

**NMB****HI-TEK**  
CORPORATION

# DOVETAIL SERIES ARRAYS AND KEYPADS

## DOVETAIL SERIES CONCEPT

The Dovetail concept lets you design keyboards to fit virtually any configuration without costly tooling charges. Dovetail arrays interlock quickly and easily providing stable, reliable keyboards without sub-panels or costly additional hardware.

HI-TEK's Dovetail system allows you to create your own designs with the confidence that you are specifying a reliable, low cost, mechanical switch design that has been specified and tested in over 11 million keyboards.

NMB HI-TEK has been supplying high quality, low cost keyboards to many of the industry's largest OEMs for over 15

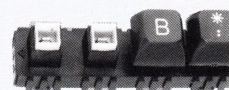
years. In 1973, HI-TEK pioneered the use of the quadfurcated contact design: four individual contact fingers inlaid with gold alloy which provide long life, low bounce, and low contact resistance. To this design, HI-TEK incorporated cantilevered contacts which are isolated from the switch dynamics, thus assuring that the contact pressure is independent of switch operations. This design has been life tested to over 20 million cycles.

For on-site repair, HI-TEK keycaps and plungers are easily removable to permit inspection and/or replacement of switch contacts, should this become necessary.

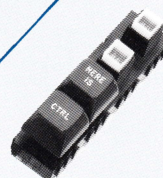
**SINGLE  
KEYSWITCHES**



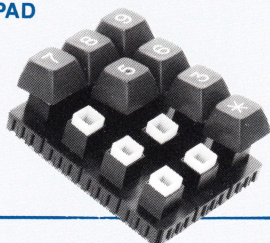
**47 KEY ARRAY**



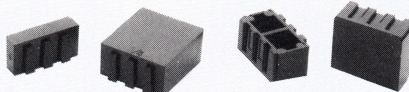
**1x4 AND 4x1 ARRAYS**



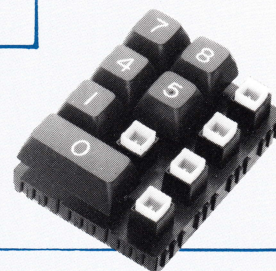
**12 KEY PAD**



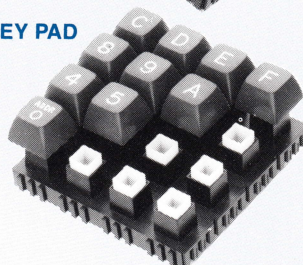
**KEY SPACERS**



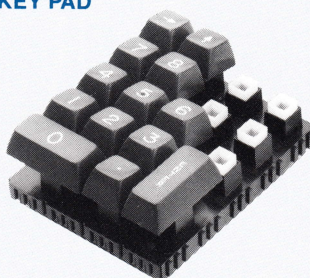
**11 KEY PAD**



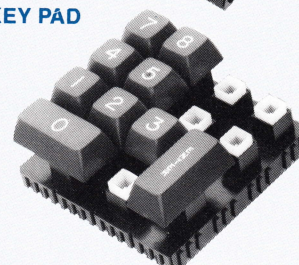
**16 KEY PAD**



**18 KEY PAD**



**14 KEY PAD**



## FEATURES

- DOVETAIL INTERLOCKING CONFIGURATION
- EASILY REMOVABLE CONTACTS, SPRINGS, PLUNGERS
- KEYSWITCH LIFE TESTED TO 20,000,000 CYCLES
- EXCLUSIVE QUADFURCATED CONTACT DESIGN
- NO SUB-PANELS OR STIFFENERS REQUIRED

