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Features

- Ranges 2.5 mbar to 700 bar
- Accuracy from 0.025% full scale (FS)
- Integral combined pressure/vacuum pump
- Dual readout: input and output
- 4 to 20 mA loop test: auto step and ramp
- Intrinsically safe (IS) version
- RS232 interface and fully documenting version
- Remote pressure sensors

Setting the Standard for Portable Pressure Calibrators

The technically advanced Druck DPI 610 and DPI 615 portable calibrators are the culmination of many years of field experience with the company's DPI 600 series.

These self-contained, battery powered packages contain a pressure generator, fine pressure control, device energizing (not IS version) 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.

DPI 610/615 Series

Druck Portable Pressure Calibrators

DPI 610/615 Series is a Druck product. Druck has joined other GE high–technology sensing businesses under a new name—GE Sensing.

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A highly accurate and easy to use calibrator is only part of the solution for improving overall data quality and working efficiency. The DPI 610 and DPI 615, with data storage and RS232 interface, reduce calibration times and eliminate data recording errors. The DPI 615 also provides error analysis for field reporting of calibration errors and pass/fail status. In addition, procedures downloaded from a PC automatically configure the DPI 615 to pre-defined calibration and test routines.

Improved Performance

The DPI 610/615 Series combine practical design with state-of-the-art performance, summarized as follows:

Accuracy	0.025% FS for ranges 200 mbar to 700 bar
Ranges	2.5 mbar to 700 bar including gauge, absolute and differential versions
Integral Pneumatic Pressure Source	-850 mbar to 20 bar
Integral Hydraulic Pressure Source	0 to 400 bar
Measure	Pressure, mA, V, switch state (open/closed) and ambient temperature
Output:	Pressure, mA step, mA ramp, mA value
Energizing Supplies	10 and 24 VDC (not IS version)
Data Storage	92 Kbytes
Documenting (DPI 615 only)	Error analysis with pass/fail status and graphs. two-way PC communication for transferring procedures and results
Remote pressure sensors	Up to 10 digitally characterized sensors per calibrator

Simplified Operation

GE's knowledge of customer needs, combined with innovative design, results in high performance, multi-functional calibrators that are simple to use. The key to simple operation is the Task Menu. Specific operating modes such as P-I, switch test and leak test are configured at the touch of a button by menu selection.

Featuring highly reliable pneumatic and hydraulic assemblies and self-test routines, the DPI 610/615 Series can be relied upon time and time again for field calibration in the most extreme conditions.

The DPI 610 and DPI 615 have been designed for ease of use whilst meeting a wide range of application needs including calibration, maintenance and commissioning. The Intrinsically Safe versions, certified to European and North American standards for use in hazardous areas, reduce response times to breakdowns and emergencies by removing the need for 'Hot Permits' and gas detection equipment. This gives peace of mind to all those responsible for safety within hazardous areas.

The dual parameter display shows the Input and Output values in large clear digits. A unique integral handle provides a secure grip for on-site use in addition to a shoulder strap which is also designed to allow the instrument to be suspended for hands-free operation.

Any technician can use these calibrators without formal training, such as a novice on an emergency call out, or those familiar with the DPI 601. By selecting basic mode the calibrator is configured to source pressure and measure mA or V, with all non-essential keys disabled.

Dedicated Task Menu

The dedicated task key gives direct access to the task menu. Select the required test, for example P-I for a pressure transmitter, and with a single key press, the calibrator is ready.

Use the advanced mode for custom tasks and add to the user task menu for future use.

Some of the Capabilities

	P	mA	V	10 V*	24 V*	Switch	°C
Measure	✓	✓	✓	–	–	✓	✓
Source	✓	✓	–	✓	✓	–	–

P = Pressure
C = Local ambient temperature
** = Not IS*

Pressure Transmitter Calibration

The P-I task configures the DPI 610/615 Series to simultaneously display the output pressure and the input current. The pressure unit can be chosen to suit the transmitter and a 24 V supply is available for loop-power (not IS version).

For process transmitters reading in percentage, use % span to scale the pressure accordingly.

The DPI 610/615 Series pneumatic calibrator hand-pump can generate pressure from -850 mbar to 20 bar. The volume adjuster gives fine pressure setting and the release valve also allows gradual venting for falling calibration points.

