

HITROL CO., LTD.

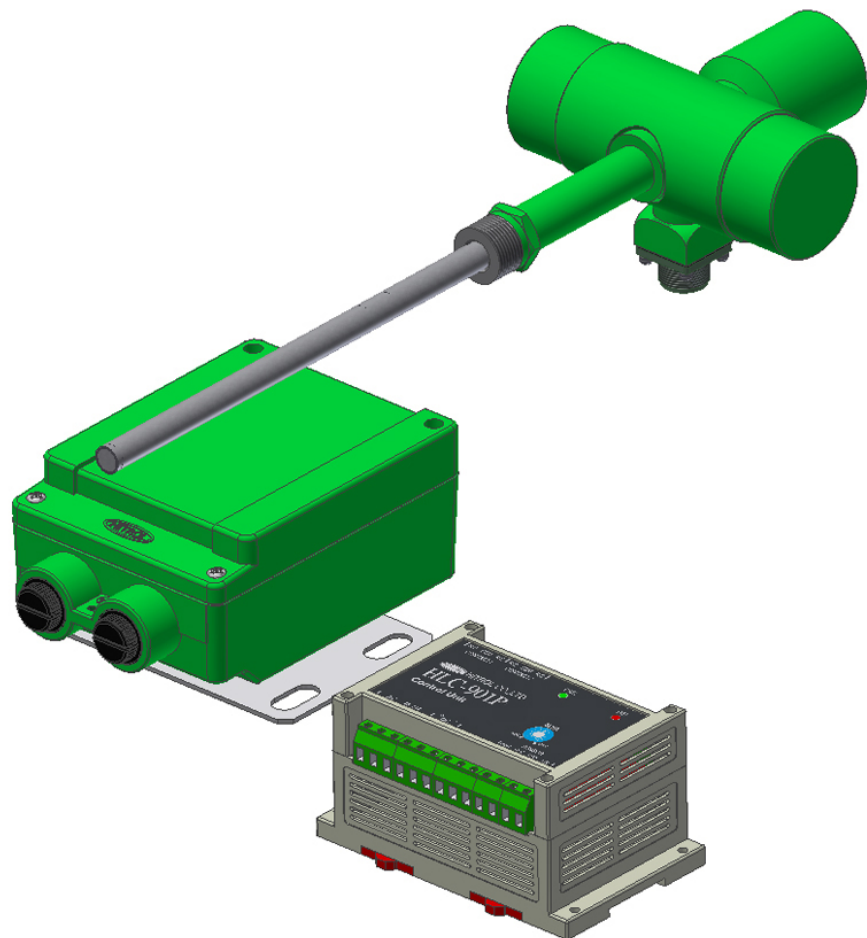
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INSTRUCTION MANUAL

VIBRATION TYPE LEVEL SWITCH

HTM-930 & HLC-901 Series



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You shall be well-informed of the contents where WARNING is marked before carrying out the work.



You shall be careful where CAUTION is marked to carry out the work.

Overview HTM-930 Series is a Vibration Type Level Switch which detects a level of medium such as solids or powder with simple structure. The product can be measured the solids of low density (Styrofoam) and it is basically used for EPS (Expandable Polyethylene) Machine because it is applicable to Styrofoam which has very low density.

HLC-901 Series is a controller that outputs the level detection results of a medium (powder) to the relay contacts in conjunction with HTM-930.

Operation Principle The sensor is composed of one module consisting of oscillator coil an induction coil. When the medium doer not contacted with the sensing probe, the sensor is continuously vibrated by oscillator coil. However, as soon as the medium touches the probe, vibration frequency and output from the induction coil are significantly decreased, and relay output signal is activated by the controller. It can be used for alarm and process control.

