

FARNELL INSTRUMENTS LIMITED

INSTRUCTION MANUAL
FOR
STABILISED VOLTAGE SUPPLY
TYPE TSV.70 MK. II.

FARNELL INSTRUMENTS LIMITED.
Sandbeck Way, Wetherby, Yorkshire. LS224DH.
Telephone Wetherby 0937 3541 (6 lines).

SECTION II
INTRODUCTION

The supply type 75V 20A. It provides a source of stabilized D.C. voltage variable over two ranges, 0 to 50 volts at output currents up to 5 amps or 0 to 25 volts at output currents up to 10 amps. The instrument is controlled by a switch on the instrument front panel.

C O N T E N T S

	<u>PAGE.</u>
SECTION 1 INTRODUCTION	1
SECTION 11 OPERATING INSTRUCTIONS	2
SECTION 111 CIRCUIT DESCRIPTION	4
SECTION 1V SPECIFICATION.. .. .	7
SECTION V SETTING UP PROCEDURE	8
SECTION VI APPLICATIONS AND TYPICAL PERFORMANCE.	6

SECTION 1.

INTRODUCTION.

The supply type TSV.70 Mk. II provides a source of stabilised D.C. voltage variable over two ranges, 0 to 70 volts at output currents up to 5 amps or 0 to 35 volts at output currents up to 10 amps, range selection being achieved by a switch on the instrument front panel.

The output voltage is set by coarse and fine controls on the unit front panel, and is continuously variable over each range.

An output on/off switch is incorporated, allowing the load to be disconnected from the supply without switching off the mains input to the unit.

Overload protection is provided in the form of a constant current limit. The current limit level is adjustable by means of a front panel control.

Output voltage and current are monitored independently by front panel meters. The meter ranges are selected automatically by the output range switch.

The instrument operates from 50/60 Hz supplies of 105 to 120 volts on 210 to 240 volts rms. The required transformer input tapping is selected on the transformer tag board.

SECTION 11

OPERATING INSTRUCTIONS

MAINS INPUT.

The transformer tapping should be set to correspond to the mains input voltage from which the unit is to be operated. (Units are normally supplied for 240 volt operation). The transformer connections for other input voltages are shown in figure 1.P13. In order to change the transformer tapping the bottom cover of the unit must be removed. This is achieved by removing the four fixing screws in the rear panel, and removing it. The bottom cover may now be withdrawn from the rear of the unit.

Mains input is applied to the unit by the three cored input lead at the rear. The cable connections are BROWN-LIVE, BLUE-NEUTRAL, GREEN/YELLOW-EARTH.

FRONT PANEL.

INPUT ON/OFF SWITCH.

This connects the mains input to the unit, indication of mains is given by the neon lamp above this switch.

VOLTAGE ADJUST. COARSE AND FINE CONTROLS.

These provide continuous adjustment of output voltage from zero to maximum output. The maximum is determined by the setting of the "RANGE" switch. The coverage of the fine control is approximately 350mV on the 35V range and 700mV on the 70V range.

RANGE SWITCH.

This selects the output range of the unit the left hand setting being 0-35V 10A, and the right hand setting being 0-70V 5A.

METERS.

These monitor output voltage (left hand) and output current (right hand). The meter full scale ranges correspond to the setting of the range switch. 35 volts and 10 amp ranges are marked in black and correspond to the 35 volt 10 amp setting of the range switch. 70 volts and 5 amps are marked in red and correspond to the 70 volt 5 amp setting.

CURRENT LIMIT CONTROL.

This sets the point of maximum output current and may be adjusted from zero to 5.5 Amps or 11 Amps depending on the setting of the "RANGE" switch. If this control is set to give a current on the 10 amp range, the same setting would give rise to half the current on the 5 amp range. The current limit point may be set by short circuiting the output terminals and adjusting the current limit control to give the required limit current as indicated on the output current meter.

OUTPUT AND SENSE TERMINALS.

Units are normally supplied with the "+ SENSE" and the "+ OUTPUT" terminals linked, and the "- SENSE" and the "- OUTPUT" terminals linked. The load should be connected to the "OUTPUT" "+" and "-" terminals. The supply is connected to the load when the "OUTPUT" switch is in its "ON" position.

For applications requiring correction of voltage drop along the leads connecting the supply to the load, the links between the "SENSE" and "OUTPUT" terminals should be removed and the current carrying leads to the load connected to the "OUTPUT" terminals. Another pair of leads should then be connected between the load and the "SENSE" terminal, ensuring that the positive end of the load is connected to the "+" "SENSE" terminal and the negative end of the load is connected to the "-" SENSE terminal. Care should be taken to ensure that no load current is drawn from the "SENSE" terminals. For notes on the limitations and use of this mode of operation refer to SECTION 6 page.10.

OUTPUT SWITCH.

This disconnects the negative of the supply from the load when the switch is in the "OFF" position, and enables the required output voltage to be set before the load is connected. The load may also be disconnected from the supply without having to switch off the mains input.

COOLING.

The series regulator elements of the supply are fan cooled. The air intake for the fan is on the rear right hand side of the unit and the air outlet is on the rear left hand side. Care must be taken not to obstruct the air inlet or outlet. If such an obstruction is present or the cooling fan fails, a thermal trip within the unit will operate and shut the supply down when the load conditions are such as to give rise to a dangerous temperature on the series regulator. The trip will reset the output when the series regulator temperature is approximately 30°C below the trip temperature, and if the cause of excess temperature is still present it will trip once again when the trip temperature is reached. This cycle will be repeated as long as mains input is applied to the unit and the cause of excess temperature is not removed.

The transformer and rectifiers within the unit are cooled by natural convection and no more than two units should be stacked one above the other without provision being made to force cool the stacked system in a vertical direction.