

Features

- Ultra High Efficiency (Up to 95%)
- Full Power at Wide Output Current Range (Constant Power)
- Thermal Sensing and Protection for LED Module
- DALI/3 Timer-Modes Dimmable
- Dim-to-Off with Standby Power $\leq 0.5W$
- Always-on Auxiliary Power: 12Vdc, 200mA
- Output Lumen Compensation
- Input Surge Protection: DM 6kV, CM 10kV
- All-Around Protection: OVP, SCP, OTP
- IP67
- SELV Output
- 7 Years Warranty



Description

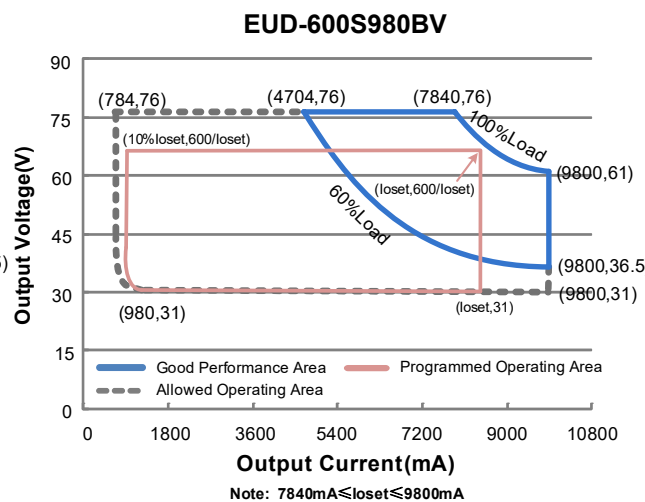
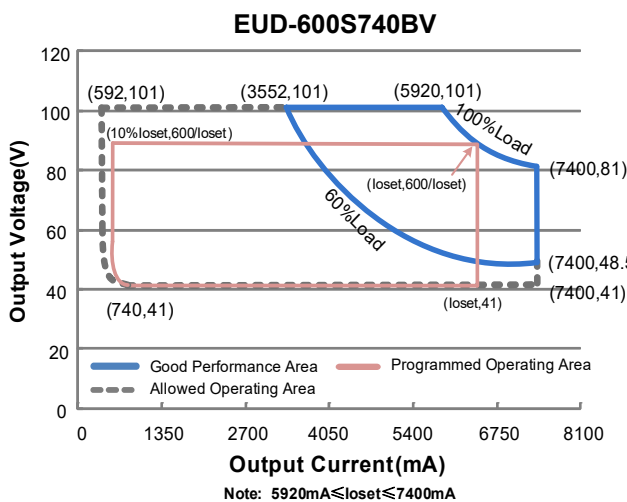
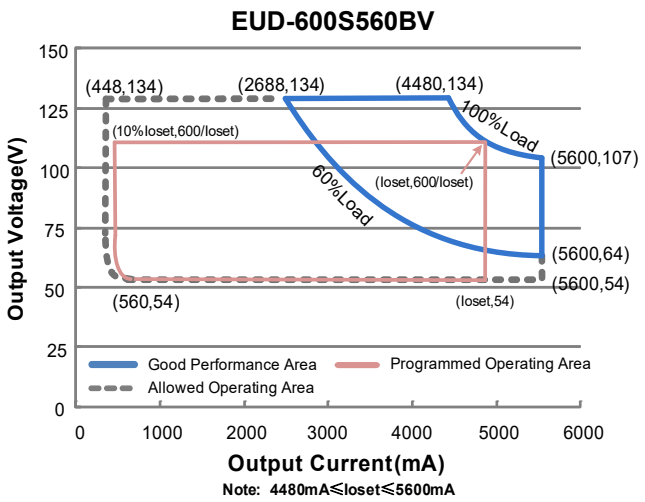
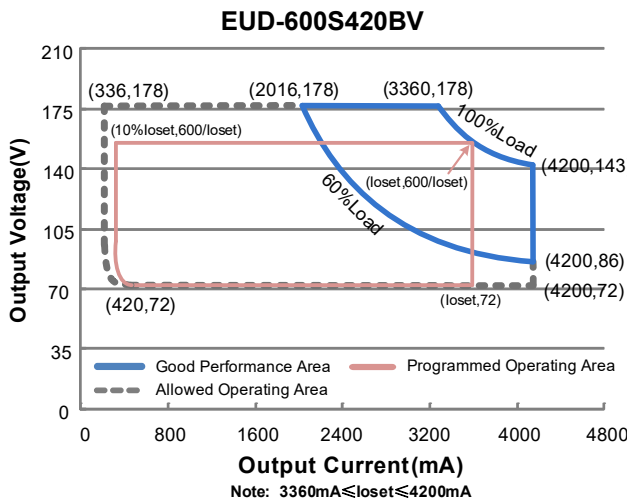
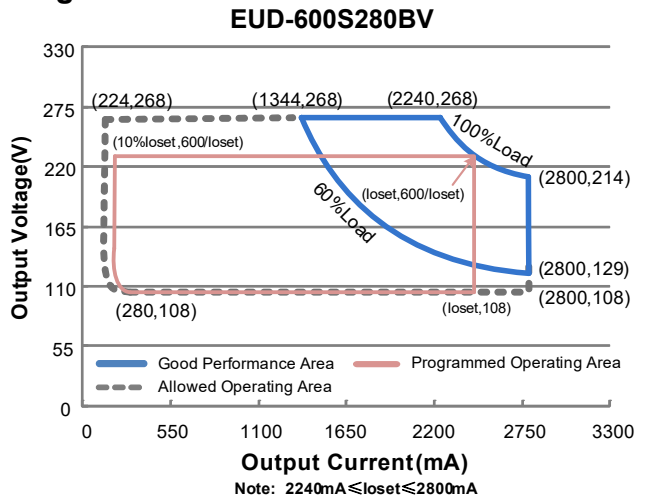
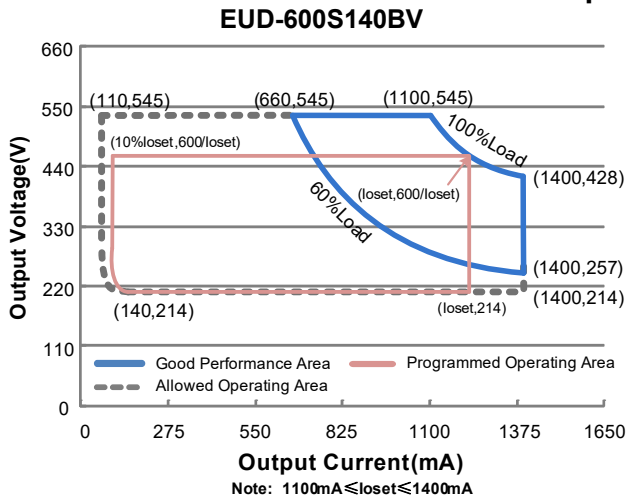
The EUD-600SxxxBV series is a 600W, constant-current, programmable LED driver that operates from 90-305 Vac input with excellent power factor. Created for many lighting applications including high bay, sports and horticultural, it provides a dim-to-off mode with low standby power. The high efficiency of these drivers and compact metal case enables them to run cooler, significantly improving reliability and extending product life. To ensure trouble-free operation, protection is provided against input surge, output over voltage, short circuit, and over temperature.