- Characteristics**
- Various kinds of solid and powder levels can be detected.
 - Excellent performance for low or high density powder
 - Long life cycle due to moveless parts
 - On-site operational convenience operational stability and improved maintenance

Specifications

Sensor

Model	HTM-930
Installation	Side or Top
Type	Remote
Ambient Temperature	-20°C ~ + 60°C
Process Temperature	*Max. 150°C
Process Pressure	Up to 10kg/cm ²
Enclosure	Weather-Proof (IP65)
Body	SS400 / Painting
Process Connection	PT 3/4"(M), SUS304
Wetted Part	SUS 316L
Cable Entry	Shell 14S

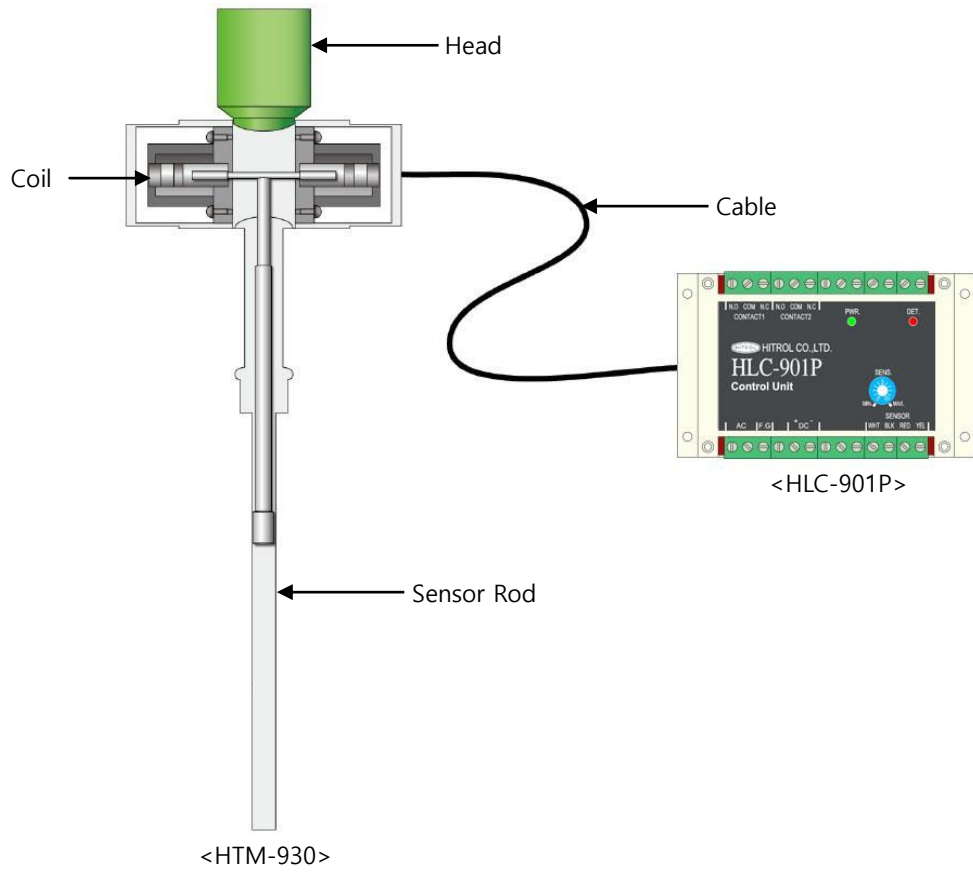
Combination Unit

Model	HLC-901L	HLC-901P
Installation	Local	Panel Inside
Ambient Temperature	-20°C ~ + 60°C	
Power Source	AC 90~240V @ 50/60Hz DC +24V @ Typ. (Min. DC+17V ~ Max. +35V)	
Contact Form	1-DPDT	
Relay Contact Rating	AC 250V 5A / DC 30V 5A	
Enclosure	Weather-Proof (IP66)	-
Housing Material	Aluminum	ABS
Cable Entry	PF 3/4" (F) (std.)	Terminal Block

