## ELECTRONICS \& DEFENSE



SERIES 584
ILLUMINATED PUSHBUTTON SWITCHES \& INDICATORS WITH LED

LIGHTING

## 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 colocation 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 fourpole 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.

## 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 bistable 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

## 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-OptoMechanical design.


## 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 $\sim 5 \mathrm{VDC}$.
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 prespecified within 22 to 12 Volt for a 28 -Volt system.


## 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 ( $52.3 . \mathrm{mm}$ ) | 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 ( 46.2 mm ) | 30 grams |
| 584-REL5 Plug-in Mount | See 584-REL5 | 14 grams |


| Switch Form | Form C single break |
| :--- | :--- |
| Actuation Travel | $0.135 \pm 0.010$ inches $(3.43 \pm 0.25 \mathrm{~mm})$. |
| Actuation Force | 2 to $5 \mathrm{lbs}(8.9$ to 22.3 N$)$ |
| Extraction Force | 3 to $5 \mathrm{lbs}(13.3$ to 22.3 N$)$ |
| Mounting Torque | $18 \pm 2$ inch-oz $(0.127 \pm 0.014 \mathrm{~N} \cdot \mathrm{~m})$ |
| Internal Seal | Dust $\&$ Drip-proof per MIL-PRF-22885 |
| Diaphragm Seal | Spray-tight per MIL-STD-108 |
| Mechanical Life | 200000 cycles MIL- |
| Marking | STD-130 |



Figure 1. Recommended Panel Cutout

| TYPE | DIMENSION "A" |
| :--- | :--- |
| Unsealed Switch $.780[19.8]$ <br> Switch with Spray $.930[23.62]$ <br> Tight Boot  |  |



Figure 2. 8 Amp IWTS Terminations
Figure 4. 8 Amp Termination PCB Layout



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

| Termination Type | Device Description | DIM «L» |  |
| :---: | :---: | :---: | :---: |
|  |  | 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

|  |  |  |  |
| :--- | :--- | :--- | :--- |
| Spray Tight | Termination Type | DIM «L» |  |
| IWTS | Basic, Switch | Device Description | Unsealed Or Dripproof |
|  | Holding Coil, Basic | $2.74[69.6]$ | $3.28[83.3]$ |
|  | $3.32[84.3]$ | $3.01[76.4]$ |  |

Table 2. 8 Amp IWTS

## ENVIRONMENTAL SPECIFICATIONS

| Operating Temperatures | $-40 C^{\circ}$ to $+71^{\circ} \mathrm{C}$ |
| :--- | :--- |
| Storage Temperatures | $-55^{\circ} \mathrm{C}$ to $+85^{\circ} \mathrm{C}$ |
| 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 <br> fungus |
| Vibration | MIL-STD-202, Method 204m Condition B, for single channel mount. <br> For multiple channel matrix mount, contact the factory for <br> 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 | 50000 Ft 28 vdc Max | 50000 Ft 115 vac Max | Life |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Resistive | 8.0 A | 8.0 A | 5.0 A | 5.0 A | 25000 cycles |
| Resistive | 5.0 A | 5.0 A | 3.0 A | 3.0 A | 100000 cycles |
| Inductive | 4.0 A | 4.0 A | 2.5 A | 2.5 A | 25000 cycles |
| Inductive | 0.5 A | 0.5 A | 0.3 A | 0.3 A | 100000 cycles |
| Lamp | 1.0 A | 1.0 A | - | - | 50000 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 | 50000 cycles |

584 Low Level Rating ${ }^{1}$

| Low Level | Sea Level $\mathbf{0 . 0 3}$ vdc Max Life |  |
| :--- | :---: | :---: |
| Resistive | 0.01 A | 200000 cycles |

584 Millenium Low Level Rating ${ }^{1}$

| Low Level | Sea Level 0.01 vdc Max | Life |
| :--- | :---: | :---: |
| Resistive | 0.003 A | 1000000 cycles |



[^0]

