Sensor Heads, Separate display type Pressure sensor and Vacuum switch

# Small-sized Pressure Sensor

## Package: 1pc. in a bag

### Sensor Heads

- Small-sized 24.5-mm pressure sensors (width: 10mm × height, 10mm × total length).
- "Union," "Nipple," and "Male screw" are prepared.
- Use of an analog output type and indicator (SED30-series) has made a separate display system possible.
- Our small-sized pressure sensors can handle "positive pressure," "negative pressure" and "Compound pressure". Concerning output, a total of six different specifications are prepared.
- Standard cable length is 3m.

### Indicators

- A large 31.4mm square size indicator is used, realizing a high level of visibility with its large-sized LED display.
- All settings can be made using just three push buttons.
- For indication units, you can choose from among 11 different types.
- Two different kinds of output methods are offered - analog output and switch output.
- Four (4) different kinds of installation stays are available depending on installation form. - for installation in the rear, on a flat surface, panel-buried, and for protection of display components.



## Specifications

■Sensor Heads (Switch type)

| Specification | | SEU 11 series | VUS 11 series | VUS 11-R series |
|---|---|---|---|---|
| Fluid admitted | | Air, inert gas | | |
| Pressure detection | | Proliferated semiconductor pressure switch | | |
| Power requirements | | DC10.8 ~ 30V (ripples included) | | |
| Power consumption | | 20mA or less (DC24V at no-load) | | |
| Service pressure range | | 0 ~ 150psi (0 ~ 1MPa) | 0 ~ -30in. Hg (-100 ~ 0kPa) | 89 ~ -30in. Hg (-100 ~ 300kPa) |
| Proof pressure | | 218psi (1.5MPa) | 29psi (200kPa) | 87psi (600kPa) |
| Storage temperature range | | -4 ~ 158°F (-20 ~ 70°C) (Atomospheric pressure, hummidity less than 60%RH) | | |
| Operating temperature range | | 32 ~ 140°F (0 ~ 60°C) (No freezing) | | |
| Operating hummidity range | | 35 ~ 85%RH (No freezing) | | |
| Protective structure | | IEC standard IP40 equiv. | | |
| Switch output | No. of pressure setting | 1 | | |
| | Switch output | NPN Open collector output: 30V 80mA max. Residual voltage 0.8V max. | | |
| | Display of action | N.O. (red LED lights up when set pressure exceeded) | | |
| | Differential response | Fixed (2%F.S. max.) | | |
| | Operating accuracy | ±3%F.S. max. (at Ta=25°C/77°F) | | |
| | Response | Approx. 1msec | | |
| | Pressure setting range | 0 ~ 150psi (0 ~ 1MPa) | 0 ~ -30in. Hg (-100 ~ 0kPa) | 89 ~ -30in. Hg (-100 ~ 300kPa) |

■Sensor Heads (Analog type)

| Specification | | SEU 11 series | VUS 11 series | VUS 11-R series |
|---|---|---|---|---|
| Fluid admitted | | Air, inert gas | | |
| Pressure detection | | Proliferated semiconductor pressure switch | | |
| Power requirements | | DC10.8 ~ 30V (ripples included) | | |
| Power consumption | | 20mA or less (DC24V at no-load) | | |
| Service pressure range | | 0 ~ 150psi (0 ~ 1MPa) | 0 ~ -30in. Hg (-100 ~ 0kPa) | 89 ~ -30in. Hg (-100 ~ 300kPa) |
| Proof pressure | | 218psi (1.5MPa) | 29psi (200kPa) | 87psi (600kPa) |
| Storage temperature range | | -4 ~ 158°F (-20 ~ 70°C) (Atomospheric pressure, hummidity less than 60%RH) | | |
| Operating temperature range | | 32 ~ 140°F (0 ~ 60°C) (No freezing) | | |
| Operating hummidity range | | 35 ~ 85%RH (No freezing) | | |
| Protective structure | | IEC standard IP40 equiv. | | |
| Analog output | Output voltage | 1 ~ 5V | | |
| | Zero-point voltage | 1 ±0.1V | | |
| | Max. rated pressure voltage | 5 ±0.1V | | |
| | Output current | 1mA max. (Load Resistance 5kΩ min.) | | |
| | Linearity | ±0.5%F.S. max. | | |

