Korry

Illuminating. Always.

Large Cap 389 Switch

Korry 1380 LED illuminated 5/8-inch switch

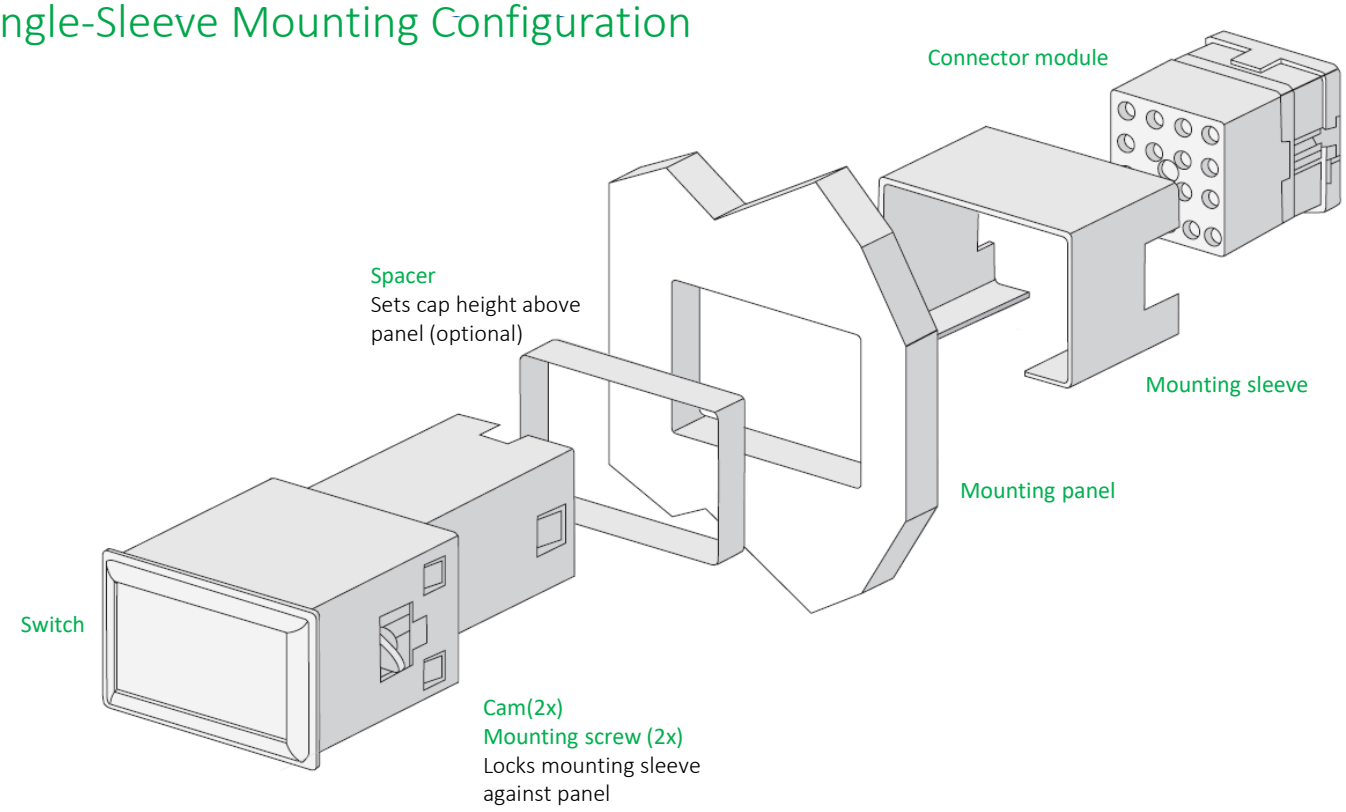
Designated the 1380 switch, this product in the Korry 389 LED switch series features a standard 5/8-inch base with a large display surface for specialized applications.

Offering the same product reliability and system versatility from the standard 389 switch, the 1380 features the same lighting and electronic engineering innovations, including a Korry patented electronic circuit design.

Its versatile circuit-card assembly (CCA) can accommodate any type of dimming requirement while the surface mounted electronics with latest generation of high-brightness LEDs offer uncompromised performance and exceptional illumination characteristics.

Korry 1380 switches can be found on most military and commercial platforms.

