

Light is OSRAM

## OPTOTRONIC® LED Power Supply

## OTi 50W Slim Emergency Driver – Technical Specifications



## General Information

|                       |   |
|-----------------------|---|
| Item Number           | 57412 & 57413   |
| Type                  | Constant Current, Class 2   |
| Output Power (Max.)   | 50W in Normal Mode<br>10W <sup>1</sup> (90min) in EM mode   |
| Programming Tool      | 51645 & 51647/51648   |
| Software              | <a href="#">Download</a>  |
| Programmable Features | Output Current (Normal mode and EM mode)<br>Soft start, Dim-to-Off<br>Dimming Level<br>LED thermal protection<br>Constant lumen output<br>End-of-life indicator<br>Auxiliary output voltage |

## Environmental Specifications

|                                    |                                    |
|------------------------------------|------------------------------------|
| Ambient Operating Temperature      | 0°C to 55°C                        |
| Case Temperature (T <sub>c</sub> ) | 75°C (50kHrs) <sup>2</sup>         |
| Max. Storage Temp.                 | 70°C                               |
| Max. Relative Humidity (%)         | 85% non-condensing                 |
| Transient Protection               | ANSI C62.41 Cat. A 2.5kV Ring Wave |
| EFT                                | IEC61000-4-4                       |
| UL Rating                          | Dry & Damp                         |
| UL File number                     | E320395                            |
| EMI Compliance                     | FCC Part 15 Class A                |
| Sound Rating                       | Class A                            |

1 – AUX power must be accounted for in EM mode

2 – Driver warranty applicable only at T<sub>c</sub> 75°C

3 – The output is in PWM mode under 350mA

4 – Includes Battery Charging

5 – Default Vaux is 12V



## Electrical Specifications

## Input

| Input Voltage (VAC)  | 120V - 277V (+/- 10%) |             |
|--|-----------------------|-------------|
| Frequency Range (Hz)   | 50 – 60 Hz (+/- 10%)  |             |
|  | 120V                  | 277V        |
| Input Current (A)  | 0.83                  | 0.36        |
| THD @ Full load  | <20%                  | <20%        |
| Power Factor @ Full load                                     | >0.9                  | >0.9        |
| Efficiency @ Full load                                       | ≥85%                  | ≥85%        |
| Inrush Current (A <sub>pk</sub> , T@50% of A <sub>pk</sub> ) | 2.5A, 100μs           | 8.00A, 80μs |

## Output

|                                    |   |
|------------------------------------|---|
| Output Current in Normal Mode (mA) | 400-1400mA (1mA step)<br>1050mA default |
| Output Voltage (VDC)               | 10-55VDC                                |
| Output Ripple Current              | <20% @ 1400mA                           |
| Max. Output Power (W)              | 50W                                     |
| LED Power-Up Time                  | <1sec                                   |
| Load Regulation                    | <5%                                     |
| Line Regulation                    | <5%                                     |
| Over Voltage Protection            | Yes, non-latching                       |
| Over Load Protection               | Yes, non-latching                       |
| Output Short-Circuit Protection    | Yes, non-latching                       |
| Over Temperature Protection        | Foldback at 110°C                       |

## Dimming

|                            |                                  |
|----------------------------|----------------------------------|
| Dimming Control            | 0 – 10V (Isolated)               |
| Dimming Range <sup>3</sup> | 1-100%                           |
| Dimming Type               | Analog, PWM <sup>3</sup> (≥1kHz) |
| Dimming Input Isolation    | 2.5KV                            |
| Source/Sink Current        | 0.2mA (max)                      |
| Dim-to-Off OFF/ON          | 0.8V                             |
| Standby Power <sup>4</sup> | 6.0W(120V); 6.8W(277V)           |

## Auxiliary Output (Model: 57412 only)

|                      |                                       |
|----------------------|---------------------------------------|
| Output Voltage (Vdc) | 12/20/24V <sup>5</sup> (configurable) |
| Output Current (mA)  | 40 (1W max.)                          |
| Voltage Regulation   | +/- 10%                               |

## LED thermal protection (NTC)

|                      |                          |
|----------------------|--------------------------|
| Output level minimum | User defined (NTC ≤25kΩ) |
|----------------------|--------------------------|

## OTi 50W Slim Emergency Driver – Technical Specifications

### Emergency Operation

|                                     |  |
|-------------------------------------|--|
| Output Current (mA)                 | 150-1000mA (programmable in 1mA step)  |
| Illumination Time                   | 90 minutes   |
| Switchover Time (Normal to EM Mode) | <2 sec   |
| Charging Indicator Light            | Illuminating Test Switch (3-wire Low Voltage)  |
| Self-Testing (57414 only)           | 30-sec discharge test/28 days & 90-min discharge test/336 days.<br>Checks LED load, Battery voltage and respective connections |

