ELECTRONICS & DEFENSE

SERIES 584

ILLUMINATED PUSHBUTTON SWITCHES & INDICATORS WITH LED LIGHTING

SAFRAN

OUR **CATALOG**

Safran Electronics & Defense, a Safran high-tech company with worldwide leadership in optronics, avionics, electronics and critical software for civil and defense applications.

The pages of this catalog introduce Safran Electronics & Defense comprehensive range of part 21 products and part 145 services for both civil and military applications. These units are designed to meet the specifications of modern cockpits.

Your parts can be designed through the use of this catalog. For specific product requests, we remain at your disposal to study new configurations for your application.

For all orders or questions

marketing.avionics@safrangroup.com

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SERIES 584
LUMINATED PUSHBUTTON SWITCHES & INDICATORS WITH LED LIGHTING

Safran Electronics & Defense has field proven capability and pedigree of development and manufacturing of illuminated pushbutton switches and control panel products. This development covers a wide array of applications for civil and military platforms.

At the Safran Electronics & Defense facilities in North America, we manufacture pushbutton switches, illuminated panels, pilot controls, and cockpit control panels. The co-location of Safran Electronics & Defense design and manufacturing enables superior Control and delivery of Quality product. Everyone at Safran Electronics & Defense takes great pride in their work and the quality of the product being shipped to our customers. Additionally, Safran's switches, pilot control products, and cockpit control panels have demonstrated superior performance and reliability in the field.

584 PBA LED PRESENTATION

INTRODUCTION

The Series 584 PBA LED Lighted Avionics Pushbutton Switch is designed for life-of-the aircraft service. It features five aviation and five NVIS (Night Vision Imaging System) compatible colors. The Series 584 PBA is available in momentary action, alternate action, alternate action holding coil and indicator only configurations. Three termination systems are available: Plug-in, Solder turret and IWTS (Integrated Wire Termination System).

PEDIGREE

The Series 584 LED switch uses the proven four-pole switch contact pushbutton mechanism and qualified to MIL-PRF-22885/110. The switch display is illuminated by surface mount Light Emitting Diodes (LEDs) located within the lamp capsule.

Series 584 PBA switches, the LED version provides high reliability product in a lightweight, sunlight readable package with options of night vision compatibility, spray-tight sealing, and plug-in mounting.

LED LIGHTING

The Series 584 LED PBA functions with 28-Volt aircraft DC power supply systems. Additionally, the LED PBA Lighting is available linear or step function. The linear dimming is proportional to the external current or voltage input while the step dimming is defined by the desired daytime and night mode voltage levels. Series 584 PBA illumination life exceeds 100,0000 continuous hours due to optimized Electro-Opto-Mechanical design.

SWITCH DESIGN

The Series 584 LED pushbutton switch is a four pole, snap action, Form C device available in momentary, indicating alternate, and indicator configurations. Safran Electronics & Defense use of its proprietary bi- stable switch contact system differentiates the Series 584 switch from all other four pole pushbutton switches. This bi-stable design ensures contact reliability and speed by enabling four switch contacts to be equally stable in both C-NC and C-NO states, unlike sub-miniature switches which require a balanced spring system to maintain them in an activated mode. The switch actuation mechanism is a unique over-center snap actuator which precludes contact tease and inadvertent switch transfer by operators. The Series 584 PBAs deliver fast and simultaneous switch contact transfer based on the bi-stable and switch actuation mechanism..

Standard Series 584 LED pushbutton switch delivers 200,000 cycles. While the «Millennium» version delivers in excess of 1,000,000 cycles

PERFORMANCE AND RELIABILITY

1. RELIABILITY

Switch life is based on three factors:

- **Mechanical life:** The 584 switch mechanism is rated for 1,000,000 actuations
- **Electrical life of the switch contacts:** 1,000,000 actuation cycle at 0.01 to 0.1 amperes resistive
- **Electrical life of the lighting circuitry:** 100,000 continuous hours based on when the degradation reaches 50% of its initial brightness value

Reliability Prediction

The MTBF for the Series 584 LED pushbutton switch is predicted to be greater than 500,000 hours based on MIL-HDBK-217F and the Non-Electronic Parts Reliability Data (NPRD) and the assumption of one operation cycle per flight. However the MTBF computation is performed based on each application pending the environmental conditions. We can determine the MTBF for a given requirements.

2. PERFORMANCE CHARACTERISTICS

Polarity

LED's are polarity sensitive devices therefore Safran Electronics & Defense provides polarity definition as part of the electronic circuit information marked on the side of the 584 LED switches. Additionally, the polarity can be marked on the connector to prevent incorrect wiring. The electronic circuit is protected from accidental application of power with the wrong polarity.

Chromaticity and Luminance

Our LED illuminated switches are manufactured with true color LED's to meet specific chromaticity values. The LED luminance or brightness can be tailored to specific customer requirements if the application necessitates a deviation from the performance of the standard product provided here. Luminance levels for all LED capsule colors and legend configurations are derived for the specified bright and dim operating voltages. The selected voltage or current has minimal impact on legend colors. The LED color and luminance will operate consistently at the specified input voltages set for the bright and dim control voltages.

Low Power Consumption

The nominal power consumption for the Series 584 LED pushbutton switch is 1.5 Watts for the 28-Volt system. This represents a power savings of greater than 50% over a typical 28-Volt incandescent system.

Low Touch Temperature

The touch temperature at the face of the Series 584 LED pushbutton switch operated at 28 volts in an ambient temperature of 24 degrees Celsius has been tested at 38 degrees Celsius. This temperature rise of 14 degrees Celsius is as much as 40 degrees Celsius cooler than an equivalent 28 volt incandescent light source.

LED Design Redundancy

The Series 584 LED PBA design utilizes eight LED's. A full display is made up of 8 LED's, while a half display would have 4 LED's per each half. Given the long life of the individual LED's, LED replacement is highly unlikely during the life of an aircraft; however premature loss of one or two LED's in a full display capsule would not result in a non-legible capsule legend. A half display will remain legible with one failed LED.

Qualification Data

The Series 584 LED pushbutton switch is qualified to MIL-PRF-22885/110.The LED upgrade to the 584 product is based on incandescent series 584 PBA and does not impact the structural integrity of the switch, and the basic switch operating mechanism remains the same.

3. DESIGN AND PRODUCT FLEXIBILITY

Dimming Methods

Safran offers «**linear dimming**», «**step dimming**» and «**logarithmic dimming**» capabilities for the Series 584 LED PBA switch.

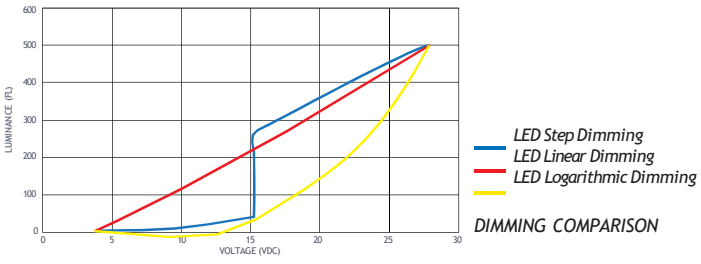
Linear dimming uses external voltage input for providing the dimming control. In this method, the voltage input to the switch is varied from full rated voltage (bright mode) to a desired dim voltage level (dim mode). In this configuration, the LED current limiting resistors are located inside the switch body which control the current and subsequently tune the luminance value of the LED's.

Step dimming provides dimming control internal to the switch and is generally designed to provide a «stair-step» response to bright and dim mode voltage inputs to achieve desired levels of luminance for day and night operation.

Logarithmic dimming, or the incandescent curve, mimics the light or luminance output of a conventional incandescent lamp circuit as the voltage input is adjusted from full bright at 28 VDC to ~5 VDC.

In a 28-Volt system, an electrical circuit within the switch housing provides the voltage reduction and dimming circuitry to provide the desired bright mode and dim mode luminance at the desired voltages. The dimming circuit is attached to the switch body to remove heat away from the LED capsule and thereby increase their operating life.

The graph shown compares the luminance versus voltage curve for a standard 28-Volt LED PBA switch with step dimming to that of a 28-Volt LED PBA switch with linear dimming and a typical 28-Volt incandescent switch. For custom applications the range of the dimming step can be pre-specified within 22 to 12 Volt for a 28-Volt system.



DIMMING COMPARISON

4. HANDLING

Due to sensitivity of electronics and Electro-Optics component to ESD the series 584 LED PBAs shipped with ESD protection packaging. We strongly recommend that proper ESD handling procedures are used when working with the series 584 LED pushbutton switches.

MECHANICAL SPECIFICATION

The length of each unit is specified from the rear of the housing flange to the end of the switch body, not including terminals. Terminal length is 0.2 inches (5.1 mm) for solder and PCB units.

To calculate the actual behind panel depth for your application, subtract the thickness of the panel, the thickness of spacers used above panel and 0.030 inches for the drip-proof panel seal, if required, from the length of unit listed below.

	Maximum Length Behind Switch Housing Flange	Maximum Weight
Basic Length, Solder & PCB Termination	2.27 inches (35.mm)	26 grams
Basic Length, Plug-in Termination	2.56 inches (52.3.mm)	27grams
Basic Length, Solder & PCB Termination, Diaphragm Seal	2.00 inches (37.3.mm)	29 grams
Basic Length, Plug-in Termination, Diaphragm Seal	2.29 inches (46.2mm)	30 grams
584-REL5 Plug-in Mount	See 584-REL5	14 grams

Switch Form	Form C single break
Actuation Travel	0.135 ± 0.010 inches (3.43 ± 0.25 mm).
Actuation Force	2 to 5 lbs (8.9 to 22.3 N)
Extraction Force	3 to 5 lbs (13.3 to 22.3 N)
Mounting Torque	18 ± 2 inch-oz. (0.127 ± 0.014 N·m)
Internal Seal	Dust & Drip-proof per MIL-PRF-22885
Diaphragm Seal	Spray-tight per MIL-STD-108
Mechanical Life	200 000 cycles MIL-
Marking	STD-130

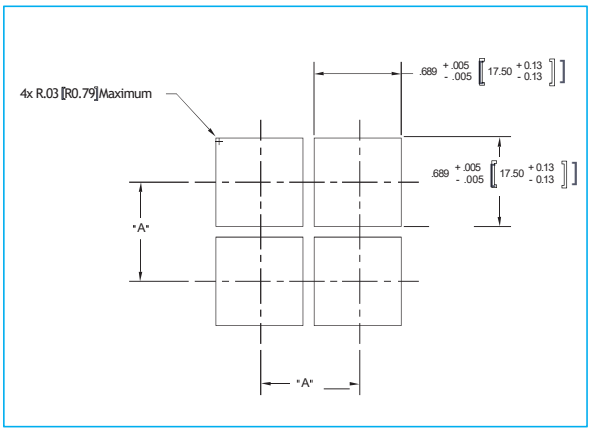


Figure 1. *Recommended Panel Cutout*

TYPE	DIMENSION "A"
Unsealed Switch	*.780 [19.8]*
Switch with Spray Tight Boot	*.930 [23.62]*

