Technical data

Series 7050Ruska Digital Pressure Indicator



The Series 7050 digital pressure indicator expands upon the popular line of Series 7000 products such as the Series 7250 digital pressure controller and Series 7252 dual output pressure controller. The 7250 and 7252 provide both pressure measurement and control, and the 7050 provides an instrument for applications that only require pressure measurement.

Three models are available to meet a wide range of applications:

- Model 7050i with advanced percent of reading precision
- Model 7050 with a high performance-to-price ratio
- Model 7050LP for low pressure measurements

The Model 7050i, 7050 and 7050LP all use a unique quartz sensor, the most accurate pressure sensing technology available. Each quartz sensor is manufactured and tested to provide the ultimate performance required by a Fluke Calibration pressure calibrator, ensuring that every customer receives quality, precision and long term stability in their instrument.

Advanced precision

The Model 7050i offers advanced percent of reading precision for increased capability with a single instrument, reducing the investment required to measure a wide pressure range. This model provides 0.005% of reading precision from 40 % to 100 % of the instrument's range. For pressures below the lower threshold of 40 %, the 7050i

Features

- Pressure ranges from 0 to 10 inH_2O and 0 to 1500 psi (0 to 25 mbar and 0 to 100 bar)
- Choose from three models: 7050i, 7050 and 7050LP
- Model 7050i provides advanced precision of 0.005% of reading
- Model 7050 provides 0.003 % of full scale precision
- Stability: 0.0075 % of reading per year
- Active matrix color screen with enhanced navigation menus
- Languages: English, French, Chinese, German, Japanese, Spanish and Italian

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precision is 0.005 % of the lower threshold value. For example, a 100 psi (7 bar) Model 7050i provides 0.005 % of reading from 40 to 100 psi (2.8 to 7 bar); the precision for pressures from 0 to 40 psi (0 to 2.8 bar) is 0.005 % of 40 psi (2.8 bar).

This unmatched precision is achieved through unique quartz pressure sensing technology and multiple quartz sensors in a single instrument. Various full scale pressure ranges from 0 to 5 to 0 to 1500 psi (0 to 400 mbar to 0 to 100 bar) are available. For absolute mode operation, select either the barometric reference option, or the vacuum reference option, which requires an external vacuum pump connected to the reference port. The latter features an on-board vacuum sensor that allows automatic zeroing in absolute mode. Permanent absolute ranges to 50 psia (4 bar) are also available.

Standard precision

For applications that do not require the level of performance provided in the Model 7050i, the Model 7050 offers an economical approach to high-accuracy pressure measurement, with a precision of 0.003 % of full scale. Various ranges from 0 to 5 to 0 to 1500 psi (0 to 400 mbar to 0 to 100 bar) are available. For absolute mode operation, select either the barometric reference option, or the vacuum reference option, which requires an external vacuum pump connected to the reference port. The latter features an on-board vacuum sensor that allows automatic zeroing in absolute mode. Permanent absolute ranges to 50 psia (4 bar) are also available.

Low pressure: 7050LP

The Model 7050LP is a specially configured instrument for low pressure applications and is available in three different range combinations with two ranges in a single instrument:

- 10 inH_2O and 30 inH2O (25 and 75 mbar)
- 20 inH_2O and 60 inH2O (50 and 150 mbar)
- 35 inH_2O and 100 inH2O (87 and 250 mbar)

The 7050LP provides a precision of 0.005 % of reading from 25 % to 100 % of the maximum range. For example, the 10/30 inH_2O 7050LP provides a precision of 0.005 % of reading when measuring pressure from 30 to 7.5 inH_2O (75 to 18.75 mbar). Changing ranges is automatic both upscale and downscale and does not require operator intervention. Since the 7050LP utilizes a true differential sensor, the reference port of the 7050LP can be connected to the test system eliminating unwanted pressure disturbances due to room drafts caused by HVAC systems.



Series 7050 features a unique fused-quartz sensor. This rugged transducer offers unequalled precision and a stability of 0.007 % of reading per year.

Long term stability

All three models not only provide unequalled precision, but also excellent long term stability of 0.0075 % of reading per year due to the inherent properties of quartz.

Automating pressure test and calibration

The 7050i, 7050 and 7050LP are provided with both an RS-232 and IEEE-488 interface, and Series 7050 syntax follows SCPI protocol for easy programming. As a standard feature, software written for previous generation Series 7215, 7010, 7000 and 6000 instruments is fully supported by the Series 7050.

Intecal, an off-the-shelf software package is available.

Firmware updates can be performed over the RS232 interface.

Versatility

The Series 7050 is versatile enough to handle almost any type of pneumatic pressure measurement application.

Wide pressure range

Available in a variety of standard or custom full scale pressure ranges from 10 inH_2O to 1500 psi (25 mbar to 100 bar)

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Pressure units/scales

Select from over twelve 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

Automatic correction for head pressure differences.

Absolute mode

The 7050i and 7050 offer three different methods to make absolute pressure measurements. The barometric reference option provides the most convenient method and is available on ranges 15 psi (1.0 bar) and higher. Alternatively, the vacuum reference option allows the connection of an external vacuum pump to the reference port of the instrument. An on-board vacuum sensor monitors the reference vacuum and allows for automatic zeroing in absolute mode. This option provides the lowest overall uncertainty since it does not include the additional uncertainty of a secondary barometric reference sensor. For pressures to 50 psia (4 bar), permanent absolute models are also available.

Pressure limits

Set upper and lower pressure limits to sound an audible alarm.