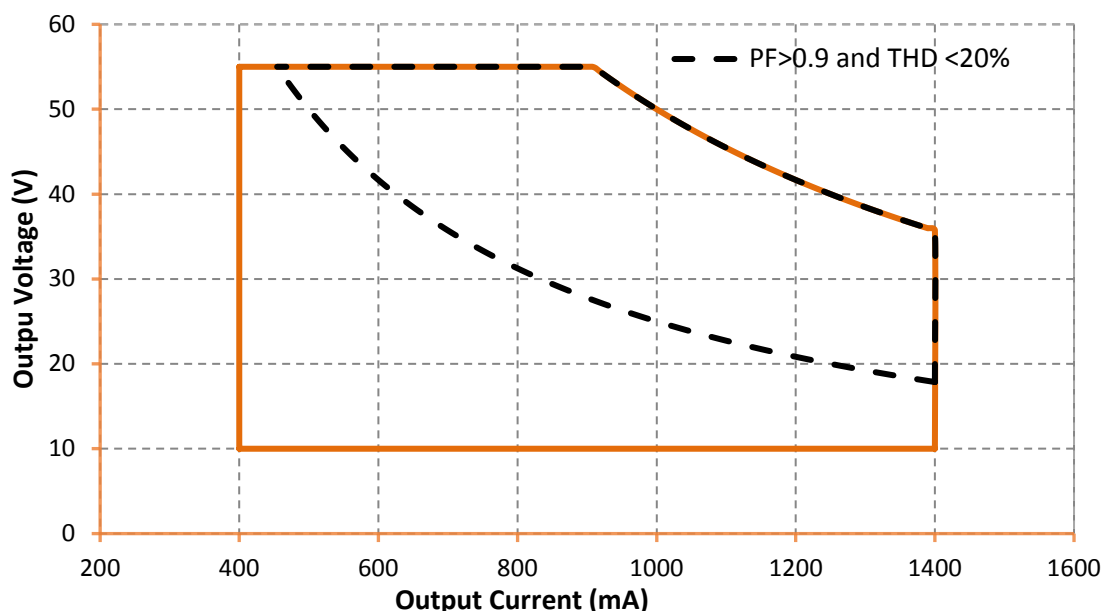
### Battery Pack

|                                   |   |
|-----------------------------------|---|
| Battery Pack                      | Nickel-Cadmium Batteries  |
| Battery Charging Current          | 135mA $\pm$ 20mA  |
| Recharge Time                     | 24 Hours  |
| Battery Voltage Range             | 8-12V (9.6V Nominal)  |
| Capacity                          | 2500mAh   |
| Fuse Rating                       | 3A, 32V   |
| Battery Pack Warranty             | 5 Year warranty (90-min) – 57411<br><b>For AUX models, the AUX power must be accounted for in the Emergency Mode Operation.</b> |
| Battery Pack Case Temperature     | 55°C max  |
| Battery Ambient Range             | 0-55°C  |
| Battery Storage Temperature       | -20-30°C  |
| Battery Maximum Relative Humidity | 85% (Non-condensing)  |

### Ordering Guide and Battery Pack Compatibility

| Part No. | Ordering Abbreviation                 | Auxiliary Output | Self-Testing | OT BAT 8x2-3AOH-L (57401) | OT BAT 4x4-3AOH-C (57402) | OT BAR 16x1-3AOH-L (57410) | OT BAT 8x1-2A5H-SLIM (57411) |
|----------|---------------------------------------|------------------|--------------|---------------------------|---------------------------|----------------------------|------------------------------|
| 57413    | OTi EM 50/UNV/1A4 DIM-1 L SLIM        | -                | -            | -                         | -                         | -                          | ✓                            |
| 57412    | OTi EM 50/UNV/1A4 DIM-1 L AUX/ST SLIM | ✓                | ✓            | -                         | -                         | -                          | ✓                            |

