

MicroCal Compact

Palm-Top Calibrators
for Easy Process Maintenance



- ▶ **MicroCal Tc**
- ▶ **MicroCal Rtd**
- ▶ **MicroCal Loop**
- ▶ **MicroCal P**

Compact, Light with Belt Clip

Rugged, IP54 with Built-in Rubber Protection

High Quality and Advanced Design

128 x 128 Pixels High Contrast Graphic OLED Display **NEW**

Easy to Use

High Accuracy Source and Measure

Low Cost

Alarms: Visible and Audible

Li-ION Rechargeable Battery Pack

Step, Ramp, Span and Valve Check

USB, Datalogging with Realtime Clock

IR Printer

- ▶ **CalpMan 2008**
Software for Automatic Calibration and Documenting in Compliance with ISO9001



www.eurotron.com



Introduction

The **MicroCal Compact Series Calibrators** are designed to meet the needs of instrumentation and Quality engineers both for in field applications. Measuring and simulation ranges are the most used for checking and calibrating process instrumentation. Calibrators are compact, lightweight and easy to use.

Common Specifications

- Accuracy:** see table.
- Accuracy indicated are stated at 1 year for a temperature range +23°C ±5°C.*
- Common mode rejection:** > 130 dB @ 50/60 Hz
- Normal mode rejection:** > 60 dB @ 50/60 Hz
- Serial interface:** USB port with charging feature
- Display:** 128x128 pixels high contrast graphic OLED
- Power supply:** n°3 "AAA" type alkaline batteries / Li-ION rechargeable battery pack (not included)
- Recharging time:** 4 hours (95% typical) with instrument switched off and line charger
- Operating temperature:** from 0°C to +55°C (from 0 to 95% R.H., non condensing)
- Storage temperature:** from -20°C to +60°C
- Datalogger:** programmable interval and duration (up to 2000 data)
- Conformity:** EN 61326-1:2006-05 / EN 61010-1:2001
- Dimension:** 130 x 64 x 35 mm
- Weight:** nett 150 g

Cat. 3105 MicroCal Tc

- Measure and source of thermocouples
- Automatic ramps and steps generation
- Programmable datalogger
- HIGH/LOW alarm
- Irda printer port
- Operate with 12 types of thermocouples

International temperature scale:
 IPTS68 and ITS90 selectable

Reference junction compensation:
Internal: from -5°C to 50°C;
Programmable: from -50°C to 100°C

Rj compensation error: ±0.1°C
Rj compensation drift: ±0.015°C/°C

Temperature stability:
Span ±0.0025% of rdg./°C;
Zero ±0.2mV/°C

Output impedance (emf output):
 <0.5Ω with max current of 0.5mA

Input impedance: >10MΩ

Source resistance effects: 1mV for 1000Ω

Max input voltage: 50Vdc
Battery life: 18 hours, typical

The standard package includes:

- Alkaline batteries (installed)
- Instruction manual
- Calibration certificate



Cat. 3115 MicroCal Rtd

- Measure and source of RTDs
- Automatic ramps and steps generation
- Programmable datalogger
- HIGH/LOW alarm
- Irda printer port
- Operate with 14 types of RTDs
- Connections: 2, 3 and 4 wires

International temperature scale:
 IPTS68 and ITS90 selectable

Measurement excitation current (IN):
 < 400Ω: 0.5mA;
 < 4000Ω: 0.05mA

Simulation excitation current (OUT):
Up to 400Ω: from 0.3 to 3mA;
Up to 4000Ω: from 0.03 to 0.3mA

Cable compensation: 100Ω max

Overload protection:
 electronic and fuse up to 60Vac

Temperature stability:
Span: ±0.01% of reading / °C;
Zero: ±0.2mΩ / °C

Battery life: 18 hours, typical

The standard package includes:

- Alkaline batteries (installed)
- Instruction manual
- Calibration certificate



	Total Range	Res.	Accuracy (% of rdg.)
MicroCal Rtd			
Pt100	-200 to 850°C	0.1°C	±(0.04%+0.1°C)IEC751
$\alpha=3850$	-328 to 1562°F	0.1°F	±(0.04%+0.18°F)DIN4376
Pt100	-200 to 650°C	0.1°C	±(0.04%+0.1°C)US
$\alpha=3902$	-346 to 1202°F	0.1°F	±(0.04%+0.18°F)
Pt100	-200 to 850°C	0.1°C	±(0.04%+0.1°C)US Lab
$\alpha=3926$	-346 to 1562°F	0.1°F	±(0.04%+0.18°F)
Pt100	-200 to 600°C	0.1°C	±(0.04%+0.2°C)SAMA
$\alpha=3923$	-346 to 1112°F	0.1°F	±(0.04%+0.36°F)
Pt100	-200 to 850°C	0.1°C	±(0.04%+0.2°C)OIML1985
$\alpha=3910$	-328 to 1562°F	0.1°F	±(0.04%+0.36°F)
Pt100	-200 to 600°C	0.1°C	±(0.04%+0.3°C)JIS JEMINA
$\alpha=3916$	-346 to 1112°F	0.1°F	±(0.04%+0.54°F)1981
Ni100	-60 to 180°C	0.1°C	±(0.04%+0.2°C)
$\alpha=617$	-76 to 356°F	0.1°F	±(0.04%+0.36°F)
Ni120	0 to 150°C	0.1°C	±(0.04%+0.3°C)
$\alpha=672$	32 to 302°F	0.1°F	±(0.04%+0.54°F)
Cu10	-70 to 150°C	1°C	±(0.04%+0.3°C)
$\alpha=42$	-94 to 302°F	1°F	±(0.04%+0.54°F)
Cu100	-180 to 150°C	1°C	±(0.04%+0.1°C)
$\alpha=42$	-292 to 302°F	1°F	±(0.04%+0.18°F)
Pt200	-200 to 760°C	0.1°C	±(0.04%+0.1°C)IEC751
$\alpha=3850$	-328 to 1562°F	0.1°F	±(0.04%+0.18°F)
Pt1000	-200 to 850°C	0.1°C	±(0.04%+0.1°C)IEC751
$\alpha=3850$	-328 to 1562°F	0.1°F	±(0.04%+0.18°F)
Pt1000	-200 to 850°C	0.1°C	±(0.04%+0.1°C)OIML1985
$\alpha=3910$	-328 to 1562°F	0.1°F	±(0.04%+0.18°F)
Ω IN	0 to 300Ω	10mΩ	±(0.04%+27mΩ)
	0 to 400Ω	100mΩ	±(0.04%+27mΩ)
	20 to 3000Ω	100mΩ	±(0.04%+270mΩ)
	20 to 4000Ω	1Ω	±(0.04%+270mΩ)
Ω OUT	2 to 300Ω	10mΩ	±(0.04%+35mΩ)
	2 to 400Ω	100mΩ	±(0.04%+35mΩ)
	20 to 3000Ω	100mΩ	±(0.04%+350mΩ)
	20 to 4000Ω	1Ω	±(0.04%+350mΩ)

	Total Range	Accuracy Range	Res.	Accuracy (% of rdg.)
MicroCal Tc				
Tc J	-210 to 1200°C	-130 to 1200°C	0.1°C	±(0.04%+0.3°C)
	-346 to 2192°F	-202 to 2192°F	0.1°F	±(0.04%+0.54°F)
Tc K	-270 to 1370°C	-60 to 1300°C	0.1°C	±(0.04%+0.3°C)
	-454 to 2498°F	-76 to 2372°F	0.1°F	±(0.04%+0.54°F)
Tc T	-270 to 400°C	-50 to 400°C	0.1°C	±(0.04%+0.3°C)
	-454 to 752°F	-58 to 752°F	0.1°F	±(0.04%+0.54°F)
Tc R	0 to 1760°C	800 to 1700°C	0.1°C	±(0.04%+0.7°C)
	32 to 3200°F	1472 to 3092°F	0.1°F	±(0.04%+1.26°F)
Tc S	0 to 1760°C	800 to 1760°C	0.1°C	±(0.04%+0.8°C)
	32 to 3200°F	1472 to 3200°F	0.1°F	±(0.04%+1.44°F)
Tc B	200 to 1820°C	1200 to 1820°C	0.1°C	±(0.04%+0.7°C)
	392 to 3308°F	2192 to 3308°F	0.1°F	±(0.04%+1.26°F)
Tc C	0 to 2300°C	0 to 2300°C	0.1°C	±(0.04%+1°C)
	32 to 4172°F	32 to 4172°F	0.1°F	±(0.04%+1.8°F)
Tc U	-200 to 400°C	-50 to 400°C	0.1°C	±(0.04%+0.3°C)
	-328 to 752°F	-58 to 752°F	0.1°F	±(0.04%+0.54°F)
Tc L	-200 to 760°C	-130 to 760°C	0.1°C	±(0.04%+0.3°C)
	-328 to 1400°F	-202 to 1400°F	0.1°F	±(0.04%+0.54°F)
Tc N	0 to 1300°C	80 to 1300°C	0.1°C	±(0.04%+0.4°C)
	32 to 2372°F	176 to 2372°F	0.1°F	±(0.04%+0.72°F)
Tc E	-270 to 1000°C	-150 to 1000°C	0.1°C	±(0.04%+0.3°C)
	-454 to 1832°F	-238 to 1832°F	0.1°F	±(0.04%+0.54°F)
Tc F	0 to 1400°C	80 to 1400°C	0.1°C	±(0.04%+0.3°C)
	32 to 2552°F	176 to 2552°F	0.1°F	±(0.04%+0.54°F)
mV	0 to 100mV	0 to 21mV	1μV	±(0.05%+9μV)
		21 to 100mV	1μV	±(0.04%+12μV)

