1. Overview

The DPI 610E series instrument comprises a portable pressure calibrator with an in-built pressure generation manual pump, with pressure measurement and simulation capability. It is to be used to calibrate pressure sensors and transmitters. It has a smart and simple user interface allowing it to be operated by any technician, service or maintenance engineer.

The DPI 610E series combines a practical and robust design with reliable and accurate measurements. It is battery-powered and features highly reliable pneumatic and hydraulic assemblies for continuous and reliable performance for field calibration, even in harsh environmental conditions.

A flexible hose is supplied with the instrument to enable connection to other equipment.

This calibrator is enhanced with data logging functionality with internal memory for secure file storage.

The analysis feature includes field error calculations with PASS/FAIL status with the ability to create or download procedures which can be run on multiple devices, providing calibration certification for asset management and maintenance purposes.

The DPI 610E supports the HART (Highway Addressable Remote Transducer) communication protocol and allows basic HART operation and configuration on HART supported devices.

1.1 DPI 610E Series

1.1.1 Firmware Versions

This manual is based on the use of application firmware DK0492 version 02.00.03 and 02.00.04. For further details see End User Software Release Note document **169M2231** available at **Druck.com/DPI610E**.

Table 1-1: DPI 610E Series

Product Name	Case Color	Pressure Range	Calibrator Type
DPI 610E-PC	Blue	0.35 bar - 35 bar (5 - 500 psi) (0.035 MPa - 3.5 MPa)	Pneumatic
DPI 610E-SPC	Yellow	0.35 bar - 35 bar (5 - 500 psi) (0.035 MPa - 3.5 MPa	Pneumatic - Intrinsically Safe
DPI 610E-HC	Blue	70 bar - 1000 bar (1000 psi - 15000 psi) (7 MPa - 100 MPa)	Hydraulic
DPI 610E-SHC	Yellow	70 bar - 1000 bar (1000 psi - 15000 psi) (7 MPa - 100 MPa)	Hydraulic- Intrinsically Safe

Photographs of these Calibrator types are on the next page.

Copyright 2022 Baker Hughes Company.



Model: DPI 610E-PC
Type: Pneumatic
Pressure Range: 0.35 - 35 bar,
5 - 500 psi, 0.035 - 3.5 MPa



Model: DPI 610E-SPC
Type: Pneumatic - Intrinsically Safe
Pressure Range: 0.35 - 35 bar,
5 - 500 psi, 0.035 - 3.5 MPa



Model: DPI 610E-HC
Type: Hydraulic
Pressure Range: 70 - 1000 bar,
1000 - 15000 psi, 7 - 1000 MPa



Model: DPI 610E-SHC
Type: Hydraulic - Intrinsically Safe
Pressure Range: 70 - 1000 bar,
1000 - 15000 psi, 7 - 1000 MPa

Copyright 2022 Baker Hughes Company.

1.2 Equipment in the Box

The following items are supplied with the instruments in the DPI 610E series. When unpacking the instrument, make sure that there are no missing items.

Note: When the hydraulic instrument is delivered there is a protective cap in the reservoir socket. Keep this cap for future use: this is for sealing the socket when no reservoir is attached.

1.2.1 Pneumatic Units

1. DC Power Supply (IO610E-PSU)
2. BSP Swivel Adapter (184-203)
3. NPT Swivel Adapter (184-226)
4. Blanking Plug (111M7272-1)
5. (IDT) Instrument Dirt Trap (IO620-IDT621-NEW) - packed separately, OR
   (IDT) Instrument Dirt Trap (IO620-IDT621-IS) - packed separately
6. Hose sets: 1m (IO620-HOSE-P1) or Intrinsically Safe (IO620-HOSE-P1-IS)
7. Electrical Test Lead Set (I06X-LEAD)
8. 2m USB Cable (IO610E-USB-CABLE)
9. DPI 610E Quick Start and Safety Manual (165M0437)
10. Certificates Document Pack (IS product only)
11. Factory Calibration Certificate.

1.2.2 Hydraulic Units

1. DC Power Supply (I0610E-PSU)
2. BSP Swivel Adapter (184-203)
3. NPT Swivel Adapter (184-226)
4. Blanking Plug (111M7272-1)
5. Hose sets: 1m long (IO620-HOSE-H1) or Intrinsically Safe (IO620-HOSE-H1-IS)
6. Reservoir (PV411-115 or Intrinsically Safe PV411-115-IS) - packed separately
7. 250 mL Reservoir Filler Bottle (1S-11-0085)
8. Electrical Test Lead Set (I06X-LEAD)
9. 2m USB Cable (IO610E-USB-CABLE)
10. DPI 610E Quick Start and Safety Manual (165M0437)
11. Certificates Document Pack (IS product only)
12. Factory Calibration Certificate.

1.3 Specifications for DPI 610E

Refer to **www.druck.com/dpi610e** for the Datasheet that gives the technical specifications for the DPI 610E.

Copyright 2022 Baker Hughes Company.

1.4 Accessories

Table 1-2 shows common accessories for the DPI 610E series. See Datasheet (BHCS39207) for a full list of accessories.