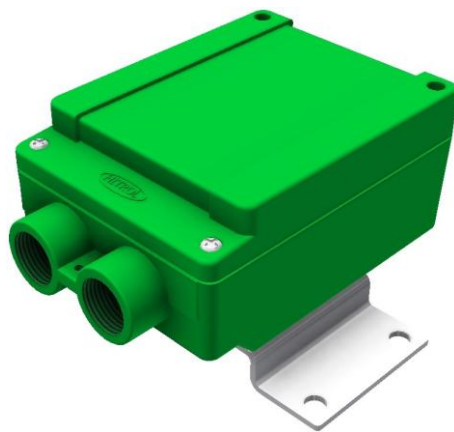
*The ideal temperature for detecting low-density measurements is 60°C. (Ex. Styrofoam)

**Product
Composition
and
Technical
Data**

■ HTM-930 & HLC-901P



■ HLC-901 Series



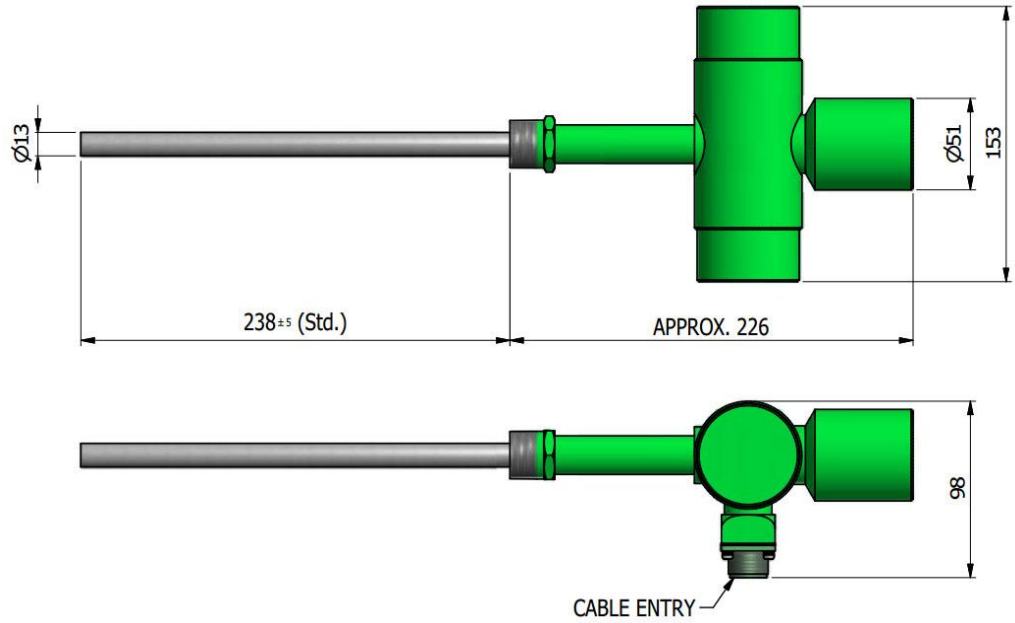
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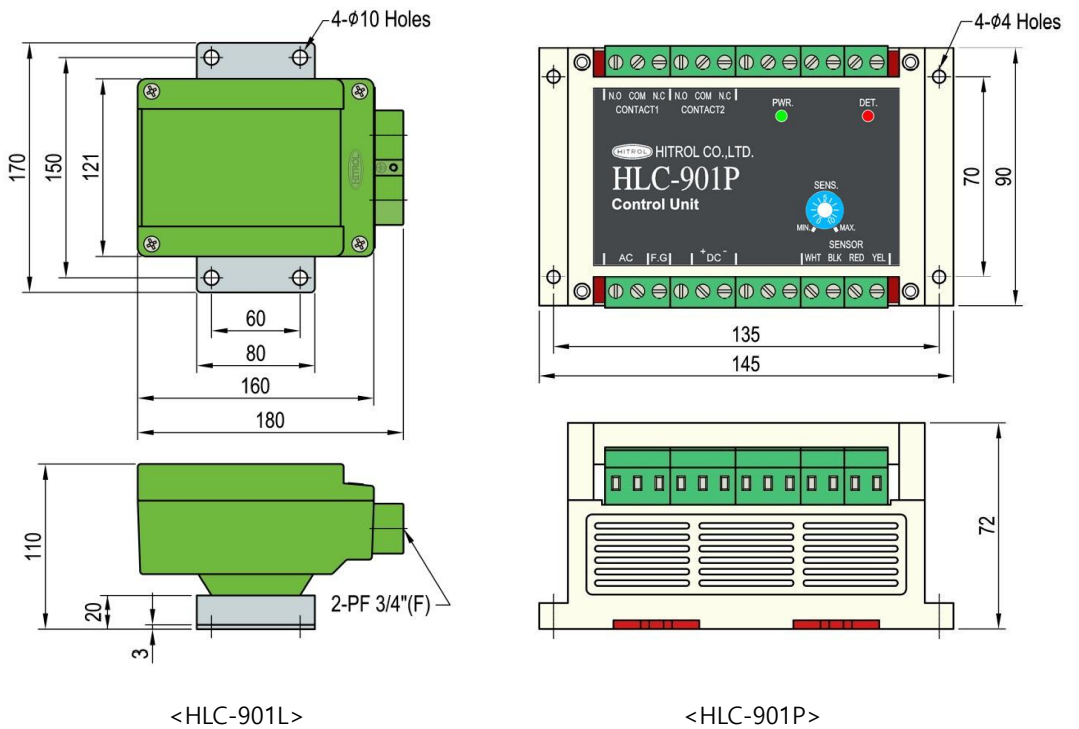
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Dimensions

