FLUKE®

MET/CAL® *Plus* Version 7

Now MET/CAL *Plus* 7 — the world's leading calibration software — brings you more flexibility, enhanced measurement uncertainty configuration and verification, broader workload coverage, and a more intuitive MET/TRACK® user interface.

Technical Data

The MET/CAL *Plus* 7 suite of applications automates the operation and management of your calibration facilities, providing you with all the tools you need to:

- Perform automated calibrations—including computer-aided, closed-case, and closed-loop calibrations—on all kinds of test and measurement tools and equipment, together with signal generators, function generators, and RF and microwave instruments.

- Create, edit, test, and document calibration procedures with sample procedures to get you started and hundreds more available from Fluke and Fluke software partners.

- Configure and report a wider range of measurement uncertainty parameters and include verification data to provide an audit trail and support further analysis.

- Track asset information including calibration and maintenance history and status, traceability, users, customers, and location and have the option to access this information over the Internet.

- Analyze and report asset information; produce printed certificates and reports.

- Make data available to other corporate systems.

- Import Portocal II data into MET/CAL *Plus*.

- Meet the requirements of quality standards like ISO 9000, ANSI Z540, ISO/IEC 17025, NRC 10 CFR, and others.

Whether you have a single, stand-alone computer or a network of many workstations throughout your organization, MET/CAL *Plus* 7 offers a powerful calibration solution.

What's new in MET/CAL *Plus* 7?

Many improvements have been made to MET/CAL *Plus* 7. Significant changes include a completely redesigned MET/TRACK application, with a new user interface and expanded capabilities. MET/CAL *Plus* 7 offers more flexible measurement uncertainty methods, more test data saved to the database, and support for more standards. The specific feature updates include:

- *Improved ease of use through:*
  - More powerful searching capabilities.
  - A custom screen layout for individual users.
  - Formatted dates and numeric display configured in the operating system.
  - Separate search, browse, and data entry screens.
  - Tabbed inventory, calibration, and maintenance screens.
  - "Quick Report Builder" for fast Query By Example (QBE) reports.
  - Broader support for the RTF file format in all memo fields to allow much richer text formatting, including font changes.

- *Extended data storage through:*
  - Support for user-created tables.
  - Expanded "Run Time" data saved to the database to support later analysis.
  - Saving all uncertainty factors to the database to satisfy audit requirements.
  - Data import translator for Portocal II.

- *An improved security model:*
  - Administrative control of the minimum and maximum days a password is valid.
  - Administrative control of the minimum and maximum password character length.

- *MET/CAL "Run-Time" improvements such as:*
  - New Function Select Codes (FSCs) to control even more instrument standards, including the new 8508A Reference Multimeter.
  - Ability to create and use multiple directories for procedure storage and execution.
  - An improved user interface to copy and delete procedures.
  - Expanded capability to display pictures.
  - Full support for user-written accuracy files to allow the calculation of test uncertainty ratios (TURs) and measurement uncertainty for user-configured standards.

- *Expanded "measurement uncertainty" control:*
  - More control over measurement uncertainty calculation to enhance conformance to local customs and standards.

## MET/CAL® – industry-leading software for automated calibration.

MET/CAL reflects more than 50 person-years experience in automated calibration software development. More users in more calibration facilities automate with MET/CAL than all other products **combined**. MET/CAL *Plus* is the most complete software solution available to calibration professionals. So, it's no surprise that it has become the **de facto** standard in calibration software worldwide.

MET/CAL is a powerful, flexible full-featured automated calibration environment for PCs running the Microsoft Windows® operating system. It generates and writes test results to the SQL database managed by MET/TRACK® and enables you to:
- Create and edit calibration procedures using a wide range of standards.
- Run those procedures.
- Collect test data during the calibration process.
- Generate calibration reports and certificates.
- Make data available to other software applications such as Microsoft Word and Excel.

With MET/CAL, it is easy to perform calibrations faster and with more repeatable results, and to collect and report a multitude of information about:
- Test data.
- Measurement uncertainty.
- Adequacy of standards.
- Traceability.
- Procedures used.
- And more!
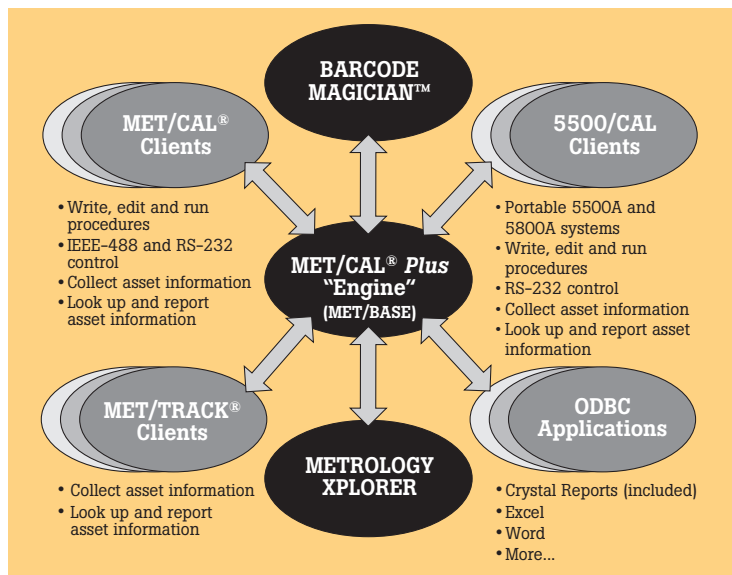
The MET/CAL *Plus* system – flexibility and power.

