DPI 610

Portable Pressure Calibrator

- Ranges -14.7 through to 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
- Data storage with RS 232 interface

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A new standard for portable pressure calibrators

The technically advanced Druck DPI 610 portable calibrator is the culmination of many years of field experience with the company’s DPI 600 series of calibrators.

This one self-contained, battery powered package contains a pressure generator, fine pressure control, device energizing and output measurement capabilities, as well as facilities for 4 to 20 mA loop testing and data storage. The rugged design, sealed generally to NEMA 12 (IP54), is ergonomically designed such that the pressure pump can be operated and test leads connected without compromising the visibility of the large dual parameter display. A single piece elastomeric keypad, which forms the user interface, excludes the weather and combines a high quality tactile feel with exceptional service life. The mA step and ramp outputs and built-in continuity tester extend the capabilities to include the commissioning and maintenance of control loops.

A second pressure channel for remote sensors is standard on all instruments and with over 40 sensors to choose from, provides a cost-effective way of increasing the calibrator’s flexibility to suit different applications.

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, with data storage and RS 232 interface, can reduce the calibration times and eliminate data recording errors.

Improved performance

The DPI 610 combines practical design with state of the art performance, summarized as follows:

- **Accuracy:** 0.025% FS for all pressure ranges
- **Ranges:** -14.7 to 10,000 psi including gauge absolute and differential versions
- **Integral pneumatic pressure/vacuum source:** -22 inHg to 300 psi
- **Integral hydraulic pressure source:** 0 to 6000 psi
- **Measure:** Pressure, mA, V, switch state (open/closed) and ambient temperature
- **Source:** Pressure, mA step, mA ramp, mA value
- **Energizing supplies:** 10 and 24 Vdc
- **Data storage:** 10,000 values
- **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 a high performance, multi-functional calibrator which is simple to operate.

The key to the simple operation of the DPI 610 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 simple menu selection. This intuitive approach ensures correct set up of the calibrator for the job at hand and leaves the operator free to concentrate on his work.

The operating system can work in several languages and in 25 different pressure scales, including a special user defined unit. Process features such as max/min, filter and % span facilitate the measurement of fluctuating signals and flow parameters.

The DPI 610 which includes a new, highly reliable, pneumatic assembly and self-test routines, can be relied upon time and time again for field calibration in the most extreme conditions.
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 and calibration records.

Unique integral handle with compliant finger grip.

Pressure input/output test point.

Volume adjuster for fine pressure control.

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

Multi-purpose strap for carrying or hanging the calibrator.

Multi-lingual firmware supported by Linkpak-W and 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.
The DPI 610 has been designed for ease of use while meeting a wide range of application needs including calibration, maintenance and commissioning. 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 the DPI 610 without formal training, such as a novice on an emergency call out, or those familiar with the DPI 610. By selecting basic mode the DPI 610 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 DPI 610 is ready.

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

Some of the capabilities

<table>
<thead>
<tr>
<th>Measure</th>
<th>P</th>
<th>mA</th>
<th>V</th>
<th>10v</th>
<th>24v</th>
<th>Switch</th>
<th>°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

P = Pressure  F = Local ambient temperature
PRESSURE TRANSMITTER CALIBRATION

The P-I task configures the DPI 610 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.

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

The DPI 610 Pneumatic Calibrator hand-pump can generate pressure from -22 inHg 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 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 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 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 to monitor system parameters. Use periodic DATA LOG or the MAX/MIN process function to capture intermittent events.
The working range of the DPI 610 can be extended by adding up to 10 external sensors (one at a time). With ranges from -14.7 to 10,000 psi and all welded stainless steel construction, sensors can be chosen to suit many applications.

As a leading manufacturer of pressure transducers Druck has applied the latest technology and production techniques to develop these sensors. The devices give the same high accuracy and temperature performance as the internal sensors.

Remote sensors offer a cost effective means of expanding the capabilities of the DPI 610, for example:

- For pressure to pressure applications
- For differential applications
- To maintain high accuracy over a wide pressure range
- To configure pneumatic calibrators for use with high pressure hydraulic systems.
- To configure hydraulic calibrators for use with low pressure pneumatic systems
- For periodic monitoring at system test points

**CALIBRATION FOR ISO 9000**

Commercial considerations and quality systems put increasing demands on instrument technicians to be more efficient. The DPI 610 reduces calibration time and provides accurate paperless data recording. Back at the office the data can be viewed on screen for accurate analysis and documenting.

The DPI 610 has an inbuilt RS 232 interface, compatible with Linkpak W Calibration Software and Intecal Calibration Management Software. Data can be transferred directly from the DPI 610 for analysis, certificate printing and archiving. Exporting facilities are provided for wordprocessor and spreadsheet applications or in-house maintenance systems.
PNEUMATIC CALIBRATOR DPI 610PC
- Pressure/vacuum pump: -22 inHg to 300 psi capability
- Volume adjuster: Fine pressure adjustment
- Release valve: Vent and controlled release
- Pressure port: 1/4" NPT (female)
- Media: Dry, non-corrosive, non-conductive gases compatible with 316 stainless steel and Hastelloy C276, BUNA-N and nylon.

