



GROUND WATER LEVEL RECORDER (PEIZOMETER)



**Model No.
UPC-GWL-20**

UPC Instruments Pvt. Ltd.

An ISO 9001:2015, 14001-2015 CE & TÜV SÜD Certified Company

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01 Product Overview

A water level indicator is a system that relays information back to a control panel to indicate whether a body of water has a high or low water level. The Water Level Indicator employs a simple mechanism to detect and indicate the water level in bore well, beneath the ground and an Over head tank etc. Measurements of water levels in wells provide the most fundamental indicator of the status of this resource and are crucial to meaningful evaluations of the quantity and quality of ground water and its interaction with surface water. This system is capable of measuring ground water level and storage of the recorded data as well as its transmission to any specific server through web telemetry.

02 Features

- Heavy industrial CE approved factory calibrated pressure sensor.
- 10 V/m EMI protection according to Health and Safety Executive.
- Accurate output with corrosion proof housing for sensors.
- Reverse polarity protection on input.
- Micro controller based design.
- Inbuilt data logger for continuous storage of data.
- User programmable intervals for data storage and data stored in easy excel format.
- Wide Temperature Range



LCD Display



High Accuracy



Low Power Consumption



USB Communication

03 Importance of Water Level Recorder

One of the most common uses of water level monitoring devices is in measuring groundwater and surface water. Because groundwater levels present less visible signs, low flow groundwater sampling is very beneficial. [Monitoring groundwater flow](#) can help to detect possible changes in water flow, or increased or decreased levels of water volume which may indicate flow path changes, or alert to potential surface level flooding. Water level indicators are important for many different industries. For example, cooling towers use water level indicators to monitor water levels in a tank and make corrective actions based on the level of water.

04 Technology Used

UPC Instruments Private Limited made a Water level recorder using pressure transducer. Pressure sensors (also called pressure transducers) perform liquid level measurement by having the sensor submerged at a fixed depth under the water surface. The pressure sensor measures the equivalent hydrostatic pressure of the water above the sensor diaphragm, using this to calculate the total liquid depth.

