FLUKE®

Process Tools

for industrial instrumentation and electrical technicians

2010 Selection Guide

Look inside for:

Loop Calibrators

Pressure Calibrators

Temperature Calibrators

Multifunction Process Calibrators

Documenting Process Calibrators

Calibration Software

Intrinsically Safe Calibrators

Process calibration tools

This selection guide will make sure you get the right tool for the job.

Working in a process environment such as pharmaceutical, refining or other process areas can be challenging work. Maintaining, building and calibrating process systems takes special expertise. Fluke can help you with the right tools for the specific challenges you face every day. Fluke Process Tools categories:

Loop calibrators

Loop calibrators are essential tools for the calibration, repair and maintenance of current loops. Fluke loop calibrators provide mA sourcing, simulation and measurement with simultaneous mA and % of span readouts, 24 V loop supply, simple operation and accuracy you can count on.

Milliamp process clamp meters

Milliamp process clamp meters can measure mA signals without breaking the loop. Several models are available with mA and voltage ranges for in-depth loop troubleshooting.

Pressure calibrators

Pressure calibrators need to be versatile, rugged and easy to use. Process technicians need to make differential, gage and absolute pressure measurements. Fluke offers a wide range of pressure calibrators and pressure modules for a variety of applications.

Temperature calibrators

Fluke offers a broad selection of temperature calibrators, compatible with most temperature measurement devices. Fluke temperature calibrators cover a wide range of RTD and thermocouple input devices.

www.fluke.com/processtools

Multifunction process calibrators

Fluke Multifunction process calibrators let you test and calibrate almost any process parameter. Measure and source mA, volts, temperature (RTDs and thermocouples), frequency, ohms, and pressure, using optional pressure modules.
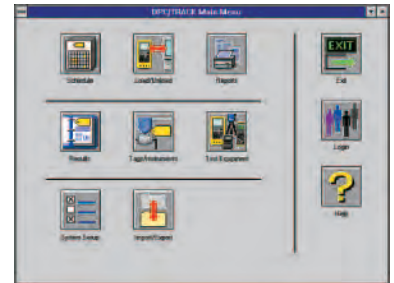
Documenting process calibrators

Documenting process calibrators do the work of several tools—sourcing, simulating and measuring pressure, temperature, and electrical signals. They also document the calibration procedures and capture your data—perfect for meeting rigorous standards and regulations. Data logging and HART communication offer even more flexibility and functionality.

Pressure modules

Pressure is one of the most widely measured parameters in the process facility. That's why Fluke offers 29 ranges of pressure modules to enable pressure measurement in multifunction and documenting process calibrators.

Process calibration software

Automating calibration procedures, data collection and analysis make more efficient use of the process calibration technician's time, and is likely to yield better results. Fluke DPC/Track software is tailored to process calibration tasks.

Intrinsically safe calibrators

Intrinsically safe calibrators are for use in potentially explosive atmospheres. These instruments are specifically designed so they cannot release enough energy to cause ignition of flammable material.

3

Loop calibrators, milliamp process clamp meters

Fluke 705   **Fluke 707**   **Fluke 715**   **Fluke 773**

CE

CSA

www.fluke.com/loop

Fluke 705, 707 and 715 mA Loop Calibrator features:
- Simultaneous mA and % readout for quick, easy, readings
- Push button 25 % steps for fast, linearity checks
- Ramp, step modes provide smooth outputs for valve and loop tests
- 24 V internal loop supply

Fluke 707 mA Loop Calibrators *adds*
- Quick click front panel selector for fast, one-hand operation

Fluke 715 Volt/mA Calibrator *adds*
- Source voltage to 200 mV or 20 V
- Measure loop current with 0.010 % accuracy and 0.001 mA resolution

Fluke 771 Milliamp Process Clamp Meter
- Measure mA signals for PLC and control system analog I/O
- Measure 4–20 mA output signals from transmitters without breaking the loop
- Resolution and sensitivity to 0.01 mA, accuracy of 0.2 %
- Dual backlit display with both mA measurement and percent of span
- Measurement spotlight illuminates hard to see wires in dark enclosures
- Detachable clamp with extension cable for measurements in tight locations

Fluke 772 Milliamp Process Clamp Meter *adds*
- mA source, simulate and 24 V loop power
- Test mA input devices and troubleshoot 4–20 mA loops

Fluke 773 Milliamp Process Clamp Meter *adds*
- DC voltage source and measure
- Test voltage input devices and measure 24 V loop power supplies
- Advanced troubleshooting functions