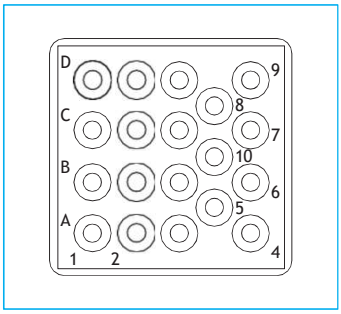


Figure 2. *8 Amp IWTS Terminations*

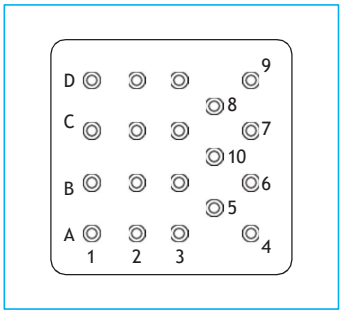
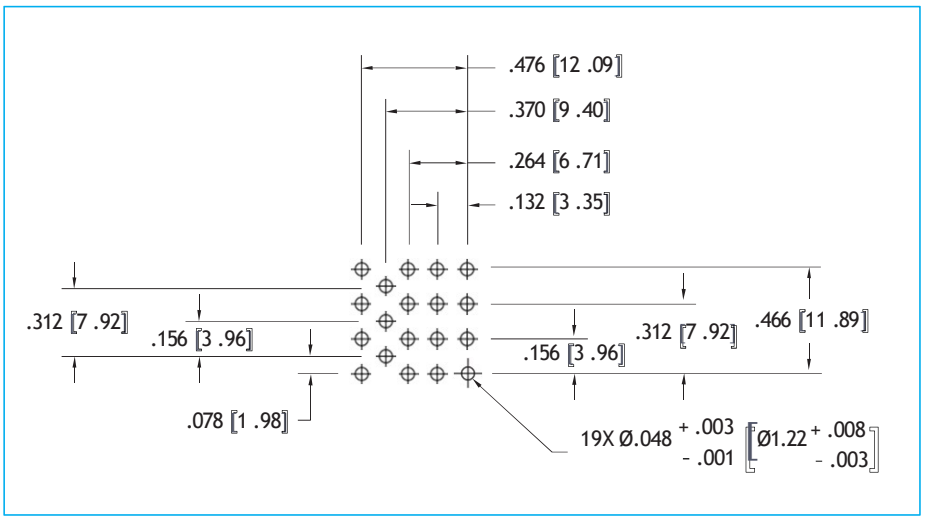


Figure 3*. 8 Amp Terminations Styles: Solder, Plug-in, PCB (shown)*

Figure 4. *8 Amp Termination PCB Layout*



DIMENSIONAL SPECIFICATIONS

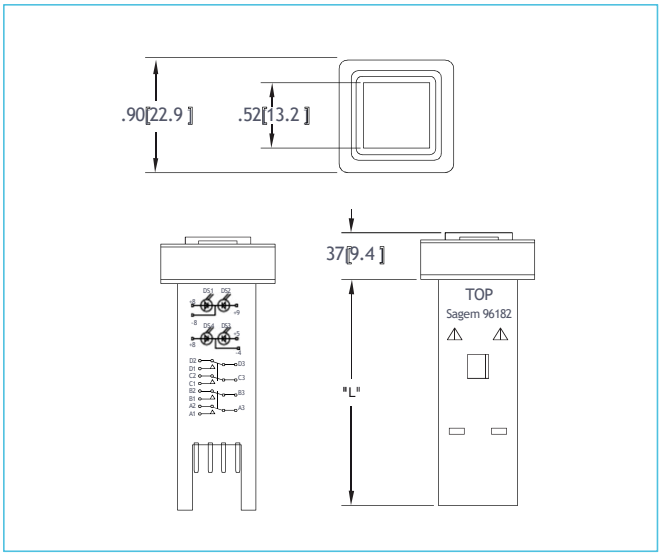


Figure 5. *Spraytight Seal*

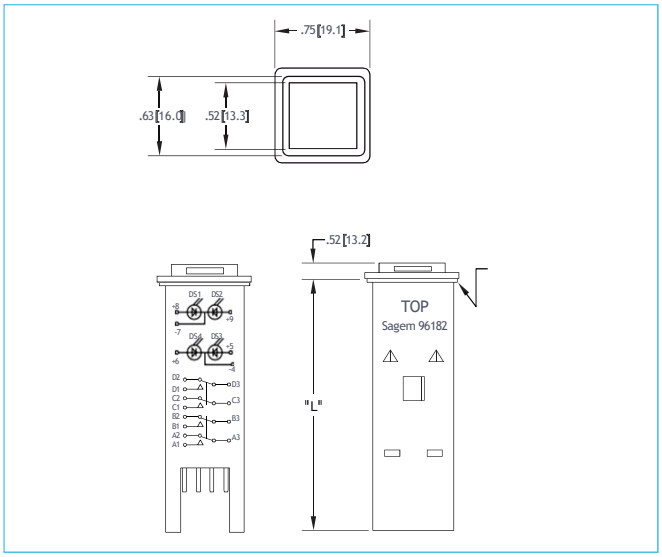


Figure 6. *Dust Resistant or Dripprof Seal*

PLUG-IN TERMINATION

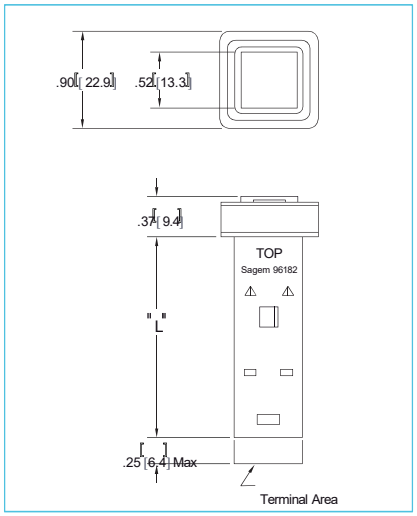


Figure 7. *Spray Tight Seal*

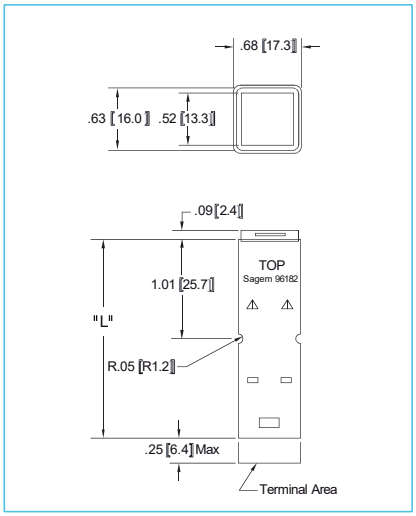


Figure 8. *Dust Resistant or Dripproof Seal*

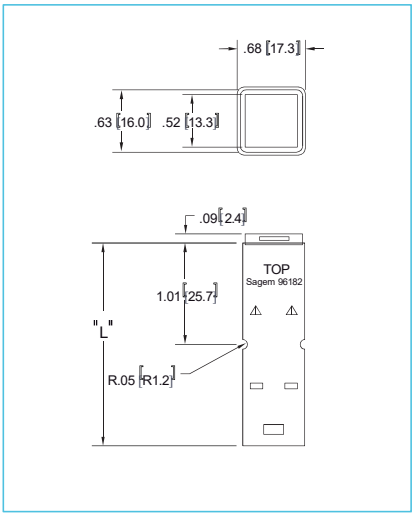
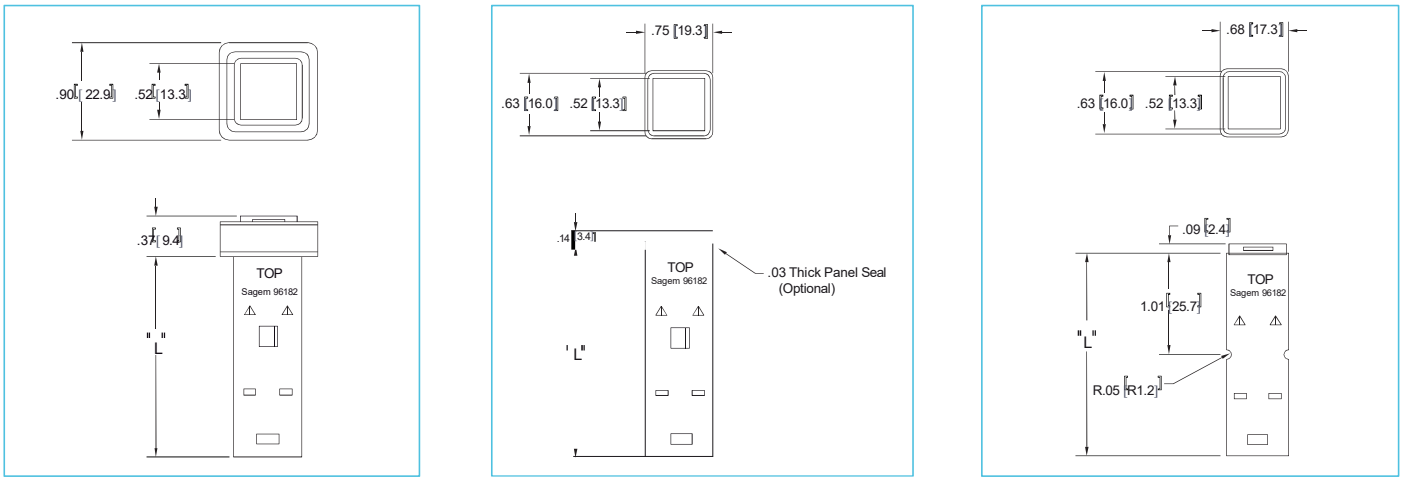


Figure 9. *Rod Mount*

TURRET TERMINAL OR PCB TERMINATION

		DIM «L»	
Termination Type	**Device Description**	**Unsealed Or Dripproof**	**Spray Tight**
Plug-in	Basic, Switch	2.56 [65.0]	2.29 [58.2]
	Basic, Holding Coil	3.10 [78.7]	2.83 [71.9]
Solder	Basic, Switch	2.27 [57.6]	2.00 [50.8]
Turrent	Basic, Holding Coil	2.81 [71.4]	2.54 [64.5]
or PCB	Basic, Holding Coil, Rod Mtg.	2.85 [72.4]	not available

Table 1. 8Amp Plug-in, Turrent and PCB Terminations



IWTS TERMINATION

		DIM «L»	
Spray Tight	**Termination Type**	**Device Description**	**Unsealed Or Dripproof**
IWTS	Basic, Switch	2.74 [69.6]	2.47 [62.7]
	Holding Coil, Basic	3.28 [83.3]	3.01 [76.4]
	Holding Coil, Basic, Rod Mtg.	3.32 [84.3]	not available

Table 2. 8 Amp IWTS

ENVIRONMENTAL SPECIFICATIONS

Operating Temperatures	-40C° to +71°C
Storage Temperatures	-55°C to +85°C
Thermal Shock	MIL-STD-202, Method 107, Condition A
Moisture	MIL-STD-202, Method 106
Salt Spray	MIL-STD-202, Method 101, Condition A, 96hours
Sand and Dust	MIL-STD-202, Method 110
Fungus	MIL-STD-810, Method 508, All Materials used are non-nutrient to fungus
Vibration	MIL-STD-202, Method 204m Condition B, for single channel mount. For multiple channel matrix mount, contact the factory for information
Shock	MIL-STD-202, Method 213, Condition B
Explosion	MIL-STD-202, Method 109
Magnet Effect	RTCA/DO-160, Section 15, Class Z
Power Input	RTCA/DO-160, Section 16, Category Z
Voltage Spike	RTCA/DO-160, Section 17, Category B
Audio Frequency Conducted Susceptibility	RTCA/DO-160, Section 18, Category Z
Induced Signal Susceptibility	RTCA/DO-160, Section 19, Category Z
Emission of Radio Frequency Energy	RTCA/DO-160, Section 21, Category M

