

**FLUKE**®

**Calibration**

# 7526A Precision Process Calibrator

**Calibrate temperature, pressure, and low dc voltage process tools in a single benchtop instrument**





The 7526A Precision Process Calibrator calibrates a wide range of pressure gauges, temperature transmitters, digital process simulators, multimeters and more.

# Versatility, precision and value — all combined into a single benchtop process calibration tool

The Fluke Calibration 7526A Precision Process Calibrator offers the best balance of economy and accuracy for benchtop calibration of pressure and temperature process instrumentation. Incorporating an isolated measurement channel, the 7526A lets you simultaneously source and measure voltage, current or resistance, making it easy to calibrate temperature and pressure transmitters, RTD and thermocouple readouts, pressure gauges, digital process simulators, data loggers, multimeters and more.

- Sources and measures dc voltage, current, resistance, RTDs and thermocouples
- Measures pressure using Fluke 700 or 525A-P Series Pressure Modules
- Measures 4–20 mA loop current
- Sources 24 V dc transmitter loop power supply
- Tests pressure and thermal switches with an automated switch-test function
- Measures thermistors up to 4 k $\Omega$
- Stores up to nine programmable setpoints for each input/output parameter
- Accepts ITS-90 coefficients for accurate SPRT measurements
- Compatible with MET/CAL® Plus Calibration Management Software

## A “best fit” for your process calibration requirements

“Doing more with less” is a requirement every process manufacturer faces today. To maintain product quality, reduce waste, improve efficiency and conform to regulatory standards, instruments that measure process variables such as temperature and pressure must be calibrated at regular intervals. Selecting the right calibrator for the job, however, can be tricky—especially when attempting to balance precision and versatility with cost. Less expensive than high-end multi-product calibrators, yet more precise and versatile than handheld field calibrators, the 7526A is a “best fit” for instrument shops that value precision, versatility and economy.

## Everything you need in one box

The 7526A packs a lot of capability into one box, allowing you to calibrate a wide-ranging and varied workload. One calibrator performs all of these functions:

- Simulates and measures nine RTD and thirteen thermocouple types
- Accurately measures pressure up to 10 000 PSI (69 MPa) when combined with Fluke 700 or 525A-P Series Pressure Modules
- Sources and measures dc voltage to within 0.004 % of reading
- Sources and measures dc resistance up to 4 k $\Omega$
- Sources dc current from 0 mA to 100 mA
- Accurately measures dc current from 0 mA to 50 mA
- Sources 24 V dc loop power



# Intuitive user interface

The user interface includes cursor controls, function keys and a ten-key keypad, making it easy to navigate through intuitive menus; store and recall up to nine setpoints for each input/output parameter; enter RTD or SPRT coefficients; and easily change display units with a key press. With two LCD displays, you can easily view both source and measurement results simultaneously.

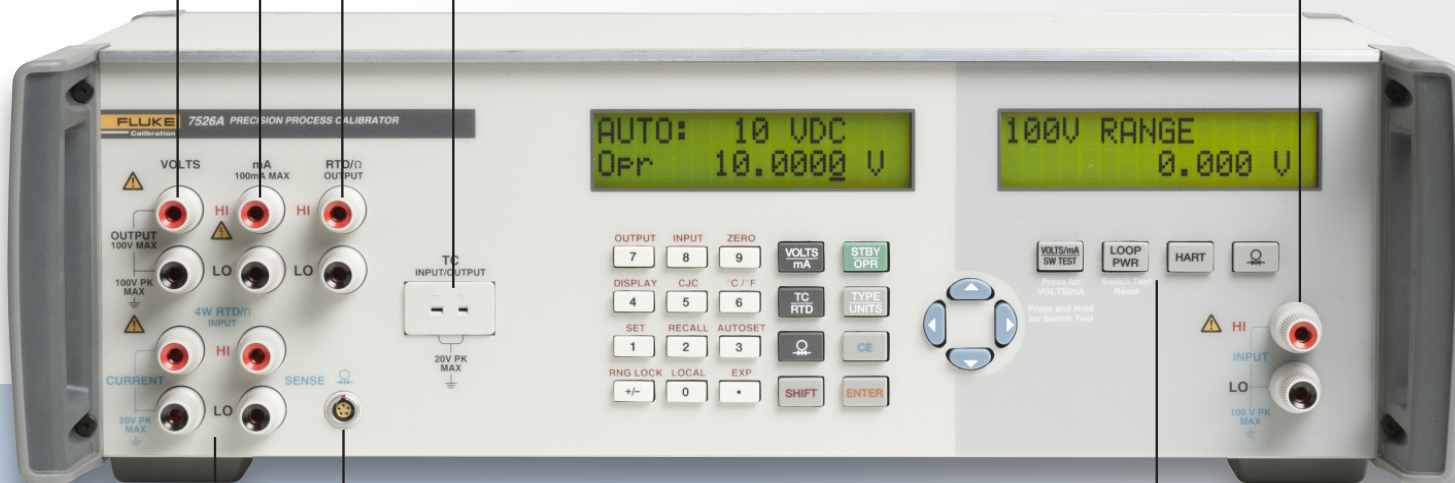
DC voltage output terminals. 0 mV to 100 V.  
Accuracy: 30 ppm (+3  $\mu$ V), 1 year\*. Five-way beryllium-copper binding posts reduce thermal EMFs and accept common cable terminations (standard single/dual pin banana plug, spade lug, pin connector, bare wire).

