



DPI 610E series

Druck Hand-held pressure calibrator

This self-contained pressure test and calibration system combines pressure generation, signal measurement and loop power with significantly improved pump capabilities with a powerful touch and button user interface.

Features

- The complete pressure calibration tool provides pressure:
 - Vacuum to 35 bar/500 psi/3.5 MPa pneumatic pressures with inbuilt barometer for accurate absolute pressure measurements
 - Up to 1000 bar/15000 psi/100 MPa hydraulic pressures
- HART as standard on all versions
- Best in class pressure accuracy: Total 1 year uncertainty down to 0.025% full scale (FS) over temperature range of -10°C to +50°C
- Integral calibration record with calibration due countdown
- Robust, handheld design with backlit high-contrast display
- Hazardous area (Intrinsically safe) version available
- Optional remote plug and play pressure sensor (PM700E) and Resistance Temperature Detector (RTD-PROBE)
- Minimise in-the-field leaks with quick-fit pressure adapters and hoses
- Optional documenting capabilities

DPI 610E hand-held pressure calibrator

The DPI 610E is the sixth 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 610E provides all the convenience and reliability of a true "Druck", yet offers faster performance with optional hazardous area approvals.



Ergonomic handle

Precision engineering

Performance is a function of precision engineering

- The choice of case material and precision over molding ensures that the DPI 610E is rugged, weatherproof, and suitable for the harshest environments.



Quick fit connections



Supplied dirt trap (pneumatic versions)



Supplied fluid reservoir (hydraulic versions)

Pressure generation

The innovative design of the DPI 610E pressure generation system provides significantly easier and more efficient pressure generation and precise control using carefully selected components.

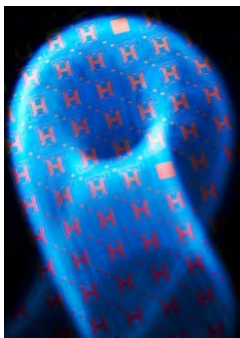
With the improved pressure generation capabilities, the DPI 610E provides higher pressures and higher volume handling with market leading pneumatic pressures from 95% vacuum to 35 bar/500 psi/3.5 MPa. A simple selector lets you switch from vacuum to pressure and with a few strokes of the pump, you can generate the required pressure. Fine adjustment can be made with the built-in volume adjuster and falling calibration points are achieved with the precision-control vent valve.

The pneumatic version has a supplied dirt trap to prevent contamination of both the instrument itself and the system under test from dirt and debris as well as moisture.

The hydraulic version has an external reservoir for easy visibility of hydraulic oil or water, a priming pump to expel air from the connected system and an intensifier to quickly and easily generate pressure up to 1000 bar/15000 psi/100 MPa.

- Pneumatic pressure generation -0.95 to 35 bar/500 psi/3.5 MPa.
- Hydraulic pressure generation 0 to 1000 bar/15000 psi/100 MPa.
- Ergonomic handle design and built-in hand/shoulder strap enables easy portability in the field and over-molding provides you with a firm grip for use against a wall or hand-held use to prevent the instrument from sliding when on a bench.

Pressure accuracy



By continuing to use Druck's in-house sensor technology, the DPI 610E provides highly accurate, reliable, and stable pressure measurement. Total 1 year uncertainty down to 0.025% full scale (FS) over temperature range of -10°C to +50°C gives you complete confidence in the measurement accuracy between annual calibrations.

Electrical capability

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

	Internal P	External P	mA	V	mV	10 Vdc	24 V Loop	Switch test
Measure	✓	✓	✓	✓	✓			✓
Source	✓		✓			✓	✓	

Pressure units

mbar, bar, Pa(N/m²), hPa, kPa, MPa, mmHg@0°C, cmHg@0°C, mHg0°C, inHg@0°C, kg/cm², kg/m², mmH₂O@20°C, cmH₂O@20°C, mH₂O@20°C, torr, atm, psi, lb/ft², inH₂O@4°C, inH₂O@20°C, inH₂O@60°F, ftH₂O@20°C, ftH₂O@4°C, ftH₂O@60°F, mmH₂O@4°C, cmH₂O@4°C, mH₂O@4°C

Calibration certificates

- Supplied as standard in bar, psi and kPa
- Optional UKAS accredited calibration available

Leak test

Used to determine if there is a leak in the system by recording the pressure change over a fixed period of time.

Leak test can also be used with the RTD sensor to record a temperature change over time.

User defined settling and test periods from 1 second to 480 minutes with live countdown timer.

