

BETA CALIBRATORS The BetaGauge Family



**PTC-8001
Precision
Temperature
Calibrator**

**DMC-1400
Documenting
Multi-Function
Calibrator**
*(shown with optional
OTS-100 Field-Portable Printer)*



Additional Precision Calibrators from Martel Electronics



**TC-100
Thermocouple
Calibrator**



**MC-1200
Multi-Function
Calibrator**



**3001
Bench/Lab
Calibrator**



**T-140
Pressure
Calibrator**



**MC-1000
Multi-Function
Calibrator**



**LC-100
Loop
Calibrator**



**for
Real-World
Pressure
Calibration**

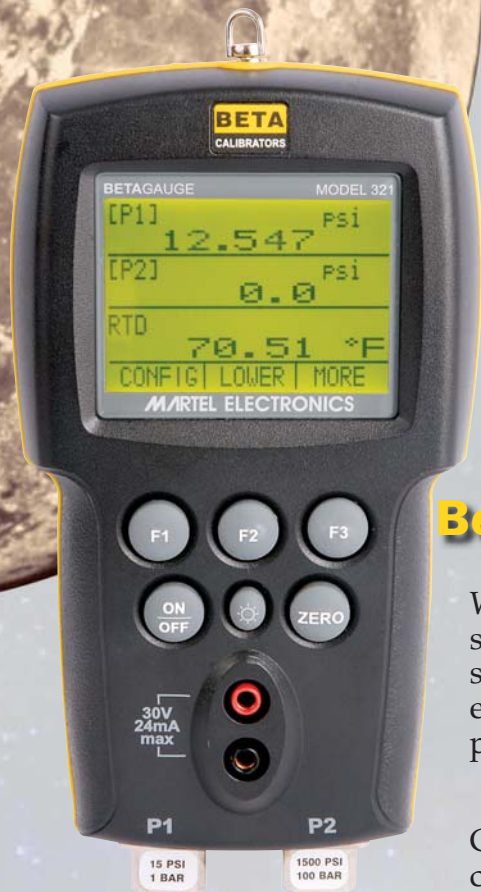
BETA CALIBRATORS **MARTEL** ELECTRONICS

Martel Electronics Corporation
PO Box 770
Londonderry, NH 03053 USA
Tel: 800-821-0023
Email: sales@martelcorp.com
Web: www.martelcalibrators.com

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MARTEL ELECTRONICS

Highest Precision and Accuracy Available in a Hand-Held Instrument



BetaGauge 321/311

Whichever you choose, the single sensor BetaGauge 311, or the dual sensor BetaGauge 321, you'll have everything you need for calibrating pressure anywhere

Gas custody transfer is the ideal application for the accuracy and capabilities of the BetaGauge 321. Select from two standard configurations: 15 psi/1500 psi, or 30 psi/3000 psi, or create a custom configuration by selecting between any two ranges.

The BetaGauge 311 can be configured by selecting from any range from 0.3, 1, 5, 15, 30, 50, 100, 150, 300, 500, 1000, 1500, 3000, 5000, or 10000 psi.

Both are supplied with soft case, AA batteries, manual, NIST-traceable certificate, and test leads.

Both are available in kits including the Pressure Calibrator, Pt100 RTD Probe, AA batteries, manual, NIST-traceable certificate, test leads, and hard-sided carrying case.



With the triple display of the BetaGauge 321, real-world gas custody transfer measurements are quick and accurate.