Single-Sleeve Mounting Configuration



Electrical and Operating Characteristics

Property	Characteristics
Switch type	Momentary / alternate action, four pole, double throw, form C, single break microswitch IAW MIL-PRF-8805
Switch contact ratings	Resistive: sea level 7A at 28 VDC Inductive: sea level at 4A at 28 VDC Lamp: sea level 2.5A at 28VDC
LED current rating	35mA max at 28 VDC, bright mode, full display
Total cap travel	0.183 inch max. (4.65 mm)
Actuation force	2-5 pounds (0.91-2.27 kg)
Cap extraction	2-5 pounds (0.91-2.27 kg)
Mounting torque	16-20 inch-ounces
Actuation life	100,000 cycles (MIL-PRF-22885)
Temperature	-55° C to +85° C (MIL-PRF-22885)

Environmental

Test	Specification
Contact resistance	MIL-STD-202F, Method 307
Contact bounce	MIL-PRF-22885F, Para. 4.7.5
Touch temperature	MIL-PRF-22885/109A
Permanency of marking	MIL-STD-202F, Method 215J
Strength of actuating means	MIL-PRF-22885F
Thermal shock	MIL-STD-202F, Method 107G, Condition A
Vibration	MIL-STD-810C, Method 514.2, Category B2, Procedure 1A
Shock	MIL-STD-202F, Method 213B, Condition B
Moisture resistance	MIL-STD-202F, Method 106F
Insulation resistance	MIL-STD-202F, Method 302, Condition B
Dielectric withstanding voltage	MIL-STD-202F, Method 301 MIL-STD-202F, Method 105C, Condition B
Salt spray*	MIL-STD-202F, Method 101D, Condition A
Explosion	MIL-STD-202F, Method 109B
Sand and dust*	MIL-STD-202F, Method 110A
Overload cycling	MIL-PRF-22885F, Para.4.7.27
Electrical endurance	MIL-PRF-22885F, Para. 4.7.28
Mechanical endurance	MIL-PRF-22885F, Para. 4.7.29
Mechanical life	Bell/Textron Specification 120-257
Power	RTCA/DO-160D, Sections 16 and 17, Category A
Audio frequency conducted susceptibility	RTCA/DO-160D, Section 18, Category Z
Magnetic effect	RTCA/DO-160D, Section 15, Category Z
Induced signal susceptibility	RTCA/DO-160D, Section 19, Category Z
Radio frequency susceptibility	MIL-STD-461D, RS103, 200 v/m
Radio frequency emission	RTCA/DO-160D, Section 21, Category M
Lightning induced transient	RTCA/DO-160D, Section 22, Category XXC3
Temperature / altitude	MIL-STD-810C, Method 504.1, Category 1
Field of view	MIL-PRF-22885F
Stray light	MIL-PRF-22885F

* Results are based on switches being inside of an enclosure. To meet higher requirements, see the back page for sealing options. An enclosure would still be required.

Reliability

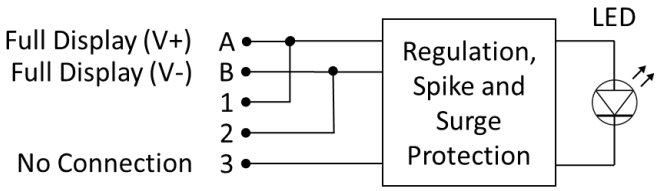
The Korry 389 switch has an MTBF of 1.5 million hours, which varies by configuration and application. The 1.5-million-hour MTBF is for a standard full display, assuming a 20-degree Celsius ambient operating temperature and 3,000 flying hours per year. This prediction was performed using 217 Plus from RiAC™ software.

1380 Lamp Circuit Diagrams

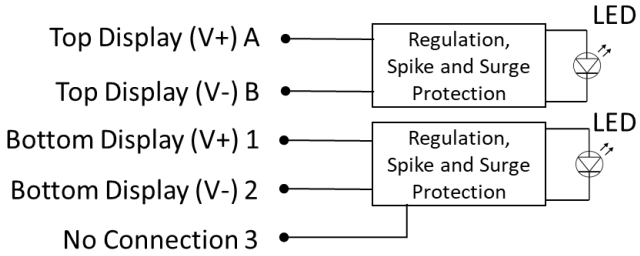
Shown are examples of standard circuits. Other options are available upon request.
Terminal designations are for reference only.