ELECTRICAL SPECIFICATIONS

584 and 584 Millenium Current Ratings[1]

Load	Sea level 28 vdc Max	Sea level 115 vac Max	50 000 Ft 28 vdc Max	50 000 Ft 115 vac Max	Life
Resistive	8.0 A	8.0 A	5.0 A	5.0 A	25 000 cycles
Resistive	5.0 A	5.0 A	3.0 A	3.0 A	100 000 cycles
Inductive	4.0 A	4.0 A	2.5 A	2.5 A	25 000 cycles
Inductive	0.5 A	0.5 A	0.3 A	0.3 A	100 000 cycles
Lamp	1.0 A	1.0 A	-	-	50 000 cycles

Table 3. *Other application values can be identified on the switch life graph shown in figure 13.*

584 and 584 Millenium Current Ratings[1]

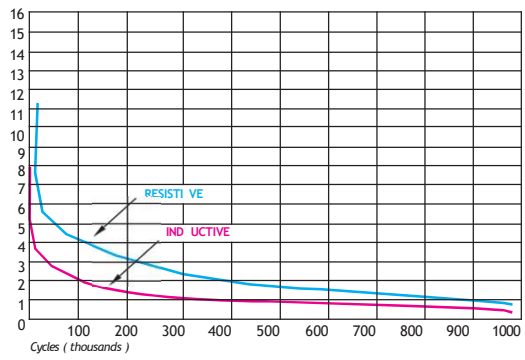
Logic Level	Sea Level 5 vdc Max	Life
Resistive	0.01 A	50 000 cycles

584 Low Level Rating[1]

Low Level	Sea Level 0.03 vdc Max	Life
Resistive	0.01 A	200 000 cycles

584 Millenium Low Level Rating[1]

Low Level	Sea Level 0.01 vdc Max	Life
Resistive	0.003 A	1 000 000 cycles



Note 1 *Contacts subjected to currents over 100 mA are no longer useable for low current applications. Contact Resistance: Initial contact resistance at 6 VDC, 100 mA is 25 mΩ maximum. Post application resistance is 1% of the electrical circuit when measured during the operation of that circuit. Since the switch contacts are not hermetically sealed, actual contact resistance will vary based upon the cleanliness of the operating environment.*

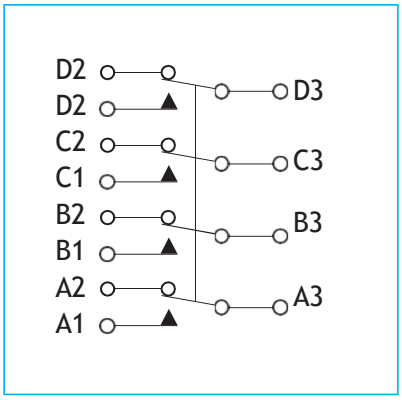


Figure 14.
4PDPT Switch

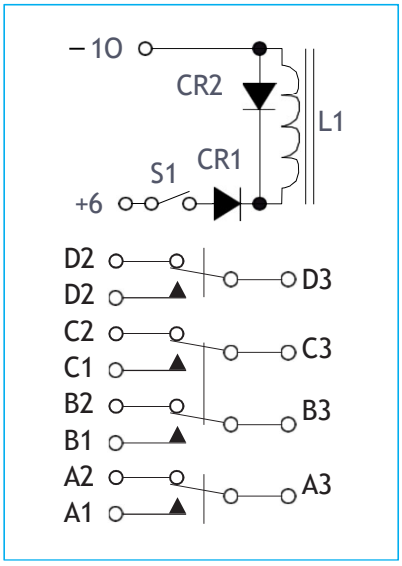


Figure 15.
4PDPT Switch with Alternate Holding Coil

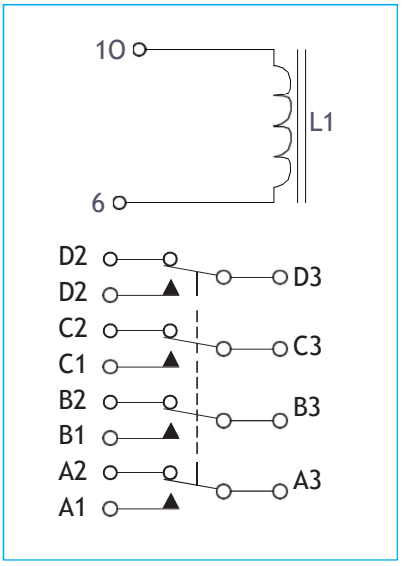


Figure 16.
4PDPT Switch with Momentary Holding Coil

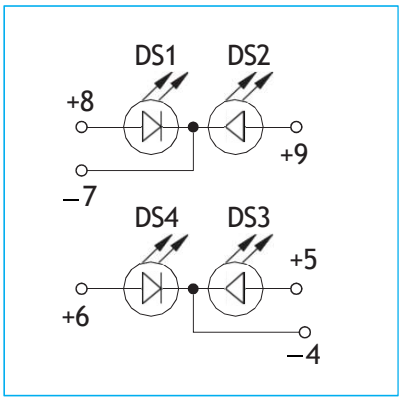


Figure 17.
C1 Four Lamp Separate Power & Ground not available with holding coil devices (see C2 or C3).

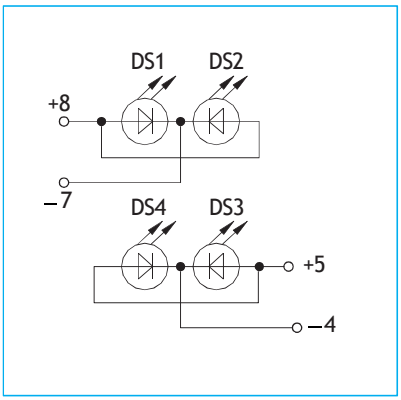


Figure 18.
C2 Two Lamp Common Power & Ground

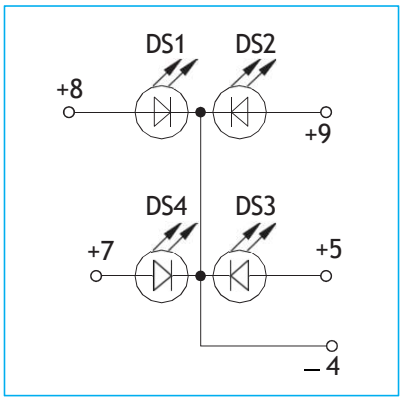


Figure 19.
C3 Four Lamp Separate Power & Common Ground

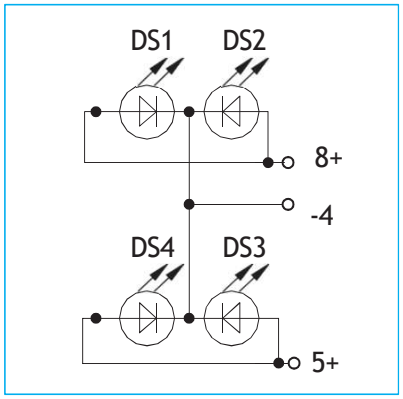


Figure 20.
C5 Two Lamp Common Power & Four Lamp Common Ground

DISPLAY SPECIFICATIONS

The Series 584 is available with a variety of display screens. The most common types are listed below. For special requirements, contact the factory customer service center.

DISPLAY TYPE DESIGNATION		WITH LIGHT SOURCE NOT ENERGIZED			WITH LIGHT SOURCE ENERGIZED		
MIL-PRF-22885	SAGEM	LEGEND	BACKGROUND	APPEARANCE/DESCRIPTIONS	LEGEND	BACKGROUND	APPEARANCE/DESCRIPTIONS
N	1	White	Black	 White characters on opaque black background	Color	Black	 Color characters on black background
W	2	Black	White	 Opaque black characters on white background	Black	Color	 Black characters on color background
S	5	Not visible	Black	 Hidden characters on black background	Color	Black	 Color characters on black background. Sunlight Readable
C	6	Black	Color	 Opaque black characters on color background	Black	Color	 Black characters on color background
B	8	Not visible	Black	 Hidden characters on black background	Black	Color	 Black characters on color background
Special	9	White	Black	 Opaque white characters on opaque black background	White	Color	 White characters on color background
special	40	White	Black	 White characters on black background for low ambient light	Color	Black	 Color characters on black background for low ambient light
special	12	White	Black	 White characters on black background	Color	Black	 Color characters on black background.
		Black	Black	 Hidden characters on black background	Color	Black	 Color characters on black background.

SAFRAN

OPTICAL SPECIFICATIONS

Luminance

The table below specifies the Luminance of PBAs at bright mode and dim mode. Bright mode luminance values are provided when the input voltage is 28V. Dim mode luminance values are provided when the input voltage is 14V.
However, customers can specify non-standard dim voltage within the range of 12V to 22V.

Aviation Color	Luminance (fL) Bright mode at 28V	Luminance (fL) Dim mode at 14V
RED	≥ 250	15±5
AMBER	≥ 250	15±5
GREEN	≥ 250	15±5
WHITE	≥ 250	15±5
BLUE	≥ 200	10±5

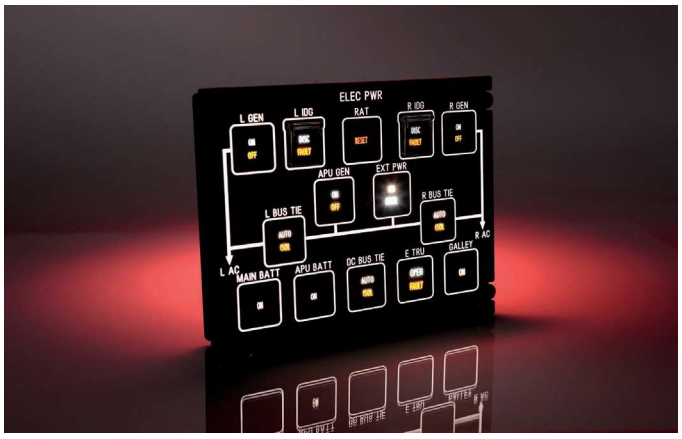
Contrast

The table below specifies the sunlight readability by contrast values between legend and background for sunlight readable display types. The measurements shall be performed at the following illumination conditions: 10,000 fC of 3000K to 5000K light source incidents to the measured surface at 45°±2°. The photometer is positioned perpendicular to the measured surface.

Aviation Color	On-Contrast (C_L)	Off-Contrast (C_{UL})
RED	≥ 0.6	≤ 0.1
AMBER	≥ 0.6	≤ 0.1
GREEN	≥ 0.6	≤ 0.1
WHITE	≥ 0.6	≤ 0.1
BLUE	≥ 0.6	≤ 0.1

Chromaticity

The typical color coordinates of illuminated characters and background shall be within the area defined by the following color coordinates based on the CIE 1931 Chromaticity diagram.