KEY FEATURES & SPECS	321	311
Isolated, stainless steel, pressure sensors; except those marked by an* below	2	1
Available pressure ranges PSIG: 0.3*, 1*, 5, 15, 30, 50, 100, 150, 300, 500, 1000, 1500, 3000, 5000, 10000, -15 to 15*, -15 to 30* PSIA: 15, 30, 100, 150, 300 PSI Differential: 1*, 5*, 30*, 50*, 100*	•	•
Full scale accuracy 0.3 psi = ±0.1 % FS 1.0 psi = ±0.05 % FS 15 to 3000 psi = ±0.025 % FS 5, 5000, 10000 psi = ±0.035 % FS	•	•
4-20 mA measurement input range = 0 to 24.000 Accuracy = ±0.015 % of rdg; ±0.002 V	•	•
DC Voltage measurement input range = 0 to 30.000 Accuracy = ±0.015 % of rdg; ±0.002 V	•	•
RTD input range (Pt100-385) = -40°C to 105°C (-40°F to 220°F)	•	•
Inclusive temperature compensation errors from 15 to 35 °C; ±0.002 % FS/°C outside that range	•	•
External pressure module connection supports all BETA Port-P pressure modules (29 ranges)	•	•
Pt100 RTD input for temperature measurement, accurate to 0.1°C (0.2°F)	•	•
Internal 24 V Loop Power Supply can power a transmitter under test	•	•
Large graphic style LCD with backlight can be configured to display up to 3 inputs simultaneously	•	•
Pressure displayed in the user's choice of engineering units: psi, bar, mbar, kPa, kgcm2, mmH2O@4°C, mmH2O@20°C, cmH2O@4°C, cmH2O@20°C, mH2O@4°C, mH2O@20°C, inH2O@4°C, inH2O@20°C, inH2O@60°F, mmHg@0°C, inHg@0°C, ftH2O@4°C, ftH2O@20°C, ftH2O@60°F	•	•
Switch test on Pressure X, or external pressure module	X=1 or 2	X=1
Operating mode layers support use from 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	•	•
Small, rugged, compact design operates on four (4) standard AA batteries	•	•

Order #	Description
BG311-C	BetaGauge 311, range in "C" psi
BG311-CK	BetaGauge 311 Kit, range in "C" psi
BG321-15	BetaGauge 321, 15/1500 psi ranges
BG321-30	BetaGauge 321, 30/3000 psi ranges
BG321-C/D	BetaGauge 321, custom C psi/D psi internal pressure ranges
BG321-15K	BetaGauge 321 Kit, 15/1500 psi ranges
BG321-30K	BetaGauge 321 Kit, 30/3000 psi ranges
BG321-C/DK	BetaGauge 321 Kit, with custom C psi/D psi ranges
LTP-100	Pt100 RTD Probe Assembly
BPPA-100	BetaPort-P Pressure Module Adapter



Value-oriented, general-purpose pressure calibrator

BetaGauge 301

Select any range from 1, 5, 30, 100, or 300 psi.

Supplied with carrying case, test leads, instruction manual, set of four AA alkaline batteries, and a calibration certificate.

Kits include the BetaGauge 301 Pressure Calibrator, carrying case, pneumatic pump, connections and fittings.

Order #	Description and Range
BG301-1	BetaGauge 301, 1 psi
BG301-5	BetaGauge 301, 5 psi
BG301-30	BetaGauge 301, 30 psi
BG301-100	BetaGauge 301, 100 psi
BG301-300	BetaGauge 301, 300 psi
BG301K-1	1 psi with MECP100 Pump
BG301K-5	5 psi with MECP100 Pump
BG301K-30	30 psi with MECP100 Pump
BG301K-100	100 psi with MECP500 Pump
BG301K-300	300 psi with MECP500 Pump

BetaGauge PI – Digital Test Gauge



Standard BetaGauge PI Digital Test Gauge.

The BetaGauge P. I. Digital Pressure Test Gauge combines the accuracy of digital technology with the simplicity of an analog gauge. Performance, ease-of-use, and a feature set unmatched in the pressure measurement world make the BetaGauge P.I. suitable for use in any high precision application.

Setup of the BetaGauge P. I. is fast and straightforward. A menu-driven display, with minimal text and intuitive functions, is simple enough to allow the gauge to be used anywhere in the world.

Where even higher accuracy is required, Reference Class gauges are available in several popular ranges. Their 0.04 % of reading accuracy yields very exceptional performance, especially when operated below 50% of their range. See Key Features/Specs.



