

PIRANI VACUUM GAUGE GP-2001G, GP-2002G QUICK MANUAL

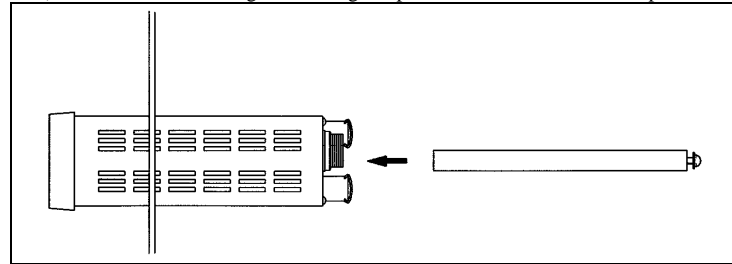
Introduction

This quick manual is for quick check of operation and display of the product. Please refer to instruction manual in advance for detailed information about operation, precautions and safety for proper use. Available for download from ULVAC website. <https://showcase.ulvac.co.jp/en>
This manual is for the following gauges. Serial Nos. 00001G and higher

1. Installing the controller

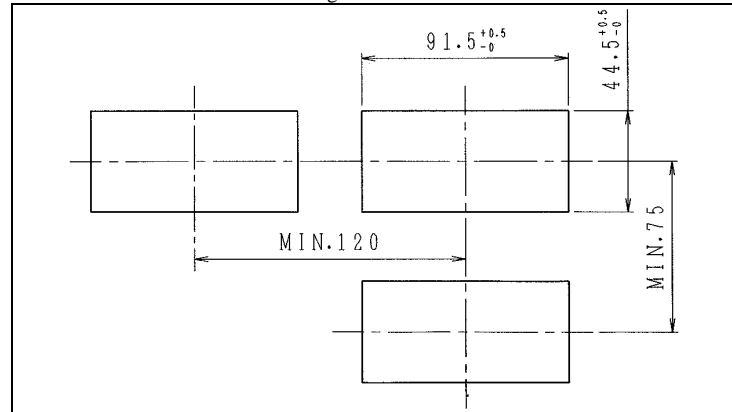
1.1. How to mount

- Remove the metal fitting from the controller.
- Fit the controller into the front panel.
- Attach the metal fittings in the original position from the back of the panel.



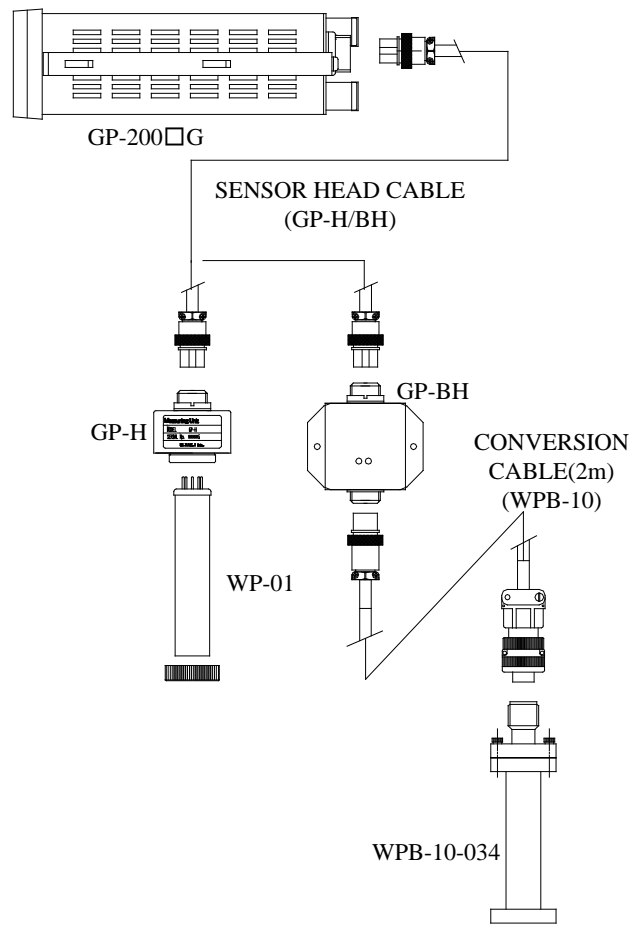
1.2. Mounting panel

- This instrument is the panel mounting type.
- The sheet thickness of the mounting panel should be 1.0 to 4.0 mm.
- A rectangular hole measuring 91.5 x 44.5 mm is required to mount this instrument.
- If the instruments are mounted side by side, provide a spacing between controllers as shown in the figure below.



