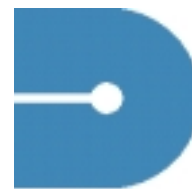


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Druck

DPI 610/615 Series

Portable Pressure Calibrators

- Ranges -14.7 through 10,000 psi
- Accuracy 0.025% FS all ranges
- Integral combined pressure/vacuum pump
- Dual readout: input and output
- 4 to 20 mA loop test: auto step and ramp
- Intrinsically safe version
- RS 232 interface and fully documenting version
- Remote pressure sensors



DPI 610/615 Series

Portable Pressure Calibrator

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.

Intrinsically Safe versions are available as complete maintenance tools and portable calibration standards for pressure instruments and control loops in hazardous 'Zoned' areas. Certified to BASEEFA and CENELEC standards, the DPI 610IS and DPI 615IS can 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.

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 RS 232 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 1 psi to 10,000 psi
Ranges:	1 psi to 10,000 psi including gauge, absolute and differential versions
Integral pneumatic Pressure source:	-14.5 to 300 psi
Integral hydraulic Pressure source:	0 to 6000 psi
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

Druck's knowledge of customer needs, combined with innovative design, results in high performance, multi-functional calibrators which 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.

Intrinsically Safe version supplied in a protective leather case



Set up key to determine default working parameters

Automatic zero correction for any input or output parameter

Input/output parameter selection keys with dedicated task key for instant access to the task menu

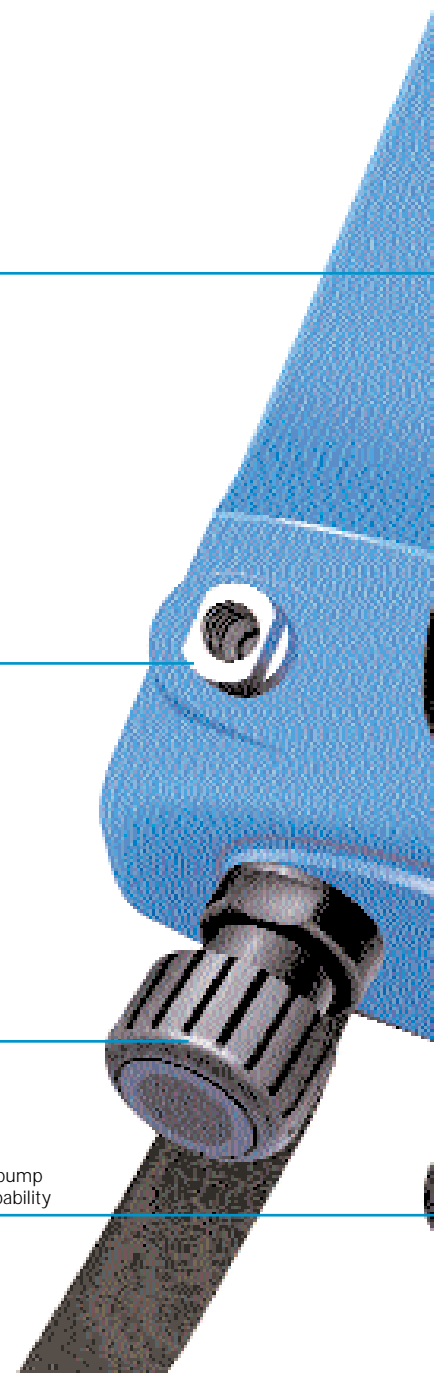
Documenting keys to store and recall screen 'snapshots', multi-channel data log, calibration procedures and results

Unique integral handle with compliant finger grip

Pressure input/output test point

Volume adjuster for fine pressure control

Combined pressure/vacuum pump with -22 inH₂O to 300 psi capability





Druck



Multi-lingual firmware supported by Linkpak-W and Intecal-W calibration software.

