400 Watt ED-28 Metal Halide Lamp (Clear)

Ordering Information

Ordering Code MH400/U/ED28
ANSI Designation M59/E
Product Number 278622
Description Metal Halide
Package Quantity 12

Physical Characteristics

Bulb Size ED-28
Bulb Finish Clear
Base Mogul Screw
Max. Overall Length (MOL) 8 5/16" (211mm)
Light Center Length (LCL) 5.0" (127mm)
Arc Length 1.55" (39mm)
Arc Tube Material Fused Silica
Max. Permissible Bulb Temp. 400ºC (752ºF)
Max. Permissible Base Temp. 210º C (410º F)
Max. Bulb to Base Eccentricity 3º
Max. Arc Tube to Base Eccentricity 3º

Operating Characteristics (Photometric)

Approx. Initial Lumens1,2 36,000
Approx. Mean Lumens1, 3,4 24,000
Rated Average Life, Hours 5
Vertical ± 15˚ 20,000
Other 15,000
Correlated Color Temp. (CCT) 4000K
CIE Chromaticity Approx.1,3 x-.390, y-.400
Color Rendering Index (CRI) 63
Efficacy (lpw) 90

Operating Position

Enclosed Luminaries Only Unless Otherwise Noted

PHILIPS
400 ED-28 Watt Metal Halide Lamp (Clear) Technical Data Sheet

Electrical Data  (Subject to change without notice)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lamp Watts (Nominal)</td>
<td>400</td>
</tr>
<tr>
<td>Lamp Operating Voltage (rms) (Nominal)</td>
<td>135</td>
</tr>
<tr>
<td>Initial Lamp Voltage Range (rms)</td>
<td>120-150</td>
</tr>
<tr>
<td>Lamp Operating Current (Amps) (Nominal)</td>
<td>3.25</td>
</tr>
<tr>
<td>Maximum Lamp Starting Current (Amps)(rms)</td>
<td>5.0</td>
</tr>
<tr>
<td>Lamp Current Crest Factor (Maximum)</td>
<td>1.8</td>
</tr>
<tr>
<td>Warm-up Time to 80% of Output</td>
<td>3-5 Minutes</td>
</tr>
<tr>
<td>Re-strike Time for Hot Lamp</td>
<td>10-15 Minutes</td>
</tr>
<tr>
<td>Ballast Type</td>
<td>ANSI M59</td>
</tr>
<tr>
<td>Ballast Open Circuit Voltage (Minimum)</td>
<td>382 RMS, 540 Peak</td>
</tr>
<tr>
<td>Minimum Operating Temperature</td>
<td>-30º C</td>
</tr>
<tr>
<td>Reference Ballast Impedance</td>
<td>45 Ohms at 200 Volts OCV</td>
</tr>
<tr>
<td>Maximum Lamp Watts</td>
<td>480 watts</td>
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</tbody>
</table>

1) Approximate lumen values listed are for vertical operation of the lamp.
2) Measured at 100 hours of life in vertical position.
3) Measured at rated lamp watts on a linear reactor. LPW does not include ballast losses.
4) Approximate lumen output at 40% of lamp rated average life.
5) Rated average life is the life obtained on the average from large representative groups of lamps in laboratory tests under controlled conditions at 10 or more operating hours per start. It is based on survival of at least 50% of the lamps and allows for individual lamps or groups of lamps to vary considerably from the average. For lamps with a rated average life of 24,000 hours, life is based on survival of 67% of the lamps.
6) Measured with the lamp operating at rated watts.

Warnings, Cautions and Operating Instructions

**WARNING:** These lamps can cause serious skin burn and eye inflammation from short wave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available.

This lamp complies with FDA radiation performance standard 21 CFR subchapter J.

**CAUTION:** To reduce the risk of personal injury, property damage, burns and fire resulting from an arc-tube rupture, the following lamp operating instructions must be followed:

Lamp Operating Instructions:

1. Turn off lamps at least once a week for at least 15 minutes in systems which are operating on a continuous basis (24 hours/day-7 days/week). FAILURE TO TURN OFF LAMPS FOR THE MINIMUM RECOMMENDED TIME MAY INCREASE THE POSSIBILITY OF AN INNER ARC-TUBE RUPTURE.

2. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

3. Use only in an enclosed fixture capable of withstanding particles of glass having temperatures up to 1000º C unless otherwise noted.

4. Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards.

5. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturer.

6. Periodically inspect the outer envelope. Replace any lamps that show scratches, cracks or damage.

7. If a lamp bulb support is used, be sure to insulate the support electrically to avoid possible decomposition of the bulb glass.

8. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.

9. Time should be allowed for lamps to stabilize in color when turned on for the first time. This may require several hours of operation, with more than one start. Lamp color is also subject to change under conditions of excess vibration or shock and color appearance may vary between individual lamps.

10. Lamps may require 10 to 20 minutes to re-light if there is a power interruption.

11. Take care in handling and disposing of lamps. If an arc tube is broken, avoid skin contact with any of the contents or fragments.

12. Do not use this lamp:

   A. In a fixture that contains a Pulse Start metal halide ballast.

   B. In a fixture that is specifically designed for use with Pulse Start metal halide lamps. Operation of these lamps on Pulse Start Metal Halide systems may increase the chance of an outer bulb rupture and pieces of extremely hot glass might be discharged into the surrounding environment. If such a rupture were to happen, THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.