

**SERIES 96**  
Conductive Rubber

**FEATURES**

- Quality, Economical Keyboards
- Easily Customized Legends
- Matrix Circuitry
- Backlit and Shielded Options Available
- Termination Mates With Standard Connectors
- Tactile Feedback to Operator
- 1,000,000 Operations per Button
- Compatible With High Resistance Logic Inputs



The Series 96 is Grayhill's most economical 3x4 and 4x4 keypad family. The contact system utilizes conductive rubber to mate the appropriate PC board traces. Offered in matrix circuitry, with shielded and backlit options. Built with quality component parts, the Series 96 is subjected to our rigid statistical process control to insure that it meets our reliability standards.

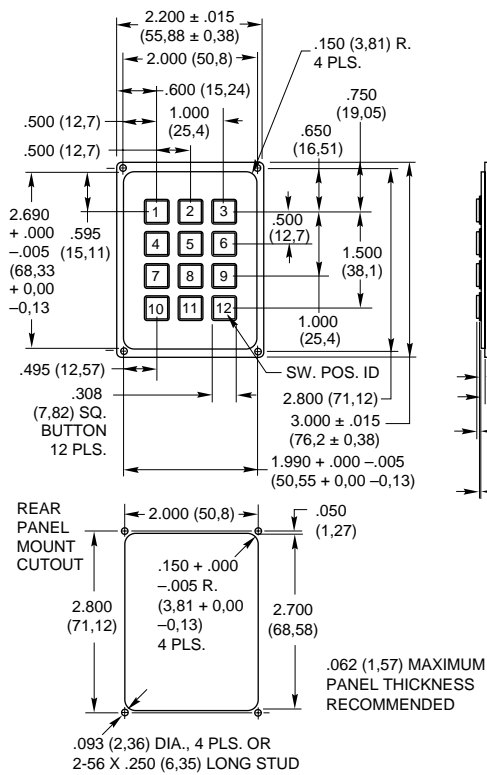
Keyboards and Keypads

**DIMENSIONS** In inches (and millimeters)

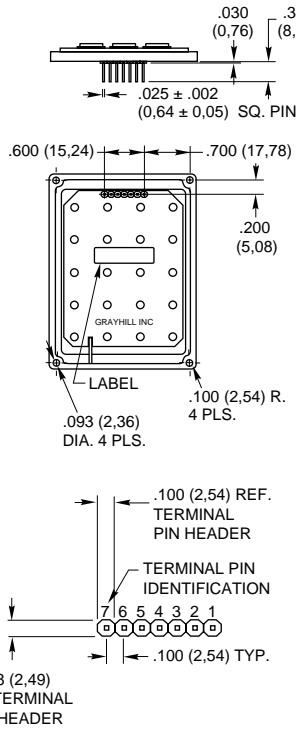


## DIMENSIONS In inches (and millimeters)

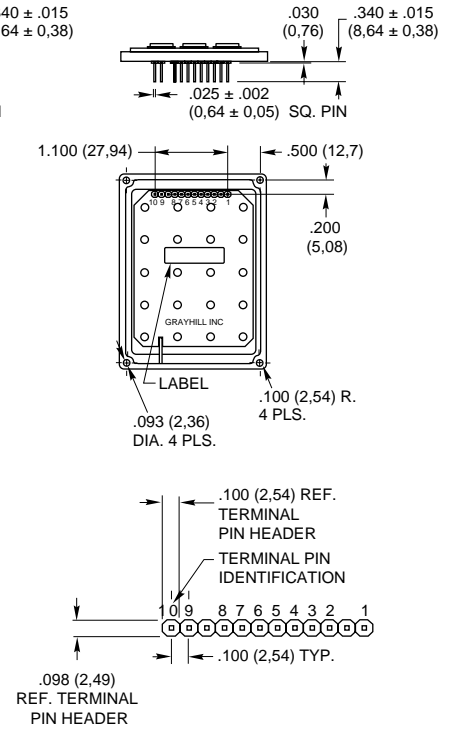
### 3x4 Rear Mount Keyboard



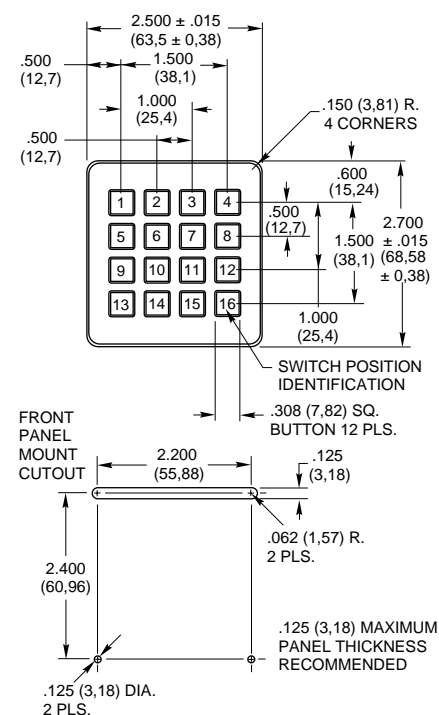
