

DC LIGHTING

Montana Light DC Lighting Fixtures

All of the fixtures and custom designed ballasts and sockets listed on pages 70 to 72 are manufactured by Montana Light. They have been designing and manufacturing DC lighting for at least 20 years. It was a great step forward when we started to offer Montana Light equipment over what was then available. These fixtures start instantly and without the annoying flicker the old style fixtures exhibited. Many of their ballasts power different size bulbs while remaining at least 95% efficient for each size. This is a real convenience for those of you who might change your mind about what size light is needed in any given space. We have had great success with this lighting equipment. If you want to use DC lighting, these are excellent fixtures to use.

Lamp Notes

When a bulb is showing signs of hard starting it needs to be replaced. If you notice black areas around the base, or a violet glow at the base of the glass for more than a few seconds while starting, its time to replace the bulb.

Ballast and socket damage at end of bulb life can be prevented by installing a small fuse at the fixture. We now include a 2 amp auto blade fuse and holder with all our ceiling fixtures. See our DC fuses on page 55.

All products from Montana Light have a **one year limited** warranty. See page 72 for installation information and other tips for using DC compact fluorescent lights.

12 Volt and 24 Volt DC Compact Fluorescent Bulbs

S/E Fixtures

See Full Size Chart on page 79



These fixtures consist of an electronic DC ballast and a replaceable compact fluorescent bulb. S/E stands for "Single Loop/Electronic" which means the bulb has one loop and is made to work with an electronic ballast. The ballast is fitted with a standard screw base and can be used in lamps or fixtures powered by 12 or 24 volts DC. They start instantly every time. They will also function to at least 0°F. However low voltage (under 12V or 24V) and/or frequent on-off cycles will shorten their life. The bulb has a

rated life of 10,000 hours. The ballast should last 45,000 hours. The S/E bulb comes in 5, 7, 9 and 13 watt sizes. The same ballast is used for all four bulb wattages, so bulbs can be interchanged in the future.



831-405	S/E Ballast/Bulb 5w 12v	\$26
831-407	S/E Ballast/Bulb 7w 12v	\$26
831-409	S/E Ballast/Bulb 9w 12v	\$26
831-413	S/E Ballast/Bulb 13w 12v	\$26
831-505	S/E Ballast/Bulb 5w 24v	\$27
831-507	S/E Ballast/Bulb 7w 24v	\$27
831-509	S/E Ballast/Bulb 9w 24v	\$27
831-513	S/E Ballast/Bulb 13w 24v	\$27

S/E Replacement Tubes

These tubes can be used either as replacement tubes for our DC compact fluorescent bulbs or for use in your own fixtures using the S/E sockets listed below and ballasts listed on page 78.

804-105,107,109,113 5, 7, 9 or 13 watts \$7.00



See Page 75 for Full Size Outlines

T/E and D/E Fixtures

T/E fixtures are similar to the S/E fixtures. They consist of an electronic DC ballast and a replaceable compact fluorescent bulb. The ballast is fitted with a standard screw base and can be used in lamps or fixtures powered by 12 or 24 volts DC. They start instantly every time. They will also function to at least 0°F. However low voltage (under 12V or 24V) and/or frequent on-off cycles will

shorten their life. The bulb has a rated life of 10,000 hours. The ballast should last 45,000 hours.

830-013	T/E Ballast/Bulb 13w 12v	\$28
830-018	T/E Ballast/Bulb 18w 12v	\$29
830-213	T/E Ballast/Bulb 13w 24v	\$28
830-218	T/E Ballast/Bulb 18w 24v	\$29

T/E Replacement Tubes

Similar in use as the S/E listed on left.

804-313	T/E Bulb 13 Watts	\$8.00
804-318	T/E Bulb 18 Watts	\$10.00



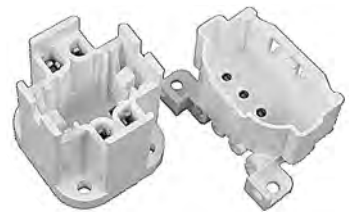
T/E 13W



T/E 18W

Compact Fluorescent Tube Sockets

These tube sockets can be used to make your own compact fluorescent fixtures using the tubes and ballasts listed in this catalog. An existing fixture could be retrofitted or a new one designed. The ballast can be mounted at a distance from the socket and out of sight from the tube.



