
File: "readme700.txt"
Date: October 04, 2002
Software: MET/CAL V7.00

Welcome to MET/CAL V7.00.

This document is divided into 7 sections:

1. What's New in V7.00

   Description of significant new features in V7.00.

2. MET/CAL

   Changes which affect one or more MET/CAL applications are listed here.

   Since MET/TRACK V7.00 is a new application, rather than an upgrade of the V6 Manual Entry and DB Setup applications, detailed MET/TRACK changes are, in general, not listed in this section. Consult the MET/CAL V7.00 Users Manual for a description of MET/TRACK V7.00.

3. Documentation.

   Overview of product documentation.

4. Manuals Errata

   Errors found in the MET/CAL V7.00 manuals. These errors were uncovered after the manuals "went to press".

5. Reports

   Reports provided with MET/CAL V7.00.

6. On Time Support Products

   On Time Support products which work with the MET/CAL database.

7. Contacting Fluke

   How to contact Fluke with MET/CAL questions, problems, or suggestions.

Section 1 What's New in V7.00

This section describes significant changes between MET/CAL V6.11A and MET/CAL V7.00.

1. New MET/TRACK

   The MET/TRACK application has been rewritten for the V7.00 release.

   There's now a single application ("mettrack.exe") rather than two separate applications (Manual Entry and DB Setup).

Login as "MT" to obtain administrator functionality (as in V6 DB Setup).

The MET/TRACK user interface is substantially different in V7.00, but all significant V6.00 functions have been preserved.
Please consult the MET/CAL V7.00 Users Manual for a description
of the features and operation of MET/TRACK V7.00.

2. Fluke 8508A

MET/CAL V7.00 supports the new Fluke 8508A Reference Multimeter. Refer to the documentation for the "8508" and "M8508" FSCs for details. Documentation is available within the MET/CAL Editor (F1) or in the MET/CAL V7.00 Reference Manual ("ReferenceManualV7.pdf").

3. Agilent E4418B and E4419B Power Meters

MET/CAL V7.00 supports the Agilent E4418B and E4419B power meters. Refer to the documentation for the "4418", "M4418", "4419", and "M4419" FSCs for details. Documentation is available within the MET/CAL Editor (F1) or in the MET/CAL V7.00 Reference Manual ("ReferenceManualV7.pdf").

4. Agilent 33250A Function Generator

MET/CAL V7.00 supports the Agilent 33250A function generator. Refer to the documentation for the "33250" and "M33250" FSCs for details. Documentation is available within the MET/CAL Editor (F1) or in the MET/CAL V7.00 Reference Manual ("ReferenceManualV7.pdf").

5. Change Procedure Directory

MET/CAL (Run Time and Editor) now allow the default procedure directory to be changed.

6. Measurement Uncertainty Improvements

MET/CAL V7.00 supports the Welch-Satterthwaite calculation. The procedure writer may now specify sensitivity coefficients and degrees of freedom for each uncertainty component.
The coverage factor used to determine the expanded uncertainty is dynamically calculated from the combined degrees of freedom (Welch-Satterthwaite), the T-distribution, and a specified confidence value. All new features are optional.

7. Picture File Formats

MET/CAL V7.00 supports JPEG, GIF, EMF, WMF, and ICO in addition to BMP.

8. Results Table

MET/CAL V7.00 writes calibration results data to a new database table, called the Results Table.

The V6.00 Calresults Table remains part of V7.00. By default the V7.00 Run Time application writes results data to both the Results Table and the Calresults Table.

Reports which work with V6 will continue to work with V7, after they are verified against the new database.

MET/CAL V7.00 includes a number of new reports which work with the V7 Results Table.

The fundamental difference between the Calresults Table and the Results Table is that in the Results Table each individual result quantity is stored in one or more separate columns.

The format file "rslt db.frm" has no effect on the Results Table or on reports which report data from the Results Table.

See the on-line reference "ResultsTable7.pdf" for a detailed list of MET/CAL V7.00 result quantities.

9. New Version of Sybase SQL Database.

MET/CAL V7.00 uses Sybase V8.

10. New Version of Crystal Reports

MET/CAL V7.00 uses Crystal Reports V8.

Section 2 MET/CAL

----> New Picture File Formats

Reports #2049, #7269, #9018, #11510

In MET/CAL V7.00 picture display is handled via an ActiveX DLL ("mcpic.dll") which uses the Visual Basic "Image Control". This control supports the following picture file formats:

.bmp - Bitmap
.jpg - JPEG
.gif - Graphics Interchange Format
.emf - Enhanced Metafile
.wmf - Windows Metafile
.ico - Icon

Prior to V7.00 only the ".bmp" format was supported.

Pictures may be resized by the user. The maximum picture size is full screen. The minimum picture size is constrained by the buttons ("Advance" and "Terminate" for PIC, "Yes", "No", and "Terminate" for PICE).

----> Add Yes/No/All/Quit Confirmation Prompt to Procedure Deletion

Report #5025

Users have stated they would like to see some sort of Yes/No/All/Quit prompt to confirm that procedures really should be deleted before doing the actual deletion.

"Delete Procedures" is now part of the Editor's "File" menu. It includes a "Search" button as well as an optional confirmation dialog. Users may remove "Delete Procedures" from the "Tools" menu. The "MET/CAL Administrator" application
is no longer needed.

----> Control of Font Used by PIC and PICE for Text Overlays

Report #5531

In V6.11g and later the Editor and Run Time support a configurable Picture Font used for text overlays by the PIC and PICE FSC. This allows the font (facename), style

(regular,
italic, bold, or bold italic), and pointsize to be controlled.

----> Add an Option to Select Multiple Procedure Directories

Report #7711

Customers have requested that more than one procedure directory
should be accessible from the Run Time and Editor applications.

The MET/CAL Editor and Run Time have been changed to support multiple directories.

A new "Change Default Directory" (Ctrl+D) menu item has been added to the top-level "File" menu of the Editor.

Choosing "Change Default Directory" causes a
"Choose Default Procedure Directory" dialog to appear.
The standard Windows common dialog for browsing and choosing a file is used.

If the user chooses a directory which does not contain a MET/CAL procedure directory file ("proc.dir"), an empty "proc.dir" is created in the directory.

Using "Change Default Directory" causes the "procdir" parameter in the MET/CAL initialization file ("metcal.ini") to be updated.

Changing the default directory in the Editor affects the Run Time as well, and vice versa.

When executing a procedure in Run Time or Test Run, all required subprocedures must be present in the currently selected default procedure directory.

A number of related changed have been made to the Editor as well:

(1) "Save As" in the "File" menu now refers to a submenu containing two menu items:

    "Save As Compiled Procedure..."
    "Save As Text Procedure..."

    The first submenu items causes a browse dialog to be displayed, allowing the user to choose the procedure directory where the procedure is to be saved. This does not change the default procedure directory.

    "Save As Text Procedure..." functions identically to the "Save As..." menu item in the "File" menu in V6 and prior.

(2) "Save Procedure" in the "File" menu (Ctrl+S) functions as it always has. However, if the default procedure directory has been changed since the time the procedure to be saved was loaded or last saved, "Save Procedure" saves it to the original procedure directory (i.e., to the procedure from which it was loaded or to which it was most recently saved).

(3) There's a second new menu item in the "File" menu: "Save to Default Directory". This menu item causes the procedure to be saved to the current default procedure directory, regardless of where it was loaded from or

was last saved to.

(4) If the user attempts to close the Editor or close a child window in a situation where procedure changes haven't been saved yet, the "How Should the File be Saved?" prompt dialog now includes "Save As Proc" and "Save As Text" buttons instead of the "Save As" button in V6 and prior. "Save As Proc" allows the user to browse for a procedure directory to save the file in compiled form. "Save As Text" functions like the "Save As" button in this dialog in V6 and prior.

(5) The usual "Create New or Overwrite" dialog appears whenever
a compiled procedure is being saved to the procedure directory from which it was loaded or, if it has already been saved at least once, whenever it is being saved to the directory where it was most recently saved.

The "Create New or Overwrite" dialog does not appear if the procedure file was loaded from a text file, or entered from scratch, or if it is being saved to a directory different from the one from which it was loaded or most recently saved. In this case, if there is a name conflict with a procedure already in the directory, an error message is generated and the user is presented with the option of either overwriting the procedure with which there is a name conflict or canceling the save operation.

It is important to realize that the change described above does not provide a "tree-structured" procedure directory. Rather, it simply makes it more convenient to change the default procedure directory.

----> MATH Functions to Read Accuracy Data

Report #8640

V7.00 includes two new MATH FSC functions used to read accuracy file data. The functions are ACCV and ACCV2.

