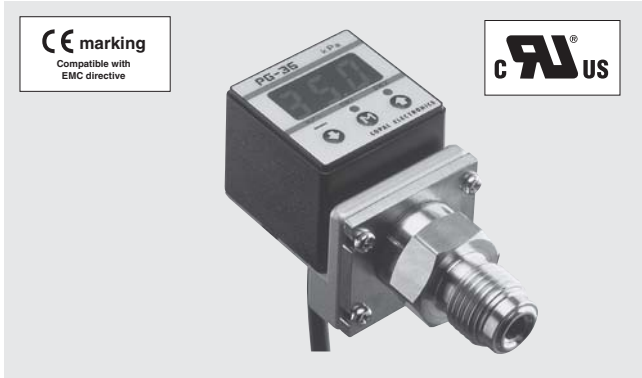


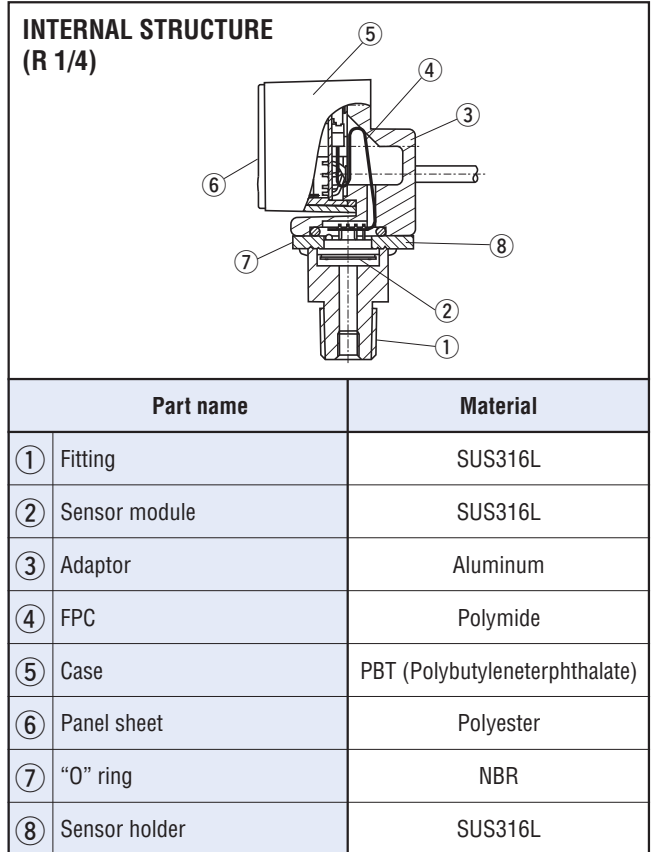
# PRESSURE GAUGES

# PG-35



## FEATURES

- **Both absolute pressure type and compound pressure type are available**  
Compound pressure type measures negative and positive gauge pressure.
- **Compact and lightweight general-purpose pressure gauges**  
Innovative general-purpose gauges of compact design (30mm sq.) and drip-proof structure (IP65).
- **Clear indication by LED**  
Easy-to-see LED assures clear readings on the panel and even in a dark place.
- **Various modes and units can be selected according to applications**  
Eight different pressure units  
Three analog output modes  
Eight switch output modes
- **Meet EMC standards**  
EN 55011 (EMI)  
EN 61326-1 (EMS)
- **Low consumption by nondisplay mode**
- **Set data protection by panel lock function**



## MODEL NUMBER DESIGNATION

High corrosion resistance type

P G - 3 5 - 1 0 2 R - N R 2 B

Series name

Pressure range

102R : - 100 ~ 100 kPa (Compound pressure [Negative pressure ~ Positive pressure])  
 102A : 0 ~ 100 kPa (Absolute pressure [Absolute vacuum ~ Barometric pressure])  
 103R : - 100 ~ 1000 kPa (Compound pressure [Negative pressure ~ Positive pressure])

