

Commercial Controls

Sealed Vehicle Rocker (SVR)



EATON

Powering Business Worldwide



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Description

The Sealed Vehicle Rocker (SVR) switch from Eaton's electrical business now offers an above panel actuator style in addition to the below panel and paddle actuators. Designed to meet the severe environmental requirements of the construction and agricultural vehicle markets, the SVR is sealed at the front and back of the switch, and meets the rigorous sealing requirements of IP68. The small switch footprint minimizes the space taken on switch panels. SVR switches are assembled into panels by pressing the switch through the top of the panel, and are held in place by retention tabs molded

into the body of the switch; mounting hardware or special tools are not necessary.

The SVR is offered in single- and double-pole switch circuits, with 2- and 3-position momentary and maintained circuits available. Switch and illumination circuits are terminated with 2.8 mm (0.11 inch) tin-plated copper alloy spade terminals. The SVR connector can be loaded with the appropriate terminals and/or wire seals to accomplish sealing at the back end of the switch.

Specifications

Electrical Life

- **Standard plating:**
50,000 operations at 12 amperes at either 12 or 24 Vdc. Life cycle testing conducted using both inductive and resistive loads.
- **Gold plating:**
250,000 (maintained circuits) / 50,000 (momentary circuits) operations at 10 mA at either 12 or 24 Vdc.

Mechanical Life

- **Maintained circuits:**
250,000 operations minimum.
- **Momentary circuits:**
50,000 operations minimum.

Dielectric Strength

1500 volts rms minimum.

Operate Force

4.4 – 13.2 N (1 – 3 lbs.) depending on circuit configuration and actuator style.

Operating Temperature Range

-40°C to +85°C

Storage Temperature Range

-40°C to +85°C

Circuits

1- or 2-pole, 2- or 3-position, with momentary and maintained capabilities.

Standard Circuit Options

- ON – NONE – ON
- ON – OFF – ON
- ON* – OFF – ON*
- ON* – OFF – ON
- ON – ON – ON
- ON* – NONE – ON
- ON* – ON – ON*
- ON* – ON – ON

(* = Momentary. See circuit schematics on Page 6.)



Above panel rocker switch with two white snap-in lenses and amber LED

Contact Material

- **Movable:**
Copper alloy with silver alloy contact surface.
- **Stationary:**
Silver-plated copper alloy with silver alloy contact surface.
- **Gold-plated:**
Contacts are available for low level electrical loads.



Below panel rocker switch with daylight white icon and red LED

Terminal Type

- Standard 2.8 mm (0.11 inch) tin-plated copper alloy spade terminal.
- Mates to AMP Junior Power Timer Terminals — Catalog Numbers 927766-3 (14 – 16 gauge) and 927770-3 (18 – 20 gauge). (See also Sealing section below for additional AMP components to seal the connector interface.)

Plastic Component UL® Ratings

- **Base material:**
UL94 V-O
- **Frame material:**
UL94 H-B
- **Sub-actuator material:**
UL94 V-O
- **Actuator material:**
 - UL94 H-B (below panel rocker button and paddle actuator)
 - UL94 V-O (above panel rocker button)

Mounting Means

Snap-in mounting using four flexible plastic retainers integral with switch frame.

Mounting Hole

Standard panel cutout of 36.8 x 21.1 mm (1.45 x 0.83 inches). (See panel opening drawing on Page 8.)



Below (left) and above (right) panel rocker switch styles



Below panel rocker switch with daylight white icons (left) and above panel rocker switch with two snap-in lenses (right)

Panel Thickness

1.0 to 4.0 mm (0.04 to 0.16 inches). Best results obtained between 1.5 to 3.0 mm (0.06 to 0.12 inches).

Sealing

SVR design includes a sealed contact chamber with dust and water resistance to IP68. The harness connection can also be sealed by using AMP wire seals Catalog Numbers **828905-1** (14 – 16 gauge) or **828904-1** (18 – 20 gauge) to seal the wires to the connector. For an application where a connector cavity is not being used, it can be sealed with AMP sealing plug Catalog Number **828922-1**.

The above panel version may also be sealed to the panel using panel seal Catalog Number **32-2245**. (See drawing on Page 8.)

