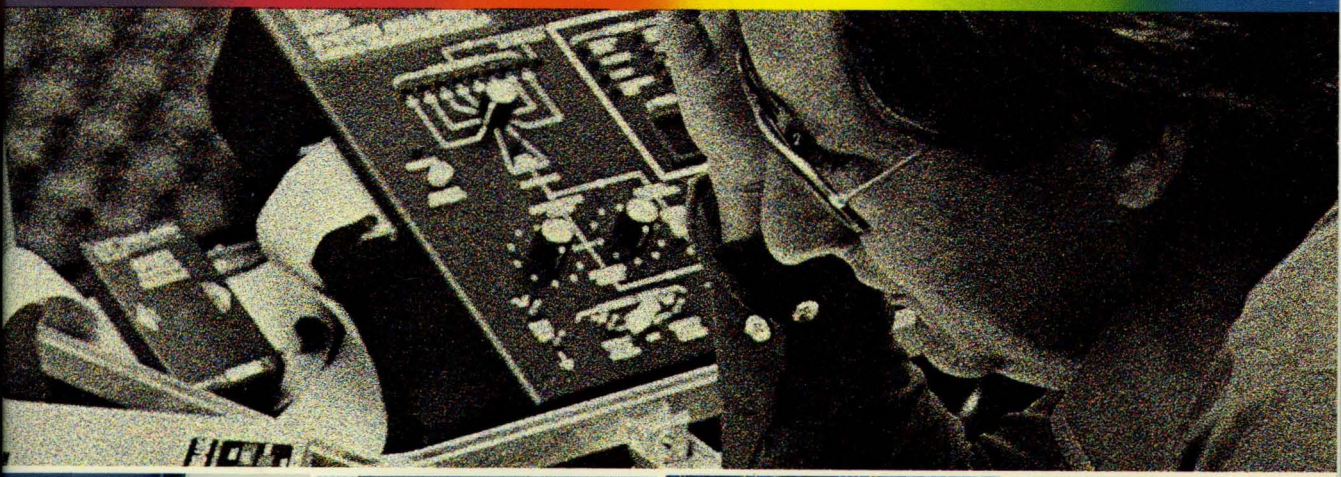
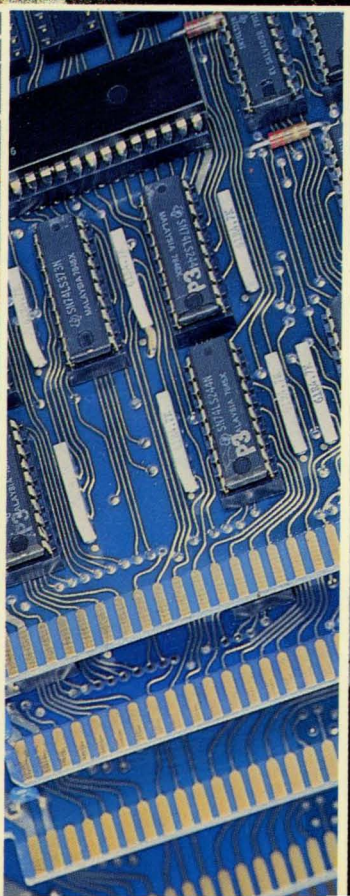
PRO-LOG® CORPORATION

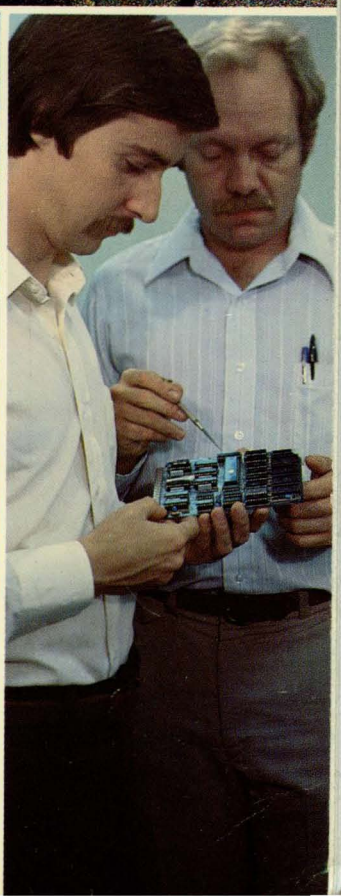
Price List and Short Form Catalog

1979 80

U.S. domestic prices effective October 15, 1979.
Prices subject to change without notice.







How PRO-LOG Supports You

Pro-Log takes pride in being one of the first to recognize and contribute to the tremendous impact microprocessors and PROMs have on the design of electronic equipment and systems. When we started (in 1972) "microprocessor" was a buzz word that not too many people took seriously and solid state PROMs were in their infancy. Our first products, the PLS-401 Microprocessor System and M810 PROM Programmer, were unique to the industry because they presented a new concept. Things have changed. Now most engineers know that to remain competitive, microprocessor-based designs are necessary. The questions have changed. No longer is it, "Should we use a microprocessor?" Now it's "Which microprocessor and which PROMs should we use?" and, "How should we approach our design?" Now, as then — Pro-Log can help you.

- **PROM Programmers**

Pro-Log has supplied PROM Programmers to industry since early 1973. In addition to rugged, reliable, and PROM vendor approved designs, Pro-Log has contributed to the state-of-the-art by inventing and pioneering the Iterative Programming Technique (now an industry standard method of programming some MOS PROMs) and by supplying up-to-date information on the entire PROM industry each year in the *PROM User's Guide*. Pro-Log's Series 90 Programmers are the first UL Listed PROM Programmers. Underwriters Laboratory listing shows commitment to your safety.

- **Microprocessor Systems and Support Hardware**

Pro-Log recognized the need for a standard 8-bit microcomputer bus, and has now developed the STD BUS and a bus-compatible card line. Our STD CPU card designs utilize the 8085A, Z80, and 6800 microprocessors. Our wide range of support, including I/O, memory, interface, and associated accessories ease your design effort. By providing these "unbundled" systems, you only buy what you need.

- **Microprocessor Test Instruments**

The M800 Analyzers are easy-to-use, low cost alternatives to complicated hardware or software debugging aids. Pro-Log's Analyzers are applicable to all phases of engineering, production, and field service. They support the design, development, production, and field service of 8080A, 8085, 8085A, Z80, and 6800 Microprocessor-based systems.

- **Education**

Pro-Log shares its microprocessor knowledge and experience with you by providing courses and seminars nation-wide. A free economics and management seminar tells you how to evaluate microprocessors, and a 3½ or 4½ day, hands-on course teaches microprocessor design and programming techniques.

- **Quality Control/Warranty**

High quality, reliability, and customer satisfaction are the prime requirements of Pro-Log products. To this end, we use only the best commercial grade products, follow a rigid inspection and testing program, and provide complete documentation and customer service facilities. The results? A Two-Year Parts and Labor Warranty on our M900, M900B, M910, and M920 PROM Programmer Control Units and a One-Year Parts and Labor Warranty on all other products.

- **Standard Discounts**

Pro-Log has standard Quantity and Dollar Volume discounts clearly defined in this catalog (pp. 57-63).

- **Products You May Manufacture**

We also allow you to be your own second source when you buy cards from Pro-Log. After delivery of 250 systems we give you, free of charge, all necessary documentation and non-exclusive manufacturing rights!

- **GSA and FSC**

Pro-Log also extends GSA pricing to appropriate government agencies; contact Pro-Log for GSA pricing. Pro-Log's Federal Supply code number is 55051.

"Microprocessors at Your Fingertips"

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PRO-LOG® CORPORATION

Our programmer isn't sidetracked by every new PROM.

Dozens of new PROMs come along every year.

Many of them are obviously different; different technologies, configurations, speeds, pinouts. Some have more subtle differences. A specific PROM may be altered by the manufacturer to require a different programming algorithm, for instance. Your problem? How to keep both your programming equipment and your knowledge of PROMs current.

One PROM programmer has kept pace.

Pro-Log's Series 90 PROM programmer is still as up-to-date today as it was when we introduced it in 1974. The secret? A design that lets you update your programmer easily, quickly and inexpensively.

Our plug-in personality modules now let you program more than 200 different PROMs. We constantly monitor PROM technology, modifying personality modules or developing new ones as PROMs change and new PROMs come along. We work closely with PROM manufacturers and get their approval on all new modules.

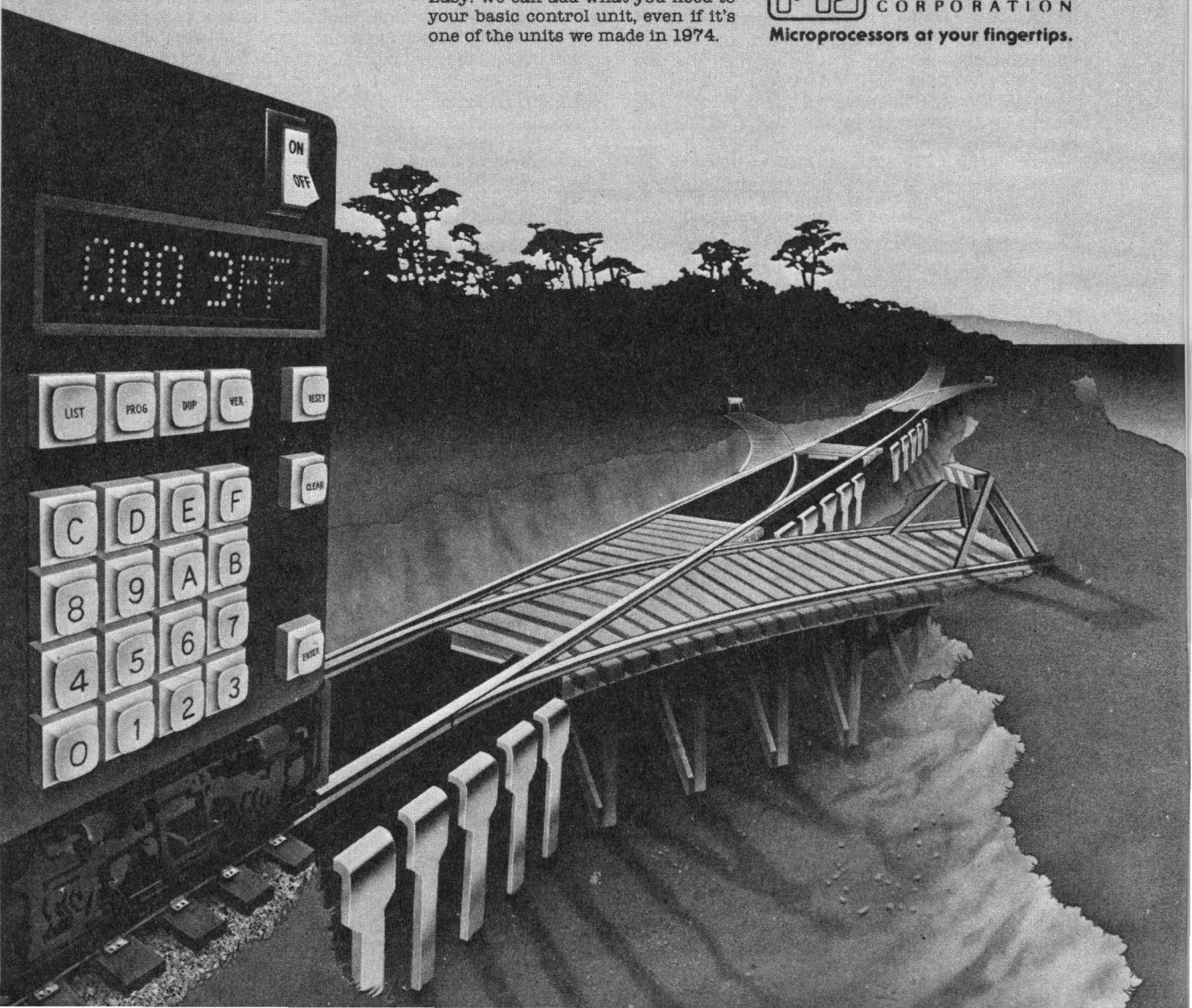
Need a selectable baud rate RS232 interface, Checksum, CMOS RAM buffer, paper tape reader, TTY control, or parallel input/output? Easy. We can add what you need to your basic control unit, even if it's one of the units we made in 1974.

We also provide you with the latest PROM information.

Our recently published 98-page PROM User's Guide includes chapters on PROM selection and PROM technology plus a complete PROM cross reference. Our PROM Programmer Comparison Guide helps you evaluate programming features. To get your free copies, call or write Pro-Log Corporation, 2411 Garden Road, Monterey, CA 93940, phone (408) 372-4593.

PRO-LOG
CORPORATION

Microprocessors at your fingertips.



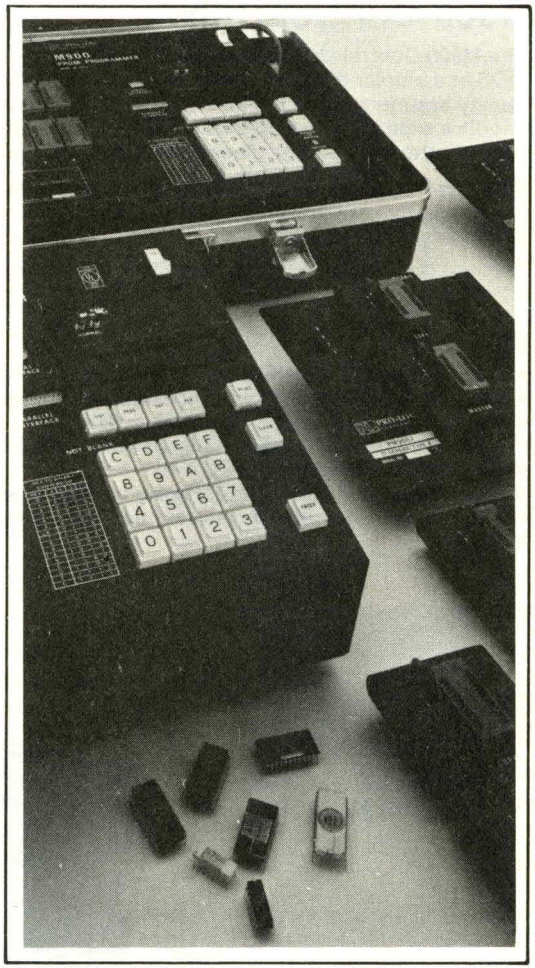
PROM Programmers

Series 90 PROM Programmers are microprocessor-based instruments for programming and testing PROMs. A Series 90 Programmer is made up of three elements: Control Unit, Control Unit Options, and Plug-in Personality Module.

There are four control units to choose from, each tailored for specific operating environments. The M900 and M900B Control Units are best suited for the engineering, field service, and quality assurance areas of PROM handling. The M910 is tailored to the manufacturing environment. The M920 is a peripheral programmer suited to most development systems.

The range of options varies for each of the Control Units. Options include TTY, Paper Tape Reader, Computer Interfaces, and a Checksum option.

A Personality Module is the hardware interface between a Control Unit and a particular PROM. There are more than 200 PROM types and they vary in number of bits, pinouts, package size, power requirements, and programming techniques. Pro-Log makes three kinds of Personality Modules: Dedicated, Generic, and Gang. Dedicated Modules are for specific PROMs with unique characteristics. Generic Modules (with appropriate Pinout Adapters and Configurators) permit programming of families of PROMs. Gang Modules enable programming of multiple PROMs simultaneously. Any Personality Module functions with any of the Control Units.



Features

- **A Proven Product**
  Over 5500 Pro-Log Programmers shipped since 1973.
- **Easy to Operate**
  "Conversational" design minimizes controls and operator instructions.
- **Programming Security**
  Separate master and copy sockets eliminate danger of accidental alterations to master PROM.
- **Precise, Fixed Voltage Regulation**
  No need for periodic calibration. Separate supplies in the Control Unit and Personality Modules assure stable regulation.
- **Warranty**
  Our enviable record of dependability is not accidental, but is due to our selection of quality components, combined with simple internal construction and rigid test procedures. Because of this quality, Pro-Log includes a full two-year parts and labor warranty with the M900, M900B, M910, and M920 Control Units. Personality Modules are covered by our standard one-year parts and labor warranty.
- **UL Listed**
  Listing by Underwriters Laboratories assures you of a product made to exacting safety standards, and a company dedicated to that philosophy.
- **Vendor Approvals**
  As a matter of policy, Pro-Log submits its Personality Modules to PROM manufacturers for evaluation and approval. This is an on-going process. Contact Pro-Log for vendor approval status on any module you are considering.

For further information on PROM Technology and PROM Programmers, contact Pro-Log or the local representative (p.64) for your free copy of the *PROM User's Guide*. (See attached card on back cover.)

M900 Control Unit

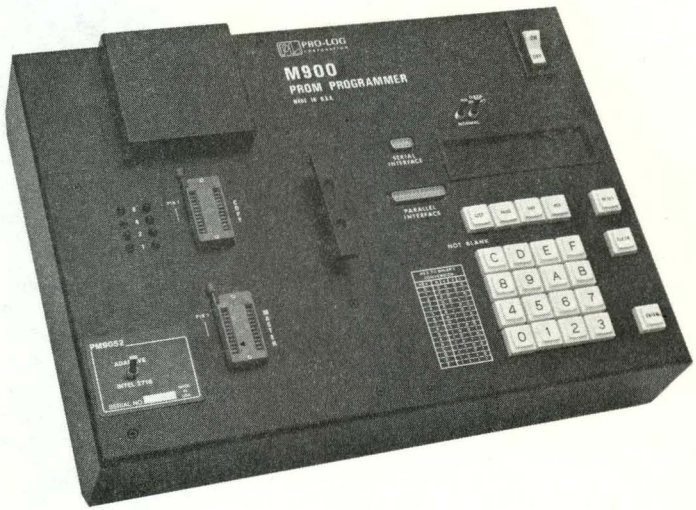
The M900 Control Unit is a low cost, portable and highly versatile solution to programming requirements for MOS and bipolar PROMs. Conversational interaction with the operator makes it simple to use in engineering, quality assurance or in the field. The M900 contains a microprocessor system which gives it the capability to handle a wide variety of options which interface with TTY paper tape readers/punches, minicomputers and a host of other equipment. These interfaces are available as standard options to the system.

Selected PRO-LOG Personality Modules may be plugged into the M900 Control Unit to program most PROMs now being manufactured. In many cases a single module enables the user to program several different types of PROMs.

The unit is packaged in a high impact carrying case but can be bench mounted by simply utilizing its built-in tilt bail.

FEATURES

- **PROGRAM, LIST, DUPLICATE, and VERIFY modes of operation**
- **DUPLICATE mode with advance substitution capability that allows up to sixteen changes**
- **Ability to operate on partial address field**
- **Automatic Blank Check of defined address field**
- **Hexadecimal Keyboard (0-9, A-F)**
- **Six Character Hexadecimal Display of Addresses and Data**
- **Fully portable for field or in-plant use (less than 20 lbs.)**
- **UL Listed**

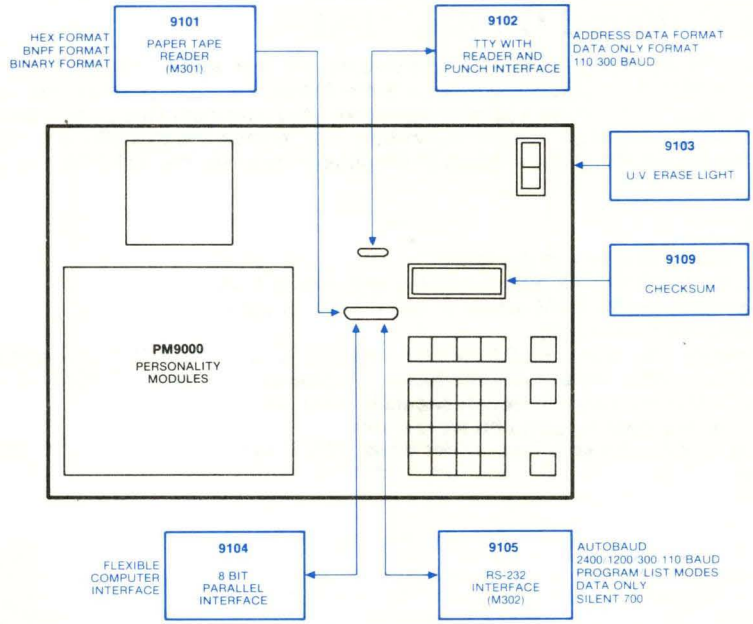


M900 Control Unit
shown with
Personality Module
and 9103 U.V. Erase Light

$1800.00 | **M900** **CONTROL UNIT**

Includes hexadecimal keyboard, control keys for List, Program, Duplicate, and Verify modes, Data and Address Enter key, Data and Address Clear key, System Reset key, 6 digit hexadecimal display, data invert control switch, connectors for Personality Modules, connectors for serial and parallel interfaces and is housed in an attache case.

M900 Options



$1050.00	9101-1 9101-2 9101-3	**PAPER TAPE READER SYSTEM** Includes 120 cps paper tape reader and power supply (M301), and control program. 9101-1 (ASCII Hex) 9101-2 (ASCII BNPF) 9101-3 (Binary)
200.00	9102-1 9102-2	**TTY CONTROL** Allows full-duplex TTY to be used as keyboard control, paper tape, I/O and hard copy device with the M900 programmer. Includes mating cable. 9102-1 (Address Data) 9102-2 (Data Only)
210.00	9103 9103-1 9103-2	**ULTRA-VIOLET ERASE LIGHT SYSTEM** Includes UV erase light, 60-minute timer and safety interlock. Mounted in an enclosure that fits in the M900 attache case. Stand alone version (9103-1) comes with 6 ft. power cord for 115 VAC only. U.L. Listed. Stand-alone 230V version (9103-2) is not UL Listed.
20.00	9103-B	Replacement bulb for the 9103 Systems.
125.00	9104	**PARALLEL INPUT/OUTPUT INTERFACE** Provides 8 parallel input DATA lines, 8 parallel output DATA lines, 6 handshake control lines, internal handshake program and mating connector. TTL compatible.
250.00	9105-1 9105-2 9105-3 9105-4* 9105-5* 9105-7	**RS232 INTERFACE** Provides an ASCII coded RS232 Interface allowing compatible interface to computers and semi-intelligent terminals. This option provides an industry standard interface connector (M302) and a control program designed to allow PROM Programming and listing operations by a remote controller. 9105-1 (1200 Baud) 9105-3 (110 Baud) 9105-5* (1200 Baud) 9105-2 (300 Baud) 9105-4* (300 Baud) 9105-7 (2400 Baud) *Modified Silent 700 (Texas Instruments)
250.00	9105-6	Auto-Baud: Automatically adjusts to incoming baud rate up to 2400 Baud.
60.00	9109	**CHECKSUM** Calculates and displays a hexadecimal sum. Provides an efficient method to check the number of programmed bits in a particular PROM.

M900B Buffered Control Unit

The M900B Buffered Control Unit has all the versatility and operating features of the M900 but has the added advantage of a 2048x8 bit CMOS Read/Write Buffer Memory with temporary power backup. A.C. Power to the M900B can be shut off for at least 60 seconds without any data loss in the buffer memory. This feature permits the user to take out a PROM Personality Module and replace it with a different module. The user can thus transfer data from one PROM type to an entirely different type and size of PROM (for example, from two 2708's to one 2716).

FEATURES

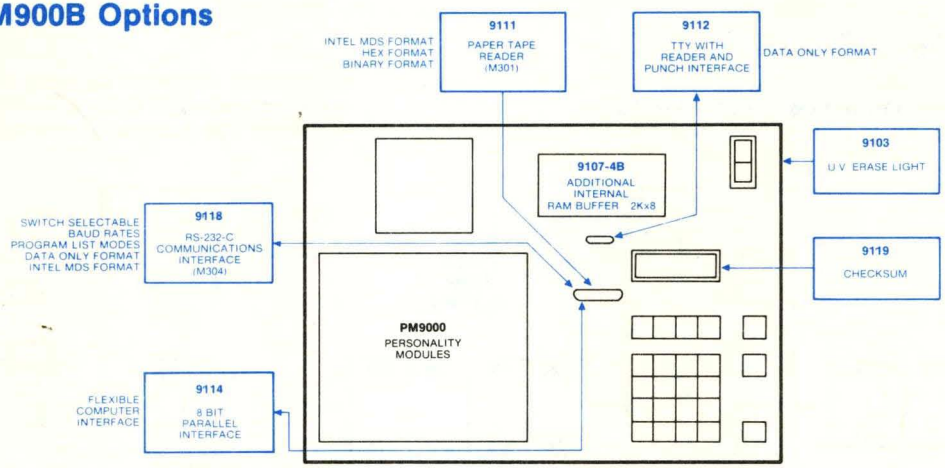
- **All the operating features of the M900**
- **2Kx8 CMOS READ/WRITE buffer memory with power backup**
- **Additional 2Kx8 CMOS RAM memory available as an option**
- **Data location shift capability**
- **Allows data transfer from one PROM type and size to another PROM type and size (see page 8)**
- **Pro-Log's two socket Personality Modules fully protect your Master PROMs at all times**
- **Unlimited buffer memory correction capability from keyboard**
- **Communications options using buffer memory**
- **Buffer Memory can be switched out for direct PROM to PROM copying and VERIFY**
- **UL Listed**

M900B Control Unit
shown with
Personality Module
and 9103 U.V. Erase Light

$2100.00 | **M900B** **CONTROL UNIT**

Includes hexadecimal keyboard, control keys for List, Program, Duplicate and Verify modes, Data and Address Enter key, Data and Address Clear key, System Reset key, 6 digit hexadecimal display, data invert control switch, connectors for Personality Modules, connectors for serial, and parallel interfaces, 2Kx8 bits of CMOS Read/Write buffer memory and is housed in an attache case.