832-001	S/E Socket 5, 7, 9 or 13 watt	\$4
832-002	T/E Socket 13 watt	\$4
832-004	T/E Socket 18 watt	\$4

COMPACT FLUORESCENT and LED

12 Volt and 24 Volt Integrated DC Compact Fluorescent Bulbs

Montana Light has a line of integrated compact fluorescent bulbs. Integrated means that the tubes are non-replaceable. The advantages of this arrangement are smaller and less expensive bulbs. We currently stock the T/E versions in 2700°K bulbs both in 12 and 24 VDC. See pg 80 for Full Size Outlines.



- 834-1213 T/E Integrated Bulb 12V 13W \$25
- 834-1218 T/E Integrated Bulb 12V 18W \$25
- 834-1223 T/E Integrated Bulb 12V 23W \$25

- 834-2413 T/E Integrated Bulb 24V 13W \$25
- 834-2418 T/E Integrated Bulb 24V 18W \$27
- 834-2423 T/E Integrated Bulb 24V 23W \$27

Very High Efficiency 12 and 24 Volt LED Lights

LED stands for "light emitting diode" Consisting of six ultra high output LEDs, this light produces an unbelievable amount of light for the power it uses. The light is ideal for reading or for a work light at close distances. The LED light requires positive voltage at its center pin and negative voltage at the threads. Dimensions: 2" dia., 2-1/2" long (including Edison base).



- 840-100 LED Light, 6 LEDs, 12/24V \$16
(12V-40mA-0.5W 24V-50mA-1.2W)
- 840-101 LED Light 12 LEDs, 12V \$29
(100mA-about 1.2W)
- 840-102 LED Light 12 LEDs, 24V \$29
(90mA-about 2W)

High Efficiency, High Brightness 12V LED Lights

This LED light consists of just three LEDs, but makes more than four times the light of the six LED light and has an expected life of over 100,000 hours. This LED lamp has a wide dispersion angle, allowing it to actually light up an area rather than just a small spot. It requires positive voltage at its center pin and negative voltage at the threads. Dimensions: 2" dia., 2-1/2" long (including Edison base).



- 840-106 LED Light 3 LEDs 12V Soft White \$39
(330mA-about 4W)

Under Cabinet LED Lights

High efficiency, high brightness LEDs are mounted in thin metal enclosures for under-counter use. This is the perfect use for LED lighting as the LEDs deliver a lot of light in a small space. The smaller fixture (3"x2"x1/2") draws about 200mA at 12VDC (about 2.5W). The larger fixture (6"x2"x1/2"), with more heat dissipating ability, draws 350mA at 12VDC (about 4W) and produces considerably more light.

- 840-107 Mini-Lux Under-Cabinet Fixture \$29
- 840-108 Mighty-Lux Under-Cabinet Fixture \$36
- 840-110 Mighty-Lux w/ Switch \$43

DC Coilight Compact Fluorescents

This a new line of integrated compact fluorescents by Montana Light. Integrated means that the bulb is not replaceable. The advantage of these lights is that they are somewhat smaller than the integrated compact fluorescents listed above. They are available in both 12 and 24 VDC. The color temperature is the same as all our other compact fluorescents: 27K °K (soft white).



- Size: 5 3/4" Long by 2 1/4" Dia. (13 watt bulb)
- 835-1213 Coilight Integrated Bulb 12V 13W \$21
 - 835-2413 Coilight Integrated Bulb 24V 13W \$22

Globe Ceiling Fixture

This "Globe" type enclosure houses a 13W T/E tube in a 5" diameter base fitted with a 6" frosted white glass globe. The ballast is mounted in the base.



