

MARTEL

ELECTRONICS

BETA
CALIBRATORS

Calibration Technology Starts Here



Calibration Technology Starts Here

Martel Electronics offers a diversified line of hand held and bench calibrators, process instruments, process indicators, and power supplies manufactured to the highest quality standards for the process industry and OEM applications.

Throughout our growth, we have maintained our small business, customer-oriented approach in all phases of product development, manufacturing, quality control and after sales service. Computer aided design, in-house software and surface mount capability enable Martel to offer "smart products in small packages", and maintain cost effective manufacturing practices. Everyone at Martel is actively engaged in quality control, to assure that only the highest quality materials and components are used - and that they receive the most reliable products available.

As a strategic partner to some of the leading OEM's serving the process industry, Martel provides them with a proven source of innovative product development that results in a product incorporating the very latest technology, and built to Martel's high quality standards, all within a realistic time frame.

Call us today for full details on our custom product design and manufacturing services to enhance your existing product line.

Contact us via:

Toll Free: 800-821-0023

Phone: 603-434-1433

Fax: 603-434-1653

Email: sales@martelcorp.com

Website: www.martelcalibrators.com

This Martel Electronics Catalog has been developed to give you a complete view of our product line, with a concise explanation of each products capability, to help you perform at total efficiency and productivity.

Our product line on the following pages is presented in the following order:

▲ **Multifunction:**

MC-1200
DMC-1400
MasterCal 990
MC-1000

▲ **Pressure:**

BetaGauge PI
BetaGauge 321 & 311
BetaGauge 301
BetaGauge II
Pressure Modules
T-140
DPC-30 & 100

▲ **Temperatures:**

PTC-8001
TC-100

▲ **Current / Voltage:**

LC-100
IVC-222HP11 & MS-420

▲ **Bench:**

M3001
M2000A

▲ **Pumps:**

MECP100
MECP500
MECP10K

▲ **Legacy Products:**

PSC-4000
T-150

MARTEL Beta MC-1200 - *Accuracy by Any Measure*

The MC-1200

provides a feature set unmatched in high accuracy, hand-held calibrators in its price range. The MC-1200 Calibrator provides the functions and accuracy associated with fixed-installation, laboratory instruments, and has everything needed for virtually any calibration task. Measure and source thermocouples, RTDs, current, voltage, and frequency, and source pulse trains. A communications port compatible with both Fluke® 700 Series and Beta Calibrators pressure modules is provided, as is an isolated mA/V read-back circuit. Arrow keys, direct numeric keypad entry, and three software-driven function buttons, plus a large backlit, menu-driven graphics display combine to provide a highly intuitive, simple yet powerful operator interface. Built-in 250 Ohm resistor for HART™ compatibility, compatibility with smart transmitters and PLCs, full fuseless protection, are just some of the additional features that make the MC-1200 the single, most indispensable tool available for virtually any calibration task. The MC-1200 is supplied in a tough, rubber boot; a carrying case is also available as an option.

General Features

- Measure and source T/Cs (13 types), RTDs (13 types), Ohms, current, voltage, frequency; source pulse trains
- Isolated mA/V read-back circuit for complete transmitter calibration
- Communication port compatible with both Fluke 700 Series and Beta Calibrators pressure modules
- Built-in 24V supply can drive 4–20 mA loops up to 1000 Ohms
- Direct entry of custom RTD coefficients (R_0 , A, B, C)
- All source modes can be programmed with dedicated setpoints to speed calibration and linearity tests
- Highest accuracy in class to 0.015% of reading
- Meets CE requirements and is designed to IEC 1010 safety standards
- Supplied in full rubber boot; optional carrying case available
- Pressure ranges: See pressure module page

*Precision
dual display
multi-function
calibrator*

For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a MC-1200 brochure
- Or go to our website, www.martelcalibrators.com and click on MC-1200
- **Online Demo**



MARTEL Beta DMC-1400 - *Accuracy by Any Measure*

*High
accuracy
multi-function
calibrator*

The DMC-1400

Documenting Multi-function Calibrator provides a feature set unmatched in high accuracy, hand-held calibrators in its price range. The DMC-1400 provides the functions and accuracy associated with fixed installation, laboratory instruments, and has everything needed for virtually any calibration task. What makes this versatile calibrator best in class is the ability to fully document any calibration easily while performing the normal job. No special software is required! You already have all the software you need installed on your PC. Some functions will require a Microsoft® Excel®-compatible spreadsheet. We call this "the documenting calibrator for the rest of us." Work better — get better work. Set up and calibrate any instrument as you normally would.