RS 232 and remote sensor connectors

Input and output connectors

Sealed tactile elastomeric keypad

Function keys used in response to display prompts

Range label for quick identification

Release valve allows controlled pressure venting

Rotating selector converts the pump to pressure or vacuum

Multi-purpose strap for carrying or hanging the calibrator



DPI 610/615 Series

Applications

DPI 610/615 PORTABLE PRESSURE CALIBRATORS

The DPI 610 and DPI 615 have been designed for ease of use while meeting a wide range of application needs including calibration, maintenance and commissioning. The Intrinsically Safe versions are certified to European and North American standards for use in 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

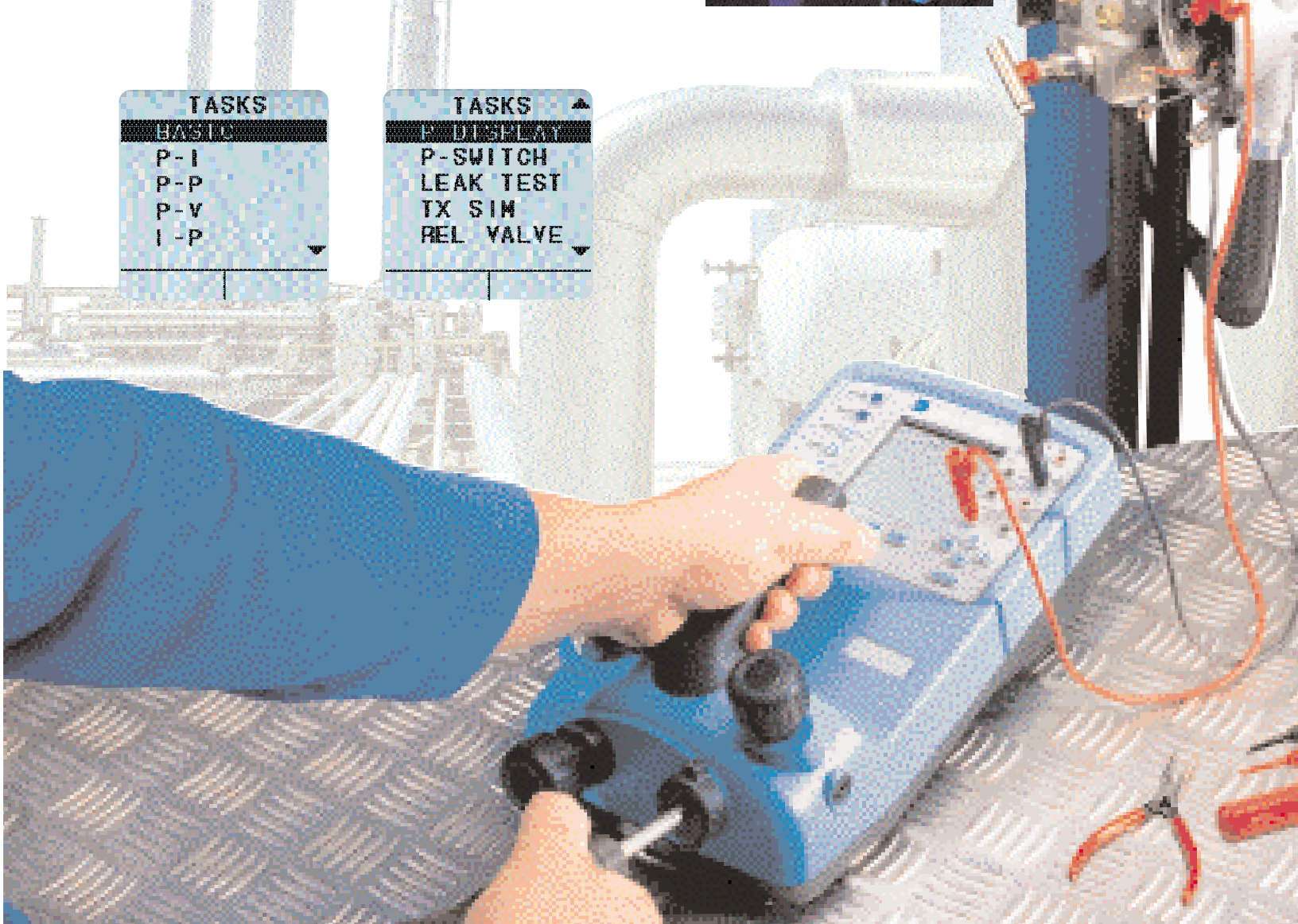
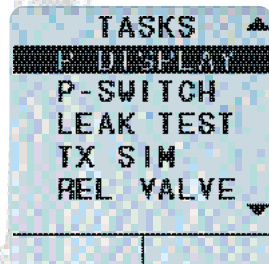
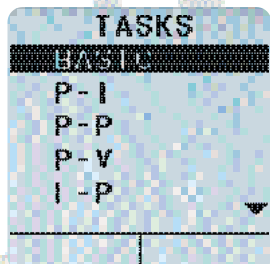
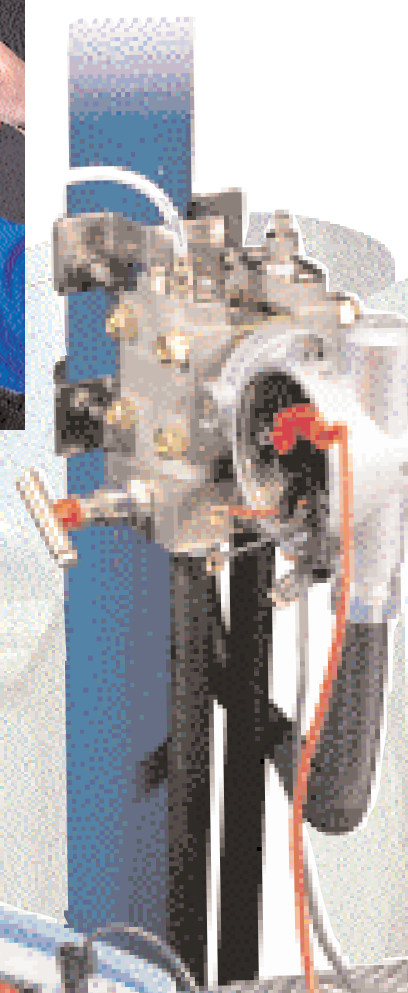
The dedicated **TASK** key gives direct access to the **TASK** menu. Select the required test, for example P-I for a pressure transmitter, and with a single key press, the calibrator is ready.

