Doc. Version: Ver. 2.2 – 02-21

DEVICE INSTALLATION GUIDE

ellenex level sensors (PL series)

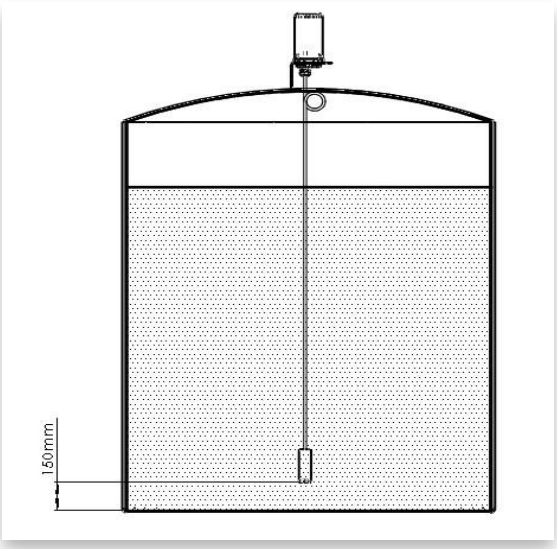
Housing Type:	**E model:** rectangular enclosure	**C model:** cylindrical enclosure
Communication Technology:	LoRaWAN	NB-IoT

E- Type level sensor

C type level sensor

GENERAL RECOMMENDATIONS

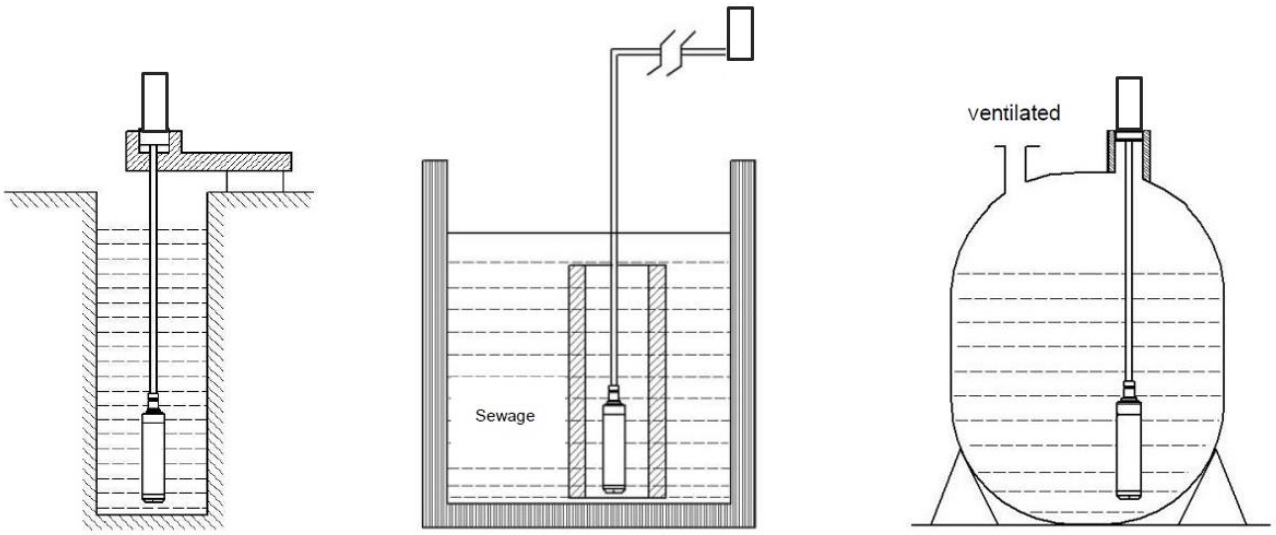
- Ellenex products are designed to work in the harsh environment for a long time, but due to sensitivity of the product, needs to be handled with care
- Sensor diaphragm is a very thin layer of stainless steel and deforms easily by over pressure. So, **never touch the diaphragm** or clean it with fabric or water pressure. Deformed diaphragm gets the sensor out of operation. If the sensor cap blocked, and any cleaning needed, gently open the cap and clean it with chemicals compatible with stainless steel.
- ellenex standard level sensors are IP65 rated, and the enclosure is UV protected, but as general advice, recommended to instal it in a shed with minimum exposure to sun light or rain.
- Install the sensor in the height, to be sure it is not submerged under the water, due to the heavy rain or flood. If there is a chance of submerge, recommended to use our IP68 rated products (for example PLS3).



- Metal part of the sensor head should be submerged under the liquid. You can easily drop the sensor head in the tank to lay on the bottom of the tank, but as generally there is a dirt on bottom of the tank, to avoid blockage of the sensor by dirt, recommended to hang it **10-15cm** from the bottom and fix the cable on top to the bracket. In the ellenex platform, you can easily adjust the level to get accurate reading of the liquid inside the tank.
- Recommended to install the sensor housing on top of the tank or on the side of the tank but mounted horizontal for the best reception.

INSTALLATION IN STEADY LIQUID

(water wells, water tanks, diesel tanks, pools, dams, etc.)



INSTALLATION TIPS:

- When measuring the level of stationary fluid in an open container, place the sensor head (metallic part) vertically close to the bottom of the container and secure the cable connecting the transmitter to enclosure on top of the container.