■ HTM-930



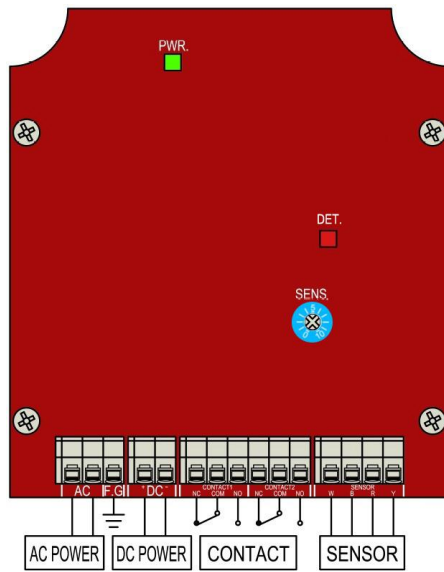
■ HLC-901 Series



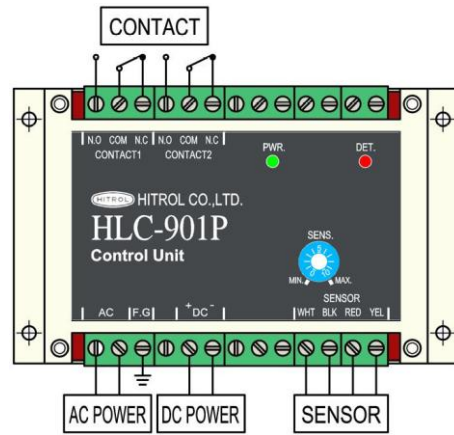
Some tolerances may occur with actual products.

Wiring & Setting

■ HLC-901 Series



<HLC-901L>



<HLC-901P>

Terminal Block	AC POWER	AC 90~240V Input
	DC POWER	DC+24V Input
	CONTACT	AC 250V, 5A / DC 30V, 5A Output
	SENSOR	Sensor Input
LED	PWR. (POWER)	Green LED is On, when power is applied.
	DET. (DETECTION)	Red LED is On, when medium is detected.
Dial	SENS. (SENSITIVITY)	Adjustment of sensitivity.



