LPL INDICATOR LIGHTS



INDICATOR LIGHTS FOR LP3 & LP5 SERIES

The LPL Indicator Light series offers an excellent means of indicating the activity of a circuit by providing a visual on/ off indication of process conditions. The LPL series is ideally suited as part of a panel mounted indicator for control panels, instrumentation and front panel fault indicators.

The LPL series is manufactured to the highest standards and built to withstand harsh environments, offering anodized aluminum alloy cases with seal options of moisture proof and dusttight to IP64 or watertight to IP68S. The LPL series offers long life LED lighting in a variety of colors and can accommodate 2 to 24VDC power.

Features:

- Seal options include:
 - Watertight per MIL-PRF-8805, Design 3 and watertight 1 meter to IP68S
 - Dusttight per MIL-PRF-8805, Design 2 and Dusttight/protected against splashing water per IP64
 - Unsealed
- LED lighted with the ability to accommodate 2, 6, 12 & 24VDC power and includes reverse voltage protection
- Tall and dome style buttons in translucent white, red & amber permitting sublimated & pad printed legends
- 15/32" & 5/8" thread, press fit & dome case styles available
- **Built-in current limiting resistor & reverse** polarity protection
- Looks identical to the LP3 & LP5 series to provide a cohesive panel look
- **RoHS** compliant



Standard Characteristics/Ratings:					
LIGHTING:					
Light Source Voltage (DI	C) Actual Voltage Nominal (DC)	Voltage Max (DC)			
2	2	2.6			
6	7	8			
12	13.5	14.5			
24	28	28.6			
Seal:	Options include:				
	• Watertight per MIL-PRF-8805, Desig	n 3 and IP68S			
	Dusttight per MIL-PRF-8805, Design 2 and IP64				
	• Unsealed				
Operating Temp Range:	-55°C to +85°C				
MATERIALS:					
Case:	ee: Anodized aluminum alloy				
Button:	Thermoplastic				
Terminals:	Brass				
Mounting Hardware:	Hex nut, lockwasher and panel gasket when applicable				

El El Alli Mollidelli Gode						
LP	L – X 0 (z	zero) X	X	X	X – XX	
Case Style	Light Source Typ	e*	Seal Level	Case Color	Button Color	Lege
E. Exposed Dome	A. 2V Red LED	N. 2V Blue LFD	1. Unsealed	1. Silver	A. Amber, Translucent	Refer

IPI PART NIIMBER CODE

2. Dusttight

3. Watertight

2. Black

F. Flush Dome R. Raised Dome 1. Press Fit Mount 3. 5/8" Thread Front Mount 4. 15/32" Thread Rear Mount 6. 5/8" Thread Rear Mount