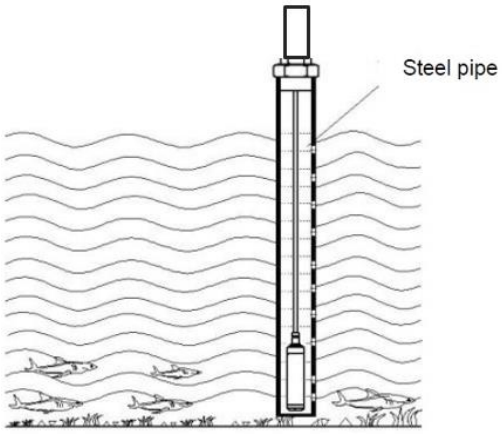
  Note: vertical installation is recommendation for installation, but if the sensor head mounted with angle or horizontally, it doesn't impact the sensor accuracy, as long as the centre of the diaphragm is fixed in the certain location.

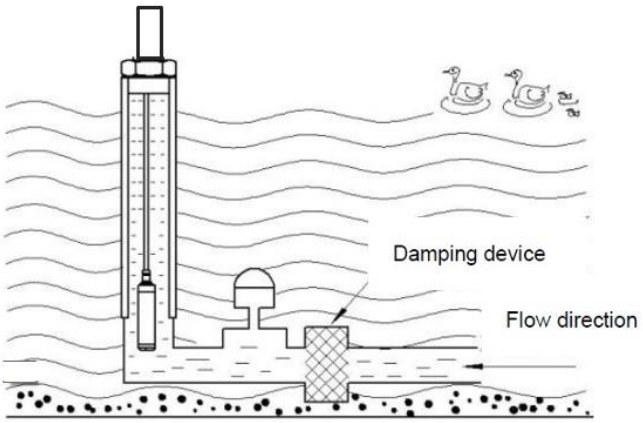
- When the medium viscosity is relatively large (such as sewage pool), recommended to install casing or bracket around the sensor to ensure that the sensor head is not covered or blocked by the dirt.

INSTALLATION IN DYNAMIC/ MOVING LIQUIDS

(rivers, lakes, water channels, etc.)

Submersible level sensors are principally working based on the pressure measurement made by the weight of the liquid and convert it to the level. Dynamic liquids have two factors of pressure. Static pressure due to the weight of the liquid and dynamic pressure because of the liquid movement. To get accurate level measurement, level sensor should not impacted by the movement of the liquid.





Installation tips:

- When measuring the water level in flowing water, when the medium fluctuates greatly, a steel pipe can be inserted in the water channel with an inner diameter of about 50cm. Make several holes of about Φ5 in diameter on the side of the immersed pipe opposite to the flow direction to allow water to enter to the pipe and fix the sensor transmission enclosure at the outlet of the pipe.

- When the medium of the water channel fluctuates greatly or the sediment is large, a damping device can be installed to filter the sediment, eliminate the adverse effects of dynamic pressure and wave and ensure the measurement accuracy.

- When installing the product in lightening intensified area, please indicate “Lightning Protection” strongly recommended to install lightning protection devices at the site and ensure that the product is reliably grounded to reduce damage to the sensor caused by lightning.

INSTALLATION ON MOBILE TANKS:

(diesel or water tankers, etc.)

For the mobile tanks, it is important to fix the sensor head inside the tank to avoid any movement which cause error in readings and damage to the sensor. For the PLG3, which comes with built-in GPS, enclosure needs to mount in a proper location with good sky visit to optimise the performance.

INSTALLATION OF THE ENCLOSURE:

Mount the enclosure onto walls or brackets by opening the blind lid. As the sensors are IP65, when doing an open-air installation, it is recommended to install the enclosure in a ventilated and dry place to avoid direct exposure to light and rain, which may cause the shell temperature to be too high or water to get inside and damage the internal circuit board.

E Type housing:

- **Installation on the wall or the tank body**
  - Please open two caps on the side of the enclosure as indicates in the front picture.
  - Screw the housing to the mounting place by two screws, provided in the pack.
  - Be careful not damaging the sensor filter on the bottom cap, while screwing. Be sure the caps are closed back to avoid water penetration to the sensor filter.

- **Installation on the rod or pillar**
  - Please use two pillar mount brackets and screw them to the back of the enclosure.
  - Use the cable tie to fix the sensor on the rod.
  - Be careful to not damage the sensor ventilation tube, while screwing the mounting brackets.

- **Installation by using the bracket**
  - ellenex L-shape brackets are suitable for the installation of the sensor on top of the surfaces (like top of the tanks). You need to just screw the bracket on the surface and then screw the enclosure to the bracket as illustrated in the front picture.
  - Be careful to not damage the sensor ventilation tube, while screwing the mounting brackets.

C Type housing:

For the C-type housing, you can either mount the sensor directly on the tank if there is a 2inch screw on top of the tank (for example for diesel tanks) or use U shape mounting bracket.

INSTALLATION GUIDE

Ver. 2.2-02/21

ABN: 87 621 283 921

Integrated IoT Solutions

E: info@ellenex.com
W: www.ellenex.com
A: 2/ 33 Bank street, South Melbourne, VIC 3205 Australia