The functions may be used with Fluke-provided accuracy files for MET/CAL-supported system instruments, like the Fluke 5700A, or may be used with user-configured instruments for which the end user provides the required accuracy file.

Refer to the on-line help for the MATH FSC for a full description of ACCV and ACCV2.

----> Support Agilent/HP E4418A (EPM-441A) Single Channel Power Meter

Report #8919

MET/CAL V7.00 supports the Agilent 4418A power meter.

The new FSCs are 4418 and M4418.

----> Scientific Notation in Error Column of Results

Report #8993

A user who does a lot of mechanical calibration states that he does not like the scientific notation in the error column and would like to be able to turn it off in the results file and get actual error in decimal format. It is confusing for his customers in the format 3e-2.

The V7.00 implementation is such that in most cases the Error

is not formatted using scientific notation. This statement applies to the V7.00 Results Table, not to "legacy results".

In V7.00 the Error is formatted per the UUT Resolution. For typical UUT Resolution values this approach does not use E-format (scientific notation).

----> Add Capability to Distinguish Accredited / Non-Accredited Measurements

Report #9859

A customer who has an accredited lab and uses MET/CAL wants to have an additional "*" on the report on the measurements where he has no accreditation.

Here's additional information provided by a Fluke representative:

> The DKD, and also NAMAS, as I learned from Wavetek reports, allows the inclusion of a certain number of non-accredited test steps in cal reports. They must be marked, e.g., with an asterisk ('*'), to identify the relevant tests, and a comment in the report has to explain this feature.
>
> To be able to mark tests the MET/CAL Editor must provide a way to include the information about accreditation with each test, and there must be a mechanism for transferring this information to the cal report. Maybe such a flag could be set with a VSET statement.
>
> The DKD is beginning to require that non-accredited tests be shown on cal reports with a gray background. Crystal Reports could make use of this new flag to do so.
>
> The DKD allows 10 to 15 % of the DKD certificate to be non-accreditated tests, but of course not for all the main functions of the UUT. Examples for non-accreditated tests could be the lowest voltage and current ranges, certain frequencies etc.
>
> If there are non-accreditated tests in a report, it must be explained with a comment line at the bottom of every page.

MET/CAL V7.00 supports an Accreditation Flag. The parameter name, using the VSET FSC, is "ACCRED". A procedure may enable or disable the Accreditation Flag on a per-test basis. See "vset.hlp" for additional information.

----> Change the ACC FSC to Use Units Prefixes

Report #10236

An option is needed that would force the compiler to look for a recognized units prefix at the beginning of the "string" portion of the ACC Nominal field. For example, in the following TUR report generated using 6.11A, the system accuracy is not the same for test 1 and test 2. Basically, test 2 assumes the nominal field is base units because the "uA" is just an arbitrary string. However the 5700 evaluation converts the Nominal value to amps before computing the system accuracy.

Calibration Training MET/CAL Procedure

```
            ============================================================
            INSTRUMENT:             Test Case: ACC Prefix
            DATE:                   2002-09-05
            AUTHOR:                 Fluke
            REVISION:               1.0
            ADJUSTMENT THRESHOLD:   70%
            NUMBER OF TESTS:        2
            NUMBER OF LINES:        19
            CONFIGURATION:          Fluke 5700A
            ============================================================
            # Use 5700A 1 year, 99% accuracy file.
            1.001  ACCF          5700            5700_99.1yr
            1.002  5700          100.0uA         1.0U                    2W
            #! Test Tol 1e-006, Sys Tol 1.6e-008, TUR 62.5000 (>= 4.00).
            # 5700A 1 year, 99% accuracy at 100uA is 60ppm + 10nA.
            2.001  ACC           100.0uA         60P% 0.01U
            2.002  MEMI          Enter the UUT reading in microamps:
            2.003  MEMCX         100.0uA         1.0U
            #! Test Tol 1, Sys Tol 0.016, TUR 62.5000 (>= 4.00).
```

In V7.00 MET/CAL parses and converts units prefixes as it does for an instrument FSC. This does not affect the T.U.R. (the ratio), but it does change the system accuracy, which affects the measurement uncertainty calculation.

ACC now operates in a manner consistent with an instrument FSC setup statement (MOD4 = "S").

----> Add Sensitivity Factors to Measurement Uncertainty Calculation

Report #11992

Sensitivity coefficients have been implemented in MET/CAL V7.00
as optional VSET parameters. The parameter names are C1, C2, ..., C10. Refer to the VSET on-line documentation for details.

----> Add Search Function in "Copy Procedures"

Report #13687

The MET/CAL Editor's "Copy Procedures" function, currently accessed via the "Tools" menu, should be enhanced to include a "Search" function.

In V7.00 "Copy Procedures" is now part of the Editor's "File" menu. The "Copy Procedures" dialog includes a "Search" button.

----> Support Agilent/HP E4419A (EPM-442A) Dual Channel Power Meter

Report #14552

MET/CAL V7.00 supports the Agilent 4419A dual channel power meter.

The new FSCs are 4419 and M4419.

----> Control of "Please Remove All Connections..." Message

Report #14599

In V7.00 there's a new "REMCON" parameter which may be specified in a VSET statement or in the MET/CAL initialization file. "REMCON = no" turns off the "Please Remove All Connections..." message. The default value is "yes". A VSET specification overrides an initialization

file specification, if any.

Users running MET/CAL workstations dedicated to mechanical cal may wish to specify "remcon = no" in "metcal.ini". This turns off the message for all procedures, unless specifically turned back on in a procedure using "VSET REMCON = yes". For other types of MET/CAL workstations (electrical workload), it will probably be more appropriate to specify "remcon = yes" in "metcal.ini" (or equivalently, not specify "remcon" in "metcal.ini"), and then specifically disable the message using "VSET remcon = no" in specific procedures where the message is unneeded.

----> 3325 & M3325 FSCs Omitted from PDF Reference Manual

Report #14628

The "3325" & "M3325" FSCs were inadvertently omitted from the V6.11 PDF reference manual.

Customers will have to rely on the MET/CAL Editor's on-line help files for these two FSCs until a reference manual update is available.

The V7.00 Reference Manual includes sections for the 3325 and M3325 FSCs.

----> MATH Functions to Access Measurement Uncertainty Data

Report #14633

V7.00 includes two new MATH FSC functions used to access measurement uncertainty data from the most recent evaluation. The functions are "UNC" and "UNCV".

"UNC" takes as an argument a string which designates the desired measurement uncertainty parameter. For example, to access the standard deviation of the measurements a statement like:

```
MATH MEM = UNC("SDEV")
```

may be used.

"UNCV" provides access to the individual measurements. The argument is the index of the desired measurement. A valid index is a value between 1 and NMEAS, where NMEAS is the number of measurements for the evaluation step just completed.

Refer to the on-line help for the MATH FSC for details.

----> Config Editor Lists Pressure Modules Separately

Report #14698

In V7.00 there's a minor enhancement to the MET/CAL Config Editor (invoked via F12 in Run Time and Editor) to display the pressure modules separately from the main "Add Instrument" dialog. Choose either "Fluke 525A Pressure Module..." or "Fluke 700 Pressure Module..." in the "Add Instrument" dialog, then choose OK to display a secondary dialog which allows a specific pressure module to be selected. In addition, the "Add
Instrument" dialog has been enlarged to show more instruments.

----> Cannot Run "Quick Sort" on Win2000

Report #14691

In V6.11A running "Quick Sort" on a Win2K platform results in an error message stating that an incorrect version of COMCTL32.OCX is present.

The MET/CAL V7.00 Install Program correct this problem.

----> List Pressure Modules in Separate List Box for Config Editor "Add" Option

Report #14698

There are so many pressure modules that the instrument configuration editor currently lists them at the end of the "Add Instrument" list box. This was done so a user would not have to scroll past all the pressure modules in order to get to instruments like the Wavetek 395. However now you have to scroll to the bottom of the list box and then search backward for a desired pressure module. A cleaner approach would be to have a single entry in the Add Instrument list box such as "Fluke 700 Pressure Module...", which when selected would display a separate list box with only the 700 series pressure modules.

V7.00 implements the change described above.

----> 33120 DC Offset Limits Incorrectly Calculated when Amplitude Taken from Memory Register MEM

Report #14711

For example, in V6.11A and prior, the following procedure statements:

```
1.001  MATH         MEM = 2
1.002  M33120       -4Voff
1.003  33120        Vpp       1kH            SI    S
L
```

casue the following run time error:

```
E7412: FSC 33120: DC offset out of range.  Limits are
                  +/-(0 to 0) for 0Vpp.
```

The underlying problem is that the limits check fails to use the value in register MEM as the 33120 NOMINAL value.