The heart of MET/CAL *Plus* is MET/BASE, which features a powerful, industry standard SQL database server – SQL Anywhere™ from Sybase – for secure, dependable storage of calibration and asset data. This robust database management application protects your mission critical data from loss and corruption. And it's compatible with the Microsoft Open Database Connectivity (ODBC) standard so you can access your calibration data from any ODBC-compatible application (such as Microsoft Excel or Word) for further processing and analysis. The package also includes several preformatted reports in Crystal Reports Professional to add even more power and flexibility to report information.

MET/CAL features a familiar Windows–based interface that makes it easy for users to learn and use, reducing your training and support costs, while making your operators more productive.

Automated calibration that is both easy and powerful

Automated calibration with MET/CAL offers several important benefits. At first glance, most people see it as a way to perform calibrations faster. But the most significant benefit is consistency. With self-documented procedures, you can ensure that all operators complete all tests and collect appropriate test data the same way every time the procedure is performed.

MET/CAL can also help you simplify complex tasks, making operators more productive. And, of course, automation with MET/CAL can often significantly reduce the time it takes to perform a calibration, thus reducing your cost per calibration.

MET/CAL was designed to address a wide range of test and measurement instrument calibration needs, from the simple to the complex. It is based on the traditional calibration model as its framework—comparing an instrument to a standard of known uncertainty.

Plain language operator prompts, diagrams, or graphics guide technicians through procedure execution. MET/CAL enables you to illustrate operator messages, connection diagrams, and adjustment points within your procedures, using commonly used .jpg, .gif, and .bmp graphics formats to make the procedures easier to follow.

The procedure writer can choose from three types of evaluation—pass/fail, keyboard entry, or slew. And you can choose from more than 80 instruments as automated standards. MET/CAL performs the measurements, calculates any errors and uncertainty, and reports the results—including the test uncertainty ratio (TUR) between the unit under test and the standard, or measurement uncertainty, for any value or percentage of scale. Virtually every quality standard requires that test adequacy be documented, and MET/CAL makes it easy.

While performing calibrations, you can keep track of results in a pop-up screen, with color-coding to indicate passed tests, marginal results, or failures. When complete, your information is saved to the database, and you can review it on screen or print it.

MET/CAL 7 offers enhancements to the uncertainty calculation including storage of all measurements and uncertainty parameters in the database.

MET/CAL now features the complete storage of all parameters for every test performed. This data is stored in unformatted "raw readings" form to ease report creation and to support further analysis. Because each test is fully documented for every procedure that is run and traceability information for each standard is stored in the database, you have complete documentation of calibration status, history, adequacy, and traceability for all the test and measurement instruments you manage.

As the MET/CAL system manager, you also have complete control over who has access to your system and at what level. Access security ranges from read-only permission to view procedures or results, to system management and configuration—all controlled by passwords and security level assignments. Permissions to read and write to database fields are set for each user level so that you can control what each user can see and change. Passwords can be set to expire periodically, helping to keep data secure over time. Rule–based password creation helps those who need to meet FDA requirements.

Traditional Procedure Instruction	Automation with MET/CAL
1. Turn on the meter.	1. DISP Turn on the meter.
2. Allow the meter to warm up for 5 minutes.	2. DISP Allow the meter to warm up for 5 minutes
3. Set the calibrator output for 10 V dc.	3. 5500 10V 0.1%.
4. Record the meter reading.	
5. Verify that the meter reading is within 10 mV of 10 V dc.	

Writing automated procedures with MET/CAL *Plus* is similar to writing traditional procedures. MET/CAL's function select codes make it simple and fast without advanced programming skills.

Enhanced MET/CAL 7 uncertainty calculations

The need to estimate measurement uncertainty has gained importance in recent years. Performing uncertainty analysis is required by most lab accrediting organizations and national standards throughout the world. MET/CAL 7 performs measurement uncertainty with a great deal of configurability to allow you to best suit your lab's requirements. Key features include:

- Support for Welch–Satterthwaite formula for computing effective degrees of freedom, including the ability to specify:
  - Sensitivity coefficients.
  - Degrees of freedom for individual uncertainty components.
- Optional uncertainty components.
- Parameter override at the procedure writer's discretion.
- Storage of all uncertainty data, including individual measurements, in the database.
- Accreditation Flag. Procedures can be written so that accreditated measurements are flagged.

Portocal-to-MET/CAL results translator

Now all of the test data collected while using Portocal II can be imported into your MET/CAL database, so that you can keep all of your test data and asset information in one place. Based on the availability of procedures, you may be able to phase out Portocal and support all of your calibration workload with MET/CAL.

Sample calibration procedures get you started right away

Writing procedures for MET/CAL is a straightforward process that doesn't require a programmer to do it. We provide a set of core of example procedures to help get you started. You can use them as is or as a template for developing your own custom procedures to fit your operation's specific requirements and calibration workload.

Warranted Procedures provide additional assurance

As part of the movement to produce the quantity and quality of procedures that customers request, Fluke now offers a series of Warranted Procedures for MET/CAL and 5500/CAL. They calibrate everything from analog and digital multimeters to analog and digital oscilloscopes, thermometers, power meters, chart recorders, data loggers, signal generators, and other RF instruments, from a wide range of manufacturers. These procedures use calibration standards from Fluke, Hewlett–Packard, Agilent, Wavetek-Datron, Tektronix, Keithley, Tegam, and Gigatronix.

Each procedure has been carefully produced according to manufacturers' specifications, and verified through testing to assure that each procedure adequately accomplishes the required calibration. A complete list of available procedures can be downloaded from www.fluke.com. They can be purchased and downloaded from Fluke's eStore and are available free to Fluke MET/SUPPORT® Gold subscribers.