Control Panel with illuminated pushbutton switches

Color	Chromaticity Coordinates based on CIE 1931	
	x	y
RED	0.665 0.665 0.695 0.710	0.335 0.320 0.290 0.290
AMBER	0.540 0.540 0.610 0.625	0.459 0.445 0.375 0.375
GREEN	0.150 0.150 0.300 0.300	0.808 0.640 0.640 0.694
WHITE	0.290 0.330 0.400 0.360	0.315 0.285 0.390 0.420
BLUE	0.175 0.175 0.077 -	0.005 0.175 0.175 -

NVIS Compatible Display

Our NVIS compatible displays meet the requirements of MIL-L-85762A and MIL-STD-3009.

The typical sunlight readable NVIS displays are shown in the following table.

The typical sunlight readable NVIS displays are shown in the following table.

WITH LIGHT SOURCE NOT ENERGIZED			WITH LIGHT SOURCE ENERGIZED		
LEGEND	BACKGROUND	APPEARANCE/DESCRIPTIONS	LEGEND	BACKGROUND	APPEARANCE/DESCRIPTIONS
Not visible	Black	Hidden characters on black background	Red	Black	Red characters on black background
			Yellow	Black	Yellow characters on black background
			White	Black	White characters on black background.
			Green B	Black	Green characters on black background
			Green A	Black	Green characters on black background

Luminance - NVIS Compatible Display

NVIS-Compatible Color	Class	Luminance (fL) Bright mode at 28V	Luminance (fL) Dim mode at 14V
RED	B	≥ 200	15±5
[1] YELLOW	A and B	≥ 200	15±5
[1] WHITE	A and B	≥ 200	15±5
[1] GREEN B	A and B	≥ 200	15±5
[1 & 2] GREEN A	A and B	1±0.5	N/A

Note 1: PBAs of Yellow Class A, White, Green A, and Green B are able dimmable continuously to less than 0.1fL.

Note 2: Legends with Green A applications appear the same as the markings of the illuminated panels.

NVIS Color and Radiance

The center chromaticity coordinates and its radius of a circle for each NVIS compatible color is specified in the table. At the luminance level specified in the following table, the u′ and v′ chromaticity coordinate values for Green A and White shall be within the areas by the defined circles; the u′ and v′ chromaticity coordinate values for Green B, Yellow, and Red shall be within the area by the defined circles and CIE 1976 diagram boundary.

The NVIS radiance for each NVIS compatible color shall meet the requirements in the table at the specified luminance level.

NVIS-Compatible Color	Class	Chromaticity Coordinates Based on CIE 1976				NVIS RADIANCE (NRa or NRb) ($W/cm^2 \cdot sr$)
		u′	v′	r	Luminance (fL)	
RED	B	0.450	0.550	0.060	15	$4.7\times10^{-8} < NRb < 1.4\times10^{-7}$
YELLOW	B	0.274	0.622	0.083	15	$4.7\times10^{-8} < NRb < 1.4\times10^{-7}$
YELLOW	A	0.274	0.622	0.083	15	$5.0\times10^{-8} < NRa < 1.5\times10^{-7}$
GREEN B	A and B	0.131	0.623	0.057	0.1	$NRa, NRb < 1.7\times10^{-10}$
GREEN A	A and B	0.088	0.543	0.037	0.1	$NRa, NRb < 1.7\times10^{-10}$
WHITE	A and B	0.190	0.490	0.040	0.1	$NRa, NRb < 1.0\times10^{-9}$

NVIS-Compatible Color	Class	On-Contrast (C_L)	Off-Contrast (C_{UL})
RED	B	≥ 0.6	≤ 0.1
YELLOW	A and B	≥ 0.6	≤ 0.1
WHITE	A and B	≥ 0.6	≤ 0.1
GREEN B	A and B	≥ 0.6	≤ 0.1
GREEN A	A and B	≥ 10.0	≥ 10.0

Contrast – NVIS Compatible Display

The table on the right specifies the sunlight readability by contrast values between legend and background for sunlight readable display types. The measurements for NVIS Red, NVIS Yellow, and NVIS Green B shall be performed at the following illumination conditions: 10,000 fC of 3000K to 5000K light source incidents to the measured surface at 45°±2°. The photometer is positioned perpendicular to the measured surface. The measurements for NVIS Green A shall be performed at the following illumination conditions: 50 fC of cool light source F2 incidents to the measured surface at 45°±2°. The photometer is positioned perpendicular to the measured surface.

CREATE YOUR OWN REFERENCE

This catalog describes the standard and optional features of the Series 584. To determine the correct part number, refer to the following pages. Samples of the typical part number are shown on each page to aid your selection.

584	71	A4	B5	C1	D2	G28	L5000	N2	GR	P12	16	ON/OFF
Series No.	Unit Options	Switch Action	Termination	Lamp Circuit	Panel Thickness	Voltage	Display Screen	Display configuration	Display color	Character Front/ Height	Legend Configuration	Legend

1 Series Codes

58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

The series number is identified by the first three or four digits of the part number.

Series	Code
584	584
584 with QA per M22885/110	584H
584 Millenium	584M

2 Option Codes

58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

Several products options are identified by the next two digits of the part number. Use the table below to select the lighting option, sealing level.

Lighting Option	Fourth Digit
LED with Step Dimming	7
LED with Linear Dimming	8
LED-NVIS with Step Dimming	9

Seal Options	Fifth Digit
Dust Resistant	0
Drip-proof, with Panel Seal	1
Spraytight, With Diaphragm Seal	2

3 Switch Action Codes

58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

The letter "A" and the digit immediately following it identify the switch action

Basic Unit	Code
Indicator	A0
4PDT Monetary Switch	A1
4PDT Alternate Switch	A2
4PDT Momentary Holding Coil Switch	A3
4PDT Alternate Holding Coil Switch	A4

4 Termination and Mounting

58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

The letter "B" and the digit following it identify the termination and mounting method.

Termination	Maximum Current Carrying Capacity	Compatible Connector Pins	Wire Size	Code
Plug-in	8A	M39029/22-192	20-24 AWG	B5
solder Turret	8A	N/A	20-24 AWG	B2
PCB	8A	N/A	20-24 AWG	B3
IWTS	8A	M39029/1-100	22-26 AWG	B4
		M39029/1-100	22-24 AWG	B4
Solder Turret w/Rod Mount	8A	N/A		B7
PCB w/Rod Mount	8A	N/A		B8
IWTS w/Rod Mount	8A	M39029/1-100	22-26 AWG	B9
		M39029/1-101	22-24 AWG	

5 Lamp Circuit Codes

58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

The letter "C" and the digit following it designate the lamp circuit. For information on custom circuits, contact the factory customer service center.

Lamp Circuit	Code
Dual Ground , 4 Way Split	C1
Dual Ground , 2 Way Split	C2
Common Ground, 4 Way Split	C3
Common Ground, 2 Way Split	C5

6 Termination and Mounting

58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

The letter "D" and the digit following it identify the mounting hardware requirements for IWTS, solder and PCB units. This code is omitted if a plug-in mount unit is specified. Plug-in hardware is specified by separate part numbers listed later in this catalog. Custom mounting hardware is available by request. Contact the factory customer service center for information.

Spacer	Spacer Height	Panel Thickness Range	Code
No Spacer	-	0.030-0.149(0.76-3.79 mm)	D25
Black	0.100(2.5mm)	0.030-0.149(0.76-3.79 mm)	D1
No Spacer	-	.150-0.269 (3.80-6.83 mm)	D26
Black	0.100 (2.5mm)	.150-0.269 (3.80-6.83 mm)	D2

7 Voltage Codes

58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

The letter "G" and the digit(s) following identify the lighting system input voltage.

Voltage Type	Code
5-VDC	G5
28-VDC	G28

Note : 5-VDC is available with linear dimming only

8 Display Screen Codes

58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

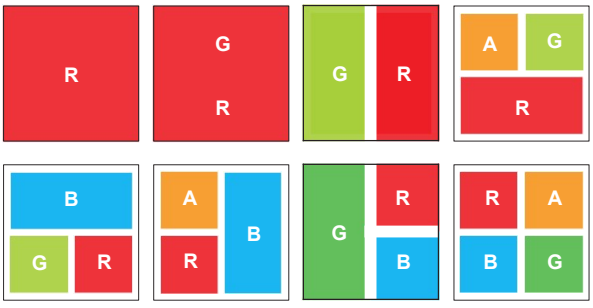
The letter"L" and the digits immediately following it identify the display screen. Display screens vary by the light source specified. To select the proper display screen code, identify the display type listed in the left column and the light source listed across the top row. Display screen types are described in the Optical Specification section.

Display Type	NVIS	Non-NVIS
1		L5001
2		L5002
5	L5060	L5000
6		L5006
7		L5007
8	L5061	L5008
9		L5009
12	L5062	L5012
40	L5066	L5040

9 Display Configuration Codes

58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

The letter "N" and the number following it designate the lens configuration as follows: Full display and Split displays.



