*TB 9-6625-2326-35

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR DIGITAL MULTIMETER ISAS MODEL DM224

Headquarters, Department of the Army, Washington, DC
29 December 2003

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can 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, US Army Aviation and Missile Command, 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. Instructions for sending an electronic 2028 may be found at the back of this manual. For the World Wide Web, use https://amcom2028.redstone.army.mil.

*This bulletin supersedes TB 9-6625-2326-35, dated 18 March 2002.

SECTION I
IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Digital Multimeter, ISAS, Model DM224. The manufacturer's manual was used as the prime data source 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 1 hour, 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 that pertain to this calibration are in table 1.

Table 1. Calibration Description

Test instrument parameters	Performance specifications
Dc voltage	Range: 0.2 to 200 V Accuracy: ± 1% of range
Ac voltage	Range: 0.2 to 200 V Frequency: 500 Hz Accuracy: ± 3% of range
Resistance	Range: 0 to 20 MΩ Accuracy: ± 1% of range

SECTION II
EQUIPMENT REQUIREMENTS

4. Equipment Required. Table 2 identifies the specific equipment to be used in this calibration procedure. This equipment is issued with Secondary Transfer Calibration Standards Set AN/GSM-286. Alternate items may be used by the calibrating activity. The items selected must be verified to perform satisfactorily prior to use and must bear evidence of current calibration. The equipment must meet or exceed the minimum use specifications listed in table 2. The accuracies listed in table 2 provide a four-to-one ratio between the standard and TI.

5. Accessories Required. The accessories required for this calibration are common usage accessories, issued as indicated in paragraph **4** above, and are not listed in this calibration procedure.

Table 2. Minimum Specifications of Equipment Required

Common name	Minimum use specifications	Manufacturer and model (part number)
CALIBRATOR	Range: 0.2 V dc to 200 V dc Accuracy: ±0.25% Range: 0.2 V ac to 200 V ac Accuracy: ±0.75% Frequency: 500 Hz Range: 0 to 20 MΩ Accuracy: ±0.25%	John Fluke, Model 5720A (p/o MIS-35947)
CONTROLLER		Polywell (MIS-45854)
SPORT		Miltope, AN/PSM-95 (Turned in with TI if required)
MSD (SPORT or MSD to be provided by customer for calibration of DM224 if Polywell Controller not available.)		Miltope, AN/PSM-95A (Turned in with TI if required)
SPORT/MSD Maintenance Disk (Required to run on SPORT/MSD if Polywell Controller not available.)		PM-TMDE (provided locally)
Test Leads		Type 311 cable (008392) PM-TMDE (provided locally)

SECTION III
CALIBRATION PROCESS FOR DM224
(UTILIZING POLYWELL CONTROLLER)

NOTE

Use of this section of the TB requires use of the Polywell Controller (MIS-45854) with the DM224 Calibration Software pre-installed. If you do not have access to this controller, choose either Section IV (SPORT) or V (MSD), depending on availability. Be advised that this pre-installed software is unique and not to be confused with the SPORT/MSD Maintenance Disk.

NOTE

If the DM224 Calibration Software is not found on the Polywell Controller, you may run the calibration procedure externally by utilizing the SPORT/MSD Maintenance Disk and running it in the Win2000 environment of the controller from the CD drive. To do this, follow the procedures presented in Section V. Both the Polywell Controller and MSD run in a Win2000 environment.

6. Preliminary Instructions

a. The instructions outlined in paragraphs **6** and **7** are preparatory to the calibration process. Personnel should become familiar with the entire bulletin before beginning the calibration.

b. Items of equipment used in this procedure are referenced within the text by common name as listed in table 2.

c. Unless otherwise specified, verify the result of each test and, whenever the test requirement is not met, take corrective action before continuing with the calibration. Adjustments required to calibrate the TI are included in this procedure. Additional maintenance information is contained in the manufacturer's manual for this TI.

d. Unless otherwise specified, all controls and control settings refer to the TI.

e. Unless otherwise specified, on screen controls will be accessed by using the mouse or the trackball controls to move the arrow over the icon, virtual instrument controls, etc., and clicking the left button.

7. Equipment Setup

WARNING

HIGH VOLTAGE is used or exposed during the performance of this calibration. DEATH ON CONTACT may result if personnel fail to observe safety precautions. REDUCE OUTPUT(S) to minimum after each step within the performance check where applicable.

a. Insert TI into controller PCMCIA slot.

b. Navigate to and execute DM224 Calibration Software program on controller.

