

# — APPLICATION NOTE

## PROPORTIONAL NO LOAD VARIATION

XP Power High Voltage offers two types of converters: regulated and proportional. The output voltage for proportional converters is proportional to the input voltage range from about 15% to 100%.

This Application Note describes operation of XP Power proportional converters with varying load conditions and applies to these XP Power products:

- A Series
- E Series
- G Series
- Q Series
- AG Series
- F Series
- GP Series
- DX Series
- FS Series
- L Series

**Safety Warning**

High voltage power supplies present a serious risk of personal injury if not used in accordance with design and/or use specifications, if used in applications on products for which they are not intended or designed, or if they are used by untrained or unqualified personnel.

For more information, please refer to the XP Power Safety Warning and Disclaimer at the end of this document.

**General Information**

- XP Power proportional models are typically isolated.
- Proportional models are typically smaller than regulated units.
- The output voltage is proportional to the input voltage – from 15-100%  $V_{in}$ .
- The output voltage is load dependent – they are not load regulated.
- The Full Load vs. No Load variation depends on the selected XP Power converter.

See the product series data sheets for more information.

**With a Full Load**

The maximum input voltage produces the maximum specified output voltage (100%) when there is a Full Load on the output. See Figure 1: Full Load Curve. The data sheet specifies the maximum output voltage under Full Load conditions. A Full Load resistor can be used for testing;  $RFL = V_{out\ max} / I_{out\ max}$ .

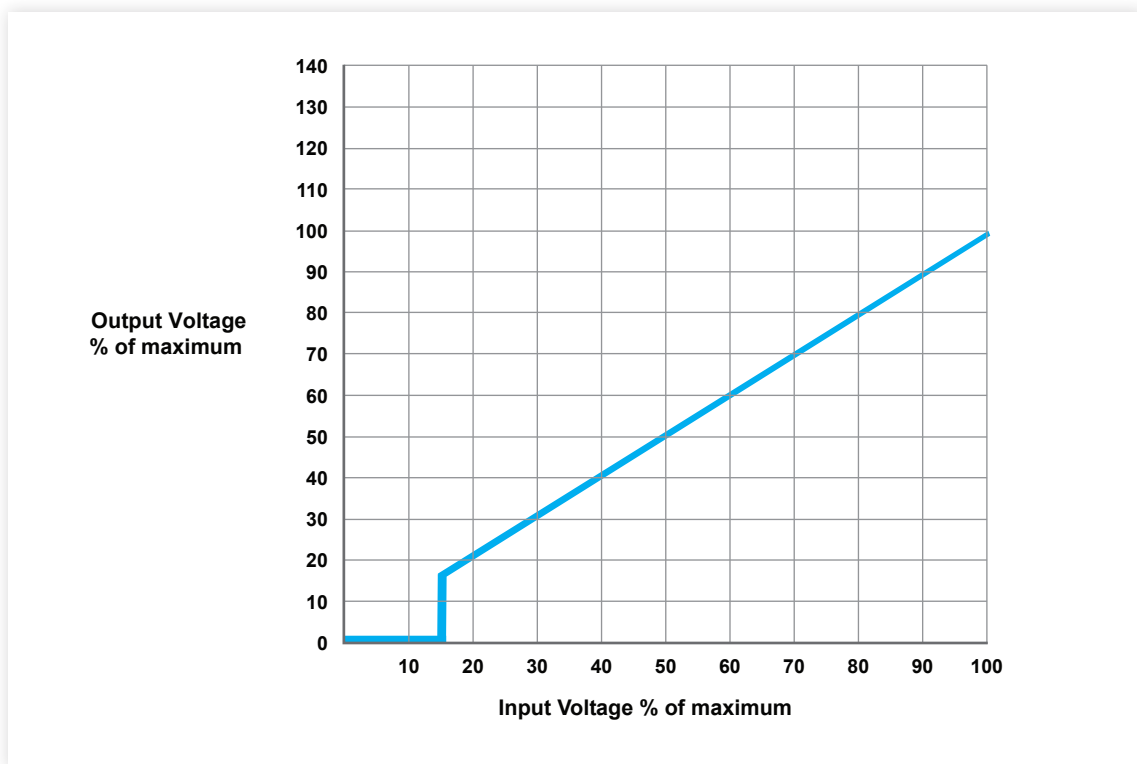


Figure 1: Full load curve

**With a Light or No Load**

Under Light or No Load conditions, the output voltage is higher than with a Full Load. See Figure 2: No Load Curve. The input to output transfer function is steeper. Under less than Full Load conditions, the user must reduce the input voltage to prevent exceeding the maximum rated output voltage.

