INSTRUCTION MANUAL

OF

LEVEL CONTROLLER & ALARM INSTRUMENTS







HITROL *Always The Best Solution by* HITROL CO., LTD.

Doc. no. : HLC_IM_Eng_Rev.0
Issue date : 2025.08

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2. HLC-300N

3. HLC-400

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INSTRUCTION MANUAL

LEVEL CONTROLLER & ALARM UNIT

HLC-200 Series



Doc. no. : HLC200_IM_Eng_Rev.1

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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

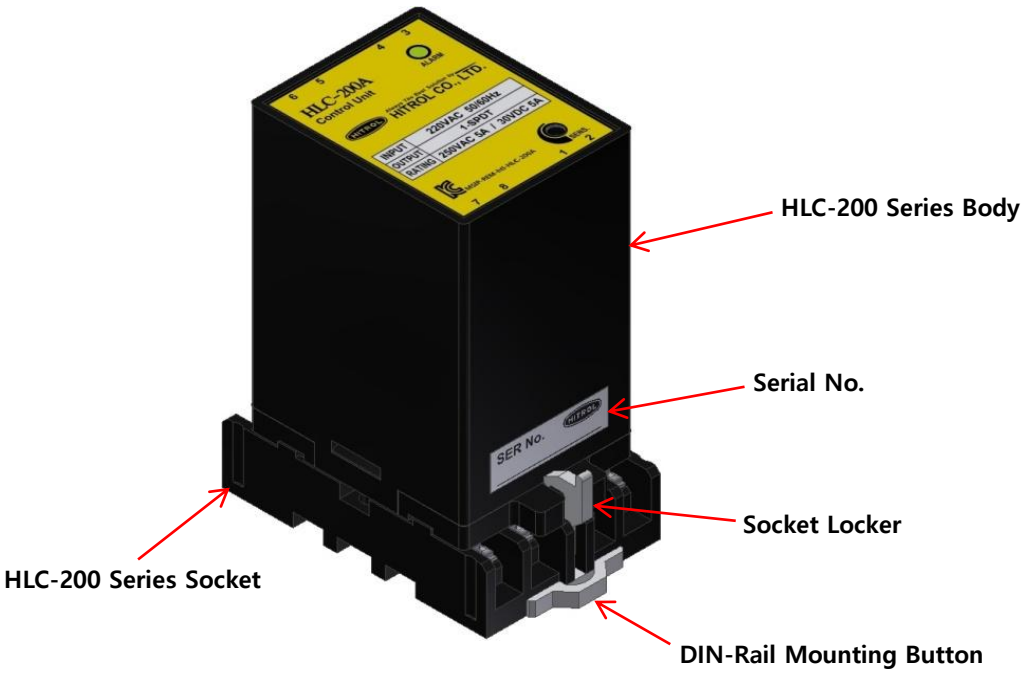
HLC-200 Series is a Level Control & Alarm Unit that controls and alarms by combining with the level sensor (HE, HQ, HR Type) of the storage of tank. The signal of the level sensor can control the upper and lower alarm of liquid and automatic supply of liquid through HLC-200 Series, and the product can be installed inside the control panel.

Characteristics

- ■ Easy to install (DIN Rail Type)
- ■ Compact size
- ■ Socket structure type for freely detachment
- ■ Operating can be checked through LED lamp (High: Red, Low: Green)
- ■ Sensitivity can be adjusted at the site if the sensor is too much sensitive to the conductivity or foam of the liquid. (HLC-200A)

Operating Principle and Composition

When the level switch connected to HLC-200 Series 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.