Models

| Adjustable Output Current Range | Full-Power Current Range (1) | Default Output Current | Input Voltage Range(2) | Output Voltage Range | Max. Output Power | Typical Efficiency (3) | Typical Power Factor | | Model Number (5) |
|---------------------------------|------------------------------|------------------------|--------------------------|----------------------|-------------------|------------------------|----------------------|--------|------------------------------|
| | | | | | | | 120Vac | 220Vac | |
| 0.11–1.40A | 1.10–1.40A | 1.4 A | 90~305Vac/ 127~300Vdc | 214 ~ 545Vdc | 600 W | 94.5% | 0.99 | 0.96 | EUD-600S140BV |
| 0.224-2.80A | 2.24–2.80A | 2.8 A | 90~305Vac/ 127~250Vdc | 108 ~ 268Vdc | 600 W | 95.0% | 0.99 | 0.96 | EUD-600S280BV |
| 0.336-4.20A | 3.36–4.20A | 4.2 A | 90~305Vac/ 127~250Vdc | 72 ~ 178Vdc | 600 W | 94.5% | 0.99 | 0.96 | EUD-600S420BV |
| 0.448-5.60A | 4.48–5.60A | 5.6 A | 90~305Vac/ 127~250Vdc | 54 ~ 134Vdc | 600 W | 94.5% | 0.99 | 0.96 | EUD-600S560BV |
| 0.592-7.40A | 5.92–7.40A | 7.0 A | 90~305Vac/ 127~250Vdc | 41 ~ 101Vdc | 600 W | 94.0% | 0.99 | 0.96 | EUD-600S740BV ⁽⁴⁾ |
| 0.784-9.80A | 7.84–9.80A | 9.8 A | 90~305Vac/ 127~250Vdc | 31 ~ 76Vdc | 600 W | 94.0% | 0.99 | 0.96 | EUD-600S980BV ⁽⁴⁾ |

- Notes:** (1) Output current range with constant power at 600W
 (2) Certified voltage range: 100-240Vac or 127-250Vdc (except CCC)
 (3) Measured at 100% load and 220Vac input (see below “General Specifications” for details).
 (4) SELV Output
 (5) The models are certificated to global-mark.

I-V Operating Area



Input Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|----------------------------------|---------|------|-----------------------|---|
| Input AC Voltage | 90 Vac | - | 305 Vac | |
| Input DC Voltage | 127 Vdc | - | 250 Vdc | |
| Input Frequency | 47 Hz | - | 63 Hz | |
| Leakage Current | - | - | 0.70 mA | IEC60598-1; 240Vac/60Hz, grounding effectively |
| Input AC Current | - | - | 6.0 A | Measured at 100% load and 120 Vac input. |
| | - | - | 3.5 A | Measured at 100% load and 220 Vac input. |
| Inrush Current(I ² t) | - | - | 4.70 A ² s | At 220Vac input, 25°C cold start, duration=7.64 ms, 10%I _{pk} -10%I _{pk} . See Inrush Current Waveform for the details. |
| PF | 0.90 | - | - | At 100-240Vac, 50-60Hz, 60%-100% Load (360-600W) |
| THD | - | - | 20% | |
| THD | - | - | 10% | At 220-240Vac, 50-60Hz, 75%-100% Load (450-600W) |

Output Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|--|----------|---------------------|----------------------|---|
| Output Current Tolerance | -5%loset | - | 5%loset | At 100% load condition |
| Output Current Setting(loset) Range | | | | |
| EUD-600S140BV | 110 mA | - | 1400 mA | |
| EUD-600S280BV | 224 mA | - | 2800 mA | |
| EUD-600S420BV | 336 mA | - | 4200 mA | |
| EUD-600S560BV | 448 mA | - | 5600 mA | |
| EUD-600S740BV | 592 mA | - | 7400 mA | |
| EUD-600S980BV | 784 mA | - | 9800 mA | |
| Output Current Setting Range with Constant Power | | | | |
| EUD-600S140BV | 1100 mA | - | 1400 mA | |
| EUD-600S280BV | 2240 mA | - | 2800 mA | |
| EUD-600S420BV | 3360 mA | - | 4200 mA | |
| EUD-600S560BV | 4480 mA | - | 5600 mA | |
| EUD-600S740BV | 5920 mA | - | 7400 mA | |
| EUD-600S980BV | 7840 mA | - | 9800 mA | |
| Total Output Current Ripple (pk-pk) | - | 5%I _{omax} | 10%I _{omax} | At 100% load condition, 20 MHz BW |
| Output Current Ripple at < 200 Hz (pk-pk) | - | 2%I _{omax} | - | At 100% load condition. Only this component of ripple is associated with visible flicker. |
| Startup Overshoot Current | - | - | 10%I _{omax} | At 100% load condition |
| No Load Output Voltage | | | | |
| EUD-600S140BV | - | 595 V | 600 V | |
| EUD-600S280BV | - | 290 V | 295 V | |
| EUD-600S420BV | - | 190 V | 200 V | |
| EUD-600S560BV | - | 150 V | 155 V | |
| EUD-600S740BV | - | 118 V | 120 V | |
| EUD-600S980BV | - | 87 V | 95 V | |

