

GE
Measurement & Control

Pressure Product Guide



01 Pressure Sensors

02 Portables

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GE Measurement & Control is a leading innovator in sensor-based measurement, inspection, asset condition monitoring, controls, and radiation measurement solutions that deliver accuracy, productivity and safety to customers in a wide range of industries, including oil & gas, power generation, aerospace, transportation and healthcare.

An important element of our global business is the design and manufacture of sensing elements, instruments and systems, that enable our customers to monitor, control, protect and validate their critical processes and applications. We have particular expertise in pressure sensing, transmission and calibration throughout the industrial and process spectrum. We have one of the most comprehensive and technologically advanced silicon processing facilities in the world. We are one of only a few companies converting raw silicon into finished sensors and gauges.

Our products and systems are sold by specially selected professional distributors, with excellent in-depth application knowledge. Please do not hesitate to contact your local GE sales office or distributor for help, advice or guidance through our pressure products guide.

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01

Pressure Sensors

GE's Silicon technology is robust, compact and provides excellent performance characteristics. Our dedicated manufacturing plant is one of only a few worldwide that converts raw silicon into finished products. A multidisciplinary engineering team designs all aspects of the product to best meet the requirements of a variety of demanding markets, applications and industries. GE provides a complete solution for pressure measurement.

Applications:

- Compressor control and monitoring
- Automotive engine development
- Turbine monitoring and control
- Flight test
- Hydrostatic level monitoring
- Critical hydraulic system control

UNIK 5000 Pressure Sensor Series

A high performance configurable solution for pressure measurement. The use of Druck silicon technology and analogue circuitry enables best in class performance for stability, low power and frequency response. The use of modular design and lean manufacturing techniques allow users to design the product required to their unique application requirement.



- Ranges from 70 mbar to 700 bar (1 to 10,000 psi)
- Accuracy ± 0.2 to 0.04 % FS
- Stability ± 0.05 % FS typical
- mV, mA, voltage and configurable voltage outputs
- Multiple electrical & pressure connector options
- Operating temperature ranges to -55 to 125 °C (-67 to 257 °F)
- Short Lead time

To create your pressure sensor from the vast amount of variations, visit our online configuration tool www.unik5000.com then select micro site. The configuration tool guides the user through the process of choosing the sensor most appropriate to the application.

*Most common configurations



* PTX5072 Pressure Sensor

A commonly used industrial configuration with standard DIN electrical interface coupled to a robust mechanical design.

- Electrical output 4-20 mA
- Ranges from 70 mbar to 700 bar (1 to 10,000 psi)
- Electrical connection DIN 43650 with mating connector
- Accuracy ± 0.2 to 0.04 % FS
- Choice of pressure connections



* PMP5068 Pressure Sensor

A high specification, flexible solution for more challenging environments and applications.

- Electrical output any voltage between -10 and $+10$ volts
- Ranges from 70 mbar to 700 bar (1 to 10,000 psi)
- Electrical connector Military specification to 125 °C
- Accuracy ± 0.2 to 0.04 % FS
- Choice of pressure connections



* PTX5032 Pressure Sensor

An economic and versatile level-measuring device, using many of the features developed in our dedicated level measuring products.

- IP68 to 200 mH2O
- Fully welded and moulded construction
- Non stretch cable using Kevlar strain relief
- Electrical output 4-20 mA
- Accessories for robust and easy installation
- Accuracies ± 0.2 to 0.04 % FS

UNIK 5600/5700

High specification, DNV marine certified sensor for use in ship-board applications such as: hydraulic and pneumatic systems, oil, gas and water pressures, fuel, fresh water and ballast tank measurements

- Ranges from 70 mbar to 700 bar (1 to 10,000 psi)
- Milliamp output
- Accuracy ± 0.2 to 0.04% FS
- Body diameter 25 mm (1in)
- All-welded 316L stainless steel or titanium construction
- Hazardous area approvals
- DIN 43650 or fully submersible electrical connectors



UNIK 5800/5900

Compact and rugged, offering flameproof/explosion-proof and dust-ignition protection by enclosure protection in hazardous areas. Cost effective alternative to pressure gauges and switches in process and oil and gas industry application such as: hydraulic power units, flushing skids, separators and wellhead production management and automation.

- Ranges from 3.5 bar to 700 bar (51 to 10,000 psi)
- Milliamp, millivolt and voltage outputs
- Accuracy ± 0.2 to 0.04% FS
- 316L Stainless Steel construction
- Hazardous area approvals
- Integrated terminal compartment (5900)



Specialist Depth and Level

A small diameter welded body in titanium or stainless steel, coupled with, injection moulded high quality cable and high stability silicon, offer the ultimate in stability and reliability resulting in low cost of ownership. A variety of packages and accessories offer a range of solutions for different customer requirements and solve customer applications worldwide.



PTX1830

Fully submersible, high performance sensors for measurement of hydrostatic liquid levels.