NOTE

During Self Test, test leads connector must be disconnected from TI.

c. Click on **Self Test** button in display window. Upon successful completion of Self Test, reconnect test leads connector to TI and continue.

8. All Parameters

a. Performance Check.

(1) Connect TI red (+), black (-), and green (ground) connections to calibrator **OUTPUT** terminals.

(2) Click on **Performance Check** button and follow on-screen instructions.

b. Adjustments

NOTE

The test and calibration utility will give pass/fail indications. If there is an out-of-tolerance finding on any function/range of the Performance Check, you will be given an opportunity to repeat the test. If the out-of-tolerance finding still exists, you will be prompted to run the Alignment Check. Follow on-screen instructions. When the Alignment Check is successfully completed, you must rerun the Performance Check for a successful completion of same.

9. Final Procedure

a. Deenergize and disconnect all equipment.

b. Annotate and affix DA label/form in accordance with TB 750-25.

SECTION IV
CALIBRATION PROCESS FOR DM224 UTILIZING SPORT (AN/PSM-95)

NOTE

Use this section of the TB if calibrating the DM224 utilizing the "SPORT/MSD Maintenance Disk" running from the SPORT (AN/PSM-95) CDrom drive.

10. Preliminary Instructions

a. The instructions outlined in paragraphs **10** and **11** are preparatory to the calibration process. Personnel should become familiar with the entire bulletin before beginning the calibration.

b. Items of equipment used in this procedure are referenced within the text by common name as listed in table 2.

c. Unless otherwise specified, verify the result of each test and, whenever the test requirement is not met, take corrective action before continuing with the calibration. Adjustments required to calibrate the TI are included in this procedure. Additional maintenance information is contained in the manufacturer's manual for this TI.

d. Unless otherwise specified, all controls and control settings refer to the TI.

e. Unless otherwise specified, on screen controls will be accessed by using the mouse or the trackball controls to move the arrow over the icon, virtual instrument controls, etc., and clicking the left button.

11. Equipment Setup

WARNING

HIGH VOLTAGE is used or exposed during the performance of this calibration. DEATH ON CONTACT may result if personnel fail to observe safety precautions. REDUCE OUTPUT(S) to minimum after each step within the performance check where applicable.

a. Open back tray of AN/PSM-95.

NOTE

Ensure that there are no other PC cards installed in back tray.

b. Insert TI into back tray. Do not connect test leads connector at this time.

c. Press **ON/OFF** button **ON** to boot the SPORT.

d. Once system has completed the boot process, open CD drive door and insert "SPORT/MSD Maintenance Disk" into CD drive.

e. Close CD drive door.

f. SPORT/MSD Maintenance CD should auto-start and present a menu. If this does not occur, explore the CD and run **SPORTICE.exe**.

g. At first menu screen, click on **SPORT**, then click on **Continue**.

h. At next menu screen, click on **ISAS DM224**.

i. On next menu screen, click on **Setup & Calibration**.

j. At this time you may be presented with a text box stating that the SPORT does not have the DM224 driver installed that is required to perform the procedure. Click OK if presented with the text box, otherwise disregard this step if not applicable.

NOTE

A menu with the buttons "**Install DM224 Driver**" and "**Run DM224 Calibration Software**" will be presented. If "**Install DM224 Driver**" is inactive, the drivers have been previously installed on this SPORT and you can select "**Run DM224 Calibration Software**" and proceed. If the "**Install DM224 Driver**" button is active, you must select it to install the drivers. You will then need to remove the CD and reboot the SPORT. Once this is done, reinsert the SPORT/MSD Maintenance Disk. Once inserted, you should then proceed to and select "**Run DM224 Calibration Software**".

NOTE

During Self Test, test leads connector must be disconnected from TI.

k. At this time you will be presented with the DM224 Calibration Menu. Click on the Self Test button. Upon successful completion of Self Test, reconnect test leads connector to TI and continue.

12. All Parameters

a. Performance Check.

(1) Connect TI red (+), black (-), and green (ground) connections to calibrator **OUTPUT** terminals.

(2) Click on **Performance Check** button and follow on-screen instructions.

b. **Adjustments**

NOTE

The test and calibration utility will give pass/fail indications. If there is an out-of-tolerance finding on any function/range of the Performance Check, you will be given an opportunity to repeat the test. If the out-of-tolerance finding still exists, you will be prompted to run the Alignment Check. Follow on-screen instructions. When the Alignment Check is successfully completed, you must rerun the Performance Check for a successful completion of same.

