



UNIQUE VACUUM  
SOLUTIONS

# Advanced Vacuum Measurement Solutions

Precision Instruments for Industrial & Research Applications

## Precision You Can Trust

High-accuracy vacuum measurement solutions engineered for dependable performance in every environment.

## 20+ Years of Innovation

Advancing vacuum technology through continuous development, reliability, and exceptional accuracy.

## Complete Vacuum Gauge Range

From 1300 mbar to  $1 \times 10^{-6}$  mbar, instruments built to support every measurement need





## ABOUT

# UNIQUE VACUUM SOLUTIONS

**UNIQUE VACUUM SOLUTIONS** offers a comprehensive range of vacuum gauges, sensors, and display controllers designed for precision measurement across a wide pressure spectrum — from 1300 mbar to  $1 \times 10^{-6}$  mbar. Our solutions cater to both industrial environments and advanced research applications. Through continuous innovation and engineering excellence, we consistently deliver instruments that ensure high accuracy, reliability, and long-term performance.

### Methods of Vacuum Measurement:

#### **Gas-Dependent Measurement:**

These systems operate on principles such as:

- Thermal conductivity (e.g., Pirani gauges)
- Ionization (e.g., Cold cathode & Hot cathode gauges)

Since these instruments measure pressure based on the thermal or ionization properties of gas present in the chamber, the reading can vary depending on the type of gas.

#### **Gas-Independent Measurement:**

These systems use:

- Ceramic disc sensors
- Capacitance manometers
- Piezo or membrane-based sensors

As there is no thermal or chemical interaction with the gas, the measurement remains consistent regardless of gas composition. These are known as Gas-Independent Vacuum Gauges and are preferred in applications requiring high measurement stability and gas-type neutrality.

## Selection of Vacuum Gauges:

### **Active Gauges:**

- Include built-in electronics for signal processing
- Provide standard 0–10V or 4–20mA outputs
- Can be directly integrated with PLCs, HMIs, dataloggers, and automation systems

## Selection of Vacuum Gauges:

### **Passive Gauges:**

- Function purely as sensors without electronics
- Require a display controller for calibration, signal conditioning, and output controls
- Ideal when multiple sensors are linked to a centralized display system



# RANGE OF VACUUM GAUGES

Vacuum Gauges for Every Application



## ROUGH VACUUM GAUGES

( ATM to 0.1 mbar )

Reliable monitoring for atmosphere-level applications



## MEDIUM VACUUM GAUGES

( ATM to  $10^{-3}$  mbar )

Precision control for industrial and laboratory environments



## HIGH VACUUM GAUGES

( ATM to  $10^{-6}$  mbar )

Advanced performance for demanding research and high-tech applications

# SELECTION OF VACUUM GAUGES

## Rough Vacuum: ATM to 0.1 mbar

High-accuracy vacuum measurement solutions engineered for dependable performance in every environment.



Sensor Model:	DVG-1S
Sensor Type:	Ceramic aluminum oxide diaphragm, excellent chemical resistance
Measurement Range:	1333 to 0.1 mbar
Accuracy:	1) $\pm 0.75\%$ of reading 2) $\pm 0.1\%$ of full scale (BFSL)
Output Signal:	0 - 10 V or 4 - 20 mA
Compatible Display Controller:	DVG - 100A



Sensor Model:	UDM-5
Sensor Type:	Capacitance diaphragm + Piezo , excellent chemical resistance
Measurement Range:	1000 to $5 \times 10^{-3}$ mbar
Accuracy:	$\pm 0.5\%$ of reading
Output Signal:	0 - 10 V
Compatible Display Controller:	DVG - 100A



Sensor Model:	UDG-2S
Sensor Type:	Ceramic piezo diaphragm , excellent chemical resistance
Measurement Range:	1333 to 0.1 mbar
Accuracy:	1) 100 to 1333 mbar: $\pm 0.5\%$ of reading 2) 1 to 99.9 mbar: $\pm 0.05\%$ of full scale (1333 mbar)
Output Signal:	0 - 10 V
Compatible Display Controller:	DVG - 100A

## DVG-100A Display Controller



Display range:	1000 to 0.1mBar
Input signal:	0 -10v or 4 - 20mA
Unit of Measurement:	mBar or torr selectable
Set point relay output:	01 number
Supply input	220V AC / 50 Hz
Display resolution:	0.1mBar / 0.1 torr