Isolated input terminals for dc voltage/current measurement, unique switch-test input for testing pressure and thermal switches, and a 24 V dc loop power supply for powering 4-20 mA transmitters.

DC current output terminals. 0 mA to 100 mA.  
Accuracy: 50 ppm, 1 year

RTD/ $\Omega$  output terminals (two-wire). 5  $\Omega$  to 4 k $\Omega$ .  
Accuracy:  $\pm 0.05$   $^{\circ}$ C\*. Accepts Pt-100 (385, 3926, 3916), Pt-200, Pt-500, Pt-1000, Ni-120, Cu-427, SPRT.

Thermocouple input/output terminal. Accuracy:  $\pm 0.1$   $^{\circ}$ C\*.  
User selectable internal or external cold junction compensation for improved thermocouple measurement accuracy. Accepts thermocouple types: B,C,E,J,K,L,N,R,S,T,U,XK,BP



Isolated pressure module input. Connect either a Fluke 700 or 525A-P Series Pressure Module to the front panel LEMO connector and the calibrator auto-detects the type and value of the module.

Four-wire RTD/ $\Omega$  input terminals.  
Accuracy:  $\pm 0.02$   $^{\circ}$ C\*. Accepts Pt-100 (385, 3926, 3916), Pt-200, Pt-500, Pt-1000, Ni-120, Cu-427, SPRT.

Isolated input controls. A HART key enables a 250  $\Omega$  loop resistor allowing HART devices to read a digital HART signal superimposed on the 4-20 mA loop current.

*\*See extended specifications for more details.*



## Don't forget the sensor

Calibrating the electronics portion of a temperature transmitter is only a part of a complete calibration. You also need to calibrate the temperature sensor itself, whether an RTD or thermocouple. Ignoring the sensor can be a mistake, because temperature sensors are responsible for more than 75 % of the output errors in temperature transmitters. You can calibrate the temperature sensor individually, or calibrate both the sensor and the transmitter as a system using a dry-block calibrator such as the Fluke Calibration 914X Series Field Metrology Wells. The Field Metrology Wells were designed specifically with process calibration in mind—optimizing speed to temperature, portability, stability and accuracy. The 7526A and a 914X dry-block calibrator make a perfect combination for calibrating just about any temperature transmitter.

## Source as well as measure pressure

The P5500 Series Comparison Test Pumps can be used with the 7526A and Fluke 700 Series Pressure Modules to generate or control test pressures. The unique test port configuration allows for easy, tool-free connections of a wide variety of connection sizes and types, including NPT, BSP, and metric threads. The P5510 includes a built-in hand pump to generate vacuum or positive pressure up to 300 psi (2 MPa). The P5513 allows for precise control of pneumatic pressures up to 3000 psi (20 MPa). An external pressure supply is required. The P5514 allows for generation of hydraulic pressures up to 10 000 psi (70 MPa). The P5515 includes a built-in priming pump and screw pump that allows for pressure generation up to 20 000 psi (140 MPa). Both the P5514 and P5515 can be used with oil or water. Special versions are available with ethylene propylene seals for use with more aggressive fluids.



## Calibration and repair services

Fluke Calibration offers extensive calibration support and service to ensure your long-term satisfaction and return on investment. Our worldwide network of calibration centers offers accredited calibrations traceable to national standards. We also offer fast, quality repair and calibration services including a module exchange program and full support in setting up your lab.