Output Specifications (Continued)

| Parameter | Min. | Typ. | Max. | Notes |
|--|--------|----------|--------|--|
| Line Regulation | - | - | ±0.5% | Measured at 100% load |
| Load Regulation | - | - | ±1.5% | |
| Turn-on Delay Time | - | - | 1.0 s | Measured at 120Vac input, 60%-100% Load. |
| | - | - | 0.5 s | Measured at 220Vac input, 60%-100% Load. |
| Temperature Coefficient of lo _{set} | - | 0.03%/°C | - | Case temperature = 0°C ~T _c max |
| 12V Auxiliary Output Voltage | 10.8 V | 12 V | 13.2 V | |
| 12V Auxiliary Output Source Current | 0 mA | - | 200 mA | Return terminal is "OTP" |

General Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|------------------------------|-------|-------|------|--|
| Efficiency at 120 Vac input: | | | | Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.) |
| EUD-600S140BV | | | | |
| lo= 1100 mA | 90.5% | 92.5% | - | |
| lo= 1400 mA | 90.0% | 92.0% | - | |
| EUD-600S280BV | | | | |
| lo= 2240 mA | 91.0% | 93.0% | - | |
| lo= 2800 mA | 90.0% | 92.0% | - | |
| EUD-600S420BV | | | | |
| lo= 3360 mA | 90.5% | 92.5% | - | |
| lo= 4200 mA | 89.5% | 91.5% | - | |
| EUD-600S560BV | | | | |
| lo= 4480 mA | 90.0% | 92.0% | - | |
| lo= 5600 mA | 89.5% | 91.5% | - | |
| EUD-600S740BV | | | | |
| lo= 5920 mA | 89.5% | 91.5% | - | |
| lo= 7400 mA | 89.0% | 91.0% | - | |
| EUD-600S980BV | | | | |
| lo= 7840 mA | 90.0% | 92.0% | - | |
| lo= 9800 mA | 89.5% | 91.5% | - | |
| Efficiency at 220 Vac input: | | | | Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.) |
| EUD-600S140BV | | | | |
| lo= 1100 mA | 92.5% | 94.5% | - | |
| lo= 1400 mA | 92.0% | 94.0% | - | |
| EUD-600S280BV | | | | |
| lo= 2240 mA | 93.0% | 95.0% | - | |
| lo= 2800 mA | 92.5% | 94.5% | - | |
| EUD-600S420BV | | | | |
| lo= 3360 mA | 92.5% | 94.5% | - | |
| lo= 4200 mA | 92.0% | 94.0% | - | |
| EUD-600S560BV | | | | |
| lo= 4480 mA | 92.5% | 94.5% | - | |
| lo= 5600 mA | 92.0% | 94.0% | - | |
| EUD-600S740BV | | | | |
| lo= 5920 mA | 92.0% | 94.0% | - | |
| lo= 7400 mA | 91.5% | 93.5% | - | |
| EUD-600S980BV | | | | |
| lo= 7840 mA | 92.0% | 94.0% | - | |
| lo= 9800 mA | 91.0% | 93.0% | - | |

General Specifications (Continued)

| Parameter | Min. | Typ. | Max. | Notes | |
|--|--|--|--|--|--|
| Efficiency at 277 Vac input: EUD-600S140BV I _o = 1100 mA I _o = 1400 mA EUD-600S280BV I _o = 2240 mA I _o = 2800 mA EUD-600S420BV I _o = 3360 mA I _o = 4200 mA EUD-600S560BV I _o = 4480 mA I _o = 5600 mA EUD-600S740BV I _o = 5920 mA I _o = 7400 mA EUD-600S980BV I _o = 7840 mA I _o = 9800 mA | 93.0% 92.5% 93.0% 92.5% 93.0% 92.0% 93.0% 92.5% 92.5% 91.5% 92.5% 91.5% | 95.0% 94.5% 95.0% 94.5% 95.0% 94.0% 95.0% 94.5% 94.5% 93.5% 94.5% 93.5% | - - - - - - - - - - - - | Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.) | |
| Standby Power | - | - | 0.5 W | | Measured at 230Vac/50Hz; Dimming off |
| MTBF | - | 200,000 Hours | - | | Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F) |
| Lifetime | - | 108,000 Hours | - | | Measured at 220Vac input, 80%Load and 70°C case temperature; See lifetime vs. Tc curve for the details |
| Operating Case Temperature for Safety Tc _s | -40°C | - | +89°C | | |
| Operating Case Temperature for Warranty Tc _w | -40°C | - | +75°C | | Case temperature for 7 years warranty. <i>Please see Inventronics Warranty Statement for complete details.</i> |
| Storage Temperature | -40°C | - | +85°C | | Humidity: 5%RH to 100%RH |
| Dimensions Inches (L × W × H) Millimeters (L × W × H) | 9.84 × 5.67 × 1.91 250 × 144 × 48.5 | | | | With mounting ear 10.83 × 5.67 × 1.91 275 × 144 × 48.5 |
| Net Weight | - | 3515 g | - | | |

Dimming Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|-------------------|-------|------|-------|-------|
| DA, DA High Level | 9.5V | 16V | 22.5V | |
| DA, DA Low Level | -6.5V | 0V | 6.5V | |
| DA, DA Current | 0mA | - | 2mA | |

Dimming Specifications (Continued)

| Parameter | | Min. | Typ. | Max. | Notes |
|----------------------|--|--|------|-------|--|
| Dimming Output Range | EUD-600S140BV EUD-600S280BV EUD-600S420BV EUD-600S560BV EUD-600S740BV EUD-600S980BV | 10%loset | - | loset | 1100 mA ≤ loset ≤ 1400 mA 2240 mA ≤ loset ≤ 2800 mA 3360 mA ≤ loset ≤ 4200 mA 4480 mA ≤ loset ≤ 5600 mA 5920 mA ≤ loset ≤ 7400 mA 7840 mA ≤ loset ≤ 9800 mA |
| | EUD-600S140BV EUD-600S280BV EUD-600S420BV EUD-600S560BV EUD-600S740BV EUD-600S980BV | 110 mA 224 mA 336 mA 448 mA 592 mA 784 mA | - | loset | 110 mA ≤ loset < 1100 mA 224 mA ≤ loset < 2240 mA 336 mA ≤ loset < 3360 mA 448 mA ≤ loset < 4480 mA 592 mA ≤ loset < 5920 mA 784 mA ≤ loset < 7840 mA |

