PowerLine LEDs



SOLID STATE ALTERNATIVES TO INCANDESCENT BULBS FOR INDUSTRIAL PLANTS AND UTILITIES

Available on-line at www.powerlineleds.com

DDP®
Engineered LED Solutions

INTRODUCTION



Since 1970, DDP has pioneered the development of LED lamps as replacements for incandescent bulbs. The advantages that solid-state LEDs offer are particularly suitable for the utility industry where numerous lamps provide critical indication in control panels. Burned-out incandescent bulbs require costly maintenance and may create safety concerns. Replacing incandescent bulbs with PowerLine® LED lamps will provide many years of maintenance-free operation.

This catalog represents our products designed specifically for the unique needs of the power generation, transmission and distribution industries. We offer a comprehensive product line to provide direct replacement of almost any indicator lamp being used without modification to existing equipment.

Since many stations have unique requirements, DDP engineers have also developed many modified versions of our standard LED lamps.

If you don't find the lamp you need in this catalog, please call our technical support number: (800) 421-6815 or e-mail: techsupport@datadisplay.com

Our applications engineers are available for technical assistance and to provide samples for evaluation. We look forward to working with you.

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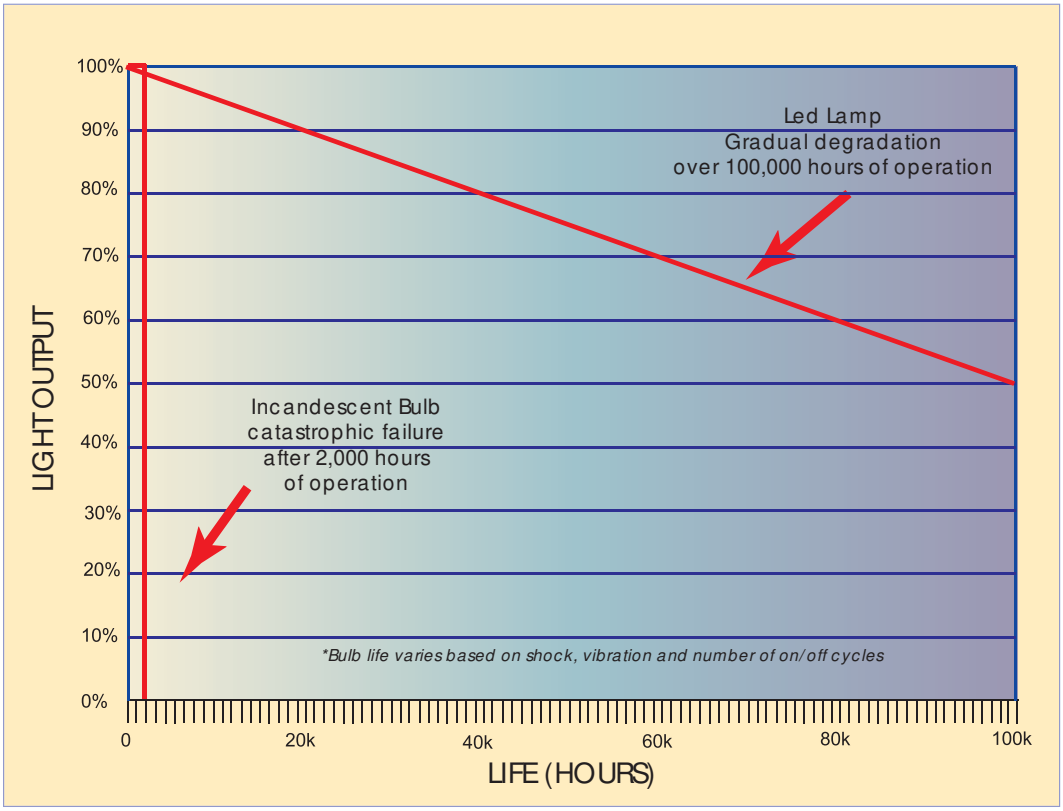
PowerLine® LED lamps are designed as drop-in replacements and offer several advantages over incandescent bulbs.

	PowerLine® LED Lamp	Incandescent Bulb
Average Life	Up to 100,000 hours	2,000 hours
Failure Mode	Predictable	Unpredictable
Lifetime affected by on/off operation	No	Yes
Resistant to shock and vibration	Yes	No
Operating temperature	Low	High
Power consumption	Low	High
Susceptible to cold filament inrush current	No	Yes

The primary benefit of PowerLine® LED technology is the tremendous cost savings for the user by eliminating replacement costs, lowering power consumption, and reducing operating temperatures.

Long Life

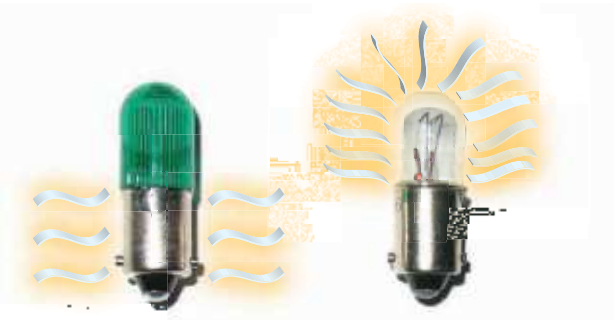
The most compelling advantage of using PowerLine® LED lamps is a predictable life. LEDs are solid-state devices and, by definition, control current without heated filaments. When used within its design parameters, a PowerLine® LED lamp will operate upwards of 100,000 hours (or 10 years). Furthermore, LED lifetime is not shortened by turning the lamp on and off.



The life of an incandescent bulb is unpredictable - subject to catastrophic failure due to shock, vibration, or cold filament inrush current. Initial powering of a control panel with numerous incandescent bulbs will generally result in several failures.

Cooler Operating Temperatures

Since incandescent bulbs generate light by heating a filament, they also heat the lenses they illuminate. This causes discoloration and eventual melting of the control panel lenses. PowerLine® LED lamps generate much less heat than the incandescent bulbs they replace. Furthermore, heat is dissipated through the base of the LED lamp, keeping the lens cooler.