MicroCal P

Portable digital manometers

- Programmable datalogger
- HIGH/LOW alarm
- Irda printer port

Overpressure:

safe to 2 x FS. Display flashes at 110% FS.

Temperature performance averaged:

- 0°C to 50°C (32°F to 122°F)
±0.01% rdg/°F (±0.02% reading/°C)
- For absolute ranges < = 15 psi (1 bar) add
±0.025% FS/°F (±0.05% FS/°C)
- For absolute ranges > 15 psi (1 bar) add ±0.01%
FS/°F (±0.02% FS/°C)
- Calibrated range: 32°F to 122°F (0°C to 50°C)
- Operating range: 15°F to 122°F (-10°C to 50°C)

Pressure units:

psi, inHg, inH₂O (4°C, 20°C and 60°F), ftH₂O (4°C, 20°C and 60°F), mmHg, mHg, mbar, bar, mH₂O, Pa, hPa, KPa, MPa, Kg/cm² and an optional user defined scale.

Reading of ambient temperature:

±1°C

Connections:

1/8 NPT female or G 1/8 female with 4 mm ID hose adapter.

External: 1/4 BSP male

Operative mode:

Leak test, gas velocity, zero/tare, max/min, average, ambient temperature, alarms and datalogger.

The standard package includes:

- Alkaline batteries (installed)
- Instruction manual
- Calibration certificate

Accessories



F3280013 Manual pump for vacuum and pressure up to 2 bar



F3280019 Manual pump for vacuum and pressure up to 40 bar



F3280015 700 bar Manual Hydraulic pump

MicroCal P Measuring Ranges	Resolution	Error limit %FS ±1 digit Dry sensors
Gauge Built-in AISI Sensors:		
0... 500 mbar	0.1	0.1%
0... 1 Bar	0.0001	0.1%
0... 2 Bar	0.001	0.1%
0... 7 Bar	0.001	0.1%
0... 20 Bar	0.001	0.1%
Absolute Built-in AISI Sensors:		
0... 2 Bar	0.001	0.1%
0... 20 Bar	0.01	0.1%
Differential Built-in Dry Gas Sensors:		
0... 20 mbar	0.001	0.1%
0... 100 mbar	0.01	0.1%
0... 200 mbar	0.01	0.1%
0... 500 mbar	0.01	0.1%
0... 1 Bar	0.00011	0.1%
0... 2 Bar	0.0001	0.1%
0... 5 Bar	0.001	0.1%
0... 10 Bar	0.001	0.1%
0... 20 Bar	0.001	0.1%
External AISI Sensors:		
0... 35 Bar	0.01	0.1%
0... 70 Bar	0.01	0.1%
0... 150 Bar	0.01	0.1%
0... 350 Bar	0.1	0.1%
0... 700 Bar	0.1	0.1%

