1505

Isolated Variable AC Line Supply

Instruction Manual

1505 ISOLATED VARIABLE AC LINE SUPPLY

Instruction Manual

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PCB Components **FRONT PANEL**

Reference Designator	Part Description
OUTPUT SOCKETS	
SOCKET 1	European (230VAC)
SOCKET 2	American (115VAC)
SOCKET 3	SLBR4 (Lekage Red)
SWITCHES	
SW1	ON/OFF SPDT 1801 10A/230V
SW2	DPDT Toggle 6A/250V
FUSE	
F1	6Amp / 250V S/B
F2	5AMP / 250V S/B
FUSE HOLDERS	
FH1	10Amp / 250V R3-11
FH2	10AMP / 250V R3-11

PCB Components **CHASSIS**

Reference Designator	Part Description
TRANSFORMERS	
T1	1506 Isolation
T2	1506 Current
T3	1506 DPM
T4	1506 0-120V/4Amp Variable
T5	1506 Voltage Sense

TABLE OF CONTENTS

SECTION - 1
INTRODUCTION

ISOLATED VARIABLE AC LINE SUPPLY : MODEL1505

The 1505 Isolated Variable AC Source cum leakage current tester is designed for modern electronics laboratories needing a clean, electrostatically and galvanically isolated variable line supply.

The unit is designed to provide isolated output variable from 0 to 130 V AC at 4 Amps max and 0 to 260VAC at 2A max on two seperate output sockets through a range selector switch. The output voltage and load current can be monitored on a 3 digit DPM. The variable isolated output voltage capability makes this unit very convenient to use for either incoming or outgoing quality control testing. It is also useful for servicing or circuit design work, when checking operation at voltage higher or lower than normal. The unit consists of a super isolation transformer which is triple shielded from the line to protect against shock hazards.

The 1505 can measure power line leakage current by means of a probe and a switch selected range of the output DPM. It can measure leakage currents upto 9.99 mA. The unit is overload protected by means of an input /output fuse.

INITIAL INSPECTION

Before shipping, the 1505 power supply has been tested thoroughly and found free of mechanical and electrical defects. As soon as it is unpacked, inspect for any damage that may have occurred during transit. Particular attention should be paid to the meters. Also check the packing material for any signs of severe stress (may be indicative of internal damage). Save all the packing material. Read the INSTRUCTION MANUAL carefully prior to operation.

PCB Components 0893 DPM

Reference Designator	Part Description
CAPACITORS	
C1	220pf 100V ±20% CD
C2	0.1µf 100V ±10% MP
C3	0.01µf 100V ±20% CD
C4	0.47µf, 100V ±20% CD
C5	0.1µf, 50V ±10% MP
C6	10µf, 35V ±20% EL
C7	0.1µf, 50V ±10% MP
C8	0.1µf, 50V ±20% CD
C9	Not used
C10	470µf, 35V ±20% EL
C11	2.2µf, 50V ±20% EL
* C12	47µf 50V, ±20% EL (Additional)
* C13	0.1µf 50V, ±20% CD (Additional)
DIODES	
D1	1N4148
D2	1N4148
D3 TO D6	1N4007
TRANSISTORS/FET'S	
Q1	TL431
Q2	MPSA12
Q3	LM7805
IC	
IC1	ICL 7107 CPL
FND'S	
DS1	TSD566 (Green)
DS2	TSD566 (Green)
DS3	TSD566 (Green)
LED'S	
LED1	3mm GREEN Defused
LED2	3mm GREEN Defused
CONNECTORS	
CON1	3 PIN 2.54 PITCH (Male / Female)
CON2 (L' Type)	7 PIN 2.54 PITCH (Male / Female)

PCB Components **GLOBAL 1505 / 06 SW - 0396**

Reference Designator	Part Description
IC'S	
IC1	7660 S
IC2	KA 741/ LM 741
PUSH SWITCHES	
SW1 TO SW3	4 Pole, 2 Way (Interlock)
RELAY	
RL1	2/P 2CO 6V/6A (OEN 58-06-2C)
CONNECTORS	
CON1	5 PIN 2.54 PITCH (MALE / FEMALE)
CON2	7 PIN 2.54 PITCH (MALE / FEMALE)

PCB Components **0893 DPM**

Reference Designator	Part Description
RESISTORS	
R1	39K, ¼W, ±5%, MFR
R2	470K, ¼W, ±5%, MFR
R3	1ME, ¼W, ±5%, MFR
R4	SEL , ¼W, ±5%, MFR
R5	2.4K, ¼W, ±5%, MFR
R6	2.7K, ¼W, ±5%, MFR
R7	30K, ¼W, ±5%, MFR
R8	8.2K, ¼W, ±5%, MFR
R9	100E, ¼W, ±5%, MFR
R10	12K, ¼W, ±5%, MFR
R11	20K, ¼W, ±5%, MFR
R12	100E, ¼W, ±5%, MFR
R13	330E, ¼W, ±5%, MFR
R14	Not in Use
PRESETS	
PR1	2.2K Horizontal

