



Technical drawing of a rectangular plate with dimensions and tolerances:

- Overall width: $2.200 \pm .015$ (55,88 $\pm$ 0,38)
- Overall height: $3.000 \pm .015$ (76,2 $\pm$ 0,38)
- Inner width: $2.000 \pm .010$ (50,8 $\pm$ 0,25)
- Inner height: $2.800 \pm .010$ (71,12 $\pm$ 0,25)
- Top edge feature: .093 $\pm$.005 (2,36 $\pm$ 0,13) DIA. 4 PLACES
- Bottom edge feature: .200 $\pm$.010 (5,08 $\pm$ 0,25)
- Left edge feature: .096 (2,44)
- Right edge feature: .100 $\pm$.010 (2,54 $\pm$ 0,25)
- Internal feature: .050 (1,27)
- Feature: RETAINING STUDS
- Feature: BUTTON NO. 1
- Feature: $\varnothing$ OF 2.200 (55,88)

3x4		CODES																			
		Matrix								Single Pole/Common Bus											
BUTTON LOCATION	1	•				•				•											•
	2		•																		•
	3			•																	•
	4				•																•
	5		•																		•
	6				•																•
	7	•																			•
	8		•																		•
	9			•																	•
	10																				•
	11		•																		•
	12			•																	•
		F	E	D	K	J	H	G	J	E	A	K	F	B	L	G	C	M	H	D	N
		TERMINAL LOCATION																			



Unsealed, .500" Centers, Flange Mounted

- 1/2" Button Centers
- Flange Mounted
- Top Surface or Sub Surface Mounting
- Snap-Dome Contact Provides Positive Feedback

[illegible]

Code and Truth Table

Technical drawing of a square terminal. The drawing includes a side view on the left and a top view on the right.

Side View Dimensions:

- Terminal width: $.280 \pm .010$ (7,11 $\pm$ 0,25)
- Terminal height: $.025 \pm .002$ (0,64 $\pm$ 0,05)
- Label: SQUARE TERMINAL

Top View Dimensions and Labels:

- Overall width: $2.700 \pm .015$ (68,58 $\pm$ 0,38)
- Overall height: $2.700 \pm .015$ (68,58 $\pm$ 0,38)
- Internal width: $.100$ (2,54) TYP.
- Internal height: $.100$ (2,54) TYP.
- Label: BUTTON NO. 1
- Label: RETAINING STUDS
- Label: ϕ OF 2.700 (68,58)
- Pin locations: AB, EFG, KLM, RST

MATRIX TERMINAL PIN-OUT

4x4								CODES																											
	Matrix							Single Pole/Common Bus																											
BUTTON LOCATION	1	.			.			.																	.								.		
	2		.			.		.																	.								.		
	3			.			.																		.								.		
	4				.		.																		.								.		
	5	.						.																	.								.		
	6		.						.																.								.		
	7			.						.															.								.		
	8				.			.																	.								.		
	9	.							.																.								.		
	10		.							.															.								.		
	11			.							.														.								.		
	12				.							.													.								.		
	13	.											.												.								.		
	14		.											.											.								.		
	15			.											.										.								.		
	16				.											.									.								.		
	H	G	F	E	M	L	K	J	P	I	E	A	R	L	F	B	S	M	H	C	T	N	G	D	K										
	TERMINAL LOCATION																																		



Unsealed, .500" Centers, Flange Mounted

- 1/2" Button Centers
- Flange Mounted
- Top Surface or Sub Surface Mounting
- Snap-Dome Contact Provides Positive Feedback