A work-around is to directly specify the Nominal value in the 33120 statement. For example:

```
1.003  33120        2Vpp       1kH            SI    S
L
```

V7.00 corrects this problem.

----> MATH Functions to Convert between Decibels and Volts (RMS)

Report #14716

In V7.00 the MATH FSC includes functions "DBTOV" and "VTODB" to convert between RMS voltage and decibels. The reference impedance must be specified.

----> TARGET FSC Omitted from PDF Reference Manual

Report #14732

In V6.11A the TARGET FSC help file is not included in the

PDF version of the Reference Manual.

Users of V6.11A and earlier must rely on the Editor's on-line help to access the TARGET FSC reference information.

The V7.00 reference manual ("ReferenceManualV7.pdf") includes the TARGET FSC.

----> Keithley 2000 AC Measurements Cause Run Time Error

Report #14757

In MET/CAL V6.11 and V6.11A execution of a "2000" FSC to perform an AC measurement causes a run time error. The Keithley 2000 generates an error code of -113 ("improper header").

This problem is not present in V6.10.

V6.11c or later is required to correct this problem.

----> MATH FSC Parsing Error when Function Argument is Literal Negative Number

Report #14762

In V6.11A and prior there's an error in the MATH FSC expression parser which prevents the recognition of the second or subsequent function argument when that argument is a literal negative number.

For example,

```
MATH MEM = MAX2(-26, -27)
```

generates a compile time syntax error.

The work-around is to enclose the literal number in parentheses:

```
MATH MEM = MAX2(-26, (-27))
```

Another work-around is to place the argument value in a register:

```
MATH M[100] = -27
MATH MEM = MAX2(-26, M[100])
```

This problem affects all functions which have a numeric argument other than in the first position.

The problem has been corrected in V6.11c or later.

----> RSS Function Added to MATH FSC

Report #14763

V7.00 includes a new "RSS" function in the MATH FSC. "RSS" performs a root-sum-square calculation on a sequence of numbers in a specified range of numeric registers.

Unlike the existing "RSS2" and "RSS3" functions, "RSS" handles up to 255 values, as long as the numeric "M" registers are pre-loaded with the necessary values.

Refer to the on-line help for the MATH FSC for a full description.

----> MATH FSC Function to Return Confidence from Accuracy File Header

Report #14764

In MET/CAL V7.00, a new MATH FSC function, "CONF", may be used to read the confidence value from the header of an accuracy file associated with a specified reference.

See the on-line help for the MATH FSC for details. Requires V6.11f or later.

----> MET/TEMP: Accuray Data Incorrect for Hydra 2620 and 2625

Report #14769

In MET/TEMP V6.11, accuracy information for the Hydra 2620 and 2625 in the accuracy file "hydacc._sd" is incorrect.

Data before and after the correction are shown below:

Before:

```
RTD2620=-200:0.06~0:0.09~100:0.11~300:0.14~600:0.20
```

After:

```
RTD2620=-200:0.13~0:0.09~100:0.12~300:0.24~600:0.56
```

----> 9500 DCV Statements May Fail in Demo Mode

Report #14797

In V6.11A, the following statement may cause an unhandled exception error when executed in demo mode:

```
9500         0V                                S
```

V6.11e or later is required to correct the problem.

----> Running 1271-Based Procedure with Configured 1281 Fails in Some Cases

Report #14814

In V6.11A and prior 1271-based procedures which use information
specified in the auxiliary FSC, M1271, do not function correctly when the procedure is used with a configured 1281. The M1271 FSC serves 3 purposes:

(1) Specification of range locking.
(2) Enabling the filter for DC voltage, DC current, & resistance measurements.
(3) Specifying the guard connection.

Running a 1271-based procedure with a configured 1281 will therefore result in a procedure which executes without range locking, with the filter disabled, and with no remote guard connection.

Possible work-arounds for the problem are:

(a) Re-write the procedure to be 1281-based.

(b) Configure the instrument as a 1271 (even though it's really a 1281). (Note: The asset in the database will still be recorded as a 1281, so the list of standards used will remain correct when a cal report is generated for a UUT where

the 1281 was used as a reference.)

V6.11g or later is required to correct this problem.

----> Support Datron-Yokogawa 9100

Report #14828

A customer in Japan would like to use MET/CAL V6.11A with the Datron-Yokogawa 9100. The manufacturer portion of the response
to IDN? for the Yokogawa-branded 9100s is "Datron-Yokogawa". MET/CAL V6.11A accepts only "Wavetek Ltd" and "Fluke".

MET/CAL V7.00 has been updated to accept the Yokogawa-branded versions of the 9100. Contact Fluke Japan or MET/SUPPORT for details.

-----> ACC, MEMC, & MEMCX Base Units Presumption Causes Uncertainty Confusion

Report #14840

In V6.11A and prior the MEMC, MEMCX, and ACC FSCs do not parse the units portion of the NOMINAL field in the same way that an instrument FSC does. In particular, the units prefix, if any, is not recognized. This means that MET/CAL never scales values entered with these FSCs, even if a units prefix is, or appears to be, present.

This design dates back to MET/CAL V1.0 (and earlier -- 7411B running on a Fluke 1720 instrument controller). The original intent was probably to allow non-supported units to be used, and this was accomplished by allowing arbitrary strings to be entered in the non-numeric portion of the MEMC NOMINAL field.

Prior to the introduction of the measurement uncertainty calculation in MET/CAL this design (i.e., not parsing the MEMC/MEMCX/ACC NOMINAL units), although it was inconsistent with instrument FSCs, did not cause significant problems, since the entered string was used to annotate the results, and the procedure writer was able to ensure that the two quantities being compared (measurement and expected value) were
in commensurate units (e.g., both in mV, or both in V, etc.).

The introduction of measurement uncertainty, however, complicated things. MET/CAL, by design, expects to do the measurement uncertainty calculation entirely in base units. A procedure which includes ACC+MEMC or ACC+MEMCX tests, and which calculates measurement uncertainty, is now forced to use base units in the procedure. This prevents the procedure from being written to conform directly to UUT capabilities.

If a user writes an old-style ACC+MEMC test and uses a units prefix, MET/CAL will (in fact) perform the measurement uncertainty calculation in scaled units, but will generate the standard and expanded uncertainties (result quantities) as if they were in base units. (The problem is that the software is unaware of the units prefix, and is simply doing the uncertainty calculation using the numbers as entered.)

In V7.00 MET/CAL parses and interprets units prefixes in MEMC, MEMCX, and ACC statements. This affects the measurement uncertainty calculation when scale units are used.

The measurement uncertainty module has been changed so that the UUT Resolution, as determined by the V7.00 result

generating and formatting code, is used directly in the uncertainty calculation.

The algorithm by which the UUT Resolution is inferred now is based on parsing the units prefix in ACC, MEMC, and MEMCX statements.

Similarly, when the raw measurements (on which the standard deviation is based) are scaled to base units, the units prefix for a MEMC or MEMCX evaluation, is now taken directly from the evaluation FSC NOMINAL field.

For example, if the procedure writer specifies:

```
MEMC 1.00mV 0.1%
```

the 'm' in "1.00mV" now matters. The readings will be taken to be mV values.

----> Datron 4808 Transition from 100 V, 100 kHz to 1900 mA, 1 kHz Causes Settings Conflict Error

Report #14876

The 4808 driver in MET/CAL V6.11A produces a settings conflict error when a transition from AC voltage to AC current is attempted and the AC voltage frequency is not valid in AC current mode.

The problem also occurs with the 4200, 4200A, 4700, 4705, 4707, 4708, 4800, 4800A, and 4805 FSCs.

V6.11i or later is required to correct this problem.

----> Datron 4808 Driver in Resistance Mode Causes Two-Wire to Four-Wire Transition Even When Already in Four-Wire Mode

Report #14877

In V6.11A the 4808 driver switches to two-wire mode at the beginning of every resistance test. This causes a two-wire to four-wire transition even when two successive four-wire tests are performed.

This does not invalidate the test, but causes unnecessary delay and unnecessary use of internal relays.

The problem also occurs with the 4000, 4000A, 4700, 4705, 4707, 4708, 4800, 4800A, and 4805 FSCs.

V6.11i or later is required to correct this problem.

----> M9500 Reset Statement Allows Other Fields to be Specified

Report #14891

In V6.11A the MET/CAL Editor fails to check for superfluous fields in an M9500 statement which specifies "*" (RESET) in the NOMINAL field.