Use the **ADVANCED** mode for custom tasks and add to the **USER TASK** menu for future use.

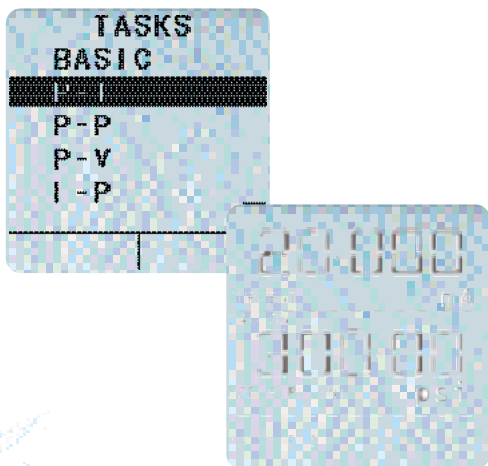
Some of the capabilities

	P	mA	V	10V*	24V*	Switch	°C
Measure	▯	▯	▯			▯	▯
Source	▯	▯		▯	▯		

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



PRESSURE TRANSMITTER CALIBRATION



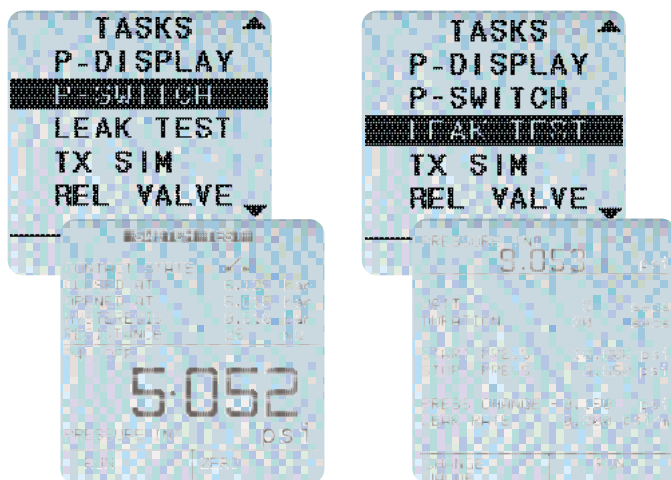
The **P-I** task configures the DPI 610/615 to simultaneously display the **OUTPUT** pressure and the **INPUT** current. The pressure unit can be chosen to suit the transmitter and a **24V** supply is available for loop power. (not IS version).