Figure 14.
4PDPT Switch


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


Figure 15.
4PDPT Switch with Alternate Holding Coil


Figure 18.
C2 Two Lamp Common Power \& 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 | APPEARAN | CE/DESCRIPTIONS | LEGEND | BACKGROUND | APPEARA | NCE/DESCRIPTIONS |
| N | 1 | White | Black | SAGEM | White characters on opaque black background | Color | Black | SAGEM | Color characters on black background |
| W | 2 | Black | White | SAGEM | Opaque black characters on white background | Black | Color | SAGEM | Black characters on color background |
| S | 5 | Not visible | Black |  | Hidden characters on black background | Color | Black | SAGEM | Color characters on black background. Sunlight Readable |
| C | 6 | Black | Color | SAGEM | Opaque black characters on color background | Black | Color | SAGEM | Black characters on color background |
| B | 8 | Not visible | Black |  | Hidden characters on black background | Black | Color | SAGEM | Black characters on color background |
| Special | 9 | White | Black | SAGEM | Opaque white characters on opaque black background | White | Color | SAGEM | White characters on color background |
| special | 40 | White | Black | SAGEM | White characters on black background for low ambient light | Color | Black | SACEM | Color charates on black background for low ambient light |
| special | 12 | White | Black | SAGEM | White characters on black background | Color | Black | SAGEM | Color characters on black background. |
|  |  | Black | Black |  | Hidden characters on black background | Color | Black | SAGEM | Color characters on black background. |

## 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 28 V . Dim mode luminance values are provided when the input voltage is 14 V .
However, customers can specify non-standard dim voltage within the range of 12 V to 22 V .

| Aviation Color | Luminance (fL) <br> Bright mode at 28V | Luminance (fL) <br> Dim mode at 14V |
| :---: | :---: | :---: |
| RED | $\geq 250$ | $15 \pm 5$ |
| AMBER | $\geq 250$ | $15 \pm 5$ |
| GREEN | $\geq 250$ | $15 \pm 5$ |
| WHITE | $\geq 250$ | $15 \pm 5$ |
| BLUE | $\geq 200$ | $10 \pm 5$ |

## 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: $10,000 \mathrm{fC}$ of 3000 K to 5000 K light source incidents to the measured surface at $45^{\circ} \pm 2^{\circ}$. The photometer is positioned perpendicular to the measured surface.

## 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

| Aviation Color | On-Contrast (Ci) | Off-Contrast (CuI) |
| :---: | :---: | :---: |
| RED | $\geq 0.6$ | $\leq 0.1$ |
| AMBER | $\geq 0.6$ | $\leq 0.1$ |
| GREEN | $\geq 0.6$ | $\leq 0.1$ |
| WHITE | $\geq 0.6$ | $\leq 0.1$ |
| BLUE | $\geq 0.6$ | $\leq 0.1$ |


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

## 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 |  $\begin{array}{c}\text { Red characters on } \\ \text { SAFRAN }\end{array}$ <br> black background  |
|  |  |  | Yellow | Black | SAFRANYellow characters <br> on black <br> background |
|  |  |  | White | Black | SAFRAN <br> White characters on black background. |
|  |  |  | Green B | Black | SAFRANGreen characters <br> on black <br> background |
|  |  |  | Green A | Black | SAFRANGreen characters <br> on black <br> background |

Luminance - NVIS Compatible Display

| NVIS-Compatible Color | Class | Luminance (fL) <br> Bright mode at 28V | Luminance (fL) <br> Dim mode at 14V |
| :---: | :---: | :---: | :---: |
| RED | B | $\geq 200$ | $15 \pm 5$ |
| ${ }^{1}$ YELLOW | A and B | $\geq 200$ | $15 \pm 5$ |
| ${ }^{1}$ WHITE | A and B | $\geq 200$ | $15 \pm 5$ |
| ${ }^{1}$ GREEN B | A and B | $\geq 200$ | $15 \pm 5$ |
| ${ }^{1 \& 2}$ GREEN A | A and B | $1 \pm 0.5$ | $\mathrm{~N} / \mathrm{A}$ |

