Proportional No Load Variation

XP EMCO 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 EMCO proportional converters with varying load conditions and applies to these XP EMCO products:

- A Series
- AG Series
- DX Series
- E Series
- F Series
- FS Series
- G Series
- GP Series
- L Series
- Q 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 EMCO Safety Warning and Disclaimer located at:
http://www.xppower.com/High-Voltage/Safety-Warning-Concern-HV.pdf

General Information

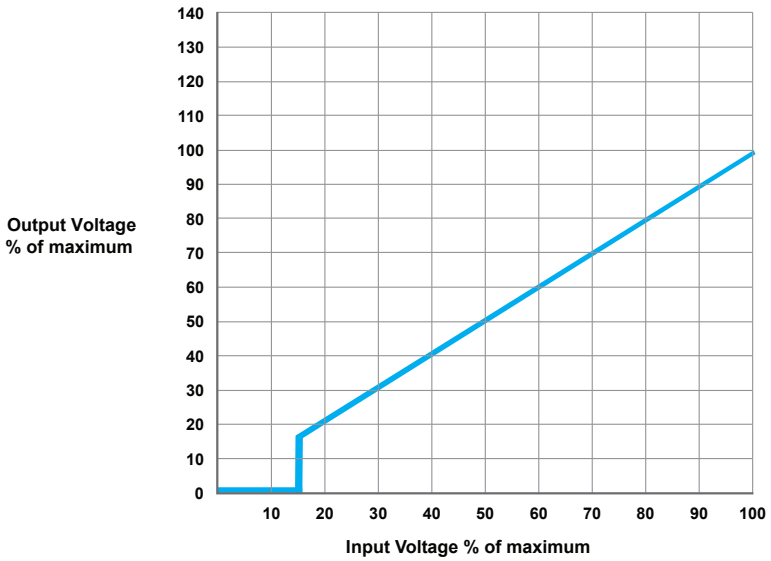
- XP EMCO proportional models are typically isolated.
- Proportional models are typically smaller than regulated units.
- The **output** voltage is proportional to the **input** voltage – from 15-100% Vin.
- The **output** voltage is load dependent – they are **not load** regulated.
- The **Full Load vs. No Load** variation depends on the selected XP EMCO 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; $R_{FL} = V_{out}$ max / L_{out} max.

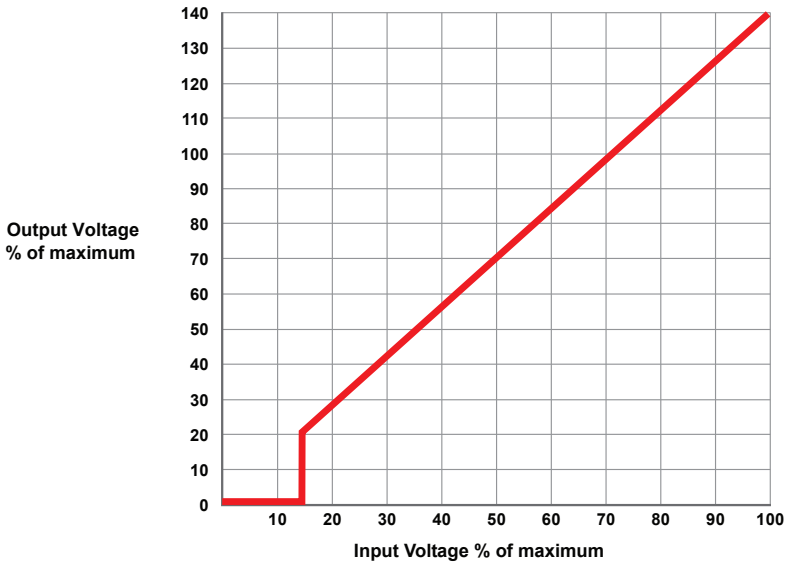
Figure 1. Full Load Curve



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



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