For example, V6.11A allows:

```
M9500  *  CH2  1T2
```

However, the "*" in the NOMINAL fields causes the other parameters to take on default values. The above statement actually sets the output channel to 1 and the trigger channel to none.

In V7.00 the M9500 statement has been changed so that:

(1) A blank M9500 statement causes the "*" to be auto-inserted, resulting in "M9500 *".

(2) In any M9500 statement where the NOMINAL field is "*" all other fields must be blank.

----> Blank M4XXX Statements Changed to Auto-Insert "*" in NOMINAL

Report #14892

In V6.11A a blank M4XXX statement (M4000, M4000A, M4200, M4200A, M4700, M4705, M4707, M4708, M4800, M4800A, M4805, and M4808) is ignored. A blank statement is not an error, but it has no effect on procedure execution.

In V7.00 the procedure compiler auto-inserts a "*" (RESET) in the NOMINAL field when a blank statement is entered.

----> Constructions [I] and [I$] not Document in "IEEE" Section of Reference Manual

Report #14896

In V6.11A the [I] and [I$] constructions are missing from the IEEE FSC Reference Manual section. V7.00 corrects this error in the manual. (Note that the Editor's on-line manual is correct in V6.11A and remains correct.)

----> 5520A 1-Year AC Voltage (Sinewave) Specs Not Updated

Report #14898

In V6.11A MET/CAL's 1-year (99%) accuracy file for the 5520A was not updated when a number of the AC Voltage (Sinewave) specs were loosened (about two years ago).

The accuracy file has been updated for V7.00.

It appears that the only changes to the ACV Sine 1-year specs are:

(1) 33 mV to 329.999 mV range, 45 Hz to 10 kHz, change ppm of output from 130 to 145.

(2) 33 mV to 329.999 mV range, 10 kHz to 20 kHz, change ppm of output from 150 to 160.

----> 5520A 90-Day AC Voltage (Sinewave) Specs Not Updated

Report #14900

In V6.11A MET/CAL's "5520.acc" accuracy file contains non-updated specs for 5 ACV sinewave ranges.

V7.00 updates the 90-day 5520 accuracy file as follows:

(1) 33 mV to 329.999 mV 45 Hz to 10 kHz change ppm of output from 110 to 140.

(2) 33 mV to 329.999 mV 10 kHz to 20 kHz change ppm of output from 120 to 150.

(3) 0.33 V to 3.29999 V 45 Hz to 10 kHz change ppm of output from 100 to 140, and change floor from 25 uV to 60 uV.

(4) 0.33 V to 3.29999 V 10 kHz to 20 kHz change floor from 50 uV to 60 uV.

(5) 3.3 V to 32.9999 V 45 Hz to 10 kHz change floor from 200 uV to 600 uV.

----> M4XXX Auxiliary FSCs Not Listed in Editor Help File

Report #14920

In V6.11A the Editor's general help file (accessed via F1 in the Editor when the current line is blank) fails to list the auxiliary FSCs M4000, M4000A, M4200, M4200A, M4700, M4705, M4707, M4708, M4800, M4800A, M4805, and M4808.

These FSCs were added to support range locking in the V6.11/V6.11A release.

In V7.00 the help file ("metcal.hlp") has been updated.

----> Add Control Over Saving of Repeated Test Results

Report #14924

All versions of MET/CAL from V1.00 to V6.11A implement a specific algorithm to deal with repeated tests in the results. If a particular test is repeated two or more times, only the first and last executions of the test are saved in the results. This algorithm is derived from an As Found / As Left approach to verification.

V7.00 implements a more flexible scheme which allows the workstation and/or site to configure the method for handling repeated tests:

Option 1
Save the first and last executions of any test executed 2 or more times. This is the same as the current approach.

Option 2
Save only the last execution of a test. This option may be used, for example, when MET/CAL is used in a factory verification application, and only the final execution of each test is to be saved.

Option 3
Save all test executions, regardless of how many times a test is repeated. As with Option 1, only the PASS/FAIL status of the last execution affects the overall PASS/FAIL status of the procedure.

Note that the new options applies only to the "Results" table, not to the "Cal Results" table. "Cal Results" continues to operate exactly as it has in V6.11A and prior.

In MET/CAL V7.00 the RSM VSET parameter (Result Save Mode) may be used to control the mode of saving repeated test results. See "vset.hlp" for details.

----> 1271 & 1281 On-Line Help Fails to Show dBm as Legal Units

Reports #14931, #14932

In V6.11A and prior, the 1271 and 1281 FSCs support dBm ("D") as legal NOMINAL field units, however the on-line help for these FSCs does not document this.

V7.00 includes corrected help files for these FSCs.

----> Test Tolerance Report in Volts when 437 FSC NOMINAL Specifies dBm

Report #14933

In V6.11A and prior the T.U.R. report module linearizes 437 dBm test tolerance and system accuracy values by conversion to Vrms, rather than watts. The T.U.R. is unaffected by this, but the reported test tolerance and system accuracy should be converted to W, not Vrms. V7.00 corrects the conversion.

----> Datron 4XXX Calibrator FSCs Now Support Range Locking Resistance

Report #14939

In V7.00 the M4XXX FSCs allow ohms ("Z") to be specified in the NOMINAL field.

----> 1271, 1281, and 4950 Should Not Be Set To 1000V DC Range by Reset Operation

Report #14965

In V6.11A and prior the 1271/1281/4950 "soft" reset function sets the meter to the 1000V DC range.

The reset operation is performed during procedure execution whenever the Post Test dialog is displayed, or following an evaluation when ASK+ Q is in effect. By unconditionally setting the meter to DCV, the meter setup and reading used for the test are lost.

A typical scenario is as follows:

1. ASK- F is in effect (display Post Test upon FAIL).
2. 1271, 1281, or 4950 evaluation fails.
3. Reset operation performed by MET/CAL sets meter to DCV.
4. Post Test dialog is displayed indicating failed test.
5. Meter no longer displays reading that contributed to the failed test.

In V7.00 the driver has been modified. The reset operation now sends only "*CLS".

----> Allow Readonly Pre-Prompt Parameters to be Written to Variable File

Report #14969

In V6.11A and prior the Run Time application does not write readonly parameter values to the variable file ("variable.dat").

This has been changed in V7.00.

In V7.00 the Run Time has been changed so that, by default, it writes readonly pre-prompt parameters to the variable file.

This feature requires V6.11l or later.

Users who wish to retain the behavior of V6.11A and prior may add "readonly var = no" to the [Startup] section of the initialization file. This will inhibit the Run Time from writing readonly parameters to the variable file.

Here's an example of what you can do with the new feature:

(1) Add the line:

```
Model :RD: Model$ 4203
```

to the pre-prompt file (default name "promptdb.txt").

(2) In the procedure include a statement like:

```
MATH MEM2 = GETV("Model")
```

You now have the value of the database field 4203 in the string register MEM2.

Suppose, for example, the UUT is a Fluke 5520A. MEM2 would then contain the string "5520A".

The procedure writer may now use the JMPL FSC and the MATH FSC's string comparison function to implement conditional branching based on the model string.

----> 33120 Accuracy File should be 365 Days not 90 Days

Report #14974

In V6.11A the 33120A accuracy file has "interval = 90 days". The 33120A specs are 1 year.

The accuracy file has been corrected in V7.00.

----> Run Time Crashes on Second Calibration When All Lines in Pre-Run Prompt File Commented Out

Report #14976

In V6.11A the Run Time may crash in some cases when the pre-run prompt file, default name "propmtdb.txt", has been disabled by commenting out all the lines in the file. In order for the problem to appear, the post-run pass and/or fail prompt files must be enabled.

The crash occurs on the second calibration, immediately after the prompt for the UUT asset number.

To avoid the problem, it is sufficient to specify "prompt = none" in the MET/CAL initialization file. This accomplishes the purpose of turning off all pre-run prompts, but does not cause the crash described above.

V7.00 corrects this problem. (This bug fix actually requires V6.11l or later.)

----> 4953 AC/DC Shunt not in List of Standards Used

Report #14977

In V6.11A a 4950 FSC statement utilizing the 10A range requires the 4953 AC/DC Shunt, however the 4953 is not included in the list of standards used.

V7.00 corrects this problem.

----> New MATH FSC Function to Convert Seconds to HH:MM:SS

Report #14990

A request has been received for a MATH function which takes as input a number of seconds and reformats as a string with the form: HH:MM:SS.

This function may be useful in procedures which wish to display elapsed or remaining time when time consuming operations are underway.