## BENEFITS

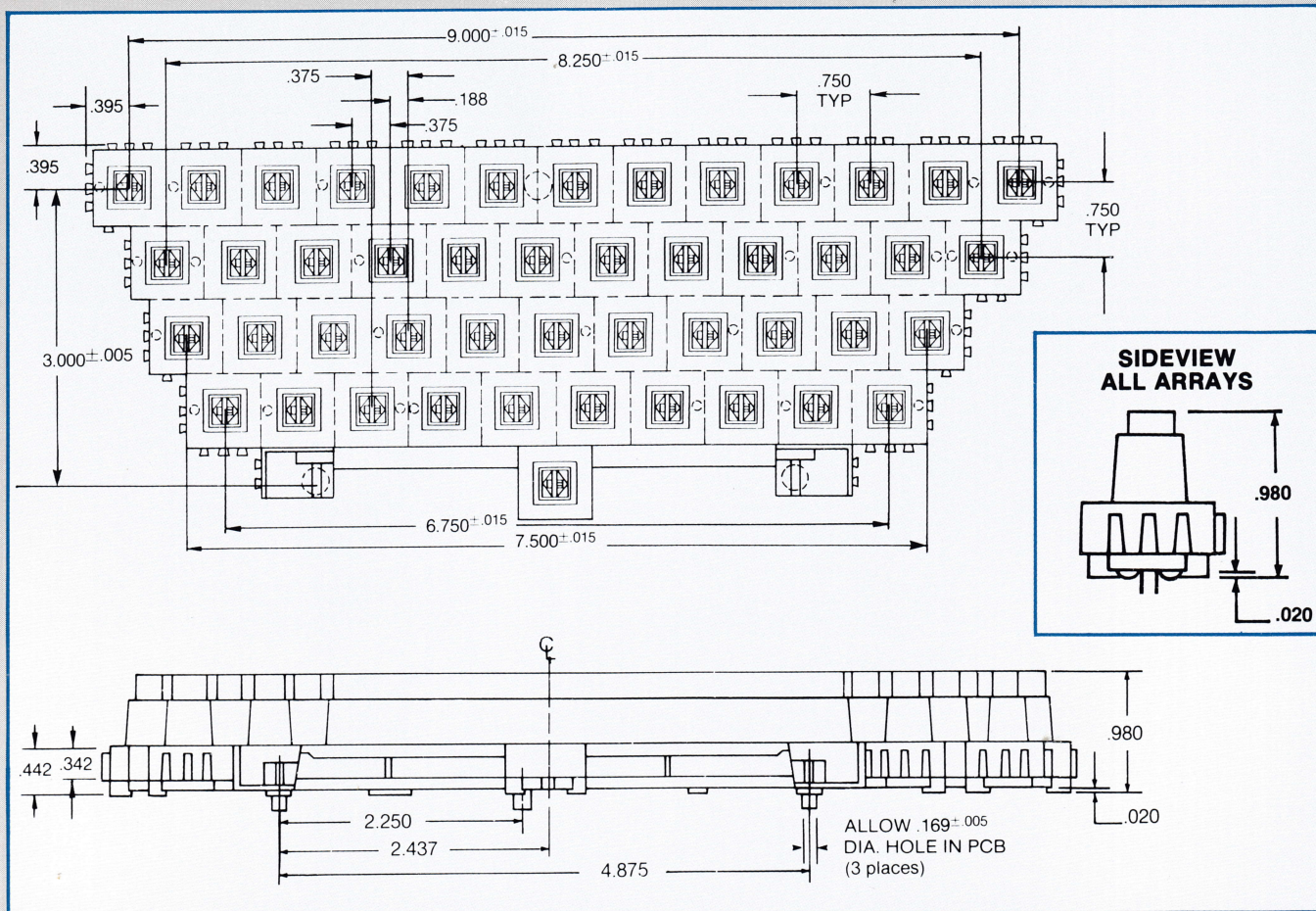
- LOW COST, ALMOST UNLIMITED CUSTOM DESIGNS
- SIMPLIFIES FIELD INSPECTION AND/OR REPAIR
- PROVEN RELIABILITY AND LONG LIFE
- LOW BOUNCE AND LOW CONTACT RESISTANCE
- LOWER TOOLING COSTS, ELIMINATES COSTLY EXTRA PARTS



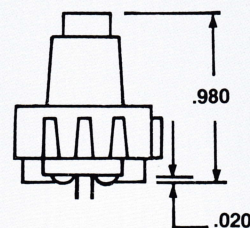
## 47 KEY ARRAY

The 47 key array provides a basic alphanumeric structure for most standard keyboard designs. Additional keys for function, control, or special applications may be included with almost unlimited freedom of placement and can be mounted on

the right side, left side, bottom or top of this standard array. Spacers in various sizes permit center mount design for oversized keys. Should a separate numeric pad be required, there are several configurations of keypads that can be used.