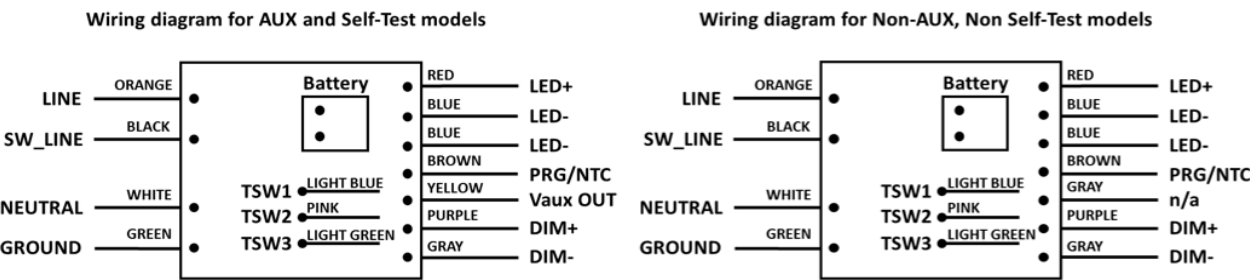
### Operating Range



Note: Meeting DLC requirements requires minimum 50% loading

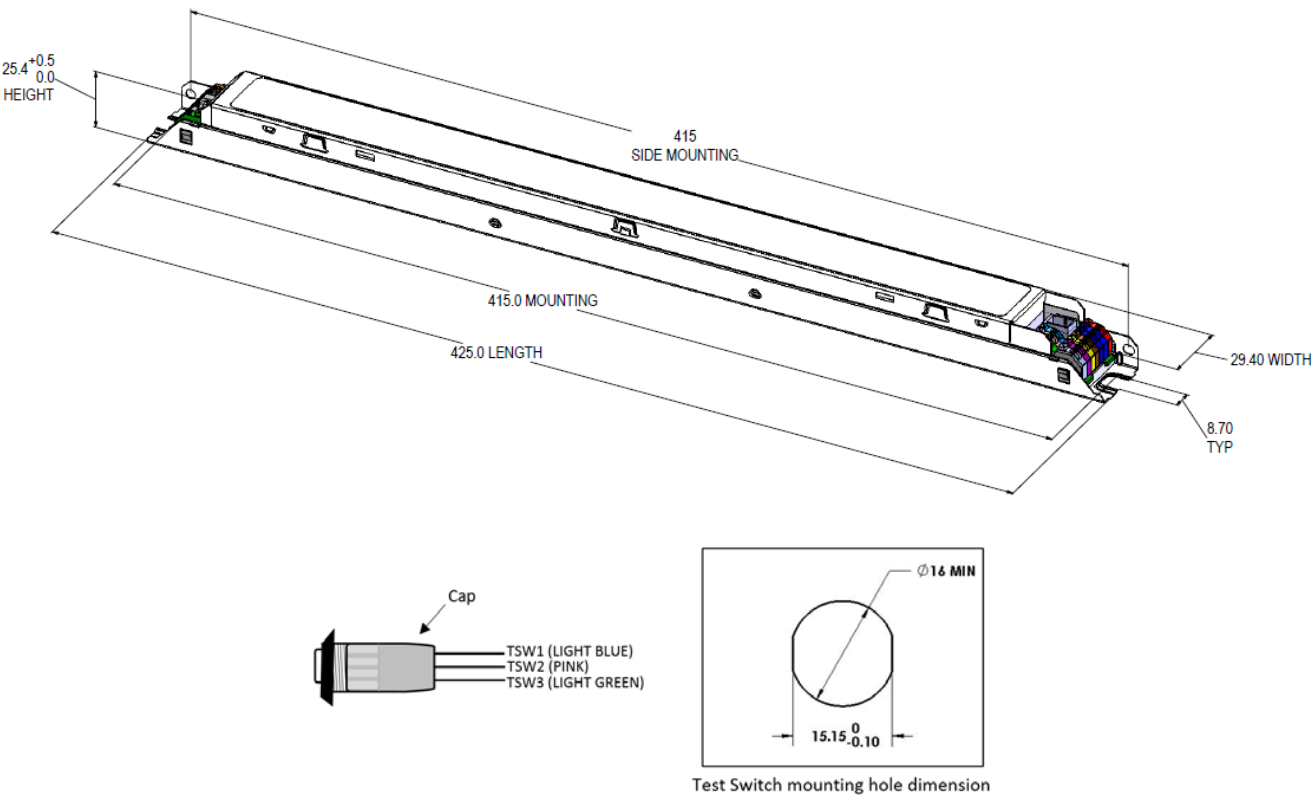
# OTi 50W Slim Emergency Driver – Technical Specifications

## Wiring Diagram



**Note:** The Vaux Out (YELLOW) and LED- (BLUE) will provide the DC auxiliary output. Yellow is “+ve” polarity and blue is “-ve” polarity.  
**Note:** Maximum suggested remote mounting distance between load and LED driver is 16 feet. Similarly, the maximum suggested remote mounting distance between LED driver and battery pack is 16 feet. Power losses in cable must be accounted for in the EM mode operation.  
**Note:** The test switch can be remote mounted up to 32 feet from the LED driver.

## Mechanical Diagram – LED Driver



## Mechanical Specifications

|                 |                |
|-----------------|----------------|
| Length          | 16.73" (425mm) |
| Width           | 1.15" (29.4mm) |
| Height          | 1.0" (25.4mm)  |
| Mounting Length | 16.34" (415mm) |

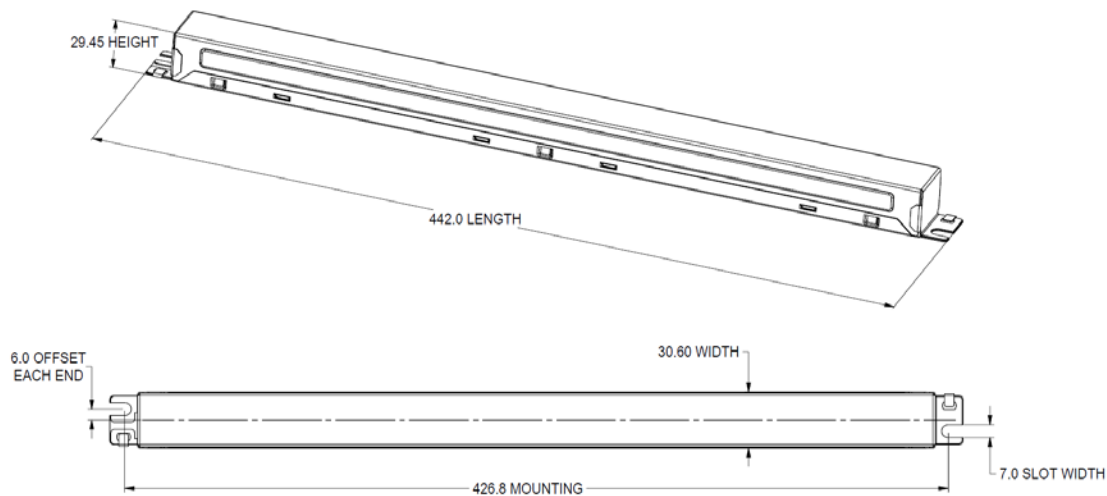
**Note:** Test switch is included in the driver packaging

# OTi 50W Slim Emergency Driver – Technical Specifications

## Mechanical Diagram – Slim Linear Battery Pack

The battery pack consists of 2 linear sized batteries that are pre-wired in series out-of-the-box to deliver the rated power.