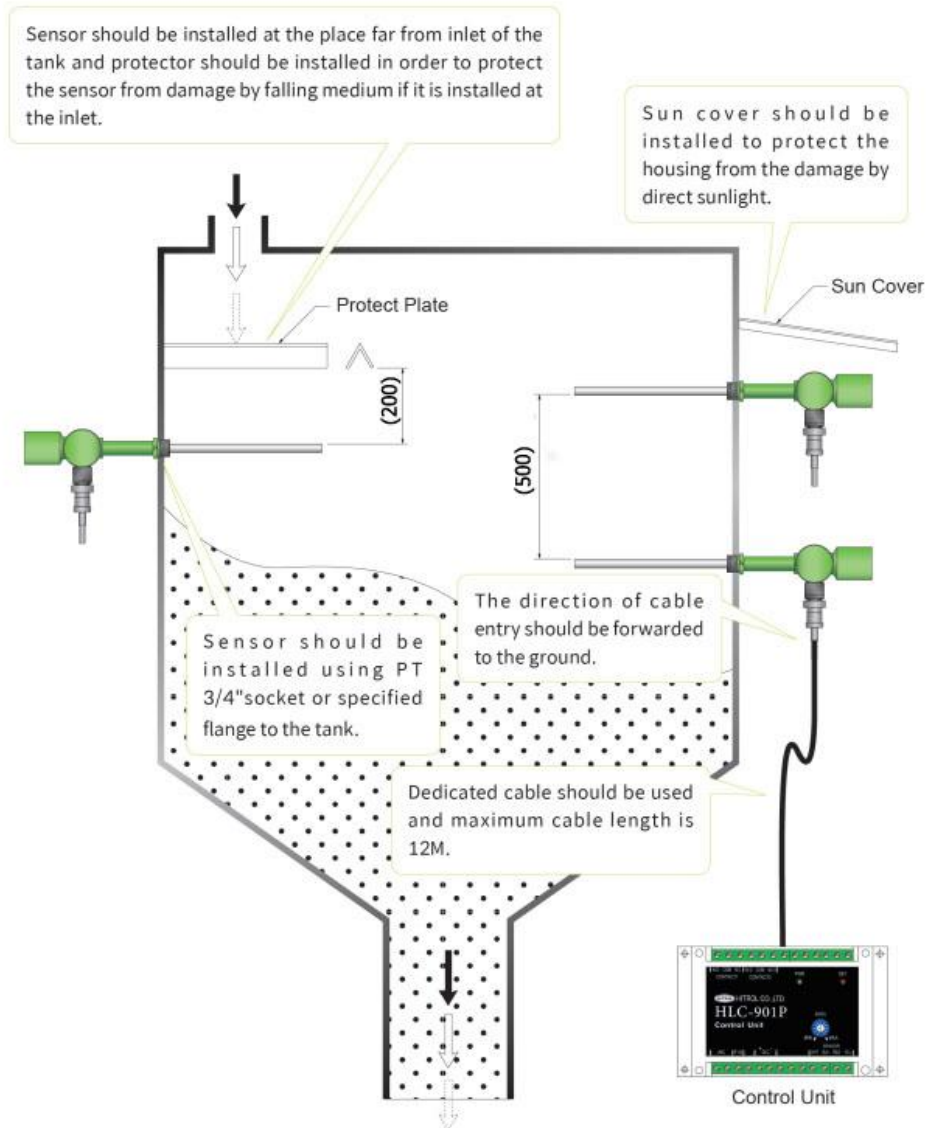
Wrong wiring can affect damage of the product.



The power and output lines shall have separate cables.

Installation

Below recommendation shall be considered when installation.



The protect plate shall have sufficient area to protect the sensor from incoming medium and be installed at a distance that does not affect sensor operation.