1.3. Electrical connection

Make electrical connection after installing components.
Fix the cable by taking care not to exert undue force to the connection between the sensor head and sensor head cable and the connection between the controller and sensor head cable.
Lay the sensor head cable away from power lines, if possible. Noise may occur.
Moving the sensor head cable will generate frictional electricity between conductor and insulator, which can cause an error at a low pressure.
Avoid installation of the vacuum gauge in a high temperature or high humidity place. Securely fasten the connector fixing screw.

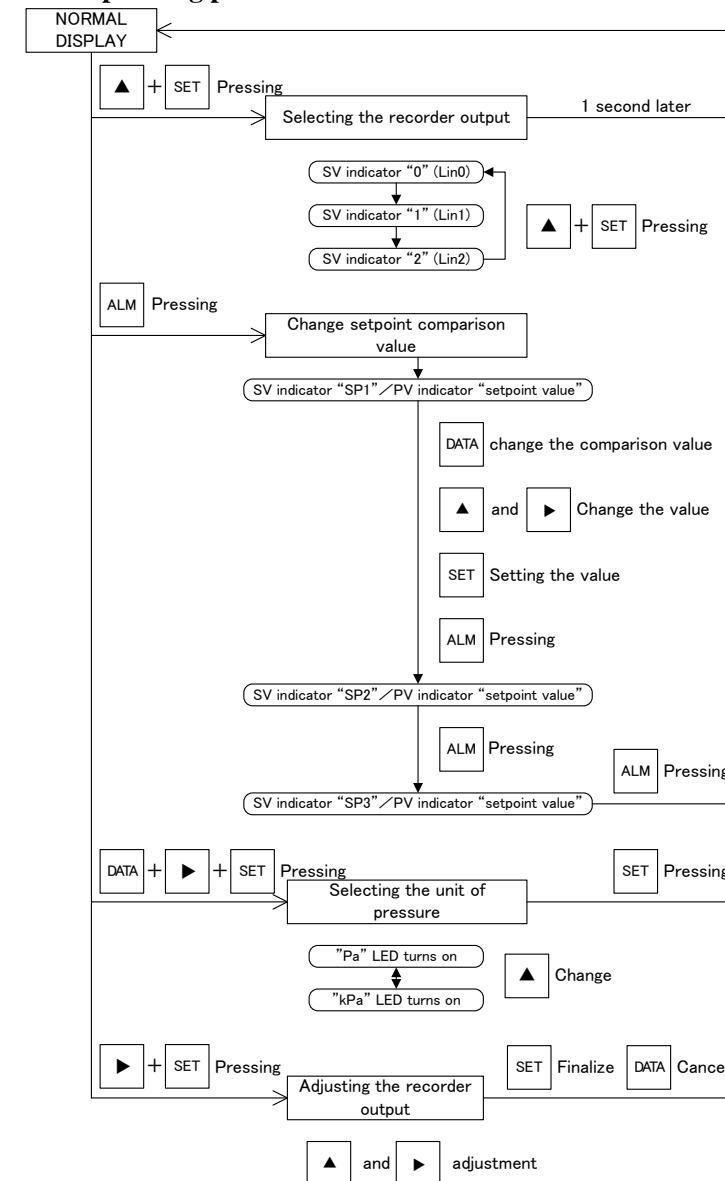


2. A sensor head installation method to GP-H

Caution: The installation methods of a screw for fixation are different by a sensor head.



3. Operating procedure



4. Recorder output

The recorder outputs of this gauge include Lin0 and Lin1, Lin2, which can be selected. Both outputs are correlated with pressure in linear function.

The ripple of the recorder output is approx. 10 mV (p-p).