B. 2V Green LED

C. 2V Amber LED

D. 6V Red LED

E. 6V Green LED F. 6V Amber LED

G. 12V Red I FD H. 12V Green LED J. 12V Amber LED

K. 24V Red I FD L. 24V Green LED M.24V Amber LED

P. 6V Blue LED Q. 12V Blue LED

R. 24V Blue LED S. 2V Deep Green LED T. 6V Deep Green LED

U. 12V Deep Green LED V. 24V Deep Green LED

- (use Amber LED)
- R. Red, Translucent (use Red LED)
- W.White, Translucent

end Style

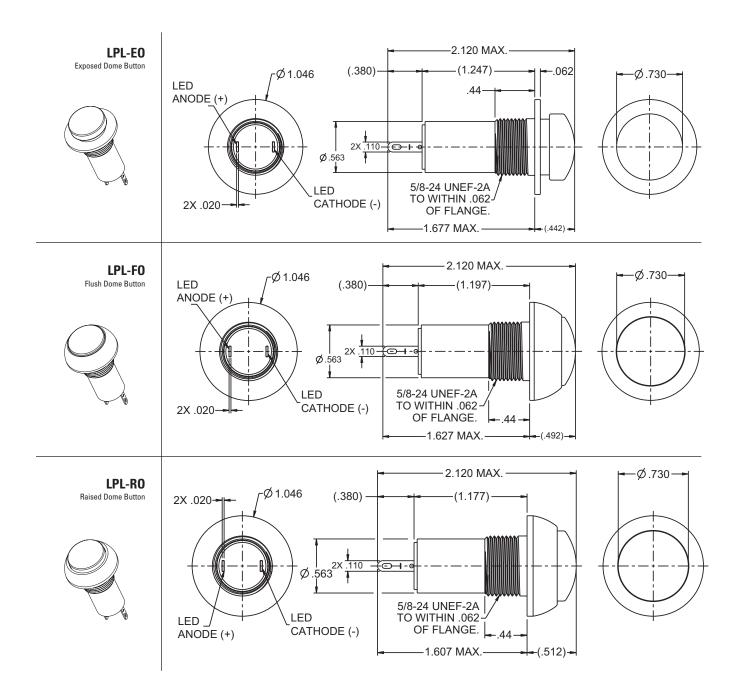
fer to Legend Table in appendix for legend codes. Legends will be printed in white on amber and red buttons and in black on white buttons.

The characters are absent from the part number if there is no legend.

^{* 2}V LED's are intended for use with an external resistor. See LED voltage chart in appendix for details on the approximate value of the resistor. All green and blue LEDs are recommended for use with translucent button color white only. For super bright LEDs, contact factory.