SECTION - 2
SPECIFICATIONS

INPUT VOLTAGE	:	115 VAC
INPUT FREQUENCY	:	47Hz to 63Hz.
OUTPUT	:	I : 0 to 130 VAC at 4AMP MAX. (Available on American socket only.) II : 0 to 260 VAC at 2AMP MAX. (Available on European socket only.)
METERING	:	3 digit DPM to read 1) Output Voltage. 2) Load Current and 3) Leakage current upto 9.99 mA.
METER ACCURACY	:	± 3 counts.
OUTPUT-LINE ISOLATION	:	Capacitive coupling less than 0.0005 pF
NOISE REJECTION	:	Better than 120 db (common mode noise).
DIMENSIONS	:	11.73"(W) x 5.23"(H) x 10.62"(D)
WEIGHT	:	35 lb. approx.

SECTION - 3
DESCRIPTION

INPUT AND OUTPUT TERMINATION :
The unit works from 115VAC, 47Hz to 63Hz single phase supply with internal tap selection facility. The input is provided through a mains cable with a plug. The use of a three core cable enables the cabinet of the unit to be properly grounded.
The unit as shipped from factory is wired for 115V AC single phase supply
Output is provided on two seperate sockets through a output voltage range selector switch. In one position, it provides 0 -130 VAC at 4A max whereas in other position,it provides 0-260VAC at 2Amp.max.

METERING :
One 3-digit DPM is provided to measure
1) Output voltage
2) Leakage current
3) Load current
Meter function is switch selectable

ON-OFF SWITCH AND FUSE :
The power ON-OFF switch is located on the front panel. The fuses (Input & Output) are also located on the front panel. The fuse ratings are clearly marked.

PANEL CONTROLS :
A voltage adjust knob allows adjustment of output AC voltage and the output voltage selector switch selects the output AC voltage range so as to provide 0 -130VAC isolated output only on American socket while 0 - 260VAC isolated output only on European socket. Three meter function push switches are provided to select the Leakage Current or Output Voltage or Output Current (mA,V & A respectively.) to be displayed on the meter.

CIRCUIT DESCRIPTION :
The circuit uses a step down tranformer to provide step down supply to a single phase variable autotrans former to obtain an output voltage variable from 0 to 130VAC. This is followed by a triple shielded isolation transformer which provides an output voltage from 0-130VAC or 0-260VAC electrostatic and galvanic isolation.
Multiple shielding technique reduces primary to secondary static coupling to below 0.0005pF. The DC isolation is over 1000 M Ohms.

SECTION - 7
PART LIST

PCB Components **GLOBAL 1505 / 06 SW - 0396**

Reference Designator	Part Description
RESISTORS	
R1	1.5K, ¼W ±5% MFR
R2	120E, ¼W ±5% MFR
R3	10K, ¼W ±5% MFR
R4	62K, ¼W ±5% MFR
R5	10 ohm, ¼W ±5% MFR
R6	220 ohm, ¼W ±5% MFR
R7	Not Used
R8	10K, ¼W ±5% MFR
R9	100K, ¼W ±5% MFR
R10	10M, ¼W ±5% MFR
R11	4.7K, ¼W ±5% MFR
R12	10K, ¼W ±5% MFR
R13	1.2M, ¼W ±5% MFR
R15	470K, ¼W ±5% MFR
CAPACITORS	
C1	1µf, 50V ±20%, ELEC
C2	1µf, 50V ±20%, ELEC
C3	220µf, 16V ±20%, ELEC
C4	220µf, 50V ±20%, ELEC
C5	0.1µf, 100V ±10%, MP
C6	0.22µf, 100V ±10%, MP
PRESETS	
PR1	100E Horizontal
PR2	100E Horizontal
PR3	100E Horizontal
PR4	10K Horizontal
DIODES	
CR1	1N4007
CR2	1N4148
CR1	1N4148

SECTION - 6
CALIBRATION PROCEDURE FOR MODEL 1505

1) Keep the Voltage knob to minimum position(ccw). Press push switch marked ' V '

2) Switch on the power.

3) Set reference voltage of DPM(pin no. 36 of U1-7107) to 1.00Volt by adjusting the preset VR1 on DPM pcb.