Heat Dissipation Comparison

With the extended use of incandescent bulbs, lens melting and discoloration is very common. We offer replacement lenses for many industry-standard sockets. Please refer to page 10.

Power Consumption

LEDs generally draw much lower current than incandescent bulbs.

Incandescent Bulb		PowerLine® LED Lamp	
6S6/120V	50mA	6S6L120-CWX	11mA
120PSB	25mA	120PSBL-NWX	5.8mA
387	40mA	387LP-X	16mA
1819	40mA	1819L-X-CX	17mA

While lower power consumption reduces operating costs, it also reduces wear on other components in the circuit such as transformers, batteries and power converters.

Cold Filament Inrush

When cold, an incandescent filament draws ten times as much current as it does during normal operation. The initial powering of hundreds of incandescent bulbs simultaneously causes significant voltage surges that lead to lamp failures.

PowerLine® LED lamps are designed with series resistors to limit the operating current, resulting in no cold filament current variation.

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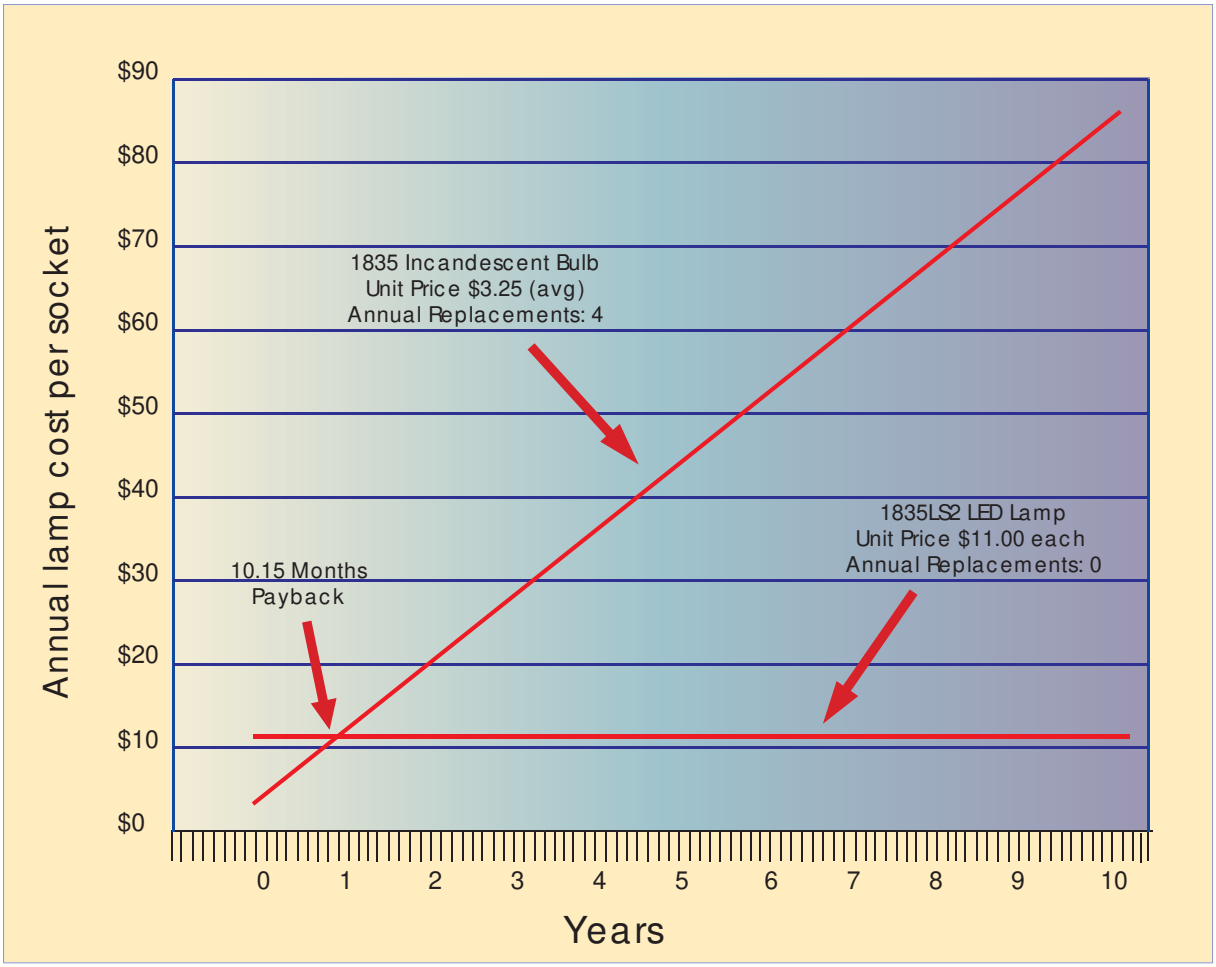
Shunt Resistor

Residual current as low as .25mA may cause the LED to illuminate dimly in the off state, PowerLine® LEDs are designed with a built-in shunt resistor to bleed-off transient current. There are several sources of leakage current in a circuit. Transient voltage from a relay or discharge from a capacitor creates circuit noise. Also, inherent in the design of some programmable logic controllers (PLCs), is a triac protective circuit that may supply up to 5mA of leakage current in the off state.

Cost Savings

Based on an average incandescent bulb life of three months, converting to PowerLine® LEDs will pay for itself in material costs alone within the first year. This payback period takes into account only the cost of the incandescent bulb. It does not take into account the labor cost associated with changing bulbs, power savings, operating downtime, incandescent bulb inventory and ordering costs, and other significant factors.

The following graph depicts the average cost of replacing a $3.25 1835 incandescent bulb in one socket four times a year. The cost of the bi-polar 1835LS2 is fixed at $11.00 for ten years. For a facility with only 1,000 lamps, the material savings alone would be approximately $2,000 after the first year!



