

MicroCal 20 series

Documenting process calibrators



- Dual readout for measure and source
- mA, V, RTD's, TC's frequency measure/source
- HART® ability
- Measure pressure from -1 to 700 bar
- ATEX approved to II 1 G EEx ia II CT4
- RS 232 interface and fully documenting version



MicroCal 20 series

Documenting Process Calibrators



The MicroCal 20 series documenting process calibrators are rugged hand tools for calibration, maintenance and trouble shooting of virtually all the control process instrumentation.

The IS versions are certified to ATEX II 1 G EEx ia II CT4, and suitable for use in hazardous area.

The series include three different models from a basic version to a sophisticated XP model. Combined with the both internal and external pressure modules, MicroCal 20's IS can calibrate almost any process parameter likely to need service in the area where explosive gases are present.

These calibrator feature

- Calibrate temperature, pressure, voltage, frequency and resistance
- Dual channel display for simultaneous measure/source
- Measure and source 14 types of thermocouple and 10 RTD's
- 24 Vdc loop power supply (12 Vdc for IS)
- Connection for internal and external pressure module up to 700 bar
- Pressure switch test and leak test
- Rechargeable battery and charger
- Hold, zero, scale, Min/Max/AVG, Tare and flow
- Automatic Ramp/Step with programmable time, step and dwell

MicroCal 20/20-IS

Multi-function Process Calibrator with data logging facility

The cost effective choice for technicians and engineer that don't require full documenting capability. This basic version offer all the feature of a multi-function calibrator and can measure pressure up to 700 bar via the Eurotron "Plug & Play" remote pressure sensor.

MicroCal 20 Plus/20 Plus-IS

Full documenting process calibrator with built-in pressure module

The intermediate model of the series which offer an excellent value for money for plant technicians and engineers who require a full documenting process calibrator with the Pass/Fail on board test results. The MicroCal 20 plus offer an extended accuracy to 0.01% of reading for the electrical signal and can measure pressure both with internal pressure sensors and remote pressure module. The optional CalPman documenting software allow to create, upload and download calibration procedure for printing report and data analysis.

MicroCal 20 XP/20 XP-IS

Extended feature with HART® ability

The XP version, top of the range, offer all the features of the Plus model, and the ability to calibrate, maintain and trouble shooting HART® instrumentation, including pressure and temperature transmitter. In addition, the unit offers a dual channel inputs. It supports customised PRT's curve for enhanced temperature measurement.



CAPABILITIES

	20 20-IS	20 Plus 20 Plus-IS	20 XP 20 XP-IS
mA, V, RTDs, T/C's, Hz, Ω	•	•	•
Measure/Source	•	•	•
Dual channel display	•	•	•
Dual input	•	•	•
Internal pressure module		•	•
Remote Pressure sensor	•	•	•
Loop power supply	•	•	•
HART® communicator		•	•
Documenting capability		•	•

MULTI-FUNCTION PROCESS CALIBRATOR

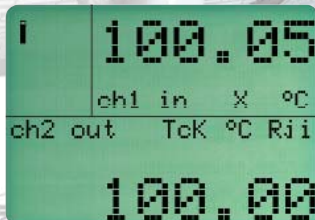
The easy to operate menu driven software enable the MicroCal 20's to be set very quickly. Easily scroll trough the input and output menu to select the required parameter.



TEMPERATURE TRANSMITTER SIMULATION

Direct connection of thermocouple compensated wires and advance cold junction compensation offer unbeatable accuracy.

When calibrating a temperature transmitter, MicroCal 20's simulate the temperature signal to the transmitter and **simultaneously** measures the output. Both the mA and mV are displayed in C for easy comparison. By running a documenting procedure, the pass/fail status can be display on the calibrator. The **24 VDC loop** power is provided (12 VDC for IS version)



ELECTRICAL CONNECTION

- Standard banana plugs
- Mini isothermic TC's connector
- Push & lock system for bare wires
- 2, 3 and 4 wire for RTD connections



LOOP CHECKING AND READ OUT DEVICE CALIBRATION



MicroCal 20s can generate a continuous signal, **Step** or **Ramp** output allowing a single technician to commission control loops. The mA and Voltage output can be **scaled** in % of FS or in engineering unit for direct comparison. The scaling can be selected to be either **linear** or **square** for flow meter readout device.