Actuator

The SVR switch family includes three styles of actuators: above panel, below panel and paddle. Switch performance and specifications are the same for all actuator styles. Black is standard, but other colors are also available. Matte finish is standard on all actuator styles, matching the finish on the bezels and all other visible SVR switch features and accessories. All actuators can be ordered either pre-assembled to the switch or as separate part numbers.

Actuator Styles

- Above panel rocker button offers new styling and a larger surface area. Eaton can offer assistance with unique designs of above panel actuators for applications where differentiation is desired.
- Below panel rocker button is the same two-faced European styling that has been offered for SVR since its initial release. Indicator style matches the below panel rocker button style.
- Paddle actuator allows toggle-type actuation of the SVR switch.

Backlighting

- Each switch can accommodate up to two LEDs which can be connected to be



Below panel rocker switch with daylight white icon

either circuit dependent or independent. (See illumination circuit schematics on Page 7.)

- Standard LED color is amber, with red, green and blue also available. Long life (100,000 hours) LEDs are standard.
- Standard LED voltages are 12 and 24 Vdc.
- The below panel rocker button style includes a single-piece back-lit actuator with laser-etched icons in either daylight white or deadfront styles. Without illumination, the icon is either daylight white or deadfront, but will change to the color of the chosen light source when illuminated. (See picture examples on Page 7.)

Snap-in Lenses

- Above and below panel rocker buttons are available with or without one or two translucent lenses (above panel) or transparent lenses (below panel). Five standard lens colors are available: white, red, green, blue and amber.

Icons

- Icon areas are provided on each end of the rocker button. Icons may be illuminated or non-illuminated, and are pad-printed in a contrasting color either directly on the rocker button or the lens. (See examples of icons on Page 11.)

Additional Options

- Additional colors of actuators, mounting bezels and lenses.
- Special circuits.
- Special ratings.
- Pad printing on the below panel switch bezel.
- Low current capabilities.
- Custom back-lit icons.
- Gang-mount system including end bezel Catalog Number **17-22146** and center bezel **17-22152**. (See drawing on Page 10.)

- Palm Guard (below panel switch only) at either or both ends of the switch frame. (See drawing on Page 9.)
- Indicators with insertable lenses. (See drawing on Page 9.)
- Polarized lock-on connector Catalog Number **25-13936**. (See drawing on Page 10.)
- Panel plug with connector retention feature Catalog Number **17-22145**. (See drawing on Page 10.)
- Non-illuminated below panel paddle actuator. (See drawing on Page 9 and picture below.)

Note: Contact your Eaton sales representative for additional information on options.

Catalog Part Number

The SVR part numbering system allows all product features to be captured in a 15-digit part number (switch and actuator). (See *How to Order tables* on Pages 4 and 5.)



Paddle actuator switch (below panel only)



How to Order

To determine the complete SVR part number for a below panel rocker switch with actuator.

BELOW PANEL ROCKER SWITCH

S **AC** **S** **2X** **2** **G** **AQ** **X** **XX** **X** **X**

Switch Series
1 Digit
S = SVR

Frame
1 Digit
S = Standard – Below Panel
T = Palm Guard – Top/Left
B = Palm Guard – Bottom/Right
F = Palm Guard – Full

Actuator Style
1 Digit
1 = No Lens
2 = Top/Left Lens Only
3 = Bottom/Right Lens Only
4 = Top/Left and Bottom/Right Lenses
5 = Paddle – No Lens
6 = Indicator – Top/Left Lens
7 = Indicator – Bottom/Right Lens
8 = Indicator – Top/Left and Bottom/Right Lenses
9 = Indicator – No Lens
A = Decorative Rocker

Lens/Icon Color (Top/Left)
1 Digit
X = None
Lens Color
R = Red
G = Green
B = Blue
A = Amber
W = White
Decorative Icon Color
1 = Daylight White
2 = Deadfront

