

Klinger ULM

Ultrasonic Leveltransmitter

Klinger ULM is an ultrasonic level gauge for measuring and monitoring the liquid content of a tank.

Principle

Ultrasonic level measurement is a reflection meter, based on echo measurement of the duration of a sound pulse emitted by a sensor - The pulse is reflected by the surface and detected again by the sensor.

The elapsed time is a measure of the distance traveled in the empty part of the tank. By subtracting this value from the total tank height, the level height is obtained which, via an amplifier, is converted into a contact signal or an analog output signal.

Ultrasonic measurement is probably the most common non-contact measuring principle for level measurement, and as the name suggests, it is high-frequency sound waves that are used to measure the distance between sensor and surface.

Limitations

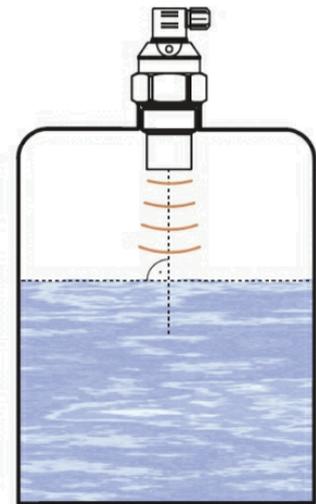
Ultrasonic measurement depends on the ability of sound waves to propagate, which demands a carrier medium to be present (usually air).

The density of the carrier medium influences the measurement, as the speed of sound changes with the composition and reservations must be made in the calculation if the medium deviates from atmospheric air v. 20°C (where the speed of sound is 343 m/s).

The use of ultrasonic measurement meets its physical limitation in media where the operating conditions are not between atmospheric pressure and 3 bar.

Measurement in vacuum is almost impossible, just as large dust concentrations in the tank can lead to an increased absorption of the waves, and thus a weaker signal.

Finally, foaming can interfere with the measurement. Whether measurement is possible is determined by the "density" of the foam - as a rule of thumb, a thin light foam layer will be transparent (measured on the liquid surface), while a thick dense layer will block (and be measured on the surface of the foam).



Klinger ULM for non-contact measurement:

- Ranges up to 30m
- 40kHz ultrasonic sensor for accurate measurement.
- Dirt-repellent design for safe measurement.
- Easy setup for all standard applications
- Compact and remote transmitter design

Technical data

Klinger ULM Level gauge is manufactured for mounting directly on the measuring site, either in a compact design or with a separate transmitter.

The sensor is made of PA6 (plastic) which do not resist high temperatures (max. +55°C).

The transmitter is, in both versions, equipped with a display and control buttons for setting / adapting to the current measuring task.

Setting takes place through a menu that allows for "simple" or "special" setup - depending on the measurement task.



Max Range	5m, 10m, 15m or 30m
Accuracy	±0.5 % af måleværdi
Resolution	3 mm or 0,1 % (highest value)
Frequency	40 KHz
Responsetime	< 1 sek.
Power Supply	24V DC or 220V AC
Power Consumption	<1W
Output	4-20mA Modbus 485 (option)
Materials / housing	PA6 / ABS
Blind Area	0,2...0,9m (depends on sensortype)
Max Load	750 Ω
Media temperature	-20...+55 °C



- Radiation angle < 9°
- Resolution 3mm
- Responsetime < 1 sek for Highest Accuracy