# Specifications

## Summary specifications

DC voltage, output			
Range <sup>[1]</sup>	Absolute uncertainty, ± (ppm of output + µV), 1 year		Resolution
0 mV to 100 mV	30	3	1 µV
0 V to 1 V	30	10	10 µV
0 V to 10 V	30	100	100 µV
0 V to 100 V	30	1 mV	1 mV
TC output and input			
-10 mV to 75 mV	30	2	10 Ω

[1] All outputs are positive only unless otherwise noted

DC voltage, isolated input			
Range	Absolute uncertainty, ± (ppm of reading + mV), 1 year		Resolution
0 V to 10 V	50	0.2	100 µV
10 V to 100 V	50	2.0	1 mV

DC current, output			
Range <sup>[1]</sup>	Absolute uncertainty, ± (ppm of reading + µA), 1 year		Resolution
0 mA to 100 mA	50	1	1 µA

[1] For line voltages less than 95 V, ±100 ppm of reading

DC current, isolated input			
Range	Absolute uncertainty, ± (ppm of reading + µA), 1 year		Resolution
0 mA to 50 mA	100	1	0.1 µA
0 mA to 24 mA <sup>[1][2]</sup> (Loop Power)	100	1	0.1 µA

[1] Loop Power: 24 V ±10 %

[2] HART Resistor: 250 Ω ± 3 %

Resistance, output			
Range	Absolute uncertainty, tcal ± 5 °C, ± ohms, 1 year	Resolution	Nominal current
5 Ω to 400 Ω	0.015	0.001 Ω	1 mA to 3 mA
5 Ω to 4 kΩ	0.3	0.01 Ω	100 µA to 1 mA

Resistance, input			
Range	Absolute uncertainty, ± (ppm of reading + Ω), 1 year		Resolution
0 Ω to 400 Ω	20	0.004	0.001 Ω
0 Ω to 4 kΩ	20	0.04	0.01 Ω

Sample thermocouple accuracy, input/output (does not include all available TC types) <sup>[1]</sup>			
TC type	Temperature range (°C)		Absolute uncertainty, tcal ± 5 °C, ± (°C), 1 year <sup>[2]</sup>
	Min	Max	
J	-210	1200	0.09
K	-250	1372	0.1
S	-50	1767	0.29
T	-250	400	0.11

[1] See extended specifications for all TC types (B,C,E,J,K,L,N,R,S,T,U,XK,BP).

[2] Best accuracy within specified TC temperature range.

Sample RTD and thermistor, output (does not include all available RTD types) <sup>[1]</sup>			
RTD type	Temperature range (°C)		Absolute uncertainty, tcal ± 5 °C, ± (°C), 1 year
	Min	Max	
Pt 385, 100 Ω	-200	630	0.05
YSI 400	15	50	0.007

[1] See extended specifications for all RTD types: Pt-100 (385, 3926, 3916), Pt-200, Pt-500, Pt-1000, Ni-120, Cu-427, SPRT.

Sample RTD and thermistor, input (does not include all available RTD types) <sup>[1]</sup>			
RTD type	Temperature range (°C)		Absolute uncertainty, tcal ± 5 °C, ± (°C), 1 year
	Min	Max	
Pt 385, 100 Ω	-80	100	0.020
	100	300	0.024
YSI 400	15	50	0.007

[1] See extended specifications for all RTD types: Pt-100 (385, 3926, 3916), Pt-200, Pt-500, Pt-1000, Ni-120, Cu-427, SPRT.

## General specifications

Standard interface	RS-232, IEEE-488 (GPIB)		
Temperature performance	Operating: 0 °C to 50 °C Calibration (tcal): 18 °C to 28 °C Storage: -20 °C to 70 °C		
Electromagnetic compatibility	CE: Conforms to EN61326; operation in controlled EM environments		
Temperature coefficient	Temperature coefficient for temperatures outside tcal 5 °C is 10 % of the 90-day specification (or one year if applicable) per °C		
Relative humidity	Operating:	<80 % to 30 °C	
		<70 % to 40 °C	
		<40 % to 50 °C	
Altitude	Operating: 3,000 m (9,800 ft) max Non-operating: 12,200 m (40,000 ft) max		
Safety	EN/IEC 61010-1:2010 3rd Edition, UL 61010-1:2012, CAN/CSA 22.2 No. 61010-1-12		
Analog low isolation	20 V		
Line power	120 V~: 100 V to 120 V 240 V~: 220 V to 240 V		
Line frequency	47 Hz to 63 Hz		
Line voltage variation	± 10 % about setting		
Power consumption	15 VA maximum		
Dimensions	Height: 14.6 cm (5.75 in) Width: 44.5 cm (17.5 in) Depth: 29.8 cm (11.75 in)		
Weight (without options)	4.24 kg (9.35 lb)		