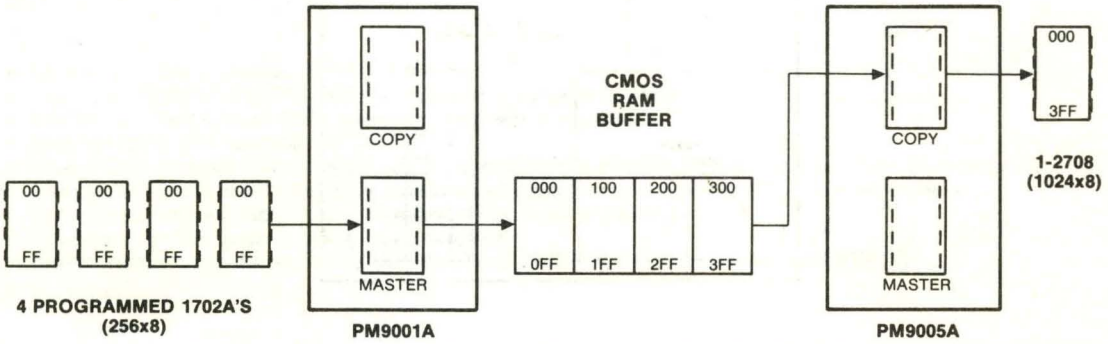
M900B Options



$ 210.00	9103 9103-1 9103-2	**ULTRA-VIOLET ERASE LIGHT SYSTEM** Includes UV erase light, 60-minute timer and safety interlock. Mounted in an enclosure that fits in the M900 attache case. Stand alone version (9103-1) comes with 6 ft. power cord for 115 VAC only. U.L. Listed. Stand-alone 230V version (9103-2) is not UL Listed.
20.00	9103-B	Replacement bulb for the 9103 Systems.
300.00	9107-4B	**RAM BUFFER** Provides an additional 2Kx8 bits of CMOS Read/Write memory workspace for data editing and temporary storage.
1050.00	9111-1 9111-2 9111-3 9111-4	**PAPER TAPE READER SYSTEM** Includes 120 cps paper tape reader and power supply (M301), and control program. 9111-1 (ASCII Hex) 9111-2 (BNPF) 9111-3 (Binary) 9111-4 (Intel MDS)
200.00	9112-2	**TTY CONTROL** Allows full-duplex TTY to be used as keyboard control, paper tape, I/O and hard copy device with the M900B Programmer. Baud rates up to 300 Baud automatically accommodated. Includes mating cable. 9112-2 (Data only)
125.00	9114	**PARALLEL INPUT/OUTPUT INTERFACE** Provides 8 parallel input DATA lines, 8 parallel output DATA lines and 6 handshake control lines, internal handshake program and mating connector. TTL compatible.
350.00	9118-1 9118-2 9118-3	**RS-232-C SELECTABLE BAUD INTERFACE** Utilizes the M304 Adapter as an RS-232-C interface between the M900B RAM Buffer and compatible computers, modems, and terminals. This option permits listing and programming of the Buffer via a remote controller at switch-selectable Baud rates. (See pp. 8 & 9 for applications.) 9118-1 ASCII Hex, 50 to 9600 Baud, 5 LIST formats including XON protocol, serially adjacent data dump, scroll by 256-byte block (for CRT), and list of data bytes with or without address header. 9118-2 INTEL Hex, 50 to 4800 Baud, LIST operation controlled locally. 9118-3 INTEL Hex, 50 to 4800 Baud, LIST operation controlled locally or from remote computer, ASCII ACK or NAK characters transmitted after checksum check.
60.00	9119	**CHECKSUM** Calculates and displays a Hexadecimal sum. Provides an efficient method to check the number of programmed bits in a particular PROM or in the buffer memory.

M900B Applications

Typical Application of M900B CMOS RAM Buffer



The figure above illustrates how the M900B's CMOS Buffer Memory enables the user to transfer data stored on four 1702A PROMs to a single 2708 PROM. First a PM9001A Personality Module is plugged into the M900B Control Unit. Then each of the four 1702A PROMs in turn is put into the Master Socket of the Personality Module and its data is copied into the Buffer Memory. The first PROM is copied to addresses 000 to OFF in the buffer, the second (using the data location shift feature of the M900B) is copied to locations 100-1FF, the third to 200-2FF and the fourth to 300-3FF. A.C. Power is then turned off the M900B, the PM9001A is removed and the PM9005A is plugged in. A.C. Power is turned on and a blank 2708 is plugged into the copy socket of the PM9005A. Data is transferred from the Buffer Memory to the PROM. This operation uses only half the memory of the standard buffer. The buffer can be expanded to 4Kx8 bits with the 9107-4B option.

Typical Applications of the 9118, RS-232-C Selectable Baud Interface Option

The 9118 option uses the M304 adapter as an RS-232-C interface between the M900B Programmer, a terminal and a modem. In the M304, a 25-pin "D" male connector for the terminal and a 25-pin "D" female connector for the modem are provided, permitting simultaneous communication between the M900B and both connectors.

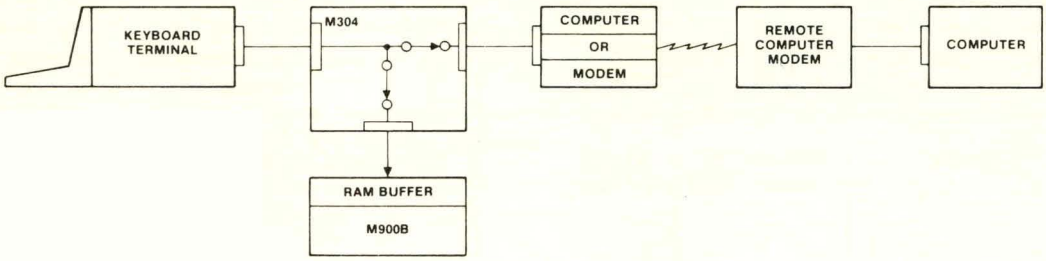
Features provided by the M304/9118 are:
- Switch selectable Baud rate from 50 to 9600 Baud
- PROGRAM buffer from terminal and/or modem
- LIST buffer to terminal and/or modem

The 9118 option consists of two functional elements: the Control Program which is located in PROMs A, B, and E of the M900B Control Unit; and the M304 Adapter, which plugs into the parallel interface socket on the M900B. The M304 Adapter interfaces the TTL level ports of the M900B to the RS-232-C type levels of a terminal/computer and/or a modem/computer. Along with signal level conversion, the M304 Adapter provides switching capabilities for Baud rate selection and switching the modem and/or the M900B ON-LINE or OFF-LINE.

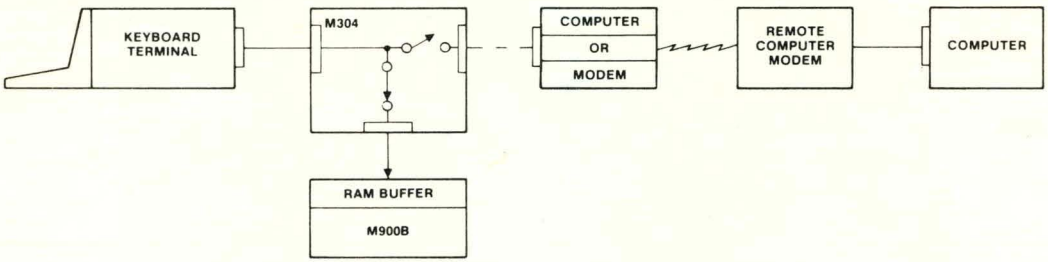
NOTE: The 9118 option does not permit direct programming of PROMs from an external source; the Buffer must be filled and then the data programmed from the Buffer to the PROM.

Typical Applications of the 9118 (continued)

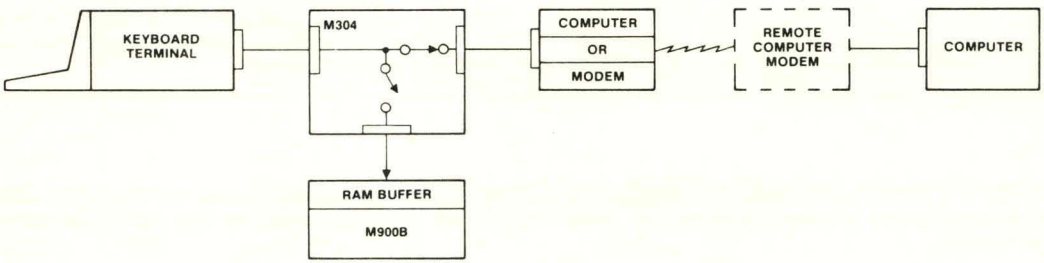
Terminal to Computer and M900B
M900B to Terminal and Computer
Computer Terminal and M900B (M900 ON-LINE) (Similar to 9108 Option)



Terminal to M900B Ram Buffer (Similar to 9115 Option)
M900B Ram Buffer to Terminal



Terminal to Computer (M900B OFF-LINE)



DEVELOPMENT SYSTEM INTERFACE TO M900B

The M900B PROM Programmer features the capability of interfacing with various development systems for direct downloading of programs to the M900B CMOS Buffer. The following table includes some of the more widely used development systems which can be interfaced to the M900B, along with the corresponding Series 90 option which affords the interface capability for each system.

MANUFACTURER	MODEL	SERIES 90 OPTION	COMMENTS
Futuredata	GenRad 230 Network 2301	9118-1 9118-1	Requires no system modification.
INTEL	MDS 210 MDS 220 MDS 230	9118-2, 9118-2, 9118-2,	Requires system modification. (See 9118-2 Operating Instructions.)
Motorola	M68SDT EXORciser	9114	Requires system modification. Contact: Motorola Microsystems, Box 20906, Phoenix, AZ 85036 (602) 962-3561
RCA	COSMAC	9114	Requires system modification. (See RCA Microprocessor Products Application Note ICAN-6622.)
Tektronix	8002A MDA	9118-2	Requires no system modification. Uses INTEL-hex (Vendor hex) format.
Zilog	ZDS 1/25 ZDS 1/40	9114 9114	Requires no system modification. Uses Zilog Centronics Interface Board (CIB). For Interfacing Details contact Zilog Technical Support Center in California (408) 446-4666 Ext. 6001.

This list is a partial compilation of the more popular development systems. It does not imply that M900B interface is limited to these systems, nor does it constitute an endorsement of any particular development system.

M910 Production Control Unit

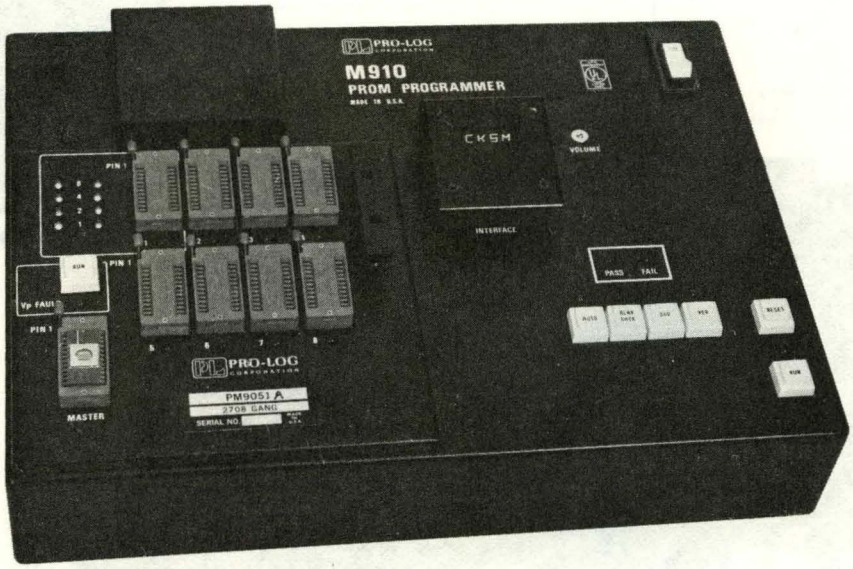
The M910 Control Unit is designed for the production environment. It offers high volume users separately selectable BLANK-CHECK, DUPLICATE, and VERIFY functions. AUTO mode is provided for automatic sequencing of all three functions. The simplified keyboard and display provides an easy to operate and easy to understand system for duplicating PROMs.

The M910 can utilize the complete selection of Pro-Log Personality Modules, and thus offers the ability to program over 250 different PROMs. The M910 is designed to enhance the features of Gang Personality Modules by extending the BLANK-CHECK and VERIFY functions to include all copy sockets.

The M910 is normally delivered as a bench top unit but can be easily installed in the 9202 attache case.

FEATURES

- **Color-coded LED PASS, FAIL and function indicators**
- **Audio tone pass and fail indicators**
- **Single push button operation in AUTO mode**
- **Optional foot pedal RUN control**
- **UL Listed**



M910 Control Unit
Shown with PM9051A Personality Module and 9129 Option

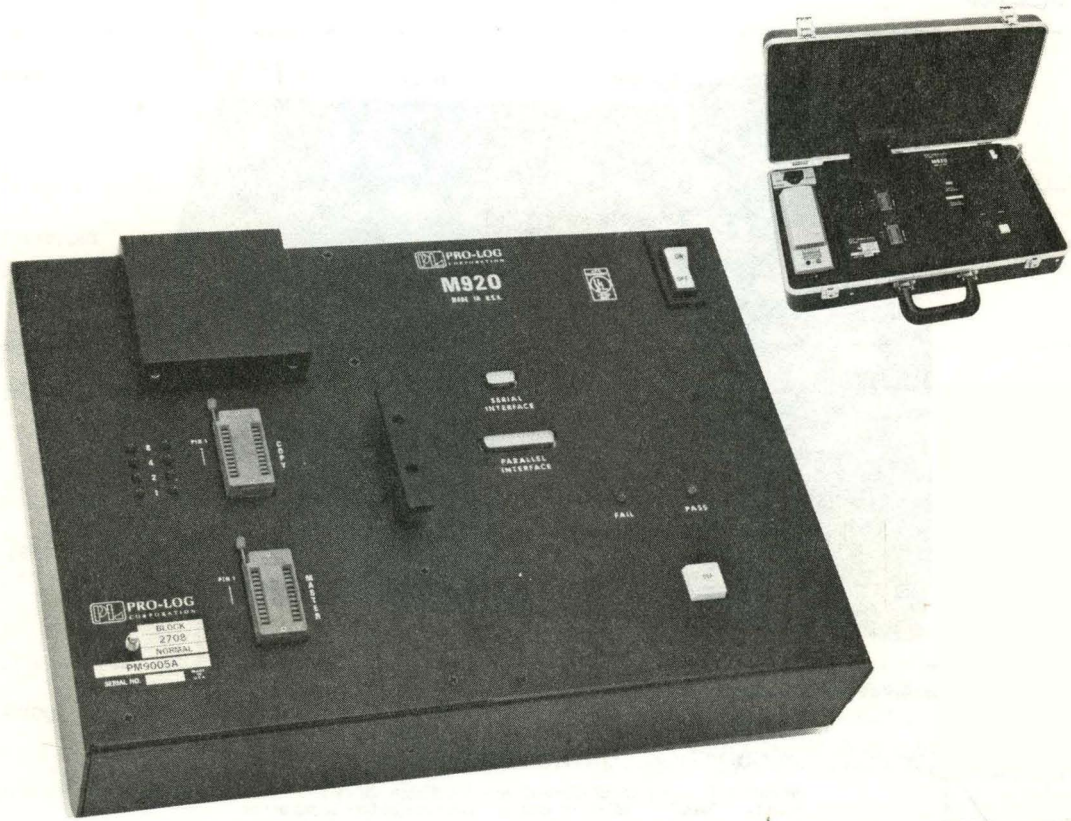
$1400.00	M910	**PRODUCTION CONTROL UNIT** Includes control keys for Blank Check, Duplicate, Verify and Automatic Modes, System Reset key, Run key, Pass/Fail indicators and a volume controlled audio alarm.
40.00	9106	**M910 FOOTSWITCH**
250.00	9129	**CHECKSUM** Calculates and displays a hexadecimal sum. Provides an efficient method to check the number of programmed bits in a particular PROM. Includes M305 display.
100.00	9202	**ATTACHE CASE**

M920 Peripheral Control Unit

The M920 Peripheral Control Unit is a low cost, highly versatile solution to PROM programming and PROM duplicating requirements. This field-proven system is designed to interface with TTY, microprocessor development systems, terminals, computers and other external devices; or operates as a stand-alone PROM duplicator. The M920 uses any of PRO-LOG's plug-in Personality Modules. The M920 comes as a bench top unit but can slip into an optional attache case in a matter of seconds.

FEATURES

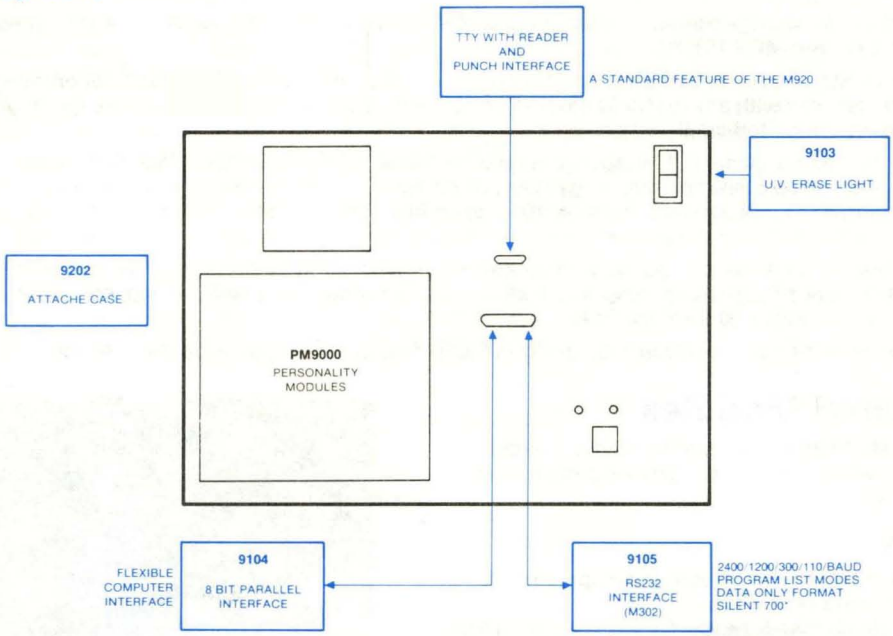
- **PROGRAMS and LISTS PROMs under control of ASR-33 TTY keyboard**
- **DUPLICATES and VERIFIES PROMs from TTY tape reader**
- **Duplicates PROMs as a stand-alone system**
- **Optional RS-232C or 8-bit parallel I/O interface offers PROGRAM and LIST Modes of operation**
- **Uses existing, field-proven PM9000 Series Personality Modules**
- **Microprocessor controller gives computer power and flexibility**
- **UL Listed**



M920 Control Unit
shown with PM9005A Personality Module

$1200.00	**M920**	**CONTROL UNIT**
		Includes Duplicate control key, two LED indicators, 9102-2 TTY control and TTY interface with mating cable, connector for parallel interface, and connectors for Personality Modules. Desk top unit.
100.00	**9202**	**ATTACHE CASE**

M920 Options



(no charge)	9102-2	**TTY CONTROL (STANDARD)** Allows full-duplex TTY to be used as keyboard control, paper tape I/O and hard copy device. Includes mating cable. (9102-2 Data only format).
$ 210.00	9103 9103-1 9103-2	**ULTRA-VIOLET ERASE LIGHT SYSTEM** Includes UV erase light, 60-minute timer and safety interlock. Mounted in an enclosure that fits in the M900 attache case. Stand alone version (9103-1) comes with 6 ft. power cord for 115 VAC only. U.L. Listed. Stand-alone 230V version (9103-2) is not UL Listed.
20.00	9103-B	Replacement bulb for the 9103 Systems.
125.00	9104	**PARALLEL INPUT/OUTPUT INTERFACE** Provides 8 parallel input DATA lines, 8 parallel output DATA lines and 6 handshake control lines, internal handshake program and mating connector. TTL compatible. Precludes use of 9105 option.
250.00	9105-1 9105-2 9105-3 9105-4* 9105-5* 9105-7 9105-8	**RS232 INTERFACE** Provides an ASCII coded RS232 Interface allowing compatible interface to computers and semi-intelligent terminals. This option provides an industry standard interface and a control program designed to allow PROM programming and listing operations by a remote controller. 9105-1 (1200 Baud) 9105-4* (300 Baud) 9105-7 (2400 Baud) 9105-2 (300 Baud) 9105-5* (1200 Baud) 9105-8 (TEK-Hex 2400 Baud) 9105-3 (110 Baud) *Modified Silent 700 (Texas Instruments)
250.00	9105-6	Auto-Baud: Automatically adjusts to incoming Baud rate up to 2400 Baud.

Note: Development System Interfacing
The 9105-8 allows direct interfacing to the Tektronix 8002A MDA without modification. The 9104 option is similar to the 9114. Refer to the chart (p. 10) for interface combinations. Some modifications may be required.

Personality Modules

The PM9000 Series of plug-in modules offer you a cost-effective approach to programming an ever expanding range of bipolar and MOS PROMs.

All Personality Modules include the circuitry for timing, voltages and currents necessary for programming the PROM when coupled with any of the Series 90 Control Units. Using this approach, PRO-LOG eliminates the need for expensive periodic calibration.

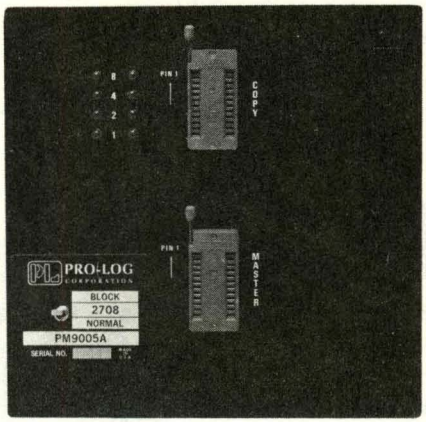
PRO-LOG maintains a close, but independent relationship with the PROM Manufacturers to always provide you with current programming technology. Our on-going program of vendor approval for all Personality Modules assures you of correct programming specifications. Contact PRO-LOG for specific vendor approvals.

PRO-LOG now offers three categories of modules: Dedicated, Generic and Gang, which provide you with alternatives for specific programming applications. Each module has self-guiding connectors for easy coupling with the Series 90 Control Units.

Personality Modules can be selected by using the selection guide on pages 16 through 22.

Dedicated Modules

Dedicated Modules provide all the circuitry necessary to program individual non-generic bi-polar and MOS PROMs.

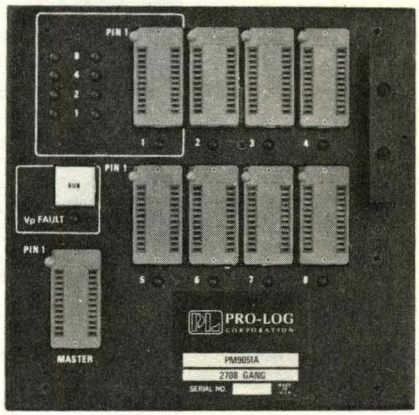


FEATURES

- **Modules include both master and copy sockets for master data protection**
- **Binary data display for copy PROM**
- **Zero insertion force sockets**
- **Can be used with all Series 90 Control Units**

Gang Modules*

Gang Modules provide a cost-effective alternative to expensive and cumbersome automated high production programming. Automatically programs and verifies up to 8 PROMs simultaneously. (It takes over 2 minutes to program a typical 2708 individually, vs 2½ minutes to duplicate 8 on PM9051A Gang Module).



FEATURES

- **Separate master with 8 copy sockets**
- **Zero insertion force sockets**
- **Automatic self check verify for all 8 copy PROMs**
- **Single copy socket can be listed or verified with Gang Module**
- **Binary display for single copy socket**
- **Can be used with all Series 90 Control Units**

*Due to the increased current drain of multiple device programming, M900 and M920 Control Units manufactured prior to October 1, 1977 should be returned to PRO-LOG for updating to Gang Module compatability. Contact Customer Service for return authorization. Cost of retrofit: $50 FOB Monterey.

Generic Modules

The Generic Personality Module offers a cost-effective solution to programming PROMs from those manufacturers who offer a family of PROMs with identical programming parameters, but different pin arrangements, PROM sizes, and bit structures.

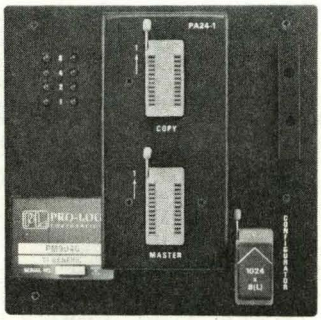
The Personality Module includes the control electronics for the PROM's voltage, current, and timing parameters. To program the entire generic family is simply a matter of accommodating the pin requirements and bit structures of a given PROM in the generic family.

To accommodate the various PROM pinout configurations, the generic module is designed to accept one of a series of Pinout Adapters (PA). The PROM bit structures are selected by a plug-in configurator (CA) that adapts the system to the appropriate PROM configuration. A zero insertion force socket is provided on the generic module to accept the Configurator.

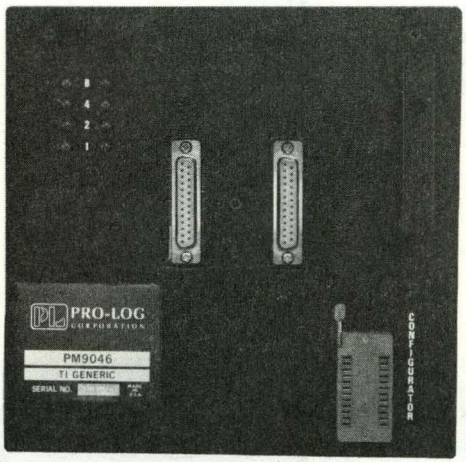
The Selection Guide on the next page shows the various generic module pinout adaptors and configurators necessary for programming. Note that several PROMs utilize the same pinout adaptor and configurator, another cost saving factor for the generic family PROM user.