Zero

Zero pressure correction (gauge/differential sensors)

Tare

0 to 100% FS temporary zero offset capability by subtracting the current reading from subsequent measurements.

Filter

Enables a filtered reading by showing a rolling average of the last 10 measurements. Provides a more stable reading in a noisy measurement. Can be applied to all measurement types.

Alarm

User adjustable alarms with visual (bell icon, pressure reading and backlight flash).

Quick-to-fit pressure connections

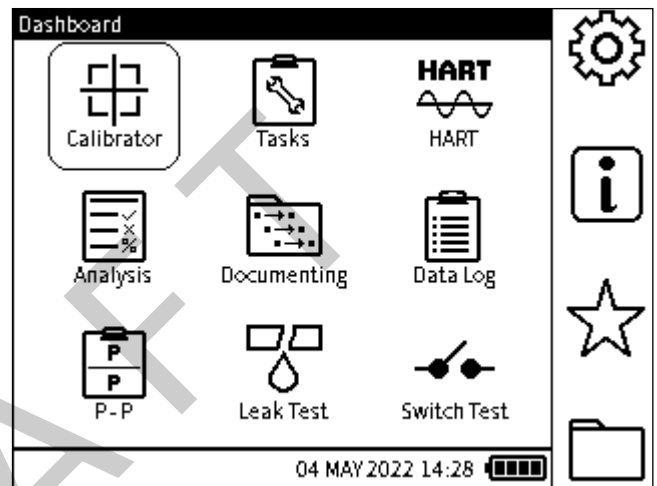
Making a leak-tight pressure connection in the field can be frustrating. The DPI 610E comes with a quick-to-fit adapter system that has a number of advantages over conventional methods:

- All adapters, hoses and accessories, including the dirt moisture trap, are quick and simple to fit. No tools or seals are required, and connections are leak free with finger-tight fittings.
- Damaged adapters can be simply replaced and there's no repair downtime.
- Making leak tight connections wastes time and for several joints, it can take longer than performing a calibration. The DPI 610E system is proven to significantly reduce set-up time.

Simplified touch screen and buttons

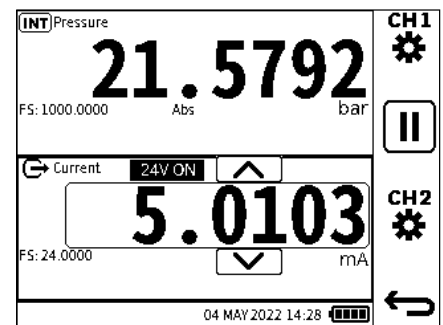
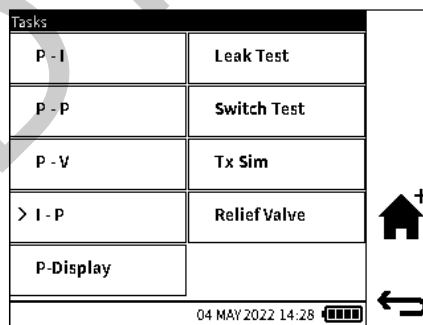
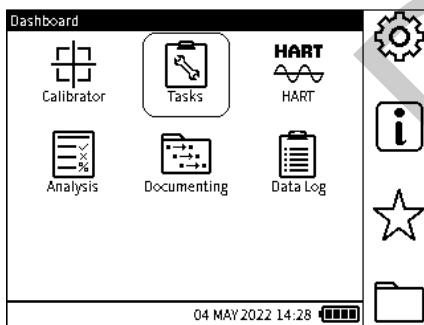
The DPI610E intuitive interface comprises both physical buttons and touchscreen enables use with or without gloves.

- The DASHBOARD allows quick application selection without the need for menus or special keys.
- The TASK menu provides a library of popular configurations. From the dashboard screen three clicks completely reconfigure the DPI 610E for the next job.
- From the FAVORITES menu it's even quicker to access regularly used and customized TASKS.
- Electrical connection diagrams can be viewed on screen.



