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# INSTRUCTION MANUAL

## LEVEL CONTROLLER & ALARM UNIT

### HLC-400



Doc. no. : HLC400\_IM\_Eng\_Rev.0.3

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



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



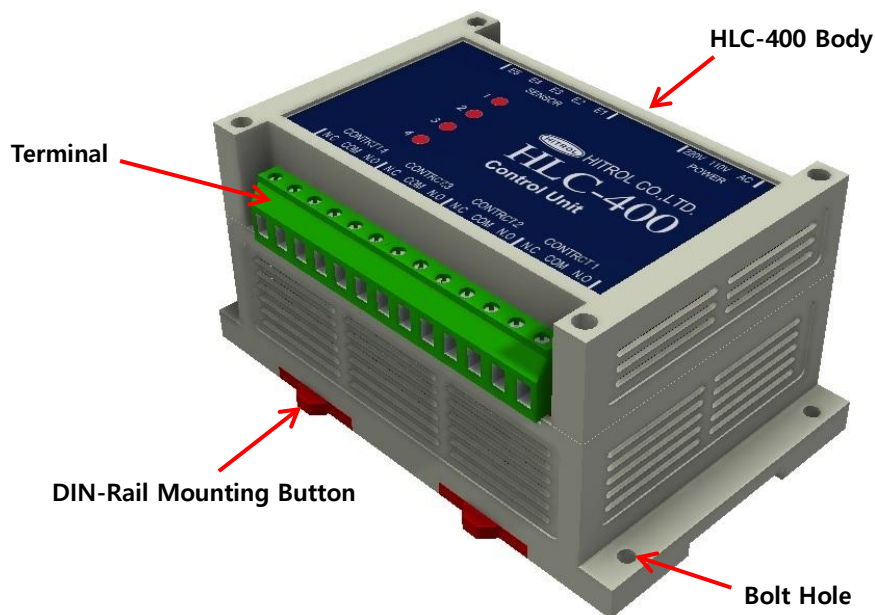
You should be aware of where **NOTICE** is marked to carry out the work.

**Overview** HLC-400 is a Level Control & Alarm Unit that controls and alarms by combining with the level sensor (HE, HQ, HR Type) of the storage of tank. The signal of the level sensor can function as the upper and lower alarm of liquid through HLC-400, and the product can be installed inside the control panel.

**Characteristics**

- Easy to install (DIN Rail Type)
- Compact size
- Operating can be checked through LED lamp

**Operating Principle and Composition** When the level sensor connected to HLC-400 detects a liquid in the tank, a leakage current flow and it is sensed by leakage current sensing circuit, and transistor is activated. Accordingly, relay contact is changed and it can be used for alarm and/or control signal.

