INSTRUKART AI-DPI-2200

INSTRUKART AI-DPI-2200 Hand Pump Calibrator User Manual

Model: AI-DPI-2200 | Hand Pump Calibrator with Pressure & Vacuum Gauge

1. Introduction

The INSTRUKART AI-DPI-2200 is an advanced pneumatic hand pump calibrator designed for precise pressure and vacuum generation and measurement. This versatile instrument is ideal for calibration laboratories, field calibration, and testing of pressure gauges and transmitters. It features a robust construction of aluminum and stainless steel, ensuring durability and reliability in demanding environments. This manual provides essential information for the safe and effective use of your calibrator.

Figure 1: INSTRUKART AI-DPI-2200 Hand Pump Calibrator with Pressure and Vacuum Gauge.

2. Product Overview and Components

The AI-DPI-2200 calibrator is engineered for dual functionality, allowing for both pressure and vacuum generation. It comes equipped with a master gauge and includes various reducers for broad compatibility.

2.1 Key Features

- **Measuring Parameters:** Pressure and Vacuum
- **Vacuum Range:** Ambient to -0.9 Kg/Cm²
- **Pressure Range:** Ambient to 30 Kg/Cm² (30 Bar / 430 PSI)
- **Construction Material:** Aluminium and Stainless Steel
- **Master Gauge Range:** -1 to 25 Bar
- **Accuracy:** ±0.5%
- **Power Supply:** 2 x AAA battery (1.5V) for digital gauge

- **Connection:** 1/4" NPT 304SS

2.2 Included Components

The standard package includes the following items:

- 1 Unit of AI-DPI-2200 Pressure and Vacuum Calibrator
- 1 Unit of Master Gauge (Range: -1 to 25 Bar)
- 3 Nos Reducers (1/4", 1/2", 3/4")
- Instruction Manual
- Hose Wire
- O-Rings

Figure 2: Calibrator with included accessories, including reducers, hose, and O-rings.

Figure 3: Calibrator with Dual Functionality, illustrating key connection points.

3. Setup

Follow these steps to set up your AI-DPI-2200 calibrator for operation:

1. **Unpacking:** Carefully remove all components from the packaging. Inspect for any signs of damage during transit.
2. **Attach Master Gauge:** Screw the provided master gauge onto the designated port at the top of the calibrator. Ensure it is hand-tightened securely to prevent leaks.
3. **Connect Unit Under Calibration (UUC):** Connect the device to be calibrated (UUC) to the appropriate port using the supplied hose and reducers if necessary. Select the reducer that matches the UUC's connection size (1/4", 1/2", or 3/4").
4. **Battery Installation (for digital master gauge):** If your master gauge is digital, ensure 2 x AAA batteries are correctly installed. Refer to the gauge's specific manual for battery compartment location and polarity.

