


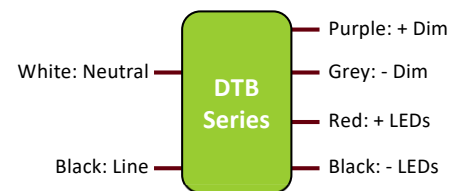


## 80 W Constant Current Class 2 / Class II LED Driver w/ 0-10V Dimming

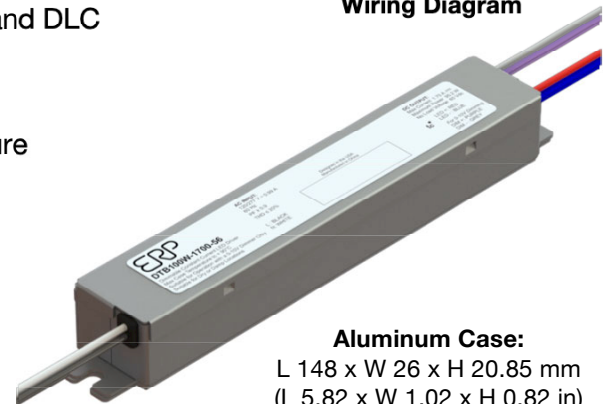
Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range
120 to 277 Vac	80 W	32 to 42 Vdc	1900 mA	up to 90% typical	90°C (measured at the hot spot)	< 20%	> 0.9	0-10V	10 - 100%

### FEATURES

- Compatible with 0–10 V dimmers
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI:
  - Compliant with FCC CFR Title 47 Part 15 Class B at 120 Vac and Class A at 277 Vac
- Complies with ENERGY STAR® luminaire specification and DLC (Design Light Consortium®) technical requirements 
- IP64-rated case
- 90° C maximum case hot spot temperature
- Lifetime: 50,000 hours at 75° C case hot spot temperature
- Class 2 power supply
- Worldwide safety approvals  



**Wiring Diagram**



### ORDERING INFORMATION

Ordering Part Number	Nominal Input Voltage (Vac)	I <sub>out</sub> (mA)	Max Output Power (W)	V <sub>out</sub> min (Vdc)	V <sub>out</sub> Nom (Vdc)	V <sub>out</sub> Max (Vdc)	Open Loop (No Load) Voltage (Vdc)	Features
DTB080W-1900-42	120 to 277	1900	79.8	32	37.8	42	50	*Standard Linear 0-10V dimming profile (10V = 100%, 1V = 10%) *Surge: IEC61000-4-5: ±6kV line to line (differential mode) / ±6kV line to common mode ground (tested to secondary ground) on AC power port, ±0.5kV for outdoor cables *ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A, 2.5 kV ring wave



## 80 W Constant Current Class 2 / Class II LED Driver w/ 0-10V Dimming

### 1 - INPUT SPECIFICATION (@25°C ambient temperature)


	Units	Minimum	Typical	Maximum	Notes
Input Voltage Range (Vin)	Vac	90	120 to 277	305	The rated output current for each model is achieved at Vin ≥ 108 Vac and at Vin ≥ 249 Vac, at nominal load.
Input Frequency Range	Hz	47	50, 60	63	
Input Current (Iin)	A			1.25 A @ 120 Vac 0.56 A @ 277 Vac	
Power Factor (PF)		0.9	> 0.9		At nominal input voltage and with nominal LED voltage
Inrush Current		Meets NEMA-410 requirements			At any point on the sine wave and 25°C
Leakage Current	µA			250 µA @ 120 Vac 500 µA @ 277 Vac	Measured per IEC60950-1
Input Harmonics		Complies with IEC61000-3-2 for Class C			
Total Harmonics Distortion (THD)				20%	<ul style="list-style-type: none"> <li>At nominal input voltage and nominal LED voltage</li> <li>Complies with DLC (DesignLight Consortium) technical requirements</li> </ul>
Efficiency	%	-	up to 90%	-	Measured with nominal input voltage, a full sinusoidal wave form and without dimmer connected.
Isolation	The AC input to the main DC output is isolated and meets Class II reinforced/double insulation power supply <input type="checkbox"/>				