- Lin0 : 0~3000Pa : 0~10V
- Lin1 : 0~1000Pa : 0~10V
- Lin2 : 0~ 100Pa : 0~10V

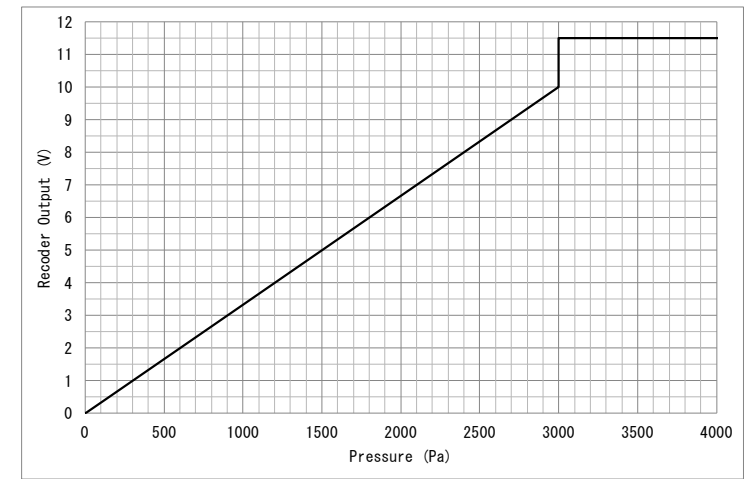
4.1. Selecting the recorder output (Default: Lin1)

Pressing the [▲] and [SET] switches simultaneously displays "0", "1" or "2" on the SV indicator for one second. Select the desired output.

4.2. Recorder output

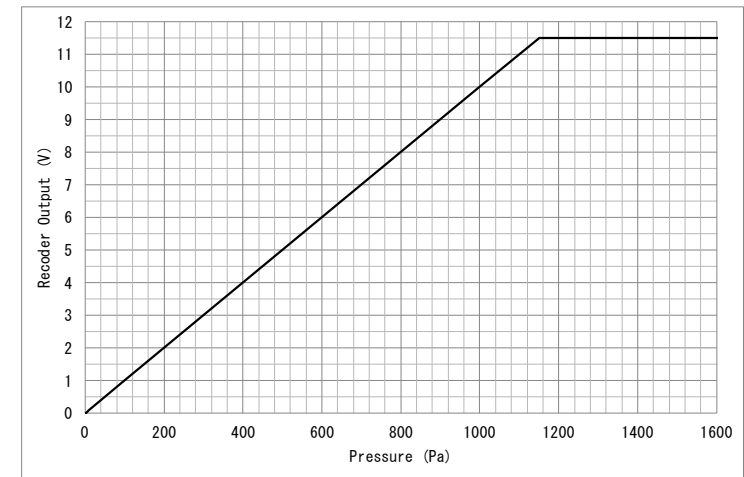
4.2.1. Lin0

Pressure (Pa)	Output Voltage (V)	Pressure (Pa)	Output Voltage (V)
0.0	0.00	1000.0	3.33
10.0	0.03	3000.0	10.00
100.0	0.33	---	11.50



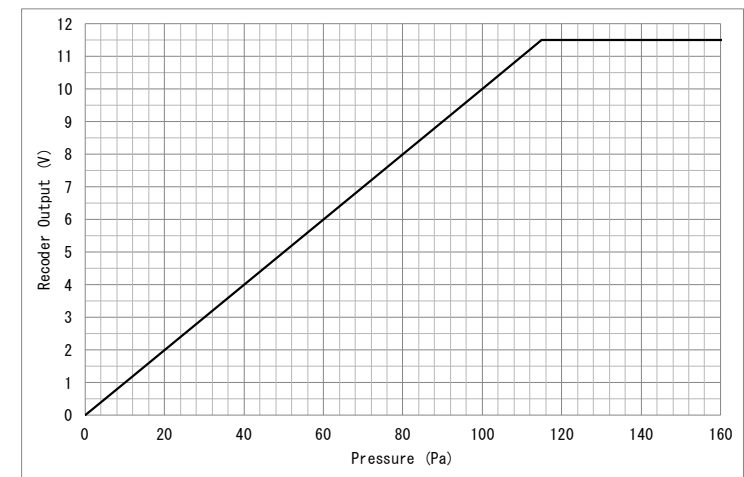
4.2.2. Lin1

Pressure (Pa)	Output Voltage (V)	Pressure (Pa)	Output Voltage (V)
0.0	0.00	100.0	1.00
1.0	0.01	1000.0	10.00
10.0	0.1	3000.0	11.50



