Digital Pressure Monitor
Model: DV-3□□□
Instruction Manual

1. Before using

1. 1. Description of marks used in this manual

The meanings of warning and caution indications are as follows.

⚠WARNING	Indicates a potentially hazardous situation that, if not avoided, could result in user death or serious injury.
⚠CAUTION	Indicates a potentially hazardous situation that, if not avoided, could result in user injury or property damage.

1. 2. About this product

⚠WARNING

- Never disassemble, remodel, or repair this product. There is danger of abnormal operation, electric shock, or fire.
- Do not touch the inside with the power on. There is a danger of electric shock.
- This product is not explosion-proof. Do not use in environments with flammable gas, liquid or powder.

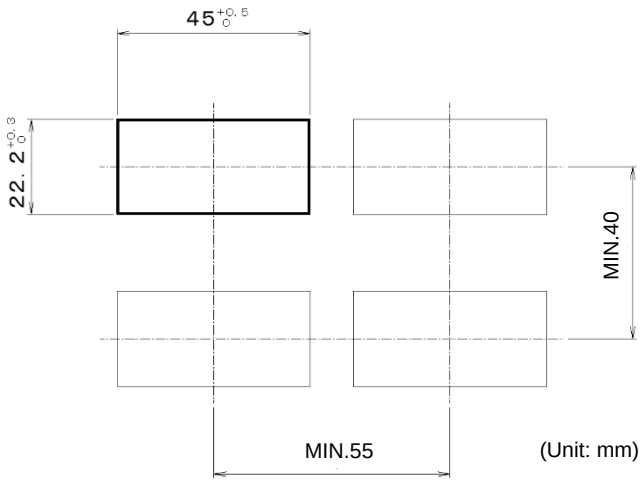
⚠CAUTION

- The contents of this manual may be changed without prior notice for product improvement.
- We have made every effort to ensure the contents of this manual, but if you find, any questionable areas, mistakes or omissions, please contact your dealer or Surpass Industry.
- After reading this manual, be sure to keep it at hand for quick reference when necessary.

2. Mounting

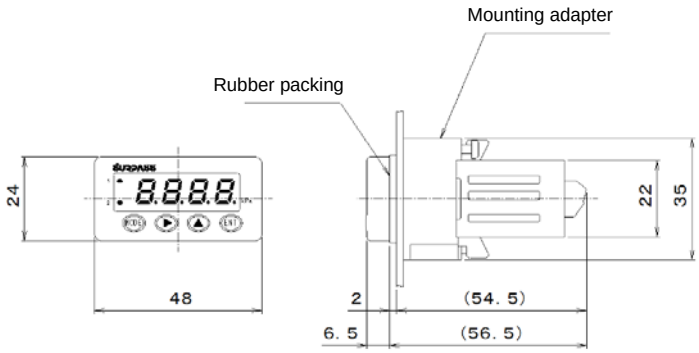
2. 1. Panel cutout dimensions

Follow the figure below to cutout the panel when mounting the pressure monitor.

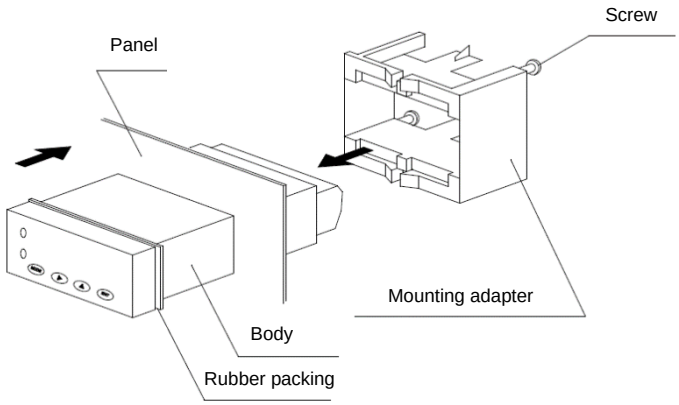


(Unit: mm)