Represents an LED array

5-Pin Lamp Circuit – accepts M39029/22-192 crimp pins, accepts AWG 20, 22 and 24

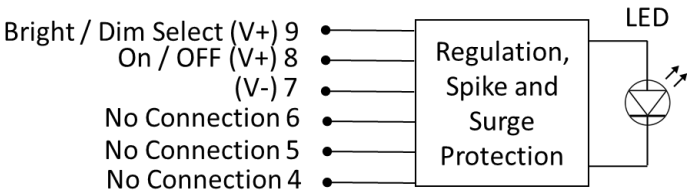


FULL DISPLAY

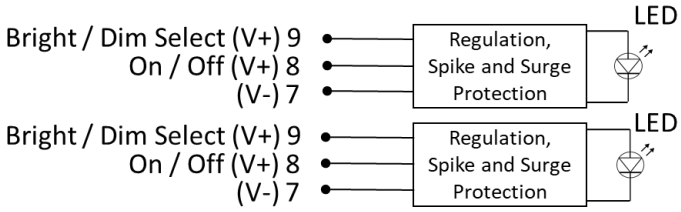


SPLIT DISPLAY

6-Pin Lamp Circuit – accepts M39029/57-354 crimp pins, accepts AWG 22, 24 and 26

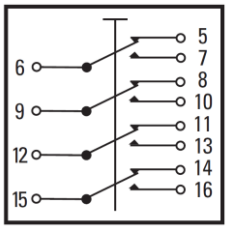


FULL DISPLAY



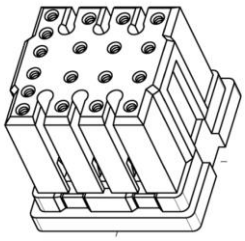
SPLIT DISPLAY

Switch Circuit Diagram



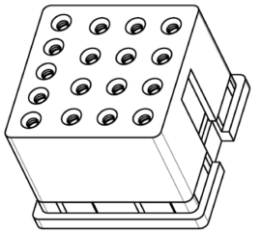
1380 Connector and Header Options

6-Pin Connector Module



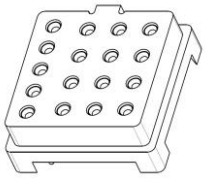
19854-XXX module uses M39029/57-354 crimp pins, accepts AWG 22, 24 and 26

5-Pin Connector Module

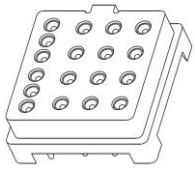


28196-XXX module uses M39029/22-192 crimp pins, accepts AWG 20, 22 and 24

Printed Circuit Board (PCB) Headers



38803-001
5-pin header



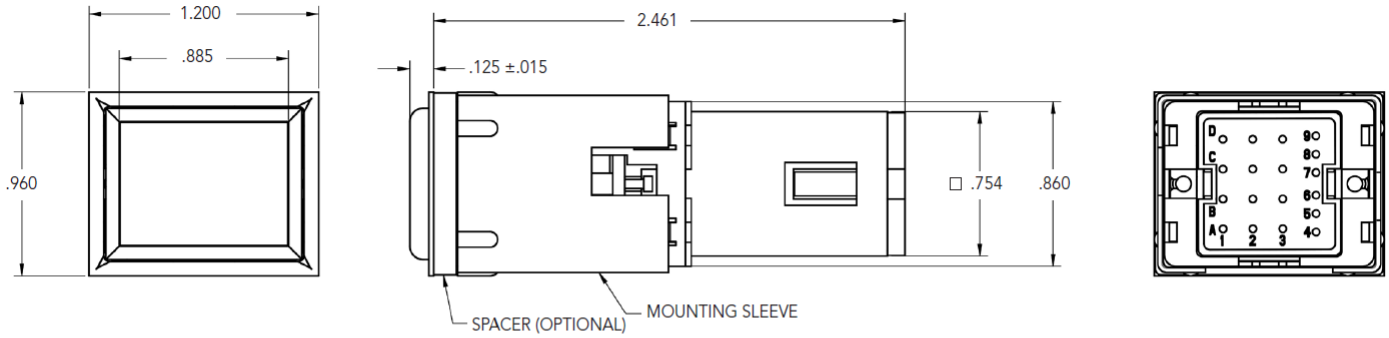
33463-001
6-pin header

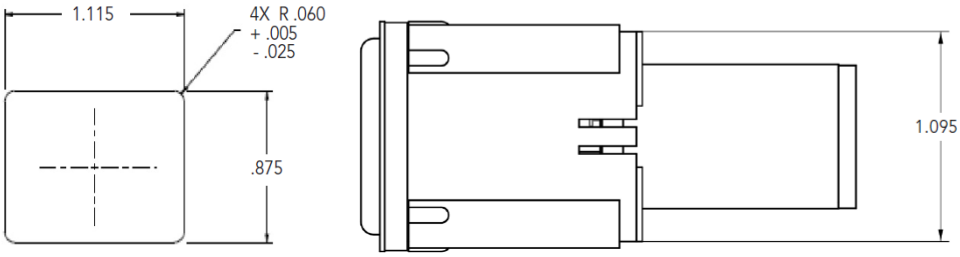
1380 Configuration Envelopes and Panel Cutouts

