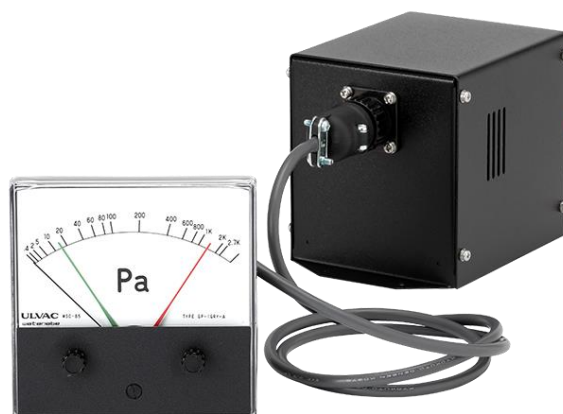


Specifications
Pirani Vacuum Gauge
GP – 1G / 1G with Case
GP-1GRY
(Pa/Torr)



This specification is the following
vacuum gauges.
Serial Nos. T0001G and higher

Ulvac, Inc.

Component Division

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1 Specification of 1 GP-1G/1RY

This is the thermal conductivity constant temperature type Pirani gauge.

The meter indication exceeds the maximum pressure during the disconnection of a sensing head.

This gauge can set two pressure points by meter relay and retrieve comparator outputs of these two points set as contact (transfer type) (GP-1GRY)

This new model doesn't need any adjustment when the length of a sensing head cable is changed because a control part is separated from measurement part.

To install two points type temperature compensation circuit allows the minimizing of variation of pressure instruction by ambient temperature changed of a sensing head.

1-1 Specification

Name	Pirani gauge	
Model	GP-1GRY	GP-1G
Area to be measured	0.4 to 2700Pa (0.003 to 20Torr)	
Difference of measurement ^{*3}	Within $\pm 3\%$ of 100% full scale as converted to linear scale	
Power source	AC100-250、10VA	
Use temperature range	10 to 40°C	
Use humidity rang	15 to 80% (No condensation)	
Analog output ^{*1}	0 to 10mV DC	
Relay contact voltage	AC100V、0.5A	-
External size ^{*2}	Control : 90W x 140D x 100H Meter (A-TYPE) : 100W x 111D x 100H	GP-1G: 100W×130D× 100H GP-1G with case: 150W×134D× 201H
Mass	Control: 1.0 kg Meter (A-TYPE): 0.7kg Measuring unit: 35g (GP-H)	GP-1G: 0.7kg GP-1G with case: 1.4kg Measuring unit: 35g (GP-H)
Standard Accessories	Quick manual 1PC	

^{*1} Analog output must be compatible with the previous model (GP-1S/1SRY).

^{*2} The panel cut size of a meter and fixed screw size of GP-1GRY control is compatibility with the previous model.

*3 Additional explanation of measurement difference

The relationship between pressure and output of a Pirani vacuum gauge is nonlinear and its accuracy range varies with pressure values. To express the outgoing inspection criterion for a Pirani vacuum gauge, it is defined as "within $\pm 3\%$ of 100% full scale as converted to the linear scale " and is given in the instruction manual as measurement accuracy.

Indicated Values (Pa)	Working Standard (Pa)			Indicated Values (Pa)	Working Standard (Pa)		
0.4	0	-	3	100	83	-	120
2	0	-	5	200	170	-	230
5	2	-	8	400	345	-	465
10	7	-	14	600	510	-	715
20	14	-	26	1000	825	-	1250
40	32	-	49	2000	1650	-	2900
60	49	-	71	2700	1920	-	3750

Indicated Values (Torr)	Working Standard (Torr)			Indicated Values (Torr)	Working Standard (Torr)		
0.003	0	-	0.02	1	0.85	-	1.2
0.01	0	-	0.03	2	1.7	-	2.3
0.05	0.03	-	0.08	3	2.6	-	3.5
0.1	0.07	-	0.13	4	3.4	-	4.6
0.2	0.14	-	0.26	6	5.0	-	7.2
0.4	0.33	-	0.48	10	8.0	-	13
0.8	0.68	-	0.92	20	15	-	27

1-2 Option

The previous model of measurement area of GP-1000H (GP-1000) is not available.