- Ranges up to 600 mH₂O (900 psi)
- Fully welded 17.5 mm titanium construction
- 4 to 20mA output
- Accuracy 0.06 % FS

PTX1730

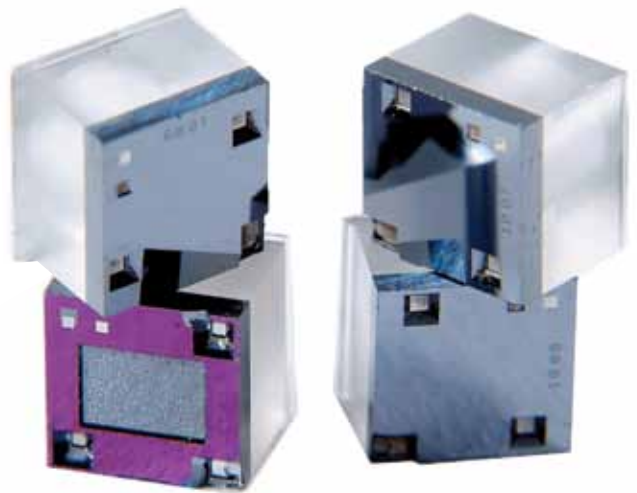
Low cost submersible pressure sensor

- Ranges up to 600 mH₂O (900 psi)
- Milliamp output
- Accuracy $\pm 0.25\%$
- Body diameter 17.5 mm (0.69 in)
- All welded 316L stainless steel construction
- Vented polyurethane cable with Kevlar® anti-stretch construction



TERPS Pressure Sensor Series

TERPS - Trench Etched Resonant Pressure Sensors - is a new silicon sensing technology that delivers unprecedented levels of accuracy and stability. TERPS uses a resonating silicon pressure sensor, which exploits the naturally occurring perfect elasticity of the single crystalline structure. With no imperfections, performance is radically enhanced.



- **Incredible resonance performance.**

At $\pm 0.01\%$ FS (100ppm) precision and stability TERPS delivers ten times the performance of standard silicon sensors

- **Low cost, high performance.**

More resilient than quartz, TERPS provides quartz accuracy and stability at a fraction of the cost

- **Ideal for challenging or remote environments.**

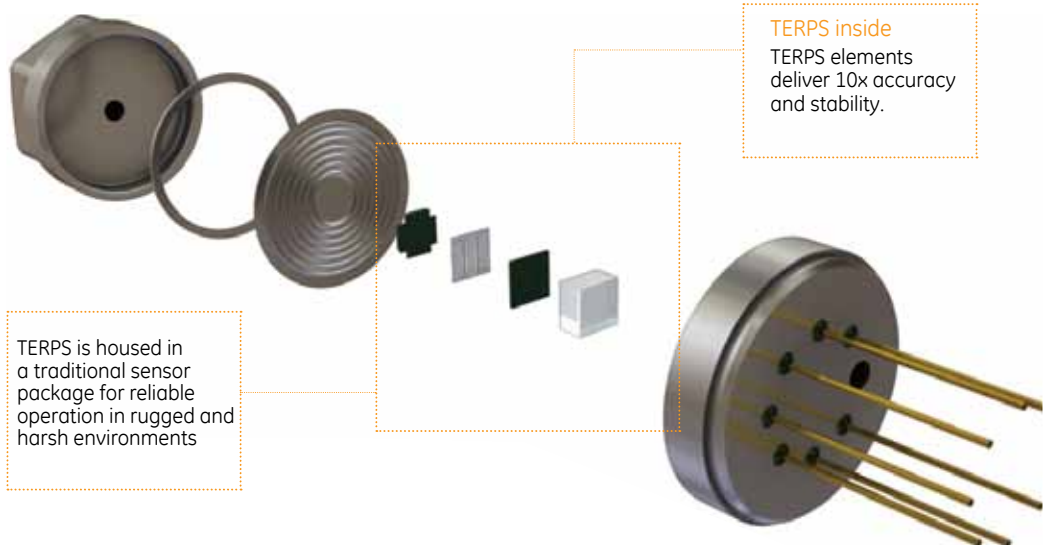
The use of glass-to-metal seals allows the sensor to be packaged for applications in challenging environments

- **Product flexibility at short lead times.**

TERPS can be produced with a wide range of variable features including outputs, electrical connectors and pressure ranges.

Applications

- Oil & Gas
- Oceanography
- Aerospace
- Hydrology
- Power Generation
- Industrial
- Metrology
- Military



8000 Series

A wide range of options allows flexible customization in a wide range of applications, from aerospace to subsea and from process engineering to industrial instrumentation.



- Designed with brand new TERPS technology
- High precision, $\pm 0.01\%$ FS over compensated temperature range
- High stability, ± 100 ppm FS/year
- Multiple output configurations, TTL and Diode, RS 232 and RS 485
- Wide selection of pressure and electrical connections to suit specific requirements

8000

- Ranges from 2 bar to 70 bar (30 to 1000 psi)
- Welded 316L media isolated construction, suitable for use in harsh environments
- Wide temperature range, $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ ($-40\text{ }^{\circ}\text{F}$ to $185\text{ }^{\circ}\text{F}$)

8100

- Exposed silicon construction
- Barometric pressure precision to 0.1mbar (0.1hpa)
- Ranges from 1 to 3.5 bar (15 to 50 psi)
- Low g sensitivity
- Wide temperature range, $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ ($-40\text{ }^{\circ}\text{F}$ to $185\text{ }^{\circ}\text{F}$)

8200

- Welded Hastelloy C276 media isolated construction, suitable for use in harsh environments
- Ranges from 2 bar to 70 bar (30 to 1000 psi)
- Wide temperature range, $-40\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$ ($-40\text{ }^{\circ}\text{F}$ to $257\text{ }^{\circ}\text{F}$)
- 8300 model is full Hastelloy C276 construction



02

Portables

GE offers high precision field portables to commission, maintain, and calibrate the high accuracy and smart instrumentation used in today's process industry. These portables help to ensure control instrumentation can perform to closer tolerances, increasing both quality and productivity and providing a guaranteed level of accuracy and a lower cost of ownership.

Environmental and regulatory requirements are an integral part of today's modern manufacturing processes and quality compliance is an important aspect. Our range of pressure temperature and multifunction portables make it easier for test and maintenance personnel to comply with all necessary requirements. Quality compliant records are easily achieved and the errors associated with manual documentation are eliminated.