| Part No. | Ordering Abbreviation | Type  | Capacity | Max load    | Max Battery Voltage |
|----------|-----------------------|-------|----------|-------------|---------------------|
| 57411    | OT BAT 8x1-2A5H-SLIM  | Ni-Cd | 2500 mAh | 10W (90min) | 12V                 |



### Mechanical Specifications

|                 |                  |
|-----------------|------------------|
| Length          | 17.40" (442mm)   |
| Width           | 1.20" (30.6mm)   |
| Height          | 1.16" (29.45mm)  |
| Mounting Length | 16.80" (426.8mm) |

## Key Application Notes

### Emergency Mode Operation

- When the LED driver is in Emergency Mode, the dimming interface is disabled.
- When the LED driver is in Emergency Mode, the LED Thermal Protection functionality is disabled.
- The AUX power must be accounted in the EM Mode power which impacts the battery warranty.
- The power losses in the remote mounting cables must be accounted in the EM Mode power which impacts the battery warranty.

### Emergency Driver Packaging

- The Test Switch is shipped as part of the driver packaging.
- Each Emergency Driver has an individual copy of Installation and Troubleshooting Guide which should be shipped by the OEM to the end user as part of the fixture.
- A set of OEM labels are also provided that can be attached to the fixture. More details are provided in the Installation and Troubleshooting Guide.

### Battery Pack Packaging

- The fuse is shipped mounted in the fuse holder with the Battery Pack.

OTi 50W Slim Emergency Driver – Technical Specifications

Installation and Troubleshooting Guide

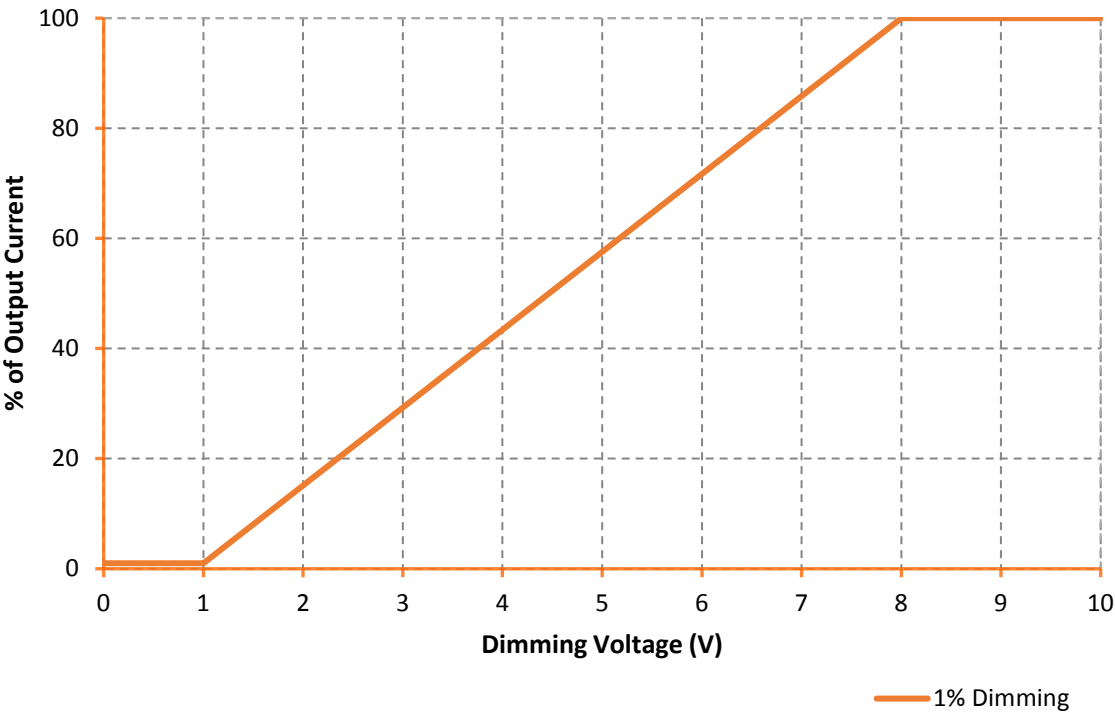
- There is a dedicated set of Installation and Troubleshooting Guides for the standard Emergency System and Self-Testing Emergency System.

|                               |                     |
|-------------------------------|---------------------|
| Standard Emergency System     | <a href="#">PDF</a> |
| Self-Testing Emergency System | <a href="#">PDF</a> |

