



TECHNICAL MANUAL

FOR

MODEL 66252A

DMM AUTOSWITCH

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1. INTRODUCTION

The model 66252A Autoswitch is an option that can be installed into the model 6625 Resistance Measurement System to allow resistance meters to be calibrated against the Standards that form part of the system. Additionally, a software package is available as an extra cost option to allow automatic calibration of the Agilent 3458 Digital Multimeter resistance ranges. Two versions of the switch are available. The rack mounted version, 66252A-R is designed to be installed within the 6625 cabinet. The bench version, 66252A is designed to rest on the bench top beside the 6625 cabinet.

The Autoswitch isolates the 6622A DCC Bridge from the 6625 system and joins the Rs and Rx scanner channel lines together. This allows you to connect the DMM to any free Rx channel (Line B) and use the Rs channels (Line A) to select the resistance values to be referenced. The functional schematic is outlined in the diagram below. A 4-Wire Zero module is included in the package to allow a proper zero to be performed at a remote channel of one of the system model 6664C scanners.

This manual describes the installation, testing and manual operation of the model 66252.

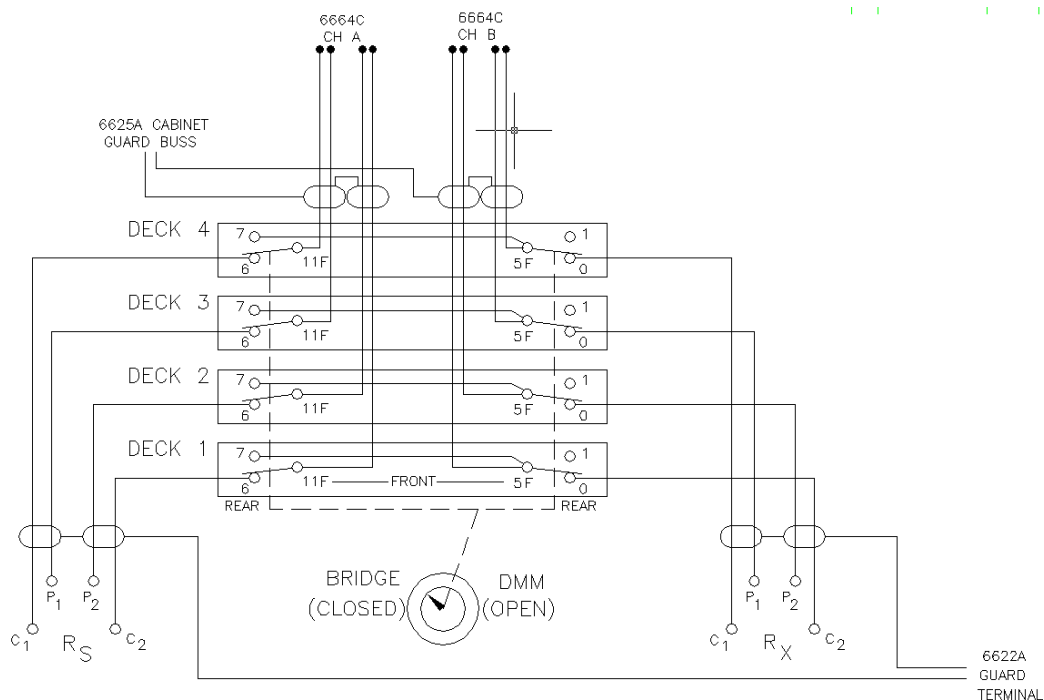


Figure 1-1: Electrical Schematic of the Autoswitch

2. INSTALLATION

This section describes the steps for installing the bench top and the rack mounted version of the model 66252A Autoswitch.

2.1 Installation of the Bench Top Version

2.1.1 Tools Required

Model 66252A Autoswitch
Screwdriver, slotted
(Optional) Jumper for 2 Scanners

2.1.2 Procedure

- a) Power down the cabinet and disconnect from power source
- b) Remove SCW cables between the 6622A Bridge Rs & Rx terminals and the 6664C scanner output terminals and discard or retain for future use. (The Autoswitch cables replace these.)
- c) Install Autoswitch Cables to the 6664C scanner channel A and channel B output terminals. Each cable end is labeled to indicate where it is to be connected.
- d) Install Autoswitch Cables to the 6622A bridge Rs and Rx terminals. Each cable end is labeled to indicate where it is to be connected.
- e) Connect the green wire for Channel A and Channel B cable shields to the guard buss bar on the left side of the cabinet.
- f) Connect the green wire for Rs and Rx ($C_1 P_1$ & $C_2 P_2$) cable shields to the 6622A guard terminal.
- g) Plug Cabinet power back into the power source.

Note: If there are two scanners install the optional jumper for the second scanner between the Rx/Rs of the first scanner and the Rx/Rs of the second scanner.

