

# DPI 705E Series

## Druck Handheld Pressure Indicators



Safe Area  
Pressure Indicator



Hazardous Area  
Pressure Indicator

The Druck DPI 705E Series of handheld pressure and optional temperature indicators combine tough and rugged design with accurate and reliable measurements.

Compact and robust, the DPI 705E Series is designed for single handed operation and provides many essential features required for routine maintenance and system troubleshooting.

### Features

- 48 pressure ranges from  $\pm 25$  mbar to 1,400 bar ( $\pm 1.69$  psi to 20,000 psi / 2.5 KPa to 140 MPa)
- Total 1 year uncertainty down to 0.05% full scale (FS) over temperature range of  $-10^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$
- Integral calibration record with calibration due count-down display
- Rugged, handheld design with backlit high-contrast display
- Leak test, tare, maximum/minimum and filter
- Hazardous Area (Intrinsically safe) version available
- Optional remote plug and play pressure and Resistance Temperature Detector (RTD) sensors
- Optional pneumatic and hydraulic hand pumps

## DPI 705E Improves Test Efficiency

- Power on and use. No warm up time required.
- 19 pressure measurement units (See below)
- 1, 3 or 5 minute leak test
- Impact resistant, sealed to IP54
- Large digit high-contrast LCD with backlight
- Optional carrying case with belt loop
- Optional magnetic/loop hanging strap
- Long battery life
- Integral desk stand and hanger

## Special Features

### Pressure Units

mbar, bar, Pa, hPa, Pa, MPa, psi, lb/ft<sup>2</sup>, kgf/cm<sup>2</sup>, kgf/m<sup>2</sup>, mmHg(0°C), mHg(0°C), inHg 0, mmH<sub>2</sub>O, cmH<sub>2</sub>O, mH<sub>2</sub>O, inH<sub>2</sub>O (4°C, 20°C), ftH<sub>2</sub>O (4°C, 20°C)

### Calibration Certificates

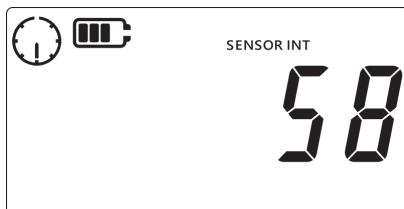
- Supplied as standard with bar, psi and kPa
- Optional UKAS approved calibrations available

### Leak Test

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

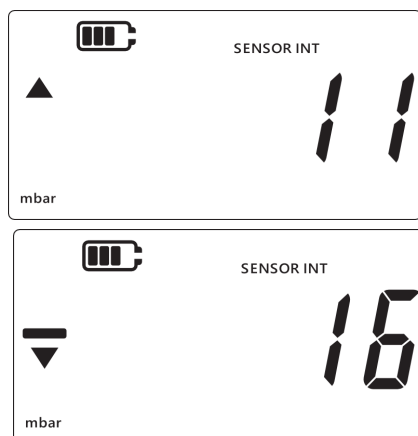
Leak test can also be used with the RTD sensor to record a temperature change over time.

User defined 1, 3 or 5 minute leak test.



### Maximum/Minimum

Captures both maximum and minimum readings in peak-hold mode.



### 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 pressure reading by showing a rolling average of the last 10 measurements. Providing a more stable reading of a noisy measurement.

### Alarm

User adjustable; high and low pressure alarms with visual (Bell Icon, Pressure Reading and Backlight flash) and audible warning for 60 seconds.

### Calibration

Used in conjunction with the optional pneumatic or hydraulic hand pumps, the DPI 705E Series provides a simple, low-cost calibration solution.



### Battery

- 4 x AA Alkaline/NiCd/NiMH cells
- Power efficient design, can be used for 8 Hours per day, 6 days per week for 1 Year using a single set of batteries.

