DPI610E series

Druck Hand-held pressure calibrator

The DPI610E handheld pressure calibrator is the latest and the sixth generation of the DPI600 family.

The DPI610E combines effortless pressure measurement and generation, signal measurement and loop power with significantly improved pump capabilities and a powerful touch and button user interface.

With a robust design, the unit has been engineered for instrument technicians, using input from those working in the field. It is an ideal solution to your test and calibration application.

Features

- The complete pressure calibration tool provides pressure:
  - Vacuum to 35 bar/500 psi/3.5 MPa pneumatic pressures with inbuilt barometer for accurate pseudo 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-INTERFACE)
- Minimize in-the-field leaks with quick-fit pressure adapters and hoses
- Full data logging and local documenting capabilities included
- Provided with one free 4Sight2 Lite calibration software license

DPI610E hand-held pressure calibrator

The DPI610E is the sixth generation in the DPI600 family, which was first introduced in 1984. The DPI600 family revolutionized test and calibration by providing all the tools for pressure generation and signal measurement in self contained portable packages. The DPI600 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 DPI610E provides all the convenience and reliability of a true "Druck", yet offers faster performance with optional hazardous area approvals.

Pressure accuracy

By continuing to use Druck's in-house sensor technology, the DPI610E 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.

Precision engineering

Performance is a function of precision engineering

The choice of case material and precision over molding ensures that the DPI610E is rugged, weatherproof, and suitable for the harshest environments.

The DPI610E retains the comprehensive electrical measurement and sourcing capability of the original DPI610E series, but has better accuracy and simplified connections.

The integrated pressure pump along with internal and optional external pressure measurement sensors work seamlessly with the electrical sourcing and measurement functions to provide a one-stop calibration instrument.

Pressure connection

The DPI610E provides a tool-less quick-fit connection where finger-tight connections achieve pressure-tight connections at up to 1000 bar. Each unit is supplied with G1/8 female and 1/8 NPT female adapters as standard. Other adapters are available, see accessories.

Designed for real-world use

The ergonomic handle design provides you with a secure grip for use against a wall or hand-held use to prevent the instrument from sliding when on a bench. A built-in hand/shoulder strap enables easy portability in the field.

Pressure generation

The innovative design of the DPI610E 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 DPI610E 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 stokes of the pump, you can generate the required pressure. Fine adjustment can be made with the built-in volume adjuster and falling pressure calibration points are achieved with the precision-control vent valve.

Pneumatic Version

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.

Pneumatic pressure generation range is -0.95 to 35 bar/ 500 psi/3.5 Mpa (gauge).

An internal Pressure Relief Valve vents safely inside the case to protect the internal pressure sensor. The relief pressure is factory set to be appropriate to the sensor/pressure range ordered.

Hydraulic Version

The hydraulic version has an external 100cc 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.

- Hydraulic pressure generation range is up to 1000 bar/15000 psi/ 100 Mpa (absolute).
- An internal Pressure Relief Valve vents safely back to the reservoir to protect the internal pressure sensor. The relief pressure is factory set to be appropriate to the sensor/ pressure range ordered.

Zero Correction

Zero pressure correction is available for gauge/differential sensors.

Pressure units

Work in whatever pressure units suit you and your application: mbar, bar, Pa(N/m^2), hPa, kPa, MPa, mmHg@0°C, cmHg@0°C, mHg0°C, inHg@0°C, kg/cm^2, kg/m^2, 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, custom (user defined)

Pressure sensor modes

On Pneumatic versions, an internal barometer is fitted which allows both gauge and absolute pressure sensors to be used in pseudo-ranges

On Hydraulic versions, we offer the sealed gauge measurement mode on absolute pressure sensors (10 bar and above).

Pressure Measurement Utilities

All utility test results can be saved and exported to a PC.

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.

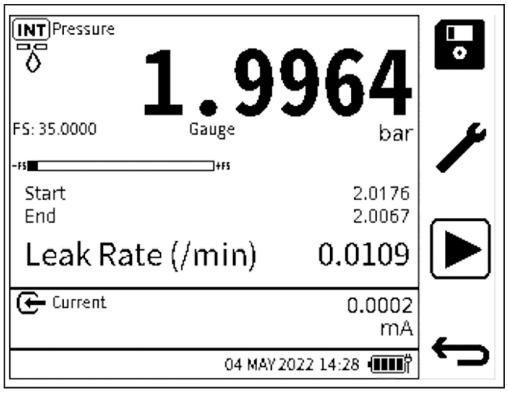
User defined settling/wait (up to 60 minutes)and test periods (1 second to 480 minutes) with live countdown timer.

Relief valve

Used to test whether safety relief or blowdown valves meet the required safe pressure release action when outside the safe pressure limits and return to normal closed position when returned normal operating pressure limits.