NOTICE **The image above is from HLC-200A.**

Specifications

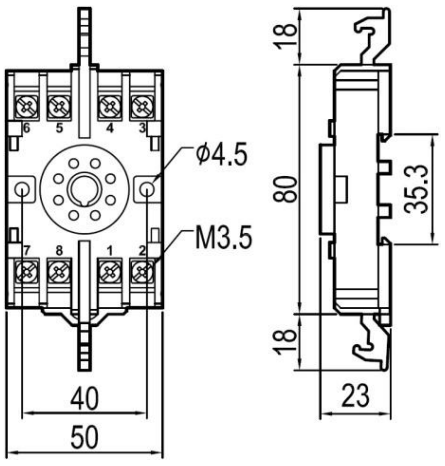
HLC-200 Series

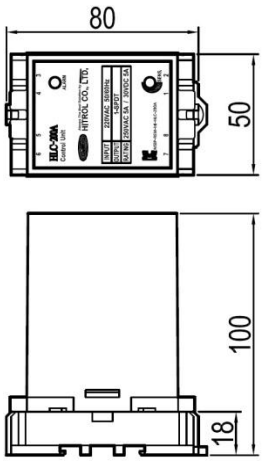
Model	HLC-200A	HLC-200F
Mounting	Panel Inside (DIN Rail or Bolting)	
Ambient Temperature	-20℃ ~ +70℃	
Power Source	AC 110V or 220V @ 50/60Hz	DC +24V @ DC +21V ~ DC+30V
Standby Power Consumption	AC 110V @ 0.5W / AC 220V @ 0.8W	DC +24V @ 0.48W
Active Power Consumption	AC 110V @ 1.4W / AC 220V @ 2W	DC +24V @ 1.1W
Output Voltage	AC 14V	DC +22V
Relay Contact	1-SPDT	
Contact Load Capacity	AC 250V, 5A / DC 30V, 5A Max.	
Weight	Body: 200g / Socket: 70g / Total: 270g	Body: 120g / Socket: 70g / Total: 190g
Housing	Body: ABS-Flame Resisting / Socket: PBT Glass	
Approvals	KC	-

Dimensions

HLC-200 Series

Unit: mm





<HLC-200 Series Socket> **<Assembly>**

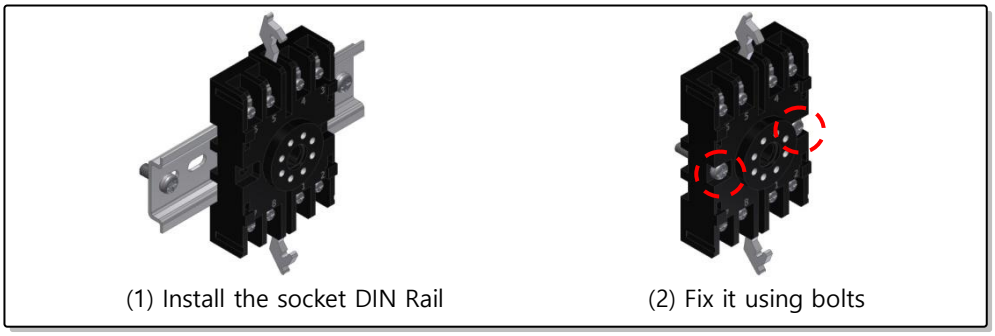
Actual product may have a tolerance slightly.

The image above is from HLC-200A.

