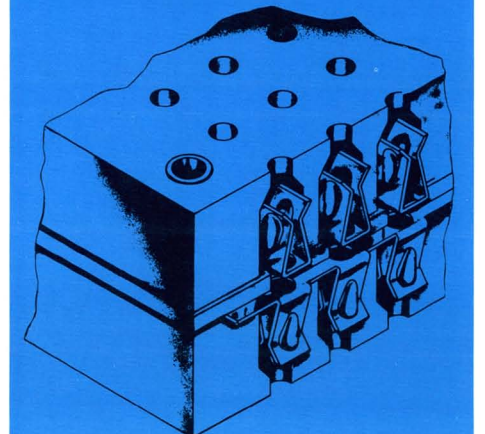
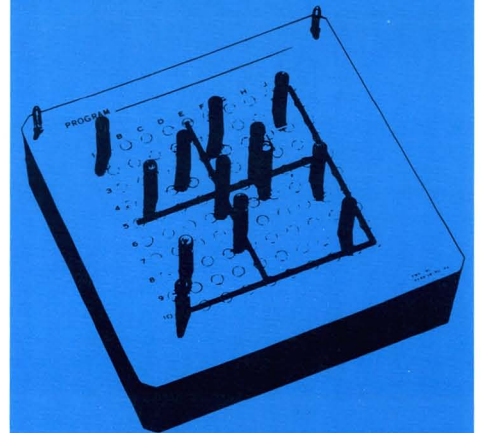
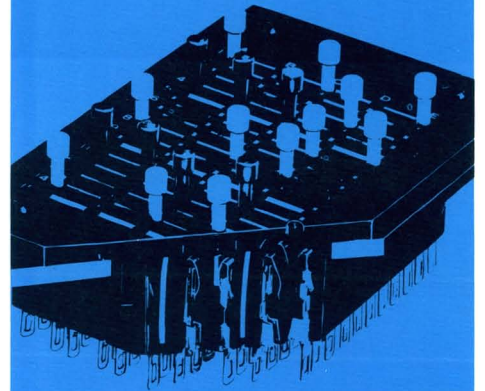


# 21

Pinboard programming devices offer a simplified method of reducing complicated switching operations. Manual programming operations are completed with the insertion and extraction of pins in specified board locations. A wide variety of prewired configurations is available to permit many programming possibilities at considerably less cost than more involved systems.

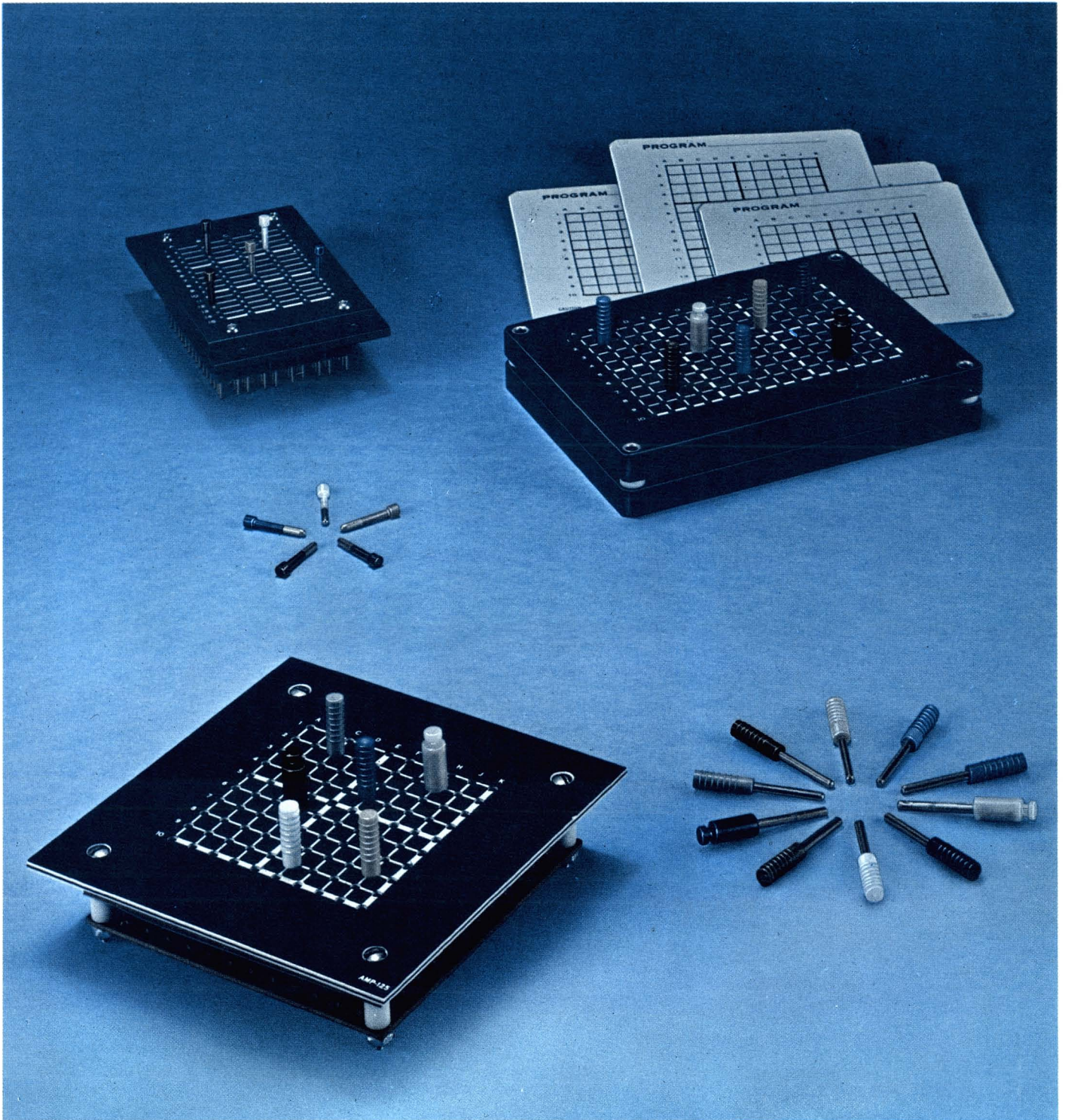
Components for matrix pinboard applications . . . . . 21-3  
Matrix and Universal Pinboards

## PINBOARD PROGRAMMING





## Matrix and Universal Pinboard Programming Devices



**Introduction**

AMP offers a broad range of manual programming devices from simple switches to complex patch-board systems. Matrix and Universal pinboard programming systems combine the easy operation of a switch with the flexibility of a patchcord system. These versatile devices are designed to satisfy the requirements of many types of equipment.

