

Korry® 389 LED-Illuminated Switch

A virtual industry standard for versatile, reliable switching solutions with outstanding illumination

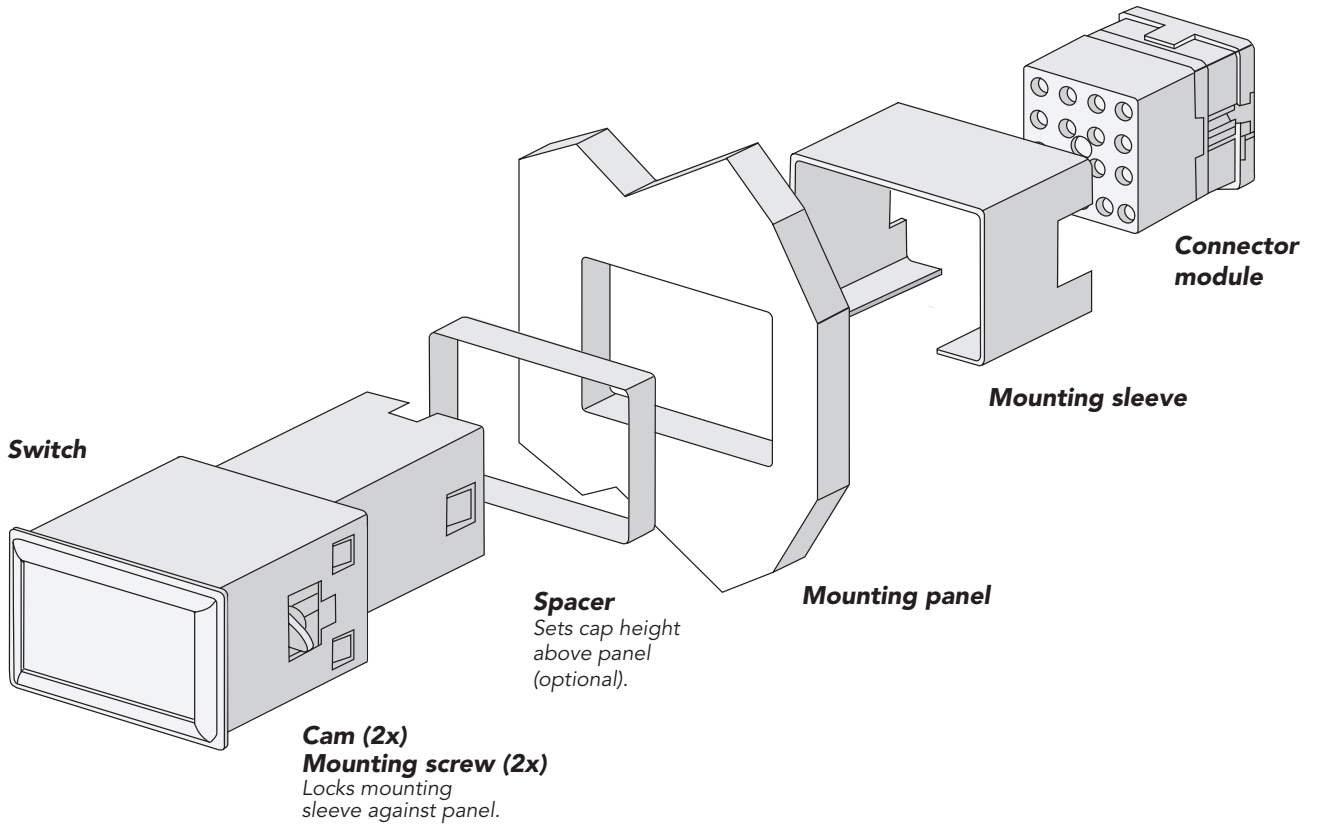
Korry 1380 high-performance switch with oversized display for master caution and warning systems

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. It offers the product reliability and system versatility you expect from the standard 389 switch and 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. Korry 1380 switches can be found on most military and commercial platforms.