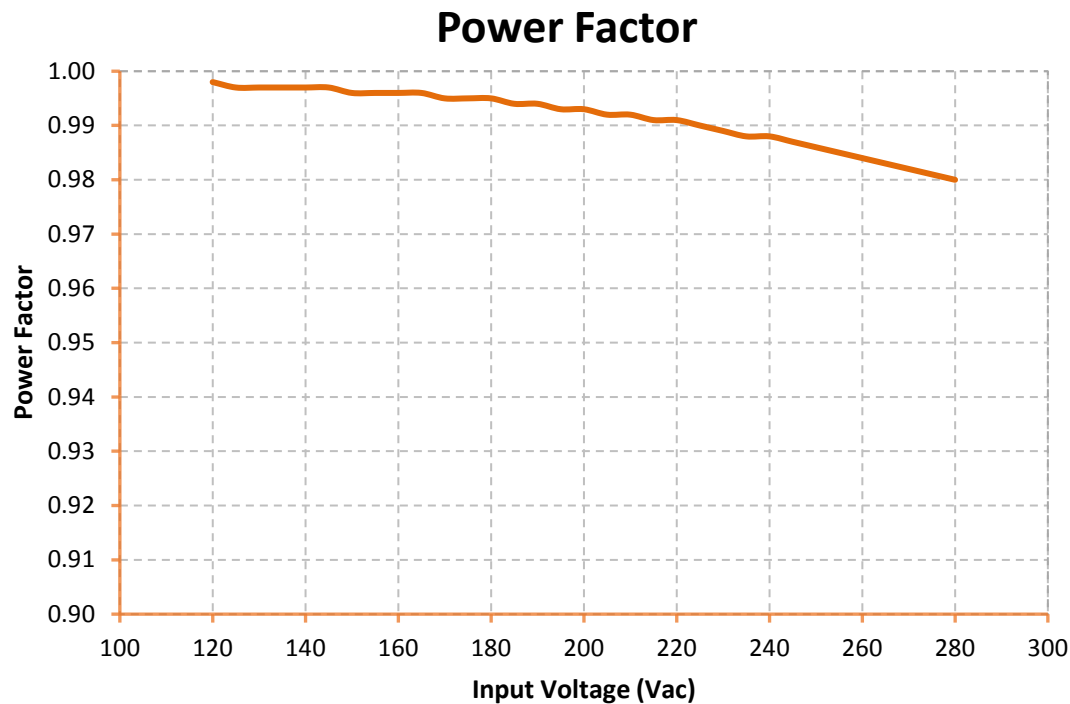
Warranty

- The Emergency Driver warranty of 5 years is applicable at the rated Tc of 75°C
- The Battery Pack warranty is dependent on the Tc. A 5 year warranty is provided at Max Tc = 55°C
- For additional details, refer to the latest version of the warranty document available at [www.osram.us/emdrivers](http://www.osram.us/emdrivers)

Dimming Curves

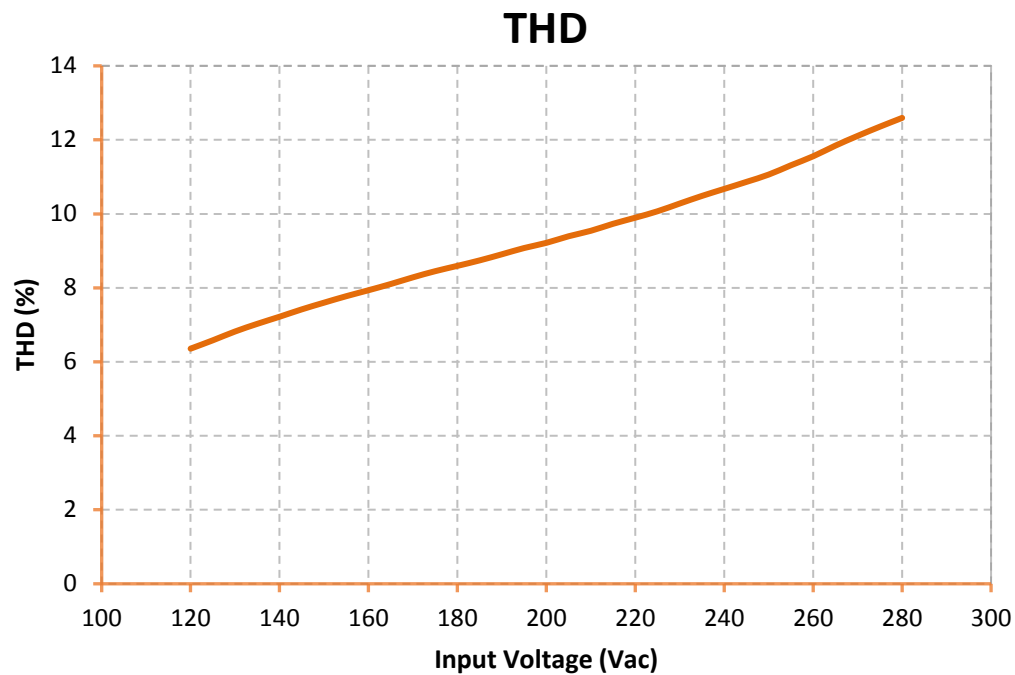


Power Factor vs Input Voltage (Full Load)