Applications:

- Testing, commissioning and calibrating process instrumentation
- Electrical, frequency, pressure and temperature
- Transmitters and transducers
- Gauges, indicators and recorders
- Switches, trips and alarms
- Positioners and converters

Common Features:

- Built-in pressure/vacuum generation
- Simplified menu-driven operation
- ISO 9000 systems compatible
- Compact, rugged and self contained
- Downloads procedures, uploads results
- Identifies calibration errors in the field
- Records user ID, tag and serial numbers

DPI 620 Genii

Evolved from the market-leading DPI 620, the new Genii system offers fast, intuitive and intelligent workflow on the move.

Using familiar swipe and touch commands, just like a smartphone, the Genii multifunction calibrator provides fast intuitive access to a vast array of functionality designed to help you improve productivity. The Genii combines an advanced multi-function calibrator and HART/Foundation Fieldbus communicator with world-class pressure measurement and generation.



Advanced Modular Calibrator

- One touch selection of common tasks, e.g. P to I for a pressure transmitter
- Highest accuracy for measuring, sourcing and simulating electrical, frequency, temperature and pressure
- Simulate device inputs and measure outputs simultaneously (up to 6 active channels)
- Calculates errors between inputs/ outputs
- Pressure system generates 100 bar/1,500 psi pneumatic and 1000 bar/15,000 psi hydraulic pressures.
- Interchangeable pressure modules from 25 mbar/10 inH2O to 1,000 bar/15,000 psi

Pressure Generation Stations

There are three pressure generation stations:

- PV 621/G, a pneumatic pressure generator for pressures 95% vacuum to 20 bar (300 psi);
- PV 622/G, a pneumatic pressure generator for pressures 95% vacuum to 100 bar (1500 psi);
- PV 623/G, a hydraulic pressure generator for pressures up to 1000 bar (15000 psi).

Each pressure station is designed for stand-alone operation as a pressure generator and can replace conventional hand pumps to provide greater efficiency and ease of use.

PM 620 Pressure Modules

- Fully interchangeable with no need for set-up or calibration
- Simple screw fit - hand tight no tools required
- Ranges from 25 mbar to 1000 bar (10 inH2O to 15000 psi)
- Accuracy from 0.005% FS

The PM 620 is the latest development in digital output sensor technology incorporating a number of key innovations to allow pressure re-ranging of compatible equipment.

Customer Benefits

- Increase productivity for calibration and maintenance
- Improve processes, efficiency and quality
- Reduce inventory, lower cost of ownership, simplify training
- Use and carry with ease



HART Digital Communicator

- View, change, clone and store HART device configurations
- Work off-line to create and change HART configurations
- Transfer HART device configurations to your PC
- Measure and source analogue variables without secondary calibration equipment
- No power during shutdown? Genii provides 24 V
- Need a 230 ohm resistor? Just select from the menu
- It's easy to upgrade Genii with free of charge software and the latest HART device description libraries



Fieldbus Foundation

- Offers engineers a full range of options for newer plants as well as more traditional infrastructures
- It's easy to upgrade Genii with the latest Foundation Fieldbus device description libraries



Documenting Features

- Automate calibration procedures and document As Found and As Left results
- Store a complete plant database including tags, devices and procedures
- Graphical views of data log files, calibration results and historical trends
- Includes Windows CE – view loop diagrams, datasheets, safety procedures, spread sheets, images and create text documents
- IEEE 802.11g wireless connection with Internet access
- Bluetooth and USB connectivity

DPI 610 / 615 Precision Portable Pressure Calibrator

Designed for ease of use while meeting a wide range of application needs such as calibration, maintenance and commissioning. The dual parameter display shows the input and output values in large clear digits. The selectable task menu allows specific operating modes such as P-I, switch test and leak test are configured at the touch of a button.

- 52 Ranges from 2.5 mbar to 700 bar (1 to 10,000 psi)
- Accuracy from 0.025% F.S.
- Integral combined pressure/vacuum pump
- 4 to 20 mA loop test facility
- RS 232 interface and fully documenting version
- Range expansion pressure module
- Intrinsically safe version available



DPI 610 / 615 LP Series - Portable Low Pressure Calibrators

A precision low pressure sensor and pneumatic generation integrated, to provide a fully self contained, portable low pressure calibrator with an intuitive task menu. Data can be transferred directly from the 610 to a PC (into a computer) for analysis, certificate printing and archiving. The DPI 615 simplifies field use by calculating the device under test error and the pass/fail status, and integrates with calibration management software systems, such as Intecal. The DPI 615 also has data storage and RS232 interface and has two-way communication for downloading procedures and uploading results.

- Ranges from 2.5 to 150 mbar (± 1.0 to ± 60 inH₂O)
- 25 scale units plus one user defined
- Accuracy 0.05% of span
- Generates pressure and vacuum
- Dedicated tasks and dual readout
- Automatic zero equalization
- RS 232 interface and documenting versions



DPI 615HC Portable Hydraulic Calibrator

A self-contained battery powered package, which contains a pressure generator, fine pressure control, device energising and output measurement capabilities, as well as facilities for 4 to 20 mA loop testing and data storage. The rugged weatherproof design is styled such that the pressure pump can be operated and test leads connected without compromising the visibility of the large dual parameter display. The mA step and ramp outputs and a built-in continuity tester extend the capabilities to include the commissioning and maintenance of control loops.