2. 2. External dimensions



2. 3. Panel mounting



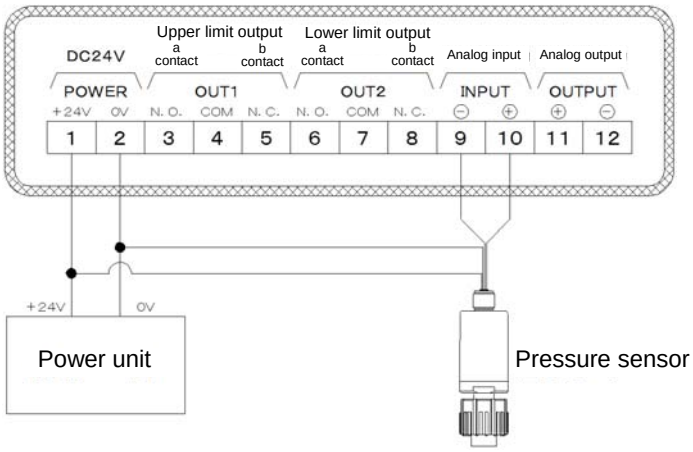
* Recommended panel thickness: 1 to 8 mm

⚠CAUTION

- Be careful to avoid the following places when mounting. Otherwise, the product may malfunction.
  - Places where the temperature changes rapidly and there is condensation.
  - Places where there is corrosive gas (sulfurized gas, ammonia, etc.) or combustible gas.
  - Places susceptible to direct vibration or shock (The output relay may malfunction due to vibration or shock).
  - Places subject to water, oil, chemicals, steam or vapor (There is a danger of electric leakage and fire when immersed in water).
  - Places where there is excessive dust, salt or iron.
  - Places where there is excessive induction interference, static electricity, magnetism, or noise.
  - Places exposed to direct sunlight.
  - Places where heat accumulates due to radiant heat.
- When mounting the panel, tightening the screws too tightly may damage the mounting adapter.
- If the panel strength is weak, a gap may be created between the rubber packing and the panel and may impair waterproofing.
- Please do not block the ventilation areas of this product so as not to hinder heat dissipation. Otherwise, the product may malfunction.
- Use the supplied rubber packing when used with dustproof/waterproof (IP66) on the front side.

3. Terminals and connection method

Pressure monitor



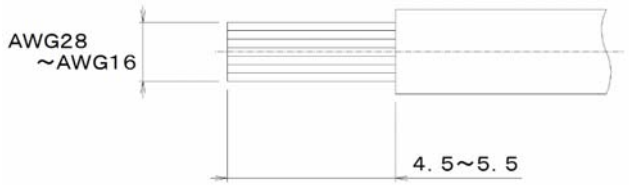
⚠ CAUTION

- Be sure to turn off the power when replacing the sensor.
- Keep the input signal away from the power line and load line to avoid the effect of noise induction.
- Separate the input signal line and output signal line from each other and use shielded wire.
- If there is excessive noise from the power supply, addition of isolation transformer and use of noise filter are recommended. Be sure to attach the noise filter to a grounded panel and wire the noise filter output and instrument power supply terminal in the shortest distance possible. Avoid attaching fuses, switches, etc. to the wiring on the output side of the noise filter because the effect as a filter will be reduced.
- It is effective to twist and wire the instrument power line. (The shorter the twist pitch is, the more effective against noise.)
- Connecting full capacity load to the output relays will shorten their life. Therefore, use an auxiliary relay. If output frequency is high, use of SSR/SSC drive output type is recommended.
- Applying voltage or power exceeding the maximum allowable value to the input will result in equipment damage.
- Use the power supply voltage within the rated range. Otherwise, there is a danger of fire, electric shock or failure.