- 840-005 12V 13W \$49
- 840-006 24V 13W \$49

Under Cabinet Fixtures

The "Under Cabinet" fixture is available in 15 watt, 12 or 24 volt versions. It has a squared off front diffuser edge. A rocker switch can be added for \$5. Dimensions: 18" long, 4.5" deep, 2" thick

- 840-017 Squared Edge 15W 12V \$39
- 840-018 Squared Edge 15W 24V \$39



DC COMPACT FLUORESCENT LIGHT FIXTURES

DC Compact Fluorescent Fixture and Ballast Installation Notes

Following are a few tips for achieving the longest bulb and ballast life:

Low Voltage

The number one problem a DC ballast has is low voltage. A 12 volt DC ballast may require up to 10 times the operating current to start the lamp. If the wire is too small or the voltage is too low, the lamp will not be able to get the necessary current to start and then a low voltage condition will exist. The lamp will work fine for a while but will soon start showing signs of failure.

If the lamp fails to start instantly it will place a high current load on the ballast.

If this load remains too long it can over heat the ballast and cause premature ballast failure.

End of Lamp Life

When a bulb is showing signs of hard starting it needs to be replaced. If you notice black areas around the base, or a violet glow at the base of the glass for more than a few seconds while starting, its time to replace the bulb.

Fluorescent bulbs do not like to be turned on and off frequently in a short amount of time. The 10,000 hour life rating is based on a minimum of three hours on time. If the bulb is on for shorter periods of time, its life will be reduced. Areas where lights are on for only a few minutes will use up bulbs much faster than when they are used for a longer period of time. We recommend using quartz halogen or even incandescent bulbs where lights are being constantly turned on and off.

DC Ceiling Fixtures

Our ceiling fixtures are ideal wherever decorative and energy efficient lighting is needed: bath, kitchen, hallway, etc. They have a low profile lens suitable for either ceiling or wall mount. The high impact white acrylic lens delivers a pleasing shadow-free light. We now stock all combinations of these ceiling lights for immediate delivery.

Our basic ceiling fixture houses one S/E bulb with its associated ballast. It can have either a "Drum" or "Mushroom" type cover. The included ballast can efficiently power any of the four S/E bulb sizes: 5W, 7W, 9W or 13W. Please specify which size you would prefer.

The second version of this ceiling fixture features two S/E bulbs and ballasts for twice as much light. Again, the included ballasts can efficiently power either a 5W, 7W, 9W or 13W tube: two tubes per fixture in any combination. With the proper switching arrangement, this fixture can produce two levels of light.

Both fixtures come in either 12 volt or 24 volt versions as specified by part number. A 120 volt version of this fixture is also available.

Bulb life is 10,000 hours; ballast life is 45,000 hours. They come with a one year guarantee, but must be used as directed in the enclosed operating instructions. (See side bar.)

A pull chain can be added to any fixture for \$5. Dimensions: 11" diameter; 3" deep.

- | | | |
|----------------|---|-------------|
| 840-352 | 12 Volt Single Bulb Fixture | \$52 |
| | Mushroom or Drum Cover; 5,7,9 or 13W Bulb | |
| 840-354 | 24 Volt Single Bulb Fixture | \$52 |
| | Mushroom or Drum Cover; 5,7,9 or 13W Bulb | |
| 840-402 | 12 Volt Double Bulb Fixture | \$68 |
| | Mushroom or Drum Cover; Specify bulb sizes. | |
| 840-404 | 24 Volt Double Bulb Fixture | \$68 |
| | Mushroom or Drum Cover; Specify bulb sizes. | |



Montana Light DC Ballasts

Light It Technology of Montana specializes in every type of DC lighting. Most of our DC fixtures are made by them. Now they have come out with their own line of DC ballasts. These ballasts were designed to operate with the new S/E and T/E electronic tubes. All LIT ballasts start instantly with no flicker and operate at high frequency without noise or radio interference. All LIT ballasts have a one year warranty. These ballasts should last for 45,000 hours.

Low Wattage Ballasts



These ballasts now power 5 through 13 watt tubes. They only draw the current necessary to power each wattage. In other

words they are about 98% efficient across their operating range.

Dimensions: Length 2", Width 1 7/8", Height 1"

- | | | |
|-----------------|-----------------------------------|-------------|
| 854-1213 | 12V, 5W-13W, S/E & T/E | \$25 |
| 854-2413 | 24V, 5W-13W, S/E & T/E | \$25 |

High Wattage Ballasts

The high wattage ballasts will now power 18 to 40 watt tubes and 18 and 26 watt bulbs. Efficiency for all wattages is 98%.



