

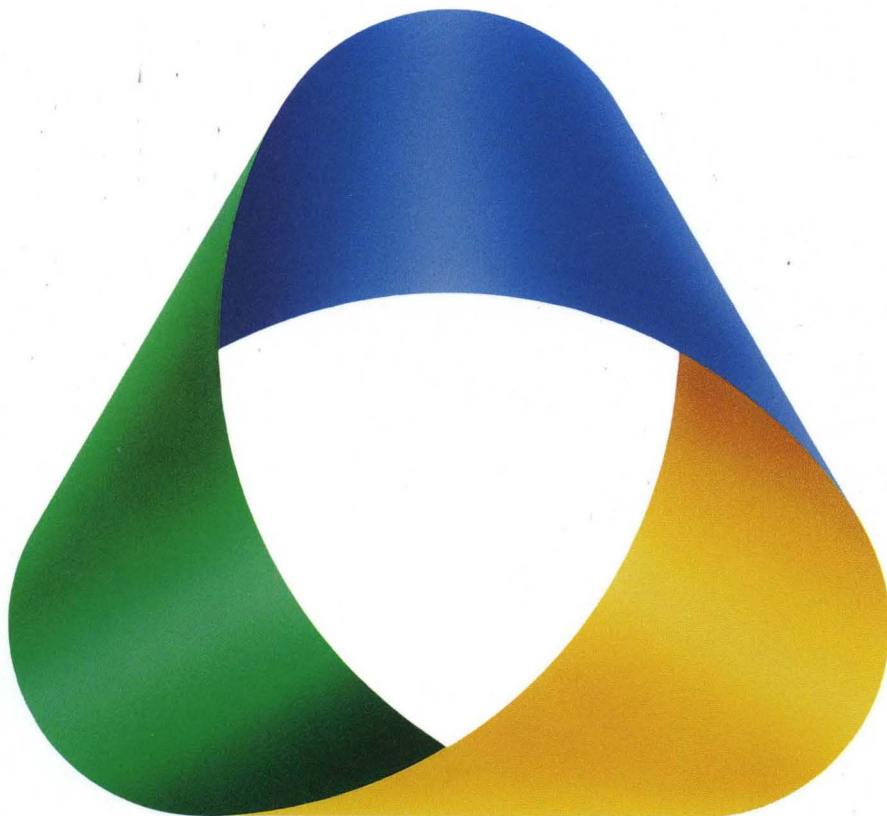


FusionPLDSM Catalog

Design Support Tools for AMD's Programmable Logic

Spring 1991

Advanced
Micro
Devices



AMD + FusionPLD Partners = Customer Solutions.

FusionPLD Catalog

**Design Support Tools for AMD's
Programmable Logic**

Spring 1991



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FusionPLD was established to allow PLD users to design and program AMD's PLDs using tools you already own and know. FusionPLD offers you reduced learning curves in designing with AMD PLDs at little or no additional cost. AMD has chosen to establish close engineering and marketing relationships with leading third-party vendors to provide users with the most affordable and highest-quality support program in the industry.

FusionPLD partners are a select group of leading third-party support vendors with proven track records. Actual development work with these vendors begins far in advance of AMD actually introducing silicon devices, and each vendor must adhere to strict AMD quality and certification requirements to become a FusionPLD partner. The result is timely support of new AMD PLD devices at quality levels commensurate with being the industry leader in programmable logic.

AMD provides each FusionPLD partner with in-depth technical information and training to assure you are supported during the design and programming phase of your project. The world's leader in Bipolar PLD technology and fastest growing CMOS PLD supplier is proud to announce a leadership program in providing customers with software and hardware support for all of our programmable logic devices.

A handwritten signature in black ink that reads "Andrew D. Robin". The signature is fluid and cursive, with a large initial 'A' and 'R'.

Andy Robin
Director of Marketing
Programmable Logic

AMD PLD LITERATURE

AMD Programmable Logic Literature

Publication #

Programmable Array Logic Data Book

10173B

Contains a detailed overview and complete set of data sheets for AMD's PAL, Sequencer, and ECL devices.

MACH Family Data Book

14051D

An introduction to the new MACH1 and MACH2 families, this book includes the MACH110 and MACH210 final data sheets, the preliminary data sheets for the next family members, and advance information on the MACH220.

MACH Casebook

15592A

The casebook uses a complete logic state analyzer (LSA) design, implemented using both MACH110 and MACH210 devices, to illustrate the interplay between device attributes, design requirements, and architectural considerations during a typical design cycle.

PAL Device Programmer Reference Guide

14097C

A guide to AMD approved programmers and a detailed listing of the AMD devices these programmers support.

Advanced PLD Menu

10253G

This menu illustrates the complete offering of AMD's PAL devices, MACH products, and Sequencers.

Contact your AMD sales representative for literature on this list. Additional literature becomes available monthly. Please ask for the latest information on upcoming data sheets, application notes, and brochures.

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INFORMATION ABOUT THE FUSIONPLD PROGRAM

If you are a developer or manufacturer of programmable logic tools and wish to be included in the next FusionPLD catalog or want information about the benefits the FusionPLD program offers, please contact:

FusionPLD Program Manager

Advanced Micro Devices, Inc.

M/S 1028

P.O. Box 3453

Sunnyvale, CA 94088

Tel: (408)235-7037

Fax: (408)235-7075



SECTION 1—PLD/FPGA COMPILERS

ADVANCED MICRO DEVICES, INC.

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Am29CPL100 SOFTWARE

VERSION 3.54

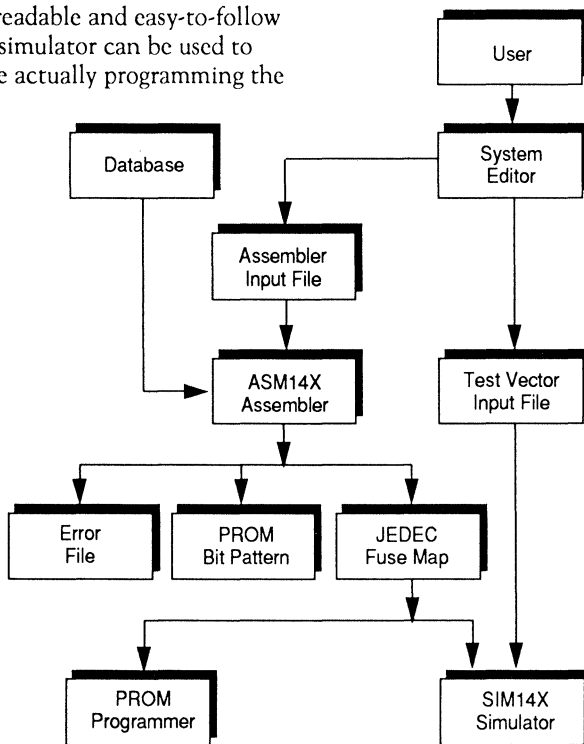
Advanced Micro Devices, Inc.

AMD's Field-Programmable Controller devices, the Am29CPL151 and Am29CPL154 are supported by dedicated software that takes advantage of the instruction-based nature of these devices.

Am29CPL100 software consists of two programs: ASM14X and SIM14X. ASM14X is the assembler program that accepts the user's design description and creates a programming file. High-level language constructs such as IF-THEN-ELSE and WHILE allow the programmer to write microcode in a logical and more conversational syntax. This enhances code documentation because the microcode is expressed in a readable and easy-to-follow format. The SIM14X simulator can be used to verify the design before actually programming the device.

STANDARD FEATURES

- ◆ ASM14X features:
 - High level next state constructs
 - Labeling of addresses/states
 - Naming of test conditions
 - Naming of output bits and fields
 - Binary, octal, decimal and hex numbers
 - JEDEC standard fuse map output



- Symbol table output
- Statement formats recognized by the ASM14X assembler:
 - IF (<condition>) THEN <action> [ELSE <action>]
 - WHILE (CREG <> 0) <action> [ELSE <action>]
 - CONTINUE
 - CMP TM(<mask>) to PL(<constant>)
- * See the Am29CPL151/4 data sheets for more details on assembler instruction syntax and device operation.
- ◆ SIM14X features:
 - Unit delay simulation of 29CPL15X code
 - Input required: JEDEC fuse map and test vectors
 - Output includes complete status information: input pins, expected and computed output pins, and registers
 - Breakpoint and single-step capability
 - Batch or interactive mode of operation

AMD DEVICES SUPPORTED

- ◆ Am29CPL151, Am29CPL154, Am29CEPL151, and Am29CEPL154 devices

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ IBM® PC/XT™ and compatibles running PC-DOS™ 2.0 or MS-DOS™ 2.11 or higher. 256KB available memory. Distributed on a single 5.25" disk. Hard disk not required.
- ◆ Text editor. Am29CPL100 software does include any text editor for creating assembler source and test vector files. Users must provide their own. Any standard text editor or word processor which produces standard ASCII output is acceptable.

SUPPORT

- ◆ Technical Support through AMD Corporate Applications (800) 222-9323 and AMD sales offices.

PRICE

- ◆ Free. Contact your local AMD sales office for more information.

CONTACTS

CORPORATE HEADQUARTERS:

Advanced Micro Devices, Inc.
901 Thompson Place
P.O. Box 3453
Sunnyvale, CA 94088
U.S.A.

Advanced Micro Devices has a worldwide network of sales offices. A list of these sales offices can be found on the last page of this catalog. For additional information about AMD's programmable logic family, contact the sales office in your area or call (800) 222-9323.

PALASM® 4

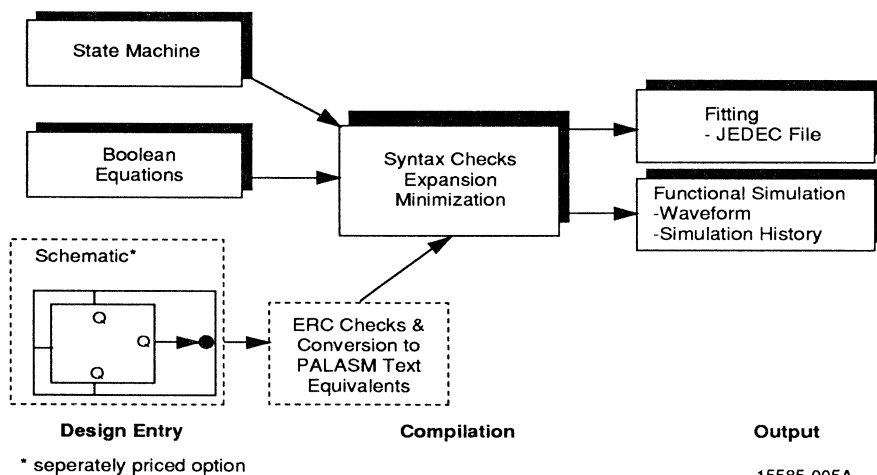
CURRENT VERSION: 1.1

Advanced Micro Devices, Inc.

PALASM 4 is a baseline PLD compiler enabling designers to configure AMD PAL® and MACH™ devices quickly, easily and effectively. PALASM offers text design entry, compilation and functional simulation of AMD PAL and MACH devices.

STANDARD FEATURES

- ◆ Easy to use
 - Menu-driven interface to simplify design work
 - On-line help to assist users in debugging designs and resolving problems
 - Rich documentation provides users with software and device references, recommended design strategies for MACH devices, and tutorials
- ◆ Design flexibility
- ◆ Create your design with Boolean or state equations
 - Optional schematic capture interface for MACH-based designs
 - Merge multiple PALASM text-based files
 - Allows JEDEC generation for all AMD devices
- ◆ Automated logic reduction and fitting
 - Automatic synthesis of user's logic
 - Device specific optimization routines
 - Automated fitting options for AMD's MACH family



15585-005A

Design Flow and Operation

- ◆ Logic simulator
 - Event-driven
 - Familiar commands allow you to describe functions easily
 - Generates vectors from test input

AMD DEVICES SUPPORTED

- ◆ Supports all AMD PAL, PLS and MACH device families. Contact AMD for the latest support information on new AMD devices.

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ IBM PC-XT/AT™ and compatibles running PC or MS-DOS 3.1 or above; 6 MB disk space, 540 K or more available memory. Extended memory (1 MB minimum) recommended for more complex designs, particularly for complex MACH designs.

SUPPORT

- ◆ One year free software maintenance and technical support included
- ◆ Technical assistance is available from your local AMD sales office and AMD Corporate Applications (800) 222-9323
- ◆ Private BBS

PRICE

- ◆ \$125
- ◆ Available through AMD distributors.

OPTIONS

- ◆ MACH Libraries and Interface to OrCAD/SDT™ III Software allows PALASM 4 users to schematically enter MACH-based designs in OrCAD/SDT III.

CONTACTS

CORPORATE HEADQUARTERS:

Advanced Micro Devices, Inc.
901 Thompson Place
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Sunnyvale, CA 94088
U.S.A.

Advanced Micro Devices has a worldwide network of sales offices. A list of these sales offices can be found on the last page of this catalog. For additional information about AMD's programmable logic family, contact the sales office in your area or call (800) 222-9323.

ABEL™-4

CURRENT VERSION: 4.0

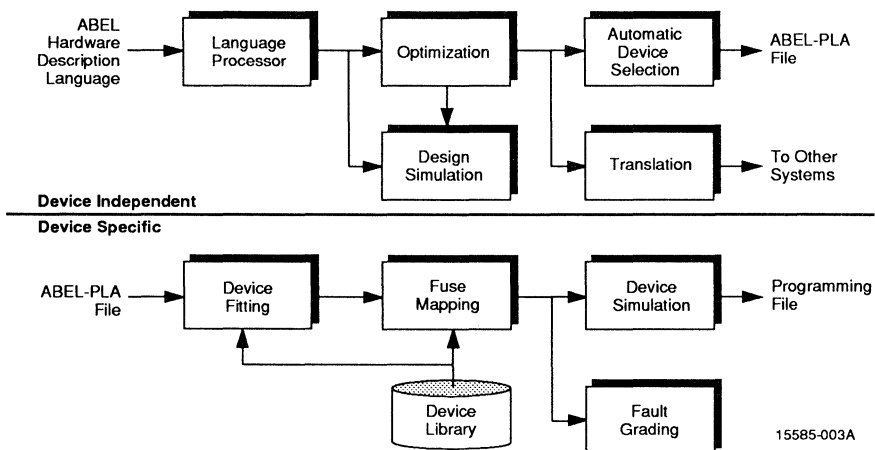
Data I/O Corporation

ABEL-4 design software lets you easily describe and implement logic designs targeted for programmable integrated circuits. Designs are entered behaviorally, and can automatically be simulated, synthesized, and converted into industry-standard output formats.

These formats include JEDEC standard programmer load files for programmable logic devices (PLDs), ABEL-PLA files for Field Programmable Gate Arrays, and PROM translation files for PROMs.

STANDARD FEATURES

- ◆ Design verification features
 - Design simulation
 - PLD device simulation
 - High-level test-vector language
- ◆ Optimization/synthesis features
 - Automatic logic optimization
 - Register synthesis
- ◆ Output format features: PLD files (JEDEC), FPGA/ASIC files, PROM files
- ◆ OPEN-ABEL: to provide a path for future device growth, ABEL-4 is open. This allows semiconductor manufacturers and other technology partners to interface with and integrate ABEL-4 into their environments.
- ◆ User documentation: user manual, tutorials, reference card, logic diagram package, design examples
- ◆ Universal device support: ABEL-4 currently supports over 250 programmable integrated circuit architectures representing over 4000 devices from every vendor in the industry.
- ◆ Design entry features
 - Device-independent ABEL Hardware Description Language (ABEL-HDL™)
 - Truth table design entry
 - State machine synthesis
 - Logic equation design entry



15585-003A

Design Flow and Operation

AMD DEVICES SUPPORTED

- ◆ PLD, PAL, MACH, and PROM devices

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ Personal computers: MS-DOS v3.0 or higher. 640 KB RAM, hard disk drive, 1 parallel port. Serial port recommended. Distributed on 3.5" and 5.25" diskettes.
- ◆ Sun™ workstations: Sun-3™ or SPARCstation™, running Sun OS™ v4.0 or higher. 1 serial port recommended. Distributed on cartridge tape.
- ◆ DEC®/VAX™ workstations: standard micro or mainframe running VMS™ v5.0 or higher. Distributed on TK50 cartridge or reel tape in VMS backup format.
- ◆ Apollo® workstations: standard workstation with OS v10.0 or higher. 1 serial port recommended. Distributed on cartridge tape.
- ◆ Macintosh® computers: contact Capilano Computing Systems, Ltd. at (604) 669-6343 for more information.
- ◆ Cadence: contact Cadence at (508) 458-1900 or your local Cadence representative for more information.