HYDRAULIC CALIBRATOR DPI 610HC
- Priming pump: Feeds from external source
- Shut-off valve: Open for system priming
- Screw press: 0 to 6000 psi capability
- Pressure port: 1/4" NPT (female)
- Media: Demineralized water and most hydraulic oils

INDICATOR DPI 610I
- Release valve: Vent and controlled release
- Pressure port: 1/4" NPT (female)
- Media: Most common fluids compatible with stainless steel and Hastelloy C276.

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.

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Pneumatic DPI 610PC</th>
<th>Hydraulic DPI 610HC</th>
<th>Indicator DPI 610I</th>
<th>Remote Option (B1)</th>
<th>Accuracy % F.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 psi (-1)</td>
<td>G</td>
<td>G</td>
<td>G or D</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>2.5 psi (2.5)</td>
<td>G</td>
<td>G</td>
<td>G or D</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>5 psi (-5)</td>
<td>G or A</td>
<td>G or A</td>
<td>G, A or D</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>10 psi (-10)</td>
<td>G or A</td>
<td>G or A</td>
<td>G, A or D</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>15 psi (-15)</td>
<td>G or A</td>
<td>G or A</td>
<td>G, A or D</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>30 psi (-30)</td>
<td>G or A</td>
<td>G or A</td>
<td>G, A or D</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>50 psi (-50)</td>
<td>G or A</td>
<td>G or A</td>
<td>G, A or D</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>100 psi (-100)</td>
<td>G or A</td>
<td>G or A</td>
<td>G, A or D</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>500 psi (-500)</td>
<td>G or A</td>
<td>G or A</td>
<td>G, A or D</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>1000 psi (-1000)</td>
<td>G or A</td>
<td>G or A</td>
<td>G, A or D</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>2000 psi</td>
<td>SG or A</td>
<td>SG or A</td>
<td>SG or A</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>2500 psi</td>
<td>SG or A</td>
<td>SG or A</td>
<td>SG or A</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>3000 psi</td>
<td>SG or A</td>
<td>SG or A</td>
<td>SG or A</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>5000 psi</td>
<td>SG or A</td>
<td>SG or A</td>
<td>SG or A</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>6000 psi</td>
<td>SG or A</td>
<td>SG or A</td>
<td>SG or A</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>10000 psi</td>
<td>G or A</td>
<td>G or A</td>
<td>G, A or D</td>
<td>0.025</td>
<td></td>
</tr>
</tbody>
</table>

Values in ( ) negative calibration for gauge and differential ranges
A = Absolute, D = Differential (500 psi in pressure), G = Gauge, SG = Sealed Gauge
* Values in ( ) refer to over pressure.
Accuracy is defined as non-linearity, hysteresis and repeatability
Span Shift: 0.5% 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 compatibility.
Negative Differential: Stainless steel and quartz compatibility.
Overpressure: Safe to 2 x F.5 (except 550 psi max. 9000 psi max. 10000 psi max. 4600 psi max. 7250 psi max. 13000 psi max.).
* Values in ( ) refer to pressure range table.

ELECTRICAL INPUTS

<table>
<thead>
<tr>
<th>Input</th>
<th>Range</th>
<th>Accuracy</th>
<th>Resolution</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage*</td>
<td>±50Vdc.</td>
<td>±0.05% Rdg.</td>
<td>±0.004% F.S.</td>
<td>1000V ±0.001mA</td>
</tr>
<tr>
<td>Current*</td>
<td>±65mA</td>
<td>±0.05% Rdg.</td>
<td>±0.004% F.S.</td>
<td>±2mA</td>
</tr>
<tr>
<td>Temperature Switch</td>
<td>15° to 105°F</td>
<td>Open/Closed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switch</td>
<td>Open/Closed</td>
<td>5mA whetting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Temperature coefficient ±0.004% reading°F w.r.t. 68°F.

ELECTRICAL OUTPUTS

<table>
<thead>
<tr>
<th>Output</th>
<th>Range</th>
<th>Accuracy</th>
<th>Resolution</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>10Vdc</td>
<td>±0.1%</td>
<td>-</td>
<td>Max. load 10mA</td>
</tr>
<tr>
<td>Current*</td>
<td>0 to 24mA</td>
<td>±0.06% Rdg.</td>
<td>±0.01% F.S.</td>
<td>±0.001mA</td>
</tr>
</tbody>
</table>

* Temperature coefficient ±0.004% reading°F w.r.t. 68°F.

SPECIAL FEATURES

Pressure units: 25 scale units plus one user defined.
mA step: Continuous cycle at 10 sec intervals.
mA ramp: Continuous cycle with configurable 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.

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: EN50081-1, CE marked.

Physical: 6.6 lb, 11.8 x 6.7 x 5.5 inches.

Power supply: Battery powered 6 "C" cells, 65 hours nominal use at 68°F. The unit will operate with 110 Vac 60 Hz and allow battery pack to recharge. When batteries become exhausted, a low battery appears on the display.
Druck Incorporated

Druck DPI 610 Portable Pressure Calibrator
ThermX Southwest  800-284-3769  www.thermx.com