MicroCal 20 series

HART Ability and Pressure Capability

POWERFUL DOCUMENTING CAPABILITY

MicroCal 20 Plus/20 Plus-IS and 20 XP/20 XP-IS add powerful time saving and error eliminating to the comprehensive functionality of the MicroCal 20. These include **field error calculation** with the Pass/Fail report. The calibrator calculates **Pass/Fail status** on field for an immediate assessment and correction greatly reducing calibration time and eliminating human error.

```
SELECT procedure
TagSel [PT100 TRX]
Results [as left]
Display procedure
Disp: Pt100 TRX CAL 5/5
Run Step: 0.00 °C + 1.80
Pres Ref: Out 100.00
Act: In 100.70
Limit: + 0.60
Error: 0.70
Procedure complete
Press [ENTER]
```

HART® ABILITY

The internal Hart communicator feature available as standard on the MicroCal 20 XP/20 XP-IS versions replace the need for a separate hand held communicator, greatly reducing HART® transmitter maintenance and Calibration time. Universal command, such as tags and serial number and specific command such as sensor trimming or adjustment are available depending of the type of transmitter. Please refer to the web page or contact a local representative for the list of compatible transmitter which can be continuously updated by a simple download from our web page. Once connected to HART® device, the MicroCal digitally communicate and provide the 250 ohm loop resistance.

CALPMAN 2006 CALIBRATION SOFTWARE

The Powerful CalPman 2006 software package helps to comply with the burned imposed by the quality system such as the ISO 9000. As the Calibration procedure is filled, object, tags and procedure are **downloaded** to the MicroCal. In the Field these procedure configure the calibrator and the **Pass/Fail** data are stored as "as found" and "as left" data for later uploaded to the PC. The whole documenting process is completed in minutes

AUTOMATED TEMPERATURE CALIBRATION

The MicroCal 20 XP can be used as an high accuracy **dual channel thermometer** for temperature sensor calibration. It supports customised SPRT for enhanced temperature measurement. Simply CH1 and CH2 are used both as input to provide a direct comparison between a Reference sensor and a probe under test. When the **T module** procedure is selected, MicroCal 20 XP is also able to **drive off-line** the Eurotron or other manufacturers' temperature calibrator baths to perform a full automated temperature calibration procedure. Please contact us for the list of supported temperature calibrator.



Pressure Capability

The extreme flexibility of MicroCal 20's/20 IS's can be extended by adding pressure capability to the unit up to **700 bar**. MicroCal 20's can be expanded to read pressure by using "Plug & Play" remote pressure module or by adding up to two Internal pressure sensors to the main unit (Plus/Plus-IS and XP/XP-IS versions). The wide choice of ranges, both absolute and gauge with typical accuracy of **0.025 % FS** offer a cost effective solution of extending the MicroCal 20's/20 IS's capability to:

- Calibration of pressure transmitter
- Test of pressure switches
- Pressure measurement
- I-P converter testing
- Flow measurement calibration

Advance Eurotron technology and their performance are stored inside each pressure module enabling convenient use of any MicroCal 20's/20 IS's without recalibration.

Pressure range and specification, see next page.



Option A1 & A2
internal sensor



Option B1
remote sensor

SWITCH TEST AND LEAK FINDING

The advance task menu, configure MicroCal 20's to display the output pressure and the switch state **OPEN/CLOSE**. The display will capture the change of status, which will be shown along with the **Hysteresis** of the switch. Data can be stored for later recal.

Switch test

```
110.02 mbar
Contact Open
```

```
Open 110.02
Close 103.10
Hyst. 06.98
```

LEAK TEST function will check for leaks during routine maintenance or process measurement. Leak time, waiting time are fully programmable. The MicroCal 20's will report the **Initial** and the **final** pressure, the change and the **leak rate**. Press Store to save the data.

Leak test

```
Initial = 105.53
Final = 90.11
Leak = 15.42
Leak rate = 92.52
```

Press enter to store

TRANSMITTER CALIBRATION

Simply configure MicroCal 20's/20-IS's to simultaneously display the **output** pressure and **input** current or Voltage. The Pressure units can be chosen to suit the transmitter, and the **24VDC** loop power is available (12 VDC limited for IS version).

The external PGS pump series can generate pressure from **-800 to 700 bar** and fine adjustment gives fine pressure setting. For Process transmitter the current or voltage reading can be scaled/converted in **% of Span** or in engineering unit for easy comparison.

HART® pressure device can be calibrated with the MicroCal 20 XP/XP-IS.