If more than one level switch is installed in a tank, it shall be installed at intervals between each sensor. (If the distance between the sensors is short, the operation may be unstable due to the effects of the instruments on each other.)

Precautions for Installation

- Use the same standard flange or screw.
- Make sure to insert washers between bolts and nuts to prevent loosening.
- Make sure to insert gaskets between flanges. (Select the gaskets in consideration of temperature of content and pressure of vessel.)
- After the installation is complete and the cover of the product is assembled, power it on.



Do not apply high impact to the product.

Maintenance The life span of key parts depends on user's environment and can be used optimally through periodic check. Therefore, regular inspection ensures optimal performance of product, so take regular inspection and maintenance at least every year. If the medium is hard or high viscous, it is recommend to clean and check the sensor frequently after removing the sensor from the tank.



Turn off the power of the product for maintenance.

Precautions for Removal

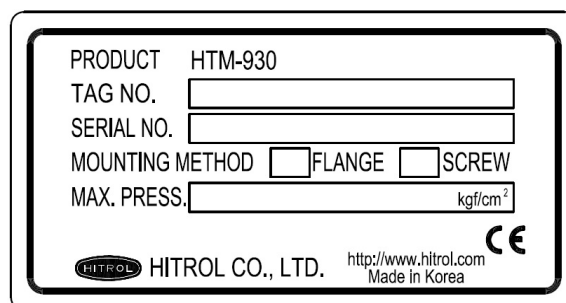
- Check the level and presence of medium in the tank before removing it.
- Wear gloves when removing it, to prevent a burn.
- Disassemble work shall be done with the power off.
- Power shall be applied after completion of installation and wiring.

Safety and Environment

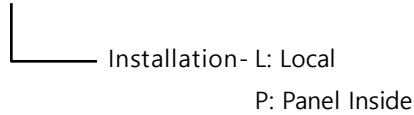
- Precautions for Use
 - Make sure to connect the product and vessel using required tools for sure.
 - Keep the lock key safe and make sure that it is locked.
 - Do not apply high impact to the product.
- Precautions for Wiring
 - Make sure to wire contacts correctly. (Refer to Wiring and Setting)
 - Wire and supply the power to the product after checking the specifications.
 - Incorrect power voltage may cause damage to the product.
 - Pay attention to prevent electric shock.
- Disposal of Product
 - Make sure to separate the amplifier and main unit from housing before disposing the products. Also, the amplifier shall be detached and discarded the metal and non-metallic materials.
 - No part (ex. Mercury switch) has influence on the environment, so no special attention is required.

Marking

- Product Identification
 - The product identification mark is attached onto the housing and shows the model name, serial number, working pressure, working temperature, and matters regarding output. The serial number is a unique manufacturing number for the identification of products.



Model The model configuration of the HTM-930 & HLC-901 Series is shown below.
Notation HTM-930
 HLC-901*



Failure ■ If there is no change in output contact even though the medium is detected, check as
Check and shown follows.
Solution

Status	Check Point
POWER (PWR.) LED is Off	Check wiring of power, and power On/Off
SENSING (DET.) LED is Off	Adjustment of Sensitivity using <i>SENS.</i> dial

■ If there is no vibration from the sensor even though the medium is not detected, check as shown follows.

Status	Check Point
POWER (PWR.) LED is Off	Check wiring of power, and power On/Off
Weak vibration of sensor	Adjustment of Sensitivity using <i>SENS.</i> dial
Wrong wiring of cable	Check the fastening of direct cable outlet Check the correct wiring to each color of cables
Bent sensor	Contact Hitrol's after sales service team

Warranty ■ Warranty and Service
and The warranty period of this product is two years after shipment of the product and after
Contact sales service will be provided free of charge during this period for problems that would have occurred during normal use. If after sales service is requested for matters other than product issues, charges may be requested regardless of the warranty period.
 A/S can be requested through our website or below head office.

■ Head office · Factory · Laboratory Contact Number
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