Pinboard programming is extremely flexible without being complicated. Programming is completed by inserting or extracting pins to complete an electrical connection. Versatility of matrix pinboards can be extended through the use of specially designed pins incorporating diodes, which prevent unwanted circuit interactions and outputs, or other circuit components. Only standard components are listed in this catalog.

**Three pinboard programming systems are available.**

- Commercial Matrix Pinboards are used in matrix applications and, in addition to the standard shorting pin, allow the interposition of diodes, resistors, and other components at the selected X and Y coordinates.
- Standard Matrix Pinboards are used in the same applications as the commercial matrix pinboard, but feature a more rugged construction to give the same high reliability in difficult environmental situations.
- Universal Pinboards are recommended for the more complex, non-matrix applications; diode pins are not required because each position is wired separately to allow maximum flexibility.

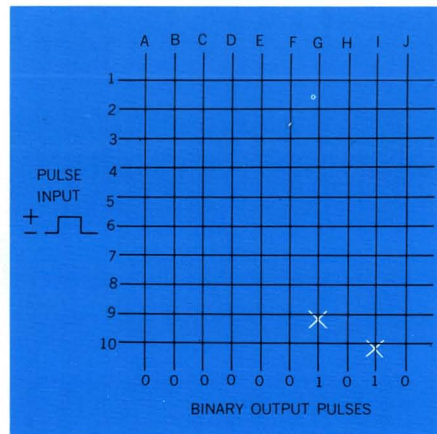
AMP pinboard programming offers high manual programming speed with simplicity of operation, and opens the way to programming possibilities which approach the flexibility of patchcord systems. AMP pinboards have greater density than most systems, and offer maximum convenience and reliability at a cost considerably less than more involved systems.

**Introduction**

The application possibilities for AMP matrix pinboards cover a wide area and include such diverse examples as:

- Digital Memories
- Sequencing Devices
- Communications Systems
- Data Processing Systems
- Automated Process Control
- Analog Function Generators
- Input-Output Switching
- Instrumentation
- Vending Machines
- Test Equipment Programming

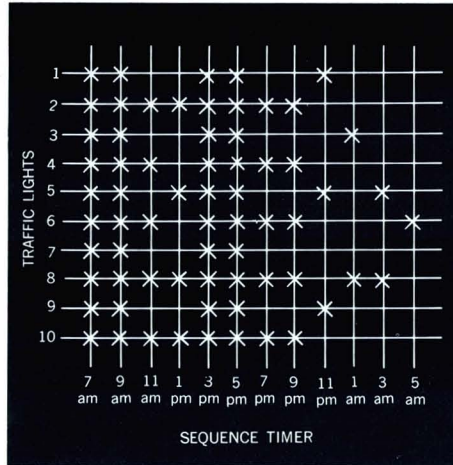
The applications discussed below and on the following pages are typical examples of how matrix programming systems reduce switching complexity and provide programming convenience that contributes greatly to increased reliability and cost-saving through reduced expenditures of time and effort.

**Digital Memory**

Where high-speed memory changes are not required, the matrix pinboard serves effectively as a simplified memory device in computers. The bit of binary information is expressed by the presence or absence of the pin installed in the board. The insertion of the pin completes the circuit thus creating the pulse. As noted in the illustration, when the pin is inserted, the pulse appears at the output. Here two pins have been inserted to produce pulse outputs on lines "G" and "I". The presence of these two pulses corresponds to the binary number 1010 which is 10 in the decimal system. Any 10 digit binary number can thus be produced at the output of this pinboard.

**Matrix Pinboard Applications (Cont'd)**

**Sequencing**



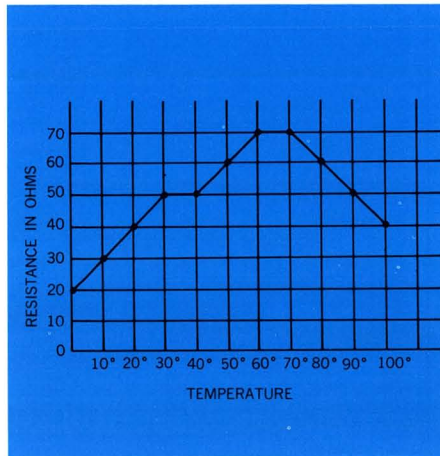
AMP matrix pinboards provide an ideal sequential programming device for use with a scanner. Input data is connected to contact strips running in one direction of the pinboard;

strips running in the other direction are connected to the scanner. Scanning data obtained is determined by the pin position.

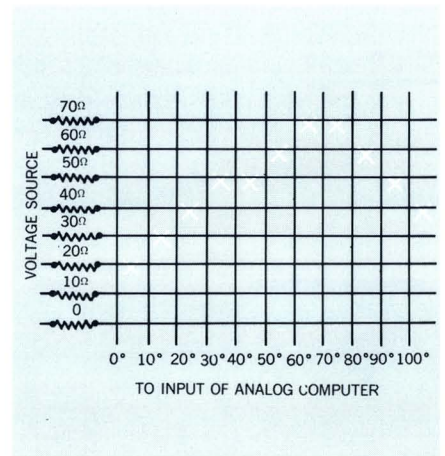
A good example of sequencing is the pinboard programming of traffic control devices. The illustration shows that the automatic operation of traffic lights is connected to the lines representing the horizontal contact strips of the pinboard.

Vertical strips are connected to a sequence timer (scanner) which operates at fixed intervals. The insertion of a pin at the cross points of traffic lights and time intervals, activates the light when the timer scans that position. The pinboard offers the flexibility needed to accommodate rush-hour or slack-period traffic by the mere addition or removal of pins.

