



Service Manual for PS-2303 & PS-2305

Linear DC Power Supply

Equipment Used	Quantity
Digital voltmeter HP3468A	1
Digital multimeter MY-65	1
Electronic load IT8512	1
Resistor 30Ω/300W	1

NOTE: Before calibration, please warm up the power supply for 15 minutes, and make sure that the local AC input matches the power supply's input voltage (110V or 220V, refer to the voltage selector on rear panel).

Procedure:

1 Calibration for Fixed 5V

- 1) Connect the voltmeter to the output terminals of fixed 5V. Adjust VR401 to get voltage readings of 5.000 ± 0.025 V on the voltmeter. It is best to get readings within the positive tolerance, which is at or above 5.000V
- 2) Turn VR402 and VR402 anti-clockwise to the end.
- 3) Connect the electronic load and voltmeter to the output terminal. Adjust the electronic load to get current readings of the electronic load between 3.30A to 3.35A.
- 4) Turn VR403 clockwise until the current readings quickly drops to 1A and below (current limit start-point)
- 5) Turn the electronic load reversely to get current readings of 3.15A.
- 6) Turn VR402 clockwise until the overload indicator turns RED (dim light or flashing)
- 7) Check load regulation:
 - a) Turn the electronic load to the position of minimum value 0A, write down the voltmeter readings.
 - b) Turn the electronic load to 3A, check the voltmeter readings. If the readings are not stable, stay with the load for about 1 minute. Check the voltmeter readings again. The readings shall jump within 4mV. Write down the minimum reading.
 - c) Subtract readings of step a and step b is load regulation, which shall be 15mV or below.

NOTE: Make sure of good connection between power supply and electronic load.

2 Calibration for Voltage

- 1) Calibration for Master Voltage
 - a) Press the output ON/FF switch to turn on the output. Set the TRACKING mode at independent model (INDEP.) Set the master voltage rotation knob at minimum value position. Set the current rotation knob at medium position. Use the multimeter to monitor the master voltage output.
 - b) Set the master voltage rotation knob to the maximum value position. Adjust VR101 to get readings of 31.45 ± 0.02 V on the multimeter.
 - c) Adjust VR4 to get readings of 31.4V on the power supply's LED display.
 - d) Press the output ON/FF switch again to turn off the output. Adjust VR202 to get readings of 31.4V on the power supply's LED display.

- 2) Calibration for Slave Voltage
 - a) Press the output ON/OFF switch to turn on the output. Set the slave voltage rotation knob to the minimum value position. Set the current rotation knob to the medium value position. Use the multimeter to monitor the slave voltage output.
 - b) Set the TRACKING mode at series model (SERIES). Set the master voltage rotation knob to the minimum value position. Adjust semi-adjustable potentiometer VR306 (series voltage at 0V) to get readings of $-65\pm 5\text{mV}$ on the multimeter.
 - c) Set the TRACKING mode back to independent mode (INDEP.). Set the slave voltage rotation knob (turn clockwise to the end) to the maximum value. Set VR301 to get readings of $31.65\pm 0.02\text{V}$ on the multimeter.
 - d) Adjust VR2 to get readings of 31.6V on the power supply's LED display.
 - e) Press the output ON/OFF switch again to turn off the output. Adjust VR802 to get readings of 31.6V on the power supply's LED display.
- 3) Calibration for Series Function
 - a) Press the output ON/OFF switch to turn on the output. Set the TRACKING mode at series mode (SERIES). Set the master and slave current knobs to the medium value position. Set the master voltage rotation knob to the minimum value position.
 - b) Turn the master voltage rotation knob clockwise. The slave voltage display will follow the change of master voltage. When the master voltage rotation knob is set at maximum voltage position, adjust VR501 to get the readings of slave voltage LED same as master voltage LED at 31.4V. Check the responding linearity of the MAX. and MIN. voltage. Compare the voltage display of master and slave, which allows error of ± 1 digit.
 - c) Press the output ON/OFF switch again to turn off the output. Adjust VR908 to get the readings of slave LED same as master LED at 31.4V.