Hydrostatic equation is used for finding the height of water

$$L = P / (\rho \times g)$$

$$\rho = \rho_0 \times SG$$

Where

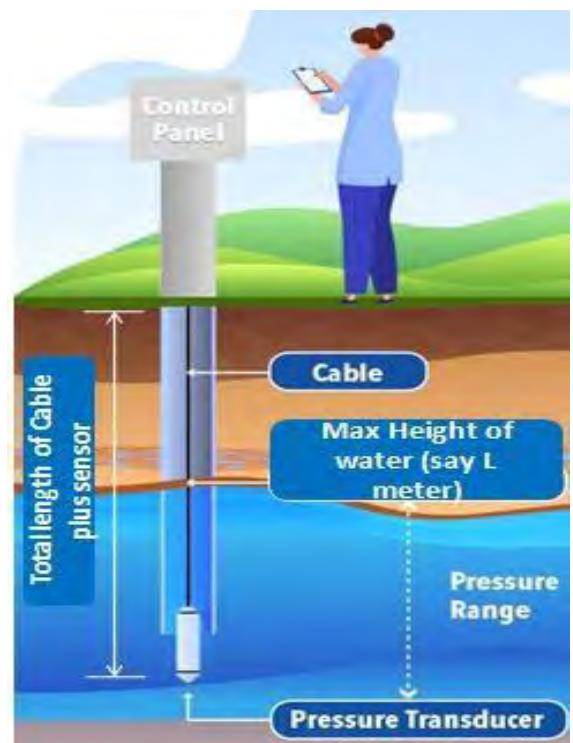
L = height of water

P = Pressure

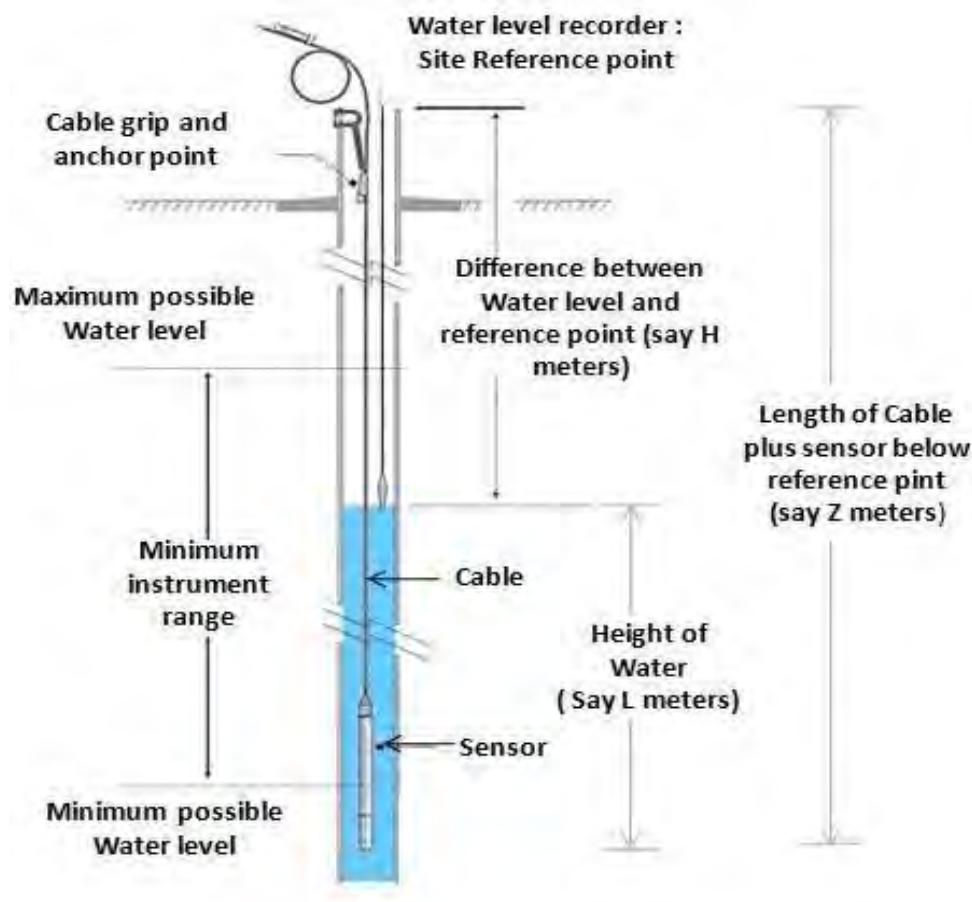
g = local gravity (e.g. standard = 9.80665 ms^{-2})

ρ = Density of liquid

ρ_0 = Density of fresh water (1000 kgm^{-3} @ 4°C)



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Above figure shows the working process of Water level recorder

Z = Total length of cable plus sensor below reference point

L = Height of water

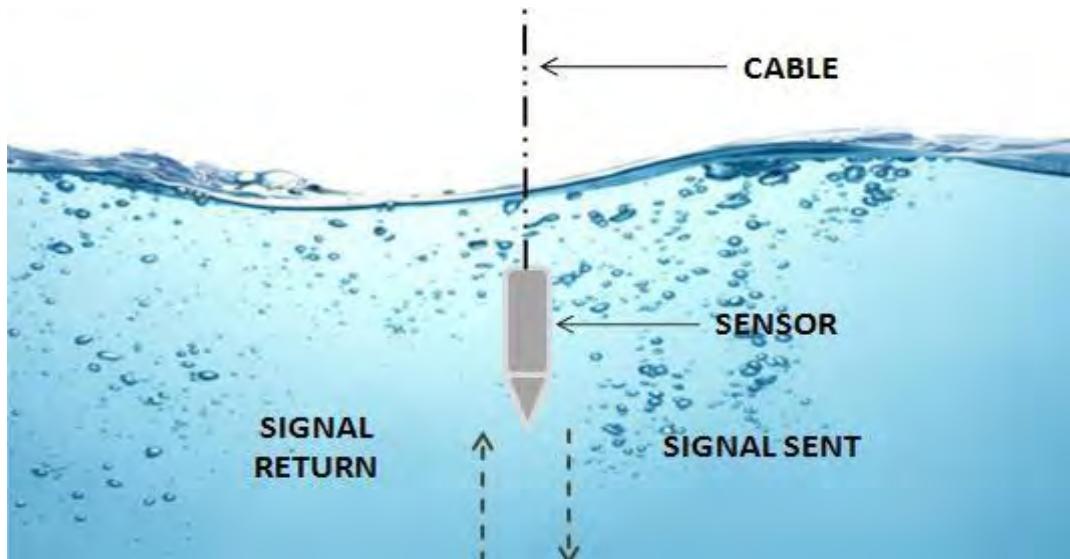
The objective of Piezometer is to measure the depth of water surface level below the ground surface (or point of reference).