The new function is MTIME. Refer to the on-line reference for the MATH FSC for details.

----> 4808_99.1yr Accuracy File Error

Report #14992

In V6.11A the accuracy file is as follows:

Mode: Ohms 2W

# Nominal		MOD1	Tolerance	Floor		Resolution
0.0000000	0.0000000	NA	NA	NA	NA	100e-9
2.000000	19.999999	NA	NA	27e-4	200e-3	1e-6
20.00000	199.99999	NA	NA	12e-4	200e-3	10e-6

It should be:

Mode: Ohms 2W

# Nominal		MOD1	Tolerance	Floor		Resolution
0.0000000	0.0000000	NA	NA	NA	NA	100e-9
2.000000	19.999999	NA	NA	27e-4	20e-3	1e-6
20.00000	199.99999	NA	NA	12e-4	20e-3	10e-6

Per the manual, below 1 kohms is 20 mohms, not 200 mohms. 1 kohm and greater is correctly stated as 200 mohms

----> 4950 10A Zero Connection Message Incorrect

Report #15005

In MET/CAL V6.11A automatic message generated when zeroing the 4950 10A range is incorrect. The message should show connections to the 4953 shunt.

V7.00 corrects this problem.

----> MEASURE ONLY VSET Parameter Should Apply to NTHROW as well as NMEAS

Report #15018

In V6.11 there's a problem as described in the following report:

> We have a customer who has upgraded from MC5 to MC6.11.
> I understand that the NTHROW command in VSET affects how the 3458 driver works with the MOD3 settings. However, in the following procedure I would expect MET/CAL to prompt for instructions to perform the test at the outset and then take all 5 readings.

```
1.001  ASK+           K
1.002  VSET         mfile = u
1.003  VSET         mfile_format = verbose
1.004  VSET         NMEAS = 5
1.005  VSET         MEASURE ONLY = YES
1.006  VSET         NTHROW = 2
1.007  3458         1.000000V      1P% 2W
2.001  END
```

What actually happens is MET/CAL prompts to perform tests 3 times. In effect, the procedure resets between the first 2 tests. I would not expect it to perform this way with MEASURE_ONLY = YES.

Of course, this can be overcome by switching the N flag off, but is this the answer?

In V7.00 the code has been changed. MEASURE ONLY now affects the NTHROW part of the measurement uncertainty loop as well as the NMEAS part.

There is no way to cause MET/CAL to behave precisely as it did in V6.11 & V6.11A in this regard. However, the risk is low because it's hard to imagine a procedure which depends on the fact that the reference meter is re-set up each time through the NTHROW loop, but still does not want the meter to be re-set up in the NMEAS loop.

This change affects the following FSCs:

1271, 1281, 2000, 2001, 2002, 2620T, 34401, 34420, 3458, 437, 4418, 4419, 45, 4950, 525, 5335, 5500, 5520, 5800, 5820, 5790, 6666, 6680, 6685, 8505, 8506, 8560, 8566, 8568, 8842, 8901, 8902, 8903, 8920, HP60, and HP63.

----> 1281 ACV Lower Limit Incorrect When Range Locked, 1 V Range and Above

Report #15026

The 1281 is only specified down to 1% of full-scale. Therefore the minimum reading is as follows:

2mV	100mV range
0.02V	1V range
0.2V	10V range
2V	100V range
20V	1000V

In V6.11A the lower limit is 2 mV independent of whether the 1 V, 10 V, 100 V, or 1000 V range is locked.

V7.00 corrects this problem.

----> 1271 ACV Lower Limit Incorrect When Range Locked, 1 V Range and Above

Report #15027

The 1271 is only specified down to 1% of full-scale. Therefore the minimum reading is as follows:

2mV	100mV range
0.02V	1V range
0.2V	10V range
2V	100V range

20V 1000V

In V6.11A the lower limit is 2 mV independent of whether the 1 V, 10 V, 100 V, or 1000 V range is locked.

V7.00 corrects this problem.

----> 1281 ACI Lower Limit Incorrect When Range Locked, 1 mA Range and Above

Report #15028

The 1281 is only specified down to 1% of full-scale. Therefore the minimum reading is as follows:

2uA	100uA range
0.02mA	1mA range
0.2mA	10mA range
2mA	100mA range
0.02A	1A

In V6.11A the lower limit is 2 uA independent of whether the 100 uA, 1 mA, 10 mA, 100 mA, or 1 A range is locked.

V7.00 corrects this problem.

----> 1271 ACI Lower Limit Incorrect When Range Locked, 1 mA Range and Above

Report #15029

The 1271 is only specified down to 1% of full-scale. Therefore the minimum reading is as follows:

2uA	100uA range
0.02mA	1mA range
0.2mA	10mA range
2mA	100mA range
0.02A	1A

In V6.11A the lower limit is 2 uA independent of whether the 100 uA, 1 mA, 10 mA, 100 mA, or 1 A range is locked.

V7.00 corrects this problem.

----> 4950 ACI Lower Limit Incorrect When Range Locked, 1 mA Range and Above

Report #15030

The 4950 is only specified down to 1% of full-scale. Therefore the minimum reading is as follows:

2uA	100uA range
0.02mA	1mA range
0.2mA	10mA range
2mA	100mA range
0.02A	1A
0.2A	10A

In V6.11A the lower limit is 2 uA independent of whether the 100 uA, 1 mA, 10 mA, 100 mA, 1 A, or 10 A range is locked.

V7.00 corrects this problem.

----> 4950 ACV Lower Limit Incorrect When Range Locked, 10 mV Range and Above

Report #15031

The 4950 is only specified down to 1% of full-scale. Therefore the minimum reading is as follows:

0.02mV	1mV range
0.2mV	10mV range
2mV	100mV range
0.02V	1V range
0.2V	10V range
2V	100V range
20V	1000V

In V6.11A the lower limit is 0.02 mV independent of whether the 10 mV, 100 mV, 1 V, 10 V, 100 V, or 1000 V range is locked.

V7.00 corrects this problem.

----> 8842 2nd and Subsequent Readings Incorrect for NMEAS > 1 and MEASURE_ONLY = YES

Report #15045

In V6.11A if measurement uncertainty is enabled (NMEAS > 1) and "measure_only = yes", the 2nd, 3rd, 4th, ..., nth 8842A measurements are corrupted.

The problem was caused by the HV probe multiplier not being properly set on the 2nd and subsequent invocations of the 8842A run time driver when "measure_only" was set to "yes".

V7.00 corrects this problem.

----> 45 2nd and Subsequent Readings Incorrect for NMEAS > 1 and MEASURE_ONLY = YES

Report #15046

In V6.11A if measurement uncertainty is enabled (NMEAS > 1) and "measure only = yes", the 2nd, 3rd, 4th, ..., nth Fluke 45 measurements are corrupted.

The problem was caused by the HV probe multiplier not being properly set on the 2nd and subsequent invocations of the Fluke 45 run time driver when "measure_only" was set to "yes".

V7.00 corrects this problem.

----> Add Function to MATH FSC to Return Name of Executing Procedure

Report #15091

A MATH FSC function to return the name of the executing procedure would allow using JMPL to replace existing JMPT and JMPF statements. This would allow procedure writers to avoid hardwiring step numbers in JMP-type procedure statements. Using step numbers presents a procedure maintenance problem, because it's easy to inadvertently introduce an error when cutting and pasting procedure code. Using labeled jumps is safer because it's unlikely that the procedure into which a code fragment is being pasted already contains a labeled jump destination which matches a JMPL in the fragment, unless the fragment being pasted includes both the JMPL and the corresponding LABEL statements.

Additionally, to save space on the JMPL line, and make it more convenient to write procedures it might be nice to

have a function which returns TRUE if a specified string is a substring of the currently executing procedure.

In V7.00 three new functions have been added to the MATH FSC:

(1) PROC - returns the name of the currently executing procedure. If the current procedure is a subprocedure, the name of the subprocedure is returned.

(2) PSUB - returns 1 if a specified string is a substring of the name of the currently executing procedure. If the specified string is not a substring of the name of the currently executing procedure, the return value is 0. The comparison is case-sensitive.

(3) PSUBI - returns 1 if a specified string is a substring of the name of the currently executing procedure. If the specified string is not a substring of the name of the currently executing procedure, the return value is 0. The comparison is case-insensitive.

As with all MATH FSC functions, these 3 functions may be used in a JMPL expression.

Most uses of JMPT and JMPF can probably be replaced by making use of these functions.

----> Auxiliary FSC NOMINAL and MOD1 Values not Always Properly Taken from MEM

Report #15166

In V6.11A a number of instrument FSCs incorrectly update an auxiliary FSC Nominal or MOD1 value, taken from MEM, when the main FSC executes.