- ◆ Intergraph®: contact Intergraph at (205) 730-8502 or your local Intergraph representative for more information.

SUPPORT

- ◆ One year maintenance and technical support included
- ◆ Technical assistance available through Data I/O
- ◆ Private electronic bulletin board service

ABEL-4 OPTIONS

- ◆ SmartPart™ intelligent device selection: ABEL-4 is capable of giving you a list of potential devices that can be used to implement your design. This list is based on a database of over 250 device architecture and 4000 devices.
- ◆ Device fitters: to guarantee efficient use of silicon, Data I/O provides custom device fitters for unique programmable architectures. These fitters can be used as stand-alone, or in conjunction with SmartPart intelligent device selection.
- ◆ PLDgrade™: fault grading software allows user-written test vectors to be fault graded by the design engineer, before passing the design to production. This allows the design engineer to make changes to the design to optimize for testability.

CONTACTS

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LOG/iC[®] VERSION: 3.3

ISDATA GmbH

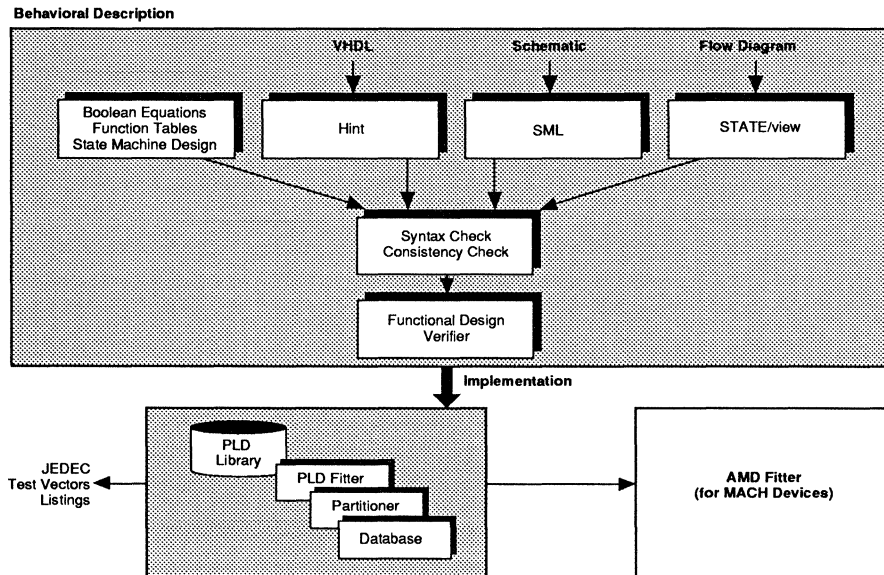
LOG/iC PLUS and LOG/iC PERFECT are integral parts of the LOG/iC digital design system. LOG/iC features a universal, device independent philosophy which covers the full ASIC spectrum including AMD's PAL and MACH products. The modular structure of LOG/iC with its numerous flexible interfaces smoothly integrates into any CAE environment.

STANDARD FEATURES

- ◆ Wide choice of design entry methods ranging from ISDATA's high level syntax, to schematics, to VHDL definitions, to state machine flow diagrams.
- ◆ Industry's most advanced optimization through proprietary algorithms (FACT and BRUNO), and also, the industry recognized algorithm ESPRESSO.

- ◆ Interactive partitioning (PERFECT) for denser device usage and faster processing.
- ◆ PLD Data Base for interactive device selection and sophisticated on-line data on all AMD devices.
- ◆ Functional verification by interactive waveform simulator for testing and debugging before device implementation.

LOG/iC PLD synthesis products keep you in control of designs, which may consist of up to 256 inputs and 256 outputs. LOG/iC's hierarchical design method allows any convenient mixture of



15585-004A

Design Flow and Operation

design entries, including Boolean, schematics, VHDL files, and state machine diagrams. The "Consistency Checker" detects logical errors, inconsistencies, and traps in which the designer might step.

Powerful optimizers squeeze your design into the smallest chip possible. The Partitioner in LOG/iC PERFECT is interactive and promises solutions which truly meet your restrictions and requirements in a minimum of time. The PLD Data Base automatically suggests devices within your personal design limitations. The entire spectrum of AMD's and other vendor's PLD devices are available to you. Four screens of information on each support chip make you an instant PLD expert. LOG/iC PERFECT offers automatic pin assignment for selected devices.

The PLD's that are configured by LOG/iC fitters can also generate test-vectors and the JEDEC file automatically. The MACH devices currently use AMD's fitter.

AMD DEVICES SUPPORTED

- ◆ PLD, PAL, MACH, and PROM devices

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ Personal computers: IBM PC-XT/AT
- ◆ Apollo
- ◆ Sun
- ◆ HP®
- ◆ DEC VAX

Several kinds of licenses ranging from stand-alone to 16 user networks are available. Change of platform and license is possible at any time through ISDATA's LOG/iCfund Policy, a unique trade-in policy that secures your investment.

SUPPORT

- ◆ ISDATA offers a software maintenance plan which guarantees you up-to-date software.
- ◆ Support is offered by a worldwide network of ISDATA's distribution partners.
- ◆ BBS services available in the U.S. and Germany.
- ◆ Registered customers receive "LOG/iC News" four times a year.

CONTACTS

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6-16-6 Nishishinjuku
Shinjuku-ku
Tokyo, Japan 160
Phone: (033) 344-2001

CUPL™

CURRENT VERSION: 4.0

Logical Devices, Inc.

CUPL is a high level, universal design software package for Programmable Logic Devices (PLDs) and Field Programmable Gate Arrays (FPGAs). CUPL offers a variety of design expression formats, true language flexibility, powerful logic minimization, DeMorgan expansion, preprocessor capabilities, as well as simulation.

STANDARD FEATURES

- ◆ Hi-level equation, truth table and multiple state machine design expression formats
- ◆ Individual pin minimization
- ◆ Language flexibility: BIT FIELDS allow the grouping of variables, naming a group, and thereafter treating the group as a single entity.
- ◆ *Assertion Level Tracking* allows *Input* and *Output* signal assertion levels to be specified in the pin declaration section of the logic description file. CUPL allows declarations for either active-HI or active-L signals.
- ◆ Indexed variables
- ◆ PALASM translator (AMD PLD compiler)
- ◆ Menu driven or batch mode
- ◆ Interactive device partitioning: PPartition™ is a design partitioner which automatically implements a design into one or more devices.
- ◆ Automatic device selection. Device-independent design without concern for target architecture. PPartition and CUPL optimizers will perform device fitting for you.



- ◆ Output file formats: JEDEC, ASCII, Hex, HL Download, P-CAD PDIF, Berkley PLA, Modified PLA/MACH, EDIF 2.0, PDS, VHDL/Verilog
- ◆ Resource utilization reports, documentation, expanded listings of macros, AMD Fitter report, partition report, pin placement.
- ◆ Universal support: CUPL was designed with a true database library containing device characteristics. This database is expandable for the future and currently supports well over 2,000 devices. These devices include the latest CMOS PAL, PROM, IFL, FPGA, ERASIC, GAL®, EPLD, EEPLD, PEEL, FPLA, and LCA™ devices, as well as AMD MACH devices.
- ◆ OnCUPL™ allows a variety of schematic capture packages to link to CUPL, such as OrCAD®, Omatation, Racal, Phase III, Protel, Wintek, P-CAD, VAMP McCAD, View Logic, etc.

AMD DEVICES SUPPORTED

- ◆ PAL, MACH, and PROM devices
- ◆ Contact Logical Devices for the latest support information on AMD devices

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ Personal computers: IBM PC/XT, PC/AT, PS2 and MS-DOS compatibles
- ◆ Personal computers: 386-based in protected mode
- ◆ Sun: Sun-3, SPARCstation
- ◆ HP/Apollo: HP9000, DN3XXX, DN4XXX
- ◆ DEC: VAX/VMS, DECstation/ULTRIX™
- ◆ Harris: Nighthawk
- ◆ Apple: Macintosh/MacOS

SUPPORT

- ◆ Phone support, FAX, TELEX, BBS. Contact Logical Devices for more information.

CONTACTS

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Shibuya-ku Toyko, Japan
Phone: (033) 461-9311
Fax: (033) 461-9854

PGA DESIGNER™

CURRENT VERSION: 2.1

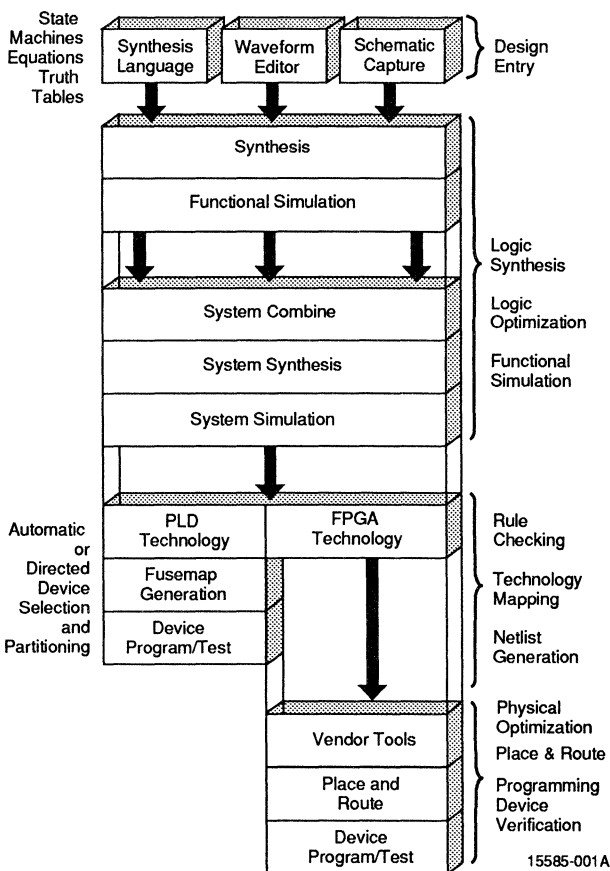
Minc, Inc.

PGA Designer is a powerful design synthesis tool that provides enhanced productivity when designing with all types of programmable logic, including the advanced architecture of today's field programmable gate arrays (FPGAs). A true system-level design methodology allows you to choose the most efficient design entry mechanism for your particular design. Using integrated functional simulation, you verify that your design description is complete and accurate. PGA Designer then assists you in targeting the most appropriate device architecture. Whether you choose FPGA or PLD implementation, PGA Designer provides powerful features to improve your design productivity.

STANDARD FEATURES

- ◆ Multiple description methods allow most productive design entry:
 - High-level language (including state machines, truth tables, Boolean equations)
 - Waveform editor/compiler
 - Schematic capture using popular schematic editors
- ◆ Functional simulation prior to device selection allows rapid design iterations.
- ◆ Quick, easy re-targeting between FPGA and PLD devices and vendors lets you develop the best implementation for your design; you can even mix PLDs and FPGAs.
- ◆ Optimization and technology mapping provides best use of silicon resources:
 - Logic reduction/optimization
 - Vendor-specific technology mapping
 - Use of vendor-specific description formats for optimal interaction with FPGA back-end software

- ◆ Full-featured support for all popular FPGA and PLD devices (over 3,200) and architectures (over 150) means the best use of the latest programmable logic technology.



Design Flow and Operation

15585-001A

With PGA Designer you can take advantage of multiple design entry mechanisms (language, waveform, schematic) to describe the logic functionality of your design. You can develop your design completely independent of a particular device architecture, then verify your logic description with the functional simulator.

Once this process is complete, you select the programmable technology for your implementation (PLD or an FPGA). If you choose an FPGA technology, your design is rule checked to verify its suitability for the chosen design architecture, then translated into the appropriate format for transfer to the FPGA vendor's place-and-route tools. The design is then completed using the vendor's software.

AMD MACH devices are supported in a fully integrated fashion that allows you to generate a JEDEC file directly from PGA Designer.

If you choose to implement your design in PLD technology, you use the powerful features of Minc's PLDesigner™ system (see separate entry in this catalog) to select devices and automatically partition your design.

AMD DEVICES SUPPORTED

- ◆ MACH and PAL devices
- ◆ Check with Minc for the latest support information on AMD devices

CONTACTS

UNITED STATES

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Japan Macnics Corporation (JMC)
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Yokoham-City, Kanagawa-Pref.
226 Japan
Attention: Daisuke Kawano, Manager
Phone: (045) 939-6150

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ Sun: Sun-3 and SPARCstations
- ◆ Personal computers: 286/386/486 with hard disk, running MS-DOS ver. 3.0 or greater. 2 Mb minimum extended memory required.
- ◆ Minc design tools are part of integrated CAE solutions sold and supported by:
 - Mentor Graphics
 - Valid Logic
 - Intergraph
 - Teradyne
 - Racal-Redac

SUPPORT

Minc prides itself on providing "peer support." Your product and applications questions are answered on-line by experienced design engineers. 90 days of support are provided with the purchase of PGA Designer. Following this period, Minc offers annual maintenance agreements to provide continued software updates along with our unrivaled applications support.

PRICE

- ◆ MS-DOS: starting form \$2,500, up to \$6,000
- ◆ Sun: starting from \$13,000, up to \$16,000

PLDESIGNER

CURRENT VERSION: 2.1

Minc, Inc.

Minc's PLDesigner brings true system-level design methodology to PLD design. This approach provides significant productivity improvements by allowing you to choose the most efficient design entry mechanism for your particular design. Using integrated functional simulation, you verify that your design description is complete and accurate. PLDesigner's expert system then assists you in selecting the most appropriate device architecture and generating the physical device implementation based on the physical characteristics of your system (ie. speed, power consumption, cost, size, etc.).

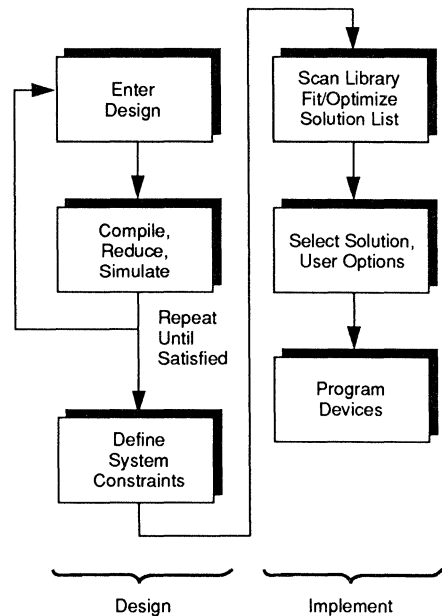
STANDARD FEATURES

- ◆ Multiple description methods allow most productive design entry:
 - High-level language (including state machines, truth tables, Boolean equations)
 - Waveform editor/compiler
 - Schematic capture using popular schematic editors
- ◆ Functional simulation prior to device selection allows rapid design iterations.
- ◆ Automatic device selection based on user-specified design criteria minimizes time spent learning architectural details and offers device options you may have not considered.
- ◆ Fully automatic partitioning across multiple PLDs simplifies the task of developing large designs and provides more optimal solutions.
- ◆ Highly efficient optimization provides best use of silicon resources:
 - Automatic DeMorganization
 - Automatic polarity selection
 - Automatic don't care generation

- ◆ Full-featured support for all popular devices (over 3,200) and architectures (over 150) means the best use of the latest technology in PLDs.

With PLDesigner you can take advantage of multiple design entry mechanisms (language, waveform, schematic) to describe the logic functionality of your design. You can develop your design completely independent of a particular device architecture, then verify your logic description with the functional simulator.

Once this process is complete, you specify information regarding the performance requirements of the circuit. This may consist of constraints for speed, temperature range, cost, size, as well as others,



15585-002A

Design Flow and Operation

including user-defined parameters. PLDesigner then uses these constraints along with the logical description of the design, and selects the appropriate PLD architectures and devices to implement the desired function. If needed, the logic and test vectors will be partitioned (automatically, with no user interaction required) across multiple devices.

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ FPGA architectures, including AMD MACH devices, are supported with Minc's PGADesigner (see separate entry in catalog).
- ◆ Check with Minc regarding support for the latest AMD devices.

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ Sun: Sun-3 and SPARCstation
- ◆ Personal computers: 286/386/486 with hard disk running MS-DOS ver. 3.0 or greater. 2 Mb minimum extended memory required.

