Exclara HVX Reference Design Overview

HVX-RDO-08.03.11

Exclara HVX Key Solution Elements

The Exclara HVX Solution includes several items geared towards easing the design, development and manufacturing of LED solutions based on the HVX product family and specifically using Exclara's EXC100 High Voltage LED Driver IC. These solution elements include:

1. EXC100 High Voltage LED Driver
2. EXC100 Reference Designs
3. EXC100 Design Tool
4. EXC100 Light Source Reference Designs

EXC100 High Voltage LED Driver

The EXC100 is an integrated high-voltage LED driver capable of direct line operation.

IC part number	Sample availability	Production
EXC100	Now	Now

EXC100 Reference Designs

Exclara provides reference designs that cover a range of product categories and form factors to enable ease of design and rapid time-to-market for the Exclara customers. Reference designs include T8, T10 and A19 form factors, support for worldwide input VAC and a range of power output. Table 2 provides details and schedules for these reference designs.

As a part of the EXC100 Reference Design Kit, Exclara provides schematics and Gerber files for each of these reference designs. Each design includes both a driver board design and a light source LED board design, and uses standard (recommended) low-cost parts.

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Model Numbers

The reference designs have the following numbering system:

EXRxxx-FFF-WWW-VVV-NF

where
xxx same as IC number
FFF form factor - T8, T10, A19, etc.
WWW wattage, such as 008, 010.
VVV 110, 120 or 220
NF N is the number of feet, F for Feet

Table 2. EXC100 and Reference Design Availability

IC Part No.	ES Available	Production
EXC100	Now	- Conditional Release: Now - Full Release: Sept 2011

Application	Input Voltage (nominal)	Power Out (W)	Length (ft)	Reference Design (1) Availability	Evaluation Kit (2) Availability
T10	220VAC	12	2	EXR100-T10-012-220-2F	
		15	3	EXR100-T10-015-220-3F	
		16	4	EXR100-T10-016-220-4F	
		20	5	EXR100-T10-020-220-4F	
		24	5	EXR100-T10-024-220-5F	
		30	6	EXR100-T10-030-220-6F	
		36	8	EXR100-T10-036-220-8F	
T10	110 VAC	16	4	EXR100-T10-016-110-4F	
T8	220VAC	12	2	EXR100-T8-012-220-2F	
		16	4	EXR100-T8-016-220-4F	EXK100-T8-016-220-4F
		17	4	EXR100-T8-017-220-4F	
		20	4	EXR100-T8-020-220-4F	
A19	220VAC	9	na	EXR100-A19-009-220	EXK100-A19-009-220
	100 VAC	9	na	EXR100-A19-009-100	EXK100-A19-009-100
	120VAC	9	na	EXR100-A19-009-120	EXK100-A19-009-120

Notes:

(1) Ref. Design comprises schematics, BOM, layout, and gerber files for EXC100 module and LED board.

(2) Evaluation Kit comprises EXC100 module, light source and qty-2 EXC100 IC's.