Automatic zeroing

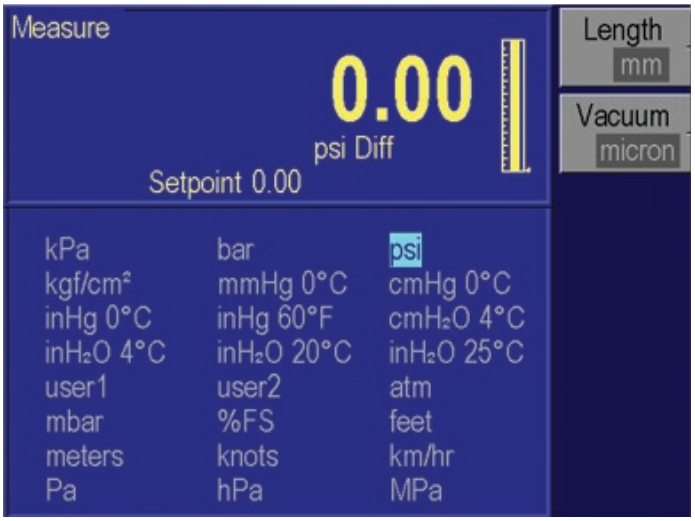
All models feature automatic zeroing, including units with the vacuum reference option, for automated absolute mode zeroing through the front panel or over the PC interfaces.

Options

The following options are available for the Series 7050:

- Vacuum (negative gauge) mode for bidirectional measurements
- Barometric reference for absolute mode operation with the 7050i and 7050; ranges 15 psi (1.0 bar) and higher
- Vacuum reference for absolute mode operation via an external vacuum pump connected to the reference port for 7050i and 7050
- Permanent absolute ranges to 50 psia (4 bar) full scale, which include a tare feature for simulated gauge mode operation

The Series 7050 digital pressure indicators provide high performance pressure measurement with a wide variety of pressure ranges and options. All are easy to use, easy to maintain, and have the reliability, performance and features that you want.



The Series 7050 features an easy to navigate menu structure with full text descriptions for menus and commands. The large color display allows the pressure value to be displayed even when viewing a submenu selection such as the units selection screen shown above.

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FLUKE® Calibration

Specifications

General	
Function	**7050**
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 7050i	Select any full scale from 5 psig to 1500 psig (400 mbar to 100 barg). Or, permanent absolute ranges are available from 15 psia to 50 psia (1 bara to 4 bara).
Model 7050	Select any Full Ccale pressure range from 5 psig to 1500 psig (400 mbar to 100 barg). Or, permanent absolute ranges are available from 15 psia to 50 psia (1 bara to 4 bara).
Model 7050LP	10/30 inH_2O (25/75 mbar) 20/60 inH_2O (50/150 mbar) 35/100 inH_2O (87/250 mbar)
Optional modes	Absolute using barometric reference sensor for ranges from 15 psig to 1500 psig (1.0 barg to 100 barg)
	Absolute using vacuum reference option for ranges 5 psig to 1500 psig (400 mbar to 100 barg)
	Negative gauge
Performance	
Precision	Model 7050i: From 40 % to 100 % full scale (FS): 0.005 % of reading Below 40 % FS: 0.005 % of 40 % FS
	Model 7050: 0.003 % of FS
	Model 7050LP: From 25 % to 100 % of maximum FS, 0.005 % reading, Below 25 % maximum FS: 0.005 % of 25 % maximum FS
Stability	0.0075 % of reading per year
Display resolution	User selectable to 1:1,000,000
Negative gauge precision (optional)	Model 7050i: 0.005 % of 40 % FS or 0.0008 psi (0.055 mbar), whichever is greater
	Model 7050: 0.003 % of FS
	Model 7050LP: 0.005 % of reading from 25 % to 100 % maximum FS Below 25 % maximum FS 0.005 % of 25 % maximum 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

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FLUKE® Calibration

Calibration

A calibration report with traceability to National Institute of Standards and Technology (NIST) is provided. An ISO-17025 accredited calibration is standard.

Total uncertainty

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

Model 7050i	40 % to 100 % FS 90 day: 0.006 % reading 1 year: 0.009 % reading
Model 7050	Ranges to 1500 psi (100 bar) 90 day RSS: 0.003 % FS + 0.002 % of reading 1 year RSS: 0.003 % FS + 0.0075 % of reading
Model 7050LP	±(0.005 % of reading) from 25 % FS to 100 % FS. ±(0.005 % of 25 % FS) from 0 % FS to 25% FS. Neg. Gauge (opt): ±(0.005 % of reading) from 25 % FS to 100 % FS. ±(0.005 % of 25 % FS) from 0 % FS to 25 % FS.

Communications

RS-232 and IEEE-488, SCPI syntax	Series 7250, 7215, Model 7000 and Series 6000 emulation are standard
LabView driver	Optional

Firmware updates are performed via RS-232 interface

Languages

The Series 7050 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
MET/CAL driver
Intecal software
NVLAP-accredited calibration
Rack mount kit
Liquid trap assembly

Precision

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

*Requires external vacuum pump

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FLUKE ® Calibration

Specifications

Model 7050i	Uncertainty (2 sigma)
Precision	0.005 % of reading
Stability (one 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
Expanded uncertainty (2 sigma)	0.009 % of reading

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

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Fluke Calibration
PO Box 9090, Everett, WA 98206
U.S.A.

Fluke Europe B.V.
PO Box 1186, 5602 BD
Eindhoven, The Netherlands
Web access: http://www.flukecal.eu

For more information call
In the U.S.A. (877) 355-3225 or
Fax (425) 446-5716
In Europe/M-East/Africa +31 (0) 40 2675 200
or Fax +31 (0) 40 2675 222
In Canada (800)-36-FLUKE or
Fax (905) 890-6866
From other countries +1 (425) 446-6110 or
Fax +1 (425) 446-5716
Web access: http://www.flukecal.com

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