

## Features

- Dimming port programming without driver power on
- Constant current output
- High efficiency (Max 97%), active power factor correction
- Ultra low THD at light load
- Isolated 0~10V/ PWM dimming
- 12V/200mA AUX Output
- UL/FCC/CB/CE
- 5 years warranty
- IP67

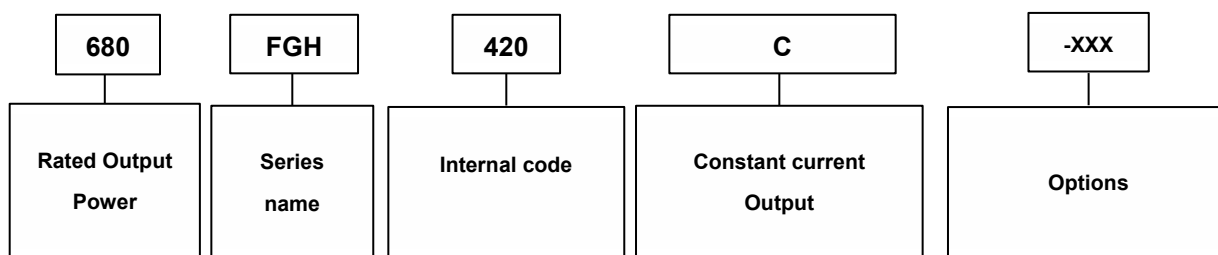


## Description

680W LED Drivers offers digital programmable drivers with wide-range adjustable output current, together with 12V/200mA auxiliary output (optional) for smart lighting.

The output current of this series are programmable, and designed for 0-10V/PWM.

## Model Name Definition



## Specifications

| Part Number   | Max. Output Power | Programmable Current Region@CC | Output Voltage Range | Efficiency @277VAC |
|---------------|-------------------|--------------------------------|----------------------|--------------------|
| 680FGH420C-CA | 680W              | 1.08-2.70A                     | 150-420V             | 95.5%              |

**Note:** Efficiency value is typical value.

## Input Specifications

| Parameter                  | Min.    | Typ. | Max.    | Notes                                          |
|----------------------------|---------|------|---------|------------------------------------------------|
| Input AC Voltage           | 198 Vac | -    | 528Vac  |                                                |
| Input Frequency            | 47 Hz   | -    | 63 Hz   |                                                |
| Leakage Current            | -       | -    | 0.75 mA | At 480Vac / 60Hz input , grounding effectively |
| Input AC Current           | -       | -    | 3.1A    | Measured at full load and 220 Vac input.       |
| Inrush Current             | -       | -    | 26A     | At 400Vac input, 25°C cold start,              |
| Inrush Current ( $I^2*t$ ) |         | 0.3  |         | A <sup>2</sup> Sec (50%Imax to 50%Imax )       |
| PF                         | 0.95    | -    | -       | At 198-400Vac, full load                       |
| THD                        | -       | -    | 20%     | At 198-400Vac, full load                       |

## Output Specifications

| Parameter                                     | Min.       | Typ.  | Max.       | Notes                                      |
|-----------------------------------------------|------------|-------|------------|--------------------------------------------|
| Output Current Tolerance                      | -5% Io set | -     | 5% Io set  | At 25°C and full load condition            |
| Total Output Current Ripple (pk-pk)           | -          | -     | 10% Io max | At 25°C and full load condition, 20 MHz BW |
| Startup Overshoot Current                     | -          | -     | 20% Io max | At 25°C and full load condition            |
| No Load Output Voltage                        | -          | -     | 550V       |                                            |
| Line Regulation                               | -          | -     | ±1%        | Measured at full load                      |
| Load Regulation                               |            |       | ±3%        |                                            |
| Turn-on Delay Time                            | -          | 0.8 s | 2s         | Measured at 277Vac input.                  |
| Output SCP                                    |            |       |            | AC power on restart                        |
| Temperature Coefficient of I <sub>o</sub> set | 0.1%/°C    | -     | 0.1%/°C    | Case temperature = 0°C ~T <sub>c</sub> max |
| 12V Auxiliary Output Voltage                  | 11.4V      | 12 V  | 12.6V      | 200mA ripple can not exceed 100mV          |
| 12V Auxiliary Output Source Current           | 0 mA       | -     | 200 mA     | Return terminal is “Dim-“                  |
| OTP T <sub>c</sub>                            | 85°C       | 90°C  | 100°C      | Output current will drop to 50%            |
| 12V Auxiliary Output SCP                      |            |       |            | Hiccup mode, Auto recover                  |
| Overvoltage Protection                        | -          | -     | 20V        |                                            |
| Overcurrent Protection                        | -          | -     | 0.5A       |                                            |