4

	Loop Calibrator			Process Milliamp Clamp Meter		
Model	**705**	**707/707Ex**	**715**	**771**	**772**	**773**
Measure						
V dc	28 V	28 V	25 V			30 V
A dc	24 mA	24 mA	24 mA	99.9 mA	99.9 mA	99.9 mA
Source/Simulate						
V dc			20 V			10 V
mA dc/% scale	24 mA	24 mA	24 mA	24 mA	24 mA	24 mA
mA source; auto step, auto ramp	•	•	•		•	•
Record						
Hold				•	•	•
Features						
24 V loop supply	•	•	•		•	•
Intrinsically safe (ATEX)		707Ex				
NIST traceable certification	•	•	•			
Accessories[1]	C	C	A/B			

[1]Accessories: A. Compatible with LockPak B. Compatible with ToolPak C. Accepts hanging straps from ToolPak

For full specifications, more product highlights and ordering information visit www.fluke.com/loopcalibrators

Pressure calibrators

717   718   719

CE   CSA

Pressure Enabled

www.fluke.com/pressure

Fluke 717 Pressure Calibrator

Now with 9 ranges: 1 psi, 30 psi, 100 psi, 300 psi, 500 psi, 1000 psi, 1500 psi, 3000 psi and 5000 psi

- Measure pressure and vacuum to 0.05 %
- Compatible with non–corrosive gasses and liquids
- Pressure measurement to 10,000 psi/700 bar using one of the 29 Fluke pressure modules
- Measure mA with 0.015 % accuracy, while providing 24 V loop power
- Built–in pressure switch test feature

Fluke 718 Pressure Calibrator

1 psi, 30 psi, 100 psi and 300 psi models available

All of the 717 features, plus:
- Built–in pressure/vacuum hand pump
- Pressure and vacuum measurement to 0.05 % of full scale (dry air only)
- Proven cleanout ports reduce pump failures
- Intrinsically safe 718 version available (see page 9)
- Precision pressure adjust vernier
- Variable release rate bleed valve for easy pressure adjustment

Fluke 719 Electric Pressure Calibrator

All of 718 features above plus:
- Electric pump, create pressure for calibration with the touch of a button
- Fully functional loop calibrator, measure and source mA with best in class 0.015 % accuracy
- Pressure measurement uncertainty of 0.025 %, ideal performance for high accuracy transmitter calibration
- Source mA with simultaneous pressure measurement to test valves and I/Ps
- Programmable pump limit settings protect against damage from over–pressurization

5

	Pressure Calibrators		
Model	**717**	**718/718Ex**	**719**
Measure			
A dc	24 mA	24 mA	24 mA
Pressure	1 psi to 5,000 psi[1]	1 psi to 300 psi[1]	30 psi to 100 psi[1]
Source/Simulate			
mA dc/% scale			24 mA
Record			
Min/Max	•	•	•
Hold	•	•	•
Features			
24 V loop supply	•	•	•
Integrated hand pressure pump		•	Electric
Intrinsically safe (ATEX)		718Ex	
NIST traceable certification	•	•	•
Accessories[2]	A/B	C	C

[1]Either the internal sensor or a Fluke 700 Pressure Module may be used
[2]Accessories: A. Compatible with LockPak B. Compatible with ToolPak C. Accepts hanging straps from ToolPak

For full specifications, more product highlights and ordering information visit www.fluke.com/pressurecalibrators

Temperature calibrators

712   **714**   **724**

712 RTD Calibrator
• Complete RTD calibration tool
• Measure temperature like a thermometer with RTD sensor
• Simulate RTD outputs
• Rosemount pulsed RTD transmitter compatible
• Operates with seven types of RTDs
• Auto step and auto ramp output function

714 Thermocouple Calibrator
• Full-featured thermocouple calibration tool
• Measure temperature like a thermometer with a TC sensor
• Simulate TC outputs
• Nine types of thermocouples
• Auto step and auto ramp output function
• Calibrate linear TC transmitter with mV source function

724 Temperature Calibrator
• Expertly test all the temperature sensors and transmit-ters in your plant
• Source and measure TCs and RTDs
• Easy-to-read measure/source back lit screens let you view input and output simultaneously
• Perform fast linearity tests with auto step and auto ramp features
• Power transmitters with internal loop supply
• Store frequently-used test setups for later use