Reduce the burden imposed by quality systems such as ISO 9000, simply store results in memory and leave both pen and calibration sheet back at the office.

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Pressure Switch Testing and Leak Testing

For switch set-up and fault finding, the display shows the output pressure and switch state open or closed. Continuity is declared by an audible signal.

Verify pressure switch performance using the automatic procedure. The DPI 610/615 Series displays the switch points and the contact hysteresis.

Leak test will check for pressure leaks prior to calibration or during routine maintenance. Define the test times or use the defaults and wait. The DPI 610/615 Series will report the start and stop pressures, the pressure change and the lead test.

Take a 'snapshot' of the working display; all details are stored in a numbered location for later recall.

Loop Testing and Fault Finding

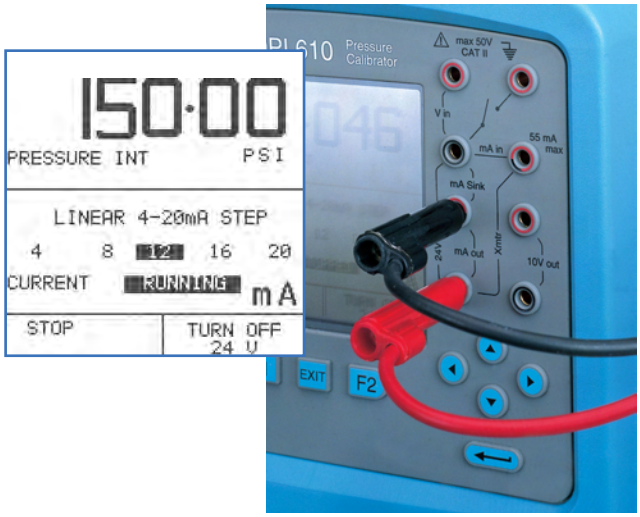
The DPI 610/615 Series can generate a continuous mA step or mA ramp output, allowing a single technician to commission control loops.

Feed the loop using mA step or mA ramp and at the control room, check the instrumentation.

Use mA value for alarm and trip circuit tests. Any mA output can be set and adjusted from the keypad.

Comprehensive process features aid flow and level measurement and help with troubleshooting. Select tare, maximum/minimum, filter, flow or %span and the function will be applied to the input parameter.

Save time in fault finding, by leaving the DPI 610/615 Series to monitor system parameters. Use periodic data log or the maximum/minimum process function to capture intermittent events.



Remote Pressure Sensors

By adding up to 10 external sensors (one at a time) the working ranges of the DPI 610 and DPI 615 can be extended. With modules from 2.5 mbar to 700 bar, sensors are available to suit most applications.

As a leading manufacturer of pressure sensors GE has applied the latest silicon technology and digital compensation techniques to develop these sensors.

Remote sensors offer a cost-effective means of expanding the capabilities of the DPI 610 and DPI 615, for example, in the following applications:

- Low pressure
- Pressure-to-pressure
- Differential pressure
- Wide range, high-accuracy
- Test-point monitoring
- To prevent cross contamination
- To configure pneumatic calibrators for high pressure hydraulic systems
- To configure hydraulic calibrators for low pressure pneumatic systems

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DPI 615 Portable Documenting Pressure Calibrator

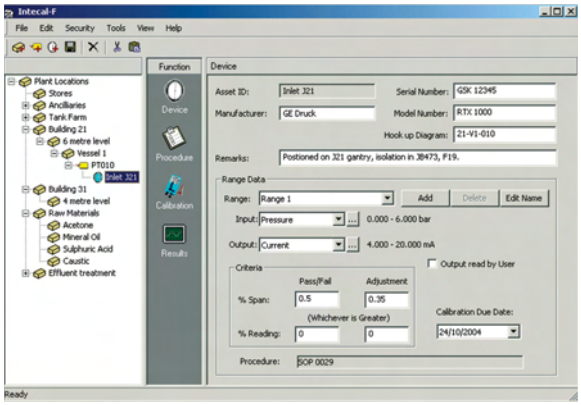
The DPI 615 adds powerful time saving and error eliminating features to the comprehensive functionality of the DPI 610. These include field error calculations with PASS/FAIL analysis and two way PC communications for downloading procedures and uploading results.

