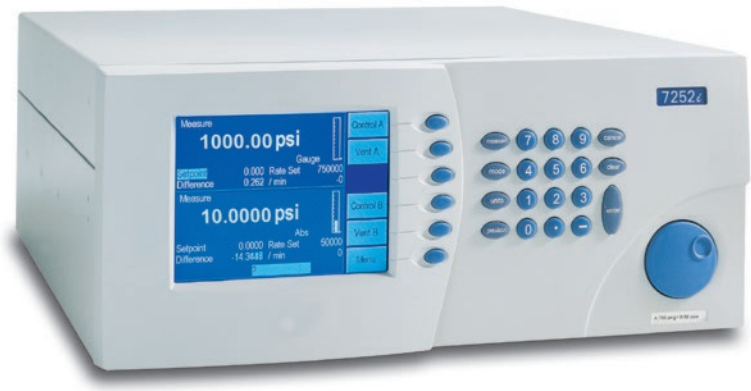
Technical data

Series 7252 Ruska Dual Output Digital Pressure Controllers



The Series 7252 dual output digital pressure controllers provide a unique and flexible approach to performing automated calibrations over a wide pressure range with a single instrument. This is accomplished through the use of two separate pressure sensors with independent pressure controllers for each range. Additionally, each range can be operated simultaneously to provide maximum efficiency and throughput.

For applications that do not require a dual output controller, Fluke Calibration offers the Series 7250 multi-range single output pressure controllers. Please refer to the Series 7250 data sheet for complete information.

Adding to the flexibility of the Series 7252, two performance models are available: the Model 7252i that offers percent of reading performance further extending the capabilities of a single calibrator, or the Model 7252, that provides percent of full scale (FS) performance for each range.

The Model 7252i provides a precision of 0.005 % of Reading from 40 % to 100 % of each installed range. For pressures below the lower threshold of 40 %, the precision becomes 0.005 % of the 40 % Full Scale value. Alternatively, the Model 7252 provides a precision of 0.003 % of FS for each installed range. Both models provide a one year stability of 0.0075 % of Reading allowing a one year calibration interval.

Both the 7252i and 7252 are available in a variety of pressure ranges. Choose from any pressure range combination from as low as 10 inH_2O (25 mbar) up to 2500 psi (172 bar).

Features

- Dual range controller with independent test ports for each range
- Simultaneous pressure control for each range
- Select any range combination from 0 to 10 inH_2O (25 mbar) to 0 to 2500 psi (172 bar).
- Two models to choose from, 7252i or 7252
- Time to setpoint < 15 seconds with no overshoot
- Languages: English, French, Chinese, German, Japanese, Spanish and Italian

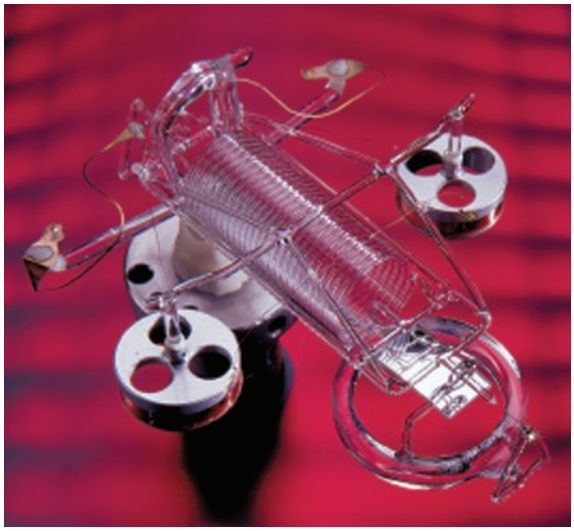
For example, either the Model 7252 or 7252i can be configured with a lower pressure range of 10 psi (1 bar) and an upper range of 1000 psi (70 bar). Or, a Model 7252i could include a 10 inH_2O (25 mbar) range and 2500 psi (172 bar) to cover very low and very high pressure calibration requirements. Only Fluke Calibration provides such a broad pressure range coverage factor in a dual output pressure controller. Please refer to the back page for a complete list of pressure ranges.

