

DPI 611 hand-held pressure calibrator

This fully self-contained pressure test and calibration system combines pressure generation, signal measurement and loop power to provide all the convenience of the Druck DPI 610/615 and yet it's half the size, twice as accurate and easier to use.

Druck
a Baker Hughes business

DPI 611 hand-held pressure calibrator

The DPI 611 is the fourth generation in the DPI 600 family, which was first introduced in 1984. The DPI 600 family revolutionized test and calibration by providing all the tools for pressure generation and signal measurement in self-contained portable packages. The DPI 600 soon became the industry workhorse and today it is simply known as the "Druck."

Building on the technical legacy and more than three decades of experience in pressure measurement and calibration, the DPI 611 provides all the convenience and reliability of a true "Druck," yet offers twice the performance in a product half the size.

- 50% smaller and 33% lighter than the DPI 610
- Generates 0 to 20 bar/300 psi in less than 30 seconds
- Creates 95% vacuum
- Pressure measurement is twice as accurate
- Three times better electrical accuracy
- Simplified touch screen interface with application DASHBOARD, quick TASK selection and FAVOURITES storage
- Fast, three touch set-up for any application
- Calculates PASS/FAIL errors, documents results and interfaces with calibration software
- Provided with one free 4Sight2 Lite calibration software license



Precision engineering

Performance is a function of precision engineering.

The innovative design of the DPI 611 pressure system can only achieve efficient generation and precise control through the use of carefully selected materials with high tolerance machining and perfect finishes.

The choice of case material and precision moulding ensures that the DPI 611 is both rugged and weatherproof.

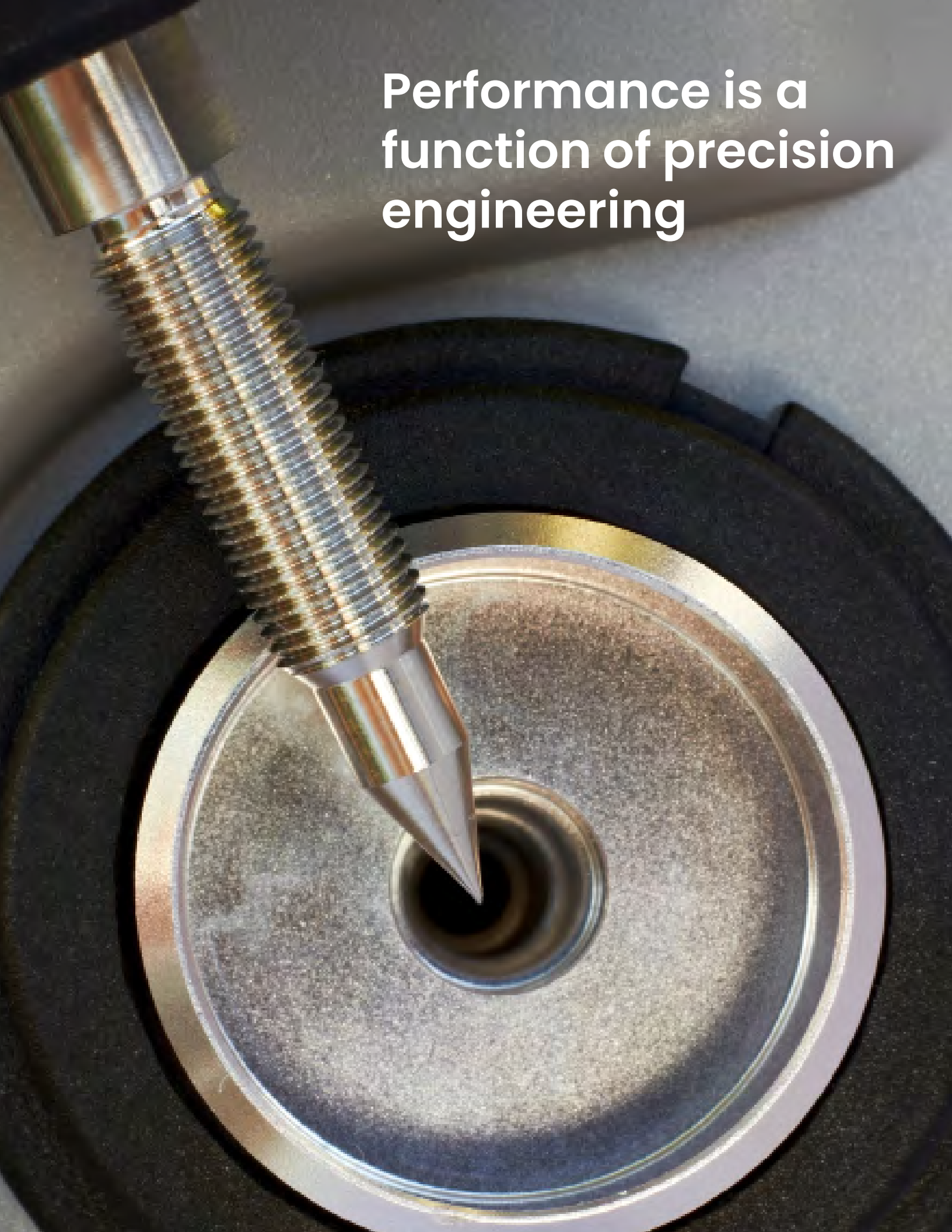
State-of-the-art analogue and digital microelectronics contribute both accuracy and processing power to provide a class leading pressure and electrical capability with a unique simple-to-use interface.









