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› Ace Instruments AI-DDPG Digital Differential Pressure Gauge User Manual

Ace Instruments AI-DDPG

Ace Instruments AI-DDPG Digital Differential Pressure Gauge User Manual

Comprehensive instructions for installation, operation, and maintenance.

1. PRODUCT OVERVIEW

The Ace Instruments AI-DDPG is a Digital Differential Pressure Gauge designed for precise measurement of differential pressure in various environments, including clean rooms and HVAC systems. It features an integrated 4-digit LED display and offers a measurement range of -100 to 100 Pascals.



Figure 1: Front view of the AI-DDPG Digital Differential Pressure Gauge, showing the red LED display and control buttons.

Key Features:

- **Measuring Parameter:** Differential Pressure
- **Range:** -100 to 100 Pascals
- **Accuracy:** +/- 0.5% of Full Scale
- **Resolution:** 1 Pascal
- **Display:** Integrated 4 Digit Red LED 7 Segment Display (0.5")
- **Output:** 4-20mA
- **Alarm:** Built-in Buzzer for process violation alerts
- **Mounting:** Panel Mounting (Default), Wall Mounting with accessory (Grouting Box)
- **Communication:** RS-485 Modbus (for BMS/SCADA/PLC integration)

2. PACKAGE CONTENTS

Verify that all items are present and undamaged upon unpacking:

- 1 Unit of Ace Instruments AI-DDPG Digital Differential Pressure Gauge
- 1 Pair of Wall-Mounted Hose Nipples
- Silicon Tube
- Mounting Screws
- Instruction Manual (this document)
- Factory Calibration Certificate

3. SAFETY INFORMATION

- Ensure the power supply matches the device specifications (24 Volts D.C. Typical).
- Do not expose the device to corrosive gases or liquids.
- Maximum over pressure is 2 times the rated pressure. Exceeding this may damage the sensor.
- Installation should be performed by qualified personnel.
- Disconnect power before making any electrical connections.

4. INSTALLATION

4.1 Mounting Options

The AI-DDPG can be installed using either panel mounting or wall mounting with the provided accessory.

Wall Mounting:

For wall mounting, use the supplied grouting box and screws. The gauge has a 30 mm profundity for cleanroom modular wall fitment.



Figure 2: The gauge's slim profile (30 mm profundity) is suitable for cleanroom modular wall installations.



Figure 3: The wall mounting box and screws provided for secure installation.



Figure 4: Example of the AI-DDPG gauge installed on a wall, typically in a cleanroom or HVAC application.

4.2 Electrical Connections

The device requires a 24 Volts D.C. power supply. Connect the power adapter to the designated terminals at the back of the unit. The gauge also supports RS-485 Modbus communication for integration with Building Management Systems (BMS), SCADA, or PLCs, and provides a 4-20mA output.



Figure 5: The AI-DDPG gauge shown with its standard power adapter.



Figure 6: Detailed view of the AC-DC adapter, specifying input and output voltage (24V DC).