LPL INDICATOR LIGHTS

LED ILLUMINATED & SEALED

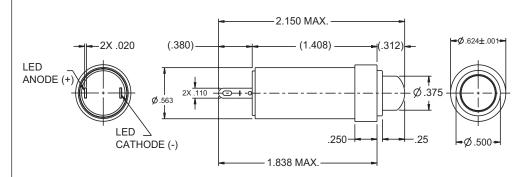




LED ILLUMINATED & SEALED

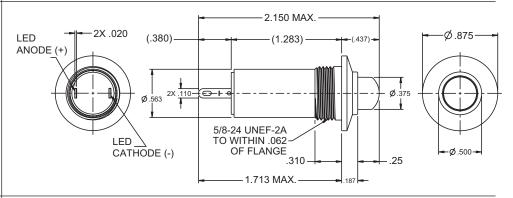
LPL-10 Press Fit Mount





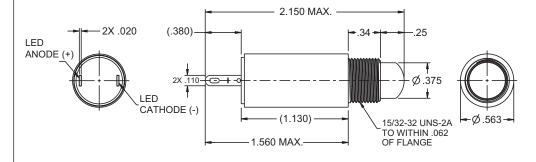
LPL-30 5/8" Threaded Front Mount





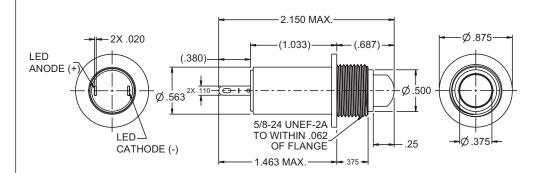
LPL-40 15/32" Threaded Rear Mount





LPL-60 5/8" Threaded Rear Mount







STANDARD LEGENDS PER SAE

STANDARD LEGENDS PER SAE SPECIFICATIONS

	STANDARD LEGENDS PER SAE SPECIFICATIONS							
A1	ţ	ANCHOR	K2	1	UNLOCK	P5	F	BILGE BLOWER
B1	- +	BATTERY	L1	٩	LIGHT	R1	1	LIFT
B2	1	ELECTRIC POWER	L2	-\̈́C-	MASTER LIGHTING SWITCH	R2	1	LOWER
C1	**	AC/COOLING SYSTEMS	L3		HEADLIGHTS	R3	1	UP
C2	4	DEHUMIDIFIER	L4		HEADLIGHTS-LOW / DIPPED BEAM	R4	¥	DOWN
C3	<u>}}}</u>	HEATER/INTERIOR HEATING	L5	ΞO	HEADLIGHTS-HIGH / UPPER BEAM	R5	-	RIGHT
D1	#	WINDSHIELD DEFROSTER	L6	P≒	PARKING LIGHT	R6	+	LEFT
D2	CHI)	REAR WINDOW DEFROSTER	L7	M	WORK LAMP	R7	FWD	FORWARD
D3		MIRROR DEFROSTER	L8	M	WORK LAMP	R8	REV	REVERSE
E1	()	ENGINE/START	L9	深	INTERIOR DOME LIGHT	S1	1	RADIO
E2	\Diamond	ENGINE/STOP	M1	Ĭ	BEACON	S2	13	MUTE
E3		ON/START	M2		HAZARD/POSITION LIGHTS	T1	4	FAST
E4	0	OFF/STOP	М3-	∌€	CLEARANCE LIGHTS	T2	4	SLOW
E5	ON	ON	M4	∌₽	SIDE MARKER LIGHT	Т3	<u></u>	TRIM TAB / TRIMMING OPERATION
E6	OFF	OFF	M5	-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	RUNNING LIGHTS (UNDER POWER)	T4	0	TRANSMISSION
E7	⊕	ENGINE ELECTRIC PREHEAT	M6	- \ \$\display-	ANCHOR LIGHT	V1	88	VENTILATING / AC FAN
E8	&	ENGINE-GAS INJECTION	M7	\$	RUNNING/ANCHOR LIGHTS	W1	P	WINDSHIELD WIPER
F1	却	FRONT FOG LIGHTS	M8	乳	SEARCH LIGHT	W2	$\widetilde{\oplus}$	WINDSHIELD-WASHER
F2	()‡	REAR FOG LIGHTS	M9	¢	LEFT TURN SIGNAL	W3	\$	WINDSHIELD-WASHER/WIPER
G1	团	FUEL	MA	\$	RIGHT TURN SIGNAL	W4	\Box	REAR WINDOW WIPER
H1	d	HORN	P1	P	BILGE PUMP #1	W5	4	REAR WINDOW-WASHER
H2	⊌R	HORN REAR	P2	₩ 2	BILGE PUMP #2	W6	\$	REAR WINDOW-WASHER/WIPER
K1		LOCK	P3	\$ 3	BILGE PUMP #3	ZZ		NO LEGEND
			P4	P	BILGE PUMP			

For legends not shown, please consult an OTTO representative.

LED VOLTAGE/CURRENT RATINGS TABLE

ROCKER AND ROTARY SWITCH VOLTAGE/CURRENT RATINGS TABLES

K1, K2, K3P and K4 LIGHTING VOLTAGE/CURRENT COMPONENTS RATINGS

LIGHT SOURCE	FORWARD	TYPICAL FORWARD/	MAX. FORWARD
COLOR	CURRENT	NOMINAL VOLTAGE	VOLTAGE
WHITE	.2 AMPS	6 VDC	8 VDC
WHITE	.08 AMPS	12 VDC	14 VDC
WHITE	.04 AMPS	24 VDC	28 VDC
AMBER	1.9 mA	125 VAC	125 VAC
AMBER	1.9 mA	250 VAC	250 VAC
RED	20 mA	1.9 VDC	2.5 VDC
GREEN	20 mA	2.15 VDC	2.5 VDC
AMBER	20 mA	1.95 VDC	2.5 VDC
BLUE	20 mA	3.5 VDC	4.0 VDC
SEE CHART	20 mA	6 VDC	8 VDC
SEE CHART	20 mA	12 VDC	14 VDC
SEE CHART	20 mA	24 VDC	28 VDC
	COLOR WHITE WHITE WHITE AMBER AMBER RED GREEN AMBER BLUE SEE CHART SEE CHART	COLOR CURRENT WHITE .2 AMPS WHITE .08 AMPS WHITE .04 AMPS AMBER 1.9 mA AMBER 1.9 mA RED 20 mA GREEN 20 mA AMBER 20 mA BLUE 20 mA SEE CHART 20 mA	COLOR CURRENT NOMINAL VOLTAGE WHITE .2 AMPS 6 VDC WHITE .08 AMPS 12 VDC WHITE .04 AMPS 24 VDC AMBER 1.9 mA 125 VAC AMBER 1.9 mA 250 VAC RED 20 mA 1.9 VDC GREEN 20 mA 2.15 VDC AMBER 20 mA 1.95 VDC BLUE 20 mA 3.5 VDC SEE CHART 20 mA 6 VDC SEE CHART 20 mA 12 VDC