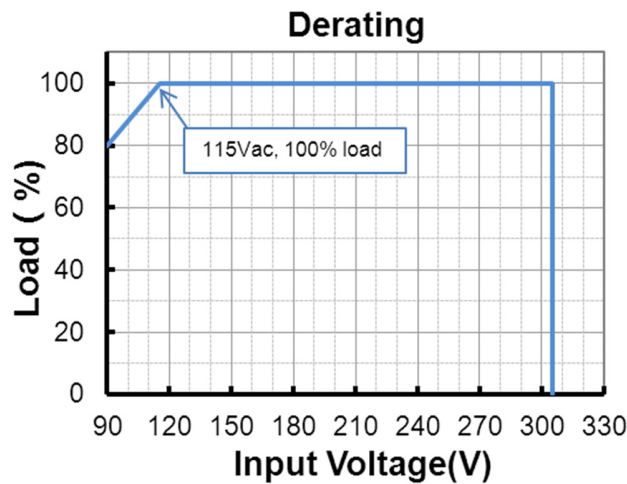
Safety & EMC Compliance

| Safety Category | Standard |
|--|--|
| ENEC & CE | EN 61347-1, EN 61347-2-13 |
| CB | IEC 61347-1, IEC 61347-2-13 |
| CCC | GB 19510.1, GB 19510.14 |
| global-mark | AS/NZS 61347.1, AS/NZS 61347.2.13 |
| Performance | Standard |
| ENEC | EN IEC 62384 |
| EMI Standards | Notes |
| EN IEC 55015/GB/T 17743 ⁽¹⁾ | Conducted emission Test & Radiated emission Test |
| EN IEC 61000-3-2/GB 17625.1 | Harmonic current emissions |
| EN 61000-3-3 | Voltage fluctuations & flicker |
| EMS Standards | Notes |
| EN 61000-4-2 | Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge |
| EN 61000-4-3 | Radio-Frequency Electromagnetic Field Susceptibility Test-RS |
| EN 61000-4-4 | Electrical Fast Transient / Burst-EFT |
| EN 61000-4-5 | Surge Immunity Test: AC Power Line: Differential Mode 6 kV, Common Mode 10 kV ⁽²⁾ |
| 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 |
| DALI Standards | Notes |
| DALI | IEC 62386-101, 102 & part of 207 ⁽³⁾ |

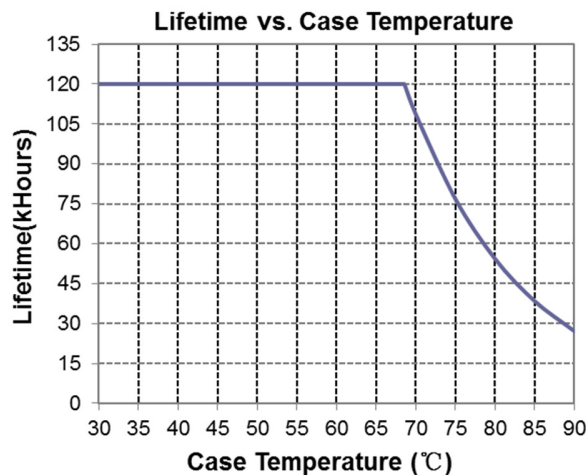
Notes: (1) This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

- (2) To perform electric strength (hi-pot) testing, the “GDT ground disconnect” (nut and metal lock sheet) on the driver end-cap should be removed temporarily to prevent the internal gas discharge tube from conducting (as allowed by IEC 60598-1 Clause 10.2). After testing is completed, these items must be reinstalled to restore line-to-earth surge protection and secure the end cap.
- (3) Optional Commands Implemented: 242 (query short circuit), 243 (query open circuit).