General Features

- Measure and simulate T/Cs (13 types), RTDs (13 types), Ohms, current, voltage, frequency and pressure; source pulse trains
- Highest accuracy in class to 0.015% of reading
- Pressure module communication port compatible with BETA pressure modules
- Isolated mA/V read-back circuit for complete transmitter calibration
- Built-in 24 V supply can drive 4 – 20 mA loops up to 1000 Ohms
- Direct entry of custom RTD coefficients (R0, A, B, C)
- All simulate modes can be programmed with dedicated setpoints to speed calibration and linearity test
- Store up to 21 data points per instrument, and up to 50 instruments in non-volatile memory
- Test for pass/fail criteria
- Capture both AS FOUND and AS LEFT data
- Review data and print calibration certificates in the field
- Upload data to PC for analysis with Microsoft® Excel® or full data-base
- Meets CE requirements and is designed to IEC 1010 safety standards
- Supplied in full rubber boot

For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a DMC-1400 brochure
- Or go to our website, www.martelcalibrators.com and click on DMC-1400



MARTEL Beta MasterCAL 990 - *Accuracy by Any Measure*

The MasterCal 990

First and foremost, the MasterCAL 990 is a precision, multi-function documenting calibrator that will calibrate virtually any process instrument you have – thermocouples, RTDs, Ohms, Voltage, current, pressure, and frequency. A host of convenience features, including source ramp functions, loop power, variable density data logging with a week's worth of calibration results storage, compatibility with many third-party calibration documentation software programs, and a built-in HART configuration/communicator, make the MasterCAL 990 an indispensable tool.

A large, white backlit LCD provides simultaneous display of input and output. Menu-driven, "soft" function keys provide rapid setup and measurement. The multi-lingual interface ensures the MasterCAL 990 is useful in as broad a range of applications and locations as possible. A high capacity rechargeable battery pack provides extended usage. An optional battery eliminator is available for extended monitoring applications. The MasterCAL 990 is housed in an over-molded urethane case that provides a solid grip and protection against "hard knocks".

For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a MasterCal 990 brochure
- Or go to our website, www.martelcalibrators.com and click on MasterCal 990

General Features

- Precision multi-function calibrator and HART™ configurator/communicator in one hand-held instrument
- Measure/read thermocouple, RTD, Ohms, DC Voltage and current, pressure, and frequency
- Source/simulate thermocouple, RTD, Ohms, DC Voltage and current, pressure, and frequency
- Multi-lingual interface—English, French, German, Italian, and Spanish
- Calibration automation and documentation with many popular third-party software packages

HART Protocol Features

- Universal, common practice and device-specific commands
- Point-to-point and multi-drop operation
- Automated HART sensor and output trim
- Read HART PV in digital mode
- Read and write HART configuration functions
- Read and clone transmitter configuration
- Re-tag smart transmitters
- Pressure ranges: See pressure module page

Precision multi-function documenting calibrator and HART™ configurator/communicator in one hand-held instrument



MARTEL Beta MC-1000 - *Accuracy by Any Measure*

*High
accuracy
multi-function
calibrator*

The MC-1000

provides the combination of a high accuracy calibrator and common DMM functions. This single instrument will calibrate virtually any process device – read and source thermocouples, RTDs, Ohms, Voltage, current, frequency, pressure – and test continuity as well. The MC-1000 is compatible with 29 Fluke® 700 Series and Beta Calibrator pressure modules with the addition of a simple connector / adapter. The MC-1000 features a simple user interface, large display, and an RS232 interface.

General Features

- ± 0.4 °C thermocouple/ ± 0.3 °C RTD accuracy
- $\pm 0.015\%$ of reading electrical accuracy
- Ten (10) T/C types and eight (8) RTD types, plus YSI 400
- Read and source modes
- Full Function 4 to 20 mA read, source, simulate, and read/power modes with $\pm 0.015\%$ of reading accuracy
- Source or read 0 to 20 Volts ($\pm 0.015\%$ of reading accuracy)
- Measure 0 to 250 VDC or VAC
- Direct keyboard entry enables quick output changes
- Store up to nine (9) setpoints for each output function
- RTD function compatible with all pulsed transmitters
- RS232 interface
- Supplied in full rubber boot; optional carrying case available
- Pressure ranges: See pressure module page



For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a MC-1000 brochure
- Or go to our website, www.martelcalibrators.com and click on MC-1000
- **Online Demo**
- **Online product comparison**



MARTEL BetaGauge PI - *Accuracy by Any Measure*

The BetaGauge PI

Digital Pressure Test Gauge takes the concept of an analog Test Gauge, and brings it to a new level, as only MARTEL Electronics can do. The BetaGauge P.I. combines the accuracy of digital technology with the simplicity of an analog gauge, and achieves performance, ease-of-use, and a feature set unmatched in the pressure measurement world. Setup of the BetaGauge P.I. is fast and straightforward, through a menu-driven display, with minimal text, and intuitive functions, that is simple enough to allow the gauge to be used anywhere in the world, without the need for multilingual displays. And the availability of optional sanitary seals that meet 3A standards per specification 37-01 allow the gauge to be used in virtually any application.