Icon (Bottom/Right)
2 Digits
XX = None <i>See Icon Table on Page 11</i>

Special Feature
1 Digit
X = None <i>For Eaton use only</i>

Switch Circuits/Illumination Circuits		
1st Digit (Circuit)	2nd Digit (Illumination)	
A = ON – NONE – ON	1-Pole	Illumination
C = ON – NONE – ON (Gold Plated)	A	None
D = ON – OFF – ON	C	Top/Left (D)
E = ON – OFF – ON (Gold Plated)	D	Bottom/Right (D)
F = ON* – OFF – ON*	E	Top/Left (I)
G = ON* – OFF – ON* (Gold Plated)	F	Bottom/Right (I)
H = ON* – OFF – ON	G	Top/Left (D)/Bottom/Right (I)
J = ON* – OFF – ON (Gold Plated)	H	Top/Left (I)/Bottom/Right (D)
K = ON – ON – ON ^①	J	Top/Left (D)/Bottom/Right (D)
L = ON – ON – ON (Gold Plated)	K	Top/Left (I)/Bottom/Right (I)
M = ON* – NONE – ON	2-Pole	Illumination
P = ON* – NONE – ON (Gold Plated)	R	None
R = ON* – ON – ON* ^①	S	Top/Left (D)
S = ON* – ON – ON* (Gold Plated)	T	Bottom/Right (D)
T = ON* – ON – ON	U	Top/Left (I)
U = ON* – ON – ON (Gold Plated)	V	Bottom/Right (I)
	W	Top/Left (D)/Bottom/Right (I)
	Y	Top/Left (I)/Bottom/Right (D)
	3	Top/Left (D)/Bottom/Right (D)
	4	Top/Left (I)/Bottom/Right (I)
1st and 2nd Digit Indicators		
NE = 7 – 9 Illumination		
NF = 8 – 10 Illumination		
NK = Dual Illumination		
N9 = Dual Illumination with 8 – 9 Jumper		

LED (Top/Left)	LED (Bottom/Right)
1 Digit	1 Digit
X = None	X = None
14 V Standard	
J = Red	
K = Green	
L = Amber (Standard)	
M = Blue	
14 V Over/Reverse Voltage Protection	
1 = Red	
2 = Green	
3 = Amber (Standard)	
7 = Blue	
28 V Standard	
E = Red	
F = Green	
G = Amber (Standard)	
H = Blue	
28 V Over/Reverse Voltage Protection	
4 = Red	
5 = Green	
6 = Amber (Standard)	
8 = Blue	

Icon (Top/Left)
2 Digits
XX = None <i>See Icon Table on Page 11</i>

Lens/Icon Color (Bottom/Right)
1 Digit
X = None
Lens Color
R = Red
G = Green
B = Blue
A = Amber
W = White
Decorative Icon Color
1 = Daylight White
2 = Deadfront

Special Feature
1 Digit
X = None <i>For Eaton use only</i>

^① Double-pole only. (See Switch Circuit Schematics on Page 6 and Illumination Circuit Schematics on Page 7.)

* = Momentary. (I) = Independent. (D) = Dependent.

LED Wavelengths:

Red = ~ 630 nm Amber = ~ 592 nm

Green = ~ 526 nm Blue = ~ 472 nm



Below panel rocker switch with two snap-in lenses

Example

SACS2X2GAQXXXXX — Below Panel Switch with Actuator Assembled — 1-pole ON – NONE – ON circuit in standard frame with green 14 volt dependent over/reverse voltage protected LED in top position, Actuator with green snap-in lens in top position and AQ icon pad-printed in white.

SNESEX6RCQXXXXX — Below Panel Indicator — Single red snap-in lens in top location with white pad-printed CQ icon and 28 volt red LED.

Notes

Standard color for pad printing RED, GREEN and BLUE lens will be WHITE.

Standard color for pad printing AMBER and WHITE lens will be BLACK.

Icons to be centered on lens.

Icon orientation per Icon Selection Table; alternate orientation will require a new 2-digit icon assignment. (See Icon Selection Table on Page 11.)