For process transmitters reading in percentage use **% SPAN** to scale the pressure accordingly.

The DPI 610/615 Pneumatic Calibrator hand-pump can generate pressure from -14.5 to 300 psi. 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.

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 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 will report the **START** and **STOP** pressures, the pressure **CHANGE** and the **LEAK RATE**.

Take a **'SNAPSHOT'** of the working display, all details are stored in a numbered location for later **RECALL**.

LOOP TESTING AND FAULT FINDING

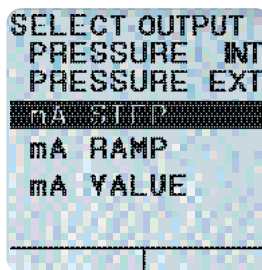
The DPI 610/615 can generate a continuous **mA STEP** or **mA RAMP** output, allowing a single technician to commission control loops.

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 trouble shooting. Select **TARE**, **MAX/MIN**, **FILTER**, **FLOW** or **%SPAN** and the function will be applied to the input parameter.

Save time fault finding, by leaving the DPI 610/615 to monitor system parameters. Use periodic **DATA LOG** or the **MAX/MIN** 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 1 psi to 10,000 psi sensors are available to suit most applications.

As a leading manufacturer of pressure sensors Druck 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

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.



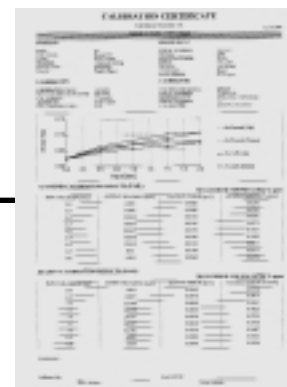
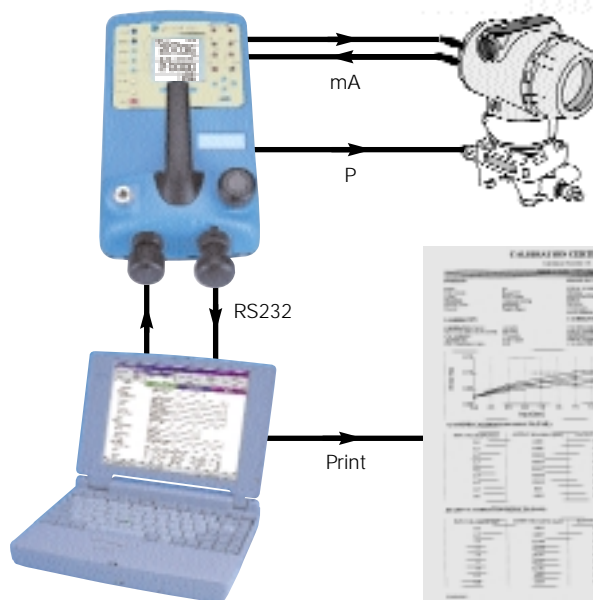
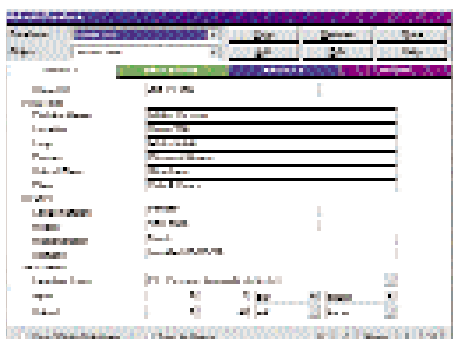
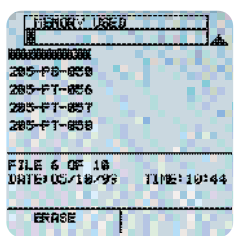
Completing the paper trail

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 more information on calibration software please refer to the Linkpak-W and Intecal-W data sheets or visit www.druck.com for free demonstration software. The DPI 615 is also compatible with many third party software systems.



DPI 610/615 Series



Standard Specification



PNEUMATIC CALIBRATOR DPI 610/615PC

Hand-pump
-22 inHg to 300 psi capability

Volume adjuster
Fine pressure adjustment

Release valve
Vent and controlled release

Pressure port
1/8 NPT (female)

Media
Dry, non-corrosive, non-conductive gasses compatible with 316 stainless steel, Hastelloy C276, BUNA-N and nylon



LOW PRESSURE CALIBRATOR DPI 610/615LP

Volume adjuster
Dual piston for coarse/fine pressure setting

Release valve
Vent and controlled release

Pressure ports
1/8 NPT (female)

Media
No corrosive gases
Please refer to DPI 610/615 LP Series datasheet for full specification.