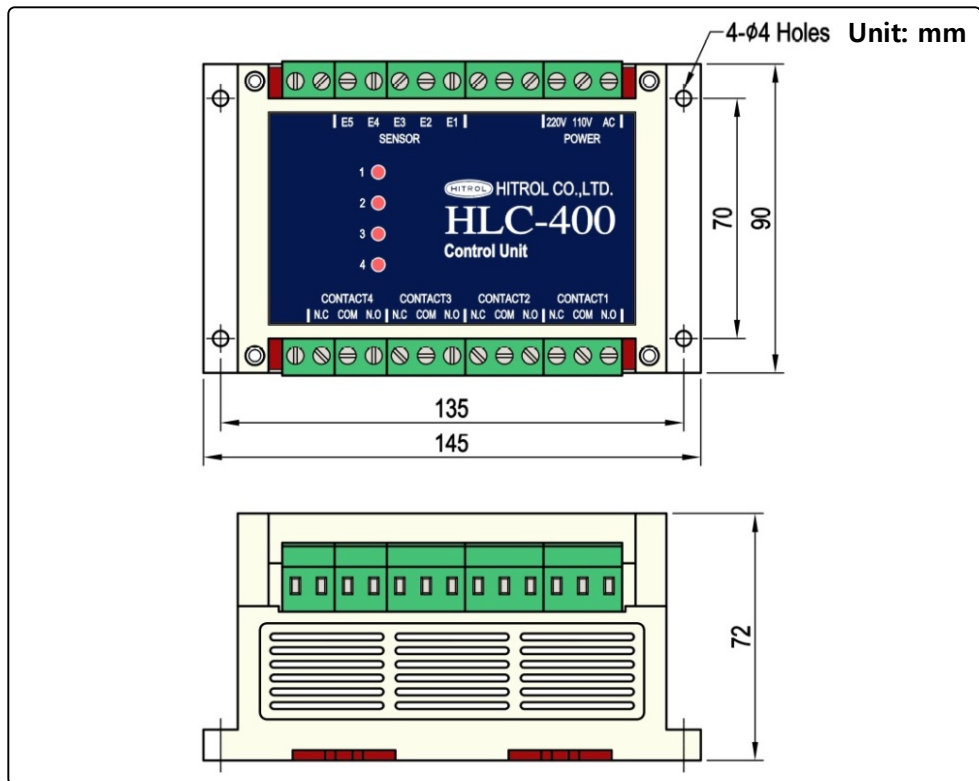


**Specifications**

**General Spec.**

|                           |  |
|---------------------------|--|
| Combination Unit          | HE Series (Electrode)<br>HQ Series (Quick Float)<br>HR Series (Float Reed Switch)  |
| Mounting                  | Panel Inside (DIN Rail or Bolting)   |
| Power Source              | AC 110V/220V @ 50/60Hz   |
| Standby Power Consumption | AC 110V @ 1.26W / AC 220V @ 1.23W  |
| Active Power Consumption  | AC 110V @ 6.8W / AC 220V @ 8W  |
| Relay Contact             | Alarm: 4-SPDT  |
| Relay Contact Rated       | AC 250V, 10A / DC 30V, 10A   |
| Transmit Signal           | E5 (AC 14V @ 50/60 Hz)   |
| LED State                 | E1 / AL.1 (Red) : H.H Detection<br>E2 / AL.2 (Red) : H Detection<br>E3 / AL.3 (Red) : L Detection<br>E4 / AL.4 (Red) : L.L Detection |
| Cable & Distance          | Def, 1.25 SQ @ Max. 300m   |
| Operating Temperature     | -20°C ~ +60°C  |
| Housing Material          | ABS  |
| Dimensions                | 145mm x 90mm x 72mm  |
| Weight                    | 325g   |

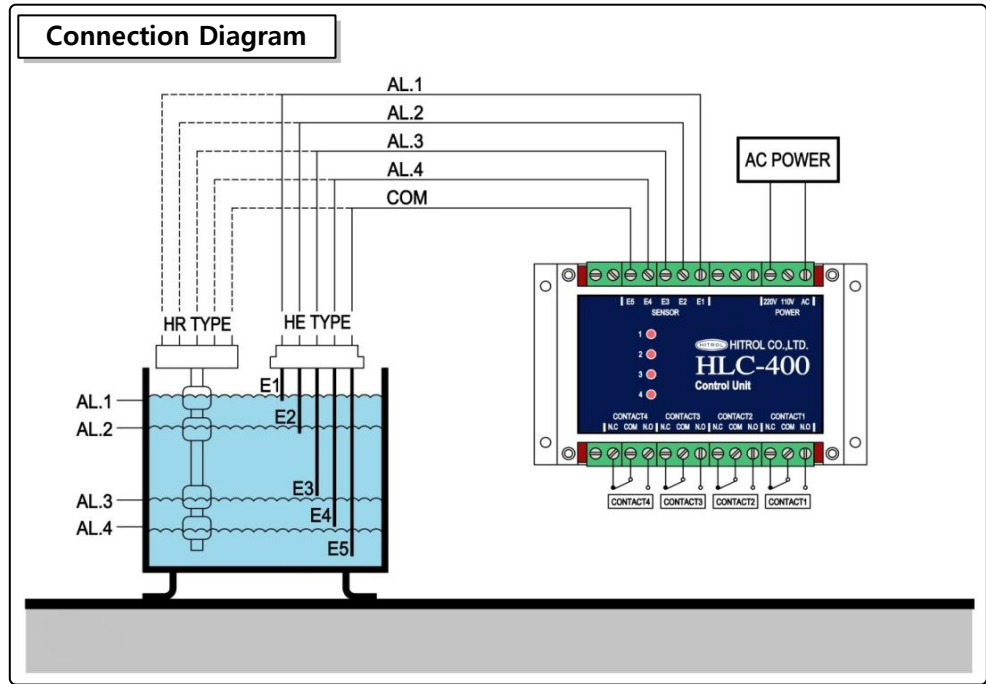
**Dimensions**



Actual product may have a tolerance slightly.

**Wiring**

Wiring shall be performed considering of below recommendation.



| Alarm   | CONTACT 1 | CONTACT 2 | CONTACT 3 | CONTACT 4 |
|---------|-----------|-----------|-----------|-----------|
| LED No. | 1         | 2         | 3         | 4         |
| Input   | E1, E5    | E2, E5    | E3, E5    | E4, E5    |
| Output  | A         | N.O, COM  | N.O, COM  | N.O, COM  |
|         | B         | N.C, COM  | N.C, COM  | N.C, COM  |

**Precautions for Installation**

- It is recommended to use washers to prevent a loosening when the product is fixed using bolts.
- Wiring shall be performed after checking of wiring diagram described in the manual or sticker.
- Make sure that the power source whether it is AC 110V or AC 220V.
- It is recommended to use AWG 13 or 14 cable between the controller and level sensor, and use shield cable in case that the distance between the controller and level sensor quite long (several hundred meters ~ 500m) and for low conductivity medium. (Non-recommendation cables may result in some differences in operating and level sensing distances.)
- Check the LED color after applying of power.
- Power shall be applied after completing of installation.