Free Samples

To evaluate PowerLine® LED lamps in your application, we will send free samples of any product.

Ordering Information

1. Model Number - Locate the incandescent bulb number you are replacing and the corresponding PowerLine® LED lamp number in the Lamp Cross-Reference on page 5. For example:

INCANDESCENT LAMP #	PowerLine® LED PART #	PAGE #
1835	1835LS2-X-CX 1835LS3-X-CX	11

2. Voltage - Verify your operating voltage and series resistor (if applicable) to select the appropriate cross. For example:

INPUT VOLTAGE	SERIES RESISTOR	MAXIMUM VOLTAGE	PowerLine® LED PART #
48DC	200 Ω	56	1835LS2-X-CX

3. Color - Select the LED color to match the color of your lens. There are no "clear" LED lamps. White LED lamps will generally not work as a universal replacement behind colored lenses.

LED COLOR CODE	EMITTED COLOR	Used to illuminate the following lenses						
		Red	Amber	Yellow	Green	Blue	White	Clear
-R-CR	Red	*					*	*
-A-CA	Amber		*	*			*	*
-G-CG	Green				*		*	*
-B-CB	Blue					*	*	*
-W-CW	White			*			*	*

4. Request Samples - Phone, fax, or e-mail us the part number and we will provide a free sample for your evaluation. The PowerLine® LED part number in the example above is **1835LS2-R-CR**.

If you have any questions, please call DDP at **(800) 421-6815** or e-mail **techsupport@datadisplay.com.**

LAMP CROSS-REFERENCE

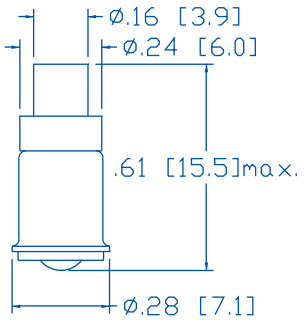
INCANDESCENT LAMP #	PowerLine® LED PART #	PAGE #
3S6/120V	6S6LS120-CWX	15
6S6/120V	6S6LS120-CWX	15
6S6DC/120V	6S6DCLS120-CWX	15
6S6/130V	6S6LS130-CWX	15
6S6DC/130V	6S6DCLS130-CWX	15
6S6/155V	6S6LS155-CWX	15
6PSB	6PSBLS-X1	7
24E / 24X	24LS Series	9
24PSB	24PSBLS-X1	7
28PSB	28PSBLS-X1	7
28MB	1819LS-X-CX	14
44	47LS-X-CX	14
47	47LS-X-CX	14
48PSB	48PSBLS-X1	7
48X	48LS4-X1	7
55C2	55CLS2-X1	7
85	85LS-X1	6
86	86LS-X1	6
120MB	120MBLS-X-CX	14
120PC	120PCLS-NWX	8
120PSB	120PSBLS-NWX	8
327	387LP-X	6
330	382LP-X	6
345	345LP-X	6
350	350LP-X	6
370	370LP-X	6
376	387LP-X	6
382	382LP-X	6
385	387LP-X	6
386	386LP-X	6
387	387LP-X	6
388	388LP-X	6
394	394LP-X	6

INCANDESCENT LAMP #	PowerLine® LED PART #	PAGE #
755	47LS-X-CX	14
757	1819LS-X-CX	14
1815	1815LS-X-CX	14
1819	1819LS-X-CX	14
	1819LS2-X-CX	11
1820	1819LS-X-CX	14
1829	1819LS-X-CX	14
1835	1835LS Series	11
1843	1819LS-X-CX	14
1847	47LS-X-CX	14
1866	47LS-X-CX	14
7341	387LP-X	6

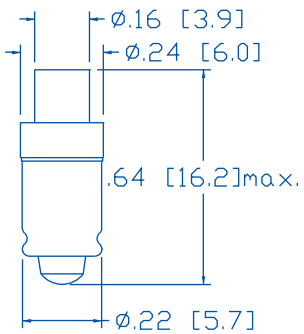
INCANDESCENT LAMP #	PowerLine® PART # WITH SHUNT RESISTOR	APPLIED VOLTAGE	MAXIMUM VOLTAGE	FIG #
85	85LS-X1	28AC/DC	30	3
86	86LS-X1	6AC/DC	7	3
327	387LP-X	28AC/DC	30	1
330	382LP-X	14AC/DC	15.5	1
345	345LP-X	6AC/DC	7	1
350	350LP-X	6AC/DC	7	1
370	370LP-X	18AC/DC	20	1
376	387LP-X	28AC/DC	30	1
382	382LP-X	14AC/DC	15.5	1
385	387LP-X	28AC/DC	30	1
386	386LP-X	14AC/DC	16	2
387	387LP-X	28AC/DC	30	1
388	388LP-X	28AC/DC	30	2
394	394LP-X	12AC/DC	13	1
7341	387LP-X	28AC/DC	30	1



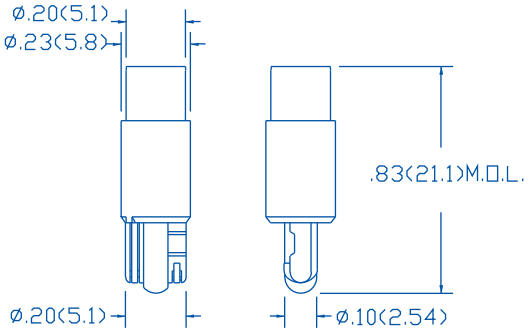
LED COLOR CODE	EMITTED COLOR	Used to illuminate the following lenses						
		Red	Amber	Yellow	Green	Blue	White	Clear
-R	Red	*					*	*
-A	Amber		*	*			*	*
-G	Green				*		*	*
-B	Blue					*	*	*
-W	White						*	*



Flange Base
Figure 1



Groove Base
Figure 2



Wedge Base
Figure 3

All dimensions are in inches (mm) Tolerances: .xx"(.x) ±.025:"(.63)/ .xxx"(.xx)±.010"(.25) Specifications are subject to change without notice.