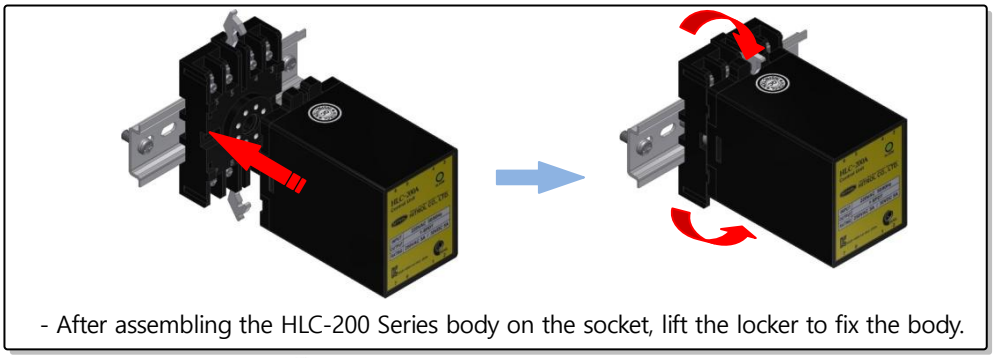
Installation and Wiring

HLC-200 Series

■ Installation



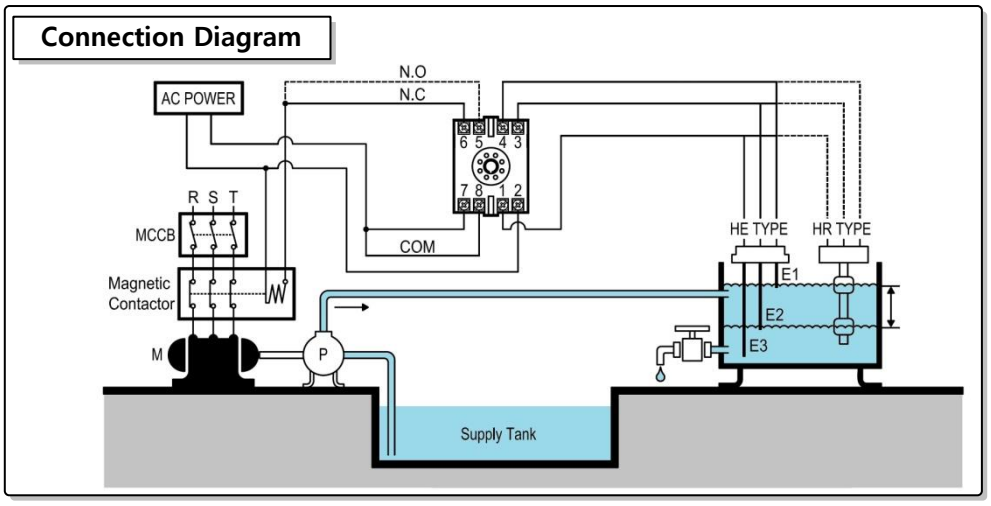
(1) Install the socket DIN Rail　　(2) Fix it using bolts



- After assembling the HLC-200 Series body on the socket, lift the locker to fix the body.