Ease-of-use, performance, and features set the BetaGauge P.I. Digital Pressure Test Gauge apart, just as you've come to expect from Martel Electronics.

General Features

- Very high accuracy compared to analog test gauges; $\pm 0.05\%$ F.S.; temperature compensated
- Temperature compensated accuracy over 0 to 50 °C
- Displays in 18 standard or fully custom engineering units
- Displays ambient temperature in °C or °F
- Large, backlit, 5-1/2 digit display with 0.65" high digits and 20 segment bar graph
- Rugged stainless steel case meets NEMA 4/IP65
- Password-protected "through the keypad" calibration
- MIN/MAX recall
- Adjustable TARE zeros large system offsets
- User-configurable sample rate maximizes measurement performance and battery life
- User-configurable damping smooths readings from pulsating/plant air sources
- Auto shut-off for extended battery life
- CSA intrinsically safe, Class 1, Div. 2 Groups A, B, C, D
- CE approved
- Available with optional 24 V external power input
- Rear mount option for panel mounting
- Rubber boot optional
- Pressure ranges: 17 ranges available

For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a BetaGauge PI brochure
- Or go to our website, www.martelcalibrators.com and click on BetaGauge PI
- Online product comparison

*Digital
pressure
test
gauge*

*Single-handed
process
validation*



MARTEL BetaGauge 321/311 - *Accuracy by Any Measure*

*Dual
sensor,
triple
display,
pressure
calibrator*

*The new
standard of
custody transfer
applications*

The BetaGauge 321

provides unmatched pressure measurement flexibility over any competitive unit, setting a new standard over the venerable BetaGauge 320.

The BetaGauge 321 provides 0.025% FS accuracy on both internal, isolated, stainless steel pressure sensors. An external pressure module connection supports all BetaPort-P pressure modules for even greater measurement capability. A Pt100 RTD input is provided for temperature measurements accurate to 0.1 °C (0.2 °F). In addition, the BetaGauge 321 measures 4-20 mA loop current and up to 30 VDC. An internal 24 V Loop Power Supply can power a transmitter under test. The BetaGauge 321 supports up to three simultaneous measurements in any combination, including three pressure measurements.

With simultaneous display of two pressure and an RTD temperature measurement, the BetaGauge 321 is ideal for gas flow (custody transfer) calibrations.

The BetaGauge 321 is available in two standard configurations; 15 psi/1500 psi or 30 psi/3000 psi ranges, or customized with any two ranges selected from 10", 1, 5, 15, 30, 100, 300, 500, 1000, 1500, 3000, 5000, or 10,000 psi. It is also available in a Kit, which includes the BetaGauge 321 Pressure Calibrator, Pt100 RTD Probe, batteries, manual, NIST-traceable certificate, test leads, and hard-sided carrying case. **Also available with single pressure sensor - BetaGauge 311.**

General Features

- Two isolated, stainless steel, pressure sensors with 0.025% F.S. accuracy
- Temperature-compensation ensures accuracy in field applications
- External pressure module connection supports all BETA Port-P pressure modules (29 ranges) for even more measurement capability
- Measure 4-20 mA input
- Measure up to 30 V DC
- Large graphic style LCD with backlight
- Switch test on pressure 1, pressure 2, or external pressure module
- Operating mode layers support simple measurements to complex applications
- Up to five frequently used setups to be stored; last setup automatically recalled on power-up
- % Error and damping functions
- Pressure ranges: 28 ranges available



For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a BetaGauge 321 or 311 brochure
- Or go to our website, www.martelcalibrators.com and click on BetaGauge 321 or 311
- **Online product comparison**



MARTEL BetaGauge 301 - *Accuracy by Any Measure*

The BetaGauge 301

The BetaGauge 301 is a general purpose, value oriented pressure calibrator. With one internal pressure range and an available adapter for external BetaPort-P pressure modules, the possibilities are extensive.

Available Ranges and Engineering Units

The available internal sensor ranges are:

1, 5, 30, 00 and 300 PSI. Note: 30 and 100 PSI ranges are calibrated from -12 PSI to full scale.