Pressure reference

R : Compound pressure (Negative pressure ~ Positive pressure)  
 A : Absolute pressure (Absolute vacuum ~ Barometric pressure)

Port

Blank : Stem mount  
 B : Back mountz

Fitting

R2 : R 1/4 (With M5 female screw)  
 GF : G 3/8 (Flush diaphragm type)  
 G2 : G 1/4 (With M5 female screw)  
 VG : 9/16-18UNF (Gasket joint)

Switch output interface

N : NPN open collector  
 P : PNP open collector

## LIST OF MODEL NUMBERS

| Pressure medium   | Fitting    | Port       | Switch output interface | Pressure reference   | Gauge             |                   | Absolute        |
|---|------------|------------|-------------------------|----------------------|-------------------|-------------------|-----------------|
|   |            |            |                         | Rated pressure range | -100 ~ 100 kPa    | -100 ~ 1000 kPa   | 0 ~ 100 kPa abs |
| Corrosive gases/<br>liquids compatible with<br>SUS 316L | R 1/4      | Stem mount | NPN                     |                      | PG-35-102R-NR2    | PG-35-103R-NR2    | PG-35-102A-NR2  |
|   |            | Back mount |                         | ➡ PG-35-102R-NR2B    | ➡ PG-35-103R-NR2B | ➡ PG-35-102A-NR2B |                 |
|   |            | Stem mount |                         |                      | PG-35-102R-PR2    | PG-35-103R-PR2    | PG-35-102A-PR2  |
|   |            | Back mount |                         | ➡ PG-35-102R-PR2B    | ➡ PG-35-103R-PR2B | ➡ PG-35-102A-PR2B |                 |
|   | G 3/8      | Stem mount | NPN                     |                      | PG-35-102R-NGF    | PG-35-103R-NGF    | PG-35-102A-NGF  |
|   |            | Back mount |                         | ➡ PG-35-102R-NGFB    | ➡ PG-35-103R-NGFB | ➡ PG-35-102A-NGFB |                 |
|   |            | Stem mount |                         |                      | PG-35-102R-PGF    | PG-35-103R-PGF    | PG-35-102A-PGF  |
|   |            | Back mount |                         | ➡ PG-35-102R-PGFB    | ➡ PG-35-103R-PGFB | ➡ PG-35-102A-PGFB |                 |
|   | 9/16-18UNF | Stem mount | NPN                     |                      | PG-35-102R-NVC    | PG-35-103R-NVC    | PG-35-102A-NVC  |
|   |            | Back mount |                         | ➡ PG-35-102R-NVCB    | ➡ PG-35-103R-NVCB | ➡ PG-35-102A-NVCB |                 |
|   |            | Stem mount |                         |                      | PG-35-102R-PVC    | PG-35-103R-PVC    | PG-35-102A-PVC  |
|   |            | Back mount |                         | ➡ PG-35-102R-PVCB    | ➡ PG-35-103R-PVCB | ➡ PG-35-102A-PVCB |                 |
|   | G 1/4      | Stem mount | NPN                     |                      | PG-35-102R-NG2    | PG-35-103R-NG2    | PG-35-102A-NG2  |
|   |            |            | PNP                     |                      | PG-35-102R-PG2    | PG-35-103R-PG2    | PG-35-102A-PG2  |

※ Verify the above model numbers when placing orders.

The products marked ➡ are manufactured upon receipt of order basis.

## ACCESSORIES (Sold separately)

| Name   | Series name | Contents  | Applicable model                           |
|--|-------------|---|--|
| Panel holder set   | ACPG-003    | Panel holder cover<br>Panel holder<br>Panel stopper (2pcs.) | PG-30 · PG-35 · PG-75 ·<br>PG-35H · PG-35L |
| Holder cover set<br>(For protecting gauge operating panel) | ACPG-004    | Panel holder cover<br>Panel holder                          | PG-30 · PG-35 · PG-75 ·<br>PG-35H · PG-35L |