- Surface-mounted electronics with the latest generation of high-brightness LEDs
- Uncompromising performance in system interface capabilities
- Exceptional illumination characteristics such as brightness output and dimming control
- Bipolar electrical interface
- Optional night-vision illumination

Korry 1380 Assembly and Installation

Single-Sleeve Mounting Configuration



Electrical and Operating Characteristics

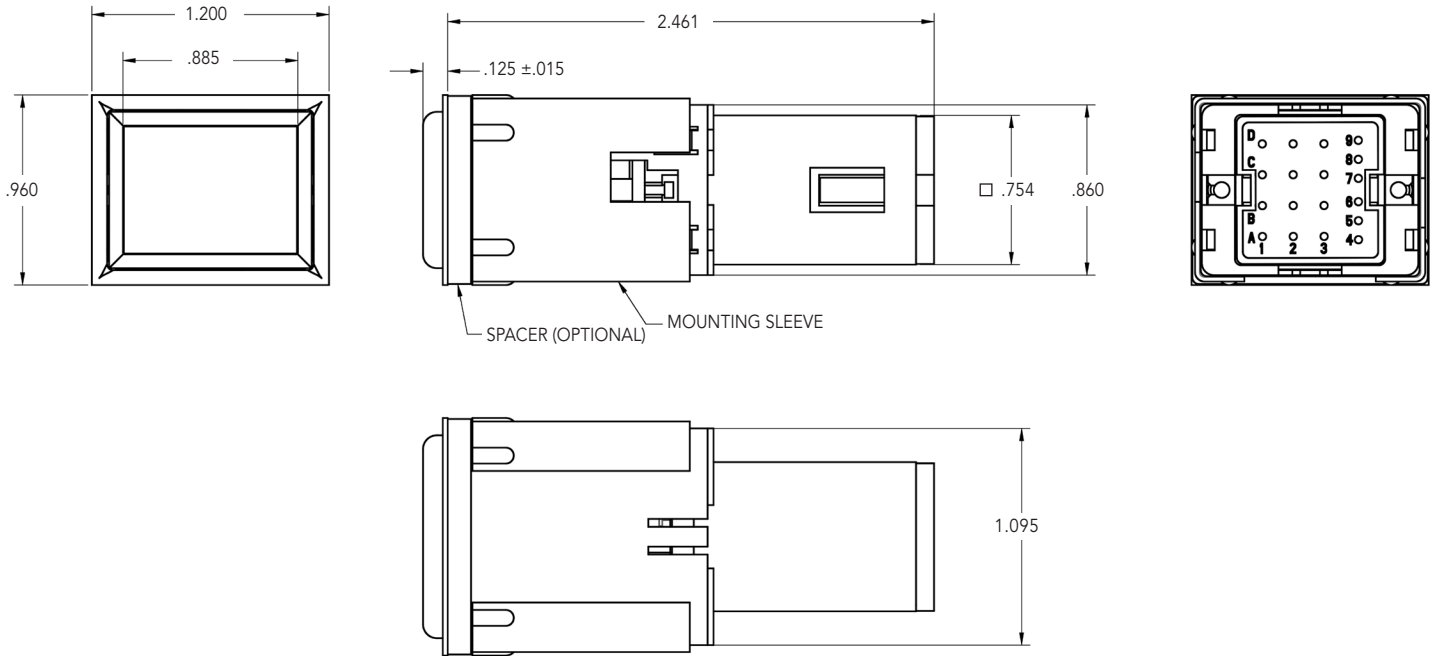
Switch type	Momentary/alternate action, four pole, double throw, form C, single break microswitch IAW MIL-PRF-8805
Switch contact ratings	Resistive: sea level 7 A at 28 VDC Inductive: sea level 4 A at 28 VDC Lamp: sea level 2.5 A at 28 VDC
LED current rating	35 mA max. at 28 VDC, bright mode, full display
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)

1380 Configuration Envelope and Panel Cutout

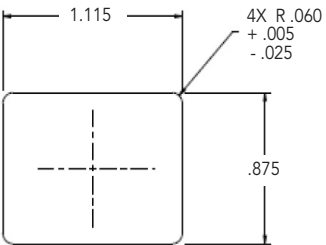
(dimensions in inches, for reference only)