Sensor head	WP – 01 ,02 ,03, 16 (Filament material Pt) WPB – 10 – 034 (Bakable type)
Measuring unit	GP-H GP-BH (Bakable type)
Sensor head cable	2, 5, 10, 15, 20, 30, 50, 100m
Test results certificate	
Calibration certificate	Calibration certificate, JCSS Calibration certificate

A reading varies with types of sensor head due to its circuit configuration. Therefore, if the type of sensor head is changed after its delivery, it requires the readjustment. Conditions for delivery adjustment (sensor head type) are described in the measurement area. Please see this before use.

1-3 Recorder Output

Pa	mV	Torr	mV
0.4	0.15	0.003	0.15
2	0.35	0.01	0.27
5	0.65	0.05	0.83
10	1.10	0.1	1.30
20	1.70	0.2	2.02
40	2.53	0.4	2.97
60	3.13	0.6	3.62
80	3.63	0.8	4.12
100	4.00	1	4.52
200	5.31	2	5.91
400	6.70	3	6.70
600	7.46	4	7.26
800	7.94	6	7.94
1000	8.29	8	8.36
2000	9.17	10	8.65
		20	9.40

*: Filament Error: More than approximately 15mV

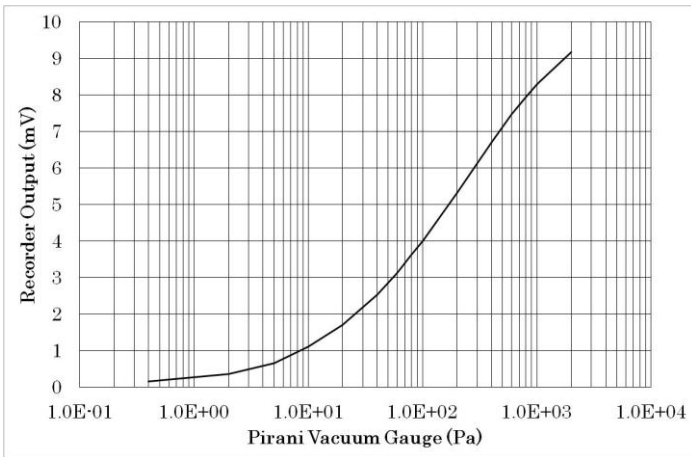


Fig.1 Pressure vs. recorder output curve (Pa)

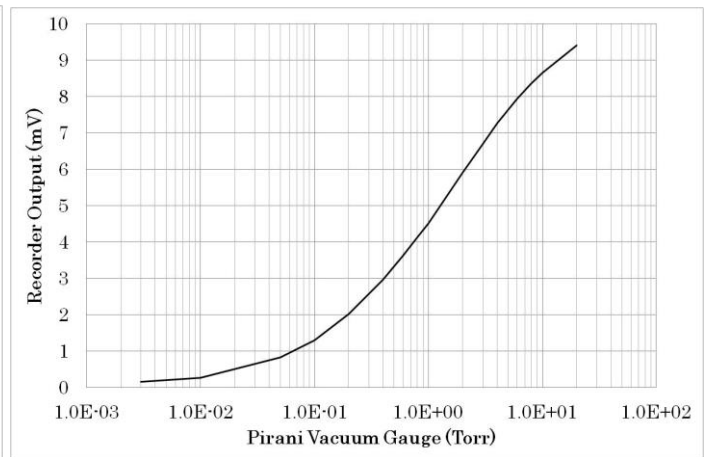


Fig.2 Pressure vs. recorder output curve (Torr)

1-4 Equipment configuration

The equipment is configured with main body (GP-1G/1GRY, sensor head cable, measuring unit (GP-H/GP-BH) and sensor head.

For GP-BH, it needs to specify an appropriate conversion cable according to types of sensing heads.

See “Sensor head list for GP-1G/1GRY” at the back of this specification.
A sensor head cable is only used for GP-1G/1GRY and GP-1000G. “A sensor head cable for WP” used for the previous model is not available.