- Pressure Connection: G1/8 female
- Ranges from 135 to 400 bar capability (2000 to 6000 psi)
- 25 scale units plus one user defined
- Error analysis for field reporting

Product Matrix - Portable Calibrators

Model	DPI 620 Genii	DPI 615	DPI 610
Accuracy	Reference Standard	High	High
Features			
Intrinsically Safe	O	O	O
4 Sight Calibration and Maintenance	S	S	
HART Communicator	S		
Fieldbus communicator	O		
PDA (Windows CE)	S		
Datalogging	S	S	S
Connectivity	W,U,R	R	R
Bluetooth	B		
Measure			
mA	S	S	S
mV	S		
V	S	S	S
V AC	S		
RTD's	S		
Thermocouples	S		
Ohms	S		
Frequency and pulses	S		
Switch Test	S	S	S
Pressure	M	S	S
Source			
mA	S	S	S
mV	S		
V	S		
RTD's	S		
Thermocouples	S		
Ohms	S		
Frequency and pulses	S		
Loop power	S	S	S
Pneumatic pressure	M	O	O
Hydraulic pressure	M	O	O

Reference Standard Accuracy

Suitable for virtually all instrument tests and calibrations

High Accuracy

Suitable for general instrument tests and calibrations

Test Accuracy

Appropriate for general test and monitoring applications

Key:

- S Standard feature
- M Optional module
- O Optional feature
- W WiFi IEEE802.11g
- B Bluetooth
- U USB
- R RS 232

The DPI 800 Series

Is a complete range of advanced, robust and simple to use hand-held instruments. Highly cost effective, these tools are ideal for test/calibration of many popular process parameters. Advanced features and technical innovations address more applications in less time and deliver results you can rely on.



DPI 800 / 802 Series Pressure Indicators

Ideal pressure measurement tools, with pressure ranges from 70 mbar to 700 bar including vacuum options. All-inclusive accuracy can be relied on from one year to the next, even in tough environmental conditions.

- Ranges from 25 mbar to 700 bar (10 in H₂O to 10,000 psi)
- Single or dual range configurations
- Accuracies to 0.01 % FS
- 25 pressure units
- Gauge, absolute and differential pressure versions.
- mA Measure, switch test and 24V loop power
- Hart loop resistor

DPI812 – RTD Loop Calibrator

Measures or simulates RTD sensors and is the ideal tool for checking probes, indicators, recorders and controllers, additionally provides simultaneous RTD out put and mA measurement for transmitter/loop maintenance.

- Measure and source RTDs
- 2,3 and 4 wire auto detection
- Temperature test and maintenance
- Transmitter calibration
- Loop set-up diagnostics
- Switch verification
- Hart loop resistor
- Intelligent Digital Output Sensor (IDOS™) Universal Pressure Modules

DPI 822 Thermocouple Loop Calibrator

Measures or simulates thermocouple sensors and is the ideal tool for checking probes, indicators and controllers. It also provides simultaneous T/C output and mA measurement for transmitter and loop maintenance.

- Measure and source T/Cs
- Advanced C/J compensation
- Temperature test and maintenance
- Transmitter calibration
- Loop set-up and diagnostics
- Switch verification
- Intelligent Digital Output Sensor (IDOS™) Universal Pressure Modules

DPI 832 Electrical Loop Calibrator

Measures or sources mA, mV, V and captures switch trip values. It is the ideal instrument for process technicians to check and maintain transmitters, control loops, DCS, PLC input cards and signal conditioners.

- Dual reading capability
- 24V loop supply to power transmitters and loops
- Large backlit display, menu driven interface
- HART® loop resistor
- Robust and weather proof
- Compact, simple to use, easy to carry
- Convenient, one-handed operation
- Secure grip, impact resistant, elastomer protected
- Intelligent Digital Output Sensor (IDOS™) Universal Pressure Modules

DPI 842 Frequency Calibrator/Loop Calibrator

The ideal instrument for process technicians and electronic engineers, providing a highly accurate calibration standard and versatile test tool, it measures Hz, kHz, CPM, CPH and pulses. Dedicated features facilitate test and maintenance of electronic circuits and frequency instruments including frequency meters, batch counters, tachometers, motion pickups, integrators and flow meters.

- Advanced frequency meter and generator with three output waveforms from 0.1 V to 24 V amplitude
- Measure or source 0.01 Hz to 50 kHz
- Sine, square and triangular waveforms mA measure, switch test and 24V loop power
- Large backlit display, menu driven interface
- HART® loop resistor
- Robust and weather proof
- Convenient, one-handed operation
- Secure grip, impact resistant, elastomer protected
- Intelligent Digital Output Sensor (IDOS™) Universal Pressure Modules

DPI880 Multi-function Calibrator

Virtually a calibration lab in the palm of your hand, it allows the user to obtain high precision data and address any issue in as much time as it takes to press a button, saving thus valuable operating time. It can accurately test switches, trips and alarms and print the results in 5 minutes.

- Single tool replaces several test instruments
- Electrical, Temperature, Pressure and frequency
- 32 IDOS® 'Plug-N-Play' Pressure modules from 10 in H₂O to 10,000 psi (25 mbar to 700 bar)
- Sources and reads mA, mV, ohms, frequency and pulses
- Simulates and reads 8 RTDs and 12 thermocouples
- Automatic switch test and pressure leak test
- 24 V loop power supply
- Optional Data logging
- Compact, simple to use, easy to carry

UPS Series

Smart loop testers, which simplify everyday maintenance tasks, are essential tools for testing, instrument maintenance and valve set-up. The tools have easy to read displays and simple to use time saving features.