Switch Test

This feature tests the actuation of pressure switches when they reach their set trip points and the reset action when the pressure returns to normal operating pressure limits. The Hysteresis value is also calculated at the end of each test.



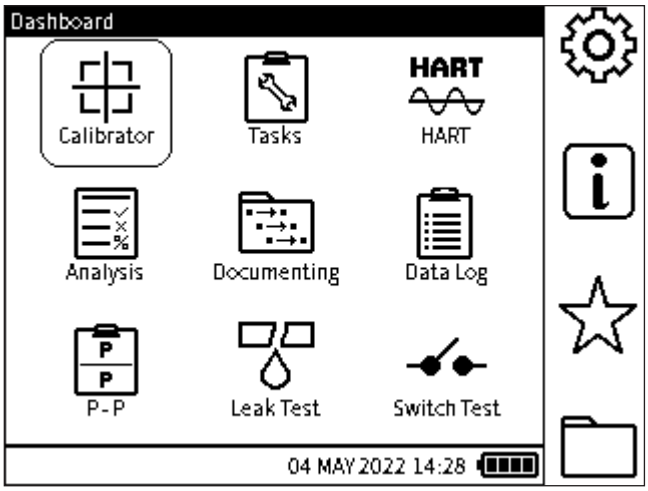
DPI610E external features

Hazardous area pneumatic unit shown

Brand new User Interface

The DPI610E user interface can be fully driven from either the touchscreen or via push buttons to allow use with or without gloves.

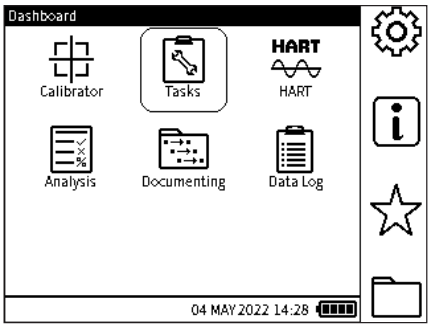
- The DASHBOARD allows quick application selection without the need for menus or special keys.
- The TASK menu provides a library of popular configurations. From the dashboard screen three clicks completely reconfigure the DPI610E for the next job.
- From the FAVORITES menu it's even quicker to access regularly used and customized TASKS.
- Electrical connection diagrams can be viewed on screen.



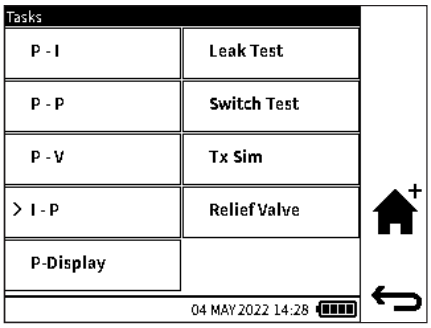
Dashboard (Home) Screen

Intuitive simple user interface

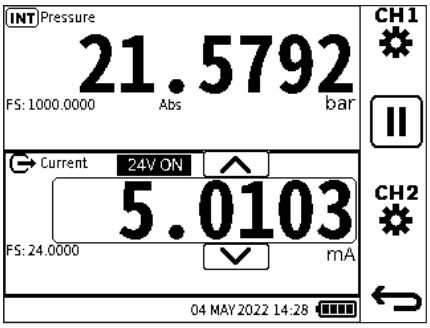
1. Select the Tasks from the Dashboard



2. Touch to a TASK to make a selection

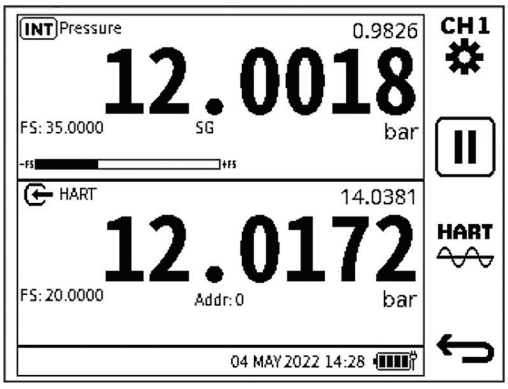


3. Touch again to set up the TASK



Multiple parameter display capability

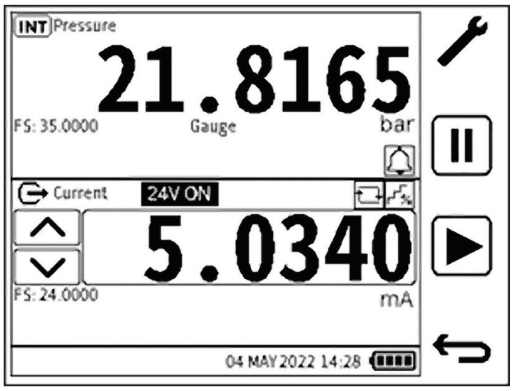
The display can be configured to show up to four simultaneous measurement readings in the channel windows.



