

### Application note

# Using MET/CAL™ procedures with 5560A, 5550A, and 5540A



## Why can't we use the old procedures?

The new 5540A, 5550A, and 5560A Calibrators use new measurement ranging and connections to improve performance on the workload they are designed for (like benchtop DMMs). These changes mean that the connection messages in existing procedures not only would no longer be accurate, but they could potentially result in damage to your calibrator or the DUT. To ensure safety and correct performance, existing procedures must be converted to the new FSCs, and no device mapping between existing 55xx series calibrator FSCs (5502E/A, 5520, 5522A) and the new 5540A, 5550A, and 5560A hardware will be available.

## Converting 55XX based procedures to use 5560A, 5550A, or 5540A FSC

- 5560A: New category (better TUR for 6.5-digit DMMs)
  - Some 57xxA based procedures can now be converted to use the 5560A FSC. However, conversion of procedures that use the 5700/MMFC, 5720A/M5720, and 5730A FSCs to use the 5560A FSC is not covered in this document.
- 5550A: 5522A replacement
- 5540A: 5502A/5502E replacement

## Device mapping

1. Procedures written using the 5540A FSC execute without modification using a 5540A, 5550A, or 5560A.
2. Procedures written using the 5550A FSC execute without modification using 5550A or 5560A.

Therefore, for maximum coverage:

1. Procedures written using the 5522A FSC should be converted to use the 5550A FSC.
2. Procedures written using the 5502A or 5502E FSCs should be converted to use the 5540A FSC.



Note, procedures that use the 5500/M550 and 5520/M5520 FSCs must be converted to use the 5502A, 5502E, or 5522A FSC prior to the following steps to convert to 5540A, 5550A, or 5560A.

## Procedure conversion

### Create 5540A/5550A/5560A based project, main procedure, and subprocedures

1. Open the MET/CAL Editor.
2. Open the solution containing the procedures to be converted.
3. Add a new project to the solution.
4. Rename the project appropriately (e.g. "Fluke 87 IV 1 year Verification 5550A").
5. Add a procedure to the project.
6. Rename the procedure appropriately (e.g. "Fluke 87 IV 1 year Verification 5550A").
7. Open the procedure to be converted (e.g. "Fluke 87 IV 1 year Verification 5522A").
8. Click anywhere in the procedure in step 7.
9. Type CTRL+A followed by CTRL+C.
10. Click anywhere in the procedure in step 6.
11. Type CTRL+A followed by CTRL+V.

12. Update the INSTRUMENT line as required (e.g. Fluke 87 IV: (1 year) VER /5550A).
13. Repeat steps 5 through 12 for any subprocedures in the project that use the FSC to be converted.

### Convert main procedure and subprocedures to use the 5540A, 5550A, or 5560A

1. Highlight FSC to be converted (e.g. 5522A).
2. Type CTRL+H.
3. Enter new FSC in the “replace with” field (e.g. 5540A, 5550A, or 5560A).
4. Select Current Project or Entire Solution in the drop-down menu.
5. Select Replace All icon or type ALT+A.
6. Note, if subprocedures use a different FSC than the main procedure (e.g. 5502E vs. 5522A), repeat steps 1 through 5 for any other 55xx FSCs to convert.
7. Enter 20A in the search field.
8. Enter 30A in the “replace with” field.
9. Select Current Project in the drop-down menu.
10. Select Replace All icon or type ALT+A.

### Update connection messages

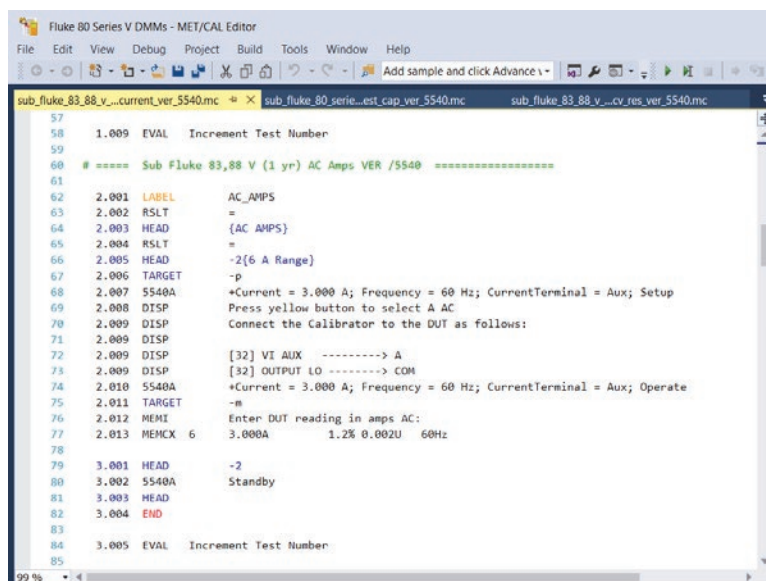
1. Enter NORMAL in the search field.
2. Enter OUTPUT in the “replace with” field.
3. Select Replace All icon or type ALT+A.
4. Close the Search and Replace UI.
5. Type CTRL+F.
6. Enter AUX in search field.
7. Press “Find Next” or F3.
  - a. If the instance found is for resistance change AUX HI to SENSE HI and AUX LO to SENSE LO.
  - b. If instance found is for current change AUX HI to VI AUX and AUX LO to OUTPUT LO.

### How to optimize procedures for the new features of the 5540A/5550A/5560A

The steps outlined here will allow your existing procedures to work in the same way they did before, but they do not take advantage of new features to optimize procedure times.

Previously, procedures required separate connection messages for resistance sense and current. With the new terminals, this has changed. However, some meters do not allow simultaneous connections to their low and high current inputs, using 5540A/5550A/5560A VI AUX and 30A outputs, because these DUTs determine which range to use based on the input terminal in use. This can be tested by using separate test leads to connect to both the DUT current inputs and setting the DUT to each current measurement function. If the DUT beeps or displays an error, then they cannot be used simultaneously.

Additionally, if you have purchased the DMM AutoCal Adapter, it would be important to reevaluate the structure and order of operation of your procedure. In many cases, existing procedures have been optimized to reduce connection changes by placing similar test connections consecutively in the run order, but this may no longer be optimal with the new cable since it could be implemented as a single connection that never changes throughout the procedure.



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