- Auto step/ramp
- Powers/reads 2 wire TX
- Sources/reads 0/4 - 24mA
- Loop power supply
- Displays mA or %span
- HART compatible



UPS-II Smart Loop Calibrator for Milliamps

Advanced handheld process calibrator tool, that can power (24 VDC) and read 2-wire transmitters to perform field calibrations. Output currents are adjustable to a resolution of 10 micro amps in both source and transmitter simulation.

- Sources and reads milliamps
- Accuracy 0.05% of range
- Auto-ramp cycling for endurance tests
- Auto-stepping for hands-free calibration
- Fixed currents for calibration and valve stroking



UPS III Loop Calibrator

Rugged and extremely compact, measuring 3" x 5" and weighing just 9.7 ounces, this high accuracy loop calibrator is an essential tool for loop testing, instrument maintenance and valve set-up, with an easy to read display and simple to use time saving features.

- Measure or Source 0 to 24 mA
- Accuracy 0.01% of reading
- Dual mA and % readout, linear or flow
- Step, Span Check, Valve Check, Ramp
- 60 VDC measurement and continuity
- HART® compatible



The UPS-III-IS Loop Calibrator

An intrinsically safe loop calibrator which is rugged and extremely compact, measuring 90 x 140 mm (3.5" x 5.5") and weighing just 460 g (16.2 ounces). It is an essential tool for loop testing, instrument maintenance and valve set-up, with an easy to read display and simple to use time saving features.

- ATEX/IEC intrinsically safe
- Measure or source 0 to 24 mA
- Accuracy 0.015% of reading
- Dual mA and % readout, linear or flow
- Step, span check, valve check, ramp
- 50 VDC measurement and continuity
- HART® resistor built in
- Uses industry standard AA batteries
- Leather case with carry strap.



DPI 705 Series Handheld Pressure Indicators

Easy to use rugged hand held portable pressure indicators, designed to offer accurate and reliable pressure measurement. Compact, robust and lightweight, it is designed for single-handed operation and provides many essential features required for routine maintenance and system troubleshooting. Intrinsically safe (I.S.) versions are available certified to European and American standards for use in hazardous areas, along with Differential, Gauge & Absolute pressure measurement versions.

- Ranges 0 to 70 mbar through to 700 bar (0 to 1 psi through to 10,000 psi)
- 16 pressure units
- Rugged, lightweight handheld design
- Leak test, tare, max/min and filter
- Intrinsically safe version
- Optional pneumatic and hydraulic hand pumps



DPI 740 Series Precision Pressure Indicator

Portable battery powered precision barometer, providing outstanding capabilities in a hand-held package. This instrument can be used in both laboratory and field applications as a first-class barometric reference device, with the recommended recalibration period being one year.

- Ranges to 103 inHg (3.5 bar) absolute
- Accuracy: ± 0.004 inHg (± 0.15 mbar) absolute
- 6 digit resolution LCD display
- Multiple pressure scales and aeronautical units
- Alkaline or rechargeable batteries
- Lightweight hand-held rugged design
- RS 232 output



DPI 104 Digital Test Gauge

A microprocessor-controlled digital pressure gauge that combines precision and functionality in a compact, robust and simple-to-use package. The DPI 104 matches advanced silicon sensor technology with several convenient design features resulting in an accurate, versatile yet affordable digital test gauge.

Supplied as a standalone process indicator or in a kit with the widely proven hand pumps, the DPI 104 provides a reliable and economic solution for a wide range of pressure sensing applications.

- Ranges from 700 mbar to 1400 bar (10 psi to 20,000 psi)
- 0.05% FS Accuracy, Temperature compensated from -10 to 50° C
- 11 selectable pressure units
- Large, easy to read display with five digit resolution
- Stainless & Inconel wetted parts for aggressive media
- Pressure switch test, Min/max, tare and alarm functions
- Pump Kits available
- Complete with rubber boot to ensure total protection of your tool



DPI 104IS Digital Test Gauge, Intrinsically safe

An intrinsically safe version of the microprocessor-controlled DPI 104 digital pressure gauge, the DPI 104IS matches advanced silicon sensor technology with several convenient design features, resulting in an accurate, versatile yet affordable digital test gauge. Supplied as a stand-alone process indicator or in a kit with the widely proven Druck hand pumps, the DPI 104IS provides a reliable and economic solution for a wide range of pressure sensing applications.

- Ranges from 700 mbar to 1400 bar (10 psi to 20,000 psi)
- 0.05% FS Accuracy, Temperature compensated from -10 to 50° C
- 11 selectable pressure units
- Large, easy to read display with five digit resolution
- Stainless & Inconel wetted parts for aggressive media
- Pressure switch test, Min/max, tare and alarm functions
- Intrinsically Safe Certification (ATEX /IECEX)
- Complete with rubber boot to ensure total protection of your tool



Product Matrix - Test Tools

Model	DPI 802	DPI 812	DPI 822	DPI 832	DPI 842	DPI 880	DPI 705	DPI 104	UPS III	UPS II
Accuracy	High	High	High	High	High	High	Test	High	Reference Standard	Test
Features										
Intrinsically Safe							O	O	O	
Datalogging	O	O	O	O	O	O				
RS 232	S	S	S	S	S	S				
Measure										
mA	S	S	S	S	S	S			S	S
mV			S	S		S				
V				S		S			S	
RTD's		S				S				
Thermocouples			S			S				
Ohms		S				S				
Frequency and pulses					S	S				
Switch Test	S	S	S	S	S	S			S	
Pressure	S	M	M	M	M	M	S	S		
Source										
mA				S		S			S	S
mV			S	S		S				
V				S		S				
RTD's		S				S				
Thermocouples			S			S				
Ohms		S				S				
Frequency and pulses					S	S				
Loop power	S	S	S	S	S	S			S	S
Pneumatic pressure										
Hydraulic pressure										

Reference Standard Accuracy

Suitable for virtually all instrument tests and calibrations

High Accuracy

Suitable for general instrument tests and calibrations

Test Accuracy

Appropriate for general test and monitoring applications

Key:

S	Standard feature
M	Optional module
O	Optional feature
W	WiFi IEEE802.11g
U	USB
R	RS 232

Dry Block and Liquid Bath Temperature Calibrator Series

Accurate temperature measurement is essential for maintaining product quality, process efficiency, regulatory compliance and operational safety in industrial processes. High performance, stable temperature sources are the solution for achieving optimal performance of temperature sensors and process instrumentation.



