VIRASENSE® GEN 1

DIFFERENTIAL PRESSURE MONITOR FOR CLEANROOM AND HVAC APPLICATIONS

CLEANROOM SOLUTION
FANAVARAN VIRA PHARMED ENGINEERING CO.
IN SEARCH OF INNOVATION

INTRODUCTION

Modern cleanroom facilities rely on accurate environmental monitoring to maintain product quality, process integrity, and regulatory compliance. Among all environmental parameters, differential pressure is one of the most critical indicators of cleanroom performance. Proper pressure cascades help prevent contamination transfer between adjacent areas, maintain directional airflow, and ensure that controlled manufacturing environments remain protected from external contamination. In pharmaceutical production facilities, biotechnology laboratories, healthcare environments, and medical device manufacturing plants, maintaining the correct pressure differential is essential for compliance with GMP guidelines and ISO 14644 cleanroom standards. Even small deviations from specified pressure limits may indicate HVAC performance issues, filter degradation, or airflow imbalances that require immediate corrective action. ViraSense® Gen1 has been developed as a dedicated differential pressure monitoring solution for cleanroom and controlled environment applications. Designed with both functionality and aesthetics in mind, the device features a flush-mounted architecture that integrates seamlessly into cleanroom wall systems while providing continuous real-time monitoring of room differential pressure. The instrument measures pressure differences across a range of ±125 Pa and provides an accuracy of ±2 Pa, making it particularly suitable for pharmaceutical and healthcare applications where precise low-pressure measurement is required. Real-time pressure values are displayed on a high-resolution 2.8-inch full-color TFT LCD display with a resolution of 240 × 320 pixels, allowing operators to quickly assess room status and identify deviations from specified operating conditions.

APPLICATIONS

ViraSense® DPS Series Devices Are Designed For A Wide Range Of Applications In HVAC/R, Cleanroom, And Air-Handling Systems, Specifically For Continuous Monitoring Of Filter Differential Pressure And Filter Loading Conditions. Typical Applications Include Monitoring Of Differential Pressure Across Pre-Filters, Fine Filters, F7/F9 Filters, HEPA Filters, And Other Air Filtration Stages; Continuous Monitoring Of Filter Pressure Drop In Air-Handling Units (AHUs); Detection Of Filter Clogging And Progressive Filter Loading; Monitoring Of Pressure Drop Across Supply And Return Air Filters; Filter Condition Monitoring In Cleanrooms And Controlled Environments; Monitoring Of HEPA Filter Pressure Drop In Pharmaceutical And Healthcare Facilities; Providing Adjustable Set-Point And Alarm Indication For Filter Maintenance Requirements; Monitoring Filter Performance In HVAC And Clean Air Distribution Systems; And Integration With BMS/EMS Systems For Centralized Monitoring, Alarm Management, And Preventive Maintenance. By Continuously Measuring The Differential Pressure Across The Filter, ViraSense® DPS Helps Operators Identify Increasing Filter Resistance, Detect Filter Clogging At An Early Stage, And Determine When Filter Cleaning, Maintenance, Or Replacement Is Required.

TECHNICAL SPECIFICATIONS

PARAMETER	SPECIFICATION
PRODUCT MODEL	DPS-MOD-500
MEASUREMENT RANGE	PA ±500
MEASUREMENT ACCURACY	PA ±2
SENSOR TECHNOLOGY	CMO SENS®
DISPLAY TYPE	TFT LCD
DISPLAY SIZE	INCH 2.8
RESOLUTION	PIXELS 320 × 240
COLOR DEPTH	65K COLORS
DISPLAY CONNECTION	FPC
DISPLAY INTERFACE	SPI / PARALLEL
COMMUNICATION	RS485 MODBUS RTU
BAUD RATE	BPS 115200 – 9600
ADDRESS	128 – 1
POWER SUPPLY	VDC 12-24
PROTECTION CLASS	IP54
HOUSING MATERIAL	ABS
HOUSING COLOR	MATTE WHITE
OPERATING TEMPERATURE	2°C TO +45°C+
BODY DIMENSIONS	MM 110 × 100
FRONT FRAME DIMENSIONS	MM 120 × 130
TERMINAL TYPE	SCREW TERMINAL
REFERENCE TUBE LENGTH	UP TO 80 CM
PRESSURE FITTINGS	500MM
MOUNTING TYPE	FLUSH MOUNTED
WEIGHT	250G
COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV GL ISO 9001 = ISO 14001	CE