6

	Temperature Calibrators		
Model	**712**	**714**	**724**
Measure			
V dc		–10 mV to 75 mV	30 V
Resistance	3200 Ω		3200 Ω
A dc			24 mA
Temperature: RTDs	7 types		7 types
Temperature: TCs		9 types	12 types
Source/Simulate			
V dc			10 V
Resistance	3200 Ω		3200 Ω
Temperature: RTDs	7 types		7 types
Temperature: TCs		9 types	12 types
Features			
24 V loop supply			•
NIST traceable certification	•	•	•
Accessories[1]	A/B	A/B	A/B

[1] Accessories: A. Compatible with LockPak B. Compatible with ToolPak

For full specifications, more product highlights and ordering information visit www.fluke.com/temperaturecalibrators

FLUKE ®

725   726

CE CSA

www.fluke.com/mfc

Fluke 725 and 726 Multifunction Process Calibrator

The Fluke 725 and 726 Multifunction Calibrators are versatile, easy-to-use field calibrators. Use them to test and calibrate almost anything.

- Dual measure/source backlit screens let you view input and output simultaneously
- Perform fast linearity tests with auto-step and ramp
- Power transmitters with internal loop supply
- Store frequently-used test setups for later use
- 725EX intrinsically safe version available
- Measure and source frequency to test sensors and flow transmitters
- Source/simulate mA, TCs and RTDs to calibrate temperature transmitters
- Source and measure pressure using any of the Fluke pressure modules for testing transmitters and gauges
- Source mA with pressure measurement to test valves and I/Ps

Fluke 726 Precision Multifunction Process Calibrator

The Fluke 726 Precision Multifunction Process Calibrator has all the features of the 725 plus twice the accuracy for unsurpassed calibration power.

- Precise measurement and calibration source performance, accuracies of 0.01 %
- Voltage input protection design for improved reliability and reduced cost of ownership
- Transmitter error % calculation, interpret calibration results without a calculator
- Memory storage for up to eight calibration results, return stored calibration data from the field
- Frequency totalizer and frequency pulse train source mode for enhanced flowmeter testing
- HART mode inserts 250 ohm resistor in mA measure with loop power and source
- Integrated pressure switch test captures the set, reset and deadband of a switch
- Custom RTD curves, add calibration constants for certified RTD probes for enhanced temperature measurement

7

	Multifunction Process Calibrator	
Model	**725/725Ex**	**726**
Measure		
V dc	30 V	30 V
Resistance	3200 Ω	4000 Ω
A dc	24 mA	24 mA
Frequency	10 kHz	15 kHz
Pressure	29 ranges[1]	29 ranges[1]
Temperature: RTDs	7 types	8 types
Temperature: TCs	12 types	13 types
Source/Simulate		
V dc	10 V	20 V
Resistance	3200 Ω	4000 Ω
mA dc/% scale	24 mA	24 mA
mA source; auto step, auto ramp	•	•
Frequency totalizer		15 kHz
Temperature: RTDs	7 types	8 types
Temperature: TCs	12 types	13 types
Record		
Calibration results		Manual
Remote operation	•	•
Features		
24 V loop supply	•	•
NIST traceable certification	•	•
Accessories[2]	A/B	A/B

[1]Fluke 700 Pressure Modules required [2]Accessories: A. Compatible with LockPak B. Compatible with ToolPak

For full specifications, more product highlights and ordering information visit www.fluke.com/multifunctioncalibrators

Documenting process calibrators

741B   **743B**   **744**

www.fluke.com/dpc

Fluke 741B Documenting Process Calibrator

The 741B does the work of several tools—sourcing, simulating and measuring pressure, temperature, and electrical signals in one rugged, hand-held device. For documentation, the 741B captures your data in the field for later retrieval.

Fluke 743B Documenting Process Calibrator

The 743B Documenting Process Calibrator automates calibration procedures and captures your data. Use the PC interface for downloading procedures, lists, and instructions to the 743 and for uploading data for printing, archiving and analysis.