## ENVIRONMENTAL CHARACTERISTICS

| Test item           | Test conditions   | Permissible change   |
|---------------------|---|--|
| Vibration           | 10 ~ 500 Hz, 98.1 m/s <sup>2</sup> or 1.5 mm P-P, 3 directions for 2 hours each   | <div style="border: 1px solid black; padding: 5px; display: inline-block;">                     ± 2 %F.S. maximum after test ※1<br/>                     Amount of analog output fluctuation is permitted<br/>                     by adding conversion error of 20 mV.                 </div> |
| Shock               | 490 m/s <sup>2</sup> , 3 directions for 3 times each                              |  |
| Pressure cycling    | 0 ~ Rated pressure、10 <sup>6</sup> cycles   |  |
| Moisture resistance | 40 °C, 90 ~ 95 %RH, 240 hrs.  |  |
| EMC                 | EMI : EN55011: 2007, A2 : 2007 Group 1, class B<br>EMS : EN61326-1 : 2006 Table 2 | Pressure indication, switch operating pressure and analog output : ± 5 %F.S. maximum during test ※1  |

※ 1 Change in the pressure indication, switch operating points and analog output.

# PG-35

## PRESSURE GAUGES

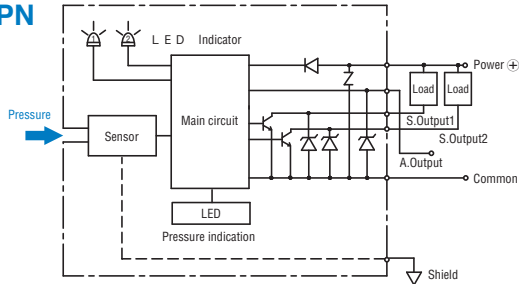
### STANDARD SPECIFICATIONS

● Unless otherwise specified, the specs are defined at an ambient temperature of 25±5 °C and excitation voltage of 12 V DC.