Pressure may be displayed in the user's choice of engineering units, which include:

- | | | |
|-------------------------------|------------------------------|----------------------|
| • PSI | • Bar | • Bar |
| • kPa | • MPa | • kg/cm ² |
| • cm H ₂ O @ 4°C / | • cm H ₂ O @ 20°C | |
| • cm H ₂ O @ 60°F | • °C @ 4°C | |
| • H ₂ O @ 20°C | • H ₂ O @ 60°F | |
| • in H ₂ O @ 4°C | • in H ₂ O @ 20°C | |
| • in H ₂ O @ 60°F | • ft H ₂ O @ 4°C | |
| • ft H ₂ O @ 20°C | • ft H ₂ O @ 60°F | |
| • Hg, in Hg | • USER defined unit. | |

General Features

- One isolated pressure sensor
- External pressure module connection supports all BetaPort-P pressure modules (25+ ranges)
- Internal 24 V DC loop power supply
- Measure 24 mA or 30 V DC
- Large, backlit, configurable display for 1, 2 or 3 variables
- Switch test on Pressure (internal or external)
- Five (5) frequently used setups can be saved
- % error and damping functions
- Compact handheld design
- Powered by 4 AA Alkaline batteries

*Single
Sensor
Pressure
Calibrator*



For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a BetaGauge 301 Pressure brochure
- Or go to our website, www.martelcalibrators.com and click on BetaGauge 301

MARTEL BetaGauge II - Accuracy by Any Measure

*Precision
documenting
modular
pressure
calibrator*

The BetaGauge II

is unmatched by any device in its price range. For the majority of its available ranges, it has a typical pressure accuracy of 0.025% fullscale and an electrical accuracy of $\pm 0.01\%$. That makes it four times more precise than the instruments it is used to calibrate, including 0.10% accuracy smart pressure transmitters. Even so, BetaGauge II is priced competitively with distant second 0.05% pressure calibrators. The closest devices more accurate are far more expensive — lab instruments not included for field use, such as quartz gauges used to calibrate other calibrators.

*Intrinsically
Safe Model
Available!*

Yet remarkably, best-of-class accuracy is but one of many reasons for specifying BetaGauge II.

A wide range of software makes BetaGauge II a full-featured documenting calibrator

By automating pressure calibrations via a variety of popular software packages, BetaGauge II users can create a centralized database for reporting and analyzing instrument maintenance tasks. Automation saves time and money, while resulting in better performing instrumentation.

BetaGauge II, like other Beta Calibrators, is compatible with most leading calibration management software, including ASTEC Cornerstone™, Emerson Asset Management System (AMS™), and Honeywell Document™.

In addition, Beta supplies the Field Calibrator Interface Standard (FCINTF), which provides communications with other FCINTF compatible software.

- Pressure Ranges: see pressure module page



For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a BetaGauge II brochure
- Or go to our website, www.martelcalibrators.com and click on BetaGauge II

BETA Pressure Modules - *Accuracy by Any Measure*

The Pressure Modules

Beta offers 29 standard pressure modules, covering gauge, vacuum, absolute, compound, and differential measurements.

All modules are directly compatible with the BetaGauge II and BetaFLEX. With the Model BPPA-100 BETA Port Pressure Adapter, the modules are fully compatible with the BetaGauge 301, BetaGauge 311, BetaGauge 321, Martel MC-1200, Martel MC-1000, Martel M2001, MasterCal 990, DMC-1400 and 3001.

Pressure ranges may be displayed in any of 13 user-selectable units. Water density correction factors of 4 °C, 20 °C, or 60 °F can be selected for either water column unit.

General Features

- 29 standard ranges
- Gauge, vacuum, absolute, compound, and differential measurements from inches H2O to 10,000 psi
- Accuracy specified over 15 °C to 35 °C range
- Isolated and non-isolated measurements, range dependent
- .025% full scale accuracy

*Precision
digital
pressure
modules*

For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a Beta Pressure Module brochure
- Or go to our website, www.martelcalibrators.com and click on Beta Pressure Module



MARTEL DPC-30 & DPC100 - *Accuracy by Any Measure*

*Precision
pneumatic
calibration
system*

*small, lightweight,
and accurate -
take your test bench
to the field!*

The Martel DPC-30 & DPC-100

is a highly accurate, digital calibrator for pneumatic field instrumentation, including valve actuators, P/I transmitters, controllers, gauges, switches, and recorders. It is especially suitable for checking 3 to 15 psi systems.

