2kW DC Power Supplies

Datasheet

Controlled open-frame power supply 2kW with active PFC, for electroplating, welding, or as supply for RF generators, laser diodes or capacitor bank

Shortform Data

property	value	unit
output current	7-70	A
output voltage	28-300	V
output power	2000	W
mains voltage	230	V_{ac}

Applications

- RF generators
- electroplating
- welding
- high power laser diode driver
- preregulator for linear laser diode driver
- capacitor bank recharger

Benefits

- output voltage controlled via interface
- current limited
- voltage modulation up to 20 Hz
- low profile

Your Task

Many applications need an adjustable and modulated DC voltage source.

Examples for direct uses are driving high power laser diodes or generating the operating current for electroplating or welding.

In indirect uses the power supply delivers a stable DC voltage that is further transformed by the process source. Examples are supplying radio frequency generators or amplifiers where the power supply adjusts the output power. It is useful as preregulator in front of precise but otherwise high-loss linear regulators, i.e. for driving laser diodes. As capacitor bank recharger in a flash lamp supply it controls the energy per flash.

Our Solution

The 2kW supply is an open-frame switch mode power supply for driving loads with controlled voltage. Example loads are power amplifiers, radio frequency generators and laser diode stacks. The switch mode supply can serve as direct supply or as a low-loss preregulator for a linear regulator.

The unit has a power factor preregulator (PFC) plus a line filter, both avoiding excessive mains currents and harmonics.

Well dimensioned power semiconductors result in a low operating temperature and thus a high reliability.

The compact design and the open-frame construction will make integration in your project a simple task. This is true as well for the engineer as it is for the purchase department.

Function

The input circuit consists of inrush current supply limiter and EMC filter. A rectifier with active power factor correction (PFC) transforms the mains voltage to a fix intermediate DC voltage. A full bridge operating at a fixed frequency drives a push-pull transformer. The secondary circuit is designed as a full phase rectifier.

Usage

Any air or water cooler is sufficient to mount the power supply. The component side of the power supply must be exposed to a constant airflow. When using an air cooler a single fan is sufficient.

The output voltage is controlled from 0 to 100% by an analog voltage of 0 to 10V. Shutdown is controlled by a separate enable input.

Mains input is connected to a screw terminal connector. The output is connected to bolts.

Overall dimensions are 330 x 150 mm (380 x 150mm for the 300V version) with a low profile of only 50mm.

For operation an external voltage supply of 12-15VDC at 400mA is required. A seperate mains connector for the auxiliary supply is on board, making use of the integrated line filter.

Specifications

Operating Range	min	typ	max	unit
output voltage	0		(1)	V
output current	0		(1)	A
output power			2000	W

(1) Versions with different output ratings are available, see order codes.

Properties	min	typ	max	unit
output current rise time 10/90% (*2)		10		ms
output current fall time 90/10%		10		ms
output ripple voltage		200		mV_{eff}

(2) Rise and fall times are dependent on load condition. The values shown assume 50V output voltage and full output current.

Environment	min	typ	max	unit
cooling plate temperature	0		50	°C
storage temperature	-10		70	°C
mains voltage	207	230	253	V_{rms}
mains current		10	12	A_{rms}
mains frequency	45		65	Hz

Dimensions	min	typ	max	unit
length (3)		330		mm
width		150		mm
height		40		mm

(3) Length is 380mm for the 300V variant 45.15.100.230

Order Code

number	description
45.15.100.110	50V 40A
45.15.100.230	300V 6.7A
45.15.100.190	screws and connectors for 45.15.100.1xx
45.15.100.191	screws and connectors for 45.15.100.2xx