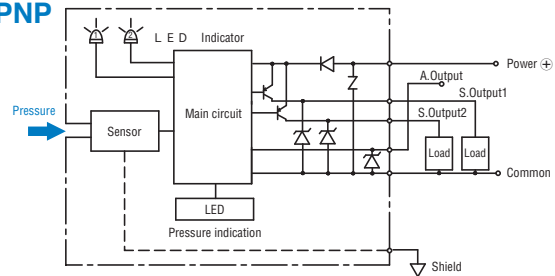
| Item / Model number    |  | PG-35  |  |   |               |
|------------------------|--|--|--|---|---------------|
|                        |  | 102R   | 103R   | 102A  |               |
| General specifications | Pressure reference   | Gauge  |  | Absolute  |               |
|                        | Pressure medium  | Corrosive gases/liquids compatible with SUS 316L                     |  |   |               |
|                        | Rated pressure range                                       | kPa  | - 100 ~ 100  | - 100 ~ 1000  | 0 ~ 100 (abs) |
|                        | Maximum pressure   | kPa  | 200  | 2000  | 200 (abs)     |
|                        | Break-down pressure  | kPa  | 300  | 3000  | 300 (abs)     |
|                        | Operating temp. range                                      | °C   | - 10 ~ 50  |   |               |
|                        | Compensated temp. range                                    | °C   | 0 ~ 50   |   |               |
|                        | Operating humidity   | %RH  | 35 ~ 85  |   |               |
|                        | Protection grade   |  | In accordance with IEC IP65  |   |               |
|                        | Type of mounting   |  | Stem mount, Back mount   |   |               |
|                        | Material of pressure port attachment                       |  | SUS 316L   |   |               |
|                        | Net weight   | g  | Approx. 150 (Including 2 m cable)  |   |               |
|                        | Thermal error  |  | ± 3 %F.S. (0 ~ 50 °C)  |   |               |
|                        | Insulation resistance                                      |  | 100 MΩ 以上 100 MΩ minimum (DC500 V)   |   |               |
|                        | Dielectric strength  |  | 1 minute (Leakage current 1 mA maximum)  |   |               |
| Input voltage          |  | 10.8 ~ 30 V DC (Including ripple percentage)                         |  |   |               |
| Consumption current    |  | 50 mA maximum  |  |   |               |
| Display                | Display element  | Full 3-digit LED   |  |   |               |
|                        | Rated display range  | kPa  | - 99.9 ~ 99.9  | - 100 ~ 999   | 0.0 ~ 99.9    |
|                        | Multiplier settings  |  | Max. 11 settings   |   |               |
|                        | Negative pressure display                                  |  | Red LED is ON.   |   |               |
|                        | Display accuracy   |  | ± 1 %  |   |               |
| Switch output          | Output status  | NPN/PNP  |  |   |               |
|                        | Output mode  | 2-point output (Transistor, Open collector output)                   |  |   |               |
|                        | Switching capacity   | Separate mode / window comparator mode                               |  |   |               |
|                        | Residual voltage   | 30 V DC 100 mA Short-circuit protection                              |  |   |               |
|                        | State indication   | 1.2 V maximum (NPN), 2.2 V maximum (PNP) (At load current of 100 mA) |  |   |               |
|                        | Switch hysteresis  | Output 1 (Green LED), Output 2 (Red LED) Lighted when output is ON.  |  |   |               |
|                        | Repeatability  | 0 ~ 300 counts Adjustable  |  |   |               |
|                        | Response   | ± 0.2 %F.S. ± 1 count (± 0.3 %F.S. maximum)                          |  |   |               |
| Analog output          | Output mode  | Approx. 5, 25, 250, 2500 ms Adjustable                               |  |   |               |
|                        | Output mode  | 3 modes  |  |   |               |
|                        | Output voltage<br>V zero : Pin=0, V span : Pin=0 ~ Pin (H) | 1 ~ 5 V  | G/V mode ZERO : 1 ± 0.2 V, SPAN : 4 ± 0.2 V<br>R mode ZERO : 3 ± 0.2 V, SPAN : 2 ± 0.2 V | 103 R (R mode) ZERO : 1.36 ± 0.2 V<br>SPAN : 3.64 ± 0.2 V |               |
|                        | Impedance  | 10 kΩ  |  |   |               |
|                        | Resolution   | 1/204  |  |   |               |
| Response               | Approx. 5, 25, 250, 2500 ms Adjustable                     |  |  |   |               |
| Accessories            |  | "O" rings are supplied (G 3/8 : P18, G 1/4 : P15)                    |  |   |               |

## INTERNAL ELECTRICAL SCHEMATICS

### NPN



### PNP



## SELECTION OF DISPLAY MULTIPLIER

The last digit/letter represents the selection code : **Blinking red LED indicates negative pressure.**

| Display multiplier | Pressure range (-Pr ~ +Pr) |              |                  |
|--------------------|----------------------------|--------------|------------------|
|                    | 102R                       | 103R         | 102A             |
| 1 × 1              | -99.9 ~ 99.9               | -100 ~ 999   | 0.0 ~ 99.9 (abs) |
| 2 × 0.0102         |                            | -1.02 ~ 9.99 |                  |
| 3 × 10.2           | -999 ~ 999                 |              | 0 ~ 999 (abs)    |
| 4 × 7.501          | -750 ~ 750                 |              | 0 ~ 750 (abs)    |
| 5 × 102            |                            |              |                  |
| 6 × 0.01           |                            | -1.00 ~ 9.99 |                  |
| 7 × 10             | -999 ~ 999                 |              | 0 ~ 999 (abs)    |
| 8 × 0.145          | -14.5 ~ 14.5               | -14 ~ 145    | 0.0 ~ 14.5 (abs) |
| 9 × 0.000145       |                            |              |                  |
| A × 0.001          |                            | -0.10 ~ 1.00 |                  |
| b × 0.2953         | -29.5 ~ 29.5               | -29 ~ 295    | 0.0 ~ 29.5 (abs) |

Diagonal column: Display multiplier cannot be selected due to resolution and number of digits. (Selection code is not indicated either.) Selection code is set at "1" prior to shipment.