HYDRAULIC CALIBRATOR DPI 610/615HC

Priming pump
Feeds from external source

Shut-off valve
Open for system priming

Screw press
0 to 6000 psi capability

Pressure port
1/8 NPT (female)

Media
DeminerIALIZED water and most hydraulic oils
(DPI 610 HC not available in IS version)



INDICATOR DPI 610/615I

Release valve
Vent and controlled release

Pressure port
1/8 NPT (female)

Media
Most common fluids compatible with stainless steel

PRESSURE RANGES

The DPI 610PC, HC 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	Remote Option (B1)	Accuracy %FS
1 psi (-1)	G		G	G or D	0.025
2.5 psi (-2.5)	G		G	G or D	0.025
5 psi (-5)	G or A		G or A	G, A or D	0.025
10 psi (-10)	G or A		G or A	G, A or D	0.025
15 psi (-15)	G or A		G or A	G, A or D	0.025
30 psi (-15)	G or A		G or A	G, A or D	0.025
50 psi (-15)	G or A		G or A	G, A or D	0.025
100 psi (-15)	G or A		G or A	G, A or D	0.025
150 psi (-15)	G or A		G or A	G, A or D	0.025
300 psi (-15)	G or A		G or A	G, A or D	0.025
500 psi (-15)	G or A		G or A	G, A or D	0.025
1000 psi (-15)	G or A		G or A	G or A	0.025
1500 psi			SG or A	SG or A	0.025
2000 psi			SG or A	SG or A	0.025
3000 psi		SG or A	SG or A	SG or A	0.025
5000 psi		SG or A	SG or A	SG or A	0.025
6000 psi		SG or A	SG or A	SG or A	0.025
10000 psi		SG or A	SG or A	SG or A	0.025

Values in () indicate negative calibration for gauge and differential ranges
A = Absolute, D = Differential (500 psi line pressure), G = Gauge, SG = Sealed Gauge
ⓐ and ⓑ refer to over pressure.

Accuracy is defined as non-linearity, hysteresis and repeatability.

Span Shift

0.5%/500 psi of line pressure for differential ranges.

Temperature Effects

±0.002% reading/°F averaged over -15° to 105°F and w.r.t. 68°F.

Remote Sensor Media

Stainless steel and hastelloy compatibility.
Negative Differential: Stainless steel and quartz compatibility.

Overpressure

Safe to 2 x FS. (except ⓐ 500 psi max. ⓑ 9000 psi max. ⓒ 5000 psi max.)
ⓐ, ⓑ and ⓒ refer to pressure range table.

ELECTRICAL INPUTS

Input	Range	Accuracy	Resolution	Remarks
Voltage*	±50 VDC (±30 VDC IS version)	±0.05%Rdg. ±0.004%FS	100µV max	Autoranging, >10MΩ
Current*	±55mA	±0.05%Rdg. ±0.004%FS	0.001mA	10ohm, 50V max.
Temperature	15° to 105°F	±2°F	0.2°F	Local ambient
Switch	Open/Closed			5mA whetting

*Temperature coefficient ±0.004% reading/°F w.r.t. 68°F.
For IS version Ui = 30V max Li = 100mH max Pi = 1W max

ELECTRICAL OUTPUTS

Output	Range	Accuracy	Resolution	Remarks
Voltage	10 VDC 24 VDC	±0.1% ±5%		Max. load 10mA Max. load 26mA
Current*	0 to 24mA	±0.05%Rdg. ±0.1%FS.	0.001mA	

*Temperature coefficient ±0.004% reading/°F w.r.t. 68°F.
For IS version Ui = 30 V max Li = 100mH max Pi = 1W max Uo = 7.9 V max

SPECIAL FEATURES

Pressure units

25 scale units plus one user defined.

mA step

Continuous cycle at 10 sec intervals.

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

mA ramp

Continuous cycle with configurable end values and 60 sec 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.