# Small-sized Pressure Sensor

## Specifications

■Indicator

| Specification | | | |
|---|---|---|---|
| Power requirements | | SED-30 | |
| Consumption current | | DC10.8 ~ 30V | |
| Storage temperature range | | 50mA max. (supply voltage: DC10BV when a 2-point switch is turned ON for output) | |
| Operating temperature range | | -4 ~ 158°F (-20 ~ 70°C) (Atomospheric pressure, hummidity less than 60%RH) | |
| Operating hummidity range | | 32 ~ 122°F (0 ~ 50°C) (No freezing) | |
| Protective structure | | 35 ~ 85%RH (No freezing) | |
| | | IEC standard IP40 equiv. | |
| Pressure indication method | No. of indications | 4 times/sec | |
| | Response | Variable with a digital filter, about 5, 25, 250, 2500msec | |
| | Indication accuracy | ±1%F.S. | |
| | Temperature characteristics | ±0.5F.S. (32 ~ 122°F (0 ~ 50°C), reference temperature: 25°C/77°F) | |
| | Monitoring function | Beyond indicated numbers of digits | "9 9 9" flashes |
| | | Beyond detection range | "- - -" flashes (rated pressure: 110% or more) |
| | | Detection of output overloads | "E-1" flashes/overloads detected, output indication lamp flashes |
| | "0" adjustment function | | Panel switch-operated pressure indication (zero clear) |
| | | Monitoring of adjustment errore | Monitors "0" adjustment operation when residual pressure is impressed beyond (10%F.S.). "Error Warning E-2" flashes (cancelled using a panel switch) |
| | Resolution | 1 digit | |
| | Pressure indication element | 3-digit 7-segmented LED (character height: 8mm), colored red | |
| | Code indication element | LED lamp (illuminates at "minus", colored red) | |
| | Rated pressure indication range | Pressure indication units and rated pressure ranges are selected via the panel switches listed in the table given below. | |
| Switch output | Number of output point | 2-point outputs (SW1, Sw2) | |
| | Switch output method | NPN Open collector | |
| | Switch capacity | DC30V 100mA max. | |
| | Residual voltage | 1.2V max. (with load current at 100mA) | |
| | Pressure setting method | Using a panel switch | |
| | Pressure setting range | -999 ~ 999 count (decimal points are to conform to the range of rated voltage as given in the tabulated specifications). | |
| | Operational indication | Two LEDs light up (SW1: green, SW2: red, when output is switched ON) | |
| | Repetitiveness | ±0.2%F.S. ±1count | |
| | Temperature characteristics | ±0.5F.S. (32 ~ 122°F (0 ~ 50°C), reference temperature: 25°C/77°F) | |
| | Response | Can be adjusted by setting digital filters, 5, 25, 250, 2500msec | |
| | Setting differential responses | 0 ~ 300 counts (canbe adjusted via a panel switch) | |
| | Protection against overloads | 2-point output switches (SW1, SW2) are switched OFF (overload current: "200mA or beyond" or "beyond 200mA") | |
| Analog output | Output voltage | 1 ~ 5V | |
| | Output current | 1mA (Load resistance: 5kΩ min.) | |
| Sensor input specifications | Voltage input signal | 1 ±0.1 ~ 5 ±0.1V | |

| Pressure sensors used | | VUS11-□A | VUS11-□AR | SEU11-□A |
|---|---|---|---|---|
| | Units of pressure | kPa | | |
| Magnification (Unit) | Pressure range setting code | -12P | 32r | 13P |
| ×1 (kPa) | Rated pressure indication range (PL ~ PH) | 0.0 ~ -99.9 | -100 ~ 300 | 0 ~ 999 |
| ×0.0102 (kgf/cm²) | | 0.00 ~ -1.02 | -1.02 ~ 3.06 | 0.00 ~ (9.99) |
| ×10.2 (gf/cm²) | | 0 ~ (-999) | — | — |
| ×7.501 (mmHg) | | 0 ~ -750 | — | — |
| ×102 (mmH₂O) | | — | — | — |
| ×0.01 (bar) | | 0.00 ~ -1.02 | -1.00 ~ 3.00 | 0.0 ~ 9.99 |
| ×10 (mbar) | | 0 ~ -999 | — | — |
| ×0.145 (psi) | | 0.0 ~ -14.5 | -14.5 ~ 43.5 | 0 ~ 145 |
| ×0.000145 (kpsi) | | — | — | — |
| ×0.001 (MPa) | | — | -0.10 ~ 0.30 | 0.00 ~ 1.00 |
| ×0.2953 (In.Hg) | | 0.0 ~ -29.5 | -29.5 ~ -88.5 | 0 ~ 295 |
| Analog output mode indicated | | 3 | 1 | 2 |

## Model Designation of Sensor Heads (Example)

VUS11 ① – 6 ② AR ③

①. Type
- **SEU11:** Positive pressure sensor
- **VUS11:** Negative pressure sensor

②. Pressure introduction configuration
- **4:** ø4mm nipple
- **6:** ø6mm nipple
- **M5:** M5×0.8 male screw
- **01:** R1/8 male screw
- **4U:** ø4mm quick-fitting joint (fitted with an in-line installation holder)
- **6U:** ø6mm quick-fitting joint (fitted with an in-line installation holder)

③. Switch output
- **A:** Analog output
- **AR:** Compound pressure type analog output
- **S:** NPN open collector output
- **SR:** Compound pressure type NPN open collector output

*Compound pressure type (□R) is only accepted when ① "VUS11" is selected.