K3/K5 LIGHTING VOLTAGE/CURRENT COMPONENTS RATINGS

LIGHT SOURCE VOLTAGE	LIGHT SOURCE	FORWARD	TYPICAL FORWARD/	MAX. FORWARD
CATEGORY	COLOR	CURRENT	NOMINAL VOLTAGE	VOLTAGE
6 VDC INCANDESCENT	WHITE	.2 AMPS	6 VDC	8 VDC
12 VDC INCANDESCENT	WHITE	.08 AMPS	12 VDC	14 VDC
24 VDC INCANDESCENT	WHITE	.04 AMPS	24 VDC	28 VDC
125 VAC NEON	AMBER	1.9 mA	125 VAC	125 VAC
250 VAC NEON	AMBER	1.9 mA	250 VAC	250 VAC
	RED	20 mA	2.0 VDC	2.5 VDC
2 V LED PRODUCTS*	GREEN	20 mA	2.2 VDC	2.6 VDC
	AMBER	20 mA	2.1 VDC	2.5 VDC
6 V LED PRODUCTS	SEE CHART	20 mA	6 VDC	8 VDC
12 V LED PRODUCTS	SEE CHART	20 mA	12 VDC	14 VDC
24 V LED PRODUCTS	SEE CHART	20 mA	24 VDC	28 VDC

R2 LIGHTING VOLTAGE/CURRENT COMPONENTS RATINGS

LIGHT SOURCE VOLTAGE	LIGHT SOURCE	FORWARD	TYPICAL FORWARD/	MAX. FORWARD
CATEGORY	COLOR	CURRENT	NOMINAL VOLTAGE	VOLTAGE
	RED	20 mA	2.0 VDC	2.5 VDC
2 V LED PRODUCTS*	GREEN	20 mA	2.2 VDC	2.6 VDC
	AMBER	20 mA	2.1 VDC	2.5 VDC
6 V LED PRODUCTS	SEE CHART	20 mA	6 VDC	8 VDC
12 V LED PRODUCTS	SEE CHART	20 mA	12 VDC	14 VDC
24 V LED PRODUCTS	SEE CHART	20 mA	24 VDC	28 VDC

RESISTOR SIZE = POWER SUPPLY VOLTAGE - LED FORWARD VOLTAGE LED FORWARD CURRENT

^{*}Intended for use with external resistor. The "2 volt" switches are intended to have a resistor added in series into the lighting circuit by the customer. To determine the approximate value of the resistor, use the equation below:

LED VOLTAGE/CURRENT RATINGS TABLE

ILLUMINATED PUSHBUTTON SWITCH & INDICATOR LIGHTS VOLTAGE/CURRENT RATINGS TABLES

LP3, LP5 AND LPL SERIES LIGHTING VOLTAGE/CURRENT COMPONENTS RATINGS

LIGHT SOURCE VOLTAGE CATEGORY	LED COLOR	FORWARD CURRENT	TYP. FORWARD VOLTAGE (DC)	MAX. FORWARD VOLTAGE DC	
	RED	20 mA	1.9V	2.5V	
2V*	GREEN	20 mA	2.2V	2.6V	
PRODUCTS	AMBER	20 IIIA	2.20	2.00	
	BLUE	20 mA	3.3V	4V	
	DEEP GREEN	2011174	3.5 V	7.0	
6V PRODUCTS	ALL COLORS	20 mA	6V	8V	
12V PRODUCTS	ALL COLORS	20 mA	12V	14.5V	
24V PRODUCTS	ALL COLORS	20 mA	24 V	28.6 V	