T-1¾ MINIATURE LAMPS

www.powerlineleds.com

T-2 SLIDE BASED LAMPS



INCANDESCENT LAMP #	PowerLine® PART # STANDARD	PowerLine® PART # WITH SHUNT RESISTOR	APPLIED VOLTAGE	MAXIMUM VOLTAGE	BI-POLAR	FIG #
6PSB	6PSBL-X1	6PSBLS-X1	6AC/DC	7	✓	1
24PSB	24PSBL-X1	24PSBLS-X1	24AC/DC	26	✓	1
28PSB	28PSBL-X1	28PSBLS-X1	28AC/DC	30	✓	1
48PSB	48PSBL-X1	48PSBLS-X1	48AC/DC	52	✓	1
48X	48L2-X1	48LS2-X1	48DC	52		2
	48L4-X1	48LS4-X1	48AC/DC	52	✓	2
55C2	55CL2-X1	55CLS2-X1	55AC/DC	60	✓	2

LED COLOR CODE	EMITTED COLOR	Used to illuminate the following lenses							
		Red	Orange	Amber	Yellow	Green	Blue	White	Clear
-R1	Red	*						*	*
-O1	Orange		*	*				*	*
-A1	Amber			*	*			*	*
-G1	Green					*		*	*
-B1	Blue						*	*	*
-W1	White							*	*

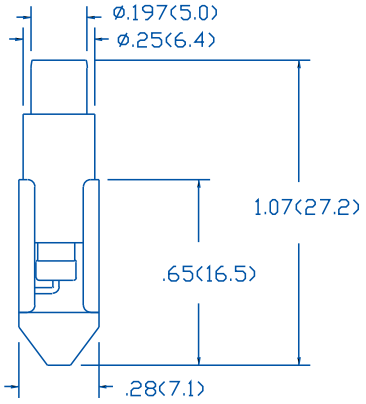
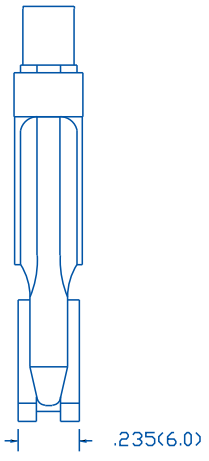


Figure 1
Slide Base #5



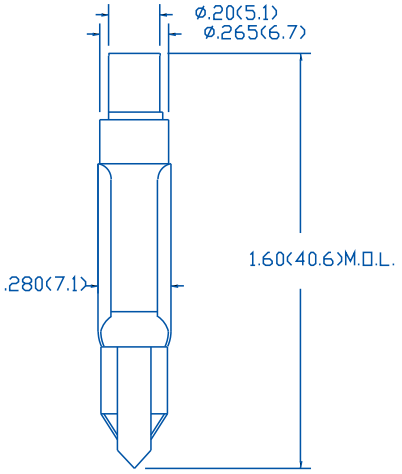


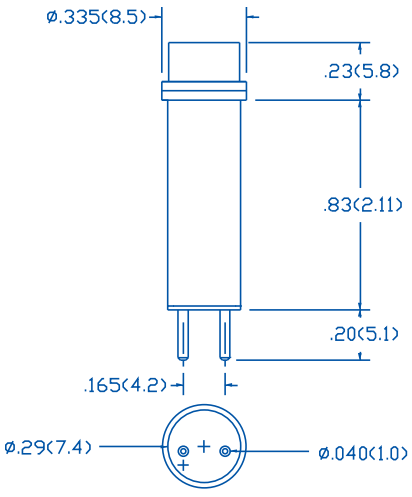
Figure 2
Slide Base #3

All dimensions are in inches (mm) Tolerances: .xx"(.x) ±.025:"(.63)/ .xxx"(.xx)±.010"(.25) Specifications are subject to change without notice.

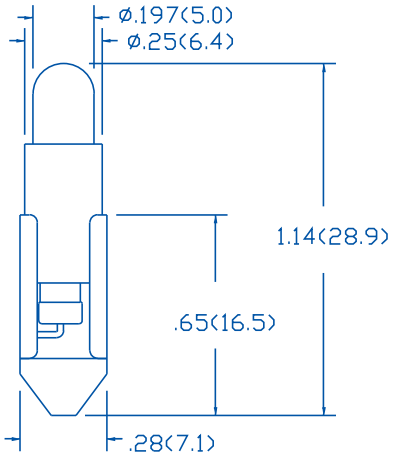


INCANDESCENT LAMP #	PowerLine® PART # STANDARD	PowerLine® PART # WITH SHUNT RESISTOR	APPLIED VOLTAGE	MAXIMUM VOLTAGE	FIG #
120PC	**120PCL-NWX**	**120PCLS-NWX**	120AC/DC	130	1
120PSB	**120PSBL-NWX**	**120PSBLS-NWX**	120AC/DC	130	2

LED COLOR CODE	EMITTED COLOR	Used to illuminate the following lenses							
		Red	Orange	Amber	Yellow	Green	Blue	White	Clear
-NWR	Red	*						*	*
-NWO	Orange		*	*				*	*
-NWA	Amber			*	*			*	*
-NWG	Green					*		*	*
-NWB	Blue						*	*	*
-NWW	White							*	*



120PCL
Figure 1



120PSBL
Figure 2

All dimensions are in inches (mm) Tolerances: .xx"(.x) ±.025:"(.63)/ .xxx"(.xx)±.010"(.25) Specifications are subject to change without notice.

