

# ELECTRODE TYPE LEVEL SWITCH

## MANUAL

Revision No. 001 (2022)

## DES SERIES



 **DONG SUNG SENSORS Co., Ltd.**

710, World Meridian Venture Center II, Gasan Digital2-ro, Geumcheon-Gu, Seoul, Korea  
TEL: +82-2-2025-8988~9 / FAX: +82-2-2025-8987

COPYRIGHT© 2019 DONG SUNG SENSORS CO., LTD. ALL RIGHT RESERVED

# CONTENTS

1. Introduction
2. Features
3. Operation Principle
4. Specification
5. Installation
6. Wire Connection
7. Dimensions
8. Contact Output
9. Maintenance

※ Please **READ** carefully  
and  
make sure you **UNDERSTAND** this manual  
for safely usage.

- This manual describes how to install, adjust and inspect DES series product.
- Keep this manual in place being available to refer immediately.
- The specification of product mentioned in this manual may not be satisfied by the condition of your environment. Please check and consider carefully before using.
- The contents of this manual could be changed any time due to improvement of product. It will be updated quarterly.
- Please contact Dong Sung Sensors sales office department via email or phone for further questions.

## WARRANTY & DISCLAIMER

1. Dong Sung Sensors warrants the product against defects in materials and workmanship under normal use for a period of ONE(1) YEAR form the date of purchase.
2. Dong Sung shall not be responsible for the following.
  - 1) Damage arising from improper use or inspection and failure to follow manual instructions.
  - 2) Repair is done by the person who is not from Dong Sung.
  - 3) Improper parts are used and replaced.
  - 4) Damage is occurred by device or machine not from Dong Sung.
  - 5) Do not include fire, earthquake, tsunami, lightning, war, radioactive pollution, acts of Government, compliance with law, regulation and order.
3. The warranty only covers the damage of products. The secondary and third kind disasters are not covered by Dong Sung Sensors.
4. This Limited Warranty applies only to Dong Sung products, that must be identified by "DSS" mark on to them.

## Unpacking

- Our unit has been thoroughly inspected and packed at the factory to prevent damage during shipment.
- Thus, please unpack carefully and visually check the product's exterior for damage.
- Do not place in piles.

## FRAGILE

- Please carry the sensor very carefully.  
Sensor may not work properly if you drop or damage on it.
- Do not remove the Sensor discretion.  
This may cause damage and malfunction.

## 1. Introduction

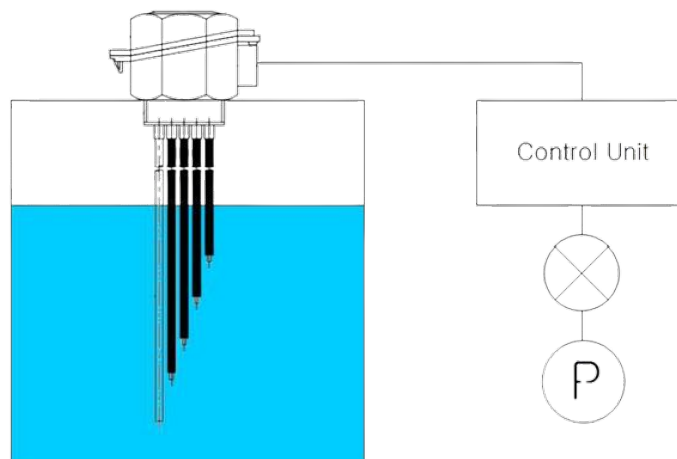
DES series are floatless sensor.  
It is simply designed to measure liquid level  
by conductivity of electrode rods.

## 2. Features

- Widely available with various liquid, especially municipal water, wastewater treatment plant and food (beer, water) tank.
- Simple installation
- Able to adjust on/off position anytime.
- Affordable price with accurate measurement
- Can be used with the tank that has conductivity
- Safe from electric shock (Low voltage – AC 8~12V)

## 3. Operation Principle

While liquid level changes, current will flow between electrodes that contact with conductive liquid. This current sends signal to unit to operate output relay.