## ANALOG OUTPUT MODE

| Display | Pressure range | -Pr |   | 0   |   | Pr |     |
|---------|----------------|-----|---|-----|---|----|-----|
|         |                | ←   | → | ←   | → | ←  | →   |
| 1       | Rモード R mode    | 1 V | → | →   | → | →  | 5 V |
| 2       | Gモード G mode    |     |   | 1 V | → |    | 5 V |
| 3       | Vモード V mode    | 5 V | ← | ←   | ← | ←  | 1 V |

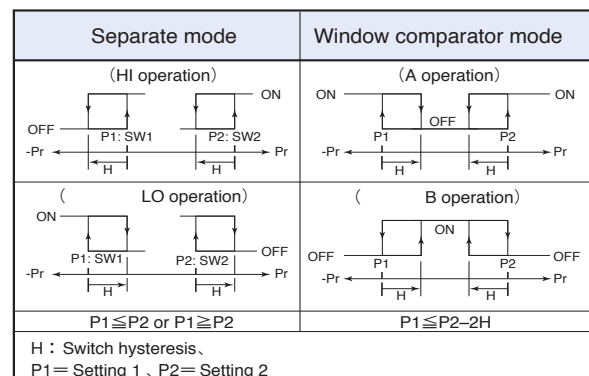
When shipped from our factory : 102R : V mode is set at "3" and 102A, 103R : G mode is set at "2". In case of 102R and 103R, R/G/V mode can be set at "1", "2" or "3" (However, the accuracy at V mode of 103R can't be guaranteed). 102A : Only G mode can be set.

## SWITCH OUTPUT MODE

| Output                             | SW1       |    |  |   | SW2       |    |  |   |
|------------------------------------|-----------|----|--|---|-----------|----|--|---|
|                                    | Separate  |    | Window comparator                                      |   | Separate  |    | Window comparator                                      |   |
| Mode                               | HI        | LO | A  | B | HI        | LO | A  | B |
| S-1                                | ○         |    |  |   | ○         |    |  |   |
| S-2                                | ○         |    |  |   |           | ○  |  |   |
| S-3                                |           | ○  |  |   |           | ○  |  |   |
| S-4                                |           | ○  |  |   |           | ○  |  |   |
| C-5                                |           |    | ○  |   |           |    | ○  |   |
| C-6                                |           |    | ○  |   |           |    | ○  |   |
| C-7                                |           |    |  | ○ |           |    |  | ○ |
| C-8                                |           |    |  | ○ |           |    |  | ○ |
| Pressure setting (Operating point) | Setting 1 |    | (Lower limit) : Setting 1<br>(Upper limit) : Setting 2 |   | Setting 2 |    | (Lower limit) : Setting 1<br>(Upper limit) : Setting 2 |   |

Note 1. In the Separate Mode, setting 1 corresponds to SW1, and Setting 2 corresponds to SW2.

Note 2. In the Window Comparator Mode, the minimum value for SW1 and SW2 corresponds to Setting 1 and the maximum value corresponds to Setting 2.