Write your own procedures

Creating completely new procedures is easy with a little practice. MET/CAL's powerful procedure language uses a calibration–oriented building block approach. Function Select Codes represent various standards and functions used during a test. Creating procedures is simply a matter of combining FSCs and test parameters. They can be as simple or powerful as you need them to be.

MET/CAL also includes a library of commonly used connection messages to speed procedure creation. Procedures can be executed directly from within the procedure editor in test run mode to make short work of tracking down errors. MET/CAL even keeps track of test uncertainty ratios, instrument specifications and capabilities, and traceability information to make sure procedures meet your quality standards for adequacy and validity. And to help you organize your procedures, MET/CAL supports multiple directories, so you can arrange procedures in logical groups, such as by instrument type, or by grouping scope cal or meter cal procedures.

Fluke conducts hands–on training courses at locations throughout the world, where you can perfect your procedure writing skills.

Documenting and reporting the results

A key benefit of automated calibration with MET/CAL is consistent testing and collection of test results. MET/CAL also gives you all the tools you need to report that information. Produce reports and certificates in a virtually limitless range of formats to meet even the most stringent quality standards. Every test parameter stored by the MET/CAL Run Time application in the database is available for use in reports. MET/CAL also includes a series of standard reports you can use right away. And MET/CAL provides a copy of Crystal Reports Professional for creating your own custom reports. With Crystal Reports you can modify the standard reports or create entirely new reports to fit your unique requirements.

MET/TRACK® – a dedicated system for T&M property management.

MET/TRACK is a powerful database management system for test and measurement that provides back-end asset management for MET/CAL *Plus*. MET/TRACK has been completely redesigned with a new more intuitive user interface and an expanded feature set that makes it more powerful, yet even easier to learn and use. Its new "activity–based" design presents tasks arranged in the order they are typically performed for more intuitive operation.

Because it was created specifically to manage equipment in the calibration environment, MET/TRACK gives you flexibility, power, and security not available in generic database applications. It enables you to track the information you need to maintain quality calibrations. And it supports the traceability and record-keeping requirements of modern quality and accreditation standards, including ISO/IEC 17025, ISO 9000, QS 9000, EN 45000, ANSI Z540, and MIL STD 45662A, without having to write your own programs, set up your own databases, or test and document the system.

MET/TRACK is structured around the flow of instruments through the calibration recall process. Multiple tables that cover all aspects of your test and measurement tool inventory are linked by an asset number, which you can format to fit your company's requirements. With just a few keystrokes, you can access information about:

- Equipment calibration and maintenance history.
- Calibration event test data.
- Traceability.
- Procedures used.
- Inventory location.
- Customer information.
- Reliability.
- And more!

With MET/TRACK, it's easy to:

- Assign calibration workload.
- Measure technician productivity.
- Schedule lab workload.
- Track and control repair and calibration turnaround time.
- Delay the start date of the calibration interval while the instrument is held on the shelf in the calibration lab.
- Report on overdue backlog.
- Log total calibration and repair orders by user and technician.

- Schedule preventative maintenance between calibrations.
- Locate and track assets.
- Search the database.
- Maintain equipment acquisition, depreciation, and ownership costs.
- Identify reliability problems or extend calibration intervals.
- Assess the impact of out–of–tolerance instruments and recall affected inventory, if necessary.
- Report on traceability to national standards and control the adequacy of standards used.
- Perform reverse traceability to find all assets calibrated by a standard.

MET/TRACK allows you to maintain local control of your inventory, so you can access the data you need in the format you need it, when and where you need it. It supports Microsoft Windows 98, Windows NT® 4.0, Windows 2000, Windows Me, and Windows XP operating systems. And it can scale to fit your needs, from a single workstation to a company–wide network.

It's never been easier to manage your T&M asset inventory

MET/TRACK's new activity–based design arranges tasks in the order they are typically performed so it's easy to learn and use. Short menus help you access the commands you want fast. All data search forms are arranged as tightly integrated tabbed dialog boxes while core asset information remains visible. You can move between an asset's inventory, calibration, and location records with a click of the mouse. Separate search, browse, and data entry screens improve navigation and make it easy to multitask. And the powerful searching capability makes it easy to find records and other information.

Inventory — Asset, model, manufacturer, description, serial number, cost, traceability, cal status, calibration interval

Location — User, address, phone, program, project, loan date

Calibration History — Date calibrated and next due, standards used, procedure used, technician, environmental conditions, status

MET/TRACK®

Maintenance — Failure, parts used, repair time, technician, preventative maintenance recall

Customers — Name, address, ship–to information, contract dates, tax information

Calibration Results — Test step, range and function, reference, test result, error, comments

MET/TRACK links six essential tables to provide complete T&M asset tracking and management.

Rather than forcing you to work with a rigid set of fields and formats, MET/TRACK allows you to manage your equipment the way that works best for you. New desktop customization features enable you to personalize the way data appears on the screen. And you can create multiple desktops to display the same information in different formats for multiple users and multiple workstations. You can edit field names to match your organization's terminology. Suppress or enable fields to include only the information that matters to you. And control the type and format of information entered into key fields.

Virtually any kind of measurement asset in your organization—electrical, mechanical or dimensional—can be managed with MET/TRACK, even if it doesn't require calibration. And, whether the calibration interval is measured in days, weeks, months, even use-cycles, you can count on MET/TRACK to keep you up to date.

Data integrity and security you can count on

Your MET/TRACK system is only as good as the data it contains. To ensure that the information is entered correctly every time, MET/TRACK includes two types of data validation. Use Required Validation where the entry must be in a validation list for the technician to enter it. Or you can use non-required choice list validation where, if the entry is on the validation list, the text box will fill in automatically as you type. This ensures correct and efficient data entry and makes it easier to search for information.