## Medium Vacuum: ATM to 10<sup>-3</sup> mbar (PASSIVE GAUGES)

<b>DPRG Series:</b>	Digital Pirani Vacuum Gauges
<b>Application Range:</b>	Ideal for accurate vacuum measurement from 20 mbar to 10 <sup>-3</sup> mbar
<b>Sensor Type:</b>	Tungsten filament-based sensor
<b>Key Advantage:</b>	Calibration handled entirely at the display controller, no adjustments required at the sensor



Display type:	Single line display
Model:	DPRG-1GH
Measurement Range:	20 mBar to 10 <sup>-3</sup> mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to 10 <sup>-3</sup> mBar : +/- 15%
Relay output:	NIL
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE



Display type:	Single line display
Model:	DPRG-1GH-SP
Measurement Range:	20 mBar to 10 <sup>-3</sup> mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to 10 <sup>-3</sup> mBar : +/- 15%
Relay output:	ONE
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE



Display type:	Single line display
Model:	DPRG-1GH-2SP
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	TWO
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE

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Display type:	Single line display
Model:	DPRG-2GH
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	NIL
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	TWO

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Display type:	Single line display
Model:	DPRG-2GH-SP
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	TWO ( one for each channel )
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	TWO



Display type:	Exponential display
Model:	DPRG-1GH
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	NIL
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE

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Display type:	Exponential display
Model:	DPRG-1GH-SP
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	ONE
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE

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Display type:	Exponential display
Model:	DPRG-2GH
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	NIL
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	TWO



Display type:	Exponential display
Model:	DPRG-2GH-SP
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	TWO ( one for each channel )
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	TWO

**FLEXA Series:** Tungsten Filament Pirani Vacuum Gauges

**Application Range:** Ideal for accurate vacuum measurement from 20 mbar to  $10^{-3}$  mbar

**Sensor Type:** Tungsten filament-based sensor

**Key Advantage:** Calibration handled entirely at the sensor, sensor to sensor interchangeable



Display type:	Single line display
Model:	FGD-1GH
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	NIL
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE



Display type:	Single line display
Model:	FGD-1GH-SP
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	ONE
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE

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Display type:	Single line display
Model:	FGD-1GH-2SP
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	TWO
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE

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Display type:	Single line display
Model:	FGD-2GH
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	NIL
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	TWO



Display type:	Single line display
Model:	FGD-2GH-SP
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	TWO ( one for each channel )
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	TWO



Display type:	Exponential display
Model:	FGE-1GH
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	NIL
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE



Display type:	Exponential display
Model:	FGE-1GH-SP
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	ONE
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE



Display type:	Exponential display
Model:	FGE-1GH-2SP
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	TWO
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE

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Display type:	Exponential display
Model:	FGE-2GH
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	NIL
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	TWO

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Display type:	Exponential display
Model:	FGE-2GH-SP
Measurement Range:	20 mBar to $10^{-3}$ mBar
Accuracy:	1) 1000 mBar to 100 mBar : +/- 100% 2) 100 mBar to 20 mBar : +/- 30% 3) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	TWO ( one for each channel )
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	TWO

<b>HYBRID Series:</b>	MEMS Diaphragm + Tungsten Filament Hybrid Vacuum Gauges
<b>Application Range:</b>	Suitable for precise measurement from 100 mbar to $1 \times 10^{-3}$ mbar
<b>Sensor Type:</b>	Hybrid system combining MEMS diaphragm and Tungsten filament technology
<b>Key Advantage:</b>	Calibration supported directly at the sensor — enabling sensor-to-sensor interchangeability without reconfiguration



Display type:	Single line display
Model:	HPRGD-1GH
Measurement Range:	1000 mBar to $10^{-3}$ mBar
Accuracy:	1) $10^3$ mBar to 20 mBar : +/- 0.25% 2) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	NIL
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE



Display type:	Single line display
Model:	HPRGD-1GH-SP
Measurement Range:	1000 mBar to $10^{-3}$ mBar
Accuracy:	1) $10^3$ mBar to 20 mBar : +/- 0.25% 2) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	ONE
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE



Display type:	Single line display
Model:	HPRGD-2GH
Measurement Range:	1000 mBar to $10^{-3}$ mBar
Accuracy:	1) $10^3$ mBar to 20 mBar : +/- 0.25% 2) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	NIL
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	TWO

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Display type:	Single line display
Model:	HPRGD-2GH-SP
Measurement Range:	1000 mBar to $10^{-3}$ mBar
Accuracy:	1) $10^3$ mBar to 20 mBar : +/- 0.25% 2) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	TWO ( one for each channel )
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	TWO