# PG-35

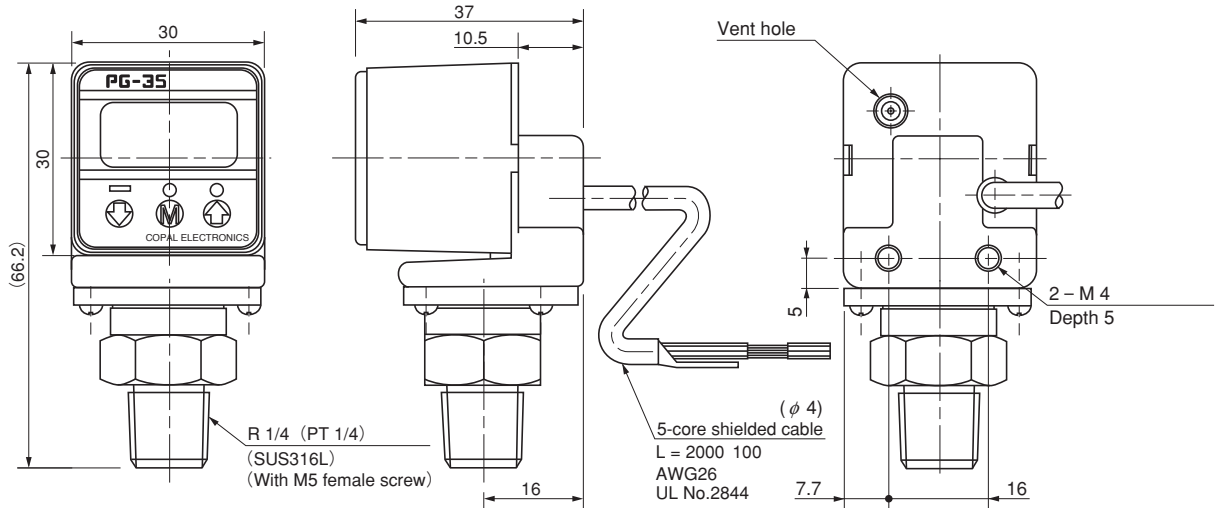
## PRESSURE GAUGES

### OUTLINE DIMENSIONS

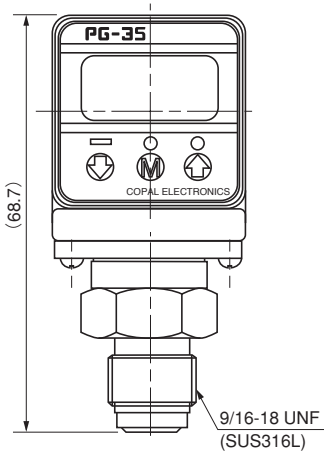
#### PG-35

Unless otherwise specified tolerance : ± 0.5 (Unit: mm)

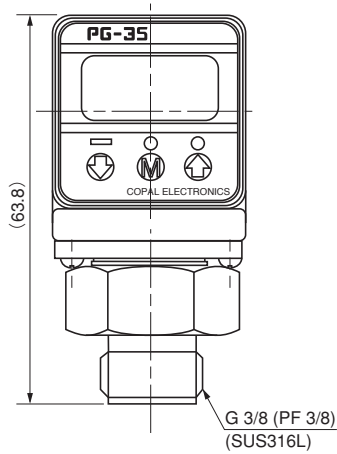
Configurations of joint R2 type



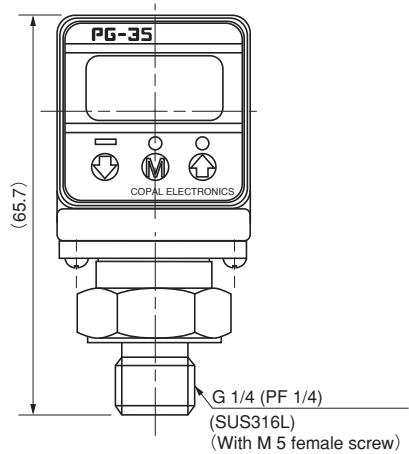
Configurations of joint VC type



Configurations of joint GF type



Configurations of joint G2 type



**!** Extra care should be taken with the diaphragm part. Do not touch the diaphragm directly to avoid damaging the diaphragm.