(dimensions in inches)

Single Sleeve Mounting and Connector Module with 6-Pin Lamp Circuit

(5-pin lamp circuit available. Header connection also available.)

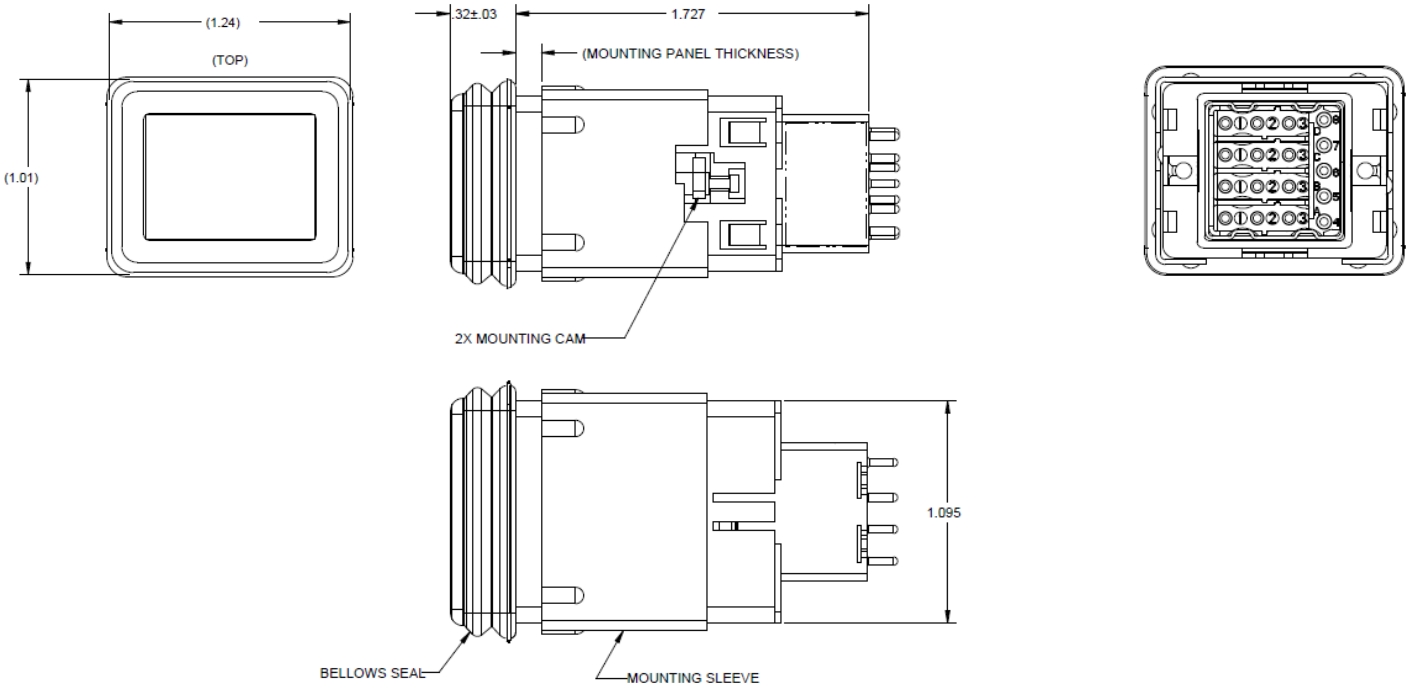




Panel Cutout

Single Mounting and Header Connection with 5-Pin Lamp Circuit

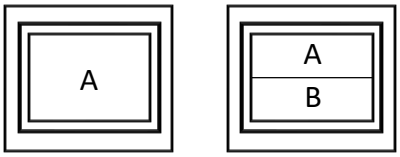
(6-pin lamp circuit available. Configuration with bellows seal shown)