Note 1: PBAs of Yellow Class A, White, Green A, and Green B are able dimmable continuously to less than 0.1 fL .
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 $u^{\prime}$ and $v^{\prime}$ chromaticity coordinate values for Green A and White shall be within the areas by the defined circles; the $u^{\prime}$ and $v^{\prime}$ 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) <br> (W/cm².sr) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | u' | v' | r | Luminance (fL) |  |
| RED | B | 0.450 | 0.550 | 0.060 | 15 | $4.7 \times 10^{-8}<\mathrm{NRb}<1.4 \times 10^{-7}$ |
| YELLOW | B | 0.274 | 0.622 | 0.083 | 15 | $4.7 \times 10^{-8}<\mathrm{NRb}<1.4 \times 10^{-7}$ |
| YELLOW | A | 0.274 | 0.622 | 0.083 | 15 | $5.0 \times 10^{-8}<\mathrm{NRa}<1.5 \times 10^{-7}$ |
| GREEN B | $A$ and $B$ | 0.131 | 0.623 | 0.057 | 0.1 | NRa, NRb < 1.7×10-10 |
| GREEN A | $A$ and $B$ | 0.088 | 0.543 | 0.037 | 0.1 | NRa, NRb < $1.7 \times 10^{-10}$ |
| WHITE | A and B | 0.190 | 0.490 | 0.040 | 0.1 | NRa, NRb < 1.0× 10-9 |


| NVIS-Compatible <br> Color | Class | On-Contrast <br> $\left(C_{L}\right)$ | Off-Contrast <br> $\left(C_{\text {UL }}\right)$ |
| :---: | :---: | :---: | :---: |
| RED | B | $\geq 0.6$ | $\leq 0.1$ |
| YELLOW | A and B | $\geq 0.6$ | $\leq 0.1$ |
| WHITE | A and B | $\geq 0.6$ | $\leq 0.1$ |
| GREEN B | A and B | $\geq 0.6$ | $\leq 0.1$ |
| GREEN A | A and B | $\geq 10.0$ | $\geq 10.0$ |

## 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: $10,000 \mathrm{fC}$ of 3000 K to 5000 K light source incidents to the measured surface at $45^{\circ} \pm 2^{\circ}$. 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 $45^{\circ} \pm 2^{\circ}$. 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 <br> Action | Termination | Lamp <br> Circuit | Panel Thickness | Voltage | Display Screen | Display configura tion | Display color | Chara- <br> cter <br> Front/ <br> 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 |
| :--- | :--- |
| $\mathbf{5 8 4}$ | 584 |
| $\mathbf{5 8 4}$ with QA per M22885/110 | 584 H |
| $\mathbf{5 8 4}$ Millenium | 584 M |

## 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 <br> Carrying Capacity | Compatible <br> Connector Pins | Wire Size | Code |
| :--- | :--- | :--- | :--- | :--- |
| Plug-in | 8 A | M39029/22-192 | $20-24$ AWG | B5 |
| solder Turret | 8 A | N/A | $20-24$ AWG | B2 |
| PCB | 8 A | N/A | $20-24$ AWG | B3 |
| IWTS | 8 A | M39029/1-100 | $22-26$ AWG | B4 |
| Solder Turret w/Rod Mount | 8 A | M39029/1-100 | $22-24$ AWG | B4 |
| PCB w/Rod Mount | 8 A | N/A | B7 |  |
| IWTS w/Rod Mount | 8 A | M39029/1-100 | $22-26$ AWG | B9 |

## (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 | - | $0.030-0.149(0.76-3.79 \mathrm{~mm})$ | D25 |
| Black | $0.100(2.5 \mathrm{~mm})$ | $0.030-0.149(0.76-3.79 \mathrm{~mm})$ | D1 |
| No Spacer | - | $.150-0.269(3.80-6.83 \mathrm{~mm})$ | D26 |
| Black | $0.100(2.5 \mathrm{~mm})$ | $.150-0.269(3.80-6.83 \mathrm{~mm})$ | 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 | 15000 |
| 6 |  | L5006 |
| 7 |  | 15007 |
| 8 | L5061 | L5008 |
| 9 |  | L5009 |
| 12 | L5062 | L5012 |
| 40 | L5066 | 15040 |