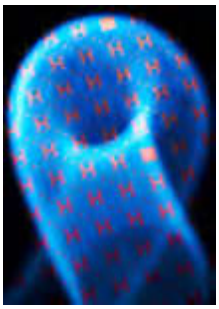

Performance is a function of precision engineering

Pressure generation

With the DPI 611 you can generate from 95% vacuum to 20 bar/300 psi pneumatic pressure. A simple selector lets you convert from vacuum to pressure and with a few stokes of the pump, you will generate the required pressure. Fine adjustment is made with the built-in volume adjuster and falling calibration points are achieved with the precision vent valve.

- The redesigned mechanical system provides significantly improved performance, allowing you to generate 20 bar/300 psi while holding the instrument in one hand.
- It's also quicker, taking just 30 seconds to generate maximum pressure even with a one meter hose connecting the device.
- Ergonomic design, a hand strap you can position on the left or right and a soft over-moulding provide you with a firm grip for hand-held use and prevent the instrument from sliding when on a test bench.
- The proven mechanical design provides a simple-to-use, dependable system without the pitfalls of electromechanical devices; namely, poor reliability, regular servicing, dependence on battery condition and long pressure cycle times.

Pressure accuracy



Using advanced silicon technology, the digitally corrected "Druck" pressure sensor achieves 0.0185% FS accuracy compared with 0.025% FS for the DPI 610/615.

Taking stability and temperature errors into account over the one year calibration period, the DPI 611 is more than twice as accurate as its predecessor. This is expressed as a total uncertainty to give you complete confidence in the measurement accuracy between annual calibrations.

Electrical capability

The DPI 611 retains the comprehensive electrical measurement and sourcing capability of the DPI 610 series, but has better accuracy and simplified connections.

	P_1	P_2 IDOS	mA	V	mV	10 Vdc	24 V	Switch
Measure	✓	✓	✓	✓	✓			✓
Source	✓		✓			✓	✓	

P2 IDOS is an optional external pressure sensor.

- The DPI 611 mA measurement accuracy includes one year stability, temperature errors and calibration uncertainty, making it three times more accurate than the DPI 610 series.
- For ease of use the electrical connectors have been rationalized to four 4mm sockets.

Truly hand-held

The DPI 611 is truly a hand-held pressure calibrator, being 50% smaller and 33% lighter than the DPI 610.

- Redesign of the pressure assembly has resulted in a more efficient and higher performance system that is both smaller and lighter.
- State-of-the art microelectronics has reduced the size of the PCA (printed circuit assembly) and lowered the power consumption, which in turn means smaller batteries.
- Even though the instrument is much smaller, the touch display is almost twice as large for clear viewing and more information.