Legends

Legend Types	Non-Energized Condition	Energized Condition
S (1B) Hidden legend. Letters not visible until illuminated. Lighted colored letters on opaque black background when energized		KORRY
B (1C) Hidden legend. Letters not visible until illuminated. Lighted colored background with opaque black letters when energized		KORRY
W (2D) Opaque black letters on white background. Background shows color when energized	KORRY	KORRY
N (2G2) White letters on opaque black background. Letters show color when energized	KORRY	KORRY
C (2B) Opaque black letters on colored background. Lighted colored background when energized	KORRY	KORRY
(2F) Opaque white letters on dark background. Background shows color when energized	KORRY	KORRY

Lens Configurations



Full Horizontal split

Fonts

Legends are available in many fonts and character heights.
Please contact us for details about your specific request

Commonly Used Fonts

FUTURA MEDIUM	FUTURA MEDIUM CONDENSED	HELVETICA MEDIUM
HELVETICA MEDIUM CONDENSED	GORTON NORMAL	GORTON CONDENSED
GORTON EXTRA CONDENSED	NEWS GOTHIC	DIN MITTELSCHRIFT 1451
DIN ENGSCHRIFT 1451		

Character heights between 0.090” - 0.156”

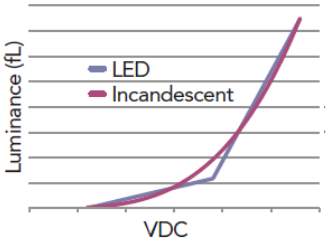
Optical Characteristics

	Luminance		Chromaticity		Contrast	
	Dim @ 14 VDC	Bright @ 28 VDC	X	Y	On	Off
RED	10 ± 5	200 - 500	0.670	0.334	0.6 Min	0 ± 0.1
			0.670	0.310		
			0.695	0.285		
			0.710	0.292		
AMBER	10 ± 5	200 – 500	0.570	0.430	0.6 Min	0 ± 0.1
			0.560	0.420		
			0.600	0.380		
			0.610	0.390		
GREEN	10 ± 5	200 – 500	0.200	0.640	0.6 Min	0 ± 0.1
			0.200	0.740		
			0.320	0.740		
			0.320	0.640		
BLUE	10 ± 5	150 – 400	0.140	0.250	0.4 Min	0 ± 0.1
			0.140	0.150		
			0.200	0.150		
			0.200	0.250		
WHITE	10 ± 5	200 - 500	0.280	0.270	0.6 Min	0 ± 0.1
			0.280	0.370		
			0.340	0.370		
			0.340	0.270		

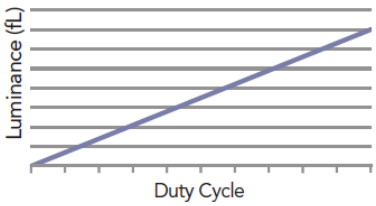
- Luminance and color requirements are for legend types S (1B), B (1C), W (2D), C (2B), and (2F)
- Type N legends are used for night visibility and are designed to match the light-plate luminance value
- NVIS colors are available per MIL-STD-3009
- Korry products meet the night-vision compatibility requirements of MIL-STD-3009
- Contrast shown is for S legends only
- Other optical characteristics are available upon request

Dimming Methodologies

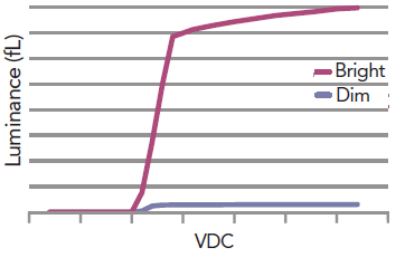
Variable Voltage



Pulse Width Modulation (PWM)



Constant Illumination over Variable Voltage



Logic Input

2-to-4-point dimming using multiple ground pins

389 Switch Accessories

Sealing accessories

To meet higher requirements than those listed in the environmental specifications, a bellows seal is an option

	Drip proof	Sand and dust	Waterproof	Humidity	Spill proof	Salt fog
Bellows seal	X	X	X	X	X	X

Electrical Interface Accessories

- M39029 crimp pins: solder-less wire connections that can easily be removed and reinstalled into the connector module
- Connector module: a standard electrical interface that accommodates the M39029 crimp-pin feature
- PCB header: for installation onto a PCB or CCA

Miscellaneous Accessories

- Spacers: available for insertion between the mounting panel and housing flange to position the cap assembly level with an adjacent light plate
- Flip-guard assembly: multiple styles available to prevent inadvertent switch actuation
- Connector-module extraction tool: M22885/108T8234.

Korry

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