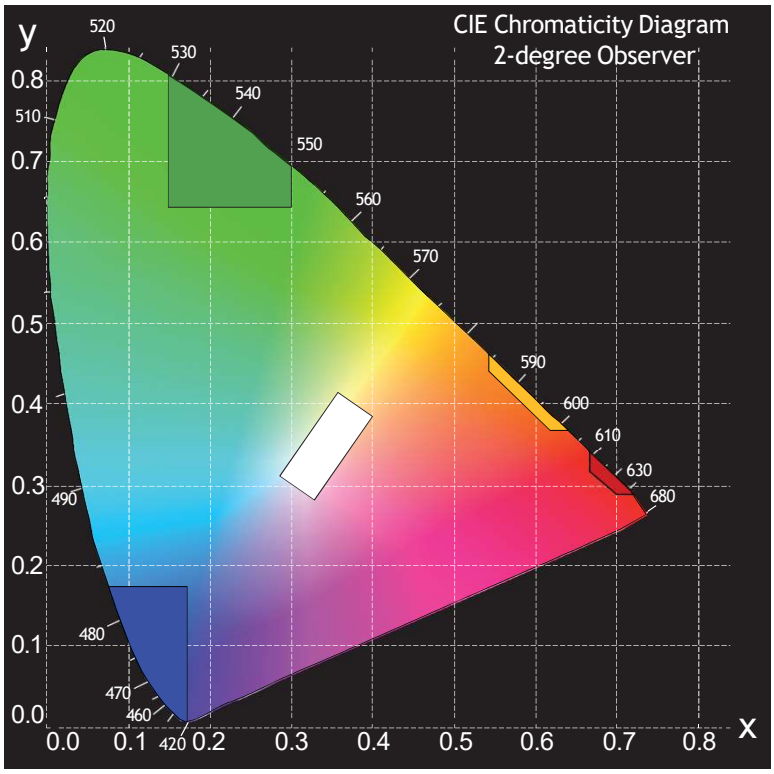
10 Display Configuration Codes

58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

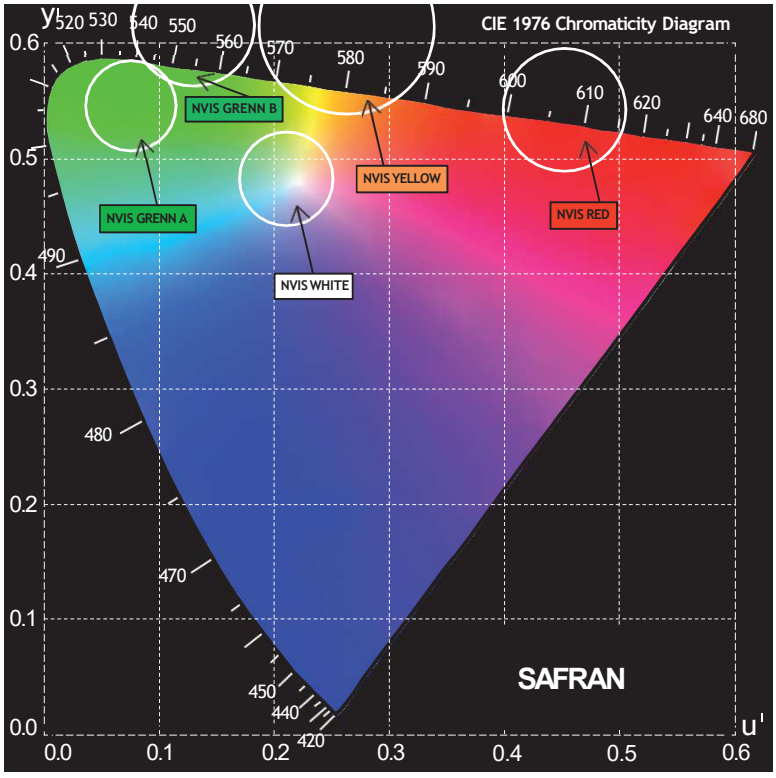
The Letters in parentheses following the lens configuration identify the lighted colors of the unit. In split displays, multiple letters are used to designate the colors of individual sections, in order from left to right and top to bottom. For example, in a four way split device, the designation (RWBG) would identify a red upper left quadrant, white upper right, blue lower left and green lower right.

Aviation Color	Display Code
RED	R
AMBER	A
GREEN	G
WHITE	W
BLUE	B

NVIS-Compatible Color	Class	NVIS-Compatible Display Code
RED	B	K
YELLOW	B	J
YELLOW	A	T
WHITE	A&B	V
GREEN B	A&B	H
GREEN A	A&B	F



Color limits within CIE Diagram



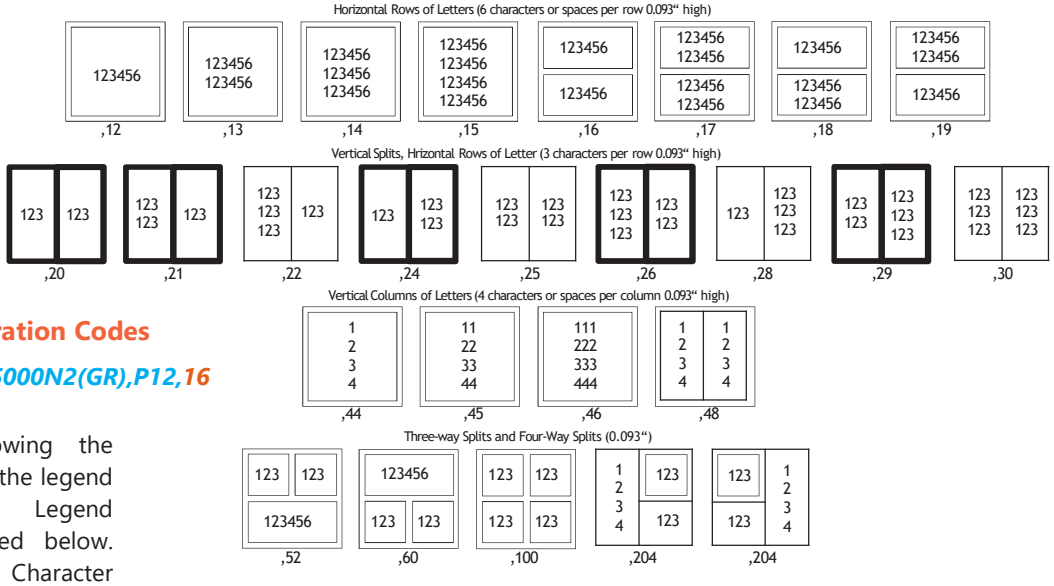
11 Character Font and Height Codes

58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

The Letter "P" and the digits following it identify the font style and character height to be used for the legend nomenclature

Letter Style	Font	Character Height	Letters Per Full Row[2]	Letters Per Half Row[3]	Code
Helvetica Medium[1]	1	0.093 (2.4 mm)[1]	7	3	P11
Helvetica Medium	1	0.125 (3.2 mm)	5	2	P12
Helvetica Medium Bold[4]	1	0.125 (3.2 mm)	5	2	P12B
Helvetica Medium Condensed	2	0.093 (2.4 mm)	8	3	P14
Helvetica Medium Condensed	2	0.125 (3.2 mm)	6	2	P16
Helvetica Med Condensed Bold[4]	2	0.125 (3.2 mm)	6	2	P16
DIN 1451/17	4	0.125 (3.2 mm)	4	2	P18
DIN 1451/17 Bold[4]	4	0.125 (3.2 mm)	4	2	P18B
DIN 1451/17 Condensed	5	0.125 (3.2 mm)	6	2	P19
DIN 1451/17 Condensed	5	0.125 (3.2 mm)	6	2	P19B
Futura Medium	7	0.125 (3.2 mm)	5	2	P20
Futura Medium Bold[4]	7	0.125 (3.2 mm)	5	2	P20B
Futura Medium Condensed	8	0.125 (3.2 mm)	6	2	P21
Futura Med Bold[4]	8	0.125 (3.2 mm)	6	2	P21B

Note 1: Default letter style and height. Allows two rows of text per half (N2) display, larger heights only allow one row of text.
Note 1: Average for a full width N1 or N2 display. Each legend will vary based on the actual letters used.
Note 1: Average for a half width N3/N11/N12/N13/N14 or N15 display. Each legend will vary based on the actual letters used.
Note 1: 15% wider character stroke width. Recommended for better off-angle viewing.



12 Legend Configuration Codes

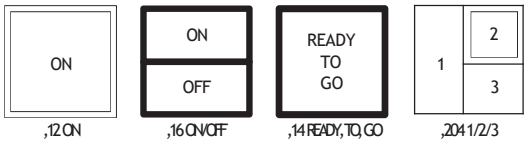
58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

The two digits following the second comma identify the legend configuration. Legend configurations are listed below. The .093 inch (2.4mm) Character height is shown.

13 Legend Nomenclature

58471A4B5C1D2G28L5000N2(GR),P12,16 ON/OFF

The legend nomenclature must be written out as part of the catalog part number when ordering a switch or indicator. The legend is appended to the catalog part number after the legend configuration code. Commas are used between rows of characters and a slash is used to identify legend splits. When specifying a legend with a split, the order for the nomenclature is upper left, upper right, lower left and lower right. Examples are listed below.



SERIES 584 PLUG-IN MOUNTING SLEEVES WITH CONNECTOR BLOCK

Basic Mounting Sleeve 584-RDL5-XXX, 584-REL5 for M39029/22-192 Connector Pins

After the switch has been inserted in the panel, this sleeve slides over the behind panel portion of the switch and is secured by tightening the pawl. When switch removal is necessary, access to both the front and rear of the panel is required.

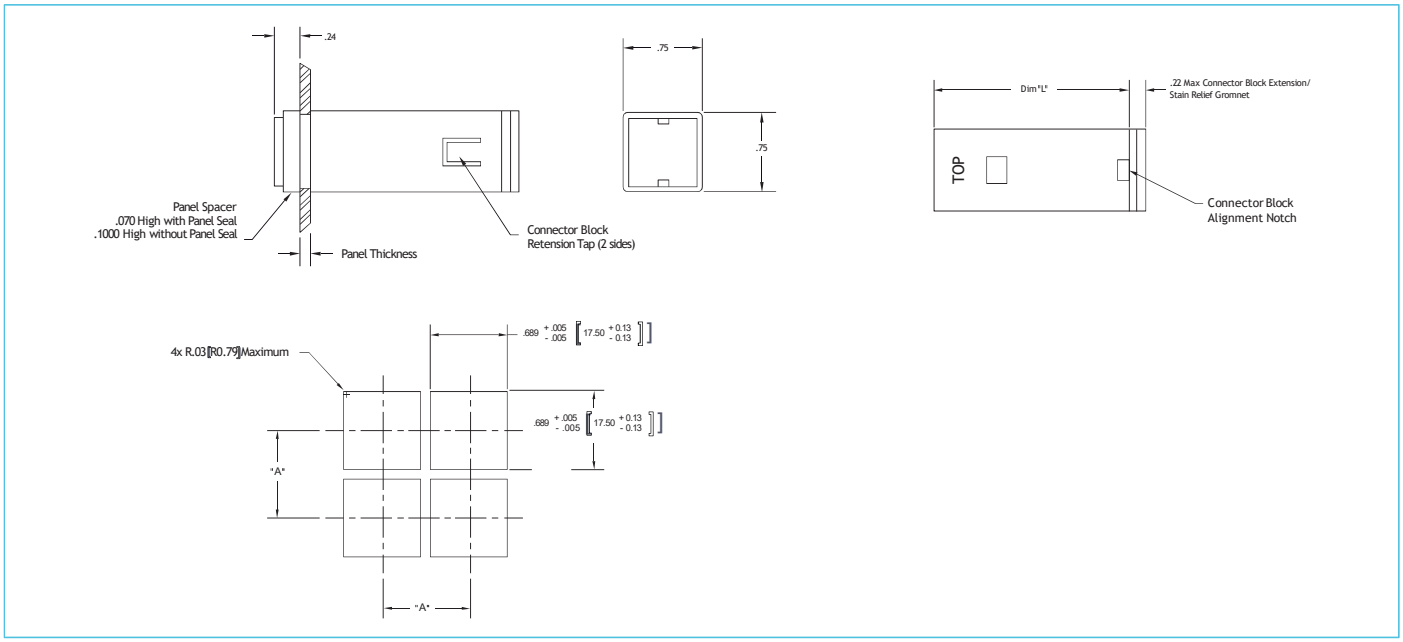
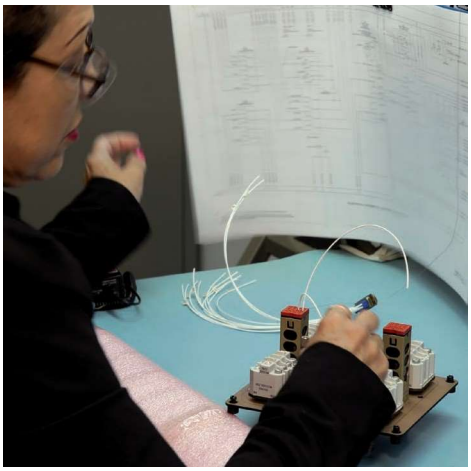


Figure 23.
Plug-In Mounting Sleeve with Connector and Plug-In Mounting Sleeve



Mounting Sleeve Dash Numbers for Dust Resistant, Spraytight & Dripproof 8 Amp Devices

