



SERIES 7050

Digital Pressure Indicators

- Pressure ranges from 0 – 25 mbar to 0 – 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



SERIES 7050

Digital Pressure Indicators

The Series 7050 Digital Pressure Indicators expand upon GE Ruska's popular line of Series 7000 products such as the Series 7250 Digital Pressure Controllers and Series 7252 Dual Output Pressure Controllers. Whereas the 7250 and 7252 provide both pressure measurement and control, the 7050 provides an instrument for applications that require pressure measurement.

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

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

The Model 7050 α and 7050 and 7050LP all utilize Ruska's 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 Ruska pressure calibrator insuring every customer receives the same Ruska quality, precision and long term stability in their instrument.

Advanced Precision – 7050 α

Model 7050 α offers advanced percent of reading precision which results in 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 25% to 100% of the instruments range. For pressures below the lower threshold of 25%, the 7050 α precision is 0.005% of the lower threshold value. For example, a 7 bar Model 7050 α provides 0.005% of reading from 1.75 to 7 bar; the precision for pressures from 0 to 1.7 bar is 0.005% of 1.7 bar.

This unmatched precision is achieved by Ruska's unique quartz pressure sensing technology along with multiple ranges in a single instrument. Various full scale pressure ranges from 0 – 400 mbar to 0 – 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 which allows automatic zeroing in absolute mode. Permanent absolute ranges to 4 bar are also available.

Standard Precision – 7050

For applications that do not require the level of performance provided in the Model 7050 α , 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 – 400 mbar to 0 – 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 which allows automatic zeroing in absolute mode. Permanent absolute ranges to 4 bar are also available.

Low Pressure – 7050LP

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

- 10 inH₂O and 30 inH₂O
- 20 inH₂O and 60 inH₂O
- 35 inH₂O and 100 inH₂O

The 7050LP provides a precision of 0.005% of each range. For example, the 10/30 inH₂O 7050LP provides a precision of 0.0005 inH₂O when measuring pressures from 0 to 10 inH₂O. 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.

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.



Series 7050 features Ruska's unique fused-quartz sensor. This rugged transducer offers unequalled precision and a stability of 0.0075% of reading per year.

Model 7050 α	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
Expanded Uncertainty (2 sigma)	0.009% of Reading



The Series 7050 features multi-lingual menus and displays.



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 sub menu selection such as the units selection screen shown above.

The Series 7050 can be used in a variety of applications such as:

- Wind tunnel pressure measurements
- Liquid level detection in bubbler systems
- Calibration of other pressure devices
- High accuracy barometric pressure measurement
- Very low pressure measurements with the 7050LP
- Virtually any application requiring high performance pressure measurement



In addition to the Series 7050, GE Ruska also offers the Series 7200 Precision Pressure Indicator for applications that require a portable configuration. Please refer to the Series 7200 data sheet for additional information. GE Druck also offers a wide range of pressure indicators such as the DPI 145, 142 and 150.

Automating Pressure Test and Calibration

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

CalManager II, an off-the-shelf software package is available in addition to a LabVIEW® driver, a free download at www.ruska.com.

Firmware updates can be performed over the RS-232 interface (updates can be downloaded from www.ruska.com).

A MET/CAL® driver is also available as an option.

Versatility

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

Wide pressure range—the Series 7050 is available in a variety of standard or custom full scale pressure ranges from 10 inH₂O to 100 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 7050 automatically corrects for head pressure differences.

Absolute mode — the 7050 α and 7050 offer three different methods to make absolute pressure measurements. The Barometric Reference option provides the most convenient method as is available on ranges 1 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 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 7050 α and 7050 (ranges 1 bar and higher).
- Vacuum reference for absolute mode operation via an external vacuum pump connected to the reference port for 7050 α and 7050.
- Permanent absolute ranges to 4 bar full scale which include a tare feature for simulated gauge mode operation.
- NVLAP accredited calibration report.
- CalManager II software for Windows®.

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, the performance, and the features that you want.

SERIES 7050

Specifications

PRESSURE RANGES

Standard pressure ranges (bar)

Model 7050 ϵ : 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 bar abs

Model 7050: 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 bar abs

Model 7050LP: 10/30 inH₂O
20/60 inH₂O
35/100 inH₂O

Optional pressure ranges

Model 7050 ϵ : Any full scale range
from 400 mb to 100 bar g

Model 7050: Any full scale range
from 400 mb to 100 bar g

Optional modes

- Absolute using barometric reference sensor for ranges from 1 to 100 bar g
- Absolute using Vacuum Reference² option for ranges from 400 mbar to 100 bar g
- Negative gauge

PERFORMANCE

Precision

Model 7050 ϵ : From 25% to 100% FS: 0.005% of Reading
Below 25% FS: 0.005% of 25% FS

Model 7050: 0.003% of full scale

Model 7050LP: 0.005% of each range

Stability

0.0075% of Reading per year

Display Resolution

User selectable to 1:1,000,000

Negative Gauge Precision (optional)

7050 ϵ : 0.005% of 25% FS or 0.034 mbar¹
7050: 0.003% of full scale
7050LP: 0.005% of each range

Barometric Reference (optional)

0.1379 mbar maximum error per year

Vacuum Reference (optional)

0.014 mbar maximum error per year

CALIBRATION

A calibration report with traceability to NIST is provided. Ruska calibrates all Series 7050's with the Model 2465 (0.0010% of reading) to 60 bar and the Model 2470 (0.0011% of reading) Gas Piston Gauge above 60 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:

7050 ϵ : (25%-100% FS)
90 day 0.006% reading
1 year 0.009% reading

7050: Ranges to 100 bar
90 day RSS 0.003%FS + 0.002%Rdg
1 year RSS 0.003%FS + 0.0075%Rdg

7050LP
10 inH₂O Range, RSS: 0.0005 inH₂O + 0.0076% Rdg/yr
30 inH₂O Range, RSS: 0.0015 inH₂O + 0.0076% Rdg/yr

20 inH₂O Range, RSS: 0.001 inH₂O + 0.0076% Rdg/yr
60 inH₂O Range, RSS: 0.003 inH₂O + 0.0076% Rdg/yr

35 inH₂O Range, RSS 0.0018 inH₂O + 0.0076% Rdg/yr
100 inH₂O Range, RSS 0.005 inH₂O + 0.0076% Rdg/yr

COMMUNICATIONS

RS-232 and IEEE-488, SCPI syntax. Ruska Series 7250, 7215, Model 7000 and Series 6000 emulation are standard.

MET/CAL[®] driver – optional

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

Firmware updates are performed via RS-232 interface

LANGUAGES

The 7050 is capable of displaying menus and functions in:

English	Japanese
French	Spanish
Chinese	Italian
German	

OPTIONS

Barometric Reference (absolute and neg. gauge)
Vacuum Reference² (absolute)
Negative gauge only
NVLAP accredited calibration
Rack Mount Kit
MET/CAL[®] driver
CalManager II software
Liquid Trap Assembly

GENERAL

Display

TFT, VGA, Active matrix, 163 mm diagonal
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

All models 7.5 kg

Power

90 – 260 VAC, 50/60 Hz, 150W

Test Port and Reference 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 total uncertainty conforms with the recommendations of the ISO Guide to the Expression of Uncertainty in Measurement.

¹Whichever is greater

²Requires external vacuum pump

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

Other Products and Services

In addition to a wide range of digital pressure controllers and indicators from 25 mbar to 2750 bar, Ruska manufactures primary standard piston gauges from 14 mbar to 5000 bar.

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Model 7615, 2750 bar controller

Agent:



Laboratory Code 200491-0

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