



190-093-902
Issue A 11/07/1996
Sheet 1 of 5

Order Number

Serial Number

PRODUCT / TEST MANUAL

4P93K2

DC- DC CONVERTER

Issue Level	Date	Summary of changes
A	11/07/1996	Initial issue.

Due to RMS continuous product improvement policy this information is subject to change without notice.

Document updated	Checked	Registered	.pdf file created	.pdf uploaded to web site

1. DESCRIPTION OF RELAY

The 4P93K2 is a 250V-125V buck converter with an output power capability of 25W. Full load output voltage is maintained over a 200-300V input voltage swing. Note that galvanic isolation between input and output is NOT provided, the input and output negative terminals being commoned. Current limiting circuitry protects the unit against overload or short circuit at the output and an SCR/fuse crowbar circuit operates if the output voltage rises to an excessive level.

2. SPECIFICATION

Input Voltage	250V DC \pm 20%
Input Current @ 250V in	<150mA full load output
Maximum Output Current (Limiting Current)	225mA nominal
Ambient Temperature Range	-5 to 55 Deg C
Crowbar Threshold Voltage	200V approx.
Signalling Relay Contacts	2 C/O
Contact Ratings	
1700 VA AC resistive with maximums of 8 Amp and 380 Volt	
125W Dc resistive with maximum of 8 Amp and 250 Volt	
Operation Indicator	LED on front panel

3. TEST EQUIPMENT REQUIRED

DC Variable Power Supply
HV Test Equipment
Digital Volt Meter
Dummy Load

4. ASSOCIATED DRAWINGS

678-016-202	Circuit Diagram PCB
678-016-301	Loading Diagram PCB

5. HIGH VOLTAGE TESTING

- a) Apply 2KV RMS 50Hz between terminal inputs and outputs for 1 minute.
- b) Apply 3 5KV 1/50us pulses of each polarity between terminal inputs and outputs.

6. CALIBRATION & TEST PROCEDURE

- a) Ensure that crowbar circuitry drive resistor R27 is not in circuit.
- b) Adjust R17 voltage trimpot fully clockwise and R22 current limit to approximately mid setting.
- c) Connect 10:1 probe on frequency counter to cathode of D7.
- d) Check that fuse F1 is in circuit, and that spare F2 is in place (both 1A 8AG).
- e) Apply 250 V DC to input and adjust no load output voltage to 125 V DC.

MINIMUM	MAXIMUM	NOMINAL	ACTUAL	UNITS
123	127	125	<input type="text"/>	V

- f) Check that switching frequency lies within acceptable limits.

MINIMUM	MAXIMUM	NOMINAL	ACTUAL	UNITS
55	75	60	<input type="text"/>	KHz

- g) Connect dummy load to output and adjust load until output current is 225mA at 125V. Adjust R22 clockwise if the output voltage drops before 225mA is reached.
- h) Adjust R22 anticlockwise until current limiting just commences at 230mA.
- i) Record output voltages at 225mA load, for input voltages as follows:

INPUT	MINIMUM	MAXIMUM	NOMINAL	ACTUAL	UNITS
212	121	127	125	<input type="text"/>	V
250	123	127	125	<input type="text"/>	V
300	123	129	125	<input type="text"/>	V

- j) At input voltage of 300V, check current limiting circuit by applying a short circuit across the 125V output terminals. Note that the short circuit current varies between units, and with temperature, but this is not critical because the current limit is purely for circuit protection. Record I S/C.

MINIMUM	MAXIMUM	NOMINAL	ACTUAL	UNITS
500	1000	750	<input type="text"/>	mA

- k) Check that the output signalling relay contacts operate correctly.
- l) Check that signalling LED is operational.
- m) Switch off DC supply.
- n) Remove dummy load and connect variable supply via 0.5W 470 ohm resistor to D14 cathode.
- o) Switch on main supply and SLOWLY increase variable supply above 175V. Record voltage at which SCR1 fires and blows F1, causing signalling relay and LED to become de energised.

MINIMUM	MAXIMUM	NOMINAL	ACTUAL	UNITS
175	210	190	<input type="text"/>	v

6. CALIBRATION & TEST PROCEDURE (Cont)

- p) Switch off both supplies and solder R27, 470 ohm resistor into circuit. Replace F1.
- q) Re apply main supply and check no load output voltage.

MINIMUM	MAXIMUM	NOMINAL	ACTUAL	UNITS
123	127	125	<input type="text"/>	V

7. GENERAL & FUNCTIONAL

Check that the relay is electrically sound and mechanically robust as per Standard Inspection & Test Schedule 903-000-026

PASS

TESTED BY : _____ DATE : _____

8. CONNECTION DIAGRAM

