

technical

# specification

## 515 Series Power Supply Units (PSU)

These are high efficiency switched mode units, primarily designed for driving incandescent lamps, although their low noise and pure DC output makes them suitable for many general purpose applications, including the driving of sensitive electronic equipment.

Variants are available for compatibility with 24/28V DC and 110V DC nominal vehicle systems. The 24/28V unit is rated at 80 Watts, whilst the 110V unit is rated at 180 Watts. The output voltage may be factory set between 11 and 12V DC.

Both variants are fully compliant with Railways Standards including EN50155, ENV50121 and RIA20.

The 515 series is particularly suited to the driving of filament lamps including dichroic units and incorporates lamp life maximising features such as cold filament inrush control, output slew rate limiting on power-up and highly stable output voltage. The latter parameter may be set between 11 to 11.4 V as standard in the interest of lamp life extension. An output voltage of 11V would typically extend the life of a 12V dichroic by a factor of three.

Both units are housed in robust aluminium extrusion-based enclosures and are fully protected against short circuit and misconnection.



80 Watt



180 Watt

## 180 Watt Variant Specification Summary

*Designed for 110V DC nominal input systems.*

**Continuous input voltage:**  
67V DC to 140V DC

**Output voltage:**  
11V Pre-set by resistor value

**Set point accuracy:**  
1% of output setting

**Load regulation:**  
Better than 75mV

**Line regulation:**  
Better than 25mV over range 80 to 140V

A lower limit for regulation is required in order to prevent excessive current consumption during abnormally low power supply conditions. Below the lower limit, output voltage falls away proportional to input voltage until the minimum continuous operating voltage is reached.

**Maximum permissible lamp rating:**  
180 Watts - e.g. 9 x 12V/20W, 18 x 12V/10W

**Maximum output current at rated output voltage:**  
14A

**Output slew limiting at switch on:**  
1 Volt/ 10mS  
(In interest of lamp life)

**Continuous operating temperature range:**  
-25 to +55 Deg C

**Output ripple & noise:**  
<200mV

**Efficiency:**  
85% Minimum at nominal supply

**M T B F:**  
160,000 hrs (Mil 217F, GM @ 40 C).  
From experience this will give an estimated in-service life greater than 1,700,000 hrs (0.6 failures/million).

**Output short circuit protection:**  
Indefinite protection

**Input reverse polarity protection:**  
Indefinite protection. No external fuse required

**Isolation, input & output to chassis:**  
1.5KV 50Hz AC Sine

**Enclosure protection:**  
IP20

**Weight:**  
Less than 1 Kg

**Interface:**  
8 way, Multi-pole connector

**Earth connection:**  
M6 Stud

**Fastening:**  
4 off M4 Screws

## 80 Watt Variant Specification Summary

*Designed for 24V DC nominal input*

**Continuous input voltage operating range:**  
16.8V DC to 32V DC

**Output voltage:**  
11 to 12V Pre-set by resistor value. Typically set to 11.4V

**Set point accuracy:**  
+/- 0.2V at output terminals

**Load regulation:**  
Better than 75mV

**Line regulation:**  
Better than 25mV over range 24 to 32V DC

A lower limit for regulation is required in order to prevent excessive current consumption during abnormally low power supply conditions. Below the lower limit, output voltage falls away proportional to input voltage until the minimum continuous operating voltage is reached.

**Maximum specified user load:**  
80 Watts

**Output slew limiting at switch on:**  
1 Volt / 10mS.  
(In interest of lamp life).

**Continuous operating temperature range:**  
-25 to +70 Deg C.

**Output ripple**  
<200mV

**Efficiency:**  
>85%.

**M T B F:**  
>150,000 hrs (Mil 217F,GM @ 40 C)

**Output short circuit protection:**  
Indefinite protection

**Input reverse polarity:**  
Indefinite protection. No external fuse required.

**Enclosure sealing:**  
IP65

**Required space envelope:**  
250x90x40mm

**Weight:**  
Less than 0.9 Kg

**Interface:**  
1/4" Faston Blades (Input and Output)

**Earth connection:**  
M6 Stud

## General

**EMC Compliance:** ENV50121-3-2 including conducted emissions, radiated emissions, radiated immunity, conducted immunity, transient burst, electrostatic discharge.

**Surge and transient requirements:** EN50155 ,Surge B, Transient D&G

**Shock and vibration testing:** BRB/LUL/RIA 20: 1995 (180W). EN50155 (80W)