

# **TECHWAY INSTRUMENTS**

*WAY THROUGH TECHNOLOGY EVOLUTION*

## **INTELLIGENT LEVEL INSTRUMENTS.**

**RADAR LEVEL TRANSMITTER**

**ULTRASONIC LEVEL TRANSMITTER**

**MAGNETOSTRICTIVE LEVEL TRANSMITTER**

**DISPLACER LEVEL TRANSMITTER**

**RF ADMITTANCE SWITCH**

### **TECHWAY INSTRUMENTS**

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## **INTRODUCTION :-**

IN MODERN ERA OF INDUSTRY LEVEL MEASUREMENT HAVE BECAME VERY CRITICAL AND IMPORTANT FACTOR FOR CONTROLLING PROCESS AND GET DESIRED QUALITY OF PRODUCT.

WE ARE PROUD TO INTRODUCE TECHWAY INSTRUMENTS BRAND LEVEL INSTRUMENTS FOR WIDE VARIETY OF APPLICATION. OUR LEVEL INSTRUMENTS MONITOR AND MEASURE LEVEL OF VARIOUS SERVICE MEDIUM WITH HIGH ACCURACY AND RELIABILITY.

### **Brief Introduction:-**

#### **❖ INTELLIGENT RADAR LEVEL TRANSMITTER.(NON GUIDED TYPE).**

In continuous non-contact level measurement with radar, the sensor sends microwave signals towards the medium from above. The surface of the medium reflects the signals back in the direction of the sensor. Using the received microwave signals, the sensor determines the distance to the product surface and calculates the level from it.

Liquids and solids are commonly measured with this measuring technique.

The advantages

- Non-contact level measurement with radar is characterized by especially high measurement accuracy
- Measurement is not affected by temperature, pressure or dust
- User-friendly adjustment saves time

#### **❖ INTELLIGENT RADAR LEVEL TRANSMITTER.(GUIDED TYPE).**

In level measurement with guided wave radar, microwave pulses are conducted along a cable or rod probe and reflected by the product surface. The measuring probe of the TDR sensor ensures that the signal reaches the medium undisturbed. Liquids, bulk solids and separation layers (interfaces) in liquids are commonly measured with this measuring technique.

The TDR sensors measure reliably despite:

- steam
- pressure and temperature fluctuations
- dust and noise
- buildup and condensation

#### **❖ COMPACT ULTRASONIC LEVEL TRANSMITTER.**

In non-contact ultrasonic level measurement, the sensor emits ultrasonic pulses in the direction of the medium, which then reflects them back.

The elapsed time from emission to reception of the signals is proportional to the level in the tank. Ultrasonic sensors are ideal for simple standard applications, both for liquids and for solids.

The advantages

- The compact design of ultrasonic sensors allows easy installation
- Non-contact measurement with ultrasonic technology operates independently of product characteristics
- Cost-effective measuring method for wear and maintenance free operation

#### **❖ SPLIT ULTRASONIC LEVEL TRANSMITTER.**

Ultrasonic level measurement unit is mounted separate from the sensor. Under the control of the electronic unit, probe emits ultrasonic wave to service media. This sound wave is reflected from the service medium and received by the measuring probe. Electronic unit converts this signal in to electrical signal. Based on time difference of travel of this ultrasonic signal electronic unit calculate the level of the service medium in the container. Split type ultrasonic level transmitter is widely used in open channel, pump station, open pipe, water cooling tower dam etc.

### ❖ **MAGNETOSTRICTIVE LEVEL TRANSMITTER.**

The magnetostrictive level transmitter uses buoyancy, magnetostriction and electronics technologies to accurately measure the level of a wide variety of liquids, including interface and insoluble multiple liquids with a two-float design. In the typical magnetostrictive level transmitter a float, appropriately sized for the specific fluid density, is mounted on the level transmitter stem such that the float will travel up and down due to the buoyancy of the float from the fluid being measured. The float contains a magnetic element. To locate the float position the magnetostrictive level transmitter electronics sends a short current pulse down a sensor wire located within the level transmitter stem with a specific frequency, setting up a magnetic field along its entire length. This field interacts immediately with the field generated by the magnet contained within the float. The overall effect is that during the brief time that the current flows, a torsional force is produced in the wire, much like a sonic vibration or wave, and travels back to the magnetostrictive level transmitter electronics. A timing circuit exists within the electronics which measures the time-of-flight (TOF) between the start of the current pulse and the return signal. In this manner the float's location (and therefore the fluid level) is very precisely determined and presented as a level signal by the magnetostrictive level transmitter, typically in 4-20mA output.

### ❖ **RF ADMITTANCE LEVEL SWITCH.**

In this principle, the sense electrode and the vessel wall act as two electrodes of a capacitor and a material "shield" is proposed as an insulated electrode that will be added between ground and sense part. The sense and the shield is connected to the same source but they are electrically isolated from each other. Due to this, no RF current is flowing between shield and sense electrode. The main purpose for adding shield is to block the RF current from reaching to the vessel wall via coating of the probe. The sense probe and the shield are maintained at equi-potential which prevents flow of RF current from probe to the vessel wall while having build-up on the probe and when actual material touches the probe the RF current starts flowing. This design helps the electronic circuitry to differentiate between build-up and the real material. As the level of the vessel increases, the dielectric changes which in turn causes change in admittance. This change in admittance correctly measured by RF technique.







