

5. CALIBRATION

5-1. CALIBRATION INTERVAL

To maintain instrument accuracy, perform the calibration of the DM-441B unit at least every one year if used frequently.

5-2. PRELIMINARY PROCEDURE

This instrument should be calibrated at an ambient temperature 18°C to 28°C with relative humidity up to 80% for best overall

5-2-1. Set the instrument controls as given in the preliminary control setting. Calibration must be performed after warmup time of at least 15 minutes after power is supplied.

5-2-2. The part should be calibrated with calibration VR marked in the electrical part arrangement.

5-3. Initial Starting Procedure

Before starting calibration, the following order must be kept:

5-3-1. Remove the power cord and the test lead and open the cover by loosening 4 screws fastening the bottom cover.

5-3-2. Check 2A/250V and 10A/250V fuse at the input board and the fuse at the real plate.

5-3-3. Turn on the power by pushing the power switch.

5-4. TEST EQUIPMENT

5-4-1. DMM calibrator (Fluke 5101B, 5220A or equal equipment) ----- 1 set

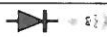
5-4-2. Decade resistor (General radio 1433-H or DMM calibrator) ----- 1 set

5-4-3. Signal generator (HP 3325B or equal equipment) ----- 1 set

5-5. CALIBRATION AND THE TEST PROCEDURE

5-5-1. Check-Up of Functions

Check the LED display as shown in the following table by choosing the functional S/W to DMM to be measured.

FUNCTION	FUNCTION LED	RANGE LED
—V	DC	mV . V
$\sim\text{V}$	AC	mV . V
—A	DC	mA . A
$\sim\text{A}$	AC	mA . A
Ω	Ω	Ω . k Ω . M Ω
		
FREQ	FREQ	KHz
hFE	hFE	

5-5-2. Check-Up Test of the LED Display

Choose the resistance range and make the input short to confirm the LED display as shown in the following table.

LED Choices	LED Display
200 Ω	00.00'
2 k Ω	.0000'
20 k Ω	0.000
200 k Ω	00.00
2000 k Ω	000.0
20 M Ω	0.000

Note : ' can be changed between 0-numeral digit by the test lead resistance.

5-5-3. DC Voltage Calibration

- 1) Choose DC V for the function switch and connect RED READ to the INPUT terminal and BLK READ to the Common terminal.
- 2) Calibrate the LED display at 00.00 with VR6(①) by choosing the 200mV RANGE and making the input short.
- 3) Calibrate VR15(②) till 1.9000V is displayed on LED by choosing the 2V RANGE and applying DC 1.9V to the input.

- must be used to reduce effects caused by the PROBE.
- Note: When calibrating $10M\Omega$, a short PROBE or STANDARD resistance the $20M\Omega$ RANGE and applying $10M\Omega$ to the input.
- 5) Calibrate VR11(13) till $10,000M\Omega$ is displayed on LED by choosing the $20M\Omega$ RANGE and applying $10M\Omega$ to the input.
 - 4) Calibrate VR1(12) till $1.0000k\Omega$ is displayed on LED by choosing the $2k\Omega$ RANGE and applying $1k\Omega$ to the input.
 - 3) Calibrate VR2(11) till $10.000k\Omega$ is displayed on LED by choosing the $20k\Omega$ RANGE and applying $10k\Omega$ to the input.
 - 2) Calibrate the LED display at $100.00k\Omega$ with VR10(10) by choosing the $200k\Omega$ RANGE and applying $100k\Omega$ to the input.
 - 1) Choose resistance for the function switch and link RED READ to the input terminal and BLK READ to the common terminal.

5-5-5. Resistance Calibration

- 5) Calibrate VC1(8) till $19.000V$ is displayed on LED by choosing the $20V$ RANGE and applying AC $19V/10kHz$ to the input.
- 4) Calibrate VC2(9) till $190.00mV$ is displayed on LED by choosing the $200mV$ RANGE and applying AC $190mV/50kHz$ to the input.
- 3) Calibrate VR8(7) till $1.9000V$ is displayed on LED by choosing the $2V$ RANGE and applying AC $1.9V/60Hz$ to the input.
- 2) Calibrate the LED display at $.0000$ with VR9(6) by choosing the $2V$ RANGE and making the input short.
- 1) Choose AC V for the function switch and link RED READ to the input terminal and BLK READ to the common terminal.

5-5-4. AC VOLTAGE CALIBRATION

- 6) Calibrate VR5(5) till $190.00mV$ is displayed on LED by choosing the $200mV$ RANGE and applying DC $190mV$ to the input.
- 5) Calibrate VR4(4) till $1000 V$ is displayed on LED by choosing the $1000V$ RANGE and applying DC $1000V$ to the input.
- 4) Calibrate VR3(3) till $190.00V$ is displayed on LED by choosing the $200V$ RANGE and applying DC $190V$ to the input.

5-5-8. FREQUENCY CALIBRATION

- 1) Choose frequency for the function switch and link RED READ to the input terminal and BLK READ to the common terminal.
- 2) Calibrate the LED display at 19.000kHz with VR14(⑭) by choosing the 20kHz RANGE and applying 19kHz/100mV to the input.
- 3) Calibrate VR13(⑮) till 150.00kHz is displayed on LED by choosing the 20kHz RANGE and applying 150kHz/100mV to the input.