**700 Series Pressure Modules Specifications**

	Model	Range/ resolution	Range (approx)/ resolution	Reference <sup>1</sup> uncertainty (23 ± 3 °C)	High <sup>2</sup> side media	Low <sup>2</sup> side media	Fitting material
<b>Differential</b>	Fluke 700P00	1 in. H <sub>2</sub> O/0.001	0.25 kPa/0.0002	0.300 %	Dry	Dry	316 SS
	Fluke 700P01	10 in. H <sub>2</sub> O/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
<b>Gage</b>	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
<b>Absolute</b>	Fluke 700PA3	5 psi/0.0001	34 kPa/0.001	0.050 %	316 SS	N/A	316 SS
	Fluke 700PA4	150 psi/0.001	103 kPa/0.001	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/0.001	0.050 %	316 SS	N/A	316 SS
<b>Vacuum</b>	Fluke 700PV3	-5 psi/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
<b>Dual</b>	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
<b>High</b>	Fluke 700P29	3000 psi/0.1	20.7 MPa/0.001	0.050 %	C276	N/A	C276
	Fluke 700P30	5000 psi/0.1	34 MPa/0.001	0.050 %	C276	N/A	C276
	Fluke 700P31	10 000 psi/1	69 MPa/0.007	0.050 %	C276	N/A	C276

<sup>1</sup> Total uncertainty, one year for temperature range 0 °C to +50 °C. Total uncertainty, 1.0 % of full span for temperature range -10 °C to 0 °C. For P00 module only, compensated temperature range is 15 °C to 35 °C. <sup>2</sup> "Dry" indicates dry air or non-corrosive gas as compatible media.

"316SS" indicates media compatible with Type 316 Stainless Steel. "C276" indicates media compatible with Hastelloy C276. Use of pressure zero is required prior to measurement or source. Max. overpressure specification includes common mode pressure. Modules are CE rated. Metric adapter(s): 1/4 inch NPr female-to-male BSP/ISO 1/4-19, tapered thread, included with all modules except P29, P30, and P31, all modules include a NIST traceable certificate and test data.

**525A-P Series Precision Pressure Transducers**

Type	Model	Range/resolution	Range/resolution	Reference uncertainty (23 ± 3 °C)
<b>Differential</b>	525A-P02	1 psi/0.00001	6900 Pa/0.01	0.008 % FS
<b>Gage</b>	525A-P03	5 psi/0.00001	34 kPa/0.001	0.008 % FS
<b>Gage</b>	525A-P04	15 psi/0.001	103 kPa/0.001	0.008 % FS
<b>Gage</b>	525A-P05	30 psi/0.0001	207 kPa/0.001	0.008 % FS
<b>Gage</b>	525A-P06	100 psi/0.001	690 kPa/0.001	0.008 % FS
<b>Gage</b>	525A-P07	500 psi/0.001	3400 kPa/0.01	0.008 % FS
<b>Gage</b>	525A-P08	1000 psi/0.01	6900 kPa/0.01	0.008 % FS
<b>Gage</b>	525A-P29	3000 psi/0.01	20.7 M Pa/0.0001	0.008 % FS
<b>Absolute</b>	525A-PA4	15 psi/0.0001	103 kPa/0.001	0.008 % FS
<b>Absolute</b>	525A-PA5	30 psi/0.0001	207 kPa/0.001	0.008 % FS
<b>Absolute</b>	525A-PA6	100 psi/0.001	690 kPa/0.001	0.008 % FS
<b>Absolute</b>	525A-PA7	500 psi/0.001	3400 kPa/0.01	0.008 % FS
<b>Absolute</b>	525A-PA8	1000 psi/0.01	6900 kPa/0.01	0.008 % FS
<b>Vacuum</b>	525A-PV4	-15 TO 0 psi/0.0001	-34 kPa/0.001	0.008 % FS

### 7526A Precision Process Calibrator

Model	Description
7526A	Precision Process Calibrator Includes traceable calibration report, user manual CD, getting started guide, power cord, thermocouple shorting jumper and USB-to-serial adapter cable

### Recommended Accessories

Model	Description
Y7526A	Rack Mount Kit
7526A-CASE	Carrying Case
5520A-525A/LEADS	Thermocouple and Test Leads Set