FEATURES

- **All pinout adaptors contain both master and copy sockets**
- **Binary data display for copy PROM**
- **Zero insertion force sockets**
- **Can be used with all Series 90 Control Units**

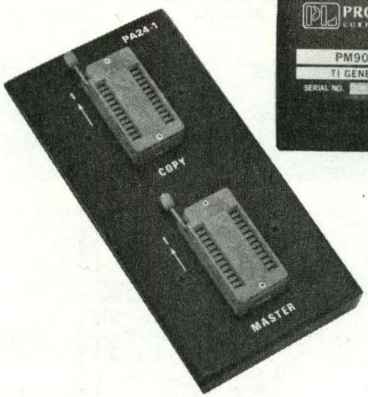


Generic Module



Personality Module

Configurator



Pinout Adapter

Personality Module Selection Guide

The following selection guide alphabetically lists all PROM manufacturers in column one. Column two provides the part numbers manufactured by a specific manufacturer. Column three gives the appropriate Personality Module required for the specific PROM. The last two columns apply to Generic Modules only, and list the appropriate Pinout Adapter (PA) and Configurator (CA) necessary, in combination with the Generic Module, to program the specific PROM. As you proceed through the table you will note that the same Generic Module facilitates various PROMs by utilizing different Pinout Adapters and Configurators. Certain PROMs can be programmed by more than one Personality Module. In these cases, all Personality Modules which apply will be listed. Only commercial part numbers are listed, but each module will program the corresponding military equivalent and/or speed range.

For further information regarding PROMs and PROM Programmers send for Pro-Log's free *PROM User's Guide*. (See attached card on back cover.)

Prices for Personality Modules, Pinout Adapters, and Configurators can be found on page 23.

PROM MANUFACTURER	PROM PART NUMBER	PERSONALITY MODULE	PIN-OUT ADAPTER	CONFIGURATOR
ADVANCED MICRO DEVICES (AMD)	**Bipolar**			
	Am27S20/21, 29760A/61A	PM9058	PA16-5	256x4(L)
	Am27S12/13, 29770/71	PM9058	PA16-5	512x4(L)
	Am27S32/33, 29780/81	PM9058	PA18-6	1Kx4(L)
	Am27S184/185	PM9058	PA18-8**	2Kx4(L)
	Am27S18/19, 29750A/51	PM9058	PA16-6	32x8(L)
	Am27S28/29, 29772/73	PM9058	PA20-4	512x8(L)
	Am27S26/27, 29774/75	PM9058	PA22-4	512x8(L)
	Am27S15	PM9058	PA24-14	512x8(L)
	Am27S30/31	PM9058	PA24-13	512x8(L)
	Am27S180/181	PM9058	PA24-13	1Kx8(L)
	MOS			
	9702A, 1702A (All Versions)	PM9001A	—	—
	9702*, 1702*	PM9011A	—	—
	Am2708	PM9005A	—	—
		PM9053A	—	—
		PM9051A (GANG)	—	—
	Am2716	PM9052	—	—
		PM9064	PA24-1	2Kx8(EH)
		PM9061 (GANG)	—	—
		PM9075 (GANG)	—	—
	Am2732**	PM9064	PA24-10	4Kx8(EH)
AMERICAN MICROSYSTEMS INC. (AMI)	**MOS**			
	S5204A	PM9057	PA24-7	512x8(L)
	S6834, S6834-1	PM9057	PA24-5	512x8(L)
ELECTRONIC ARRAYS (EA)	**MOS**			
	EA2704	PM9005A	—	—
		PM9053A	—	—
		PM9051A (GANG)	—	—
	EA2708	PM9005A	—	—
		PM9053A	—	—
		PM9051A (GANG)	—	—
	EA2716	PM9052	—	—
		PM9064	PA24-1	2Kx8(EH)
		PM9061 (GANG)	—	—
		PM9075 (GANG)	—	—

PROM MANUFACTURER	PROM PART NUMBER	PERSONALITY MODULE	PIN-OUT ADAPTER	CONFIGURATOR
FAIRCHILD	**Bipolar**			
	93417, 93427	PM9045	PA16-1	256x4(H)
	93436, 93446	PM9045	PA16-1	512x4(H)
	93452, 93453	PM9045	PA18-2	1Kx4(H)
	93438, 93448	PM9045	PA24-1 or -8	512x8(H)
	93450, 93451	PM9045	PA24-1 or -8	1Kx8(H)
	93460, 93461	PM9045	PA24-1 or -8	1Kx8(H)
	93465, 93466	PM9045	PA24-1 or -8	1Kx8(H)
	93510**, 93511**	PM9045	PA24-8	2Kx8(H)
	MOS			
	F2708	PM9005A	—	—
		PM9053A	—	—
		PM9051A (GANG)	—	—
	F2716**	PM9052	—	—
		PM9064	PA24-1	2Kx8(EH)
		PM9061 (GANG)	—	—
		PM9075 (GANG)	—	—
FUJITSU	**Bipolar**			
	MB7121/22	**	PA18-2	1Kx4(L)
	MB7123/24	**	PA20-1	512x8(L)
	MB 7125/26	**	PA24-1 or -8	512x8(L)
	MB7127**/28**	**	PA18-2	2Kx4(L)
	MB7129**/30**	**	PA22-1	1Kx8(L)
	MB7131**/32**	**	PA24-1 or -8	1Kx8(L)
	MB7133/34**	**	**	4Kx4(L)
	MB7135/36**	**	**	2Kx8(L)
	MB7137/38**	**	**	2Kx8(L)
	MOS			
	MB8518E, MB8518H	PM9005A	—	—
		PM9053A	—	—
		PM9051A (GANG)	—	—
	MBM2716	PM9052	—	—
		PM9064	PA24-1	2Kx8(EH)
		PM9061 (GANG)	—	—
		PM9075 (GANG)	—	—
	MBM2732**	PM9064	PA24-10	4Kx8(EH)
HARRIS SEMICONDUCTOR	**Bipolar**			
	7610, 7610A, 7611, 7611A	PM9039A	PA16-1	256x4(H)
	7620, 7620A, 7621, 7621A	PM9039A	PA16-1	512x4(H)
	7644, 7644A	PM9039A	PA16-3	1Kx4(H)
	7642, 7642A, 7642P	PM9039A	PA18-2	1Kx4(H)
	7643, 7643A, 7643P	PM9039A	PA18-2	1Kx4(H)
	7645, 7645P	PM9039A	PA20-8	1Kx4(H)

PROM MANUFACTURER	PROM PART NUMBER	PERSONALITY MODULE	PIN-OUT ADAPTER	CONFIGURATOR
HARRIS SEMICONDUCTOR (Continued)	**Bipolar (continued)**			
	7684, 7684P, 7685, 7685P	PM9039A	PA18-2	2Kx4(H)
	7686, 7686P, 7686R, 7686RP	PM9039A	PA20-3**	2Kx4(H)
	7687, 7687P, 7687R, 7687RP	PM9039A	PA20-3**	2Kx4(H)
	7602, 7603	PM9039A	PA16-2 or -4	32x8(H)
	HPROM 0512	PM9055	—	—
	7625R	PM9039A	PA24-9	256x8(H)
	7629	PM9039A	PA24-1 or -8	256x8(S2)**
	7648, 7649	PM9039A	PA20-1	512x8(H)
	7640, 7640A, 7640AR	PM9039A	PA24-1 or -8	512x8(H)
	7641, 7641A, 7641AR	PM9039A	PA24-1 or -8	512x8(H)
	7647R	PM9039A	PA24-9	512x8(H)
	7608	PM9039A	PA24-1 or -8	1Kx8(H)
	7680, 7680P, 7680R, 7680RP	PM9039A	PA24-1 or -8	1Kx8(H)
	7681, 7681P, 7681R, 7681RP	PM9039A	PA24-1 or -8	1Kx8(H)
	7683	PM9039A	PA20-5**	1Kx8(H)
	7616**	PM9039A	PA24-1 (MOD)	2Kx8(H)
	76160**, 76161**	PM9039A	PA24-8	2Kx8(H)
	CMOS			
	HM6611	PM9056	—	—
	HM6661	**	—	—
INTEL CORPORATION	**Bipolar**			
	3601*, 3601-1*	PM9003	—	—
	3621*, 3621-1*	PM9048	PA16-1	256x4(H)
	3602*, 3602A, 3602A-2	PM9048	PA16-1	512x4(H)
	3622*, 3622A, 3622A-2	PM9048	PA16-1	512x4(H)
	3605, 3605-2, 3625, 3625-2	PM9048	PA18-2	1Kx4(H)
	3605A, 3605A-1	PM9048	PA18-3	1Kx4(H)
	3625A, 3625A-1	PM9048	PA18-3	1Kx4(H)
	3604A, 3604A-2, 3604AL	PM9048	PA24-2	512x8(H)
	3624A, 3624A-2	PM9048	PA24-2	512x8(H)
	3608, 3608-4, 3628, 3628-4	PM9048	PA24-1 or -8	1Kx8(H)
	3616, 3616-1, 3636, 3636-1	PM9048	PA24-8	2Kx8(H)
	MOS			
	1702*	PM9011A	—	—
	4702A, 1702A (All Versions)	PM9001A	—	—
	2704	PM9005A	—	—
		PM9053A	—	—
		PM9051A (GANG)	—	—
	2708 (All Versions), 8708	PM9005A	—	—
		PM9053A	—	—
		PM9051A (GANG)	—	—
	2758	PM9052	—	—
		PM9064	PA24-1	1Kx8(EH)
		PM9062 (GANG)	—	—
	2716 (All Versions)	PM9052	—	—
		PM9064	PA24-1	2Kx8(EH)
		PM9061 (GANG)	—	—
		PM9075 (GANG)	—	—
	2732	PM9064	PA24-10	4Kx8(EH)
		PM9071** (GANG)	—	—
	8741, 8748	PM9054	PA40-1	1Kx8(EL)
	8755A, 8755*	PM9054	PA40-2	2Kx8(EH)

PROM MANUFACTURER	PROM PART NUMBER	PERSONALITY MODULE	PIN-OUT ADAPTER	CONFIGURATOR
INTERSIL	**Bipolar**			
	IM5603A, IM5623	PM9007B	—	—
	IM5604, IM5624	PM9007B	—	—
	IM5600, IM5610	PM9016B	—	—
	IM5605, IM5625	PM9028B	—	—
	CMOS			
	IM6603I*, IM6602AI*	PM9065	PA24-11	1Kx4(EH)
	IM6604I*, IM6604AI*	PM9065	PA24-1	512x8(EH)
	IM6653, IM6653A	PM9065	PA24-11	1Kx4(EH)
	IM6654, IM6654A	PM9065	PA24-1	512x8(EH)
MITSUBISHI	**Bipolar**			
	M58563S (1702A)	PM9001A	—	—
	M58732S, M58732S1 (2708)	PM9005A	—	—
		PM9053A	—	—
		PM9051A (GANG)	—	—
MONOLITHIC MEMORIES (MMI)	**Bipolar**			
	6300-1, 6301-1	PM9037	PA16-1	256x4(H)
	6305-1, 6306-1	PM9037	PA16-1	512x4(H)
	6350-1, 6351-1	PM9037	PA18-1	1Kx4(H)
	6352-1, 6353-1	PM9037	PA18-2	1Kx4(H)
	6330-1, 6331-1	PM9037	PA16-2	32x8(H)
	6308-1, 6309-1	PM9037	PA20-2	256x8(H)
	6335-1, 6336-1	PM9037	PA24-1 or -8	256x8(H)
	63137*	PM9037	PA24-3	512x8(H)
	6348-1, 6349-1	PM9037	PA20-1	512x8(H)
	6340-1, 6341-1	PM9037	PA24-1	512x8(H)
	6386-1, 6387-1	PM9037	PA22-1	1Kx8(H)
	6380-1, 6381-1	PM9037	PA24-1 or -8	1Kx8(H)
	6384-1, 6385-1	PM9037	PA24-1 or -8	1Kx8(H)
	63S140, 63S141	PM9066	PA16-1	256x4(L)
	63S240, 63S241	PM9066	PA16-1	512x4(L)
	63S440, 63S441	PM9066	PA18-2	1Kx4(L)
	63RA441, 63RS441	PM9066	PA18-5**	1Kx4(L)
	PAL			
	PAL10H8	PM9068	—	512x4(S1)
	PAL12H6	PM9068	—	512x4(S1)
	PAL14H4	PM9068	—	512x4(S1)
	PAL16H2	PM9068	—	512x4(S1)
	PAL10L8	PM9068	—	512x4(S2)
	PAL12L6	PM9068	—	512x4(S2)
	PAL14L4	PM9068	—	512x4(S2)
	PAL16L2	PM9068	—	512x4(S2)
	PAL16L8	PM9068	—	512x4(S2)
	PAL16R8	PM9068	—	512x4(S2)
	PAL16R6	PM9068	—	512x4(S2)
	PAL16R4	PM9068	—	512x4(S2)
	PAL16A4	PM9068	—	512x4(S2)
	PAL16X4	PM9068	—	512x4(S2)
	PAL16C1	PM9068	—	512x4(S3)

PROM MANUFACTURER	PROM PART NUMBER	PERSONALITY MODULE	PIN-OUT ADAPTER	CONFIGURATOR
MOSTEK	**MOS**			
	MK3702-1 (All Versions)	PM9001A	—	—
	MK2708	PM9005A	—	—
		PM9051A (GANG)	—	—
		PM9053A	—	—
	MK2716	PM9052	—	—
		PM9064	PA24-1	2Kx8(EH)
		PM9061 (GANG)	—	—
		PM9075 (GANG)	—	—
MOTOROLA	**Bipolar**			
	5003*, 5004*	PM9055	—	—
	7620, 7621	PM9039A	PA16-1	512x4(H)
	7642, 7643	PM9039A	PA18-2	1Kx4(H)
	7684, 7685	PM9039A	PA18-2	2Kx4(H)
	7640, 7641	PM9039A	PA24-1	512x8(H)
	7680**, 7681**	PM9039A	PA24-1 or -8	1Kx8(H)
	82707**, 82708**	PM9039A	PA24-1 or -8	1Kx8(H)
	MOS			
	MCM68708, 2708 MCM68A708, 27A08	PM9005A	—	—
		PM9053A	—	—
		PM9051A (GANG)	—	—
	TMS2716	PM9053A	—	—
		PM9060 (GANG)	—	—
	MCM2716**	PM9052	—	—
		PM9064	PA24-1	2Kx8(EH)
		PM9061 (GANG)	—	—
		PM9075 (GANG)	—	—
NATIONAL SEMICONDUCTOR	**Bipolar**			
	74S287, 74S387	PM9047	PA16-1	256x4(L)
	74S570, 74S571	PM9047	PA16-1	512x4(L)
	74S572, 74S573	PM9047	PA18-2	1Kx4(L)
	74S574	PM9047	PA18-4**	1Kx4(L)
	74S184, 74S185	PM9047	PA18-2	2Kx4(L)
	74S188, 74S288	PM9047	PA16-2 or -4	32x8(L)
	74S472, 74S473	PM9047	PA20-1	512x8(L)
	74S474, 74S475	PM9047	PA24-1 or -8	512x8(L)
	87S180, 87S181	PM9047	PA24-1 or -8	1Kx8(L)
	87S190, 87S191	PM9047	PA24-8	2Kx8(L)
	PAL			
	DMPAL10H8	PM9068	—	512x4(S1)
	DMPAL12H6	PM9068	—	512x4(S1)
	DMPAL14H4	PM9068	—	512x4(S1)
	DMPAL16H2	PM9068	—	512x4(S1)
	DMPAL10L8	PM9068	—	512x4(S2)
	DMPAL12L6	PM9068	—	512x4(S2)
	DMPAL14L4	PM9068	—	512x4(S2)
	DMPAL16L2	PM9068	—	512x4(S2)
	DMPAL16L8	PM9068	—	512x4(S2)
	DMPAL16R8	PM9068	—	512x4(S2)
	DMPAL16R6	PM9068	—	512x4(S2)
	DMPAL16R4	PM9068	—	512x4(S2)
	DMPAL16A4	PM9068	—	512x4(S2)
	DMPAL16X4	PM9068	—	512x4(S2)
	DMPAL16C1	PM9068	—	512x4(S3)

PROM MANUFACTURER	PROM PART NUMBER	PERSONALITY MODULE	PIN-OUT ADAPTER	CONFIGURATOR
NATIONAL SEMICONDUCTOR (Continued)	**MOS**			
	MM1702AQ	PM9001A	—	—
	MM5203Q	PM9002A	—	—
	MM5204Q, MM5204-1Q	PM9006A	—	—
	MM2708Q, MM2708-1Q	PM9005A	—	—
		PM9053A	—	—
		PM9051A (GANG)	—	—
	MM2716, MM2716-1Q	PM9052	—	—
		PM9064	PA24-1	2Kx8(EH)
		PM9061 (GANG)	—	—
		PM9075 (GANG)	—	—
	NMC2732**	PM9064	PA24-10	4Kx8(EH)
NIPPON ELECTRIC (NEC)	**Bipolar**			
	μPB403D, μPB423D	PM9007B	—	—
	μPB405E, μPB425E	PM9028B	—	—
	MOS			
	μPD454D	PM9063	PA24-6	256x8(EL)
	μPD458D	PM9063	PA28-1	1Kx8(EL)
	μPD2716**	PM9052	—	—
		PM9064	PA24-1	2Kx8(EH)
		PM9061 (GANG)	—	—
RAYTHEON	**Bipolar**			
	29693 PMUX	PM9037	PA20-7**	256x4(H)
	29660/61/62/63	PM9037	PA16-1	256x4(H)
	29610/11/12/13	PM9037	PA16-1	512x4(H)
	29650/51/52/53	PM9037	PA18-2	2Kx4(H)
	29600/01/02/03	PM9037	PA20-2	256x8(H)
	29620/21/22/23	PM9037	PA20-1	512x8(H)
	29624/25/26/27	PM9037	PA24-1 or -8	512x8(H)
	29630/31/32/33	PM9037	PA24-1 or -8	1Kx8(H)
	29634/35/36/37	PM9037	PA24-1 or -8	1Kx8(H)
	29680/81/82/83	PM9037	PA24-8	2Kx8(H)
SIGNETICS CORPORATION (SIG)	**Bipolar**			
	N82S126, N82S129	PM9059	PA16-1	256x4(L)
	N82S130, N82S131	PM9059	PA16-1	512x4(L)
	N82S136, N82S137	PM9059	PA18-2	1Kx4(L)
	N82S184, N82S185	PM9059	PA18-2	2Kx4(L)
	N82S23, N82S123	PM9059	PA16-2 or -4	32x8(L)
	N82S114	PM9059	PA24-9	256x8(S1)
	N82S115	PM9059	PA24-9	512x8(S1)
	N82S140, N82S141	PM9059	PA24-1 or -8	512x8(L)
	N82S180, N82S181,N82S2708	PM9059	PA24-1 or -8	1Kx8(L)
	N82S182, N82S183	PM9059	PA24-1 or -8	1Kx8(L)
	N82LS180, N82LS181	PM9059	PA24-1 or -8	1Kx8(L)
	N82S190, N82S191	PM9059	PA24-8	2Kx8(L)

PROM MANUFACTURER	PROM PART NUMBER	PERSONALITY MODULE	PIN-OUT ADAPTER	CONFIGURATOR
SIGNETICS (Continued)	**ECL**			
	10149	PM9072**	PA16-7**	256x4(L)
	10139	PM9072**	PA16-4	32x8(SI)
SYNERTEK	**MOS**			
	SY2758**	PM9052	—	—
		PM9064	PA24-1	1Kx8(EH)
		PM9062 (GANG)	—	—
	SY2716	PM9052	—	—
		PM9064	PA24-1	2Kx8(EH)
		PM9061 (GANG)	—	—
		PM9075 (GANG)	—	—
TEXAS INSTRUMENTS (TI)	**Bipolar**			
	74S287 (14S10)	PM9046A	PA16-1	256x4(H)
	74S387 (14SA10)	PM9046A	PA16-1	256x4(H)
	74S476 (24S41)	PM9067	PA18-7**	1Kx4(H)
	74S477 (24SA41)	PM9067	PA18-7**	1Kx4(H)
	74S454 (24S81)	PM9067	PA18-2	2Kx4(H)
	74S455 (24SA81)	PM9067	PA18-2	2Kx4(H)
	74S188 (18SA030), 74188A*	PM9046A	PA16-4	32x8(L)
	74S288 (18S030)	PM9046A	PA16-4	32x8(L)
	74186*	PM9055	—	—
	74S470 (18SA22)	PM9046A	PA20-2	256x8(L)
	74S471 (18S22)	PM9046A	PA20-2	256x8(L)
	74S472 (18S42)	PM9046A	PA20-1	512x8(L)
	74S473 (18SA42)	PM9046A	PA20-1	512x8(L)
	74S474 (18S46)	PM9046A	PA24-1 or -8	512x8(L)
	74S475 (18SA46)	PM9046A	PA24-1 or -8	512x8(L)
	74S478 (28S86)	PM9067	PA24-1 or -8	1Kx8(H)
	74S479 (28SA86)	PM9067	PA24-1 or -8	1Kx8(H)
	74S2708** (28S2708)	PM9067	PA24-1 or -8	1Kx8(H)
	MOS			
	TMS2508 (all versions)	PM9064	PA24-1	1Kx8(EH)
		PM9062 (GANG)	—	—
	TMS2708 (all versions)	PM9005A	—	—
		PM9053A	—	—
		PM9051A (GANG)	—	—
	TMS2516 (all versions)	PM9052	—	—
		PM9064	PA24-1	2Kx8(EH)
		PM9061 (GANG)	—	—
		PM9075 (GANG)	—	—
	TMS2716	PM9053A	—	—
		PM9060A (GANG)	—	—
	TMS2532 (all versions)	PM9064	PA24-12	4Kx8(EH)
		PM9070** (GANG)	—	—
TOSHIBA	**MOS**			
	TMM322	PM9005A	—	—
		PM9053A	—	—
		PM9051A (GANG)	—	—
	TMM323**	PM9052	—	—
		PM9064	PA24-1	2Kx8(EH)
		PM9061 (GANG)	—	—

* Consult PROM manufacturers before ordering

**Under development, contact Pro-Log for latest status

Personality Modules Pricing

PRICE	PERSONALITY MODULE	PROMs PROGRAMMED (For details see Personality Module Selection Guide)
$ 525.00	PM9001A	1702A, 4702A, 8702A, 58563S, 3702, 9702A
575.00	PM9002A	National 5202*, 5203, 5203A
600.00	PM9003**	Intel 3601*
450.00	PM9005A	2704, 4704, 8704, 2708, (and compatible)
550.00	PM9006A	National 5204
550.00	PM9007B	Intersil 5603A/23/04/24; Fujitsu MB7052/53/57/58; NCμPB403D/23
600.00	PM9011A	Intel 1702*, AMD 9702*
550.00	PM9015***	Signetics 8223*
550.00	PM9016B	Intersil 5600, 5610; Fujitsu MB7051, MB7056
600.00	PM9018***	Harris HPROM 1024*, HPROM 1024A*
600.00	PM9024***	Fairchild 93416*, 93426*; National 8573*, 8574*
525.00	PM9028B	Intersil 5605, 5625; NECμPB405D,μPB4525D
425.00	PM9037	MMI, Ratheon Generic (See Selection Guide)
425.00	PM9039A	Harris, Motorola Generic (See Selection Guide)
425.00	PM9045	Fairchild Generic (See Selection Guide)
425.00	PM9046A	T.I. Generic (See Selection Guide)
425.00	PM9047	National Generic (See Selection Guide)
560.00	PM9048	Intel Generic (See Selection Guide)
1050.00	PM9051A	2708 (and compatible) Gang Module
400.00	PM9052	Intel 2716 (and compatible)
550.00	PM9053A	2708 and TMS2716 (and compatible)
450.00	PM9054	Intel MCS-48 Generic (See Selection Guide)
425.00	PM9055	Motorola 5003, 5004; Harris 0512; T.I. 74186
450.00	PM9056	Harris 6611
400.00	PM9057	AMI Generic (See Selection Guide)
450.00	PM9058	AMD Generic (See Selection Guide)
450.00	PM9059	Signetics Generic (See Selection Guide)
1050.00	PM9060A	T.I. TMS2716 (and compatible) Gang Module
950.00	PM9061	Intel 2716 (and compatible) Gang Module
950.00	PM9062	Intel 2758 and T.I. TMS2508 (and compatible) Gang Module
600.00	PM9063	NEC Generic (See Selection Guide)
425.00	PM9064	5 Volt EPROM Generic (See Selection Guide)
425.00	PM9065	Intersil CMOS Generic (See Selection Guide)
450.00	PM9066	MMI Generic Type 2 (See Selection Guide)
450.00	PM9067	T.I. Generic Type 2 (See Selection Guide)
950.00	PM9068	MMI PAL Generic (includes all configurators)
1050.00	PM9070	T.I 2532 Gang Module
1050.00	PM9071**	Intel 2732 Gang Module (Q1, 1980)
530.00	PM9072	Signetics ECL Generic Module
1050.00	PM9075**	Intel 2716 (and compatible) Gang Module (Q1, 1980) (For use with M910)
120.00	PA 16 thru PA 24	Pinout Adapters for Generic Modules
175.00	PA 40-1	Pinout Adapter for PM9054 - Intel 8741, 8748 PROMs
150.00	PA 40-2	Pinout Adapter for PM9054 - Intel 8755A PROM
35.00	CA - All	Configurators for Generic Modules

*Consult PROM manufacturers before ordering

**Under development, contact Pro-Log for latest status

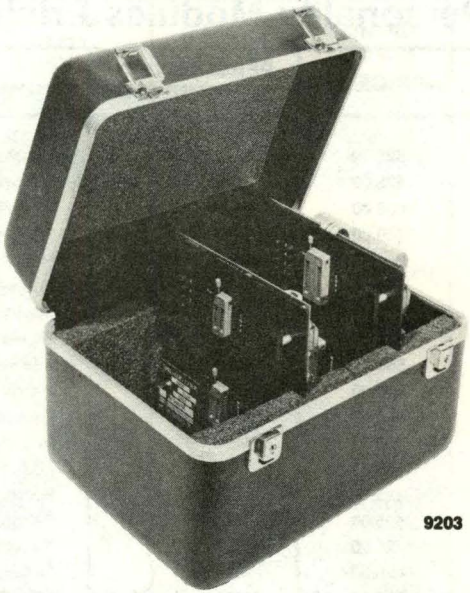
***Special order only - allow 8 weeks for delivery

Accessory Equipment

Personality Module Storage/Carrying Case

Pro-Log now offers a convenient storage/carrying case to accommodate either Generic or individual Personality Modules. The case will house a complete generic family or up to four individual modules.