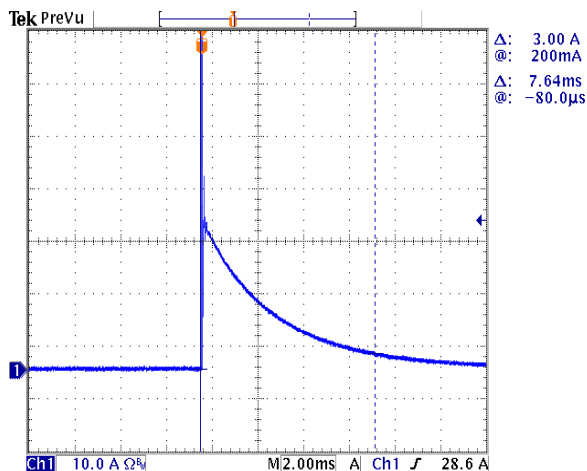
Derating



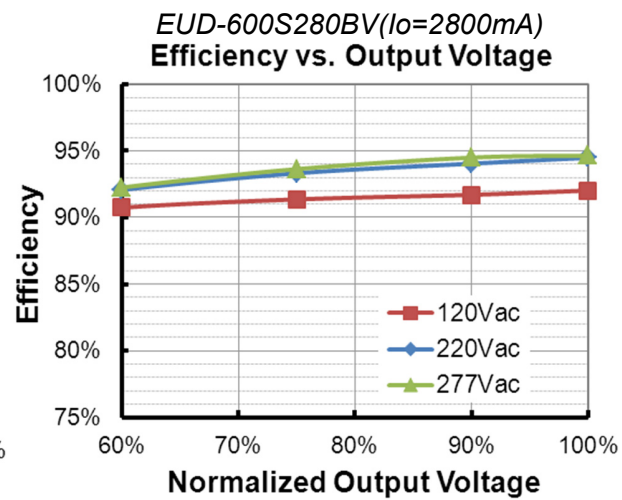
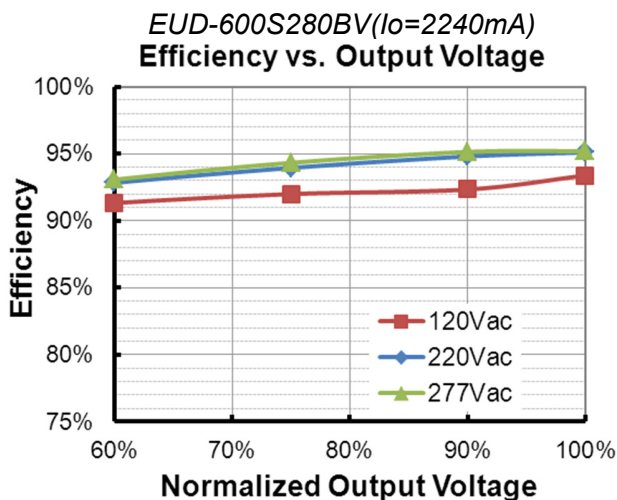
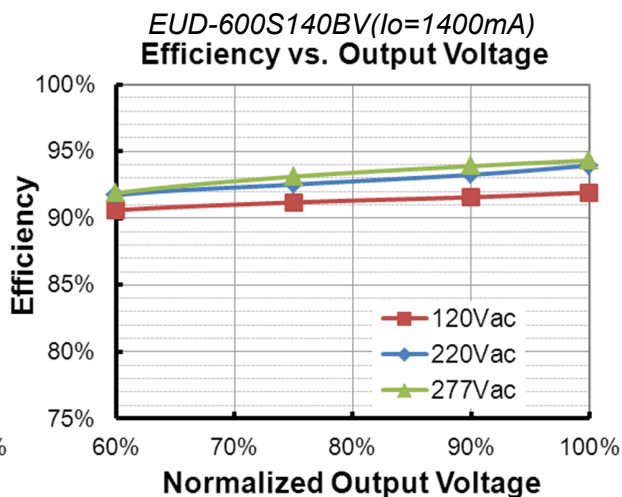
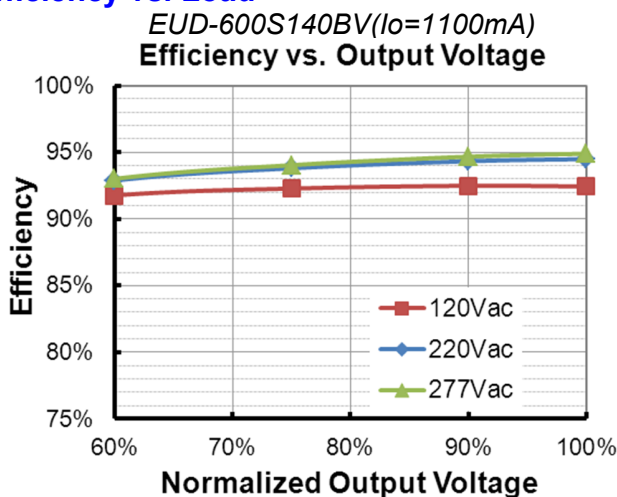
Lifetime vs. Case Temperature