3 Calibration for Current

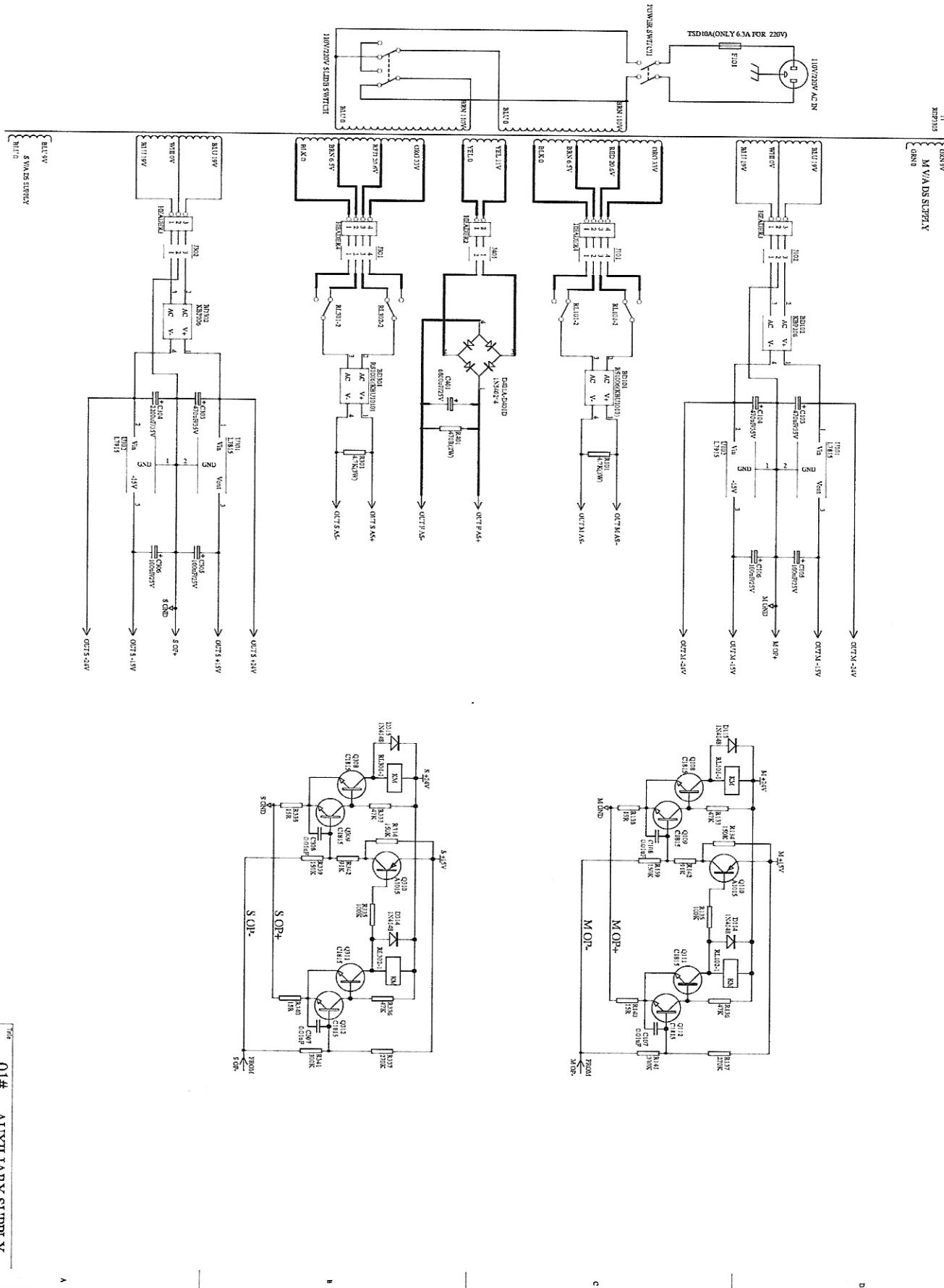
- 1) Calibration for Master Current
 - a) Press the output ON/OFF switch to turn off the output. Set the TRACKING mode at independent mode (INDEP.). Set the voltage rotation knob to the minimum value position. Connect the ammeter to the terminals of the master output.
 - b) Set the current rotation knob to the maximum value position. Adjust VR103 to get readings of 3.15A for PS-2303 (5.25A for PS-2305) on the ammeter.
 - c) Adjust VR3 to get the power supply's LED display as as the ammeter's.
 - d) Press the output ON/OFF switch again to turn off the output. Adjust VR703 to get the power supply's LED display same as display of step c.
- 2) Calibration for Parallel Function
 - a) Press the output ON/OFF switch to turn on the output. Set the TRACKING mode at parallel mode (PARALLEL). Set the master and slave voltage rotation knobs at medium value postion. Set the master and slave current rotation knobs at minimum value position. Connect the ammeter to the terminals of master output.