Features of the Fluke 741B, 743B and 744:
- Measure volts, mA, RTDs, thermocouples, frequency, and ohms to test sensors, transmitters and other instruments

- Source/simulate volts, mA, thermocouples , RTDs, frequency, ohms, and pressure to calibrate transmitters
- Power transmitters during test using loop supply with simultaneous mA measurement
- Measure/source pressure using any of 29 Fluke pressure modules
- Measure and source simultaneously with one compact, rugged, reliable tool
- Create and run automated as-found/as-left procedures to satisfy quality programs or regulations. Record and document results
- Use many features like autostep, custom units, user entered values during test, one-point and two-point switch testing, square root DP flow testing, programmable measurement delay etc
- Handling of fast pulsed RTD transmitters and PLCs, with 1 ms response time
- English, French, German, Italian, and Spanish languages
- Three-year warranty

Fluke 744 Documenting Process Calibrator

The 744 includes integrated HART communication capability. This rugged, reliable tool is ideal for calibrating, maintaining, and troubleshooting HART and other instrumentation. Additional 744 features:

- Monitor, control and calibrate HART instrumentation
- Interrogate HART devices to determine type, manufacturer, model and tag-ID
- Read HART PV, smart transmitter digital output
- Make field adjustments to ranging, damping and more
- Change/assign the HART transmitter tag
- Re-configure HART temperature sensor (e.g., TC to RTD)
- Perform HART sensor trim and output trim
- Perform HART loop test
- Control selected Hart Scientific Dry Blocks

The 744 supports these classes of HART instructions:
- Universal commands—such as "read manufacturer and device type," "read primary variable (PV)," or "read current output and percent of span"
- Common practice commands—such as "read multiple variables," "set damping time," or "loop test"
- Device-specific commands on supported transmitters—functions unique to a particular field device, like "sensor trim"

8

Fluke 707Ex Fluke 718Ex Fluke 725Ex Fluke 700PEX

www.fluke.com/ex

What is "intrinsically safe"?

Intrinsic safety is a protection method employed for potentially explosive atmospheres. Devices that are certi–fied as "intrinsically safe" are designed to be unable to release sufficient energy, by either thermal or electri–cal means, to cause ignition of flammable gasses. Fluke makes intrinsically safe loop, pressure and documenting process calibrators, plus intrinsically safe pressure mod–ules, with the following safety ratings:

		Intrinsically Safe Calibrators	
Model	**707Ex**	**718Ex**	**725Ex**
Measure			
V dc	28 V		30 V
Resistance			3200 Ω
A dc	24 mA	24 mA	24 mA
Frequency			10 kHz
Pressure		30 to 300 psi[1]	8 ranges[2]
Temperature: RTDs			7 types
Temperature: TCs			12 types
Source/Simulate			
V dc			10 V
Resistance			3200 Ω
mA dc/% scale	24 mA		24 mA
mA source; auto step, auto ramp	•		•
Frequency			10 kHz
Temperature: RTDs			7 types
Temperature: TCs			12 types
Record			
Min/Max		•	
Hold		•	
Features			
Loop supply	24 V		12 V
Integrated hand pressure pump		•	
Intrinsically safe (ATEX)	•	•	•
NIST traceable certification	•	•	•

[1]Either the internal sensor or a Fluke 700 Pressure Module may be used
[2]Fluke 700 Pex Pressure Module required

9

	707Ex: Intrinsically Safe mA Calibrator	718Ex: Intrinsically Safe Pressure Calibrator	725Ex: Intrinsically Safe Multifunction Calibrator	700PEx: Intrinsically Safe Pressure Modules
ATEX certified	⟨Ex⟩ II 2 G Ex ia IIC T4	⟨Ex⟩ II 1 G Ex ia IIC T4	⟨Ex⟩ II 1 G Ex ia IIB 171 °C	⟨Ex⟩ II 1 G Ex ia IIC T4
North American Certification	FM APPROVED N.I. Class I, Div 2, Groups A-D T4	CSA us LR 110460 I.S. Class I, Div 1, Groups A-D T4	CSA us LR 110460 I.S. Class I, Div 1, Groups B-D, 171 °C	CSA us 221839 I.S. Class I, Div 1, Groups A-D T4

700 Series Pressure Calibration Modules

Fluke Pressure Modules

Fluke offers 29 different pressure modules for use with its pressure, multifunction and documenting process calibrators. Fluke Process Calibrators in this guide marked with the "Pressure Enabled" symbol display readings from these Precision 700 Series Pressure Modules. Each pressure module includes NIST traceable certificate, metric adapter and instruction sheet. A full range of differential, gage, absolute, vacuum, dual and intrinsically safe pressure modules are available, from –15 psi (–103 kPa) to 10,000 psi (69 MPa).