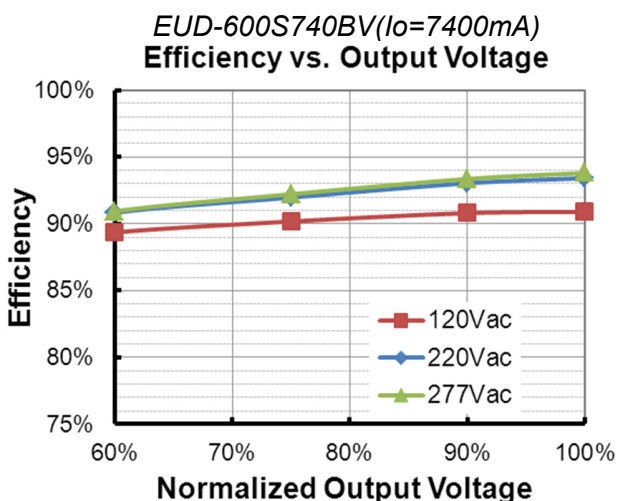
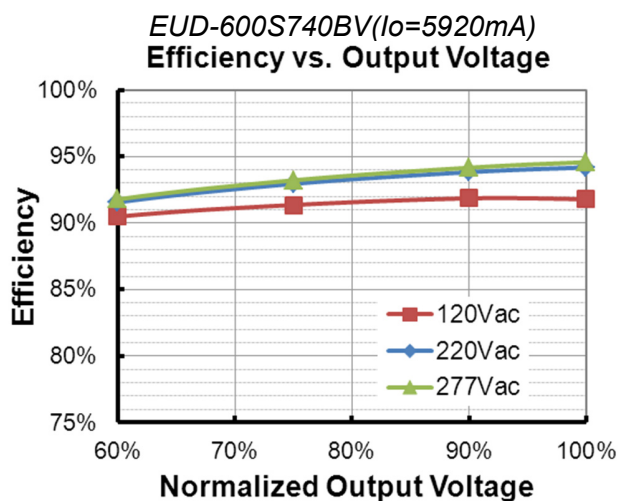
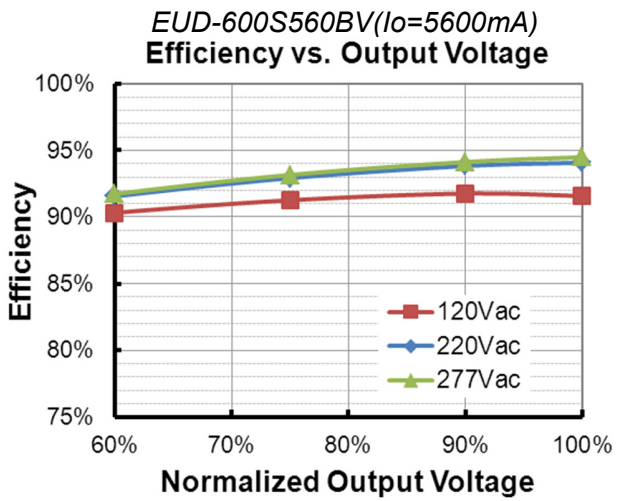
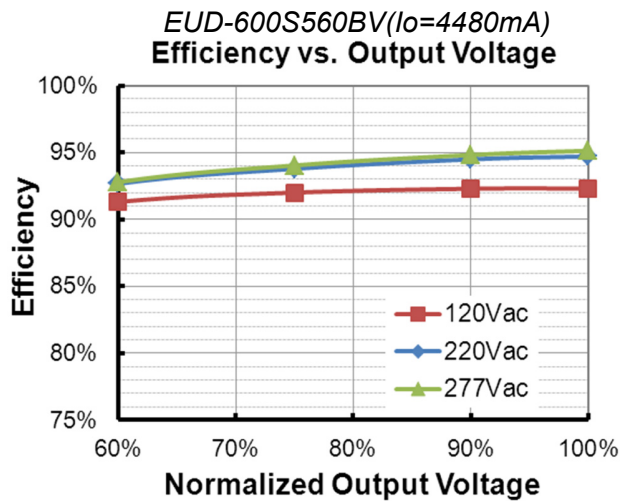
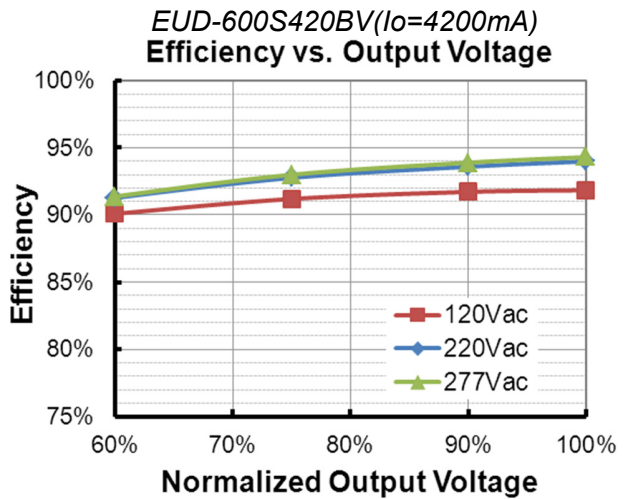
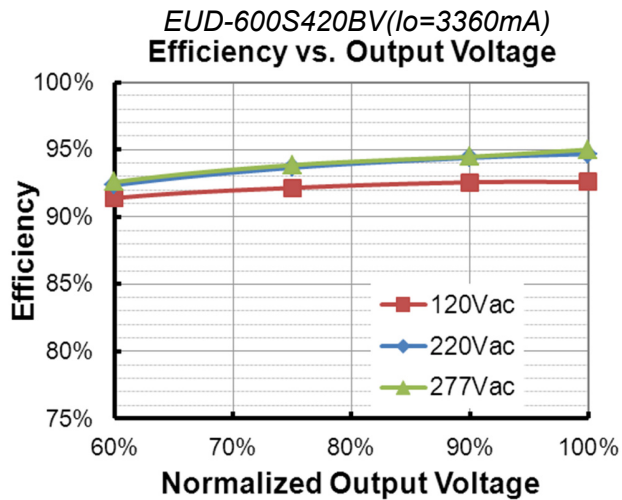


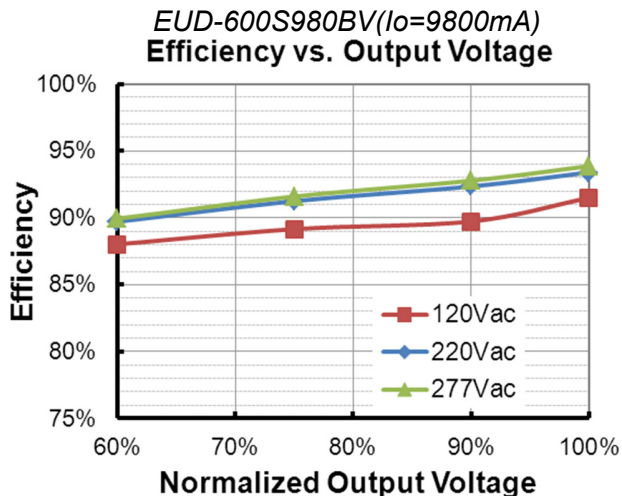
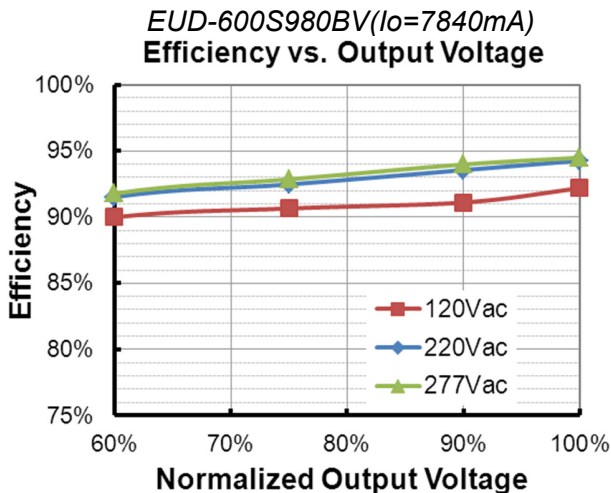
Inrush Current Waveform



