

7250xi / 7250i / 7250



Series 7250

High Speed Digital Pressure Controllers

- Pressure ranges from 0—400 mbar to 0—210 bar
- Model 7250_{xi} and 7250_i provide advanced 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
- Control stability ≤ 10 ppm
- Active matrix colour screen with enhanced navigation menus



SERIES 7250

High Speed Digital Pressure Controllers

The Series 7250 High Speed Digital Pressure Controllers represent the 5th generation of automatic pressure controllers from Ruska and offer unmatched performance, an active matrix colour screen and enhanced control stability. Utilising multiple sensors and ranges in a single instrument, the Series 7250 combine precision, stability, speed, and affordability. The Model 7250xi, 7250i and 7250 up to 172 bar utilise Ruska's unique quartz sensor, the most accurate pressure sensing technology in a pressure calibrator. Each quartz sensor is manufactured and tested to provide the ultimate performance required by a Ruska pressure calibrator insuring every customer receives the same quality, precision and stability in their instrument.

Advanced Precision

The Model 7250xi and 7250i offer advanced percent of reading precision which results in increased capability with a single instrument reducing the investment required to calibrate a wide variety of pressure devices and ranges. The Model 7250xi provides 0.005% of reading precision from 5% to 100% of the instruments range. This unmatched precision is achieved by Ruska's unique quartz pressure sensing technology along with multiple quartz sensors in a single instrument. Various ranges from 0 – 1.6 to 0 – 172 bar are available. The Model 7250i provides 0.005% of reading from 25% to 100% of range and is available in various ranges from 0 – 400 mbar to 0 – 68 bar.

For pressures below the lower threshold of 5% for the 7250xi and 25% for the 7250i, the precision becomes 0.005% of the lower value. For example, a 60 bar Model 7250xi provides 0.005% of reading from 3 to 60 bar; the precision for pressures from 0 to 3 bar is 0.005% of 3 bar.

Selecting the full scale range of the 7250xi / 7250i to purchase is simplified with the percent of reading capability. Simply determine the highest pressure required and then decide if 0.005% of reading is required down to 25% or 5% to maintain the appropriate calibration ratio. The complex analysis associated with selecting the appropriate single or multirange instruments with percent of full scale performance is no longer required. And, since the performance of the 7250xi / 7250i is continuous throughout the range, the time consuming task of controlling to atmosphere and switching ranges is eliminated.

The 7250xi and 7250i not only provide unequalled precision, but also excellent long term stability due to the inherent properties of quartz in combination with several enhancements Ruska has implemented over the last few years. The total uncertainty for the Model 7250xi and 7250i over a one year calibration interval is 0.009% of reading down to 5% and 25% respectively (see table, right). Ruska's simplified specifications eliminate guesswork and "specmanship" to allow you to determine actual performance delivered with every instrument.

Standard Precision

For applications that do not require the level of performance provided in the 7250xi or 7250i, the Model 7250 offers an economical approach to automatic pressure testing and calibration with a precision of 0.003% of full scale for ranges to 172 bar. Further, a 210 bar full scale range is available with 0.01% of full scale precision, or select the triple scale option which provides 0.01% of 70, 140 and 210 bar.

High Speed Pressure Control

All Series 7250 instruments up to 172 bar reach setpoint in 15 seconds or less into a 245 cc volume, with no overshoot, to allow high speed pressure test and calibration.

Dual Control Modes

The Series 7250 also provides two user selectable control modes: Active mode and Passive mode. In Active mode, the 7250 is continually maintaining the set-point and can compensate for small leaks and pressure changes due to temperature. In Passive mode, the user defines a control band and the 7250 will turn off the controller once it achieves the set-point within the control band. In a leak free and temperature stable system, Passive mode contributes no additional uncertainty providing optimum performance.



Series 7250's feature Ruska's unique fused-quartz sensor. This rugged transducer offers unequalled precision and a stability of 0.0075% of reading per year.

Model 7250xi	Uncertainty (2 sigma)
Precision	0.005% of Reading
Stability (1 year)	0.0075% of Reading
Calibration Standard	0.0010% of Reading
Environmental:	
Temperature (included in precision)	0.000% of Reading
Head Pressure	0.001% of Reading
Control (Passive Mode)	0.000% of Reading
Expanded Uncertainty (2 sigma)	0.009% of Reading

Straightforward specifications!