Table 1-2: Common accessories

Part Code	Description
RTD-INTERFACE-485	RTD Interface only (non-IS area)
RTD-INTERFACE-IS	RTD IS Interface (IS area)
RTD-PROBE-485	RTD Interface with PT100 Probe (non-IS area)
RTD-PROBE-IS	RTD Interface with PT100 Probe (IS area)
IO-RTD-M12CON	M12 Field Wireable Connector to fit RTD Interface (IS and non-IS area)
IO-RTD-M12EXT	RTD M12 male to female extension lead 2 m (6.5 ft) 4-wire
IO-RTD-PRB150	150 mm length 6 mm diameter PT100 steel RTD probe, Class A
PM700E	Remote Pressure Sensor (non-IS area)
PM700E-IS	Remote Pressure Sensor (IS area)
PM700E-CABLE	Remote Sensor Extension Cable 2.9 m (9.5 ft)
IO620-IDT621-NEW	Bar Dirt and Moisture Trap (non-IS area)
IO620-IDT621-IS	Bar Dirt and Moisture (IS area)
IO610E-CASE	Carrying Case (suitable for IS and non-IS use)

1.5 Observance of Manual

INFORMATION **This manual contains operating procedures and safety information for the DPI 610E series. It is the responsibility of the customer to make sure that all personnel operating and maintaining the equipment are correctly trained and qualified.**

Note: Before operating or using the equipment, read and obey all warnings and cautions given in the Quick Start and Safety Manual.

1.6 Safety

INFORMATION **The manufacturer has designed this equipment to be safe when used as detailed in this manual. Operators should read and obey all local Health and Safety regulations and Safe Working Procedures or Practices.**

When performing a procedure or task:

1. Do not use this instrument for any other purpose than stated in this manual. Incorrect use may reduce safety.
2. Follow all operating and safety instructions in the Quick Start and Safety Manual.
3. Use suitably qualified Technicians and good engineering practice for all procedures in this documentation.

Copyright 2022 Baker Hughes Company.

1.6.1 General Safety Precautions

- Use only the approved tools, consumable materials and spares to operate and maintain the equipment.
- Make sure all work areas are clean and clear of unwanted tools, equipment and materials.
- Make sure all unwanted consumable materials are discarded in accordance with local health and safety and environmental regulations.

1.6.2 Operation in a Hazardous Environment



WARNING Do not use the DPI 610E-HC or DPI 610E-PC in locations where explosive gas, vapor or dust are present. There is a risk of an explosion.

Refer to the Quick Start and Safety Manual provided with the instrument.

1.6.3 General Warnings



Make sure that the instrument is safe to use with the proposed media. Some liquid and gas mixtures are dangerous. This includes mixtures that result from contamination.

Do not use in an enriched oxygen environment or with other strong oxidizers - this can cause an explosion.

Do not use tools on the instrument that might cause incendive sparks - this can cause an explosion.

It is dangerous to ignore the specified limits (refer to data sheet) for the DPI 610E series or to use the instrument when it is not in its normal condition. Use the applicable protection and obey all safety precautions.

1.6.4 Electrical Warning



RISK OF ELECTRIC SHOCK To prevent electrical shocks or damage to the instrument, do not connect more than 30 V CAT I between the terminals, or between the terminals and the ground (earth). Any connection must be compliant with the terminal input/output parameters.

External circuits should have appropriate insulation to the mains.



WARNING This instrument uses a Lithium-Ion (Li-Ion) battery pack. To prevent an explosion or fire, do not short circuit and do not disassemble. Keep the battery safe from damage.



WARNING To prevent an explosion or fire, only use the Druck specified battery (150M8295-1) and power supply (149M4334-1) rated for this instrument.

To prevent battery leakage/damage or excess heat generation, only use the mains power supply in the ambient temperature range 0 to 40°C (32 to 104°F). The power supply input range is 90 – 264 VAC, 50 to 60 Hz, 300 mA, installation category CAT II.

Note: Position the power supply without obstructing the supply disconnecting device.

Note: The instrument is suitable for short-term and long-term temporary overvoltage that may occur between the line conductor and earth in electrical installations.

Note: Keep all leads free from contaminants.

Copyright 2022 Baker Hughes Company.

1.6.5 Pressure Warnings

INFORMATION **The instrument contains an internal over-pressure vent mechanism to protect the internal pressure sensor and pump mechanism from damage.**

Note: Maximum Operating Pressure (MWP) is stated on the label on the underside of the instrument. Over pressure should be limited to 1.5 × MWP (MWP is based on unit pressure range).

WARNING **Always wear appropriate eye protection when working with pressure.**

To prevent a dangerous release of pressure, make sure that all the related pipes, hoses and other accessories have the correct pressure rating, are safe to use and are correctly attached. Isolate and bleed the system before you disconnect a pressure connection.

It is dangerous to attach an external source of pressure to the instrument. Use only the internal mechanisms to set and control pressure in the pressure station.

1.6.6 Overvoltage Categories

The following summary of installation and measurement overvoltage categories is derived from IEC610101. The overvoltage categories indicate the severity of overvoltage transients.

Table 1-3: Overvoltage Categories

Category	Description
CAT I	This is the least severe overvoltage transient. CAT I equipment cannot be directly connected to the mains power. E.g a process loop powered device.
CAT II	This is for single phase electrical installation. E.g appliances and portable tools.

Copyright 2022 Baker Hughes Company.