Its dual precision regulators enable output of set and variable pressures to control devices, while the switching manifold allows fast selection among the pressure ports. The unit simultaneously displays pressure and either mA or VDC, and has a built-in loop power supply. Accuracy is 0.035% of full scale for all ranges.

General Features

- Works with compressed plant air
- 0.001 psi resolution, 0.035% accuracy
- Dual digital display – psi & mA or voltage
- Gage, differential, and vacuum modes
- Selectable engineering units
- Pressure switch test
- Rugged case to withstand factory floor environment

For more information:

- Call us toll free at 800-821-0023 or 603-434-1433

- Fax us at 603-434-1653

- Email us at sales@martelcorp.com

and ask for a DPC-30 or DPC-100 brochures

- Or go to our website, www.martelcalibrators.com and click on DPC-30 or DPC-100



MARTEL Beta T-140 - *Accuracy by Any Measure*

The T-140

is part of the Martel Electronics Tuff-Tools line of calibrators and is designed to give technicians the laboratory-grade accuracy in a family of rugged, easy-to-use instruments.

The T-140 Pressure Calibrator is available in several ranges; 10" H₂O, 200" H₂O, and 30, 100, 300, and 3,000 psi. Operation of these calibrators is made easy through the use of a sealed membrane keypad with simple controls. When combined with a Martel MECP 100, MECP 500, or MECP 3000 Hand Pumps, the T-140 Kit makes a great package to handle your pneumatic calibration requirements.

General Features

- High accuracy gauge and differential capability
- Rugged, dust tight, water-resistant case
- Isolated SS sensors on 300 psi and 3,000 psi units
- Easy to read Super-Twist LCD
- Intuitive controls make operation easy, even for infrequent users
- Powered by a common 9 Volt alkaline battery
- Supplied in full rubber boot; optional carrying case available

*Precision
pressure
calibrator/
manometer*

For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a T-140 brochure
- Or go to our website, www.martelcalibrators.com and click on T-140



MARTEL Beta PTC-8001 - Accuracy by Any Measure

*Precision
universal
temperature
calibrator*

The PTC-8001

The Martel PTC-8001 Precision Temperature Calibrator is an ideal device to handle all of your temperature calibration needs in a truly rugged, low-cost package.

It combines virtually all widely used thermocouples and RTD's in one device - you'll never have to worry about finding a temperature device you can't calibrate. This is especially true when calibrating "smart" or pulsed RTD transmitters, where many other calibrators fail to work or operate at reduced accuracy specs. The PTC-8001 handles those applications with ease.

General Features

- Calibrate thermocouples and RTD's with one unit
- Works with Rosemount 3144 and all other smart transmitters
- Direct keyboard entry or scroll control of output
- User-defined setpoints
- High accuracy $\pm 0.4^{\circ}\text{C}$ J/T/C and $\pm 0.3^{\circ}\text{C}$ PT 100 -385 RTDs; all errors included
- Ten (10) T/C types and eight (8) RTD types including PT 385 (1,000 Ohm) and Cu (10 Ohm)
- NEMA 4 rated case, rugged design
- RTD simulation works with all pulsed (smart) transmitters
- YSI 400 series thermistor range for medical applications
- Standard mini-plug connections for T/C
- Standard banana jack connections for RTDs
- Store up to nine (9) setpoints for each output function
- RS232 interface
- Supplied in full rubber boot; optional carrying case available

For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a PTC-8001 brochure
- Or go to our website, www.martelcalibrators.com and click on PTC-8001
- **Online product comparison**



MARTEL Beta TC-100 - *Accuracy by Any Measure*

The TC-100

The Martel Electronics TC-100 Thermocouple Calibrator provides high accuracy and measurement of ten common thermocouples, as well as mV. The TC-100's accuracy of $\pm 0.3^\circ\text{C}$ for Type J T/Cs includes all errors, at resolutions of 0.01°C or $^\circ\text{F}$ in measure mode and 0.1°C or $^\circ\text{F}$ in source mode. Features including MIN/MAX recall in measure mode, three setpoints per thermocouple range, a large knob for decade control of the output in source mode, and the ability to accept bare T/C wires in addition to mini-plug inputs, makes the TC-100 an accurate, easy-to-use instrument for all your thermocouple calibration needs.