www.fluke.com/pmod

- Best-in-class 0.025 % reference uncertainty
- Rugged, chemical resistant packaging
- Temperature compensated using proprietary micro-technology linearized output
- Digital communication to calibrators, no analog losses or errors
- Absolute ranges: 0 to 5 psiA to 0 to 100 psiA (0 to 34 kPa to 0 to 690 kPa)
- Differential: 0 to 1 in H_2O to 0 to 15 psi (0 to 0.25 kPa to 0 to 103 kPa)
- Gage: 0 to 30 psi to 0 to 10,000 psi (0 to 207 kPa to 0 to 10 M kPa)
- Vacuum: 0 to –5 psi to 0 to –15 psi (0 to –34 kPa to 0 to –103 kPa)
- Dual: –1 psi to 1psi to –15 to 200 psi
- Intrinsically safe: 0 to 10 in H_2O to 0 to 3000 psi (0 to 2.5 kPa to 0 to 20.7 M kPa)

Fluke Process Calibrators in this guide displaying this symbol are Pressure Enabled units and display readings from these Precision 700 Series Pressure Modules. Each pressure module includes NiST traceable certificate, metric adapter and instruction sheet.
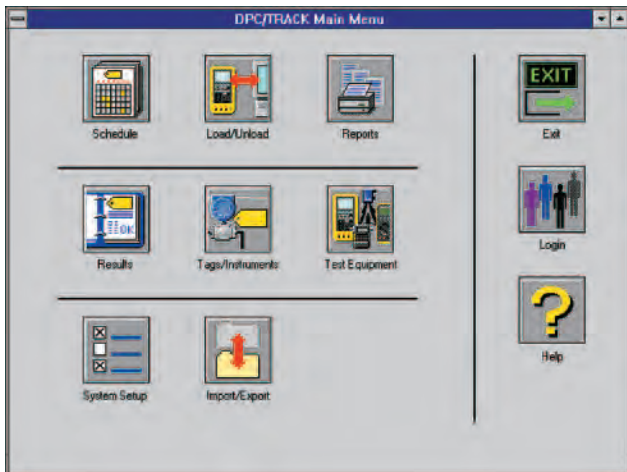
Models	Range/ resolution	Range (approx) resolution	Reference uncertainty (23 ± 3 °C)	Highside media	Low side media	Fitting material
Differential						
Fluke 700P00	1 in. H20/0.001	0.25 kPa/0.0002	0.300 %	Dry	Dry	316 SS
Fluke 700P01*	10 in. H20/0.01	2.5 kPa/0.002	0.200 %	Dry	Dry	316 SS
Fluke 700P02	1 psi/0.0001	6900 Pa/0.7	0.150 %	Dry	Dry	316 SS
Fluke 700P22	1 psi/0.0001	6900 Pa/0.7	0.100 %	316 SS	Dry	316 SS
Fluke 700P03	5 psi/0.0001	34 kPa/0.001	0.050 %	Dry	Dry	316 SS
Fluke 700P23	5 psi/0.0001	34 kPa/0.001	0.025 %	316 SS	Dry	316 SS
Fluke 700P04	15 psi/0.001	103 kPa/0.01	0.025 %	Dry	Dry	316 SS
Fluke 700P24*	15 psi/0.001	103 kPa/0.01	0.025 %	316 SS	Dry	316 SS
Gage						
Fluke 700P05*	30 psi/0.001	207 kPa/0.01	0.025 %	316 SS	N/A	316 SS
Fluke 700P06*	100 psi/0.01	690 kPa/0.07	0.025 %	316 SS	N/A	316 SS
Fluke 700P27*	300 psi/0.01	2070 kPa/0.1	0.025 %	316 SS	N/A	316 SS
Fluke 700P07	500 psi/0.01	3400 kPa/0.1	0.025 %	316 SS	N/A	316 SS
Fluke 700P08	1000 psi/0.1	6900 kPa/0.7	0.025 %	316 SS	N/A	316 SS
Fluke 700P09*	1500 psi/0.1	10 M Pa/0.001	0.025 %	316 SS	N/A	316 SS
Absolute						
Fluke 700PA3	5 psi/0.0001	34 kPa/0.001	0.050 %	316 SS	N/A	316 SS
Fluke 700PA4*	15 psi/0.001	103 kPa/0.01	0.050 %	316 SS	N/A	316 SS
Fluke 700PA5	30 psi/0.001	207 kPa/0.01	0.050 %	316 SS	N/A	316 SS
Fluke 700PA6	100 psi/0.01	690 kPa/0.07	0.050 %	316 SS	N/A	316 SS
Vacuum						
Fluke 700PV3	–5/0.0001	–34 kPa/0.001	0.040 %	316 SS	Dry	316 SS
Fluke 700PV4	–15 psi/0.001	–103 kPa/0.01	0.040 %	316 SS	Dry	316 SS
Dual						
Fluke 700PD2	± 1 psi/0.0001	±6900 Pa/0.7	0.150 %	316 SS	Dry	316 SS
Fluke 700PD3	± 5 psi/0.0001	±34 kPa/0.001	0.040 %	316 SS	Dry	316 SS
Fluke 700PD4	± 15 psi/0.001	±103 kPa/0.01	0.025 %	316 SS	Dry	316 SS
Fluke 700PD5	–15/30 psi/0.001	–100/207 kPa/0.01	0.025 %	316 SS	N/A	316 SS
Fluke 700PD6	–15/100 psi/0.01	–100/690 kPa/0.07	0.025 %	316 SS	N/A	316 SS
Fluke 700PD7	–15/200 psi/0.01	–100/1380 kPa/0.1	0.040 %	316 SS	N/A	316 SS
High						
Fluke 700P29*	3000 psi/0.1	20.7 M Pa/0.001	0.050 %	C276	N/A	C276
Fluke 700P30	5000 psi/0.1	34 M Pa/0.001	0.050 %	C276	N/A	C276
Fluke 700P31	10000 psi/1	69 M Pa/0.007	0.050 %	C276	N/A	C276