For absolute mode calibrations, the Series 7252 can be supplied with a Barometric Reference option, or the Vacuum Reference option where a vacuum pump is connected to the reference port(s). While the former offers a high degree of convenience by allowing instantaneous transition from gauge to absolute mode, the Vacuum Reference option provides the ultimate performance solution, since it does not introduce the additional uncertainty of a secondary, barometric sensor. Instruments with the Vacuum Reference option include an on-board vacuum sensor to allow fully automatic zeroing when operating in absolute mode. For applications where absolute calibrations are performed exclusively, permanent absolute ranges to 50 psia (4 bar) are available. The Series 7252 also provides negative gauge operation to support the calibration of a wide variety of test devices and applications.

The Series 7252 is a dual output pressure controller, which increases throughput, while providing maximum stability for each range. With simultaneous pressure control, it can actually perform two calibrations at the same time.

For Series 7252's configured with dual ranges between 10 (1 bar) and 1000 psi (70 bar), 10 and 1000 psi (1 and 70 bar) the two test ports can be interconnected. The instrument will then auto range from the lowest to the highest sensor and vice versa. For performing single calibrations, this feature provides a high degree of performance over the full range.

Increased throughput is also accomplished via the digital control valve technology, that ensures fast control speed with no overshoot. For example, each range will control in 10% increments in 15 seconds, or less, into a 245 cubic centimeters (15 cubic inch) volume. No other controller combines this speed coupled with no overshoot control.



Series 7252s features a unique fused-quartz sensor. This rugged transducer offers unequalled precision and a stability of 0.0075% of reading per year.

For ease of use, the large, bright, active matrix color display provides the operator with menus that are presented in plain text with a logical navigation structure similar to all other Ruska digital pressure controllers and indicators, with multi-lingual support.

Automating pressure test and calibration

The Model 7252i and Model 7252 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 7252 increases or decreases the pressure by the step amount with the jog dial—no lengthy keystroke sequences to program.
- 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 7252 will automatically exercise the device under test prior to the calibration run.
- Computer interface: Every Series 7252 is provided with both an RS-232 and IEEE-488 interface, and all Series 7252's syntax follow SCPI protocol for easy programming. Intecal, an off-the-shelf software package, is available in addition to a LabVIEW™ driver, a free download. Firmware updates can also be performed over the RS-232 interface (updates can be downloaded from the website). A MET/CAL™ driver is also an available option.

Versatility to handle any pneumatic pressure calibration

The Series 7252 is versatile enough to handle almost any type of pneumatic pressure calibration.

- Wide pressure range: The Series 7252 is available in a variety of full scale (FS) pressure ranges from 10 inH_2O (25 mbar) to 2500 psi (172 bar).
- Pressure units/scales: Select from over fifteen standard units of measure, including inHg at 0 °C and 60 °F, kPa, bar, psi, inH_2O at 4 °C, 20 °C and 60 °F, kg/cm^2, mmHg at 0 °C, cmHg at 0 °C, and cmH_2O at 4 °C, and two user defined units.
- Head pressure: The Series 7252 automatically corrects for head pressure differences.
- Autovent and autozero: With a few keystrokes, the Series 7252 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.

Specifications

General	
Function	**7252**
Electrical power	90/260 V ac, 50/60 Hz, 150 W
Temperature	Operating: 18 °C to 36 °C (64 °F to 97 °F) Storage: -20 °C to 70 °C (-4 °F to 158 °F)
Humidity	5 % to 95 % RH, non-condensing
Weight	Series 7252/7252i: 9 kg (20 lb)
Dimensions (H x W x D)	All versions: 178 mm x 419 mm x 483 mm (7 in x 16.5 in x 19 in)
Pressure medium	Nitrogen or clean dry air
Display	TFT, VGA, active matrix, 162.5 mm (6.4 in) 640 x 480 resolution, 65,000 colors
Test port and supply connection	1/4 in NPT female
Warm up time	24 hours; may be left on indefinitely
Standard pressure ranges	
Model 7252i	Select two of any full scale (FS) pressure range from 5 psig to 2500 psig (400 mbar to 172 barg), or permanent absolute range from 15 psia to 50 psia (1 to 4 bara). Low Pressure (LP) ranges starting at 10 inH_2O (25 mbarg) are also available. Please refer to the 7250LP data sheet for additional information on LP ranges and specifications.
Model 7252	Select two of any FS pressure range from 5 psig to 2 500 psig (400 mbar to 172 bar). Or, any permanent absolute range from 15 psia to 50 psia (1 bara to 4 bara).
Optional modes	Absolute using barometric reference sensor for ranges from 15 psig to 2500 psig (1 bar to 172 bar)
	Absolute using Vacuum Reference option for ranges from 5 psig to 2500 psig (400 mbar to 172 bar)
	Negative gauge

