

## **SDERC Lighting Display**

### **Track Lighting: MR16**

Location: Fixture #20

Technology Description: The track unit displays three 12 volt MR16 lamps: 50MR16/T/FL40(EXN), 37MR16/IR/FL40, and an LED MR16. MR16s are a popular accent light for retail, artwork and other displays because a smaller lamp filament allows better optics.

The infrared coated MR16 lamp has a multi-layered thin film coating that allows visible light to pass through while reflecting infrared energy back to the filament. IR coated MR16s can substantially increase lamp life and reduce wattage when compared to standard MR16 halogen lamps. The lamp in the fixture, a 37MR16/IR/FL40, consumes 37W, has a lumen output of 800, and a catalog life of 5000 hours. The comparison lamp, a 50MR16/T/FL40(EXN), consumes 50W, has a lumen output of 800, and a catalog life of 4000 hours.

Light emitting diodes (LEDs) are diodes capable of emitting light when connected in a semi-conductor chip. This semi-conductor chip (made of epoxy) is located in the center of the bulb and is separated by a junction to form a positive and a negative region. Energy passing through the material emits energy in the form of a photon. The material used for the layers and the amount of energy in the photon determines the color of the LED light. This technology results in an extremely stable and long lasting lamp.

The main advantage of LEDs over incandescent and halogen lamps is the small amount of heat generated when producing light. Incandescent, including halogen MR16, lamps convert a relatively large amount of electricity into heat instead of producing visible light. For this reason, LEDs are appropriate for applications that are temperature sensitive and where a narrow spot is desired. Also, LEDs do not have a filament that will burn out; this results in a life of 40,000-100,000 hours. The display lamp consumes 2.5-Watts, has a color temperature of 5000K, and a beam spread of 4°. Currently, white light LED MR16s cannot economically provide the same light level as a halogen MR16; however, the technology is rapidly improving and this should be possible within a few years.

Applications: Spot/Flood track lighting

Energy Savings: The 37MR16/IR consumes 37W compared to 50W for the 50MR16. The infrared coated lamp will save 39kWh/yr and \$6/yr (based on 3,000 hrs/yr and \$0.15/kWh).

Costs: The 37MR16/IR costs 33% more than the 50MR16.

Donated Products: SDREO would like to formally thank John Templer at Wesco for donating the dioptic coated lamp and Mule for donating the LED MR16. For more information please contact John at (619) 838-5749 or [jtempler@wescodist.com](mailto:jtempler@wescodist.com). The website for Mule is [www.mulelighting.com](http://www.mulelighting.com).

Discussion: Other manufacturers also provide high performance halogen MR16s, such as Sylvania Tru-Aim IR and GE Precise Cover Glass IR. Other manufacturers also have or are developing LED MR16s.