LP3S LIGHTING VOLTAGE/CURRENT COMPONENTS RATINGS

LIGHT SOURCE VOLTAGE CATEGORY	LED COLOR	FORWARD CURRENT	TYP. FORWARD VOLTAGE	MAX. FORWARD VOLTAGE	
	RED			2.5 V	
	GREEN	20 mA	2 V		
2V*	AMBER				
PRODUCTS	BLUE		3.2 V	4 V	
	DEEP GREEN	20 mA			
	WHITE				
12V PRODUCTS	ALL COLORS	20 mA	12V	14V	
24V PRODUCTS	ALL COLORS	20 mA	24 V	28.6 V	

LP7-D and LP9 SERIES LIGHTING VOLTAGE/CURRENT COMPONENTS RATINGS

LIGHT SOURCE VOLTAGE CATEGORY	LED COLOR, WAVELENGTH (nm)	FORWARD CURRENT	TYP. FORWARD VOLTAGE	MAX. FORWARD VOLTAGE
2V LIGHTPIPE STYLE	RED (631) GREEN (525) AMBER (591) BLUE (470) WHITE	20 mA 20 mA 20 mA 20 mA 5 mA	2V 3.2V 2.1V 3.3V 2.9V	2.4V 3.6V 2.4V 3.8V 3.15V
2V, TRANSLUCENT FULLY ILLUMINATED STYLE	RED (630) GREEN (525) AMBER (601) BLUE (465) WHITE	20 mA 20 mA 20 mA 20 mA 5 mA	1.95V 3.3V 2.1V 3.3V 2.85V	2.5V 4.1V 2.5V 4V 3.1V
12V ALL PRODUCTS	ALL COLORS, SAME AS 2V	(20 mA)	12.0V	14.0V

LP9L SERIES LIGHTING VOLTAGE/CURRENT COMPONENTS RATINGS

LIGHT SOURCE VOLTAGE CATEGORY	LED COLOR, WAVELENGTH (nm)	FORWARD CURRENT	TYP. FORWARD VOLTAGE	MAX. FORWARD VOLTAGE
2V PRODUCTS	RED (631) GREEN (525) AMBER (591) BLUE (470) WHITE	20 mA 20 mA 20 mA 20 mA 5 mA	2V 3.2V 2.1V 3.3V 2.9V	2.4V 3.6V 2.4V 3.8V 3.15V
12V PRODUCTS	ALL COLORS, SAME AS 2V	(20 mA)	12.0V	14.0V

^{*}Intended for use with external resistor. The "2 volt" switches are intended to have a resistor added in series into the lighting circuit by the customer. To determine the approximate value of the resistor, use the equation below:

RESISTOR SIZE = POWER SUPPLY VOLTAGE - LED FORWARD VOLTAGE LED FORWARD CURRENT

Mouser Electronics

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OTTO:

<u>LPL-F00004</u> <u>LPL-F00005</u> <u>LPL-10M32A</u> <u>LPL-60B32W</u> <u>LPL-F0C31A</u> <u>LPL-F0C31W</u> <u>LPL-F0E21W</u> <u>LPL-F0J31A</u> <u>LPL-F0K32R</u> <u>LPL-10K12R</u> <u>LPL-F0L32W</u> <u>LPL-F0M32A</u> <u>LPL-60C32W</u> <u>LPL-30K31W</u> <u>LPL-30L31W</u> <u>LPL-30M11A</u> <u>LPL-60K11W</u> <u>LPL-F0A31R</u>