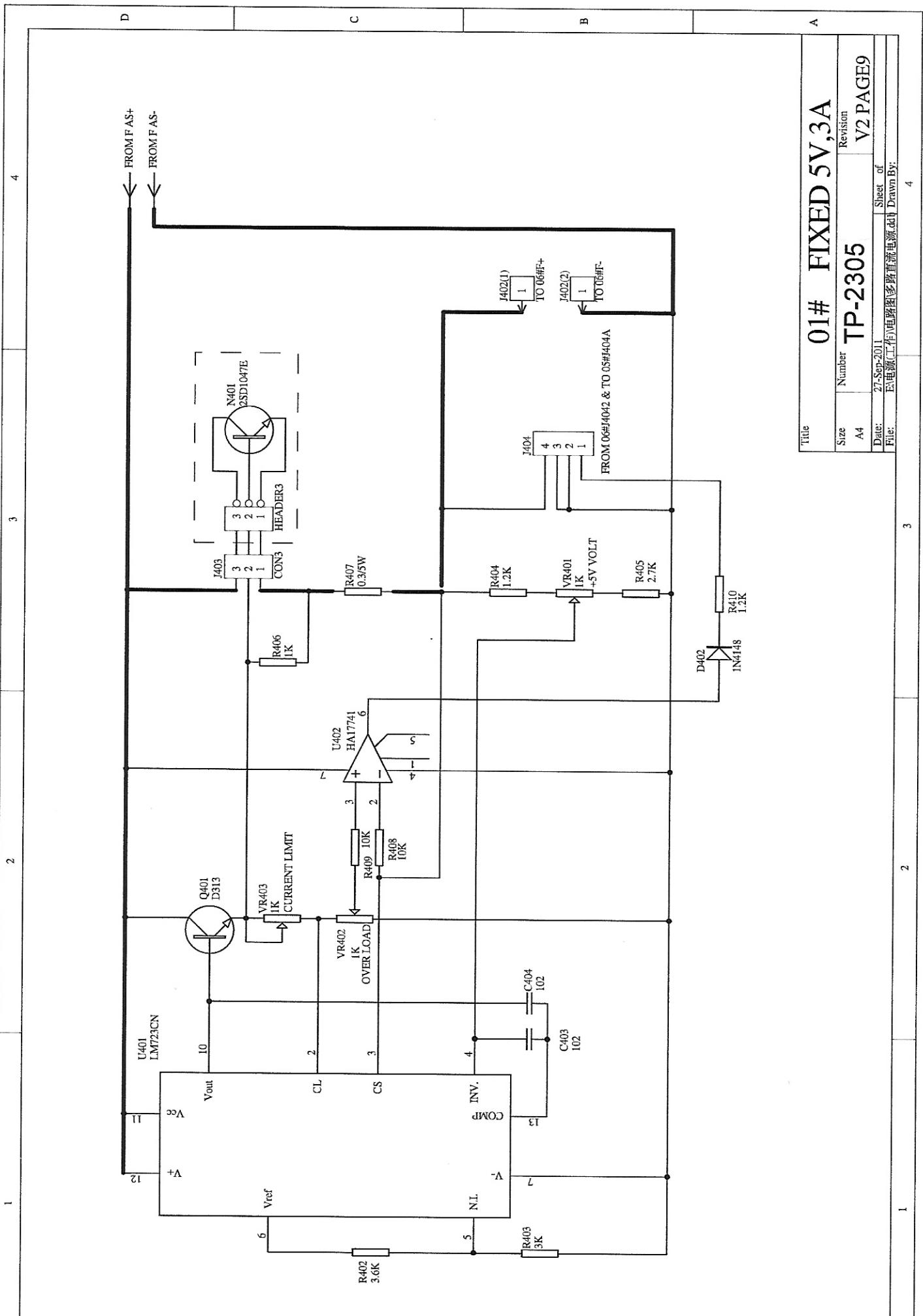
- b) Set the master current rotation knob to the maximum value position. Adjust VR502 to make the current LED display of master and slave the same at 3.15A for PP-2303 (5.25A for PS-2305). Compare the ammeter readings with the sum total of the master and slave current displays, which allows error of 9 digits or below for PS-2303 (15 digits or below for PS-2305).
 - c) Press the output ON/OFF switch again to turn off the output. Adjust VR909 to get the slave current display same as display of step b.
- 3) Calibration for Slave Current
- a) Press the output ON/OFF switch to turn off the output. Set the TRACKING mode at independent mode (INDEP.). Set the slave voltage rotation knob at the maximum value position. Set the current rotation knob at minimum value position. Connect the ammeter to the terminals of slave output.
 - b) Set the current rotation knob to the maximum value. Adjust VR303 to get readings of 3.15A for PS-2303 (5.25A for PS-2305) on the ammeter.