Device Description	Code	Code Dash Numbers (-XXX)							
		.032 [.813]	.063 [1.59]	.094 [2.39]	.125 [3.17]	.157 [3.99]	.188 [4.78]	.219 [5.56]	.250 [6.35]
Basic, Switch	584-REL5	-1	-2	-3	-4	-5	-6	-7	-8
Basic, Holding Coil	584-REHL5	-1	-2	-3	-4	-5	-6	-7	-8
Basic, Switch	584-REL5	-201	-202	-203	-204	-205	-206	-207	-208
Basic, Holding Coil	584-REHL5	-201	-202	-203	-204	-205	-206	-207	-208
Basic, Switch, Dripproof	584-REL5	-301	-302	-303	-304	-305	-306	-307	-308
Basic, Switch, Dripproof	584-REL5	-101	-102	-103	-104	-105	-106	-107	-108
Basic, H.C., Dripproof	584-REHL5	-101	-102	-103	-104	-105	-106	-107	-108
Basic, H.C., Dripproof	584-REHL5	-301	-302	-303	-304	-305	-306	-307	-308
Basic, Spray Tight	584-RDL5	-201	-202	-203	-204	-205	-206	-207	-208
Basic, H.C., Spray Tight	584-RDHL5	-201	-202	-203	-204	-205	-206	-207	-208

Note: *The dash numbers shown are for applications without switch guards. For applications employing switch guards, please consult customer service.*

Table 8

Basic Mounting Sleeve 584-RDL5-XXX, 584-REL5 for M39029/22-192 Connector Pins (cont'd) Mounting Sleeve Lengths For Dust Resistant, Spraytight & Dripproof 8 Amp Devices

	Dim L			
	rdL5	rdhL5	reL5	rehL5
-1 or -101	-	-	2.52	3.06
-2 or -102	-	-	2.49	3.03
-3 or -103	-	-	2.47	3.01
-4 or -104	-	-	2.43	2.97
-5 or -105	-	-	2.40	2.94
-6 or -106	-	-	2.37	2.91
-7 or -107	-	-	2.34	2.88
-8 or -108	-	-	2.31	2.85
-201	2.36	2.90	2.63	3.17
-202	2.32	2.86	2.59	3.13
-203	2.30	2.84	2.57	3.10
-204	2.25	2.80	2.53	3.07
-205	2.23	2.77	2.50	3.04
-206	2.20	2.74	2.47	3.01
-207	2.17	2.71	2.44	2.98
-208	2.14	2.68	2.41	2.95
-301	-	-	2.59	3.13
-302	-	-	2.57	3.10
-303	-	-	2.53	3.07
-304	-	-	2.50	3.04
-305	-	-	2.47	3.01
-306	-	-	2.44	2.98
-307	-	-	2.41	2.95
-308	-	-	2.38	2.92

Table 9

SERIES 584 SNAP-ON MOUNTING SLEEVES WITH CONNECTOR BLOCK

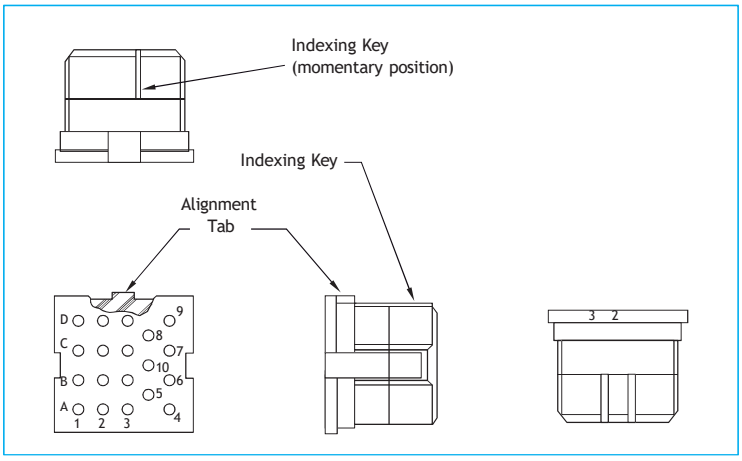


Figure 24.
Plug-In Mounting Sleeve
Connector Block
Note: *Polarity markings available upon request.*

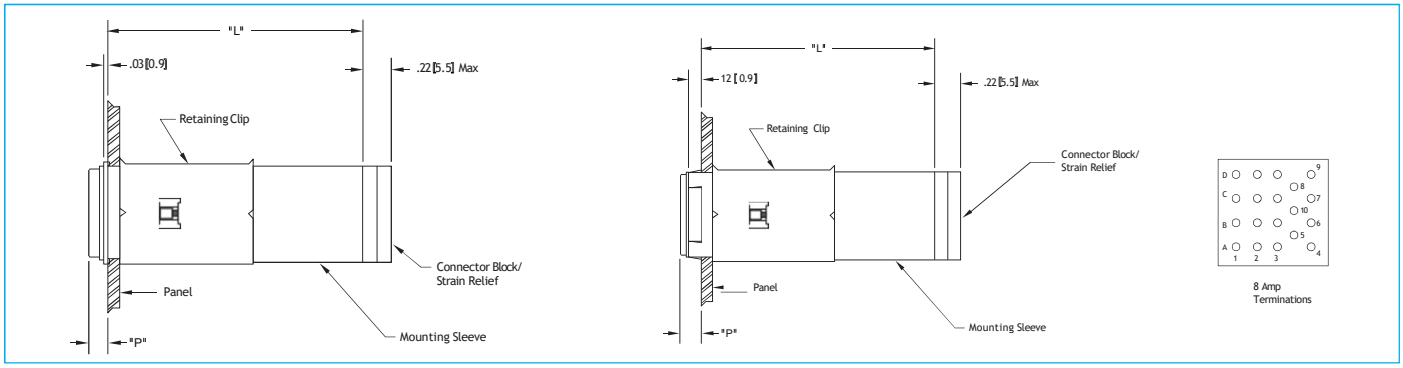
Figure 25.
Panel Cutout Snap-On Mounting Sleeve
Flush Mount (left) and Panel Mount (right)

Key Slot Position	Type of Device
1	Momentary switch
2	Alternate Switch
3	Indicator
1 & 2	Alternate Switch w/Holding Coil
2 & 3	Not Used

Table 10.

Snap-On Mounting Sleeves 584-REL6-XXX, for M39029/22-192 Connector Pins

In the snap-on version, the 584-REL5 sleeve is modified to provide a positive stop above panel, leaving part of the sleeve protruding above the panel. The sleeve is installed and retained by a snap-on clip assembled from the rear of the panel. The sleeve assembly remains loosely attached to the panel until the switch is inserted and tightened, creating a rigid mounting. The switch is removable from the front of the panel, rear access is not required. Not available for use with the diaphragm seal switches.



Panel *Cutout* Snap-on Mounting Sleeve

Description	Dim "P"	Dim "L"	Code				
Flush Mt., Basic	.269 [4.29]	2.64 [53.7]	584-REL6	-001	-002	-003	-004
Flush Mt., Basic, w/HC	.169 [4.29]	3.18 [67.4]	584-REHL6	-001	-002	-003	-004
Panel Mt., Basic	.253 [6.43]	2.34 [51.6]	584-REL6	-101	-102	-103	-104
Panel Mt., Basic, with HC	.253 [6.43]	3.08 [65.3]	584-REHL6	-101	-102	-103	-104

SERIES 584 MATRICES

Series 584 matrices are modular units in which switches and indicators can be mounted. The maximum square matrix is 5 x 5 and the maximum rectangular matrix is 5 x 10. Contact factory customer service center for information on other configurations. Wire terminals and installation tools are listed on page 23.

Bezel Matrix 584-RELWY xxxx-1

The bezel matrix has a black colored bezel and is inserted through the front of the panel. Matrix selection must be coordinated with switch length. Fasteners are inserted into slots in the matrix after the matrix has been inserted into the panel and are tightened to secure the unit. Switches are removable from the front of the panel, rear access is not required after being mounted in the panel. Not available with the diaphragm seal version.

Code	IdentiFies	Codes
584-**RELWY**0203-1	Matrix length	Use **RELWY** for basic units
584-RELWY**02**03-1	No. of units per horizontal row	Two digits
584-RELWY02**03**-1	No. of units per vertical column	Two digits
584-RELWY0203-**1**	Connector M39029/22-192	One digit