The Case is high impact resistant PVC. The dimensions are 8½"x11¾"x8½". Foam plastic inserts accommodate and protect the Personality Modules.



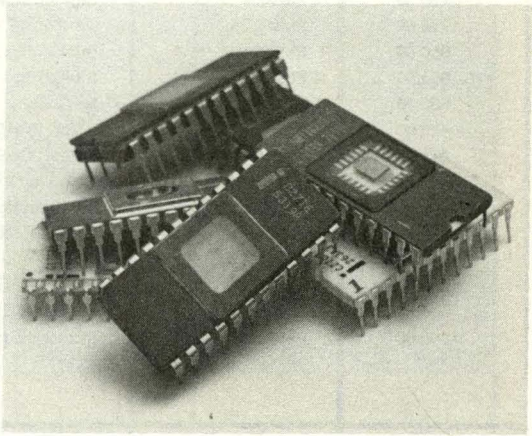
9203

$ 85.00	9203	**Dedicated Personality Module Carrying Case**	Will house maximum of 4 Personality Modules.
85.00	9204	**Generic Personality Module Carrying Case**	Will house maximum of 10 Pinout Adapters, 7 Configurators, and 2 Personality Modules.

PROM User's Guide (PUG)

Due to the everchanging PROM market, we publish a PROM User's Guide containing all the latest PROM and PROM Programmer information. The PROM User's Guide (PUG) contains articles on PROM technology and applications as well as easy to use cross reference tables providing all the various PROMs' specifications.

Fill-in the appropriate card attached to the back cover and mail it to PRO-LOG for your free copy of the 96 page PROM User's Guide.



System Analyzers

A System Analyzer is a test instrument capable of monitoring the operation of a microprocessor-based system, not just the microprocessor itself. It is the primary instrument for verification and troubleshooting in the design, manufacture, and field service of your microprocessor-based product.

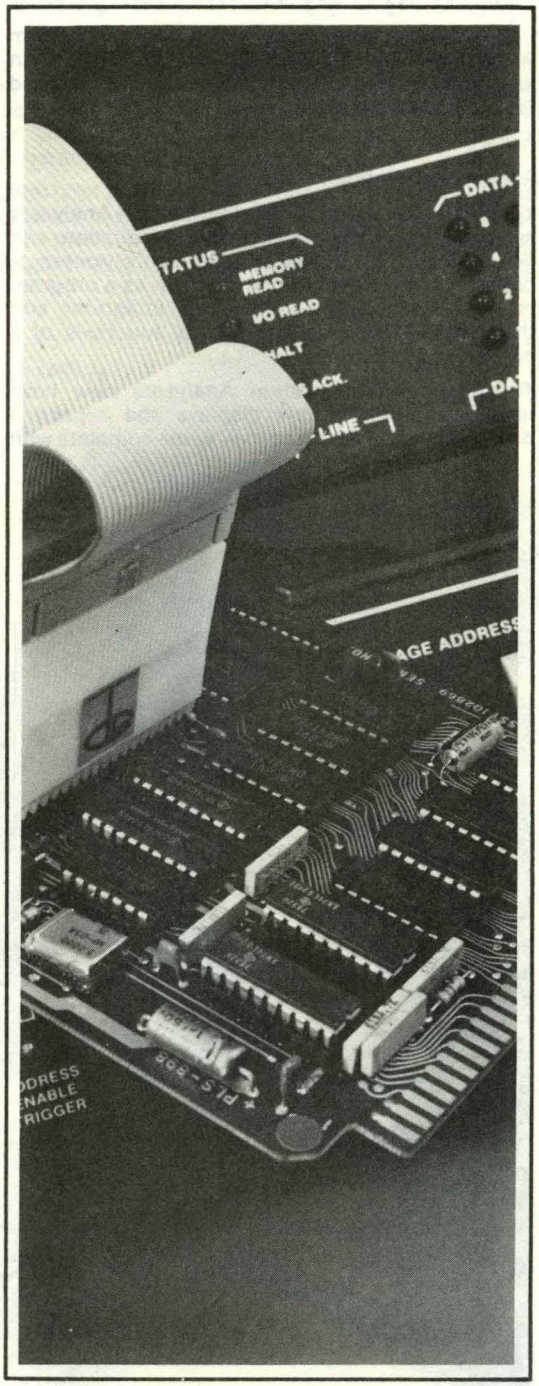
A System Analyzer does two things: it tracks and displays what's going on in your product at any step in its microprocessor's program, and it synchronizes an oscilloscope or other test equipment to the program when signal measurements are necessary.

A System Analyzer looks like a computer control panel and it provides some of the same functions, such as the ability to stop and step the microprocessor. Functionally, however, the Analyzer is similar to a digital storage oscilloscope. It captures microprocessor bus information and separates it into address, instruction, data and status at any step in the program. It can also capture and hold dynamic control states and data passing between the microprocessor and the system it controls. Critical timing need not be interrupted for analysis.

The microprocessor cannot truly analyze itself. Built-in software debugging routines are fine for large computers but simply add to the cost of goods in dedicated microprocessor-based products. They service the problem solver, not the problem, while they increase the circuit board space and number of PROMs. Clip-on System Analyzers give the same visibility without adding to the product's cost.

Why not build the Analyzer's features into your system hardware? Cost is the main reason. Unlike large computers, a dedicated microprocessor is programmed only once and seldom needs service. A Clip-on Analyzer can service a large number of microprocessors in as many different applications. It can also move from one department to another — Field Service can use the same instrument that Engineering used to design the product. With proper system documentation, your existing personnel can use the Analyzer effectively.

You already know the essentials to learn to document a microprocessor-based system. The engineer's approach to problem solving inherently produces the documentation needed to design, modify, test, and service the product. Pro-Log's *Microprocessor User's Guide* provides information on how to adapt engineering methods to microprocessor design and the role played by the System Analyzer during and after the design phase.



Pro-Log's System Analyzers

Pro-Log currently has two lines of System Analyzers. The original Analyzers support design and development of 4004, 4040, 8008, 8080A, and 6800 microprocessor-based systems.

Second Generation Analyzers

The second generation Pro-Log System Analyzers support the design, development, production, and field service of Z80, 8085, and 6800 microprocessor-based systems. These units function as a program monitor and program-to-hardware integrator, and they provide many of the display functions of a computer control panel.

These second generation Analyzers now have hexadecimal dot matrix displays and expanded diagnostic capability, and they come complete with carrying case, buffer, ribbon cables, and both a standard DIP connector and a special low profile connector.

Each unit is a self contained instrument consisting of a power supply, display, address display logic, machine cycle logic, and control logic which presents appropriate **real time** system information.

To analyze your digital data, simply clip the Analyzer's DIP connector onto your microprocessor and set the Analyzer's switches. The Analyzer will then help you test and evaluate your program by displaying instruction cycle data one cycle at a time. To analyze your hardware, just connect the Analyzer to a standard oscilloscope. The Analyzer will generate a scope trigger pulse so you can test hardware during each instruction cycle.

M400 and M800 System Analyzers

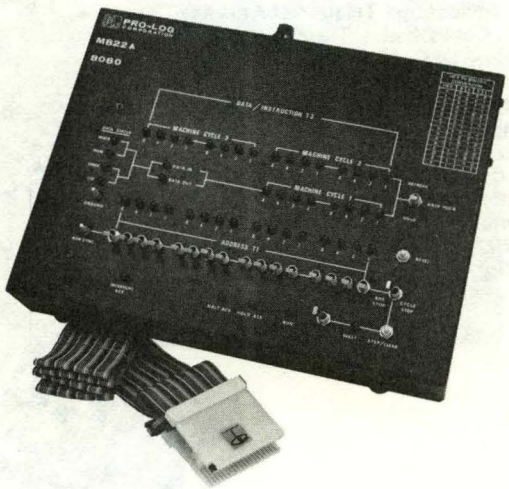
All instruments have two major characteristics: They allow the user to select a particular instruction cycle and to capture and display all significant information relative to that instruction cycle. They also generate a scope trigger whenever the pre-selected instruction cycle occurs. This permits the user to look at wave forms during the instruction cycle and to relate the system hardware characteristics to the program.

The M400 and M800 Analyzers are used to design, troubleshoot and test both programs and hardware in systems using the 4040, 4004, 8080A, or 6800 microprocessor chips. The System Analyzer offers a cost-effective alternative to software techniques used for program development and debugging of microprocessor systems and satisfies your production and field service requirements too. The Analyzer eliminates the need for:

1) Control panels
2) Software diagnostic routines (simulators)
3) Special considerations for production and field service testing

Common Features Include:

- **Displays Address, Instruction, and Execution Data**
- **Provides scope trigger outputs**
- **Clip-on (DIP) connector for quick, easy interfacing**
- **Static and dynamic display modes**
- **Provides for external system reset**
- **Self-referencing power supply**
- **Each Analyzer also includes special test and control features pertinent to the Processor it tests**



$850.00	M442	**SYSTEM ANALYZER (4040)** Self-powered test instrument that clips to 4040 Microprocessor for check-out program and hardware. Includes RUN/STOP and single cycle operation feature. (Will not be manufactured after August 1982.)
800.00	M422A	**SYSTEM ANALYZER (4004)** Self-powered test instrument that clips to 4004 Microprocessor or 4002 RAM register for check-out of program hardware. Can be used on limited basis to test 4040-based systems by clipping on to 4002 RAM. (Will not be manufactured after August 1982.)
850.00	M822A	**SYSTEM ANALYZER (8080A)** Self-powered test and debug instrument that clips to 8080A Microprocessor. Includes RUN/WAIT and single instruction operation feature. (Will not be manufactured after 1984.)
900.00	M823	**SYSTEM ANALYZER (6800)** Self-powered test and debug instrument that clips to 6800 Microprocessor. Includes RUN/WAIT and single instruction operation feature. Suggested for reorder only. (Will not be manufactured after December, 1980.) See M826 second generation 6800 System Analyzer (p. 29) with new and improved features.

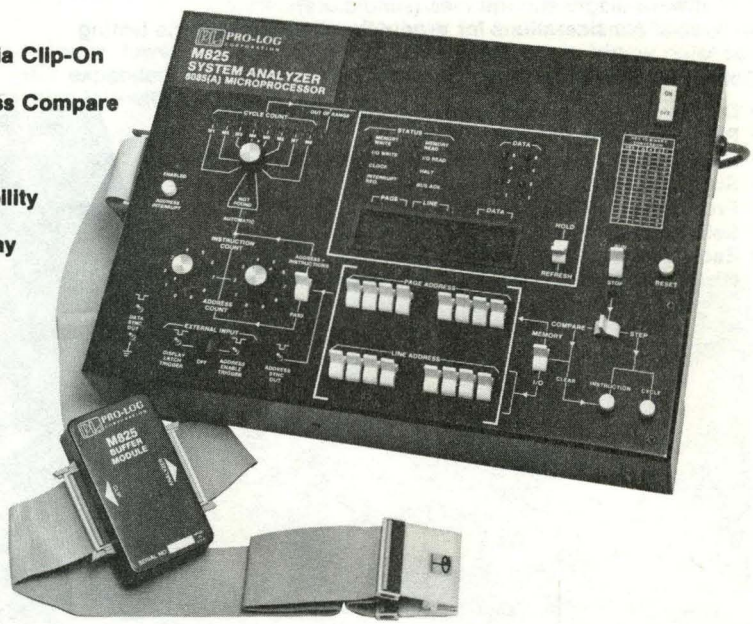
Second Generation M800 System Analyzers

The M824, M825, and M826 Analyzers are portable, cost-effective instruments which support the design, development, production, and field service of Z80, 8085, 8085A, and 6800 microprocessor-based systems. Each unit functions as a program monitor, program-to-hardware integrator, and provides many of the display functions of a computer control panel.

The new Analyzer is self-contained and easily connected to your system microprocessor by means of a single DIP clip or low profile connector. It is useful as an alternative or complement to software techniques for program development or debugging of microprocessor-based systems. Since it is easily connected, the System Analyzer, together with adequate program documentation, is an ideal tool for field service or production.

Common Features Include:

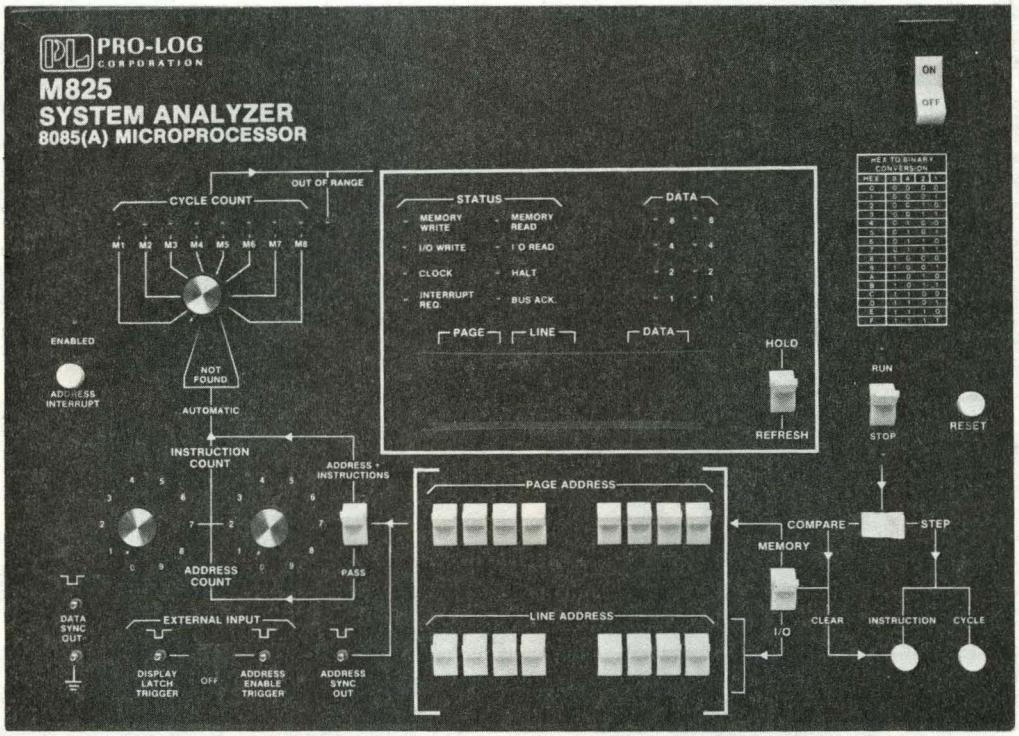
- **Displays Address, Data, Machine Cycle, and Status**
- **Static and Dynamic Display Modes**
- **System Run/Step Control**
- **System Reset Push Button**
- **Connects to Processor Chip Via Clip-On or Low Profile Connector**
- **Oscilloscope Trigger at Address Compare or Data Display Time**
- **Delayed Data Capture**
- **Memory or I/O Address Select**
- **Non-Maskable Interrupt Capability at Address Compare**
- **External Control of Data Display**
- **Address Stop**
- **Interrupt Trap and Display**
- **Interface Buffer to Minimize Microprocessor Loading**
- **High-Impact Attache Case**



The Analyzer allows examination of the system (address, data, and status) during a user-specified machine cycle at the desired Compare Address. Observation of the system is possible at full system speed or by single-step by instruction or machine cycle. The possible display modes are: dynamic mode, in which the processor continues to run without analyzer interference, and static mode, in which the analyzer controls the processor WAIT line.

Delayed Data Capture affords the capability of observing a particular machine cycle up to 99 instructions past a chosen reference address. The feature also allows observing the reference address after a user-defined number of passes over that address. A two-decade address counter, coupled with a single machine cycle counter, provides the operator with the capability of simply "dialing" his way through the program under investigation. This delay capability may be extended to any number by utilizing Stop/Compare mode.

The Analyzer provides Memory or I/O Address selection and Interrupt Trap and/or Stop on Interrupt, along with hex Address, hex and binary Data, and Status Displays. The Analyzer also features an oscilloscope synchronization output pulse during Address Compare and Data Display Latch time. DATA SYNC OUT can be utilized to trigger an oscilloscope at any selectable instruction cycle.



The System Analyzers come with two types of connector assemblies: the standard DIP connector and a special low profile connector. To use the Analyzer with the DIP connector, the CPU card is extended from the card rack. The DIP connector is then simply clipped on to the microprocessor, and the system can be tested. The low profile connector may be used to connect the Analyzer to the system with the CPU card actually inside the rack; no additional card slots are needed. The low profile connector assembly provides required isolation on control lines in case isolation has not been provided on the board.

$1590.00	**M824**	**Z80 SYSTEM ANALYZER** Self-powered test and debug instrument that clips to Z80 Microprocessor. UL Listed.
1590.00	**M825**	**8085(A) SYSTEM ANALYZER** Self-powered test and debug instrument that clips to 8085 or 8085A Microprocessor. UL Listed.
1750.00	**M826**	**6800 SYSTEM ANALYZER** Self-powered test and debug instrument that clips to 6800 Microprocessor. Includes VMA feature which is a check for valid memory address. To assist hardware debug, Echo Mode allows the operator to source the system address, data, and READ/WRITE lines after each instruction step. (Available Q1, 1980.)

Pro-Log maps the STD BUS route to easy microprocessor design.

First checkpoint, our STD BUS Information Packet.

It explains the basics of the new STD BUS and Pro-Log's Series 7000 cards. With these, you can build 8-bit microprocessor systems around a standard bused motherboard. You can choose the functions in your system, the memory type, even the microprocessor type by simply selecting from among Series 7000 cards. The STD BUS is 56 lines wide, compatible with Pro-Log's standard 4-1/2 inch by 6-1/2 inch edge – connected cards, supported by other manufacturers, and freely available to the industry.

Second checkpoint, our STD BUS Technical Manual.

It contains detailed electrical and mechanical specifications for the STD BUS and Pro-Log's Series 7000 cards.

Third checkpoint, our microprocessor design course.

Where we teach you how to design and document an STD BUS microprocessor system independent of any development system. Write for a schedule of courses in your locale.

Your destination: easy, cost-effective, fast design.

Contact Pro-Log Corporation, 2411 Garden Road, Monterey, CA 93940, phone (408) 372-4593.

SERIES 7000 CARDS AVAILABLE
Z-80; 6800; AND 8085 PROCESSOR
16K BYTE STATIC RAM; 16K BYTE 2716 EPROM
TTL INPUT; TTL OUTPUT; AND TTL I/O PORTS UNIVERSAL TTL I/O
TRIAC OUTPUTS; SP/ST RELAY OUTPUTS AC/DC OPTOISOLATED INPUTS MEDIUM POWER DC DRIVERS
RS 232 AND TTY DRIVER/RECEIVER KEYBOARD/ALPHANUMERIC DISPLAY
⅛; ¼; AND ½ STD BUS RACKS
CARD EXTENDER; GENERAL UTILITY UTILITY DIP; DECODED UTILITY

PRO-LOG CORPORATION

Microprocessors at your fingertips.

Microprocessor Cards

Pro-Log Corporation is now in its 8th year as a supplier of microprocessor cards and card systems. Pro-Log offers a unique advantage to the user. We do not manufacture the devices we use on our boards. We select parts from the entire industry and we use second sourced parts. We do not manufacture boards to sell Silicon! Pro-Log maintains a very close watch on the industry and selects only those parts that are or will become standards.

The second sourced parts are common to most of our microprocessor boards but there are other common features from board to board. These are:

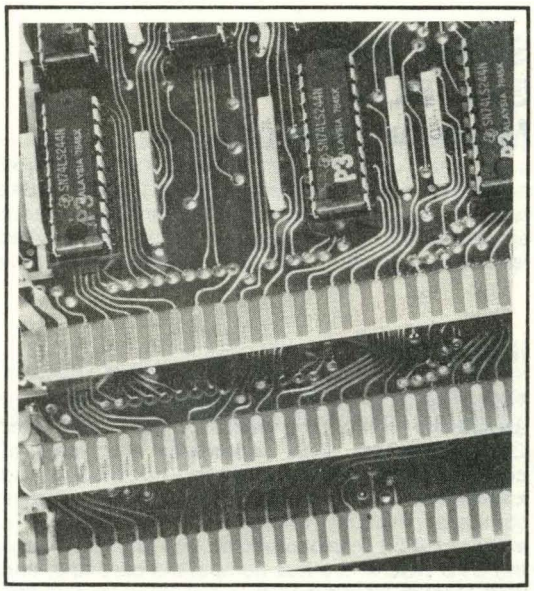
- **Board Size**
  All boards are 4½" x 6½"
- **Card Edge Connection**
  Standard 56 pin on .125" centers
- **Testing**
  All boards receive 48 hr. power-on burn-in at 70°C with 100% performance testing before and after burn-in.
- **Documentation**
  All boards delivered include data sheets, assembly prints, schematics and application notes where appropriate
- **Manufacturing Rights**
  Pro-Log offers free manufacturing rights after purchase of 250 card sets
- **Warranty**
  All cards are under a 1-year parts and labor warranty

Cards and Systems

Now! Pro-Log provides three different cost effective configurations for the 8-bit microprocessor product line:

1. STD BUS Expandable Systems
2. One Card Microprocessor Systems
3. Backplane Wired Systems

The STD BUS Expandable System is a new bused backplane microprocessor system that meets the demand of easy expansion and provides features such as interchangeable processors, dual 65K memory bank capacity, 256 port I/O addressing, multiple interrupt structures, any card functions in any slot, and,to make it more attractive,the STD BUS system is multiple sourced. Further details on this system can be found on pages 32 thru 41.



The One Card Microprocessor Systems are available with four different microprocessors, and in three memory types. These one card systems were designed to offer inexpensive, fixed configurations with limited memory and I/O expansion capability. These cards are described on pages 46 and 47.

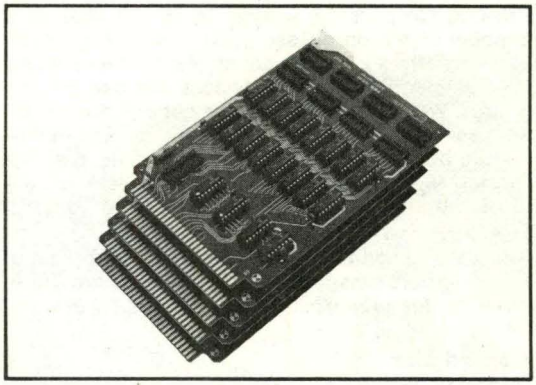
The Wired Backplane Systems have been available from Pro-Log since 1973. They offer a wide variety of CPU's, memory, I/O, and interface cards. This line of products is not recommended for new design; new customers should take advantage of the STD BUS. Pro-Log will continue to suport its existing customers with Backplane Wired Systems until 1984.

Pro-Log is presently manufacturing cards and card systems around seven different microprocessors (Z80, 6800, 8008, 8080, 8085, 4004, and 4040). Pages 32-52 provide a brief overview of these cards, including special support hardware such as card racks and power supplies. Should further details on any card or card systems be required please contact Pro-Log or your nearest Pro-Log manufacturers representative (p. 64) for detailed data sheets.

Prototyping Systems

Pro-Log's 8-bit STD BUS Prototyping Systems are shown on pages 44 and 45. Each system includes everything needed to begin designing with microprocessors: Series 90 PROM Programmer, STD BUS Microprocessor Subsystem, associated hardware, and System Analyzer. A substantial savings is offered in these package prices.

Series 7000 STD BUS Microprocessors



Introduction

Pro-Log's STD BUS has evolved from years of experience in building microcomputer cards for OEM customers. This experience and years of customer interface have given Pro-Log the skill and knowledge to be an authority in setting a bus standard. Pro-Log recognized the need for a standard 8-bit microcomputer bus and developed the STD BUS and a bus compatible card line, and with Mostek introduced it to the industry in 1978. The STD BUS was designed to be as universal as possible; yet orderly, well defined, and able to meet the major portion of requirements. Specifically, the needs of the user were considered at every decision point. Pro-Log recognized that a standard could not be created without a second source. As of October 1979, over 20 companies are manufacturing STD BUS cards.

The orderly and compact STD BUS connected via a motherboard facilitates system development, configuration, and testing by eliminating the need for time consuming backplane wiring. Additional cards for system expansion and testing can be added or deleted as required. Also, processor type can be changed by simply changing the processor cards and reprogramming the program memory.

The physical size of the motherboards are 1/8, 1/4, and 1/2 RETMA card sizes, providing packaging and electrical advantages. This provides 4, 8, and 16 card slots on 1/2 inch centers. The 7000 card line is designed specifically to meet the STD BUS electrical and physical requirements. These high functional density 4½" x 6½" cards are designed to allow the user to achieve a minimum system cost by selecting the combination of cards that meet his requirements.