By selecting current out put and pressure reading, MicroCal 20's/20-IS simply perform calibration of **I-P converter**, typical 4-20 to 3-15 PSI.

```
Pressure
mbar ↑
bar
Pa
Psi
mmH2O ↓
Press I 100.05
ch1 in X mbar
chP P1 mbar
100.000
```



MicroCal 20 series

Specification

Parameter	Range or Type	Resolution	Accuracy 20/20-IS	Accuracy 20 Plus-IS/XP-IS
Temperature measure and source				
T/C's	J*, K*, T*, U, L, N	0.01°C	±(0.02% rdg.+0.1°C)	±(0.01% rdg.+0.1°C)
T/C's	R, B,C,G,D,FE	0.1°C	±(0.02% rdg.+0.1°C)	±(0.01% rdg.+0.1°C)
RTD'S	Pt100, 1000 (385)	0.01°C	±(0.02% rdg.+0.05°C)	±(0.01% rdg.+0.05°C)
	Pt100, (3926), Pt100 (3902)	0.01°C	±(0.02% rdg.+0.05°C)	±(0.01% rdg.+0.05°C)
	Pt200, Pt500, Cu10	0.1°C	±(0.02% rdg.+0.1°C)	±(0.02% rdg.+0.1°C)
	Cu100, Ni100, Ni120	0.1°C	±(0.02% rdg.+0.05°C)	±(0.02% rdg.+0.05°C)
Electrical measure and source				
Voltage	-20 to 200 mV	1 µV	±(0.02% rdg.+3 µV)	±(0.01% rdg.+3 µV)
	-2 to 2 V	10 µV	±(0.02% rdg.+10 µV)	±(0.01% rdg.+10µV)
	-2 to 20 V (11 VDC-IS)	100 µV	±(0.02% rdg.+100 µV)	±(0.01% rdg.+100 µV)
Current (in/out)	-5 to 50 mA (30 mA-IS)	0.1 µA	±(0.02% rdg.+0.4 µA)	±(0.01% rdg.+0.4 µA)
	0 to 50 mA*(21 mA-IS)	0.1 µA	±(0.02% rdg.+0.4 µA)	±(0.01% rdg.+0.4 µA)
Resistance	0 to 500 Ω	10 mΩ	±(0.02% rdg.+12 mΩ)	±(0.01% rdg.+12 mΩ)
	0 to 5000 Ω	100 mΩ	±(0.02% rdg.+120 mΩ)	±(0.01% rdg.+120 mΩ)
Frequency	1 to 200 Hz	0.001 Hz	±(0.005% rdg+ 0.001 Hz)	±(0.005% rdg+ 0.001 Hz)
	1 to 2 KHz	0.01Hz	±(0.005% rdg+ 0.0 1Hz)	±(0.005% rdg+ 0.01 Hz)
	1 to 20 KHz	0.1 Hz	±(0.005% rdg+ 0.1 Hz)	±(0.005% rdg+ 0.1 Hz)
Pulse	0 to 10(6)	1 count		

The relative accuracies shown above are stated for 365 days and the operative conditions are from 18 to 28°C. All input ranges: additional error ±1 digit.
 *Resolution is 0.1°C below 200°C. **21mA/12 VDC max on passive current loop (ATEX)
 Note: additional technical information available on the web site.

Pressure specification (optional)

MicroCal 20/20-IS version takes only remote pressure sensors (B1), MicroCal 20 Plus-IS and 20 XP/20XP-IS versions take up two internal sensors (A1-A2) and remote pressure sensors (B1) the ranges of which need to be specified.

Pressure	Type	Internal option (A1/A2)	Remote option (B1)	Accuracy (1 Year)	Resolution
±100 mbar	G	G	G	0.025% FS	0.001 mbar
±500 mbar	G	G	G	0.025% FS	0.01 mbar
-1 to 1 bar	G	G	G	0.025% FS	0.01 mbar
-1 to 2 bar	G or A	G or A	G or A	0.025% FS	0.01 mbar
-1 to 7 bar	G	G	G	0.025% FS	0.1 mbar
-1 to 20 bar	G or A	G or A	G or A	0.025% FS	0.1 mbar
-1 to 35 bar	G	G	G	0.025% FS	1 mbar
0 to 70 bar	SG	SG	SG	0.025% FS	1 mbar
0 to 150 bar	SG	SG	SG	0.025% FS	1 mbar
0 to 350 bar	SG	SG	SG	0.025% FS	10 mbar
0 to 700 bar	SG	SG	SG	0.025% FS	10 mbar