Reporting Errors in the Field
The DPI 615 calculates errors and reports the pass/fail status during field tests. Problems and failures can be analyzed graphically for immediate assessment and correction. This simple to use feature reduces calibration and maintenance times and eliminates human errors.

Completing the Paper Trail
It takes longer to fill out a calibration report, calculate the errors and assess the results than it does to calibrate the transmitter. With the DPI 615, documents can be quickly completed either on site or, at a more convenient time and location, by recalling the information from the DPI 615's memory.

Calibration Management Systems
When used in conjunction with calibration management software the DPI 615 greatly reduces the financial and resource burden imposed by quality systems such as ISO 9000. As work orders are issued, object lists and procedures are downloaded to the DPI 615. In the field these procedures configure the instrument for the tests. The errors and pass/fail status are reported and recorded in memory (as found or as left results) for later upload to the software. Calibration certificates can then be printed and plant maintenance systems updated. The whole documenting process is completed in a fraction of the time it takes using manual systems and without human error.

For information on Intecal calibration software please visit www.gesensing.com. The DPI 615 is also compatible with many third party software systems.



DPI 610/615 Specifications

DPI 610/615PC Pneumatic Calibrator

Hand-Pump
-850 mbar to 20 bar capability

Volume Adjuster
Fine pressure adjustment

Release Valve
Vent and controlled release

Pressure Port
G 1/8 female

Media
Most common gases

DPI 610/615LP Low Pressure Calibrator

Volume Adjuster
Dual piston for coarse/fine pressure setting

Release Valve
Vent and controlled release

Pressure Ports
G 1/8 female

Media
No corrosive gases

Please refer to the specifications page for more information.

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DPI 610/615HC Hydraulic Calibrator

Priming Pump
M5 female feed port

Shut-off Valve
Open for system priming

Screw Press
0 to 400 bar capability

Pressure Port
G 1/8 female

Media
Demineralized water and most hydraulic oils

DPI 610/615I Indicator

Release Valve
Vent and controlled release

Pressure Port
G 1/8 female

Media
Most common fluids compatible with stainless steel

Pressure Ranges

The DPI 610/615 PC, HC, LP and I include an integral sensor, the range of which should be specified from the list below. Up to 10 remote sensors (option B1) may also be ordered per calibrator.

Pressure Range	Pneumatic DPI 610PC/ DPI 615PC	Hydraulic DPI 610HC/ DPI 615HC	Indicator DPI 610I/ DPI 615I	Low DPI 610LP/ DPI 615LP	Remote Option (B1)	Accuracy %
±2.5 mbar	—	—	—	ULD	ULD	0.05 Span
±12.5 mbar	—	—	—	VLD	VLD	0.05 Span
±25 mbar	—	—	—	VLD	VLD	0.05 Span
±50 mbar	—	—	—	LD	LD	0.05 Span
±70 mbar	G	—	G		G or D	0.05 FS
±75 mbar	—	—	—	LD	LD	0.05 Span
±150 mbar	—	—	—	LD	LD	0.05 Span
±200 mbar	G	—	G	—	G or D	0.025 FS
±350 mbar	G or A	—	G or A	—	G,A or D	0.025 FS
±700 mbar	G or A	—	G or A	—	G,A or D	0.025 FS
1 bar (-1)	G or A	—	G or A	—	G,A or D	0.025 FS
2 bar (-1)	G or A	—	G or A	—	G,A or D	0.025 FS
3.5 bar (-1)	G or A	—	G or A	—	G,A or D	0.025 FS
7 bar (-1)	G or A	—	G or A	—	G,A or D	0.025 FS
10 bar (-1)	G or A	—	G or A	—	G,A or D	0.025 FS
20 bar (-1)	G or A[1]	—	G or A	—	G,A or D	0.025 FS
35 bar (-1)	—	—	G or A	—	G,A or D	0.025 FS
70 bar (-1)	—	—	G or A	—	G or A	0.025 FS
135 bar	—	SG or A	SG or A	—	SG or A	0.025 FS
160 bar	—	SG or A	—	—	—	0.025 FS
200 bar	—	—	SG or A	—	SG or A	0.025 FS
350 bar	—	—	SG or A[3]	—	SG or A	0.025 FS
400 bar	—	SG or A[2]	—	—	—	0.025 FS
700 bar	—	—	—	—	SG or A	0.025 FS