**Function Generators**



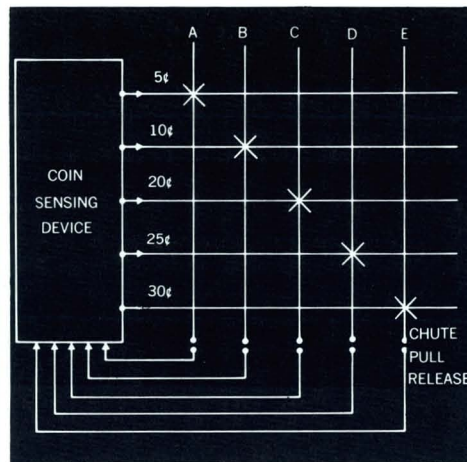
Variations of the standard graph illustrated here can be duplicated by the use of a pinboard. The variable factors are represented by different values of resistors connected to one side of the pinboard; temperature factors are similarly represented on the other side of the pinboard. Connecting the resistors to the pinboard causes a specific voltage drop across each resistor. The voltage on each horizontal contact strip then



differs, depending on the value of the resistor involved and the voltage developed. Insertion of the pins in the proper holes of the pinboard produces the effect of a specific level of resistance to the input of the analog computer. In scanning the vertical contact strips (0 to 100) the computer receives incremental voltage values that vary in exactly the same way as the original graphic representation.

## Matrix Pinboard Applications (Cont'd)

### Automatic Vending Machines



This illustration shows a typical pinboard application in automatic vending machines. It functions ideally in machines where the price range of items is subject to frequent change. In such cases, the coin sensing device produces a voltage on the pinboard horizontal contact strip corresponding to the amount of money made available. The presence of a pin at the intersection of the horizontal (money) and the vertical (item) strips allows the circuit to be completed when the chute release for that item is pulled. Then the product is dispensed. The circuit is completed only when the coin sensing voltage is present on the correct horizontal contact strip for the price of the item.

### Input/Output Switching

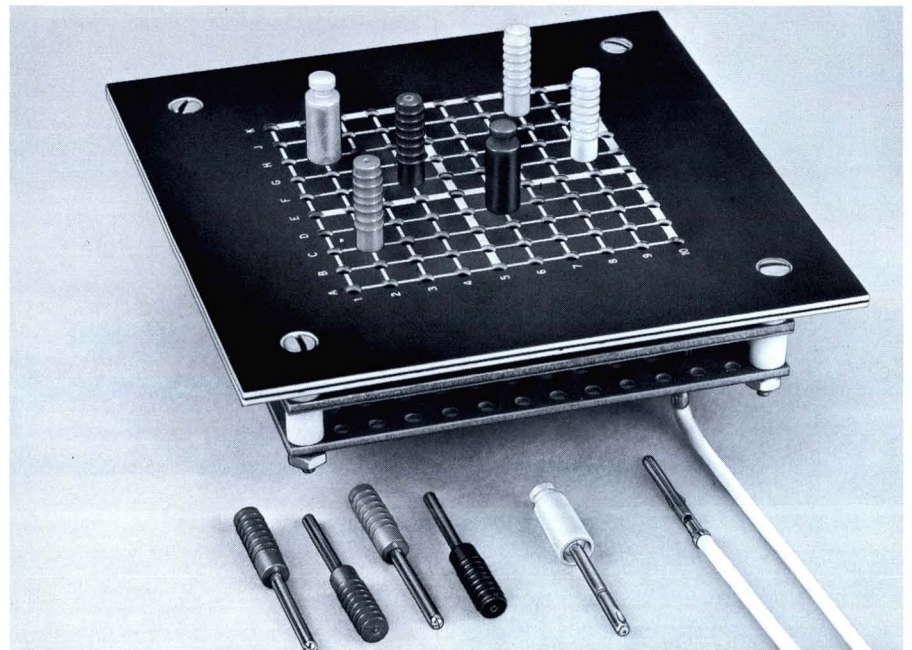
The AMP matrix pinboard is perfectly suited to any application that demands simple input-output switching arrangements. By connecting inputs to the horizontal strips and outputs to the vertical contact strips, it is possible to connect any input to any output. It is also possible to connect all inputs together. Diode pins are used to prevent circuit interactions.

Matrix pinboards are also extremely useful for programming automated industrial processes. They can be used to perform many functions in automatic control systems. All variable functions in numerous processes can be programmed on a pinboard. Location of the pins determines the exact operations performed at any time interval.

A machine tool can be pinboard-programmed using pins to select various operating functions. When, for example, the electric motor driving the drill head is connected to a vertical bus on a pinboard, and the voltage required to produce various drill (motor) speeds are connected to horizontal bus strips, a particular drill speed can be selected by inserting a pin into the proper voltage hole. In like manner, coolant flow and many other tool operations can be easily controlled through the same procedure.

## Commercial Matrix Pinboard

### Description



The AMP Commercial Matrix Pinboard comprises bus-type continuous contact springs, which are arranged on x and y coordinates separated by a perforated insulating board and are attached to a plastic laminate front panel. Inserting a shorting pin completes the electrical connection between the two sets of contact strips; any two circuits can be joined by inserting the pin where the contact strips cross. Inserting a diode pin interposes a diode between the two contact strips.

Commercial pinboards are recess mounted on panels and may be used individually or grouped, using the mounting holes provided, to form a larger, modular-type pinboard assembly. Refer to the parts listing for mounting dimensions.

### Features

- Funnel design in spring contacts to ease insertion and prevent misalignment or malfunction
- High reliability bifurcated spring contacts make four-point contact
- Bus contacts minimize input/output connections
- Available in gold plated contacts for low voltage applications, and nickel plated contacts for high voltage applications
- Holes on .250 centers for high density programming
- No panel to remove; pins immediately accessible for program changes
- Both shorting and diode pins available
- Wide range of standard sizes: up to 500 cross points on a single standard pinboard module
- Standard pinboards are easily grouped for added capacity
- Special split matrices available for standard pinboard sizes

The face of the pinboard is silk screened with a standard pattern for rapid identification of pin holes. The enamel markings are baked on in temperature controlled ovens to ensure maximum resistance to wear and chipping. Custom patterns may also be silk screened and baked on. Letters of the standard screen designate vertical contact strips and numbers designate horizontal contact strips.

Input and output connections are made with rear connection pins. One receptacle on the rear of the board is provided for each contact strip. These pins and receptacles provide a fast reliable method for connecting the pinboard assembly to the associated equipment.



**Materials**

**Contacts:** #4 hard, fine-grain brass per QQ-B-626B

**Front panels:** Plastic laminate, NEMA grades ES-1, ES-2

**Insulation board:** Phenolic per MIL-P-3115

**Shorting and diode pins:** Brass per QQ-B-626B with nylon insulation cap

**Plating:** Gold should always be used below 20 volts, and where repeatable contact resistance is desired

**Gold:** .000060 hard gold over .000100 nickel on contact surfaces per MIL-G-45204, Type II, Class 1

**Nickel:** .000300 electro-deposited nickel per Federal Specification QQ-N-290, Class 2

**Electrical  
Characteristics**

**Maximum operating voltage (at sea level):**

**Between intersecting contact springs:** 1500 VDC, or 900 VAC @ 60 Hz

**Between adjacent contact springs:** 1750 VDC, or 1000 VAC @ 60 Hz

**Maximum contact resistance:** between busing strips with shorting pin inserted

**Gold contacts:** .009 ohm

**Nickel contacts:** .025 ohm

**Maximum continuous current:**

**Bus strips:** 5 amperes at 68°F

**Single contact:** 5 amperes at 68°F

**Capacitance:** measured at 83°F and 45% relative humidity per MIL-STD-202B, Method 305 at 1 MHz

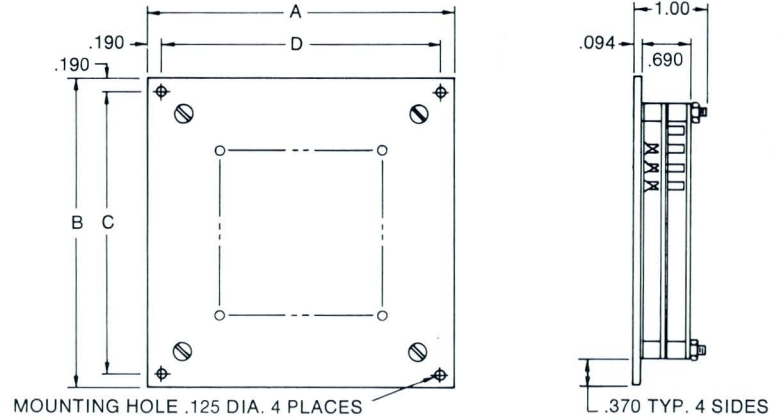
**Adjacent bus strips:** capacitance is a function of bus strip length. For two adjacent strips spanning 10 holes (.250 centers), the capacitance is approximately 9 picofarads

**Intersecting bus strips:** approximately 7 picofarads in a 10 x 10 pinboard

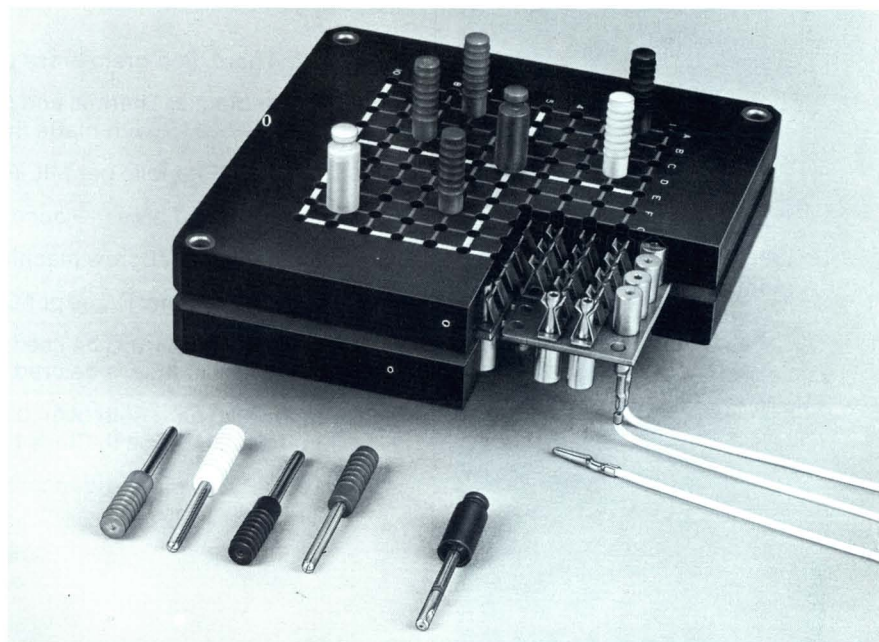
**Insulation resistance:** per MIL-STD-202B, Method 302, at 83°F, 45% relative humidity, between adjacent bus strips spanning 14 holes is  $10^{10}$  ohms

Commercial  
Matrix Pinboard (Cont'd)

Commercial  
Matrix Pinboard Sizes



Number of Holes	Holes Vertical by Horizontal	Dimensions				Contact Plating	Panel Color	Alpha-Numeric Silk Screen Included	Part Number
		A	B	C	D				
100	10 x 10	4.250	4.250	3.875	3.875	Nickel	Black	No	425670-1
							Gray	No	425670-2
							Black	Yes	425670-3
						Gold	Black	Yes	425670-4
							Gray	Yes	425670-5
							Black	Yes	425670-6
150	10 x 15	5.500	4.250	3.875	5.125	Nickel	Black	No	425494-1
							Gray	No	425494-2
							Black	Yes	425494-3
						Gold	Black	Yes	425494-4
							Gray	Yes	425494-5
							Black	Yes	425494-6
200	10 x 20	6.750	4.250	3.875	6.375	Nickel	Black	No	425495-1
							Gray	No	425495-2
							Black	Yes	425495-3
						Gold	Black	Yes	425495-4
							Gray	Yes	425495-5
							Black	Yes	425495-6
250	10 x 25	8.000	4.250	3.875	7.625	Nickel	Black	No	425496-1
							Gray	No	425496-2
							Black	Yes	425496-3
						Gold	Black	Yes	425496-4
							Gray	Yes	425496-5
							Black	Yes	425496-6
300	15 x 20	6.750	5.500	5.125	6.375	Nickel	Black	No	425497-1
							Gray	No	425497-2
							Black	Yes	425497-3
						Gold	Black	Yes	425497-4
							Gray	Yes	425497-5
							Black	Yes	425497-6
375	15 x 25	8.000	5.500	5.125	7.625	Nickel	Black	No	425497-7
							Gray	No	425497-8
							Black	Yes	425498-1
						Gold	Black	Yes	425498-2
							Gray	Yes	425498-3
							Black	Yes	425498-4
400	20 x 20	6.750	6.750	6.375	6.375	Nickel	Black	No	425498-5
							Gray	No	425498-6
							Black	Yes	425503-1
						Gold	Black	Yes	425503-2
							Gray	Yes	425503-3
							Black	Yes	425503-4
500	20 x 25	8.000	6.750	6.375	7.625	Nickel	Black	No	425503-5
							Gray	No	425503-6
							Black	Yes	425504-1
						Gold	Black	Yes	425504-2
							Gray	Yes	425504-3
							Black	Yes	425504-4
						Nickel	Black	No	425504-5
							Gray	No	425504-6
						Gold	Black	Yes	425504-7
							Gray	Yes	425504-8



### Description

The AMP Standard Matrix Pinboard comprises bus-type continuous contact springs, which are arranged on x and y coordinates separated by a perforated insulating board and are sandwiched between rugged phenolic blocks. Inserting a shorting pin completes the electrical connection between the two sets of contact strips; any two circuits can be joined by inserting the pin where the contact strips cross. Inserting a diode pin interposes a diode between the two contact strips.

Standard pinboards can be either surface or recess mounted on panels, and may be used individually or grouped, using the mounting holes provided, to form a larger, modular-type pinboard assembly. Jumpering between modules is readily accomplished. Refer to the parts listing for mounting dimensions.

### Features

The Standard Matrix Pinboard incorporates all the features listed on page 4 of this catalog for the Commercial Matrix Pinboard. Additional features include the following.

- Constructed of rugged thermal and moisture stabilized phenolic, conforming to MIL-P-3115 requirements

The face of the pinboard is silk screened with a standard pattern for rapid identification of pin holes. The enamel markings are baked on in temperature controlled ovens to ensure maximum resistance to wear and chipping. Custom patterns may also be silk screened and baked on. Letters of the standard screen designate vertical contact strips and numbers designate horizontal contact strips.

Input and output connections are made with AMP Series "53" taper pins. Two receptacles, one on each end of the rear of the board, are provided for each contact strip. AMP taper pins and receptacles provide a fast reliable method for connecting the pinboard assembly to the associated equipment.

- Swaged eyelets securely clamp blocks together for added durability
- Templates and guide pins available as an aid to programming
- All materials meet MIL specifications
- Special size pinboards available on special order with up to 3,600 cross points

**Standard  
Matrix Pinboard (Cont'd)**

**Materials**

**Contacts:** #4 hard, fine-grain brass per QQ-B-626B

**Front and rear blocks:** Thermal and moisture stabilized phenolic, per MIL-P-3115, with matte finish

**Insulation board:** Phenolic per MIL-P-3115

**Eyelets:** Nickel plated brass — accept #4 screws for mounting

**Taper pin receptacles:** Screw machined brass

**Shorting and diode pins:** Brass per QQ-B-626B with nylon insulation cap

**Plating:** Gold should always be used below 20 volts, and where repeatable contact resistance is desired

**Gold:** .000060 hard gold over .000100 nickel on contact surfaces per MIL-G-45204, Type II, Class 1

**Nickel:** .000300 electro-deposited nickel per Federal Specification QQ-N-290, Class 2

**Electrical  
Characteristics**

**Maximum operating voltage (at sea level):**

**Between intersecting contact springs:** 1500 VDC, or 900 VAC @ 60 Hz

**Between adjacent contact springs:** 1750 VDC, or 1000 VAC @ 60 Hz

**Maximum contact resistance:** between busing strips with shorting pin inserted

**Gold contacts:** .009 ohm

**Nickel contacts:** .025 ohm

**Maximum continuous current:**

**Bus strips:** 5 amperes at 68°F

**Single contact:** 5 amperes at 68°F

**Capacitance:** measured at 83°F and 45% relative humidity per MIL-STD-202B, Method 305 at 1 MHz

**Adjacent bus strips:** capacitance is a function of bus strip length. For two adjacent strips spanning 10 holes (.250 centers), the capacitance is approximately 9 picofarads

**Intersecting bus strips:** approximately 7 picofarads in a 10 x 10 pinboard

**Insulation resistance:** per MIL-STD-202B, Method 302, 90-95% relative humidity, between adjacent bus strips spanning 14 holes is  $10^8$  ohms

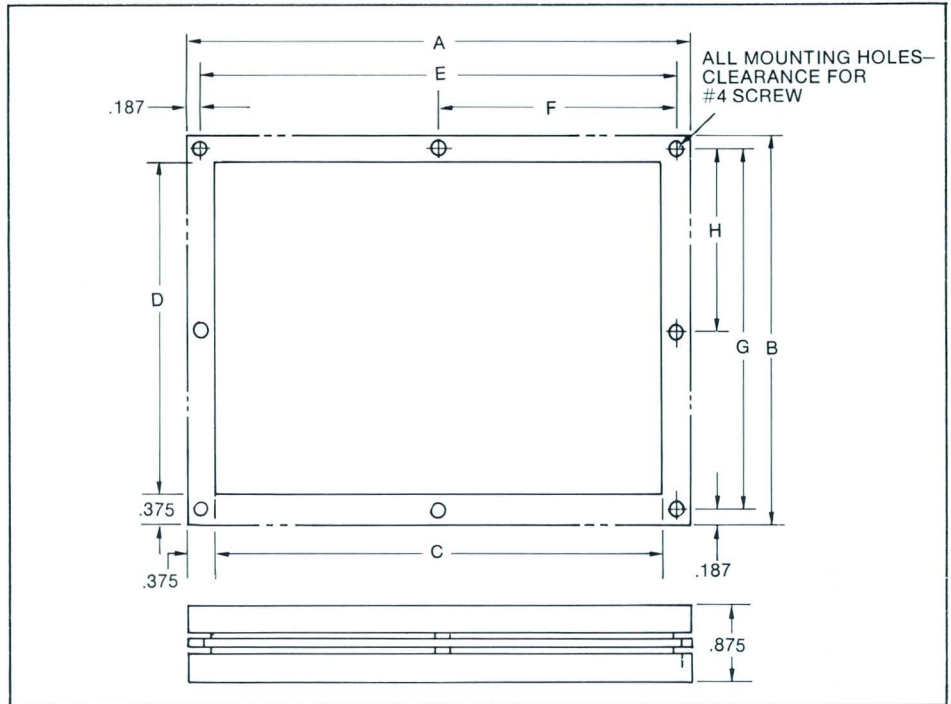
**Breakdown voltage:**

**Between layers:** 4500 VDC

**Between adjacent spring strips:** 2500 VDC

Standard Matrix Pinboard (Cont'd)

Standard Matrix Pinboard Sizes



Number of Holes	Size Vertical by Horizontal	Dimensions								Number of Mounting Holes	Contact Spring Plating	Alpha-Numeric Silk Screening Included	Programming Template Part Number **	Part Number
		A	B	C*	D*	E	F	G	H					
100	10 x 10	3.750	3.750	3.000	3.000	3.375	—	3.375	—	4	Gold	No	497177	397066-1
				3.375	3.375	—	—	Nickel	No		397066-2			
				3.000	3.000	—	—	Gold	Yes		397066-3			
				3.375	3.375	—	—	Nickel	Yes		397066-4			
150	10 x 15	5.000	3.750	4.250	3.000	4.625	—	3.375	—	4	Gold	No	497392	397081-1
				3.375	3.375	—	—	Nickel	No		397081-2			
				4.250	3.000	—	—	Gold	Yes		397081-3			
				3.375	3.375	—	—	Nickel	Yes		397081-4			
150	15 x 10	3.750	5.000	3.000	4.250	3.375	—	4.625	—	4	Gold	Yes	497398	397081-5
				3.375	3.375	—	—	Nickel	Yes		397081-6			
200	10 x 20	6.250	3.750	5.500	3.000	5.875	—	3.375	—	4	Gold	No	497397	397392-1
				3.375	3.375	—	—	Nickel	No		397392-2			
				5.500	3.000	—	—	Gold	Yes		397392-3			
				3.375	3.375	—	—	Nickel	Yes		397392-4			
200	20 x 10	3.750	6.250	3.000	5.500	3.375	—	5.875	—	4	Gold	Yes	497396	397392-5
				3.375	3.375	—	—	Nickel	Yes		397392-6			
250	10 x 25	7.500	3.750	6.750	3.000	7.125	3.562	3.375	—	6	Gold	No	497393	397330-1
				3.375	3.375	—	—	Nickel	No		397330-2			
				6.750	3.000	—	—	Gold	Yes		397330-3			
				3.375	3.375	—	—	Nickel	Yes		397330-4			
250	25 x 10	3.750	7.500	3.000	6.750	3.375	—	7.125	3.562	6	Gold	Yes	497399	397330-5
				3.375	3.375	—	—	Nickel	Yes		397330-6			
300	15 x 20	6.250	5.000	5.500	4.250	5.875	—	4.625	—	4	Gold	No	497395	397391-1
				3.375	3.375	—	—	Nickel	No		397391-2			
				5.500	4.250	—	—	Gold	Yes		397391-3			
				3.375	3.375	—	—	Nickel	Yes		397391-4			
300	20 x 15	5.000	6.250	4.250	5.500	4.625	—	5.875	—	4	Gold	Yes	497401	397391-5
				3.375	3.375	—	—	Nickel	Yes		397391-6			
375	15 x 25	7.500	5.000	6.750	4.250	7.125	3.562	4.625	—	6	Gold	No	497311	397070-1
				3.375	3.375	—	—	Nickel	No		397070-2			
				6.750	4.250	—	—	Gold	Yes		397070-3			
				3.375	3.375	—	—	Nickel	Yes		397070-4			
375	25 x 15	5.000	7.500	4.250	6.750	4.625	—	7.125	3.562	6	Gold	Yes	497400	397070-5
				3.375	3.375	—	—	Nickel	Yes		397070-6			
400	20 x 20	6.250	6.250	5.500	5.500	5.875	—	5.875	—	4	Gold	No	497394	397075-1
				3.375	3.375	—	—	Nickel	No		397075-2			
				5.500	5.500	—	—	Gold	Yes		397075-3			
				3.375	3.375	—	—	Nickel	Yes		397075-4			
500	20 x 25	7.500	6.250	6.750	5.500	7.125	3.562	5.875	2.937	8	Gold	No	—	497157-1
				3.375	3.375	—	—	Nickel	No		497157-2			
				6.750	5.500	—	—	Gold	Yes		497157-3			
				3.375	3.375	—	—	Nickel	Yes		497157-4			
500	25 x 20	6.250	7.500	5.500	6.750	5.875	2.937	7.125	3.562	8	Gold	Yes	—	497157-5
				3.375	3.375	—	—	Nickel	Yes		497157-6			

\*Panel Cutout Dimension

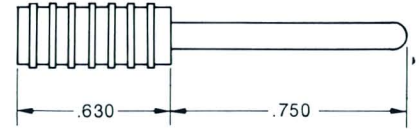
Custom Silk Screen Patterns may be applied to -1 and -2 of all sizes.

\*\*One pair template guide pins required per assembly. Pin post number 497519-1. Unless otherwise specified all pinboards will be constructed with vertical spring strips in rear board. Letters of the standard screen designate the vertical contact strips located in the rear block whereas numbers identify the horizontal contact strips located in the front block. See page 11 for standard pattern.