Dry TC 165 and Dry TC 650

These dry block calibrators incorporate the latest metal block and electronic control technology and offer a choice of precision bored well inserts to accommodate a wide range of test devices.

- Dry TC 165 temperature range -35° C to 165° C (-31 °F to 329 °F)
- Dry TC 650 temperature range ambient to 650° C (1202 °F)
- Accuracy from 0.2° C
- Stability 0.05° C
- Rapid heating and cooling
- Light weight and robust for field use
- Choice of interchangeable well inserts
- Easy to set-up and use

Liquid TC 165 and Liquid TC 255

These multi-purpose calibrators combine the portability of dry block calibrators with the flexibility of liquid immersion baths to enable the testing and calibration of virtually any shape and size of devices. The calibrators can be re-configured by the user to function as a liquid bath, as an infra-red black body source and as a dry block calibrator with interchangeable inserts.

- Liquid TC 165 temperature range -35° C to 165° C (-31 °F to 329 °F)
- Liquid TC 255 temperature range ambient to 255° C (491 °F)
- Accuracy from 0.1° C
- Stability 0.05° C
- Large bath for irregular and multiple devices
- Multi-purpose – liquid bath, black body source, dry block
- Interchangeable bath – simplifies fluid changes
- Light weight and robust for field use
- Leak-proof bath cover for transportation





03

Controllers/Indicators

Our economical solution to pressure indication & control for production, test and calibration, PACE is a flexible modular family of high speed pressure controllers and precision pressure indicator.

Applications:

- Manufacturing
- Instrument workshops
- Services companies
- Laboratories
- Automotive test cells
- Burst testing
- Aerospace

Common Features:

- High resolution colour touch display
- Easy to use icon driven task menu
- Three levels of measurement precision
- Compatibility with software
- RS232, IEEE, USB & Ethernet connectivity as standard
- Negative calibration included as standard
- Twenty four scale units plus four user defined
- Utilises GE's unique resonant & piezo-resistive sensor technology
- Multilanguage

PACE Modular Pressure Controller

The PACE pneumatic modular pressure controller brings together the latest control and measurement technology from GE to offer an elegant, fast, flexible and economical solution to pressure control for automated production, test and calibration.

PACE employs full digital control to provide high control stability and high slew rate, while its digitally characterized pressure sensor offers the quality, stability and precision associated with this latest generation of piezo-resistive and resonant devices.



PACE5000 Chassis

- Single channel pressure controller chassis
- Easy to use colour touch screen display
- Can be used with any interchangeable PACE CM control module as a bench top or rack mounted pressure controller
- Intuitive task driven menu with basic, preset & divide as standard
- Multi Language - any additional language to suit specific requirements can easily be translated & downloaded
- RS232, IEEE connectivity, Ethernet and USB as standard
- Compatible with software packages

PACE6000 Chassis

Additional (to PACE5000) features:

- Dual channel pressure controller chassis
- With two PACE CM control modules fitted the PACE6000 can be used in single, auto-ranging or simultaneous dual pressure control mode*
- No module pressure range ratio limit
- Aeronautical Option

PACE CM – High Speed Pressure Control Module

- Interchangeable robust control module that is easily installed into a PACE chassis
- Calibration data stored in the control module (only the CM needs to be sent away for re-calibration)
- High speed pressure control
- Full scale pressure ranges from 25 mbar up to 210 bar (0.35 up to 3000 psi/2.5 KPa up to 21 MPa)
- Choice of standard, high or premium pressure measurement precision
- Barometric reference available to enable pseudo gauge/absolute indication & control
- Aeronautical version

* For auto-ranging both control modules have to be a range below 70 bar/1000 psi or both control modules have to be a range above 70 bar/1000 psi.

PACE Precision Pressure Indicator

The PACE precision pressure indicator brings together the latest measurement technology from GE to offer an elegant, flexible and economical solution to pressure measurement for test, calibration and monitoring. PACE employs digitally characterized pressure sensors which offer the quality, stability and precision associated with this latest generation of piezo-resistive and resonant devices.



PACE1000 Precision Pressure Indicator

- Single or multiple internal pressure range configurations
- Additional external Universal Pressure Modules available
- Up to three pressures displayed simultaneously
- Up to five pressures digitally re-transmitted
- Full scale pressure ranges from 25 mbar up to 1,000 bar (0.35 up to 14500 psi/2.5 KPa up to 100 MPa)
- Choice of precision up to 0.005% FS
- Long term stability up to 0.01% Rdg per annum
- Data Logging as standard with on screen replay
- Selectable numeric or graphical display
- Min/Max/Average display
- Compatible with software packages
- Multi Language – any language to suit specific requirements can easily be translated & downloaded

PACE1001 Precision Barometric Indicator and Recorder

- Pressure range 750-1150 mbar (10.9-16.7 psi) absolute
- Additional external Universal Pressure Modules available
- Up to three pressures displayed simultaneously and digitally re-transmitted
- Choice of precision up to 0.025 mbar/0.0003625 psi
- Data Logging as standard with on screen replay
- Selectable numeric or graphical display
- Min/Max/Average display
- Compatible with software packages
- Airfield Task as standard: Display QFE, QFF or QNH in pressure units or as altitude in feet or meters

PACE Options

Switch Test

Automates the testing of pressure switch devices.