•Values in ( ) indicate negative calibration for gauge and differential ranges
•A = Absolute, D, LD, VLD and ULD = Differential, G = Gauge, SG = Sealed Gauge
•(1), (2) and (3) refer to over pressure
•Accuracy is defined as non-linearity, hysteresis and repeatability

Stability
0.015% of reading/annum
Except for ULD, VLD, and LD Ranges (see DPI 610/615 LP datasheet)

Temperature Effects (averaged and wrt 20°C)
±0.004% reading/°C, LD, ULD and VLD ±0.008% reading/°C

Line Pressure
- D = 35 bar, LD
- LD and VLD = 20 bar
- ULD = 5 bar

Line Pressure Span Shift
D = 0.5%/35 bar

Remote Sensor Media Compatibility
A, G, D (positive port) and SG stainless steel and hastelloy. D (negative port) stainless steel and silicon. ULD, VLD and LD non-corrosive gases only.

Overpressure
A, G, D and SG ranges safe to 2 x FS except [1]35 bar, [2]600 bar and [3]350 bar maximum

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Maximum Differential Pressure
ULD = 100 mbar, VLD = 500 mbar and LD = 1000 mbar

Electrical

Electrical Inputs

Input	Range	Accuracy	Resolution	Remarks
*Voltage**	±50 VDC (±30 VDC IS version)	±0.05% reading ±0.004% FS	100 µV	Autoranging, >10 MΩ
*Current**	±55 mA	±0.05% reading ±0.004% FS	0.001 mA	10Ω, 50 V maximum (30 V maximum IS version)
Temperature	-10°C to 40°C	±1°C	0.1°C	Local ambient
Switch	Open/closed	—	—	5 mA (1 mA IS version)

**Temperature coefficient ±0.0075% reading/°C wrt 20°C*

Electrical Outputs

Output	Range	Accuracy	Resolution	Remarks
Voltage	10 VDC (Not IS version)	±0.1%	—	Maximum load 10 mA
	24 VDC	±5%	—	Maximum load 26 mA
*Current**	0 to 24 mA	±0.05% reading ±0.01% FS	0.001 mA	—

**Temperature coefficient ±0.0075% reading/°C wrt 20°C*

For IS version Ui = 30 V maximum, Ii = 100 mA maximum, Pi = 1 W maximum and Uo = 7.9 V maximum

Electrical Stability
0.03% of reading/annum

Special Features

Pressure Units
25 scale units plus one user-defined

Function	mA Output						
4 to 20 mA linear	4	8	12	16	20	—	—
0 to 20 mA linear	0	5	10	15	20	—	—
4 to 20 mA flow	4	5	8	13	20	—	—
0 to 20 mA flow	0	1.25	5	11.25	20	—	—
4 to 20 mA valve	3.8	4	4.2	12	19	20	21

mA step
Continuous cycle at 10 sec intervals

mA ramp
Continuous cycle with configurable end values and 60 second travel time

Data Log
Multi-parameter with internal memory for 10,000 values. Variable sample period or log on key press

Snapshot
Paperless notepad. Stores up to 20 complete displays

RS232 Computer Interface (IS Version-Safe Area Use Only)
- DPI 610 unidirectional for uploading results to a PC
- DPI 615 bidirectional for downloading procedures and uploading results

Process Functions
Tare, maximum/minimum, filter, flow, % span

Languages
English, French, German, Italian, Portuguese and Spanish

Power Management
Auto power off, auto backlight off, battery low indicator and status on key press

Display

Panel
60 mm x 60 mm graphic LCD with backlight. (Backlight not available on IS version)

Readout
± 99999 capability, two readings per second

Environmental

Temperature
- Operating: -10°C to 50°C
- Calibrated: -10°C to 40°C

Humidity
0 to 90%, non-condensing

Sealing
IP54

Conformity
EN61010, EN50081-1, EN50082-1, CE marked

Intrinsically safe version: Supplied certified for use in hazardous areas
II 1 GEEx ia IIC T4 (-10°C to 50°C)
To EN50014:1997 + amds 1 and 2
EN50020:1994
EN50284:1999

Physical
Weight: 3 kg, size: 300 mm x 170 mm x 140 mm

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Power Supply
- Six 1.5 V 'C' cells, alkaline (up to 65 hours nominal use at 20°C for the standard version and 30 hrs for the IS version).
- For rechargeable batteries see Option A (20 hrs nominal use).

