

POWER SUPPLIES FOR DEUTERIUM LAMPS

INTRODUCTION

The Cathodeon deuterium lamp power supplies have very low noise and drift characteristics and use a novel strike circuit to ensure reliable arc initiation of the lamp. They are fully automatic in operation and provide warning of malfunction of the lamp. They are available fully cased, or in component form and will be of particular interest to individual researchers, analytical instrument design teams and low volume manufacturers.

Fig 42 Power Supply For Deuterium Lamps



hi-Tech lamps

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GENERAL OPERATION

The new C713 power supply fully conforms to the EEC directive 89/336/EEC on electromagnetic compatibility (EMC) and warrants CE marking. The C713 is a standard cased preset power supply, it runs all Cathodeon continuous deuterium lamps including VUV lamps. It runs the lamps with stabilised direct current heaters and is available for 3V and 10V versions. After switching on, the lamp heater supply is switched to its starting level for a timed period of 60 seconds. After this initial period the anode voltage and strike voltage pulse are applied. When the lamp strikes, the "Lamp on" indicator is illuminated and a timer holds the heater on at full voltage for a further 30 seconds, after which the heater is switched down to a preset level which can range from 0V to about 75% of the start level.

Should the lamp not strike immediately, further attempts are automatically made at 10 second intervals. At each attempt, the "restart" indicator is illuminated, providing a warning that the lamp has not struck. Normal operation is indicated by the "Lamp on" indicator being lit. The supply is preset to run the lamp at an anode current of 300mA, this being the optimum current for the majority of deuterium lamps. This current can be preset by an internal control to values between 230 and 301A. If the mains supply is interrupted the warm-up cycle is automatically restarted. The supply is fitted with a thermal cut-out to protect the supply in case the outputs are shorted out for an excessive period. If the supply does cut out for this reason it should be switched off and the short removed. If not switched off, a start cycle will be initiated once the supply has cooled down.

| PARAMETERS | SPECIFICATION |
|--------------------------------|--|
| Heater voltage | Start voltage: Preset 3V at 6A DC or 10V at 1A DC Run voltage: Preset internally 0-2.5V DC or 0-7.5V DC |
| Anode current | Preset internally in the range 230-310mA |
| Current stability | Long term drift less than 0.3%. Short term drift and ripple less than 0.02% |
| Maximum lamp operating voltage | 100V at 300mA |
| Strike potential | 700V nominal, inductively generated |
| Indicators | Mains on-green, Lamp restart-red, Lamp on-amber |
| Thermal cut-out | Operates at 75°C on internal heat sink |
| Mains input | 110, 130, 220, 240V ($\pm 10\%$ rms) selected externally 50/60Hz. Selected on rear panel |
| Lamp output | Socket at rear, mating plug supplied. Neutrix "AXR"/"XLR" series. Type Xconn3MX |
| EMC | Complies with 89/336/EEC |
| Dimensions | 260mm x 250mm x 140mm high |
| Weight | 10V version: 5.00kg; 3V version: 5.15kg |

OEM VERSION

Both versions of the Cathodeon deuterium lamp power supply are available for OEM use in board form for building into original equipment. These packages include:

C713 3V: (i) Mains transformer, (ii) heatsink with transistors and thermal cutout, (iii) main PCB 'A' usually fixed to the chassis, (iv) PCB 'B' usually fixed to the chassis, (v) PCB 'C' mounted on heatsink (ii), (vi) PCB 'D' usually fixed to chassis, (vii) PCB 'E' mounted to transformer (i), (viii) chassis fuse holder plus fuse, (ix) interconnection leads CN1, CN2 and CN3, (x) 2 LEDs for the front panel, (xi) Filter kit for EMC, (xii) 10 x ferrite beads, (xiii) 1 x 10nF 63V capacitor.

C713 10V: As above with the addition of a heatsink for the 4 x voltage regulators, which are usually situated on PCB 'B' for the 10V version of this power supply.

ORDERING CODES

| PRODUCT | ORDERING CODE |
|------------------------|---------------|
| 3V heater version | C713/3 |
| 10V heater version | C713/10 |
| OEM 3V heater version | C713/3/B2 |
| OEM 10V heater version | C713/10/B2 |

WARRANTY

The C713 power supply from Cathodeon is covered by warranty for one year.

APPLICATIONS

These power supplies are available as either a 3V or a 10V heater version, and are designed to operate all Cathodeon deuterium arc lamps in the recommended manner. In addition, they can also be used with most lamps made by other manufacturers.