Electrical Circuit Descriptions

SWITCH CIRCUIT SCHEMATICS

CODE	SINGLE-POLE SCHEMATIC (Shown in Top/Left Actuated Position)	TOP/LEFT ACTUATED	CENTER	BOTTOM/RIGHT ACTUATED
A C (GOLD)		ON	NONE	ON
		2-3	—	2-1
D E (GOLD)		ON	OFF	ON
		2-3	—	2-1
F G (GOLD)		MOM ON	OFF	MOM ON
		2-3	—	2-1
H J (GOLD)		MOM ON	OFF	ON
		2-3	—	2-1
K L (GOLD)	DOUBLE-POLE ONLY			
M P (GOLD)		MOM ON	NONE	ON
		2-3	—	2-1
R S (GOLD)	DOUBLE-POLE ONLY			
T U (GOLD)		MOM ON	ON	ON
		2-3	2-1	2-1

DOUBLE-POLE SCHEMATIC (Shown in Top/Left Actuated Position)	TOP/LEFT ACTUATED	CENTER	BOTTOM/RIGHT ACTUATED
	ON	NONE	ON
	2-3 5-6	— —	2-1 5-4
	ON	OFF	ON
	2-3 5-6	— —	2-1 5-4
	MOM ON	OFF	MOM ON
	2-3 5-6	— —	2-1 5-4
	MOM ON	OFF	ON
	2-3 5-6	— —	2-1 5-4
	ON	ON	ON
	2-3 5-6	5-4-2-3	5-4-2-1
	MOM ON	NONE	ON
	2-3 5-6	— —	2-1 5-4
	MOM ON	ON	MOM ON
	2-3 5-6	5-4-2-3	5-4-2-1
	MOM ON	ON	ON
	2-3 5-6	2-1 5-4	2-1 5-4

Circuit

The SVR switch is capable of 1- or 2-pole configurations with 2- or 3-position maintained, momentary, or a combination of actuations. The addition of jumpers between switch terminals expands the circuit possibilities.

Contact your Eaton sales representative for more specific information about SVR standard and custom circuit options.

Illumination Circuit Descriptions

ILLUMINATION CIRCUIT SCHEMATICS

SINGLE-POLE CODE	DOUBLE-POLE CODE	SCHEMATIC ①	ILLUMINATION CODE	SCHEMATIC ①
A	R	NONE	9	
C	S			
D	T			
E	U			
F	V			
G	W			
H	Y			
J	3			
K	4			

① LED for terminals 7 – 9 is at top/left side of switch.
LED for terminals 8 – 10 is at bottom/right of switch.

DECORATIVE ICON COLOR EXAMPLES

NON-ILLUMINATED

Deadfront

Daylight White

ILLUMINATED

Deadfront

Daylight White

Illumination
Long life LEDs provide back-lighting illumination for the SVR switch. Backlighting can be either independent of or dependent on the switch circuits, or a combination of both. Standard LED color is amber, with red, green and blue also available. LED protection circuitry is available to protect the LED from overvoltage and reverse voltage conditions.

Contact your Eaton sales representative for more specific information about standard and custom circuit options.

