

2456/WinPrompt®



Piston Gauge Monitor and Software

- Automates piston gauge calibrations
- Monitors critical piston gauge parameters in real time
- Dual channel capability for crossfloat calibrations
- WinPrompt Software is Windows™-based
- Use WinPrompt alone or in combination with Piston Gauge Monitor for optimum automation
- Export data to create calibration certificates and reports



MODEL 2456/WinPrompt

Piston Gauge Monitor and Calibration software

Model 2456 Piston Gauge Monitor

Accounting for environmental factors when performing piston gauge calibrations is an important but labor intensive process. Ruska's Model 2456 Piston Gauge Monitor (2456 PGM) and WinPrompt® calibration software help automate this process. The Model 2456 PGM enhances measurement precision and consistency of critical piston gauge parameters including piston gauge temperature, float position, sink rate, air density, vacuum and other variables.

Temperature

The Model 2456 PGM uses precision 4-wire platinum resistance thermometers (PRTs) to monitor the piston gauge temperature. It actively monitors two PRTs and stores coefficients for up to ten. This minimizes the risk of damage to sensitive PRTs by allowing the operator to move the Model 2456 PGM to another piston gauge location without moving the PRTs.

Float Position

Non-contact, inductive proximity sensors in the Model 2456 PGM accurately read the float position of the piston gauge to a resolution of 0.001 inches, which is significantly greater than the readability of the unaided eye.

Sink Rate

Sink rate is often used as an accurate indication of thermal stability, and for detecting leaks in the system that result in pressure measurement errors. In crossfloat applications, sink rate becomes a high resolution indicator of the differential pressure existing between two piston gauges. Routinely monitoring the sink rate of your piston gauge promotes consistency and confidence in your pressure calibrations. The sink-rate-versus-time display is vital for evaluating system integrity and stability.

Air Density

The optional Air Density Module actively monitors relative humidity, barometric pressure, and ambient air temperature. The Model 2456 PGM reads these signals and performs a real-time computation of the density of the air surrounding the masses on the piston gauge. WinPrompt calibration software computes the buoyant effect of the ambient air on the piston gauge masses, and computes adjustments to the pressure or mass accordingly.

Vacuum Module

The optional vacuum module is typically used with Ruska's Model 2465 Gas Piston Gauge when operating in absolute mode and monitoring the residual bell jar pressure is required. The 2456 PGM allows real time monitoring of the vacuum and is used with WinPrompt to make appropriate corrections to the pressure-mass calculations.

Trim (g)	Actual	Reading	Comment
0.000	0.000	0.000	SET AFTER EXERCISE
2.732	1000.000	1000.083	AS FOUND FULL SCALE
5.554	500.000	500.036	AS FOUND MID SCALE
0.000	0.000	0.000	REPEAT ZERO
2.732	1000.000	1000.000	SET FULL SCALE
5.554	500.000	500.000	SET MID SCALE
0.000	0.000	0.000	REPEAT ZERO
2.732	1000.000	999.998	REPEAT FULL SCALE
4.293	750.000		
0.000	500.000		
0.000	250.000		
0.000	0.000		

Shown: the WinPrompt calibration screen displays calibration values and allows for user comments. Export this information using dynamic data exchange (DDE) into your favorite word processing or spreadsheet program to create calibration certificates and reports.



Units

Select from the following units of measurement:

- Temperature: °C or °F
- Float position: in or cm
- Barometric pressure: inHg, kPa, mbar, psi, kg/cm², mmHg, or cmHg
- Vacuum: µHg or mTorr
- Density: g/cm³, kg/m³, lb/in³
- Sink rate: in/min or cm/min

WinPrompt Calibration Software

WinPrompt calibration software increases calibration efficiency by providing full-color, Windows-based measurement for your process. This easy-to-use software can be used independently or in conjunction with the Model 2456 Piston Gauge Monitor. In either instance, WinPrompt provides the capability for customizing calibration procedures and reports.

Data Storage

WinPrompt stores the calibration coefficients for your working standards, including piston/cylinder effective area, thermal coefficient of expansion, pressure deformation coefficients, and all calibrated mass values and associated density. It also stores all of the critical system and environmental parameters, including local gravity, head corrections, and air density.