- ◆ Minc design tools are part of integrated CAE solutions sold and supported by:

- Mentor Graphics
- Valid Logic
- Intergraph
- Teradyne
- Racal-Redac

SUPPORT

Minc prides itself on providing "peer support." Your product and applications questions are answered on-line by experienced design engineers. 90 days of support are provided with the purchase of PLDesigner. Following this period, Minc offers annual maintenance agreements to provide continued software updates along with our unrivaled applications support.

PRICE

- ◆ PC-DOS: starting from \$1950, up to \$4500
- ◆ Sun: starting from \$3,950, up to \$12,500

CONTACTS

UNITED STATES

Minc, Inc.
6755 Earl Drive
Colorado Springs, CO 80918
U.S.A.
Phone: (719) 590-1155
Fax: (719) 590-7330

JAPAN

Promac Data Systems Division
Japan Macnics Corporation (JMC)
Hakusan Hi-Tech Park
807-1 Hakusan-Cho Midori-Ward
Yokoham-City, Kanagawa-Pref.
226 Japan
Attention: Daisuke Kawano, Manager
Phone: (045) 939-6150

ORCAD PROGRAMMABLE LOGIC DESIGN TOOLS

CURRENT VERSION: 4.01

OrCAD

OrCAD software for the DOS environment for programming PLDs. Includes a series of software tools for programing logic, generating test vectors and creating JEDEC and/or hex output.

STANDARD FEATURES

- ◆ Seven forms of input, including:
 - Boolean equations
 - Indexed equations
 - State machines
 - Truth tables
 - Numerical maps
 - Streams
- ◆ Test vector generation
- ◆ Schematic entry from OrCAD Schematic Design Tools
- ◆ Design portability—move designs from one device to another painlessly
- ◆ Integrated design documentation
- ◆ Support for 1500 parts
- ◆ No software or hardware copy protection

AMD DEVICES SUPPORTED

- ◆ PAL, PLD, and MACH devices
- ◆ OrCAD/PLD™ supports most popular AMD devices. Check with OrCAD for the latest support information.

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ IBM PC-XT/AT and PS/2, and compatibles running MS-DOS 2.0 or higher. 640K RAM. Graphics card. Mouse recommended.

SUPPORT

- ◆ One year free product and part library updates
- ◆ One year telephone technical support from factory trained service engineers
- ◆ One year access to 24-hour Bulletin Board System
- ◆ Subscription to OrCAD newsletter

PRICE

- ◆ \$495
- ◆ Contact OrCAD for additional pricing information

OPTIONS

OrCAD/PLD is integrated with OrCAD's family of engineering tools:

- ◆ OrCAD/SDT for fast, accurate schematic capture
- ◆ OrCAD/VST™ simulates digital designs and eliminates time-consuming prototyping
- ◆ OrCAD/MOD™ works with OrCAD/VST to read standard JEDEC files and create simulation models
- ◆ OrCAD/PCB™ takes your OrCAD/SDT netlist and produces precise circuit layouts quickly and easily

CONTACTS

UNITED STATES
OrCAD
3175 N.W. Alcock Drive
Hillsboro, Oregon 97124
U.S.A.
Phone: (503) 690-9881

SYSTEMPLD™/SYSTEMPGA™

CURRENT VERSION: 1.1

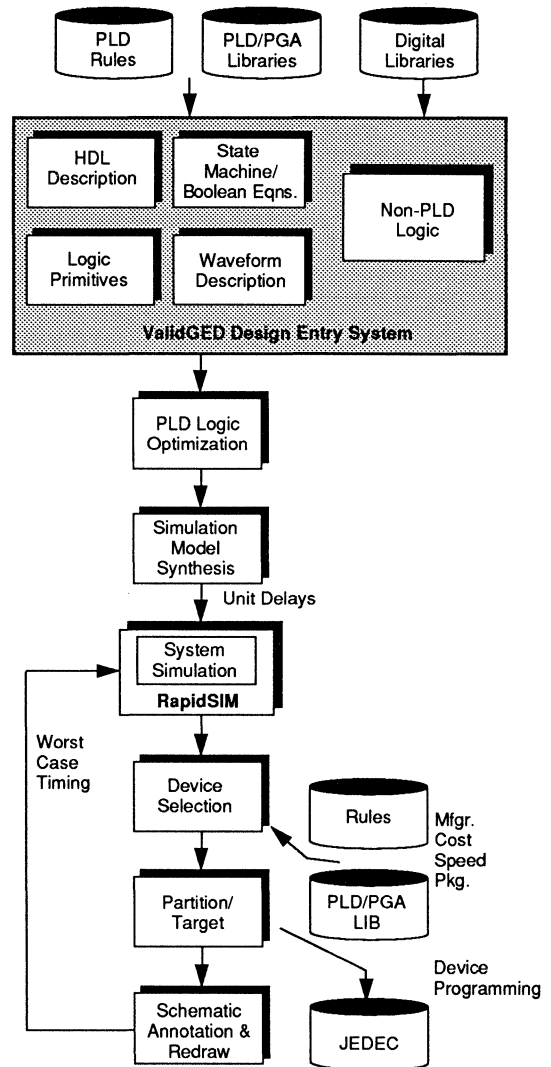
Valid Logic Systems, Inc.

SystemPLD and SystemPGA are the first tools to fully integrate PLD and FPGA design and simulation in their target environment from the beginning of the system design process. Through tight integration with Valid's Logic Workbench™ digital design environment and RapidSIM™ logic simulator, SystemPLD/PGA offers integrated PLD and FPGA system design capabilities.

SystemPLD/PGA provides a range of unique capabilities including the ability to freely mix PLD logic hierarchically throughout the design with the ValidGED™ design entry system, perform using complete system simulation with RapidSIM before device selection, and then automatically target PLDs and/or FPGAs from the design description.

In support of Valid's rules-driven design philosophy, SystemPLD/PGA performs automatic device selection and partitioning across multiple PLD devices based upon user-defined constraints either entered in on-screen forms or included in the schematic.

A unique SystemPLD/PGA feature is automatic redraw of schematics containing the actual PLDs after device selection. The implemented design can then be re-simulated with worst-case timing, packaged and forwarded to Valid's Allegro™ PCB layout system with no modification by the user.



15585-008A

Design Flow and Operation
Valid's SystemPLD and SystemPGA makes PLD and FPGA design an integral part of the overall system design process.

STANDARD FEATURES

- ◆ Integrates programmable logic design throughout the system design process
- ◆ Accepts multiple-entry methods including HDL, waveform, state machine, Boolean equations and generic logic
- ◆ Targets PLD and/or FPGA devices from a technology-independent description
- ◆ Synthesizes models for system simulation prior to device selection
- ◆ Performs automatic device selection and partitioning based on user-defined criteria
- ◆ Redraws schematic with selected devices for final simulation and transfer to PCB layout

AMD DEVICES SUPPORTED

- ◆ Most devices (call Valid for a complete list)

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ Sun-4™, DECstation and IBM RS/6000 workstations

SUPPORT

- ◆ Customer support hotline (800) 447-2253
- ◆ Field Applications Engineers

PRICE

- ◆ Starting at \$13,500 (software only)

CONTACTS

CORPORATE HEADQUARTERS
Valid Logic Systems, Inc.
2820 Orchard Parkway
San Jose, CA 95134
Phone: (408) 432-9400
Fax: (408) 432-9430

INTERNATIONAL HEADQUARTERS
Valid House
39 Windsor Road
Slough Berkshire SL 1 4TN
United Kingdom
Phone: (075) 382 0101
Fax: (075) 370057

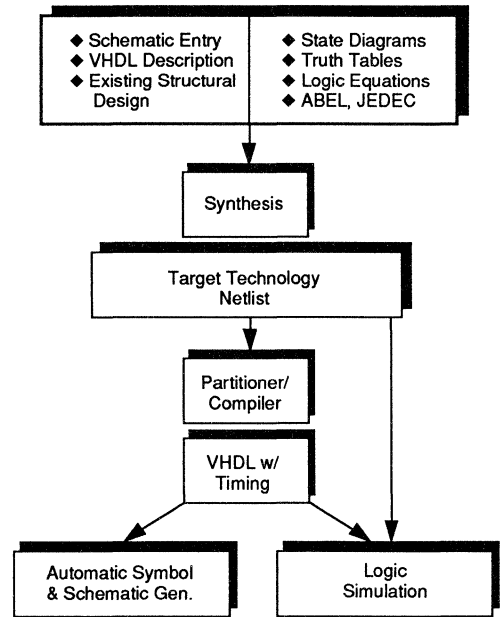
NIHON VALID
Tokyu Building 2nd Floor
2-16-8 Minami-Ikebukuro
Toshima-Ku, Tokyo 171
Japan
Phone: (033) 980-6421
Fax: (033) 981-8775

VIEWPLD SYNTHESIS

Viewlogic Systems, Inc.

ViewPLD is a design tool focused on productivity and ease of use. An array of design entry formats can be synthesized into a multiple PLD implementation. The design entry formats include: VHDL, schematics, netlists, state diagrams, truth tables, logic equations, and PALASM, ABEL, and CUPL design files.

The design is automatically partitioned and optimized into PLD architectures with the accompanying symbols and schematics generated by ViewPLD. The design can further be retargeted to an FPGA or ASIC as needed. This turn-key system allows for unprecedented flexibility. ViewPLD is unique in that the synthesized design can be simulated with full timing by Viewsim/SD™. The PLDs can also be part of a system simulation with VHDL, ASICs, analog, LMSI hardware models, and LAI software models. This level of integration allows comprehensive testing in the target system. Fault simulation with Viewfault insures the PLD design is testable by itself or within the system. Test vectors for functional/timing/fault testing can be created graphically with Viewwave™. Graphical back-annotation of logic simulation and fault simulation results round out a complete PLD design environment.



Design Flow and Operation

15585-009A

STANDARD FEATURES

- ◆ Design Entry Methods:
 - VHDL
 - State diagrams
 - Truth tables
 - Logic equations
 - ABEL, JEDEC files
 - Schematics, netlists
- ◆ Automatic:
 - Synthesis
 - Optimization
 - Partitioning
 - Symbol generation
 - Schematic generation
- ◆ Full timing/unit delay/fault simulation (Viewfault)
- ◆ Graphical test vector waveform entry
- ◆ System simulation with VHDL, analog models, Hardware models (LMSI), LAI SmartModel[®], ASIC/FPGA

AMD DEVICES SUPPORTED

- ◆ Supports most major AMD PAL devices
- ◆ Check with Viewlogic regarding support for specific devices

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ Sun-4
- ◆ DECstation
- ◆ IBM RS/6000
- ◆ PC-compatible 386 or 486 running PC or MS-DOS
- ◆ UNIX[™]

AVAILABILITY

- ◆ Mid-1991. Please contact Viewlogic for the latest information.

PRICE

- ◆ Contact Viewlogic

CONTACTS

UNITED STATES
Viewlogic Systems, Inc.
293 Boston Post Road West
Marlboro, MA 01752
U.S.A.
Phone: (504) 480-0881

EUROPE
Viewlogic Europe BV
Daneshill House
Chineham Court
Lutyens Close
Chineham
Hampshire, UK RG240UL
Phone: (025) 651133

ASIA AND JAPAN
Marubeni HYTECH Co., Ltd.
Marubeni HYTECH Building
20 22 Koishikawa 4-Chome
Bunkyo-Ku, Tokyo, 112
Japan
Phone: (033) 817-4881



SECTION 2—SCHEMATIC EDITORS & LIBRARIES

ADVANCED MICRO DEVICES, INC.

MACH Libraries and Interface to OrCAD/SDT III Software26

ORCAD

OrCAD/SDT28

MACH LIBRARIES AND INTERFACE TO OrCAD/SDT III SOFTWARE

CURRENT VERSION: 1.1

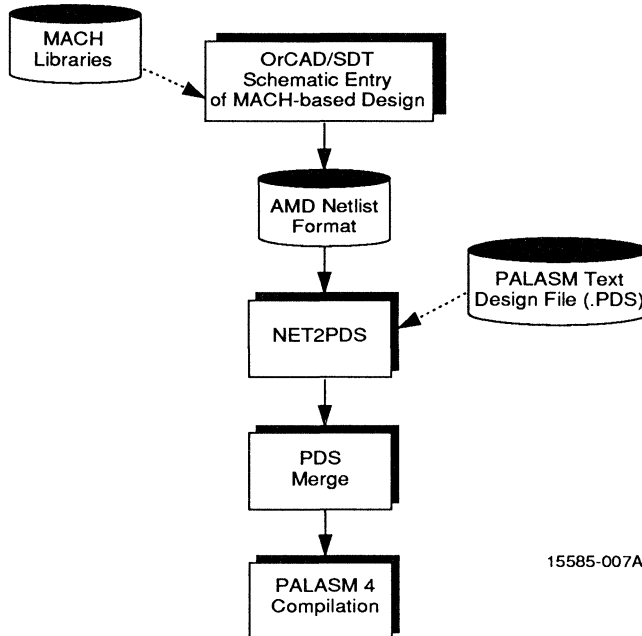
Advanced Micro Devices, Inc.

This option to AMD's PALASM 4 software provides a software bridge between PALASM 4 and the popular OrCAD/SDT III schematic design tool from OrCAD. This option is intended only for users who want to create schematic or a mix of schematic and text-based MACH designs.

This software interface requires that both PALASM 4 and version 3.21 or 3.22 of OrCAD/SDT III software be already installed.

STANDARD FEATURES

- ◆ Over 100 SSI/MSI equivalent macros in associated MACH library
- ◆ Direct interface to OrCAD/SDT editor
- ◆ Combine OrCAD/SDT schematic-based MACH designs with text-based PALASM designs
- ◆ Fully integrated into existing PALASM 4 environment upon installation
- ◆ On-line help to assists users in resolving problems



15585-007A

Design Flow and Operation

Design entry begins with OrCAD/SDT. After design entry is finished, the PALASM interface takes over:

- ◆ Data on each worksheet is converted into a single netlist
- ◆ Individual netlists are combined into one netlist
- ◆ Data from the combined netlist is translated into Boolean equations to produce the PALASM design file (.PDS)

Once the schematic has been translated to its Boolean equivalent, PALASM 4 can compile the design.

To learn more about this software interface and the associated macro libraries, consult the PALASM 4 User's Manual. More information on the OrCAD/SDT III schematic drawing program is available from OrCAD and its distributors.

AMD DEVICES SUPPORTED

- ◆ MACH110 and MACH210 devices
- ◆ Contact AMD for the latest support information on new MACH devices

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ IBM PC/XT/AT and compatibles running PC- or MS-DOS 3.1 or above. 2MB disk space, 540K or more available memory. Mouse recommended.

SUPPORT

- ◆ One year free software maintenance and technical support included
- ◆ Technical assistance is available from your local AMD sales office and AMD Corporate Applications (800) 222-9323
- ◆ Private BBS

PRICE

- ◆ \$100
- ◆ Available through AMD distributors

CONTACTS

CORPORATE HEADQUARTERS:

Advanced Micro Devices, Inc.
901 Thompson Place
P.O. Box 3453
Sunnyvale, CA 94088
U.S.A.

Advanced Micro Devices has a worldwide network of sales offices. A list of these sales offices can be found on the last page of this catalog. For additional information about AMD's programmable logic family, contact the sales office in your area, or call (800) 222-9323.

OrCAD/SDT

CURRENT VERSION: IV

OrCAD

OrCAD software for the DOS environment includes a graphical environment for managing electronic design projects. It includes a series of software tools for designing schematics, creating reports, and even converting information to other formats for use with other vendor's products.

STANDARD FEATURES

- ◆ True hierarchy support—over 200 hierarchical levels
- ◆ Large libraries
 - TTL, ECL, CMOS, etc.
 - 20,000+ unique library parts
 - On-line part browsing and searching
- ◆ Graphical library part editor
- ◆ Netlist conversion into over 30 different formats: Algorex, AlteraADF, Applicon, Cadentix, Calay, Case, CBDS, ComputerVision, EDIF, FutureNet, HiLo, IntelADF, Intergraph, Mentor, RacalRedac, SALT, Scicards, Spice, Telesis, Vectron, and many more.
- ◆ User definable "A" through "E" sized worksheets
- ◆ Visible grid
- ◆ Part rotation and mirroring
- ◆ 5 levels of zoom/automatic panning
- ◆ Step and repeat objects and text
- ◆ Block delete, move, replicate
- ◆ Rubberbanding of wires and buses
- ◆ File import and export through interfaces to PSpice[®], OrCAD/VST, OrCAD/PLD, OrCAD/PCB II
- ◆ Pop-up menus
- ◆ 10 part fields
- ◆ Variable text and object sizes
- ◆ 100+ keyboard macros
- ◆ 16 user definable colors
- ◆ Smooth vector printing and plotting
- ◆ 190+ graphics card/printer/plotter drivers included
- ◆ Suspend to DOS feature
- ◆ No software or hardware copy protection

AMD DEVICES SUPPORTED

- ◆ PAL, PLD, and MACH devices
- ◆ Check with OrCAD regarding support for the latest AMD devices

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ IBM PC-XT/AT and PS/2, and compatibles running MS-DOS 3.0 or higher. 640K RAM. Supported graphics card. Mouse recommended.

SUPPORT

- ◆ One year free software updates
- ◆ One year telephone technical support
- ◆ One year access to BBS and subscription to OrCAD newsletter

PRICE

- ◆ \$595

OPTIONS


OrCAD/SDT is integrated with OrCAD's family of engineering tools:

- ◆ OrCAD/PLD - design tools for programmable logic devices
- ◆ OrCAD/VST simulates digital designs and eliminates time-consuming prototyping
- ◆ OrCAD/MOD works with OrCAD/VST to read standard JEDEC files and create simulation models
- ◆ OrCAD/PCB takes your OrCAD/SDT netlist and produces precise circuit layout quickly and easily

CONTACTS

UNITED STATES

OrCAD
3175 N.W. Alcock Drive
Hillsboro, Oregon 97124
U.S.A.
Phone: (503) 690-9881



SECTION 3—SIMULATORS

ALDEC COMPANY, INC.

Susie32

LOGIC AUTOMATION, INC.

SmartModel Library34

ORCAD

OrCAD/VST36

SUSIE™

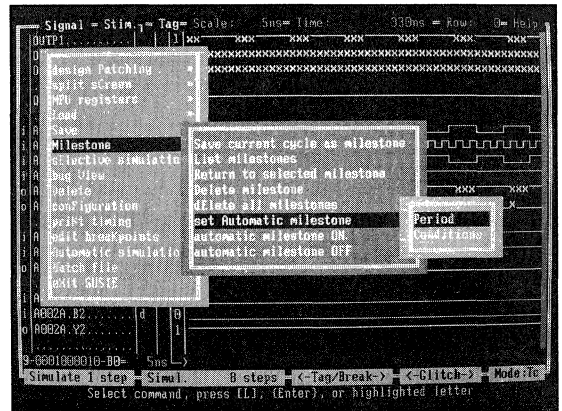
CURRENT VERSION: 6.0

ALDEC Company, Inc.

SUSIE (Standard Universal Simulator for Improved Engineering) 6.0 is a real-time logic simulator that simulates PLD and FPGA devices at the chip and PC board level. Users can change design and test vectors and instantly simulate all changes without software compilation.

STANDARD FEATURES

- ◆ Real-time operation
- ◆ Unlimited design size. SUSIE allows 20,000 gates per each 1MB of RAM.
- ◆ Works directly with all PC-based schematic tools
- ◆ Works directly from JEDEC fuse maps, Intel hex files, etc.
- ◆ Automatically reports all design problems
- ◆ Selective simulation of design sections speeds simulation 10 to 1000 times
- ◆ Instant re-simulation of past cycles with new design parameters, test vectors, etc.
- ◆ True event logic simulator
- ◆ 10 picosecond resolution
- ◆ Linear zoom-in and zoom-out on timing sections
- ◆ VHDL-based simulator
- ◆ Supports a broad range of logic families and devices



AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ Sequencers

Contact ALDEC for information on specific devices and the latest support information on new AMD devices.

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

- ◆ IBM PC-AT, 386, 486 and compatibles running MS- or PC-DOS version 3.0 or later. 2 MB RAM, 3 MB disk space.

SUPPORT

- ◆ Technical Support: Phone (805) 499-6868
Fax (805) 498-7945
- ◆ Private BBS (805) 498-4086
- ◆ Newsletter

PRICE

- ◆ Starting at \$1,195
- ◆ Earlier versions of SUSIE are available; SUSIE 4.6 starts at \$995

CONTACTS

UNITED STATES

Sales Department
ALDEC Company, Inc.
3525 Old Conejo Road
Suite 111
Newbury Park, CA 91320
Phone: (805) 499-6867

EUROPE

Local schematic captive
vendors like CADAM/
P-CAD™, CAD Software,
Racal-Redac, Ultimate
Technology, etc.

ASIA AND JAPAN

HIREL Co., Ltd.
2F KS Bldg.
2-4-1 Sadhoharacho
Ichigaya Shinjyuku-ku
Tokyo, Japan
Phone: (033) 260-8401

SMARTMODEL LIBRARIES

Logic Automation, Inc.

Logic Automation provides a library of models of standard semiconductor devices called SmartModels. SmartModels are behavioral simulation models with built-in expert assistance. Models range from complex 32-bit microprocessors to memories, PLDs, and TTL. Logic Automation's SmartModel library supports AMD MACH devices, several AMD PLDs, the Am29000™, AMD Taxi chips as well as several other AMD devices.

SmartModels make board-level simulation possible. Simulation provides faster design time, lower prototype costs, and a higher quality end product. The models are sold as a subscription service with access to the entire library of over 5000 different devices. Logic Automation is set up to provide all customer support including complete documentation, technical support, and maintenance.

SIMULATORS SUPPORTED

- ◆ AT&T proprietary
- ◆ Cadence
- ◆ Dazix
- ◆ Genrad
- ◆ Hewlett Packard
- ◆ Mentor Graphics
- ◆ Racal Redac
- ◆ Valid
- ◆ Vantage
- ◆ Viewlogic
- ◆ Development is underway for Teradyne and Intergraph.

STANDARD FEATURES

- ◆ Fast and accurate simulation models
- ◆ Extensive error messages
- ◆ Compatible with leading simulators
- ◆ SmartModel Windows®, a system emulation capability, allows designers to view and change register contents
- ◆ Thirty-day free trial subscriptions available

AMD DEVICES SUPPORTED

- ◆ MACH devices
- ◆ AmPAL16R4, AmPAL16R6, AmPAL16R8
- ◆ AmPAL22V10
- ◆ Am29000

Check with Logic Automation regarding support for the latest AMD devices.

SUPPORT

- ◆ Availability: now

CONTACTS

UNITED STATES

Logic Automation, Inc.
19500 NW Gibbs Drive
P.O. Box 310
Beaverton, Oregon 97075
Phone: (503) 690-6900

EUROPE

Logic Automation Ltd.
Stratfield House
265 High Street
Crowthorne RG11 7AH
United Kingdom
Phone: (0344) 778-822

JAPAN AND ASIA

Logic Automation Inc.,
Asian Headquarters
4010 Moorpark Avenue, Suite 105
San Jose, CA 95117
U.S.A.
Phone: (408) 247-1442
Fax: (408) 247-6790

OrCAD/VST

CURRENT VERSION: 4.0

OrCAD

OrCAD software for the DOS environment including a graphical OrCAD/VST environment for managing electronic design projects. Includes a series of software tools for performing timing-based simulation of digital designs.

STANDARD FEATURES

- ◆ 12-state logic simulator
- ◆ Event-driven
- ◆ 65,000 events per second (20 MHz 386)
- ◆ 14,000 gate capacity
- ◆ Simulator engine capable of simulation to greater than 2 billion time units.
- ◆ 10 breakpoints with 16 AND/OR signals per breakpoint
- ◆ Logic analyzer style format
- ◆ Simplifies data analysis
 - 3 markers for measuring time intervals
 - Signal and bus logic values easily displayed
 - User definable trace displays
- ◆ 4 zoom levels to magnify displayed traces
- ◆ Horizontal and vertical panning to view the entire trace of the simulation.
- ◆ Signals to be traced are defined with the integrated pop-up editor.
- ◆ 50 channels (signals or buses) with a maximum of 250 different signals traceable on screen.
- ◆ Display defined as signals or buses
- ◆ Buses displayed as binary, octal, decimal or hexadecimal.
- ◆ User selectable minimum or maximum delays
- ◆ Powerful on-line error checking
- ◆ Includes component modeling program
- ◆ Includes source code to model libraries
- ◆ Accepts OrCAD/SDT generated netlists
- ◆ Input stimulus defined with integrated pop-up editor
- ◆ Initializes signals
- ◆ Generates any type of clock signal
- ◆ Multiple stimulus, trace and breakpoint specifications can be saved on disk.
- ◆ Traced signals storable to disk for later viewing.
- ◆ Powerful keyboard macros record keystroke commands.
- ◆ No software or hardware copy protection

AMD DEVICES SUPPORTED

- ◆ PAL, PLD, and MACH devices

Check with OrCAD for the latest support information on AMD devices.

HOSTS SUPPORTED AND MINIMUM CONFIGURATIONS

IBM PC-XT/AT and PS/2, and compatibles running MS-DOS 3.1 or higher. 640K RAM. Supported graphics card. Mouse recommended.

SUPPORT

- ◆ One year free software updates
- ◆ One year telephone technical support
- ◆ One year access to BBS and subscription to OrCAD newsletter

PRICE

- ◆ \$995

OPTIONS

OrCAD/VST is integrated with OrCAD's family of engineering tools:

- ◆ OrCAD/PLD - design tools for programmable logic devices.
- ◆ OrCAD/SDT for fast, accurate schematic capture
- ◆ OrCAD/MOD works with OrCAD/VST to read standard JEDEC files and create simulation models
- ◆ OrCAD/PCB takes your OrCAD/SDT netlist and produces precise circuit layouts quickly and easily

CONTACTS

UNITED STATES

OrCAD
3175 N.W. Alcock Drive
Hillsboro, Oregon 97124
U.S.A.
Phone: (503) 690-9881



SECTION 4—TEST VECTOR GENERATION

ACUGEN SOFTWARE

ATGEN Test Generation Software 40

DATA I/O CORPORATION

PLDtest Plus 42

ATGEN™ TEST GENERATION SOFTWARE CURRENT VERSION: 2.47

Acugen Software

ATGEN software automatically generates high coverage functional test vectors for all types of Programmable Logic Devices (PLDs), including PAL, FPLA, FPGA, FPLS, and EPLD devices and other architectures. These vectors are applied after programming, either on the programmer, on a device tester, or during in-circuit testing. Testing the PLDs individually, prior to functional board or system test results in large savings in testing, diagnosis, repair and inventory costs.

The ATGEN product is composed of an event-driven time-based simulator, concurrent fault simulator, general purpose automatic test vector generator, a menu interface and support programs.

More than 126 devices supported, including the AMD devices listed below:

AMD MODEL LIBRARIES (PARTIAL LISTING)

PAL10H20P8	PAL16R4	PAL16R6	PAL16R8	PAL16RA8
PAL16V8	PAL16L8	PAL18P8	PAL20L2	PAL20L8
PAL20L10	PAL20R4	PAL20R6	PAL20R8	PAL20RA10
PAL20V8	PAL20X4	PAL20X8	PAL20X10	AmPAL22P10
PAL22V10	AmPAL23S8	PALCE29M16	PAL32VX10	PLS105
PLS167	MACH110	MACH210		

Contact ACUGEN for information about AMD devices not listed here and the latest support information on new AMD devices.

TESTER SUPPORT

Translators are available from ACUGEN for the following testers:

- ◆ Sentry: Sentry LMI, Sentry AC
- ◆ GenRad: 1732, 227x, 115,125, 130
- ◆ Schlumberger: Series 30 and 700
- ◆ MCT2000
- ◆ Teradyne L200
- ◆ HP 3065/3070
- ◆ Logue McDonald

Contact ACUGEN for information on these and other testers.

SPECIFICATIONS

- ◆ IBM PC/XT, PC/AT, 386, 486 and compatibles with 640KB RAM and 4MB available disk space.
- ◆ DEC VAX/VMS
- ◆ Sun-3, Sun-4

ATGEN is written in C. Support for additional host computers will be available in the future. Contact ACUGEN Software for more information.

SUPPORT, MAINTENANCE AND UPDATES

Direct access telephone support for one full year is included with all product purchases. Frequency of updates depends upon the product purchased and includes bug fixes and enhancements to software. CRISIS support is available to high capacity customers and is ACUGEN Software's commitment to our customer's successful PLD testing efforts.

Annual Technical Support Service is 15% of the price of currently installed ATGEN products and is renewable annually. A 90 day extension of support is included with all upgrades of base products. Customers receive full credit of base product purchase when upgrading base products. New models and major new software capability are not included in the Technical Support Service—they are considered new products.

PRICE

- ◆ ATGEN Starter kits start at \$1995 (6000 fuses). Contact ACUGEN for information on pricing and special programs.

OPTIONS

- ◆ Translators for testers
- ◆ AADELAY™ for AC testing

CONTACTS

UNITED STATES

ACUGEN Software Inc.
427-3 Amherst St.,
Suite 391
Nashua, N.H. 03063
Phone: (603) 891-1995

SINGAPORE

Kelectronics (S) PTE. LTD.
1090 Lower Delta Rd.
#06-01/07
Tiong Bahru Industrial Estate
Singapore 0316
Phone: 65 278-6211

U.K. AND EUROPE

Parametric Technology, LTD
3 Roxborough Way
Maidenhead
Berkshire, SL6 3UD
Phone: (0628) 826 858

JAPAN

Tokyo Electron LTD
2-30-7 Sumiyoshi-cho Fuchu
Tokyo 183, Japan
FAX: (042) 333-8489

Marubeni Hytech Corporation
KS Bldg 2-4 Ichigaya
Sadoharamachi
Sinjuku-Ku
Tokyo 162
FAX: (03) 235-8897

AUSTRALIA & NEW ZEALAND.

Parameters PTY, LTD
25-27 Paul Street North
P.O. Box 291
North Ryde
N.S.W. Australia 2113
Phone: (02) 888-8777

PLDTEST[®] PLUS CURRENT VERSION: 2.0

Data I/O Corporation

PLDtest Plus is an integrated software package for design and test engineers who work with designs targeted for programmable logic devices (PLDs). It combines a testability analysis of the device under design or test with fault grading and automatic test vector generation (ATVG). A wide selection of devices are supported, including the most popular non-preloadable registered devices, preloadable registered devices, and combinatorial devices.

STANDARD FEATURES

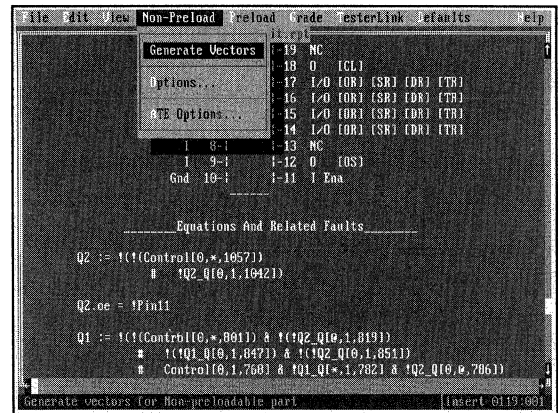
- ◆ Support for a wide range of AMD non-preloadable parts.
- ◆ Windowed user interface with on-line help.
- ◆ Fault grading using hard and soft fault grading techniques
- ◆ In-circuit test support
- ◆ Documented testability analysis.
- ◆ Programmer-specific vector application modes.
- ◆ Auxiliary vector support

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ PLDtest Plus supports most major AMD PLD devices. Contact Data I/O for the latest information about specific AMD devices.

SPECIFICATIONS

- ◆ IBM PC/XT, PC/AT, PS/2 and compatibles running DOS version 3.1 and above. 640KB memory. Distributed on 5.25" and 3.5" disks.
- ◆ DEC VAX: VMS ver. 5.0 or higher. Distributed in "backup" format on 1600 bpi 0.5" reel tape or TK50 cartridges.
- ◆ Sun-3 and SPARCstation workstations: Sun OS ver. 4.0 or higher. Distributed in TAR format on cartridge media.



SUPPORT, MAINTENANCE AND UPDATES

- ◆ One year free support with purchase of product. Annual technical support and update plans are available.
- ◆ Updates distributed approximately twice a year to all owners of active technical support and update plans.
- ◆ BBS
- ◆ Newsletter

PRICE

- ◆ \$4,995 DOS version
- ◆ \$7,995 Sun 3, SPARCstation, and VAX/VMS

OPTIONS

TesterLink™ PLD Test Vector to In-Circuit Tester Translator is a fully automated Computer-Aided Test (CAT) tool. It links PLDtest Plus JEDEC files containing test vectors to in-circuit testers.

TesterLink translates test vectors present in PLDtest Plus JEDEC file and creates files that allow testing of programmable logic devices embedded in circuit boards. These test vectors are generated by PLDtest Plus, and already contain the auxiliary test vectors required by the in-circuit tester—thereby creating a totally automatic test generation and translation environment.

CONTACTS

UNITED STATES

DATA I/O Corporation
10525 Willows Rd. NE
Redmond, WA 98073-9746
Phone: (206) 881-6444
Phone: (800) 247-5700

EUROPE

DATA I/O Europe
World Trade Center
Strawinskylaan 633
1077 XX Amsterdam
The Netherlands
Phone: (0) 20 6622866

ASIA AND JAPAN

DATA I/O Japan
Sumitomoseimei Higashishinbashi Bldg. 8F
2-1-7 Higashi-Shinbashi
Minato-Ku, Tokyo, 105 Japan
Phone: (033) 432-6991

SECTION 5—PROGRAMMERS

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LABPRO™ PROGRAMMABLE LOGIC DEVELOPMENT SYSTEM

Advanced Micro Devices, Inc.

Developed in conjunction with Digilec, Inc., the stand-alone LabPro programmer supports AMD PLDs in CMOS and TTL technologies. Revision 1.2 of the LabPro adds support for new AMD devices, including MACH110, PALCE22V10Z, PALCE610 and other devices.

The LabPro Programmable Logic Development System includes AMD's PALASM software, a baseline PLD compiler enabling designers to configure AMD PAL and MACH devices quickly, easily and effectively.

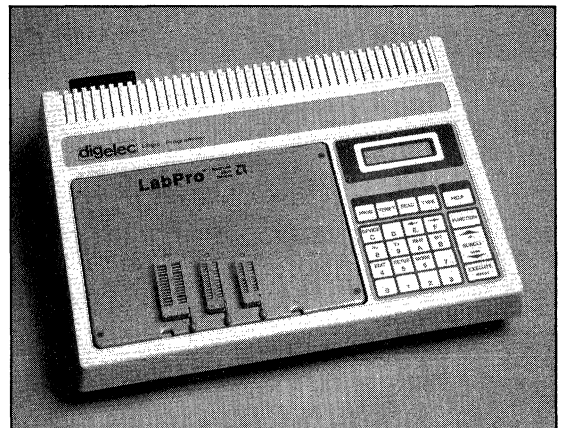
AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ MACH devices (MACH110)
- ◆ Sequencers (PAL32VX10, PLS30S16)

The LabPro supports major AMD bipolar and CMOS PAL devices, including the MACH110 under revision 1.2. See the AMD PAL Device Programmer Reference Guide (PID#14097) for information on whether a specific device is supported.

STANDARD FEATURES

- ◆ Easy to use
- ◆ Stand alone—does not require a connected PC to operate
- ◆ Easy to read 16 character LCD display
- ◆ Step-by-step menu and on-board help
- ◆ Menu driven functions: Select Type, Load, Program, Verify and Vector Test
- ◆ SETUP function stores programmer setup values in non-volatile memory
- ◆ Accepts data in JEDEC formats
- ◆ Edit JEDEC fuses and test vectors
- ◆ Built-in self-test on power up
- ◆ RS 232C Serial port
- ◆ Easy to update: plug-in "softpack" updates
- ◆ Compact: the LabPro is briefcase sized and comes with a carrying handle
- ◆ Certified and approved by AMD PAL device engineering



DEVICE PACKAGES SUPPORTED

- ◆ DIP (20-, 24- and 28-pin)
- ◆ PLCC with adapter

DEVICE TESTING FEATURES

- ◆ Blank/illegal bit check
- ◆ Misplaced/reversed
- ◆ Current overload
- ◆ Continuity
- ◆ Checksum
- ◆ Vector test (up to 2500)
- ◆ Preload
- ◆ Array verify

SPECIFICATIONS

- ◆ General
 - Dimensions: 14.6 x 4.5 x 11" (37 x 11.5 x 28 cm)
 - Weight: 12.1 lbs (4.3 kg)
 - Power: 110/220 VAC, 50/60 Hz

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ Technical support and repair: Digilec 818-701-9677
- ◆ Updates: available. Contact Digilec 818-701-9677

PRICE

- ◆ \$995
- ◆ Available through AMD distributors

CONTACTS

**CORPORATE
HEADQUARTERS:**
Advanced Micro Devices, Inc.
901 Thompson Place
P.O. Box 3453
Sunnyvale, CA 94088
U.S.A.

LabPro is sold through AMD authorized distributors. To obtain the name of the AMD authorized distributor nearest you, contact your AMD sales office. Advanced Micro Devices has a worldwide network of sales offices. A list of these sales offices can be found on the lastpage of this catalog. For additional information about AMD's programmable logic family, contact the sales office in your area or call 800-222-9323.

CP-1128 COMBINATION PROGRAMMER

BP Microsystems

The CP-1128 Combination Programmer will program 20-, 24- and 28-pin PLDs, 24- and 28-pin EPROMs, and 16-, 18-, 20-, 24-, and 28-pin bipolar PROMs. The CP-1128 connects to any standard parallel printer port.

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ MACH devices with adaptor
- ◆ Sequencers
- ◆ PROMs

See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device. Contact BP Microsystems for the latest support information on new devices.

STANDARD FEATURES

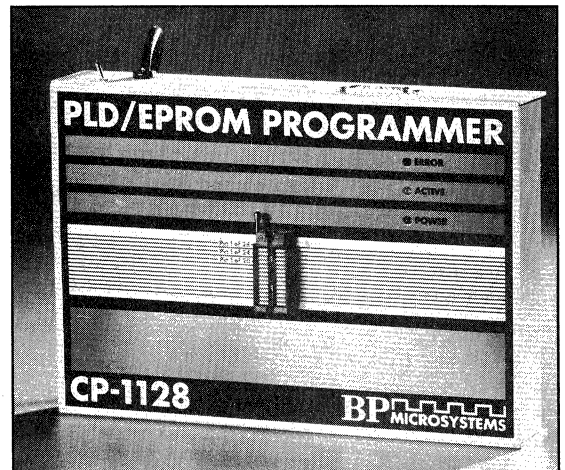
- ◆ Handler support
- ◆ On-screen help
- ◆ File types accepted: JEDEC

DEVICE PACKAGES SUPPORTED

- ◆ DIP
- ◆ PLCC with adapter

DEVICE TESTING FEATURES

- ◆ Vector tests
- ◆ Built-in fuse map editor



SPECIFICATIONS

- ◆ PC requirements
 - Type: IBM PC, AT, 386, 486, or compatible
 - Memory: 640 K
 - Host connect: parallel printer port
 - Cable: DB-25
- ◆ General
 - Dimensions: 2.75"H x 12"W x 8.75"D (70mm x 305mm x 222mm)
 - Shipping weight: 8 lbs (3.6 Kg)
 - Operating voltage: 110-125 VAC or 220-250 VAC
 - Frequency range: 50-60 Hz
 - Power consumption: 30 W

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ Lifetime, free software updates available via 24-hour BBS
- ◆ Unlimited toll-free technical support
- ◆ One year warranty on parts and labor, additional periods available
- ◆ Quarterly newsletter providing information on chip support

PRICE

- ◆ \$ 1295

OPTIONS

- ◆ The PLD-1128 Logic Programmer features programming capabilities for programmable logic devices only, and is priced at \$995

CONTACTS

UNITED STATES

BP Microsystems
10681 Haddington, #190
Houston, TX 77043
Phone: (713) 461-9430
Phone: (800) 225-2102
Fax: (713) 461-7413

EUROPE

Mutek Limited
Farleigh House, Frome Road
Bradford on Avon
Wiltshire, England
Phone: (022) 166 501
Fax: (022) 22 16 5083

Integrated Systems Scandinavia
Solnavagnen 51
S-171 Solna, Sweden
Phone: (08) 27 5980
Fax: (08) 27 5988

Emulations
Antelia 4 Burospace
Chemlin de Gizey
91571 Bievres Cedex, France
Phone: (1) 69 41 2801
Fax: (1) 60 19 2950

UNISITE™

Data I/O Corporation

The UniSite Universal Programmer is capable of programming virtually every programmable logic device, memory device, and microcontroller device on the market. The parallel configuration of universal pin-driver cards inside UniSite easily accommodates the different devices, so there is no need for socket adapters or internal hardware modifications. The UniSite is driven by a remote PC or terminal.

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ MACH devices
- ◆ Sequencers
- ◆ PROMs

See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device. Contact Data I/O for the latest support information on new devices.

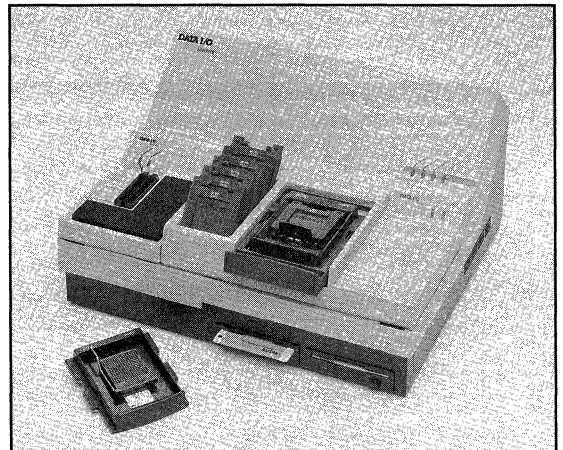
STANDARD FEATURES

- ◆ Universal pin drivers
- ◆ Single 48-pin DIP socket
- ◆ Two 720 KB disk drives
- ◆ Help menu
- ◆ High-speed (115K baud) download
- ◆ Two RS232C ports

- ◆ SmartPort configures RS232C port to modem or terminal without cable change
- ◆ File types accepted: JEDEC; Intel Hex-32; Motorola Exorcisor, S-3; Tektronix Hexidecimal, extended Tek Hex; Binary, DEC Binary; HP 64000 Absolute; and many others.

DEVICE PACKAGES SUPPORTED

- ◆ DIP
- ◆ PGA
- ◆ PLCC
- ◆ SOIC
- ◆ LCC



SPECIFICATIONS

- ◆ Host connect: two RS232C ports
- ◆ Two 720 KB, 3.5" disk drives
- ◆ General
 - Dimensions: 7.1" X 17.1" x 14.3"
(181 mm x 435 mm x 362 mm)
 - Weight: 20 lbs (9 Kg)
 - Operating voltage: 100 VAC to
240 VAC ± 10%
 - Frequency range: 48 to 63 Hz
 - Power consumption: 500 W (max)

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ Quarterly user-installable update service provided via 3.5" MS-DOS compatible diskettes

PRICE

- ◆ For pricing information, contact Data I/O at
(800) 247-5700.

CONTACTS

UNITED STATES

Data I/O Corporation
10525 Willows Road N.E.
P.O. Box 97046
Redmond, WA 98073-9746
Tel: (800) 247-5700

Data I/O Corporation
1701 Fox Drive
San Jose, CA 95131
Tel: (408) 437-9600

Data I/O Corporation
20 Cotton Road
Nashua, NH 03063
Tel: (603) 889-8511

CANADA

Data I/O Canada Corp.
6725 Airport Road
Suite 302
Mississauga, Ontario L4V 1V2
Tel: (416) 678-0761
Fax: (416) 678-7306

EUROPE

Data I/O Europe
World Trade Center
Strawinskyaan 633
1077 XX Amsterdam
The Netherlands
Tel: (0) 20-622-866

Data I/O Instrumatic Electronic
Systems Vertriebs GmbH
Lochhamer Schlag 5a
8032 Graefelfing
Germany
Tel: (089) 85 8580

JAPAN

Data I/O Japan Company Ltd.
Sumitomoseimei Higashishinbashi
Building 8F
2-1-7, Higashi-Shinbashi,
Minato-Ku
Tokyo 105 Japan
Tel: (033) 432-6991

2900

Data I/O Corporation

The 2900 programming system is capable of programming virtually every programmable logic device and memory device on the market. Its modular architecture allows tailored device support. The 2900 is driven by a remote PC or terminal.

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ MACH devices
- ◆ Sequencers
- ◆ PROMs

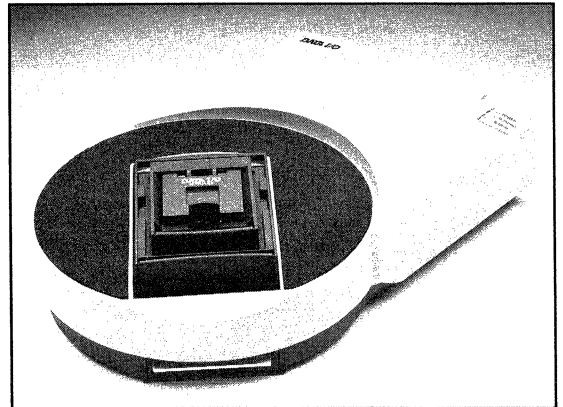
See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device. Contact Data I/O for the latest support information on new devices.

STANDARD FEATURES

- ◆ Universal pin drivers
- ◆ 128K RAM, expandable to 2M
- ◆ High-speed (115K baud) download/upload
- ◆ SmartPort configures RS232C port to modem or terminal without cable change
- ◆ Macros and job files for automatic set up
- ◆ Autobaud senses baud rate of host and configures the 2900 appropriately
- ◆ File types accepted: JEDEC and many others

DEVICE PACKAGES SUPPORTED

- ◆ DIP
- ◆ PLCC
- ◆ LCC



DEVICE TESTING FEATURES

- ◆ Functional testing
- ◆ Parallel test vector application
- ◆ Device continuity check
- ◆ Backwards device test

SPECIFICATIONS

- ◆ Memory: 128K RAM, expandable to 2M
- ◆ General
 - Dimensions: 3.8" x 11.3" x 16.3"
(95.3 mm x 286 mm x 413 mm)
 - Weight: 8.5 lbs (3.8 Kg)
 - Operating voltage: 90 VAC to
264 VAC \pm 10%
 - Frequency range: 48 to 63 Hz
 - Power consumption: 150 W

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ Floppy disk device-support updates

PRICE

- ◆ For pricing information, contact Data I/O at
(800) 247-5700

CONTACTS

UNITED STATES

Data I/O Corporation
10525 Willows Road N.E.
P.O. Box 97046
Redmond, WA 98073-9746
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Data I/O Corporation
1701 Fox Drive
San Jose, CA 95131
Tel: (408) 437-9600

Data I/O Corporation
20 Cotton Road
Nashua, NH 03063
Tel: (603) 889-8511

CANADA

Data I/O Canada Corporation
6725 Airport Road
Suite 302
Mississauga, Ontario
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Tel: (416) 678-0761
Fax: (416) 678-7306

EUROPE

Data I/O Europe
World Trade Center
Strawinskylaan 633
1077 XX Amsterdam
The Netherlands

Data I/O Instrumatic
Electronic
Systems Vertriebs GmbH
Lochhamer Schlag 5a
8032 Graefelfing
Germany
Fax: (089) 858 580

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Data I/O Japan Company Ltd.
Sumitomoseimei Higashishinbashi
Building 8F
2-1-7, Higashi-Shinbashi,
Minato-Ku
Tokyo 105 Japan
Tel: (033) 432-6991

UNIORT 860 UNIVERSAL PROGRAMMER

Digelec

The Uniport is a portable, stand alone universal logic programmer. Using advanced technology, the Uniport makes all phases of logic and memory device programming convenient, accurate and productive. At the same time, the Uniport retains Digelec features common to all its programmers: user-friendliness—for stand alone as well as remote operation—portability, and competitive pricing.

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ MACH devices
- ◆ Sequencers
- ◆ PROMs, EPROMs, EEPROMs

See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device. Contact Digelec for the latest support information on new devices.

STANDARD FEATURES

- ◆ Supports leading handlers
- ◆ On-line help
- ◆ File types accepted: JEDEC, Hex, and all standard formats
- ◆ Modular design leads to optimal configuration for changing programming needs
- ◆ Each module handles a broad range of devices
- ◆ Upgrade path from entry-level system to full-blown universal programmer
- ◆ 2x16 character LCD display

DEVICE PACKAGES SUPPORTED

- ◆ DIP: 20-, 24-, 28- and 40-pin
- ◆ PLCC with adaptor

DEVICE TESTING FEATURES

- ◆ Program
- ◆ Verify
- ◆ Read
- ◆ Select type—name and device code
- ◆ Illegal bit check
- ◆ Blank check

- ◆ Vector test
- ◆ Blow security fuse
- ◆ Edit array fuses, test vectors
- ◆ Built-in test
- ◆ Automatic detection of misplaced device, empty socket, and overload conditions

SPECIFICATIONS

- ◆ Host connect: RS-232
- ◆ General
 - Dimensions: 38 cm (14.6") wide by 11.5 cm (4.5") high by 28 cm (11") deep
 - Weight: 4.3 kg (12.2 lbs)
 - Power: 110/210 use selectable
 - Frequency: 50/60 Hz

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ One year parts and labor warranty included
- ◆ Digelec's optional SOFTPACK™ update program assures customers of continuing device support for the latest device technologies.

PRICE

- ◆ Starting at \$1995

OPTIONS

- ◆ PLCC adaptor
- ◆ Remote control software driver, SOFTLINK™
- ◆ Padded carrying case
- ◆ SOFTPACK update program

CONTACTS

UNITED STATES

Digelec Inc.
20144 Plummer St.
Chatsworth, CA 91311
U.S.A.
Phone: (800) 367-8750

EUROPE

Digelec GmbH
Brudermuhlstrasse
8000 Munich 70
Germany
Phone: (089) 776-098

ISRAEL

Digitronics Israel Ltd.
25 Galgaley Hapalada St.
Herzliya B 46722
Israel

SPRINT EXPERT

Encore Technology Corp.

The Sprint Expert is a very compact, PC-based universal device programmer designed to be used primarily as an engineering workstation.

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ MACH devices
- ◆ Sequencers
- ◆ Microcontrollers
- ◆ EPROMS, Bipolar PROMS

See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device. Contact Encore Technology for the latest support information on new devices.

STANDARD FEATURES

- ◆ Universally programmable 40-pin DIP TOP
- ◆ Universally programmable PLCC/LCC, PGA and multi-socket DIP TOPs
- ◆ Easy automatic handler interface
- ◆ Files types accepted as input: JEDEC, Intel Hex, Motorola "S" Hex, Standard Hex, Binary, PLD

DEVICE PACKAGES SUPPORTED

- ◆ DIP
- ◆ PLCC/LCC/JLCC
- ◆ PGA
- ◆ QFP (adapter required)
- ◆ SOIC (adapter required)
- ◆ SOJ/SOP (adapter required)



SPECIFICATIONS

- ◆ PC-based requirements
 - Type: IBM PC/XT/AT, IBM PS/2 Model 30 or compatible
 - Memory: 512 KB
 - Distribution media: 5.25" 360 K floppy (3.5" 720 K, 1.44 MB optional)
 - Host connect: 8-bit expansion slot
 - Cable: included
- ◆ General
 - Dimensions: POD—8 cm x 20 cm x 7 cm
Card—IBM PC short card
 - Weight: 1.1 Kg (2.3 lbs)
 - Power: 1 amp (peak), 0.4 amps av. at 12 volts
0.05 ams at -12 volts

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ Technical Support: Free. 800-688-3122
- ◆ Update frequency: 3 to 4 times annually at \$395/year
- ◆ Update vehicle: annual software maintenance plan
- ◆ Repair: Dallas Tech Center
- ◆ BBS: planned for future
- ◆ Newsletter: distributed quarterly

PRICE

- ◆ \$3995

CONTACTS

WORLD WIDE

Sales Department
Encore Technology Corp.
13720 Midway Rd., Suite 105
Dallas, TX 75244
U.S.A.
Phone: (214) 233-3122
Fax: (214) 233-2614

EUROPE

Sales Department
SMS Microcomputer Systems
Im Morgental
8994 Herz-Schwarzenberger
Germany
Phone: (097) 522 5018
Fax: (007) 522 8929

ASIA AND JAPAN

Promac Data Systems Corp.
Hakusan-High-Tech Park
1-22-2 Hakusan, Midori-Ku
Yokohama-City 226
Japan
Phone: (045) 939 6150
Fax: (045) 939 6152

SPRINT PLUS

Encore Technology Corp.

The Sprint Plus is a very compact, PC-based universal device programmer designed to be used primarily as an engineering workstation.

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ MACH devices with 44-pin PLCC/LCC adapter
- ◆ Sequencers
- ◆ Microcontrollers
- ◆ EPROMS, Bipolar PROMS

See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device. Contact Encore Technology for the latest support information on new devices.

STANDARD FEATURES

- ◆ Universally programmable 28-pin DIP POD
- ◆ Files types accepted as input: JEDEC, Intel Hex, Motorola "S" Hex, Standard Hex, Binary, PLD
- ◆ Device packages supported (with adapters)
 - DIP
 - PLCC/LCC/JLCC
 - PGA
 - QFP
 - SOIC
 - SOJ/SOP



SPECIFICATIONS

- ◆ PC-based requirements
 - Type: IBM PC/XT/AT, IBM PS/2 Model 30 or compatible
 - Memory: 512 KB
 - Distribution media: 5.25" 360 K floppy (3.5" 720 K, 1.44 MB optional)
 - Host connect: 8-bit expansion slot
 - Cable: included
- ◆ General
 - Dimensions: POD—7cm x 12 cm x 4 cm
 - Card—IBM PC full size card
 - Weight: 0.6 Kg (1.1 lbs)
 - Power: 1 amp at 5 volts, 1 amp (peak), 0.4 amps av. at 12 volts. 0.05 amp at -12 volts

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ Technical support: Free. 800-688-3122
- ◆ Update frequency: 3 to 4 times annually at \$325/year
- ◆ Update vehicle: annual software maintenance plan
- ◆ Repair: Dallas Tech Center
- ◆ BBS: planned for future
- ◆ Newsletter: distributed quarterly

PRICE

- ◆ \$2195

CONTACTS

WORLD WIDE

Sales Department
 Encore Technology Corp.
 13720 Midway Rd., Suite 105
 Dallas, TX 75244
 U.S.A.
 Phone: (214) 233-3122
 Fax: (214) 233-2614

EUROPE

Sales Department
 SMS Microcomputer Systems
 Im Morgental
 8994 Herz-Schwarzenberger
 Germany
 Phone: (097) 522 5018
 Fax: (007) 522 8929

ASIA AND JAPAN

Promac Data Systems Corp.
 Hakusan-High-Tech Park
 1-22-2 Hakusan, Midori-Ku
 Yokohama-City 226
 Japan
 Phone: (045) 939 6150
 Fax: (045) 939 6152

EPP-80

Kontron Elektronik

The Engineering PLD/PROM programmer EPP-80 is a desk-top programmer. When used with the UPM (Universal Programming and Test Module), the EPP-80 can program bipolar and CMOS PLDs with up to 40 pins. This stand alone device has the option of being operated by a remote terminal or computer.

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ Sequencers
- ◆ PROMs

See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device. Contact Kontron Elektronik for the latest support information on new devices.

STANDARD FEATURES

- ◆ 16-Digit alphanumeric display
- ◆ Operator prompts
- ◆ Error display with audible alarm
- ◆ Expandable memory
- ◆ Built-in UV eraser
- ◆ Remote control interface

- ◆ Microprocessor controlled
- ◆ File types accepted: JEDEC (with UPM), Intel Hex, ASCII Hex, Binary, DEC Binary, Tektronix Hex, Motorola Exorciser, HP 64000, and many others.

DEVICE PACKAGES SUPPORTED

- ◆ DIP
- ◆ PLCC with adapter
- ◆ LCC with adapter

DEVICE TESTING FEATURES

- ◆ Supports test vectors (with UPM)
- ◆ Illegal bit check (with UPM)
- ◆ Incorrect insertion test (with UPM)
- ◆ Defective pin/bond test (with UPM)

SPECIFICATIONS

- ◆ Stand alone
 - Keyboard: 10-key, color coded
 - Memory: 128K x 8 standard, up to 512 K x 8 optional
 - Host connect: RS232 interface port for computer control
- ◆ General
 - Dimensions: 22.2"W x 4.9"H x 12.9" D (564 mm x 125 mm x 327 mm)
 - Weight: 14.4 lbs (6.5 Kg)
 - Operating voltage: 115/230 VAC $\pm 10\%$ ($\pm 15\%$ on request)
 - Frequency range: 60/50 Hz
 - Power: 30 W

PRICE

- ◆ Contact the appropriate Kontron Elektronik office for configuration and pricing information.

PRODUCT OPTIONS

- ◆ MPP-80S portable programmer, offers the same functions and memory configurations as the EPP-80
- ◆ IEEE 488-1978 talker/listener interface for remote control operation
- ◆ Centronics compatible parallel interface
- ◆ Additional RS232C/20mA current loop for I/O

CONTACTS

UNITED STATES
Kontron Elektronik U.S.
66 Cherry Hill Drive
Suite 200
Beverly, MA 01915
Tel: (508) 927-6575
Fax: (508) 927-6511

EUROPE
Kontron Elektronik GmbH
Freisinger Str. 21
D-8057 Eching
Germany
Tel: (8165) 77-102
Fax: (8165) 77-113

ASIA/JAPAN
Kontron Elektronik
Liason Office Asia Pacific
302, Orchard Road, Nr. 08-01
Singapore 0923
Tel: (408) 732-9166

ALLPRO™

Logical Devices, Inc.

The ALLPRO is a DAC-per-PIN™, software driven, universal device programmer. The ALLPRO, together with a personal computer and CUPL, becomes an effective engineering workstation. Connection to the computer is by way of a proprietary PC bus interface. An optional hardware/software package is available to allow direct connection to non-PC type machines through an RS-232 port. The ALLPRO is available in variable pin-driver configurations and three software packages: Logic, Memory, and Comprix (Logic & Memory).

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ MACH devices
- ◆ Sequencers
- ◆ PROMs

See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device. Contact Logical Devices for the latest support information on new devices.

STANDARD FEATURES

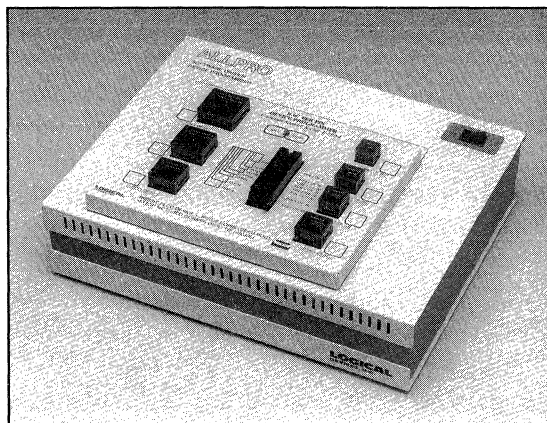
- ◆ DAC-per-PIN
- ◆ Macro capability
- ◆ Handler support
- ◆ File data merging
- ◆ Format conversion
- ◆ File shuffle
- ◆ Help menu
- ◆ Auto serialization
- ◆ Set programming
- ◆ Auto secure
- ◆ File splitting
- ◆ EMS extended software
- ◆ Start-up configuration file
- ◆ Menu/command line operation
- ◆ File types accepted: Intel Hex 80, 86; Motorola S1, S2, S3; Binary, Byte/Nibble; Hex, ASCII; Tektronix; JEDEC; Custom

DEVICE PACKAGES SUPPORTED

- ◆ DIP, PGA, PLCC, SOIC, LCC

DEVICE TESTING FEATURES

- ◆ Functional testing
- ◆ Diagnostic
- ◆ Margin verify
- ◆ Pin driver test
- ◆ Continuity test
- ◆ Power supply test
- ◆ Reverse insertion test
- ◆ Internal logic test
- ◆ Reverse leakage test
- ◆ Hysteresis test
- ◆ System connections
- ◆ Fuse program verify



SPECIFICATIONS

- ◆ PC requirements
 - Type: IBM-PC, -XT, -AT, PS/2 or compatible with DOS 2.0 or greater
 - Memory: 256K bytes PC memory
 - Host connect: interface card with cable or RS-232 Serial Port
- ◆ General
 - Dimensions: 15.5"W x 4"H x 12" D (394 mm x 102 mm x 305 mm)
 - Weight: 18 lbs (8.1 Kg)
 - Operating voltage: 90-132 VAC or 180-264 VAC
 - Frequency range: 50-60 Hz
 - Power consumption: 150 W

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ Warranty: one year parts and labor. Lifetime warranty against disk damage or incomplete set of libraries or purchased version. Free new version update if released within 90 day purchase window.

- ◆ Update frequency: quarterly for full versions (automatic with yearly maintenance); daily for specific libraries per request.
- ◆ Subscription program: yearly program providing unlimited updates, priority device support.
- ◆ Unlimited telephone support.
- ◆ BBS: unlimited use, 24 hours a day.
- ◆ Newsletters: free subscription to "Logical News."

PRICE

- ◆ From \$1,295 (24-pin, limited device support), to \$ 8,995 (88-pin, unlimited device support)

Eleven levels overall, each level upgradable to any higher level.

OPTIONS

- ◆ CUPL w/PLPARTITION
- ◆ RS-232 Expansion Chassis w/SERIALPRO™
- ◆ PS/2 Interface

CONTACTS

UNITED STATES

Logical Devices, Inc.
1201 N.W. 65th Place
Fort Lauderdale, FL 33309
Tel: (800) 331-7766
Fax: (305) 974-8531
BBS: (305) 974-0612

EUROPE

Idemax
Dorpsstraat 74
3732 HK De Bilt
Holland
Tel: (0) 30 202924
Fax: (0) 30 210106

ASIA/JAPAN

Synerdyne
150 Kako Bldg.
32-24 Sakuragadka-Machi
Shibuya-Ku Tokyo, Japan
Tel: (033) 461 9311
Fax: (033) 461 9854

AUSTRALIA

Emona Instr. Ltd.
86 Parramatta Road
Camperdown, Sydney
NSW., Australia
Tel: (612) 519 3933
Fax: (612) 550 1378

CANADA

Logical Devices Canada
4585 Canada Way, Ste 208
Burnaby, B. C. Canada
V5G416
Tel: (604) 299-2032

GSH-System Technik

Ebenboeckstr. 20
8000 Muchen 60
West Germany
Tel: (089) 834-3047
Fax: (089) 834-0448

ROM 3000B/ROM 5000B

Micropross

The ROM 3000B is a universal PC-dedicated programmer supporting programmable logic devices and PROMs. The ROM 3000B also supports on-board programming.

The ROM 5000B is a stand alone version, equipped with a screen and full keyboard. It allows users to edit and assemble logical equations.

AMD DEVICES SUPPORTED

- ◆ PAL devices: 16R8, 16RA8, 20R8, 20X10, 29M16, 22V10, 26V12, 20RA10, 16P8 and 18P8 families
- ◆ Field programmable controllers
- ◆ Sequencers
- ◆ MACH110 and MACH210 device support scheduled for 1Q91
- ◆ PROM

The ROM 3000B and ROM 5000B programmers support many AMD PLD devices. See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device not listed here. Contact Micropross for the latest support information on new devices.

STANDARD FEATURES

- ◆ 40-pin DIP socket allows more than 2000 devices of all technologies to be programmed
- ◆ Programming algorithms: Highspeed, Intelligent, Standard, Quick Pulse™
- ◆ Two RS-232C interfaces, configurable by software
- ◆ File transfer formats: JEDEC, ASCII-BNPF, ASCII-B10F, Octal, Hex, Intel-Hex, Binary and more
- ◆ Board level programmer
- ◆ ULIS development software and device library for PCs, 3.5" floppy disk

DEVICE PACKAGES SUPPORTED

- ◆ DIP
- ◆ LCC
- ◆ PLCC with adapter

DEVICE TESTING FEATURES

- ◆ Marginality test
- ◆ Illegal bits test
- ◆ Blank check
- ◆ Test vectors
- ◆ Preload

SPECIFICATIONS

- ◆ PC requirements
 - Computer type: any compatible PC
 - Memory: 512 KB
 - Host connect: RS-232 interface
- ◆ General
 - Dimensions: 527 mm x 405 mm x 130 mm
 - Weight: 12 kg
 - Operating voltage: 110 V 60 hz or 220 V 50 hz
 - Power consumption: 125 W

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ Contact Micropross

PRICE

- ◆ Contact Micropross

CONTACTS

FRANCE

Micropross
Parc d'Activite des Pres
5 rue Denis-Papin
59650 Villeneuve d'Ascq
France
Phone: 120 47 90 40

UNITED KINGDOM

CPL
Enterprise House
Station Road
Sawbridgeworth
Herts, CM21 9JX UK
Phone: (0279) 279-600-313

GERMANY

Macrotron AG
Stahlgruberring 28
8000 Munchen 82
Germany
Phone: (089) 4200-80

SYSTEM 3000

Stag Microsystems, Inc.