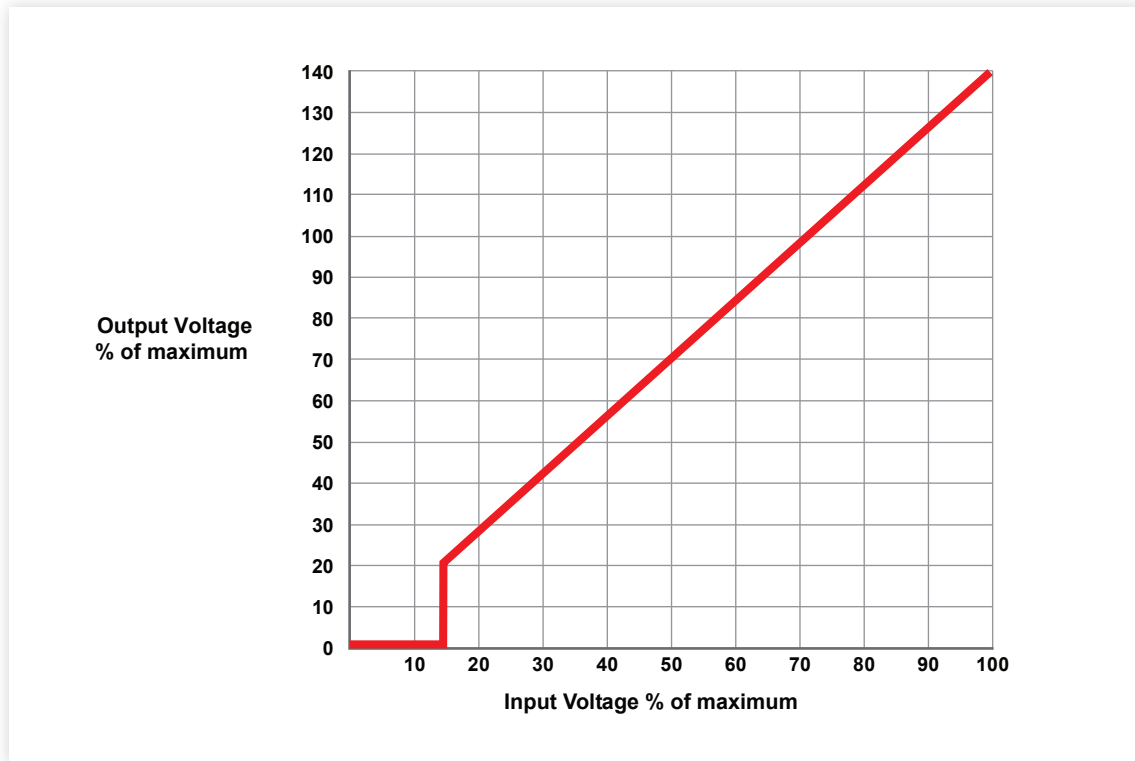


Figure 2: No load curve

**Safety Information**

High voltage power supplies present a serious risk of personal injury if not used in accordance with design and/or use specifications, if used in applications on products for which they are not intended or designed, or if they are used by untrained or unqualified personnel. Before testing, incorporating or using XP Power’s products, read, understand and thereafter adhere to all instructions, protocol, cautions and safety procedures applicable not only to XP Power’s products but to each product and/or application into which XP Power’s products are incorporated or assembled, as well as industry standard safe practices and rules and regulations regarding the use of high voltage.