

► Pressure calibration

Pressure calibration is the comparison of the output of a device used to measure pressure with that of another pressure measurement device, or pressure measurement standard. This usually involves plumbing the unit under test (UUT) to the standard device and generating a common pressure in the measurement circuit. The outputs of the devices are compared at one or more pressures, typically from the lowest to highest readings of the UUT's full scale range, or the range over which it is normally used.

The comparison process can be performed in a chain from the highest level of fundamental pressure realization down to everyday pressure measurement devices, such as analog gauges, transducers and transmitters, to ensure that pressure measurements are accurate and comply with accepted or mandated standards.

The test fluid inside a pressure calibration system may be liquid or gas depending on the application. In general, gas (usually compressed nitrogen or air) is used for cleanliness and precision at lower pressures, and liquids (usually oil or water) are often used for safety, leak integrity, and ease of pressure generation at higher pressures above 7 to 21 MPa (1000 to 3000 psi). There is a great deal of overlap in the actual ranges for which liquid or gas may be used practically, as reflected in the range of Fluke Calibration instruments that are specialized for each type of test fluid.



Product highlights

7252 and 7252i High Performance Dual Output Pressure Controller/Calibrators Unmatched performance, combining precision, stability, speed and affordability.

Series 7252 provides a unique and flexible approach to performing automated calibrations over a wide pressure range. The 7252 incorporates two pressure ranges with independent controllers for each range. Therefore, two calibrations can be performed at the same time. A wide variety of pressure range combinations can be provided from as low as 0 to 2.5 kPa up to 0 to 21 MPa (0 to 10 inH₂O up to 0 to 3000 psi) providing maximum flexibility in a single instrument. Two different models are available, the 7252i and 7252. The 7252i features percent of reading performance from 25 % to 100 % of each installed range, whereas the economical 7252 provides 0.003 % of full scale precision for each range. Similar to the single output Series 7250, the 7252 also features an active matrix color screen display with enhanced navigation menus for ease of operation. The controller is capable of very quick active pressure control, and offers passive control mode for maximum stability.

- Pressure ranges from 0 to 2.5 kPa and to 21 MPa (0 to 0.36 psi and to 3000 psi, 0 to 25 mbar and to 210 bar)
- Model 7252i provides advanced precision of 0.005 % of reading
- Model 7252 provides 0.003 % of full scale precision
- Measurement stability: 0.0075 % of reading per year
- Time to set point: less than 15 seconds with no overshoot
- Control stability: 10 ppm
- Languages: English, French, Chinese, German, Japanese, Spanish and Italian



PG7000™ Piston Gauges with AMH™ Automated Mass Handlers Completely automated operation and data collection for best available measurement performance

PG7000™, already the world's most advanced piston gauge, becomes even more advanced with AMH™ automated mass handling technology. Tedious, error prone and wear inducing manual mass manipulation can be eliminated from high end piston gauge operation, over the full pressure range, in a bench top system, at a reasonable cost. The AMH system can be added to existing platforms or ordered with new installations. Two models are available to cover the complete PG7000 line of gas and oil operated piston gauges, including absolute mode with a vacuum reference. Thanks to the PG7000's unique system architecture, the exact level of automation appropriate for the application can be configured with standard components, from complete automation to simply automating mass handling. In all cases, PG7000's unified approach assures a simple, integrated system with a single local and remote interface.

- **Model AMH-38 with 38 kg mass set used with PG7601 or PG7607** gas piston gauges for automated mass handling with vacuum reference for defining absolute pressures—eliminates the need for time-consuming make and break of vacuum between test points
- **Model AMH-100 with up to 100 kg mass set used with PG7102, PG7202, PG7302 or PG7307** gas piston gauges for automated mass handling of gauge pressure to 110 MPa (16 k psi) gas and 500 MPa (72.5 k psi) oil
- Automated mass loading resolution down to 100 g, with mass tray to manually trim with 10 mg resolution
- Modular design allows use with existing manually operated PG7000 installations
- Simple removal of AMH and mass set to change or clean piston-cylinder module
- Fully automated with COMPASS® for Pressure Software, or user-developed automation with complete, intuitive remote command structure



► Pressure calibration

Gas Pressure Controllers/Calibrators

7250LP Low Pressure Controller/Calibrator

Specialized measurement and control for very low draft pressure range.