**Commercial and Standard Matrix Pinboard Components**

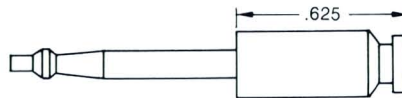
**Shorting Pin**

Shorting pins are available with gold or nickel plating to match the desired contact plating. The nylon cap on the pin provides insulation, serves as a handle, and comes in eight standard colors to provide easy identification of pinboard circuits and extra convenience in programming.



Cap Color	Nickel Plated	Gold Plated
White	425520-1	1-425520-1
Red	425520-2	1-425520-2
Green	425520-3	1-425520-3
Yellow	425520-4	1-425520-4
Blue	425520-5	1-425520-5
Black	425520-6	1-425520-6
Violet	425520-7	1-425520-7
Gray	425520-8	1-425520-8

**Diode Pin**



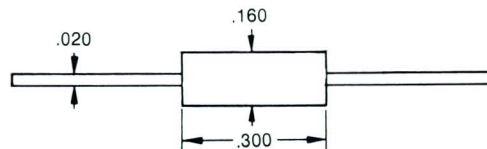
Diode pins are available with gold or nickel plating to match the desired contact plating. The nylon cap provides insulation and protection for the diode, serves as a handle, and comes in two standard colors to identify diode type or orientation.

Diode pins, because of their ability to block current flow in one direction while permitting it to flow in the other, are interposed between x and y axes on AMP matrix pinboards to isolate circuits from each other. They would be used, for example, where one input feeds several outputs and interaction between individual output circuits is not permissible.

One electrode of the diode is crimped to the tip of the pin; the other is crimped to the body. Diode pins are available wired anode to tip and cathode to tip. The tip of the pin always contacts the vertical contact strip (identified by letters) of commercial and standard matrix pinboards.

Part No.	Plating	Cap Color	Diode	Wired
497522-4	Nickel	Red	In 464	Anode to Tip
497522-3	Gold	Red	In 464	Anode to Tip
497522-2	Nickel	White	In 464	Cathode to Tip
497522-1	Gold	White	In 464	Cathode to Tip

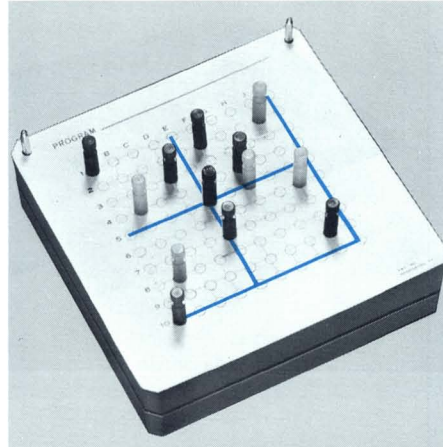
**Special Pins**



On special order, diode pins can be supplied with resistors, bulbs, or other components inserted in place of the diode. These components must

fit within the envelope dimensions given. Dimensions show maximum size component acceptable for use in the diode pin assemblies.

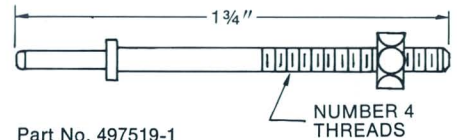
Templates



Programs can be set up in advance, changed in seconds, and stored indefinitely for future use with the help of templates. These are durable cards printed with the board format which have accurate die-cut partial hole perforations stamped in the card. Programs are set up by punching the desired holes out of the template using a pinboard pin or pencil. Handling or flexing the card will not disturb unpunched holes.

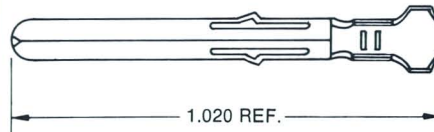
Templates are available for all standard AMP matrix pinboards. They are printed with a legend corresponding to that found directly on the face of the silk screened pinboards. Special size templates along with custom-designed legend imprints can be furnished as required.

By using the two guide pins which are used for mounting the pinboard, the pre-programmed templates are accurately positioned on the face of the pinboard. Since the operator is instructed simply to insert the appropriate pins into all available holes, semi-skilled operators can be employed; no knowledge of the programming function is required.



Part No. 497519-1

Commercial Matrix Pinboard Rear Connection Pin



Wire Size: #22-20 AWG

Plating	Part Number	Hand Tool Part Number
Nickel	425787-1	
Gold	425787-2	90135
Tin	425787-3	

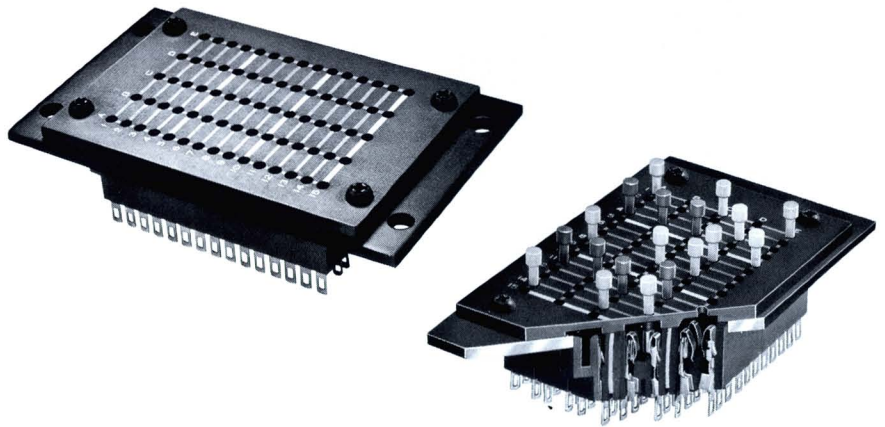
Standard Matrix Pinboard Rear Connection Pin



All connections to the vertical and horizontal contact strips of AMP standard matrix pinboards are made with Series "53" taper pins. Two receptacles, one on each end of the board, are provided for each contact strip on standard sizes. Refer to AMP Catalog No. 73-191 for information and part numbers of taper pin products.

## Universal Pinboard

### Description



The AMP Universal Pinboard comprises pairs of leaf spring contacts arranged in parallel rows in housings, which are attached to a plastic laminate front panel. Inserting a shorting pin completes the electrical connection between the two contacts. Each pair of contacts operates independently of all others.