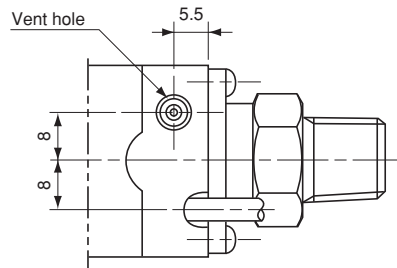
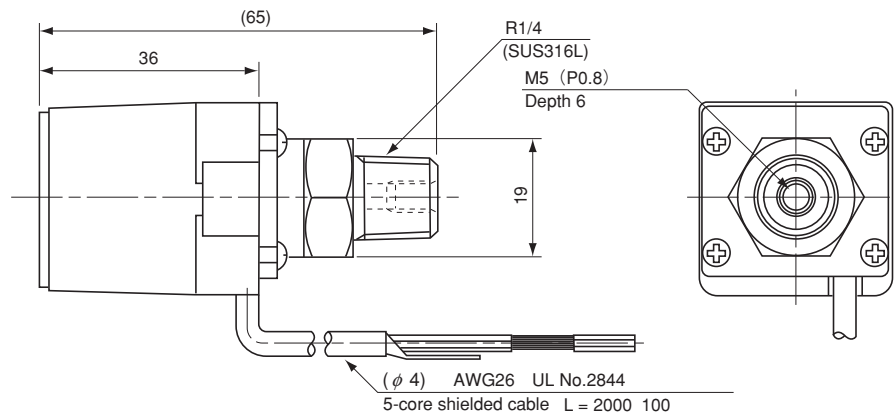
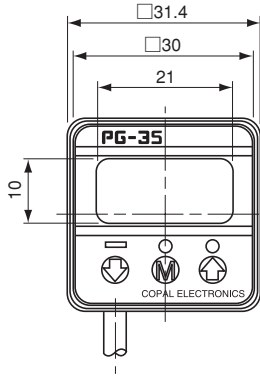
| Wire color | Connection      |
|------------|-----------------|
| Brown      | Power ⊕         |
| Gray       | Analog output   |
| Black      | Switch output 1 |
| White      | Switch output 2 |
| Blue       | Common          |
| Shield     | Fitting         |

# PG-35 PRESSURE GAUGES

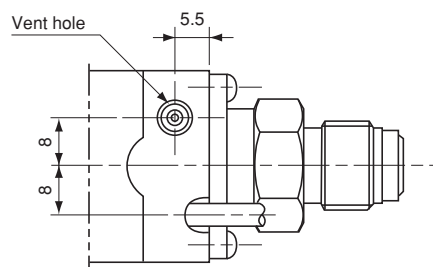
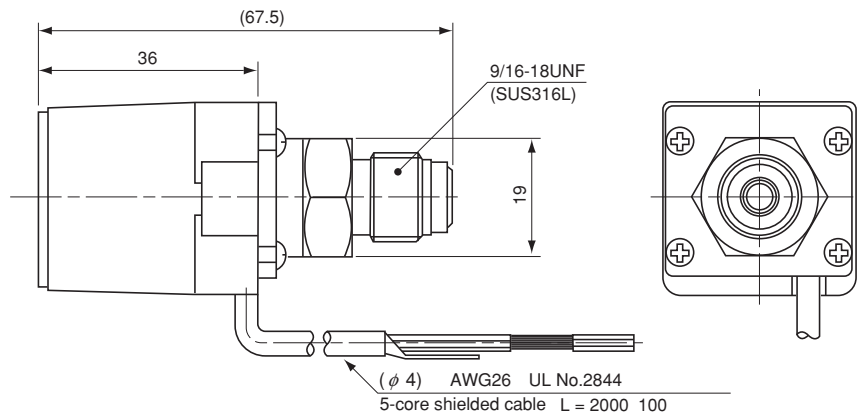
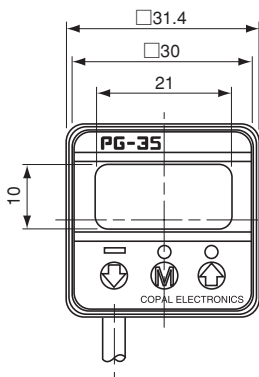
## OUTLINE DIMENSIONS

Unless otherwise specified tolerance :  $\pm 0.5$  (Unit: mm)

### PG-35-B (R2)



### PG-35-B (VC)



※ Accessories (sold separately) are available for common use with PG-30, PG-35, PG-75 series. (P. 173)