## 4. Specification

### ► Sensor

type category		DES-3	DES-4	DES-5
Material	head	ABS	ABS	ABS
	flange	PVC	PVC	PVC
	rod	SUS304 or 316	SUS304 or 316	SUS304 or 316
Temperature		Max 60°C	Max 60°C	Max 60°C
Operating Pressure		Max 2kgf/Cm <sup>2</sup>	Max 2kgf/Cm <sup>2</sup>	Max 2kgf/Cm <sup>2</sup>
Electrode rod		φ5 x 1M, 2M	φ5 x 1M, 2M	φ5 x 1M, 2M
-		-	-	-
Control Contact		START / STOP	START / STOP / HIGH-A	START / STOP / HIGH-A / LOW-A
Mounting Spec		PF2"	PF2"	PF2"
Cable Grand		PF1/2"	PF1/2"	PF1/2"
Enclosure		IP54	IP54	IP54

### ► Controller

type category		DEC-3U	DEC-4U	DEC-5U
Sensor Voltage		DC 12V	DC12 V	DC 12V
Contact Rating		AC 250V, 5A		
Power Supply		AC 110/220V ±10%, 50/60Hz		
Ambient Temp		0 ~ 60°C		
control output		DEC-3U (supply) DEC-3U (drain)	DEC-4U-4W (H/AL) DEC-4U-4W (L/AL)	DEC-5U-5W (L/AL, H/AL)
Fuse Rating		AC 250V, 100mA		
Material		Base Plate: ABS, Cover: ABS		
Mounting		Wall Mount		
Dimensions		49(w) x 69(d) x 61(h)	88.5(w) x 128.5(d) x 66(h)	

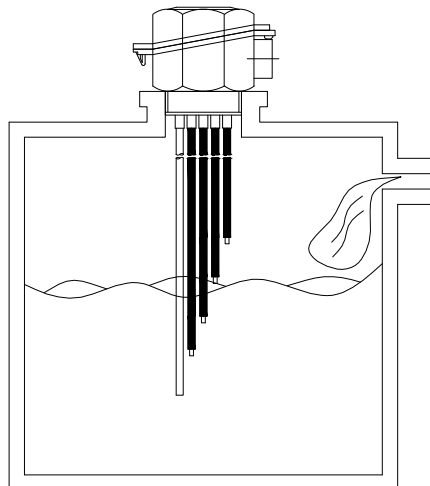
## 5. Installation

Before installation,

1. Check the electrodes or wire length before putting in the tank.
2. Use a wire-type sensor for low ceiling.
3. Make sure that mounting nuts are fastened tight on electrodes.
4. Remove tubing completely from E1(com)  
(For the rest of electrodes, remove about 10cm from the end)
5. If measuring depth is longer than 2M, wire-type works better.  
Or must use spacers between electrodes to keep them separate.
6. Keep the electrodes clean for precise measurement.
7. Avoid high temperature / pressure tank.

During installation,

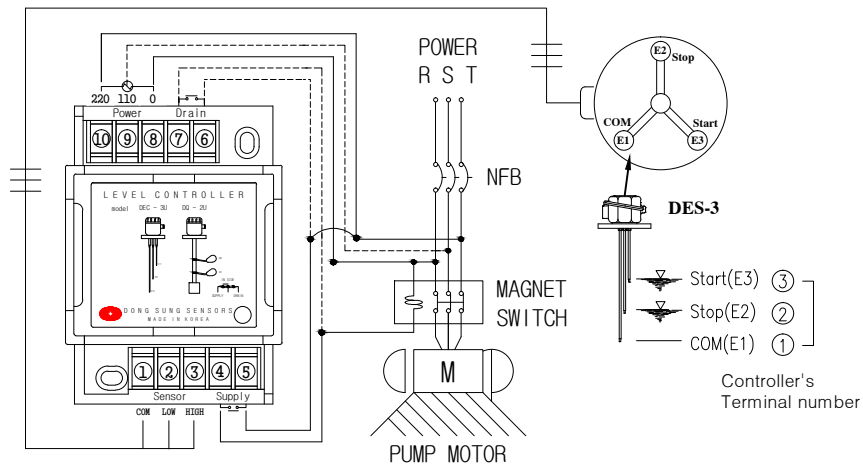
1. Do not install the sensor near flow inlet.
2. Make sure H/AL spot do not go over overflow point.
3. Please be aware that separate terminals are provided  
110V / 220V AC
4. Do not touch the span controller knob.  
Please contact us if you need to adjust.