T-2 SLIDE BASED LAMPS 24LS SERIES



- Replaces 24E and 24X incandescent bulbs
- For GE ET-5, ET-6 and Westinghouse Minalite Socket
- Built-in shunt resistor to clamp noise current
- Bi-polar (optional)
- High-intensity
- Up to 100,000-hour life
- Shock and vibration resistant

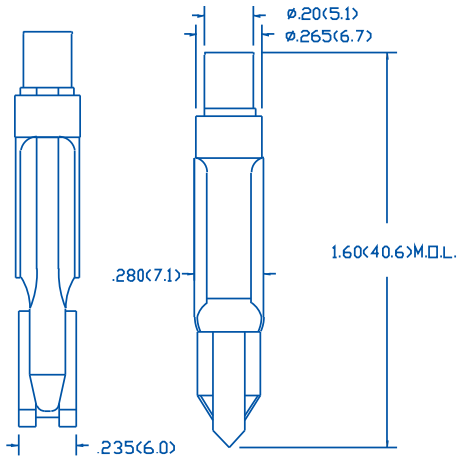
The PowerLine® 24LS series LED lamps are designed as drop-in replacements for the industry-standard 24E and 24X incandescent bulbs. Several models are available designed specifically for operation in GE ET-5, ET-6 and Westinghouse Minalite sockets. No modification to input voltage or series resistance is required.

ET-5 socket not included

To select a PowerLine® LED lamp:

1. Identify your input voltage and series resistor from the chart below. Series resistor values are usually marked on the socket.
2. Select the appropriate PowerLine® LED part number.
3. Replace "X1" in the part number with the color code (see LED color code chart below)

INPUT VOLTAGE	SERIES RESISTOR	MAXIMUM VOLTAGE	PowerLine® LED PART #	BI-POLAR
130AC/DC 48DC	3.2KΩ 900Ω	140 56	**24LS4-X1**	YES
130DC 24DC 48DC 600DC	3.2KΩ 110Ω 900Ω 20KΩ	140 26 56 650	**24LS2-X1**	NO
130DC	2KΩ	140	**24LS8-X1**	YES
67AC 115AC 230AC 250AC 460AC 575AC	1.5KΩ 2.8KΩ 6.3KΩ 7.2KΩ 13KΩ 17KΩ	75 125 250 280 500 630	**24LS10-X1**	YES
125DC 250DC	Dim/Bright	140 280	**24LS12-X1**	YES
115AC 230AC	Dim/Bright	125 250	**24LS16-X1**	YES



24LS Series
Slide Base #3

LED COLOR CODE	EMITTED COLOR	Used to illuminate the following lenses							
		Red	Orange	Amber	Yellow	Green	Blue	White	Clear
-R1	Red	*						*	*
-O1	Orange		*	*				*	*
-A1	Amber			*	*			*	*
-G1	Green					*		*	*
-B1	Blue						*	*	*
-W1	White							*	*

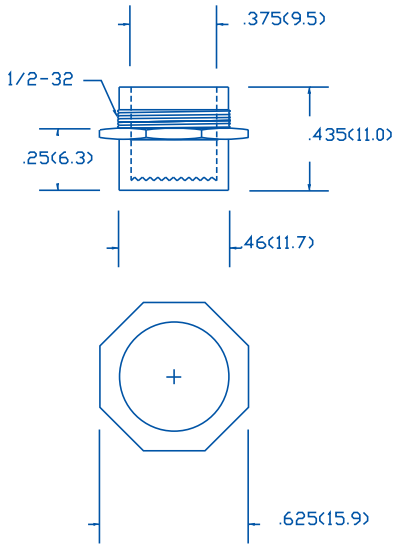
All dimensions are in inches (mm) Tolerances: .xx"(.x) ±.025:"(.63)/ .xxx"(.xx)±.010"(.25) Specifications are subject to change without notice.

REPLACEMENT LENSES

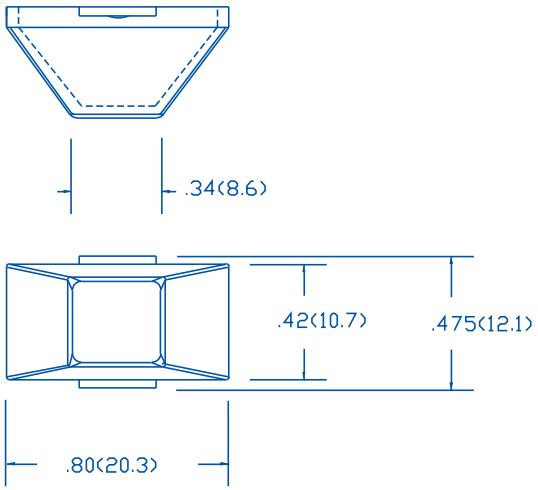


- GE ET-5
- GE ET-6
- Westinghouse Minalite

SOCKET MODEL NUMBER	PowerLine® LENS PART #	DIFFUSION	COLOR	FIG#
GE ET-5 & ET-6	BB3-CR	Clear	Red	1
	BB3-CA	Clear	Amber	1
	BB3-CY	Clear	Yellow	1
	BB3-CG	Clear	Green	1
	BB3-CB	Clear	Blue	1
	BB3-CW	Water Clear		1
	BB3-NW	Translucent	White	1
Westinghouse Minalite	BB2-CR	Clear	Red	2
	BB2-CA	Clear	Amber	2
	BB2-CG	Clear	Green	2
	BB2-CW	Water Clear		2
	BB2-NW	Translucent	White	2



BB3
Figure 1



BB2
Figure 2

All dimensions are in inches (mm) Tolerances: .xx"(.x) ±.025:"(.63)/ .xxx"(.xx)±.010"(.25) Specifications are subject to change without notice.

T-3¼ BAYONET BASED LAMPS DESIGNED FOR GE ET-16 SOCKETS



ET-16 socket not included

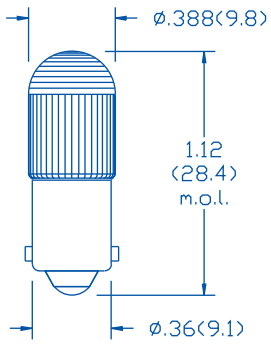
- Replaces 1835 and 1819 incandescent bulbs
- For GE ET-16 Socket
- No modification to series resistor required
- Built-in shunt resistor to clamp noise current
- Bi-polar
- High-intensity
- Up to 100,000-hour life
- Shock and vibration resistant

The PowerLine® 1835LS and 1819LS2 series LED lamps are designed specifically for the GE ET-16 socket. Several models are available to operate with industry-standard voltages and series resistor combinations.