### ❖ **DISPLACER TYPE LEVEL TRANSMITTER.**

The principle of displacement level measurement is based on Archimedes Principle. Displacement instruments determine liquid level by sensing the buoyant force exerted on a displacer by the liquid it displaces. Unlike floats, in float-type level instruments, the displacer moves very little relative to the rising or falling liquid. Displacement transmitters can be used in a wide range of temperatures and pressures. Displacement transmitters should be suitable for interface level measurement if specific gravities differ significantly and the change in specific gravity due to composition or temperature cannot affect the reading. Displacement transmitters can be use also for density measurement if the displacer is permanently and fully immersed in a single fluid.

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## 26GHz Intelligent Radar Level Transmitters







Model	VRPWRD91	VRPWRD92	VRPWRD93	VRPWRD94	VRPWRD95	VRPWRD96
Appearance						
Applications	Strong corrosive liquids, such as hydrochloric acid, nitric acid, sulfuric acid, alkali liquids, etc.	Liquids in industries of petroleum, chemical, metallurgy and water treatment, etc.	Liquid similar with water Solids like ash, powders, particles, lumps, etc. in cement, steel, power plant, coal industries.	Solid level for process tanks with heavy dust or ash, easy crystallization and condensation.etc.	Liquid similar with water Solids like particles, lumps, etc.	Liquids in hygiene class vessels, medicals or food
Max. range	20m for liquid similar with water 7m for liquid of corrosive chemicals	30m for liquid similar with water 12m for liquid of petroleum liquids, chemicals, etc.	70m for liquid similar with water 50m for solids like ash, powders, particles, lumps, etc.	70m for liquid similar with water 50m for solids like ash, powders, particles, lumps, etc.	35m for liquid similar with water 18m for liquid of petroleum liquids, non-corrosive chemicals 15m for acid 20m for alkali 8m for particles, lumps, etc.	20m for liquid similar with water 15m for liquid of medicals or other chemicals
Accuracy	±3mm for liquid similar with water ±5mm for liquid of corrosive chemicals	±2mm for liquid similar with water ±5mm for liquid of petroleum liquids, chemicals	±10mm for liquid similar with water ±15mm for solids like ash, powders, particles, lumps, etc.	+/- 15mm	±3mm for liquid similar with water ±5mm for particles, lumps, etc.	±2mm for liquid similar with water ±3mm for liquid of medicals or other chemicals

Model	VRPWRD92H/ 95H/ 93H	VRPWRD92HT/ 95HT/ 93HT	VRPWRD92HE/ 95HE/ 93HE	VRPWRD92HA	VRPWRD95F	VRPWRD95FF
Appearance						
Applications	Water monitoring for lakes, rivers, reservoirs, open channels, agricultural irrigation, city road or bridge flood and tides of oceans, etc.				Strong corrosive liquids	
Max. range	30m/ 35m/ 70m	20m/ 30m/ 50m	20m/ 30m/ 50m	15m	35m	
Accuracy	+/- 3mm; +/- 5mm; +/- 10mm			+/- 3mm	+/- 3mm	
Process temperature	-40 to +100 °C		-40 to +80 °C		-60 to +150 °C	








## 6.8 GHz Intelligent Radar Level Transmitter

Model	VRPWRD51	VRPWRD52	VRPWRD53	VRPWRD54	VRPWRD55	VRPWRD56
Appearance						
Applications	Liquids, waste water, acid, alkali, slurry	Liquids, waste water, acid, alkali, slurry	Liquids, crude oil, light oil, volatile liquids or slurry	Solids like big lumps and bulks	Low dielectric constant liquids, Marine water with sludge	High temperature solids, blast furnace
Max. range	20m for liquid similar with water 15m for liquid of waste water 8m for slurry, acid or alkali ( $\leq 80^{\circ}\text{C}$ )	20m for liquid similar with water 15m for liquid of waste water 8m for slurry, acid or alkali ( $\leq 80^{\circ}\text{C}$ )	30m for liquid similar with water 10m for liquid of oil, volatile liquids or slurry	10-15m for big lumps and bulks	Guiding tube 10m for DN50 12m for DN80 16m for DN100	10m for high temperature coal lumps
Accuracy	$\pm 8\text{mm}$ for liquid similar with water $\pm 10\text{mm}$ for liquid of corrosive chemicals or slurry	$\pm 8\text{mm}$ for liquid similar with water $\pm 10\text{mm}$ for liquid of corrosive chemicals or slurry	$\pm 8\text{mm}$	$\pm 15\text{mm}$	$\pm 8\text{mm}$	$\pm 15\text{mm}$
Repeatability	$\pm 2\text{mm}$	$\pm 2\text{mm}$	$\pm 2\text{mm}$	$\pm 2\text{mm}$	$\pm 2\text{mm}$	$\pm 2\text{mm}$