- Precision: 0.005 % of reading
- Control stability: 0.004 % of each range
- Resolution to 0.0001 in H₂O
- Full scale ranges from 0 to 10 in H₂O (2.5 kPa) to 0 to 100 in H₂O (25 kPa)



7250/7250i Gas Pressure Controllers/Calibrators

Combining advanced precision, stability, speed and affordability.

- Pressure ranges from 0 to 40 kPa and to 21 MPa (0 to 5 psi and to 3000 psi, 0 to 400 mbar and to 210 bar)
- Model 7250i provides precision of 0.005 % of reading
- Model 7250 provides 0.003 % of full scale precision
- Stability: 0.0075 % of reading per year
- Time to setpoint: 15 seconds with no overshoot



7250xi High Performance Gas Pressure Controllers/Calibrators

Unmatched precision and speed.

- Pressure ranges from 0 to 40 kPa and to 17 MPa (0 to 5 psi and to 2500 psi, 0 to 400 mbar and to 170 bar)
- Advanced precision of 0.005 % of reading from 5 % to 100 % of full scale
- Stability: 0.0075 % of reading per year
- Time to setpoint: 15 seconds with no overshoot



7252/7252i Dual Output Gas Pressure Controllers

A unique and flexible approach to performing automated calibrations over a wide pressure range.

- Two independent pressure measurement and control modules
- Two performance models available, 7252i and 7252
- Fast control: <15 seconds with zero overshoot
- Full scale ranges from 0 to 2.5 kPa and to 21 MPa (0 to 0.36 psi and to 3000 psi)



PPC4 Gas Pressure Controller/Calibrator

Wide rangeability and flexibility in a single controller. Ranges and accuracy classes can be selected to best suit the application.



- Up to two internal Quartz Reference Pressure Transducers (Q-RPTs) from absolute (vacuum) to 14 MPa (2000 psi)
- Full-scale standard class Q-RPTs provide 0.015 % full scale of selected range measurement uncertainty
- Standard class Q-RPTs provide 0.01 % reading measurement uncertainty
- Premium class Q-RPTs provide 0.008 % reading measurement uncertainty
- 4 ppm control precision as low as 1 kPa (0.15 psia) with large turndown
- Can use RPM4 reference pressure monitors as integrated remote pressure references for additional Q-RPT ranges

PPC4E Pressure Controller/Calibrator

Very wide rangeability and reliability at a great value, for everyday pressure calibration.



- Models available with 10:1 or 100:1 accurate measure and control range turndown for maximum workload coverage
- Absolute, gauge and bidirectional gauge modes included in most models
- Gauge calibration measurement uncertainty ± 0.02 % of selected range, with range options available from ± 1 kPa (± 0.15 psi) to 14 MPa (2000 psi)
- Absolute range of 1 kPa (0.15 psi) to 14 MPa (2000 psi)

High Pressure Controllers/ Calibrators

7350 High Pressure Gas Controller/ Calibrator

Safe, easy-to-use, and effective high pressure test and calibration.

- Ranges to 70 MPa (10k psi, 700 bar)
- Measurement precision to 0.01 % of range
- Control stability 0.007 % FS



PPCH-G High Pressure Gas Controller/ Calibrator

Wide rangeability and flexibility with precise high pressure gas control.

- Ranges to 100 MPa (15k psi)
- One or two internal Q-RPTs with large range turndown
- Can use RPM4 reference pressure monitors as integrated remote pressure references for additional Q-RPT ranges



7615 Hydraulic Pressure Controller/ Calibrator

Unique, high speed approach to high pressure calibration and testing.