The Series 7250 features multi-lingual menus and displays.



The Series 7250 features an easy to navigate menu structure with full text descriptions for menus and commands. The large colour display allows the pressure value to be displayed even when viewing a sub menu selection such as the units selection screen shown above.



All Series 7250's are fully programmable and can store up to 20 separate programs with up to 1000 steps.



The Series 7250 can be used with CalManager II software to perform fully automated calibrations. CalManager II includes drivers for popular DMM's, Multiplexers and Environmental Chambers allowing a variety of configurations and options for maximum flexibility and capability. Please refer to the CalManager II data sheet for additional information.

Automating Pressure Test and Calibration

The 7250xi, 7250i and 7250 are easy to use and can automate your calibrations in several ways.

Step up/down—for calibrations where the increments are fixed intervals, enter a user-defined step value. The Series 7250 increases or decreases the pressure by the step amount with the Jog Dial – no more lengthy keystroke sequences to programme.

Sweep test—for simple exercising routines, as with dial gauges, enter a start value, a stop value, and number of times to repeat the cycle. The Series 7250 will automatically exercise the device under test prior to the calibration run.

Onboard programs—for frequently used or lengthy calibrations, the Series 7250 can store up to 20 user-defined programmes/profiles with up to 1000 steps total in internal memory.

Computer interface—every Series 7250 is provided with both an RS-232 and IEEE-488 interface, and all Series 7250's syntax follow SCPI protocol for easy programming. CalManager II, an off-the-shelf software package, is available in addition to a LabVIEW® driver- a free download. As a standard feature, software written for Ruska's previous generation Series 7215, 7010 and 6000 instruments is fully supported by the Series 7250. The Series 7250 can also be set to 510 emulation mode to use software originally written for the Druck DPI 510. Firmware updates can also be performed over the RS-232 interface (updates can be downloaded from the web site).

Versatility to handle any pneumatic pressure calibration

The Series 7250 is versatile enough to handle almost any type of pneumatic pressure calibration.

Wide pressure range—the Series 7250 is available in a variety of standard or custom full scale pressure ranges from 400 mbar to 210 bar.

Pressure units/scales—select from over twelve standard units of measure, including inHg at 0 °C and 60 °F, kPa, bar, psi, inH₂O at 4 °C, 20 °C, and 60 °F, kg/cm², mmHg at 0 °C, cmHg at 0 °C, and cmH₂O at 4 °C, and two user defined units.

Head pressure—the Series 7250 automatically corrects for head pressure differences.

Autovent and autozero—with a few keystrokes, the Series 7250 will vent the test port to atmosphere or automatically zero itself (autovent is not applicable to permanent absolute models).

Protection of the device under test—set upper and lower pressure limits to ensure protection of the device under test.

Options—the Series 7250 can be provided for gauge mode operation, or with:

- optional vacuum (negative gauge) mode for bidirectional devices.
- optional barometric reference for absolute mode calibrations.
- permanent absolute ranges to 4 bar a full scale which include a tare feature for simulated gauge mode operation.
- triple scale option for 210 bara range Model 7250.
- NVLAP accredited calibration report.
- CalManager II software for Windows®.

The Series 7250 High Speed Digital Pressure Controllers can easily automate your test and calibration workload. All are easy to use, easy to maintain, and have the reliability, the performance, and the features that you want.

SERIES 7250

Specifications

PRESSURE RANGES

Standard pressure ranges (bar)

Model 7250 μ 1.6, 4, 6, 25, 40, 60 and 160 bar gauge

Model 7250 ϵ 400 mb, 1.0, 1.6, 4, 6, 25, 40 and 60 bar gauge
1.0, 1.6, 2.5, 4 bar abs

Model 7250 400 mb, 600 mb, 1.0, 1.6, 2.5, 4, 6, 10, 16, 25, 40, 60, 100 and 160 bar g
1.0, 1.6, 2.5, 4, 210 bar a