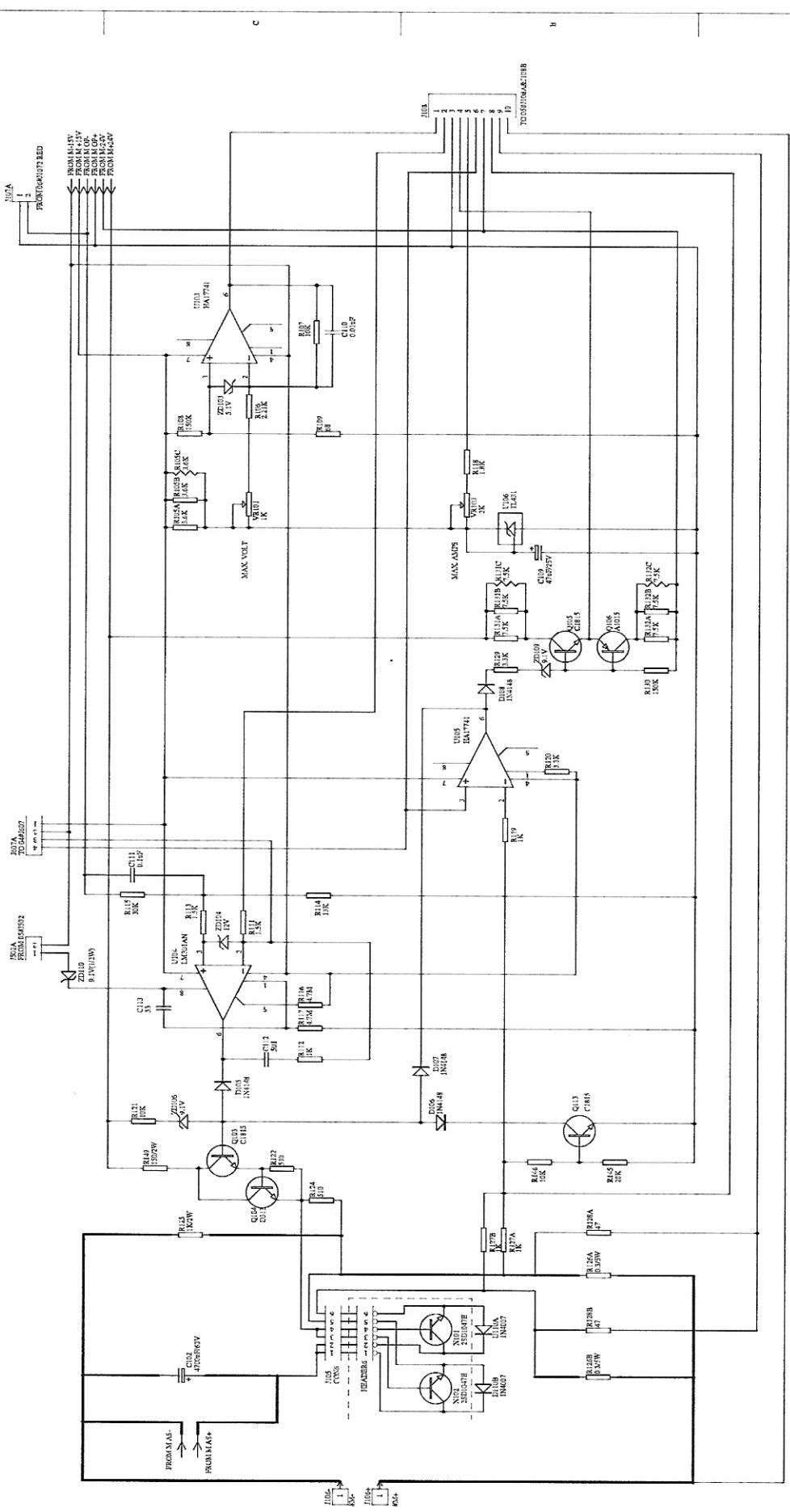
NOTE: When the TRACKING mode is set at independent mode, the output current of master and slave should be the same. The error between the master and slave output current shall be ± 2 digits or below.