Example:

```
2.001  MATH         MEM = -4
2.002  M33120       Voff
2.003  MATH         MEM = 2
2.004  33120        Vpp   1kH       SI    S  L
```

When the above 33120 statement executes, the run time driver takes the offset from MEM when the 33120 statement is executed. The result is an offset of 2V instead of -4V. This bug affects the following FSCs:

M2024
M33120
M395
M550
M5520
M5800
M5820
M8648
M9100
M9500
MSMY02

This bug has no effect as long as the value of MEM is not changed between execution of the auxiliary and main FSCs.

V7.00 corrects this problem.

----> 9100 Statements with "TZ" in MOD2 Cannot Be Compiled

Report #15177

In V6.11 and V6.11A 9100 statements with "TZ" in MOD2 cannot be compiled. The "TZ" is incorrectly identified as a NOMINAL field. This problem did not exist in V6.10, but was inadvertently introduced just before the release of V6.11.

Apparently "TZ" (Trapezoid) is little-used in the 9100 FSC.

V7.00 corrects this problem.

----> File Permission Problems under NT, 2K, and XP with NTFS

Report #15244

By default, under WinNT, Win2K, and WinXP, when using an NTFS file system, writing to files and directories in the Windows system directory and in the "Program Files" directory requires Windows system administrator level access.

The problem most likely to arise from this situation is that the MET/CAL initialization file ("metcal.ini") will be unwritable on a MET/CAL client system.

When this problem is present, various error messages will occur, depending on which application is executed. For example, attempting to start the MET/CAL Run Time application generates an error like:

```
E2242: Error writing parameter "method" to section
"Run Time" of file "C:\WINNT\METCAL.INI".
```

(Of course, the reported file name will vary, depending on the name of the Windows directory.)

Note that the real error has nothing to do with the parameter named "method". The problem is that "metcal.ini" is readonly, and "method" just happens to be the first parameter which the system attempts to write to "metcal.ini".

A more serious, but probably less likely, problem will arise if the user browses to one of the Windows protected directories during MET/CAL's client installation and chooses to install MET/CAL there.

For example, choosing "C:\Program Files\METCAL" as the MET/CAL directory on a client running NT, 2K, or XP with an NTFS file system will leads to lots of problems, because there are numerous application-specific files for which MET/CAL requires write permission.

Users using MET/CAL V6.11A or earlier who experience the "metcal.ini" problem described above may login on each client as an Administrator, use the Windows Explorer, right click on "metcal.ini", and modify the properties to allow write access for all users.

The MET/CAL Install program for V7.00 has been modified so that file permissions are adjusted as needed.

----> Change "metcal.ini" "525A_488_iterm" Default from "CR" to "EOI"

Report #15249

The MET/CAL initialization file ("metcal.ini") parameter "525A 488 iterm" was added to support controlling a 525A with an IEEE-488 to RS-232 converter. MET/CAL 6.11A shipped with the default for this parameter set to "CR". "CR" was required for use with the translators. However,

production 525As that ship with an IEEE-488 will work only with the parameter set to "EOI". MET/CAL 7.00 ships with the "525A_488_iterm" default set to "EOI".

----> 5700 2-wire Statement Does not Generate Automatic Connection Message

Report #15252

In V6.11A the following statement does not generate an automatic connection message when ASK+ A or ASK+ V is in effect:

```
5700   2     1.00V          0.01U            2W
```

V7.00 corrects this problem.

----> PORT FSC [REOPEN] Construction Works Only if Current Port Established

Report #15269

The design of [REOPEN] from its inception up to and including V6.11A has been that it affects the current port.

The initial condition at the start of execution of each PORT statement is that the current port is not set.

Operations which establish the current port are:

(1) Read.

(2) Write.

(3) Execution of a [CLR] construction.

(4) Execution of a [P<params>] port configuration construction.

(5) Execution of an [@<address>] construction.

Thus, if the current port has not been established at the time of execution of a [REOPEN] construction, the construction has no effect.

However, [REOPEN] will be more flexible and more useful if it's changed so that it establishes the current port in the same way that [CLR] does.

The algorithm for establishing the current port when it's not known is:

(1) The UUT port, if known, becomes the current port.

(2) If the UUT port is not known, the UUT port and the current port are both set to the default port (as specified in the MET/CAL initialization file). The default port can be configured using the MET/CAL Config Editor (F12 in Editor or Run Time).

For V6.11A customers and earlier, an interim solution for this lack of flexibility is to specify a [CLR] construction prior to the [REOPEN] construction in any situation where the procedure writer wishes to use [REOPEN] and the current port has not been established.

Examples which work in V6.11A:

```
PORT     [CLR][REOPEN]
PORT     [@5500][REOPEN]
PORT     [@COM1][REOPEN]
```

Example which does not work in V6.11A:

```
PORT     [REOPEN]
```

V7.00 corrects this problem.

----> 2001 FSC 4-Wire Ohms Upper Limit Incorrect

Report #15272

In V6.11A the Keithley 2001 4-wire ohms upper limit is 210 kOhm, not 2.1 MOhm. The 2002 4-wire ohms upper limit should be 2.1 MOhm.

This mistake has been corrected in V7.00.

----> Too Many "Test Setup" Prompts Generated When NTHROW > 0

Report #15456

In V6.11A when a "meter" type instrument FSC function is executed with ASK+ N, "Test Setup" prompts are generated as follows:

"Set UUT to source <nominal>."

"Then set UUT to OPERATE."

Driver performs measurement(s).

"Set UUT to STANDBY."

These two sets of prompts should be generated at most once for each test. However, the first set of prompts is generated for each reading thrown away. That is to say, if VSET NTHROW = 3, the operator will be directed to set the UUT to source <nominal>. Then set UUT to OPERATE, before each of the thrown away readings.

V7.00 corrects this problem.

----> 9100 Opt -135 Measurement Not Handled Correctly in Demo Mode

Report #15484

When a 9100 statement that uses opt -135 (Insulation or Continuity measurement) is executed in demo mode, the measurement entered is not properly converted to nominal units.

Example:

When the following statement is executed in demo mode, the operator is prompted to enter the 9100 reading in milliamps. However the entered value is incorrectly converted amps and the test fails:

```
9100  1.00mA   1.00U    1kZ            SE CO    4W
```

V7.00 corrects this problem.

----> 890X FSC Does Not Generate "Set UUT to STANDBY" Message with ASK+ N & NMEAS > 0

Report #15486

In V6.11A the 8901, 8902, and 8903 FSCs do not properly generate the "Set UUT to STANDBY" message when ASK+ N is set and measurement uncertainty is enabled (nmeas > 0). Specifically the message is not generated when ASK+ N is in effect and more than one reading is taken as follows:

nmeas = 1 and nthrow >= 1 or
nmeas > 1 and nthrow >= 0

The prompt is only correctly generated when nmeas = 0 or nmeas = 1 with nthrow = 0.

V7.00 corrects this problem.

----> M680 and M681 Trigger Sensitivity Incorrect

Report #15507

In V6.11A the M680 and M681 help files and compile time function restricts the PM 6680 and PM 6681 trigger sensitivity to 20 mV, 50 mV, and 100 mV (X1 attenuation). Legal values for PM 6680 and PM 6681 trigger sensitivity for X1 attenuation are actually 0.00 V to 5.10 V in increments of 0.02 V.

V7.00 corrects this problem.

----> 6060 FSC Causes Incorrect Mod-Freq When Used with a 608X

Report #15547

In V6.11A the driver for the 6060 FSC uses the "MR" command to select the modulation frequency. For a 606X, MR0 selects 400 Hz and MR1 selects 1 kHz modulation frequency. For a 608X, MR is not the native command. MR is supported for 606X emulation. The problem is that the 608X firmware has the 606X MR emulation inverted. When MR0 is sent to a 608X, 1 kHz modulation frequency is selected. Likewise the when MR1 is sent to a 608X, 400 Hz modulation frequency is selected.

In V7.00 the driver now uses MF<mod-freq>HZ command, which is emulated correctly by the 608X.

----> 34420 Voltage Difference or Voltage Ratio Statement Causes Header Error

Report #15714

In V6.11A a 34420 statement with MOD2 = VD (Voltage Difference)
or nominal units of V/V (Voltage Ratio) causes error -113 "Undefined header".

This problem is corrected in V7.00.

----> Attempt to Use 34420 FSC with 34420A Connected to a Serial Port Causes Timeout

Report #15739

In V6.11A if a 34420A is configured for serial control, a timeout occurs after the first measurement is taken.