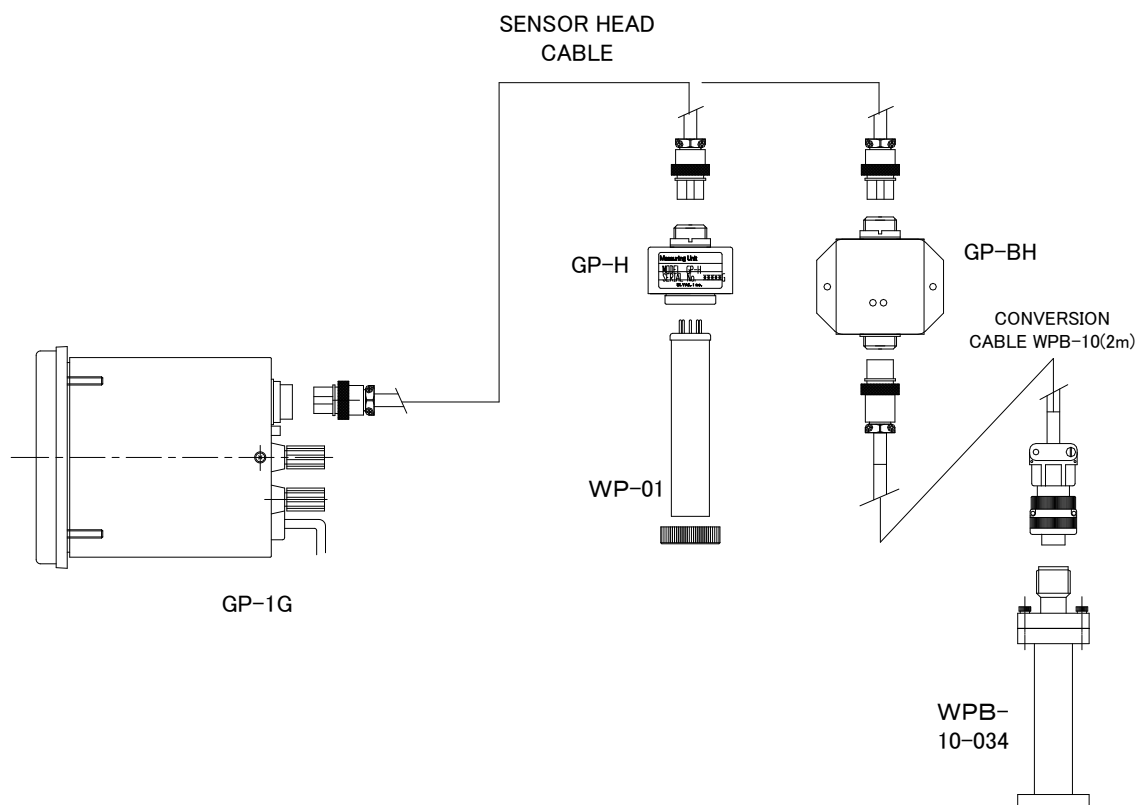


Fig.3 GP-1G connection diagram

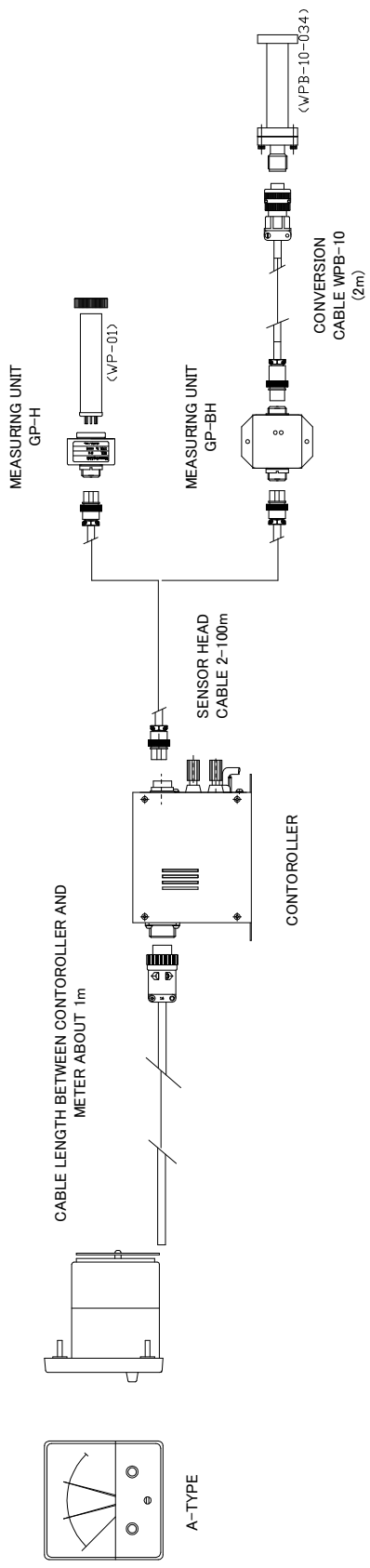


Fig.4 GP-1GRY connection diagram

2 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 conform 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 damage 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.