Remarks:

- 1) Before calibration, please check measuring accuracy of the equipment used for calibration. The actual testing values is the equipment's readings removing measuring accuracy.
- 2) When at empty load, the master current display allows display of 0.01A under series mode.







01# MASTER CIRCUIT

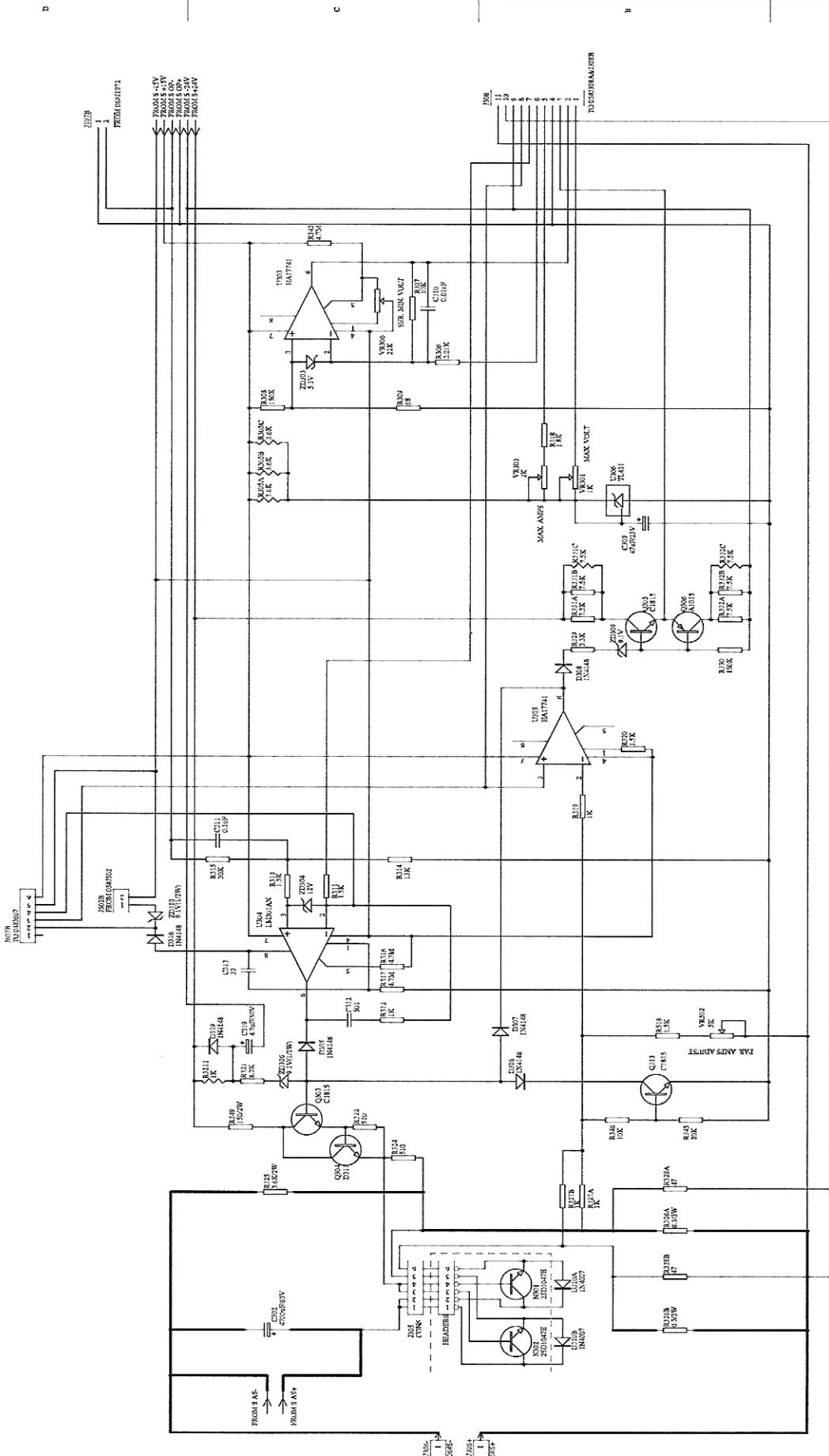
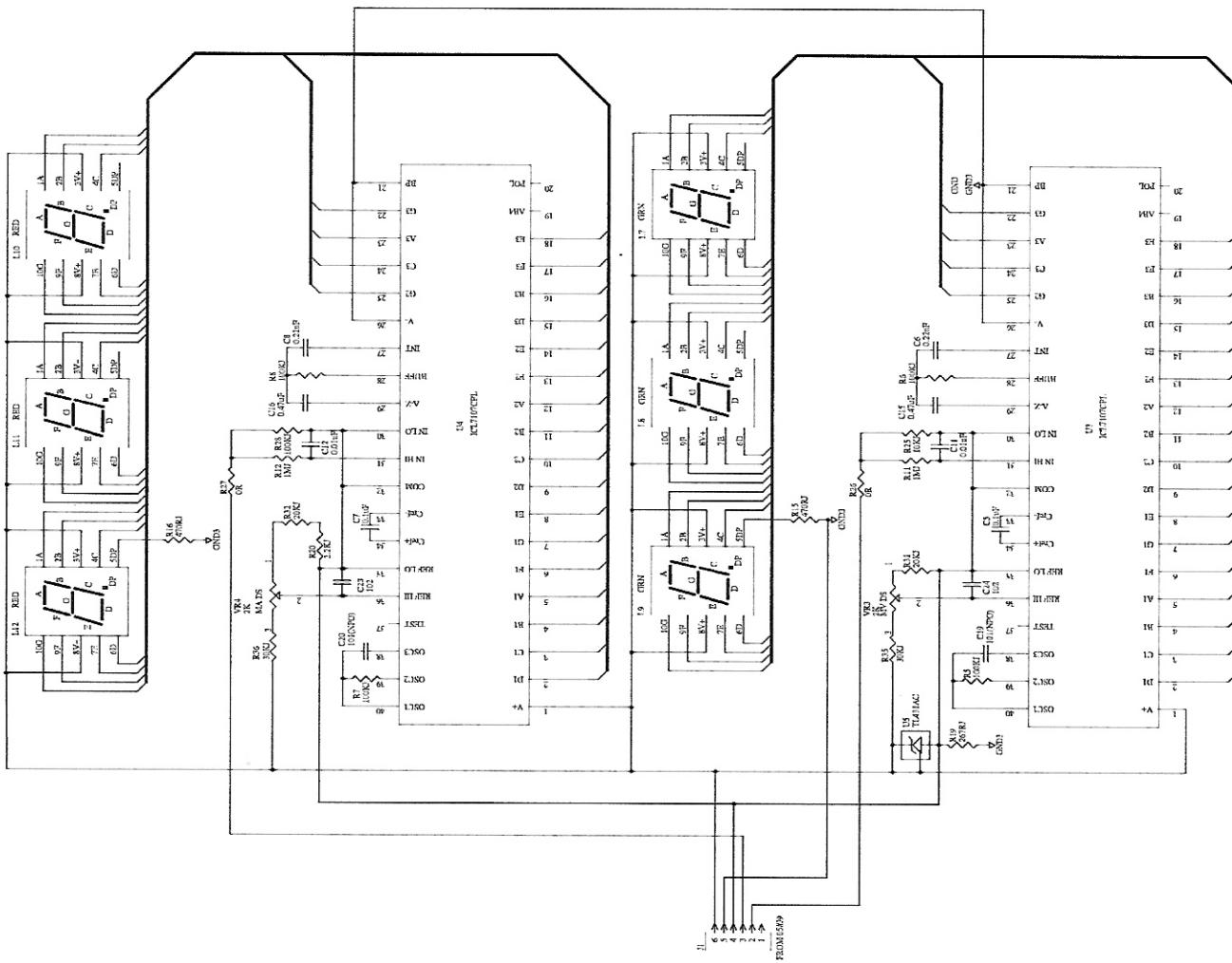