Optional pressure ranges

Model 7250 μ Any full scale range from 1.6 to 172 bar g

Model 7250 ϵ Any full scale range from 400 mb to 68 bar g

Model 7250 Any full scale range from 400 mb to 172 bar g

Optional modes

Absolute using barometric reference sensor for ranges from 1 to 172 bar g
Vacuum (negative gauge) for ranges 1 to 172 bar g

PERFORMANCE

Precision

Model 7250 μ
From 5% to 100% FS: 0.005% of Reading
Below 5% FS: 0.005% of 5% FS

Model 7250 ϵ
From 25% to 100% FS: 0.005% of Reading
Below 25% FS: 0.005% of 25% FS

Model 7250
Ranges to 172 bar: 0.003% of full scale
210 bar a: 0.01% of full scale
with triple scale: 0.01% of 70/140/210 bar a

Stability

Ranges to 172 bar: 0.0075% of Reading per year
210 bar a range: 0.01% of full scale per year

Control Stability

Active Mode: 0.001% FS (10 ppm)
Passive Mode: no additional uncertainty

Display Resolution

User selectable to 1:1,000,000

Control Response

15 seconds or less with zero overshoot into a 245 cc volume for ranges to 172 bar
30 – 45 seconds for 210 bar a range

Negative Gauge Precision (optional)

7250 μ : 0.005% of 5% FS or 0.05 mbar¹
7250 ϵ : 0.005% of 25% FS or 0.05 mbar¹
7250: 0.003% of full scale

Barometric Reference (optional)

0.1379 mbar maximum error per year

CALIBRATION

A calibration report with traceability to NIST is provided. Ruska calibrates all Series 7250's with the Model 2465 (0.0010% of reading) to 68 bar and the Model 2470 (0.0011% of reading) Gas Piston Gauge above 68 bar. A NVLAP accredited calibration is available.

TOTAL UNCERTAINTY

The maximum deviation from the true value of pressure including precision, stability, temperature effects and the calibration standard is:

7250 μ (5%-100% FS)
90 day 0.006% reading
1 year 0.009% reading

7250 ϵ (25%-100% FS)
90 day 0.006% reading
1 year 0.009% reading

7250 Ranges to 172 bar
90 day 0.003% FS + 0.002% RDG
1 year 0.003% FS + 0.0075% RDG

210 bar a Range
90 day 0.01% of each range
1 year 0.014% of each range

CONTROL PARAMETERS

Volume: 82 – 980 cc's
Low control (absolute): 10 mbar a

COMMUNICATIONS

RS-232 and IEEE-488, SCPI syntax. Ruska Series 7215, Model 7010 Series 6000 and Druck DPI-510 emulation are standard.

LabVIEW[®] driver - download from www.ruska.com

Firmware updates are performed via RS-232 interface

LANGUAGES

The 7250 is capable of displaying menus and functions in:

English	Japanese
French	Spanish
Chinese	Italian
German	

OPTIONS

Barometric Reference (absolute and vacuum)
Vacuum only (negative gauge)
CalManager II software
NVLAP accredited calibration
Triple scale for 210 bar a 7250
Rack Mount Kit
Liquid Trap Assembly



Laboratory Code 200491-0

GENERAL

Display

TFT, VGA, Active matrix, 163 mm diag.
640 x 480 resolution, 65,000 colors

Temperature

Operating : 18 to 36°C
Storage : -20 to 70°C

Humidity

5% to 95% relative humidity, non-condensing

Dimensions

All Versions: 18 cm H x 43 cm W x 48.3 cm D

Weight

7250 / 7250 ϵ 7.7 kg
7250 μ 9.0 kg

Test Port and Supply Connection

1/4 inch NPT female

Warm Up Time

2-3 hours; may be left on indefinitely

Pressure Medium

Nitrogen or clean dry air

Precision is defined as the combined effects of linearity, repeatability and hysteresis throughout the operating temperature range.

Expression of accuracy (uncertainty) conforms with the recommendations of the ISO Guide to the Expression of Uncertainty in Measurement.

¹Whichever is greater

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

Other Products and Services

In addition to a wide range of digital pressure controllers and indicators from 0.07 to 2750 bar, Ruska manufactures primary standard deadweight gauges from 14 mbar to 5000 bar.

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Model 7615, 2750 bar controller

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