3 Related drawings

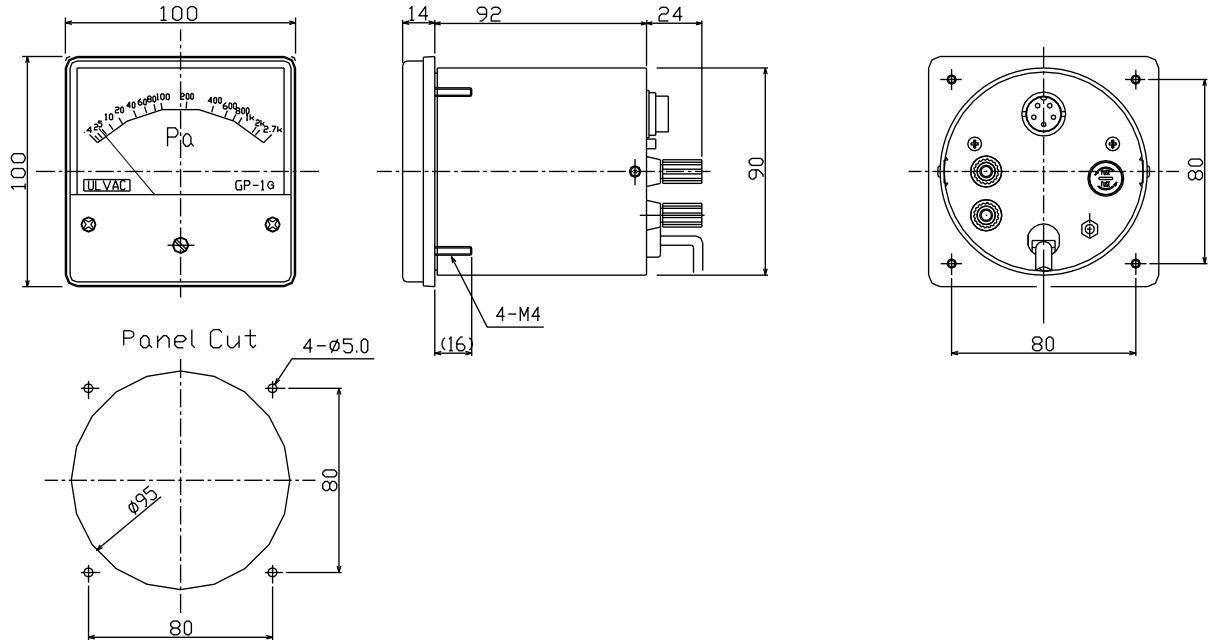


Fig.5 Dimensional drawing for GP-1G

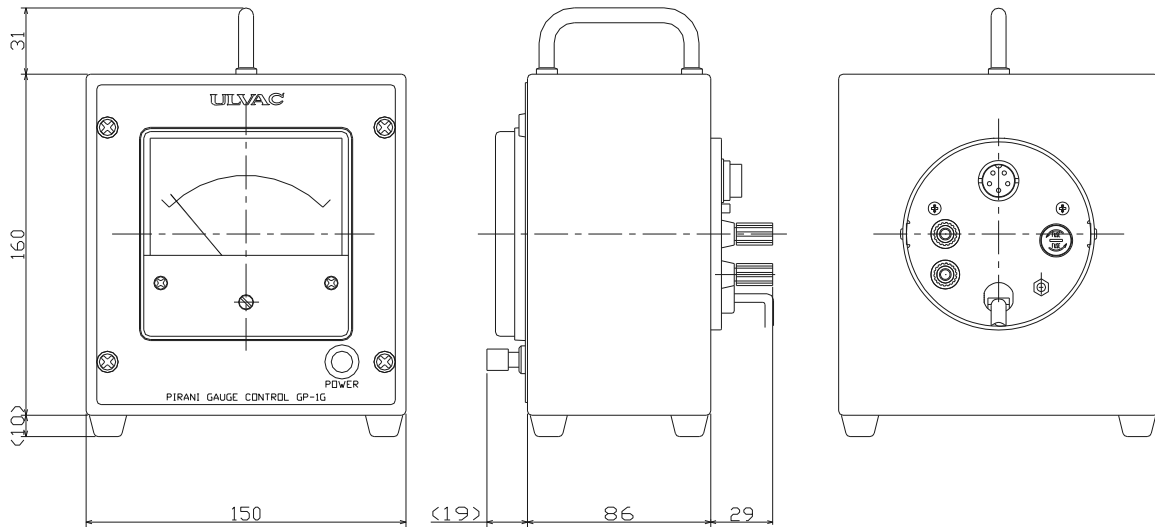


Fig.6 Dimensional drawing for GP-1G with case

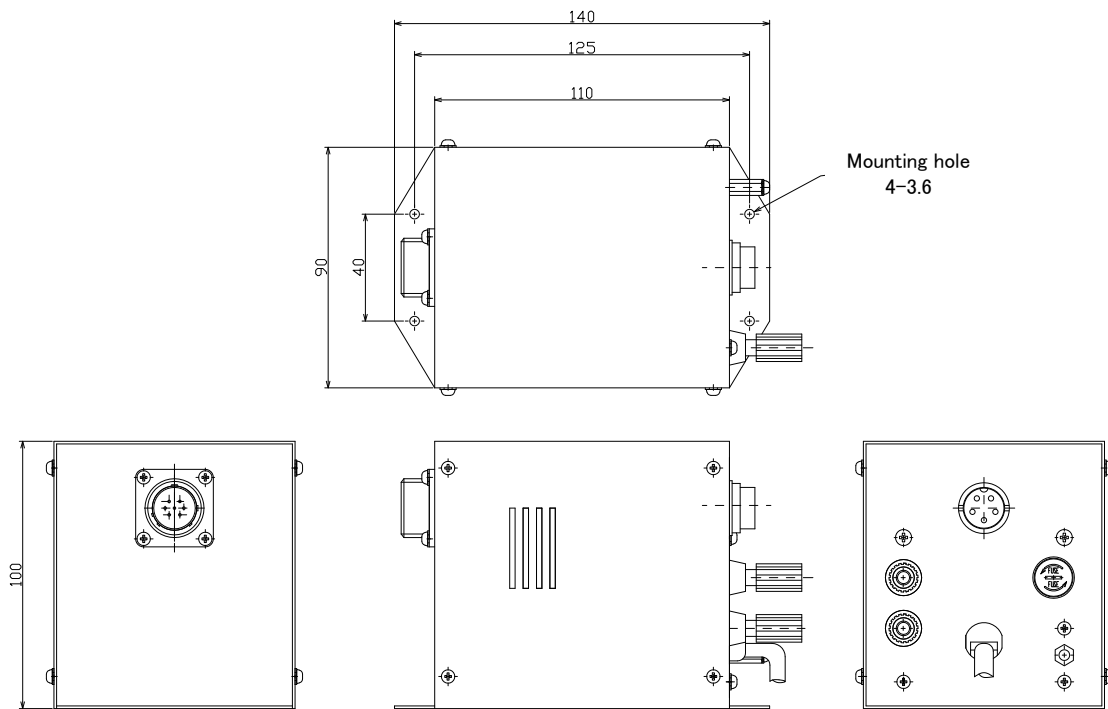


Fig.7 Dimensional drawing for GP-1GRY controller

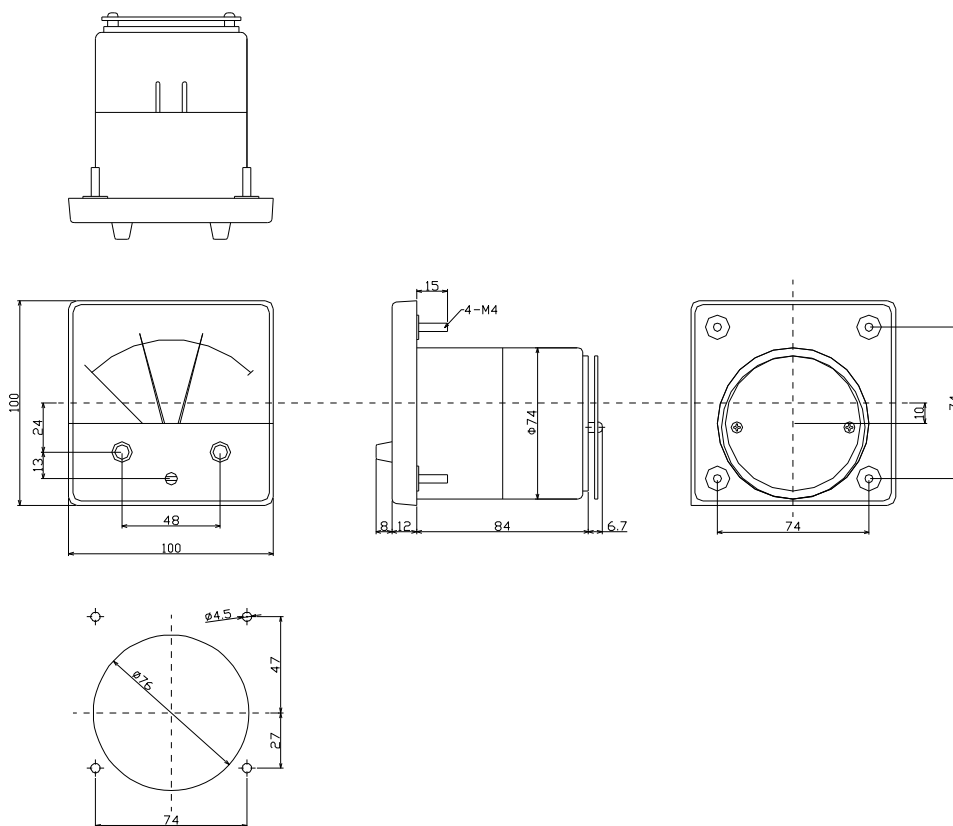


Fig.8 Dimensional drawing for A-type meter

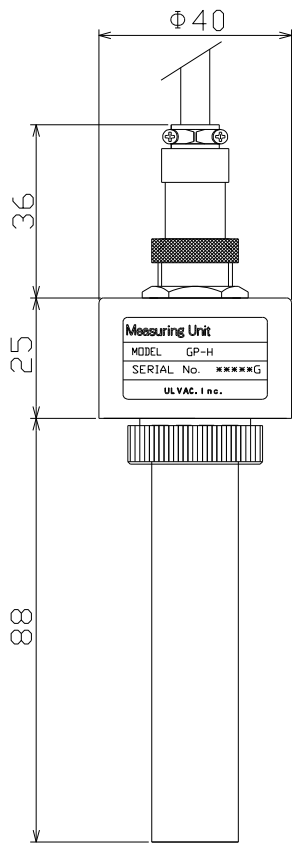


Fig. 9 Dimensional drawing for measuring unit GP-H

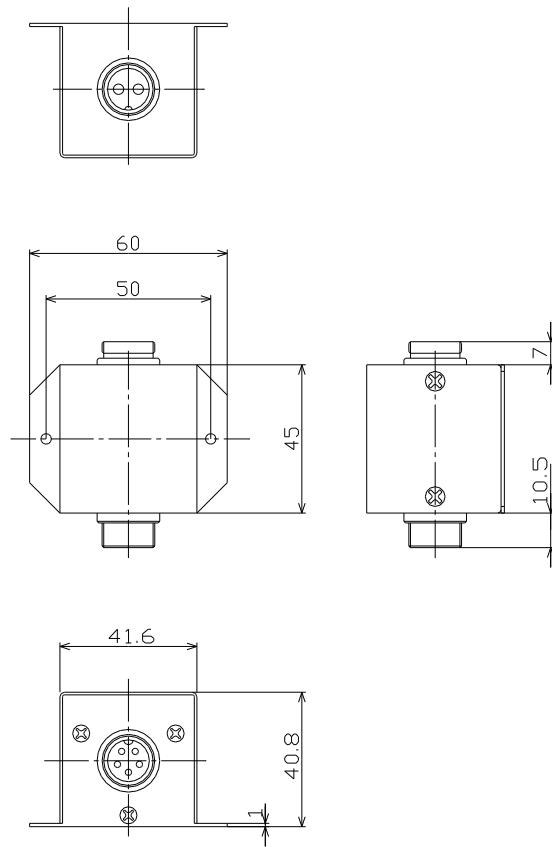