**Remove it with the power disconnected.**

**Safety and Environment**

- Precautions for Use
  - Do not disconnect the cable during use.
  - Do not disconnect the product during use.
  - Do not apply high impact to the product.
  
- Precautions for Wiring
  - Make sure to wire contacts correctly. (Refer to Wiring)
  - 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 PCB and main unit from housing before disposing the products.  
No part (ex. Mercury Switch) has influence on the environment, so no special attention is required.

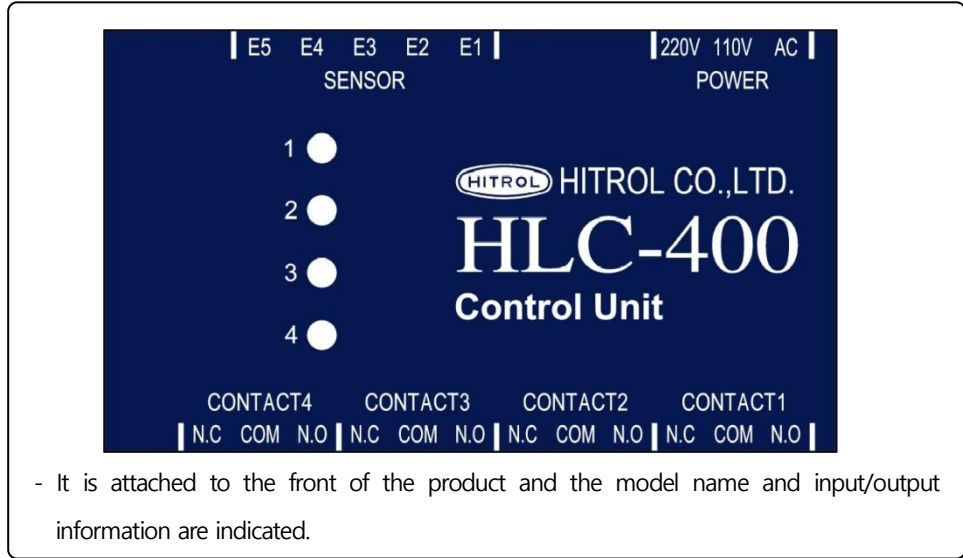
**Failure Check and Solution**

- Relay contact does not work
  - Check whether the LED lamp is on/off.
  - Check the cable connection.
  - Check the input voltage.
  - Check the level sensor wiring cable.
  
- Controller is normal, but not working
  - 1) Electrode Type Level Switch
    - If there is foreign matter or sediment such as lime on the bottom of tank, it may cause malfunction.
    - Too low liquid conductivity can cause malfunction. (ex. Distilled Water)
    - When wiring between controller and electrode is far apart, it may cause malfunction.
    - Please refer to the cable recommendations between the controller and the sensor for installation precautions (Page 5).
  
  - 2) Float Type Level Switch
    - Check that the float floats normally.
    - Check the signal when the float operates normally.

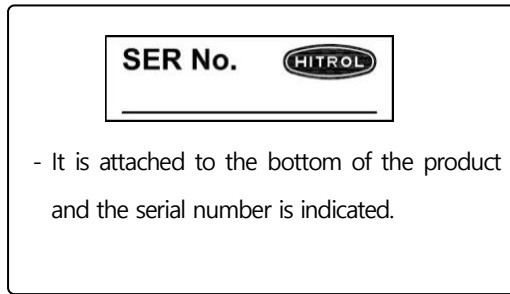
**Marking**

■ Product Identification

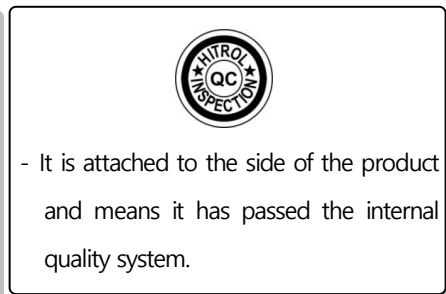
- The product identification mark is attached onto housing and shows the model name, serial number, input/output and matters regarding quality control. The serial number is a unique manufacturing number for the identification of products.



- It is attached to the front of the product and the model name and input/output information are indicated.



- It is attached to the bottom of the product and the serial number is indicated.



- It is attached to the side of the product and means it has passed the internal quality system.

**Warranty and Contact**

■ Warranty and Service

This product is subject to the warranty for 2 years of shipment and unpaid service will be provided for any damage found under normal operating conditions. If it is not about the failure of product, the service charge will be payable.

You can request A/S at our website or by contacting our headquarters.

■ Headquarters . Factory . Laboratory Contact

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