For example, an oscilloscope could be described as a scope, an oscope, or a DSO, which would make it difficult to retrieve information consistently. The data validation feature in MET/TRACK assures that you identify an instrument—or manufacturer or department name or other term—by the same name every time.

To make data entry even faster and more accurate, you can link key fields on MET/TRACK forms so that selecting one item causes other fields on the form to be completed automatically. For example, entering "3401A" could be set up to make "DMM" appear in the description field and "Agilent" appear in the manufacturer field.

Five levels of security, from "read only" to "system manager," ensure that only authorized users gain access to inventory data, so your data remains secure. Because the security is managed by the server, all users—even those accessing data from other applications—must be authorized.

Reporting to meet a wide range of requirements

For fast ad-hoc reports, MET/TRACK includes the Quick Report Builder, which enables you to create reports quickly on the fly to meet your most immediate needs for information.

MET/CAL *Plus* also offers a variety of standard reports prepared with Crystal Reports™ Professional, which is included in the package. These report formats cover a wide range of information to help you meet a variety of documentation requirements, including those for ISO 9000 and similar quality standards. They report on forward and reverse traceability, allowing you to easily document traceability from any asset to the equipment calibrated. And MET/CAL *Plus* offers enhanced measurement uncertainty reporting to provide increased compliance with the requirements of ISO/IEC 17025.

In addition to standard reports, such as equipment location and items due for calibration, Crystal Reports makes it easy to create custom reports, lists, and labels using data from your existing databases. Its graphical user interface makes it easy to build reports, and its powerful query tools quickly draw values from a variety of data tables allowing you to easily manipulate the data to:
- Calculate and compare data values.
- Calculate subtotals and grand totals of field values.
- Calculate group averages, count the records in a group and test for minimum and maximum values.
- Test for specific values.
- Present data only if certain conditions are met.
- Evaluate logical relationships between values.
- Convert data from one type to another.
- Merge text, graphics and data.

Crystal Reports doesn't modify the calibration data in your database, so you can manipulate the selected data as much as you want to produce the reports you need while preserving the integrity of your database.

5500/CAL—Compact, portable automation for on-site applications.

For those who use Fluke oscilloscope and multi-product calibrators, 5500/CAL provides nearly all the automated calibration and test and measurement asset management capabilities of MET/CAL, in a lower cost, portable version. It features RS–232 (serial) control, eliminating the need for IEEE–488 interfaces or PC cards. And it's designed to work with Fluke's rugged, portable 5500A, 5520A, 5800A, and 5820A calibrators via their unique pass-through serial port. 5500/CAL also supports the Hewlett-Packard 34401A, Keithley 2000 digital multimeters, and any instrument that has a serial interface supported by MET/CAL. Serial control makes 5500/CAL ideal for use with laptop computers, providing all the power and versatility a PC provides, with the portability you need for on-site work. You're never restricted to just a small set of simple procedures that do little more than store front panel settings.

The flexibility to fit your needs— from single workstations to company-wide networks.

MET/CAL *Plus* is designed for a wide range of automation needs. Its modular architecture means you can buy precisely the capability you need, and add to or expand it as your requirements change. Its client/server architecture and industry standard SQL database ensure scalability. You can set your system up on a single personal computer, or take advantage of its client/server design to operate multiple MET/CAL, 5500/CAL, and MET/TRACK workstations over your network.

The key to MET/CAL *Plus'* versatility is its flexible configuration. You can mix and match the capabilities you need.

- **MET/BASE-7** is the "engine" of your system, whether you're using MET/CAL, 5500/CAL, or MET/TRACK. It includes Crystal Reports Professional. Generally you need only one MET/BASE package per installation. All of the basic MET/CAL *Plus* 7 programs are included in the MET/BASE package. Applying the appropriate license unlocks the associated programs so you can use them.
- **MET/CAL-L** provides a single, concurrent license for all MET/CAL *Plus* 7 automation and MET/TRACK asset management applications. A concurrent license is one where the software is installed on many machines, but is licensed to run only on a specific number of those machines at any given time. When a user begins to run a MET/CAL *Plus* application, it checks with the server to see that there is a license available. If all the licenses are in use, the application stops and reports this information to the user. Start with one or more licenses, depending on the number of workstations you require and add workstations as your needs change. MET/CAL *Plus* 7 can be used in combination with any and all of the other MET/CAL *Plus* applications. For example, additional data entry stations can be added to an existing MET/CAL installation by purchasing MET/TRACK licenses.

- **5500/CAL-L** provides a single concurrent license for its automation and MET/TRACK asset management functions. Its automation capabilities are similar to those of MET/CAL, but are designed around RS–232 (serial) instrument control. It supports: Agilent 33250A, Fluke 2620T, Fluke 2635T, Fluke 45, Fluke 525A, Fluke 5500A, Fluke 5500A-COIL, Fluke 5520A, Fluke 5725A, Fluke 5800A, Fluke 5820A, HP 33120A, HP 3325B, HP 34401A, HP 34420A, Keithley 2000, Marconi 2024, Wavetek 395, Agilent E4418B, Agilent E4419B, Fluke 700 Series Pressure Modules, Fluke 525A Series Pressure Modules. Like MET/CAL, you can start with one or more licenses, depending on the number of workstations you require, and add workstations as your needs change.

- **MET/TRACK-L** provides you with a concurrent license for the test and measurement asset management capabilities of MET/CAL *Plus*. Choose it when your application calls only for asset management.