4) Set voltage at pin no. 6 of IC3 (CA3160) to zero Volts with the help of preset PR4 on switch pcb.

VOLTAGE CALIBRATION

5) Set desired output voltage by turning Voltage knob in clockwise direction.Connect external AC voltmeter at the output.

6) Adjust preset PR2 on switch pcb so that DPM reading matches with external AC Voltmeter.

CURRENT CALIBRATION

7) Press push switch marked ' A ' . Connect load at the output with AC current meter in series with the load.The DPM will now read the load current.(The load current should not exceed 2 Amps/ 4Amps for Range A/B respectively.)

8) Adjust preset PR3 on switch pcb so that the DPM reading matches with external AC current meter

LEAKAGE CURRENT CALIBRATION

9) Set output voltage to zero volt s by turning the Voltage knob to minimum position.

10) Press push switch marked ' V '

11) Switch on the power.Adjust output voltage to 130VAC.

12) Press push switch marked ' mA '. now DPM will read leakage current.

13) Connect 25 Kohm (aprox.1W) resistor across banana socket, marked 'LEAKAGE TEST', & live point of output socket. Adjust preset PR1 on switch pcb so that DPM reading is 5.00mA

SECTION - 4
OPERATING INSTRUCTIONS

a) 1505 as Isolated Variable AC Supply.

Set output voltage to ‘0’ volt by turning the 'Set Voltage' knob to minimum position. Press push button switch marked 'V'

Keep the output voltage selector switch to the desired range (0 -130V or 0 -260V). Isolated variable voltage will be available at the respective output socket only.

Switch "POWER"ON. Adjust the voltage control knob till the desired voltage is indicated on the 3-digit DPM.Connect the load at the output. Press push switch marked 'A'.The DPM will now read the load current. The total load current should not exceed the maximum rating indicated for each range.

b) 1505 as Line Leakage Tester.

Set output voltage to ‘0’ volt by turning the knob to minimum position. Press push switch marked ‘V’. switch "POWER" ON. Adjust the voltage control till the desired voltage at which leakage current is to be measured is available at the output socket.

Now press push switch marked ‘mA’. Connect unit under test (U. U. T) to output socket. Connect the leakage test probe at the socket marked 'Leakage Test'. Connect the other end of the leakage test probe to the chassis of the unit under test. Depending on the leakage,the DPM will read the leakage current.

SECTION - 5
SERVICE AND WARRANTY INFORMATION
FACTORY SERVICE AND REPAIR

Global Specialties will service and repair this instrument free of charge for a period of one full year, subject to the warranty conditions stated below.

To obtain a return merchandise authorisation (RMA) required for all returns, phone our Customer Service Department for a RMA and all shipping instructions :

GLOBAL SPECIALTIES
22820 Savi Ranch Parkway,
Yorba linda, CA 92887
WWW.globalspecialties.com
800-572-1028

WARRANTY

Global Specialties warrants this device to be free from defective material or workmanship for a period of one full year from the date of original purchase.

Global Specialties under this warranty is limited to repairing the defective device when returned to the factory, shipping charges prepaid, within one full year from the date of original purchase. Units returned to Global Specialities that have been subject to abuse, misuse damage or accident, or have been connected, installed or adjusted contrary to the instructions furnished by Global Specialities, or that have been repaired by unauthorized persons will not be covered by this warranty.

Global Specialities reserves the right to discontinue models, change specifications price or design of this device at any time without incurring any obligation whatsoever.

The purchaser agrees to assume all liabilities for any damages and/or bodily injury which may result from the use or misuse of this device by the purchaser, his employees or agents.

This warranty is in lieu of all other representations or warranties expressed or implied and no agent or representative of Global Specialties is authorized to assume any other obligation in connection with the sale and purchase of this device.

Specifications subject to change without notice.

CASE DISASSEMBLY AND ASSEMBLY

WARNING

Potentially lethal AC power is present whenever the line cord is plugged into the AC outlet, even when the power switch is OFF. Always disconnect the power cord when opening the case. Avoid touching the fuse post on the inside of the unit.

Should access to the inside of the unit be required, proceed a follows:

1. Remove the line cord from the AC outlet before disassembly.

2. To disassemble the case, remove the screws that secure the cover to the chassis and lift the cover off.

3. To reassemble the case, place the cover on the chassis, line up the screw holes, and replace the screws.

MAINTENANCE AND RECALIBRATION

ADJUSTMENTS

All circutry is factory-calibrated. No user adjustments are required.

FUSE REPLACEMENT

Remove the line cord from the AC outlet before changing fuses. Using a screwdriver, remove the fuse holder cap. Replace the fuse with another fuse of identical type and current rating. Replace the fuse holder cap.

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