4. Wiring material specifications

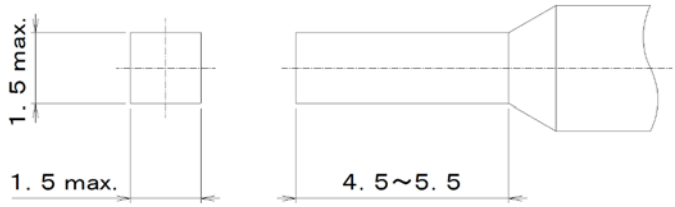
4. 1. Electrical wire

Size : AWG28 to AWG16
Stripped length : 4.5 to 5.5 mm



4. 2. Rod terminal

Conductive part shape : 1.5 x 1.5 mm max.
Conductive section length : 4.5 to 5.5 mm



The following item is recommended.
Manufacturer : Phoenix Contact
Model : AI 0, 5 - 6 WH

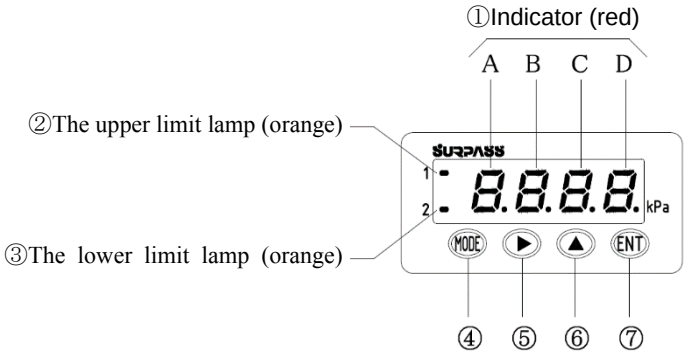
⚠ CAUTION

- To prevent disconnection and short-circuit, use the above wiring material and securely insert it all the way to the terminal block.
  Tightening torque: 0.22 to 0.25·Nm

⚠ WARNING

- This product is not equipped with power supply switch or fuse. Please install them separately if necessary. Also, wire the fuse so that it is located between the main power switch and this product. (Main power switch: 2 pole breaker, fuse rating: 250 V 0.3 A)
- Provide appropriate external protection circuit if there is a possibility that a malfunction or abnormality of this product could lead to a serious accident.
- Supply the rated power supply voltage to avoid equipment damage and malfunction.
- Do not turn on the power until all wiring is completed in order to prevent electric shocks and equipment failures.
- Be sure there is sufficient space to guard against electric shock and equipment fire before turning on the power.
- Do not touch the terminals while the power is on. Otherwise, there is a danger of electric shock or malfunction.

5. Name and function of each part



	Name	Function
①	Indicators (red)	● Displays the measured value during normal operation. ● Displays the set value during upper/lower limit setting mode. ● Displays various abnormalities.
②	The upper limit lamp (orange)	Turns on when the measured value exceeds the upper limit value.
③	The lower limit lamp (orange)	Turns on when the measured value falls below the lower limit.
④	Mode key	Moves to upper/lower limit setting mode. Switches between upper limit value and lower limit value in upper/lower limit setting mode.
⑤	Shift key	Selects the digit in upper/lower limit setting mode.
⑥	Up key	Increments the setting value by one in upper/lower limit setting mode.
⑦	Enter key	Enters the setting and returns to normal operation in upper/lower limit setting mode.

6. Setting the upper/lower limit

6. 1. Setting the upper limit

1. Press MODE for at least 2 seconds.
   The upper limit lamp turns on and the current upper limit value is displayed on the indicator.
2. Use ▶ and ▲ to change the setting.
   The setting value within the pressure range can be specified.
   Select the digit with ▶. The selected digit flashes.
   Use ▲ to increment the flashing indicator by 1. Indicator A changes in the order "0, 1, 2, - (minus)" and indicator B to D in the order "0 to 9".
3. Press ENT to complete the setting.
   Normal operation is resumed and the indicator shows the measured value.

6. 2. Setting the lower limit value

1. Press MODE for at least 2 seconds.
   The upper limit lamp turns on and the current upper limit value is displayed on the indicator.
2. Press MODE.
   The lower limit lamp turns on and the current lower limit value is displayed on the indicator.
3. Use ▶ and ▲ to change the setting. The setting value within the pressure range can be specified.
   Select the digit with ▶. The selected digit flashes.
   Use ▲ to decrement the flashing indicator by 1. Indicator A changes in the order "0, 1, 2, - (minus)" and indicator B to D in the order "0 to 9".
4. Press ENT to complete the setting.
   Normal operation is resumed and the indicator shows the measured value.