NOTICE **The image above is from HLC-200A.**

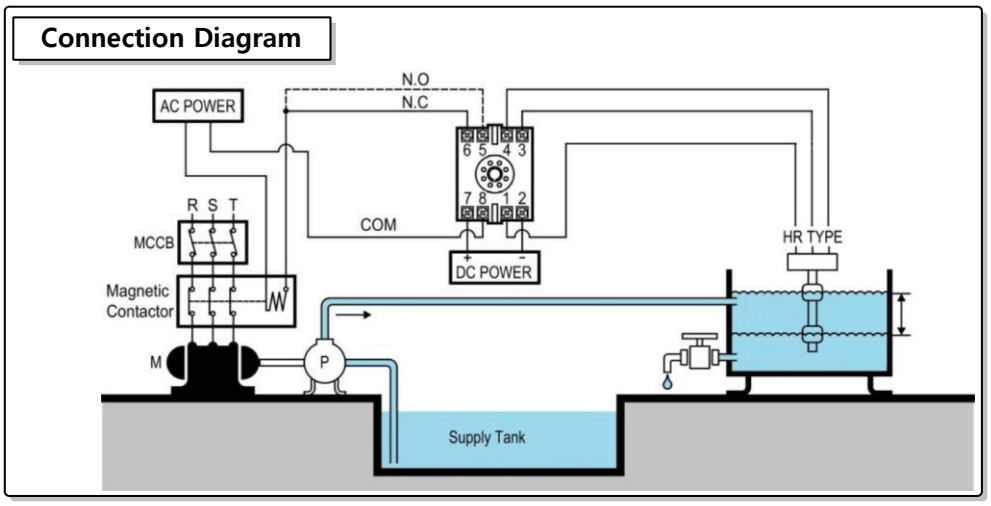
■ HLC-200A Wiring



Control	Drain	Pump
LED Color	Red	Green
Input	1, 3, 4	1, 3, 4
Output	8, 5	8, 6

Alarm	H. A	L. A
LED Color	Red	Green
Input	1, 4	1, 4
Output	8, 5	8, 6

■ HLC-200F Wiring

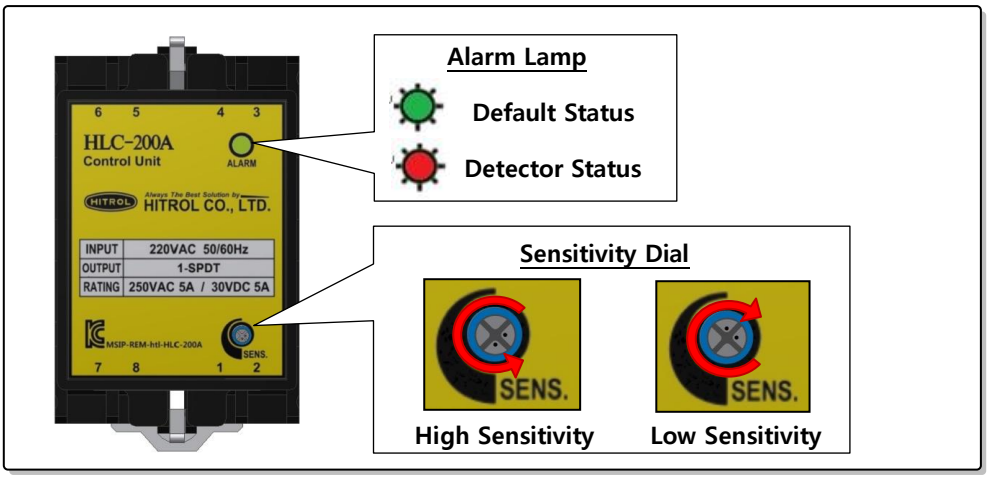


Control	Drain	Pump
LED Color	Red	Green
Input	1, 3, 4	1, 3, 4
Output	8, 5	8, 6

Alarm	H. A	L. A
LED Color	Red	Green
Input	1, 4	1, 4
Output	8, 5	8, 6

Sensitivity Adjustment & Recommended Tool (HLC-200A)

■ Sensitivity Adjustment



- Alarm Lamp: The red light is on when the liquid is detected, and the green light is on when the liquid is not detected.
- Sensitivity Dial: It is a function to adjust the sensitivity in condition that it is too sensitive to the conductivity of the medium or foam. Turning counter-clockwise is for higher sensitivity and clockwise is for lower sensitivity.

NOTICE

Use only with electrode sensors.

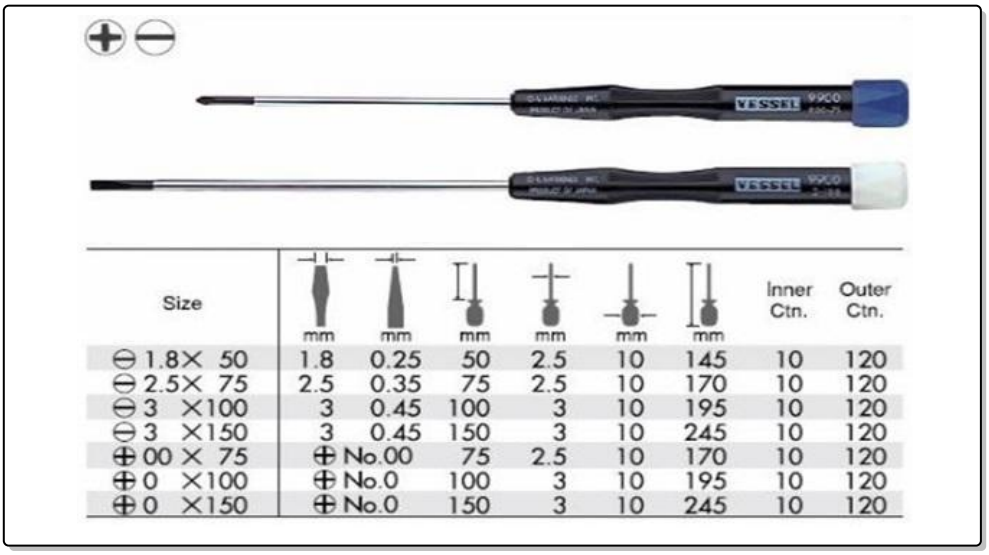
Note that factory standard setting is for high sensitivity.

CAUTION

Maximum available adjustment range of potentiometer using for the sensitivity dial is approximately 260°. (±130° based on 9 o'clock direction)

Pay attention to use it because it can be damaged if it is adjusted over the range.

■ Recommended Tool



Size	mm	mm	mm	mm	mm	mm	Inner Ctn.	Outer Ctn.
⊖ 1.8× 50	1.8	0.25	50	2.5	10	145	10	120
⊖ 2.5× 75	2.5	0.35	75	2.5	10	170	10	120
⊖ 3 ×100	3	0.45	100	3	10	195	10	120
⊖ 3 ×150	3	0.45	150	3	10	245	10	120
⊕ 00 × 75	⊕ No.00		75	2.5	10	170	10	120
⊕ 0 ×100	⊕ No.0		100	3	10	195	10	120
⊕ 0 ×150	⊕ No.0		150	3	10	245	10	120

- When adjusting *SENS.* (Sensitivity), use the driver **(-) 2.5x75 or less** or **(+) 00x75**.

Precautions for Removal

■ Remove it with the power disconnected.

■ Remove in reverse order of installation. (Power off ➔ Release the Locker ➔ Body Disconnection ➔ Wiring Disconnection ➔ Socket Disconnection)

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, AC 220V, or DC +24V.