Intuitive simple user interface

1. Select the Tasks from the Dashboard
2. Touch to a TASK to make a selection
3. Touch again to set up the TASK



DPI 610E external features

Hazardous area pneumatic unit shown



Fully documenting

The DPI 610E is a simple-to-use “everyday” tool for maintaining and calibrating pressure instruments. It has optional documenting locally and externally with our 4Sight2 software, providing advanced features 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
- 100,000 data-logging point memory
- Connectivity with our 4Sight2 calibration and maintenance software from Druck

Automated calibration procedures

Procedures generated by calibration management software can be downloaded to the DPI 610E. These procedures are presented as a list of work orders and when selected, each one will configure the DPI 610E 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 610E with semi-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 accessing 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 610E can record data from 2 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 maintenance software

The DPI 610E integrates with leading calibration and maintenance software including 4Sight2 from Druck. 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



When partnered with our comprehensive 4Sight2 calibration software package, full multipoint calibration procedures can easily be completed quickly and efficiently by uploading the pre-configured procedure from 4Sight2 into the DPI610E device, all you need to do is pump and the calibrator will collate the data for you.

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.

- 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.

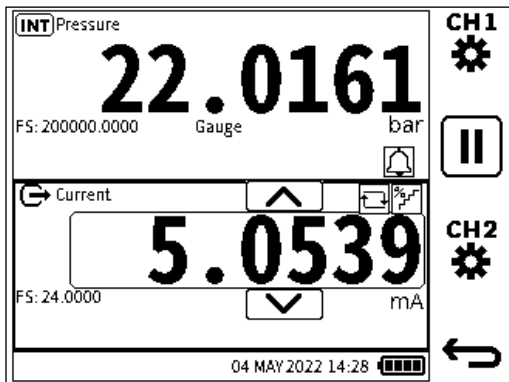
- Software
- Mobile solutions
- Workshop solutions
- Global service

Please visit <https://www.bakerhughesds.com/measurement-sensing/druck-pressure-measurement/test-and-calibration/4sight2-calibration-asset-management-software> for more information.

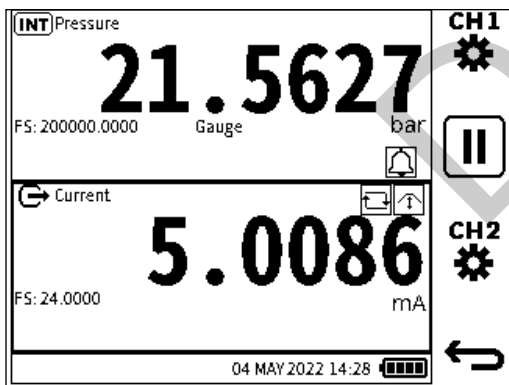
Advanced features

Current Source Automation (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 between two end points. For example 25% between 4 and 20 mA 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.



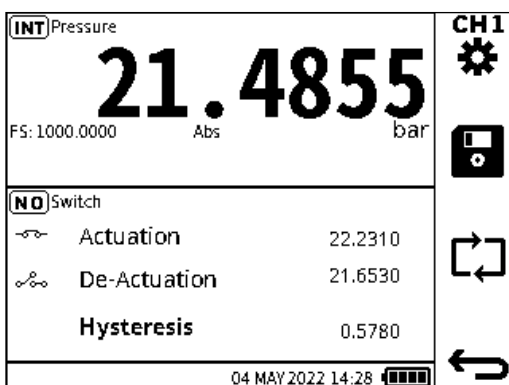
25% step manual advance



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.

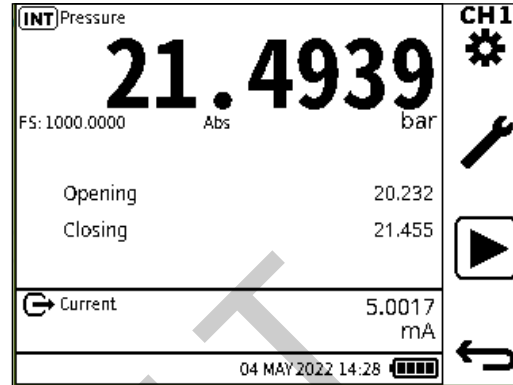
Switch test: Automates the capture of pressure switch actuation and de-actuation values and calculates the hysteresis.



ADROIT6000 Compatibility: Can communicate with the Druck ADROIT6000 sensors to adjust calibration parameters.

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

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

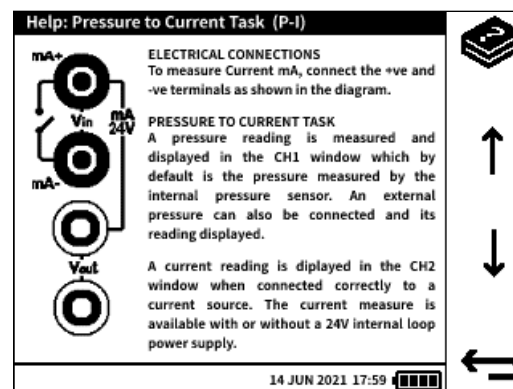


Scaling: Scales the measured value into a process value. For example, mA expressed as a %. Flow correction is available for scaling differential flow transmitter outputs.