### 2 - OUTPUT SPECIFICATION (@25°C ambient temperature)

	Units	Minimum	Typical	Maximum	Notes
Output Voltage (Vout)	Vdc	32		42	See ordering information for details
Output Current (Iout)	mA		1900		<ul style="list-style-type: none"> <li>See ordering information for details</li> <li>The rated output current for each model is achieved at Vin ≥ 108 Vac and at Vin ≥ 249 Vac, at nominal load.</li> </ul>
Output Current Regulation	%	-5	±2.5	5	<ul style="list-style-type: none"> <li>At nominal AC line voltage</li> <li>Includes load and current set point variations</li> </ul>
Output Current Overshoot	%	-	-	10	The driver does not operate outside of the regulation requirements for more than 500 ms during power on with nominal LED load and without dimmer.
Ripple Current		≤ 10% of rated output current for each model			<ul style="list-style-type: none"> <li>Measured at nominal LED voltage and nominal input voltage without dimming.</li> <li>Calculated in accordance with the IES Lighting Handbook, 9th edition.</li> </ul>
Dimming Range (% of Iout)	%	10		100	<ul style="list-style-type: none"> <li>The dimming range is dependent on each specific dimmer. It may not be able to achieve 10% dimming with some dimmers.</li> <li>Dimming performance is optimal when the driver is operated at its nominal output voltage matching the LED nominal Vf (forward voltage). Dimming performance may vary when the driver is operated near its minimum output voltage.</li> </ul>
Start-up Time	ms		500		At nominal AC line voltage and nominal LED voltage and without dimmer attached
Isolation	The main DC output is certified and tested per UL8750 Class 2 or LED Class 2				

## 80 W Constant Current Class 2 / Class II LED Driver w/ 0-10V Dimming

### 3 - 0-10 V DIMMING CONTROL (@25° C ambient temperature)

	Units	Minimum	Typical	Maximum	Notes
<b>+Dim Signal, -Dim Signal</b>	The DTB series operate only with 0-10V dimmers that sink current. The method to dim the output current of the driver is done via the +Dim/-Dim Signal pins. The +Dim/-Dim signal pins can be used to adjust the output setting via a standard commercial wall dimmer, an external control voltage source (0 to 10 Vdc), or a variable resistor when using the recommended number of LEDs. The dimming input permits 10% to 100% dimming.				
<b>Dimming Range (% of I<sub>out</sub>)</b>	%	10		100	<ul style="list-style-type: none"> <li>The dimming range is dependent on each specific dimmer. It may not be able to achieve 10% dimming with some dimmers.</li> <li>Dimming performance is optimal when the driver is operated at its nominal output voltage matching the LED nominal V<sub>f</sub> (forward voltage). Dimming performance may vary when the driver is operated near its minimum output voltage.</li> </ul>
<b>Current Supplied by the +Dim Signal Pin</b>	mA			1	
<b>Output Current Tolerance While Being Dimmed</b>	%			±8	The tolerance of the output current while being dimmed is ≤ ±8% until down to 1V.
<b>Isolation</b>	The 0-10 V circuit is isolated from the AC input and meets class II reinforced/double insulation power supply. 				

### 4 - ENVIRONMENTAL CONDITIONS

	Units	Minimum	Typical	Maximum	Notes
<b>Operating Ambient Temperature (T<sub>a</sub>)</b>	°C	-40		+50	
<b>Maximum Case Temperature (T<sub>c</sub>)</b>	°C			+90	Case temperature measured at the hot spot •t <sub>c</sub> (see label in page 8)
<b>Storage Temperature</b>	°C	-40		+85	
<b>Humidity</b>	%	5	-	95	Non-condensing
<b>Cooling</b>	Convection cooled				
<b>Acoustic Noise</b>	dBA			22	Measured at a distance of 1 foot (30 cm), without and with approved dimmers
<b>Mechanical Shock Protection</b>	per EN60068-2-27				
<b>Vibration Protection</b>	per EN60068-2-6 & EN60068-2-64				
<b>MTBF</b>	> 250,000 hours when operated at nominal input and output conditions, and at T <sub>c</sub> ≤ 75°C				
<b>Lifetime</b>	hours	50,000			•At T <sub>c</sub> ≤ 75°C maximum case hot spot temperature (see hot spot •t <sub>c</sub> on label)
<b>Warranty</b>	5 years at T <sub>c</sub> ≤ 75°C				