Instrument features

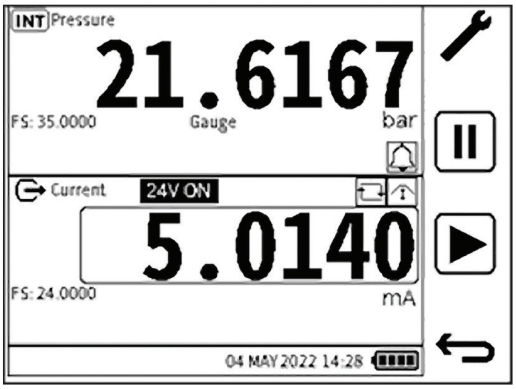
Current Source Automation (mA Output): Simply configured for simulating transmitter outputs into control loops, testing valve positioners and checking safety systems. The source function has programmable end points, with manual or automatic sequencing. The following options are available for quick set-up:

- **% 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.



25% step manual advance

- **Defined step:** The step size is defined as a value in.
- **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.

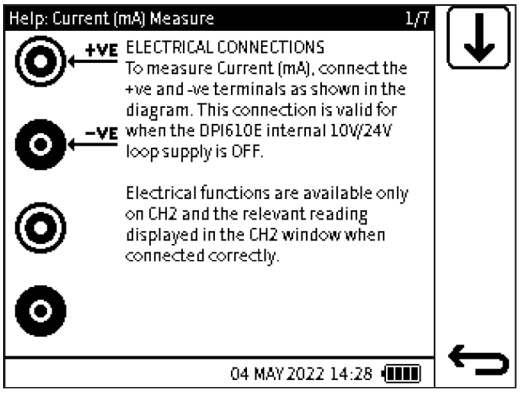


RAMP automatic cycle

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

Help: The DPI610E 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.



Help Screen Example

Product Information and QR code for full user manual

Measurement Resolution

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

Electrical Resolution: voltage measurement is adjustable from four to seven digits, current measurement and sourcing from four to six digits.

Measurement Process Options

Tare

0 to 100% FS temporary zero offset capability by subtracting the current reading from subsequent measurements. Can be applied to all measurement types.

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). Can be applied to all measurement types.

Flow

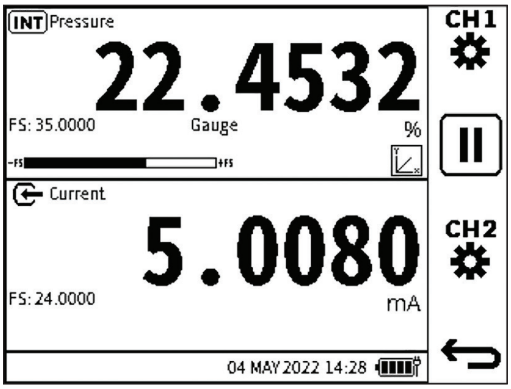
Performs a square root calculation on the measured pressure reading.

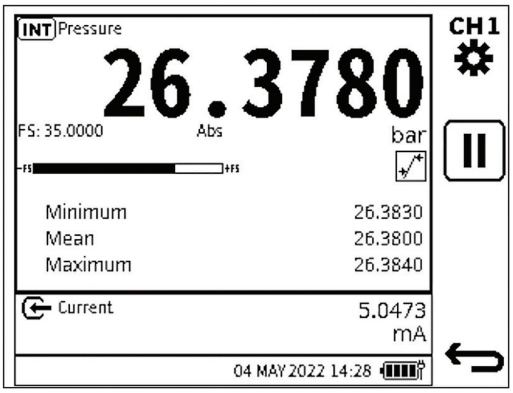
Scaling

Allows measured values to be scaled to user defined custom units with custom unit labels. For example, mA expressed as a %. Flow correction is available for scaling differential flow transmitter outputs.

Min/Max/Mean

Provides instantaneous minimum, maximum, and average values of any measurement type to be captured and displayed.





Documenting

The DPI610E is a simple-to-use "everyday" tool for maintaining and calibrating pressure instruments. It has a documenting application, providing advanced features for automating calibration procedures, calculating errors and interfacing with PCs and calibration and maintenance systems.