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Display type:	Exponential display
Model:	HPRGE-1GH
Measurement Range:	1000 mBar to $10^{-3}$ mBar
Accuracy:	1) $10^3$ mBar to 20 mBar : +/- 0.25% 2) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	NIL
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE



Display type:	Exponential display
Model:	HPRGE-1GH-SP
Measurement Range:	1000 mBar to $10^{-3}$ mBar
Accuracy:	1) $10^3$ mBar to 20 mBar : +/- 0.25% 2) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	ONE
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	ONE



Display type:	Exponential display
Model:	HPRGE-2GH
Measurement Range:	1000 mBar to $10^{-3}$ mBar
Accuracy:	1) $10^3$ mBar to 20 mBar : +/- 0.25% 2) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	NIL
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	TWO



Display type:	Exponential display
Model:	HPRGE-2GH-SP
Measurement Range:	1000 mBar to $10^{-3}$ mBar
Accuracy:	1) $10^3$ mBar to 20 mBar : +/- 0.25% 2) 20 mBar to $10^{-3}$ mBar : +/- 15%
Relay output:	TWO ( one for each channel )
RS485 / 0-10V non linear o/p:	OPTIONAL
No. of channels:	TWO

## High Vacuum: ATM to $10^{-6}$ mbar (ACTIVE GAUGES)

<b>OnePirani Series:</b>	Precision measurement across a wide high-vacuum range from $1 \times 10^3$ mbar to $1 \times 10^{-6}$ mbar
<b>Sensor Type:</b>	Tungsten filament-based sensor
<b>Key Advantages:</b>	<ul style="list-style-type: none"> <li>1) Sensor-level calibration for greater accuracy</li> <li>2) Interchangeable sensors with no recalibration required on the controller</li> </ul>



Sensor Model:	HVP- 4 (Miniature Pirani)
Measurement Range:	$1 \times 10^{-6}$ to 13.33 mbar
Accuracy:	<ul style="list-style-type: none"> <li>1) <math>1 \times 10^{-5}</math> to <math>9.99 \times 10^{-5}</math> mbar : 25% of reading</li> <li>2) <math>1 \times 10^{-4}</math> to <math>9.99 \times 10^{-1}</math> mbar : 5% of reading</li> <li>3) 1.00 to 13.33 mbar : 30% of reading</li> </ul>
Output Signal:	0 - 10 V
Corresponding Display Controller:	UVGS-1GH-SP



Sensor Model:	HVP - 5 (Miniature Pirani + Diaphragm Piezo)
Measurement Range:	$1 \times 10^{-6}$ to $1 \times 10^3$ mbar
Accuracy:	<ul style="list-style-type: none"> <li>1) <math>1 \times 10^{-5}</math> to <math>9.99 \times 10^{-5}</math> mbar : 25% of reading</li> <li>2) <math>1 \times 10^{-4}</math> to <math>7.99 \times 10^{-1}</math> mbar : 5% of reading</li> <li>3) 8.00 to 99.9 mbar : 1% of reading</li> <li>3) 100 to 1333 mbar : 0.5% reading</li> </ul>
Output Signal:	0 - 10 V
Corresponding Display Controller:	UVGS-1GH-SP

## UVGS-1GH-SP features



Display range:	$1 \times 10^{-6}$ to $1 \times 10^3$ mbar
Input signal:	0 -10v
Unit of Measurement:	mBar
Set point relay output:	01 number
Supply input	220V AC / 50 Hz
Display resolution:	One Decimal in Mantissa

Pressure Range	Pressure in mbar	Molecules per cm <sup>3</sup>	Mean free path
Atmosphere	1013 .	$2.7 \times 10^{19}$	68 nm
Rough Vacuum	300 ... 1	$10^{19}$ to $10^{16}$	0.1 – 100 µm
Medium Vacuum	$1 \dots 10^{-3}$	$10^{16}$ to $10^{13}$	0.1 – 100 mm
High Vacuum	$10^{-3} \dots 10^{-7}$	$10^{13}$ to $10^9$	10 cm – 1 km
Ultra High Vacuum	$10^{-7} \dots 10^{-11}$	$10^9$ to $10^5$	1 km – $10^4$ km