V7.00 corrects this problem.

----> Add "ask_c_default = no" to Initialization File for New

Installations

Report #18344

Corrections are asset and elapsed time specific. However, MET/CAL does not use asset and/or elapsed time information to determine if use of a correction is valid or not valid.

In V6.11A if the parameter "ask c default" does not exist in the MET/CAL initialization file, the default is "ask c default = yes" (i.e., use corrections). For backward compatibility it is not possible to simply change the default, as this might affect upgrade customers. However, adding "ask c default = no" to the initialization file for new installations of MET/CAL is ok.

V7.00 implements the change described above to the default MET/CAL initialization file.

----> 6680 with MOD3 = FC Causes Misleading Error Message

Report #18391

In V6.11A if an attempt is made to compile the procedure statement:

```
6680 100.000MH    0.0001U     70.0mV       +A FC     2W
```

with no PM 6680 configured, the following message is generated:

```
        E1528 : FSC 6680: If "FC" is specified in MOD3, PM
                6680/6681 must be configured with option
                PM 9621, PM 9624, or PM 9625.
```

However, configuring a PM 6681 with any one of the three options will not allow the statement to compile. Only configuring a PM 6680 with one of the options will allow the statement to compile.

In V7.00 separate error messages for PM 6680 and PM 6681 are used.

----> 4700, 4705, 4707, 4800, 4800A, & 4805 Max Freq on 1000V Range Incorrect

Report #18441

In V6.11A the procedure compiler does not restrict 4700, 4705, 4707, 4800, 4800A, & 4805 statements which use the 1000 V AC range to the maximum frequency supported by the instrument. For example the following statement does not cause a limit error:

```
        4800 210.000V 50kH S
```

However, an accuracy file lookup error is generated when ASK+ U is in effect because the actual maximum frequency for the 4800 at 210 V is 33 kHz.

V7.00 corrects this problem.

----> 5520 FSC with MOD3 = HC Generates Incorrect Automatic Connection Message

Report #18731

In V6.11A one connection message is missing.

The statement:

```
5520 12A 1% HC
```

does not cause the correct High Current Output connection message to be generated.

V7.00 corrects the problem.

----> Configure Initially Highlighted Line for Post Test "List"

Report #19119

It has been pointed out that in V6.11A the operation of Post Test "List" may be confusing for certain procedures in the sense that re-starting execution at the initially highlighted line may not be a well-defined operation.

This is true, and has always been the case with the MET/CAL procedure language, but certain measurement uncertainty-enabled
procedures, such as the example below:

```
1.001  ASK+           K                                A
1.002  ASK-         N       P                          W
1.003  VSET        nsd = 2 nmeas = 1
1.004  5500        10.000mVpp     125.30kH   SI  S 2W
1.005  MEMI        enter value in mV
1.006  MEMCX  15   10.000mVpp     1U         125.30kH
```

are particularly confusing.

In such cases it would be preferable to re-start the test at the first line of the test, or at the TARGET statement, if there is one.

Although the V6.11A implementation allows the procedure writer to disable the "List" option altogether to prevent the problem from arising, it would be better to support a configurable option to allow either (a) re-start at the last-executed statement or (b) re-start at the first line of the test (or TARGET, if any).

A new initialization file parameter, "pt_list_current" has been added for V7.00.

If "pt_list current = yes", the initially highlighted line is the last-executed step (i.e., the current line).

If "pt list current = no", the initially highlighted line is first line of the test or, if there's a TARGET statement, the TARGET line is highlighted.

The parameter is optional, and the default if "yes", which is compatible with V6 and prior.

----> Correction to 4805 1-Year 99% Accuracy File

Report #19353

For the 1000 V range there's a gap in the V6.11A accuracy file between 330 Hz and 3 kHz. In V7.00 the accuracy file for this section has been changed to:

```
Mode: 1000V
```

```
                        90.000    1100.000  10   330  xxxx
                        90.000    1100.000  330  10e3 xxxx
                        90.000    1100.000  10e3 33e3 xxxx
```

----> 8901 FSC Does Not Support 8901B

Report #19469

In V6.11A and earlier the 8901/8902/8903 driver expects the following return format from an 8901:

SDDDDDDDDESDD<cr><lf> 15 bytes

In actuality this is only correct for the 8901A. The 8901B and 8902A return format is:

SDDDDDDDDDDESDD<cr><lf> 17 bytes

In V7.00 the MET/CAL 8901/8902/8903 has been updated to accept both the 8901A and 8901B formats.

Section 3 Documentation

Printed manuals have been updated for MET/CAL V7.00.

The V7.00 distribution contains the following documentation files:

GettingStartedV7.pdf

This is the MET/CAL and 5500/CAL Getting Started Guide, Version 7.

Available in printed form as well as on-line.

InstallV7.pdf

This is the V7.00 Install Manual.

Available in printed form as well as on-line.

ReferenceManualV7.pdf

This is the MET/CAL V7.00 Reference Manual.

Available on-line only.

UsersManualV7.pdf

This is the MET/CAL Users Manual (Version 7).

Available in printed form as well as on-line.

PIItoMCTranslator.pdf

This is the User's Guide for the Portocal II to MET/CAL results translator.

Available on-line only.

MetTemp611.pdf

MET/TEMP Users Manual (V6.11). This is the full MET/TEMP manual, last updated for the V6.11 release.

Available on-line only.

MetTempTour.pdf

MET/TEMP software tutorial. It was last updated at the time of the MET/TEMP V6.01 release. (V6.01 was the first version of MET/TEMP.)

Available on-line only.

ResultsTable7.pdf

This document lists the MET/CAL V7.00 Result quantities, and shows the new database Results Table column names.

Available on-line only.

QuickReferenceV7.pdf

This is the one-page hot keys sheet which shows the hot keys used by MET/TRACK and the MET/CAL Editor.

Available in printed form as well as on-line.

RHT.pdf

This document explains how to use the Fluke 5000A RH/T Precision Humidity and Temperature Data Logger with MET/CAL V6.11 and later (including MET/CAL V7.00).

Available on-line only.

The following "readme" files are provided. These are available on-line only. "readme700.txt" (this file) is the primary "readme" file for V7.00. "readme6.pdf", "readme601.pdf", "readme610.pdf", "readme611.txt", and "readme611A.txt" are supplied for upgrade customers who wish to the understand the full sequence of software updates.

readme6.pdf

This is the readme file for the V6.00 release.

readme601.pdf

This is the readme file for the V6.01 release.

readme610.pdf

This is the readme file for the V6.10 release.

readme611.txt

This is the readme file for the V6.11 release.

readme611A.txt

This is the readme file for the V6.11A release.

readme700.txt
This is the readme file for the V7.00A release.
[This is the file you are currently reading!]

readme.txt

This is an abbreviated readme file which is displayed when the MET/CAL client install program is run.

--

Section 4 Manuals Errata

Users Manual

----> In Chapter 4, on page 4-6, the text:

> If there are any picture (.bmp) files required, the Run Time verifies that the specified files exist.

should be:

> If there are any picture files required, the Run Time verifies that the specified files exist.

The issue here is that MET/CAL V7.00 supports picture files formats other than just .BMP.

----> On page 4-11, in the "Selection by Procedure Name" section, the paragraph:

> You can add, delete, or modify procedures using the Editor. Open the Tools menu and select Administrator. The Run Time application does not provide a way to add, delete or modify procedures. It only allows the operator to select a procedure to be executed.

should be replaced with:

> You can add, delete, or modify procedures using the Editor. The Run Time application does not provide a way to add, delete or modify procedures. It only allows the operator to select a procedure to be executed.

The issue here is that in the MET/CAL V7.00 Editor "Copy Procedures..." and "Delete Procedures..." are in the top-level "File" menu. It's no longer necessary to invoke the Administrator via the "Tools" menu.

----> On page 4-12 the "Options" section name should be "Configure" and the text:

> Choosing "Options" causes a drop-down submenu to display.

should be replaced with:

> Choosing "Configure" causes a drop-down submenu to be displayed.

----> On page 4-14 the section title:

> Autosave Pass / Autosave Fail Macros

should be:

> AutoMacro (Pass) / AutoMacro (Fail) Macros

The following sentence:

> The Autosave pass and Autosave Fail macros...

should be:

The AutoMacro (Pass) and AutoMacro (Fail) macros...

----> On page 4-27 in the section on "Setting up Memory Registers" step (3) should be deleted and step (4) should be renumbed as step (3).

----> On page 4-30 the sentence:

The UUT data must be obtained prior to execution of the MEMC statement.

should be replaced with:

The UUT data must be obtained prior to execution of the MEMC or MEMCX statement.