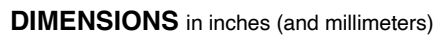
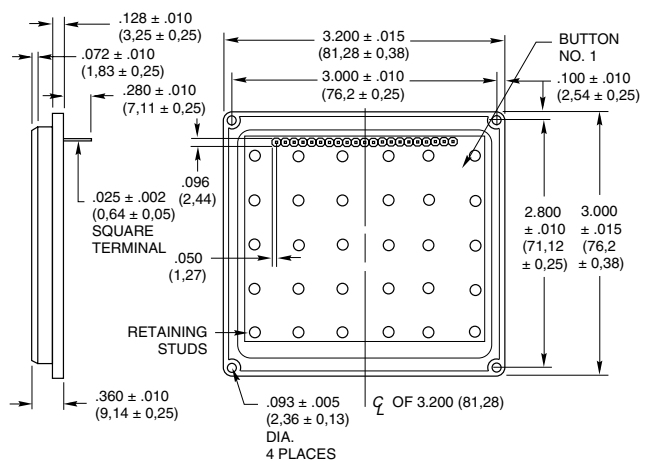


Figure 1: Dimensions of the 5x4 Switch Matrix. The diagram shows a 5x4 grid of square buttons numbered 1 to 20. Dimensions are given in inches with tolerances and equivalents in millimeters. Key dimensions include: button width (.150 ± .005, 3.81 ± 0.13 mm), button height (.127 ± 0.25, 3.18 ± 0.64 mm), button pitch (.500 ± .010, 12.7 ± 0.25 mm), button thickness (.366 ± .010, 9.30 ± 0.25 mm), and overall matrix dimensions (2.990 ± .010, 75.95 ± 0.25 mm). A switch key identification for reference is also shown.

**Termination** in inches (and millimeters)

Technical drawing of the 28-pin connector showing top and side views with dimensions and labels.

Top View Dimensions:

- Overall width: $3.200 \pm .015$ (81,28 $\pm$ 0,38)
- Pin pitch: $.100$ (2,54) TYP.
- Pin diameter: $.280 \pm .010$ (7,11 $\pm$ 0,25)
- Pin height: $.220 \pm .010$ (5,59 $\pm$ 0,25)
- Terminal thickness: $.025 \pm .002$ (0,64 $\pm$ 0,05) SQUARE TERMINAL
- RETAINING STUDS
- CL OF 3.200 (81,28)
- BUTTON NO. 1

Pin Labels (Top View): A, B, C, D, E, F, G, H, J, K, L, M, N, P, R, S, T, U, V, W

Side View Dimensions:

- Overall height: 2.000
- Pin height: $.100$ TYP.

Pin Labels (Side View): A B C D E F G H J K L M N P R S T U V W

Bottom View Dimensions:

- Overall width: $.800$
- Pin height: $.100$ TYP.

Pin Labels (Bottom View): F G H J K L M N P

Labels:

- SINGLE POLE COMMON BUS TERMINAL PIN-OUT**
- MATRIX TERMINAL PIN-OUT**

Code and Truth Table

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

5x4								CODES																													
Matrix								Single Pole/Common Bus																													
BUTTON LOCATION	1	•				•																							•								
	2		•				•																						•								
	3			•				•																					•								
	4				•				•																				•								
	5					•				•																			•								
	6	•									•																		•								
	7		•									•																	•								
	8			•									•																•								
	9				•									•															•								
	10					•									•														•								
	11	•														•													•								
	12		•														•												•								
	13			•														•											•								
	14				•														•										•								
	15					•														•									•								
	16	•																			•								•								
	17		•																			•							•								
	18			•																			•						•								
	19				•																			•					•								
	20					•																			•				•								
								P	N	K	G	F	J	L	M	H	T	P	M	H	D	U	Q	L	G	C	V	R	K	F	B	W	S	J	E	A	N
								TERMINAL LOCATION																													



SPECIFICATIONS

Rating Criteria

Rating at 24 Vdc: 10 milliamps, resistive

Contact Resistance: Compatible with MOS, TTL and DTL (10 ohms maximum)

Voltage Breakdown: 250 Vac between mutually insulated parts

Life Expectancy: 3,000,000 operations per button

Contact Bounce: Less than 4 milliseconds at make, 10 milliseconds at break

Operating Temperature: -40°C to +80°C

Materials and Finishes

Housing: ABS polycarbonate, black

Buttons: ABS plastic, white. Legends are black.