For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a TC-100 brochure
- Or go to our website, www.martelcalibrators.com and click on TC-100
- **Online Demo**

General Features

- High accuracy- $\pm 0.3^\circ\text{C}$ (Type J T/C - all errors combined)
- Ten (10) common T/C types plus mV
- Accepts both T/C mini-plug and bare T/C wires
- Simple decade control of output
- Three setpoints for each T/C type
- MIN/MAX recall in measure mode
- Input protection to 240VAC
- Supplied in full rubber boot; optional carrying case available

*Precision
thermocouple
calibrator*



MARTEL Beta LC-100 - *Accuracy by Any Measure*

*Precision
current
loop
calibrator*

The LC-100

The Martel Electronics LC-100 Precision Loop Calibrator provides significantly extended performance when compared to any competitive calibrator. With an accuracy of 0.015% of reading, with 0.001 mA resolution, the LC-100 has the highest accuracy in its class. Unique features, such as a "% Error" function, which eliminates manual error calculation and allows the display of the actual versus ideal error at any calibration point, put the LC-100 way beyond similar instruments. The Martel LC-100 can simulate, power, and measure two-wire transmitters. With automatic Step and Ramp functions, the LC-100 enables remote calibration of 4-20mA devices.

General Features

- Very high accuracy - $\pm 0.015\%$ of reading
- Very high resolution - 0.001mA / 0.001V
- % Error function- eliminates manual error calculation
- Extended adjustment range- digital knob and user-selectable decade output allow both large and incremental (0.001 mA step) output changes
- Reads 0 to 28.000 VDC
- Built in 250 Ohm resistor facilitates calibration of HART™ devices
- Remote calibrations through Automatic Step and Ramp functions
- Loop power measurements capability
- Simulates powers, and measures two-wire transmitters
- Five preset outputs(4, 8, 12, 16, 20 mA)
- Fuseless input protection up to 250 VAC
- Supplied in full rubber boot; optional carrying case available



For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a LC-100 brochure
- Or go to our website, www.martelcalibrators.com and click on LC100
- **Online Demo**
- **Online product comparison**

MARTEL IVC-222HPH & MS-420 - *Accuracy by Any Measure*

The IVC-222HPH

The Martel Electronics IVC-222HPH Voltage/Current Calibrator is a general purpose current and voltage source that can be used in engineering, manufacturing, test, and process control applications. It combines both digital and analog circuitry to achieve its rated specifications in a small, reliable package.

The IVC-222HPH has the capability to store and recall up to two setpoint values, the SP1 and SP2 keys. An RS-232 port accessed via a custom cable (available from Martel) allows the calibrator to be computer controlled for automated testing.

General Features

- Remarkable 0.015% of reading accuracy
- Four ranges: 200 mV, 2 V, 20 V and 24mA
- Intuitive, easy-to-use controls
- RS-232 interface allows computer control
- Built-in 24 V supply can drive 4 to 20 mA loops over 1,000 Ohms
- Rugged, lightweight, hand-held unit
- Includes test leads, carrying case, 9 V battery, NIST Certificate, and instruction manual

For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a IVC222HPH or MS420 brochure
- Or go to our website, www.martelcalibrators.com and click on IVC-222HPH or MS-420

MS-420

The Martel Electronics MS-420 Mini-Source Portable Calibrator is a multi-purpose process loop tool that offers high accuracy in an ultra-small, rugged package.

A single pushbutton selects one of five current outputs (4, 8, 12, 16, or 20 mA), which can drive up to 300 Ohms, or can act as a 2-wire simulator with an external loop power supply of up to 30 VDC.

Each unit is provided with a 9 V battery, NIST Certificate, and instruction manual.

General Features

Designed for calibrating the following:

- Chart recorder
- Panel meter
- Data acquisition
- Other process instruments

*Precision
voltage/current
calibrator
&
Mini-source
portable
calibrator*



MARTEL 3001 - Accuracy by Any Measure

*Lab
standard
multifunction
calibrators*

The 3001

The Martel 3001 Bench Calibrator combines the power and features of the M2000 voltage/current calibrator, with the addition of thermocouple, RTD, and pressure calibration, for a single laboratory calibration instrument unmatched in versatility, performance, and value. As with every Martel calibrator, the 3001's world-class performance and features are accessed through a very simple-to-use, intuitive user interface. The Martel 3001 is truly a "process calibration laboratory in a box."

Need similar performance for voltage and current only?

If your calibration needs are limited to voltage and current, the Martel M2000 Bench Calibrator provides all of the performance, functionality, and ease of use of the 3001.