Accuracy includes non-linearity-hysteresis and repeatability



MicroCal P Ordering Code

Code	Model
3211	MicroCal P, accuracy 0.1% FS ±1 digit
Table A Sensor Range	
G-500m	0-500 mbar gauge AISI
G-1B	0-1 Bar gauge AISI
G-2B	0-2 Bar gauge AISI
G-7B	0-7 Bar gauge AISI
G-20B	0-20 Bar gauge AISI
A-2B	0-2 Bar absolute AISI
A-20B	0-20 Bar absolute AISI
D-20m	0-20 mbar differential dry gas
D-100m	0-100 mbar differential dry gas
D-200m	0-200 mbar differential dry gas
D-500m	0-50 mbar differential dry gas
D-1B	0-1 Bar differential dry gas
D-2B	0-2 Bar differential dry gas
D-5B	0-5 Bar differential dry gas
D-10B	0-10 Bar differential dry gas
D-20B	0-20 Bar differential dry gas
E-35B	0-35 Bar external sensor AISI
E-70B	0-70 Bar external sensor AISI
E-150B	0-150 Bar external sensor AISI
E-350B	0-350 Bar external sensor AISI
E-700B	0-700 Bar external sensor AISI

3211 - G-7B Typical ordering code

Calibration Kits for MicroCal P

EE480058

2 Bar Calibration Kit

- F3280013 Pneumatic hand pump from -0.80 to 2 bar
- EE480060 Hose ϕ 4/6 mm connection kit
- EE480054 BSP adapters kit
- ABS carrying case

EE480059

40 Bar Calibration Kit

- F3280019 Pneumatic hand pump from -0.95 to 40 bar
- EE480061 Hose and connection adapter kit
- EE480054 BSP adapters kit
- ABS carrying case



The integrated pocket clip lets the operator to keep the instrument close to hand.

Cat. 3407

MicroCal Loop

- Measure and source of current.
- 24V loop supply.
- Automatic ramps or steps outputs with function for valves verification.
- Simultaneous mA and % readout.
- Scale function (-1000 to 1000).
- 0V to 50V measurement to check the loop voltage
- Continuity tester (switch tester)
- Datalogger with data download on PC
- 250 Ω series resistor for HART devices.

Maximum load: 1000 Ω @ 20 mA

Battery life: 18 hours, typical (only measure)

Battery life: 4 hours, typical (20 mA source)

Connectors: 4 mm. sockets x 3

The standard package includes:

- Alkaline batteries (installed)
- Instruction manual
- Test leads with alligator clips
- Calibration certificate



	Range	Res.	1 year Accuracy* % rdg + counts	Note
MicroCal Loop				
Out mA active	0-24 mA	0.001	±(0.015%+3)	V-max 75V
Out mA passive 24V	0-24 mA	0.001	±(0.015%+3)	R-max 1,1 kohm at 20 mA
In mA active	0-30 mA	0.001	±(0.015%+3)	V-max 75V
In mA passive 24V	0-24 mA	0.001	±(0.015%+3)	Rmeasure 30 ohm
In Vdc	0-50 V	0.001	±(0.015%+3)	Rmeasure 1 Mohm
Continuity	< 100 ohm			1 mA current
HART resistor	250 Ω			

*Accuracy includes temperature effects 23±5°C. For use outside these limits add 0.003%/°C.

mA Ramp

Manual or Continuous cycle at programmable intervals

mA Step

Manual or Continuous cycle at programmable intervals

Source	Current OUTPUT					
4-20mA Lineare	4	8	12	16	20	
0-20mA Lineare	0	5	10	15	20	
4-20mA Flow	4	5	8	13	20	
0-20mA Flow	0	1.25	5	11.25	20	
Valve Test	3.8	4	4.2	12	19	20
4-20mA Loop Test	4	20				
0-20mA Loop Test	0	20				

ACCESSORIES

EE880091
ABS carrying case



EE880098
Compact vinyl protection case



EE490012
Thermal IR printer

EE340009
Thermal paper rolls
10 rolls kit
Paper length: 30 meters - width: 57 mm



BB300122
Tc type J, K, T and S compensated cables kit

EE300204
Mini-DIN TC type J, K, T and S female connector set

EE300205
Mini-DIN TC type J, K, T and S male connector set

EE300040
Test leads kit for electrical signal

F2132100
Tc K air probe.
Length: 130 mm. - Diameter: 4.5 mm.

F2137100
Tc K contact probe.
Length: 130 mm. - Diameter: 4.5 mm.

EE620064
Kit Li-ion rechargeable battery pack
+ USB cable for recharging
+ 110/220V universal line charger



EE625052
USB single port desktop battery charger