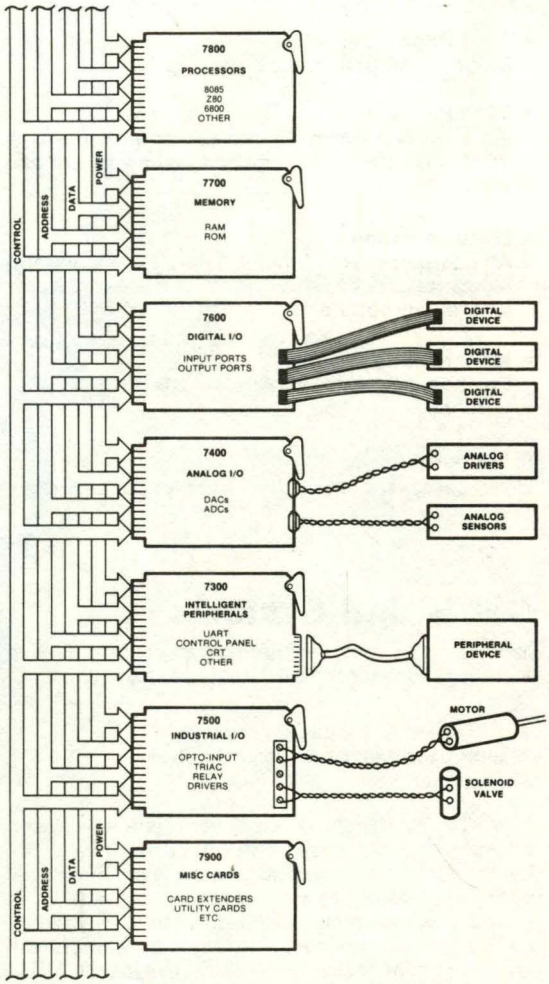


Figure 1 7000 System Concept

The STD Concept (Figure 1)

The STD Concept provides a dedicated, orderly interconnection scheme for modular microprocessor card systems. Its design consists of a bused Motherboard allowing every card to work in any slot. Cards are a compact 4.5 x 6.5 inches and provide reasonable system partitioning for modular designs. The Bus is reserved for internal communications only. All other system interconnections are made via suitable connectors on the card edge opposite from the Bus. This design enables orderly signal flow across the cards; and peripheral and I/O devices can be connected to the system according to their own unique connector and cabling requirements.

The STD BUS

The STD BUS consists of a 56-pin (dual 28) card edge connector layout on 0.125 inch pin centers interconnected on a bused Motherboard with connectors on 0.5 inch centers. The BUS organization consists of a logic power bus, data bus, address bus, control bus, and an analog power bus. The organization and pinouts are shown in Figure 2.

STD BUS

	COMPONENT SIDE				CIRCUIT SIDE			
	PIN	MNEMONIC	SIGNAL FLOW	DESCRIPTION	PIN	MNEMONIC	SIGNAL FLOW	DESCRIPTION
LOGIC POWER BUS	1	+5V	In	+5 Volts DC (Bused)	2	+5V	In	+5 Volts DC (Bused)
	3	GND	In	Digital Ground (Bused)	4	GND	In	Digital Ground (Bused)
	5	-5V	In	-5 Volts DC	6	-5V	In	-5 Volts DC
DATA BUS	7	D3	In/Out	Low Order Data Bus	8	D7	In/Out	High Order Data Bus
	9	D2	In/Out	Low Order Data Bus	10	D6	In/Out	High Order Data Bus
	11	D1	In/Out	Low Order Data Bus	12	D5	In/Out	High Order Data Bus
	13	D0	In/Out	Low Order Data Bus	14	D4	In/Out	High Order Data Bus
ADDRESS BUS	15	A7	Out	Low Order Address Bus	16	A15	Out	High Order Address Bus
	17	A6	Out	Low Order Address Bus	18	A14	Out	High Order Address Bus
	19	A5	Out	Low Order Address Bus	20	A13	Out	High Order Address Bus
	21	A4	Out	Low Order Address Bus	22	A12	Out	High Order Address Bus
	23	A3	Out	Low Order Address Bus	24	A11	Out	High Order Address Bus
	25	A2	Out	Low Order Address Bus	26	A10	Out	High Order Address Bus
	27	A1	Out	Low Order Address Bus	28	A9	Out	High Order Address Bus
	29	A0	Out	Low Order Address Bus	30	A8	Out	High Order Address Bus
CONTROL BUS	31	WR*	Out	Write to Memory or I/O	32	RD*	Out	Read to Memory or I/O
	33	IORQ*	Out	I/O Address Select	34	MEMRQ*	Out	Memory Address Select
	35	IOEXP*	In/Out	I/O Expansion	36	MEMEX*	In/Out	Memory Expansion
	37	REFRESH*	Out	Refresh Timing	38	MCSYNC*	Out	CPU Machine Cycle Sync.
	39	STATUS 1*	Out	CPU Status	40	STATUS 0*	Out	CPU Status
	41	BUSAK*	Out	Bus Acknowledge	42	BUSRQ*	In	Bus Request
	43	INTAK*	Out	Interrupt Acknowledge	44	INTRQ*	In	Interrupt Request
	45	WAITRQ*	In	Wait Request	46	NMIRQ*	In	Non-Maskable Interrupt
	47	SYSRESET*	Out	System Reset	48	PBRESET*	In	Push Button Reset
	49	CLOCK*	Out	Clock from Processor	50	CNTRL*	In	AUX Timing
	51	PCO	Out	Priority Chain Out	52	PCI	In	Priority Chain In
POWER BUS	53	AUX GND	In	AUX Ground (Bused)	54	AUX GND	In	AUX Ground (Bused)
	55	AUX +V	In	AUX Positive (+12 Volts DC)	56	AUX -V	In	AUX Negative (-12 Volts DC)

*Low Level Active Indicator

Figure 2 STD BUS Pinout

Series 7000 Cards (STD BUS)

	MODEL	DESCRIPTION
PROCESSORS	7801	8085A Processor Card
	7802	6800 Processor Card
	7803	Z80 Processor Card
MEMORY	7701	16K Byte Static RAM Memory Card
	7702	16K Byte 2716 EPROM Memory Card
DIGITAL I/O	7601	TTL Input/Output Port Card
	7602	TTL Output Port Card
	7603	TTL Input Port Card
	7604	TTL Universal Input/Output Card
INDUSTRIAL I/O	7501	Medium Power DC Driver Card
	7502	SPST Relay Output Card
	7503	Optoisolated low voltage AC Input Card
	7504-1	Triac Output Card (2A, 280V)
	7506	Optoisolated high voltage Input Card
	7507	Industrial I/O Module Interface Card, Available Q1, 1980
PERIPHERAL INTERFACE	7301	RS-232-C and TTY Driver/Receiver Card
	7303	Keyboard and Display Card
	7304	Dual UART Card, Available Q2, 1980
	7320	Priority Interrupt Card, Available Q2, 1980
MISCELLANEOUS	7901	Utility Extender Card
	7902	Utility DIP Card
	7903	General Utility Card
	7904	Decoded Input/Output Utility Card
	7907	I/O Distributor Master Rack, Available Q2, 1980
	7908	I/O Distributor Remote Rack, Available Q2, 1980
	7920	In-rack Power Supply (+5V, 5A), Available Q1, 1980
	7921	In-rack Power Supply (+5V, 3.0A; ±12V, 0.2A), Available Q1, 1980
MOTHERBOARDS	7101	¼ Rack Motherboard with complete Cable Assembly
	7101-1	¼ Rack Motherboard without Power Cable
	7101-2	¼ Rack Motherboard with Power Cable
	7102	½ Rack Motherboard with complete Cable Assembly
	7102-1	½ Rack Motherboard without Power Cable
	7102-2	½ Rack Motherboard with Power Cable
	7105-1	4 Slot Motherboard without Power Cable
	7105-2	4 Slot motherboard with Power Cable

New cards will be released at the rate of one per month through 1980. Contact Pro-Log for latest information.

Series 7000 Cards

PROCESSORS

$290.00 | **7801** | **8085A PROCESSOR CARD**

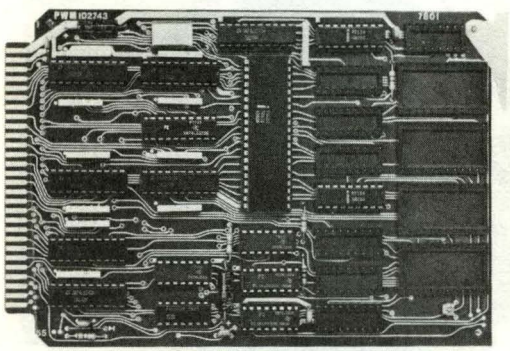
Combines a buffered and fully expandable 8085A Microprocessor with on-board RAM and PROM sockets. The 7801 includes 1K byte of RAM with sockets for up to 4K, and sockets for up to 8K bytes of ROM or EPROM (D2002 or equivalent).

360.00 | **7802** | **6800 PROCESSOR CARD**

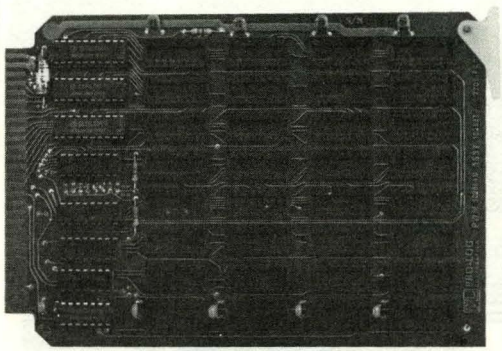
Provides a buffered and fully expandable 6800 Microprocessor with on-board RAM and PROM sockets. The 7802 includes 1K byte of RAM with sockets for up to 4K, and sockets for up to 8K bytes of ROM or EPROM (D2002 or equivalent).

270.00 | **7803** | **Z80 PROCESSOR CARD**

Combines a buffered and fully expandable Z80 Microprocessor with on-board RAM and PROM sockets. The 7803 includes 1K byte of RAM with sockets for up to 4K, and sockets for up to 8K bytes of ROM or EPROM (D2002 or equivalent).



7801 8085A Processor Card



7701 16K Byte Static RAM Memory

MEMORY

$150.00 | **7701** | **16K BYTE STATIC RAM MEMORY CARD**

Provides sockets for up to 16,384 bytes of READ/WRITE or PROM memory. The card uses 2114 (D1004 or equivalent) type RAMs and has sockets for 16 pairs of RAMs.

110.00 | **7702** | **16K BYTE 2716 EPROM MEMORY CARD**

Provides sockets for up to 16,384 bytes of EPROM memory. The card uses 2716 EPROMs (D2002 or equivalent) and has sockets for 8 EPROMs.

Series 7000 Cards (continued)

DIGITAL I/O

$165.00 | **7601**

TTL INPUT/OUTPUT PORT CARD

Provides four 8-bit gated input ports (32 input lines) and four 8-bit latched output ports (32 output lines). Input port lines and output port lines are accessed at 16-pin DIP sockets on the card.

130.00 | **7602**

TTL OUTPUT PORT CARD

Provides eight 8-bit latched output ports (64 output lines). Output port lines are accessed at 16-pin DIP sockets on the card. A reset line is available to clear all ports simultaneously.

135.00 | **7603**

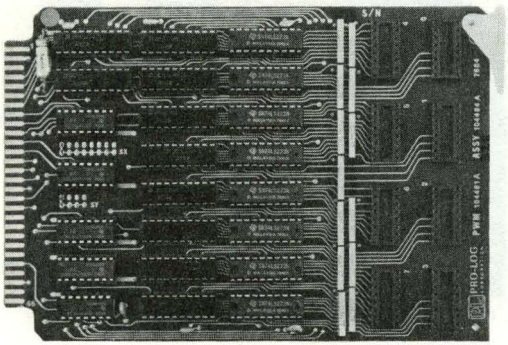
TTL INPUT PORT CARD

Provides eight 8-bit gated input ports (64 input lines). Input port lines are accessed at 16-pin DIP sockets on the card.

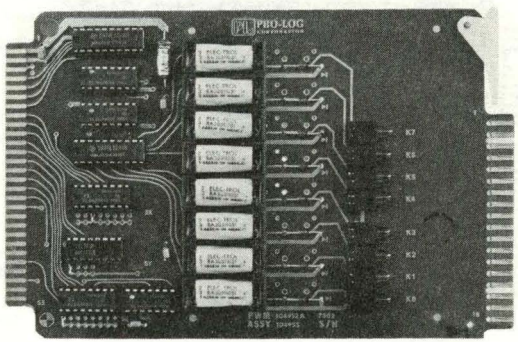
180.00 | **7604**

TTL UNIVERSAL INPUT/OUTPUT CARD

Provides 8 ports of which any number can be input or output ports or output ports with readback (64 I/O lines total). The ports are accessed at 16-pin DIP sockets on the card.



7604 TTL Universal Input/Output Card



7502 SPST Relay Output Card

INDUSTRIAL I/O

$175.00 | **7501**

MEDIUM POWER DC DRIVER CARD

Provides 16 independent 50VDC, 225mA open collector output circuits for the Series 7000 STD BUS. Diode clamping is provided to limit the output voltage excursion when driving inductive loads.

195.00 | **7502**

SPST RELAY OUTPUT CARD

Consists of 8 independent SPST dry reed relays controlled by a fully decoded, latched 8-bit output port. Each 7502 gives the processor direct control of 8 additional reed relay switches.

Series 7000 Cards (continued)

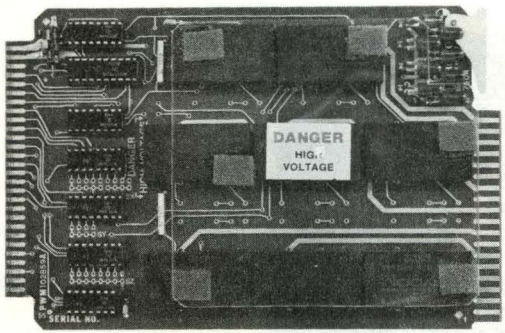
INDUSTRIAL I/O

$280.00 | **7503** | **OPTOISOLATED INPUT CARD 4.5 - 80VAC/VDC**

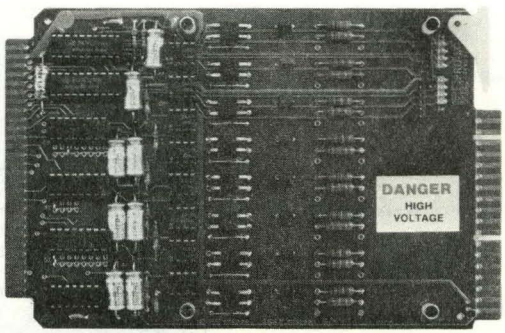
Provides 8 independent, optically coupled AC/DC inputs for the STD BUS. The input voltage ranges from 4.5VAC/VDC to 80VAC/VDC.

295.00 | **7504-1** | **TRIAC OUTPUT CARD**

Consists of 8 independent solid state AC relays (Triacs) controlled by a fully decoded latched 8-bit output port. Each 7504 gives the processor direct control of 8 additional switched AC power circuits.



7504-1 Triac Output Card



7506 Optoisolated Input Card

$280.00 | **7506** | **OPTOISOLATED INPUT CARD 70 - 280VAC/VDC**

Provides 8 independent, optically coupled AC/DC inputs for the STD BUS. The input voltage ranges from 70VAC/VDC to 280VAC/VDC.

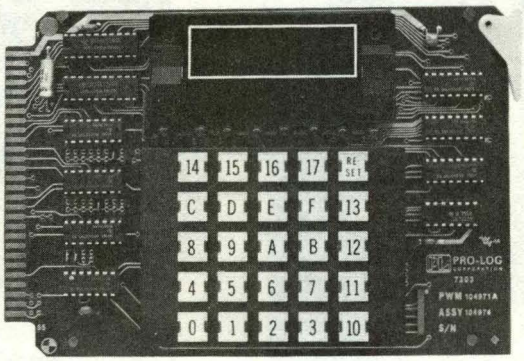
195.00 | **7507** | **INDUSTRIAL I/O MODULE INTERFACE CARD**

Provides for interconnection between the STD BUS and the Opto-22, PB-8, PB-16A, or PB-24 module mounting racks. Also compatible with the Motorola MS8, MS16, and MS24 racks. Available Q1, 1980. (Mating Cable RC-50-6 description is found on page 42.)

Series 7000 Cards (continued)

PERIPHERAL INTERFACE

$175.00	7301	**RS-232-C and TTY DRIVER/RECEIVER INTERFACE** Combined I/O ports and voltage translation needed to interface a microprocessor to both RS-232-C and TTY serial data communications lines.
295.00	7303	**KEYBOARD AND DISPLAY CARD** General purpose control panel card which provides data input and display capability. Includes an 8-position alphanumeric display, keyboard with 24 program definable keys, plus System Reset, an 8-bit binary LED display, and two rocker switches.
*	7304	**DUAL UART CARD** Contains two fully independent, asynchronous communication channels featuring separate Baud Rates and full RS-232-C specifications. Available Q2, 1980.*
*	7320	**PRIORITY INTERRUPT CARD** Functions as an 8-input priority interrupt controller for the 7800 Series Processors. Available Q2, 1980.*



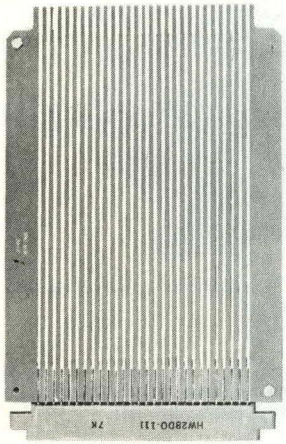
7303 Keyboard and Display Card

MISCELLANEOUS CARDS

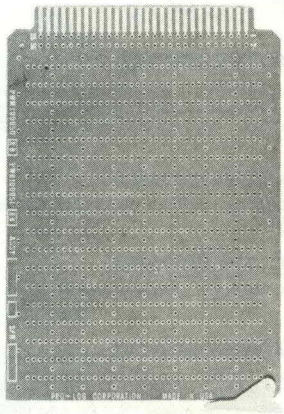
$ 35.00	7901	**UTILITY EXTENDER CARD** A printed circuit card for extending cards out of the card cage for easy access. The 7901 card can be used with all Pro-Log edge connected cards.
30.00	7902	**UTILITY DIP CARD** A printed circuit card for prototyping with Dual-In-Line (DIP) packaging.
30.00	7903	**GENERAL UTILITY CARD** A printed circuit card for prototyping with 0.100" (0.25cm) grid hole pattern.

*Pricing information and data sheets available after March 1980.

Series 7000 Cards (continued)



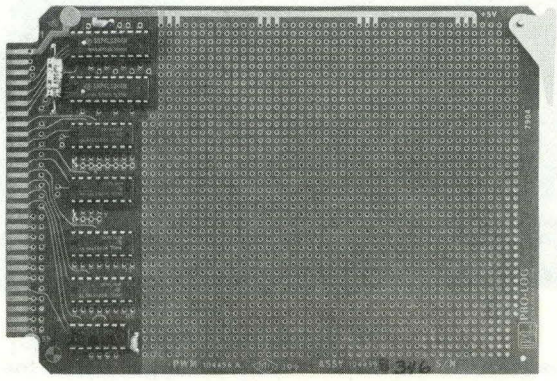
7901 Utility Extender Card



7902 Utility DIP Card

7903 General Utility Card

$ 80.00	7904	**DECODED INPUT/OUTPUT UTILITY CARD** A printed circuit card for prototyping I/O circuitry. The 7904 provides complete STD BUS buffering and decoding for I/O functions implemented in the card's 0.1 inch grid prototype area.
135.00	7907	**I/O DISTRIBUTOR MASTER RACK**
135.00	7908	**I/O DISTRIBUTOR REMOTE RACK** Allows expansion of system to I/O cards located in remote card racks. The 7907 and one to eight 7908 cards form a multi-rack I/O card expansion system.
320.00	7920	**IN-RACK POWER SUPPLY** AC line-operated power supply with high efficiency switching module for compact size and cool operation in STD BUS card rack. Provides +5V/5A logic power.
450.00	7921	**IN-RACK POWER SUPPLY** Same as the 7920 but provides +5V/3A logic power and ±12V/.2A each for STD auxiliary power buses.

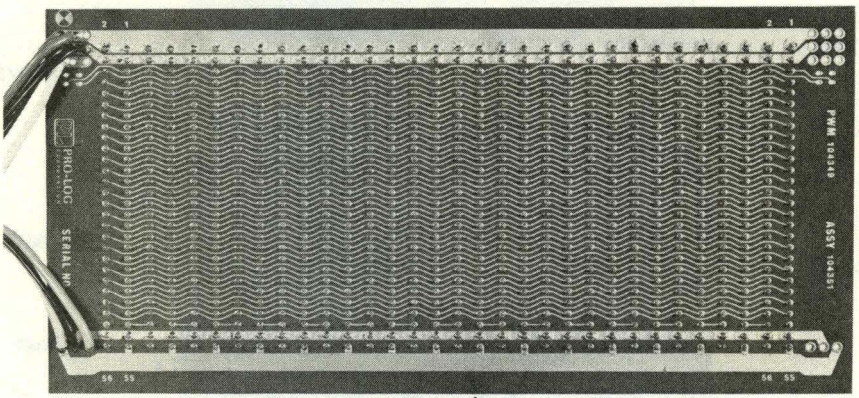


7904 Decoded Input/Output Utility Card

Series 7000 Cards (continued)

MOTHERBOARDS

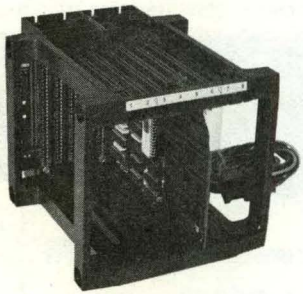
$120.00	7101	**1/4 RACK MOTHERBOARD** Implements the STD BUS backplane interconnection scheme, as defined by the STD BUS general specifications. Provides 8 edge connectors on 0.5" centers. Comes with complete power cable assembly and mating connector (CP9P and CP9S).
95.00	7101-1	**1/4 RACK MOTHERBOARD** Same as above, except without power cable assembly.
110.00	7101-2	**1/4 RACK MOTHERBOARD** Same as above, except comes with power cable (CP9P only).
150.00	7102	**1/2 RACK MOTHERBOARD** Implements the STD BUS backplane interconnection scheme, as defined by the STD BUS general specifications. Provides 16 edge connectors on 0.5" centers. Comes with complete power cable assembly and mating connector (CP9P and CP9S).
125.00	7102-1	**1/2 RACK MOTHERBOARD** Same as above, except without power cable assembly.
140.00	7102-2	**1/2 RACK MOTHERBOARD** Same as above, except comes with power cable (CP9P only).
80.00	7105-1	**1/8 RACK MOTHERBOARD** Implements the STD BUS backplane interconnection scheme, as defined by the STD BUS general specifications. Provides 4 edge connectors on 0.5" centers. Comes without power cable assembly.
95.00	7105-2	**1/8 RACK MOTHERBOARD** Same as above, except comes with power cable (CP9P only).



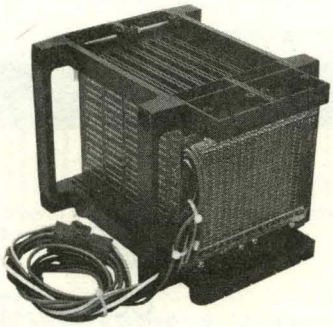
7102 1/2 Rack Motherboard

Full technical details on the STD BUS and Series 7000 Cards can be found in the *Series 7000 STD Bus Technical Manual* available from Pro-Log or a Pro-Log manufacturers representative. The location of a representative in your area can be found on page 64.

Series 7000 Accessories



CR16A-1
STD Bused 1/2 Rack (Front View)



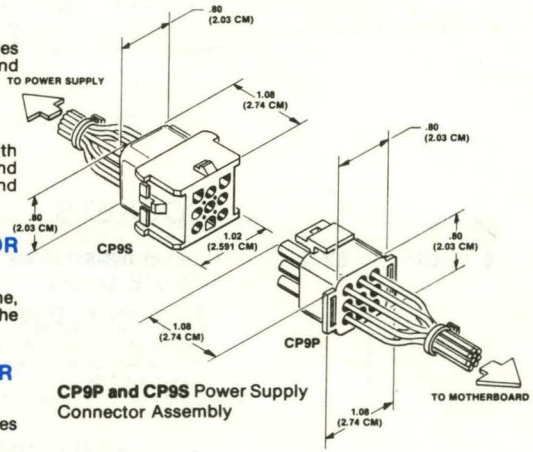
CR16A-1
STD Bused 1/2 Rack (Back View)

CARD RACKS

$120.00	CR4A-1	**STD BUSED 1/8 RACK**
135.00	CR4A-2	Molded glass-filled polycarbonate rack which includes the 7105-1 (CR4A-1) or 7105-2 (CR4A-2) Motherboard which has 4 edge connectors. Meets UL flame rating 94V-0.
150.00	CR8A-1	**STD BUSED 1/4 RACK**
165.00	CR8A-2	Molded glass-filled polycarbonate rack, which includes the 7101 (CR8A-1) or 7101-2 (CR8A-2) Motherboard which has 8 edge connectors. Meets UL flame rating 94V-0.
195.00	CR16A-1	**STD BUSED 1/2 RACK**
210.00	CR16A-2	Molded glass-filled polycarbonate rack which includes the 7102-1 (CR16A-1) or 7102-2 (CR16A-2) Motherboard which has 16 edge connectors. Meets UL flame rating 94V-0.
195.00	CR8	**STD BUSED 1/4 RACK**
		Aluminum-sided rack which includes the 7101 Motherboard which has 8 edge connectors. Includes complete cable assembly.
260.00	CR16	**STD BUSED 1/2 RACK**
		Aluminum-sided rack which includes the 7102 Motherboard which has 16 edge connectors. Includes complete cable assembly.

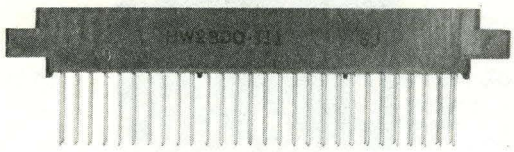
POWER SUPPLIES & ACCESSORIES

$165.00	M280	**STD DC POWER SUPPLY**
		Open frame power supply which includes power cable CP9S. Provides +5V/6A and -12V/2A.
225.00	M281	**STD DC POWER SUPPLY**
		Completely enclosed power supply with line cord, circuit breaker switch, and power cable CP9S. Provides +5V/10A and ±12V/1A.
15.00	CP9P	**POWER SUPPLY CONNECTOR ASSEMBLY; PLUG**
		Consists of a 9-pin, 12" cable with nine, 18-gauge wires which connect to the Motherboard or card rack.
15.00	CP9S	**POWER SUPPLY CONNECTOR ASSEMBLY; SOCKET**
		Mating socket with 12" cable which wires to the power supply.

