

# G-TRAN Series Pirani Gauge (Sensor Unit SP1/Box Unit BPR2)



SP1/WP-01



BPR2

ULVAC has developed a new type vacuum gauge that works without a visual pressure display. The G-TRAN series vacuum gauge provides the minimum required functions to reduce both size and cost. The SP1 sensor unit contains both a combined sensor head with a measurement electronics circuit, while the BPR2 box unit provides a separate measurement control circuit and a bakable sensor head.

Both units are operated with DC24 V and feature an analog signal output and 2 set points. The BPR2 box unit also includes an RS-485 interface. When visual display of the pressure reading is required, a display unit (ISP1, ISP2, IAP2) can be connected.

## Features

- When the pressure display is not required, the following advantages can be realized:
  - Vacuum gauge cost is reduced because the display has been eliminated
  - Smaller size frees-up system control panel space
  - Wiring is reduced
- Operated with DC24 V
- Output of analog signal and 2 set points is possible
- RS-485 communication (multi-drop compatible, 31 units max.) is possible (box unit only)
- Easy replacement of sensor head
- Previous sensors (WP-01, WP-02, WP-03, WPB-10) can be used without modification (WPB-10 is connected with the box unit only)
- Sensor bake-out is possible (when used with a box unit)

## Applications

- Process control in low vacuum range of vacuum equipment such as for semiconductor, optics and electronic parts manufacturing.
- Process control in the low vacuum range for industrial equipment such as vacuum furnaces, etc.
- Process control in low pressure range for vacuum systems with multiple process chambers such as in-line sputtering and single wafer processing equipment

**Specifications**

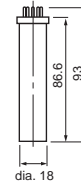
Item	Name	Pirani gauge	
		Box unit	Sensor unit
Model		BPR 2	SP1
Applicable sensor heads		WP-01, WP-02, WP-03, WP-16, WPB-10 (BPR2 only)	
Pressure measurement range	Pa	$4.0 \times 10^{-1}$ - $3.0 \times 10^{+3}$	
Measurement accuracy		$\pm 15\%$ (51 Pa-760 Pa) $\pm 30\%$ (10 Pa-1000 Pa) $\pm 50\%$ (0.4 Pa-3000 Pa)	
Operating temperature range	°C	10-40	
Sampling time		50ms: 5 time moving average processing	
Recorder output		Non-linear output: DC: 0-5 V (Max. 10 V)	
		Quasi-logarithmic output: DC 0-10 V 1 V linear signal within each digit	
	Renewal time	50 ms	
	Resolution	10 mV	
SETPOINT-1: Monitor output for adjustment		0-10 V linear output of mantissa section	Non-linear output: DC0 V-5 V (Max. 10 V)
SETPOINT-2: Monitor output for adjustment		0-10 V linear output of mantissa section	Non-linear output: DC0 V-5 V (Max. 10 V)
Output signal		Open collector	
Control output signals		ERROR signal: Open collector output, negative logic	
		Setpoint 1: Open collector output, negative logic	
		Setpoint 2: Open collector output, negative logic	
LED display		Power, error, set point 1, set point 2	
Communication model		RS-485 communication	
Communication baud rate	bps	RS-485	
Communication baud rate	bps	9600/19200/38400	
Number of communication nodes		31 units maximum	
Communication cable length		Up to 30 m	
Communication connector		6 pin modular connector	
Communication mode		Dip switch selection of complete communication control mode or READ-ONLY mode	
Memory function		Setting values backed up by EEPROM using communication function	
Power		DC24 V $\pm$ 2 V, 150 mA (MAX.)	DC24 V $\pm$ 2 V, 90 mA (MAX.)
Input/output connector		D-sub15 socket, M2.6 screw	
Main unit weight (not including gauge head)	g	270	190
Accessories		3P power connector: 1 Connection connector: 1 Operation manual	Connection connector: 1 Operation manual

\* I/O and analog GND are not isolated from the power GND.

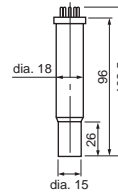
\* Communication connector is not included.

**Sensor Head Dimensions**  
(unit: mm)

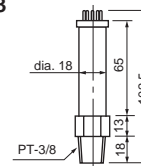
**WP-01**



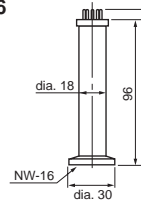
**WP-02**



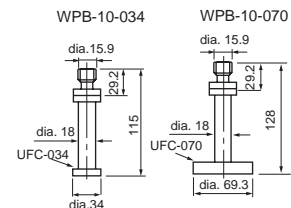
**WP-03**



**WP-16**



**WPB-10**



The WPB series is a bakable type (heating and degassing is possible) that can be connected to ultra-high vacuum systems. The surrounding ambient temperature limit is 40 °C or less.

**External Dimension Diagram**

(unit: mm)

**BPR2 box unit**

**SP1 sensor unit**