■ 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 is 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. (High: Red, Low: Green)

■ Power shall be applied after completing of installation.

Safety and Environment

■ Precautions for Use

- Do not disconnect the cable during use.
- Do not disconnect the product from the socket 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 connection between the body and the socket.
- 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 9).

NOTICE **Since the DC voltage (HLC-200F) may cause sensor corrosion due to electrolysis, it is recommended to use it with float type level switch (HR-30 Series).**

2) Float Type Level Switch

- Check that the float floats normally.
- Check the signal when the float operates normally.

Marking

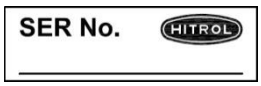
■ Product Identification

- The product identification mark is attached onto housing and shows the model name, serial number, and matters regarding input/output. 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 top 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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INSTRUCTION MANUAL

LEVEL CONTROLLER & ALARM UNIT

HLC-300N



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Overview

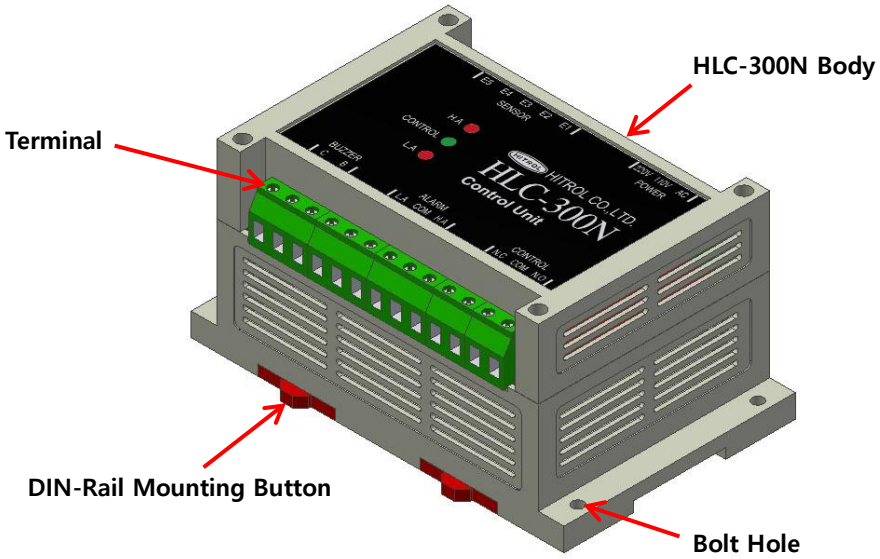
HLC-300N is a Level Control & Alarm Unit that controls and alarms by combining with the level sensor (HE, HQ, HR Type) of the storage of tank. The signal of the level sensor can control the upper and lower alarm of liquid and automatic supply of liquid through HLC-300N, and the product can be installed inside the control panel.

Characteristics

- Easy to install (DIN Rail Type)
- Compact size
- Operating can be checked through LED lamp (High Alarm & Low Alarm: Red, H-L Control: Green)

Operating Principle and Composition

When the level sensor connected to HLC-300N 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.