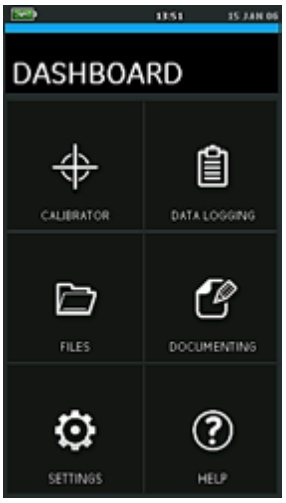


Quick-to-fit pressure connections

Making a leak-tight pressure connection in the field is inevitably frustrating. The DPI 611 comes with a quick-to-fit adapter system that has a number of advantages over conventional methods:

- All adapters, hoses and accessories, including the dirt moisture trap, are quick and simple to fit. No tools or sealing are required and connections are leak free.
- Damaged adapters are very simply replaced and there's no repair downtime.
- Making leak tight connections wastes time and for several joints, it takes longer than a calibration. The DPI 611 system is proven to significantly reduce set-up time.





Simplified touch screen

The DPI 611 uses the same interface design as the unique and award-winning DPI 620 Genii (Measures magazine innovative product of 2014).

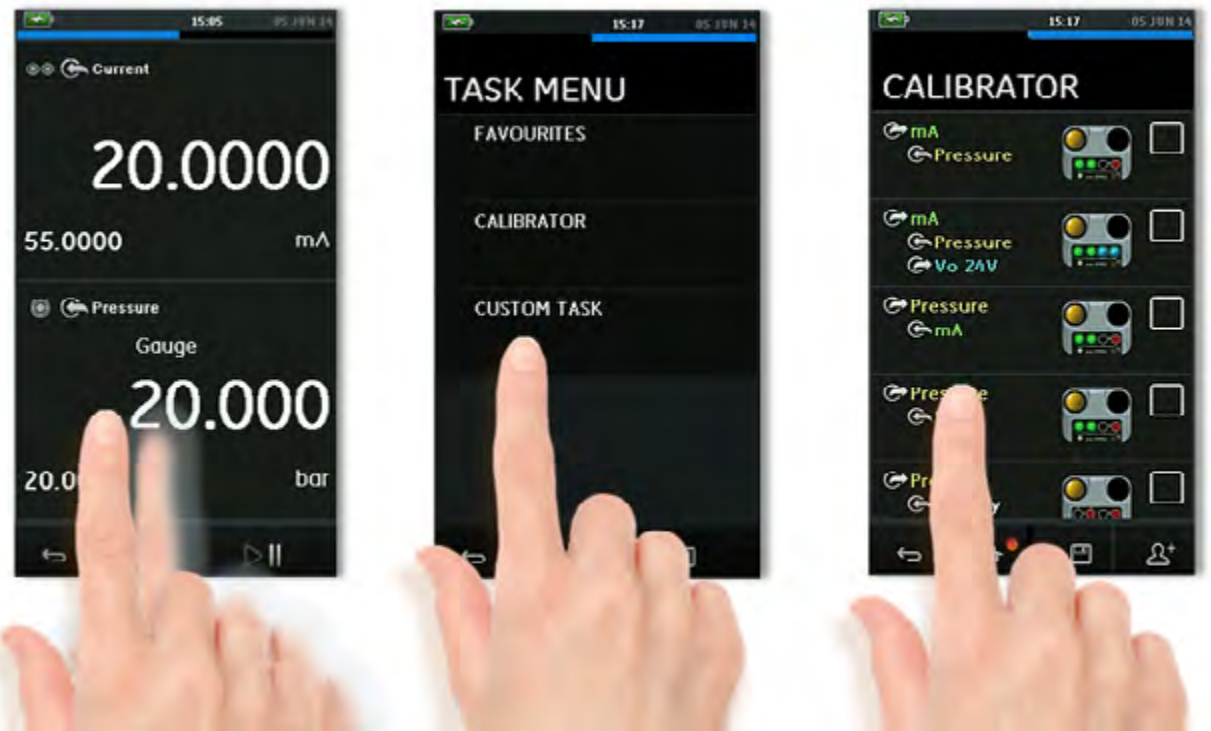
- The DASHBOARD allows quick application selection without menus or special keys - just tap the app.
- The TASK menu provides a library of popular configurations. From the calibrator screen three simple gestures completely reconfigure the DPI 611 for the next job.
- From the FAVOURITES menu it's even quicker to access regularly used and customized TASKS.
- The DPI 611 touch screen only shows function keys when they're required, making it quicker and simpler to use than complex keypads with special function keys and key combinations.
- Application connection diagrams can be viewed on screen