Reference Class BetaGauge PIR

Order #			
BetaGauge-PI	STND	REF	Common
	-xxx	-Rxxx	-x -Kitx -24
1 psi*/70 mBAR, xxx=001; 15.000 psi/1 BAR, xxx = 015; 30.000 psi/2 BAR, xxx = 030; 100.00 psi/7 BAR, xxx = 100; 300.00 psi/20 BAR, xxx = 300; 500.00 psi/30 BAR, xxx = 500; 1,000.00 psi/70 BAR, xxx = 01K; 2,000.0 psi/140 BAR, xxx = 02K; 3,000.0 psi/200 BAR, xxx = 03K; 5,000.0 psi/300 BAR, xxx = 05K; 10,000 psi/700 BAR, xxx = 10K; -15 to +15 psi*, xxx=015C; -15 to +30 psi*, xxx=030C			
30 psi compound (C/V), xxx=C30; 30 psi, xxx=030; 100 PSIG, xxx=100; 500 PSIG, xxx=500; 1000 PSIG, xxx=01K; 3000 PSIG, xxx=03K			
Port Position Bottom (standard); x = __ (leave blank); Back (option); x = RM			
Kit (includes BetaGauge PI, case, rubber boot, pressure calibration hand pump, hose and fittings) With MECP500 pneumatic test pump (500 psi and below); Kit5 With MECP10K hydraulic test pump (above 500 psi); Kit3			
OPTIONAL: External 24 VDC Power Input			



KEY FEATURES & SPECS		
Feature/Spec	Standard Models	Reference Class Models
Available pressure ranges:	1 psi*/70 mBAR; 15 psi/1 BAR, 30 psi/2 BAR, 100 psi/7 BAR, 300 psi/20 BAR, 500 psi/30 BAR, 1,000 psi/70 BAR, 2,000 psi/140 BAR, 3,000 psi/200 BAR, 5,000 psi/300 BAR, 10,000 psi/700 BAR; -15 to +15 psi*; -15 to +30 psi*	30 PSI Compound (C/V), 30 psi, 100 psi, 500 psi, 1000 psi, 3000 psi
Full scale accuracy	±0.05 % FS positive pressure ±0.1 % FS for 1.0 psi	±0.04 % of reading, ±0.01 % FS
Temperature-compensation ensures accuracy in the field; no temperature effect over 0 °C to 50 °C	•	•
Large, back-lit, 5-1/2 digit display with 0.65" high digits and 20 segment bar graph	•	•
Pressure displayed in 18 standard or fully custom engineering units: PSI, Bar, Kg/cm2, inH2O (4 °C, 20 °C or 60 °F), ft H2O (4 °C, 20 °C or 60 °F), cmH2O (4 °C and 20 °C), mH2O (4 °C and 20 °C), Kpa, mBAR, inHg, mmHg, TORR	•	•
Media Compatibility – liquids and gases compatible with 316 stainless steel; except for ranges marked * above	•	•
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	•	•
Rugged stainless steel case meets NEMA 4/IP65	•	•
Rubber boot standard on all stand-alone bottom mount gauges; not available on rear mount or with 24 VDC option	•	•
CE approved; CSA intrinsically safe, Class 1, Div. 2	•	•

* non-isolated sensor

Field-Portable, Precision Calibration, Hot-Swappable Range Modules, AND Documenting



BetaGauge II

The BetaGauge II is a two-channel pressure calibrator, with interchangeable modules for measuring a variety of pressure ranges and DC electrical signals.

Documenting

The BetaGauge II becomes a documenting calibrator when used with our versatile, menu-driven, PC-based ProCAL Software. Used together, they can create a centralized database, with a history for every pressure instrument and pressure I/O loop in your plant, with minimal guesswork and data entry. The BetaGauge II's RS232 port also permits use with key software programs from manufacturers like Cornerstone, Honeywell Loveland, Emerson AMS, and others.

Versatility

The BetaGauge II uses two independent, hot-swappable, field changeable pressure modules, available in a wide variety of pressure ranges to redefine calibrator versatility. Changing ranges is as easy as plugging in new input modules, which can be done even while the unit is powered up. The BetaGauge II automatically recognizes the signals and assigns them to the proper channel. This plug-in design simplifies maintenance, too. The base unit needs no recalibration; only the input modules do. That means you never have to be out of service — you send only the out-of-calibration modules back to the shop, while continuing to use the BetaGauge II in the field.



The BPPA-100 Module Adapter allows all of the BetaGauge Pressure Modules to be used with other Martel-BETA process Calibrators, including

- BetaGauge 321 Dual Sensor Pressure Calibrator
- BetaGauge 311 Single Sensor Pressure Calibrator
- BetaGauge 301 Single Sensor Pressure Calibrator
- DMC-1400 Documenting, Multi-Function Calibrator
- MC-1200 Multi-Function Calibrator
- MC-1000 Multi-Function Calibrator

For optimum mechanical strength, external pressure connection is made by a 1/8" FNPT 316SS connector welded to a stainless steel metal plate.



