480W Constant Power Mode LED Driver

HVGC-480 series

**Features**
- Wide input range 180 ~ 528VAC
- Constant Power mode output
- Metal housing with Class I design
- Built-in active PFC function
- Function options: output adjustable via potentiometer; 3 in 1 dimming (dim-to-off); Smart timer dimming
- Typical lifetime>50000 hours
- 5 years warranty

**Description**
HVGC-480 series is a 480W LED AC/DC driver featuring the constant power mode and high voltage output. HVGC-480 operates from 180~528VAC and offers models with different rated current ranging between 1400mA and 3500mA. Thanks to the high efficiency up to 94.5%, with the fanless design, the entire series is able to operate for -40°C ~+90°C case temperature under free air convection. The design of metal housing and IP67 ingress protection level allows this series to fit both indoor and outdoor applications. HVGC-480 is equipped with various function options, such as dimming methodologies, so as to provide the optimal design flexibility for LED lighting system.

**Model Encoding**
HVGC - 480 - M - AB

**Function**
- Rated output current(1400/2100/2800mA)
- Rated wattage
- Series name
- Function options

<table>
<thead>
<tr>
<th>Type</th>
<th>IP Level</th>
<th>Function</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>IP65</td>
<td>Standard constant power output with 3 in 1 dimming function (0~10Vdc, 10V PWM signal and resistance) and built-in potentiometer.</td>
<td>In Stock</td>
</tr>
<tr>
<td>Blank</td>
<td>IP67</td>
<td>Io and Vo fixed.</td>
<td>By request</td>
</tr>
<tr>
<td>D2</td>
<td>IP67</td>
<td>Built-in Smart timer dimming and programmable function.</td>
<td>By request</td>
</tr>
<tr>
<td>Dx</td>
<td>IP67</td>
<td>Built-in Smart timer dimming function by user request.</td>
<td>By request</td>
</tr>
<tr>
<td>DA</td>
<td>IP67</td>
<td>DALI control technology.</td>
<td>By request</td>
</tr>
</tbody>
</table>

Downloaded from Arrow.com.
## SPECIFICATION

### MODEL

<table>
<thead>
<tr>
<th>MODEL</th>
<th>HVGC-480-L</th>
<th>HVGC-480-M</th>
<th>HVGC-480-H</th>
</tr>
</thead>
<tbody>
<tr>
<td>RATED CURRENT</td>
<td>1400mA</td>
<td>2100mA</td>
<td>2800mA</td>
</tr>
<tr>
<td>RATED POWER</td>
<td>480W</td>
<td>480W</td>
<td>480W</td>
</tr>
<tr>
<td>CONSTANT CURRENT REGION</td>
<td>137 ~ 343V</td>
<td>92 ~ 228.5V</td>
<td>68 ~ 171.5V</td>
</tr>
<tr>
<td>FULL POWER CURRENT RANGE</td>
<td>1400~1750mA</td>
<td>2100~2625mA</td>
<td>2800~3500mA</td>
</tr>
<tr>
<td>OPEN CIRCUIT VOLTAGE (max.)</td>
<td>350V</td>
<td>240V</td>
<td>180V</td>
</tr>
<tr>
<td>CURRENT RIPPLE</td>
<td>5.0% max. @rated current</td>
<td>5.0% max. @rated current</td>
<td>5.0% max. @rated current</td>
</tr>
<tr>
<td>CURRENT TOLERANCE</td>
<td>±5%</td>
<td>±5%</td>
<td>±5%</td>
</tr>
<tr>
<td>SET UP TIME</td>
<td>Note.4</td>
<td>500ms/230VAC, 347VAC, 480VAC</td>
<td></td>
</tr>
</tbody>
</table>