4.2.3. Lin2

Pressure (Pa)	Output Voltage (V)	Pressure (Pa)	Output Voltage (V)
0.0	0.00	100.0	10.00
1.0	0.1	1000.0	11.50
10.0	1	3000.0	11.50



5. SETPOINT

5.1. SETPOINT Output

The setpoint output turns ON (continuity) the transistor output (open collector) if the measured value is smaller than the set comparison value and the status is maintained continuously for more than 0.5 second.

When the setpoint output is turned ON, the LED (green) that displays the comparison output action on the front panel also light up.

The setpoint output is not turned ON for approx. three seconds after power is turned ON regardless of the measured value.

5.2. Adjustable range: 0.0 to 3000.0 Pa

※Default : SP1:400Pa, SP2:600Pa, SP3:800Pa

5.3. Rated load

Rated load voltage: 24 VDC, Maximum load current: 50 mA

5.4. Setting of SETPOINT value

(1) The comparison value setting mode and the normal measurement mode can be changed over from one to the other by pressing the [ALM] switch on the front panel. Select the required indicator while watching the SV indicator.

(Example) To display and change the comparison value of SETPOINT, press [ALM] switch once to display "SP1" on the SV indicator.

(2) To change the comparison value, press the [DATA] switch, and the one of the displayed decimal places will blink. Move this blinking place to the decimal place to be changed by pressing the [▶] switch. When the decimal place is determined, press the [▲] switch to display the desired numeric value.

In the same matter, set all the decimal places to the desired value using the [▶] and [▲] switches.

Here, pressing the [SET] switch completes the change of the comparison value.

(3) Upon completion of the display and change of the comparison value, press the [ALM] switch to restore the blank state (measurement status) in while nothing is displayed on the SV indicator.

6. Selecting the Unit pressure

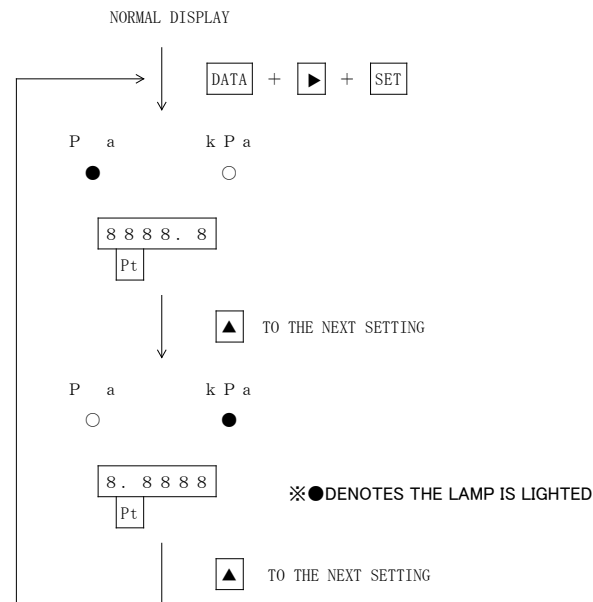
This gauge permits selection of "Pa" or "kPa" at the unit of pressure.

The gauge has been factory set to "Pa"

(1) Pressing the [DATA], [▶] and [SET] switches simultaneously sets up the unit changeover mode.

(2) Press the [▲] switch to select the desired unit of pressure.

(3) Pressing the [SET] switch finalizes the unit and sets up the normal measurement mode.



7. Adjusting the Recorder Output

Adjustment has been completed before shipment from factory. If the correlation between the displayed value and the output value cannot be obtained, refer to the instruction manual for more information.

