

# **\*TB 9-6625-2020-35**

## **DEPARTMENT OF THE ARMY TECHNICAL BULLETIN**

# **CALIBRATION PROCEDURE FOR DIGITAL MULTIMETER, TEKTRONIX TYPES DM 502 AND DM 502A**

Headquarters Department of the Army, Washington, D.C.  
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### **REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also provide DA Form 2028 information to AMCOM via e-mail, fax, or the World Wide Web. Our fax number is: DSN 788-6546 or Commercial 256-842-6546. Our e-mail address is: [2028@redstone.army.mil](mailto:2028@redstone.army.mil). You may also complete a digital DA Form 2028 appearing at: <https://amcom2028.redstone.army.mil>.

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\*This bulletin supersedes TB 9 6625-2020-35, 24 July 1989.

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**SECTION I  
IDENTIFICATION AND DESCRIPTION**

**1. Test Instrument Identification.** This bulletin provides instructions for the calibration of Digital Multimeter, Tektronix, Types DM 502 and DM 502A. The manufacturer's manuals were used as the prime data sources in compiling these instructions. The equipment being calibrated will be referred to as the TI (test instrument) throughout this bulletin.

**a. Model Variations.** None.

**b. Time and Technique.** The time required for this calibration is approximately 2 hours, using the dc and low frequency technique.

**2. Forms, Records, and Reports**

**a.** Forms, records, and reports required for calibration personnel at all levels are prescribed by TB 750-25.

**b.** Adjustments to be reported are designated (R) at the end of the sentence in which they appear. When adjustments are in tables, the (R) follows the designated adjustment. Report only those adjustments made and designated with (R).

**3. Calibration Description.** TI parameters and performance specifications which pertain to this calibration are listed in table 1.

Table 1. Calibration Description

Test instrument parameters	Performance specifications
Type DM 502	
Dc volts	Range: 0 to 1000 V in 5 ranges Accuracy: $\pm 0.1\%$ of reading, $\pm 1$ count
Ac volts	Range: 0 to 500 V in 5 ranges Accuracy: 40 Hz to 10 kHz, $\pm 0.5\%$ of reading, $\pm 1$ count 20 to 40 Hz and 10 to 20 kHz, $\pm 1.0\%$ of reading, $\pm 1$ count

**Table 1. Calibration Description - Continued.**

Test instrument parameters	Performance specifications
<b>Type DM 502</b>	
Ac decibels	Range: -40 to +40 dB in 4 ranges Accuracy: ±0.5 dB from 0 to +20 dB from 20 Hz to 20 kHz ±0.5 dB from 0 to -10 dB from 20 Hz to 2 kHz ±1.0 dB from 0 to -10 dB from 2 to 20 kHz ±0.5 dB from -10 to -20 dB from 20 Hz to 2 kHz ±1.0 dB from -10 to -20 dB from 2 to 7.5 kHz ±2.0 dB from -10 to -20 dB from 7.5 to 20 kHz
Ohms	Range: 0 to 20 MΩ in 6 ranges Accuracy: 200Ω range; ± (0.5% ± 1 count) +0.1Ω 2, 20, 200 kΩ, and 2 MΩ range; ±0.5%, ± 1 count 20 MΩ range; ± 1%, ± 1 count
Dc current	Range: 0 to 2000 mA in 5 ranges Accuracy: ± 0.2% of reading, ± 1 count
Ac current <sup>1</sup>	Range: 0 to 2000 mA in 5 ranges Accuracy: ± 0.6% of reading, ± 1 count
<b>Type DM 502A</b>	
Dc volts	Range: 0 to 1000 V in 5 ranges Accuracy: 200 mV, 2, 20, and 200 V range: ± (0.1% of reading +0.05% of FS) 1000 V range: ±(0.1% of reading +0.1% of FS)
Ac volts	Range: 0 to 500 V in 5 ranges Accuracy: 200 mV, 2, 20, and 200 V range: 20 to 40 Hz, ± (1.5% of reading +0.3% of FS) 40 Hz to 20 kHz, ± (0.6% of reading ±0.3% of FS) 500 V range: 20 to 40 Hz, ± (1.5% of reading +1.2% of FS) 40 Hz to 20 kHz, ± (0.6% of reading +1.2% of FS)
True rms decibels	Range: -10 dB to +50 dB in 4 ranges with measurement capability to -60 dB Accuracy: ±0.5 dB from +50 dB to -50 dB from 20 Hz to 20 kHz ±0.5 dB from -50 dB to -60 dB from 20 Hz to 2 kHz ±1.5 dB from -50 dB to -60 dB from 2 kHz to 10 kHz
Ohms	Range: 0 to 20 MΩ in 6 ranges Accuracy: 200Ω, 2 kΩ, 20kΩ, 200 kΩ, and 2000 kΩ range: ± (0.5% of reading +0.05% of FS +0.2Ω) 20 MΩ range: ± (1% of reading +0.05% of FS)
Dc current	Range: 0 to 2000 mA in ranges Accuracy: ± (0.2% of reading, +0.05% of FS)
Ac current <sup>1</sup>	Range: 0 to 2000 mA in 5 ranges Frequency: 40 Hz to 10 kHz Accuracy: ± (0.6% of reading +0.3% of FS)

<sup>1</sup>Ac current verified during dc current check since same shunt resistors are utilized for both checks.