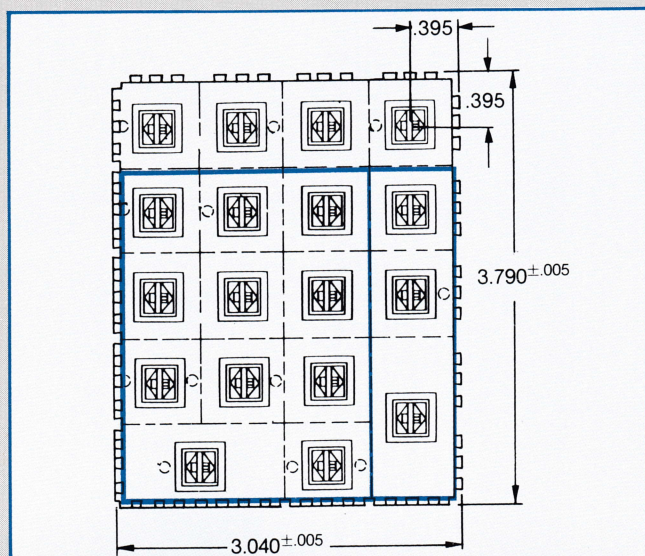


**SIDEVIEW  
ALL ARRAYS**



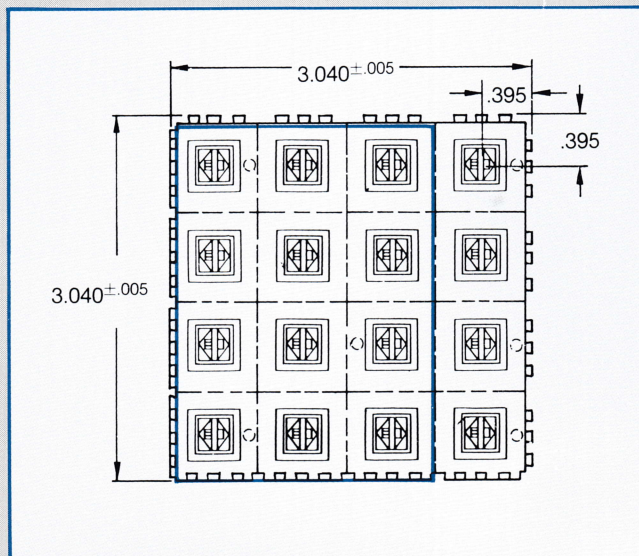
## 11, 14, AND 18 KEY PADS

The 11 key pad is most commonly used in numeric pad applications for calculators and data input terminals where a separate numeric keyboard is desired. The 14 key pad is ideal for expanded numeric applications. When a combination of numeric and function control keys is desired, HI-TEK's 18 key pad provides the solution.



## 12 AND 16 KEY PADS

The 12 key pad is most often used for basic cursor control functions on data entry terminals. The 16 key pad provides the capability for expanded cursor control or a combination of cursor and function control.

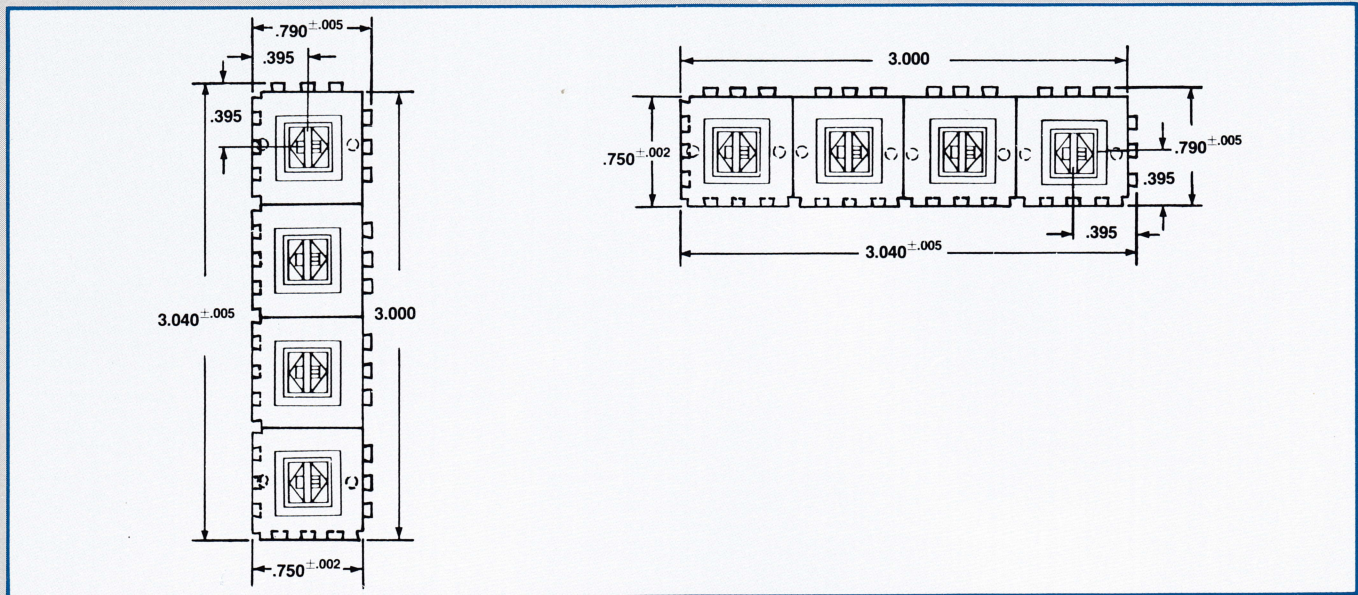




## 1x4 AND 4x1 ARRAYS

Engineers can easily develop custom designs using these arrays in conjunction with standard arrays and keypads to add control or function keys to standard keyboards. The 1x4 array permits the addition of a vertical row while the 4x1 array allows