## 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.


## 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 <br> Color | Class | NVIS-Compatible Display <br> 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


## 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 <br> Height | Letters Per <br> Full Row | Letters Per <br> Half Row | Code |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Helvetica Medium ${ }^{1}$ | 1 | $0.093(2.4 \mathrm{~mm})^{1}$ | 7 | 3 | P11 |
| Helvetica Medium | 1 | $0.125(3.2 \mathrm{~mm})$ | 5 | 2 | P12 |
| Helvetica Medium Bold ${ }^{4}$ | 1 | $0.125(3.2 \mathrm{~mm})$ | 5 | 2 | P12B |
| Helvetica Medium Condensed | 2 | $0.093(2.4 \mathrm{~mm})$ | 8 | 3 | P14 |
| Helvetica Medium Condensed | 2 | $0.125(3.2 \mathrm{~mm})$ | 6 | 2 | P16 |
| Helvetica Med Condensed Bold 4 | 2 | $0.125(3.2 \mathrm{~mm})$ | 6 | 2 | P16 |
| DIN 1451/17 | 4 | $0.125(3.2 \mathrm{~mm})$ | 4 | 2 | P18 |
| DIN 1451/17 Bold 4 | 4 | $0.125(3.2 \mathrm{~mm})$ | 4 | 2 | P18B |
| DIN 1451/17 Condensed | 5 | $0.125(3.2 \mathrm{~mm})$ | 6 | 2 | P19 |
| DIN 1451/17 Condensed | 5 | $0.125(3.2 \mathrm{~mm})$ | 6 | 2 | P19B |
| Futura Medium | 7 | $0.125(3.2 \mathrm{~mm})$ | 5 | 2 | P20 |
| Futura Medium Bold 4 | 7 | $0.125(3.2 \mathrm{~mm})$ | 5 | 2 | P20B |
| Futura Medium Condensed | 8 | $0.125(3.2 \mathrm{~mm})$ | 6 | 2 | P21 |
| Futura Med Bold 4 | 8 | $0.125(3.2 \mathrm{~mm})$ | 6 | 2 | P21B |

Note 1: Default letter stye and height Alows two rows of text per half (N2) dsplay, larger heights only allow one row of text.
Note 1: Average for a full width N1 or N2 display. Each legend will vary besed on the actual leters used.
Note 1: Aserage for a half width N3N11 N12N13N14 or N15 display. Each legend will vary based on the actual letters used.
Note 1: 15\% wider character stoke width. Recommended for better off-angle viewing


Vertical Splits ,15


Vertical Columns of Letters ( 4 characters or spaces per column 0.093" high)

## 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 ( 2.4 mm ) Character height is shown.

## 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.

,12ON



14FADY,TO,GO


## 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) |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{gathered} .032 \\ {[.813]} \end{gathered}$ | $\begin{array}{r} .063 \\ {[1.59]} \end{array}$ | $\begin{array}{r} .094 \\ {[2.39]} \end{array}$ | $\begin{aligned} & .125 \\ & {[3.17]} \end{aligned}$ | $\begin{gathered} 157 \\ {[3.99]} \end{gathered}$ | $\begin{aligned} & 188 \\ & {[4.78]} \end{aligned}$ | $\begin{gathered} .219 \\ {[5.56]} \end{gathered}$ | $\begin{gathered} 250 \\ {[6.35]} \end{gathered}$ |
| 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 $5 \times 5$ and the maximum rectangular matrix is $5 \times 10$. 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- <br> RELWY0203-1 | Matrix length | Use RELWY for <br> basic units |
| 584- <br> RELWY0203-1 | No. of units per <br> horizontal row | Two digits |
| 584- <br> RELWY0203-1 | No. of units per vertical <br> column | Two digits |
| 584- | Connector M39029/22- <br> RELWY0203-1 <br> 192 | One digit |