- **The Metrology Xplorer™** option allows you to access information in your MET/CAL *Plus* database, through a Web browser, from any workstation connected to your network. It consists of Metrology Xplorer™ from Fluke software partner On-Time Support, Inc (www.ontimesupport.com), and is designed to allow authorized users to perform queries to view asset information with the same customized layout that is established for your MET/TRACK screens. You can also generate reports quickly using data stored in your MET/CAL *Plus* system for display and printing on your remote web browser. It's ideal for sites where the corporate intranet is used to access and distribute information. Metrology Xplorer can also be used to access MET/CAL *Plus* calibration and asset information and reports over the Internet. Stringent user security keeps your vital information safe from unauthorized eyes.

- **Barcode Magician**® software enables you to make real-time changes to your MET/CAL *Plus* database automatically for both small and large quantities of instruments. This ensures that even inexperienced users can make changes quickly and consistently. Developed by Fluke software partner On Time Support, Inc., Barcode Magician software enables you to automate repetitive database entry tasks, using a simple barcode tool or keyboard. Its simple, easy-to-use interface allows calibration technicians and instrument custodians to update a MET/CAL *Plus* database quickly and efficiently, while at the same time drastically reducing data entry errors and substantially increasing productivity.
- **The 5000A-RH/T Precision Humidity and Temperature Data Logger** allows MET/CAL to read temperature and humidity directly into a calibration record as you start to run a procedure. This environmental information becomes a permanent part of the calibration record without requiring you to enter the data manually. The 5000A-RH/T is manufactured by Fluke partner Veriteq Instruments Inc.
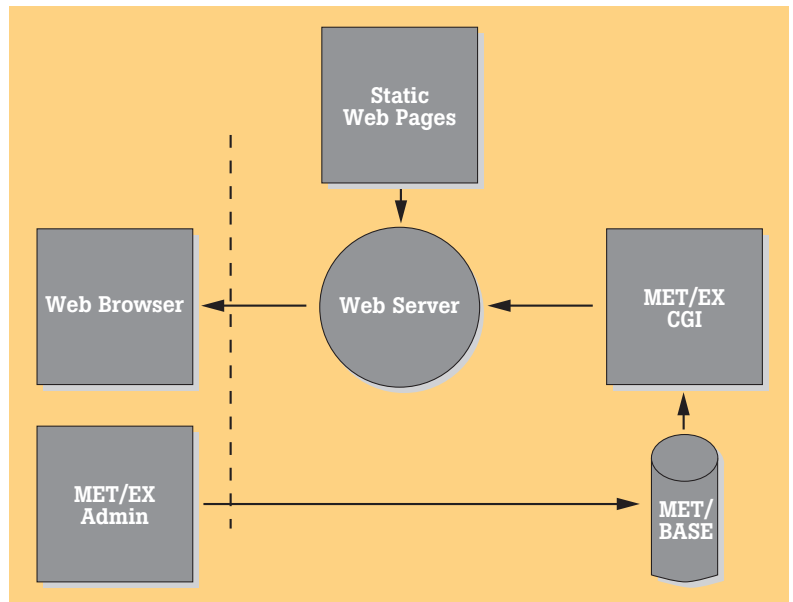
Metrology Xplorer allows you to access MET/CAL *Plus* data over your company's intranet or over the Internet, through a web browser.

How to upgrade from previous versions of MET/CAL

To upgrade to MET/CAL *Plus* 7 from version 5.0 and later, simply acquire an upgrade to the MET/BASE package, and then acquire the license upgrades you need. (You will need the serial number for your existing software). MET/CAL *Plus* customers using versions prior to 5.0 will need to acquire a new, complete MET/CAL *Plus* 7 product. For more information, see **Ordering Information**.

MET/SUPPORT Gold members receive a free upgrade to MET/CAL *Plus* 7.

The support you need, when you need it

When you register your new copy of the MET/BASE portion of MET/CAL *Plus*, you are enrolled automatically in the MET/SUPPORT Silver program for 60 days of free support via telephone, fax, and e-mail—to help get you up and running quickly and easily. But the support doesn't stop there. Enroll in the annual MET/SUPPORT Gold program and receive additional premium support and services to help keep you as productive as possible. In addition to priority access by telephone, fax or e-mail, you will get free access to Fluke's library of Warranted Procedures, software updates and upgrades, discounts on training courses and custom procedure development, and more. Even if you use only a few of the Gold services, you can easily recover more than the cost of your membership fee.

Fluke's commitment to support provides additional benefits as well, including invitations to user group meetings and conferences, and a newsletter. You will become part of a worldwide community of software users who have already discovered why MET/CAL is the **de facto** standard.