**Note:** It indicates normal temperature if there is not mark temperature.

## General Specifications

| Parameter                                    | Min.                   | Typ.             | Max.  | Notes                                                                              |
|----------------------------------------------|------------------------|------------------|-------|------------------------------------------------------------------------------------|
| Standby power                                | -                      | -                | 1W    | Measured at 198-400Vac/60Hz; Dimming off                                           |
| MTBF                                         | -                      | 234,000<br>Hours | -     | Measured at 277Vac input, 80%Load and<br>25°C ambient temperature (MIL-HDBK- 217F) |
| Lifetime                                     | -                      | 61,320<br>Hours  | -     | Measured at 400Vac input, 100%Load and<br>72°C case temperature.                   |
| Dielectric Strength(Hi-pot)                  |                        |                  | 10mA  | Primary to Earth: 1960Vac 60 seconds                                               |
| Grounded Resistance                          |                        |                  | 0.1Ω  | 25A, 1 minute                                                                      |
| Operating Case Temperature T <sub>c</sub>    | -20°C                  | -                | 90°C  |                                                                                    |
| Operating Ambient Temperature T <sub>a</sub> | -20°C                  | -                | 50°C  |                                                                                    |
| Storage Temperature                          | -20°C                  | -                | +85°C |                                                                                    |
| Dimensions                                   |                        |                  |       |                                                                                    |
| Inches (L × W × H)                           | 18.03 × 1.73 × 1.67 in |                  |       |                                                                                    |
| Millimeters (L × W × H)                      | 458 × 43.9 × 42.4 mm   |                  |       |                                                                                    |
| Net Weight/pcs                               | -                      | 1.6kg            | -     |                                                                                    |

## Dimming Specifications

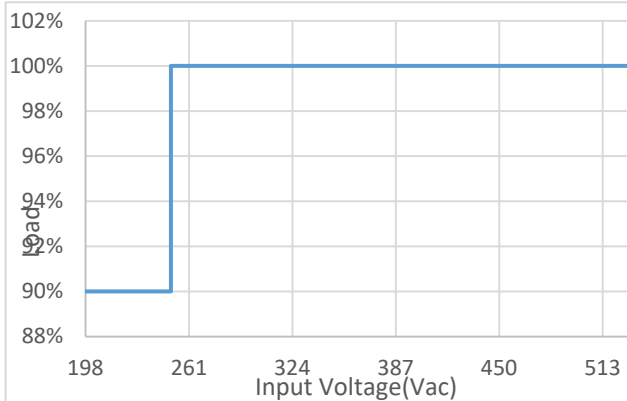
| Parameter                                    | Min.       | Typ.   | Max.   | Notes                             |
|----------------------------------------------|------------|--------|--------|-----------------------------------|
| Absolute Maximum Voltage on the Vdim (+) Pin | 0V         | -      | 15 V   |                                   |
| Source Current on Vdim (+)Pin                | 90 uA      | 100 uA | 110 uA |                                   |
| Dimming Output Range                         | 10% Io set | -      | Io set | 80% Io max ≤ Io set ≤ 100% Io max |
|                                              | 8% Io max  | -      | Io set | Io set < 80% Io max               |
| Recommended Dimming Input Range              | 0 V        | -      | 10 V   | Default 0-10V dimming mode.       |
| Dimming On Voltage                           | 0.5V       | 0.7V   | 0.9V   |                                   |
| Dimming Off Voltage                          | 0.3V       | 0.5V   | 0.7V   |                                   |
| Hysteresis Voltage                           | -          | 0.2V   | -      |                                   |
| PWM_in High Level                            | 9.5 V      | 10V    | 10.5 V |                                   |
| PWM_in Low Level                             | -0.3 V     | -      | 0.6 V  |                                   |
| PWM_in Frequency Range                       | 600 Hz     | -      | 3 KHz  |                                   |
| PWM_in Duty Cycle                            | 1%         | -      | 100%   |                                   |
| PWM Dimming off                              | 3%         | 5%     | 7%     |                                   |
| PWM Dimming on                               | 5%         | 7%     | 9%     |                                   |
| PWM Hysteresis Voltage                       | -          | 2%     | -      |                                   |