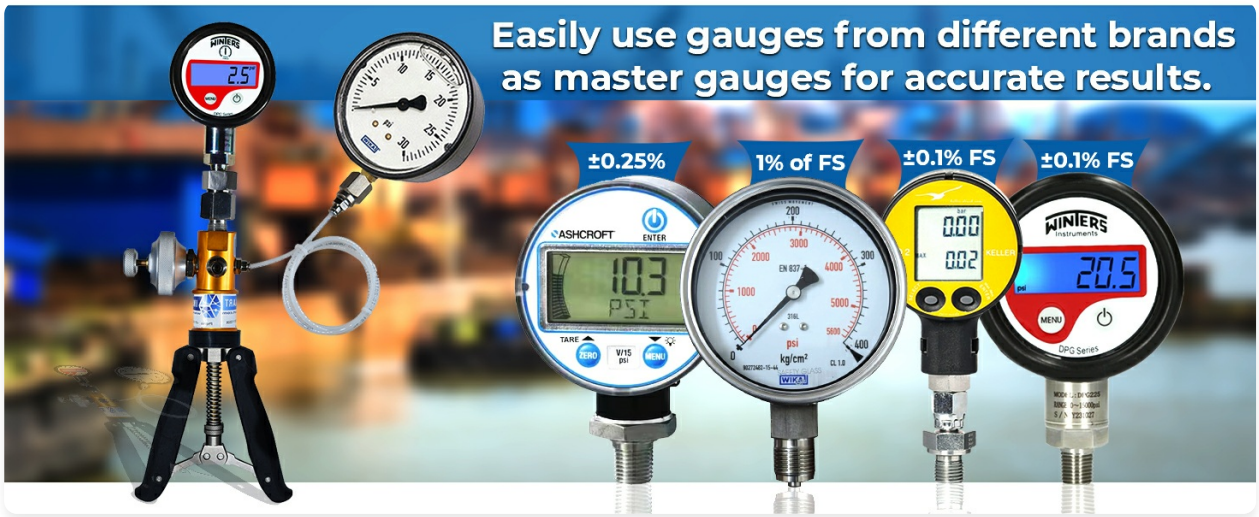


Figure 4: Connecting the Unit Under Calibration (UUC).

4. Operating Instructions

The AI-DPI-2200 allows for precise generation of both pressure and vacuum. Familiarize yourself with the controls before operation.

4.1 Pressure Generation

1. Ensure all connections are secure.
2. To generate pressure, repeatedly squeeze the hand pump handles. The master gauge will display the increasing pressure.
3. Use the fine adjustment knob (if present) to precisely set the desired pressure.
4. To release pressure, slowly open the release valve.

Figure 5: Generating pressure by squeezing the handles.

4.2 Vacuum Generation

1. To switch from pressure to vacuum mode, use the piston pin. This typically involves pulling out or rotating a pin located near the pump mechanism.
2. Once in vacuum mode, repeatedly squeeze the hand pump handles to generate vacuum. The master gauge will display the decreasing pressure (negative values).
3. To release vacuum, slowly open the release valve.

Figure 6: Toggling between pressure and vacuum modes using the piston pin.

4.3 Master Gauge Usage

The calibrator is compatible with various master gauges, allowing for flexibility in calibration tasks.

Figure 7: Compatibility with various master gauges for accurate results.

5. Maintenance

Proper maintenance ensures the longevity and accuracy of your AI-DPI-2200 calibrator.

- **Cleaning:** Wipe the calibrator with a soft, dry cloth after each use. Avoid using abrasive cleaners or solvents that could damage the finish or internal components.
- **Storage:** Store the calibrator in a clean, dry environment, away from extreme temperatures and direct sunlight. Use the original packaging or a protective case for storage.
- **O-Ring Replacement:** Periodically inspect the O-rings for wear and tear. Replace them if they appear cracked, flattened, or damaged to maintain a proper seal. Spare O-rings are provided.
- **Battery Replacement:** For digital master gauges, replace the 2 x AAA batteries when the low battery indicator appears or the display becomes dim. Ensure correct polarity during installation.

- **Calibration:** For optimal accuracy, it is recommended to have the calibrator and master gauge professionally calibrated at regular intervals, typically annually, or as required by your quality system.

6. Troubleshooting

This section addresses common issues you might encounter with your calibrator.

Problem	Possible Cause	Solution
Cannot generate pressure/vacuum	Loose connections; Damaged O-rings; Piston pin not correctly set for mode.	Check all connections for tightness. Inspect and replace O-rings if necessary. Ensure piston pin is fully engaged for the desired mode (pressure or vacuum).
Pressure/Vacuum leaks	Loose connections; Worn or damaged O-rings; Damaged hose.	Tighten all connections. Replace O-rings. Inspect hose for cracks or damage and replace if found.
Inaccurate readings on digital gauge	Low battery; Gauge needs calibration.	Replace batteries. Consider professional calibration of the master gauge.
Handles are stiff or difficult to pump	Lack of lubrication; Internal debris.	Consult with INSTRUKART support for guidance on lubrication or internal cleaning. Do not attempt to disassemble without proper knowledge.