To select a PowerLine® LED lamp:

1. Identify your input voltage and series resistor from the chart below.
   Series resistor values are usually marked on the ceramic case at the back of the socket.
2. Select the appropriate PowerLine® LED part number.
3. Replace "X-CX" in the part number with the color code (see LED color code chart below).

INPUT VOLTAGE	SERIES RESISTOR	MAXIMUM VOLTAGE	PowerLine® LED PART #
24DC	10Ω	28	**1819LS2-X-CX**
48DC	200Ω	56	**1835LS2-X-CX**
100-140DC 250DC 70AC 120AC 125AC 240AC	2KΩ 5.1KΩ 750Ω 1.9KΩ 2.7KΩ 4.8KΩ	140 280 76 130 140 260	**1835LS3-X-CX**
100-140DC	5.1KΩ	140	**1835LS9-X-CX**
125DC	Dim/Bright	140	**1835LS4-X-CX**
48DC	Dim/Bright	52	**1835LS6-X-CX**



1835LS/1819LS2
Series for GE ET-16

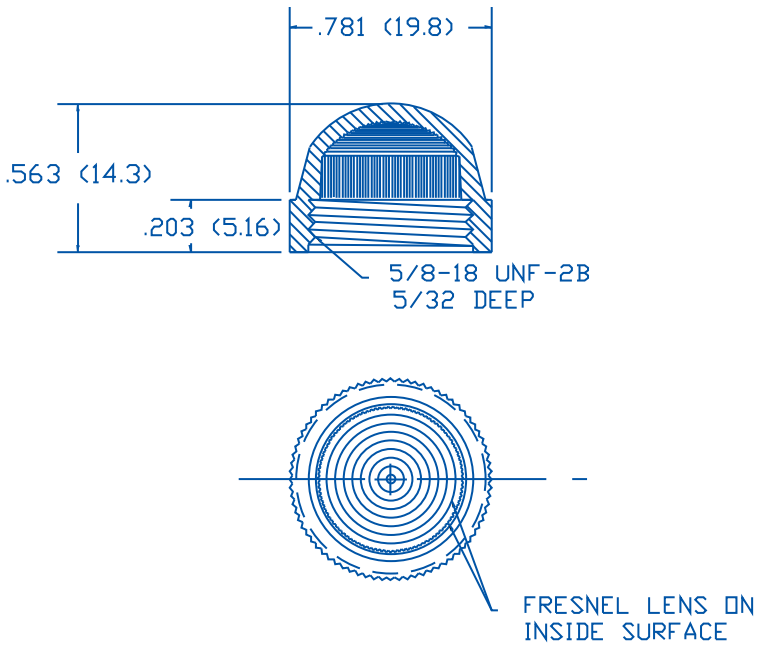
LED COLOR CODE	EMITTED COLOR	Used to illuminate the following lenses						
		Red	Amber	Yellow	Green	Blue	White	Clear
-R-CR	Red	*					*	*
-A-CA	Amber		*	*			*	*
-G-CG	Green				*		*	*
-B-CB	Blue					*	*	*
-W-CW	White						*	*

All dimensions are in inches (mm) Tolerances: .xx"(.x) ±.025:"(.63)/ .xxx"(.xx)±.010"(.25) Specifications are subject to change without notice.

REPLACEMENT LENSES FOR GE ET-16 SOCKET



SOCKET MODEL NUMBER	PowerLine® LENS PART #	DIFFUSION	COLOR	FIG#
GE ET-16	BB4-CR	Clear	Red	1
	BB4-CA	Clear	Amber	1
	BB4-CY	Clear	Yellow	1
	BB4-CG	Clear	Green	1
	BB4-CB	Clear	Blue	1
	BB4-CW	Water Clear		1
	BB4-NR	Translucent	Red	1
	BB4-NA	Translucent	Amber	1
	BB4-NY	Translucent	Yellow	1
	BB4-NG	Translucent	Green	1
	BB4-NW	Translucent	White	1



BB4
Figure 1

All dimensions are in inches (mm) Tolerances: .xx"(.x) ±.025:"(.63)/ .xxx"(.xx)±.010"(.25) Specifications are subject to change without notice.

16mm PILOT LIGHT AND LED LAMP (REPLACES GE ET-16 SOCKET)



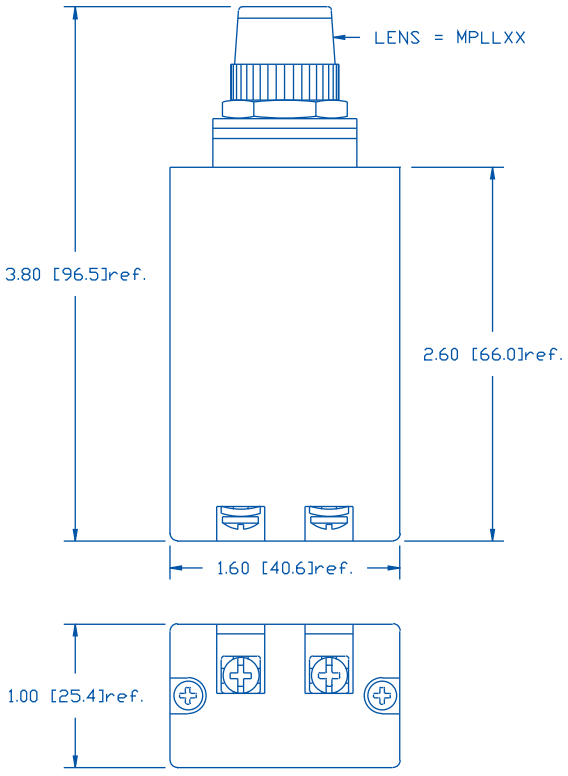
- UL Listed for Type 1, 2, 3, 3R, 4/4X, 12 and 13
- Includes bayonet-based LED lamp and Lexan™ lens
- Mounts in 16mm (5/8”) hole
- Self-lifting captive wire clamps
- 24V, 48V and 120V
- Choice of five colors

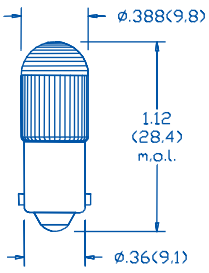
The PowerLine® PL16 Pilot Light features polyester construction for superior corrosion resistance, moisture rejection and electrical insulation. All units are supplied with #6 terminal screws with self-lifting captive wire clamps to accommodate #22 through two #12 AWG wires per terminal. Nickel-plated clamp rings are ideal for corrosive environments. All units mount in a round 16mm (5/8”) hole and are directly interchangeable with competitor units.