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 610E 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, context related hints and tips can be accessed as well as any relevant electrical connection diagrams.



Specifications

Pneumatic pressure

	Pressure range	NLHR (24hr) (% FS) ^{-10 to 50 degrees C}	Total uncertainty (1 Year) (%FS) ^{-10 to 50 degrees C}	
			Gauge	Pseudo Abs (1)
03G	350 mbar/5 psi/35 kPa	0.02	0.047	0.186
05G	1 bar/15 psi/100 kPa	0.0185	0.044	0.077
07G	2 bar/30 psi/200 kPa	0.015	0.025	0.040
08G	3.5 bar/50 psi/350 kPa	0.015	0.025	0.031
10G	7 bar/100 psi/700 kPa	0.015	0.025	0.027
11G	10 bar/150 psi/1000 kPa	0.017	0.025	0.026
13G	20 bar/300 psi/2 MPa	0.017	0.025	0.025
14G	35 bar/500 psi/3.5 MPa	0.017	0.025	0.025

Hydraulic Pressure

	Pressure range	NLHR (24hr) (% FS) ^{-10 to 50 degrees C}	Total uncertainty (1 Year) (%FS) ^{-10 to 50 degrees C}		
			Gauge	Abs	Sealed gauge
16A	70 bar/1000 psi/7 MPa	0.017		0.063	0.025
16G	70 bar/1000 psi/7 MPa	0.017	0.025		
165A	100 bar/1500 psi/10 MPa	0.018		0.063	0.025
165G	100 bar/1500 psi/10 MPa	0.018	0.025		
17A	135 bar/2000 psi/13.5 MPa	0.018		0.063	0.025
17G	135 bar/2000 psi/13.5 MPa	0.018	0.025		
18A	200 bar/3000 psi/20 MPa	0.018		0.063	0.025
18G	200 bar/3000 psi/20 MPa	0.018	0.025		
20A	350 bar/5000 psi/35 MPa	0.018		0.063	0.025
22A	700 bar/10000 psi/70 MPa	0.018		0.063	0.025
23A	1000 bar/15000 psi/100 MPa	0.018		0.063	0.025

Electrical measurement and source

Measure mode	Total uncertainty 10°C to 30°C (50° to 86°F) for one year %Rdg + %FS		Additional error -10°C to 10°C & 30°C to 50°C %FS/°C		Resolution
DC					
+/- 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					
10V* (Fixed, 25mA max.)	0	0.1	0		0.001
24V (Fixed, 25mA max.)	n/a – loop supply				
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 * Non-IS unit only

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.

Multiple parameter display capability

The display can be configured to show up to four simultaneous measurement readings in the channel windows.

General specifications	
Display	Size: 112mm (4.4in) diagonal. 320 x 240 pixels. LCD monochrome display
Internal memory	100,000 point data logging memory, store user procedures
Languages	English, Chinese, Dutch, French, German, Italian, Japanese, Korean, Portuguese, Russian, Spanish, Turkish, Polish
Operating temperature	-10° to 50°C (14° to 122°F)
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	PC ABS, Polycarbonate, polyamide, polypropylene, acrylic, cotton (strap)
Approvals	CE marked, UKCA marked Hazardous Area version: ATEX, IECEx, UKEX to EN60079-11:20212 Ex ia IIC T4 Ga (-10 to 50 °C)
Size (L:W:H)	Pneumatic: 350 x 150 x 180 mm (13.8 x 5.9 x 7.1 in) Hydraulic: 400 x 150 x 190 mm (15.7 x 5.9 x 7.5 in)
Weight	Pneumatic - 3.6Kg (8 lbs) including battery Hydraulic - 4.4g (10 lbs) including battery
Power supply	Integral Lithium ion battery Mains adaptor P/N IO610E-PSU 100 - 260V 50/60Hz AC, Output DC V=15V, 1.6A
Battery life	Over 24 hours continuous use
Connectivity	USB client micro-USB

External modules

PM700E pressure modules or RTD temperature probes can be connected via the external sensor port to extend the measuring range of the instrument.