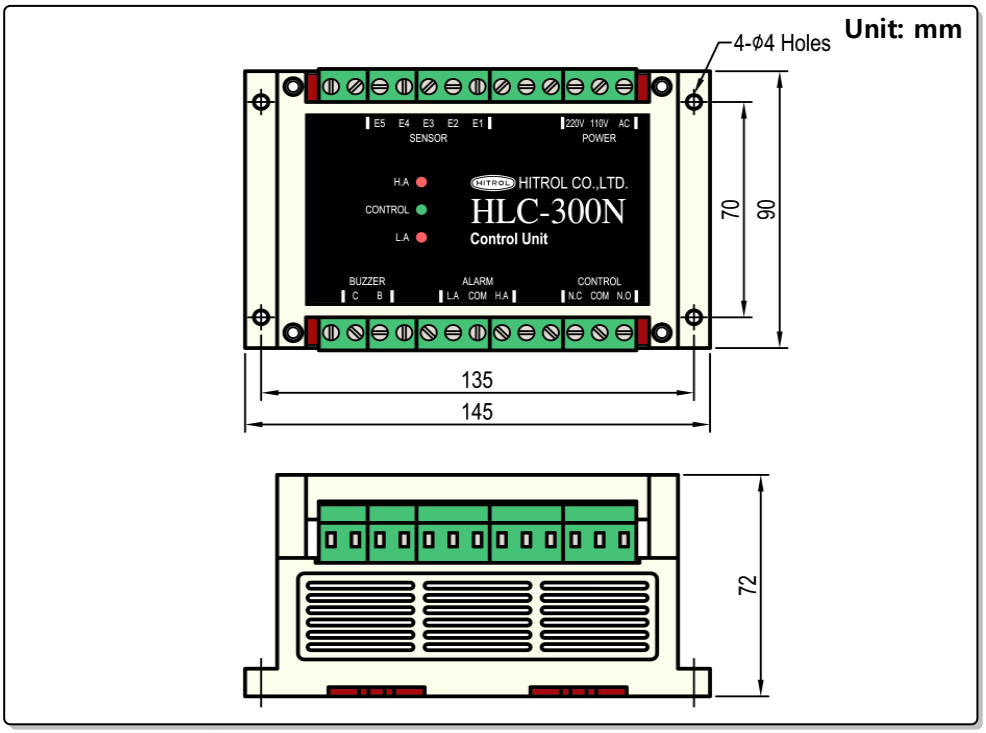


Specifications

General Spec.

Combination Unit	HE Series (Electrode) HQ Series (Quick Float) HR Series (Float Reed Switch)	
Mounting	Panel Inside (DIN Rail or Bolting)	
Power Source	AC 110V/220V @ 50/60Hz	
Standby Power Consumption	AC 110V @ 1.14W / AC 220V @ 1.1W	
Active Power Consumption	AC 110V @ 6.2W / AC 220V @ 7W	
Relay Contact	High Alarm & Buzzer	1-DPST
	Low Alarm & Buzzer	1-DPST
	Control	1-SPDT
Relay Contact Rated	AC 250V, 5A / DC 30V, 5A	
Transmit Signal	E5 (AC 14V @ 50/60 Hz)	
LED State	E1 (Red) : H.H Detection E2-E3 (Green) : H-L Control E4 (Red) : L.L Detection	
Cable & Distance	Def, 1.25 SQ @ Max. 300m	
Operating Temperature	-20℃ ~ +60℃	
Housing Material	ABS	
Dimensions	145mm x 90mm x 72mm	
Weight	325g	

Dimensions

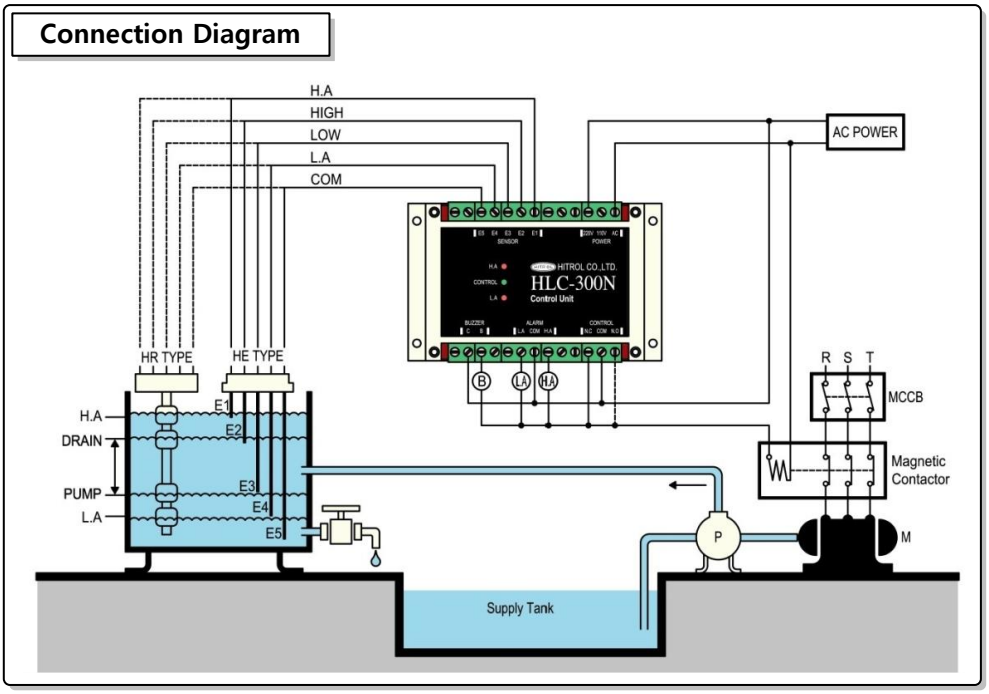


NOTICE **Actual product may have a tolerance slightly.**

Wiring

Wiring shall be performed considering of below recommendation.