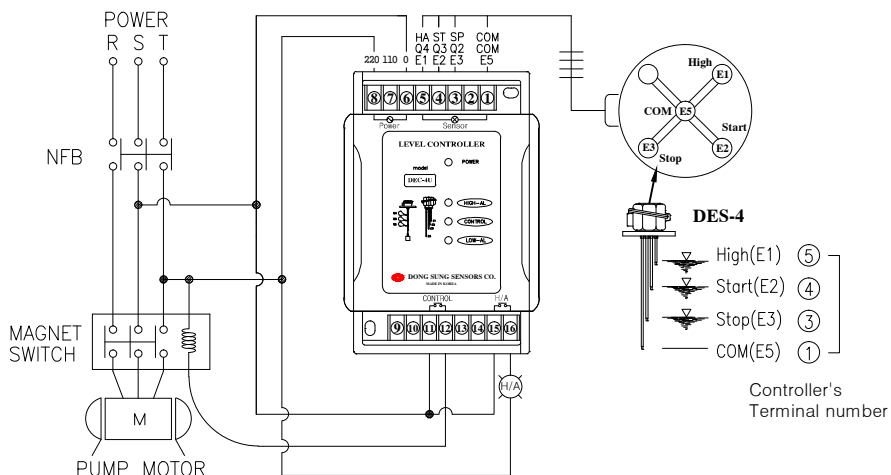
## 6. Wire Connection

### 1. DEC-3U



- Check supply/drain terminal.
- Match the terminal number to sensor correctly.
- Caution
  - Make sure the connection between Level Controller and Sensor, for proper use.
  - Peel off the E1(COM) bar Tubing entirely, and only 10Cm for the rest of bars. The bars must be washed regularly.
  - Must use keeper for electrode bar longer than 1M.
  - Make sure the connection between Level Controller and Sensor, for proper use.
  - Sensor and Level Controller MUST be treated very carefully.

### 2. DEC-4U-4W

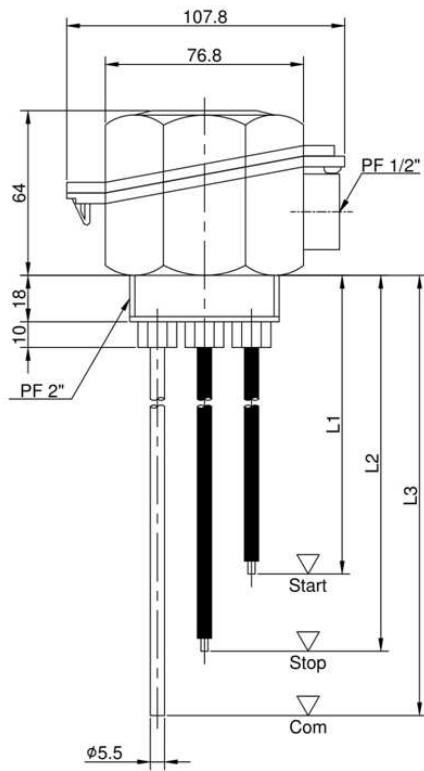


- Match the number of Controller and sensor.
- To change DEC-4U's supply/drain option, use switching switch inside of Controller(remove upper cover).
- Check the connection state when you open/close the Controller's cover.
- Caution
  - Make sure the connection between Level Controller and Sensor, for proper use.
  - Peel off the E1(COM) bar Tubing entirely, and only 10Cm for the rest of bars. The bars must be washed regularly.
  - Must use keeper for electrode bar longer than 1M.
  - Make sure the connection between Level Controller and Sensor, for proper use.
  - Sensor and Level Controller MUST be treated very carefully.