General Features

- Superior calibration accuracy to 0.0025% of reading
- Direct keyboard entry or cursor entry with decade control
- Source/Read thermocouple (13), RTD (9), Voltage, Current, Pressure (read only)
- Custom RTD and SPRT profiles
- Nine (9) setpoints for each output range and type
- Beryllium-Copper binding posts reduce thermal EMFs
- RS232, USB and IEEE-488 remote control
- Compatible with Fluke Met/Cal® software
- Isolated measurement channel
 - Two (2) voltage ranges: 10V and 100 V DC
 - MilliAmp range 0 to 52 mA
 - MilliAmp range with simultaneous 24 VDC power
 - Selectable 250 Ohm HART™ resistor
 - Accuracy of 0.005% of reading on voltage ranges



For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a 3001 brochure
- Or go to our website, www.martelcalibrators.com and click on 3001

MARTEL M2000A - *Accuracy by Any Measure*

The M2000A

The Martel M2000A Bench Calibrator sets a new standard in lab calibrator value — the M2000A features the accuracy and stability of calibration sources costing twice as much — and provides useful features no other calibrator offers in its class! Despite its world-class performance and powerful operating features, the M2000A Calibrator is very simple to setup and use.

General Features

- Superior Calibration accuracy
- Direct keyboard entry or cursor entry with decade control
- Automatic standby function protects device under test
- Nine (9) manual/automatic setpoints per output range
- Tellurium-Copper binding posts reduce thermal EMFs to $<1\mu\text{V}$
- Local or RS232 remote control
- IEEE-488 control
- Compatible with Fluke Met/Cal® software
- Optional rack/panel mount kit available

*Voltage
current
lab
standard
calibrator*



For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a M2000A brochure
- Or go to our website, www.martelcalibrators.com and click on M2000A

MARTEL Pneumatic & Hydraulic Hand Pumps - *Accuracy by Any Measure*



MECP100



The MECP Series of pneumatic and hydraulic test pumps are high performance hand operated pumps that allow the user to generate both pressure and vacuum for precise testing of pressure instrumentation including transmitters, pressure switches, etc.

The pneumatic pumps allow pressures in excess of 100 or 600 PSI (model-dependent) to be generated with just a few strokes of the pump. By changing the switching valve to vacuum, a range of -27" Hg is available.

The MECP10K Hydraulic Pressure Test Pump works with a variety of hydraulic fluids or even water to easily generate test pressures up to 10,000 PSI (700 Bar). It uses a unique fully adjustable stroke control to allow for fast priming or filling of test systems, and then switching as needed to a smaller stroke for easier pumping at high pressure.

The output pressure of all pumps can be fine tuned using the vernier control. A precision needle valve allows controlled venting for exacting pressure calibration requirements.

All pumps features NPT connections for ease of use. See specifications for details.

In addition to the bare pump, all pump models are offered in kit form with a hard sided carrying case and a flexible connection hose with appropriate fittings.

General Features

- Generate both pressure and vacuum
- Generate -27 "Hg to 100 or 600 PSI, model-dependent
- Generate hydraulic pressure from 0 to 10,000 psi
- Completely isolated vernier prevents heat transfer from hand
- Precision valve for bleed control
- Pneumatic pumps include user-friendly, field serviceable, and replaceable check valves
- Ergonomic design makes it easy to pump, even at high pressure

For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a Pump brochure
- Or go to our website, www.martelcalibrators.com and click on MECP100, MECP500, or MECP10K



MECP500



Pump Kits shown with optional BetaGauge PI Digital Test Gauge



MECP10K



Pump Kits shown with optional BetaGauge PI Digital Test Gauge

PSC-4000 Voltage & Current Calibrator - *Accuracy by Any Measure*

The Martel Electronics PSC-4000 Process Calibrator

is a portable, hand-held, full function voltage and current calibrator with the capability to both read and simulate common process control signals.

The PSC-4000 incorporates multiple input/output ranges for both current and voltage operating modes. When operated in the current mode, the calibrator can source, simulate, or read over a 0 to 24 mA range, with 0.01 mA resolution. It can also supply 24 VDC to power a two-wire transmitter, while simultaneously reading back its output both in milliAmps or % of full scale. When operated in the voltage range, the PSC-4000 can read or source over two ranges, 0 to 20.00 V, or 0 to 200.0 mV.

For convenience, up to three (3) calibration points can be stored in memory for each voltage or current range.

Features:

- Reads and simulates process control signals
- Memory for three (3) calibration points in each range
- Multiple input/output ranges for current and voltage modes
- Built-in 24 VDC source for powering two-wire transmitters
- Accuracy of 0.025% FS \pm 1 LSD
- Large 32 character dot matrix display
- Test leads, carrying case, 4 AA batteries, NIST Certificate, and instruction manual included

*Calibration
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Starts
Here*



For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a PSC-4000 brochure
- Or go to our website, www.martelcalibrators.com and click on PSC-4000

T-150 Frequency Calibrator - *Accuracy by Any Measure*

*Calibration
Technology
Starts
Here*

T-150 – Frequency Calibrator

The T-150 frequency calibrator can generate or read frequencies ranging from 1 count per minute to 100 kHz allowing it to be used for a wide range of flow measuring instrumentation.