8. Zero Resetting Function

This is a function of resetting the indicated value (PV display value) and the analog output to zero when a zero signal is inputted or when the reset switch on the front panel is pressed. Refer to the instruction manual for more information

9. Specifications

9.1. Specifications

Name	Pirani vacuum gauge
Measurable pressure range	0.4 to 3000 Pa
Measuring point	1 point
Display	7-segment digital Indicator (red LED) 0.0~3000.0 Pa
Display sampling time	100 msec
Measurement accuracy	0.4Pa ~ 10Pa : ±50% 10Pa ~ 50Pa : ±30% 51Pa ~ 760Pa : ±15% 760Pa ~ 1000Pa : ±30% 1000Pa ~ 3000Pa : ±50%
Recorder output signal	-1.5 to 11.5 VDC (maximum recorder output range) 1) Lin 0 output 0 to 10 V: 0 to 3000 Pa 2) Lin 1 output 0 to 10 V: 0 to 1000 Pa 3) Lin 2 output 0 to 10 V: 0 to 100 Pa
Zero correction input	No-voltage contact input Input current : 10 mA
Setpoint output	3 points Transistor output (open collector) Rated load voltage : 24 VDC Max. Load current : 50 mA (saturation voltage:1V)
Interchangeability of sensor head	Within ± 3% at the filament resistance value (same type of sensor head)
Operating temperature range	10 to 40 °C
Power requirements	GP-2001G : AC 85~264 V 50/60 Hz GP-2002G : DC 24 V ± 10%
Power consumption	10 VA
Outside dimensions	48H×96W×151D(mm)
Weight	0.4 kg

9.2. Standard accessories

Quick manual	This paper	1pc
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9.3. Option

9.3.1. Sensor head

Sensor head	WP-01/WP-03/WP-03/WP-16	WPB-10-034
Filament material	Pt	Pt
Other materials	BS/Ni-plating Ni, Kovar, Glass, SnSbCu	SUS304, Cu(Gasket) FeNiCo(Ni-plating), Al ₂ O ₃
Permitted leak ratio	1×10 ⁻⁸ Pa·m ³ /s max	1×10 ⁻⁸ Pa·m ³ /s max
Weight(g)	WP-01 : 26, WP-02 : 45 WP-03 : 63, WP-16 : 77	173
Internal volume(cm ³)	WP-01 : 19, WP-02 : 17 WP-03 : 17, WP-16 : 22	18
Pressure max※1	< 2×10 ⁻⁵ Pa(abs)	< 2×10 ⁻⁵ Pa(abs)
Bakeout※2	80°C max	250°C max

※1:The breakdown pressure of the flange and clamp are to be considered otherwise.

※2:Bakeout temperature is a temperature of the sensor unit. Please remove the electronics(GP-H) or the conversion cable(GP-BH).

※3:WP-04 andWP-05 discontinued producing in August, 2012.

9.3.2. Measuring unit

Measuring unit	GP-H	GP-BH (Conversion cable 2m)
Sensor head	WP-01, WP-02 WP-03, WP-16	WPB-10-034
Weight	35g	GP-BH: 0.13kg Conversion calbe: 0.2kg
remarks	GP-H for WP-01/WP-02 and WP-03/WP-16 are different.	

9.3.3. Sensor head cable

Sensor head cable	2、5、10、15、20、30、50、100m
Weight(kg)	0.2/0.4/0.7/1.0/1.3/1.9/3.9/7.7

9.3.4. Supply cable 3m (only GP-2001G)

※The plug specification of supply cable is AC125V / 7A.

【CAUTION】

This gauge is based on the measurement of thermal conductance and the indicated value may change depending on the type of the sensor head. Some sensor heads may require change of the circuitry or structure of the measuring unit. Therefore, if the type of the sensor head is changed after delivery of the gauge, re-adjustment will be required. Factory adjusted conditions (type of sensor head) are inscribed on the measuring unit GP-H. Check them before operation.

10. Panel

10.1. Front panel

(1) Operation switch
ALM : Used to display and change the comparison set value (setpoint)
ZER : Used to set and cancel the zero point correction function
DATA : Used to change data
▶ : Used to shift the decimal place of data when changing data.
▲ : Used to change data
SET : Used to finalize data,etc.

(2) Comparison (setpoint) output action display
 The green LED comes on when the comparison output is ON.