----> On page 4-31, in the section "Example, User-configured Measurement Instrument", the following text:

5. Evaluation - Compare the UUT Indicated (MEMCX Nominal Value) to the System Actual (MEM) against the UUT specification in the Tolerance field.

should be:

5. Evaluation - Using the UUT specification in the TOLERANCE field, compare the UUT Indicated (MEMC NOMINAL value) to the System Actual (MEM).

----> In the section on MET/CAL initialization file parameters the line on page 7-14:

pidir = picture_directory

should be:

picdir = picture_directory

----> In the section on MET/CAL initialization file parameters the line on page 7-17:

pocdir = picture_directory

should be:

procdir = procedure_directory

Section 5 Reports

MET/CAL V7.00 includes the following reports:

(1) basic inventory.rpt
(2) basic report template.rpt
(3) cal due by asset for xxx days.rpt
(4) cal due by asset through date.rpt
(5) cal due by dept by status for xxx days.rpt
(6) cal due by location by status thru date.rpt
(7) cal due by tech by status for xxx days.rpt
(8) cal due by tech by status thru date.rpt
(9) cal procedures and revs for eqpt.rpt
(10) cal summary for asset number.rpt
(11) cal summary for work order.rpt
(12) field customization.rpt
(13) field properties.rpt
(14) license.rpt

(15) master inventory for asset number.rpt
(16) rt certificate of cal or failed_cal.rpt
(17) rt report of cal ver 7.rpt
(18) rt report of cal ver 7 color coded.rpt
(19) rt report of cal ver 7 failures.rpt
(20) rt report of cal with exp_uncert.rpt
(21) screen customizing.rpt
(22) trace.rpt

The list above shows the report file names.

To install reports use MET/TRACK. Login as "MT", and choose first "Install Reports", then "Configure Reports" in the top-level "Set-Up" menu.

Additional reports are included on the MET/CAL Bonus Disk.

A brief description of each report on the MET/CAL 7.00 CD (not the Bonus Disk) is provided below:

basic_inventory.rpt

A basic report that shows just inventory data. This report can be used as a template for other reports.

basic_report_template.rpt

A basic report that shows inventory data. Specifically designed to be used as a template. Has the joins set to left outer.

cal_due_by_asset_for_xxx_days.rpt

Prompts the operator for the number of days from today and shows assets with calibration due and overdue.

cal_due_by_asset_through_date.rpt

Prompts the operator for the date and shows assets with calibration due and overdue.

cal_due_by_dept_by_status_for_xxx_days.rpt

Prompts the operator for the number of days from today and groups the calibration due data by department and by status.

cal_due_by_location_by_status_thru_date.rpt

Prompts the operator for a date and groups the calibration due data by status and location.

cal_due_by_tech_by_status_for_xxx_days.rpt

Prompts the operator for number of days from today and groups the calibration due data by technician and status.

cal_due_by_tech_by_status_thru_date.rpt

Prompts the operator for a date and groups the calibration due data by status and technician.

cal_procedures_and_revs_for_eqpt.rpt

Lists all calibration procedures listed in field C2320 and shows the revisions.

cal_summary_for_asset_number.rpt

Prompts the operator for an asset number and gives the summary data for the asset.

cal_summary_for_work_order.rpt

Prompts the operator for a work order number and gives the summary data for the asset.

field_customization.rpt

Shows the current customization of the database fields.

field_properties.rpt

Shows the current customization of the properties for the database fields.

license.rpt

Lists all of the licenses assigned to the database and shows the version and serial numbers.

master_inventory_for_asset_number.rpt

Provides all inventory information for a specified asset number.

rt_certificate_of_cal_or_failed_cal.rpt

Generates a calibration certificate. Usually invoked from the Run Time application after a calibration has completed. Covers both PASS and FAIL calibrations.

rt_report_of_cal_ver_7.rpt

This is the basic report used to show full results generated by the MET/CAL Run Time application. This report uses result data from the new V7.00 Results Table. It is not a legacy report, so the "rslt db.frm" file has no effect on the information presented by this report.

rt_report_of_cal_ver_7_color_coded.rpt

Similar to "report of_calibration ver 7.rpt", but shows failures with a red background and marginal passes with a yellow background. (The color coding is similar to MET/CAL's Test Results window.)

rt_report_of_cal_ver_7_failures.rpt

Similar to "report of calibration_ver_7.rpt", but shows only tests which failed.

rt_report_of_cal_with_exp_uncert.rpt

Similar to "report of calibration ver 7.rpt" but shows expanded measurement uncertainty rather than test uncertainty ratio.

screen_customizing.rpt

This report shows the current customization of the screens.

trace.rpt

This report is used with the forward trace and reverse trace functions of the MET/TRACK.

Section 6 On Time Support Products

On Time Support, Inc. provides software products to enhance or augment the functioning of your MET/CAL and MET/TRACK software. The following On Time Support programs may be purchased directly from Fluke. Contact your local Fluke representative for specific details, options, and prices. Additional information is also provided on Fluke's WEB site:

http://www.fluke.com

Metrology/Xplorer

Metrology/Xplorer is a web-based query tool used to retrieve MET/CAL and MET/TRACK data with your browser, over the internet or your company's intranet.

Barcode Magician

Barcode Magician (BCM) is a product from On Time Support Inc. which allows you to automate repetitive database entry tasks such as checking in/out equipment, or changing equipment status simply and consistently for quantities of assets using a simple barcode tool or keyboard.

BCM provides a simple, easy to use interface that allows your calibration technicians and instrument custodians a way to update your Fluke MET/BASE database quickly and efficiently while at the same time drastically reducing data entry errors and substantially increasing productivity. By using a barcode scanner in conjunction with this software, you can automate such tasks as:

(1) Checking in/out equipment from a tool crib or instrument impound area.

(2) Updating in-process status descriptors.

(3) Changing location and association of assets.

(4) Accepting instrumentation for repair work.

(5) Virtually any database function other than calibration data entry, repair record creation, or addition of instruments.

On Time Support has developed additional programs which enhance the benefits of MET/CAL Plus. The following applications may be obtained directly from On Time Support. Please see "http://www.ontimesupport.com" for full information, or contact On Time Support at:

ON TIME SUPPORT Inc.
Voice - 281.296.6066;
Fax - 281.465.9478;
E-mail - inquiries@ontimesupport.com;
U.S. Mail - 25132 Oakhurst Drive, Suite 185
Spring, Texas 77386-1443

Process/Track

Process/Track allows users to create, download, and upload procedures and data from Fluke 702, 743B, and 744 documenting calibrators, using the MET/CAL-Plus database. The software is fully automated. Process/Track will combine metrology and process calibrations into one system with complete forward and reverse traceability.

(1) Data from every calibrator is stored in one database, providing complete traceability.

(2) Calibration records are created automatically in your existing Fluke MET/BASE system expediting calibration record recording and eliminating data entry errors.

(3) Calibration data is immediately accessible in the Fluke MET/BASE system after upload.

(4) Existing calibration reports and test result certificates may be used with newly created calibration data.

Change/Log

On Time Support has created a plug-in for the MET/TRACK database (version 6.x, 7.x) that keeps track of changes to the Inventory, Calibration, Location, Maintenance, Customer, and Standards tables. No front end program is required to configure the Change/Log option. Change/Log tracks database changes regardless of the application which makes the change. You can update your database using MET/TRACK Manual Entry, MET/CAL Run Time, Barcode Magician, ISQL, or any other application and Change/Log will maintain a full record of the change history. Change/Log is particularly useful for customers who may be subject to FDA regulatory requirements. An archive function is included.

Remote Pipeline

Remote Pipeline allows calibration lab supervisors/technicians to operate multiple workstations in remote locations where a continuous connection to a master server is difficult or impossible - and operate using the same database at every site. Remote Pipeline is a conduit that enables each remote system to share or replicate data with a master, consolidated Fluke MET/CAL database. Fluke MET/CAL customers can simultaneously operate many MET/CAL, 5500/CAL, MET/TRACK, Barcode Magician, and Process/Track workstations to calibrate instrumentation, perform process calibrations, or inventory instrument locations.

Section 7 Contacting Fluke

For assistance and questions regarding Fluke Metrology Software please contact MET/SUPPORT at:

phone: 1 (800) 825-7411
email: MetSupport@fluke.com

European customers may contact the MET/SUPPORT group in Europe via email at:

MetSupport@fluke.nl

To directly contact the MET/CAL software development team you may send

email to:

Matt.Nicholas@fluke.com