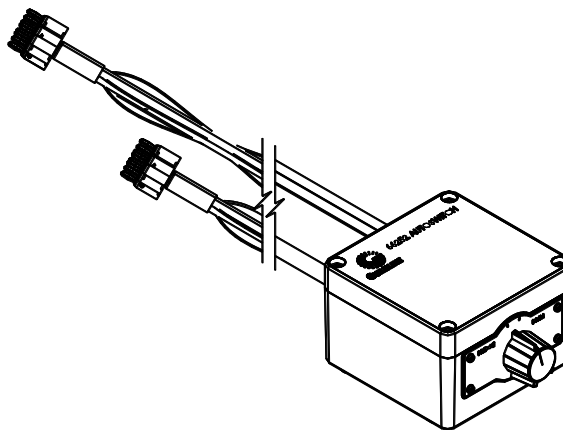


Figure 2-1: Autoswitch Bench Mount Version

2.2 Installation of the Rack Mount Version

2.2.1 Tools Required

Model 66252A-R Autoswitch
Screwdriver, slotted
(Optional) Jumper for 2 Scanners
(Empty 3U location in 6625A System required)

2.2.2 Procedure

- h) Power down the cabinet and disconnect from power source
- i) Remove SCW cables between the 6622A Bridge Rs & Rx terminals and the 6664C scanner output terminals and discard or retain for future use. (The Autoswitch cables replace these.)
- j) Remove 3U blank panel from front of 6625A cabinet, retain screws and washers for installation of 66252A-R.
- k) Install 66252A-R assembly into 3U hole with screws & washers from 3U blanking panel.
- l) Install Autoswitch Cables to the 6664C scanner channel A and channel B output terminals. Each cable end is labeled to indicate where it is to be connected.
- m) Install Autoswitch Cables to the 6622A bridge Rs and Rx terminals. Each cable end is labeled to indicate where it is to be connected.
- n) Connect the green wire for Channel A and Channel B cable shields to the guard buss bar on the left side of the cabinet.
- o) Connect the green wire for Rs and Rx ($C_1 P_1$ & $C_2 P_{2_1}$) cable shields to the 6622A guard terminal.
- p) Plug Cabinet power back into the power source.

Note: If there are two scanners install the optional jumper for the second scanner between the Rx/Rs of the first scanner and the Rx/Rs of the second scanner.

3. INSTALLATION TESTS

Once the DMM Switch option is installed, measurements need to be performed on known resistance ratios to ensure the integrity of the installation.

3.1 Test Procedure

- a) Turn the DMM Switch counter clockwise to the “Bridge” position.
- b) Select Scanner channels for 2 resistance elements of known ratio and individual values.
- c) Set up the 6622A Bridge to measure the ratio of the resistance elements selected.
- d) Once the measurement has settled, verify that the ratio is within expected limits. (Note: Other ratios may be checked as desired.)
- e) Turn the DMM Switch clockwise to the “DMM” position and connect the DMM to one of the unused scanner channels.
- f) Install the 4-Wire Zero Adapter directly to an unused scanner channel.
- g) Select the scanner channel on line B chosen for the DMM and the scanner channel selected for the 4-wire Zero Adapter on line A.
- h) Set up the DMM and perform a 4-wire zero for all Ohms ranges to be checked. The DMM manual should be referred to for the use of the key functions and setup.
- i) Select the scanner channel on line A for one of the known resistance element values selected in Step 2.
- j) Once the measurement has settled, verify that the value is within expected limits.
- k) For full system integrity validation, turn the DMM switch back to the “Bridge” position and perform the Verification Utility from the Bridgeworks Software Package.

4. OPERATION

This procedure describes methods of automatically or manually calibrating the Agilent 3458 DMM. This procedure may be used with other meters but it is advisable to review the meter manufacturer's procedure before using either of these methods.

4.1 Automated Procedure

The automated procedure is described in the documentation with Bridgeworks-C 3458A Resistance Calibration Utility available as an extra cost option.

4.2 Manual Procedure

- a) Clear all 6664C and 6664C-2 scanner channels
- b) Connect all necessary resistors and the Zero Ohm Adapter to the 6664C and 6664C-2 scanners input terminals.
- c) Connect the 3458 to an unused scanner channel input.
- d) Power on the 3458
- e) Set the DMM switch to the "DMM" position.
- f) Select 4-wire ohms function on the 3458 by pressing the blue "Shift" key followed by the "OHMF" key.
- g) Select the Zero Ohm link scanner channel on line A and select the DMM scanner channel on line B.
- h) Zero the meter by selecting "Offset Comp" key followed by the "Enter" key.
- i) The 3458 should read zero ohms.
- j) Select each resistor on line A starting from the 1 ohm up to the 100 Mega-ohm resistor, allowing each measurement to stabilize. (15 minutes)
- k) Record each value as they are obtained.
- l) Determine the meter error with respect to the known resistance values and correlate to the 3458 1 year specifications or as required.