The System 3000 is a universal programmer.

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ MACH devices with adapter module
- ◆ Sequencers
- ◆ PROMs, EPROMs, EEPROMs
- ◆ Microcontrollers

See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device. Contact Stag Microsystems for the latest support information on new devices.

STANDARD FEATURES

- ◆ Menu driven for ease of operation
- ◆ Built-in CRT display
- ◆ High-speed programming
- ◆ Fuse data entry into programmer RAM via the keyboard, master device, or interface
- ◆ RS232C, IEE-488 and handler interface ports are standard
- ◆ Pass through mode
- ◆ Supports commonly used formats including JEDEC, Fuse Plot, Tek Hex, Extended Tek Hex, Intellec, Extended Intellec, S-Record, DEC-Binary, Binary, Stag Binary, Hex ASCII, and Stag Hex
- ◆ Expansion modules provide additional support for new package styles and device innovations
- ◆ Remote control functions are standard

DEVICE PACKAGES SUPPORTED

- ◆ Most 300 and 600 mil DIP
- ◆ PLCC, LCC, center power DIP, PGA, etc. optional

DEVICE TESTING FEATURES

- ◆ Detects faulty devices and connect errors
- ◆ Performs empty and verify checks on devices
- ◆ Display indicates PASS, FAIL and operational errors
- ◆ LEDs indicate the socket to be used for the selected device
- ◆ Marginal verify after testing
- ◆ High-speed vector testing
- ◆ Automatic checksum and fuse count
- ◆ Supports security fuse programming

SPECIFICATIONS

- ◆ General
 - Dimensions: 20.5 x 15.25 x 7"
 - Weight: 20 lbs
 - Power: 115V/60 Hz or 230 V/50 Hz. 150 W nominal

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ One year warranty
- ◆ Maintenance agreements available
- ◆ Updates consist of exchanging memory card
- ◆ Quarterly newsletter

PRICE

- ◆ From \$5995

CONTACTS

UNITED STATES

Stag Microsystems, Inc.
1600 Wyatt Drive
Santa Clara, CA 95054
U.S.A.
Phone: (408) 988-1118

CANADA

Allan Crawford Associates Ltd.
5835 Coopers Ave.
Mississauga, Ontario L4Z 1Y2
Canada
Phone: (416) 890 2010

EUROPE

Stag Microsystems Ltd.
Martinfield
Wellwyn Garden City
Hertz AL7 1JT
United Kingdom
Phone: (707) 332 148

JAPAN

Teksel Co. Ltd
Kanagawa Science Park
R&D C-4F
100-1 Sakado, Takatsu-ku
Kawasaki 213 Japan
Phone: (044) 812 7430

HONG KONG

Tektron Electronics (HK) Ltd.
1702 Bank Centre
626 Nathan Road
Kowloon, Hong Kong
Phone: (852) 388 0629

ZL30A

Stag Microsystems, Inc.

The ZL30A is a stand alone logic programmer.

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ MACH devices with adapter module
- ◆ Sequencers

See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device. Contact Stag Microsystems for the latest support information on new devices.

STANDARD FEATURES

- ◆ High speed programming
- ◆ Fuse data entry into programmer RAM via the keyboard, master device, or interface
- ◆ RS232C, IEE-488 and handler interface ports are standard
- ◆ Supports commonly used formats including JEDEC and fuse plot

- ◆ Expansion modules provide additional support for new package styles and device innovations
- ◆ Remote control functions are standard
- ◆ Automatic "Data Log" of production programming statistics.
- ◆ Removable ZIF sockets to allow easy replacement of worn sockets.

DEVICE PACKAGES SUPPORTED

- ◆ Most 300 and 600 mil DIP
- ◆ PLCC, LCC, center power DIP, PGA, etc. optional

DEVICE TESTING FEATURES

- ◆ Detects faulty devices and connect errors
- ◆ Performs empty and verify checks on devices
- ◆ Display indicates PASS, FAIL and operational errors
- ◆ LEDs indicate the socket to be used for the selected device
- ◆ Marginal verify after testing
- ◆ High speed vector testing
- ◆ Automatic checksum and fuse count
- ◆ Supports security fuse programming

SPECIFICATIONS

- ◆ General
 - Dimensions: 15 x 9.5 x 3.25"
 - Weight: 10 lbs
 - Power: 115 V/60 Hz or 230 V/50 Hz. 70 W nominal

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ One year warranty
- ◆ Maintenance agreements available
- ◆ Updates consist of exchanging firmware
- ◆ Quarterly newsletter

PRICE

- ◆ From \$2995

CONTACTS

UNITED STATES

Stag Microsystems, Inc.
1600 Wyatt Drive
Santa Clara, CA 95054
U.S.A.
Phone: (408) 988-1118

CANADA

Allan Crawford
Associates Ltd.
5835 Coopers Ave.
Mississauga, Ontario L4Z 1Y2
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Phone: (416) 890 2010

EUROPE

Stag Microsystems Ltd.
Martinfield
Wellwyn Garden City
Hertz AL7 1JT
United Kingdom
Phone: (707) 332 148

JAPAN

Teksel Co. Ltd
Kanagawa Science Park
R&D C-4F
100-1 Sakado, Takatsu-ku
Kawasaki 213 Japan
Phone: (044) 812-7430

HONG KONG

Tektron Electronics (HK) Ltd.
1702 Bank Centre
626 Nathan Road
Kowloon, Hong Kong
Phone: (852) 388-0629

SGUP-85 UNIVERSAL PROGRAMMER

System General Corp.

The SGUP-85 Universal Programmer is a programmable pin driven instrument for PLDs and Memories. This device can be either stand alone or PC controlled.

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ Sequencers
- ◆ PROMs

See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device. Contact System General for the latest support information on new devices.

STANDARD FEATURES

- ◆ Handler support
- ◆ 8 to 28 pin DIP ZIF socket
- ◆ Patented AutoSense for keyboard-free operation
- ◆ Filetypes accepted for input: JEDEC, Intel hex, Motorola S record, Tekhex, ASCII, Binary

DEVICE PACKAGES SUPPORTED

- ◆ DIP
- ◆ PLCC with adapter

DEVICE TESTING FEATURES

- ◆ Supports structured test vectors and pseudo-random (signature) tests
- ◆ Pin continuity, reversed device, backwards device, and position checks

SPECIFICATIONS

- ◆ Stand alone
 - Keyboard: 16-key hexadecimal
 - Memory: 256 K x 8 standard, 1024 K x 8 optional
 - Host connect: parallel port, printer, or handler interface; RS232C port for PC control
- ◆ General
 - Dimensions: 15.6"W x 3.7"H x 12"D (396 mm x 94 mm x 303 mm)
 - Weight: 11 lbs (5 Kg.)
 - Operating voltage: 90-135 VAC or 180-270 VAC
 - Frequency range: 44-440 Hz
 - Power consumption: 70 W

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ Quarterly EPROM
- ◆ Telephone technical support
- ◆ One year of maintenance and device support updates
- ◆ Annual extended service contracts available

PRICE

- ◆ \$2750
- ◆ PLCC options include:
 - 20, 28, and 32 pins = \$120
 - 68 pins = \$200
 - 44 pins = \$170

CONTACTS

NORTH/SOUTH AMERICA

244 South Hillview Drive
 Milpitas, CA 95035
 Tel: (408) 263-6667
 Fax: (408) 262-9220

ASIA/AUSTRALIA /EUROPE

3F, No. 1, Alley 8, Lane 45
 Boa Shing Road, Shin Dian
 Taipei, Taiwan, R.O.C.
 Tel: (886) 2-917-3005
 Fax: (886) 2-911-1283

JAPAN

2-19-7, Higashi-Gotanda
 Shinagawa-ku, Tokyo,
 Japan
 Tel: (033) 441-7100
 Fax: (033) 441-7185

PROMAC 11A

UEC-Promac

The Promac 11 Universal Programming Station is a stand alone, universal programmer with optional remote operation from a computer terminal. The Promac 11, together with the PM1 Logic Module, supports 20-, 24-, and 28-pin PLDs.

AMD DEVICES SUPPORTED

- ◆ PAL devices
- ◆ Sequencers

See the AMD datasheet or the AMD PAL Device Programmer Reference Guide for information on a particular device. Contact UEC-Promac for the latest support information on new devices.

STANDARD FEATURES

- ◆ 16-bit CPU
- ◆ Fully programmable
- ◆ 1M RAM buffer
- ◆ Menu driven remote control
- ◆ Handler interface

- ◆ Two serial ports
- ◆ File types accepted: JEDEC, ASCII Hex DEC Binary, DG Binary, Intel Hex (8/16 bits), Motorola S, Tekhex, extended Tekhex, ASM86 Hex, HP64000 ABS

DEVICE PACKAGES SUPPORTED

- ◆ DIP
- ◆ PLCC
- ◆ Other package types supported with adapters

DEVICE TESTING FEATURES

- ◆ Functional testing
- ◆ Reverse insertion test
- ◆ Illegal bit check
- ◆ Programming voltage check
- ◆ Programming timing check

SPECIFICATIONS

- ◆ Stand alone
 - Keyboard: 16-key hexadecimal
 - Memory: 1M standard
 - Host connect: two RS232C ports for PC control and handler interface, parallel I/O port
- ◆ General
 - Dimensions: 3.5"H x 14.3"W x 11.7"D (90 mm x 363 mm x 298 mm)
 - Weight: 6.4 lbs (2.9 Kg)
 - Operating voltage: 85-132 VAC, 170-270 VAC
 - Frequency range: 50-400 Hz
 - Power consumption: 60 W (Max.)

SUPPORT, MAINTENANCE, AND UPDATES

- ◆ One year warranty
- ◆ Free telephone support
- ◆ Updates several times per year, or as needed to support the latest devices

PRICE

- ◆ Contact UEC-Promac for pricing information

CONTACTS

UNITED STATES
United Exporters Co.
1095 Market St.
San Francisco, CA 94103
Tel: (415) 255-9393
Fax: (415) 255-9392
Telex: 278227 UNICO



SECTION 6—ADAPTERS

CTI TECHNOLOGIES, INC.

800 Series76

EMULATION TECHNOLOGY, INC.

Adapt-A-Socket78

800 SERIES ADAPTERS

CTI Technologies, Inc.

The 800 Series Adapters increase the flexibility of existing programming and test equipment by making virtually all types of IC packages compatible with DIP sockets. Adapters provide a means for emulation, enhancing prototype processing and lowering developmental costs.

PACKAGE TYPES SUPPORTED

- ◆ PLCC
- ◆ LCC
- ◆ Flat Pack
- ◆ SOIC

STANDARD FEATURES

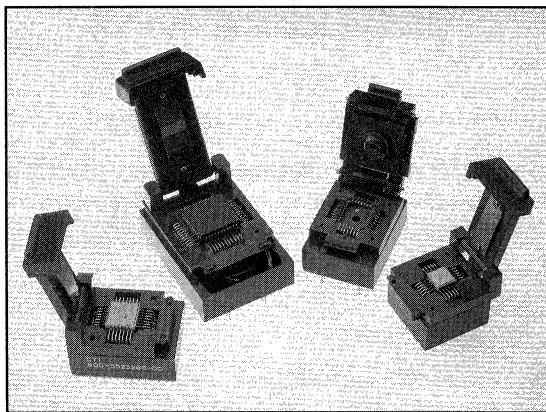
- ◆ Sturdy 0.025" diameter pins for base contacts
- ◆ Equal length interconnects
- ◆ Works with popular programmers

PROGRAMMERS SUPPORTED

CTI 800 Series Adapters can be used with all programmers that utilize a dual-in-line interface, including programmers from these manufacturers:

- ◆ Data I/O
- ◆ Genrad
- ◆ Oliver

Contact CTI Technologies or their representative for information on specific programmer models.



SPECIFICATIONS

- ◆ Physical
 - LCC socket: DIP base
 - Body material: Ryton, DAP or ABS
 - Contact material: Beryllium copper & brass
 - Potting compound: Hysol 4412 or equivalent
 - Contact plating: 30 microinch gold over nickel
- ◆ Environmental
 - Temperature rating: -55°C to +85°C
- ◆ Electrical
 - Contact resistance: 25 milliohms per contact maximum
 - Insulation resistance: 5000 megaohms minimum at 500 volts VDC
 - Capacitance: 2.0 pico-farads between any pair of isolated contacts

PRICE

- ◆ Ranging from \$120 to \$300. Contact CTI Technologies for more information.

CONTACTS

UNITED STATES

CTI Technologies
Suite A
7855 E. Evans Road
Scottsdale, AZ 85260-6996
Phone: (602) 998-1484
Fax: (602) 483-2731

EUROPE

Hunter Electronics
Components, Unit 3
Central Estate, Denmark St.
Maidenhead, Berks 516 7BN
U.K.
Phone: (0628) 75911

ASIA AND JAPAN

Uthe Technology Pte Ltd.
998 Loayoh North #05-25
Singapore 1231
Phone: (65) 252-2072

ADAPT-A-SOCKET®

Emulation Technology, Inc.

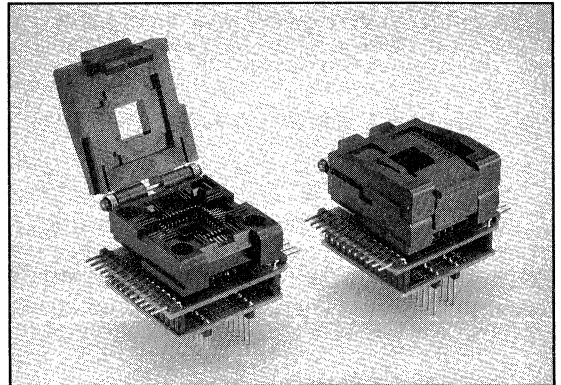
Adapt-A-Socket enables any programmer designed for DIPs to accept virtually every type of IC package.

AMD PACKAGE TYPES SUPPORTED

- ◆ LCC
- ◆ Flat Pack
- ◆ PLCC
- ◆ SOIC
- ◆ PGA

STANDARD FEATURES

- ◆ Supports all AMD Programmable Logic Devices (including MACH devices)
- ◆ Provides test points for each signal in most adapters
- ◆ Fits all DIP programmers
- ◆ Accepts add-on decoupling capacitors



PROGRAMMERS SUPPORTED

- ◆ Data I/O
- ◆ Stag Microsystems
- ◆ Bytek
- ◆ All AMD-certified programmers and more

PRICE

- ◆ \$65 to \$400. Custom device quotations available upon request

Free catalog and cross reference guide available upon request.

CONTACTS

UNITED STATES

Emulation Technology, Inc.
2344 Walsh Avenue, Bldg. F
Santa Clara, CA 95051
Tel: (408) 982-0660
Fax: (408) 982-0664

INTERNATIONAL

For international distributors,
contact Emulation Technology
Headquarters in the U.S.



SECTION 7—HANDLER & MARKING SYSTEMS

DATA I/O

Autolabel System 3000 and Autolaser System 7000	82
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AUTOLABEL SYSTEM™ 3000 AND AUTOLASER SYSTEM™ 7000

Data I/O Corporation

Both the Autolabel System 3000 and the Autolaser System 7000, in combination with a Data I/O programmer, give IC users an automated turn-key method to program, test, label and sort integrated circuits in one operation. Data I/O is the exclusive worldwide distributor for Quality Automation's Autolabel System 3000 and Autolaser System 7000 products. Both systems have been certified by AMD for use with MACH devices.

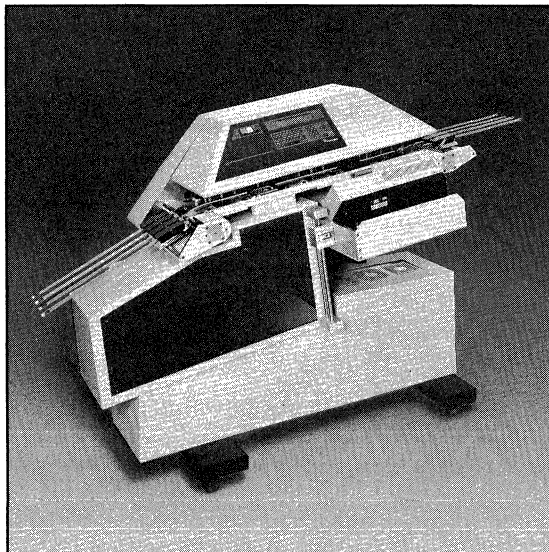
Integrating the Data I/O Unisite Universal Programmer and the Quality Automation Autolabel System 3000 or the Autolaser System 7000 results in a front-to-back system that automates the entire production process. This minimizes part damage, eliminates human error, and ensures the highest level of reliability, accuracy and flexibility in device manufacturing.