MET/CAL® *Plus* works the way you do.
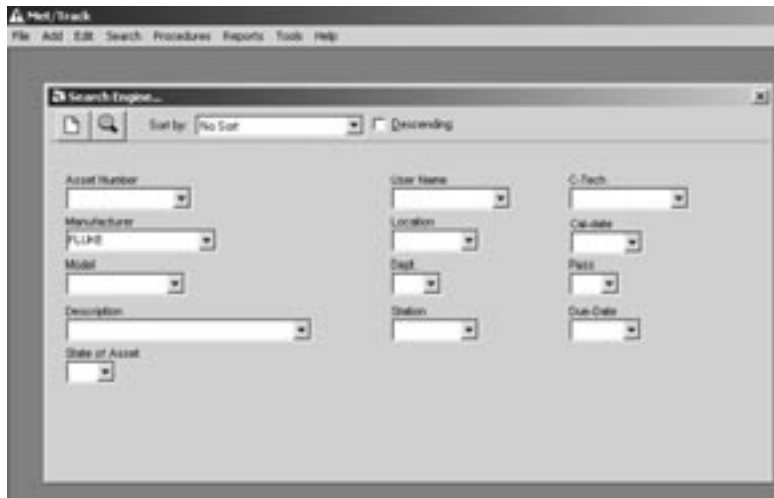
On-screen queries of your data are as simple as filling in a few blanks. Use wildcards to broaden your search. The query screen can be customized to meet your specific needs. You can include fields from several different tables.
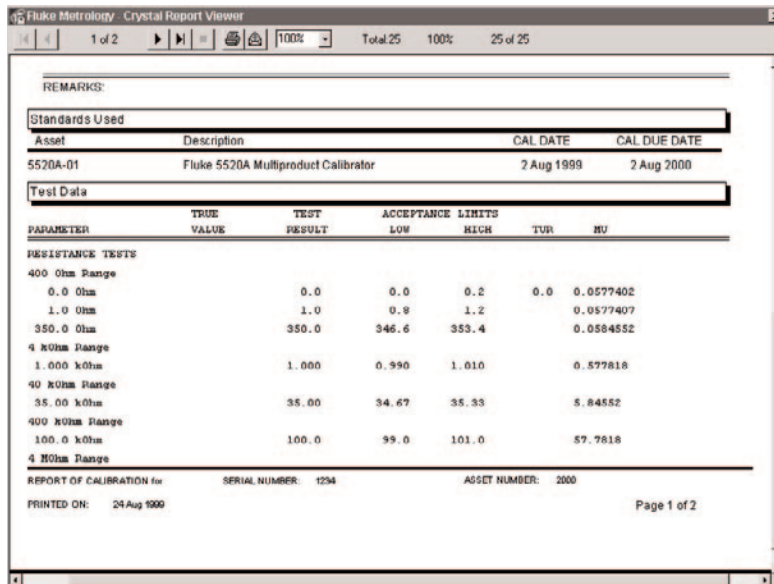
MET/CAL *Plus* 7 now supports calculation and reporting of measurement uncertainty consistent with international guidelines.

Adding inventory items to MET/CAL *Plus* 7 is as easy as typing up a form. Drop-down validation boxes assure that data are entered consistently and accurately. You can customize validation rules to match your company's terminology. Information can also be imported automatically with validation.

A range of reports is included with MET/CAL *Plus*. They can be previewed on screen, then printed. All are prepared with Crystal Reports Professional, so they can be modified as you see fit or used as a basis for creating your own custom reports.

Because the MET/CAL *Plus* database supports the Microsoft ODBC standard, it's easy to access your data from other Windows applications for further analysis. Full security and data integrity are maintained. MET/CAL *Plus* is designed for flexibility so it can be tailored to work the way you work. You decide which data you wish to maintain and in what format, length, access level, storage and display lengths. You can even assign your own field names.

Procedures are written in a readable, self–documenting language and follow traditional calibration steps. This makes them easy to create, modify or read without programming experience. Complete listings help satisfy calibration procedure requirements of ISO 9001 4.11c. More than 1,900 procedures for hundreds of instruments are available. You can further customize them, or use them as templates for creating new ones.
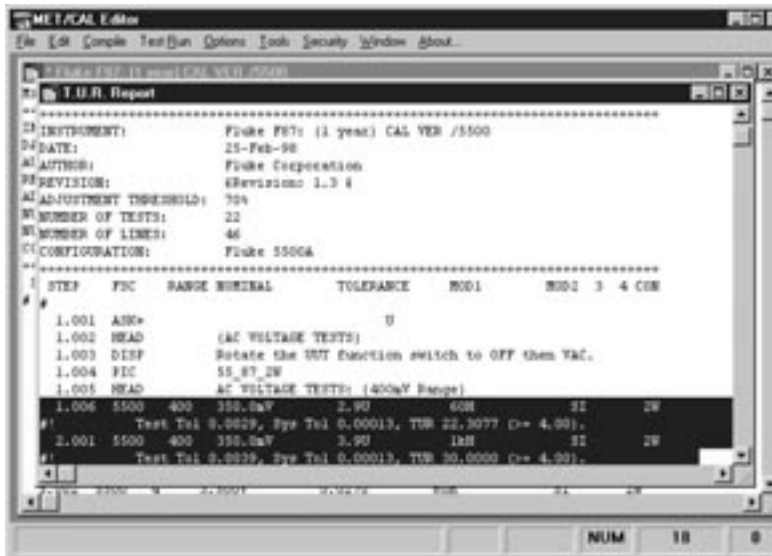
MET/CAL *Plus* enables you to establish minimum test uncertainty ratios (TURs) to assure that tests performed by the calibrator are sufficiently accurate for the instrument being calibrated. Flagging TURs helps demonstrate the adequacy of standards according to ISO 9001, 4.11.2a.
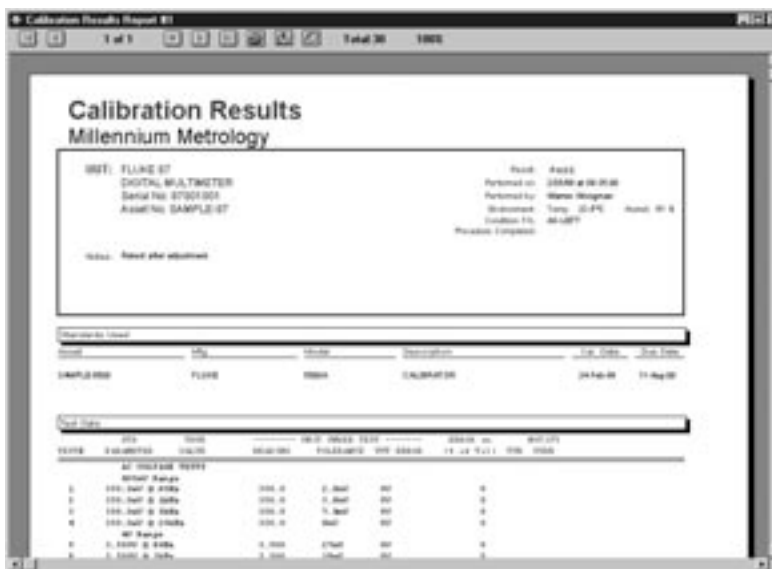

Capture complete calibration results, includ-ing traceability data and environmental con-ditions. The operator can see at a glance which tests were performed and which ones passed or failed. Complete results records help you identify out-of-tolerance conditions and satisfy the records requirements of ISO 9000. Report measurement uncertainty in accordance with international standards.