## 80 W Constant Current Class 2 / Class II LED Driver w/ 0-10V Dimming

### 5 - EMC COMPLIANCE AND SAFETY APPROVALS

EMC Compliance		
<b>Conducted and Radiated EMI</b>		FCC CFR Title 47 Part 15 Class B at 120 Vac and Class A at 277 Vac
<b>Harmonic Current Emissions</b>		IEC61000-3-2 For Class C equipment
<b>Voltage Fluctuations &amp; Flicker</b>		IEC61000-3-3
<b>Immunity Compliance</b>	<b>ESD (Electrostatic Discharge)</b>	IEC61000-4-2 6 kV contact discharge, 8 kV air discharge, level 3
	<b>RF Electromagnetic Field Susceptibility</b>	IEC61000-4-3 3 V/m, 80 - 1000 MHz, 80% modulated at a distance of 3 meters
	<b>Electrical Fast Transient</b>	IEC61000-4-4 $\pm 2$ kV on AC power port for 1 minute, $\pm 1$ kV on signal/control lines
	<b>Surge</b>	IEC61000-4-5 $\pm 6$ kV line to line (differential mode) / $\pm 6$ kV line to common mode ground (tested to secondary ground) on AC power port, $\pm 0.5$ kV for outdoor cables
		ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A, 2.5 kV ring wave
	<b>Conducted RF Disturbances</b>	IEC61000-4-6 3V, 0.15-80 MHz, 80% modulated
	<b>Voltage Dips</b>	IEC61000-4-11 >95% dip, 0.5 period; 30% dip, 25 periods; 95% reduction, 250 periods
Safety Agency Approvals		
<b>UL</b>	UL8750 recognized, Class 2	
<b>cUL</b>	CAN/CSA C22.2 No. 250.13-14 LED equipment for lighting applications	

Safety					
	Units	Minimum	Typical	Maximum	Notes
<b>Hi Pot (High Potential) or Dielectric voltage-withstand</b>	Vdc	4400			<ul style="list-style-type: none"> <li>Insulation between the input (AC line and Neutral) and the output</li> <li>Tested at the RMS voltage equivalent of 3110 Vac</li> </ul>

### 6 - PROTECTION FEATURES

#### Short Circuit

The DTB series is protected against short-circuit such that a short from any output to return shall not result in a fire hazard or shock hazard. The driver shall hiccup as a result of a short circuit or over current fault. Removal of the fault will return the driver to within normal operation. The driver shall recover, with no damage, from a short across the output for an indefinite period of time.

#### Internal Over temperature Protection

The DTB series incorporates circuitry that prevents internal damage due to an over temperature condition. An over temperature condition may be a result of an excessive ambient temperature or as a result of an internal failure. When the over temperature condition is removed, the driver shall automatically recover.

#### Output Open Load

When the LED load is removed, the output voltage of the DTB series is limited to 1.3 times the maximum output voltage of each model.

## 80 W Constant Current Class 2 / Class II LED Driver w/ 0-10V Dimming

### 7 - 0-10 V DIMMING

The DTB080 drivers operate only with 0-10V dimmers that sink current. They are not designed to operate with 0-10V control systems that source current, as used in theatrical/entertainment systems. Developed in the 1980's, the 0-10V sinking current control method is adopted by the International Electrotechnical Commission (IEC) as part of its IEC Standard 60929 Annex E.