Easy as 1, 2, 3

1) Swipe from right to left

2) Touch to make a selection

3) Touch to select the TASK



DPI 611 external features



Fully documenting

The DPI 611 is a simple-to-use "everyday" tool for maintaining and calibrating pressure instruments. It also has the advanced features of the DPI 620 Genii for automating calibration procedures, calculating errors and interfacing with PCs and calibration and maintenance systems.

- Automated calibration procedures
- PASS/FAIL error analysis
- Multi-channel data logging
- 8 GB (nominal) user memory
- Connectivity with leading calibration and maintenance software including 4Sight2 from Druck

Automated calibration procedures

Procedures generated by calibration management software can be downloaded to the DPI 611. These procedures are presented as a list of work orders and when selected, each one will configure the DPI 611 to calibrate a specific device. The procedures run automatically and all you have to do is set the pressure. The data is recorded digitally ready to be uploaded to the management software.

Using the DPI 611 with automated procedures significantly reduces the time taken to calibrate a device, from typically 40 minutes to less than 10 minutes including the time to set-up. Further time is saved when assessing the data and creating calibration reports because these operations are automated within the software.

PASS/FAIL error analysis

Error analysis calculates the error of the device being tested and reports a pass or fail. The error is displayed live allowing zero and span adjustments to be assessed as they are made.

Multi-channel data logging

The DPI 611 can record data from three channels simultaneously by manually touching a record button or automatically at a user set interval. Data can be reviewed on screen or the data file can be transferred to a PC for further analysis.

Connectivity with leading calibration and maintenance software

The DPI 611 integrates with leading calibration and maintenance software including 4Sight2 from Druck. Typically such applications provide an automated and paperless solution to calibration and realise significant benefits including reduced operating costs, regulatory compliance and improved process efficiency.

4Sight2 calibration and maintenance software



4Sight2 is the new state-of-the-art, integrated, web-based Software as a Service (SaaS) calibration manager.

- Maintains compliance with industry standards
- Provides a full-time and date stamped audit trail
- Significantly reduces your operating costs
- Provides automated paperless solutions
- Ensures that you are always ready for an audit
- Optional web hosting means no IT overhead

4Sight2 calibration and maintenance software gives you total control for all your calibration and maintenance tasks.

- Software
- Mobile solutions
- Workshop solutions
- Global service

4Sight2 calibration management software will help you comply with regulations, reduce running costs and improve process efficiency. As your calibration manager, its automated workflow, robust data and complete traceability will significantly reduce calibration and maintenance costs.

Please visit www.bit.ly/4Sight2-Website for more information. One free 4Sight2 Lite license is provided free of charge with each DPI611 Hand-held Pressure Calibrator.

Advanced features

Step and ramp mA output: Simply configured for simulating transmitter outputs into control loops, testing valve positioners and checking safety systems. The function has programmable end points, manual or automatic sequencing and the following options for quick set-up:

- % step: The step size is defined as a percentage. For example 25% provides five test points of 4, 8, 12, 16 and 20 mA.
- Defined step: The step size is defined as a value in mA.
- Span check: Toggles between two end points, for example, 4 and 20 mA for checking zero and FS.
- Ramp: A linear ramp between two end points with programmable travel and dwell times is perfect for dynamically testing switches.



25% step manual advance



RAMP automatic cycle

Nudge: Simply used to make a small incremental change to a mA output using up/down keys. This is great for determining trip values.

Switch test: Automates the capture of pressure switch actuation and de-actuation values and calculates the hysteresis.



Pressure leak test: This automated procedure for detecting leaks and determining leak rates has programmable settle and run times. The start and end pressures are reported along with the pressure change and leak rate.



Max/min: Captures maximum and minimum values and calculates the mean.

