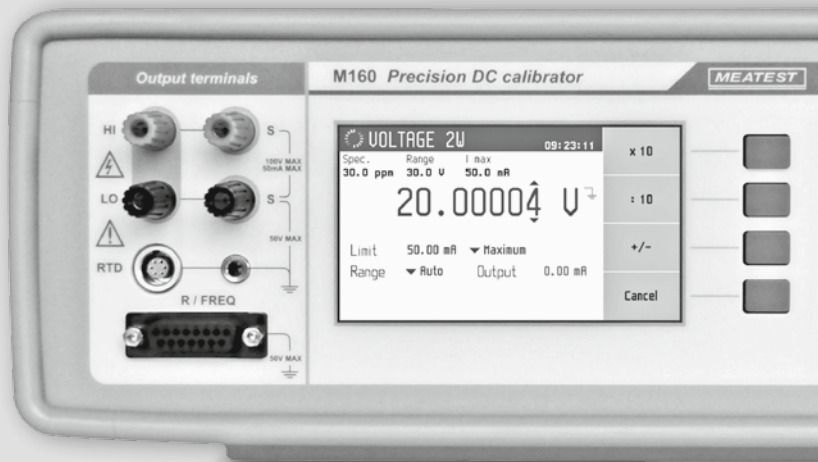


ELECTRICAL CALIBRATION

product overview



DECADES OF COMMITMENT

History of Meatest started back in early 80s when all three founders started to work together on calibrators and standards in metrology department of company Tesla. Collapse of the Soviet Union brought favourable conditions for doing business in Czech Republic once again and marked the foundation of Meatest in 1991.

With just 200 sqm of rented space, no staff and early-days ambitions the founders set about developing their own calibrators, standards and solutions for automatic calibration and eventually selling them to local customers throughout the nation.





It was obvious that local market wasn't big enough for Meatest right from the beginning so we started to look for global customers in mid 90s. First success came in 1998 when agreement on delivering calibrators to Taiwanese distributor for south west Asia has been made, followed by Swiss distributor for western Europe in 2000.

2000 was a milestone for Meatest as it had to take a huge step towards its own factory in order to keep up with foreign market demand and new trends in electronics. Newly acquired space of 650 sqm was enough even for introduction of two new types of products – programmable resistance decades and magnetic flow meters.

Another factory floor has been built in 2006, then a brand new 600 sqm development center in 2009 and staff numbers reached 40 in 2019.

And now it's time for you to try our time-proven technology and join our story

OUR SOLUTIONS

We strive to offer our customers great return on investment by keeping operating costs as low as possible and offering flexible solutions. Being a rather small company in metrology market we can work closely with customer feedback to create both hardware and software solutions that match everyone's exact applications even if it means creating a custom solution altogether.

MULTIFUNCTION CALIBRATORS	<ul style="list-style-type: none">- Bench-top Multifunction Calibrators- Portable Multifunction Calibrators- Multifunction Process Calibrators
PROGRAMMABLE DECADES	<ul style="list-style-type: none">- Resistance Decades- Capacitance Decades- RTD Simulators- High Voltage Resistance Decades
SPECIAL LABORATORY INSTRUMENTS	<ul style="list-style-type: none">- Power and Energy Calibrators- High Current, Impedance Calibrators- Resistance and Capacitance Standards
CALIBRATION SOFTWARE	<ul style="list-style-type: none">- Automated calibration- Camera readout- Calibration database

**Samsung, NPL, CMI, TÜV SÜD, NASA,
Telefonica, Philips, Jumo, Egston,
INOR, Weidmüller, Bourns Inc.,
Celesta, Iskra, Bosch, Osram, Siemens,
Honeywell, ABB, E.ON, Skoda,
Mercedes-Benz, ...**

How can we help you?

MULTIFUNCTION CALIBRATORS

Multifunction calibrators are cost-saving, all-in-one standards for calibration of electric meters including DMMs, transducers and regulators. All Meatest multifunction calibrators support computer assisted automated calibration. Full versions support additional functions like RTD simulation, resistance or power.

BENCH-TOP	<p>9010+ 10 ppm accuracy, widest ranges and workload coverage including 6½ digit DMMs.</p> <p>9010 30 ppm accuracy, options for scope, clamp meter and insulation tester calibration.</p>
PORTABLE	<p>M143 60 ppm accuracy, compact size and weight, wide ranges, great value for money.</p>
PROCESS	<p>M160 High accuracy industrial DC signals, designed for tough industrial conditions.</p>

Model	Voltage	Current	Power	Frequency	Impedance	TC	RTD	Accuracy
9010+	1050 V	30 A	31.5 kW	1100 MHz	1 GΩ, 120 mF	✓	✓	10 ppm
9010	1050 V	20.5 A	5.74 kW	400 MHz	1 GΩ, 120 mF	✓	✓	35 ppm
M143	1000 V	20 A	–	2 MHz	100 MΩ	✓	opt.	60 ppm
M143i	1000 V	2 A	–	2 MHz	100 MΩ	✓	opt.	60 ppm
M160	100 V	50 mA	–	15 kHz	300 kΩ	✓	✓	15 ppm
M160i	100 V	50 mA	–	15 kHz	–	✓	–	15 ppm