Automated calibration procedures

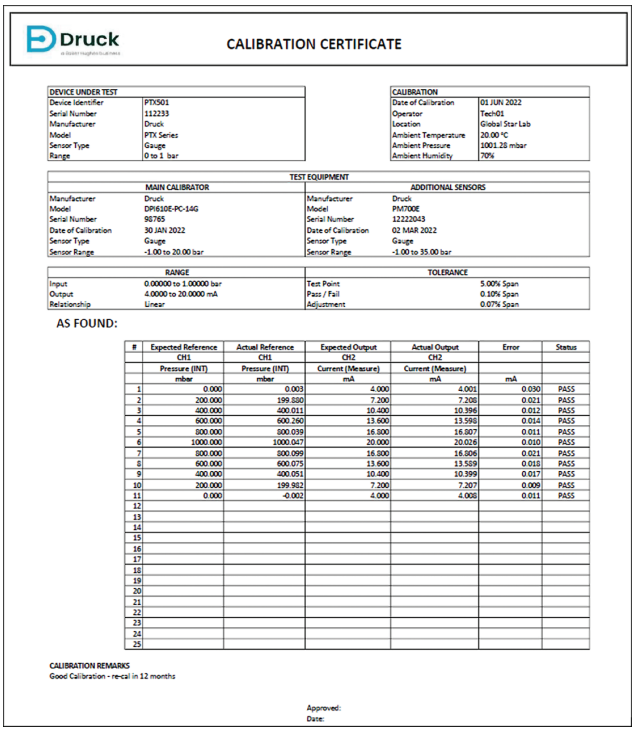
Test procedures can be created using the DPI610E. These procedures are presented as a list of work orders and when selected, each one will configure the DPI610E to calibrate a specific device.

The procedures run automatically and all you have to do is set the pressure. The data is recorded digitally ready to be uploaded to a database or calibration management software.

A single test procedure template can be run on multiple assets with live pass/fail error analysis and results for each asset saved individually in the internal storage of the DPI610E that can be locally viewed or transferred to a PC to support traceability.

With the test results exported to a PC, Druck provides a Calibration Certificate template for pressure device calibrations, which transforms the results into a formatted professional-look certificate ready for printing or filing.

Using the DPI610E 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.



Druck

CALIBRATION CERTIFICATE

DEVICE UNDER TEST	
Device Identifier	PTX501
Serial Number	112233
Manufacturer	Druck
Model	PTX Series
Sensor Type	Gauge
Range	0 to 1 bar

CALIBRATION	
Date of Calibration	01 JUN 2022
Operator	Tech01
Location	Global Star Lab
Ambient Temperature	20.00 °C
Ambient Pressure	1001.28 mbar
Ambient Humidity	70%

TEST EQUIPMENT

MAIN CALIBRATOR		ADDITIONAL SENSORS	
Manufacturer	Druck	Manufacturer	Druck
Model	DPI610E-PC-14G	Model	PM700E
Serial Number	98765	Serial Number	12222043
Date of Calibration	30 JAN 2022	Date of Calibration	02 MAR 2022
Sensor Type	Gauge	Sensor Type	Gauge
Sensor Range	-1.00 to 20.00 bar	Sensor Range	-1.00 to 35.00 bar

RANGE		TOLERANCE	
Input	0.00000 to 1.00000 bar	Test Point	5.00% Span
Output	4.0000 to 20.0000 mA	Pass / Fail	0.10% Span
Relationship	Linear	Adjustment	0.07% Span

AS FOUND:

#	Expected Reference CH1 Pressure (INT) mbar	Actual Reference CH1 Pressure (INT) mbar	Expected Output CH2 Current (Measure) mA	Actual Output CH2 Current (Measure) mA	Error mA	Status
1	0.000	0.003	4.000	4.001	0.030	PASS
2	200.000	199.880	7.200	7.208	0.021	PASS
3	400.000	400.011	10.400	10.396	0.012	PASS
4	600.000	600.290	13.600	13.598	0.014	PASS
5	800.000	800.039	16.800	16.807	0.011	PASS
6	1000.000	1000.047	20.000	20.026	0.010	PASS
7	800.000	800.099	16.800	16.806	0.021	PASS
8	600.000	600.075	13.600	13.589	0.018	PASS
9	400.000	400.051	10.400	10.399	0.017	PASS
10	200.000	199.982	7.200	7.207	0.009	PASS
11	0.000	-0.002	4.000	4.008	0.011	PASS
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

CALIBRATION REMARKS
Good Calibration - recal in 12 months

Approved:
Date:

Sample of Certificate from Calibration Certificate Wizard

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.

Datalogging

Multi-channel data logging

The DPI610E 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.

The DPI610E can hold over 100,000 datalog points.

4Sight2 calibration management software

The DPI610E is compatible with Druck's 4Sight2 calibration management software that provides full visibility of all your assets and reference standards with calibration workload scheduling, track and trace calibrations, historical trending and drift analysis features to drive process efficiency and time saving.