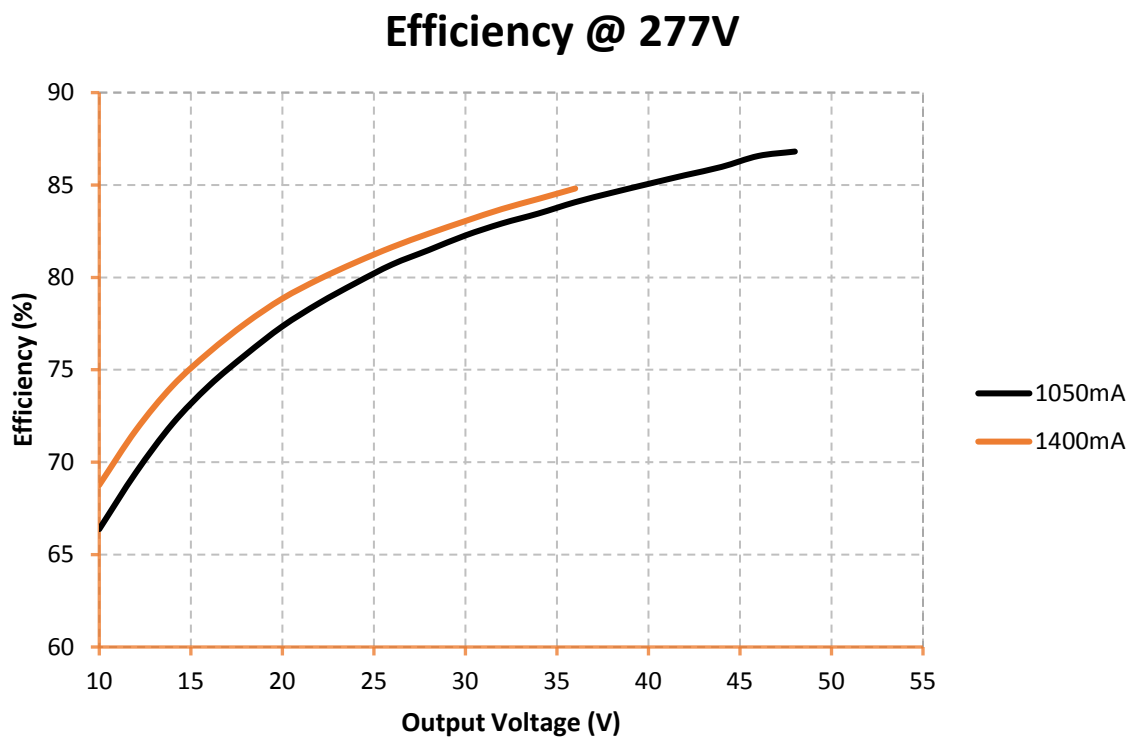
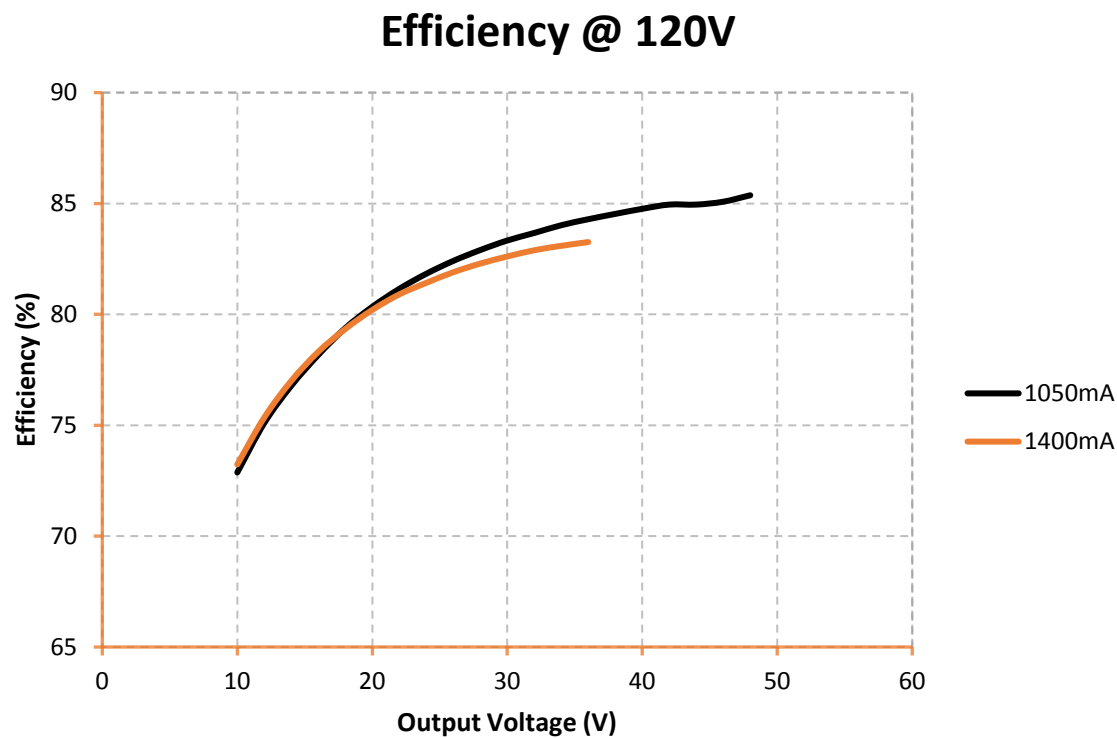


Data refers to Normal Mode operation

THD vs Input Voltage (Full Load)