(3) PV indicator
 Main indicator that displays the comparison set value and set value for output adjustment, in addition to the current measurement value. If the measurement value exceeds the scale limit or if the sensor head filament has blown out, "-----" will blink on the display.

(4) V indicator
 An auxiliary indicator that explains the contents of the PV indicator. Nothing is displayed or in normal measuring condition."OFF" is displayed when the comparison set value is displayed or in the output adjustment setting.

(5) Display of unit of pressure
 The LED for the selected unit of pressure comes on.

10.2. Rear panel

(1) Sensor head cable connector
 A connector to which the supplied sensor head cable is to be connected.

(2) Terminal block for input / output
 Terminal block for connecting input/output such as connection of input power, zero point correcting function input, comparison (setpoint) output, recorder output, etc. A 3mm-dia. solderless terminal is best suited to connection. When connecting the input / output wiring, do not make mistake in wiring. Also cover the solderless terminal with insulating covering so that adjacent terminals are not shorted.

(3) Fuse
 The fuse protects the power supply. Normally, it does not blow out. If it blows

out, contact your local ULVAC service center or representative for repair without taking any action.

11. WARRANTY

This product was shipped after rigid company inspection. However, in case any failure occurs under ULVAC's responsibility, such as defect in manufacturing and damage during transportation, Buyer shall inform ULVAC, Inc. or the local ULVAC representatives. ULVAC will repair or exchange it at free of charge.

Warrantable Items: Vacuum gauge (controller)

Duration of guarantee

One (1) year after shipping date from ULVAC

Warranty scope

- 1) Domestic business in Japan: Product, which has damage, caused by a failure on delivery.
- 2) Direct export transaction: Product, which has damage, caused by a failure on delivery. The warranty scope shall confirm to the new INCOTERMS.
- 3) Products not satisfying meet the standard specifications although the product is used under the normal service conditions such as temperature range and power etc.

Response procedure

- 1) Domestic business in Japan: ULVAC send a replacement or Buyer return the defective items to ULVAC, Inc. or to the local ULVAC representatives for repair. If field service is required, Buyer shall ask ULVAC, Inc. or the local ULVAC representatives.
- 2) Direct export transaction: ULVAC send a replacement or Buyer return the defective items to ULVAC, Inc. or to the local ULVAC representatives for repair. Return charge shall be paid by Buyer.

Disclaimer

- 1) Failure occurred after expiration of warranty period
- 2) Failure caused by force majeure, such as fire, storm and flood damage, earthquake, lightning strike, war etc
- 3) Failure occurred due to carelessness handling or faulty usage
- 4) Products remodeled, disassembled or repaired without ULVAC's acceptance
- 5) Failure occurred under abnormal environment, such as intense electromagnetic field, radiation, high-temperature, high-humidity, flammable gases, corrosive gases, dust etc.
- 6) Failure occurred by noise
- 7) Product deficiency or secondary damnification occurred to Buyer, from law suit to ULVAC by third party for patent infringement.
- 8) Sensor head being used (expiration of life, measurement error, etc.)
- 9) Sensor head cable being used (cable burnout due to improper installation, poor contact, etc.)

Others

- 1) In case, special agreement or memorandum for specifications is made individually, the descriptions are prior to this article "13 Product Warranty".
- 2) Buyer shall inform ULVAC when this product is exported out of Japan. In the meantime, Buyer shall take necessary procedures according to Foreign Exchange and Foreign Trade Law.
- 3) As for the question and consultation, Buyer shall check the model and serial number and ask the local representative or ULVAC, Inc.
- 4) The content of this document is subject to change without notice in future.

12. Certificate of Contamination

All material must be certified as decontaminated and this certificate must be submitted to your closest local ULVAC service center or sales office prior to shipment. The form is available for download from ULVAC website.

13. Networks

ULVAC, Inc. <http://www.ulvac.co.jp/eng/>

Service Centers <http://www.ulvac.co.jp/eng/support/service/index.html>

Sales Office http://www.ulvac.co.jp/eng/support/sales_office/index.html

14. RELATED DRAWINGS

Please refer to an ULVAC website (<https://showcase.ulvac.co.jp/en/>).

ULVAC, Inc.

Components Division,

<http://www.ulvac.co.jp/>