Bezel Matrix Dimensions


Figure 26.
Bezel Matrix

BEZEL MATRIX PANEL CUTOUT SIZES

| X (HORIZ) $\triangleright$ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { NO. OF } \\ & \text { STATIONS } \end{aligned}$ | PANEL CUTOUT | PANEL CUTOUT | PANEL CUTOUT | PANEL CUTOUT | PANEL CUTOUT | PANEL CUTOUT | PANEL CUTOUT | PANEL CUTOUT | PANEL CUTOUT | PANEL CUTOUT |
| Y (VERT) $\nabla$ | DIMX DIMY | DIMX DIMY | DIMX DIMY | DIM $X$ DIMY | DIMX DIMY | DIMX DIMY | DIMX DIMY | DIMX DIMY | DIM X DIMY | DIMX DIMY |
| 1 | . 985 . 985 | $1.740 \quad .985$ | $2.495 \quad 985$ | $3.250 \quad .985$ | $4.005 \quad .985$ | 4.760 .985 | $5515 \quad 985$ | $6.270 \quad .985$ | $7.025 \quad .985$ | 7780.985 |
|  | [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 | $\begin{array}{ll}.985 & 1.740\end{array}$ | $1.740 \quad 1.740$ | $2.495 \quad 1.740$ | $3.250 \quad 1.740$ | $4.005 \quad 1.740$ | $4.760 \quad 1.740$ | 5.515 1.740 | $6.270 \quad 1.740$ | 7.025 1.740 | 7.7801 .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 | $1.740 \quad 2.495$ | $\begin{array}{lll}2.495 & 2.495\end{array}$ | $3.250 \quad 2.495$ | $4.005 \quad 2.495$ | $4.760 \quad 2.495$ | $\begin{array}{lll}5.515 & 2.495\end{array}$ | $6.270 \quad 2.495$ | $\begin{array}{lll}7.025 & 2.495\end{array}$ | $7.780 \quad 2.495$ |
|  | [25.02] [63.37] | [44.19] [63.37] | [63.37] [63.37] | [82.55] [63.37] | [101.73] [63.37] | [120.90] [6337] | [140.08] [63.37] | [159.26] [63.37] | [178.43] [63.37] | [197.61] [6337] |
| 4 | . 98583.250 | $1.740 \quad 3.250$ | $2.495 \quad 3.250$ | $3.250 \quad 3.250$ | $4.005 \quad 3.250$ | $4.760 \quad 3.250$ | $\begin{array}{llll}5.515 & 3.250\end{array}$ | $6.270 \quad 3.250$ | $7.025 \quad 3.250$ | $7.780 \quad 3.250$ |
|  | [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 | . 9854.005 | 1.7404 .005 | $2.495 \quad 4.005$ | 3.250 | $4.005 \quad 4.005$ | $4.760 \quad 4.005$ | $\begin{array}{ll}5.515 & 4.005\end{array}$ | 6.2704 .005 | 7.0254 .005 | $7.780 \quad 4.005$ |
|  | [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 | . 9854.760 | $1.740 \quad 4.760$ | $\begin{array}{lll}2.495 & 4.760\end{array}$ | $3.250 \quad 4.760$ | $4.005 \quad 4.760$ | $4.760 \quad 4.760$ | $\begin{array}{ll}5.515 & 4.760\end{array}$ | $6.270 \quad 4.760$ | $\begin{array}{lll}7.025 & 4.760\end{array}$ | 77804.760 |
|  | [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 | $1.740 \quad 5.515$ | $2.495 \quad 5.515$ | $3.250 \quad 5.515$ | $4.005 \quad 5.515$ | $4.760 \quad 5.515$ | $5.515 \quad 5.515$ | $6.270 \quad 5.515$ | $7.025 \quad 5.515$ | $7.780 \quad 5.515$ |
|  | [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 | . 9856.270 | $1.740 \quad 6.270$ | $2.495 \quad 6.270$ | $3.250 \quad 6.270$ | $4.005 \quad 6.270$ | $4.760 \quad 6.270$ | $5.515 \quad 6.270$ | $6.270 \quad 6.270$ | $7.025 \quad 6.270$ | $7.780 \quad 6.270$ |
|  | [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 | $1.740 \quad 7.025$ | $2.495 \quad 7.025$ | $\begin{array}{lll}3.250 & 7.025\end{array}$ | $4.005 \quad 7.025$ | $4.760 \quad 7.025$ | 5.5157 .025 | 6.2707 .025 | $7.025 \quad 7.025$ | 7780 |
|  | [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 | $1.740 \quad 7.780$ | $2.495 \quad 7.780$ | $3.250 \quad 7.780$ | $4.005 \quad 7.780$ | $4.760 \quad 7.780$ | $\begin{array}{lll}5.515 & 7.780\end{array}$ | $6.270 \quad 7.780$ | $\begin{array}{lll}7.025 & 7.780\end{array}$ | 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-RELX0203-1-.125 | Matrix length | Use RELX for basic units |
| $584-$ RELX0203-1-.125 | No. of units per horizontal row | Two digits |
| $584-$ RELX0203-1-.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), $0.090(2.3)$, |