Connection Diagram



Control & Alarm	ALARM (BUZZER)	H-L CONTROL		ALARM (BUZZER)
	H.A	DRAIN	PUMP	L.A
LED Color	Red	Green	-	Red
Input	E1, E5	E2, E3, E5	E2, E3, E5	E4, E5
Output	H.A, COM (C, B)	N.O, COM	N.C, COM	L.A, COM (C, B)

NOTICE **It is normal that the L.A LED is light on when E4 is not wiring.**

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.

WARNING **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, and matters regarding input/output. 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.

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INSTRUCTION MANUAL

LEVEL CONTROLLER & ALARM UNIT

HLC-400



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Overview

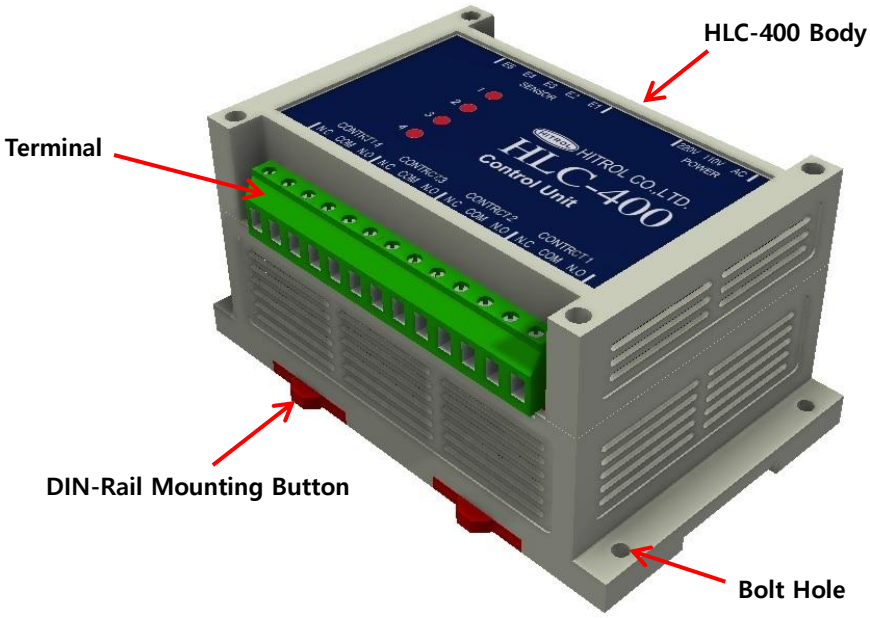
HLC-400 is a Level Control & Alarm Unit that controls and alarms by combining with the level sensor (HE, HQ, HR Type) of the storage of tank. The signal of the level sensor can function as the upper and lower alarm of liquid through HLC-400, and the product can be installed inside the control panel.

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.