* Intrinsically safe version available for use with 718Ex and 725Ex.

For full specifications, more product highlights and ordering information visit www.fluke.com/pressure

700SW DPC/TRACK Software

Fluke DPC/TRACK is an easy-to-use, single-user, entry-level instrumentation manager. For more sophisticated software, you may wish to investigate products from one of Fluke's software partners below.

www.fluke.com/dpctrack

700SW DPC/TRACK Software

DPC/TRACK Software is a specialized database that can help you manage your instrumentation and address the documentation requirements of quality programs and regulations. With DPC/TRACK and a 744 DPC you can:

- Manage your inventory of tags and instruments, schedule for calibration
- Create tag specific procedures with instructions and comment
- Load those procedures to your DPC, and later upload the results to your PC
- Select and execute automated as found/as left procedures in the field, automatically capturing results
- Examine the calibration histories of your tags and instruments and print reports
- Import and export instrument data and procedures as ASCII text
- View it in English, French, German, Italian, or Spanish languages

The 743B and 744 includes DPC/Track Sample software, compatible with many Asset Management software packages.

DocuMint®

On Time Support

Prime Technologies

Cornerstone
The Open Platform for Instrument Management

Meridium

AMS aware™

PRM
Plant Resource Manager

beamex

INTERGRAPH

AMS from Emerson Process Management, (formerly Fisher-Rosemount).

PRM (Plant Resource Manager) from Yokogawa Electric Corporation.

These Fluke Process Calibration software partners provide differentiated solutions with connectability to Fluke 743 and 744 Documenting Process Calibrators.

For full specifications, more product highlights and ordering information visit www.fluke.com/process_software

Pressure accessories, batteries

Fluke 700HTP-1   Fluke 700PTP-1   Fluke 700LTP-1   BP7235 Battery Pack

www.fluke.com/process_acc

Fluke 700HTP-1 Hydraulic Test Pump

The Fluke 700HTP-1 is designed to generate pressures up to 10,000 psi/ 700 bar. Use the Fluke 700PRV-1 adjustable relief valves to limit pressures from 1360 psi to 5450 psi. Use the 700HTH-1 test hose to connect from the pump to the device under test.

Fluke 700PTP-1 Pneumatic Test Pump

The Fluke 700PTP-1 is a handheld pressure pump designed to generate either vacuum to -11.6 psi/-0.8 bar or pressure to 600 psi/ 40 bar.

Fluke-700LTP-1 Low Pressure Test Pump

Hand operated pressure pump designed to generate either vacuum to -13 psi/-.90 bar or pressures to 100 psi/6.9 bar. Ideal for low pressure applications requiring accurate low pressure testing.

For full specifications, more product highlights and ordering information visit www.fluke.com/process_acc

BP 7235 NiMH battery

Spare battery for 74X calibrators. Have the power to easily run the calibrator for a full day's work.

For full specifications, more product highlights and ordering information visit www.fluke.com/ process_batteries

Fluke. *Keeping your world up and running.®*

Process Troubleshooting
Webinar Series Assets

Watch the Webinar:
Testing and troubleshooting
4 mA to 20 mA control loops

To learn more about testing and troubleshooting industrial process controls visit **www.fluke.com/process_webinar** to watch a free webinar or view a video.