Specifications

Pneumatic pressure

	Gauge pressure ranges		
	Pressure range	NLHR (24hr) % FS -10 to 50 °C	Total uncertainty (1 Year) %FS -10 to 50 °C
03G	350 mbar/5 psi/35 kPa	0.02	0.047
05G	1 bar/15 psi/100 kPa	0.0185	0.044
07G	2 bar/30 psi/200 kPa	0.018	0.025
08G	3.5 bar/50 psi/350 kPa	0.018	0.025
10G	7 bar/100 psi/700 kPa	0.018	0.025
11G	10 bar/150 psi/1000 kPa	0.018	0.025
13G	20 bar/300 psi/2 MPa	0.018	0.025
14G	35 bar/500 psi/3.5 MPa	0.018	0.025

	Pseudo Absolute pressure ranges		
	Pressure range	NLHR (24hr) % FS' -10 to 50 °C	Total uncertainty (1 Year) %FS -10 to 50 °C (1)
03G	350 mbar/5 psi/35 kPa	0.02	0.048
05G	2 bar/30 psi/200 kPa	0.0185	0.039
07G	3 bar/45 psi/300 kPa	0.018	0.027
08G	4.5 bar/65 psi/450 kPa	0.018	0.025
10G	8 bar/115 psi/800 kPa	0.018	0.025
11G	11 bar/165 psi/1.1 MPa	0.018	0.025
13G	21 bar/315 psi/2.1 MPa	0.018	0.025
14G	36 bar/515 psi/3.6 MPa	0.018	0.025

Note 1: Pseudo abs is using a gauge sensor in conjunction with the internal barometer to provide an absolute pressure reading. Pseudo ABS specification is quoted as a percentage of the calculated ABS range e.g. For 05G (1bar gauge) sensor, in Pseudo ABS mode the FS range is 2 bar. Barometer total uncertainty (24hr) is <0.5mbar, drift is <0.33mbar/year typical.

Hydraulic Pressure

			Total uncertainty (1 an) (% PE) -10 à 50 °C		
	Pressure range	NLHR (24 h) (% PE) -10 à 50 °C	Gauge	Abs	Sealed gauge
16A	70 bar/1000 psi/7 MPa	0.018		0.063	0.025
16G	70 bar/1000 psi/7 MPa	0.018	0.025		
165 A	100 bar/1500 psi/10 MPa	0.018		0.063	0.025
165G	100 bar/1500 psi/10 MPa	0.018	0.025		
17 A	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		
18 A	200 bar/3000 psi/20 MPa	0.018		0.063	0.025
18G	200 bar/3000 psi/20 MPa	0.018	0.025		
20 A	350 bar/5000 psi/35 MPa	0.018		0.063	0.025
22 A	700 bar/10000 psi/70 MPa	0.018		0.063	0.025
23 A	1000 bar/15000 psi/100 MPa	0.018		0.063	0.025

Electrical measurement and source

	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
Measure mode				
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				
10 V* (Fixed, 25 mA max.)	0	0.1	0	0.001
24V (Nominal, 25mA max.)	n/a – loop supply			
Current				
0.6 to 24 mA	0.018	0.006	0.001	0.0001
0.6 to 24 mA (internal loop power)	0.018	0.006	0.001	0.0001

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.

Calibration certificates

- Electrical calibration certificate supplied
- Pressure calibration certificate supplied in bar, psi and kPa
- Optional UKAS accredited calibration available

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 (Gauge or Absolute);
(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

M 1m Hose

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

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

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.

*Due to individual country radio licence requirements, Bluetooth® wireless technology may not be available in some countries. An up-to-date list of countries where with Bluetooth® wireless technology is licenced to be used in is available upon request from Druck.

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 and test results
Languages	English, Chinese, Dutch, French, German, Italian, Japanese, Korean, Portuguese, 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 non-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)

General specifications	
Approvals	CE marked, UKCA marked Hazardous Area version: (Ordering code 'SPC or SHC') ATEX, IECEx, UKEX, CCOE, XPL, KCs, NEPSI, ECASEx to EN60079-11:2012 Ex ia IIC T4 Ga (-10 to 50 °C), CSA approved (Canada & US): Class I, Zone 0, AEx/Ex ia IIC T4 Ga (–10°C ≤ Ta ≤ +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 – 4.4Kg (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	• Much improved battery performance typically: - 100% Volts Measure, 0% Current Source 4mA, 0% Current Source 20mA -> 90 hours - 80% Volts Measure, 10% Current Source 4mA, 10% Current Source 20mA -> 74.8 hours - 40% Volts Measure, 40% Current Source 4mA, 20% Current Source 20mA -> 62 hours - 0% Volts Measure, 0% Current Source 4mA, 100% Current Source 20mA -> 31.5 hours • Full recharge in 2 hours with supplied charger
Connectivity	USB client micro-USB

Plug and play remote sensor range

PM 700E External remote pressure sensors

Any number of remote sensors can be individually used with a single DPI610E as all sensors hold their own calibration data and are supplied with a 2.9m (9.5 feet) cable.