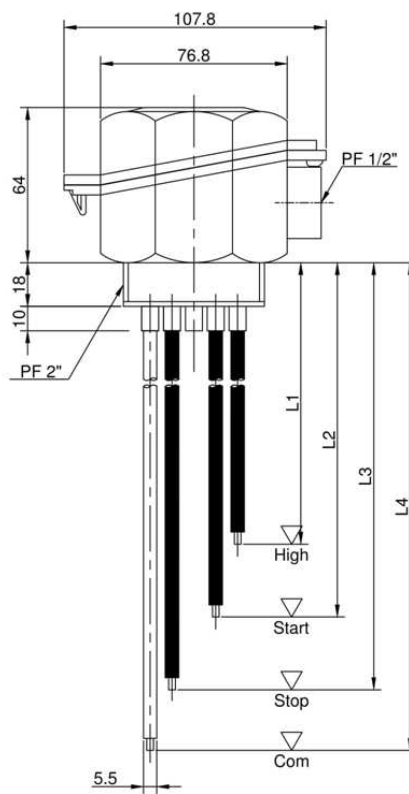


## 7. Dimensions

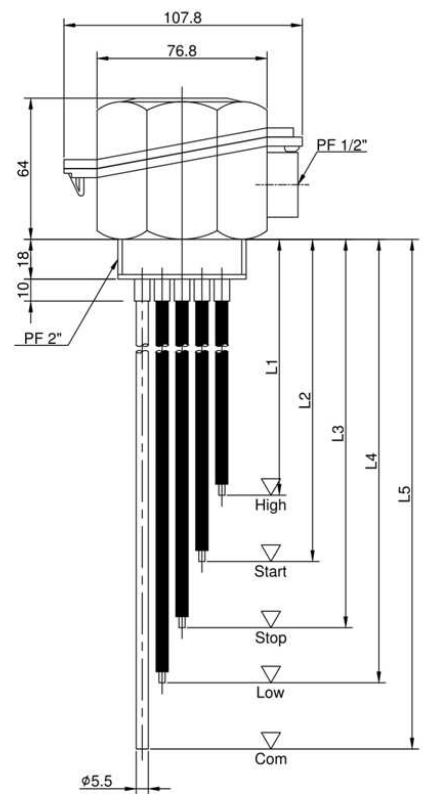
DES-3 (PF2")



DES-4 (PF2")



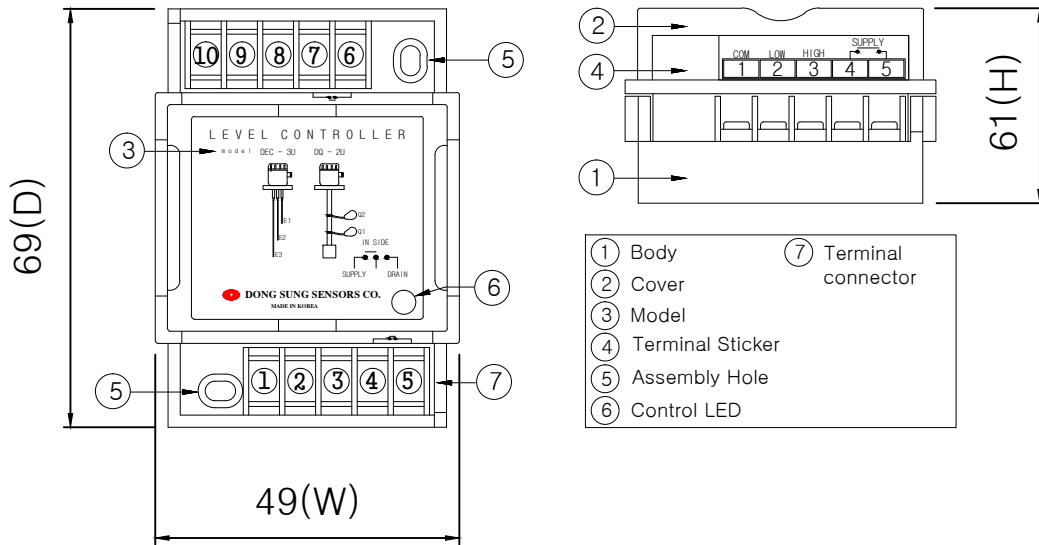
DES-5 (PF2")