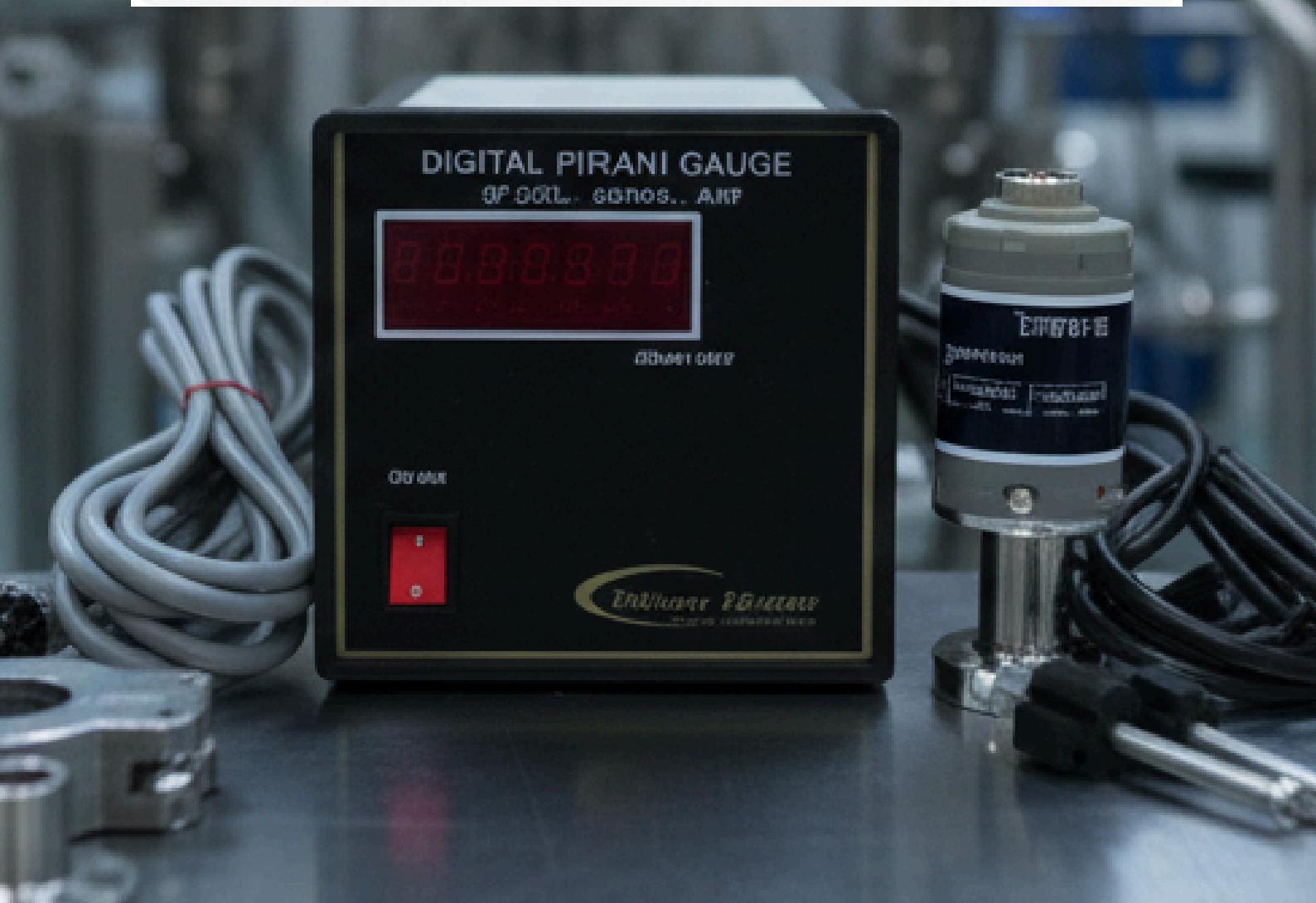
### Pressure Unit Conversions:

- 1 mbar = 100 Pa = 0.75 torr = 0.75 mmHg
- 1.33 mbar = 1 Torr = 1 mmHg = 133 Pa
- 1013 mbar = 760 torr = 1 atm

# Powering Precision, Securing Performance

**DRIVEN BY EXPERTISE. FOCUSED ON YOUR SUCCESS.**

Our cutting-edge vacuum instruments combine robust engineering with precise measurement control, helping industries achieve higher productivity, improved safety, and superior product quality across every application.





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## Find us here:

#57, 8th cross, 1st B cross, Doddanna Industrial Estate, Vishwaneedam post, near Peenya 2nd stage, Bangalore - 560091

## Contact us:

-  +91-9886726920, 080-28367059
-  support@uniquevacuum.co.in
-  www.uniquevacuum.co.in