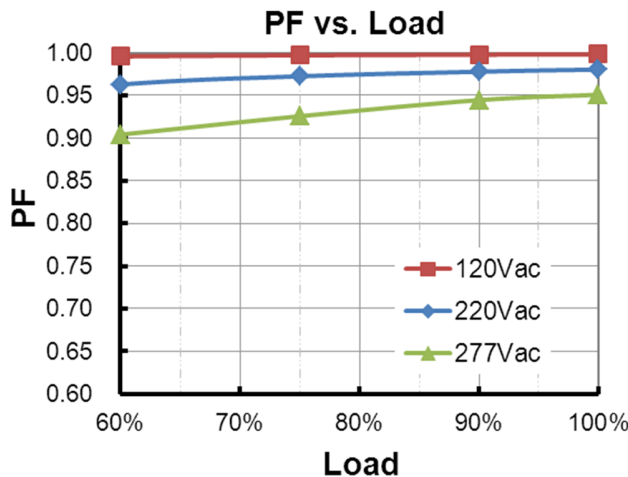
Efficiency vs. Load



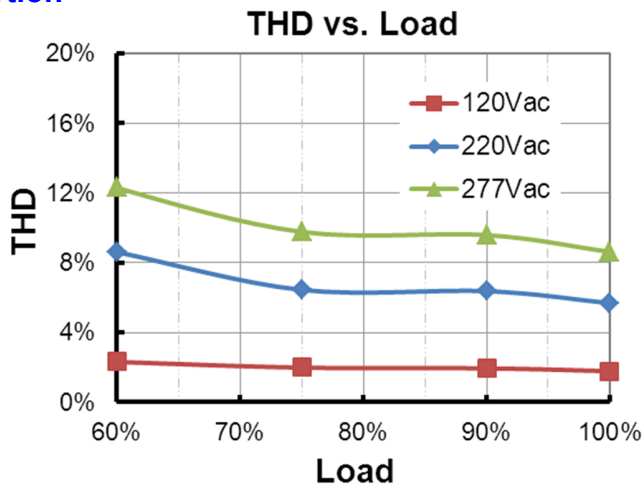




Power Factor



Total Harmonic Distortion



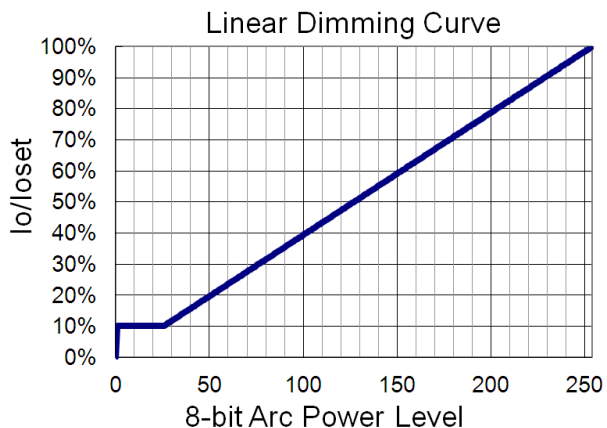
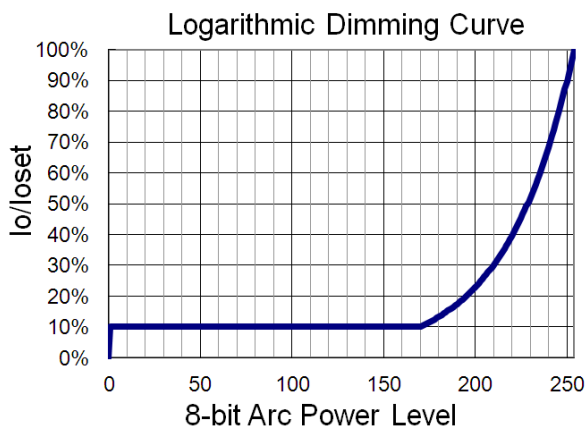
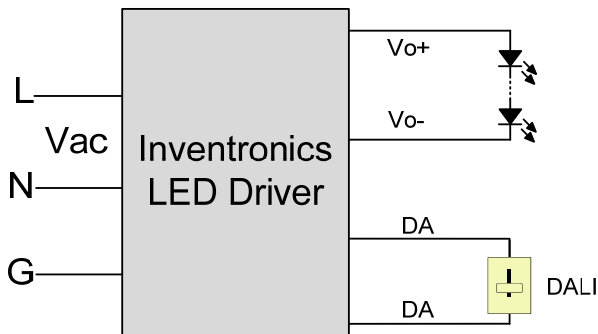
Protection Functions

| Parameter | | Min. | Typ. | Max. | Notes |
|---------------------------------|--------------------------|--|-----------|---|---|
| External Thermal Protection NTC | R1 | - | 7.81 kOhm | - | When R_NTC falls below R1, External Thermal Protection is triggered, reducing output current until R2 is reached. |
| | R2 | - | 4.16 kOhm | - | When R_NTC is less than R2, output current is reduced to the programmed "Protection Current Floor." |
| | Protection Current Floor | 10%loset | 60%loset | 100%loset | 10%loset > I _{omin} (default setting is 60%) |
| I _{omin} | | 60%loset | 100%loset | 10%loset ≤ I _{omin} (default setting is 60%) | |
| Over Temperature Protection | | Decreases output current, returning to normal after over temperature is removed. | | | |
| Short Circuit Protection | | Auto Recovery. No damage will occur when any output is short circuited. The output shall return to normal when the fault condition is removed. | | | |
| Over Voltage Protection | | Limits output voltage at no load and in case the normal voltage limit fails. | | | |

Dimming

● DALI Dimming

The recommended implementation of the dimming control is provided below.



Implementation: DALI Dimming

● **Time Dimming**

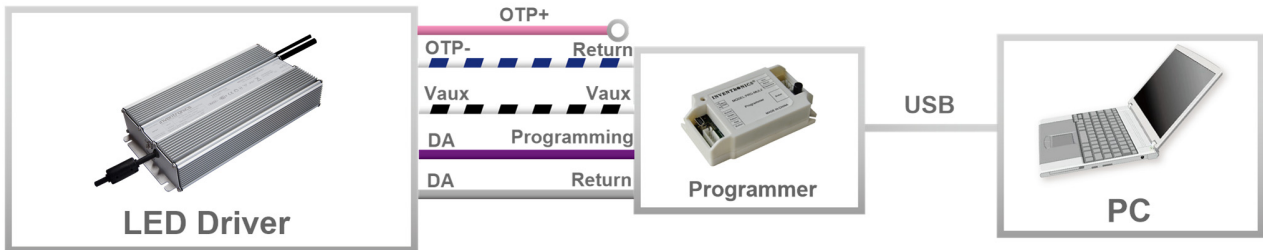
Time dimming control includes 3 kinds of modes, they are Self Adapting-Midnight, Self Adapting-Percentage and Traditional Timer.