Single Sleeve and Connector Module

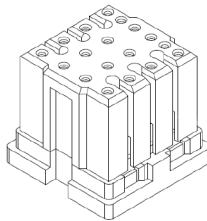
(6-pin version shown)



Panel Cutout

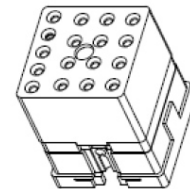


6-Pin Connector Module



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

5-Pin Connector Module

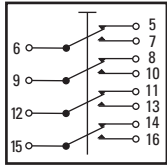


5-pin connector module 28196-XXX uses M39029/22-192 crimp pins, accepts AWG 20, 22 and 24.

1380 Electrical Schematics and Interface Options

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

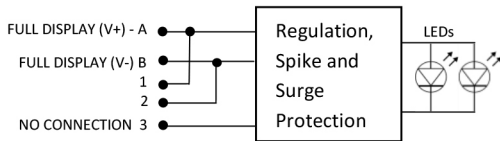
Switch Circuit



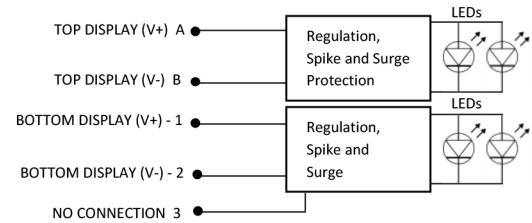
Terminal identification is optional.

Lamp Circuit

(bipolar design)

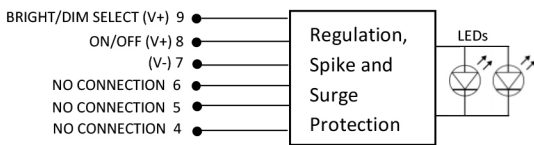


FULL DISPLAY

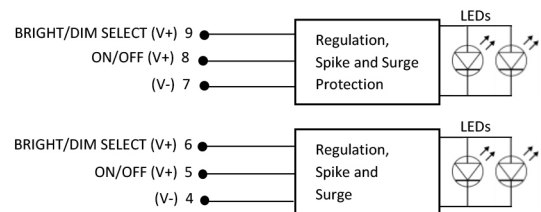


SPLIT DISPLAY

5 PIN CONNECTOR MODULE



FULL DISPLAY



SPLIT DISPLAY

6 PIN CONNECTOR MODULE

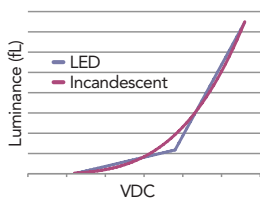
Optical Characteristics

	Luminance (fL)		Chromaticity		Contrast	
	Dim @ 14 VDC	Bright @ 28VDC	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		

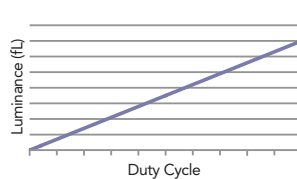
- Luminance and color requirements are for legend types S(1B), B(1C), W(2D), N(2G2), C(2B), and (2F).
- Type N legends are used for night visibility and are designed to match the light-plate luminance value.
- NVIS colors are available per MIL-STD-3009.
- Korry products meet the night-vision compatibility requirements of MIL-STD-3009.
- Contrast shown is for S legends only.
- Other optical characteristics are available upon request.