H = Difference between water level and reference point (or depth of water surface below ground level)

$$H = Z - L$$

Above Formula is programmed by IT Technology in Water level recorder device.

05 Working Principle of Pressure Transducer



A **transducer** is a device that converts energy from one form to another. The process of converting one form of energy to another is known as transduction. Pressure transducers have a sensing element of constant area and respond to force applied to this area by fluid pressure. The force applied will deflect the diaphragm inside the pressure transducer. The deflection of the internal diaphragm is measured and converted into an electrical output. This allows the pressure to be monitored by microprocessors, programmable controllers and computers along with similar electronic instruments.

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06 Technical Specifications

S.NO	TYPE	DETAILS
1	Accuracy	0.25 % F.S
2	Current consumption	5mA
3	Wetted Material	17-4PH or 316L Stainless Steel Port, 316L Stainless Steel Snubber
4	Vibration	±20g, MIL-STD-810C
5	Dielectric strength	2mA @500VAC, 1min
6	Display	16×2 LCD display
7	Enclosure	IP65
8	Data Output	Microsoft Excel format
9	Clock	Real-time internal clock

07 Applications

Groundwater level monitoring is important to know the information of water column head under the earth's surface. As per the compliance, it helps to observe the changes in the quantity of groundwater level accordingly. The continuous groundwater monitoring provides the detailed data and helps to make the observations easily for future projects and development. It is useful in following processes:

- Industrial Water Level Monitoring
- Agricultural bore wells
- CGWB compliance fulfilment
- Ground Water Level Monitoring

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08 Dashboard View

Flow Meter and Piezometer Report

Report Type: Flow Meter NOC Number: Select NOC Number

Total NOC Number : 1 Tubewell ID: Select Tubewell ID Show

Ground Water Requirement in Application : 94.0000
KLD(Kilo Liters per day)

NOC Number	Company Name	Abstraction Structure Number	Flow Meter Reading	Latitude	Longitude	Flow Meter Reading Date time	Sending Date Time
HWRA/NOC/IND/N/2022/409		1	268.62	28.20566	76.79146	9/14/2023 12:10:34 AM	9/14/2023 12:10:34 AM
HWRA/NOC/IND/N/2022/409		1	203.50	28.20566	76.79146	9/13/2023 6:30:27 AM	9/13/2023 6:30:28 AM
HWRA/NOC/IND/N/2022/409		1	124.04	28.20566	76.79146	9/12/2023 12:06:59 AM	9/12/2023 12:07:00 AM
HWRA/NOC/IND/N/2022/409		1	112.48	28.20566	76.79146	9/11/2023 5:51:52 PM	9/11/2023 5:51:52 PM

WARRANTY

All meter are warranted against any manufacturing defect for a period of 12 months from date of supply, provided the meter has not been misused, damaged, installed for services it is not recommended or the seal has been tampered with. The company shall be liable to furnish part/ parts thereof or full water meter as the company may deem fit.

UPC INSTRUMENTS PVT.LTD.

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