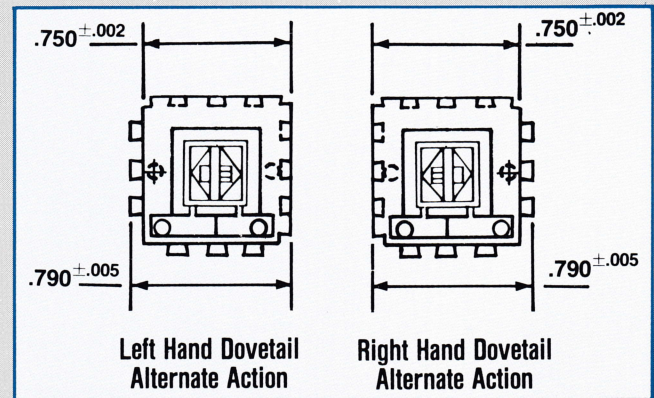
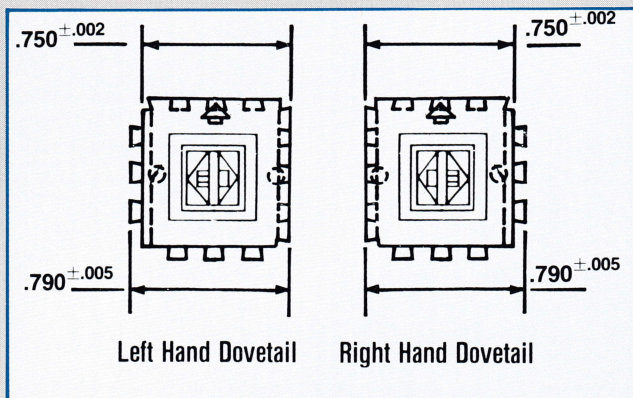
for the addition of a horizontal row of keys. Both arrays can be offset by spacers when a separate group of control or function keys is desired.



## SINGLE KEYSWITCHES

These keyswitches can be mounted at the top, bottom, right or left side of any standard array or keypad, offering virtually unlimited freedom for custom designs. Single keyswitches

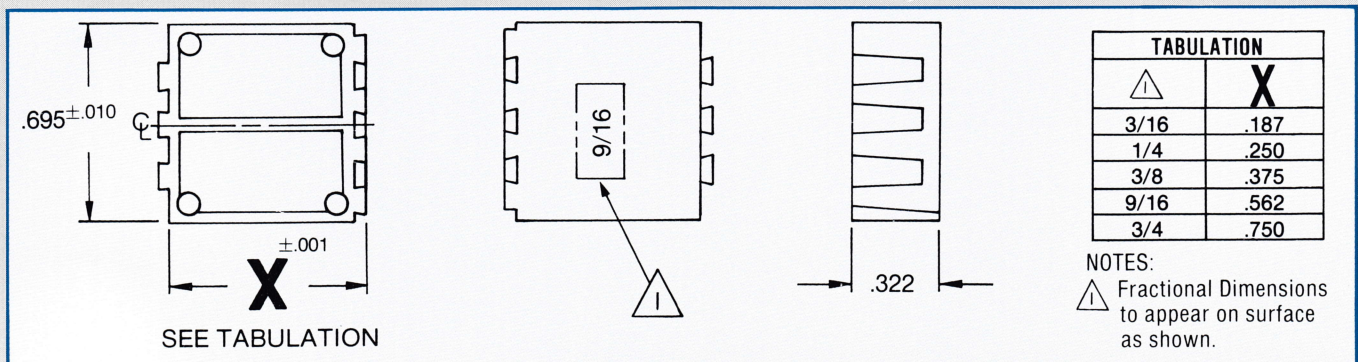
may be joined to each other for added design flexibility and are available in both standard linear and alternate action styles.



## KEY SPACERS

When used in conjunction with Dovetail arrays or keypads these spacers allow the designer to vary the space between keys or to design keyboards with oversized keys (e.g. 1½ wide,

2 wide, etc.). Key spacers come in 3/16", 1/4", 3/8", 9/16", and 3/4" widths for mounting on either top, bottom, right or left side of any standard Dovetail keyswitch or configuration.