### Display

16mm LCD with ±99999 readout

### Hazardous Area Approvals

- ATEX, IECEx, NEPSI, ECASEx (Ordering code 'H1')
- INMETRO (Ordering code 'H2')
- IS Class I, Groups A, B, C & D, T4 Ex ia; Class I, Zone 0, AEx/Ex ia IIC T4 Ga (-10°C ≤ Ta ≤ +50°C) to CSA Std. 157-92, UL 913 (7th Ed.), CAN/CSA-C22.2 No. 60079-0:2018, CAN/CSA-C22.2 No. 60079-11:2012, ANSI/UL 60079-0:2018 and ANSI/UL 60079-11:2012.
- Ex ia IIC T4 Ga (-10°C ≤ Ta ≤ +50°C) to ATEX IEC 60079-0:2017 and EN 60079-11:2011

## Pressure Ranges

Internal and remote sensors are fitted with pressure connectors as detailed below:

- 25 mbar – 200 bar (10 inH<sub>2</sub>O – 3000 psi / 2.5 kPa – 20 MPa): G1/8 BSP female
- Differential reference port: Legris 4 mm tubing adaptor
- ≥350 bar (5000 psi / 35 MPa): Autoclave 9/16 x 18 UNF Male

### DPI 705E Internal Pressure Sensors

The DPI705E includes an internal Absolute, Gauge or Differential sensor.

Available ranges as per table:

Internal Pressure Sensor Availability					
Pressure Range	Abs	Gauge	Differential	Standard Accuracy	High Accuracy
25 mbar / 10 inH <sub>2</sub> O / 2.5 kPa	-	✓	✓	✓	-
70 mbar / 1 psi / 7 kPa	-	✓	✓	✓	-
200 mbar / 3 psi / 20 kPa	-	✓	✓	✓	-
350 mbar / 5 psi / 35 kPa	✓	✓	✓	✓	✓
700 mbar / 10 psi / 70 kPa	✓	✓	✓	✓	✓
1 bar / 15 psi / 100 kPa	✓	✓	✓	✓	✓
2 bar / 30 psi / 200 kPa	✓	✓	✓	✓	✓
3.5 bar / 50 psi / 350 kPa	✓	✓	-	✓	✓
7 bar / 100 psi / 700 kPa	✓	✓	-	✓	✓
10 bar / 150 psi / 1000 kPa	✓	✓	-	✓	✓
20 bar / 300 psi / 2 MPa	✓	✓	-	✓	✓
35 bar / 500 psi / 3.5 MPa	✓	✓	-	✓	✓
70 bar / 1000 psi / 7 MPa	✓	✓	-	✓	✓
100 bar / 1500 psi / 10 MPa	✓	✓	-	✓	✓
135 bar / 2000 psi / 13.5 MPa	✓	✓	-	✓	✓
200 bar / 3000 psi / 20 MPa	✓	✓	-	✓	✓
350 bar / 5000 psi / 35 MPa	✓	-	-	✓	✓
700 bar / 10000 psi / 70MPa	✓	-	-	✓	✓

Note: Do not apply pressure greater than 1 bar (16 psi) absolute to the negative port of differential pressure indicators.

### PM 700E External Remote Pressure Sensors

Any number of remote sensors can be used with a single DPI705E as all sensors hold their own calibration data and are supplied with a 2.9m (9.5 feet) cable

Available ranges as per table:

External Remote Pressure Sensor Availability					
Pressure Range	Abs	Gauge	Differential	Standard Accuracy	High Accuracy
25 mbar / 10 inH <sub>2</sub> O / 2.5 kPa	-	✓	✓	✓	-
70 mbar / 1 psi / 7 kPa	-	✓	✓	✓	-
200 mbar / 3 psi / 20 kPa	-	✓	✓	✓	-
350 mbar / 5 psi / 35 kPa	✓	✓	✓	✓	✓
700 mbar / 10 psi / 70 kPa	✓	✓	✓	✓	✓
1 bar / 15 psi / 100 kPa	✓	✓	✓	✓	✓
2 bar / 30 psi / 200 kPa	✓	✓	✓	✓	✓
3.5 bar / 50 psi / 350 kPa	✓	✓	-	✓	✓
7 bar / 100 psi / 700 kPa	✓	✓	-	✓	✓
10 bar / 150 psi / 1000 kPa	✓	✓	-	✓	✓
20 bar / 300 psi / 2 MPa	✓	✓	-	✓	✓
35 bar / 500 psi / 3.5 MPa	✓	✓	-	✓	✓
70 bar / 1000 psi / 7 MPa	✓	✓	-	✓	✓
100 bar / 1500 psi / 10 MPa	✓	✓	-	✓	✓
135 bar / 2000 psi / 13.5 MPa	✓	✓	-	✓	✓
200 bar / 3000 psi / 20 MPa	✓	✓	-	✓	✓
350 bar / 5000 psi / 35 MPa	✓	-	-	✓	✓
700 bar / 10000 psi / 70 MPa	✓	-	-	✓	✓
1000 bar / 15000 psi / 100 MPa	✓	-	-	✓	✓
1400 bar / 20000 psi / 140 MPa	✓	-	-	✓	✓