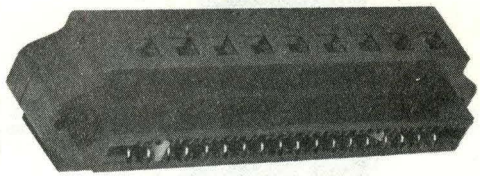


CP9P and CP9S Power Supply Connector Assembly

Series 7000 Accessories (continued)



CW56 Wrap Connector



CB18 Barrier Strip Connector

CONNECTORS

$ 35.00 | **RC-50-6**

RIBBON CABLE INTERCONNECT

Six foot, 50-line ribbon cable assembly. Allows interface between the 7507 Industrial I/O Module Interface card and the Opto-22 Motorola cards.

15.00 | **CT56**

TRANSITION CONNECTOR

Mates discrete cable wires to CW56. Includes pack of 60 self-crimp connections.

6.00 | **CW56**

WRAP CONNECTOR

Card edge 56-pin, 3-level wire wrap connector. Fits all Pro-Log card racks. Pins are 0.025 inches square and spaced on 0.125 inch centers.

25.00 | **CB18**

BARRIER STRIP CONNECTOR

15.00 | **CS18**

SOLDER TAIL CONNECTOR

The CB18 and CS18 are I/O edge card 18-pin connectors. They are used on industrial interface cards where ≥ 50 VDC and/or ≥ 0.5A per contact is required. The materials used in both connectors are UL flame rated 94V-0.

CB18 Includes tubular contact plate for wire size #22-#12 AWG. UL listed.

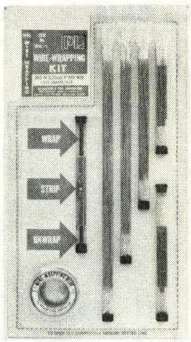
CS18 Includes pierced solder tails, each of which accepts three #22 AWG wires.

$ 50.00 | **WK-1**

WIRE WRAPPING KIT

The kit includes:

- One 30 AWG wrap, unwrap, and stripping tool
- Pre-cut and stripped 30 AWG Blue Kynar wire
  - 200 pieces 2 inch insulation length
  - 150 pieces 4 inch insulation length
  - 100 pieces 6 inch insulation length
  - 50 pieces 8 inch insulation length
- One 100 foot roll 30 AWG Blue Kynar wire



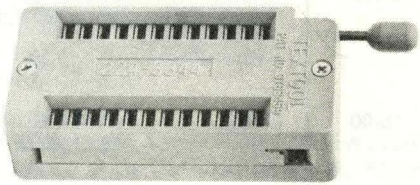
WK-1 Wire Wrapping Kit

SOCKETS

$ 15.00 | **SZ-24**

ZERO INSERTION FORCE SOCKET

24-pin socket adapted to mate with PROMs and PROM sockets. Expedites changing of 24-pin PROMs. SZ-24s do not fit in adjacent sockets on most Pro-Log memory cards.



SZ-24 Zero Insertion Force Socket

Series 7000 Accessories (continued)

PRO-LOG provides competitively priced memory devices for the convenience of its customers. These devices are available from semiconductor manufacturers and their distributors. They are sold by PRO-LOG only with card orders.

MEMORY DEVICES

$ 13.00	D256	**UV ERASABLE PROM** PROM contains 256 eight-bit words (1702A type). 1.0 microsecond access time. Works with all PLS and most MPS systems. Uses +15VDC or +5 and -10VDC.
25.00	D1002	**READ/WRITE MEMORY** Static RAM (2102 type) provides 1024 eight-bit words in 8 packages. 0.45 microsecond access time. +5VDC. Used with 8122 RAM card.
75.00	D1003	**CMOS READ/WRITE MEMORY** Static CMOS RAM (6508 type) 1024 eight-bit words in 8 packages. 0.30 microsecond access time. Standby current is 600 microamps at +5V, 300 microamps at +3V, total for 8 packages.
30.00	D1004	**READ/WRITE MEMORY** Static RAM (2114 type or equivalent) provides 1024 eight-bit words in 2 packages. 0.45 microsecond access time. +5VDC.
20.00	D1024	**UV ERASABLE PROM** PROM contains 1024 eight-bit words (2708 type). 0.5 microsecond access time suitable for PLS-881 or 8812 cards. Uses +12, +5, -5VDC.
55.00*	D2001	**UV ERASABLE PROM** PROM contains 2048 eight-bit words (TMS2716 type). 0.450 microsecond access time. Uses +12, +5, -5VDC.
75.00*	D2002	**UV ERASABLE PROM** PROM contains 2048 eight-bit word (Intel 2716 type). 0.450 microsecond access time. Uses +5VDC.
12.00	4002-1 4002-2	**RAM REGISTER** Contains 80 four-bit data characters organized as four registers of 16 data characters and 4 status characters. Order as -1 or -2 depending on system address. First two RAMs, including RAM supplied with system are -1; next two are -2. RAMs alternate in groups of two. Includes 4 MOS outputs. Sold only with PLS hardware. Used only with 4004 or 4040 Processor Chips.

STD BUS MONITOR PROGRAMS

$ 200.00	MP-1	**MONITOR PROGRAM, 7801**
200.00	MP-3	**MONITOR PROGRAM, 7803**
		An easy-to-use and useful monitor/debugging program for use with the 7303 Keyboard/Display Card. Allows machine language editing, execution with breakpoint, and PROM Programmer interface. Contained in one 2716 EPROM with listing, instructions, and applications software.

CODING FORMS

$ 5.00	CF-1	**PROGRAM ASSEMBLY FORM** Tablet of 100 Hexadecimal coding forms for assembling programs.

*Consult factory for current pricing.

Prototyping Systems

Pro-Log introduces two STD BUS Prototyping Systems designed for the 8085A and Z80 Microprocessors.

Pro-Log's STD BUS Prototyping Systems include STD BUS hardware, test equipment, PROM-based applications and operating software, and complete documentation. These systems are comprised of the same equipment which is used in Pro-Log's Microprocessor Design Course. This equipment is all that is required to design, document, and debug programs using Pro-Log's engineering methods.

Pro-Log's STD BUS Prototyping Systems offer the user a complete system at a substantial discount. The normal list price of the hardware in Prototyping Systems is over $6000. Pro-Log's system price of $4995 represents a 20% discount.

INCLUDES

STD BUS HARDWARE

CR8A-1	Card Rack/Motherboard
7921	Power Supply Card, In-rack
7904	Decoded I/O Utility Card
7901	Utility Card Extender
780x	Processor Card (7801, 8085A; 7803, Z80)
7604	TTL I/O Card
7303	Keyboard/Display Card

ENGINEERING INSTRUMENTS

M900B	Buffered Universal PROM Programmer with
PM9052	Personality Module
9114	Software for the Computer Interface Option and
9103	UV Erase Light Option
M82x	System Analyzer (Z80, M824, 8085(A), M825)

LITERATURE AND DOCUMENTATION

STD Manual	*Series 7000 STD BUS Technical Manual*
MUG	*Microprocessor User's Guide*
PUG	*PROM User's Guide*
M900B Manual	*Buffered Universal PROM Programmer Operating Manual*
M82x Manual	*System Analyzer Operating Manual* (Z80, M824, 8085(A), M825)
MP-1 or -3	Monitor Program Listing and Operating Instructions
CF-1	Program Assembly Forms
	Programming Aid Cards
	Schematics and Assembly Drawings

ADDITIONAL HARDWARE

1 2716 EPROM with applications and operating software
2 2716's
1 Zero Insertion Force DIP Socket
2 Augat Sockets

$4995.00* | **PS-1** **8085 STD BUS PROTOTYPING SYSTEM**

Includes the 7801 (8085A Processor Card), the M825 System Analyzer for the 8085(A) Microprocessor, in the items listed above.

4995.00* | **PS-3** **Z80 STD BUS PROTOTYPING SYSTEM**

Includes the 7803 (Z80 Processor Card), the M824 System Analyzer for the Z80 Microprocessor in the items listed above.

OPTIONS

$ 250.00 | **PIN-114** **PARALLEL INTERFACE OPTION FOR THE STD BUS PROTOTYPING SYSTEM**

Includes the 7507 Industrial I/O Module Interface Card with the RC-50-6 ribbon cable connector. Allows communication between the STD BUS System and the PROM Programmer.

*Not subject to quantity or dollar volume discounts.

Single-Card 8-Bit Microprocessors

The Pro-Log single-card programmed logic systems have been designed as complete systems with processor, clock circuit, data memory, program memory, and I/O. Pin compatability has been maintained where possible to offer maximum flexibility and interchange of processors. Use the Card Compatability Guide on page 48 and the following chart for reference.

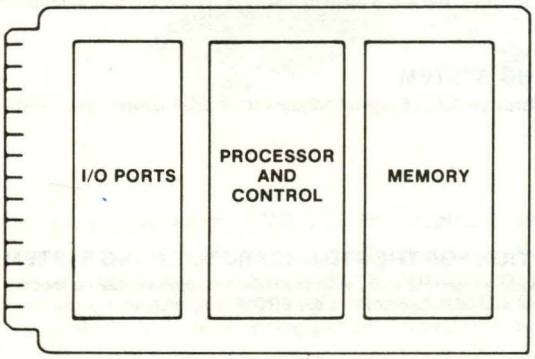
Single 8-Bit Systems

	PLS-881	PLS-888	PLS-888A	PLS-858	PLS-868	PLS-898
PROCESSOR	8080A	8080A	8080A	8085A	6800	Z-80
PROM CAPACITY	4K (2708)	8K (TMS2716)	8K (2716)	8K (2716)	8K (2716)	8K (2716)
RAM CAPACITY	1K	2K	2K	2K	2K	2K
INPUT PORTS (8 LINES)	2	2	2	2	2	2
OUTPUT PORTS (8 LINES)	3	3	3	3	3	3
I/O EXPANSION (TOTAL PORTS)	VIA MULTIPLEXING	8/8 VIA RIBBON CABLE	8/8 VIA RIBBON CABLE	8/8 VIA RIBBON CABLE	8/8 VIA RIBBON CABLE	8/8 VIA RIBBON CABLE
STATE TIME	488 NSEC	488 NSEC	488 NSEC	320 NSEC	1.0 MICROSECOND (CYCLE TIME)	400 NSEC
PIN COMPATIBLE (except power)	YES	YES	YES	YES	YES	YES
POWER REQUIREMENTS	+12,+5,-5	+12,+5,-5	+12,+5,-5	+5	+5	+5

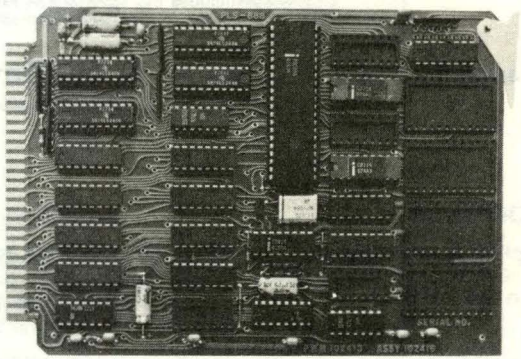
PROM NOT INCLUDED ON CARD SYSTEMS.

1K OF RAM PROVIDED ON CARD SYSTEMS.

DATA SHEETS ARE AVAILABLE ON REQUEST.



Typical Single-Card Layout



PLS-888 8080A/TMS2716 System

$220.00 | **PLS-881** | **ONE CARD 8080A/2708 SYSTEM**

This industry standard processor is optimized in the PLS-881 for small and medium sized dedicated control systems. I/O is expanded through multiplexing.

Includes 8080A Processor with 0.488 microsecond state time, crystal clock, single level interrupt, power-on and external reset, 1024 bytes of D1002 RAM (2102 or equivalent) and sockets for 4096 bytes of D1024 PROM (2708 or equivalent), 16TTL input lines and 24 TTL output latches. Requires +12, +5, -5VDC. Does not include PROM.

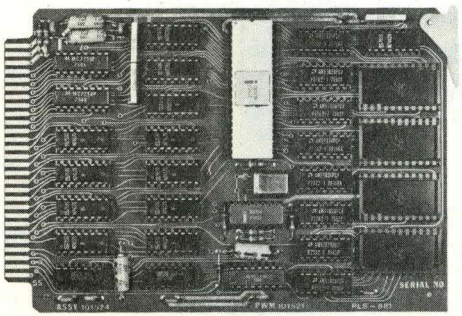
240.00 | **PLS-888** | **ONE CARD 8080A/TMS2716 SYSTEM**

Incorporates the same features of the PLS-881, but with capacity for 8K of program memory and 2K of RAM. I/O expansion to six additional input ports and five additional output ports through simple ribbon connector.

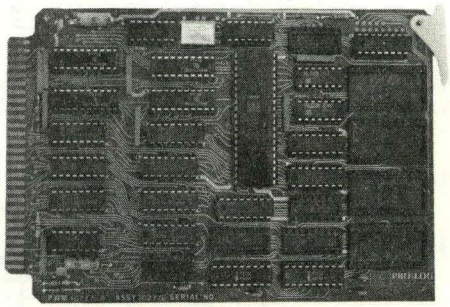
Includes 8080A Processor with 0.488 microsecond state time, crystal clock, single level interrupt, power-on and external reset, 1024 bytes of D1004 RAM (2114 or equivalent), sockets for an additional 1024 bytes, sockets for 8192 bytes of D2001 PROM (TMS 2716 or equivalent), 16 TTL input lines, and 24 TTL output latches. Requires +12, +5, -5VDC. Does not include PROM.

260.00 | **PLS-888A** | **ONE CARD 8080A/2716 SYSTEM**

Identical to PLS-888, but with sockets for 8192 bytes D2002 PROM (Intel 2716 or equivalent).



PLS-881



PLS-858

265.00 | **PLS-858** | **ONE CARD 8085/2716 SYSTEM**

Software compatible with PLS-881/888 with additional instructions for serial data I/O. Expansion through simple ribbon connector for 6 additional input ports and 5 additional output ports. Five interrupts available. Single +5V supply.

Includes 8085 Processor with 0.320 microsecond state time, crystal clock, 2 interrupt inputs, power-on and external reset, 1024 bytes of D1004 RAM (2114 or equivalent), sockets for an additional 1024 bytes, sockets for 8192 bytes of D2002 PROM (Intel 2716 or equivalent), 16 TTL input lines and 24 TTL output latches. Requires +5VDC. Does not include PROM.

260.00 | **PLS-868** | **ONE CARD 6800/2716 SYSTEM**

The 6800 is well suited to small scale data processing applications and is also capable of high speed bit manipulation for control applications. The PLS-868 allows the designer to select either RAM or I/O in memory base page 00 for use with high speed direct instructions. Expansion to 6 additional input ports and 5 additional output ports through simple ribbon connector. Single +5V supply.

Includes 6800 Processor with one microsecond cycle time, crystal clock, two interrupt inputs, power-on and external reset, 1024 bytes of D1004 RAM (2114 or equivalent), sockets for additional 1024 bytes, sockets for 8192 bytes of D2002 PROM (Intel 2716 or equivalent), 16 TTL input lines and 24 TTL output latches. Requires +5VDC. Does not include PROM.

260.00 | **PLS-898** | **ONE CARD Z80/2716 SYSTEM**

The expanded instruction set of the Z80 (158 instructions) adds versatility. Particularly useful for bit manipulation. Multiple masked and unmasked interrupts. Ribbon cable port expansion. Single +5V supply.

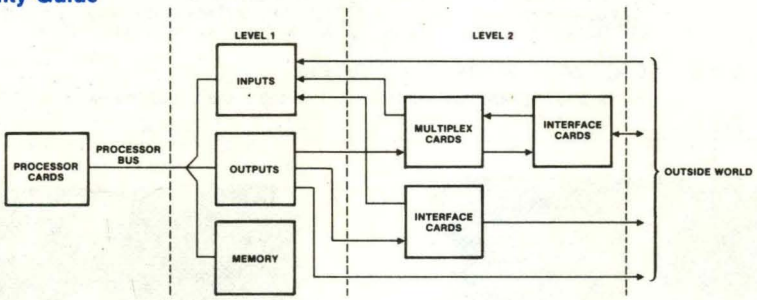
Includes Z80 Processor with .400 microsecond state time, crystal clock, two interrupt inputs, power-on and external reset, 1024 bytes of D1004 RAM (2114 or equivalent), sockets for additional 1024 bytes, sockets for 8192 bytes of D2002 PROM (Intel 2716 or equivalent), 16 TTL input lines and 24 TTL output latches. Requires +5VDC. Does not include PROM.

Wired Backplane Card Components

The Series 4000 and 8000 cards will be discontinued in December 1984, because parts for some of these cards are becoming obsolete. We suggest that new customers take advantage of the new technology offered in the Series 7000 STD BUS products. Pro-Log strongly urges that the wired backplane card components be ordered only by customers who have existing 4000 and 8000 systems. We will support previous customers committed to these systems until December, 1984. Pro-Log recommends that the user take one of three alternatives:

1. Redesign using Series 7000 STD BUS cards
2. Acquire manufacturing rights from Pro-Log
3. Order sufficient quantities to ensure product maintenance

Card Compatibility Guide



MICROPROCESSOR	8080A					8008	6800		8085	Z80
MICROPROCESSOR CARDS	8811A	8821	PLS-881	PLS-888	PLS-888A	8111	8611	PLS-868	PLS-858	PLS-898
MEMORY CARDS	OC	OC	OC	OC	OC			OC	OC	OC
8112-1							1			
8116	1	1				1	1			
8117	1	1	2	2	2	1	1	2	2	2
8119	1	1	2	2	2	1	1	2	2	2
8120		1(a)					1(a)			
8122			2	2	2		1	2	2	2
8122A	1	1	2	2	2	1		2	2	2
8812		1(a)					1(a)			
INPUT/OUTPUT CARDS			OC	OC	OC			OC	OC	OC
8113						1,2				
8113-1	1,2	1,2	2	2	2		1,2	2	2	2
8114	1,2	1,2	2	2	2	1,2	1,2	2	2	2
8115						1,2				
8115-1	1,2	1,2	2	2	2		1,2	2	2	2
INTERRUPT CARDS			OC	OC	OC			OC	OC	OC
8118						1				
8118-1	1	1	2	2	2		2	2	2	2
INTERFACE CARDS	2	2	2	2	2	2	2	2	2	2
8401-2	2	2	2	2	2	2	2	2	2	2
8402-2	2	2	2	2	2	2	2	2	2	2
8403	2	2	2	2	2	2	2	2	2	2
8404-4	2	2	2	2	2	2	2	2	2	2
8405	2	2	2	2	2	2	2	2	2	2
8406	2	2	2	2	2	2	2	2	2	2
8407	2	2	2	2	2	2	2	2	2	2
8409	2	2	2	2	2	2	2	2	2	2
8419	2	2	2	2	2	2	2	2	2	2
8420	2	2	2	2	2	2	2	2	2	2

(a) 8812 or 8120 should not be mixed with 8112 or 8116, because of differing power supply requirements.

LEGEND:

OC--Indicates item contained "on-card" (e.g. PLS-881 has I/O on card).
1--Indicates interface level 1, connects to Processor bus.
2--Indicates interface level 2, connects to I/O.
1,2--Indicates interface level 1 or 2.

8-Bit Wired Backplane Card Components

PROCESSOR CARDS

$225.00	8611 8611-1	**PROCESSOR CARD (6800)** Implements the 8-bit 6800 Microprocessor as a fully TTL buffered Microprocessor card with clock, reset, data, address, memory control and I/O control. Includes 6800 Microprocessor, with 1.600 microsecond state time crystal clock. Timing is compatible with D256 PROM (1702A or equivalent). Requires +5VDC. For 1.000 microsecond state time clock specify 8611-1. 8611-1 requires 0.5 microsecond memory.
210.00	8811A	**PROCESSOR CARD (8080A)** Includes 8080A with 1.000 microsecond state time, crystal clock, DMA buffers and interrupt input with optional power-on restart, and 1024 bytes of RAM (D1002). Provides fully TTL buffered address and data buses for full memory and I/O expansion. Requires +12, +5, -10VDC.
225.00	8821	**PROCESSOR CARD (8080A)** Includes 8080A Microprocessor with 0.488 microsecond state cycle, crystal clock, DMA buffers and interrupt input with optional power-on restart, 1024 bytes of RAM (D1002), and sockets for up to 4096 bytes of 1024 PROM (2708 or equivalent). Provides fully TTL buffered address and data buses for full memory and I/O expansion. Requires +12, +5, -5VDC. Does not include PROM.
330.00	8111	**PROCESSOR CARD (8008)** Contains 8008-1 Microprocessor with 2.800 microsecond state time, crystal clock, DMA buffers and interrupt input with optional power-on restart. Provides fully TTL buffered address and data buses. Requires +5, -10VDC.

MEMORY CARDS

$ 95.00	8112-1	**PROM/RAM CARD** Suggested for 6800 based systems only. Capacity to 1024 words of D256 PROM (1702A or equivalent) and 2048 words of D1002 RAM (2102 or equivalent). Requires +5, -10VDC. Does not include PROM or RAM.
85.00	8116	**PROM CARD** Capacity to 2048 words of D256 PROM (1702A or equivalent). Requires +5, -10VDC. Does not include PROM.
115.00	8117	**RAM CARD** Capacity to 4096 words of D1002 RAM (2102 or equivalent). Requires +5VDC. Does not include RAM.
130.00	8119	**RAM CARD** Capacity to 16,384 words of D1004 RAM (2114 or equivalent). Requires +5VDC. Does not include RAM.
130.00	8120	**PROM/RAM CARD** Capacity to 16,384 words of D2001 PROM (TMS2716 or equivalent) and 2048 words of D1004 RAM (2114 or equivalent). Interfaces with 8821 processor card. Avoid mixing with 8112 or 8116 cards because of conflicting power supply. Requires +12, +5, -5VDC. Does not include PROM or RAM.
180.00 350.00 475.00	8122 8122-2 8122-4	**RAM CARD, CMOS WITH BATTERY BACKUP** Capacity to 4096 words of D1003 CMOS RAM (6508 or equivalent). Includes nickel-cadmium rechargeable battery which enables RAM data retention for up to 20 days. Requires +5VDC. Interfaces with 6800 Microprocessor. 8122 does not include RAM 8122-2 2K RAM 8122-4 4K RAM
180.00 350.00 475.00	8122A 8122A-2 8122A-4	**RAM CARD, CMOS WITH BATTERY BACKUP** Same as 8122 but interfaces with 8080A Microprocessor. 8122A does not include RAM 8122A-2 2K RAM 8122A-4K RAM
125.00	8812	**PROM/RAM CARD** Capacity to 8192 words of D1024 PROM (2708 or equivalent) and 1024 words of D1002 RAM (2102 or equivalent). Interfaces with 8821 processor card. Avoid mixing with 8112 or 8116 because of conflicting power supply requirements. Requires +12, +5, -5VDC. Does not include PROM or RAM.

I/O AND SUPPORT CARDS

$ 95.00 105.00	8113 8113-1	**I/O CARD** Contains 28 TTL universal lines, field selectable in groups of 4 as input gate or output latches. Requires +5VDC. 8113 connects to 8111. 8113-1 connects to 8811A, 8821, or 8611.
70.00	8114	**TTL INPUT GATE CARD** Contains 32 input gates. Requires +5VDC. Can be used as input multiplexer.
95.00 85.00	8115 8115-1	**TTL OUTPUT LATCH CARD** Contains 32 output latches. Requires +5VDC. 8115 connects to 8111. 8115-1 connects to 8811A, 8821, or 8611.
125.00	8118 8118-1	**8-LEVEL PRIORITY INTERRUPT CARD** Expands interrupt to 8 levels of priority interrupt. Requires +5VDC. 8118 connects to 8111. 8118-1 connects to 8811A or 8821.

8-Bit Wired Backplane Card Components (continued)

CARD RACK SYSTEMS

$660.00	CRS-81	**EXPANDABLE 8080A/1702A CARD RACK SYSTEM** Includes 8811A Processor Card, 8116 ROM Card, 8114 Input Selector Card, 8115-1 Latched Output Card, and a CR-10A Card Rack prewired for system expansion. All 16 of the Card Edge Connectors in the CR-10A are power bused. Ten of the connectors are prewired as follows: one 8811A Processor Card, three 8116 ROM Cards, one 8117 RAM Card, two 8114 Input Selector Cards, two 8115-1 Latched Output Cards, and one 8406 20mA current loop Interface Card. The other six connectors may be wired by the customer to suit his needs. (Pro-Log now offers the WK-1 Wire Wrapping Kit for this purpose.) Requires +12VDC, +5VDC, and -10VDC. The clock rate and voltage requirements of the system are compatible with the 1702A PROM. PROMs not included.
680.00	CRS-81-1	**EXPANDABLE 8080A/1702A CARD RACK SYSTEM** Same as CRS-81 but with a CR-19 Full Width Card Rack. Field expandable to 32 connectors.
605.00	CRS-82	**EXPANDABLE 8080A/2708 CARD RACK SYSTEM** Includes 8821 Processor Card, 8114 Input Selector Card, 8115-1 Output Latch Card and a CR-10A card rack prewired for system expansion. All 16 of the card edge connectors in the CR-10A are power bused. Ten of the connectors are prewired as follows: one 8821 Processor Card, one 8812 ROM Card, three 8117 RAM Cards, two 8114 Input Cards, two 8115-1 Latched Output Cards, and one 8406 20mA current loop Interface Card. The other six connectors may be wired by the customer to suit his needs. (Pro-Log now offers the WK-1 Wire Wrapping Kit for this purpose). Requires +12VDC, +5VDC and -5VDC. The clock rate and voltage requirements of this system are compatible with 2708 PROM. PROMs not included.
625.00	CRS-82-1	**EXPANDABLE 8080A/2708 CARD RACK SYSTEM** Same as CRS-82 but with a CR-19 Full Width Card Rack. Field expandable to 32 connectors. For additional connectors order CW-56.