### Fluke 525A Series Pressure Modules

Type	Model	Range	
Differential	525A-P02	1 psi (6900 Pa)	
	525A-P03	5 psi (34 kPa)	
Gage	525A-P04	15 psi (103 kPa)	
	525A-P05	30 psi (207 kPa)	
	525A-P06	100 psi (690 kPa)	
	525A-P07	500 psi (3400 kPa)	
	525A-P08	1000 psi (6900 kPa)	
	525A-P29	3000 psi (20.7 MPa)	
	Absolute	525A-PA4	15 psi (103 kPa)
		525A-PA5	30 psi (207 kPa)
525A-PA6		100 psi (690 kPa)	
525A-PA7		500 psi (3400 kPa)	
525A-PA8		1000 psi (6900 kPa)	
Vacuum	525A-PV4	-15 psi to 0 psi (-34 kPa)	

### Fluke 700 Series Pressure Modules

Type	Model	Range	
Differential	FLUKE-700P00	1 in. H <sub>2</sub> O (0.25 kPa)	
	FLUKE-700P01	10 in. H <sub>2</sub> O (2.5 kPa)	
	FLUKE-700P02	1 psi (6900 Pa)	
	FLUKE-700P22	1 psi (6900 Pa)	
	FLUKE-700P03	5 psi (34 kPa)	
	FLUKE-700P23	5 psi (34 kPa)	
	FLUKE-700P04	15 psi (103 kPa)	
	FLUKE-700P24	15 psi (103 kPa)	
	Gage	FLUKE-700P05	30 psi (207 kPa)
		FLUKE-700P06	100 psi (690 kPa)
FLUKE-700P27		300 psi (2070 kPa)	
FLUKE-700P07		500 psi (3400 kPa)	
FLUKE-700P08		1000 psi (6900 kPa)	
FLUKE-700P09		1500 psi (10 MPa)	
Absolute		FLUKE-700PA3	5 psi (34 kPa)
		FLUKE-700PA4	15 psi (103 kPa)
	FLUKE-700PA5	30 psi (207 kPa)	
	FLUKE-700PA6	100 psi (690 kPa)	
	Vacuum	FLUKE-700PV3	-5 psi (-34 kPa)
FLUKE-700PV4		-15 psi (-103 kPa)	
Dual	FLUKE-700PD2	±1 psi (±6900 Pa)	
	FLUKE-700PD3	±5 psi (±34 kPa)	
	FLUKE-700PD4	±15 psi (±103 kPa)	
	FLUKE-700PD5	-15 psi to 30 psi (-100 to 207 kPa)	
	FLUKE-700PD6	-15 psi to 100 psi (-100 to 690 kPa)	
	FLUKE-700PD7	-15 psi to 200 psi (-100 to 1380 kPa)	
	High	FLUKE-700P29	3000 psi (20.7 MPa)
FLUKE-700P30		5000 psi (34 MPa)	
FLUKE-700P31		10 000 psi (69 MPa)	

### Pumps and Accessories

Model	Description
FLUKE-700PTP-1	Pneumatic Test Pump
FLUKE-700LTP-1	Low-pressure Test Pump
FLUKE-700PRV-1	Pressure Relief Valve Kit

### Comparison Test Pumps

Model	Description
P5510-2M	Pneumatic Test Pump, vacuum to 300 psi (2 MPa)
P5513-20M	Pneumatic Test Pump, vacuum to 3000 psi (20 MPa)
P5514-70M	Hydraulic Test Pump, 0 psi to 10 000 psi (70 MPa)
P5515-140M	Hydraulic Test Pump, 0 psi to 20 000 psi (140 MPa)

### Hydraulic Test Pump

Model	Description
FLUKE-700HTH-1	Hydraulic Test Hose
FLUKE-700HTP-2	Hydraulic Test Pump, 10 000 PSI (690 bar)

### 700 PMP Pressure Pump

Model	Description
Fluke-71X	Hose Kit Accessory
FLUKE-700ILF	In-line Filter

### Pressure Calibration Kit

Model	Description
FLUKE-700PCK	Pressure Calibration Kit

### Thermocouple Plug Kit

Model	Description
FLUKE-700TC1	TC Mini-Plug Kit, Types J,K,T,E,R/S,B/Cu,L,U,C,N
FLUKE-700TC2	TC Mini-Plug Kit, Types J,K,T,E,R,S

**Fluke Calibration.** Precision, performance, confidence.™

Electrical	RF	Temperature	Pressure	Flow	Software
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Printed in U.S.A. 10/2012 4226314A\_EN Pub-ID 11977-eng

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