PM700E (Gauge, Absolute)



PM700E (Differential)

## Accuracy Levels

Total Uncertainty includes 1-year drift for both Standard and High accuracy levels.

- 1-Standard ±0.1% FS NLH&R over temperature, including non-linearity, hysteresis and repeatability.
- 2-High ±0.05% FS NLH&R over temperature, including non-linearity, hysteresis and repeatability.

## Accuracy Specification

Absolute Sensors	Standard Accuracy		High Accuracy	
	NLH&R	Total Uncertainty	NLH&R	Total uncertainty
	-10 to 50°C (14 to 122°F)			
Pressure Range	(% FS)	(% FS)	(% FS)	(% FS)
350 mbar to 1400 bar	0.08	0.1	0.04	0.075

Gauge/Differential Sensors	Standard Accuracy		High Accuracy	
	NLH&R	Total Uncertainty	NLH&R	Total Uncertainty
	-10 to 50°C (14 to 122°F)			
Pressure Range	(% FS)	(% FS)	(% FS)	(% FS)
25 mbar	0.3	0.348	N/A	N/A
70 mbar	0.1	0.121	N/A	N/A
200 mbar	0.08	0.1	N/A	N/A
350 mbar to 700 mbar	0.08	0.1	0.04	0.05
1 bar to 200 bar	0.08	0.1	0.04	0.05

**Note:** NLH&R Non-linearity, hysteresis and repeatability.

## Negative calibration option

- Negative calibration is an option OPI for gauge sensors up to 20 bar (300 psi / 2 MPa).
- Ranges below 1 bar (15 psi / 100 kPa) are calibrated to  $\pm$ FS  $\pm$ 200 mbar ( $\pm$ 3 psi /  $\pm$ 20 kPa).
- Ranges of 1 bar (15 psi / 20 kPa) and above are calibrated -1 bar (-15 psi / -100 kPa) to FS.

General Specifications	
Working Pressure	110% FS (alarm active beyond this range)
Sealing	IP54
Operating temperature	-10 to 50°C (14 to 122°F)
Storage temperature	-20 to 70°C (-4 to 158°F)
Humidity	0 to 90% RH non condensing
Shock and vibration	MIL-PRF-28800F for Class II equipment. 1 m Drop Tested @ -20°C (-4°F)
EMC	BS EN 61326-1
Electrical safety	BS EN 61010-1 UL 61010-1
Pressure safety	Pressure equipment directive class SEP. UL61010 Safe to 2xFS
Approval	CE marked, RCM
Size and weight	L 200 mm, W 95 mm, D 43 mm 563 g maximum
RoHS	Compliant
Media Compatibility	Media to be compatible with Stainless Steel and Hastelloy
Resolution	5 digits

## Media Compatibility

Only fluids that are compatible with Stainless Steel and Hastelloy should be used. This is to ensure the integrity of the pressure sensor and avoid fluid leakage.

## 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 DPI705E Safe Area or **P/N RTD-INTERFACE-IS** for DPI705EIS Hazardous Area certification allows users to use their own PT100 RTD probe. **RTD-INTERFACE** supplied with a field-rewireable M12 connector to allow users to connect their own wire-ended RTD's.

The probe option **P/N RTD-PROBE-485** for DPI705E Safe Area or **P/N RTD-PROBE-IS** for DPI705EIS Hazardous Area comes with the interface and a 15 cm (6") class A PT100 probe.

For further options please see Accessories section.