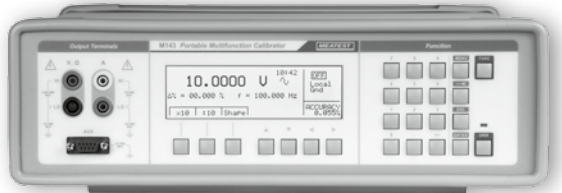
9010+



Advancing from previous M14x calibrator series, 9010+ can now calibrate even 6½ digit DMMs, 1GHz o-scopes, power analyzers, 1.5 kV insulation testers, clamp meters and more. Fixed resistor and capacitor series allows for calibration of more accurate ohm meters than competitive calibrators would. Built-in multimeter for transducer and external sensor calibration (strain gauge, pressure, torsion, strength, etc.) remains available in 9010 series too.

9010+ can be fully integrated into commonly used calibration automation platforms. Unique camera readout module CamOCR, available in Meatest's SW package Caliber/WinQbase, allows for semi-automated calibrations of multimeters with no remote control interface.

THE M143



Size of a briefcase, weight of just 11 kg and still a lot to offer. M143 is a cost saving solution for calibration of meters of electric quantities with basic accuracy 60 ppm which is enough for calibration of 3½ and 4½ digit multimeters. This portable calibrator can output up to 1000 V, 20 A or 100 MΩ, further offering TC and RTD temperature sensor simulation.

Model M143 works with Caliber© and WinQbase© software as well.

PROGRAMMABLE DECADE BOXES

Reference impedance standards were once huge sets of boxes that needed to be switched between manually. But as we moved into 21st century (at least Meatest did), things have changed. Welcome to the world of automated testing, one-click switching, no residual impedance and simple recalibration, where no accuracy or stability has been lost. All decades can be built into 19" rack and come with RS-232 interface as standard.

REAL RESISTANCE

M6x2 Excellent accuracy, stability, resolution, 6 ms reaction time and wide range. 4W connection.

M6x1 Designed for RTD simulation. Shorter ranges, otherwise same parameters and technology as M6x2.

REAL-CAPACITANCE

M525 Low loss coefficient, open correction, resolution from 1 pF.

HIGH VOLTAGE

M194 Calibrates insulation testers up to 6 kV and 100 G Ω , test voltage verification through signal meter.

M109R Cost saving version of M194. Fully floating terminals, battery powered.

Model	Range	Resolution	Max. Voltage	Interfaces (RS232 std.)	Accuracy
M632	1 Ω –1.2 M Ω	10 $\mu\Omega$	200 V _{PK}	USB, GPIB, LAN	0.002 %
M642	0.1 Ω –20 M Ω	1 $\mu\Omega$	200 V _{PK}	USB, GPIB, LAN	0.02 %
M631	16 Ω –400 k Ω	0.001 °C	200 V _{PK}	USB, GPIB, LAN	0.01 °C
M641	10 Ω –300 k Ω	0.01 °C	200 V _{PK}	USB, GPIB, LAN	0.1 °C
M525	0.1 nF–100 μ F	1 pF	50 V _{PK}	USB, GPIB, LAN	0.25 %
M194	10 k Ω –100 G Ω	10 Ω	6000 V _{PK}	USB, GPIB, LAN	0.1 %
M109R	1 M Ω –12 G Ω	1 M Ω	5000 V _{PK}	–	0.1 %

THE M632



Precision Resistance Decade M632 is truly a masterpiece, providing excellent 20 ppm accuracy and less than 1 ppm/°C temperature coefficient in area of resistance calibration.

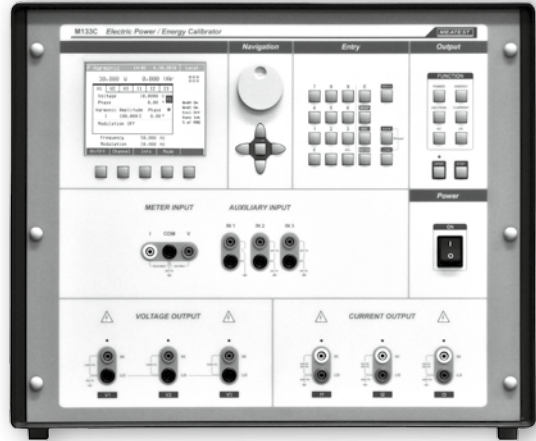
Precise resistance decade can't go without best foil resistors like those from Vishay Precision Group. Even relays available in time of M632 development were not good enough so they had to be customized by Meder to meet our high requirements.