Dimming Methodologies

Variable Voltage



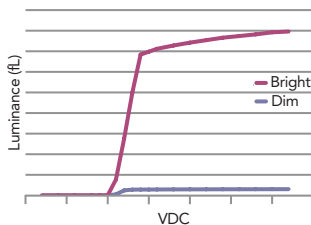
Pulse Width Modulation (PWM)



Logic Input

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




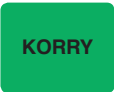








Constant Illumination over Variable Voltage



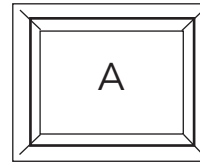
For additional information, please
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Legends

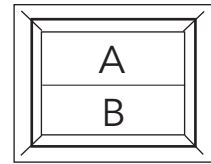
Legend Types

	OFF CONDITION	ON CONDITION
S (1B) Hidden legend. Letters not visible until illuminated. Lighted colored letters on opaque black background when energized.		
B (1C) Hidden legend. Letters not visible until illuminated. Lighted colored background with opaque black letters when energized.		
W (2D) Opaque black letters on white background. Background shows color when energized.		
N (2G2) White letters on opaque black background. Letters show color when energized.		
C (2B) Opaque black letters on colored background. Lighted colored background when energized.		
(2F) Opaque white letters on dark background. Background shows color when energized.		

Lens Configurations



Full



Horizontal split

Fonts and Sizes Versus Character Capacities

	Character height	TEXT		TEXT	
		Lines	Characters per line	Lines	Characters per line
Futura Medium	.093	1-4	10	1-2	10
	.100	1-4	9	1-2	9
	.125	1-3	8	1	8
	.156	1-3	6	1	6
Futura Medium Condensed	.093	1-4	16	1-2	16
	.100	1-4	15	1-2	15
	.125	1-4	11	1-2	11
	.156	1-3	9	1	9
Helvetica Medium	.093	1-4	9	1-2	9
	.100	1-4	8	1	8
	.125	1-4	7	1	7
	.156	1-2	6	1	6
Helvetica Medium Condensed	.093	1-4	11	1-2	11
	.100	1-4	10	1-2	10
	.125	1-7	9	1	9
	.156	1-3	7	1	7
GORTON NORMAL	.093	1-4	10	1-2	10
	.100	1-4	9	1-2	9
	.125	1-3	7	1	7
	.156	1-3	6	1	6
GORTON NORMAL CONDENSED	.093	1-4	10	1-2	10
	.100	1-4	9	1-2	9
	.125	1-3	9	1	9
	.156	1-3	7	1-3	7
GORTON EXTRA CONDENSED	.093	1-5	16	1-2	16
	.100	1-4	12	1-2	12
	.125	1-3	12	1	12
	.156	1-3	10	1	10
News Gothic	.093	1-5	12	1-2	12
	.100	1-4	11	1-2	11
	.125	1-4	9	1-2	9
	.156	1-3	7	1	7
DIN Mittelschrift 1451	.093	1-5	10	1-2	10
	.100	1-4	9	1-2	9
	.125	1-4	8	1-2	8
	.156	1-3	6	1	6
DIN Engschrift 1451	.093	1-4	15	1-2	15
	.100	1-4	14	1-2	14
	.125	1-4	11	1-2	11
	.156	1-3	9	1	9

Number of characters per line can vary depending on characters selected. Other fonts are available upon request.

Environmental

Test	Specification
Contact resistance	MIL-STD-202F, Method 307
Contact bounce	MIL-PRF-22885F
Touch temperature	MIL-PRF-22885/109A (USAF)
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
Electrical endurance	MIL-PRF-22885F
Mechanical endurance	MIL-PRF-22885F
Power	RTCA/DO-160D, Section 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	RTCA/DO-160D, Section 20, Category R
Radio frequency emission	RTCA/DO-160D, Section 21, Category M
Lightning induced transient	RTCA/DO-160D, Section 22, Category A3C3
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 C ambient operating temperature and 3,000 flying hours per year. This prediction was performed using 217 Plus from RiAC™ software.

For additional information, please
email korry.techinfo@esterline.com

389 Switch Accessories

Sealing Accessories

To meet higher requirements than those listed in the environmental specifications (page 6), 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 lightplate.
- Flip-guard assembly: multiple styles available to prevent inadvertent switch actuation.
- Connector-module extraction tool: M22885/108T8234.

Custom Options

For specific applications, custom circuits and lighting are available upon request.

Find out more about Korry switches at www.esterline.com/controlandcommunication, or contact us at +1-425-297-9700 or korry.techinfo@esterline.com.

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Control &
Communication Systems

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