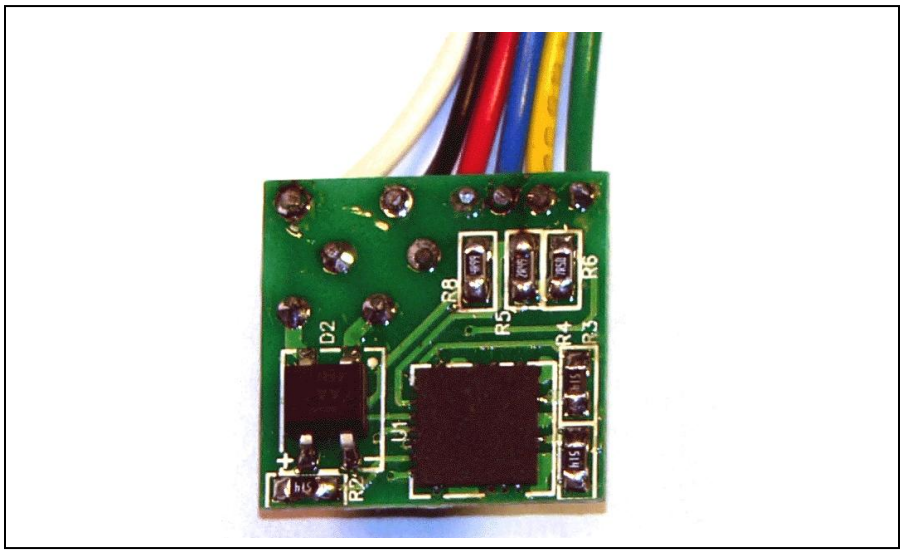

Figure 1. Example - HVX EXC100-Based Board Reference Design

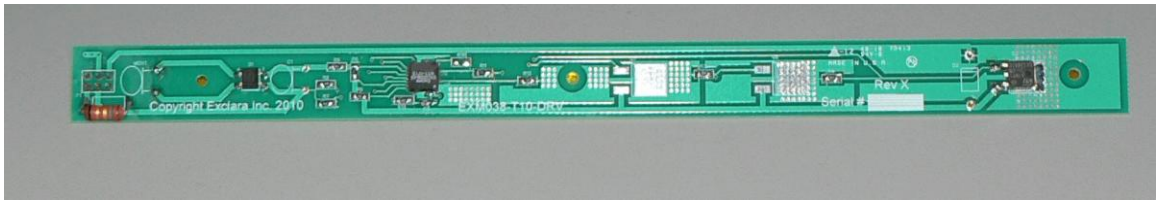

Figure 2. EXM038 T10-DRV Driver Board Reference Design Example

EXC100 Design Tool

Where the reference designs must be modified for custom needs, Exclara's EXC100 design tool can be used to guide the LED system designer with selecting EXC100 driver components as well as modifying the light source electrical and physical design.

The designer inputs the following design parameters to the spreadsheet tool:

1. Operating temperature - ambient to EXC100
2. Rated output power to LEDs
3. Rated voltage
4. Rated current of each LED
5. Total number of LEDs
6. LED IV curve

Based on these parameters, the EXC100 Design Tool generates three types of output parameters:

1) driver-related, 2) light source related and 3) system-related.

Driver-related sense resistor values include Rsense1, Rsense2 and Rsense3 (see RS1, RS2, RS3 in Figure 3 below.

Light source-related output parameters include:

1. Number of LEDs for segment 1 in series
2. Number of LEDs for segment 2 in series
3. Number of LEDs for segment 3 in series
4. Number of LEDs Parallel Strings in segment 1
5. Number of LEDs Parallel Strings in segment 2
6. Number of LEDs Parallel Strings in segment 3

System-related output parameters include driver efficiency, power factor, THD, power and LED currents.

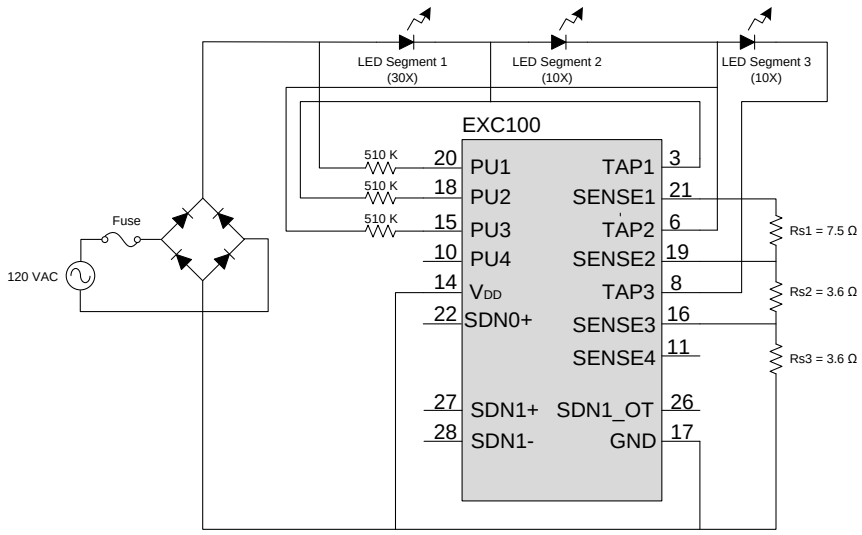

Figure 3. HVX Solution Using EXC100 Driver

EXC100 Light Source Reference Designs

Exclara also provides several reference designs to aid the system designer with the light source design. These reference designs are available as schematics and Gerber files.

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