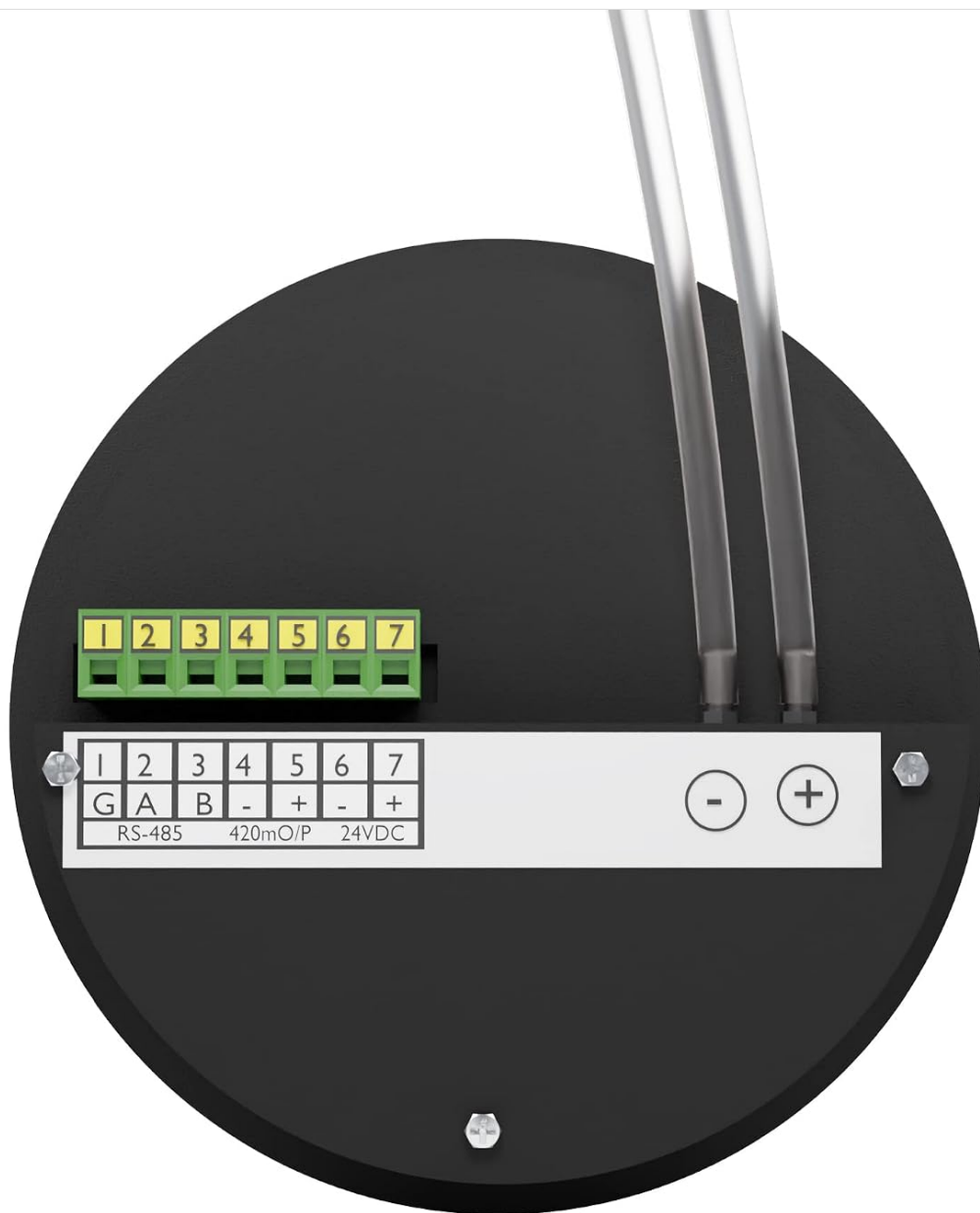


Figure 7: Rear panel illustrating the terminal block for electrical connections (RS-485, 4-20mA, 24VDC) and hose nipples for pressure input.

RS 485 Modbus communication
for **BMS/SCADA/PLC** integration.

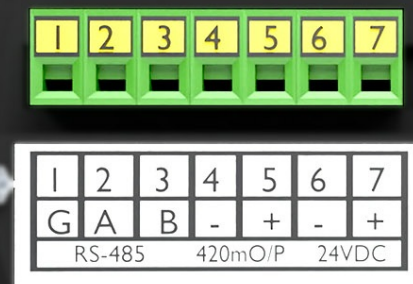


Figure 8: Close-up of the RS-485 Modbus communication terminals for integration with control systems.

4.3 Pressure Connections

Connect the silicon tubes to the two hose nipples (4mm ABS Plastic) located at the back of the unit. These ports are for high and low pressure inputs to measure the differential pressure.



Figure 9: Illustration of the 1/8" port connection size for high and low pressure inputs on the back of the unit.

5. OPERATION

5.1 Power On

Once properly connected to the 24V DC power supply, the gauge will power on, and the 4-digit red LED display will illuminate, showing the current differential pressure reading.

5.2 Reading the Display

The display shows the differential pressure value. The unit of measurement (Pascals or mm.W.C.) is indicated by an illuminated LED next to the reading.

5.3 Unit Selection

Press the 'UNIT ACK' button to toggle between Pascals and mm.W.C. measurement units.



Figure 10: The 'UNIT ACK' button allows for easy switching between Pascals and mm.W.C. units.

5.4 Alarm Function

The built-in buzzer will activate to provide an audible alert if the measured differential pressure falls outside predefined limits, indicating a process violation.

5.5 Understanding Differential Pressure

Differential pressure measurement is crucial for monitoring airflow and system performance. It can indicate both positive and negative air pressure conditions.

- **Positive Air:** Occurs when the pressure in one area is higher than another, indicating efficient airflow and proper ventilation.
- **Negative Air:** Occurs when the pressure in one area is lower than another, potentially signaling air leaks, ventilation problems, or system inefficiencies.