Available ranges as per table:

	PM 700E External pressure sensor availability		
Type	**Standard Accuracy 0.1% (-1)**	**High Accuracy 0.05% (-2)**	**Premium Accuracy 0.025% (-3)**
25 mbar / 10 inH2O / 2.5 kPa	G, L	-	-
70 mbar / 1 psi / 7 kPa	G, L	-	-
200 mbar / 3 psi / 20 kPa	G, L	-	-
350 mbar / 5 psi / 35 kPa	G, A, L	G, L	-
700 mbar / 10 psi / 70 kPa	G, A, L	G, L	-
1 bar / 15 psi / 100 kPa	G, A, L	G, A, L	-
750-1150 mbar / 11-17 psi /75-115 kPa (Barometric)	B	B	-
2 bar / 30 psi / 200 kPa	G, A, L	G, A, L	G,L
3.5 bar / 50 psi / 350 kPa	G, A	G, A	G
7 bar / 100 psi / 700 kPa	G, A	G, A	G
10 bar / 150 psi / 1000 kPa	G, A	G, A	G, A
20 bar / 300 psi / 2 MPa	G, A	G, A	G, A
35 bar / 500 psi / 3.5 MPa	G, A	G, A	G, A
70 bar / 1000 psi / 7 MPa	G, A	G, A	G, A
100 bar / 1500 psi / 10 MPa	G, A	G, A	G, A
135 bar / 2000 psi / 13.5 MPa	G, A	G, A	G, A
200 bar / 3000 psi / 20 MPa	G, A	G, A	G, A
350 bar / 5000 psi / 35 MPa	A	A	A
700 bar / 10000 psi / 70 MPa	A	A	A
1000 bar/ 15000 psi/ 100 MPa	A	A	A
1400 bar / 20000 psi / 140 MPa	A	A	A

G = Gauge L = Differential A = Absolute B = Baro

Negative calibration of Gauge sensors (option OP1)

Full Scale Pressure Range	Standard and High Accuracy sensors	Premium accuracy sensors
25 mbar to 1 bar/10 in H2O to 15 psi	Available down to negative Full Scale by default	Not available
1 bar to 35 bar/15 psi to 500 psi	Available down to -1 bar g as option OP1	Available down to -1 bar g by default
70 bar to 200 bar/1000 psi to 3000 psi	Not available – calibrated down to 0 bar g	Not available – calibrated down to 0 bar g

Note: All differentials calibrated down to negative Full Scale (limited to -1bar)

PM700E (Gauge, Absolute)

PM700E (Differential)

PM 700E External remote pressure sensors

Accuracy levels

1-Standard	±0.1% FS Total accuracy over -10 to 50 °C including NLH&R,1 year drift and calibration uncertainty
2-High	±0.05% FS Total accuracy over -10 to 50 °C including NLH&R,1 year drift and calibration uncertainty
3-Premium	±0.025% FS Total accuracy over -10 to 50 °C including NLH&R,1 year drift and calibration uncertainty

Accuracy specification

Gauge/differential sensors	Standard accuracy		High accuracy		Premium accuracy	
Pressure range	NLH&R	Total uncertainty	NLH&R	Total uncertainty	NLH&R	Total uncertainty
	-10 to 50°C					
	(% FS)	(% FS)	(% FS)	(% FS)	(% FS)	(% FS)
25 mbar/10 inH2O/2.5 kPa	0.3	0.348	N/A	N/A	N/A	N/A
70 mbar/1 psi/7 kPa	0.1	0.121	N/A	N/A	N/A	N/A
200 mbar/3 psi/20 kPa	0.08	0.1	N/A	N/A	N/A	N/A
350 mbar/5 psi/35 kPa to 1 bar/15 psi/100 kPa	0.08	0.1	0.04	0.05	N/A	N/A
2 bar/30 psi/200 kPa to 200 bar/3000 psi/20 MPa	0.08	0.1	0.04	0.05	0.018	0.025

Absolute sensors	Standard accuracy		High accuracy		Premium accuracy	
Pressure range	NLH&R	Total uncertainty	NLH&R	Total uncertainty	NLH&R	Total uncertainty
	-10 to 50°C					
	(% FS)	(% FS)	(% FS)	(% FS)	(% FS)	(% FS)
750-1150 mbar/11-17 psi/75-115 kPa (Barometric)	0.08	0.1	0.04	0.075	N/A	N/A
350 mbar/5 psi/35 kPa to 700 mbar/10 psi/70 kPa	0.08	0.1	N/A	N/A	N/A	N/A
1 bar/15 psi/100 kPa to 7 bar/100 psi/700 kPa	0.08	0.1	0.04	0.075	N/A	N/A
10 bar/150 psi/1000 kPa to 1400 bar/20000 psi/140 MPa	0.08	0.1	0.04	0.075	0.018	0.063

Notes:
1. NLH&R Non-linearity, hysteresis and repeatability.
2. Total uncertainty includes 1 year drift and calibration uncertainty. For 350mbar to 7bar absolute ranges typical values are stated – for maximum values add 0.045%FS for standard accuracy, 0.055%FS for high accuracy. For 10bar absolute ranges and above maximum values are stated above.

Media compatibility

Sensors up to and including 3.5 bar (including differential) are exposed, 7-1400 bar are diaphragm isolated.