FLANGE MATRIX PANEL CUTOUT SIZES

| $X(H O R I Z) ~ D ~$ | 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) $\nabla$ | DIMX DIMY | DIMX DIMY | DIMX DIMY | DIMX DIMY | DIM X DIMY | DIM X DIMY | DIM X DIMY | DIM X DIMY | DIM X DIMY | DIMX DIMY |
| 1 | . 775.775 | $1.530 \quad .775$ | 2285.775 | $3.040 \quad 775$ | $3.795 \quad .775$ | $4.550 \quad 775$ | $5.305 \quad .775$ | 6.060 .775 | 6815.775 | 7.570375 |
|  | [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 | 1.5301 .530 | 22851.530 | $3.040 \quad 1.530$ | 3.7951 .530 | 4.5501 .530 | $5.305 \quad 1.530$ | $6.060 \quad 1.530$ | $\begin{array}{lll}6.815 & 1.530\end{array}$ | 7.5701 .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 | $\begin{array}{ll}1.530 & 2.285\end{array}$ | $\begin{array}{lll}2285 & 2.285\end{array}$ | $\begin{array}{lll}3.040 & 2.285\end{array}$ | $3.795 \quad 2.285$ | 4.5502 .285 | $\begin{array}{llll}5.305 & 2285\end{array}$ | $6.060 \quad 2.285$ | $\begin{array}{lll}6.815 & 2.285\end{array}$ | 7.5702 .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 | . 7753 | $1.530 \quad 3.040$ | $2285 \quad 3.040$ | $3.040 \quad 3.040$ | $3.795 \quad 3.040$ | $4.550 \quad 3.040$ | $5.305 \quad 3.040$ | $6.060 \quad 3.040$ | $6.815 \quad 3.040$ | $7.570 \quad 3.040$ |
|  | [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 | . 77583.795 | $\begin{array}{llll}1.530 & 3.795\end{array}$ | $\begin{array}{lll}2285 & 3.795\end{array}$ | 3.040 | $\begin{array}{ll}3.795 & 3.795\end{array}$ | 4.550 | $5.305 \quad 3.795$ | $6.060 \quad 3.795$ | $\begin{array}{ll}6.815 & 3.795\end{array}$ | 7.5703 .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 | $\begin{array}{lll}1.530 & 4.550\end{array}$ | 22854.4550 | $3.040 \quad 4.550$ | 3.7954 .4550 | 4.5504 .550 | $5.305 \quad 4.550$ | $6.060 \quad 4.550$ | 6.815 4.550 | 7.5704 .550 |
|  | [19.68] [115.57] | [38.86] [11557] | [58.04] [11557] | [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 | $1.530 \quad 5.305$ | $2285 \quad 5.305$ | $3.040 \quad 5.305$ | $3.795 \quad 5.305$ | $4.550 \quad 5.305$ | $5.305 \quad 5.305$ | $6.060 \quad 5.305$ | $6.815 \quad 5.305$ | $7.570 \quad 5.305$ |
|  | [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 | . 7756.060 | $\begin{array}{ll}1.530 & 6.060\end{array}$ | $2285 \quad 6.060$ | $3.040 \quad 6.060$ | $3.795 \quad 6.060$ | $4.550 \quad 6.060$ | $5.305 \quad 6.060$ | $6.060 \quad 6.060$ |  | 7.5706 .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 | . 77568.815 | $\begin{array}{lll}1.530 & 6.815\end{array}$ | $2285 \quad 6.815$ | $\begin{array}{llll}3.040 & 6.815\end{array}$ | $3.795 \quad 6.815$ | $4.550 \quad 6.815$ | $\begin{array}{lll}5.305 & 6.815\end{array}$ | $6.060 \quad 6.815$ | $\begin{array}{ll}6.815 & 6.815\end{array}$ | 77.5706 .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 | $\begin{array}{ll}1.530 & 7.570\end{array}$ | $2285 \quad 7.570$ | $3.040 \quad 7570$ | $3.795 \quad 7.570$ | $4.550 \quad 7570$ | $5.305 \quad 7.570$ | $6.060 \quad 7.570$ | $\begin{array}{lll}6.815 & 7.570\end{array}$ | $7.570 \quad 7570$ |
|  | [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