13. Final Procedure

a. Deenergize and disconnect all equipment.

b. Annotate and affix DA label/form in accordance with TB 750-25.

SECTION V
CALIBRATION PROCESS FOR DM224 UTILIZING MSD (AN/PSM-95A)

NOTE

Use this section of the TB if calibrating the DM224 utilizing the "SPORT/MSD Maintenance Disk" running from either the MSD (AN/PSM-95A) or Polywell Controller (MIS-45854) CDrom drive.

14. Preliminary Instructions

a. The instructions outlined in paragraphs **14** and **15** are preparatory to the calibration process. Personnel should become familiar with the entire bulletin before beginning the calibration.

b. Items of equipment used in this procedure are referenced within the text by common name as listed in table 2.

c. Unless otherwise specified, verify the result of each test and, whenever the test requirement is not met, take corrective action before continuing with the calibration. Adjustments required to calibrate the TI are included in this procedure. Additional maintenance information is contained in the manufacturer's manual for this TI.

d. Unless otherwise specified, all controls and control settings refer to the TI.

e. Unless otherwise specified, on screen controls will be accessed by using the mouse or the trackball controls to move the arrow over the icon, virtual instrument controls, etc., and clicking the left button.

15. Equipment Setup

WARNING

HIGH VOLTAGE is used or exposed during the performance of this calibration. DEATH ON CONTACT may result if personnel fail to observe safety precautions. REDUCE OUTPUT(S) to minimum after each step within the performance check where applicable.

a. With the MSD/Polywell Controller operating, insert TI into PCMCIA input connector slot. Do not connect test leads connector at this time.

b. Insert the "SPORT/MSD Maintenance Disk" into CD drive.

c. The "SPORT/MSD Maintenance Disk" should auto-start and present a menu. If this does not occur, explore the CD and run **SPORTICE.exe**.

d. At Main Menu Selection screen, click on **MSD**.

NOTE

Personnel should become familiar with the ReadMe file contents before continuing this section. Do so by clicking on "**ReadMe First**" in the menu to access the instructions.

NOTE

The DM224 Calibration Software menu will now be presented. If the "**Install DM224 Driver**" selection is present, you must first select it to install the drivers to perform the procedure. You will then need to remove the CD and reboot the MSD (or Controller). Once this is done, reinsert the SPORT/MSD Maintenance Disk. Once inserted, you should then proceed to and select "**Run DM224 Calibration Software on Disk**". If the "**Install DM224 Driver**" button is not present, the drivers have previously been installed and you may proceed to step **e** below.

e. At DM224 Calibration Software menu, click on "**Run Calibration Software on Disk**".

NOTE

During Self Test, test leads connector must be disconnected from TI.

f. Click on the **Self Test** button. Upon successful completion of Self Test, reconnect test leads connector to TI and continue.

16. All Parameters

a. Performance Check.

(1) Connect TI red (+), black (-), and green (ground) connections to calibrator **OUTPUT** terminals.

(2) Click on **Performance Check** button and follow on-screen instructions.

b. Adjustments

NOTE

The test and calibration utility will give pass/fail indications. If there is an out-of-tolerance finding on any function/range of the Performance Check, you will be given an opportunity to repeat the test. If the out-of-tolerance finding still exists, you will be prompted to run the Alignment Check. Follow on-screen instructions. When the Alignment Check is successfully completed, you must rerun the Performance Check for a successful completion of same.

17. Final Procedure

a. Deenergize and disconnect all equipment.

b. Annotate and affix DA label/form in accordance with TB 750-25.

By Order of the Secretary of the Army:

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0330702

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INSTRUCTIONS FOR SUBMITTING AN ELECTRONIC 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however, only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" whomever@redstone.army.mil
To: <2028@redstone.army.mil

Subject: DA Form 2028

1. **From**: Joe Smith
2. Unit: home
3. **Address**: 4300 Park
4. **City**: Hometown
5. **St**: MO
6. **Zip**: 77777
7. **Date Sent**: 19-OCT –93
8. **Pub no:** 55-2840-229-23
9. **Pub Title**: TM
10. **Publication Date**: 04-JUL-85
11. Change Number: 7
12. Submitter Rank: MSG
13. **Submitter FName**: Joe
14. Submitter MName: T
15. **Submitter LName**: Smith
16. **Submitter Phone**: 123-123-1234
17. **Problem**: 1
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
26. Total: 123
27. **Text**

This is the text for the problem below line 27.

PIN: 079836-000