Pressure FS	Media compatibility
0 bar/0 psi/0 kPa to 3.5 bar/50 psi/350 kPa	Non-condensing dry gases compatible with 316L Stainless Steel, Pyrex, Silicon, Gold, Aluminium, Glass, Silicon Dioxide and RTV Adhesive
Differential sensor reference port	Non-condensing dry gases compatible with 316L and 304 Stainless Steel, Pyrex, Silicon, Glass, Silicon Dioxide and RTV Adhesive
7 bar/100 psi/700 kPa to 200 bar/3000 psi/20 MPa	316L Stainless Steel and Hastelloy C276
350 bar/5000 psi/35 MPa to 1400 bar/20000 psi/140 MPa	Inconel 625 and 17-4PH Stainless Steel

Pressure fittings

Remote sensors are fitted with pressure connectors as detailed below:

- P1 - G1/8 Female direct sensor connection of instrument, welded non-removable (for ranges 200 bar and below) with optional adaptor:
- P2 - G1/4 Female adaptor that goes into the instruments G1/8 female
- P3 - 1/8 NPT Female adaptor that goes into the instruments G1/8 female
- P4 - 1/4 NPT Female adaptor that goes into the instruments G1/8 female
- P5 - Quick-Fit adaptor comes with G1/8 and 1/8 NPT adaptors
- P6 - 9/16 x 18 UNF Male direct sensor connection of instrument, welded non-removable (mandatory for ranges greater than/equal to 350 bar)

Note: Only fluids that are compatible as per above table should be used, to ensure the integrity of the pressure sensor.

Optional remote RTD temperature interface/probe

Enabling users to perform plug and play temperature measurement capability, displaying units as resistance or temperature.

The Interface only option P/N RTD-INTERFACE-485 for DPI610E-PC / DPI610E-HC Safe Area or P/N RTD-INTERFACE-IS for DPI610E-SPC / DPI610E-SHC Hazardous Area allows users to use their own PT100 RTD probe.

RTD-INTERFACE is supplied with a field-rewireable M12 connector to allow users to connect their own wire-ended RTDs.

The probe option P/N RTD-PROBE-485 for DPI610E-PC / DPI610E-HC Safe Area or P/N RTD-PROBE-IS for DPI610E-SPC / DPI610E-SHC Hazardous Area comes with the interface and a 15 cm (6") class A PT100 probe. All RTD-PROBE and RTD-INTERFACE come with a 2.9m cable.

RTD Accuracy specification

	NLH&R ±1°C (2°F) for 24 hrs (note 1)	Total Uncertainty 10° to 30°C (50° to 86°F) for 1 year (note 2)	Additional error -10° to 10°C (14° to 50°F) 30° to 50°C (86° to 122°F)
0 to 400 Ω	0.012% Rdg + 0.005% FS	0.015% Rdg + 0.006% FS	0.001% FS/°C
Pt 100 - Measured temp range -200 to 0°C		0.017% Rdg + 0.1°C	Excluding PT100 calibration error
Pt 100 - Measured temp range 0 to 850°C		0.0215% Rdg + 0.1°C	Excluding PT100 calibration error

Notes:

1. NLH&R includes stability at ±2°C for 24 hours, at temperatures within 10°C to 30°C.
2. Total uncertainty includes 1 year drift

RTD General specifications

Measuring temperatures	IO-RTD-PRB150	-50°C to 200°C (when used with appropriate extension cable)
	RTD-INTERFACE (BODY)	-10°C to 50°C
	RTD-PROBE	-10°C to 50°C when directly plugged in to RTD-INTERFACE
		-25°C to 75°C when using supplied cable
	SPECIALIST RTD PROBES (Not supplied by Druck)	The capability of the RTD-INTERFACE (resistance range) with a suitable extension cable and suitable probe is 0 to 400Ω which equates to -250°C to +650°C for a PT100 probe.
Dimensions	IO-RTD-PRB150 RTD-PROBE	Probe tip: Ø6.35 x 150mm Probe total: Ø15 x 200mm
	RTD-INTERFACE	Body: Ø34 x 72mm length

Ordering information for PM700E external remote pressure sensors

The PM 700E and PM 700E-IS are supplied with a user guide and calibration certificate as standard.