### Standard Versions



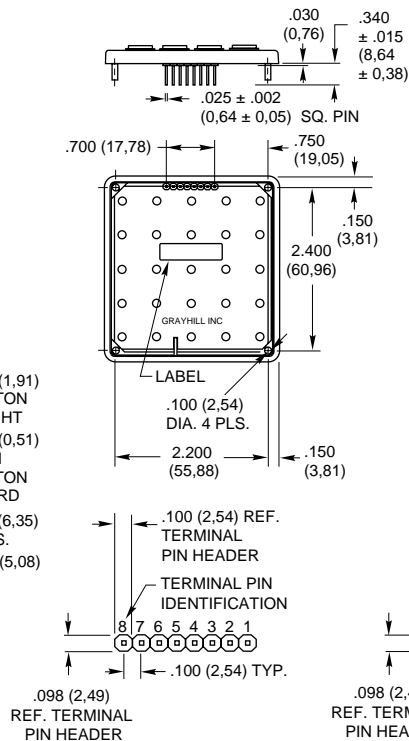
### Shielded/Backlit Versions



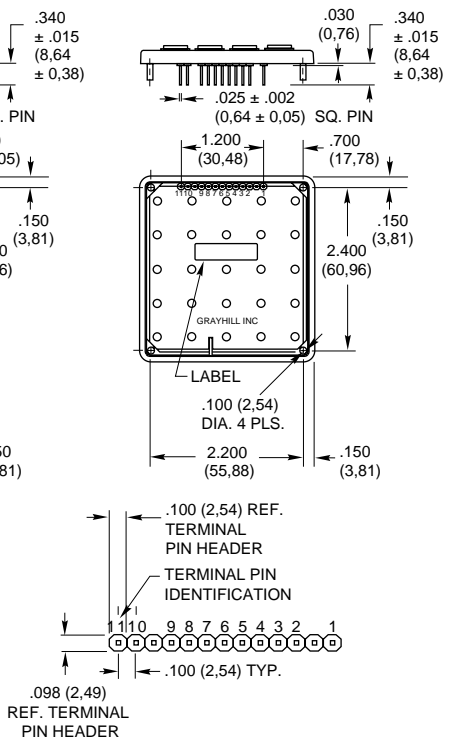
### 4x4 Front Mount Keyboard



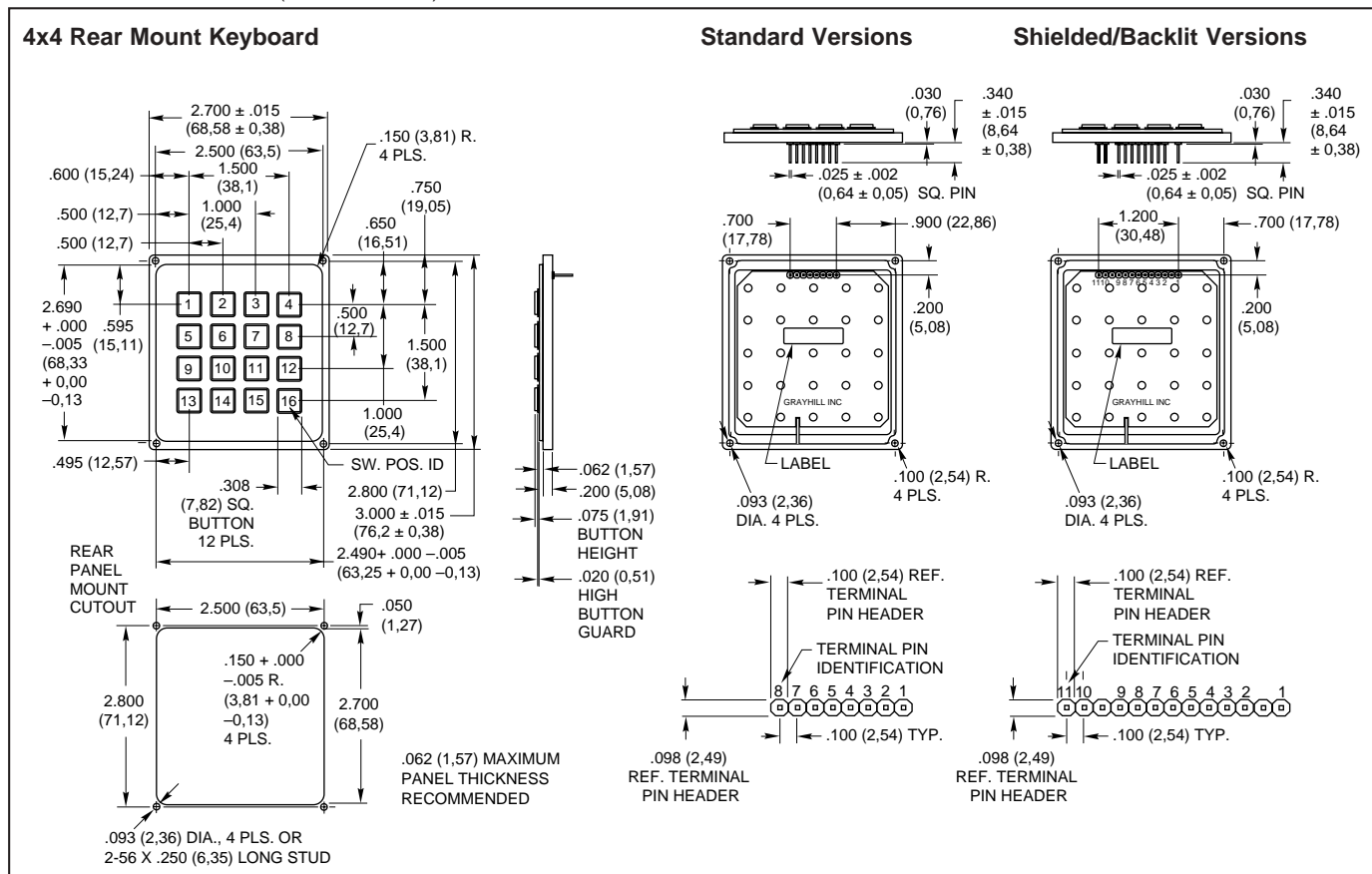
### Standard Versions



### Shielded/Backlit Versions



**DIMENSIONS** In inches (and millimeters)



Keyboards and Keypads

**CODE AND TRUTH TABLES**

Dots in the chart indicate connected terminals when switch is closed. Terminals are identified on the keyboard.