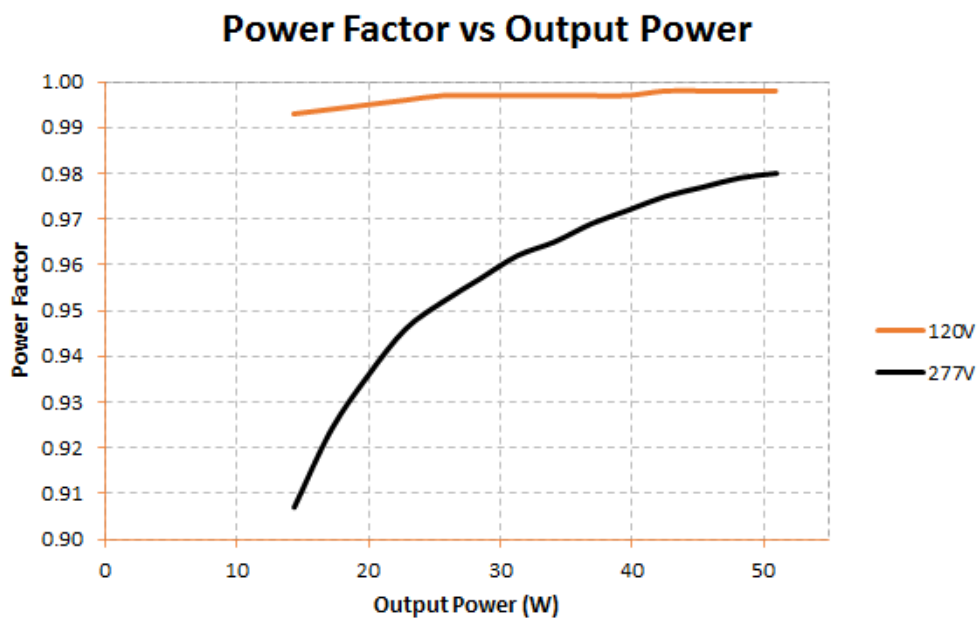


Efficiency vs Output Voltage



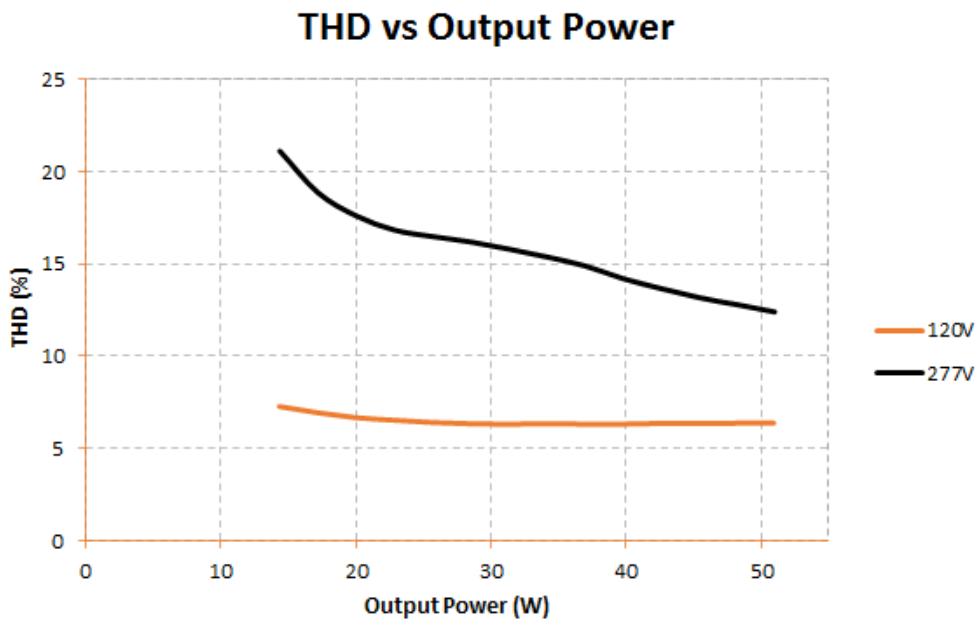
Data refers to Normal Mode operation

Power Factor vs. Output Power



Data refers to Normal Mode operation

THD vs Output Power



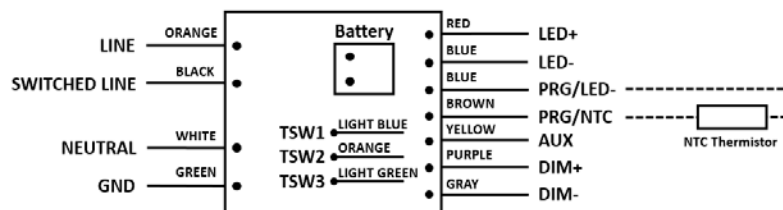
Data refers to Normal Mode operation



## OTi 50W Slim Emergency Driver – Technical Specifications

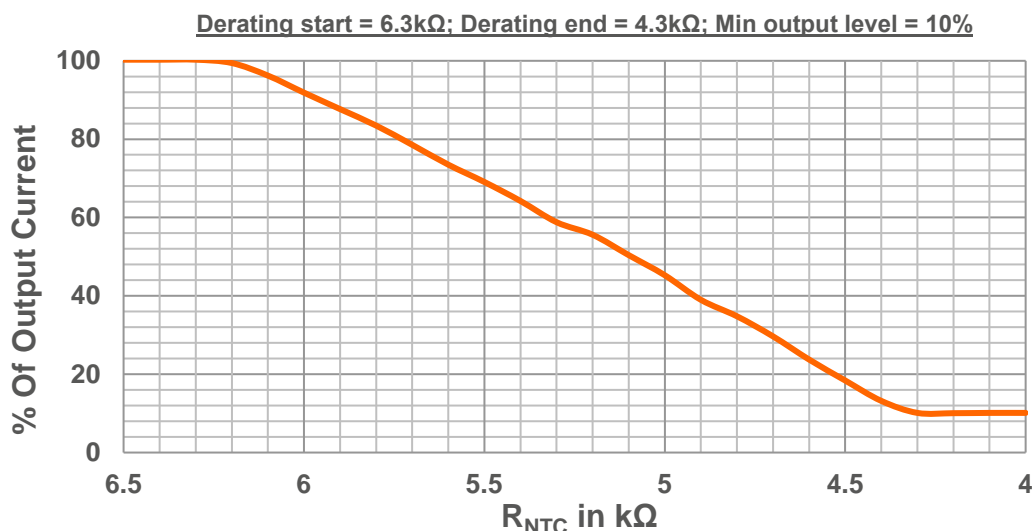
### LED Thermal Protection (NTC) Characteristic

The LED thermal protection feature of the OTi 50W EM helps reduce the temperature of the LED module by reducing the output current in case of abnormal temperature conditions. To use this feature, a third party NTC thermistor should be connected to the LED power supply as shown in the wiring diagram below.