Model type

PM700E Safe Area External remote pressure sensor

PM700EIS Hazardous Area External remote pressure sensor

Accuracy (Now offering three levels of accuracy – see page 9 for availability by pressure range)

1 Standard

2 High

3 Premium

Pressure range and reference type; (Mandatory to select only one e.g. 008L or 008G for each configuration)

	Gauge (G)	Absolute (A)	Differential (L)	Barometric (B)
25 mbar/10 inH2O/2.5 kPa	008G	-	008L	-
70 mbar/1 psi/7 kPa	01G	-	01L	-
200 mbar/3 psi/20 kPa	02G	-	02L	-
350 mbar/5 psi/35 kPa	03G	03A	03L	-
700 mbar/10 psi/70 kPa	04G	04A	04L	-
1 bar/15 psi/100 kPa	05G	05A	05L	-
750-1150 mbar/11-17 psi/75-115 kPa (barometric)	-	-	-	05B
2 bar/30 psi/200 kPa	07G	07A	07L	-
3.5 bar/50 psi/350 kPa	08G	08A	-	-
7 bar/100 psi/700 kPa	10G	10A	-	-
10 bar/150 psi/1000 kPa	11G	11A	-	-
20 bar/300 psi/2 MPa	13G	13A	-	-
35 bar/500 psi/3.5 MPa	14G	14A	-	-
70 bar/1000 psi/7 MPa	16G	16A	-	-
100 bar/1500 psi/10 MPa	165G	165A	-	-
135 bar/2000 psi/13.5 MPa	17G	17A	-	-
200 bar/3000 psi/20 MPa	18G	18A	-	-
350 bar/5000 psi/35 MPa	-	20A	-	-
700 bar/10000 psi/70 MPa	-	22A	-	-
1000 bar/ 15000 psi/100 MPa	-	23A	-	-
1400 bar/20000 psi/140 MPa	-	24A	-	-

Pressure fitting - Refer to page 5

P1	G1/8 Female	For ranges less than 350 bar (welded non-removable)
P2	G1/4 Female adaptor	For ranges less than 350 bar
P3	1/8 NPT Female adaptor	For ranges less than 350 bar
P4	1/4 NPT Female adaptor	For ranges less than 350 bar
P5	Quick-Fit adaptor	For ranges less than 350 bar
P6	9/16 x 18 UNF Male	Mandatory for ranges greater than/equal to 350 bar (welded non-removable)

Hazardous area approvals (Mandatory to select one)

H0 No hazardous area approval

H1 ATEX, IECEx, CSA, CCOE, XPL, KCS, NEPSI, ECASEx

H2 INMETRO (Brazil)

Options (Mandatory to select one)

OP0 No option required

OP1 Negative calibration for gauge ranges 35 bar and below

PM700E – 1 – 07G – P2 – H0 – OP1 (Example model numbers)

PM700E Options

OP1 - Negative calibration

Optionally available for Gauge ranges of 35 bar and below (default for -3 accuracy). If this option is chosen, then the calibration certificate will include values down to -1 bar g.

UKAS calibration

We also offer UKAS accredited calibrations, please advise at the time of order placement if required.

Accessories

Please order accessories by part number as separate line items:

DPI610E 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.

DPI610E 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)

(Supplied as standard with all DPI610E)

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

100cc hydraulic reservoir (P/N PV411-115)

(Supplied as standard with all hydraulic DPI610E-HC)

A 100cc removable hydraulic reservoir which can be disconnected from the DPI610E without draining the fluid.

100cc hydraulic reservoir (Ex) (P/N PV411-115-IS)

(Supplied as standard with all hydraulic DPI610E-SHC)

Hazardous area 100cc removable hydraulic reservoir which can be disconnected from the DPI610E without draining the fluid.

Dirt moisture trap (P/N IO620-IDT-621-NEW)

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

(Supplied as standard with all pneumatic DPI610E)

Prevents contamination of the DPI610E pneumatic system and cross contamination from one device under test to another. The trap connects directly to the pressure port and replicates the DPI610E quick fit connection for compatibility with the standard adapters, adapter kits and hoses. IS version is a hazardous area accessory.

Pressure adapter sets

A set of test point adaptors to connect the tool-less quick fit DPI610E 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

Pneumatic hoses

A pneumatic hose rated to 35 bar (508 psi). The hose connects directly to the DPI610E pressure port and replicates the quick fit connection for compatibility with the standard adaptors supplied and the adaptor kits. IS version is a hazardous area accessory.

P/N IOHOSE-NP1 Pneumatic Hose Assembly 1m/3.28ft (Maximum 35 bar pressure)

P/N IOHOSE-NP2 Pneumatic Hose Assembly 2m/6.56ft (Maximum 35 bar pressure)

P/N IOHOSE-NP3 Pneumatic Hose Assembly 3m/9.84ft (Maximum 35 bar pressure)

P/N IO620-HOSE-P1-IS Pneumatic Hose 1m/3.28ft (IS) (Maximum 400 bar pressure)

P/N IO620-HOSE-P2-IS Pneumatic Hose 2m/6.56ft (IS) (Maximum 400 bar pressure)

P/N IO620-HOSE-P3-IS Pneumatic Hose 3m/9.84ft (IS) (Maximum 400 bar pressure)

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-H1: 1 m/3.28 ft hydraulic hose

P/N IO620-HOSE-H1-IS: 1 m/3.28 ft hydraulic hose

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.

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