| $584-$ RELM0303-. 125 | Matrix length | Codes |
| :--- | :--- | :--- |
| $584-$ RELM0303-.125 | No. of units per horizontal row for basic units |  |
| $584-$ RELM0303-.125 | No. of units per vertical row | Two digits |
| $584-$ RELM0303-.125 | Panel thickness | Two digits |

584-RELMxxxx-.xxx Dimensions


Figure 28
ROD MOUNT MATRIX PANL CUTOUT SIZES
Rod Mount Matrix

| X (HORIZ) | 1 | 2 | 3 | 4 | 5 | 6 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NO. OF 7 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 | . 7001.380 | 1.3801 .380 | 2.0601 .380 | 2.7401 .380 | 3.4201 .380 | 4.1001 .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 | . 7002.060 | 1.3802 .060 | 2.0602 .060 | 2.7402 .060 | 3.4202 .060 | 4.1002 .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 | . 7002.740 | 1.3802 .740 | 2.0602 .740 | 2.7402 .740 | 3.4202 .740 | 4.1002 .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 | . 7003.420 | 1.3803 .420 | 2.0603 .420 | 2.7403 .420 | 3.4203 .420 | 4.1003 .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 | . 7004.100 | 1.3804 .100 | 2.0604 .100 | 2.7404 .100 | 3.4204 .100 | 4.1004 .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. | $58 \mathrm{~A}-111-1$ |
| :--- | :--- |
| Connector Pin, 8A, M39029/22, 25 ct | $58 \mathrm{~A}-111-2$ |
| Connector Pin, 8A, M39029/1-100, Crimp Style, 1 ea. | $58 \mathrm{~A}-110-1$ |
| Connector Pin, 8A, M39029/1-100, 25 ct | $58 \mathrm{~A}-110-2$ |
| Connector Pin, 8A, M39029/1-101, Crimp Style, 1 ea. | $58 \mathrm{~A}-110-3$ |
| Connector Pin, 8A, M39029/1-101, 25 ct | $58 \mathrm{~A}-110-4$ |
| Clear Plastic Switchguard | $58 \mathrm{~A}-104$ |
| Wire Switchguard, Black | $58 \mathrm{~A}-105-1$ |
| Wire Switchguard, Red | $58 \mathrm{~A}-105-2$ |

## Installation and Removal Tools

| Lamp Capsule Removal Tool | $58 \mathrm{~T}-101$ |
| :--- | :--- |
| Connector Pin Crimp Tool, for M39029/1 | $58 \mathrm{~T}-109-1$ |
| Connector Pin Crimp Tool, for M39029/22 | $58 \mathrm{~T}-109-2$ |
| Connector Pin Removal Tool | $58 \mathrm{~T}-104$ |
| Connector Block Removal Tool | $58 \mathrm{~T}-107$ |
| Torque Screwdriver | $58 \mathrm{~T}-106$ |



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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[^0]:    Note 1 Contacts subjected to currents over 100 mA are no longer useable for low current applications. Contact Resistance: Initial contact resistance at $6 \mathrm{VDC}, 100 \mathrm{~mA}$ is $25 \mathrm{~m} \Omega$ 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.