- **Self Adapting-Midnight:** Automatically adjusts the dimming curve based on the on-time of past two days (if difference <15 minutes), assuming that the center point of the dimming curve is midnight local time.
- **Self Adapting-Percentage:** Automatically adjusts the on-time of each step by a constant percentage = (actual on-time for the past 2 days if difference <15 min) / (programmed on-time from the dimming curve).
- **Traditional Timer:** Follows the programmed timing curve after power on with no changes.

● **Output Lumen Compensation**

Output Lumen Compensation (OLC) may be used to maintain constant light output over the life of the LEDs by driving them at a reduced current when new, then gradually increasing the drive current over time to counteract LED lumen degradation.

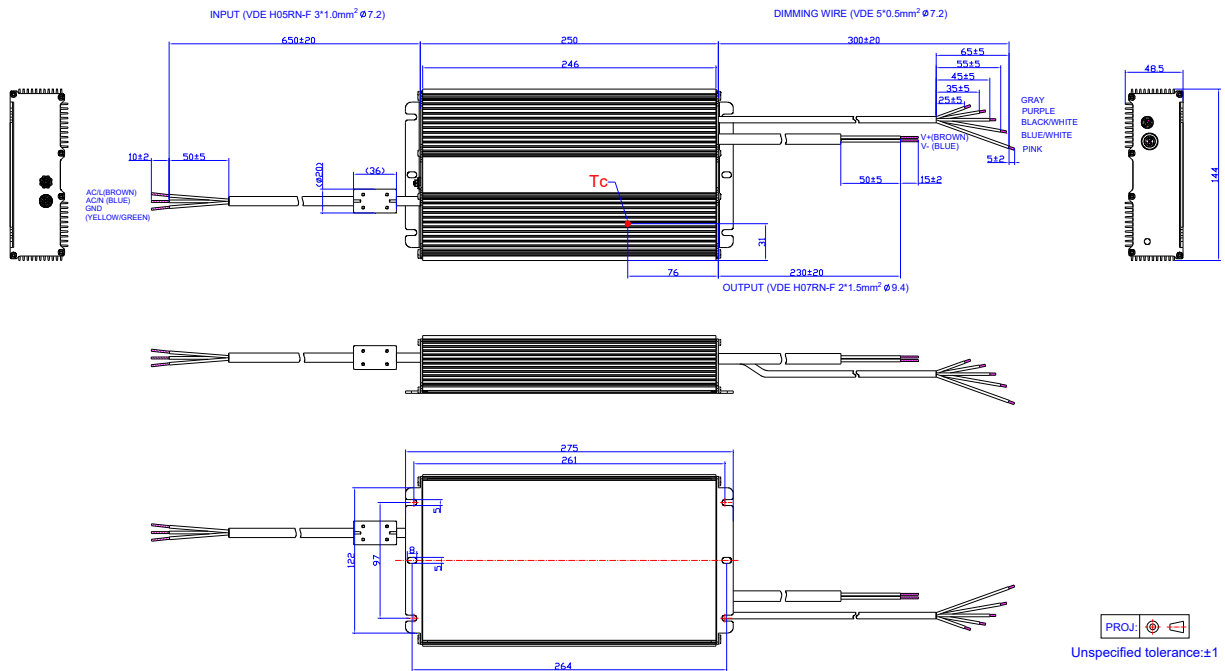
Programming Connection Diagram



Note: (1) The driver does not need to be powered on during the programming process.
 (2) Both "OTP-" and "DA" (gray) should be connected to "Return" of the programmer when programming.

● Please refer to [PRG-MUL2 \(Programmer\) datasheet](#) for details.

Mechanical Outline



RoHS Compliance

Our products comply with reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU, calling for the elimination of lead and other hazardous substances from electronic products.

Revision History

| Change Date | Rev. | Description of Change | | |
|-------------|------|--|--|-----------------------------|
| | | Item | From | To |
| 2017-05-15 | A | Datasheets Release | / | / |
| 2017-10-25 | B | Features | 7 Years Warranty | Added |
| | | Input Specifications | PF/THD | Updated |
| | | General Specifications | Operating Case Temperature for Warranty Tc_w | Updated |
| 2018-01-17 | C | Output Specifications | No Load Output Voltage | Updated |
| | | General Specifications | Lifetime | Updated |
| | | Operating Case Temperature for Warranty Tc_w | +70°C | +75°C |
| | | Lifetime vs. Case Temperature | / | Updated |
| 2019-01-18 | D | Features | DALI/Timer Dimmable (3 Timer Modes) | DALI/3 Timer-Modes Dimmable |
| | | Models | EUD-600S140BV | Added |
| | | I-V Operating Area | EUD-600S140BV | Added |
| | | Output Specifications - Output Current Setting (loset) Range | EUD-600S140BV | Added |
| | | Output Specifications - Output Current Setting Range with Constant Power | EUD-600S140BV | Added |
| | | Output Specifications - No Load Output Voltage | EUD-600S140BV | Added |
| | | General Specifications - Efficiency at 120 Vac input: | EUD-600S140BV | Added |
| | | General Specifications - Efficiency at 220 Vac input: | EUD-600S140BV | Added |
| | | General Specifications - Efficiency at 277 Vac input: | EUD-600S140BV | Added |
| | | Dimming Specifications - Dimming Output Range | EUD-600S140BV | Added |
| | | Standards Compliance | / | Updated |
| | | Efficiency vs. Load curve | EUD-600S140BV | Added |
| | | Total Harmonic Distortion curve | / | Updated |

Revision History (Continued)

| Change Date | Rev. | Description of Change | | |
|-------------|------|--------------------------------|----------|---------|
| | | Item | From | To |
| 2024-05-20 | E | Product Photograph | / | Updated |
| | | TUV logo | / | Deleted |
| | | global-mark/Independent logo | / | Added |
| | | CCC logo | / | Updated |
| | | Features | / | Updated |
| | | Models | Notes(5) | Added |
| | | Safety &EMC Compliance | / | Updated |
| | | Programming Connection Diagram | / | Updated |
| | | RoHS Compliance | / | Updated |