Leak Test

Applies a test pressure(s) to an external system connected to the instrument to determine the magnitude of pressure variations due to leaks.

Test Program (PACE Controller)

Provides a facility for creating, storing and executing numerous test procedures within the instrument itself.

Analogue Output

Can be programmed via the setup menu screen to output a signal proportional to the instrument range selected.

Volt Free Contacts

Enable control of peripheral devices such as vacuum pumps, ovens, etc.

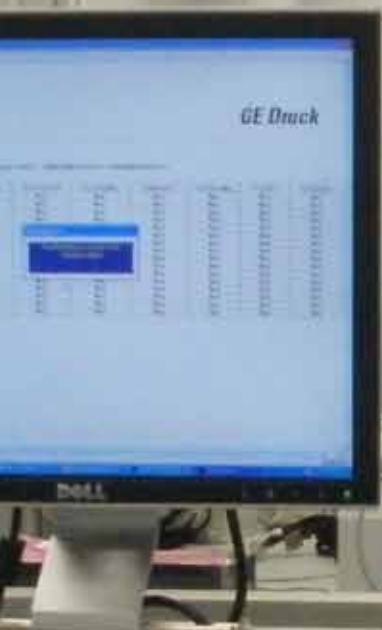
Burst Test (PACE Controller)

An application for the PACE Series designed primarily for the testing of pressure rupture discs.

Aeronautical Option (PACE6000)

Simultaneous control of calibrated airspeed and altitude (when used with two PACE CM2-A control modules) with a "go to ground" function. Indication and control available in pure aeronautical units: Altitude - feet or meters Air Speed - knots or km/hour, mph Mach - mach number - Rate of climb - feet or meters/minute, second.





UKAS No. 2 T0243



04

Hand Pumps

Hand pumps are an essential part of any pressure test or calibration system. These high quality, high performance hand pumps are designed for ease of use and reliability. Models are available to suit the widest range of applications from very low to high pneumatic pressures and for very high pressure hydraulic systems. A choice of adaptors and hoses simplify device connections, reduce leakage and improve safety and for convenience there are flexible carrying systems.

Applications:

- Generate vacuum, pneumatic and hydraulic pressures
- Rugged hand held pumps for field use
- Use with pressure indicators and gauges
- Testing, commissioning, fault finding, calibration
- Generate pressure from -950 mbar (28.5 inHg) to 1000 bar (15,000 psi)

PV210 Low Pressure Pneumatic Hand Pump

Fully portable, easy to use and generates pneumatic pressures to of 3000 mbar / 45 psi. It is an ideal tool for calibration checks on pressure transmitters, pressure switches, indicators, recorders and controllers.

The PV 210 can be used as a portable pressure comparator in conjunction with various pressure indicating devices. This precision unit includes a unique user adjustable pressure relief setting, enabling setting of maximum pressure.

- Dual source of pneumatic pressure and vacuum
- Generate vacuum to 90%
- Generate pressure to 3000 mbar (45 psi)
- Thermally insulated to eliminate temperature effects
- Use with DPI104 Gauge and Remote Pressure sensors



PV211 Pneumatic Pressure and Vacuum Pump

Lightweight, high quality combined pressure and vacuum hand pump. It has been designed to provide maximum pneumatic pressures efficiently and effortlessly.

The PV 211 can be used as a portable Pressure Comparator in conjunction with various pressure indicating devices. This precision unit includes an adjustable over pressure protection system as standard.

- Dual source of pneumatic pressure and vacuum
- Pneumatic pressure in excess 40 bar (600 psi)
- Generates vacuum to -950 mbar (-28.5 inHg)
- Adjustable stroke
- Built-in fine adjust vernier
- Needle valve for controlled pressure release
- High pressure generation with minimal effort
- Use with DPI104 Gauge and Remote Pressure sensors



PV212 Hydraulic Hand Pump

Lightweight, easy to use and generates pressure up to 1000 bar (15,000 psi) , it is an ideal tool for calibrating pressure transmitters, pressure transducers, pressure switches and pressure gauges.

The PV 212 can be used as a portable pressure comparator in conjunction with various pressure indicating devices. It offers adjustable overpressure protection, fine control and a unique priming/high pressure selector switch

- Compatible with distilled water, or mineral oil
- Pressures up to 1000 bar (15,000 psi)
- Large transparent 100cc capacity reservoir
- Quick priming and pressure generation using scissor action pump
- Controlled pressure release and adjustment
- High pressure / priming selector
- Can be filled even under pressure
- HK15 High Pressure hose kit available
- Use with DPI104 Gauge and Remote Pressure sensors



PV411A Multi-function Four-in-One Hand Pump
High quality field proven pressure and vacuum hand pump providing functionality never before seen in a hand held pressure source. This product replaces four conventional hand pumps and offers the following additional features that can be found in the datasheet

- Pneumatic pressures to 40 bar (600 psi)
- Hydraulic pressures to 700 bar (10,000 psi)
- Generates vacuum to -950 mbar (-28.5 inHg)
- Vacuum priming for hydraulic systems
- Excellent low pressure control
- Adjustable overpressure protection (can be set from 300 to 10,000 psi)
- Use with DPI104 Gauge and Remote Pressure sensors





05

Software Solutions

Calibrating field based instrumentation to quality standards such as ISO 9000 creates additional paperwork and increases both financial and resource burdens. The cost effective solution is calibration software which simplifies quality compliance and maintains optimum plant processing efficiency. We offer a Calibration Management Software compatible with an extensive range of field and workshop calibrators.