SPECIAL LABORATORY INSTRUMENTS

Sometimes your requirements just don't fit into ordinary ranges and capabilities of multi-purpose instruments. For these cases, Meatest has few a solutions:

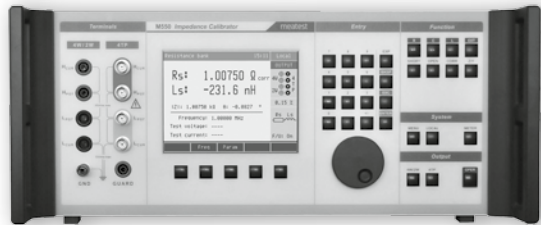
<p>POWER & ENERGY CALIBRATORS</p>	<p>M133C 0.037 % accuracy in 3-phase AC/DC power with harmonic and interharmonic distortion, amplitude modulation, Dip/Swell and flicker. Voltage-from-Current function, built-in multimeter, single-phase 90A output, RS232, ethernet, GPIB.</p>
<p>HIGH CURRENT CALIBRATOR</p>	<p>M151 175 ppm AC/DC current source and amplifier with range from 8 mA to 120 A. Built-in multimeter, simple recalibration, RS232, GPIB.</p>
<p>IMPEDANCE CALIBRATOR</p>	<p>M550 The only fully automated calibration solution for LCR meters on the market! Includes 25 LCR standards (0.1 Ω to 100 MΩ, 10 pF to 100 μF and 10 μH to 10 H), built-in test signal meter, RS232 and GPIB interface.</p>
<p>IMPEDANCE STANDARDS</p>	<p>MTE Fix LF standards with low temperature coefficient and time constant. Decadic resistance and capacitance values.</p>

THE M133C



Outstanding accuracy and resolution are quite common for Meatest instruments but the best thing about M133C is its flexibility. All three phases are completely independent and AC signal can be set up in many different ways including phase shift, frequency, harmonic and interharmonic distortion, amplitude modulation by yet another independent signal and dip/swell.

THE M550



Impedance calibrator M550 has been made using the proven top-quality-parts recipe with low calculated phase shift resulting in very good accuracy, thermal independence and lasting stability.

With M550, you no longer need countless numbers of fix standards and a lot of time to calibrate your LCR meters with frequency up to 1 MHz. Just connect your LCR meter to the M550 and press start.

CALIBRATION SOFTWARE

To make your work a bit easier, Meatest has developed its own calibration software designed to work in synergy with all calibration instruments, reducing calibration times, calculating uncertainties and keeping your data organized.

LABORATORY MANAGEMENT IN WINQBASE

LABORATORY RESOURCES

CUSTOMER DATA



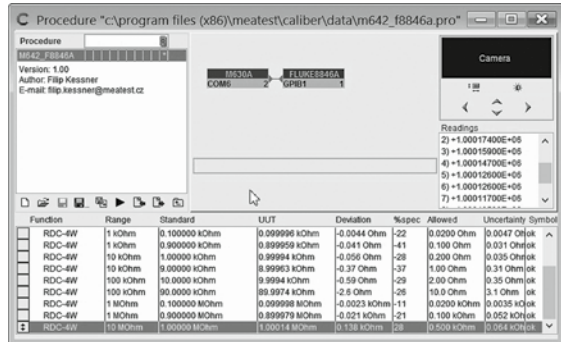
- Inventory & locations
- Personnel
- Workload schedule

- Calibrated inventory
- Orders & billing
- Contact details

WinQbase is designed to keep track of your calibrator arsenal, customers, work in progress and of course the calibrations themselves. Calibrations done by Caliber software are then linked to these records as well as instrument serial number, inventory data, owner identification, calibration dates, methods, etc.

CALIBRATIONS IN CALIBER

PROCEDURE AUTOMATION



- Procedure setup
- Uncertainty calculation
- Full test automation
- Protocol output

Caliber software is designed for automated calibration and reporting. It does the same thing as you would with Excel spreadsheet and manual calibration but much faster, cheaper, doing no errors and not bothering you even a minute. Caliber controls calibration instruments using RS232, GPIB or VISA interface where possible. Instruments with no such interfaces can be operated and read manually with Caliber providing detailed step-by-step guidance.

CAMOCR CAMERA MODULE



CamOcr camera module extends possibilities of MEATEST automatic calibration software Caliber by scanning readouts directly from 7 segment digital displays. CamOcr can do any number of repeated measurements, decreasing type "A" uncertainty.

CERTIFIED BUSINESS

Our quality management system is certified to ISO 9001:2015 under UKAS certification rules. All new instruments are tested and calibrated with possibility of ISO 17025 certified calibration.

MADE TO LAST

Development and instrument design in Meatest is focused on long-lasting durability. High quality components and precise manufacturing processes are key factors in cutting life-cycle costs.

INNOVATION FOCUS

Continuous development is taken very seriously in Meatest. That's why developers account for more than a quarter of all Meatest workforce.

FLEXIBLE SOLUTIONS

Nothing on market to match your requirements? Or just missing critical feature in our instruments? Let us know and together we'll surely come up with solution.

INSTRUMENTS FOR PEOPLE

Even though Meatest instruments are complex and powerful, user interface is always clear and easy. Come to one of our events and try it yourself.

WHEREVER YOU ARE

Our representatives are at your service all over the world. Would you like to consult your solution with us? Get a quote? Training? Service? Calibration? Let us know.

AFFORDABLE CALIBRATION SOFTWARE

To make your work a bit easier, Meatest has developed a calibration software designed to work in synergy with calibration instruments not only from Meatest. Let your PC do all the hard work for you!



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