Negative pressure (-100 mbar, -500 mbar and -1 bar) are only for gauge ranges.
 A = absolute, G = gauge, SG = sealed gauge
 Accuracy is defined as non linearity, hysteresis and repeatability
 Averaged temperature effect = ±0.002 of rdg/°C (w.t.r + 23°C)
 Compensated temperature range 0 to 40°C
 Temperature compensation automatic with built-in calibration matrix
 Pressure sensor media AISI 316 compatible fluids (water, gases and oil)
 Overpressure 125 % FS.
 Pressure unit: mbar, bar, Pa, hPa, kPa, MPa, kg/cm², kg/m², psi, mmH₂O, cmH₂O, mH₂O, Torr, atm, lb/ft², inH₂O, ftH₂O, mmHg, cmHg, mHg, inHg, user defined (1).

Ordering Information

MicroCal 20 Documenting Process Calibrator
 MicroCal 20PLUS Documenting Multi-function Calibrator
 MicroCal 20XP Documenting Multi-function Calibrator with HART® and T module
 MicroCal 20-IS Process Calibrator, IS version
 MicroCal 20PLUS-IS Documenting Process Calibrator, IS version
 MicroCal 20XP-IS Documenting Process Calibrator with HART®, IS version
 CalpMan2006 Calibration software package (includes USB cable)

Options

Option A1: Internal pressure sensor for XP and Plus versions (specify range and type)
 Option A2: Second internal pressure sensor for XP and Plus versions (specify range and type)
 Option B1: Remote Pressure Sensor (specify range and type)

Included accessories

MicroCal 20/20PLUS/XP include rubber sleeve, set of test leads, traceable calibration certificate, rechargeable battery, charger and instruction manual. MicroCal 20XP only include HART® communicator and HART® user manual
 Note: MicroCal 20/20P/X-IS version do not include rubber sleeve.

Accessories

BB880033: Aluminium carrying case
 BB880048: Vinyl carrying case
 BB880043: Vinyl carrying case with shoulder strap
 BB300122: Thermocouple cable kit

Features

Temperature unit
 C, F or K selectable
Temperature scale
 ITS 90 or IPTS 68 selectable
Frequency source
 Square, triangular or Sinusoidal with adjustable amplitude
Ramp
 Fully programmable with up/down, Tsoak and dwell and cycles
Scaling
 6 digits on electrical input/output both liner and square
Signal converter
 Convert any input into output (mA or V) fully isolated
Task
 Storage and recall of 10 user configuration
Transmitter simulation
 mA or V output reads in temperature or pressure unit
Transmitter calibration
 Both input and output readings in temperature or Pressure units
Math function
 Hold, max, min, offset, zero, average
Data storage
 Internal non-volatile memory
Computer interface
 Fully bidirectional RS232 (for IS version, in a safe area use only)
Language
 Support multi language

Display

Graphic LCD display
 with automatic and manual backlight, 6 digits
Sampling time
 250 ms

Environmental

Operating temperature
 -10 to 50°C
Humidity
 0 to 95 % non-condensing
Sealing
 IP 54
Intrinsically safe version
 ATEX approved II 1 G Eex ia II CT4
Power Supply
 Internal Ni-HM rechargeable battery (charger supplied as standard)-life 10hrs on TC and mV/V output (IS version, recharge in a safe area only).
Physical
 1.4 kg, 290X98X57 mm
Conformity
 ISO9000, 89/336/CEE

Pneumatic and hydraulic hand pump

PGS 3 Pneumatic Pressure Pump
 Range: -.850 to 3 bar
 Complete with 2 x 1/4 BSP F adaptors and a hose

PGS 40 Pneumatic Pressure Pump
 Range: -.950 to 40 bar
 Complete with 1/4 BSP F adaptor and a hose

PGS 700 Hydraulic Pressure Pump
 Range 0 to 700 bar
 Water/Oil operated

HTH-1000 Hydraulic Pressure Hose
 1 m high pressure rate flexible hose
 Complete with 1/4 BSP F adaptor

PGS-BSP-40

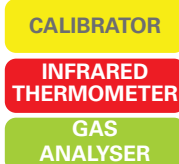
A set of BSP adaptors suitable for pneumatic applications

PGS-BSP-700

A set of SS BSP adaptors suitable for hydraulic applications



Continuous development may necessitate change of specification without notice.



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