### OUTPUT

<table>
<thead>
<tr>
<th>OUTPUT</th>
<th>VOLTAGE RANGE</th>
<th>Note.3</th>
<th>FREQUENCY RANGE</th>
<th>POWER FACTOR (Typ.)</th>
<th>TOTAL HARMONIC DISTORTION</th>
<th>EFFICIENCY (Typ.)</th>
<th>AC CURRENT (Typ.)</th>
<th>INRUSH CURRENT (Typ.)</th>
<th>MAX. NO. of PSUs on 16A CIRCUIT BREAKER</th>
<th>LEAKAGE CURRENT</th>
<th>SHORT CIRCUIT</th>
<th>OVER VOLTAGE</th>
<th>OVER TEMPERATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>180 ~ 528VAC</td>
<td>254VDC ~ 747VDC</td>
<td>47 ~ 63Hz</td>
<td>PF ≥ 0.98 / 230VAC, PF ≥ 0.98 / 277VAC, PF ≥ 0.97 / 347VAC, PF ≥ 0.96 / 400VAC, PF ≥ 0.95 / 480VAC at full load</td>
<td>THD&lt; 20% (@ load 50% at 230VAC/277VAC/347VAC/400VAC/480VAC input)</td>
<td>94.5%</td>
<td>1.52A / 347VAC</td>
<td>COLD START 40mA(max=1100μs measured at 50% volt) at 480VAC. Per NEMA 410</td>
<td>2 unit(circuit breaker of type B) / 4 units(circuit breaker of type C) at 480VAC</td>
<td>&lt;0.75mA / 480VAC</td>
<td>Constant current limiting, recovers automatically after fault condition is removed</td>
<td>241 ~ 257V</td>
<td>Shut down output voltage, re-power on to recovery</td>
</tr>
</tbody>
</table>

### ENVIRONMENT

<table>
<thead>
<tr>
<th>ENVIRONMENT</th>
<th>WORKING TEMP.</th>
<th>MAX. CASE TEMP.</th>
<th>WORKING HUMIDITY</th>
<th>STORAGE TEMP., HUMIDITY</th>
<th>TEMPERATURE COEFFICIENT</th>
<th>VIBRATION</th>
<th>SAFETY STANDARDS</th>
<th>ISOLATION RESISTANCE</th>
<th>EMC EMISSION</th>
<th>EMC IMMUNITY</th>
<th>OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tcase=40 ~ 90°C</td>
<td>Tcase=+90°C</td>
<td>20 ~ 95% RH non-condensing</td>
<td>-40 ~ +85°C, 10 ~ 95% RH non-condensing</td>
<td>±0.03%/°C (0 ~ 60°C)</td>
<td>10 ~ 500Hz, 5G 12min./cycle, period for 72min. each along X, Y, Z axes</td>
<td>UL6750 (type 1C), CSA C22.2 No. 25013-14, EN61347-1, EN61347-2-13 independent, EN62284, IP65 or IP67, EAC TP TC 004 approved</td>
<td>I/P-O/P:3.75KVAC, I/P-FG:2KVAC, O/P-FG:1.5KVAC</td>
<td>I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH</td>
<td>Compliance to EN55015, EN61000-3-2 Class C (load&lt;50%), EN61000-3-3, FCC Part 15 Class B, EAC TP TC 020</td>
<td>Compliance to EN61000-4-2,3,4,5,6,8,11, EN61547, light industry level (surge immunity Line-Line 4KV, Line-Neutral 2KV), EAC TP TC 026</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### NOTE

1. All parameters NOT specially mentioned are measured at 347VAC input, rated current and 25°C of ambient temperature.
2. Please refer to "DRIVING METHODS OF LED MODULE".
3. De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.
4. Length of set up time is measured at first cold start. Turning ON/OFF the power supply may lead to increase of the set up time.
5. The driver is considered as a component that will be operated in combination with final equipment. Since EMC performance may be affected by the complete installation, the final equipment manufacturers must re-quality EMC Directive on the complete installation again.
6. This series meets the typical life expectancy of >50,000 hours of operation when Tcase, particularly tc point (or TEMP, per DLC), is about 80°C or less.
7. Please refer to the warranty statement on MEAN WELL’s website at http://www.meanwell.com
8. To fulfill requirements of the latest EiP regulation for lighting fixtures, this LED driver can only be used behind a switch without permanently connected to the mains.
9. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).
10. For any application note and IP water proof function installation caution, please refer our user manual before using.