**12 Button Keypads**

|                 |    | MATRIX CODES      |   |   |   |                  |   |   |   |   |   |   |   |   |   |   |   |    |  |
|-----------------|----|-------------------|---|---|---|------------------|---|---|---|---|---|---|---|---|---|---|---|----|--|
|                 |    | Standard          |   |   |   | Shielded/Backlit |   |   |   |   |   |   |   |   |   |   |   |    |  |
| BUTTON LOCATION | 1  | •                 | • | • | • | •                | • | • | • | • | • | • | • |   |   |   |   |    |  |
|                 | 2  | •                 | • | • | • | •                | • | • | • | • | • | • | • |   |   |   |   |    |  |
|                 | 3  | •                 | • | • | • | •                | • | • | • | • | • | • | • |   |   |   |   |    |  |
|                 | 4  | •                 | • | • | • | •                | • | • | • | • | • | • | • |   |   |   |   |    |  |
|                 | 5  | •                 | • | • | • | •                | • | • | • | • | • | • | • |   |   |   |   |    |  |
|                 | 6  | •                 | • | • | • | •                | • | • | • | • | • | • | • |   |   |   |   |    |  |
|                 | 7  | •                 | • | • | • | •                | • | • | • | • | • | • | • |   |   |   |   |    |  |
|                 | 8  | •                 | • | • | • | •                | • | • | • | • | • | • | • |   |   |   |   |    |  |
|                 | 9  | •                 | • | • | • | •                | • | • | • | • | • | • | • |   |   |   |   |    |  |
|                 | 10 | •                 | • | • | • | •                | • | • | • | • | • | • | • |   |   |   |   |    |  |
|                 | 11 | •                 | • | • | • | •                | • | • | • | • | • | • | • |   |   |   |   |    |  |
|                 | 12 | •                 | • | • | • | •                | • | • | • | • | • | • | • |   |   |   |   |    |  |
|                 |    | 5                 | 6 | 7 | 1 | 2                | 3 | 4 | 6 | 7 | 8 | 2 | 3 | 4 | 5 | 1 | 9 | 10 |  |
|                 |    | TERMINAL LOCATION |   |   |   |                  |   |   |   |   |   |   |   |   |   |   |   |    |  |

Shielded keypad = Shielded  
Backlit keypad = NC  
Shielded and backlit keypad = Shielded

Shielded keypad = NC  
Backlit keypad = EL Panel 1  
Shielded and backlit keypad = EL Panel 1

Shielded keypad = NC  
Backlit keypad = EL Panel 2  
Shielded and backlit keypad = EL Panel 2

**16 Button Keypads**

|                 |    | MATRIX CODES      |   |   |   |                  |   |   |   |   |   |   |   |   |   |   |   |   |    |    |  |
|-----------------|----|-------------------|---|---|---|------------------|---|---|---|---|---|---|---|---|---|---|---|---|----|----|--|
|                 |    | Standard          |   |   |   | Shielded/Backlit |   |   |   |   |   |   |   |   |   |   |   |   |    |    |  |
| BUTTON LOCATION | 1  | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 2  | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 3  | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 4  | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 5  | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 6  | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 7  | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 8  | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 9  | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 10 | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 11 | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 12 | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 13 | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 14 | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 15 | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 | 16 | •                 | • | • | • | •                | • | • | • | • | • | • | • | • | • | • |   |   |    |    |  |
|                 |    | 5                 | 6 | 7 | 8 | 1                | 2 | 3 | 4 | 6 | 7 | 8 | 9 | 2 | 3 | 4 | 5 | 1 | 10 | 11 |  |
|                 |    | TERMINAL LOCATION |   |   |   |                  |   |   |   |   |   |   |   |   |   |   |   |   |    |    |  |

Shielded keypad = Shielded  
Backlit keypad = NC  
Shielded and backlit keypad = Shielded