INSTALLATION, CONFIGURATION

1. Panel Preparation Before installation, switch OFF the power supply. Prepare a panel cut-out of 105 × 112 mm. After cutting, carefully remove all burrs and sharp edges from the cut-out area. Thoroughly clean the cut surface and surrounding area from dust, oil, grease, and other contaminants using a suitable degreasing cleaner compatible with the panel material. Allow the surface to dry completely before installation.
2. Sensor Installation :Install the ViraSense sensor into the prepared panel cut-out and ensure that it is securely and properly positioned.
3. Modbus Address ConfigurationSet the required Modbus slave address using the Modbus Configuration DIP Switch according to the binary addressing scheme and the assigned address in the control system.
4. Baud Rate Configuration Set The Required RS-485 Baud Rate Using The Dedicated Baud Rate DIP Switch (W01).

The Default Configuration Is:

0-1	0-2	Baud Rate
OFF	OFF	1200 bps
ON	ON	9600 bps
ON	OFF	19200 bps
OFF	ON	56000 bps

After Changing The Baud Rate, Switch The Device OFF And ON To Apply The New Setting.

5. Modbus Connection
Connect The RS-485 Communication Lines To The Corresponding Terminals:

• A	RS-485	A
• B	RS-485	B

Ensure That The A And B Connections Are Correctly Wired And Securely Tightened.

6. Power Connection Connect The 24 VDC Power Supply To The Designated Power Terminals :

+24V	Positive
GND	Negative

Always Verify The Power Supply Voltage And Polarity Before Energizing The Device.

7. Final Check & Commissioning Before Powering On The Device, Verify That The Sensor Is Securely Installed And That The Modbus Address, Baud Rate, A/B Communication Lines, And Power Connections Are Correctly Configured.
After Powering On The Device, Verify The Displayed Measurement And Confirm Successful Modbus RTU Communication With The Monitoring Or Control System.

IMPORTANT SAFETY INSTRUCTIONS

Read All Instructions Before Installation Or Use.
Disconnect Power Before Installation, Wiring, Maintenance, Or Servicing. Use Cables Rated For The Device's Maximum Operating Voltage. Do Not Use In Explosive Or Flammable Environments Unless Specifically Approved.
Installation And Servicing Must Be Performed By Qualified Personnel. Follow All Applicable Standards, Regulations, And Installation Requirements.Keep This Manual For Future Reference.Vira Pharmed Is Not Responsible For Improper Installation, System Design, Or Use Outside The Specified Requirements.

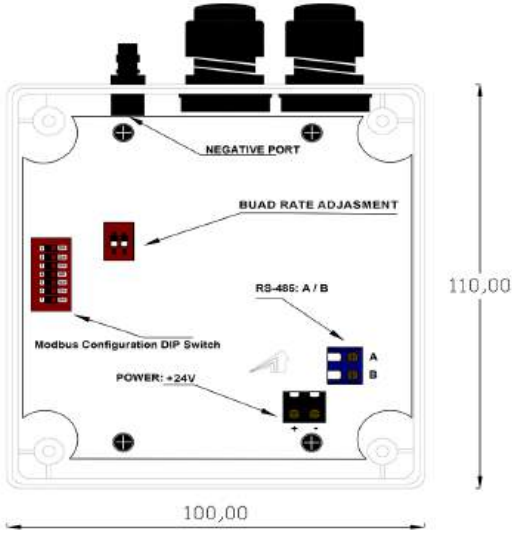
⚠ WARNING:

Disconnect The Power Supply Before Installation, Wiring, Or Servicing. Incorrect Wiring, Reversed Polarity, Or Omproper Configuration May Result In Malfunction Or Damage To The Device.

SCHEMATICS



DIMENSIONAL DRAWINGS



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