The Autolabel System 3000 prints and applies labels with a high density dot matrix printer. The Autolaser System 7000 marks IC's with a built in 10 watt CO₂, class 1 laser.

STANDARD FEATURES

- ◆ Program, test and label PLCCs, DIPs and SOIC devices
- ◆ Supported by Data I/O hardware and software
- ◆ "Turn-key" system when used with Data I/O Unisite programmer
- ◆ True tube-to-tube operation to prevent ESD and handling damage
- ◆ No track changes or tools required for different device packages

- ◆ Stores up to 150 different label texts in non-volatile memory
- ◆ Menu driven display for ease of setup and operation
- ◆ Eight different label font sizes (9, 12, 15, 15s, 18, 18s, 20, 20s)
- ◆ No surplus or unapplied labels to store or discard
- ◆ Variety of label sizes and materials to match device packages
- ◆ Throughput of up to 1100+ devices per hour when programming PAL devices
- ◆ Runs stand alone or remotely through a personal computer
- ◆ Applies labels in a uniform manner to each device



- ◆ Input/Output tube holders accept standard IC tubes with no adjustments
- ◆ Custom designed test sites eliminate lead damage
- ◆ Advanced pick and place technology for parts handling
- ◆ Open architecture for ease of service
- ◆ Expandable to future industry trends and packaging styles
- ◆ Built-in diagnostic firmware provides extensive electromechanical analysis

PACKAGE TYPES SUPPORTED

- ◆ PLCC: 20- to 68-pin
- ◆ DIP: 300 and 600 mil, 8- to 48-pin
- ◆ SOIC: 20- to 28-pin (2Q91)

PROGRAMMERS SUPPORTED

The Autolabel System 3000 is compatible with most programming and testing units. Contact Data I/O for information on specific programmer models.

SPECIFICATIONS

- ◆ Dimensions: 49.5 x 42.0 x 28.0" (125.7 x 106.7 x 71.1 cm)
- ◆ Weight: 450 lbs (205 kg)
- ◆ Power: 110/220/240 VAC, 50/60 Hz, 4 amps maximum
- ◆ Compressed Air: 75 psi
- ◆ Keyboard: 4-line, 160 character display, upper and lower case alphanumeric
- ◆ Control interface: Two RS-232C ports, one parallel handler port
- ◆ Print density: 20 characters per inch, maximum
- ◆ Throughput: up to 1100 devices per hour, depending upon programming time

PRICE

- ◆ Contact Data I/O for more information on Data I/O's integrated production solutions.

CONTACTS

UNITED STATES

Data I/O Corporation
10525 Willows Rd. NE
Redmond, WA 98073-9746
U.S.A.
Phone: (800) 247-5700

EUROPE

Data I/O Europe
World Trade Center
Strawinskylaan 633
1077 XX Amsterdam
The Netherlands
Phone: (0) 20-6622866

ASIA AND JAPAN

Data I/O Japan
Sumitomoscimei Higashishinbashi
Bldg. 8F
2-1-7 Higashi-Shinbashi
Minato-Ku, Tokyo, 105 Japan
Phone: (033) 432-6991



SECTION 8—ADVANCED PLD MENU

Advanced PLD Menu

Featuring PAL® Devices, MACH™ Products, and Sequencers

FEATURES OF PAL DEVICES

- Easy-to-use programmable logic devices provide instant custom logic
- Speed design, save board space, increase reliability, lower costs
- Improve time-to-market dramatically
- Advanced PALASM® software allows Boolean or state equations for design entry
- Low-cost standalone AMD LabPro™ programmer for easy prototyping
- Distributor-based TestPro™ Centers for volume programming, test, and marking.

ADVANTAGES OF AMD PAL DEVICES

- Widest selection and best support from the leader in programmable logic
- Highest-speed bipolar PAL devices provide fastest logic type
- Low-power and zero-standby power Universal EE CMOS PAL devices
- MACH family provides breakthrough combination of speed and density
- Advanced architectures for efficient state machines and complex logic
- Industry-leading quality
- Supported by widest variety of third-party software, programming, and test tools

STANDARD PAL DEVICES

FAMILY	PART NUMBER*	PACKAGE	TECH-NOLOGY	INPUTS	I/O	OUTPUTS	PRODUCT TERMS/OUTPUT	t _{PD} ns		f _{MAX} MHz		I _{CC} * mA	
								Com1	Mil.	Com1	Mil.		
16R8	PAL16L8-4 PAL16R8-4 PAL16R6-4 PAL16R4-4	28J	TTL	10 8 8 8	6 Comb — 2 Comb 4 Comb	2 Comb 8 Reg 6 Reg 4 Reg	7 8 7,8 7,8	4.5	—	125	—	180	
	PAL16L8-5 PAL16R8-5 PAL16R6-5 PAL16R4-5	20P, J	TTL					5	—	117	—	180	
	PAL16L8-7 PAL16R8-7 PAL16R6-7 PAL16R4-7	20P, J /BRA /B2A	TTL						7.5	10 12	74	52.6 47.6	180
	PAL16L8D PAL16R8D PAL16R6D PAL16R4D	20N, NL 20L, J, W	TTL						10	15	58.8	77	180
	PAL16L8B PAL16R8B PAL16R6B PAL16R4B	20N, NL 20L, J, W	TTL						15	20	37	28.5	180

ADVANCED PLD MENU

STANDARD PAL DEVICES (continued)

FAMILY	PART NUMBER*	PACKAGE	TECH-NOLOGY	INPUTS	I/O	OUTPUTS	PRODUCT TERMS/OUTPUT	t _{pd} ns		f _{MAX} MHz		I _{cc} * mA
								Com'1	Mil.	Com'1	Mil.	
16R8 (cont'd)	PAL16L8B-2	20N, NL, 20L, J, W	TTL	10	6 Comb — 2 Comb 4 Comb	2 Comb 8 Reg 6 Reg 4 Reg	7 8 7,8 7,8	25	30	25	20	90
	PAL16R8B-2			8				8	25	30	25	
	PAL16R6B-2	8	8	25				30	25	20		
	PAL16R4B-2	8	8	25				30	25	20		
	PAL16L8A PAL16R8A PAL16R6A PAL16R4A	20N, NL, 20L, J, W	TTL					25	30	25	20	155 180 180 180
	PAL16L8B-4 PAL16R8B-4 PAL16R6B-4 PAL16R4B-4	20N, NL, 20L, J, W	TTL					35	50	16	13.3	55
	PAL16L8A-2 PAL16R8A-2 PAL16R6A-2 PAL16R4A-2	20N, NL, 20L, J, W	TTL					35	50	18	13.3	80 90 90 90
20R8	PAL20L8-5 PAL20R8-5 PAL20R6-5 PAL20R4-5	24P, 28J	TTL	14 12 12 12	6 Comb — 2 Comb 4 Comb	2 Comb 8 Reg 6 Reg 4 Reg	7 8 7,8 7,8	5	—	117	—	210
	PAL20L8-7 PAL20R8-7 PAL20R6-7 PAL20R4-7	24P, 28J, /BLA, /B3A	TTL					7.5	10 12	74	50 41.7	210
	PAL20L8-10 PAL20R8-10 PAL20R6-10 PAL20R4-10	24P, 28J, /BLA, /B3A	TTL					10	15	55.5	35.7	210
	PAL20L8B PAL20R8B PAL20R6B PAL20R4B	24NS, 28NL, 24JS, W, 28L	TTL					15	20	37	28.5	210
	PAL20L8B-2 PAL20R8B-2 PAL20R6B-2 PAL20R4B-2	24NS, 28FN	TTL					25	—	25	—	105
	PAL20L8A PAL20R8A PAL20R6A PAL20R4A	24NS, 28NL, 24JS, W, 28L	TTL					25	30	25	20	210
	PAL20L8A-2 PAL20R8A-2 PAL20R6A-2 PAL20R4A-2	24NS, 28NL, 24JS, W, 28L	TTL					35	50	16	13.3	105
20X10/ 20L10	PAL20L10A PAL20X10A PAL20X8A PAL20X4A	24NS, 28NL, 24JS, W, 28L	TTL	10 10 10 10	10 Comb — 2 Comb 6 Comb	— 10 Reg XOR 8 Reg XOR 4 Reg XOR	3 4 3,4 3,4	30	35	22.2	15.4	165 180 180 180
	AmPAL20L10B AmPAL20L10-20 AmPAL20L10AL			24P, 28J					15 20 25	—	—	—

ADVANCED PLD MENU

UNIVERSAL PAL DEVICES

FAMILY	PART NUMBER*	PACKAGE	TECHNOLOGY	INPUTS	I/O	PRODUCT TERMS/OUTPUT	FEATURES	t_{PD} ns		f_{MAX} MHz		I_{CC}^* mA
								Com'l	Mil.	Com'l	Mil.	
29M16	PALCE29M16H-25 PALCE29M16H-35	24P, 28J	EE CMOS	5	16 Macro	8-16	Advanced I/O Macrocell	25 35	-	33.3 25	-	100
26V12	PALCE26V12H-20 PALCE26V12H-25	28P, J	EE CMOS	14	12 Macro	8-16	28-Pin 22V10	20 25	-	40 33.3	-	105
22V10	PAL22V10-10 PAL22V10-15 AmPAL22V10A AmPAL22V10	24P, 28J /BLA, /BKA /B3A	TTL	12	10 Macro	8-16	Varied Term Distribution	10	12	71	50	180
	15	20	50					31.2				
24V10	PALCE24V10H-15 PALCE24V10H-25	28P, J	EE CMOS	14	10 Macro	8	28-Pin GAL®-Type	25	30	28.5	22	90
								35	40	18	16.5	
								15	15	50	42	
								-	20	-	33.3	
								25	-	33.3	-	
20V8	PALCE20V8H-10 PALCE20V8Q-15 PALCE20V8H-15 PALCE20V8Q-25 PALCE20V8H-25	24P, 28J /BLA, /B3A	EE CMOS	12	8 Macro	8	GAL® Device Equivalent	25	25	33.3	25	90
								25	-	33.3	-	
								15	15	55.5	41.6	
								15	-	45.5	-	
								15	20	45.5	33.3	
16V8	PALCE16V8H-10 PALCE16V8Q-15 PALCE16V8H-15 PALCE16V8Q-25 PALCE16V8H-25 PALCE16V8Z-20	20P, J /BRA, /B2A	EE CMOS	8	8 Macro	8	GAL® Device Equivalent	25	25	37	28.6	90
								25	-	37	-	
								15	15	55.5	41.6	
								15	20	45.5	33.3	
								25	-	37	-	
18P8	AmPAL18P8B AmPAL18P8AL AmPAL18P8A AmPAL18P8L	20P, J	TTL	10	8 Comb	8	Programmable Polarity	25	-	-	-	180
								25	-	-	-	
								25	-	-	-	
								35	-	-	-	
22P10	AmPAL22P10B AmPAL22P10AL AmPAL22P10A	24P, 28J	TTL	12	10 Comb	8	Programmable Polarity	25	-	-	-	180
								25	-	-	-	
								25	-	-	-	

ASYNCHRONOUS PAL DEVICES

FAMILY	PART NUMBER*	PACKAGE	TECHNOLOGY	INPUTS	MACRO-	PRODUCT TERMS/OUTPUT	CLOCK CELLS	OTHER FEATURES	t_{PD} ns		f_{MAX} MHz		I_{CC}^* mA
									Com'l	Mil.	Com'l	Mil.	
29MA16	PALCE29MA16H-25 PALCE29MA16H-35	24P, 28J	EE CMOS	5	16	4-12	Program- mable	Advanced I/O Macrocell	25 35	-	33.3 25	-	100
610	PALCE610H-15 PALCE610H-25	24P, 28J	EE CMOS	4	16	8	Program- mable	J-K Flip-Flops	15 25	20	50 28.6	33.3	90
20RA10	PALCE20RA10H-15	24P, 28J	EE CMOS	10	10	4	Program- mable	Program- mable Polarity	15	-	45	-	100
	PAL20RA10-20	24NS, 28FN 24JS, W 28L	TTL						20	-	30	-	200
	PAL20RA10	24NS, 28NL	TTL						30/35†	35	20	16.7	200
16RA8	PAL16RA8	20N, NL	TTL	8	8	4	Program- mable	Program- mable Polarity	30/35†	-	20	-	170

† Active HIGH

ADVANCED PLD MENU

MACH™ Family (Macro Array CMOS High-Density)

FAMILY	PART NUMBER*	PACKAGE	TECHNOLOGY	INPUTS	OUTPUT MACROS	BURIED MACROS	PRODUCT TERMS/ OUTPUT	t _{PD} ns		f _{MAX} MHz		I _{CC} * mA
								Com'l	Mil.	Com'l	Mil.	
MACH 1	MACH110-15	44J	EE CMOS	6	32	—	0-12	15	20	50	40	150
	MACH110-20	44CQFP						20	40	40	40	
MACH 1	MACH130-15	84J	EE CMOS	6	64	—	0-12	15	20	50	40	150
	MACH130-25	84CQFP						20	50	50	40	
MACH 2	MACH210-15	44J	EE CMOS	6	32	32	0-16	15	20	50	40	180
	MACH210-20	44CQFP						20	40	40	40	

MEMORY/INSTRUCTION-BASED SEQUENCERS

FAMILY	PART NUMBER*	PACKAGE	TECHNOLOGY	INPUTS	OUTPUTS	ARRAY SIZE	FEATURES	f _{MAX} MHz		I _{CC} * mA
								Com'l	Mil.	
Field-Programmable Controllers	Am29CPL151H-33	28P, D, J /BLA	UV CMOS	8	16 Reg	64 x 32	Instruction-based with Counter and Stack	33	25	115
	Am29CPL151H-25							25	115	
	Am29CPL154H-30			7	16 Reg	512 x 36		30	125	
	Am29CPL154H-25			25	125					

SEQUENCER PAL DEVICES

FAMILY	PART NUMBER	PACKAGE	TECHNOLOGY	INPUTS	I/O	OUTPUTS	PRODUCT TERMS/ OUTPUT	FEATURES	t _{PD} ns	f _{MAX} MHz	I _{CC} mA
23S8	AmPAL23S8-20	20P	TTL	9	4 Macro	4 Reg	6-12	6 Buried Flip-Flops	20	33.3	210
	AmPAL23S8-25								25	25	
32VX10	PAL32VX10A	24NS, 28FN	TTL	12	10 Macro	—	8-16	Buried Flip-Flops, J-K Flip-Flops	25	25	180
	PAL32VX10								30	22.2	

PROGRAMMABLE LOGIC SEQUENCERS

FAMILY	PART NUMBER	PACKAGE	TECHNOLOGY	INPUTS	OUTPUTS	OUTPUT OR BURIED REGISTER	BURIED REGISTERS	PRODUCT TERMS	FEATURES	f _{MAX} MHz	I _{CC} mA
PLS	PLS30S16-40	28P,J	TTL	12-17	8-12Macro	—	4-12	64	PLA structure, complement array	40	225
	PLS105-40	28R,P,J	TTL	16	8 Reg	—	6	48		40	200
	PLS167-33	24NS,28FN	TTL	14	4 Reg	2	6	48		33	160
	PLS168-33	24NS,28FN	TTL	12	4 Reg	4	6	48		33	160

PACKAGE DESIGNATORS

AMD Marking	MMI Marking	Package	AMD Marking	MMI Marking	Package
P	N	Plastic DIP	J	NL	PLCC—20-pin
P	NS	Plastic SKINNYDIP®	—	NL	PLCC—28-pin non-JEDEC
R	—	Plastic SKINNYDIP Option	J	FN	PLCC—28-pin JEDEC
			J	—	PLCC—44-pin
R	J	Ceramic DIP	K	W	Ceramic Flatpack
L	JS	Ceramic SKINNYDIP	2	L	20-Pin Ceramic Leadless Chip Carrier
			3	L	28-Pin Ceramic Leadless Chip Carrier
			X		44-Pin Ceramic Quad Flatpack

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