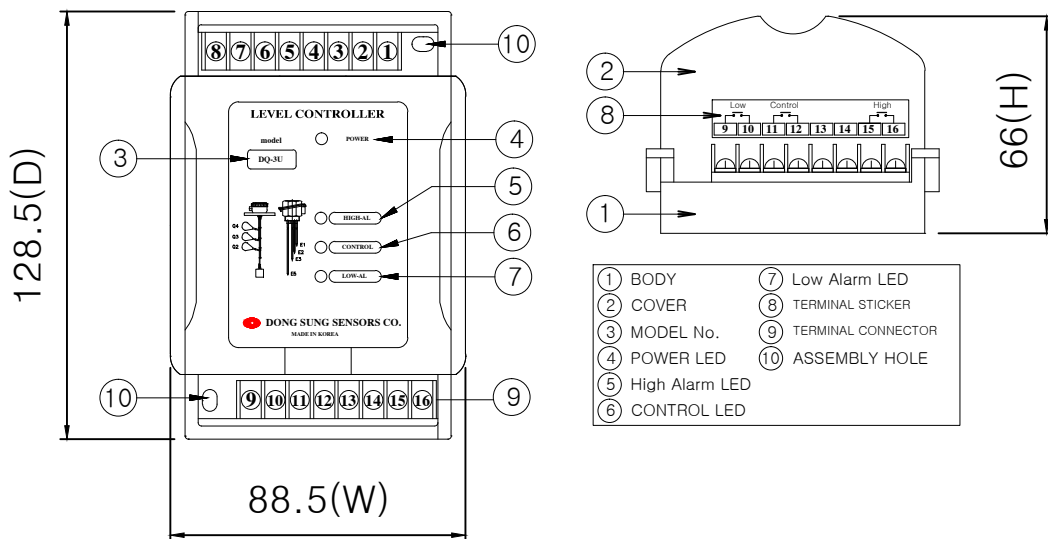
# ELECTRODE TYPE LEVEL SWITCH

## ▶ Controller

### 1) DEC-3U

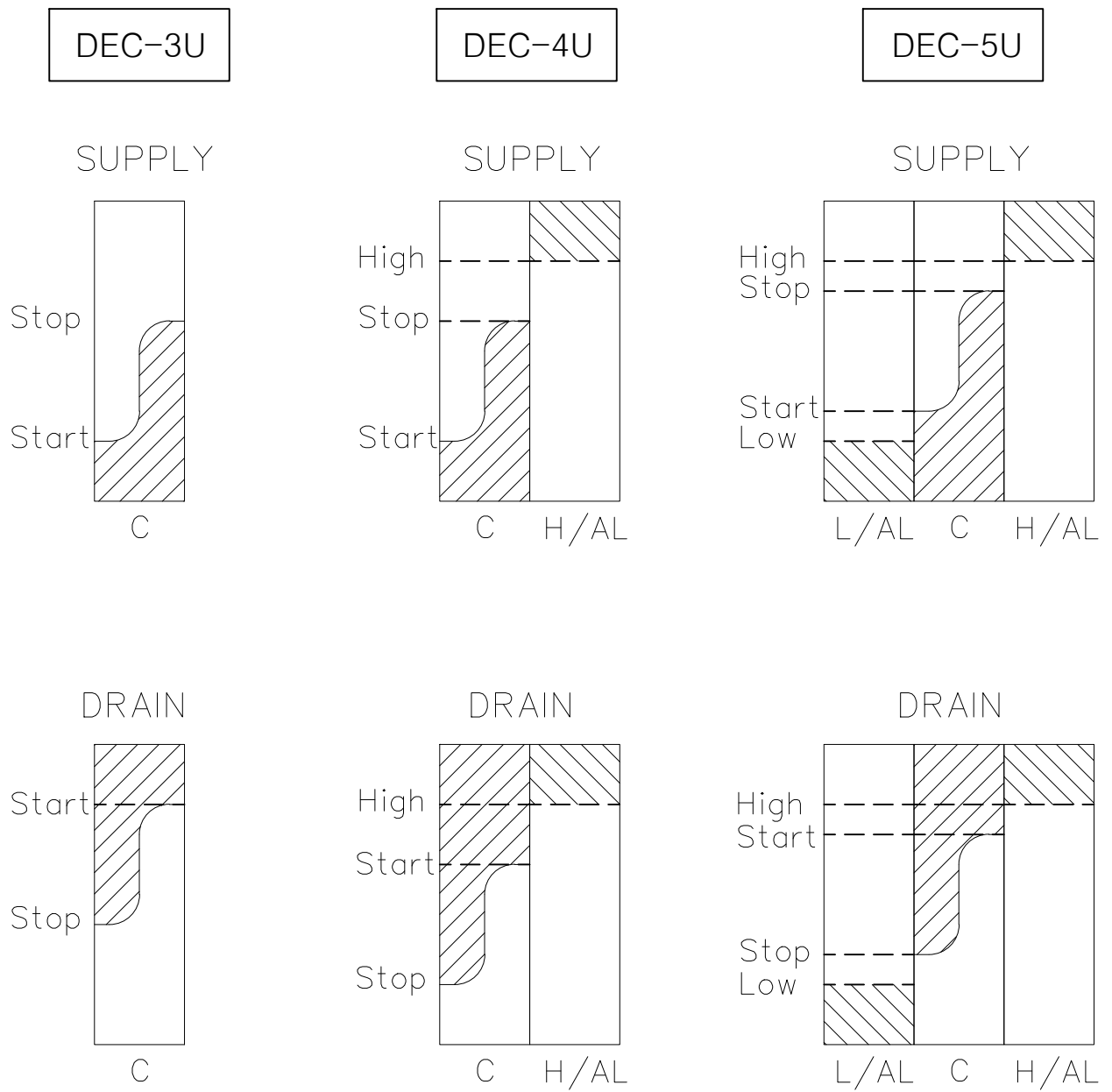


### 2) DEC-4U/5U



## 8. Contact Output

H / AL : High Alarm  
 C : Control  
 L / AL : Low Alarm



## 9. maintenance

- 1) Check if contact output is stable.  
If not, connect the negative terminal of multimeter to COM of the controller, and also connect the positive terminal of multimeter to the contact terminal of the controller. Then, check the resistance value for each point.
- 2) Make sure the electrodes clean(to keep high conductivity)
- 3) If motor or valve does not operate while Control LED is on, short the control terminals with a piece of wire.  
If it runs, it is controller problem.  
If not, wire is disconnected somewhere.
- 4) If motor or valve does not stop when Control LED is off, check if wires are disconnected from control terminals.  
If motor stops, it is controller problem.
- 5) If the power indicating LED lamp is off, see if the fuse is OK (100mA, 250V AC)
- 6) Must read and follow "wire connection" part in this manual for correct connection.

For any inquiries, please contact us via email.