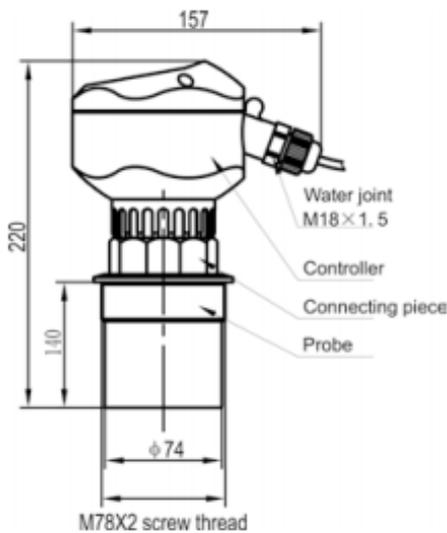


- Diaphragm in PTFE
- IP 68
- Dirt-repellent

- No Wetted Parts
- M78 x 2mm nut for easy mounting

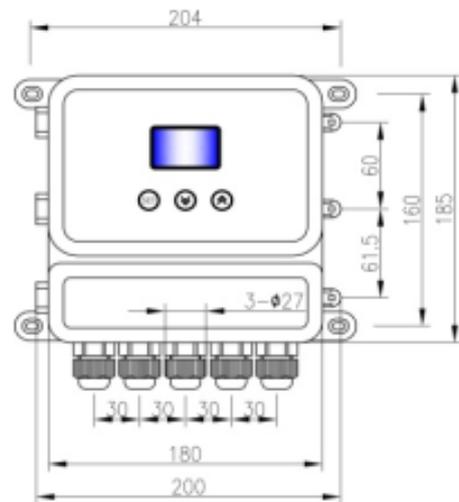
Dimensions

Compact Transmitter



Thread M78 × 2 Sensor

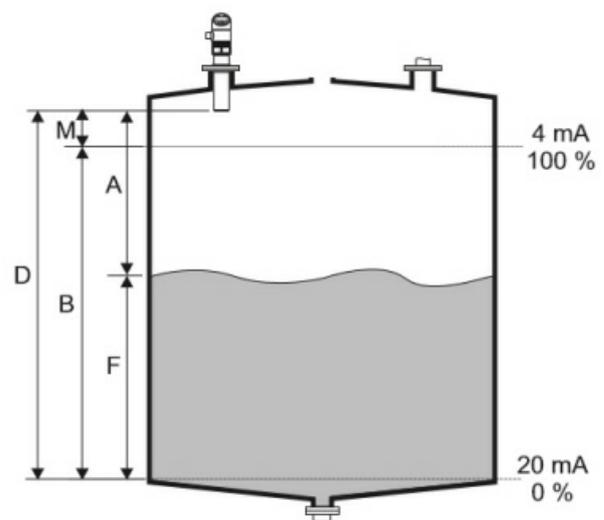
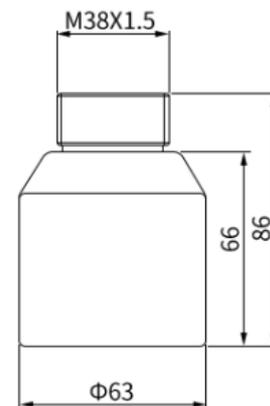
Remote Transmitter



Installation

ULM need a clear view of the liquid surface, so that the signal can be reflected back towards transmitters with restrictions. If there are inlets or other irregularities, the meter must be moved so that the sound waves are not reflected on any of these.

Note - there is a blind area close to the sensor, where it is not possible to measure - if the level rises above this level, the measurement stops.



A = Free space
 B = Max Range
 D = Total height of the Tank
 F = Liquid Level
 M = Blind Area

Product Selection

Model	Suffix Code						Description
ULM-	1	2	3	4	5	6	Ultrasonic Level Meter
Diameter	XX						05: 5m 10: 10m 15: 15m 30: 30m
Power Supply		AC					220Vac
		DC					24V DC
Structure			S				Compact Type with local display
			L				Remote Type: 10m cable default
Communication				1			None
				2			RS485
Relay Output					1		None
					2		One Relay Output
					3		Two Relay Output
Probe Material						PO	Polyoxymethylene
						PV	PVDF
						PT	PTFE



ULM 05 AC 1 1 1 PT

- ① 05: 0...5 meter
- ② AC: 240Vac power supply
- ③ 1: 2 wire 4-20mA output
- ④ 1: No communication
- ⑤ 1: No relay output
- ⑥ PT: PTFE material