RTD Interface Ohms Measurement		
Pressure Range	NLH&R	Total Uncertainty
	-10 to 50°C (14 to 122°F)	
	(% FS)	(% FS)
0 to 400 Ω	0.005	0.006

### Notes:

- RTD NLH&R includes 24 hour stability.
- RTD Total Uncertainty includes 1 year drift.

# Ordering Information for DPI705E Handheld Pressure indicator

The DPI 705E and DPI 705E-IS are supplied with a user guide and calibration certificate as standard.

## Model Type

**DPI705E** Safe Area pressure indicator  
**DPI705EIS** Hazardous Area pressure indicator

### Accuracy (Now offering two levels of accuracy – see page 3 for availability by pressure range)

- 1 Standard
- 2 High

### Pressure Range and Reference type; (Mandatory to select only one e.g. 008A for each configuration)

	Gauge (G)	Absolute (A)	Differential (L)
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
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	-

### Pressure fitting

<b>P1</b>	G1/8 BSP Female	For ranges less than 350 bar
<b>P2</b>	G1/4 BSP Female Adaptor	For ranges less than 350 bar
<b>P3</b>	1/8 NPT Female Adaptor	For ranges less than 350 bar
<b>P4</b>	1/4 NPT Female Adaptor	For ranges less than 350 bar
<b>P5</b>	Quick-Fit Adaptor	For ranges less than 350 bar
<b>P6</b>	9/16 x 18 UNF Male	Mandatory for ranges greater than/equal to 350 bar

### Hazardous Area Approvals (Mandatory to select one)

<b>H0</b>	No Hazardous Area Approval (Default if DPI705E selected)
<b>H1</b>	ATEX/IECEX
<b>H2</b>	INMETRO (Brazil)

### Pressure Units

<b>U0</b>	All Pressure units (Default selection)
<b>U1</b>	Pa (Si) Pressure units only

### Options (Mandatory to select one)

<b>OP0</b>	No option required
<b>OP1</b>	Negative calibration for gauge ranges less than 35 bar (If selected, the calibration certificate includes values down to -1 bar g.)

DPI705EIS - 1 - 07G - P2 - H1 - U0 - OP1 (Example Part Number)

# 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

<b>PM700E</b>	Safe Area External remote pressure sensor
<b>PM700EIS</b>	Hazardous Area External remote pressure sensor

### Accuracy (Now offering two levels of accuracy – see page 3 for availability by pressure range)

- 1** Standard
- 2** High

### Pressure Range and Reference type; (Mandatory to select only one e.g. 008A for each configuration)

	Gauge (G)	Absolute (A)	Differential (L)
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
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

<b>P1</b>	G1/8 BSP Female	For ranges less than 350 bar
<b>P2</b>	G1/4 BSP Female Adaptor	For ranges less than 350 bar
<b>P3</b>	1/8 NPT Female Adaptor	For ranges less than 350 bar
<b>P4</b>	1/4 NPT Female Adaptor	For ranges less than 350 bar
<b>P5</b>	Quick-Fit Adaptor	For ranges less than 350 bar
<b>P6</b>	9/16 x 18 UNF Male	Mandatory for ranges greater than/equal to 350 bar

### Hazardous Area Approval (Mandatory to select one)

<b>H0</b>	No Hazardous Area Approval (Default if PM700E selected)
<b>H1</b>	ATEX/IECEX
<b>H2</b>	INMETRO (Brazil)

### Options (Mandatory to select one)

<b>OP0</b>	No option required
<b>OP1</b>	Negative calibration for gauge ranges less than 35 bar (if selected, the calibration certificate includes values down to -1 bar g.)

PM700E - 1 - 07G - P2 - H0 - OP0 (Example Part Number)

## Options

### OPI – Negative Calibration

Available for Gauge ranges lower than 35 bar. 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 state any accessories required as separate items when placing order.

The DPI 705E Safe and Hazardous area versions are compatible with the following accessories unless otherwise specified.