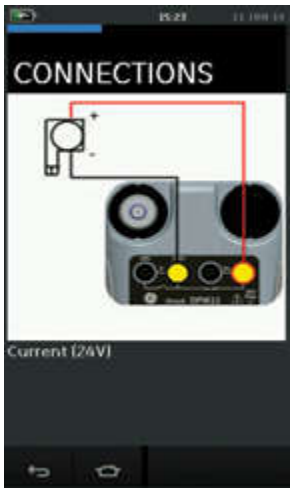
Relief valve: Captures the venting pressure of a relief valve.

Scaling: Scales the measured value into a process value. For example, mA expressed as a %. Flow correction is available for scaling differential flow transmitter outputs.

Pressure Resolution: Adjustable from four to seven digits; this matches the displayed value to that of the test device for easy comparison.

Help: The DPI 611 is provided with a multi-lingual quick user guide to get you up and running without delay. For convenience, the full manual is stored digitally within the instrument and can be transferred to a PC for viewing or printing.

In the help application you can also view wiring connection diagrams.




mA-
mA+
V
Vo
mA 24V
Druck DPI611
30V MAX
21:28
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DASHBOARD
CALIBRATOR
DATA LOGGING
FILES
DOCUMENTING

Specifications

Pressure (gauge ranges referenced to atmosphere)				
Pressure Range		Accuracy[1]	Total uncertainty[2] 10° to 30°C (50° to 86°F) for one year	Over-pressure[3]
bar	psi	%FS	%FS	%FS
-1 to 1	-14.5 to 15	0.0185	0.025	150
-1 to 2	-14.5 to 30	0.0185	0.025	150
-1 to 7	-14.5 to 100	0.0185	0.025	150
-1 to 10	-14.5 to 150	0.0185	0.025	150
-1 to 20	-14.5 to 300	0.0185	0.025	150

FS = Full scale

[1] Accuracy defined as non-linearity, hysteresis and repeatability.
[2] Add 0.001%FS/°C from -10°C to 10°C and 30°C to 50°C (14°F to 50°F and 86°F to 122°F).
[3] The system is protected from over-pressure with an internal pressure relief valve.

Pressure media

Most gases compatible with aluminum brass, stainless steel, nitrile and polyurethane seals, PTFE, acetal, nylon

Pressure connection

Tool-less quick-fit connection. Supplied with G1/8 female and 1/8 NPT female adapters. Other adapters available, see accessories.

External pressure modules

IDOS (intelligent digital output sensor) pressure modules can be connected via a USB converter P/N IO620-USB-IDOS to extend the measuring range of the instrument. Please refer to the IDOS UPM datasheet.

Electrical measurement and source				
	Total uncertainty 10°C to 30°C (50° to 86°F) for one year		Additional error -10°C to 10°C & 30°C to 50°C (14°F to 50°F and 86°F to 122°F).	Resolution
	%Rdg + %FS		%FS/°C	
Measure mode				
DC Voltage				
+/- 200 mV	0.018	0.005	0.001	0.001
+/- 2000 mV	0.018	0.005	0.001	0.01
+/- 20 V	0.018	0.005	0.001	0.00001
+/- 30 V	0.018	0.005	0.001	0.0001
Current				
+/- 20 mA	0.015	0.006	0.001	0.0001
+/- 55 mA	0.018	0.006	0.001	0.0001
Source mode				
DC Voltage				
10V (Fixed, 25mA max.)	0	0.1	0	0.001
24V (Fixed, 25mA max.)	0	1.0	0	0.001
Current				
0 to 24 mA	0.018	0.006	0.001	0.001
0 to 24 mA (internal loop power)	0.018	0.006	0.001	0.001

FS = Full scale Rdg = reading

Multiple parameter display capability

The display can be configured to show a maximum of three simultaneous reading windows as follows: pressure, electrical measurement or electrical source, IDOS external pressure module.