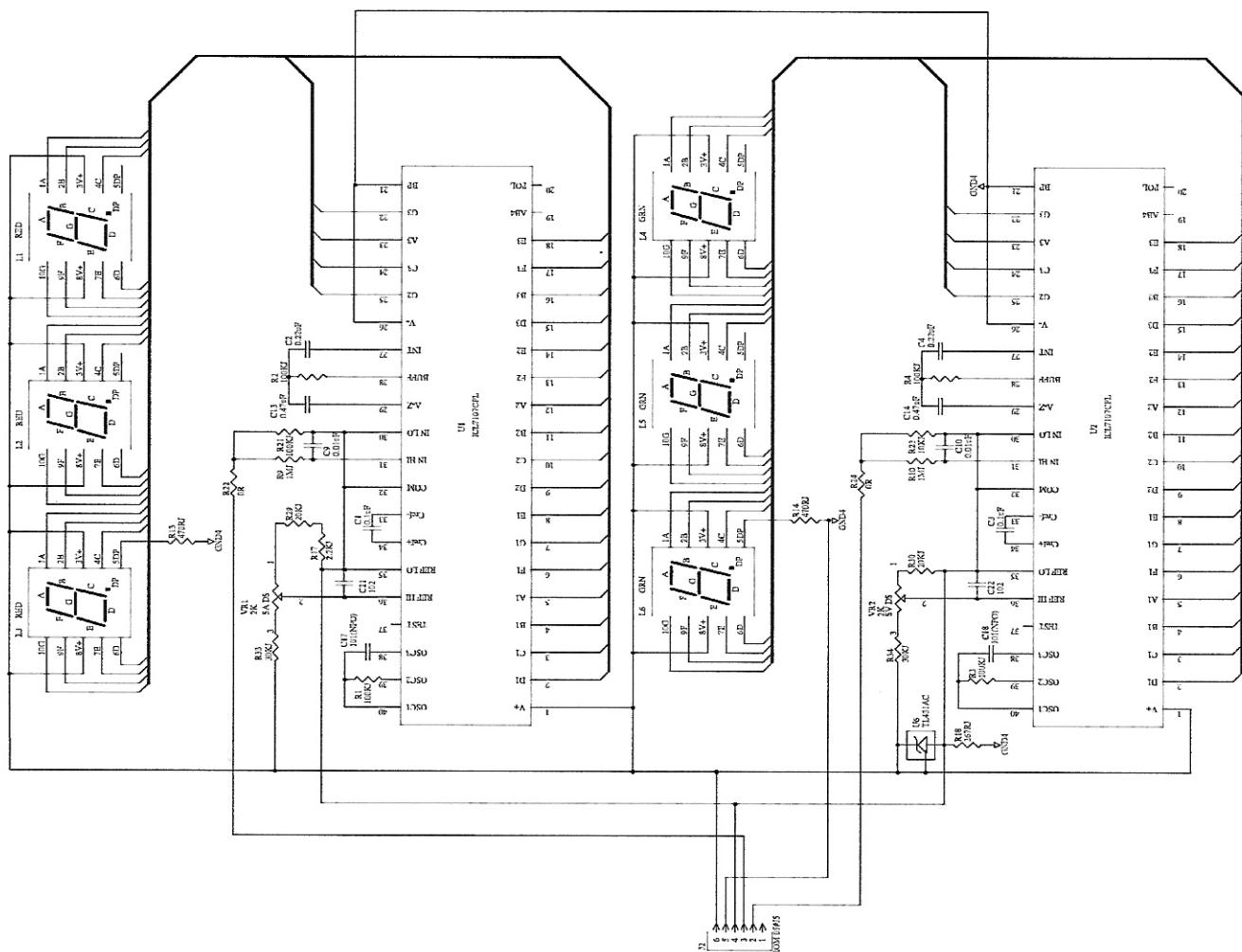
Fig. 01# SLAVE CIRCUIT

Ref. No.	01#	Slave Circuit
Size		Revised
Date		1980.01.01
Page	V2	PAGE3

1 2 3 4 5 6



Ref	03#MASTER DISPLAY
Size	16x2x4
Code	C
Designator	TP-2305T
Date	2010-01-01
Rev.	A
Sheet of	1
Page	1



Date	03# SLAVE DISPLAY	
Elec	Name	TP-2305
C	Version	Rev.0.0.1
Date	2018-07-01	
File	TP-2305_V0.0.1_20180701.zip	
	Sheet of	1 / 2
	V2 PAGE5	