Dimensions: Length 3", Width 1 3/4", Height 1 1/4"

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|-----------------|---------------------------|-------------|
| 854-1240 | 12V, 18W-40W Tubes | \$39 |
| 854-2440 | 24V, 18W-40W Tubes | \$39 |

Thin-Lite DC LED Fixtures

Thin-Lite has come out with a new line of DC LED fixtures. These are the nicest LED fixtures we've seen so far. The color rating is neutral white (4000K) and the color rendering index, CRI, is 80. They all work on 8 to 30 VDC, and have two switchable output light levels, 30% and 100%. All fixtures have built-in switches which determine the output level as well as on/off. You can set the switch to the level you want and then control the fixture with a wall switch. And best of all, these fixtures deliver a pleasing light output, unlike much of the LED lighting available today. LED life is rated at 100,000 hours and they all have a three year warranty. These fixtures cost more than their old fluorescent equivalents, but they will be much less expensive in the long run, if for nothing but their power saving characteristics alone. Needless to say, no more replacing tube and no more flicker.

- 811-109 LED109CP** 400/1600 lumens **\$69**
 8-30 VDC; 2.88/9.6 Watts
 9.5" Dia. x 1.75" Deep 48 LED's
 (Similar to the old 108's)



LED109CP

- 811-612 LED612P** 480/1600 lumens **\$75**
 8-30 VDC; 2.88/9.6 Watts
 15" x 5.53" x 1.57" 48LED's



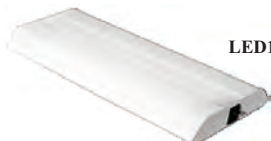
LED612P

- 811-616 LED616P** 720/2400 lumens **\$95**
 8-30 VDC; 4.32/14.4 Watts
 20.625" x 5.53" x 1.57" 72 LED's



LED616P

- 811-130 LED130WP** 480/1600 lumens **\$69**
 8-30 VDC; 2.88/9.6 Watts
 12" x 5.375" x 1.75" 48 LED's
 (Similar to the old 182's, but thinner)



LED130WP

- 812-134 LED134WP** 720/2400 lumens **\$89**
 8-30 VDC; 4.32/14.4 Watts
 18" x 5.375" x 1.75" 72 LED's
 (Similar to the old 186's, but thinner)



LED134WP

- 812-1913 LED1913BKP** 240/800 lumens **\$49**
 8-30 VDC; 1.44/4.8 Watts
 13.25" x 2.5" x 2.5" 24 LED's
 (Similar to the old 191's)



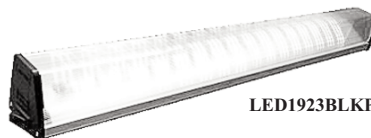
LED1913BKP

- 812-1918 LED1918BKP** 315/1050 lumens **\$65**
 8-30 VDC; 2.16/7.2 Watts
 18.25" x 2.5" x 2.5" 36 LED's
 (Similar to the old 193's)



LED1918BKP

- 812-1923 LED1923BKP** 480/1600 lumens **\$75**
 8-30 VDC; 2.88/9.6 Watts
 23.25" x 2.5" x 2.5" 48 LED's



LED1923BKP

Thin-Lite Replacement Ballasts

For those that need them, we still carry replacement ballasts for the older style Thin-lite fixtures. You can also use these ballasts to convert AC fluorescents to DC. Other DC ballasts can be found on the previous page. Dimensions: 5-1/2" long, 1-1/4" wide, 7/8" high.

- | | | |
|----------------|------------------------|-------------|
| 850-015 | 15W 12V Ballast | \$24 |
| 850-020 | 22W 12V Ballast | \$25 |
| 850-030 | 30W 12V Ballast | \$25 |
| 850-040 | 40W 12V Ballast | \$30 |
| 851-015 | 15W 24V Ballast | \$40 |
| 851-020 | 20W 24V Ballast | \$40 |
| 851-030 | 30W 24V Ballast | \$40 |
| 851-040 | 40W 24V Ballast | \$46 |



Replacement Bulbs
 For those that need them, we still carry replacement tubes for the older style Thin-lite fixtures.