⚠ CAUTION

- If this setting is not set correctly, it will not be output correctly at the time of equipment malfunction, so be sure to check it before operation.
- When a value below the lower limit is set, the minimum value of the pressure range is set. For example, in the case of 0 to 500 kPa, even if -100 is set as the lower limit value, the lower limit value becomes 0. Also, when a value exceeding the upper limit value is set, the maximum value of the pressure range will be set similaly.

7. Alarm indication

This product has a display function to notify abnormality. When an abnormality occurs, remove the cause promptly. After removing the cause, turn off the power supply once and turn it on again.

Display	Cause
UUUU	(1) Measured value exceeds the pressure range + 5% FS
LLLL	(1) Input line is disconnected or shorted (2) Measured value is less than the pressure range -5% FS

8. Maintenance

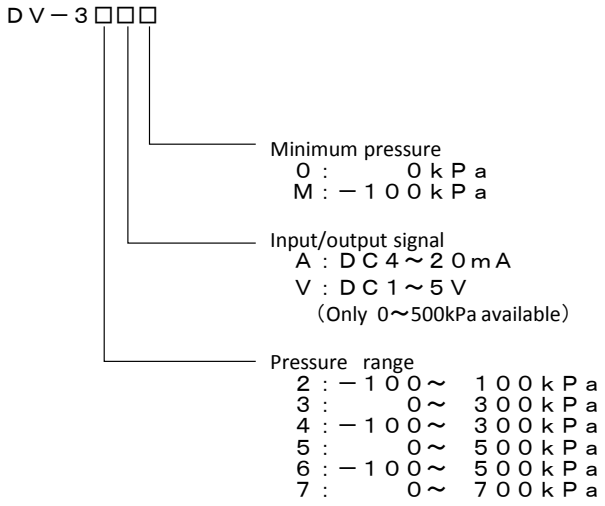
⚠ WARNING

- Please turn off the power before attaching/removing this product. Otherwise, there is a danger of electric shock or malfunction.
- Regular maintenance is recommended in order to use this product continuously and safely. Parts used in this product have a limited lifetime and some may deteriorate over time.
- Do not wipe this product with organic solvent such as alcohol or benzine. Use a mild detergent when wiping.

9. Specification

■ Power supply	:	DC 24 V ± 10%
■ Current consumption	:	100 mA
■ I/O	:	Depends on model A: DC 4 to 20 mA V: DC 1 to 5 V
■ Output load resistance	:	Depends on model A: 500 Ω or less V: 2 kΩ or more
■ Display accuracy	:	±0.3%F.S.±1 digit (at 23°C ambient temperature)
■ Upper/lower limit output	:	Relay c contact AC 220 V 0.12 A (resistive load) DC 30 V 1A (resistive load)
■ Output accuracy	:	±0.3%F.S. (at 23°C ambient temperature)
■Operating and storage temperature /humidity range	:	0 to 50°C, 30 to 80%RH (No condensation)
■ Warm-up time	:	30 minutes or more

10. Model composition



11. Warranty

Surpass Industry products are warranted to be free from latently defective performance and material for a period of one (1) year from the date of delivery. We will replace products that have been permitted in writing to be latently defective in design or workmanship within this time.

This warranty shall not be applied to any defects caused by misuse, alteration, neglectful treatment, and disregard of our recommendations or instructions.

In addition, we will not be liable to any direct or consequential loss, damage, and personal injury due to unauthorized usage in combination with other products and improper usage outside of the specifications. Our product warranty shall be limited to replacement of product.

Replacement with expense to the purchaser shall be applied to the followings:

- Any defects or damages caused by usage that is not described in the manual.
- Any defects or damages caused by neglectful treatment.
- Any defects or damages caused by disassembly, alteration, and improper adjustment or repair.
- Any natural disasters, fires, and other unforeseen circumstances beyond control.
- Replacement of consumables and accessories.

<Contact information>
SURPASS Surpass Industry Co., Ltd.
2203 Shimooshi Gyoda-shi, Saitama
361-0037
PHONE: (+81) 48 (554) 9760
FAX: (+81) 48（554）9906
URL: http://www.surpassindustry.co.jp