The BetaGauge II is supplied with a standard voltage/current input module, an external battery pack (NiCd, rechargeable) and trickle charger, test leads, manual, carrying case, and 9-pin D shell serial cable.

Order #	Description
BetaGauge II	BetaGauge II; with DC electrical module and one pressure module
Pressure Module	Specify Parameter and Range Limit Example PSIG-5 is 0 to 5 psi/ 0=350 mBar Gauge (PSIG)
DC Module	DC Voltage/Current measurement
BPPA-100	Pressure Module Adapter

AVAILABLE MODULES		
PARAMETER/RANGE	FULL SCALE ACCURACY	OVER PRESSURE
Gauge (PSIG)		
0 to 0.3 (0 to .02 mBar)	±0.1 %	400 %
0 to 1 (0 to 7 mBar)	±0.05 %	400 %
0 to 5 (0 to 350 mBar)	±0.025 %, ±0.003 psi	400 %
0 to 7.2 (0 to 500 mBar)	±0.035 %, ±0.0025 psi	300 %
0 to 10 (0 to 700 mBar)	±0.025 %, ±0.0025 psi	300 %
0 to 30 (0 to 2 Bar)	±0.025 %	300 %
0 to 50 (0 to 3.5 Bar)	±0.03 %	300 %
0 to 100 (0 to 7 Bar)	±0.025 %	300 %
0 to 150 (0 to 10 Bar)	±0.035 %	200 %
0 to 300 (0 to 20 Bar)	±0.025 %	200 %
0 to 500 (0 to 35 Bar)	±0.025 %	200 %
0 to 1000 (0 to 70 Bar)	±0.025 %	200 %
0 to 1500 (0 to 100 Bar)	±0.035 %	200 %
0 to 3000 (0 to 200 Bar)	±0.1 %	200 %
0 to 5000 (0 to 340 Bar)	±0.1 %	200 %
0 to 10000 (0 to 700 Bar)	±0.1 %	150 %
Vacuum (PSIG)		
0 to -5 (0 to -350 mBar)	±0.025%, ±0.003 psi	400 %
0 to -15 (0 to -1 mBar)	±0.025%, ±0.0025 psi	300 %
Absolute (PSIA)		
0 to 15 (0 to 1 Bar)	±0.025%, ±0.0025 psi	300 %
0 to 30 (0 to 2 Bar)	±0.025%	300 %
0 to 50 (0 to 3.5 Bar)	±0.03%	300 %
0 to 100 (0 to 7 Bar)	±0.025%	300 %
0 to 300 (0 to 20 Bar)	±0.025%	200 %
Compound (PSIG)		
-15 to 15 (-1 to 1 Bar)	±0.025%, ±0.0025 psi	300 %
-15 to 30 (-1 to 2 Bar)	±0.025%, ±0.0025 psi	300 %
Differential (PSID)		
0 to 5 (0 to 350 mBar)	±0.025%, ±0.003 psi	400 %
0 to 30 (0 to 2 Bar)	±0.025%	300 %
0 to 50 (0 to 3.5 Bar)	±0.03%	300 %
Electrical (For use with BetaGauge II only)		
Voltage: > 1M ohms input impedance	Autoranging: 0 to ±249.99 mVdc 0 to ±2.4999 Vdc 0 to ±24.999 Vdc	
Current: 5 ohms input impedance	Autoranging: 0 to ±24.999 mAdc 0 to ±149.99 mAdc	

KEY FEATURES & SPECS
Available pressure ranges -any two companion modules
DC electrical measurements; 0.01% accuracy
Pressure measurements; ±0.025% FS
128 by 128 pixel, 63 by 63 mm LCD display with on-demand backlighting
Pressure displayed in 13 standard engineering units: Kp/cm2; Atmos; mBar; Bar; KPa; mmHg; InHg; InH2O 4°C, 20°C, 60°F; cmH2O 4°C, 20°C, 60°F; plus one user-defined unit.
MIN/MAX recall
% Error
Field Calibrator Interface Standard (FCINTF) compatible
ESD protection on all pins; EMI shielding
Intrinsically safe; Class 1, Groups A, B, C, and D
Intrinsically safe; Class 1, Division 2, Groups A, B, C, and D
CE approved; EC92 compliant