Common Features:

- Quick to install, easy to learn and use
- Audit ready 24/7
- Compatible with Druck and other calibrators
- Automated planning and scheduling
- Windows based

4Sight Calibration and Maintenance Manager Software

Provides a highly flexible information system with the tools for managers to plan, review and adapt the maintenance workflow and for technicians to work efficiently to defined and automated procedures.

- Reduce maintenance costs, automate processes
- Improve process efficiency, yield and quality
- Comply with regulations FDA, ISO, GAMP, 21 CFR Part 11
- Reduce management time
- Operate safely
- Simplify training
- Trace calibrations, actions and resources
- Plan maintenance, prevent downtime
- Define processes and procedures

4Sight - Mobile provides portable calibrators and mobile paperless solutions for automating field activity and ensuring the highest quality and integrity of data.

4Sight - Laboratory and Workshop provides the highest accuracy reference standards and fully automated test bench solutions. The 4Sight Calibration Solution is simple to use, cost effective and can be scaled for a single user or for a global multi-site operation.

Flexible browser based simplicity

4Sight is a web-based SaaS (Software as a Service) system that can sit on your server, or can be hosted by GE. With a simple web browser, you can manage tasks from anywhere in the world, with secure access from virtually any PC, PDA or mobile device you choose.

Absolute control

4Sight puts you in total control of calibration and maintenance workflow and data. Scheduling can be automated, with worksheets sent directly to appropriate operators. The system generates alarms for overdue activity and will highlight deviations in data that require action. 4Sight provides audit ready data with compliance to FDA, ISO, GAMP and 21 CFR Part 11.

Enterprise-Wide Visibility

4Sight can be set up to manage as many tasks as you need, from a single process in your plant, to workflows and schedules across multiple plants, and even across borders.

New Levels of Efficiency

Seamless integration with GE calibration equipment enables the automatic download of tasks and direct upload of results. There are no manual work arounds. Your data is 100% robust. An extensive range of analysis tools enables you to monitor ongoing plant, calibration and maintenance efficiencies. Browser tabs allow multiple orders to be worked on at the same time, new orders set up and schedule information to be viewed while entering calibration results.

4Sight

Take control of your calibration workflow.



4Sight Software as a Service (SaaS) platform is:

- Scalable, from a single process to millions of tasks
- Expandable with user licenses, anywhere in the world
- Futureproof, through automatic updates
- Browser-based, securely accessible from any Internet-enabled device
- Simple to set up and run and requires no local installation, no IT support, no server requirements
- Available to host on your servers or at GE
- Designed to reduce IT costs, compared with comparable systems

Conversion Chart

(Using the SI system* for units of measurement)

Pressure	kPa	bar	psi	Kgf/cm ²	mmH2O	inH2O	ftH2O	mmHg	inHg	torr
kPa	1.00000	0.01000	0.14504	0.01020	101.972	4.01463	0.33455	7.50064	0.29530	7.50064
bar	100.000	1.00000	14.5038	1.01972	10197.2	401.463	33.4552	750.064	29.5300	750.064
psi	6.89476	0.06895	1.00000	0.07031	703.070	27.6799	2.30666	51.7151	2.03602	51.7151
Kgf/cm ²	98.0665	0.98067	14.2233	1.00000	10000.0	393.701	32.8084	735.561	28.9590	735.561
mmH2O	0.00981	0.00010	0.00142	0.00010	1.00000	0.03937	0.00328	0.07356	0.00290	0.07356
inH2O	0.24909	0.00249	0.03613	0.00254	25.4000	1.00000	0.08333	1.86833	0.07356	1.86833
ftH2O	2.98907	0.02989	0.43353	0.03048	304.800	12.0000	1.00000	22.4199	0.88267	22.4199
mmHg	0.13332	0.00133	0.01934	0.00136	13.5951	0.53524	0.04460	1.00000	0.03937	1.00000
inHg	3.38639	0.03386	0.49115	0.03453	345.316	13.5951	1.13292	25.4001	1.00000	25.4001
torr	0.13332	0.00133	0.01934	0.00136	13.5951	0.53524	0.04460	1.00000	0.03937	1.00000

*Note: The International System of units (known as the SI System), is the coherent system of units adopted as recommended by the General Conference on Weight and Measures. Pressure is a derived quantity with fundamental dimensions of length, mass and time

About Us

Measurement & Control is a leading innovator in advanced, sensor-based measurement, non-destructive testing, inspection and condition monitoring and flow and process control solutions. Providing healthcare for our customers' most critical assets, we deliver accuracy, productivity and safety to a wide range of industries, including oil & gas, power generation, aerospace, metals and transportation. Headquartered in the Greater Boston Area, USA, Measurement & Control has facilities in countries around the world, and is part of GE Oil & Gas.

Our commitment to quality: is validated by our ISO 9001:2000 certification, which demands establishment of a quality management system for our business practices. This certification demonstrates that our quality management system is:

- Documented
- Supported and maintained
- Executed with continuous improvements

The 2000 standard emphasizes customer satisfaction as a required measurement for both our services and products to make sure we continually meet and fulfil customer needs. Audits are conducted annually by quality management and externally by certified third party agencies to ensure compliance. These audits include documentation and corrective action but also encompass customer and internal communications.

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