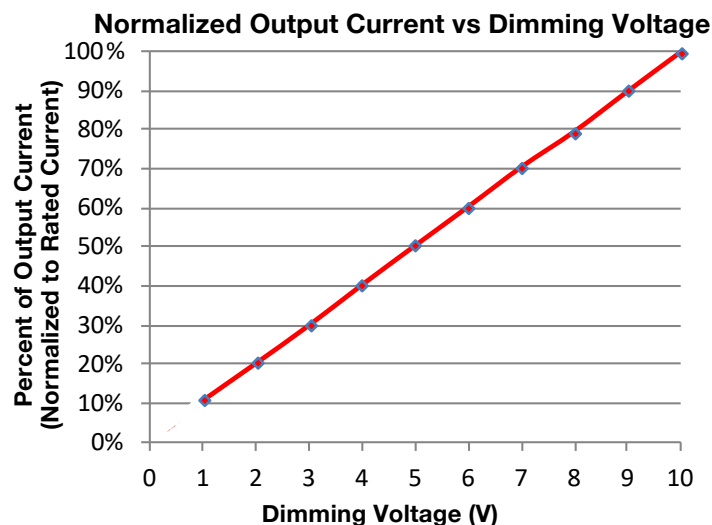
The method to dim the output current of the driver is done via the +Dim/-Dim Signal pins. The +Dim/-Dim Signal pins respond to a 0 to 10 V signal, delivering 10% to 100% of the output current based on rated current for each model. A pull-up resistor is included internal to the driver. When the +Dim input (purple) is short circuited to the -Dim wire (grey) or to the -LED wire (black), a small amount of current may be present on the output and, in that condition, shimmering may be observed. If the +Dim input is  $\leq 1$  V and  $\geq 0.6$  V, the output current is still present. *Please note that short circuiting the +Dim wire (purple) to the -Dim wire (grey) does not guarantee that the output current is turned off.*

If the +Dim input is  $>10$  V or open circuited, the output current is programmed to 100% of the rated current.

When not used, the -Dim wire (grey) and to the +Dim wire (purple) can be capped or cut off. In this configuration, no dimming is possible and the driver delivers 100% of its rated output current.

The maximum source current (flowing from the driver to the 0-10V dimmer) supplied by the +Dim Signal pin is  $\leq 1$  mA. The tolerance of the output current while being dimmed shall be  $\pm 8\%$  typical until down to 1V.

The DTB080W-1900-42 uses the linear 0-10V dimming curve, as shown in figure 1.



**Figure 1**

## 80 W Constant Current Class 2 / Class II LED Driver w/ 0-10V Dimming

### 7 - 0-10 V DIMMING (CONTINUED)

A fixed or variable resistor can be also used from the dimming input to the return to adjust the output current. Figure 2 show the relationship of the output current to a resistor connected across the 0-10V dimming input

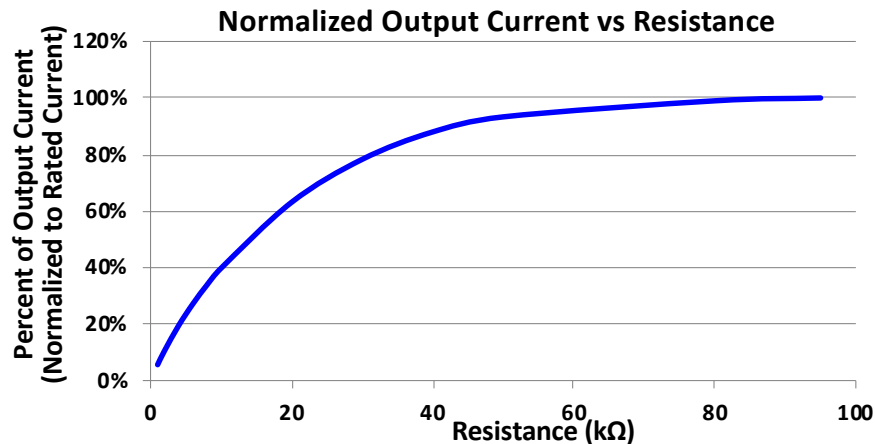


Figure 2

### 8 - COMPATIBLE 0-10 V DIMMERS

- Lutron, Nova series (part number NFTV)
- Lutron, Diva series (part number DVTV)
- Leviton, IllumaTech series (part number IP710-DL)