Ordering information

Please use the following part numbers when ordering:

Model type

DPI610E-PC	Pneumatic safe area
DPI610E-HC	Hydraulic safe area
DPI610E-SPC	Pneumatic hazardous area
DPI610E-SHC	Hydraulic hazardous area

Pressure range code and reference type (G or A);
(Mandatory to select only one e.g. 16G for each configuration)

	Pressure range code	Pneumatic DPI610E-PC, DPI610E-SPC	Hydraulic DPI610E-HC, DPI610E-SHC
350 mbar/5 psi/35 kPa	03	G	-
1 bar/15 psi/100 kPa	05	G	-
2 bar/30 psi/200 kPa	07	G	-
3.5 bar/50 psi/350 kPa	08	G	-
7 bar/100 psi/700 kPa	10	G	-
10 bar/150 psi/1000 kPa	11	G	-
20 bar/300 psi/2 MPa	13	G	-
35 bar/500 psi/3.5 MPa	14	G	-
70 bar/1000 psi/7 MPa	16	-	G or A
100 bar/1500 psi/10 MPa	165	-	G or A
135 bar/2000 psi/13.5 MPa	17	-	G or A
200 bar/3000 psi/20 MPa	18	-	G or A
350 bar/5000 psi/35 MPa	20	-	A
700 bar/10000 psi/70 MPa	22	-	A
1000 bar/15000 psi/100 MPa	23	-	A

Pressure units

U0 All pressure units (Default selection)

U1 Pa (Si) pressure units only

Country of use (entered during order process to ensure relevant approvals are available for Bluetooth features)

Bluetooth required

B0 Bluetooth not required

B1 Bluetooth required

Options

D Documenting

M 1m Hose

S 4Sight2-STD available when option D selected

DPI610E-PC -03G -UO B0 -D (Example part number)

Each DPI 610E is supplied with a lithium ion battery, mains charger, integrated carry strap, test leads, G1/8 female and 1/8 NPT female adaptors, calibration certificate, quick start user guide. All pneumatic versions come with an IDT dirt moisture trap to prevent contamination and all hydraulic versions come with a 100ml reservoir.

UKAS calibration is available – please order as separate line item.

Accessories

Please order accessories by part number as separate line items:

DPI 610E carry case (P/N IO610E-CASE)

A hazardous area to Zone 0 tailored carry case made from durable leather. Detachable shoulder strap and storage pocket for test leads, IDT, reservoir, and other items.

DPI 610E car charger (P/N IO610E-CAR-CHARGER)

A 12V car charger ensures you can charge on the go or remotely from the workshop.

USB cable (P/N IO610E-USB-CABLE)

DPI610E USB A-B cable 2m

Mains PSU/charger (P/N IO610E-PSU)

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



100cc hydraulic reservoir (P/N IO610E-RES-100)

A 100cc removable hydraulic reservoir which can be disconnected from the DPI 610E without draining the fluid 100cc hydraulic reservoir (Ex) (P/N IO610E-RES-100-IS)

Hazardous area 100cc removable hydraulic reservoir which can be disconnected from the DPI 610E without draining the fluid

Dirt moisture trap (P/N IO620-IDT621)

Dirt moisture trap (Ex) (P/N IO620-IDT621-IS)

(IDT's supplied as standard with all pneumatic versions)

Prevents contamination of the DPI 610E pneumatic system and cross contamination from one device under test to another. The trap connects directly to the pressure port and replicates the DPI 610E quick fit connection for compatibility with the standard adapters, adapter kits and hoses. IS version is hazardous area accessory.



Pneumatic hoses

A pneumatic hose rated to 35 bar (518 psi). The hose connects directly to the DPI 610E pressure port and replicates the quick fit connection for compatibility with the standard adaptors supplied and the adaptor kits. IS version is hazardous area accessory.



P/N IOHOSE-NPI: 1m/3.28ft pneumatic hose kit

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

Also available as P2 (2m/6.56ft) and P3 (3m/9.84ft) versions

Pressure adapter sets

A set of test point adaptors to connect the tool-less quick fit DPI 610E 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



Hydraulic hoses

A high pressure hydraulic hose rated to 1,000 bar (15,000 psi) and terminated with quick fit connectors compatible with the test point adapters supplied with the DPI610E and the adapter sets. The hose is self sealing to avoid leakage when disconnected.

P/N IO620-HOSE-HI: 1 m/3.28 ft hydraulic hose

P/N IO620-HOSE-HI-IS: 1 m/3.28 ft hydraulic hose

Also available as H2 (2m/6.56ft) and H3 (3m/9.84ft) versions

Related products

For information on the wide range of pressure, temperature and electrical test and calibration equipment please visit our web site at Druck.com/Expert.