480W Constant Power Mode LED Driver

**HVGC-480** series

**BLOCK DIAGRAM**

- EMI FILTER & RECTIFIERS
- PFC CIRCUIT
- POWER SWITCHING
- RECTIFIERS & FILTER
- DIM+
- DIM-
- PWM CIRCUIT
- O.L.P.
- O.T.P.
- DETECTION CIRCUIT
- O.V.P.

**DRIVING METHODS OF LED MODULE**

---

**I-V Operating Area**

**HVGC-480-L**

- 84mA, 343V
- 1400mA, 343V
- 170mA, 274.5V
- 105mA, 171.5V
- 1750mA, 137V
- 2800mA, 86V
- 3500mA, 68V
- 210mA, 68V
- 168mA, 86V

- 1750mA, 274.5V
- 170mA, 274.5V
- 105mA, 171.5V
- 700mA, 343V
- 1400mA, 343V
- 1750mA, 137V
- 2800mA, 86V
- 3500mA, 68V
- 210mA, 68V
- 168mA, 86V

- Recommended High Performance Region
- Allowed Operational Region

**HVGC-480-M**

- 126mA, 228.5V
- 1050mA, 228.5V
- 2100mA, 228.5V
- 2625mA, 182.8V
- 197.5mA, 92V
- 2800mA, 86V
- 3500mA, 68V
- 210mA, 68V
- 168mA, 86V

- Recommended High Performance Region
- Allowed Operational Region

**HVGC-480-H**

- 188mA, 171.5V
- 1400mA, 171.5V
- 2800mA, 171.5V
- 3500mA, 137.1V
- 2800mA, 86V
- 3500mA, 68V
- 210mA, 68V
- 168mA, 86V

- Recommended High Performance Region
- Allowed Operational Region

---

File Name: HVGC-480-SPEC    2018-09-30

Downloaded from Arrow.com.
DIMMING OPERATION

◎ Applying additive 0 ~ 10VDC:

"DO NOT connect "DIM- to -V"

◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):

"DO NOT connect "DIM- to -V"

◎ Applying additive resistance:

"DO NOT connect "DIM- to -V"

Note: 1. Min. dimming level is about 6% and the output current is not defined when 0%< \( I_{out} < 6\% \).
2. The output current could drop down to 0% when dimming input is about 0Ω, or 0Vdc, or 10V PWM signal with 0% duty cycle.
Smart timer dimming function (for Dxx-Type by User definition)

MEAN WELL Smart timer dimming primarily provides the adaptive proportion dimming profile for the output constant current level to perform up to 14 consecutive hours. 3 dimming profiles hereunder are defined accounting for the most frequently seen applications. If other options may be needed, please contact MEAN WELL for details.

Ex : ◆ D01-Type: the profile recommended for residential lighting

Set up for D01-Type in Smart timer dimming software program:

| TIME**  | 06:00 | 07:00 | 11:00 | ---  |
| LEVEL** | 100%  | 70%   | 50%   | 70%  |

Example: If a residential lighting application adopts D01-Type, when turning on the power supply at 6:00pm, for instance:

1. The power supply will switch to the constant current level at 100% starting from 6:00pm.
2. The power supply will switch to the constant current level at 70% in turn, starting from 0:00am, which is 06:00 after the power supply turns on.
3. The power supply will switch to the constant current level at 50% in turn, starting from 1:00am, which is 07:00 after the power supply turns on.
4. The power supply will switch to the constant current level at 70% in turn, starting from 5:00am, which is 11:00 after the power supply turns on. The constant current level remains till 8:00am, which is 14:00 after the power supply turns on.

Ex: ◆ D02-Type: the profile recommended for street lighting

Set up for D02-Type in Smart timer dimming software program:

| TIME**  | 01:00 | 03:00 | 08:00 | 11:00 | ---  |
| LEVEL** | 50%   | 80%   | 100%  | 60%   | 80%  |

Example: If a street lighting application adopts D02-Type, when turning on the power supply at 5:00pm, for instance:

1. The power supply will switch to the constant current level at 50% starting from 5:00pm.
2. The power supply will switch to the constant current level at 80% in turn, starting from 6:00pm, which is 01:00 after the power supply turns on.
3. The power supply will switch to the constant current level at 100% in turn, starting from 8:00pm, which is 03:00 after the power supply turns on.
4. The power supply will switch to the constant current level at 60% in turn, starting from 1:00am, which is 08:00 after the power supply turns on.
5. The power supply will switch to the constant current level at 80% in turn, starting from 4:00am, which is 11:00 after the power supply turns on. The constant current level remains till 6:30am, which is 14:00 after the power supply turns on.
Ex: ◎ D03-Type: the profile recommended for tunnel lighting

Set up for D03-Type in Smart timer dimming software program:

<table>
<thead>
<tr>
<th>TIME**</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL**</td>
<td>70%</td>
<td>100%</td>
<td>70%</td>
</tr>
</tbody>
</table>

**: TIME matches Operating Time in the diagram whereas LEVEL matches Dimming Level.
Example: If a tunnel lighting application adopts D03-Type, when turning on the power supply at 4:30pm, for instance:
[1] The power supply will switch to the constant current level at 70% starting from 4:30pm.
[2] The power supply will switch to the constant current level at 100% in turn, starting from 6:00pm, which is 01:30 after the power supply turns on.
[3] The power supply will switch to the constant current level at 70% in turn, starting from 5:00am, which is 11:00 after the power supply turns on.
The constant current level remains till 6:30am, which is 14:00 after the power supply turns on.

※ DALI interface (primary side; for DA-Type)
- Apply DALI signal between DA+ and DA-.
- DALI protocol comprises 16 groups and 64 addresses.
- First step is fixed at 6% of output.
**OUTPUT LOAD vs TEMPERATURE**

If HVGC-480 operates in Constant Power mode with the rated current, the maximum workable Ta is 55°C (Typ. 230VAC)

**STATIC CHARACTERISTIC**

**TOTAL HARMONIC DISTORTION (THD)**
※ L Model, Tcase at 80°C

**EFFICIENCY vs LOAD**
HVGC-480 series possess superior working efficiency that up to 94.5% can be reached in field applications.
※ L Model, Tcase at 80°C

**POWER FACTOR (PF) CHARACTERISTIC**
※ Tcase at 80°C
MECHANICAL SPECIFICATION

Case No. 251  Unit: mm

※AB-Type

※Blank-Type

* : Max. Case Temperature

File Name: HVGC-480-SPEC   2018-09-30
### MECHANICAL SPECIFICATION

#### D2-Type

![Diagram of D2-Type](image)

- **FG**: Green/Yellow
- **AC/L**: Brown
- **AC/N**: Blue
- **ψ**: 4.5
- **4PL**: UNI2027
- **V**: Max. Case Temperature
- **tc**: 8.9
- **15**: 78
- **15**: 125
- **13.4**: 235.2
- **262**: 113.8
- **58**: 300 ± 20
- **300 ± 20**: 2

#### Dx-Type

![Diagram of Dx-Type](image)

- **FG**: Green/Yellow
- **AC/L**: Brown
- **AC/N**: Blue
- **ψ**: 4.5
- **4PL**: UNI2027
- **V**: Max. Case Temperature
- **tc**: 43.8
- **15**: 78
- **15**: 125
- **13.4**: 235.2
- **262**: 113.8
- **58**: 300 ± 20
- **300 ± 20**: 2

*Notes:

- SOOW 17AWG 3C & H07RN-F 3 1.0mm
- 2
- SOOW 17AWG 2C & H07RN-F 2 1.0mm
- 2
- SJOW 17AWG 2C & H05RN-F 2 1.0mm
- 2

**Dimensions**

- Width: 3.4
- Height: 235.2
**DA-Type**

- FG (Green/Yellow)
- AC/L (Brown)
- AC/N (Blue)

ψ×4.5 4PL

Max. Case Temperature:
- 8.9°C
- 15°C
- 330 ± 20°C

- SOOW 17AWG × 3C & H07RN-F 3 × 1.0mm²
- SJOW 17AWG × 2C & H05RN-F 2 × 1.0mm²

- Vo- (Blue)
- Vo+ (Brown)
- DA- (Black)
- DA+ (Gray)

- 480W Constant Power Mode LED Driver
- HVGC-480 series

**INSTALLATION MANUAL**

Please refer to: http://www.meanwell.com/manual.html