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### 9 - MECHANICAL DETAILS

**Packaging Options:** Metal case

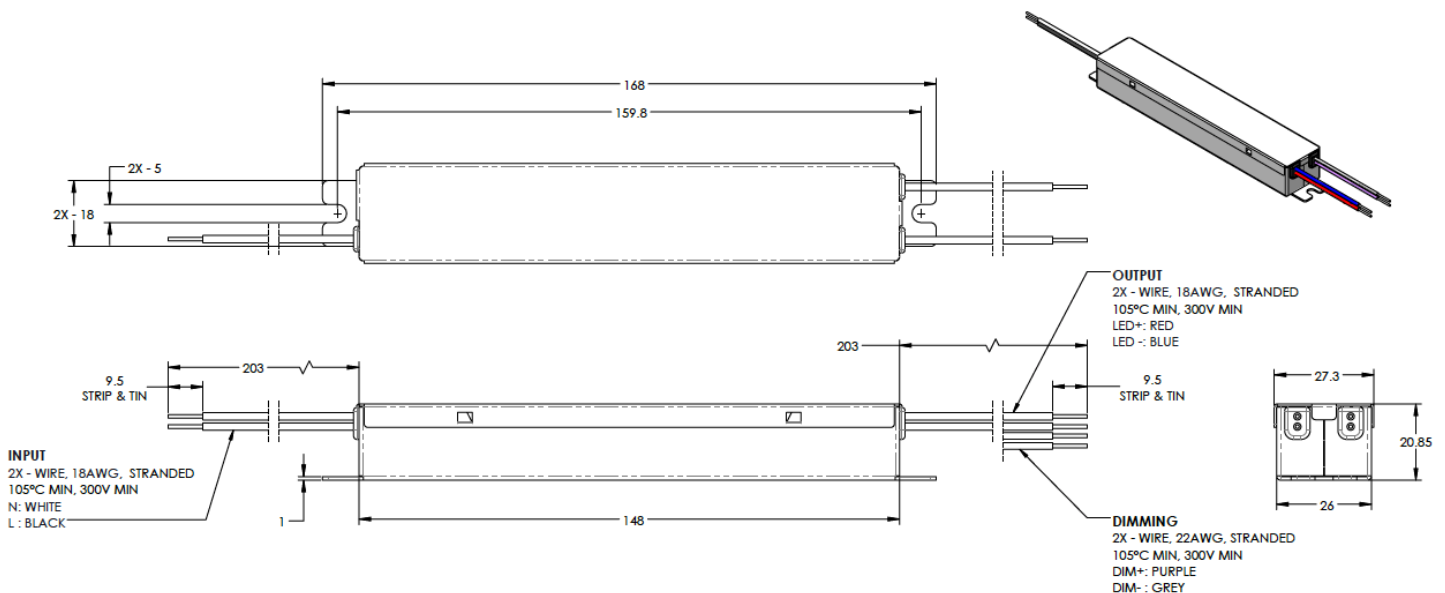
**I/O Connections:** Flying leads, 18 AWG on power leads, 22 AWG on 0-10V dimming wires, 203 mm (8") long, 105°C rated, double insulated stranded, stripped by approximately 9.5mm and tinned. All the wires, on both input and output, have a 300 V insulation rating. Input wires have double insulation.

**Ingress Protection:** IP64

### 10 - OUTLINE DRAWINGS

**Dimensions:** L 148 x W 26 x H 20.85 mm (L 5.82 x W 1.02 x H 0.82 in)

**Volume:** 80.23 cm<sup>3</sup> (4.90 in<sup>3</sup>)



**Figure 3**

All dimensions are in mm

## 80 W Constant Current Class 2 / Class II LED Driver w/ 0-10V Dimming

### I2 - LABELING

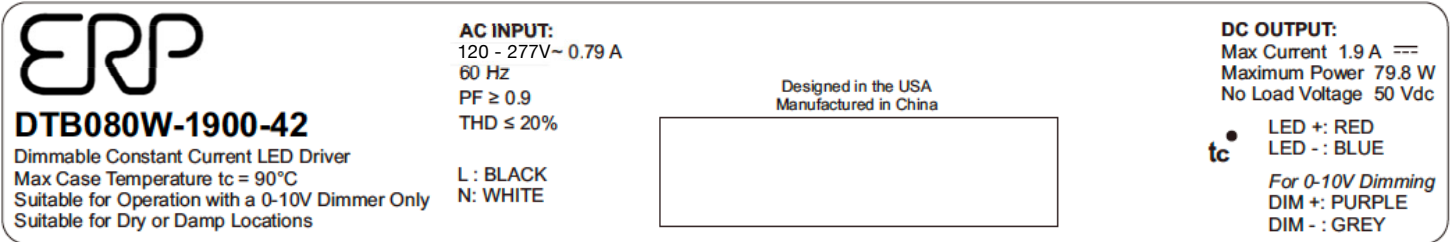


Figure 4

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