Above panel rocker switch with two green snap-in lenses

SVR Circuit Descriptions

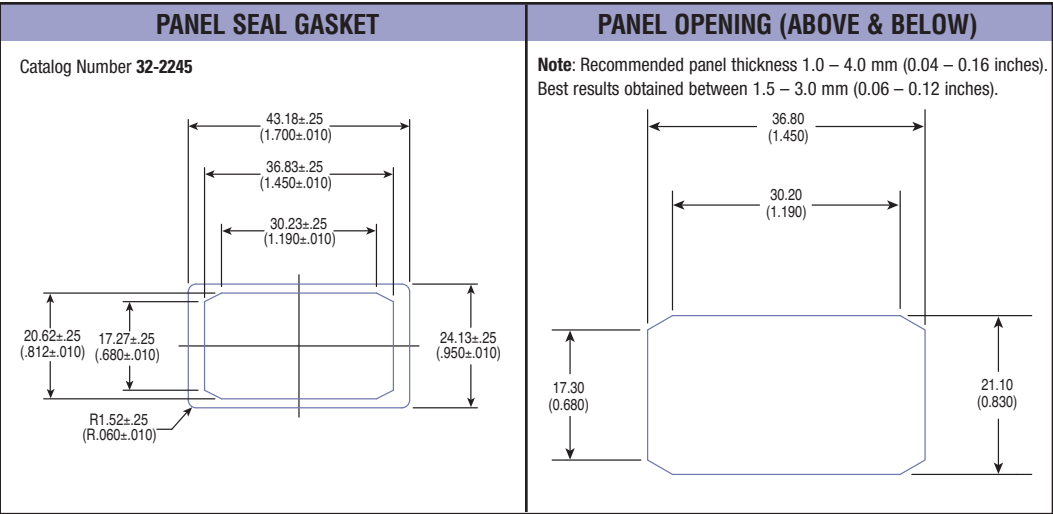
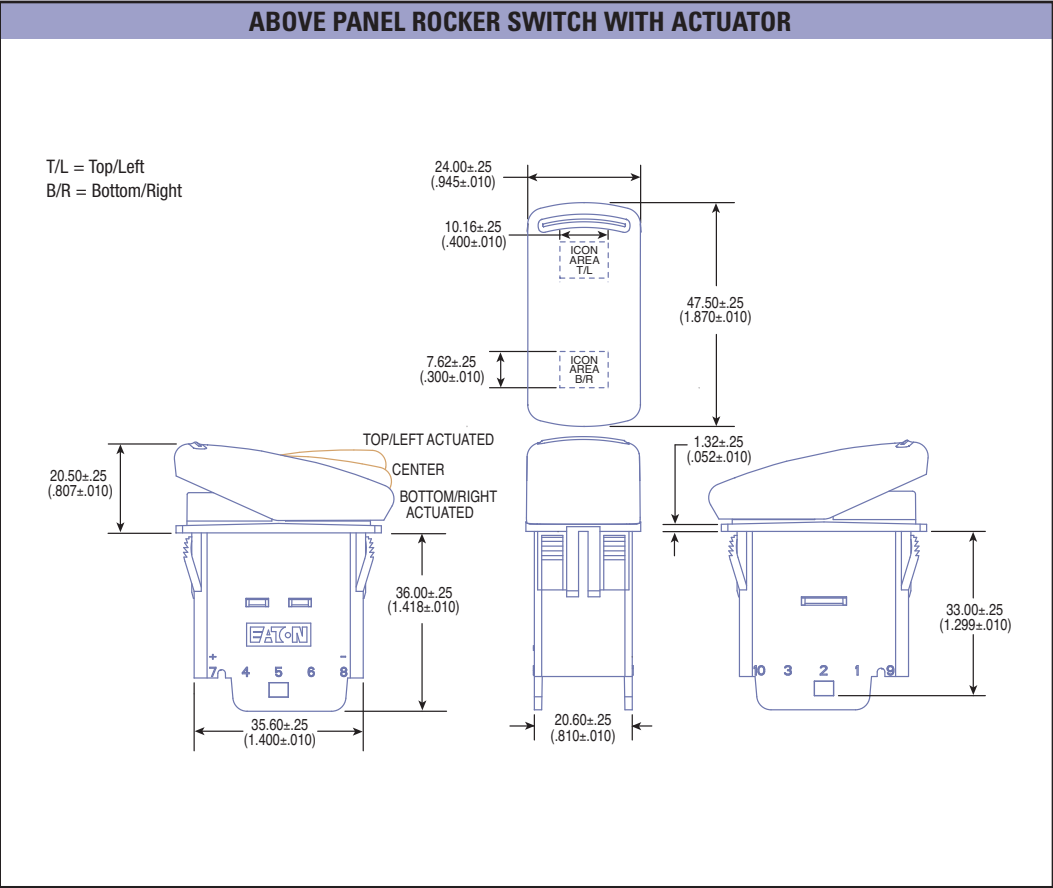
EATON CORPORATION

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Dimensions

APPROXIMATE MM (INCHES)

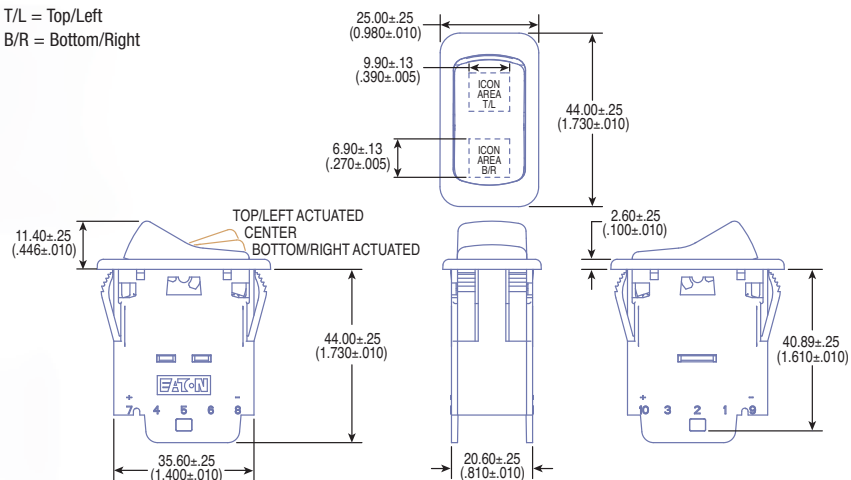


Dimensions

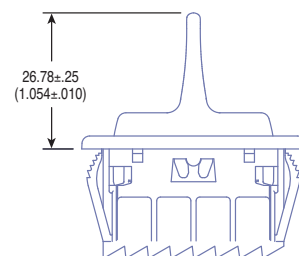
APPROXIMATE MM (INCHES)

BELOW PANEL ROCKER SWITCH WITH ACTUATOR

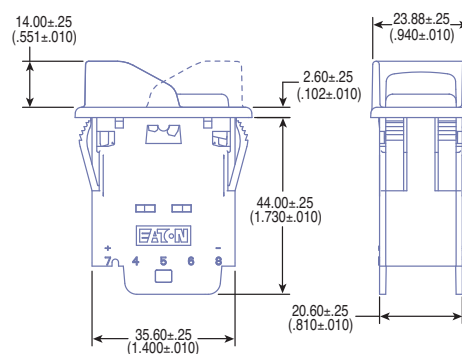
T/L = Top/Left
B/R = Bottom/Right



PADDLE ACTUATOR (BELOW PANEL ONLY)

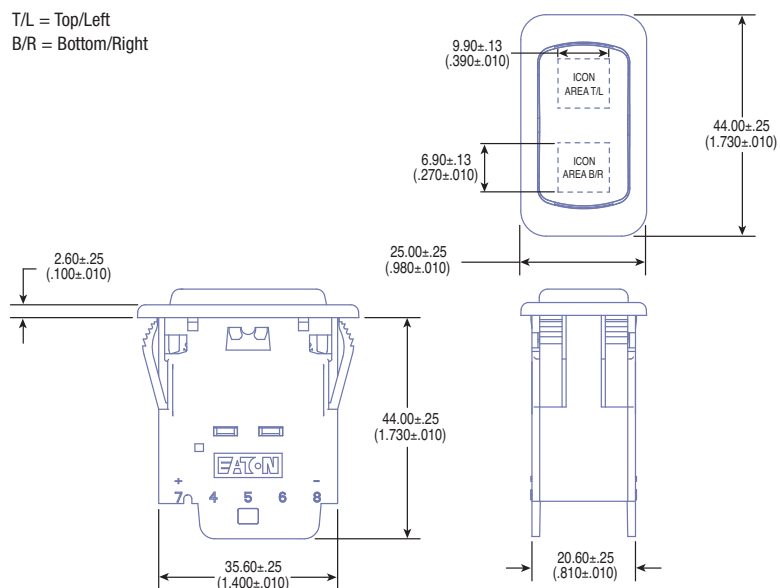


PALM GUARD (BELOW PANEL ONLY)

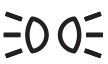


INDICATOR (BELOW PANEL ONLY)

T/L = Top/Left
B/R = Bottom/Right



Icon Selection Table

ICON	CODE	ICON	CODE	ICON	CODE	ICON	CODE	ICON	CODE
	AA		AR		BI		DN		HY
	AB		AS		BJ		DQ		KR
	AC		AT		BK		DR		LX
	AD		AU		BL		DS		MV
	AE		AV	3	BP	START	DX		MW
	AF		AW	1	BQ	STOP	DY		NF
	AG		AX		BR		EI		NG
	AH		AY		BS		FC	F	NJ
	AJ		BA		BZ		FF	N	NK
	AK		BB		CF		GH	R	PA
	AL		BC	(P)	CP		GI		QE
	AM	—	BE		CQ		GU		QL
	AN		BF		CS		HA		RW
	AP		BG		CV		HM		RX
	AQ		BH		CW		HN		SB