Part Code	Description
IO705E-CASE	DPI705E Carry Case
IO705E-CASE-IS	DPI705E Carry Case (IS)
IO705E-STRAP	DPI705E Hanging Strap
PM700E-CABLE	PM700E Remote Sensor Cable 2.9M
IO-ADAPT-G1/4	Adaptor G1/8 Male to G1/4 Female
IO-ADAPT-1/4NPT	Adaptor G1/8 Male to 1/4NPT Female
IO-ADAPT-1/8NPT	Adaptor G1/8 Male to 1/8NPT Female
IO-ADAPT-QF	G1/8M to Quick-fit Adaptor
RTD-INTERFACE-485	RTD Interface only - RS485
RTD-INTERFACE-IS	RTD IS Interface only - RS485
RTD-PROBE-485	RTD Interface with PT100 probe - RS485
RTD-PROBE-IS	RTD IS Interface with PT100 probe-RS485
IO-RTD-MI2CON	Field Wireable MI2 connector 4-pin
IO-RTD-MI2EXT	MI2M to MI2F 2m ext lead (6.5 ft) 4-wire
IO-RTD-PRBI50	RTD Probe 150mm, PT100 steel Class A
IOHOSE-NP1	20 bar Hose Assembly 1 metre
IOHOSE-NP2	20 bar Hose Assembly 2 metre
IO620-HOSE-P1	Pneumatic Hose Kit-1 metre
IO620-HOSE-P2	Pneumatic Hose Kit-2 metres
IO620-HOSE-H1	Hydraulic Hose Kit-1 metre
IO620-HOSE-H2	Hydraulic Hose Kit-2 metres
IO620-HOSE-P1-IS	Pneumatic Hose Kit-1 metre (IS)
IO620-HOSE-P2-IS	Pneumatic Hose Kit-2 metres (IS)
IO620-HOSE-H1-IS	Hydraulic Hose Kit-1 metre (IS)
IO620-HOSE-H2-IS	Hydraulic Hose Kit-2 metres (IS)
IO620-BSP	Pressure Adaptor Set - BSP
IO620-NPT	Pressure Adaptor Set - NPT



## Related Products

### Process Calibrators

Druck offer a comprehensive range of portable pressure, temperature and electrical field calibrators. To help you select the right process calibration tools we have categorised our products into three ranges.

Druck's Essential range provides rugged, accurate and easy-to-use test and calibration tools.

Druck's Expert range introduces higher accuracy and increased functionality.

Druck's Elite range provides a modular system offering state-of-the-art multifunction communication and calibration.



### Pneumatic and Hydraulic Test Kits:

#### PV210 Low Pressure Pneumatic Hand Pump

Fully portable, easy to use, an ideal tool for low pressure calibration checks on pressure transmitters, pressure switches, indicators, recorders and controllers.

- Generates pressures to 3 bar (45 psi)
- Generates vacuum to 90%

#### PV211 Pneumatic Hand Pump

Lightweight, high quality combined pressure and vacuum hand pump, designed to provide maximum pneumatic pressures efficiently and effortlessly.

- Pneumatic pressures in excess of 40 bar (600 psi)
- Generates vacuum to 96%



#### PV212 High Pressure Hydraulic Hand Pump

Lightweight, easy to use, an ideal tool for calibrating pressure transmitters, pressure transducers, pressure switches and pressure gauges.

- Generates pressures up to 1000 bar (15,000 psi)
- Controlled pressure release and adjustment



#### PV411A Multifunction Hand Pump

High quality field proven pressure and vacuum hand pump. This product replaces four conventional hand pumps.

- Pneumatic pressures to 40 bar (600 psi)
- Hydraulic pressures to 700 bar (10,000 psi)
- Removable hydraulic reservoir which can be disconnected from the pump without draining the fluid
- Excellent low pressure control
- 95% vacuum



### Laboratory and Workshop Instruments

Druck's PACE Series offers a comprehensive range of pressure controllers and indicators.

#### Pressure Transducers and Transmitters

Druck offer a wide range of pressure transducers and transmitters including analog, digital and HART/Smart devices. Please contact BH for further information

#### Supporting Services

Druck's highly trained staff can support you, no matter where you are in the world. We can provide nationally accredited calibration (both initially and at periodic intervals), extended warranty terms, maintenance and even rental of portable or laboratory instruments. Please contact your local Druck customer care team for more information.

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