In the end application, care must be taken to place the NTC thermistor close to the hottest spot on the LED module. If LED thermal protection is not required the NTC port on the LED power supply connector can be left open. Vishay, EPCOS, Murata, Panasonic are some of the manufacturers of NTC thermistor. EPCOS part number for reference only **B57164K153J (15kΩ @ 25°C)**. Murata part number for reference only - **NCP03XH223J05RL (22kΩ @ 25°C)**

**Note:** Graphs for reference. The derating limits can be programmed using the OT Programmer



To learn more about this feature, please refer to the technical application guide for [LED Thermal Protection](#) (ECS304).

### End-of-Life Indicator

The End-of-Life indicator helps the end user to receive a signal from the fixture indicating that it has reached its programmed life-time. After the LED driver reaches the programmed life-time, whenever it is turned ON, it stays at 'Dim' level (10%) for 10 minutes and reaches its appropriate level.

### Constant Lumen Maintenance

The Constant Lumen Maintenance feature of the OTi 50W EM helps to maintain the required lumen output of the fixture at a constant level throughout its lifetime. In general LED's lumen output will depreciate over time and in order to maintain sufficient light level towards the end of lifetime, the LED's are driven at high current initially and will result in more energy consumption. The constant lumen maintenance will give the flexibility to drive the LEDs at optimal driving current throughout its lifetime. This helps in energy savings, constant light output and enhanced reliability of the system.

**Note:** A detailed step-by-step instructions are outlined in the Help section of the OT Programmer software.

## OTi 50W Slim Emergency Driver – Technical Specifications

### Dimmer Compatibility

| Manufacturer              | Part Number                         |
|---------------------------|-------------------------------------|
| Encelium EMS              | EN-LCM-1R10V-GB2-BK                 |
|                           | EN-LCM-1R10V-GB2-BK/DR              |
|                           | EN-ALC-1R10V-GB2-BK                 |
|                           | EN-ALC-1R10V-GB2-BK/DR              |
| OSRAM                     | ZBHA-CLM DIM                        |
|                           | EN-CLM-PIR-DD-ZB (NAED: 58286)      |
| Leviton                   | IP710-DLZ                           |
| Lutron                    | DVTV-XX                             |
| Wattstopper               | ADF-120277                          |
|                           | FD-301                              |
| Enlighted Inc.            | SU-3E-00 (Enlighted Compact Sensor) |
| Synergy Lighting Controls | ISD BC                              |

**Note:** Please reference the dimmer manufacturer's instructions for installation. The absence of a dimmer from this chart does not necessarily imply incompatibility. However, please contact your OSRAM Digital Lighting Systems representative for compatibility queries.

### UL Conditions of Acceptability (E320395)

**Conditions of Acceptability** – When installed in the end-product, consideration shall be given to the following:

- The Emergency LED driver models, Models OTi EM 50/UNV/1A4 DIM-1 L SLIM, OTi EM 50/UNV/1A4 DIM-1 L AUX/ST SLIM, OTi EM 30/UNV/1A0 DIM-1 L SLIM, OTi EM 30/UNV/1A0 DIM-1 L AUX/ST SLIM shall be enclosed in the end-product.
- In the end product, OTi EM 50/UNV/1A4 DIM-1 L SLIM, OTi EM 50/UNV/1A4 DIM-1 L AUX/ST SLIM, OTi EM 30/UNV/1A0 DIM-1 L SLIM, OTi EM 30/UNV/1A0 DIM-1 L AUX/ST SLIM shall be wired with solid copper conductors only.
- The housing of the LED drivers Models OTi EM 50/UNV/1A4 DIM-1 L SLIM, OTi EM 50/UNV/1A4 DIM-1 L AUX/ST SLIM, OTi EM 30/UNV/1A0 DIM-1 L SLIM, OTi EM 30/UNV/1A0 DIM-1 L AUX/ST SLIM shall be suitably grounded in the end-product.
- In the end-product, adequate separation shall be maintained between Class 2 and non-Class 2 circuits in accordance with end-product requirements.
- The Minimum Light Output test shall be conducted in the end-product.
- Emergency LED Drivers models OTi EM 50/UNV/1A4 DIM-1 L SLIM, OTi EM 50/UNV/1A4 DIM-1 L AUX/ST SLIM, OTi EM 30/UNV/1A0 DIM-1 L SLIM, OTi EM 30/UNV/1A0 DIM-1 L AUX/ST SLIM have been evaluated for use with Battery Assemblies cat. no. OT BAT 8x1-2A5H-SLIM by Osram Sylvania Inc. The use of these LED drivers with any other batteries or battery assemblies shall be evaluated during an end-product investigation.
- The highest temperature on the case of the LED drivers was measured 85 degrees C. The need for additional temperature testing shall be determined during the end-product investigation.
- The output terminal connections shall be rendered inaccessible in the end-product.

## OTi 50W Slim Emergency Driver – Technical Specifications

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### Warranty

OPTOTRONIC® products are covered by our LED Module, OPTOTRONIC Power Supply or Control Warranty. For additional details, refer to the latest version of the warranty (LED395) available at [www.osram.us/optotronic](http://www.osram.us/optotronic)

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