Computer interface

RS 232.

Process functions

Tare, max/min, filter, flow, % span.

Language

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

2.36 x 2.36 inch graphic LCD with backlight. (Backlight not available on IS version)

Readout

± 99999 capability, 2 readings per second.

ENVIRONMENTAL

Temperature

Operating: 15° to 120°F

Calibrated: 15° to 105°F

Humidity

0 to 90%, non-condensing.

Sealing

Generally to NEMA 12 (IP54)

Conformity

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

Intrinsically safe version : Supplied certified for use in hazardous areas.

To CAN/CSA-E79-11-95 and CAN/CSA E79-0-95 (Class 1, Div I, groups A, B, C and D)

Physical


6.6 lb, 11.8 x 6.7 x 5.5 inches

Power supply

6 x 1.5 V 'C' cells, alkaline (up to 65 hours nominal use at 68°F rechargeable battery pack and charger are supplied as standard (20 hours nominal use)). Rechargeable batteries and charger/power supply not available for the IS version which uses alkaline batteries only.

Options and Related Products

OPTIONS

- (A) Spare rechargeable batteries and charger**
Rechargeable battery pack (P/N 191-A022) and 110 Vac charger/power supply (P/N 191-A023). A 220 Vac charger/power supply is also available (P/N 191-129). (Not available for IS version)
- (B1) Remote pressure sensor**
The DPI 610 has a second pressure channel which 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 1/4" NPT (female) pressure ports.
Please refer to specifications for ranges and associated accuracy. At least one mating cable is required per DPI 610 when ordering remote pressure sensors - see Option (B2).
- (B2) Mating cable for remote sensors**
A 6 ft mating cable for connecting remote sensors to the DPI 610. At least one cable should be ordered when ordering Option (B1).
- (B3) Calibration of special remote pressure sensor (150mV max)**
(Not available on Intrinsically Safe version)
- (D2) Intecal-W calibration database software (P/N ICDPI)**
Builds on the basic concept of Linkpak-W supporting both portable field calibrators and on-line workshop calibrators; manual data entry is also a key feature for recording data. Intecal-W is a simplified calibration management software which enables a high productivity of calibration scheduling work and documentation. Device information, calibration procedures and results are stored in an instrument database. Multiple databases can be created for organizing client accounts, processes or areas. Extensive management features include a database search engine, time based calibration due queries and standard reports.
Visit www.druck.com for an Intecal-W demonstration
- 
- (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 is supplied with carrying case, test leads, user guide, calibration certificate with data, rechargeable battery pack and charger/power supply as standard. The DPI 610HC also has a 8 oz. polypropylene fluid container and priming tube. (Alkaline batteries supplied for the IS version).

Continuing development sometimes necessitates specification changes without notice.

Druck is an ISO 9001 registered company.



CALIBRATION STANDARDS

Instruments manufactured by Druck are calibrated against precision equipment traceable to the National Institute of Standards and Technology (NIST).

RELATED PRODUCTS

Laboratory and workshop instruments

Druck also manufactures a comprehensive range of pressure indicators and controllers. Included in this range are the Pressurements industrial deadweight testers and the Ruska high precision controllers and primary standard piston gauges.

Portable field calibrators

Druck manufactures a wide range of portable pressure, temperature and electrical field calibrators. A selection of these are shown below.

Pressure transducers and transmitters

The DPI 610 is the ideal calibration and maintenance tool for Druck transducers and transmitters, utilized in a variety of aerospace, automotive, depth level, pharmaceutical and process applications. Please refer to manufacturer for further information on related products.



ORDERING INFORMATION

Standard complete packages are available for ranges 5, 30, 100 and 300 psig. These include user guide, test leads, pressure/vacuum pump, volume adjuster, release valve, carrying case, rechargeable battery pack and charger. When ordering, please state type, pressure range and "complete"; e.g. DPI 610PC, range 30 psig complete.

For other ranges please state the following (where applicable):

1. DPI 610 type number i.e. DPI 610PC.
For IS version use the suffix 'S' after the basic model number e.g. DPI 610S PC or DPI 610S I. (Intrinsically safe hydraulic version not available)
2. Integral pressure range gauge or absolute.
3. Options, including range for remote sensors.

Note: Options B and C should be ordered as separate line items.