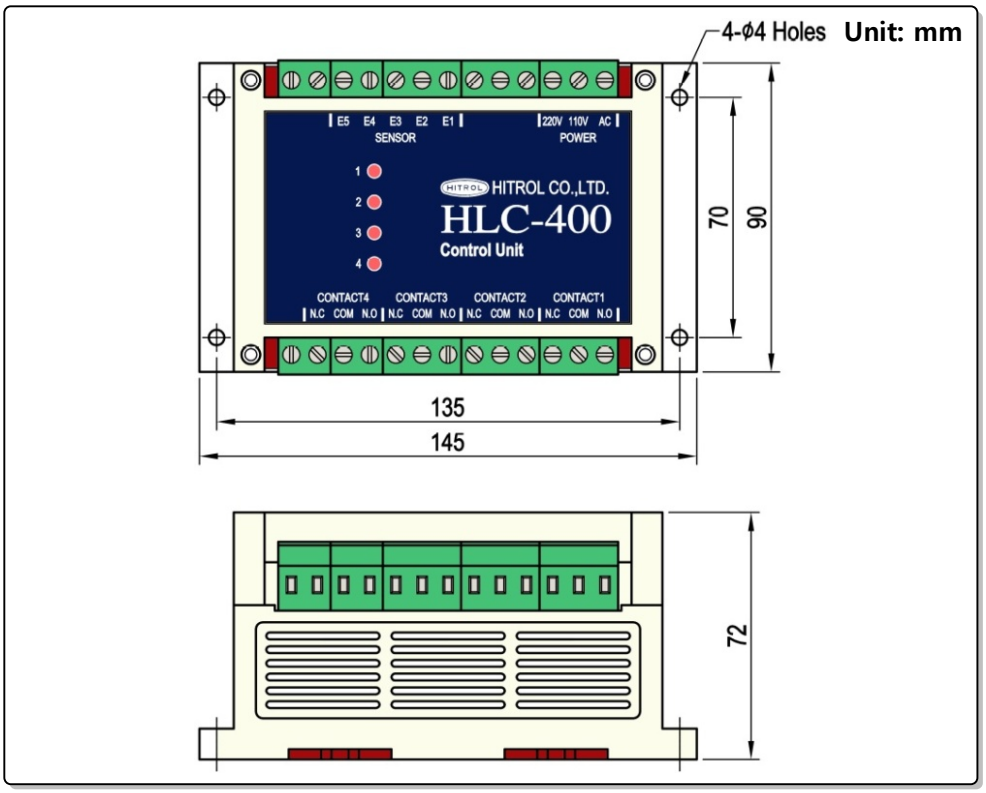


Specifications

General Spec.

Combination Unit	HE Series (Electrode) HQ Series (Quick Float) 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 E2 / AL.2 (Red) : H Detection E3 / AL.3 (Red) : L Detection E4 / AL.4 (Red) : L.L Detection
Cable & Distance	Def, 1.25 SQ @ Max. 300m
Operating Temperature	-20℃ ~ +60℃
Housing Material	ABS
Dimensions	145mm x 90mm x 72mm
Weight	325g

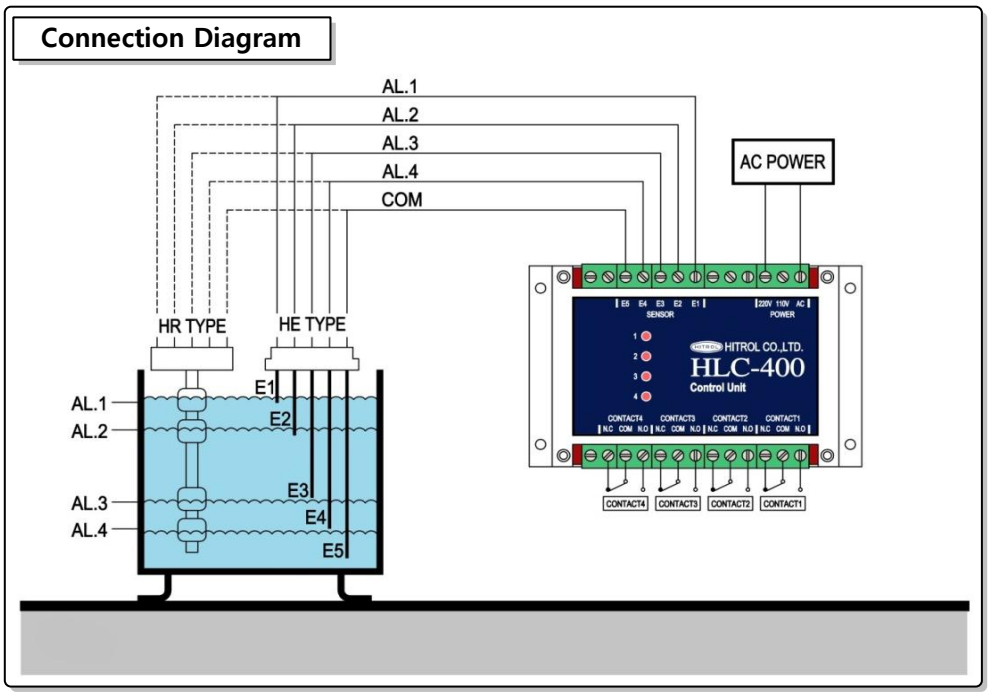
Dimensions



NOTICE **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	N.O, COM
	B	N.C, COM	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.

WARNING **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

ADDRESS: HITROL CO., LTD 141, Palhakgol-gil, Jori-eup, Paju-si, Gyeonggi-do, Korea

T E L : 031-950-9700 (Headquarters & A/S)

F A X : 031-943-5600 (Headquarters & A/S)