Snap-On-Cap: Clear polycarbonate

Contact Dome: Stainless steel, selectively

gold-plated

Terminals: Phosphor bronze

Operating Features

Button Travel: 0.015" nominal total travel

Typical Operating Force: 350 grams

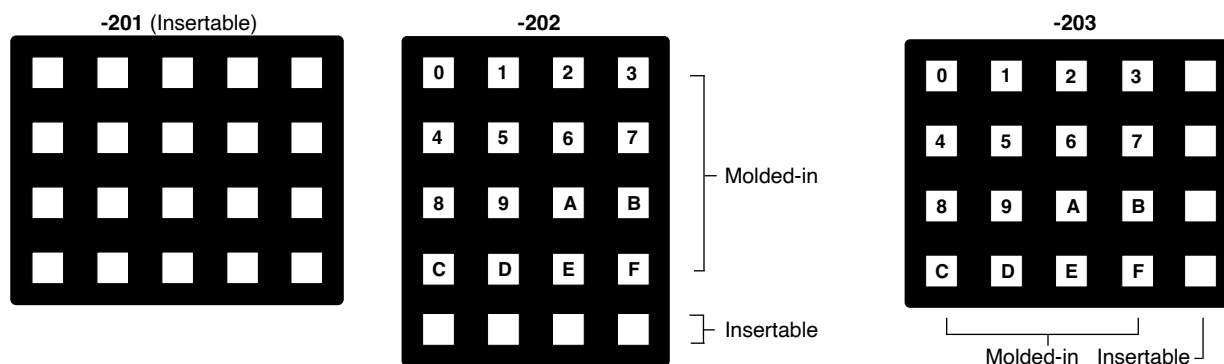
STANDARD LEGENDS

Insertable legend version (legend numbers -101, -001, -201 and row or column indicated in -202 and -203) has a removable cap. The revealed button surface can be legended by an insert or a dry transfer of a blank legend

5x4: Shown below

insert. This surface can also be ink stamped by Grayhill in higher volume quantities. When the cap is replaced, the assembly extends approximately .015" (0,38 mm) above the surface. The legend sheet information follows

the legend presentation. All other legends incorporate molded-in (two shot) legends with the exception of legend numbers -202 and -203. The blank legends or spaces in legends -202 and -203 are insertable legends, others are molded-in.

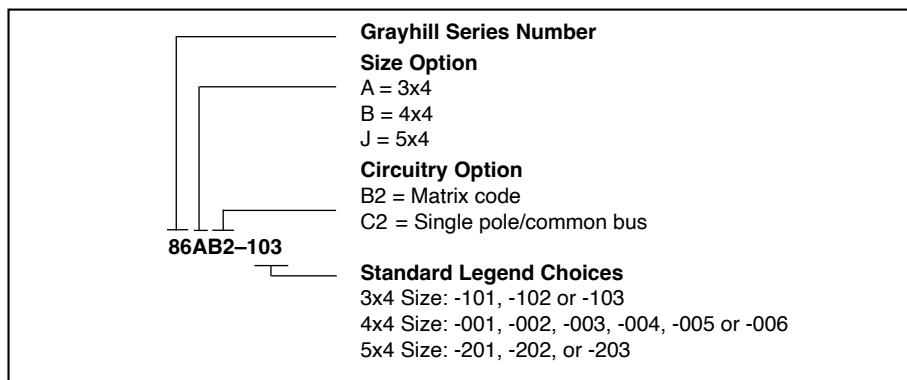


INSERTABLE LEGENDS

For use with -101, -001, -201, -202 and -203 legend options. Legends are die cut to fit button surface when cap is removed. Dry transfer legends offer some flexibility to customize the blank inserts included on the sheet of popular legend letters, words and symbols provided or on the insertable legends sheet.

Description	Part No.
Sheet of Legend Inserts	87AC2046
Dry Transfer Lettering, Small	87-DT-2096-088
Dry Transfer Lettering, Medium	87-DT-2096-125
Dry Transfer Lettering, Large	87-DT-2096-187

ORDERING INFORMATION



Available from your local Grayhill Distributor.

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