## Safety & EMC Compliance

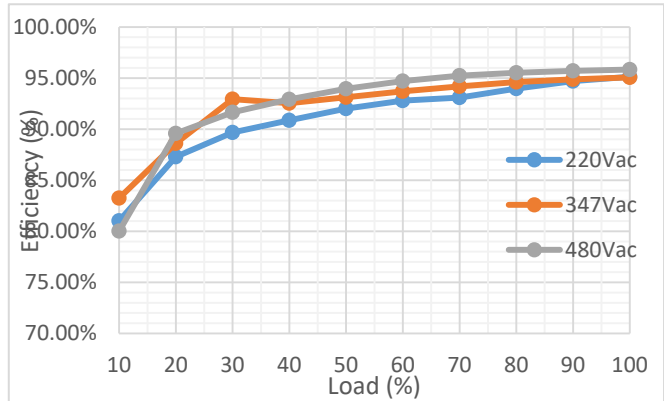
| Safety Category      | Standard                                                                                                                                                                                                                                                                            |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UL/cUL               | UL8750, CAN/CSA-C22.2 No.250.13-12                                                                                                                                                                                                                                                  |
| CE                   | EN 61347-1, EN 61347-2-13, EN 55015, EN 61000-3-2                                                                                                                                                                                                                                   |
| CB                   | IEC 61347-1, IEC 61347-2-13                                                                                                                                                                                                                                                         |
| EMC Standards        | Notes                                                                                                                                                                                                                                                                               |
| FCC Part 15/EN 55015 | ANSI C63.4:2009 Class B                                                                                                                                                                                                                                                             |
|                      | This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired Operation. |
| EN 61000-4-2         | Electrostatic Discharge (ESD): 8kV air discharge, 4kV contact discharge                                                                                                                                                                                                             |
| EN 61000-4-3         | Radio-Frequency Electromagnetic Field Susceptibility Test-RS                                                                                                                                                                                                                        |
| EN 61000-4-4         | Electrical Fast Transient / Burst-EFT: level 3, criteria B                                                                                                                                                                                                                          |
| EN 61000-4-5         | Surge Immunity Test: AC Power Line: line to line 4kV, line to earth 6kV                                                                                                                                                                                                             |
| EN 61000-4-6         | Conducted Radio Frequency Disturbances Test-CS                                                                                                                                                                                                                                      |
| EN 61000-4-8         | Power Frequency Magnetic Field Test                                                                                                                                                                                                                                                 |
| EN 61000-4-11        | Voltage Dips                                                                                                                                                                                                                                                                        |
| EN 61547             | Electromagnetic Immunity Requirements Applies To Lighting Equipment                                                                                                                                                                                                                 |