Options

(A) Rechargeable Batteries and Charger
Rechargeable battery pack to replace standard dry cells. Supplied with a universal input charger/battery eliminator, which allows the instrument to be used while charging. (Not available for IS version)

(B1) Remote Pressure Sensor
The DPI 610 and 615 has a second pressure channel that can be configured with up to 10 remote sensors (one at a time). For ease of use the sensors are fitted with an integral electrical connector and G 1/4 female pressure port. (ULD, VLD and LD ranges fitted to 6 mm tube connectors). Mating cable is required–Option (B2).

(B2) Mating Cable for Remote Sensors
A two meter mating cable for connecting remote sensors to the calibrator. At least one cable should be ordered when ordering Option (B1).

(C) 1/8 NPT Female Adaptor
A stainless steel adaptor and bonded seal to convert the standard G 1/8 female pressure port to 1/8 NPT female.

(D1) Intecal Basic
Developed to meet the growing demand on industry to comply with quality systems and calibration documentation. Test procedures are created in a Windows® based application and devices are grouped into work orders for transfer to the DPI 325, DPI 335, DPI 605, DPI 615, TRX II and MCX II. Calibration results are uploaded to the PC for analysis and to print calibration certificates.

(D2) Intecal Calibration Management Software
Builds on the concept of Intecal for Industry supporting both portable calibrators and on-line workshop instruments. Intecal is a simple-to-use calibration management software, which enables a high productivity of scheduling, calibration and documentation.

Visit www.gesensing.com for more information and free 30 day download.

(E1) Dirt/Moisture Trap
Where a clean/dry pressure media cannot be guaranteed, the IDT 600 dirt/moisture trap prevents contamination of the DPI 610/615 pneumatic system and eliminates cross-contamination from one device under test to another.

Accessories

The DPI 610/615 is supplied with carrying case, test leads, user guide and calibration certificate with data. The DPI 610HC also has a 250 ml polypropylene fluid container and priming tube.

Calibration Standards

Instruments manufactured by GE Sensing are calibrated against precision equipment traceable to international standards.

Related Products

- Portable field calibrators
- Laboratory and workshop instruments
- Pressure transducers and transmitters

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Ordering Information

Please state the following (where applicable):
1. Full DPI 610 or DPI 615 type number e.g DPI 610PC. For IS version use the suffix 'S' after the basic model number e.g. DPI 610S PC.
2. Integral pressure range gauge or absolute.
3. Options, including range for remote sensors.
4. Preferred language of user guide. (Refer to specifications for availability).
5. Supporting Services (order as separate items)

Options B1 and D should be ordered as separate line items.

Supporting Services

GE sensing provides Services to enhance, support and complement the Aviation GSE range. Our highly trained staff can support you, no matter where you are in the world. Further details can be found in www.gesensing.com/productservices/service.htm

Pressure measurement training
GE Sensing's training and education program offers comprehensive standard and customized curricula focusing on operation, application, maintenance and technology.

Quality training enables your engineers & technicians to optimize your business' performance.

Nationally accredited calibration
New product is supplied with factory calibration certificates with measurements traceable back to international standards. For applications where initial nationally accredited calibration certificates are required or periodic re-calibration is desired GE sensing can provide the solution.

Extended warranty terms
New product is supplied with an industry benchmarked initial warranty. For peace of mind particularly if final installation is months away from your product purchase, extend coverage on your equipment beyond the initial period up to 4 years term.
- Improved cost predictability
- Increased assurance

Multi-year calibration and repair services agreements
Multi-year service agreements increase cost predictability by providing fixed rates for extended periods.

Rental
GE's rental program offers a simple, quick and affordable solution for unexpected measurement need. Rentals allow customers to be fully operational when challenges that are not foreseen arise. We can provide measurement, test and calibration instruments, from simple pressure indicators to sophisticated air data test systems. The rental fleet is available from inventory, Factory tested & calibrated with a minimum rental period only 1 week. With larger scope undertakings any product can be made available for rental.

Maintenance
Should your equipment need maintenance our global repair facilities are happy to serve. Work is conducted by trained approved technicians, using controlled original equipment parts and procedures so restoring the product to design condition. This is particularly important with Intrinsically Safe products operated in hazardous environments and aviation ground support equipment

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