

# A Solution to Environment B Power

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# Features

- 2 port, 15W power source
- DC-DC converters provide full 802.3 isolation
- Includes discovery
- Opto-isolated status and control signals
- External power on/off control
- Very attractive cost per watt

# Specifications

- **Output Voltage and Current**

- 50 VDC +/- 5% over the full output loading range of 25 mA to 350 mA, with any input voltage from 36 VDC to 60 VDC.

- **Isolation**

- Port to port isolation shall be greater than 500 VDC
- Port to chassis ground isolation shall be greater than 2250 VDC  
This test requires that 2250 VDC shall be applied for one minute, after which leakage shall not exceed 2 Mohms at 500 VDC.

- **Turn-On Time and Rise Time**

- All outputs within their error band 200 milliseconds after application of DC input power under all operating conditions.
- The output rise times (5% to 90%) shall be less than 50 milliseconds, but greater than 1 millisecond under all operating conditions. The output rise shall be monotonic.
- There shall be no overshoot or undershoot outside the error band during turn-on or turn-off

# Specifications

- **Line Transient Deviation and Response**
  - Less than 1% of the nominal output voltage following an input line step of +/- 30% of nominal line voltage.
- **Load Transient Deviation and Response**
  - Less than 5% of the nominal output voltage set point following a load change of 20% with a slew rate of .2 amperes per microsecond, returning to 1% of steady state load within 1 mS.
- **Hold-Up Time**
  - Minimum of 200 microseconds from a complete line loss with maximum output loadings.
- **Over current**
  - Must current limit between 350ma and 450ma. No damage shall result to the power supply as the result of any over current condition.

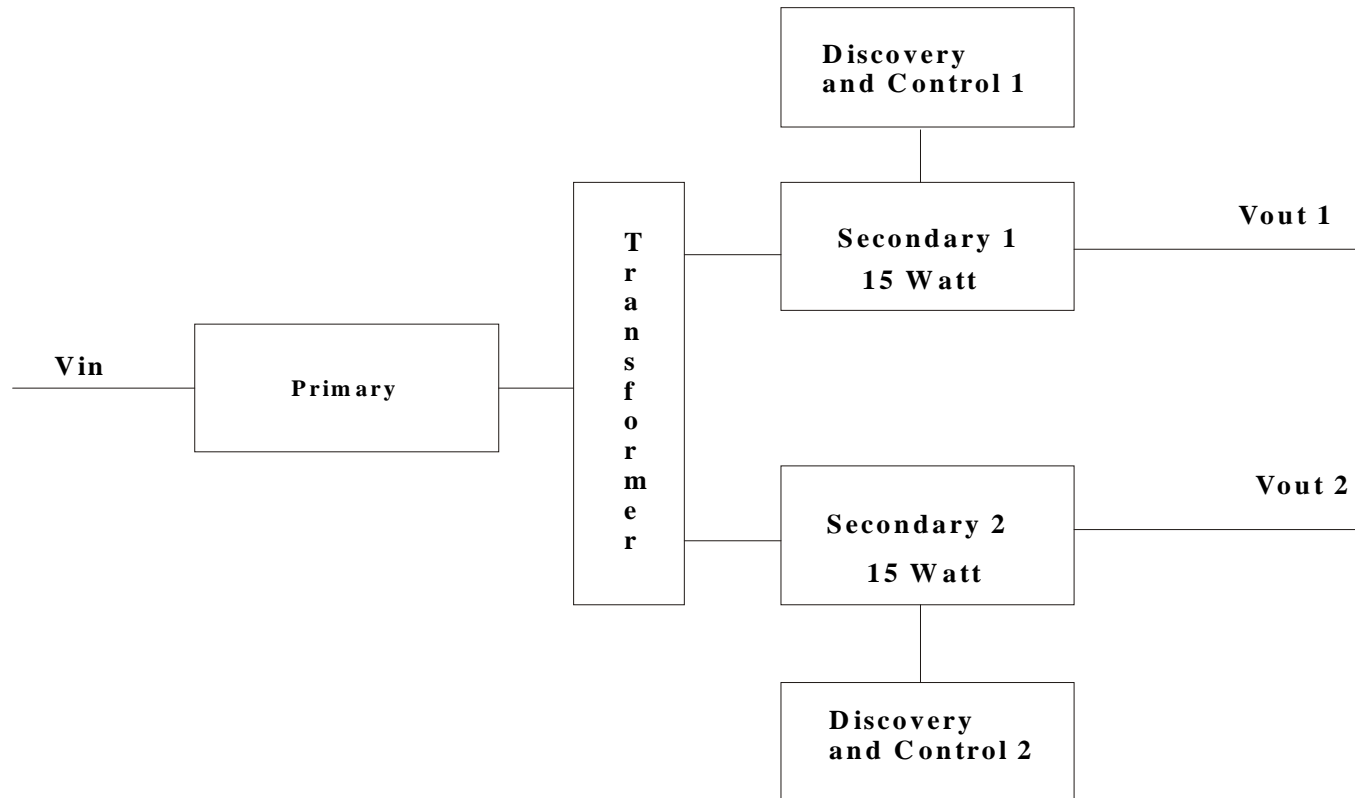
# Specifications

- **Over voltage**
  - OVP trip levels shall be to 57 volts +/- 0.1 volts. When the OVP circuitry is activated, it is required that the power supply recover automatically.
- **Status and control opto-isolated inputs and outputs**
  - On/off control input to enable/disable output power
  - Unplug status to indicate a current load below 25 ma
  - Over voltage or over current status
  - Device discovered status

# Specifications, Noise

- **Differential mode noise requirements**
  - $< 20 \text{ dbrnC}$  from 20 Hz to 20 KHz
  - $< 500 \text{ mV}$  peak to peak from 20 KHz to 150 KHz
  - $< 100 \text{ mV}$ , peak to peak from 150 KHz to 1 MHz
  - $< 3 \text{ mV}$  peak to peak from 1 MHz to 30 MHz
  - $< 0.3 \text{ mV}$  peak to peak over 30 MHz
- **Common mode noise requirements**
  - $< 20 \text{ dbrnC}$  from 20 Hz to 20 KHz
  - $< 500 \text{ mV}$  peak to peak from 20 KHz to 150 KHz
  - $< 1 \text{ mV}$  peak to peak from 150 KHz to 1 MHz
  - $< 0.3 \text{ mV}$  peak to peak from 1 MHz to 30 MHz
  - $< 30 \text{ uV}$  peak to peak over 30 MHz.

# Block Diagram



**DUAL ENVIRONMENT “B” 15 WATT + 15 WATT BUCK BOOST CONVERTER WITH DISCOVERY AND CONTROL**

NORTEL NETWORKS

# Here it is





# Conclusion

- A cost effective, fully isolated 15W power source is quite feasible.