To select a PowerLine® Pilot Light:

1. Identify your input voltage from the chart below.
2. Select the appropriate PowerLine® LED part number.

INPUT VOLTAGE	MAXIMUM VOLTAGE	PowerLine® LED PART #	COLOR
24AC/DC	26	PL16-R24-CR	Red
24AC/DC	26	PL16-A24-CA	Amber
24AC/DC	26	PL16-G24-CG	Green
24AC/DC	26	PL16-B24-CB	Blue
24AC/DC	26	PL16-W24-CW	White
48AC/DC	52	PL16-R48-CR	Red
48AC/DC	52	PL16-A48-CA	Amber
48AC/DC	52	PL16-G48-CG	Green
48AC/DC	52	PL16-B48-CB	Blue
48AC/DC	52	PL16-W48-CW	White
120AC/DC	140	PL16-R120-CR	Red
120AC/DC	140	PL16-A120-CA	Amber
120AC/DC	140	PL16-G120-CG	Green
120AC/DC	140	PL16-B120-CB	Blue
120AC/DC	140	PL16-W120-CW	White





LED Lamp for PL-16 Pilot Light (included)

All dimensions are in inches (mm) Tolerances: .xx”(.x) ±.025:”(.63)/ .xxx”(.xx)±.010”(.25) Specifications are subject to change without notice.

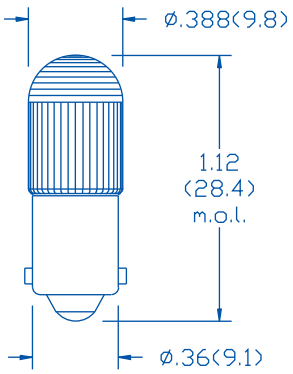
T-3¼ MINIATURE BAYONET BASED LAMPS



- Miniature Bayonet Base
- Bi-Polar
- Built-in shunt resistor (optional)
- High Intensity
- Up to 100,000-hour life
- Shock and vibration resistant

INCANDESCENT LAMP #	PowerLine® PART # STANDARD	PowerLine® PART # WITH SHUNT RESISTOR	MAXIMUM VOLTAGE	APPLIED VOLTAGE
28MB	**1819L-X-CX**	**1819LS-X-CX**	30	28AC/DC
44	**47L-X-CX**	**47LS-X-CX**	7	6AC/DC
47	**47L-X-CX**	**47LS-X-CX**	7	6AC/DC
51	**51L-X-CX**	**51LS-X-CX**	9	8AC/DC
120MB	**120MBL-X-CX**	**120MBLS-X-CX**	130	120AC/DC
755	**47L-X-CX**	**47LS-X-CX**	7	6AC/DC
757	**1819L-X-CX**	**1819LS-X-CX**	30	28AC/DC
1815	**1815L-X-CX**	**1815LS-X-CX**	14	12AC/DC
1819	**1819L-X-CX**	**1819LS-X-CX**	30	28AC/DC
1820	**1819L-X-CX**	**1819LS-X-CX**	30	28AC/DC
1829	**1819L-X-CX**	**1819LS-X-CX**	30	28AC/DC
1843	**1819L-X-CX**	**1819LS-X-CX**	30	28AC/DC
1847	**47L-X-CX**	**47LS-X-CX**	7	6AC/DC
1866	**47L-X-CX**	**47LS-X-CX**	7	6AC/DC

LED COLOR CODE	EMITTED COLOR	Used to illuminate the following lenses						
		Red	Amber	Yellow	Green	Blue	White	Clear
-R-CR	Red	*					*	*
-A-CA	Amber		*	*			*	*
-G-CG	Green				*		*	*
-B-CB	Blue					*	*	*
-W-CW	White						*	*



All dimensions are in inches (mm) Tolerances: .xx"(.x) ±.025:"(.63)/ .xxx"(.xx)±.010"(.25) Specifications are subject to change without notice.

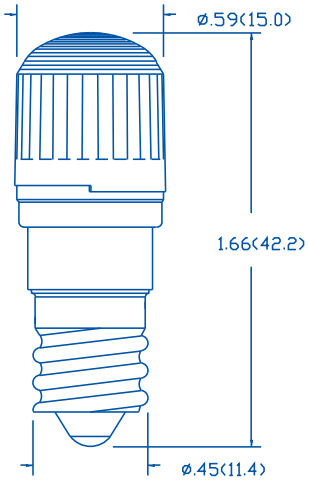
S-6 LAMPS



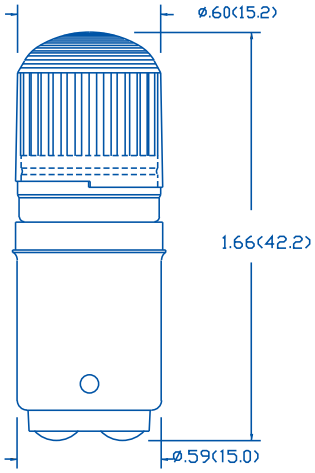
- Candelabra Screw Base
- Double-Contact Bayonet Base
- Built-in shunt resistor (optional)
- Bi-Polar
- High-Intensity
- Up to 100,000-hour life
- Shock and vibration resistant