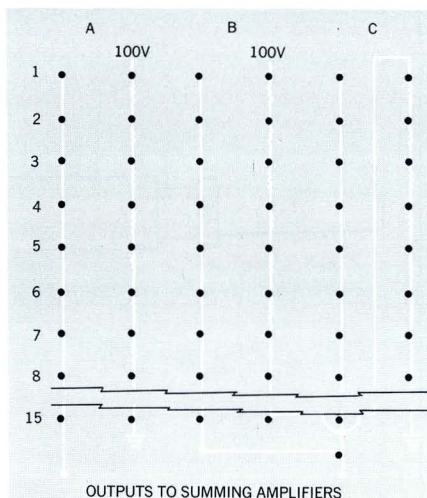
Universal pinboards can be either surface or recess mounted using the black anodized aluminum mounting flange, and may be used individually or grouped, using the mounting holes provided, to form a larger, modular-type pinboard assembly. Refer to the parts listing for mounting dimensions.

The face of the pinboard is silk screened with a standard pattern for

rapid identification of pin holes. The enamel markings are baked on in temperature controlled ovens to ensure maximum resistance to wear and chipping. Custom patterns may also be silk screened and baked on. Letters of the standard screen designate vertical rows of contact pairs and numbers designate horizontal rows of contact pairs.

Through the use of appropriate permanent wiring installed by the user on the rear of the pinboard, special or unusual programming and circuit commoning functions can be easily accomplished; contact springs can be interconnected in any desired variation, and panels can be made with as many matrices as required.

### Applications



The AMP Universal Pinboard is ideally suited for specialized programming or switching for various applications where the matrix pinboards do not provide sufficient flexibility; for example, digital programming of inputs to an analog computer.

In this application every other row of leaf contacts is bussed and fed to the inputs of the analog computer. The other rows are ladder networks of resistors. By inserting a shorting pin in any hole, the input may be varied from 100 volts to ground in fifteen 7-volt increments. The ladder networks of two or more rows may be wired in series to increase the number of increments.



**Features**

- Rugged construction
  - Aluminum mounting flange
  - Glass epoxy laminate front plate
  - Glass filled diallyl phthalate housings
- Gold over nickel plated leaf contacts
- Special size pinboards available on special order
- Up to 600 cross-points on a single pinboard unit
- Wide range of standard sizes
- Pin changing gives preferred programming convenience
- Immediate access to pins for program changes
- Easily wired or modified to serve many different applications and special needs
- All materials meet requirements of applicable military specifications

**Materials**

**Contact housings:** glass-filled diallyl phthalate

**Front plate:** black-painted glass epoxy laminate, black matte finish

**Mounting flange:** black anodized aluminum alloy

**Contacts:** phosphor bronze plated with .000060 gold over .000100 nickel plate with solder tab receptacle for a maximum of two #18 wires

**Shorting pins:** copper alloy .094 dia. by  $\frac{25}{32}$ " long, including nylon insulation cap, minimum average .000060 gold over minimum average .000100 nickel plating. Optional color coding on caps.

**Silk screening:** standard alpha-numerical legend. Special legends available to customer specifications

**Hole spacing:** horizontal,  $\frac{3}{8}$ " centers; vertical,  $\frac{5}{32}$ " centers.

**Electrical  
Characteristics**

**Resistance:** from contact through pin to mating contact — .007 ohm maximum

**Contact life:** minimum of 5,000 pin insertions

**Contact pressure:** 30 ounces minimum

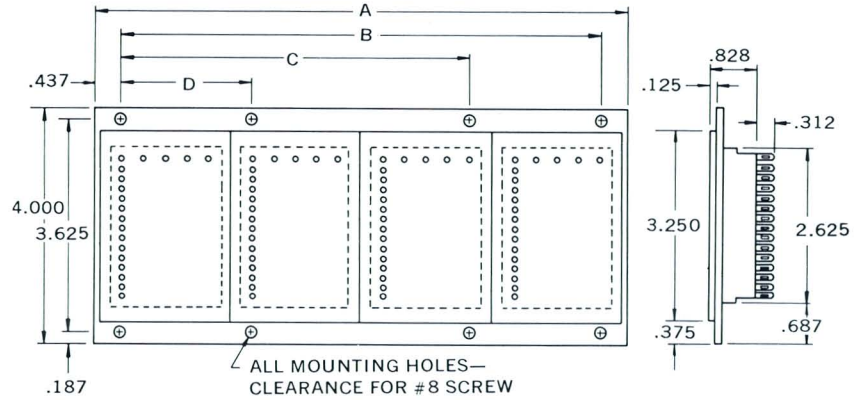
**Voltage rating:** between mating contacts — 850 volts DC at sea level

**Contact current rating:** maximum 3 amperes DC continuous — no make or break under load

**Insulation resistance:** between contacts at 22°C and 50% humidity — minimum  $10^{12}$  ohms

Universal  
Pinboard (Cont'd)

Universal  
Pinboard Sizes



Number of Holes	Size Vertical by Horizontal	Part Number	Dimensions				Number of Mounting Holes
			A	B	C	D	
75	15 x 5	397540-9	2.375	1.500	—	—	4
150	15 x 10	397540-8	4.625	3.750	—	—	4
225	15 x 15	397540-7	6.875	6.000	—	—	4
300	15 x 20	397540-6	9.125	8.250	—	—	4
375	15 x 25	397540-5	11.375	10.500	5.250	—	6
450	15 x 30	397540-4	13.625	12.750	9.000	3.750	8
525	15 x 35	397540-3	15.875	15.000	10.500	4.500	8
600	15 x 40	397540-2	18.125	17.250	11.250	6.000	8

Notes: All contacts and shorting pins are gold over nickel plated.  
Standard Alpha Numeric Silk Screening. For special Silk Screening patterns, a drawing must be sent with order specifying screening desired. See layout for dimensions. If NO screening is desired a note should be added to order specifying this.

Universal Pinboard  
Shorting Pins



Pin Part Number	Cap Color
495831-1	White
495831-2	Black
495831-3	Red
495831-4	Yellow
495831-5	Green
495831-6	Blue
495831-7	Violet
495831-8	Gray

Extraction Tool

Part No. 495956-1

