G-TRAN Series Multi Ionization Gauge [SH2-1/SH2-2]

ULVAC, Inc. has developed and commercialized the G-TRAN Series "Multi ionization Gauge" (patent pending). A transducer type that can connect gauge heads with different measurement ranges. The newly developed G-TRAN Series "Multi ionization Gauge" has advantages such as wide range measurement, lower running cost and low environmental burden.

SH2-1 SPU SAU

Features

- **Wide-range Measurement**
  Wide pressure measuring range from atmospheric pressure to high vacuum range (10^{+5} to 5×10^{-8}Pa, 760 to 3.75×10^{-10} Torr, 1013 to 5×10^{-10} mbar). (when SPU and SAU are used together)
- **Possible to Connect Gauge Heads with Different Measurement Ranges**
  With Multi Ionization Gauge (patent pending), a gauge head is selected depending on the usage.
- **Precise Measurement of Atmospheric Pressure**
  Confirming atmospheric pressure easily and accurately (when SAU is used together)
- **Low Environmental Burden**
  Capable of reducing the running costs as only failed gauge heads are replaced
- **Improvement in Visibility**
  With high visible LED for error verification
- **Maintenance**
  Easy sensor head replacement
- **Measured Value Output Signal**
  Pressure output in 0 to 10V (Log output)
- **Control Output Signal**
  3 setpoint output (only SH2-1)
- **Serial Communication**
  RS232C / RS485 communication (only SH2-2)
- **Applicable Standard**
  Conforms with CE

Applications

- Process control in high vacuum processes such as for photovoltaic field, FPD, semiconductor, optics and electronic parts manufacturing systems
- Ultimate pressure measurement in high vacuum range in manufacturing systems with multiple process chambers such as in-line and single wafer processing system
- For pressure measurement in high and ultra high vacuum equipments

G-TRAN Series Multi Ionization Gauge [SH2-1/SH2-2]

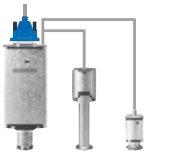
Specifications

Model	SH2-1	SH2-2
Type	Standard type	Serial communication type
Compatible sensor head	M-34 (NW16), M-35 (NW25), M-36 (UFC070)	
Compatible measuring unit	Multi Ionization Gauge : 1pc. Pirani Vacuum Gauge SPU : 1pc. (Option) Pressure switch SAU : 1pc. (Option)	
Sampling time	5 times in 50ms running average	
Value output	Output voltage DC 0 to 10V, Logarithmic output 0.75V/1decade Pressure conversion formula V=7.25+0.75× (LogP-2) P=10^ { (V-7.25) /0.75+2} *Also serves as output voltage for set point adjustment (SH2-1 only)	
Update time	50ms	
Control input signal	FIL ON/OFF, FIL 1/2, DEGAS ON/OFF Open collector input, Negative logic *Various use of FIL ON/OFF signal for different modes	
Control output signal	Error signal, Setpoint1/2/3, Emission valid Watch of electric power of filament Rating : 24V$_{MAX}$、50mA$_{MAX}$、Saturation voltage 1V	
Serial communication type		RS232C/RS485
LED display	POWER/ERROR: Power, ERROR LED (Blinking changes depending on each mode) FIL : Emission valid LED	
	SET1: Setpoint 1 LED SET2: Setpoint 2 LED SET3: Setpoint 3 LED	
Emission current	1mA (1×10^{-3}Pa or less) 、10μA	
Degas Method	Electron bombard type 1mA, 350V	
Maximum pressure of sensor	2×10^{+5} Pa (1.5×10^{+3} Torr, 2×10^{+3} mbar) (Absolute pressure) *Need separate measures as a capacity to resist pressure, such as flange and clamp	
Internal volume of sensor	17cm^3(M-34), 19cm^3(M-35), 17cm^3(M-36)	
Operating temperature range	10 to 50℃ (50 to 122℉)	
Operating humidity range	15 to 80% (not condensing)	
Storage temperature	-20 to 65℃ (-4 to 149℉) (At non-energizing, not condensing)	
IP rating	IP30	
Power supply voltage	DC20 to 28V (Ripple, Noise 1% or less) Steady state 8W, Degas 19W or lower, 6A or lower when power supply turned on (4ms)	
Input/output connector	D-sub15-pin (M2.6 screw)	
Weight	Sensor unit : 530g, B-A sensor gauge (M-34/35) : 80g, (M-36) : 300g	
Dimension	144×75×62mm (max.) (Power supply)	
Applicable standard	CE	
Options: Multi Ionization Sensor head	M-34 (NW16), M-35 (NW25), M-36 (UFC070) Material of gas contacting sections : 1-filament・Ir/Y_2O_3, 2-filament・W, Another-PtC・Mo, SUS, W	
Options: Pirani Vacuum Gauge	SPU	
Options: Pirani Vacuum Sensor head	WP-16 (NW16) Material of gas contacting sections : Filament-Pt, Another-BS/Ni Plating, Ni, Solder	
Options: Pressure switch	SAU (NW16) Material of gas contacting sections : SUS316L	
Options: Unit cable	0.5m, 1m, 2m for SPU	
	0.5m, 1m, 2m for SAU	
Options: Display unit	1CH Model ISG1 (DC24V)	
	4CH *1 Model IM1R1 (DC24V) Model IM2R1 (AC100V)	
Options: Display cable	Cable between SH2 and Display unit 2m, 5m, 10m, 15m	
Options: Certification Document	Inspection result data sheet, General calibration test report, JCSS calibration certification	