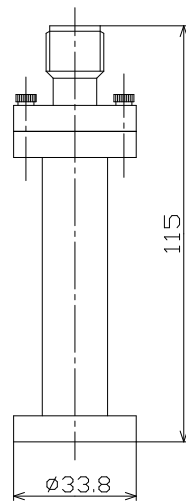
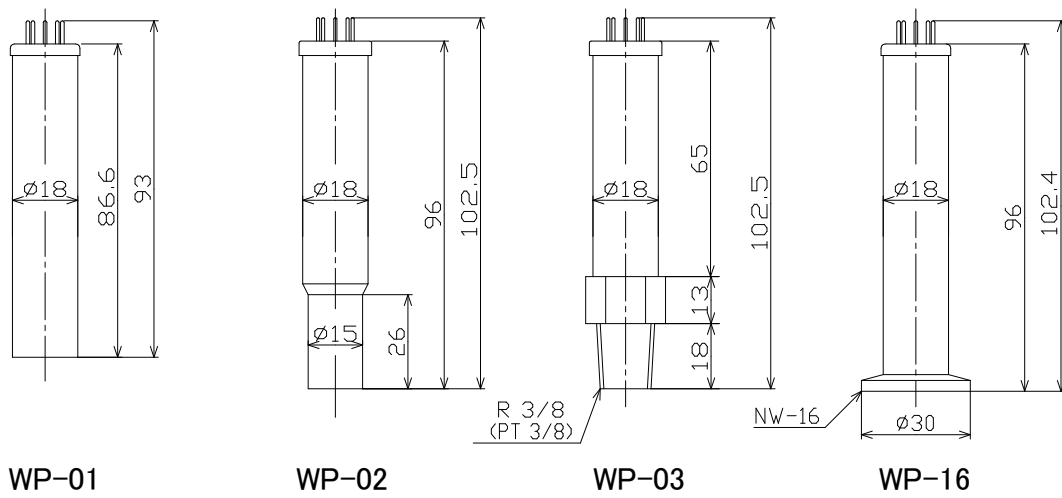


Fig. 10 Dimensional drawing for measuring unit GP-BH



Sensor head model	Mounting port size (dia.)	Filament material	Case material	Compatible cable
WP-01	φ 18	Pt (φ 25μ)	BS (Ni plating)	Socket type
WP-02	φ 15 (18)	Pt (φ 25μ)	BS (Ni plating)	Socket type
WP-03	φ 3/8	Pt (φ 25μ)	BS (Ni plating)	Socket type
WP-16	NW-16 (φ 30)	Pt (φ 25μ)	BS (Ni plating)	Socket type
WPB-10-034	UFC-034	Pt (φ 25μ)	SUS304	WPB

Fig.11 List of sensor heads compatible with GP-1G/1GRY