- Ranges to 280 MPa (40k psi)
- Measurement precision to 0.01 % of range
- Available in a variety of fluids, including water
- High speed pressure control



PPCH Hydraulic Pressure Controller/ Calibrator

Wide rangeability and flexibility with precise high pressure hydraulic control.

- Ranges to 200 MPa (30k psi)
- One or two internal Q-RPTs with large range turndown
- High precision control over wide range
- Can use RPM4 reference pressure monitors as integrated remote pressure references for additional Q-RPT ranges



Reference Pressure Indicators

RPM4 Reference Pressure Monitor

Premium measurement performance in a compact and rugged instrument.

- One or two independent quartz reference pressure transducer modules (Q-RPTs) with individual self-defense systems (SDS™) to prevent over-pressure
- Infinite Ranging and AutoRange™
- Differential measurement mode (channel 1 - channel 2)
- Dedicated version available for air data ranges units and features, RPM4-AD
- Can be used as integrated external reference pressure transducer for PPC pressure controller/calibrators



7050 Series Digital Pressure Indicators

Unmatched precision with long term stability.

- Pressure ranges from 0 to 10 in H₂O and 0 to 1,500 psi (0 to 25 mbar and 0 to 100 bar)
- Model 7050i provides precision of 0.005 % of reading
- Model 7050 provides 0.003 % of full scale precision
- Active matrix color screen with enhanced navigation menus
- Model 7050LP provides precision of 0.005 % reading for very low draft pressure ranges



► Pressure calibration

PG7000 Series Piston Gauges

PG7601 Absolute Gas Piston Gauge

Gas piston gauge with vacuum reference for defining absolute pressures.

- Gas pressure from 5 kPa to 7 MPa (0.7 psi to 1000 psi) gauge or absolute pressure
- Onboard measurement of test conditions, and real-time calculation and display of test pressure
- Compatible with PPC4 pressure controller and AMH-38 Automated Mass Handler



PG7102 Gas Piston Gauge

Gas piston gauge with 55 kg mass set for extended range measurement of gauge pressures.

- Gas pressures from 100 kPa to 11 MPa (15 to 1,600 psig)
- Onboard measurement of test conditions, and real-time calculation and display of test pressure
- Compatible with PPC4 pressure controller and AMH-100 Automated Mass Handler



PG7202 High Pressure Gas Piston Gauge

Gas piston gauge with oil-lubricated piston-cylinder for operation in high pressure gas or oil.

- Gas pressures from 100 kPa to 110 MPa (15 to 16,000 psig), oil pressures from 100 kPa to 200 MPa (15 to 30,000 psig)
- Gas operated, liquid lubricated for robust operation and low piston sink rates
- Onboard measurement of test conditions, and real-time calculation and display of test pressure
- Compatible with PPCH-G pressure controller and AMH-100 Automated Mass Handler



PG7302 Piston Gauge

Oil piston gauge for measurement of high gauge pressures.

- Oil pressures from 100 kPa to 500 MPa (15 psi to 75,000 psig)
- Onboard measurement of test conditions, and real-time calculation and display of test pressure
- Compatible with PPCH pressure controller and AMH-100 Automated Mass Handler



PG7000-AMH Automated Mass Handler

Automated Mass Handler for PG7000 Piston Gauges.

- Add to PG7000 Series piston gauge to fully automate pressure testing in gauge or absolute mode
- Designed and tested to provide years of reliable, maintenance free operation
- Reduce wear and possible mass value changes caused by manual mass handling



2400 Series Piston Gauges

2465A Absolute Gas Piston Gauge

Gas piston gauge capable of very low pressures, for defining gauge and absolute pressures.

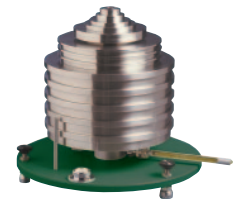
- Gas pressure from 1.5 kPa to 7 MPa (0.2 psi to 1000 psi) gauge or absolute pressure
- Lightweight, compact system with small masses for reduced bench space, transportability and ergonomic mass handling
- Compatible with Autofloat Controller and WinPrompt and COMPASS software



2470 Gas Piston Gauge

Gas piston gauge capable of very low to high gauge pressures.

- Pressures ranges from 1.5 kPa to 20 MPa (0.2 psi to 3000 psig)
- Lightweight, compact system with small masses for reduced bench space, transportability and ergonomic mass handling
- Compatible with WinPrompt and COMPASS software



2482 Differential Piston Gauge

High precision differential pressure measurement at elevated line pressures.

- Measures differential pressures using a gas or oil medium
- Differential pressure to 210 kPa (30 psi, 2100 mbar) at static line pressure range to 20 MPa (2900 psi, 200 bar)
- Quickly and easily set differential pressures with lightweight masses
- Fully automated pressure control and pressure determination using WinPrompt software



Specialty Piston Gauges

FPG8601 Force-Balanced Piston Gauge

Gas pressure calibration system for very low gauge, differential and absolute pressures.

- Gas pressure from 0 to 15 kPa (113 Torr) in gauge, differential and absolute modes
- Measurement uncertainty to \pm (5 mPa + 30 ppm of reading) in gauge and absolute differential mode, \pm (8 mPa + 30 ppm of reading) in absolute mode
- Fully automated, including test execution, pressure control and reference and device under test data collection



PG9607 Gas Piston Gauge

Fully automated primary pressure reference for absolute and gauge pressures to 500 kPa.

- Gauge and absolute pressures from 11 to 500 kPa with a single piston-cylinder
- Large diameter 50 mm piston-cylinder with improved geometry allows direct traceability to dimensional measurements with very low uncertainties



PG9602 Gas Piston Gauge

Fully automated primary pressure reference for absolute and gauge pressures to 11 MPa.

- Gauge and absolute pressures from 10 kPa to 11 MPa
- Up to 100 kg mass load under vacuum bell jar for large turndown and overlap of piston-cylinder ranges



Manual Pressure Generation and Control

3990 Gas Pressure Control Pack

Precise, manual absolute and gauge pressure control for gas piston gauges and indicators.

- Models from vacuum to 7 MPa and 20 MPa (1000 psi and 3000 psi)
- Self-contained for intuitive, easy use



GPC1 High Gas Pressure Controller

Precise, assisted manual control for high pressure gas piston gauges and indicators.

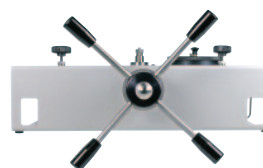
- Models to 70 MPa and 110 MPa (10k psi and 16k psi)
- Precise control to full pressure with simple, ergonomic push-button operation



MPG2 Hydraulic Pressure Generator/Controller

Precise, manual control for hydraulic piston gauges and indicators.

- Models to 100 MPa and 200 MPa (15k psi and 30k psi)
- Self-contained for intuitive and easy generation and precise control to full pressure



OPG1 Hydraulic Pressure Generator/Controller

Precise, assisted manual control for hydraulic piston gauges and indicators.

- Pressure to 200 MPa (30k psi)
- Precise generation and control to full pressure with simple, ergonomic push-button operation



► Pressure calibration

Industrial Deadweight Testers

P3000 Pneumatic Deadweight Tester

High performance gas deadweight testers, with unique suspended piston design for vacuum calibration.

- 0.015 % of reading accuracy standard (0.008 % optional)
- 3 to 500 psi (0.2 to 35 bar) pressure
- Optional low range 0.03 to 1 bar vacuum (1 to 30 inHg)
- Integrated vacuum and pressure pump available to 2 MPa (300 psi)



P3100 Hydraulic Deadweight Tester

Highly accurate oil deadweight tester, with quick and easy-to-use single and dual piston deadweight models.

- Pressure ranges to 140 MPa (20k psi, 1400 bar)
- 0.015 % of reading accuracy standard (0.008 % optional)
- Built-in pressure generation and adjustment
- Single or dual piston formats



P3200 Hydraulic Deadweight Tester

Hydraulic deadweight tester specially designed to use water as a test medium.

- Pressure ranges to 70 MPa (10k psi, 700 bar)
- 0.015 % of reading accuracy standard (0.008 % optional)
- Built-in pressure generation and adjustment is standard
- Single or dual piston formats
- Water media



P3800 Hydraulic Deadweight Tester

High performance and simplicity for very high pressure hydraulic calibration.

- Pressure ranges to 400 MPa (60k psi, 4000 bar)
- 0.02 % of reading accuracy standard (0.015 % optional)
- Includes hand pump and intensifier for generating and adjusting high pressures



Pressure Gauge Calibrators

E-DWT-H Electronic Deadweight Tester

A digital alternative to the traditional deadweight tester.

- Set and measure pressure precisely without limitation of mass loading resolution
- Pressure measurement is insensitive to local gravity and orientation
- One year uncertainty of ± 0.02 % of reading
- Run onboard test routines and store calibration data for review and export to a PC



P5510 Pneumatic Comparison Test Pump

- Dual pressure/vacuum capability
- Pressure to 20 MPa (300 psi, 20 bar)
- Vacuum from 0 to 80 kPa (0 to 24 inHg, 800 mbar)
- Built-in pressure and vacuum generation



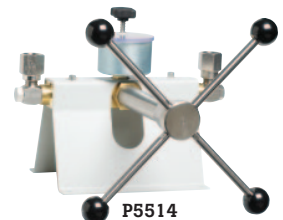
P5513 Pneumatic Comparison Test Pump

- Pressure range 0 to 210 MPa (3k psi, 210 bar)
- High pressure pneumatic operation
- Screw press for fine pressure adjustments
- High quality needle valves for fine control



P5514 and P5515 Series Hydraulic Comparison Test Pumps

- Compatible with a wide range of fluids
- P5514 Test Pump generates pressures to 70 MPa (10k psi, 700 bar)
- P5515 Test Pump generates pressures to 140 MPa (20k psi, 1400 bar)
- P5515 has a built-in hand pump for system priming and large volume applications



Air Data Calibration

7750i Air Data Calibrator

Air data test set with unequalled precision and long term stability and superior pressure control technology.



- High accuracy, RVSM compliant
- Accuracy to ± 2 feet, 0.02 knots
- True differential sensor for airspeed (Qc)

RPM4-AD Reference Pressure Monitor

Specialized pressure indicator for the absolute and differential pressure ranges in air data instruments.



- Fixed wing and rotary wing range versions
- True Pt, Ps, Qc operation

2468A Pitot/Static Primary Standard

Gas piston gauge specialized for air data absolute and differential pressure ranges.



- Pressure range: 0.4 to 103 inHg. Optional range: 3.4 to 400 inHg
- Accuracy to ± 0.5 feet, 0.003 knots
- Extended mass set covers entire air data range without the need to change pistons
- Compatible with Autofloat Controller and WinPrompt and COMPASS software

ADCS-601 Air Data Calibration System

Gas pressure calibration bench system for absolute and differential measurement in the air data range.



- Primary pressure calibration of the entire air data range
- Fully automated, including test execution, pressure control and reference and device under test data collection

Pressure Calibration Systems

7250Sys Multi-Range Pressure Calibration System

Turn-key automated gas pressure calibration system.

- Gas pressure measurement and control from low absolute to 17 MPa (2500 psi)
- Fully integrated multi-range pressure test and calibration systems with a single interface and single test port
- Select either an 8 range or the 12 range system for maximum performance and coverage



Custom Pressure Calibration Systems

Engineered custom systems integrate standard Fluke Calibration products into a complete system based on the user's specific requirements. These are often multi-range systems that include pressure generation and supply accessories, data acquisition hardware and software and/or test instrument connection manifolds. Custom systems include but are not limited to turn-key pressure calibration rack systems, portable calibration carts and automated pressure calibration bench systems.