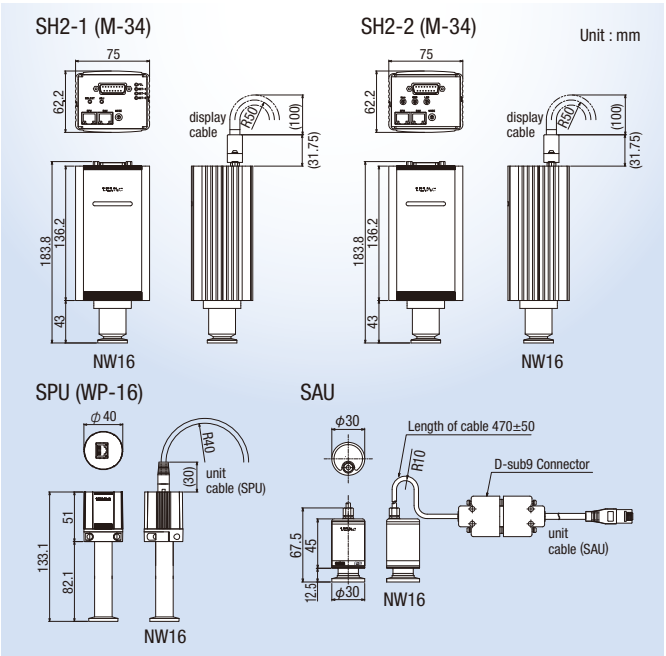
*1 Non available for combination mode

Mode Specifications

➤SH2-1/SH2-2 have three options; simple mode with a multi ionization gauge, combination mode with a multi ionization gauge and a pirani gauge (SPU), and triple combination mode with a multi ionization gauge, a pirani gauge (SPU) and a pressure switch

Mode	SH2-1/SH2-2 Simple mode	SH2-1/SH2-2+SPU Combination mode	SH2-1/SH2-2+SPU+SAU Triple combination mode
Measurable pressure range	5×10^{-8} to 1×10^{+1} Pa	5×10^{-8} to 1×10^{+4} Pa	5×10^{-8} to 1×10^{+5} Pa
Accuracy	5×10^{-8} to 10 Pa: ±15%	5×10^{-8} to 1×10^{+3} Pa: ±15% 1.0×10^{+3} to 3.0×10^{+3} Pa: ±30% 3.0×10^{+3} to 1.0×10^{+4} Pa: No warranty	5×10^{-8} to 1×10^{+3} Pa : ±15% 1.0×10^{+3} to 3.0×10^{+3} Pa: ±30% 3.0×10^{+3} to 1.0×10^{+4} Pa: No warranty 1.0×10^{+4} to 1.0×10^{+5} Pa: ±3% F.S.
	3.75×10^{-10} to 7.5×10^{-2} Torr: ±15%	3.75×10^{-10} to 7.5 Torr: ±15% 7.5 to 22.5 Torr: ±30% 22.5 to 75 Torr: No warranty	3.75×10^{-10} to 7.5 Torr: ±15%7.5 to 22.5 Torr: ±30% 22.5 to 75 Torr: No warranty 75 to 760 Torr: ±3% F.S.
	5×10^{-10} to 0.1 mbar: ±15%	5×10^{-10} to 10 mbar: ±15% 10 to 30 mbar: ±30% 30 to 100 mbar: No warranty	5×10^{-10} to 10 mbar: ±15%10 to 30 mbar: ±30% 30 to 100 mbar: No warranty 100 to 1013 mbar: ±3% F.S.
Repeatability	1×10^{-6} to 1×10^{-1} Pa : ±2%		
Connection diagram (for Example)	 Multi Ion Gauge	 Multi Ion Gauge Pirani Gauge	 Multi Ion Gauge Pressure Switch Pirani Gauge

Dimensions



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