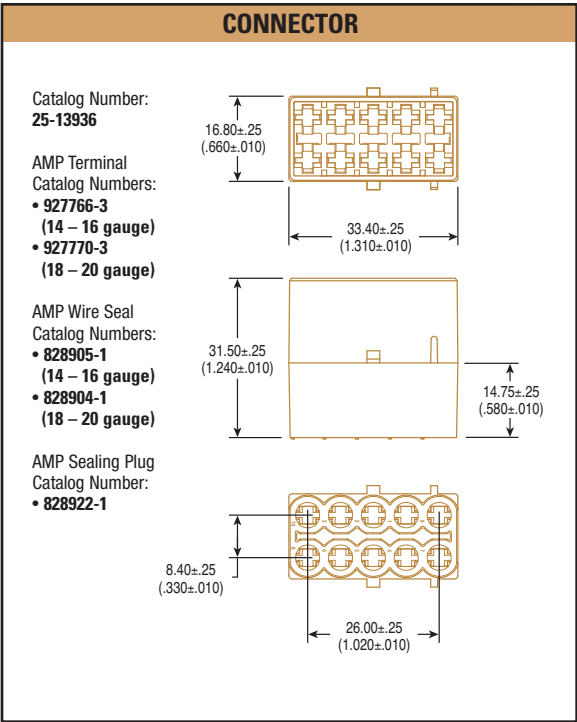
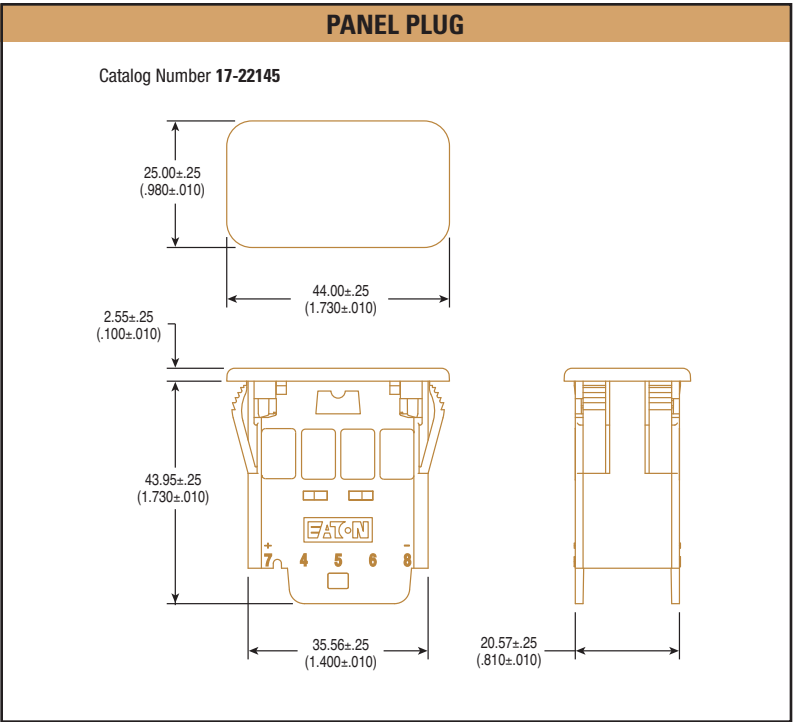
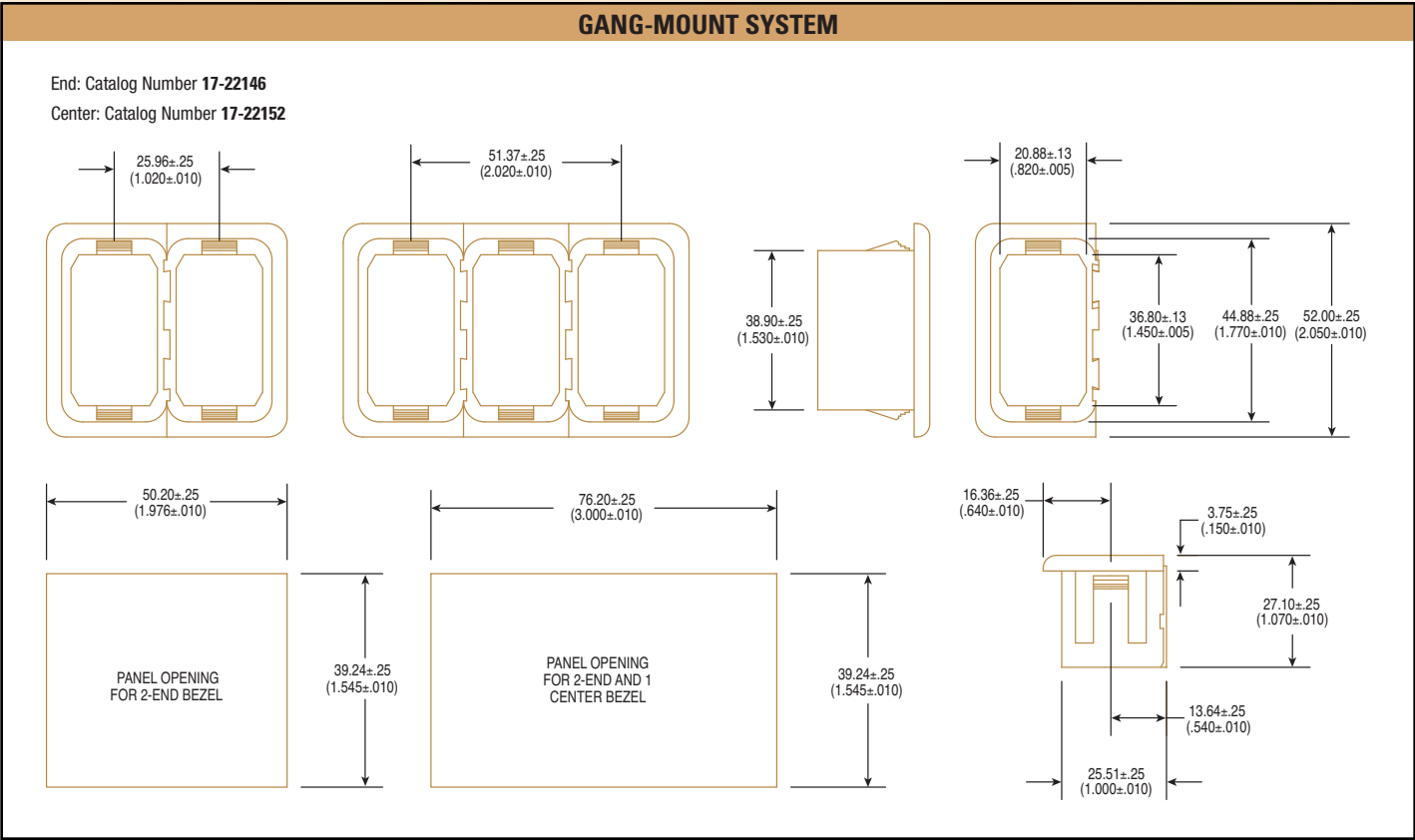
Note: Other standard icons are available. Contact your Eaton sales representative for a complete listing of standard icons.





Accessories Dimensions

APPROXIMATE MM (INCHES)



Eaton Corporation is a diversified power management company ranked among the largest Fortune 500 companies. The electrical group is Eaton's largest division and is a global leader in electrical control, power distribution, power quality, automation, and monitoring products and services. Eaton's global electrical product lines, including Cutler-Hammer®, MGE Office Protection Systems™, Powerware®, Holec®, MEM®, Santak and Moeller, provide customer-driven PowerChain Management® solutions to serve the power system needs of the industrial, institutional, government, utility, commercial, residential, IT, mission critical and OEM markets worldwide.

PowerChain Management solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle. With Eaton's distribution, generation and power quality equipment; full-scale engineering services; and information management systems, the power system is positioned to deliver powerful results: greater reliability, operating cost efficiencies, effective use of capital, enhanced safety, and risk mitigation.

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