General specifications	
Display	Size: 110 mm (4.3in) diagonal. 480 x 272 pixels. LCD colour display with touch screen
Internal memory	8 GB (nominal) user memory for automated procedures, calibration data and data log files
Languages	English (default), Chinese, Dutch, French, German, Italian, Japanese, Korean, Portuguese, Russian, Spanish
Operating temperature	-10° to 50°C (14° to 122°F). 0° to 40°C (32° to 104°F) when powered from optional mains adaptor IO620-PSU
Storage temperature	-20° to 70°C (-4° to 158°F)
Ingress protection	IP 54. Protected against dust and splashing water from any direction
Humidity	0 to 90% RH none condensing. To Def Stan 66-31, 8.6 cat III
Shock / vibration	BS EN 61010-1:2010 / MIL-PRF-28800F CLASS 2
Altitude	Up to 2000m
EMC	BS EN 61326-1:2013
Electrical safety	BS EN 61010-1:2010
Pressure safety	Pressure Equipment Directive - Class: Sound Engineering Practice (SEP)
Enclosure materials	Polycarbonate, polyamide, polypropylene, acrylic, cotton
Approved	CE marked
Size (L:W:H)	270 x 130 x 120mm (10.6 x 5.1 x 4.7 in)
Weight	1.96Kg (4.3lbs) including batteries
Power supply	8 x AA alkaline batteries Optional mains adaptor P/N IO620-PSU 100 – 260V +/- 10%, 50 / 60Hz AC, Output DC V=5A, 1.6A
Battery life	18 to 26 hours depending on functions
Connectivity	USB type A, USB type mini B

Ordering information

Please use the following part numbers when ordering:

DPI611-05G for -1 to 1 bar / -14.5 to 15 psi gauge range

DPI611-07G for -1 to 2 bar / -14.5 to 30 psi gauge range

DPI611-10G for -1 to 7 bar / -14.5 to 100 psi gauge range

DPI611-11G for -1 to 10 bar / -14.5 to 150 psi gauge range

DPI611-13G for -1 to 20 bar / -14.5 to 300 psi gauge range

Please order accessories by part number as separate line items.

Each DPI 611 is supplied with a set of alkaline batteries, hand strap, test leads, G1/8 female and 1/8 NPT female adaptors, calibration certificate, quick user guide and an electronic copy of the user manual stored in memory on the instrument.

Accessories

DPI 611 carry case (P/N IO611-CASE-1)

A tailored carry case made from durable leather allows the DPI 611 to be used without removing it from the case. Detachable shoulder strap and storage pocket for test leads.



Mains adaptor (P/N IO620-PSU)

A universal input mains adapter. Input voltage 100 to 240 VAC 50/60 Hz. Mains socket adapters are provided.



USB cable (P/N IO620-USB-PC)

Connects the DPI 611 to a PC.

IDOS to USB converter (P/N IO620-IDOS-USB)

Allows connection of an IDOS universal pressure module to the DPI 611. P/N IO620-USB-PC is also required to connect the converter to the DPI 611 USB port.



USB to RS 232 cable (P/N IO620-USB-RS232)

Connects the DPI 611 to an RS 232 interface.



Dirt moisture trap (P/N IO620-IDT621 - NEW)

Prevents contamination of the DPI 611 pneumatic system and cross contamination from one device under test to another. The trap connects directly to the pressure port and replicates the DPI 611 quick fit connection for compatibility with the standard adapters, adapter kits and hoses.



Pneumatic hose

A high pressure pneumatic hose rated to 400 bar (5800 psi). The hose connects directly to the DPI 611 pressure port and replicates the quick fit connection for compatibility with the standard adaptors supplied and the adaptor kits.

P/N IO620-HOSE-P1: 1m/3.28ft pneumatic hose kit

P/N IO620-HOSE-P2: 2m/3.28ft pneumatic hose kit

Pressure adapter set



A set of test point adaptors to connect the tool-less quick fit DPI 611 pressure port or the extension hoses to the device under test

P/N IO620-BSP: G1/8 male and G1/4 male, G1/4 female, G3/8 female and G1/2 female

P/N IO620-NPT: 1/8" male and 1/4"male, 1/4" female, 3/8" female, and 1/2" female

P/N IO620-MET: 14 mm female and 20 mm female



Comparator adapter (P/N IO620-COMP - NEW)

For greater efficiency, two test devices can be connected at the same time. The adapter connects to the pressure port of the DPI 611 and provides two outlet ports. Compatible with the standard adapters supplied and the adapter kits.



Related products

For information on the wide range of pressure, temperature and electrical test and calibration equipment please visit our web site at www.bakerhughesds.com/druck/test-and-calibration-instruments.





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