## 1.8 GHz Guided Wave Radar Level Transmitters

Model	VRPWRD31	VRPWRD32	VRPWRD33	VRPWRD34	VRPWRD35	VRPWRD36
Appearance						
Applications	Both liquids and solid powder	Liquids only	Solid powder, liquids with low dielectric constant	High temperature and pressure liquids	Corrosive liquids	Lower dielectric constant liquids or wave surface liquids
Max. range	30m for liquid similar with water 10m for liquid of non-sticky oil or some of solids	3m	10m	3m	3m for rod / 4m for cable probe	3m
Accuracy	$\pm 3\text{mm}$					
Repeatability	$\pm 2\text{mm}$					







## Compact Ultrasonic Level Transmitters

Model	VRPWCS61	VRPWCS62	VRPWCS63	VRPWCS64	VRPWCS71	VRPWCS72	VRPWCS73	VRPWCS74
Appearance								
Applications	Liquids level measurement in industrial areas, especially for water treatment industry				Both liquids and particles level measurement, especially for water treatment industry, open channel applications			
Probe type & Max. range	<b>Standard type</b> Liquids: 0.25 - 5m	<b>Standard type</b> Liquids: 0.3 - 10m	<b>Standard type</b> Liquids: 0.4 - 15m	<b>Standard type</b> Liquids: 0.5 - 20m	<b>Standard type</b> Liquids: 0.25 - 5m Solids: 0.25 - 2m	<b>Standard type</b> Liquids: 0.3 - 10m Solids: 0.3 - 4m	<b>Standard type</b> Liquids: 0.4 - 15m Solids: 0.4 - 6m	<b>Standard type</b> Liquids: 0.5 - 20m Solids: 0.5 - 8m
	<b>Sealed type</b> Liquids: 0.25 - 4m	<b>Sealed type</b> Liquids: 0.3 - 8m	<b>Sealed type</b> Liquids: 0.4 - 12m	<b>Sealed type</b> Liquids: 0.5 - 16m	<b>Sealed type</b> Liquids: 0.25 - 4m Solids: 0.25 - 2m	<b>Sealed type</b> Liquids: 0.3 - 8m Solids: 0.3 - 4m	<b>Sealed type</b> Liquids: 0.4 - 12m Solids: 0.4 - 6m	<b>Sealed type</b> Liquids: 0.5 - 16m Solids: 0.5 - 8m
Probe material	PA66+GF30/ PVDF	PA66+GF30/ PVDF	PA66+GF30/ PVDF	PA66+GF30	PA66+GF30/ PVDF	PA66+GF30/ PVDF	PA66+GF30/ PVDF	PA66+GF30
Process temperature	-40°C to +70°C							
Process pressure	-0.02MPa to +0.1MPa							
Accuracy	+/- 0.4% FS				+/- 0.25% FS			
Process connection	Tread G1A or Flange	Thread G2A or Flange	Thread M66×2 or Flange	Thread M95×2 or Flange	Tread G1A or Flange	Thread G2A or Flange	Thread M66×2 or Flange	Thread M95×2 or Flange

## Split-type Ultrasonic Level Transmitters

Model	VRPWCS75	VRPWCS76	VRPWCS77	VRPWCS78
Appearance				
Applications	Slurry or water treatment	Slurry or water treatment	Open channel flow measurement	Slurry or water treatment
Max. range	0.3- 10m 0.5- 20m	0.3- 10m 0.5- 20m	Parshall flume Throat flume Rectangular slot	0.3- 10m 0.5- 20m
Output	4-20mA RS485/ Modbus	4-20mA RS485/ Modbus	4-20mA	4-20mA RS485/ Modbus
Power supply	220V AC/ 24V DC			
Process temperature	-40°C to +80°C			
Accuracy	+/- 0.5% FS			
Enclosure of probe	IP68			
Enclosure of master	IP65			

## Magnetostrictive Liquid Level Transmitters

Model	VRPWMT81	VRPWMT82	VRPWMT83	VRPWMT84	VRPWMT85	VRPWMT86
Appearance						
Applications	Liquid level measurement	Liquid level/ interface measurement	Liquid level measurement	Liquid level/ interface measurement	Liquid level measurement	Liquid level / interface measurement in dangerous industries
Max. range	6m	6m	6m	6m	15m	15m
Accuracy	+/- 1mm	+/- 1mm/ +/-10mm	+/- 1mm	+/- 1mm/ +/-10mm	+/- 1mm	+/- 1mm/ +/-10mm
Process temperature	0 to +200 centigrade	0 to +200 centigrade	0 to +350 centigrade	0 to +350 centigrade	0 to +200 centigrade	0 to +200 centigrade

## RF Admittance Level Switch (for both solid and liquid level control)



VRPWRF211- For level control  
-180 - +200°C



VRPWSRF213- For level control  
-40 - +500°C



VRPWSRF212-- For Corrosive level control  
-40 - +150°C



## **Displacer Level Transmitters**

**With FISHER DLC3010 FIELDVUE or FOXBORO 244LD Levelstar transmitter head**



Measuring range: 300 to 2500mm

Working temperature: -100 to +350 °C

Working pressure: 1.6 to 16MPa

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