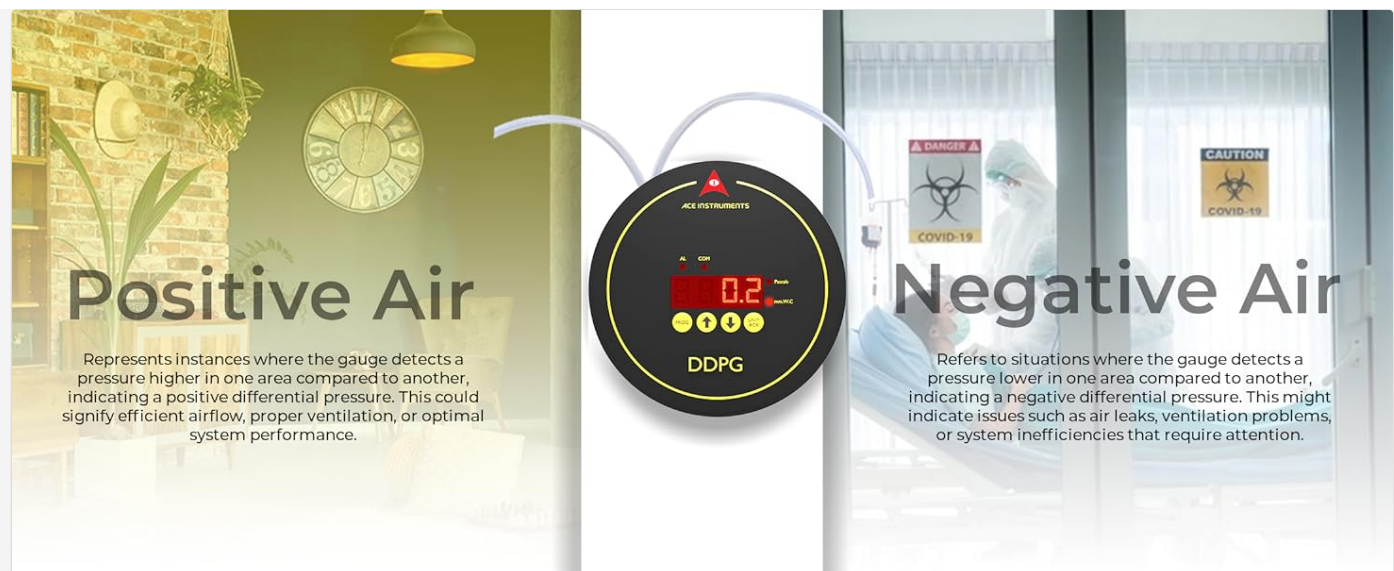


Figure 11: Visual explanation of positive and negative air pressure as detected by the differential pressure gauge.

6. MAINTENANCE

6.1 Cleaning

Clean the exterior of the gauge with a soft, dry cloth. Do not use abrasive cleaners or solvents. Ensure the device is not exposed to corrosive substances.

6.2 Calibration

The AI-DDPG comes with a factory calibration certificate. Regular re-calibration may be required depending on application and regulatory standards. Refer to your facility's calibration schedule or contact Ace Instruments for service.

7. TROUBLESHOOTING

• No Display:

- Check if the power adapter is securely connected.
- Verify the power supply voltage is 24V DC.

• Incorrect Readings:

- Ensure pressure tubes are correctly connected to the high and low pressure ports.
- Check for any kinks or blockages in the silicon tubes.
- Verify the measurement unit (Pascals/mm.W.C.) is correctly selected.
- Consider if re-calibration is necessary.

• Alarm Constantly Active:

- Check the actual differential pressure against the set alarm limits.
- If the pressure is within limits, consult the device's programming guide for alarm threshold adjustment.

• No Communication via RS-485:

- Verify wiring connections for RS-485 (A, B, G).
- Check communication settings (baud rate, parity) on both the gauge and the connected system.

8. SPECIFICATIONS

Parameter	Specification
Measuring Parameter	Differential Pressure
Differential Pressure Range	-100 to 100 Pascals
Accuracy	+/- 0.5% of Full Scale
Resolution	1 Pascal
Display	4 Digit Red LED 7 Segment Display (0.5")
Output	4-20mA
Maximum Over Pressure	2 Times the rated pressure
Sensors	Integrated High Speed Differential Pressure Sensor
Mounting Option	Panel Mounting (Default), Wall Mounting with accessory (Grouting Box)
Medium	Air or Gases (Non-Corrosive)
Connection	2 Nos. Hose Nipples of 4mm ABS Plastic at the back
Alarm Type	Built-in Buzzer Alarm for Process Violation Alert
Construction	Matte Finish ABS Plastic Enclosure
Power Supply	24 Volts D.C. Typical
Size (Diameter)	4.5 inches (114.3mm)
Depth	30 mm
Weight	180 Grams
Product Dimensions (L x W x H)	3.94 x 0.79 x 1.05 inches

9. WARRANTY AND SUPPORT

The Ace Instruments AI-DDPG Digital Differential Pressure Gauge is supplied with a factory calibration certificate, ensuring its accuracy at the time of manufacture. For specific warranty terms, technical support, or service inquiries, please refer to the official Ace Instruments website or contact their customer service department directly. Contact information can typically be found on the manufacturer's packaging or website.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question