Procedures can use a combination of graphics and text instructions to guide operators step-by-step through the calibration. This reduces errors and enables even less experienced technicians to perform complex tasks. Pictures can be used directly from scanners or digital cameras.

MET/CAL *Plus* prompts for environmental conditions which helps demonstrate environmental control as per ISO 9001, 4.11.2h. This data can be gathered and recorded automatically with the 5000A-RH/T Precision Humidity and Temperature Data Logger.
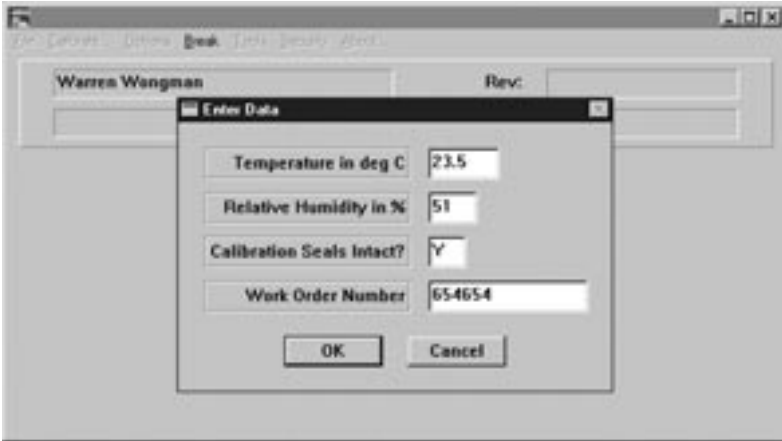
MET/CAL *Plus* takes advantage of the flexibility of its open database structure and the power of Crystal Reports Professional to create reports and certificates that precisely meet your lab's business reporting requirements.

MET/CAL® *Plus* compliance with quality standards

Standard	What it asks you to do	How MET/CAL *Plus* helps
ISO 9001, 4.11.2a: Adequacy of Calibration Standards	Select equipment appropriate to the measurements to be made	Maintains complete records about the adequacy of each calibrator and standard. Checks for appropriate levels of standards. Includes standard traceability reports.
ISO 9001, 4.11.2b: Traceability Documentation	Calibrate equipment at regular intervals to recognized standards	Documents the dates, equipment used, and results of each calibration as well as traceability to recognized standards. Flags equipment due for calibration. Checks for out-of-date condition when entering standards.
ISO 9001, 4.11.2c: Calibration Procedures	Use documented procedures	Documents calibration procedures.
ISO 9001, 4.11.2.d+e: Calibration Records	Equipment must indicate its calibration status	Preserves calibration records, prints calibration reports, labels. Maintains calibration history records for each item in inventory.
ISO 9001, 4.11.2.f: Out-of-Tolerance	Assess the validity of test results when equipment is found out-of-tolerance	Flags out-of-tolerance points. Search function ensures that each link in the calibration chain of instruments can be easily located and checked.
ISO 9001, 4.11.2.g: Environmental Controls	Environmental conditions must be appropriate	Logs environmental conditions. Calibration history records include environmental conditions.
ISO 9001, 4.11.2h: Handling and Storage	Storage and handling conditions must be appropriate	Documents conditions under which calibrations are performed. Location history records track where equipment is stored.
ISO 9001, 4.11.2.i: Security of Calibrations	Security must be adequate to protect the validity of calibrators	Includes multi-level security for access to inventory information, procedures, results and run-time system.
ISO/IED 17025		
Maintain equipment or prevent people from using it	Maintains calibration and maintenance status and history. Location information makes recalls easy	
Maintain calibration records	Archives extensive information including calibration, next due date, procedures and standards used, results, operator, and more	
Keep maintenance/repair records	Repair and maintenance history maintained. Preventive maintenance recall interval can be maintained	
Equipment must be documented traceable to recognized standards	Traceability is documented for all assets managed and adequacy hierarchy is enforced	
Documented, accessible, secure, understandable, adequate procedures are used	Procedures are accessible, secure, readable and documented adequate for the instrument calibrated	
Results reports and certificates	Collects results information and reports it in any format required	
Assess the impact of an out-of-tolerance condition	Reverse traceability capability enables reporting the effect of any standard found out-of-tolerance on the workload it calibrated	

Supported Instruments

Agilent
- **NEW!** E4418A, E4418B*, EPM–441A Single Channel Power Meters
- **NEW!** E4419A, E4419B*, EPM–442A Dual Channel Power Meters
- 848 and 3325B Power Sensors (with E-Series Power Meters)
- **NEW!** 33250A Function Generator/Arbitrary Waveform Generator