Thin-Lite 191/291
CF8T5/CW

819-191 \$5

Thin-Lite 193/293
CF15T8/CW

819-193 \$5

The F8 and F15 tubes are "regular" fluorescent tubes, with a cool white color temperature.



190/290 Series Tube

Thin-Lite 182/282
F18PL

819-182 \$16

Thin-Lite 186/286
F39BX

819-186 \$22

The 180/280 series tubes are the "PL" single loop type bulb, which are not readily available. Their color temperature tends towards "daylight". These bulbs are expensive, but very long lasting. Though we've been selling the 180/280 series Thinlite for over 15 years, we sell very few replacement tubes.



180/280 Series Tube

Replacement Lenses

In case you should damage the plastic covers on your ThinLite fixtures.

Thin-Lite 191/291

818-191 \$8

Thin-Lite 193/293

818-193 \$10

Thin-Lite 182/282

818-182 \$8

Thin-Lite 186/286

818-186 \$15

DC LIGHTING

MR-16 Quartz Halogen Floodlight

MR-16's are floodlights, 2" in diameter. They produce at least 50% more light than the same wattage DC incandescent. They deliver such bright directed light, we actually use them in mountain bike headlights for night riding in the woods! One light hanging above a table, or one light in a reading lamp are good applications. These lights have bi-pin bases. You can solder onto the pins, but we recommend buying the adapter to convert to a standard screw base.



QH MR-16 Bulb

- | | | |
|---------|------------------------|--------|
| 802-003 | MR-16 Bulb 12V 20 watt | \$3.00 |
| 802-004 | MR-16 Bulb 12V 35 watt | \$3.00 |
| 802-009 | Screw Base Adapter | \$6.00 |

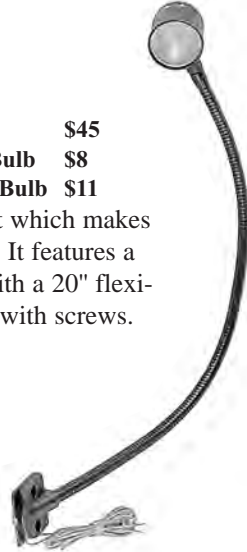
MR-16 Adapter



CO-PILOT LAMP

- | | | |
|---------|--------------------------|------|
| 802-001 | 20" long 12V 5 watt | \$45 |
| 802-002 | 5W 12V Replacement Bulb | \$8 |
| 802-007 | 10W 12V Replacement Bulb | \$11 |

This is an automotive map light which makes an excellent reading or task light. It features a 12V DC 5 watt Halogen lamp, with a 20" flexible neck and a mounting bracket with screws. Very good for reading in bed.



MR-16 LED Floodlight

LED MR-16 Bulb



MR-16 LED floodlights are 2" in diameter, the same physical size as the QH type. However, they produce the same amount of light while using only 4 watts, rather than 20

watts. The ones we offer are warm white (3200K), a very pleasing light especially for LED's. They have a 60 degree dispersion pattern and the same bi-pin bases as the QH type. Even though they operate on 12 VDC, the pins are not polarized: they can be inserted into the adapter either way. The best part is that their expected life is over 100,000 hours. Use the same screw base adapter as the "regular" MR-16's.

- | | | |
|---------|----------------------|--------|
| 802-008 | MR-16 LED 12V 4 watt | \$9.00 |
| 802-009 | Screw Base Adapter | \$6.00 |



LED MR-16 Bulb in MR-16 Adapter

DC Incandescent Light Bulbs With standard screw base

These DC bulbs give you about the same light for the same wattage as conventional 120V AC incandescent light bulbs. They will work in conventional lamps and light fixtures, as long as any switch used is a clicking type switch, not a silent mercury switch. Because of their inefficiency, they should be used only where light is needed for a short period of time (a closet or hallway). Don't use these for reading lights.

- | | | |
|---------|----------------------------|--------|
| 820-025 | 12 volt 25 watt 275 lumens | \$4.25 |
| 820-050 | 12 volt 50 watt 790 lumens | \$4.00 |



DC Compact Fluorescents

Full Size Charts

(Fixtures on page 70 & 71)