7. Specifications

Parameter	Value
Model	AI-DPI-2200
Measuring Parameters	Pressure and Vacuum
Vacuum Range	Ambient to -0.9 Kg/Cm²
Pressure Range	Ambient to 30 Kg/Cm² (30 Bar / 430 PSI)
Material Of Construction	Aluminium and Stainless Steel
Weight (Approx.)	1.5 Kgs
Master Gauge Range	-1 to 25 Bar
Accuracy	±0.5%

Parameter	Value
Case Size (Master Gauge)	2.5" (63mm)
Case Material (Master Gauge)	ABS (IP64)
Rubber Boot (Master Gauge)	Silicone rubber (IP65)
Operation Mode	Continuous pressure reading
Response Time	±3 Hz display refresh rate
Proof / Burst Pressure	200% / 300% FS
Operating Temperature	14°F to 122°F / -10°C to 50°C
Storage Temperature	-4°F to 167°F / -20°C to 75°C
LCD Display (Digital Gauge)	2" x 3/4" (48mm x 16mm)
Connection	1/4" NPT 304SS
Sensor	316L welded, Piezo
Operation Life	1 million cycles
Power Supply	2 x AAA battery (1.5V)
Battery Life	2 years (auto shut-off mode)
Power Mode	Auto or manual shut-off
Display Digits	4 digits to 5,000 psi
Pressure Unit Selection	psi, bar, kg/cm², MPa

8. Applications

The INSTRUKART AI-DPI-2200 Hand Pump Calibrator is suitable for a wide range of applications requiring accurate pressure and vacuum calibration:

- Calibration Laboratories
- Field Calibration
- Pressure Gauge Calibration
- Pressure Transmitter Calibration
- Oil and Gas Industries
- HVAC Systems
- Industrial Process Control
- Aerospace and Aviation

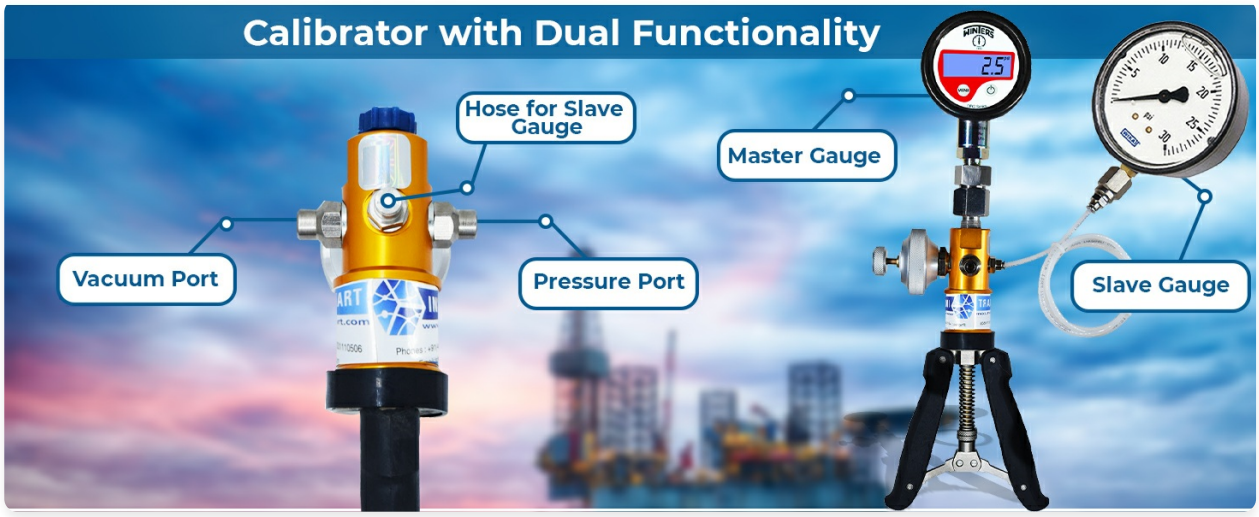


Figure 8: Applications in Oil and Gas Industries and HVAC Systems.

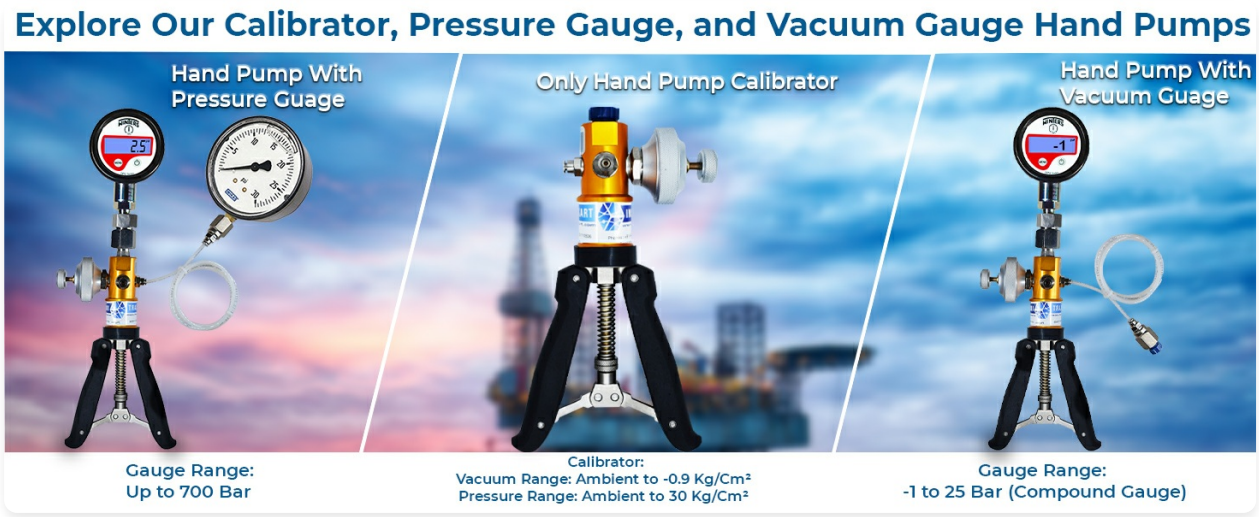


Figure 9: Applications in Industrial Process Control and Aerospace and Aviation.

9. Warranty and Support

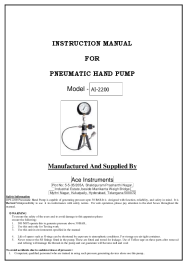
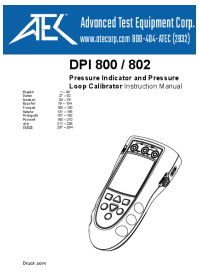
For warranty information, technical support, or service inquiries, please contact INSTRUKART customer service. Keep your purchase receipt as proof of purchase for any warranty claims.

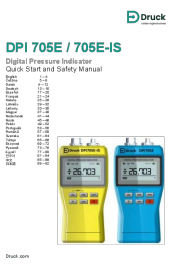
Manufacturer: Ace Instruments

First Available: November 16, 2022

For further assistance, please visit the official INSTRUKART store or contact their support channels.

Related Documents - AI-DPI-2200

	Instrukart DHPG 210 & DHPC 210S Digital High Pressure Pirani Gauge Operation and Maintenance Manual This manual provides detailed operation and maintenance instructions for the Instrukart DHPG 210 and DHPC 210S Digital High Pressure Pirani Gauges. It covers product specifications, installation procedures, operating principles, circuit descriptions, and troubleshooting guidance.
	Pneumatic Hand Pump Model AI-2200 Instruction Manual - Ace Instruments Instruction manual for the Ace Instruments Pneumatic Hand Pump Model AI-2200. This manual provides specifications, guidelines for safe use, unpacking instructions, principles of operation, calibration procedures, and troubleshooting for the DPI-2200 hand pump.
	Druck DPI 611 Hand-Held Pressure Calibrator: Features, Specifications, and Accessories Detailed information on the Druck DPI 611 hand-held pressure calibrator, including its precision engineering, pressure generation capabilities, electrical functions, user interface, advanced features, specifications, and available accessories. Learn about its compact design, accuracy, and integration with 4Sight2 calibration software.
	DPI 612 Portable Pressure Calibrator Safety and Quick Start Guide A comprehensive guide to the safe operation and setup of the DPI 612 Portable Pressure Calibrator, covering its various models (PFX, PFP, HFP), features, and essential safety precautions.
	Druck DPI 800 / 802 Pressure Indicator and Loop Calibrator Instruction Manual Instruction manual for the Druck DPI 800 and DPI 802 Pressure Indicator and Pressure Loop Calibrator, detailing operation, safety, calibration, and specifications.



[Druck DPI 705E / 705E-IS Digital Pressure Indicator: Quick Start & Safety Manual]

Get started quickly and safely with the Druck DPI 705E / 705E-IS Digital Pressure Indicator. This manual covers installation, safety, operation, and intrinsic safety features for accurate pressure measurement.