## Performance Curve

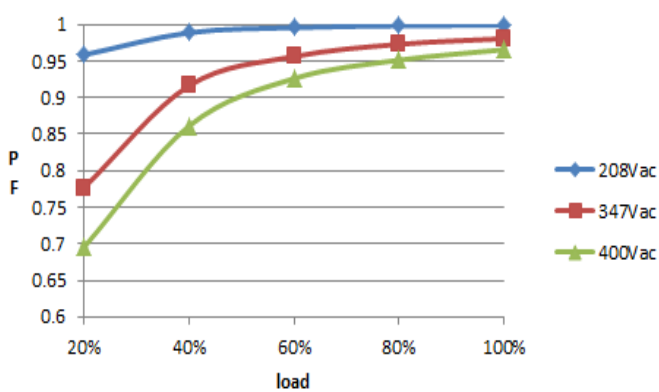
**Derating curve**



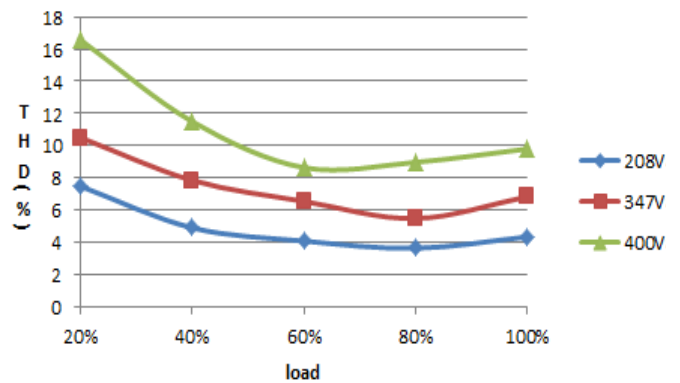
**Efficiency Vs Different Loads**



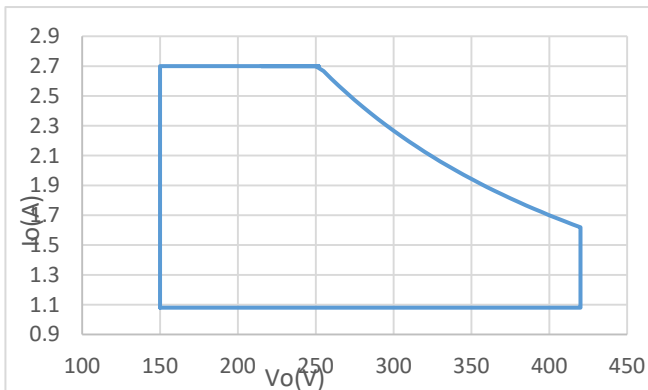
**Power Factor Vs Different Loads**



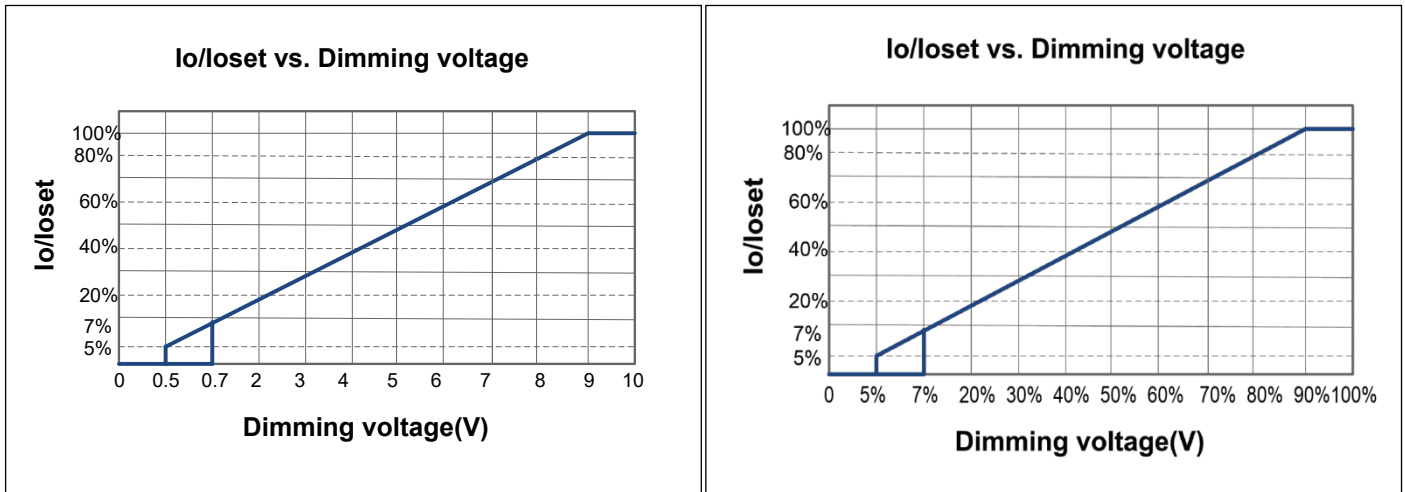
**Total Harmonics Vs Different Loads**



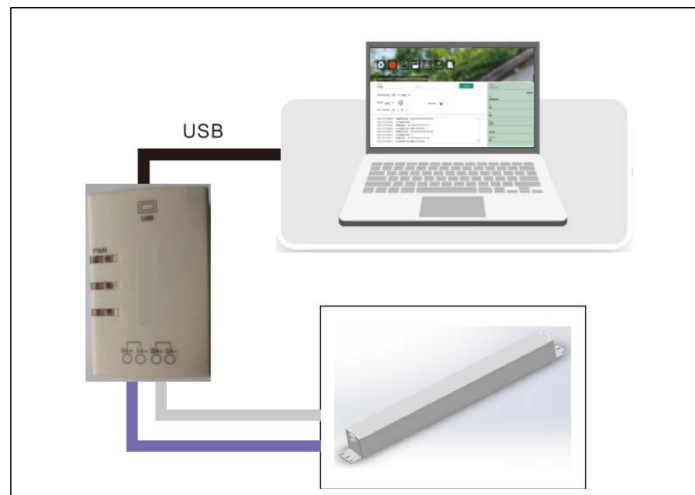
**I/V Operating Area**



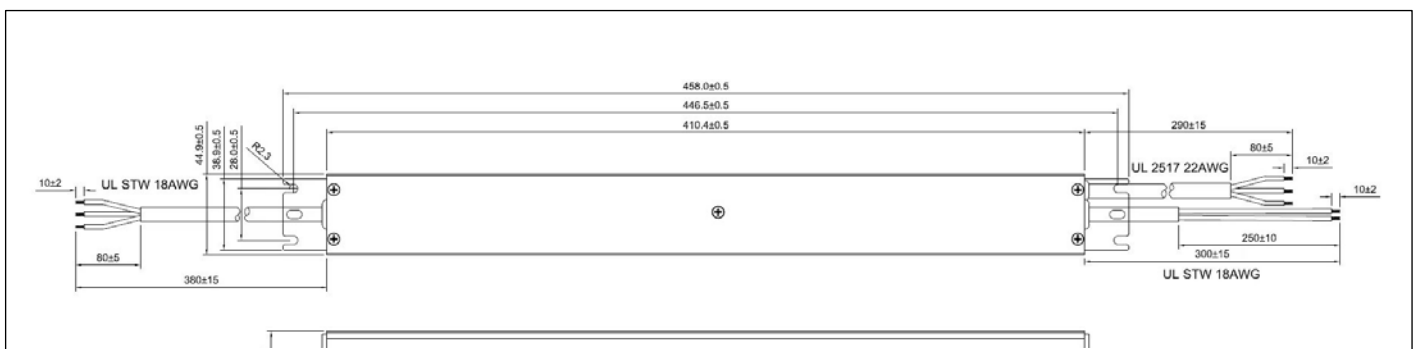
## 0-10V Analog Dimming & PWM Dimming



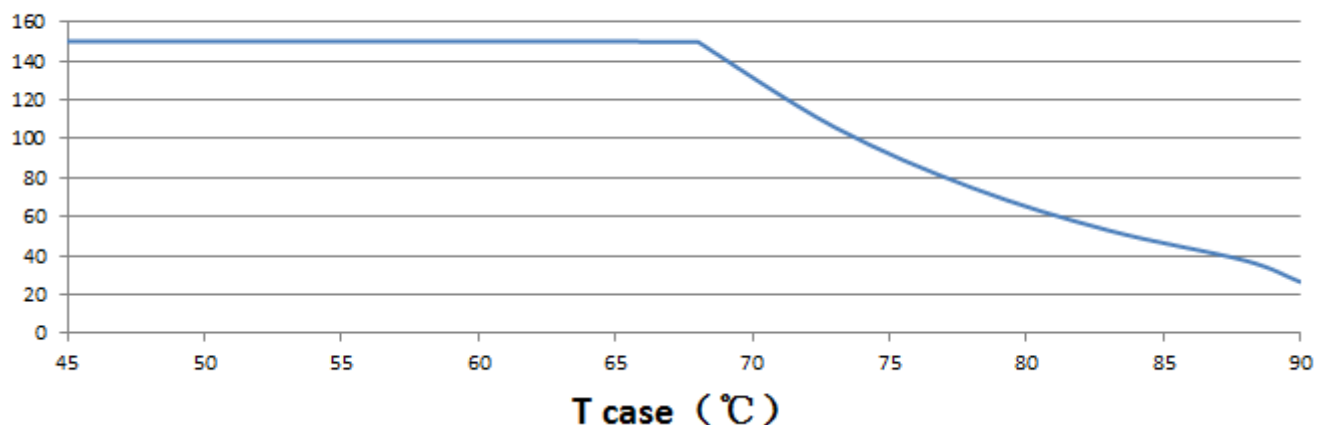
## Programming wiring diagram



## Mechanical Specification



## Lifetime VS case temperature

**Life time (K hrs) Lifetime VS case temperature@400Vac full load**


## Revision History

| Change Date | Rev. | Description of Change                 |                              |                                                                  |
|-------------|------|---------------------------------------|------------------------------|------------------------------------------------------------------|
|             |      | Item                                  | From                         | To                                                               |
| 2023.3.25   | V1.0 |                                       |                              |                                                                  |
| 2023.4.13   | V1.1 | Update Programmable Current Region@CC | 1.3-3.2A                     | 1.08-2.70A                                                       |
|             |      | Update I/V Operating Area curve       |                              |                                                                  |
| 2023.5.10   | V1.2 | Inrush Current                        | 65                           | 26                                                               |
| 2023.5.12   | V1.3 | Mechanical Specification              | Input and output wire length | Change the length of input and output wire as customer's require |
| 2023.5.19   | V1.4 | Overvoltage Protection                | 15                           | 20                                                               |
| 2023.5.26   | V1.5 | Lifetime VS case temperature          |                              |                                                                  |