## Model Designation of Indicators (Example)

SED – 30

## Model Designation of Individual Indicator accessories (Example)

ACPG – 011 ①

①. Configuration of accessories (installation stay)
- **011:** Rear angles (rear angles, two M3×4 male screws)
- **012:** Flat surface angles (two M3×4 male screws)
- **004:** Holder cover set (a panel holder cover, a panel holder)
- **003:** Panel holder set (a panel cover, a panel holder and panel stopper)
- **007:** Holder stopper set (a panel holder and panel stopper)

➲.In case of ordering, please apply Model code in the following chart.

## Detailed Safety Instructions

Before using the PISCO device, be sure to read the "Safety Instructions", "Common Safety Instructions for Products Listed in This Manual" on page 15 to 17 and "Common Safety Instructions for Control Series" on page 59 and "Common Safety Instructions for LED Digital Pressure Sensors, Digital Pressur Sensors & Pressure Sensors" on page 77.

### ⚠ Caution

1. For power, use stable direct currents.
2. Insert surge-absorbing circuits into relays, valves, etc. Do not arbitrarily use these units at currents that exceed rated levels.
3. When using unit power sources, such as switching power sources, be sure to ground their FG terminals.
4. Take the utmost care to avoid short-circuitting the output terminal with other terminals.
5. Do not apply excessive loads to pressure sensors. Subjecting them to excessive loads can damage them.
6. Do not wire nozzles and other components in a way that will impress them with noises, etc. Do not use them in any arbitrary manner, either. Doing so can cause malfunctions.
7. When conducting pressure adjustments for units fitted with switch output sensors, use small screwdrivers (included). Do not apply excessive force to these screwdrivers, and turn them slowly. Applying excessive force may damage the units.
8. Our indicator (SED-30) is not constructed to be drip- or dust-proof. As such, do not use indicators that have been exposed to water or oil and/or dust.
9. For the SED-30 indicator's sensor heads, use either a "VUS 11…A." or an "SEU 11…A" type head. Using different specifications with these sensor heads will not achieve the required level of accuracy.
10. Do not pull or bend vacuum switch lead wires excessively. Doing so may result in lead wires being snapped off and connector components broken.

## Sensor heads (Switch type)

| SEU Positive pressure type<br>VUS Negative pressure type | SEU Positive pressure type<br>VUS Negative pressure type | SEU Positive pressure type<br>VUS Negative pressure type |
|---|---|---|
|  |  |  |
| Model | Model | Model |
| SEU11-4US | SEU11-4S | SEU11-M5S |
| SEU11-6US | SEU11-6S | SEU11-01S |
| VUS11-4US | VUS11-4S | VUS11-M5S |
| VUS11-6US | VUS11-6S | VUS11-01S |
| VUS11-4USR | VUS11-4SR | VUS11-M5SR |
| VUS11-6USR | VUS11-6SR | VUS11-01SR |

## Sensor heads (Analog type)

| SEU Positive pressure type<br>VUS Negative pressure type | SEU Positive pressure type<br>VUS Negative pressure type | SEU Positive pressure type<br>VUS Negative pressure type |
|---|---|---|
|  |  |  |
| Model | Model | Model |
| SEU11-4UA | SEU11-4A | SEU11-M5A |
| SEU11-6UA | SEU11-6A | SEU11-01A |
| VUS11-4UA | VUS11-4A | VUS11-M5A |
| VUS11-6UA | VUS11-6A | VUS11-01A |
| VUS11-4UAR | VUS11-4AR | VUS11-M5AR |
| VUS11-6UAR | VUS11-6AR | VUS11-01AR |

## Indicator

| SED Indicators |
|---|
|  |
| Model |
| SED-30 |

## Accessories for indicators

| ACPG-003 Panel-holder set | ACPG-004 Holder-cover set | ACPG-007 Holder-stopper set | ACPG-011 Rear angles | ACPG-012 Plain angles |
|---|---|---|---|---|
|  |  |  |  |  |
| Model | Model | Model | Model | Model |
| ACPG-003 | ACPG-004 | ACPG-007 | ACPG-011 | ACPG-012 |
| | | | *It is equipped with two screws for fixing the sensor. | *It is equipped with two screws for fixing the sensor. |