Shielded keypad = NC  
Backlit keypad = EL Panel 1  
Shielded and backlit keypad = EL Panel 1

Shielded keypad = NC  
Backlit keypad = EL Panel 2  
Shielded and backlit keypad = EL Panel 2

## SPECIFICATIONS

### Rating Criteria

- Rating at 12 Vdc:** 5 milliamps for .5 seconds
- Contact Bounce:** < 12 milliseconds
- Contact Resistance:** < 100 ohms (at stated operating force)
- Voltage Breakdown:** 250 Vac between components
- Mechanical Operation Life:** 1,000,000 operations per key
- Insulation Resistance:** > 10<sup>12</sup> ohms @ 500 Vdc
- Push Out Force Per Pin:** 5 lbs.

### Operating Features

- Travel:** .040 minimum
- Operating Force:** 175 ± 40 grams
- Operating Temperature:** -30°C to +80°C

### Material and Finishes

- Terminal Pin:** Phosphor bronze, solder-plated
- PC Board:** FR-4 glass cloth epoxy
- Keypad:** Silicone rubber, durometer 50 ± 5
- Housing:** ABS, cycolac FR15
- Housing Color:** Black

### Shielding Effectiveness

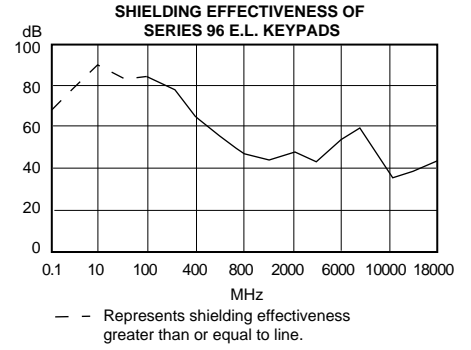
Results shown are typical for a standard Grayhill Series 84S keyboard. A conductive gasket will generally increase the shielding, depending on the size and shape of the gasket and its material. Data derived for E-Field Radiation.

### Test Method:

Measurements were made with the keyboard mounted to a brass plate, which in turn was mounted to a shielded enclosure containing the receiving equipment. A signal generator provided the frequency source that was radiated from the transmitting antenna to the enclosed receiving antenna. The spacing between antennas was maintained constant throughout the frequency range. The effectiveness rating is determined by establishing a reference reading without obstruction between the two antennas and determining the difference between that reading and the test setup reading.

### Note:

When measured in actual equipment, shielding effectiveness is determined by many factors. This method accurately represents the shielding effectiveness of the Grayhill Series 84S under Ideal test conditions.



| Frequency<br>M Hz | Rating<br>in dB |
|-------------------|-----------------|
| 0.1               | ⊕66.2           |
| 10                | ⊕94.8           |
| 100               | 90.5            |
| 400               | 64.2            |
| 800               | 42.3            |
| 2,000             | 40.5            |
| 6,000             | 33.1            |
| 10,000            | 34.4            |
| 18,000            | 37.0            |

## STANDARD LEGENDS

Available through Grayhill Distributors

To order one of the configurations below, use the dash number shown here; select the keypad size and code, and order the part number with the appropriate legend dash number.



-102



-006



-152



-056

## ORDERING INFORMATION



### Grayhill Series Number

**Keyboard Size:** A = 3x4, B = 4x4

**Circuitry:** B2 = Matrix (terminal pin header)

### E.L. Panel Backlighting Option

EL = Backlit, Blank = Non-backlit

### EMI/RFI Shielding Option

S = Shielded, Blank = Non-shielded

**Mounting Option:** F = Front panel mount, R = Rear panel mount

### Standard Legend Choices

*12 Position legends*

102 = Black legends on a white button

152 = White legends on a black button

*16 Position legends*

006 = Black legends on a white button

056 = White legends on a black button

Available from your local Grayhill Distributor.

For prices and discounts, contact a local Sales Office, an authorized local Distributor or Grayhill.

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А