## SPECIFICATIONS

### Mechanical

Keyswitch Movement  
(travel) ..... 0.140"  $\pm$  0.020"  
Operating Movement  
(stroke to make) ..... 0.075"  $\pm$  0.020"

### Operating Force

Momentary Action ..... 2.0 oz.  $\pm$  0.5 oz.  
Alternate Action ..... 3 oz.  $\pm$  0.5 oz.  
Spacebar ..... 3 oz.  $\pm$  0.5 oz.

### Environmental

Operating Temperature ..... 0° to +50°C  
Storage Temperature ..... -40° to +55°C  
Relative Humidity ..... 0 to 95%

### Materials

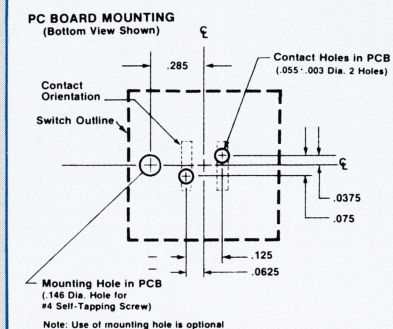
Contacts ..... Gold alloy inlay,  
Western Electric #1  
Housing ..... One-piece molded  
thermoplastic

### Reliability

Momentary Action ..... 20 million operations  
each keystation  
Alternate Action ..... 5 million operations  
each keystation

### Electrical

Contact System ..... Form A (SPST-NO)  
Single quadfurcated contact, normally open  
Contact Resistance  
Initial ..... 25 milliohms typ. 1 ohms max.  
Over Life ..... 10 ohms max.  
Contact Bounce  
Typical ..... 0.250 mS  
Initial (max.) ..... 2 mS  
End of Life (max.) ..... 5 mS  
Rating ..... Dry circuit to 10 mA  
@ 5 VDC resistive  
Dielectric ..... 500 V RMS, 60 Hz

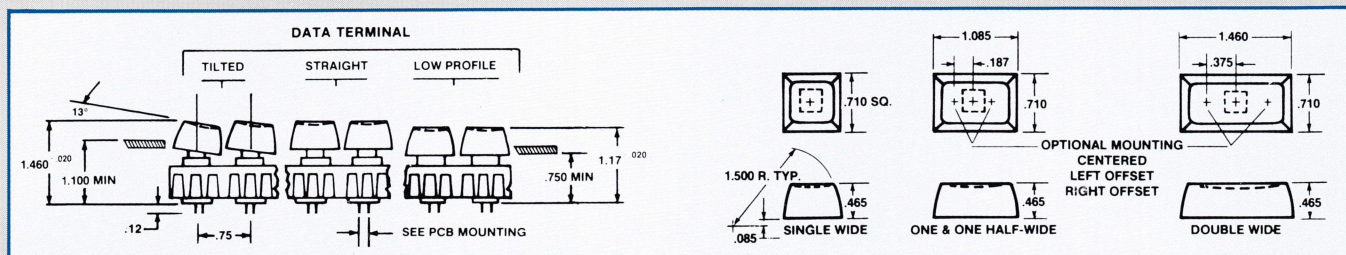


## PANEL CUTOUT ALLOWANCES

Allow .375" from centers of last switches for panel cutout dimensions. Make additional allowance for oversized keycaps. Contact HI-TEK or your Distributor for more information.

Keycap Size	Center Mounted	Offset Mounted
1½ Wide	Allow additional .187" each side for panel cutout.	Allow additional .375" for panel cutout.
2 Wide	Allow additional .375" each side for panel cutout.	Allow additional .750" for panel cutout.

## DIMENSIONS/KEYCAPS



## PART NUMBERS AND ORDERING INFORMATION

Part No.	Description*
200453	47 Key Dovetail Array
200464	18 Key Dovetail Keypad
200454	16 Key Dovetail Keypad
200440	14 Key Dovetail Keypad
200441	12 Key Dovetail Keypad
200457	11 Key Dovetail Keypad
200455	1x4 Dovetail Array
200442	4x1 Dovetail Array

Part No.	Description*
200456	1x1 Left Hand Single Keyswitch
200459	1x1 Right Hand Single Keyswitch
200460	1x1 Left Hand Alternate Action Single Keyswitch
200461	1x1 Right Hand Alternate Action Single Keyswitch
100426	3/16" Spacer
107267	1/4" Spacer
100427	3/8" Spacer
100428	9/16" Spacer
106243	3/4" Spacer

\*Note: Dovetail units are supplied without keycaps. Contact HI-TEK or your HI-TEK distributor for ordering information.

## DISTRIBUTOR



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