Wavetek
- 395* Function Generator/Arbitrary Waveform Generator

Fluke
- **NEW!** 8508A Reference Multimeter
- 2620T* and 2635T* Recording Thermometers
- 5500A Multi–Product Calibrator including the 5500A–SC300 and 5500A–SC600 Oscilloscope Calibration options and 5725A Amplifier*
- 5520A Multi–Product Calibrator including the 5500A–SC300 and 5500A–SC600 Oscilloscope Calibration options*
- 5800A/5820A* Oscilloscope Calibrators
- GHz Option for 5800A and 5820A
- 5700A/5720A Multifunction Calibrators incl. the 5700A–03 option and 5725A Amplifier
- 5790A AC Measurement Standard
- 5100 Series Calibrators including the 5100B–03 option
- 5200A AV Calibrator
- 5205A, 5215A and 5220A Amplifiers
- 525A* Temperature/Pressure Calibrator
- 525A–P Series Pressure Modules (with 525A)
- 5440B Series DV Calibrators
- 5450A Resistance Calibrator
- 45 Dual Display Multimeter*
- 6060B Series RF Signal Generators (Fluke and Gigatronix)
- 6080 Series RF Signal Generators in 6060B emulation mode (Fluke and Gigatronix)
- 8502A, 8505A and 8506A Multimeters
- 8840 Series Multimeters
- 700 Series Pressure Modules (with 5520A and 525A)*
- 8920A RF Voltmeter (with 1120A)
- PM 5191, PM 5192 and PM 5193 Function Generators
- PM 6666 and PM 6680 Frequency Counters

Tek and Tegam
- CG 5001, CG 5011 Oscilloscope Calibrators
- SG 5030 and SG 5050 Leveled Sinewave Generators

Hewlett-Packard
- 33120A* Function Generator
- 3458A Multimeter
- 34401A* Multimeter
- 3325A* Function Generator
- 34420A* Nanovoltmeter
- 437B Power Meter and EPM–441A in 437B emulation mode
- 5335A Universal Counter
- 6060B, 6063B Electronic Loads
- 8648A/B/C/D RF Signal Generators
- 8560A/E, 8561A/B/E, 8562A/B/E, 8563A/E, 8564E, and 8565E Spectrum Analyzers (peak search)
- 8566B, 8568B, 8590E/L Spectrum Analyzer (peak search)
- 8901A/B Modulation Analyzers
- 8902A Measuring Receiver
- 8903B Audio Analyzer and 8903E Distortion Analyzer

Keithley
- 2000 Multimeter*
- 2001, 2002 Multimeters

Marconi
- 2023 and 2024* RF Signal Generators

Rhode & Schwartz
- SMY01, SMY02, and SMY43 RF Signal Generators

Wavetek-Datron
- 9000 Universal Calibration System
- 9100 Universal Calibration System
- 9500 Oscilloscope Calibrator
- 4700 Precision Calibrator
- 4705 Precision Calibrator
- 4707 Precision Calibrator
- 4708 Precision Calibrator
- 4800 Precision Calibrator
- 4800A Precision Calibrator
- 4805 Precision Calibrator
- 4808 Precision Calibrator
- 4950 Multifunction Transfer Standard
- 1281 Precision Digital Multimeter
- 1271 Precision Digital Multimeter
- 900 Timer Counter
- 901 Timer Counter
- 905 Frequency Counter
- 4000 DC Precision Calibrator
- 4000A DC Precision Calibrator
- 4200 AC Precision Calibrator
- 4200A AC Precision Calibrator

*RS-232 (serial) control only in 5500/CAL

Fluke is your source for total solutions in calibration, including calibrators, standards, software, service, support, and training: everything you need to help you maintain the quality and traceability of your measurements, from the factory floor to national standards. For more information on Fluke's complete range of electrical calibration solutions, contact your local representative.

Recommended Hardware

Processor	Intel Pentium
Memory	128 MB
Client and Stand-alone Operating System	Microsoft® Windows® 98, Windows NT® Workstation 4.0, Windows Me, Windows 2000, Windows XP (Intel-compatible microprocessors only)
Server Operating System	Microsoft Windows NT Server 4.0, Windows ME, Windows 2000, Windows XP (Intel-compatible microprocessors only)
Hard Disk	1 GB, 500 MB working space
Supported Network Protocols	NetBIOS, IPX, TCP/IP
Backup Device	Strongly recommended
Monitor	800 x 600 dpi resolution minimum

Ordering Information

Model	Description
MET/CAL-L	License disk for MET/CAL. Includes capabilities of 5500/CAL and MET/TRACK 7. MET/BASE 7 or earlier version required.
MET/CAL-LU	License disk upgrade. MET/BASE 7 and serial number for prior version (5 or newer) of MET/CAL required.
5500/CAL-L	License disk for 5500/CAL. Includes capabilities of MET/TRACK 7. MET/BASE 7 or earlier version required.
5500/CAL-LU	License disk upgrade. MET/BASE 7 and serial number for prior version (5 or newer) of 5500/CAL required.
MET/TRACK-L	License disk for MET/TRACK metrology property management software. MET/BASE 7 or earlier version required.
MET/TRACK-LU	License disk upgrade. MET/BASE 7 and serial number for prior version (5 or newer) of MET/TRACK required.
MET/BASE 7	Calibration Software Database System. One or more MET/CAL, 5500/CAL and/or MET/TRACK 7 license disks required for use.
MET/BASE 7J	Japanese version of MET/BASE
MET/BASE 7U	MET/BASE Upgrade. Upgrades installed version of MET/BASE or MET/CAL, 5500/CAL or MET/TRACK version 5.0 and later. Serial number required for purchase. One or more MET/CAL, 5500/CAL and/or MET/TRACK new or upgrade licenses required for use.
METROLOGY XPLORER XPLORER	Web based data viewer for MET/CAL and MET/TRACK, with Reports
5000A-RH/T	Precision Humidity and Temperature Data Logger
BARCODEMAGIC	Barcode Magician location management software for MET/TRACK with bar code reader support
MET/CAL-CBT7	Two complete, interactive training courses on a CD-ROM
Scheduled Training	Various courses are available

Fluke. *Keeping your world up and running.*