Bezel Matrix Dimensions

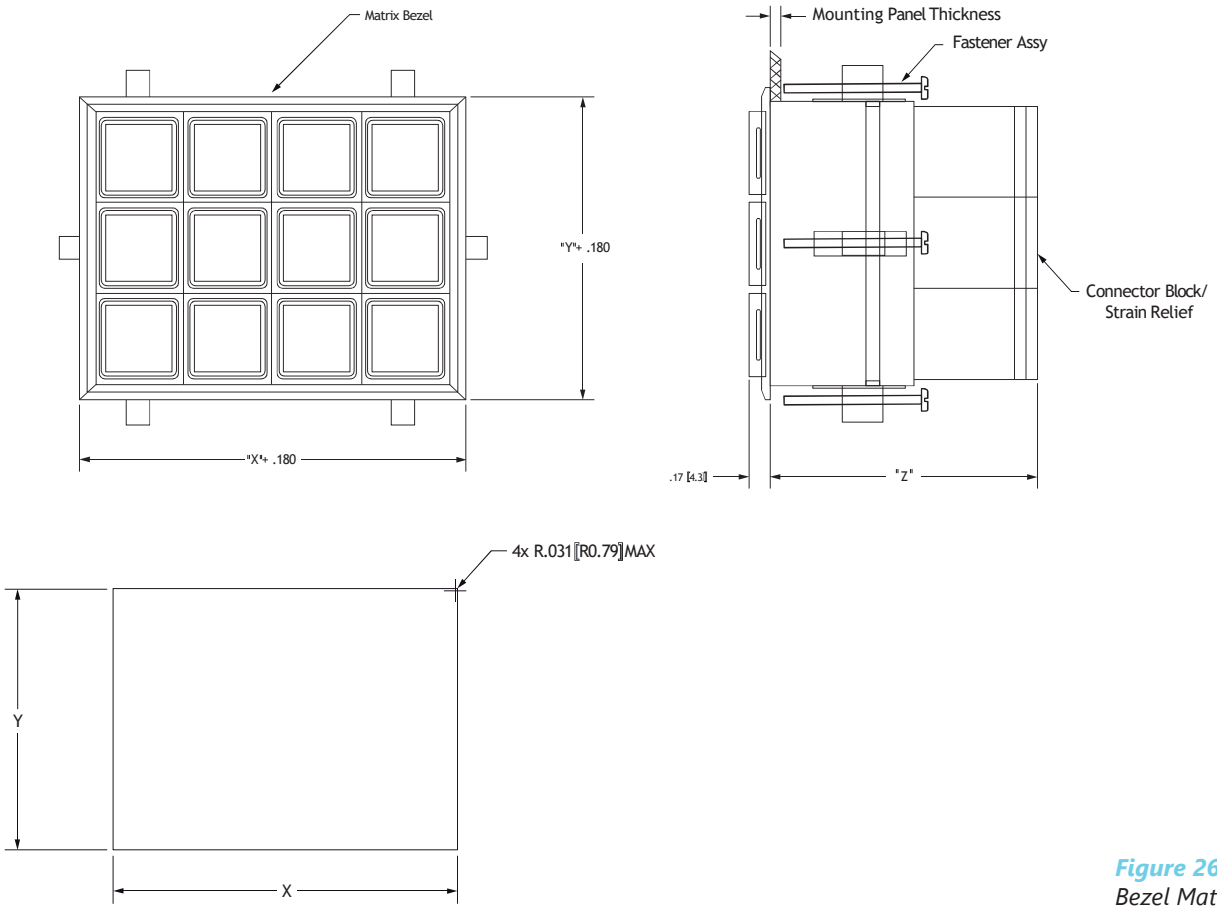


Figure 26.
Bezel Matrix

BEZEL MATRIX PANEL CUTOUT SIZES

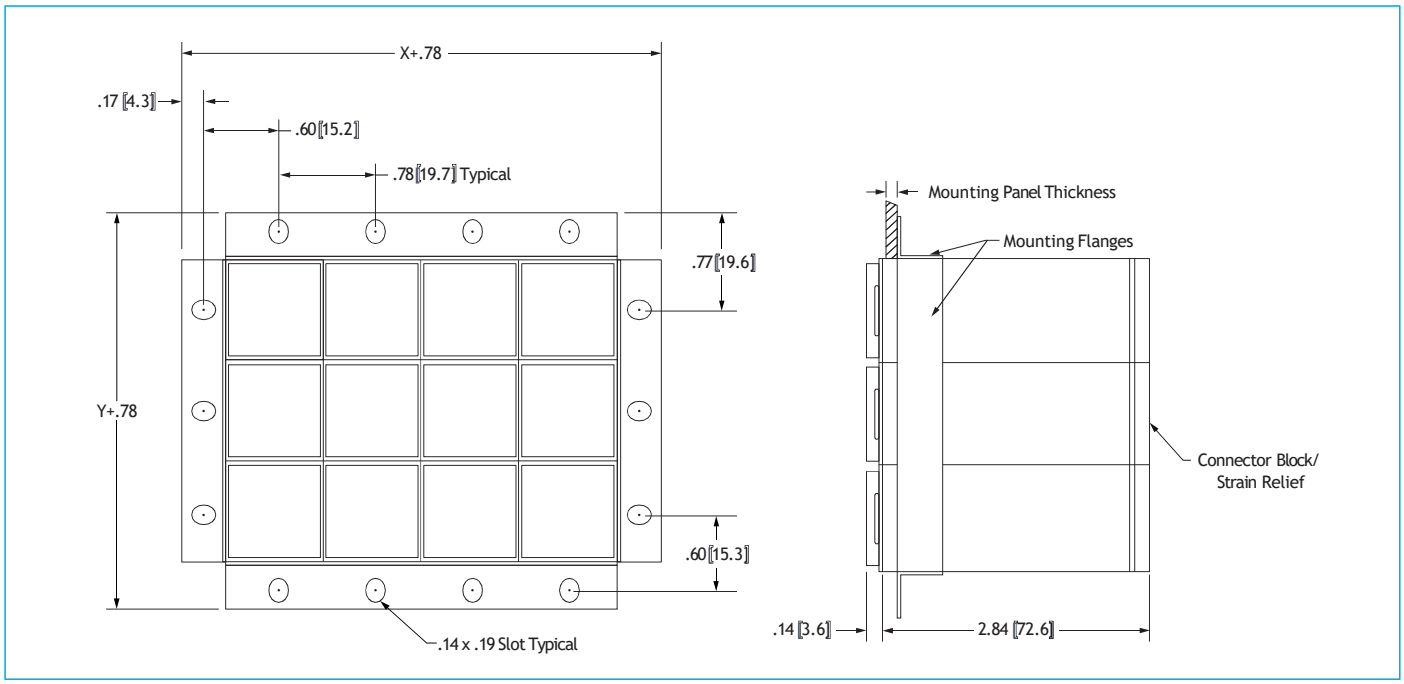
X (HORIZ) ▷	1		2		3		4		5		6		7		8		9		10	
NO. OF STATIONS	PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT	
Y (VERT) ▽	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y
1	.985	.985	1.740	.985	2.495	.985	3.250	.985	4.005	.985	4.760	.985	5.515	.985	6.270	.985	7.025	.985	7.780	.985
	[25.02]	[25.02]	[44.19]	[25.02]	[63.37]	[25.02]	[82.55]	[25.02]	[101.73]	[25.02]	[120.90]	[25.02]	[140.08]	[25.02]	[159.26]	[25.02]	[178.43]	[25.02]	[197.61]	[25.02]
2	.985	1.740	1.740	1.740	2.495	1.740	3.250	1.740	4.005	1.740	4.760	1.740	5.515	1.740	6.270	1.740	7.025	1.740	7.780	1.740
	[25.02]	[44.19]	[44.19]	[44.19]	[63.37]	[44.19]	[82.55]	[44.19]	[101.73]	[44.19]	[120.90]	[44.19]	[140.08]	[44.19]	[159.26]	[44.19]	[178.43]	[44.19]	[197.61]	[44.19]
3	.985	2.495	1.740	2.495	2.495	2.495	3.250	2.495	4.005	2.495	4.760	2.495	5.515	2.495	6.270	2.495	7.025	2.495	7.780	2.495
	[25.02]	[63.37]	[44.19]	[63.37]	[63.37]	[63.37]	[82.55]	[63.37]	[101.73]	[63.37]	[120.90]	[63.37]	[140.08]	[63.37]	[159.26]	[63.37]	[178.43]	[63.37]	[197.61]	[63.37]
4	.985	3.250	1.740	3.250	2.495	3.250	3.250	3.250	4.005	3.250	4.760	3.250	5.515	3.250	6.270	3.250	7.025	3.250	7.780	3.250
	[25.02]	[82.55]	[44.19]	[82.55]	[63.37]	[82.55]	[82.55]	[82.55]	[101.73]	[82.55]	[120.90]	[82.55]	[140.08]	[82.55]	[159.26]	[82.55]	[178.43]	[82.55]	[197.61]	[82.55]
5	.985	4.005	1.740	4.005	2.495	4.005	3.250	4.005	4.005	4.005	4.760	4.005	5.515	4.005	6.270	4.005	7.025	4.005	7.780	4.005
	[25.02]	[101.73]	[44.19]	[101.73]	[63.37]	[101.73]	[82.55]	[101.73]	[101.73]	[101.73]	[120.90]	[101.73]	[140.08]	[101.73]	[159.26]	[101.73]	[178.43]	[101.73]	[197.61]	[101.73]
6	.985	4.760	1.740	4.760	2.495	4.760	3.250	4.760	4.005	4.760	4.760	4.760	5.515	4.760	6.270	4.760	7.025	4.760	7.780	4.760
	[25.02]	[120.90]	[44.19]	[120.90]	[63.37]	[120.90]	[82.55]	[120.90]	[101.73]	[120.90]	[120.90]	[120.90]	[140.08]	[120.90]	[159.26]	[120.90]	[178.43]	[120.90]	[197.61]	[120.90]
7	.985	5.515	1.740	5.515	2.495	5.515	3.250	5.515	4.005	5.515	4.760	5.515	5.515	5.515	6.270	5.515	7.025	5.515	7.780	5.515
	[25.02]	[140.08]	[44.19]	[140.08]	[63.37]	[140.08]	[82.55]	[140.08]	[101.73]	[140.08]	[120.90]	[140.08]	[140.08]	[140.08]	[159.26]	[140.08]	[178.43]	[140.08]	[197.61]	[140.08]
8	.985	6.270	1.740	6.270	2.495	6.270	3.250	6.270	4.005	6.270	4.760	6.270	5.515	6.270	6.270	6.270	7.025	6.270	7.780	6.270
	[25.02]	[159.26]	[44.19]	[159.26]	[63.37]	[159.26]	[82.55]	[159.26]	[101.73]	[159.26]	[120.90]	[159.26]	[140.08]	[159.26]	[159.26]	[159.26]	[178.43]	[159.26]	[197.61]	[159.26]
9	.985	7.025	1.740	7.025	2.495	7.025	3.250	7.025	4.005	7.025	4.760	7.025	5.515	7.025	6.270	7.025	7.025	7.025	7.780	7.025
	[25.02]	[178.43]	[44.19]	[178.43]	[63.37]	[178.43]	[82.55]	[178.43]	[101.73]	[178.43]	[120.90]	[178.43]	[140.08]	[178.43]	[159.26]	[178.43]	[178.43]	[178.43]	[197.61]	[178.43]
10	.985	7.780	1.740	7.780	2.495	7.780	3.250	7.780	4.005	7.780	4.760	7.780	5.515	7.780	6.270	7.780	7.025	7.780	7.780	7.780
	[25.02]	[197.61]	[44.19]	[197.61]	[63.37]	[197.61]	[82.55]	[197.61]	[101.73]	[197.61]	[120.90]	[197.61]	[140.08]	[197.61]	[159.26]	[197.61]	[178.43]	[197.61]	[197.61]	[197.61]

Table 12.

Snap-On Mounting Sleeves 584-REL6-XXX, for M39029/22-192 Connector Pins

In the snap-on version, the 584-REL5 sleeve is modified to provide a positive stop above panel, leaving part of the sleeve protruding above the panel. The sleeve is installed and retained by a snap-on clip assembled from the rear of the panel. The sleeve assembly remains loosely attached to the panel until the switch is inserted and tightened, creating a rigid mounting. The switch is removable from the front of the panel, rear access is not required. Not available for use with the diaphragm seal switches.

Code	IdentiFies	Codes
584-**RELX**0203-1-.125	Matrix length	Use **RELX** for basic units
584-RELX**02**03-1-.125	No. of units per horizontal row	Two digits
584-RELX02**03**-1-.125	No. of units per vertical column	Two digits
584-RELX0203-**1**-.125	Connector M39029/22-192	One digit
584-RELX0203-1-.**125**	Panel thickness	Std thicknesses: 0.063 (1.6), 0.090 (2.3), 0.125 (3.2), 0.190 (4.8)



