
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- Dice Timer
- Bike Alarm
- Power Amplifier
- Sound Activated Switch
- Reaction Tester

Part No. Description Price
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- Teachers’ notes and editable worksheets included on CD.
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- Virtual labs
- SPICE® simulation of over 50 editable circuits
- Design parameters for editable worksheets

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01ELANAST2 Analog Electronics – Student Ver. $59.00
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