The Tuff-Tools line of calibrators is designed to give the technician laboratory grade accuracy in a family of rugged, easy to use instruments.

Operation of this calibrator is made easy through the use of a sealed membrane keypad with simple controls. The outputs are set through the use of step and ramp keys which allows both large and small output changes to be made with ease.



For more information:

- Call us toll free at 800-821-0023 or 603-434-1433
- Fax us at 603-434-1653
- Email us at sales@martelcorp.com and ask for a T-150 brochure
- Or go to our website, www.martelcalibrators.com and click on T-150

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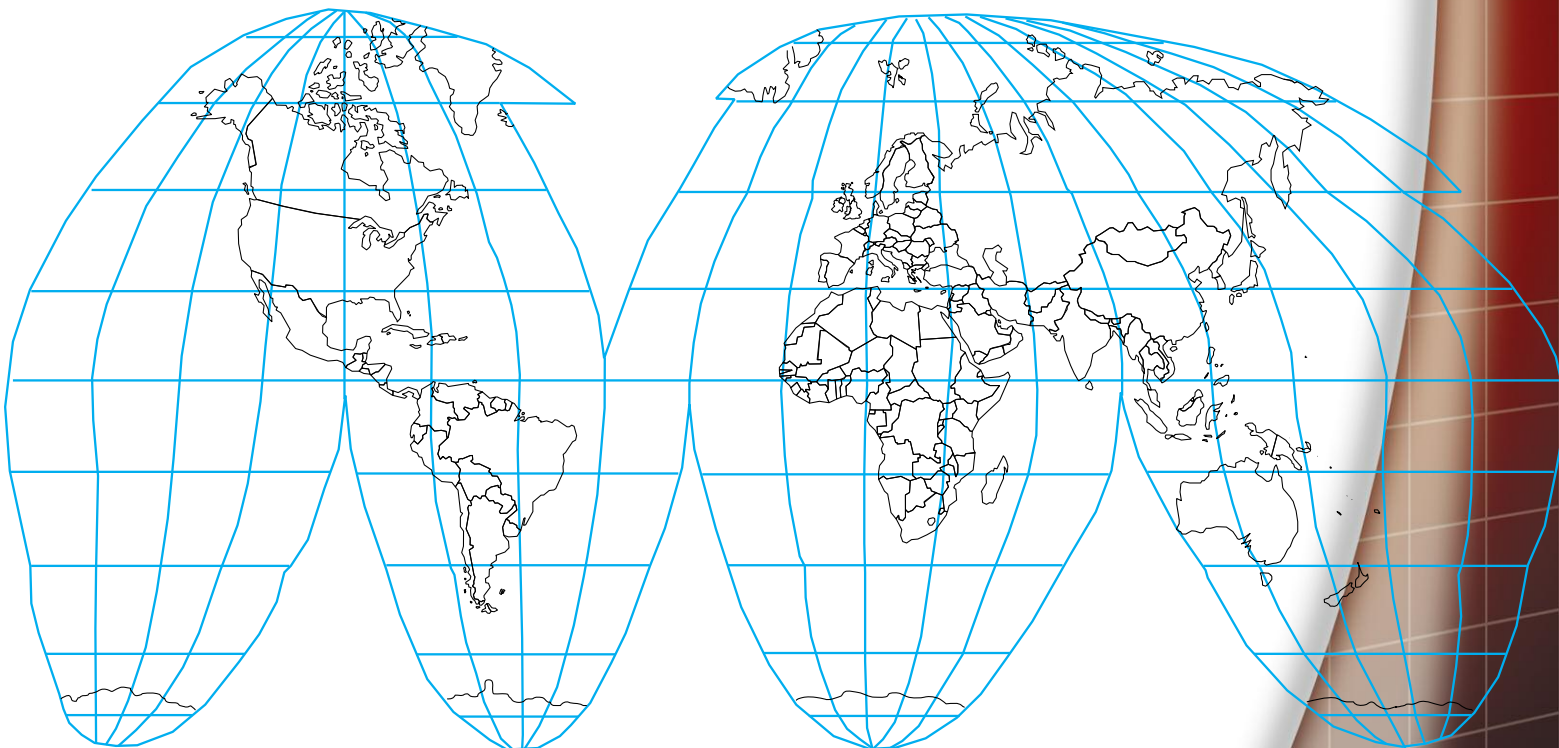
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www.martelcalibrators.com

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