INTERFACE CARDS

$120.00	8401-2	**DRIVER OUTPUT CARD** Sixteen driver outputs. Each output sinks 300mA maximum. Each output rated for 28VDC maximum. Includes 16 LED status indicators on card and screwdriver lug cable attachment. Uses +5VDC.
150.00	8402-2	**RELAY OUTPUT CARD** Eight relays, Form A (SPST) isolated contacts, includes 8 LED status indicators on card and screwdriver lug cable attachment. Uses +5VDC.
225.00	8403	**OPTOISOLATED AC/DC INPUT CARD** 24VAC (8403-1) 115VAC (8403-3) 48VDC (8403-5) 48VAC (8403-2) 24VDC (8403-4) 115VDC (8403-6)
240.00	8404-4	**TRIAC OUTPUT CARD** Switches up to 240VAC @ 2A on each of 4 independent loads. Screwdriver lug cable attachment.
60.00	8405	**TERMINAL STRIP INTERFACE CARD** Implements 50 screwdriver lug cable attachment points for transition to PLS-400 or MPS-800 card rack mounted microprocessor systems.
85.00	8406	**SERIAL TTY INTERFACE CARD** Provides interface to ASR33 20mA current loop. Output on 9-pin connector. Uses +5VDC and -9 to -12VDC.
140.00	8407	**CURRENT LOOP AND RS-232-C HARDWARE INTERFACE** Provides interface to ASR33 20mA current loop on 9-pin connector. Provides RS-232-C interface on 25-pin connector. Current loop interface identical to that of 4806. Uses +5VDC and -9 to -12VDC.
140.00	8409	**RECEIVER DRIVER CARD** Contains 8 line driver circuits each capable of driving up to 1000 feet of twisted pair (50-500 ohms impedance) and 8 line receivers for twisted pair cables. Includes terminal strip connectors for cable hook-up. Uses +5VDC.
140.00	8419	**DRIVER OUTPUT CARD** 8 drivers. Each driver switches 1.0 amps. to 35VDC. Terminal strip for outputs, GND, and external supply. Each output has a diode clamped to the external supply and an LED display. Each display is visible with card plugged into rack. Uses +15VDC.
290.00	8420	**TRIAC OUTPUT CARD, HIGH DENSITY** Switches up to 240VAC @ 2A on each of 8 independent loads. Outputs available on card edge connection. Mating connector not included. Includes LED indication of input signals to each Triac.
35.00	P560	**CARD EXTENDER, See 7901**
30.00	P561	**UTILITY DIP CARD, See 7902**
30.00	P562	**GENERAL UTILITY CARD, See 7903**

4-Bit One Card Programmed Logic Systems

$195.00	PLS-401	**ONE CARD PROGRAMMED LOGIC SYSTEM (4004)** Includes 4004 Microprocessor, clock, external and power-on reset, sockets for 1024 words of D256 PROM (1702A or equivalent). Contains an 80 character data RAM with capacity to 320 characters. Has 16 TTL input, 16 TTL output, and 4 MOS output lines. Requires +5, -10VDC. Does not include PROM.
235.00	PLS-411	**ONE CARD PROGRAMMED LOGIC SYSTEM (4004)** Includes 4004 Microprocessor, clock, external and power-on reset, sockets for 768 words of D256 PROM (1702A or equivalent). Socket for Intel 8316 (2048 word ROM) or for 4125 ROM Simulator Card. Contains 80 character data RAM with capacity to 560 characters. Has 16 TTL input, 16 TTL output, and 4 MOS output lines. Requires +5, -10VDC. Does not include PROM.
215.00	PLS-441	**ONE CARD PROGRAMMED LOGIC SYSTEM (4040)** Includes 4040 Microprocessor, clock, external and power-on reset, sockets for 1280 words of D256 PROM (1702A or equivalent). Contains an 80 character data RAM with capacity to 640 characters. Has 16 TTL input, 16 TTL output, 4 MOS output lines, interrupt and stop lines. PLS-401 compatible in most applications. Requires +5, -10VDC. Does not include PROM.

4-Bit Wired Backplane Card Components

PROCESSOR CARDS

$160.00	4111	**PROCESSOR CARD (4004)** Includes 4004 Microprocessor, clock, external and power-on reset, and an 80 character data RAM. Has mixed capacity to 2048 ROM instructions and 32 I/O lines by using a 4001 masked ROM (with I/O lines) or 640 RAM data characters. Has up to 24 MOS output lines. Requires +5, -10VDC.
235.00	4115	**PROCESSOR CARD FOR CUSTOM I/O (4004)** Includes 4004 Microprocessor, clock, external and power-on reset, and PROM capacity to 1536 words. Contains an 80 character data RAM with capacity to 320 characters. I/O bus for custom interfaces or remote I/O. Has up to 16 MOS output lines. Uses D256 PROM (1702A or equivalent). Does not include PROM. Requires +5, -10VDC.
225.00	4415	**PROCESSOR CARD FOR CUSTOM I/O (4040)** Includes 4040 Microprocessor, clock, external and power-on reset, and PROM capacity to 2048 words. Contains an 80 character data RAM with capacity to 640 characters. I/O bus for custom interfaces or remote I/O. Has up to 16 MOS output lines, interrupt, and stop lines. Uses D256 PROM (1702A or equivalent). Does not include PROM. Requires +5, -10VDC.
225.00	4416	**PROCESSOR CARD FOR CMOS I/O (4040)** Includes 4040 Microprocessor, clock, external and power-on reset, and PROM capacity to 2048 words. Contains an 80 character data RAM with capacity to 640 characters. Has up to 16 MOS output lines, interrupt, and stop lines. I/O bus for custom CMOS interfaces, remote I/O or the 4434 and 4433 input and output cards. Uses D256 PROM (1702A or equivalent). Does not include PROM. For high noise, industrial control environments. Requires +15VDC.
225.00	4417	**PROCESSOR CARD (4040)** Includes 4040 Microprocessor, clock, external and power-on reset, and an 80 character data RAM. Has mixed capacity to 4096 ROM instructions by using a 4001 masked ROM (with I/O lines) or 1280 RAM data characters. Has up to 8 MOS output lines, interrupt, and stop lines. Requires +5, -10VDC.

MEMORY CARDS

$110.00	4111-2	**RAM EXPANDER CARD FOR 4111 PROCESSOR CARD** Capacity to 640 RAM data characters. Uses 4002 RAM. +5, -10VDC. Does not include RAM.
115.00	4112	**PROM CARD** Plug in PROM capacity to 2560 words of D256 PROMs (1702A or equivalent). Requires +5, -10VDC. Does not include PROM.
85.00	4112-2	**PROM EXPANDER CARD** Expands PROM capacity to 4096 words when used with 4112 ROM card. Uses D256 PROMs 1702A or equivalent). Requires +5, -10VDC. Does not include PROMs.
115.00	4418	**PROM EXPANDER CARD** Plug in PROM capacity to 4096 words. Uses D256 PROMs (1702A or equivalent). Requires +5VDC. Does not include PROMs.
195.00	4428	**PROM CARD FOR 4416** Plug in PROM capacity to 3840 words for CMOS I/O systems. Interfaces to 4416 Processor card. Uses D256 (1702A or equivalent). Ribbon cable interconnect. Requires +15VDC. Does not include PROM.

4-Bit Wired Backplane Card Components (continued)

I/O CARDS

$105.00	4113	**TTL I/O PORT CARD** Provides 32 lines, field selectable in groups of 4 as input gates or output latches. Interfaces with 4115, 4415, 4417 or with other TTL input or output ports. Requires +5VDC.
85.00	4114-2	**TTL INPUT EXPANDER WITH TRI-STATE OUTPUTS (Digital Multiplexer)** Multiplexes 32 digital input lines to four lines controlled by TTL or MOS outputs. Allows direct output "OR"ing of two or more cards. Requires +5VDC.
125.00	4433	**BUFFERED CMOS OUTPUT CARD FOR 4416** Contains 32 CMOS output latches. Each CMOS output can drive two TTL loads at +5 volts. Can drive over 20 CMOS loads. Operating supply voltage may range from +5VDC to +15VDC. TTL compatible at +5VDC.
120.00	4434	**3-STATE CMOS INPUT CARD FOR 4416** Contains 32 CMOS input gates multiplexed to 4 outputs (3-state). Supply voltage may range from +5 to +15VDC. TTL compatible at +5VDC. Allows direct output "OR"ing of two or more cards.
145.00	4434-1	**3-STATE CMOS INPUT CARD FOR 4416** Contains 32 CMOS input gates multiplexed to 4 outputs (3-state). Each input has 3mA pullup to supply an LED visible from the card edge. Allows direct output "OR"ing of two or more cards. Requires +15VDC.

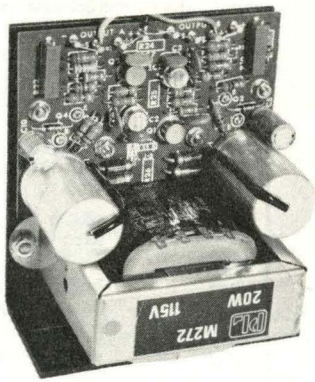
CARD RACKS

$115.00	CR-5A	**1/4 WIDTH CARD RACK** Includes seven CW56 connectors and power busing.
125.00	CR-5B	**1/4 WIDTH CARD RACK** Same as CR-5A but with split power busing for TTY card in slot 7.
155.00	CR-10A	**1/2 WIDTH CARD RACK** Includes sixteen CW56 connectors and power busing.
175.00	CR-19A	**FULL WIDTH CARD RACK** Full 19 inch rack with sixteen CW56 connectors and power busing. Field expandable to 32 connectors. For additional connectors order CW-56.

POWER SUPPLIES

Pro-Log provides several open-frame power supply modules as convenience items. Customers must add their own AC wiring and fusing. Pro-Log's cards and systems have no special tolerance or noise requirements for power supplies so that customers may use almost any set of supplies which provide the specified voltages and currents.

$ 95.00	M272	**DUAL DC SUPPLY** Provides +5VDC @ 2A and -10VDC @ 1A. For PLS-400 systems.
165.00	M273	**DUAL DC SUPPLY** Provides +5VDC @ 6A and -10VDC @ 2A. For MPS-800 systems and large PLS-400 systems.
80.00	M274	**DC SUPPLY** Provides +12VDC @ 1A. Used with M273 in 8080A systems.
85.00	M275	**DC SUPPLY** Provides +15VDC @ 1.5A. Used with 4-bit CMOS systems.
100.00	M276	**DUAL DC SUPPLY** Provides +12V @ 1A and -5VDC @ 2A for 8080A systems.
85.00	M277	**DC POWER SUPPLY** Provides +5V @ 3A used with PLS cards requiring only +5V DC.



M272 Dual DC Supply

Courses and Literature

Microprocessor Design Courses

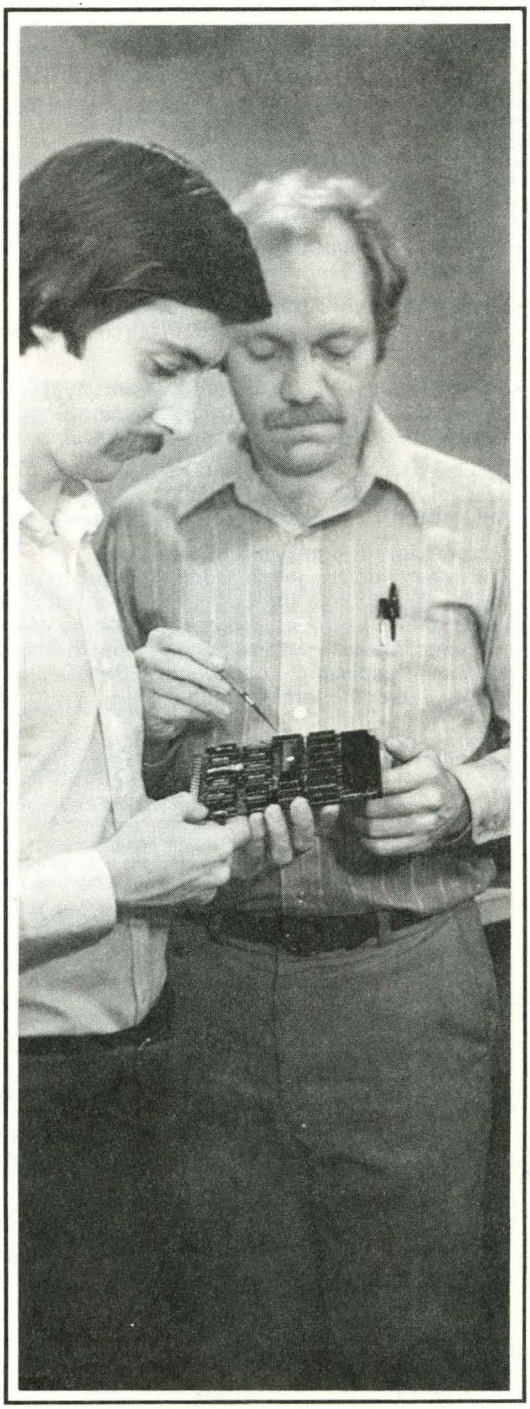
Pro-Log's Course Teaches You:

- How a microprocessor can be used as a universal logic element for solving your control problems
- The fundamentals of microprocessor operation, programming, and I/O integration
- To design and properly document software for use in manufacturing and field service
- How to connect the microprocessor to external loads such as lights, switches, relays, and displays
- How to troubleshoot hardware and software problems with an easy-to-use clip-on tester
- Independence from computer-aided software design

Pro-Log's Design Course teaches the professional engineer how to handle the microprocessor in his design, by using proven engineering design and documentation techniques. Our course offers you an intensive, hands-on learning experience with the popular 8085 and Z80 Microprocessors. Course material is also applicable to the 8080 user. Familiarity with digital logic and binary arithmetic is all you need; no previous microprocessor experience is required. The course begins with fundamentals and leads to the control system level. Even if you have had some experience with microprocessors, you will find that this course is of great value to you.

Classes are held from 8:00 to 5:00 each day (concluding at 12:00 noon on the final day). Alternating lecture and lab sessions allow students to experiment with the concepts and methods they are learning. Lab equipment includes complete PS-1 and PS-3 Prototyping Systems (p.44). Labs are open with instructors available until 10:00 p.m. every evening.

Our approach is engineer-oriented, and has been taught to more than 4000 engineers. This design technique was developed by Matt Biewer, vice president of engineering, and is based on common engineering methods for design and documentation. The engineering approach is far easier to work with than the data processing method, and we use it exclusively in all of our own designs. Instead of using complex and expensive computer-aided design tools such as assemblers, compilers, and high level languages; the engineering method incorporates block diagrams, flowcharts, schematics, pencil, paper, tape, and scissors.



Microprocessor Design Courses (continued)

The Following Topics Are Covered In The Class:

- **Basic Review**
  Digital Logic Elements, Binary and Hexadecimal Numbers
- **Basic μP System Organization and Operation**
  CPU, Memory (PROM and RAM), I/O, and the Basic Instruction Cycle
- **STD BUS Organization**
  Decoding and Modularity
- **Fundamental μP Architecture (8085 and Z80)**
  ALU, Accumulator, Registers, Program Counter, and Instruction Register
- **Fundamental μP Operations (8085 and Z80)**
  Input, Output, Logic, Decisions, Timing Loops, Counting, Subroutine Jumps, and Interrupts
- **μP Instruction Set (8085 and Z80)**
  Use of STD Assembly Language Mnemonics, Instruction Timing, and Execution Characteristics
- **Introductory Programming Techniques**
  Flowchart Fundamentals, Modular Programming, Using Subroutines, the Engineering Approach to Programming, Direct and Indirect Addressing, Lookup Tables, Input Scanning, Output Strobing Output Multiplexing, Loop Control, Debouncing, Serial I/O, and Interrupt Handling.

NC

MICROPROCESSOR AND STD BUS SEMINAR

Our seminar explains how to:
- Use microprocessors as "black box" logic
- Design with microprocessors using the same approach used to design hard-wired logic
- Evaluate the important business factors involved in selecting a microprocessor
- Document microprocessor-based systems for manufacturing and field service

Half-day seminar focuses on the advantages and pitfalls of designing with microprocessors. Geared to the corporate decision maker, engineering managers, and anyone looking for a cost-effective approach to designing with microprocessors. The seminar is conducted throughout the country. Contact Pro-Log or your local representative (p. 64) for a seminar schedule.

$400.00 **DC-4**

DESIGN COURSE (Regional Locations only)

Three and one half day, hands-on lab and lecture course. Includes lunches, course and application notes, *Microprocessor User's Guide*, *PROM User's Guide*, *STD Technical Manual*, programming and design aids. Contact Pro-Log or your local representative (p. 64) for a schedule.

400.00 **DC-5**

DESIGN COURSE (Monterey Location only)

Four and one-half day, hands-on lab and lecture course. Includes lunches, course and application notes, *Microprocessor User's Guide*, *PROM User's Guide*, *STD Technical Manual*, programming and design aids. Time allowed for Pro-Log plant tour and interface with applications engineers. Contact Pro-Log or your local representative (p. 64) for a schedule.

Monterey Design Course Schedule 1980

February 4 - 8	August 11 - 15	December 8 - 12
May 12 - 16	October 13 - 17	

Literature

$7.50 | **DG-3**

DESIGNER'S GUIDE TO PROGRAMMED LOGIC (8080A)

The *Designer's Guide* provides the engineer with a complete description of the microprocessor, as well as the actual application of the microprocessor's capabilities. The guide implements graphic aids such as block diagrams, flowcharts, and program forms to illustrate and explain the concepts being discussed. Time Delay, Instruction Timing, Microprocessor Instructions, and other reference materials have been organized into convenient and easy-to-use tables that give the engineer the necessary tools to design his system. The *Designer's Guide* was initially conceived as an aid in educating the engineer in microprocessor technology and design. It now serves as a much used reference book for anyone utilizing the microprocessor in his design.

INCLUDES:
- Full Instruction Descriptions
- Hexadecimal Notation
- System Organization (data flow, memory organization, addressing notes)
- Timing

2.00 | **MUG**

MICROPROCESSOR USER'S GUIDE

An 80 page booklet about designing with microprocessors. Includes information about the engineering design approach, microprocessor architectures, single-chip microprocessors, a proposal for standard mnemonics; and programming aids for the 8080, 8085, Z80, and 6800 Microprocessors and the STD BUS. Articles are written by professional engineers from the perspective of the engineering culture. (One free copy when requested on company letterhead or by completing the card on the back cover.)

2.00 | **PUG**

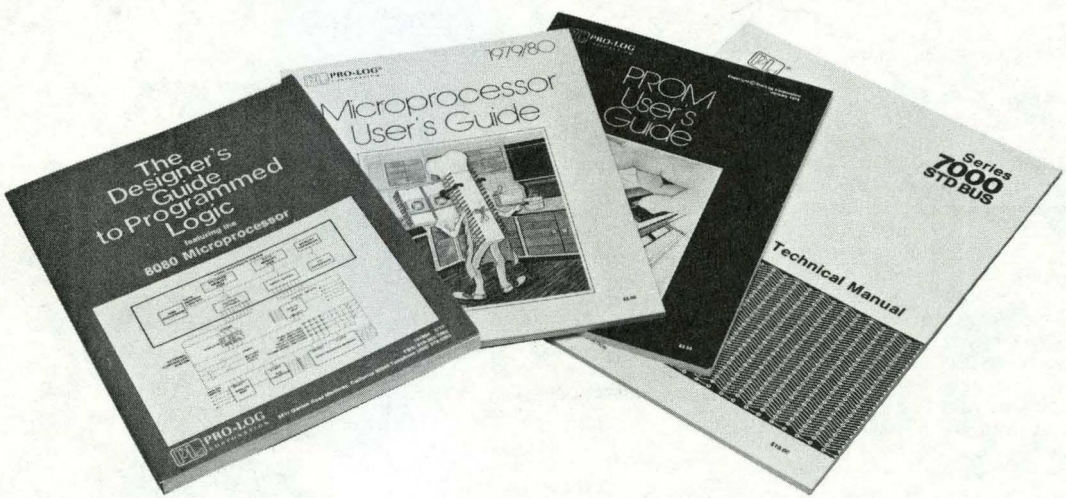
PROM USER'S GUIDE

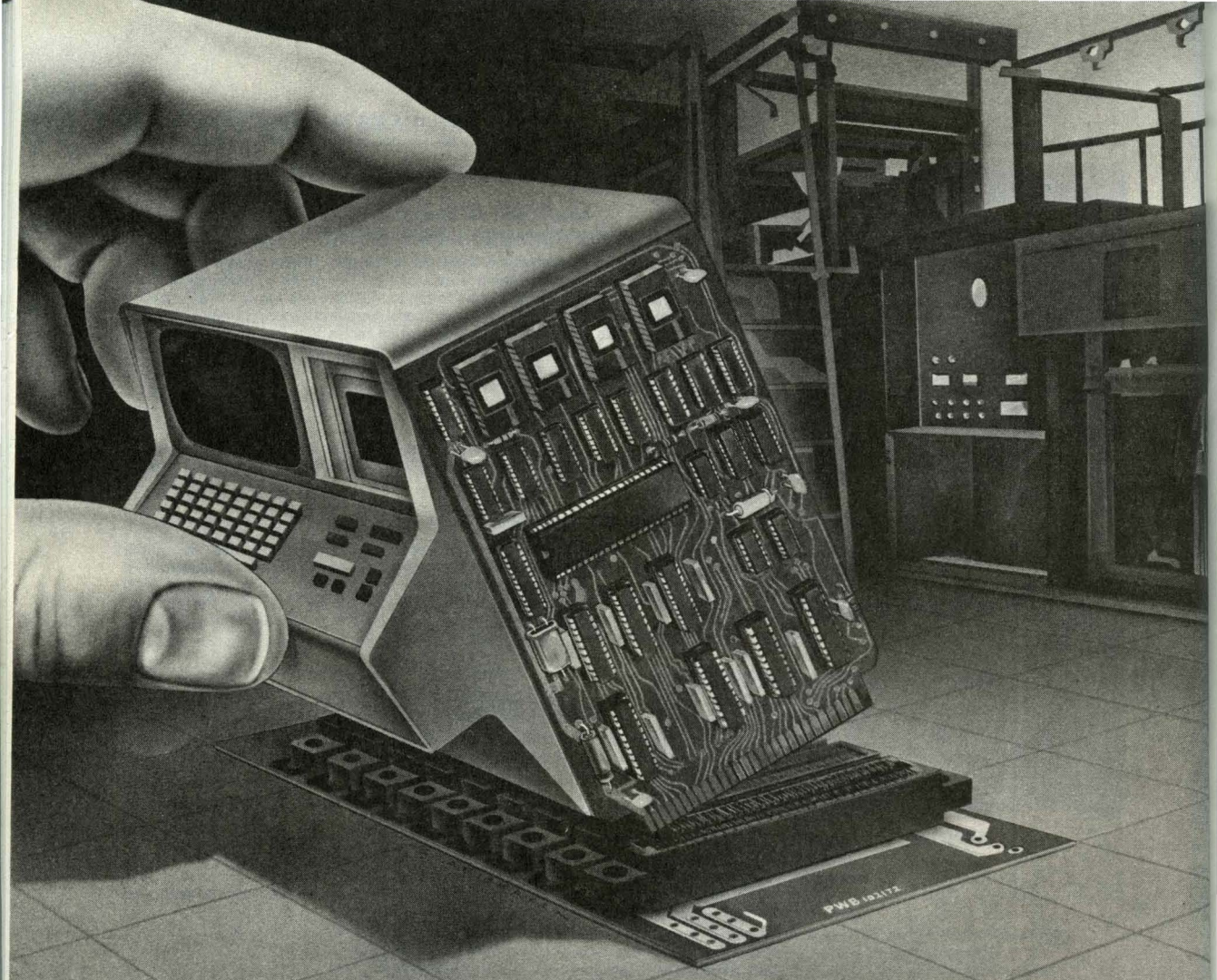
A 96 page booklet on PROMs and the Series 90 PROM Programmers. Includes such articles as, "An Introduction to PROM Technology" and "How to Use the 1702A MOS PROM Reliably." It also includes PROM cross-reference tables and complete data sheets on the Pro-Log PROM Programmers, Options, and Personality Modules. (One free copy when requested on company letterhead or by completing the card on the back cover.)

10.00 | **STD MANUAL**

SERIES 7000 STD BUS TECHNICAL MANUAL

The manual defines the standards constituting the STD BUS and the parameters common to the Series 7000 Cards. The Series 7000 Data Sheets are included to illustrate the compatibility of the Series 7000 Cards and provide design guidelines and application information.
The *Series 7000 STD BUS Technical Manual* is aimed at the professional engineer who contemplates using the STD BUS in his company's products.





Microprocessor design can be simple.

With our new Series 7000 cards. Designed, manufactured, and tested for rugged industrial use.

Our modular Series 7000 cards can handle anything from data processing to instrumentation or industrial control. Take your choice of Z-80, 6800 and 8085 CPU cards. We also have a variety of other cards including memory, input/output, industrial control (like TRIAC outputs and AC/DC opto-isolated inputs), and communications interfaces (such as RS-232 and TTY). We also have card racks and compatible power supplies. Because our Series 7000 cards conform to the STD BUS, all of our cards work together. Just plug them into our standard bused motherboard. No messy, inconvenient backplane wiring.

Second-source designed in at every level.

We use all second-sourced parts, parts which have been proven through years of use. Buy 250 of any one card, and we give you free nonexclusive manufacturing rights, photo-ready artwork, a parts list and assembly prints. So you can build your own cards relying on us as your second-source.

Reliability backed by a 1-year parts and labor warranty.

We test every card before and after power-on burn-in. If something does go wrong, our modular, plug-in concept means easy service. Just swap cards.

Our courses and literature show you how easy microprocessor design can be.

Write for a copy of our STD BUS Technical Manual, our Microprocessor User's Guide, and for a schedule of our free half-day microprocessor economics seminars and our microprocessor design courses. Pro-Log Corporation, 2411 Garden Road, Monterey, CA 93940, phone (408) 372-4593.

PRO-LOG CORPORATION

Index and Quantity Pricing

The following prices for cards, systems, and support items are listed in numeric and alphanumeric order. Quantity pricing is shown for most items and offers substantial discounts over unit prices. Other discounts do not apply to items purchased at the quantity discount price. A dash in the quantity price column indicates that a factory quote is required.