FLANGE MATRIX PANEL CUTOUT SIZES

X (HORIZ) ▷	1		2		3		4		5		6		7		8		9		10	
NO. OF STATIONS	PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT		PANEL CUTOUT	
Y (VERT) ▽	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y	DIM X	DIM Y
1	.775	.775	1.530	.775	2.285	.775	3.040	.775	3.795	.775	4.550	.775	5.305	.775	6.060	.775	6.815	.775	7.570	.775
	[19.68]	[19.68]	[38.86]	[19.68]	[58.04]	[19.68]	[77.22]	[19.68]	[96.39]	[19.68]	[115.57]	[19.68]	[134.75]	[19.68]	[153.92]	[19.68]	[173.10]	[19.68]	[192.28]	[19.68]
2	.775	1.530	1.530	1.530	2.285	1.530	3.040	1.530	3.795	1.530	4.550	1.530	5.305	1.530	6.060	1.530	6.815	1.530	7.570	1.530
	[19.68]	[38.86]	[38.86]	[38.86]	[58.04]	[38.86]	[77.22]	[38.86]	[96.39]	[38.86]	[115.57]	[38.86]	[134.75]	[38.86]	[153.92]	[38.86]	[173.10]	[38.86]	[192.28]	[38.86]
3	.775	2.285	1.530	2.285	2.285	2.285	3.040	2.285	3.795	2.285	4.550	2.285	5.305	2.285	6.060	2.285	6.815	2.285	7.570	2.285
	[19.68]	[58.04]	[38.86]	[58.04]	[58.04]	[58.04]	[77.22]	[58.04]	[96.39]	[58.04]	[115.57]	[58.04]	[134.75]	[58.04]	[153.92]	[58.04]	[173.10]	[58.04]	[192.28]	[58.04]
4	.775	3.040	1.530	3.040	2.285	3.040	3.040	3.040	3.795	3.040	4.550	3.040	5.305	3.040	6.060	3.040	6.815	3.040	7.570	3.040
	[19.68]	[77.22]	[38.86]	[77.22]	[58.04]	[77.22]	[77.22]	[77.22]	[96.39]	[77.22]	[115.57]	[77.22]	[134.75]	[77.22]	[153.92]	[77.22]	[173.10]	[77.22]	[192.28]	[77.22]
5	.775	3.795	1.530	3.795	2.285	3.795	3.040	3.795	3.795	3.795	4.550	3.795	5.305	3.795	6.060	3.795	6.815	3.795	7.570	3.795
	[19.68]	[96.39]	[38.86]	[96.39]	[58.04]	[96.39]	[77.22]	[96.39]	[96.39]	[96.39]	[115.57]	[96.39]	[134.75]	[96.39]	[153.92]	[96.39]	[173.10]	[96.39]	[192.28]	[96.39]
6	.775	4.550	1.530	4.550	2.285	4.550	3.040	4.550	3.795	4.550	4.550	4.550	5.305	4.550	6.060	4.550	6.815	4.550	7.570	4.550
	[19.68]	[115.57]	[38.86]	[115.57]	[58.04]	[115.57]	[77.22]	[115.57]	[96.39]	[115.57]	[115.57]	[115.57]	[134.75]	[115.57]	[153.92]	[115.57]	[173.10]	[115.57]	[192.28]	[115.57]
7	.775	5.305	1.530	5.305	2.285	5.305	3.040	5.305	3.795	5.305	4.550	5.305	5.305	5.305	6.060	5.305	6.815	5.305	7.570	5.305
	[19.68]	[134.75]	[38.86]	[134.75]	[58.04]	[134.75]	[77.22]	[134.75]	[96.39]	[134.75]	[115.57]	[134.75]	[134.75]	[134.75]	[153.92]	[134.75]	[173.10]	[134.75]	[192.28]	[134.75]
8	.775	6.060	1.530	6.060	2.285	6.060	3.040	6.060	3.795	6.060	4.550	6.060	5.305	6.060	6.060	6.060	6.815	6.060	7.570	6.060
	[19.68]	[153.92]	[38.86]	[153.92]	[58.04]	[153.92]	[77.22]	[153.92]	[96.39]	[153.92]	[115.57]	[153.92]	[134.75]	[153.92]	[153.92]	[153.92]	[173.10]	[153.92]	[192.28]	[153.92]
9	.775	6.815	1.530	6.815	2.285	6.815	3.040	6.815	3.795	6.815	4.550	6.815	5.305	6.815	6.060	6.815	6.815	6.815	77.570	6.815
	[19.68]	[173.10]	[38.86]	[173.10]	[58.04]	[173.10]	[77.22]	[173.10]	[96.39]	[173.10]	[115.57]	[173.10]	[134.75]	[173.10]	[153.92]	[173.10]	[173.10]	[173.10]	[192.28]	[173.10]
10	.775	7.570	1.530	7.570	2.285	7.570	3.040	7.570	3.795	7.570	4.550	7.570	5.305	7.570	6.060	7.570	6.815	7.570	7.570	7.570
	[19.68]	[192.28]	[38.86]	[192.28]	[58.04]	[192.28]	[77.22]	[192.28]	[96.39]	[192.28]	[115.57]	[192.28]	[134.75]	[192.28]	[153.92]	[192.28]	[173.10]	[192.28]	[192.28]	[192.28]

Table 13.

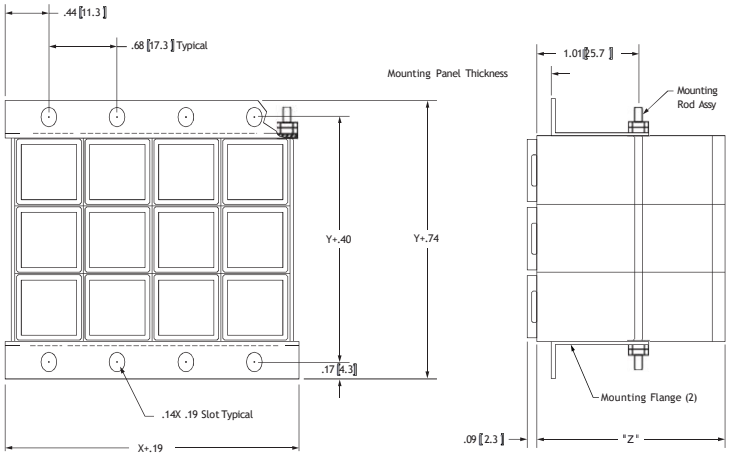
SERIES 584 ROD MOUNT HARDWARE

The rod mount system allows for units to be mounted in the smallest allowable space by using a system of rods and plates to hold the switch/indicator units together and fasten them to the mounting panel.

584-RELMxxxx-.xxx

		Codes
584-RELM0303-.125	Matrix length	Use RELM for basic units
584-RELM0303-.125	No. of units per horizontal row	Two digits
584-RELM0303-.125	No. of units per vertical row	Two digits
584-RELM0303-.125	Panel thickness	Std sizes: 0.063 (1.6), 0.090 (2.3), 0.125 (3.2)

584-RELMxxxx-.xxx Dimensions



Description	Dim "P"
Basic, IWTS	2.70 [68.6]
Basic, 8 amp solder	2.45 [62.2]

Table 14.
Rod Matrix "Z" Tabulation

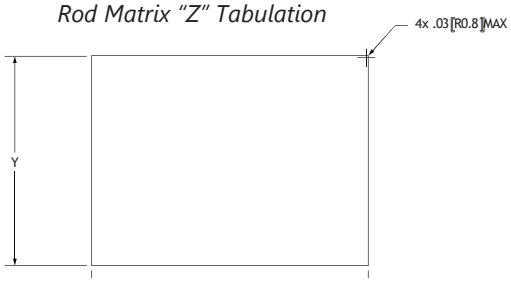


Figure 28
Rod Mount Matrix

ROD MOUNT MATRIX PANL CUTOUT SIZES

X (HORIZ)	1	2	3	4	5	6
NO. OF STATIONS	PANEL CUTOUT	PANEL CUTOUT	PANEL CUTOUT	PANEL CUTOUT	PANEL CUTOUT	PANEL CUTOUT
Y (VERT)	DIM X DIM Y	DIM X DIM Y	DIM X DIM Y	DIM X DIM Y	DIM X DIM Y	DIM X DIM Y
1	.700 .700	1.380 .700	2.060 .700	2.740 .700	3.420 .700	4.100 .700
	[17.78] [17.78]	[35.05] [17.78]	[52.32] [17.78]	[69.60] [17.78]	[86.87] [17.78]	[104.14] [17.78]
2	.700 1.380	1.380 1.380	2.060 1.380	2.740 1.380	3.420 1.380	4.100 1.380
	[17.78] [35.05]	[35.05] [35.05]	[52.32] [35.05]	[69.60] [35.05]	[86.87] [35.05]	[104.14] [35.05]
3	.700 2.060	1.380 2.060	2.060 2.060	2.740 2.060	3.420 2.060	4.100 2.060
	[17.78] [52.32]	[35.05] [52.32]	[52.32] [52.32]	[69.60] [52.32]	[86.87] [52.32]	[104.14] [52.32]
4	.700 2.740	1.380 2.740	2.060 2.740	2.740 2.740	3.420 2.740	4.100 2.740
	[17.78] [69.60]	[35.05] [69.60]	[52.32] [69.60]	[69.60] [69.60]	[86.87] [69.60]	[104.14] [69.60]
5	.700 3.420	1.380 3.420	2.060 3.420	2.740 3.420	3.420 3.420	4.100 3.420
	[17.78] [86.87]	[35.05] [86.87]	[52.32] [86.87]	[69.60] [86.87]	[86.87] [86.87]	[104.14] [86.87]
6	.700 4.100	1.380 4.100	2.060 4.100	2.740 4.100	3.420 4.100	4.100 4.100
	[17.78] [104.14]	[35.05] [104.14]	[52.32] [104.14]	[69.60] [104.14]	[86.87] [104.14]	[104.14] [104.14]

Table 15

Spare Parts

Capsule	584 (See Pages 12-15)
Body	584 (See Pages 11-15)
Mounting Hardware	584 (See Page 12)
Panel Seal and Retainer, Black	584-515-
Panel Seal and Retainer, Stainless Steel	584-515-2
Frame Matrix Fastener	584-
8 amp, M39029/22-192 Connector Block w/ Strain Relief	584-527

Accessories

Connector Pin, 8A, M39029/22-192, Crimp Style, 1 ea.	58A-111-1
Connector Pin, 8A, M39029/22, 25 ct	58A-111-2
Connector Pin, 8A, M39029/1-100, Crimp Style, 1 ea.	58A-110-1
Connector Pin, 8A, M39029/1-100, 25 ct	58A-110-2
Connector Pin, 8A, M39029/1-101, Crimp Style, 1 ea.	58A-110-3
Connector Pin, 8A, M39029/1-101, 25 ct	58A-110-4
Clear Plastic Switchguard	58A-104
Wire Switchguard, Black	58A-105-1
Wire Switchguard, Red	58A-105-2

Installation and Removal Tools

Lamp Capsule Removal Tool	58T-101
Connector Pin Crimp Tool, for M39029/1	58T-109-1
Connector Pin Crimp Tool, for M39029/22	58T-109-2
Connector Pin Removal Tool	58T-104
Connector Block Removal Tool	58T-107
Torque Screwdriver	58T-106

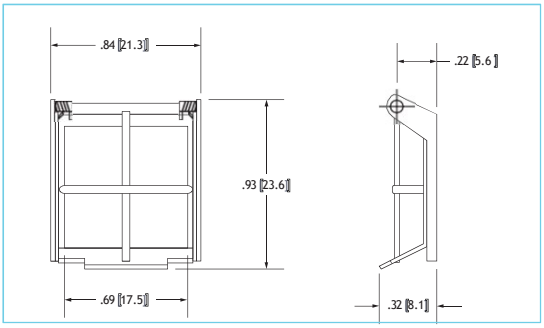


Figure 29
Wire Switch Guard
Not for use with Matrices

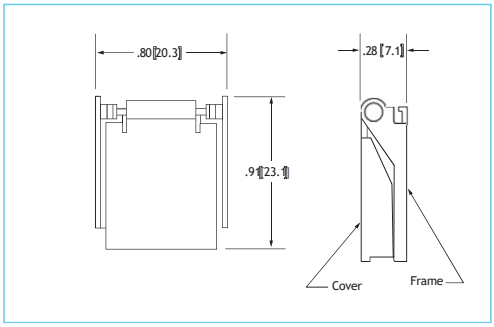


Figure 30
Clear Plastic Switch Guard
Not for use with Matrices

Specifications, illustrations and features shown in this brochure are based on the latest available information at the time of publication. Although descriptions are believed to be correct, accuracy cannot be guaranteed. Eaton reserves the right to make changes in specifications, materials, accessories and procedures at any time, without notice or obligation.

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