Performance

Precision	Model 7252i: Ranges from 5 psi to 2500 psi (400 mbar to 172 bar) From 40 % to 100 % FS: 0.005 % of reading Below 40 % FS: 0.005 % of 40 % FS
	Model 7252: Ranges 5 psi to 2500 psi (400 mbar to 172 bar) 0.003 % of FS
	Model 7252i: 0.36/1 psi (25/75 mbar) range: 0.005 % of reading from 25 % to 100 % of maximum FS
Stability	0.0075 % of reading per year
Display resolution	User selectable to 1:1,000,000
Control stability	Active mode: 0.001 % of each range
	0.36/1 psi (25/70 mbar) range: 0.004 % of each range
	Passive mode: No additional uncertainty
Control response	15 seconds or less with zero overshoot into a 245 c^3 (15 in^3) volume in 10 % increments
Negative gauge precision (optional)	Model 7252i: 0.005 % of 25 % FS or 0.00075 psi* (0.0345 mbar) *Whichever is greater
	Model 7252: 0.003 % of positive FS
Barometric Reference (optional)	0.002 psi (0.1379 mbar) maximum error per year
Vacuum Reference (optional)	0.0002 psi (0.014 mbar) maximum error per year

Calibration

A calibration report with traceability to National Institute of Standards and Technology (NIST) is provided. Fluke Calibration calibrates all Series 7252's with the Model 2465 (0.0010 % of reading) to 1000 psi (70 bar) and the Model 2470 (0.0011 % of reading). Gas piston gauge above 1000 psi (70 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:

Model 7252i	Ranges 0.36 psi to 2500 psi (25 mbar to 172 bar) (40 % to 100 % FS) 90 day: 0.006 % reading 1 year: 0.009 % reading
Series 7252	Ranges 5 psi to 2500 psi (400 mbar to 172 bar) 90 day: RSS 0.003 % FS + 0.002 % reading 1 year: RSS 0.003 % FS + 0.0075 % reading
Control parameters	Volume: 82 c^3 to 980 c^3 (5 in^3 to 60 in^3)
	Control low limit: 0 psi (0 mbar) gauge 0.15 psi (10 mbar) absolute

Communications

RS-232 and IEEE-488, SCPI syntax	
LabView driver	Optional
Firmware updates are performed via RS-232 interface	

Languages

The Series 7252 is capable of displaying menus and functions in: English, French, Chinese, German, Japanese, Spanish and Italian

Options

Barometric reference (absolute and negative gauge)
Vacuum reference* (absolute)
Negative gauge only
NVLAP accredited calibration
Rack mount kit
MET/CAL driver
Intecal software
Liquid trap assembly

Precision

Precision is defined as the combined effects of linearity, repeatability and hysteresis throughout the operating temperature range. Expression of uncertainty conforms with the recommendations of the ISO Guide to the Expression of Uncertainty in Measurement.

*Requires external vacuum pump

绿测科技有限公司
广州总部：广州市番禺区陈边村金欧大道83号江潮创意园A栋208室
深圳分公司：深圳市龙华区龙华街道 油松社区东环一路1号耀丰通工业园1-2栋2栋607
南宁分公司：广西自由贸易试验区南宁片区五象大道401号五象航洋城1号楼3519号
广州分公司：广州市南沙区凤凰大道89号中国铁建·凤凰广场B栋1201房
电话：020-2204 2442
传真：020-8067 2851
邮箱：Sales@greentest.com.cn
官网：www.greentest.com.cn

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