Calculations and Conversions

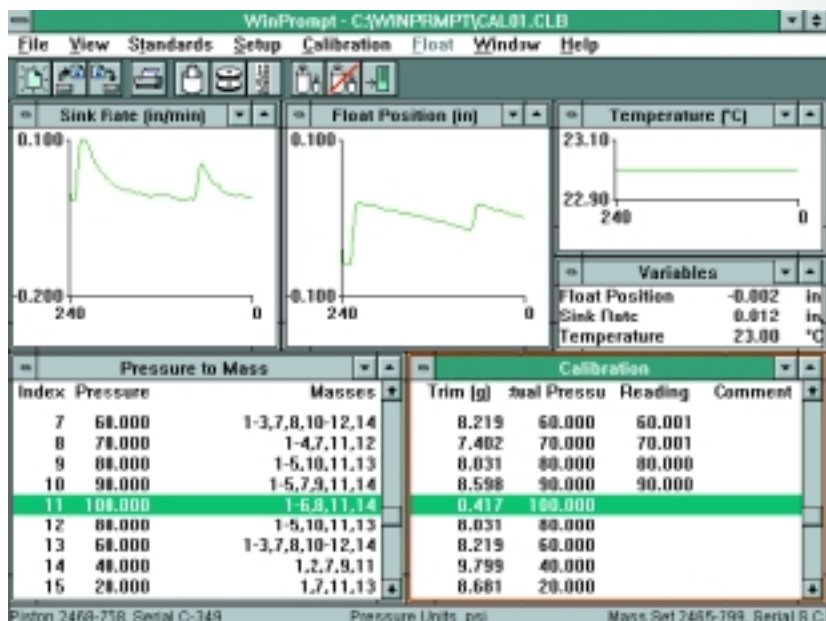
WinPrompt performs all necessary calculations of pressure-to-mass and mass-to-pressure in both S.I. and English units. When using the Model 2456 PGM and the Air Density Module, WinPrompt computes the buoyant effect of the ambient air on the piston gauge masses, and compensates accordingly.

Procedures

WinPrompt provides the ability to create calibration procedures for performing repetitive type calibrations. Multiple pressure values can be created in a table and each window (i.e. float position, temperature, etc...) can be sized, positioned and saved as a procedure. This can be recalled anytime the calibration is being performed.

Report Formatting

Calibration reports can be exported in ASCII format and then imported into popular commercial spreadsheet and word processing software programs to generate customized, formal calibration reports. Set up your own calibration report templates in Microsoft Word, Excel, or other popular programs, adding your organization's logo and other information to simplify and automate professional looking reports.



Shown: WinPrompt is acquiring information from the piston gauge through the Piston Gauge Monitor and displaying it in real-time. The data is being used to automatically adjust the pressure/mass values.



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Specifications

MODEL 2456 PISTON GAUGE MONITOR

Available in Single or Dual Channel configuration using WinPrompt Calibration Software.

Electrical power

100–250 VAC, 50/60 Hz

Temperature

Operating temperature 18–36 °C
Storage temperature -20–70 °C

Humidity

5–95% relative humidity, noncondensing

Dimensions

4.2" H x 11.8" W x 9.9" D

Weight

8.4 lb

Requires appropriate Ruska Instrument adapter kit (connecting hardware for interface from Piston Gauge Monitor to the piston gauge). Consult factory.

FLOAT POSITION

Sensor type

Inductive

Resolution

Sink rate: 0.001 in/min or 0.001 cm/min
Float position: 0.001 in or cm

Number of sensors

1 to 4 (up to 2 sensors per piston gauge, total of 2 piston gauges)

Calibration Range

approximately 0.05–0.75 in (0.13 to 1.9 cm)

PISTON/CYLINDER TEMPERATURE

Probe type

4-wire 100Ω PRT

Resolution

0.01 °C or 0.01 °F

Accuracy

±0.1 °C (conforms with ITS-90) /Year

Number of sensors

1 or 2

Calibration

A calibration report providing traceability to NIST is provided with each PRT.

VACUUM MODULE (OPTIONAL)

Resolution

1 mTorr

Accuracy

10% of reading or 10 mTorr, whichever is greater.

Number of sensors

1 or 2

Sensor type

silicon, micromachined thermal conductivity

Calibration

A calibration report providing traceability to NIST is provided with each vacuum module.

COMMUNICATIONS

RS-232 Interface

AIR DENSITY MODULE (OPTIONAL)

Accuracy

Temperature: ±0.5 °C /Year
Humidity: ±10% relative humidity /Year
Pressure: ±2 mmHg /Year

Sensor types

Temperature: thin-film platinum 1000Ω RTD
Humidity: capacitive IC humidity sensor
Pressure: piezoresistive, monolithic silicon transducer

Calibration

A calibration report providing traceability to NIST is provided with each air density module.

WINPROMPT CALIBRATION SOFTWARE

Hardware requirements

Minimum 80386 33 MHz processor; 8MB RAM; program requires 2MB available hard disk space and available RS-232 Interface.

Software requirements

Microsoft® Windows™ version 3.1 or later. Also compatible with Windows NT.

Other products and services

Ruska manufactures a range of piston gauges for pressures from 0.2 to 72,500 psi and digital pressure controllers from 1 to 40,000 psi, air data test sets, and precision pressure indicators. Ruska also offers a complete line of fluid phase behavior instrumentation and ancillary items, mass-sorption systems (McBain-Bakr apparatus), and custom quartz component design and manufacturing. Repair and recalibration services are available to support our equipment worldwide. Regular training courses are held in Houston, Texas for all Ruska products.



Due to Ruska Instrument's process of continuous improvement, the printed specifications are subject to change without notice.



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Representative: