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› Digital Differential Pressure Controller User Manual

Ace Instruments Range: 0 to 10 mm.W.C

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Model: Range: 0 to 10 mm.W.C

1. INTRODUCTION

The Ace Instruments Digital Differential Pressure Indicator is a precision digital readout monitor designed for accurate measurement of room pressure. It is ideally suited for critical environments such as pharmaceutical clean rooms, hospital operation theaters, and isolation rooms, where precise pressure monitoring is essential for maintaining environmental integrity.

This device provides a clear digital display of differential pressure, ensuring easy readability and reliable performance in demanding applications.



Figure 1: Front view of the Digital Differential Pressure Controller, showing the digital display and control buttons.



Figure 2: The Digital Differential Pressure Controller held in a hand, illustrating its compact and ergonomic design.

2. KEY FEATURES

- **Measuring Range:** 0 to 10 mm.W.C.
- **Accuracy:** +/- 0.5% of Full Scale.
- **Resolution:** 0.1 mm.W.C.
- **Display:** Integrated 4 Digit Red LED 7 Segment Display, 0.5 inches high, for clear visibility.
- **Sensor:** Integrated High Speed Differential Pressure Sensor for rapid and accurate readings.
- **Medium Compatibility:** Suitable for Air or Non-Corrosive Gases.
- **Alarms:** Built-in Buzzer Alarm for immediate process violation alerts.
- **Power:** Operates on 24 Volts D.C. (Typical).
- **Connection:** Two 4mm Stainless Steel Hose Nipples located at the back for secure connections.
- **Size:** Standard 4 ½ Inch (114.3 mm) diameter, designed to fit Maganahelic Gauge cutouts, with only 30 mm depth for easy integration.

- **Construction:** Durable Aluminium Lm-6 Powder Coated Body with Flush Bezel Fitment and Water Splash Proof Polycarbonate Front Sticker for robust performance.

3. SETUP AND INSTALLATION

Proper installation is crucial for the accurate and reliable operation of your Digital Differential Pressure Controller. Follow these steps carefully:

3.1 Unpacking and Inspection

- Carefully remove the controller and all accessories from the packaging.
- Inspect the unit for any signs of physical damage that may have occurred during transit. If damage is found, contact your supplier immediately.
- Verify that all components are present: the controller unit, power adapter, and mounting screws.



Figure 3: The Digital Differential Pressure Controller shown with its included power adapter and mounting hardware.

3.2 Mounting the Controller

- The controller is designed for flush bezel fitment and has a standard 4 ½ inch (114.3 mm) diameter, suitable for Maganahelic Gauge cutouts.
- Ensure the mounting surface is stable and free from excessive vibrations.
- Secure the controller using the provided mounting screws.

3.3 Electrical Connections

- Connect the 24 Volts D.C. power supply to the designated power input terminals at the back of the unit. Ensure correct polarity (+ and -).
- If applicable, connect any external alarm or communication wiring (e.g., 4-20mA output, RS 485 COM) to the appropriate terminals as per your system requirements. Refer to the wiring diagram on the back of the unit.



Figure 4: Rear view of the controller, detailing the power input terminals, hose nipples, and optional communication/output terminals.

3.4 Pressure Connections

- Connect the pressure tubing to the two 4mm Stainless Steel Hose Nipples located at the back of the controller.
- Ensure that the tubing is securely attached and free from kinks or leaks to prevent inaccurate readings.

- Connect the high-pressure side to one nipple and the low-pressure side to the other to measure differential pressure.

4. OPERATING INSTRUCTIONS

Once installed and powered on, the Digital Differential Pressure Controller will begin displaying the measured differential pressure.

4.1 Power On

- After all connections are made, apply 24V D.C. power to the unit.
- The 4-digit red LED display will illuminate and show the current differential pressure reading.

4.2 Reading the Display

- The primary display shows the differential pressure in mm.W.C.
- Observe the display for real-time pressure values.

4.3 Alarm Functionality

- The built-in buzzer alarm will activate if the measured pressure falls outside the pre-set acceptable range.
- Consult the device's programming guide (if available separately) for instructions on setting alarm thresholds.
- Press the "UNIT/ACK" button to acknowledge and silence the alarm.

4.4 Unit Conversion (if applicable)

- The unit typically displays in mm.W.C. If other units are supported, use the "UNIT/ACK" button to cycle through available units (e.g., Pascals).

4.5 Programming (PROG Button)

- The "PROG" button is used to enter programming mode for advanced settings such as alarm limits, calibration, or output configurations.
- Refer to the detailed programming manual for specific instructions on using the "PROG" and arrow buttons for configuration.

5. MAINTENANCE

The Digital Differential Pressure Controller is designed for minimal maintenance. However, regular checks can ensure its longevity and accuracy.

- **Cleaning:** Wipe the front panel with a soft, damp cloth. Do not use abrasive cleaners or solvents. Ensure the polycarbonate front sticker remains intact and clear.
- **Connection Checks:** Periodically inspect the hose nipples and electrical connections for any signs of wear, looseness, or corrosion. Ensure tubing is free from kinks or blockages.
- **Calibration:** While the device comes with a calibration certificate, periodic re-calibration by a qualified technician is recommended to maintain accuracy, especially in critical applications.
- **Environment:** Ensure the operating environment remains within the specified temperature and humidity ranges to prevent damage to internal components.

6. TROUBLESHOOTING

This section provides solutions to common issues you might encounter.

Problem	Possible Cause	Solution
No Display / Unit Not Powering On	No power supply or incorrect voltage/polarity.	Check power connections and ensure 24V D.C. is supplied with correct polarity. Verify power adapter functionality.
Inaccurate Readings	- Leaky or kinked pressure tubing. - Incorrect pressure connection (high/low sides reversed). - Sensor obstruction or damage. - Unit requires re-calibration.	- Inspect and secure all pressure tubing connections. - Ensure correct connection of high and low pressure lines to the nipples. - Contact technical support if sensor damage is suspected. - Arrange for professional re-calibration.
Alarm Constantly Active	- Pressure is genuinely outside set limits. - Alarm limits are set too narrowly or incorrectly.	- Verify the actual pressure conditions. - Review and adjust alarm settings using the "PROG" button and programming manual. - Press "UNIT/ACK" to silence the alarm temporarily.
Buttons Unresponsive	Temporary software glitch or physical damage.	Try power cycling the unit (turn off, wait 10 seconds, turn on). If issue persists, contact support.

7. SPECIFICATIONS

Attribute	Detail
Model	Digital Differential Pressure Controller
Measuring Range	0 to 10 mm.W.C
Accuracy	+/- 0.5% of Full Scale
Resolution	0.1 mm.W.C
Display	Integrated 4 Digit Red LED 7 Segment Display, 0.5 Inches High
Sensor Type	Integrated High Speed Differential Pressure Sensor
Medium	Air or Gases (Non Corrosive)
Alarms	Built-in Buzzer Alarm for Process Violation Alert
Power Supply	24 Volts D.C. Typical
Connections	2 Nos. Hose Nipples Of 4mm. Stainless Steel At The Back
Size (Diameter)	Standard 4 ½ Inch (114.3 mm)
Depth	30 mm
Construction Material	Aluminium Lm-6 Powder Coated Body, Polycarbonate Front Sticker
Manufacturer	Ace Instruments
Country of Origin	India
ASIN	B07CDQMM8D

8. WARRANTY AND SUPPORT

Ace Instruments is committed to providing high-quality products. For specific warranty details, please refer to the documentation provided with your purchase or contact Ace Instruments directly.

8.1 Technical Support

If you encounter any issues not covered in this manual or require further assistance, please contact Ace Instruments customer support. Have your product model and serial number ready when contacting support.

For the latest contact information, please visit the official Ace Instruments website or refer to your purchase documentation.

8.2 Returns and Protection Plans

This product may be eligible for a return within 30 days of purchase. Additionally, extended protection plans may be available for purchase to cover your device beyond the standard warranty period. Please consult your retailer or purchase platform for details on return policies and available protection plans.