All pricing is given for reference purposes only. Pro-Log reserves the right to change prices without notice. Actual pricing is based on the price in effect on the date an order is placed or quoted. Quantity pricing is determined separately on each card model or multi-card order. Prices for quantities of 1-9 are automatically subject to dollar volume discounts. These dollar volume discounts do not apply to other quantity prices. Price and delivery for quantities over 250 units requires a special factory quotation.

*Customer may schedule delivery over a 12 month period. Minimum shipment is 25 units and requires 8 weeks lead time for initial delivery and changes in schedule.

Pricing of PROM Programmers, Personality Modules, and options are on pages 3 - 24.

MODEL	TITLE	PAGE	PER QUANTITY SHIPPED			*
			1-9	10-24	25-99	100-249
4002-1	RAM REGISTER DEVICE	43	12.00	10.00	9.00	8.00
4002-2	RAM REGISTER DEVICE	43	12.00	10.00	9.00	8.00
4111	PROCESSOR CARD (4004)	51	160.00	140.00	125.00	110.00
4111-2	RAM EXPANDER CARD FOR 4111	51	110.00	95.00	85.00	75.00
4112	PROM CARD	51	115.00	100.00	90.00	82.00
4112-2	PROM EXPANDER CARD	51	85.00	75.00	67.00	60.00
4113	TTL I/O PORT CARD (4-BIT)	52	105.00	95.00	85.00	75.00
4114-2	3-STATE TTL INPUT EXPANDER (4-BIT)	52	85.00	75.00	67.00	60.00
4115	PROCESSOR CARD FOR CUSTOM I/O	51	235.00	210.00	190.00	160.00
4122	PROCESSOR CARD FOR REMOTE I/O (4004)		260.00	230.00	210.00	190.00
4125	PROM SIMULATOR CARD		110.00	87.00	70.00	58.00
4415	PROCESSOR CARD FOR CUSTOM I/O (4040)	51	225.00	190.00	170.00	145.00
4416	PROCESSOR CARD FOR CMOS I/O (4040)	51	225.00	200.00	185.00	170.00
4417	PROCESSOR CARD (4040)	51	225.00	190.00	170.00	150.00
4418	PROM CARD	51	115.00	105.00	95.00	85.00
4428	PROM CARD	51	195.00	175.00	160.00	145.00
4433	BUFFERED CMOS OUTPUT CARD (4-BIT)	52	125.00	110.00	100.00	90.00
4434	3-STATE CMOS INPUT CARD (4-BIT)	52	120.00	105.00	95.00	85.00
4434-1	3-STATE CMOS INPUT CARD WITH LEDs	52	145.00	130.00	115.00	105.00
7101	1/4 RACK MOTHERBOARD	40	120.00	105.00	95.00	88.00
7101-1	1/4 RACK MOTHERBOARD	40	95.00	85.00	79.00	72.00
7101-2	1/4 RACK MOTHERBOARD	40	110.00	95.00	87.00	80.00
7102	1/2 RACK MOTHERBOARD	40	150.00	130.00	120.00	110.00
7102-1	1/2 RACK MOTHERBOARD	40	125.00	110.00	102.00	95.00
7102-2	1/2 RACK MOTHERBOARD	40	140.00	120.00	110.00	102.00

INDEX AND QUANTITY PRICING

MODEL	TITLE	PAGE	PER QUANTITY SHIPPED			*
			1-9	10-24	25-99	100-249
7105-1	4 SLOT MOTHERBOARD	40	80.00	75.00	72.00	68.00
7105-2	4 SLOT MOTHERBOARD	40	95.00	85.00	80.00	75.00
7301	RS-232-C AND TTY DRIV/REC	38	175.00	145.00	130.00	115.00
7303	KEYBOARD AND DISPLAY	38	295.00	265.00	245.00	225.00
7501	MEDIUM POWER DC OUTPUT	36	175.00	150.00	135.00	120.00
7502	SPST RELAY OUTPUT	36	195.00	165.00	150.00	135.00
7503	OPTOISOLATED INPUT (LV)	37	280.00	245.00	215.00	185.00
7504-1	TRIAC OUTPUT CARD (2A)	37	295.00	260.00	230.00	195.00
7506	OPTOISOLATED INPUT (HV)	37	280.00	245.00	215.00	185.00
7507	INDUSTRIAL I/O INTERFACE	37	195.00	165.00	150.00	135.00
7601	TTL I/O CARD	36	165.00	140.00	125.00	110.00
7602	TTL OUTPUT CARD	36	130.00	115.00	98.00	87.00
7603	TTL INPUT CARD	36	135.00	120.00	105.00	90.00
7604	UNIVERSAL I/O	36	180.00	155.00	140.00	125.00
7701	16K BYTE STATIC RAM CARD	35	150.00	130.00	115.00	105.00
7702	16K BYTE PROM CARD FOR 2716	35	110.00	95.00	85.00	75.00
7801	PROCESSOR CARD (8085)	35	290.00	245.00	215.00	185.00
7802	6800 PROCESSOR	35	360.00	305.00	260.00	210.00
7803	PROCESSOR CARD (Z80)	35	270.00	230.00	200.00	175.00
7901	EXTENDER CARD	38	35.00	30.00	27.00	24.00
7902	UTILITY DIP CARD	38	30.00	25.00	20.00	17.00
7903	GENERAL UTILITY CARD	38	30.00	25.00	20.00	17.00
7904	DECODED UTILITY CARD (KLUGE)	39	80.00	70.00	65.00	55.00
7907	I/O DISTRIBUTOR REMOTE	39	135.00	120.00	105.00	90.00
7908	I/O DISTRIBUTOR MASTER	39	135.00	120.00	105.00	90.00
7920	IN-RACK POWER SUPPLY	39	320.00	—	—	—
7921	IN-RACK POWER SUPPLY	39	450.00	—	—	—
8111	PROCESSOR CARD (8008)	49	330.00	270.00	—	—
8112-1	PROM/RAM CARD (6800)	49	95.00	85.00	75.00	70.00
8113	I/O CARD (8008)	49	95.00	85.00	—	—
8113-1	I/O CARD (8080A, 6800)	49	105.00	95.00	85.00	75.00
8114	TTL INPUT GATE CARD, 8-BIT	49	70.00	63.00	58.00	53.00
8115	TTL OUTPUT LATCH CARD (8008)	49	95.00	85.00	75.00	70.00
8115-1	TTL OUTPUT LATCH CARD (8080A, 6800)	49	85.00	75.00	63.00	55.00
8116	PROM CARD (8-BIT)	49	85.00	75.00	63.00	55.00
8117	RAM CARD (8-BIT)	49	115.00	100.00	87.00	75.00

MODEL	TITLE	PAGE	PER QUANTITY SHIPPED 1-9	10-24	25-99	* 100-249
8118	8-LEVEL PRIORITY INTERRUPT CARD (8008)	49	125.00	105.00	90.00	75.00
8118-1	8-LEVEL PRIORITY INTERRUPT CARD (8080)	49	125.00	105.00	90.00	75.00
8119	RAM CARD	49	130.00	115.00	100.00	90.00
8120	PROM/RAM CARD	49	130.00	115.00	100.00	90.00
8122	CMOS BATTERY BACKUP RAM CARD (6800)	49	180.00	160.00	140.00	130.00
8122-2	8122 WITH 2K CMOS RAM	49	350.00	310.00	290.00	270.00
8122-4	8122 WITH 2K CMOS RAM	49	475.00	420.00	400.00	375.00
8122A	CMOS BATTERY BACKUP RAM CARD (8080)	49	180.00	160.00	140.00	130.00
8122A-2	8122A WITH 2K CMOS RAM	49	350.00	310.00	290.00	270.00
8122A-4	8122A WITH 4K CMOS RAM	49	475.00	420.00	400.00	375.00
8401-2	DRIVER OUTPUT CARD	50	120.00	105.00	95.00	85.00
8402-2	RELAY OUTPUT CARD	50	150.00	130.00	115.00	105.00
8403	OPTOISOLATOR AC/DC INPUT CARD	50	225.00	200.00	185.00	170.00
8404-4	TRIAC OUTPUT CARD	50	240.00	195.00	—	—
8405	TERMINAL STRIP INTERFACE CARD	50	60.00	50.00	45.00	40.00
8406	SERIAL TTY INTERFACE CARD	50	85.00	75.00	65.00	60.00
8407	SERIAL TTY AND RS-232-C INTERFACE CARD	50	140.00	120.00	110.00	95.00
8409	RECEIVER, DRIVER CARD	50	140.00	120.00	110.00	95.00
8419	DRIVER OUTPUT CARD	50	140.00	120.00	110.00	95.00
8420	TRIAC OUTPUT CARD	50	290.00	260.00	230.00	210.00
8611	PROCESSOR CARD (6800)	49	225.00	195.00	185.00	160.00
8811A	PROCESSOR CARD (8080A)	49	210.00	185.00	175.00	150.00
8812	PROM/RAM CARD (8080A)	49	125.00	105.00	95.00	85.00
8821	PROCESSOR CARD (8080A)	49	225.00	195.00	180.00	165.00
CB-18	BARRIER STRIP CONNECTOR	42	25.00	22.00	20.00	18.00
CS-18	SOLDER TAIL CONNECTOR	42	15.00	13.50	12.50	11.50
CF-1	PROGRAM ASSEMBLY FORM	43	5.00	4.00	3.50	3.00
CR4A-1	STD BUSED 1/8 RACK	41	120.00	110.00	100.00	91.00
CR4A-2	STD BUSED 1/8 RACK	41	135.00	120.00	108.00	99.00
CR-5A	1/4 RACK CARD CAGE	52	115.00	100.00	95.00	90.00
CR-5B	1/4 RACK CARD CAGE	52	125.00	110.00	105.00	100.00
CR8	STD BUSED 1/4 RACK	41	195.00	170.00	160.00	150.00
CR8A-1	STD BUSED 1/4 RACK	41	150.00	135.00	122.00	108.00
CR8A-2	STD BUSED 1/4 RACK	41	165.00	145.00	130.00	115.00
CR16	STD BUSED 1/2 RACK	41	260.00	230.00	210.00	195.00
CR16A-1	STD BUSED 1/2 RACK	41	195.00	175.00	162.00	150.00

INDEX AND QUANTITY PRICING

MODEL	TITLE	PAGE	PER QUANTITY SHIPPED			*
			1-9	10-24	25-99	100-249
CR16A-2	STD BUSED 1/2 RACK	41	210.00	185.00	170.00	158.00
CR19A	FULL WIDTH CARD RACK	52	175.00	—	—	—
CRS-81	8080A/1702A CARD RACK SYSTEM	50	660.00	560.00	525.00	495.00
CRS-81-1	8080A/1702A CARD RACK SYSTEM (FULL RACK)	50	660.00	560.00	525.00	495.00
CRS-82	8080A/2708 CARD RACK SYSTEM	50	680.00	580.00	545.00	515.00
CRS-82-1	8080A/2708 CARD RACK SYSTEM (FULL RACK)	50	625.00	560.00	500.00	450.00
CP9S	POWER SUPPLY CABLE, SOCKET	41	15.00	13.50	12.50	—
CP9P	POWER SUPPLY CABLE, PLUG	41	15.00	13.50	12.50	—
CT-56	TRANSITION CONNECTOR	42	15.00	13.00	11.00	9.50
CW-56	WIRE WRAP CONNECTOR	42	6.00	5.00	4.50	4.00
D256	UV ERASABLE PROM (1702A)	43	13.00	11.50	10.50	9.00
D1002	RAM (8 EACH 2102 TYPE)	43	25.00	22.00	19.00	16.00
D1003	CMOS RAM (8 EACH 6508 TYPE)	43	75.00	63.00	55.00	50.00
D1004	RAM (2 EACH 2114 TYPE)	43	30.00	27.00	24.00	22.00
D1024	UV ERASABLE PROM (2708)	43	20.00	17.00	15.00	13.00
D2001*	UV ERASABLE PROM (TMS 2716)	43	55.00*	—	—	—
D2002*	UV ERASABLE PROM (2716)	43	75.00*	60.00	52.00	45.00
DC4/5	DESIGN COURSE	54	400.00	—	—	—
DG3	DESIGNER'S GUIDE FOR 8080	55	7.50	5.00	4.00	3.00
M272	DUAL DC SUPPLY +5 and -10VDC	52	95.00	85.00	80.00	77.00
M273	DUAL DC SUPPLY +5 and -10VDC	52	165.00	145.00	140.00	135.00
M274	DC SUPPLY +12VDC	52	80.00	72.00	70.00	68.00
M275	DC SUPPLY +15VDC	52	85.00	77.00	75.00	72.00
M276	DUAL DC SUPPLY +12 and -5VDC	52	100.00	90.00	85.00	80.00
M277	DC SUPPLY +5VDC	52	85.00	77.00	75.00	72.00
M280	STD POWER SUPPLY	41	165.00	145.00	140.00	135.00
M281	STD POWER SUPPLY	41	225.00	200.00	—	—
M422	SYSTEM ANALYZER (4040)	27	850.00	—	—	—
M422A	SYSTEM ANALYZER (4004)	27	800.00	—	—	—
M821	SYSTEM ANALYZER (8008)		900.00	—	—	—
M822A	SYSTEM ANALYZER (8080)	27	850.00	750.00	—	—
M823	SYSTEM ANALYZER (6800)	27	900.00	—	—	—
M824	Z80 SYSTEM ANALYZER	29	1590.00	1400.00	—	—
M825	8085(A) SYSTEM ANALYZER	29	1590.00	1400.00	—	—
M826	6800 SYSTEM ANALYZER	29	1750.00	1550.00	—	—
MP-1	MONITOR PROGRAM, 7801	43	200.00	—	—	—

*Consult Factory for current pricing.

MODEL	TITLE	PAGE	PER QUANTITY SHIPPED			*
			1-9	10-24	25-99	100-249
MP-3	MONITOR PROGRAM, 7803	43	200.00	—	—	—
P560	CARD EXTENDER (See 7901)	38	35.00	30.00	27.00	24.00
P561	UTILITY DIP CARD (See 7902)	38	30.00	25.00	20.00	17.00
P562	GENERAL UTILITY CARD (See 7903)	38	30.00	25.00	20.00	17.00
PIN-114	PARALLEL INTERFACE OPTION TO PROTOTYPING SYSTEM	45	250.00	—	—	—
PLS-401	ONE CARD 4004 SYSTEM	51	195.00	165.00	140.00	125.00
PLS-411	ONE CARD 4004 SYSTEM	51	235.00	200.00	175.00	155.00
PLS-441	ONE CARD 4040 SYSTEM	51	215.00	180.00	160.00	140.00
PLS-858	ONE CARD 8085 SYSTEM	47	265.00	225.00	195.00	170.00
PLS-868	ONE CARD 6800 SYSTEM	47	260.00	220.00	190.00	165.00
PLS-881	ONE CARD 8080A SYSTEM	47	220.00	185.00	160.00	145.00
PLS-888	ONE CARD 8080A SYSTEM	47	240.00	210.00	180.00	160.00
PLS-888A	ONE CARD 8080A SYSTEM	47	260.00	220.00	190.00	165.00
PLS-898	ONE CARD Z80 SYSTEM	47	260.00	220.00	190.00	165.00
PS-1	PROTOTYPING SYSTEM, STD 8085	45	4995.00	—	—	—
PS-3	PROTOTYPING SYSTEM, STD Z80	45	4995.00	—	—	—
RC-16-6	RIBBON CABLE INTERCONNECT		15.00	—	—	—
RC-16-7	RIBBON CABLE INTERCONNECT		50.00	—	—	—
RC-50-6	RIBBON CABLE INTERCONNECT 7507/M900	42	35.00	—	—	—
SS-10	8080A-BASED PROTOTYPING SYSTEM (1709A)		3750.00	—	—	—
SS-11	8080A-BASED PROTOTYPING SYSTEM (1702A)		3950.00	—	—	—
SS-12	8080A-BASED PROTOTYPING SYSTEM (2716)		3950.00	—	—	—
SS-13	8080A BASED PROTOTYPING SYSTEM (2716)		3750.00	—	—	—
STD MANUAL	SERIES 7000/STD BUS TECHNICAL MANUAL	55	10.00	9.00	8.00	6.00
SZ-24	ZERO INSERTION FORCE SOCKET	42	15.00	12.00	—	—
TTY-1X	TTY OPTION FOR 8080A STARTER SETS		400.00	—	—	—
WK-1	WIRE WRAP KIT	42	50.00	—	—	—

General Information

Placing An Order

Orders may be placed through your local PRO-LOG Representative or directly with the factory. Telephone orders are accepted pending credit verification and confirming paperwork. When telephoning an order to PRO-LOG ask for the Order Desk. We have specially trained personnel to handle your order promptly.

Product Availability

PRO-LOG's normal shipment time is 2-4 weeks ARO on most products. Should you require faster delivery, PRO-LOG will try to accommodate you. However, there will be a $50 expediting charge on any order requiring less than 2 weeks delivery.

If You Should Need Service Or Technical Support

Contact your local Representative or call PRO-LOG direct and ask for the Customer Service Desk. If it is necessary to return some equipment to PRO-LOG for repair, the Service Desk will provide you with a return number and the instructions which will expedite handling of your equipment by PRO-LOG.

Functions and Limitations of PRO-LOG Representatives

PRO-LOG is represented domestically by a network of sales representatives (see page 64). These people are ready to answer most of your questions about PRO-LOG and its products and can assist you in getting the support and information you need to solve your problems. Our representatives are not authorized to quote prices other than those listed in our published Price List, nor can they commit PRO-LOG to any contractual arrangements. Such pricing and arrangements can be made only in writing by an officer of PRO-LOG Corporation.

Special Configurations

PRO-LOG is a manufacturer of standard products and as such does not normally consider special purpose designs or hardware configurations. However, PRO-LOG may be willing to quote specialized product configurations, specialized packaging and additional products, services and documentation as part of an OEM agreement.

Pricing

Dollar Volume Discount Policy

PRO-LOG grants its customers significant discounts from unit list price based on the total dollar volume of orders placed for its products and paid for promptly. Late payment penalties include loss of the entire discount on the related order. The Volume Discount Policy has been established by PRO-LOG and is subject to change without notice.

BASE PRICE

Under this policy, prices are based on the published Price List in effect at the time a particular order is placed.

NON-DISCOUNTABLE ITEMS

Some items are shown on PRO-LOG's Price List as non-discountable or as quantity pricing. These items are not subject to the "Dollar Volume Discount", but will be added to your "Accumulated Dollar Volume" for future purchases.

DISCOUNT

The discount is determined from the Volume Discount Schedule shown below. The only requirement to continue your achieved Discount Level is to purchase a minimum of $3,000 in products during any 12 month period.

Accumulated Dollar Value	Discount
$ 0 - $9,999	None
10,000 - 24,999	5%
25,000 - UP	10%

DISCOUNT CALCULATION

PRO-LOG calculates the discount for an order by adding the list price of that order to the invoiced or invoiceable amounts of all previous orders placed since the starting date of the agreement. (Except for those invoices subjected to the late payment penalty.) The total figure is "Accumulated Dollar Volume." The applicable discount rate will be determined from the table on the previous page. The discount is applied only to the order in question and is not retroactive to previous orders.

LATE PAYMENT PENALTIES

An invoice not paid within 60 days of the invoice date is "overdue". The following penalties automatically occur on an overdue invoice:

1. All discounts on that invoice are voided. A new invoice for the amount of the discounts will be issued. The original invoice remains due and payable in full.
2. The amount of an overdue invoice shall not be included in any later computation of "Accumulated Dollar Volume".
3. Future orders from the customer will be accepted only on a C.O.D. or cash-with-order basis until credit is re-established to PRO-LOG's satisfaction.

International Ordering Information

We require an irrevocable letter of credit for all sales not handled by one of our international distributors. Our normal delivery time on initial orders is four to six weeks after receipt of order, pending completion of export licensing.

In order for us to obtain an export license, we must have a Letter of Credit, a Purchase Order number, and the necessary documents required for importation (i.e. import certificate). After receiving these documents, we can then apply for the export license, which takes approximately three to four weeks to process. ALL SALES ARE F.O.B. MONTEREY, CALIFORNIA.

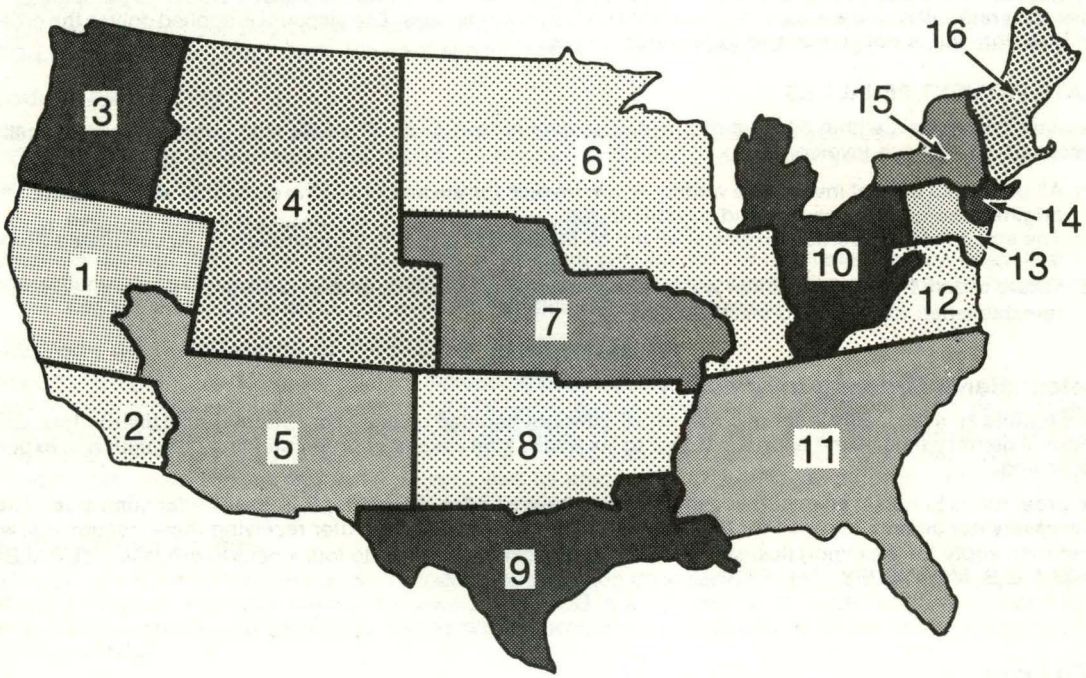
Terms

1. 2%-10 Days, Net 30 Days; F.O.B. Monterey, California.
2. Cancellation charges on orders for standard products will be charged at the rate of 10 percent of the amount of the purchase order covering standard products. This will apply in all instances where orders for standard products are cancelled after PRO-LOG acceptance of purchase order.
3. Minimum Order: $100.00; all orders subject to credit verification.
4. Discounts voided on invoices not paid in 60 days.
5. International orders must be preceded by an irrevocable Letter of Credit.

Warranty

WARRANTY: Seller warrants that the articles furnished hereunder are free from defects in material and workmanship and perform to applicable, published PRO-LOG specifications for one year from date of shipment (two years for M900, M900B, M910 and M920 Control Units). This warranty is in lieu of any other warranty expressed or implied. In no event will Seller be liable for special or consequential damages as a result of any alleged breach of this warranty provision. The liability of Seller hereunder shall be limited to replacing or repairing, at its option, any defective units which are returned F.O.B. Seller's plant. Equipment or parts which have been subject to abuse, misuse, accident, alteration, neglect, unauthorized repair or installation are not covered by warranty. Seller shall have the right of final determination as to the existence and cause of defect. As to items repaired or replaced, the warranty shall continue in effect for the remainder of the warranty period, or for ninety (90) days following date of shipment by Seller or the repaired or replaced part whichever period is longer. No liability is assumed for expendable items such as lamps and fuses. No warranty is made with respect to custom equipment or products produced, to Buyer's specifications except as specifically stated in writing by Seller and contained in the contract.

Sales Representatives



1. **MANCO**
   Mt. View, CA (415) 964-7281

2. **ADVANCED DIGITAL GROUP**
   Los Angeles, CA (714) 892-2583
   (213) 341-6998

3. **CASCADE MARKETING, INC.**
   Seattle, WA (206) 282-9266
   Portland, OR (503) 641-9266

4. **EMCAR MARKETING**
   Denver, CO (303) 424-0108
   Sandy, UT (801) 943-1240

5. **TREMBLY ASSOCIATES**
   Albuquerque, NM (505) 266-8616
   Phoenix, AZ (602) 967-2058
   Las Vegas, NV (702) 739-6816

6. **SYSTEM ENGINEERING ASSOCIATES**
   Indianapolis, IN (317) 846-2591
   Chicago, IL (312) 255-4820
   Milwaukee, WI (414) 547-6637
   Minneapolis, MN (612) 425-4455

7. **VERTEC ASSOCIATES, INC.**
   St. Louis, MO (314) 394-6242

8. **WEST & ASSOCIATES**
   Dallas, TX (214) 661-9400

9. **WEST & ASSOCIATES**
   Austin, TX (512) 441-6973
   Houston, TX (713) 777-4108

10. **INFINITY, INC.**
    S. Lyon, MI (313) 437-2705/437-8036
    Aurora, OH (216) 562-3228

11. **FM ASSOCIATES**
    Orlando, FL (305) 851-5710
    Palm Beach, FL (305) 746-2996
    Huntsville, AL (205) 536-9990
    Greensboro, NC (919) 824-2196
    Atlanta, GA (404) 452-1535

12. **REPTRON, INC.**
    Columbia, MD (301) 995-1433
    (301) 953-7580

13. **MULTI-MEASUREMENTS, INC.**
    Warminster, PA (215) 675-3082

14. **TECNIMAT, INC.**
    Englewood, NJ (201) 569-4200

15. **J. CAMERON ASSOCIATES, INC.**
    Rochester, NY (716) 385-1681

16. **MARTINDALE ASSOCIATES**
    Boston, MA (617) 933-8228

ADTECH, INC.
Honolulu, HI (808) 941-0708

TRANSALASKA DATA SYS.
Anchorage, AL (907) 344-1141

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