INCANDESCENT LAMP #	PowerLine® PART # STANDARD	PowerLine® PART # WITH SHUNT RESISTOR	APPLIED VOLTAGE	MAXIMUM VOLTAGE	FIG #
3S6/120V	**6S6L120-CWX**	**6S6LS120-CWX**	120AC/DC	130	1
6S6/30V	**6S6L30-CWX**	**6S6LS30-CWX**	30AC/DC	33	1
6S6/120V	**6S6L120-CWX**	**6S6LS120-CWX**	120AC/DC	130	1
6S6DC/120V	**6S6DCL120-CWX**	**6S6DCLS120-CWX**	120AC/DC	130	2
6S6/130V	**6S6L130-CWX**	**6S6LS130-CWX**	130AC/DC	140	1
6S6DC/130	**6S6DCL130-CWX**	**6S6DCLS130-CWX**	130AC/DC	140	2
6S6/155V	**6S6L155-CWX**	**6S6LS155-CWX**	155AC/DC	165	1

LED COLOR CODE	EMITTED COLOR	Used to illuminate the following lenses							
		Red	Orange	Amber	Yellow	Green	Blue	White	Clear
-CWR	Red	*						*	*
-CWO	Orange		*	*				*	*
-CWA	Amber			*	*			*	*
-CWG	Green					*		*	*
-CWB	Blue						*	*	*
-CWW	White							*	*



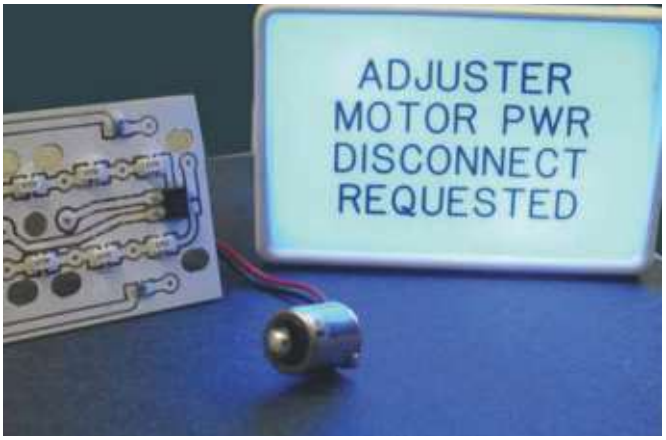
6S6L
Figure 1

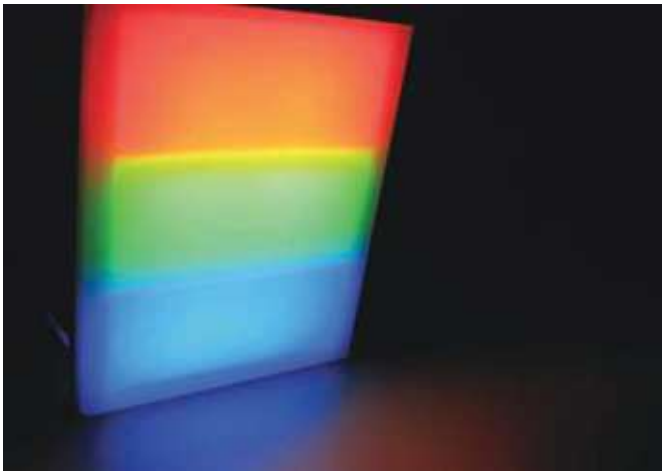


6S6DCL
Figure 2

All dimensions are in inches (mm) Tolerances: .xx"(.x) ±.025:"(.63)/ .xxx"(.xx)±.010"(.25) Specifications are subject to change without notice.

CUSTOM LED ANNUNCIATOR RETROFIT LAMPS







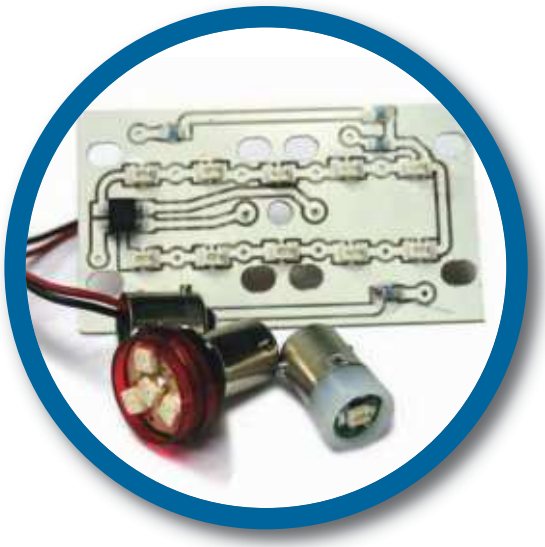


- **LED solutions to backlight almost any annunciator panel**
- **Multiple voltage options**
- **White or colored LEDs to match lenses**
- **Up to 100,000 hour life**
- **LED lamps operate at cooler temperatures compared to incandescents.**

Increase efficiency and eliminate downtime. Check and monitor processes more effectively. Accurately identify warning signs with confidence.

DDP offers various LED retrofit options for unique annunciator applications. LED lamps can be designed to match almost any voltage and color combinations.

We have experienced applications engineers who can assist you in replacing incandescent bulbs with more reliable LED lamp retrofits. Call us to discuss your requirements.



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LIMITED WARRANTY

All of our products are warranted against defects of manufacture for 3 years from date of purchase providing they have been subjected to normal use and service. Any replacement will be made at no charge except for necessary shipping charges. Returns shall be effected as follows: (1) call factory for a return authorization number, and (2) return products with authorization number prominently displayed, freight prepaid, to DDP at the address listed.

This warranty is expressly in lieu of all other warranties expressed or implied and does not extend in any way to consequential or incidental damage, including injury to persons or damage to property.

The terms of this warranty may not be amended, altered or extended except by an instrument in writing executed by an officer of DDP.

NOTES

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