

### Technical Data.



#### Purpose

ULM-31-HF radar level transmitter is a precision instrument. It is designed for high-precision non-contact measurement of liquid levels with a level measurement accuracy of  $\pm 1$  mm. The level transmitter operating frequency of **120-140 GHz is the highest operating frequency among the mass-produced level transmitters!** It is used for measuring the levels of both neutral and aggressive products. It does not contact the measured medium and has the protected antenna. The level transmitter is intended for use in the fiscal flow metering systems. It is perfectly suitable for reliable measurement of level in complicated conditions.

#### Principle of Operation.

The level transmitter is installed in the upper part of the tank with controlled product (on the tank roof) and emits a continuous frequency modulated electromagnetic wave in the microwave range in the direction of the product. The reflected wave returns to the level transmitter antenna, where it is mixed with the emitted wave. The allocated resulting frequency corresponds to the distance to the product being measured. The measured distance is deducted from the installation height; thus, the tank filling level is determined. The guaranteed accurate allocation of the resulting frequency ensures an accurate and reliable level measurement regardless of reflecting power from the product (the amplitude of the reflected signal).

#### ULM-31-HF Advantages.

- Very high measurement accuracy -  $\pm 1$  mm.
- Ultra-high operating frequency **120-140 GHz**.
- Narrow measuring beam.
- Ultra-high sensitivity and stability of measurements.
- No contact with the product – the level transmitter does not require servicing.
- The protected antenna provides reliable measurement in complicated conditions and the best protection against vapors and dust.
- Storing of debugging and diagnostic data in the non-volatile memory allows for the level transmitter remote setting up and checking without their dismantling from the tank. Keeping of emergency logs.
- Tank calibration charts stored on SD-card enable to recalculate the product measured level to the product stored volume.
- Different digital and analog interfaces.
- Wireless interface Bluetooth

#### Basic Technical Characteristics

Measuring range .....	0.6-30(50) m
Maximum absolute error .....	$\pm 1$ mm
Measuring beam width .....	4°
Connection .....	flange, from DN50
Ambient temperature .....	-40°C to +50°C
Electrical connection .....	four-wired
Digital interface .....	RS485 (Modbus RTU), HART
Analog interface .....	4-20 mA
Discrete output .....	Double-relay contacts
Wireless interface .....	Bluetooth
Supply voltage .....	20-36 VDC
Version .....	general purpose industrial
Weight .....	4 kg max

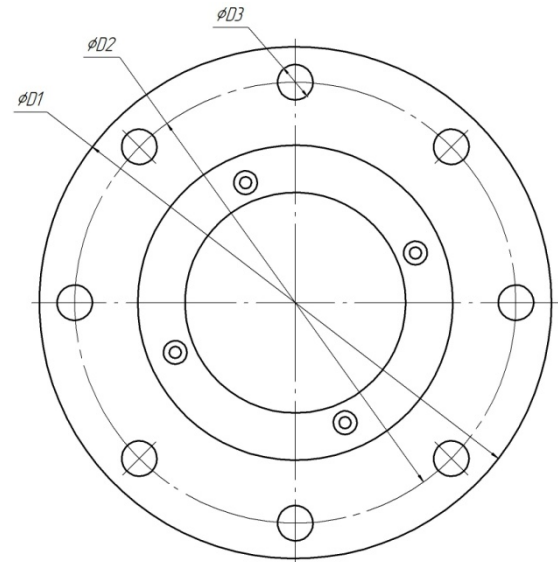
### Casing.

The casing is made of aluminum with anodized protective powder-painted coating, or of **plastic**. Dust and moisture protection rating is IP65.

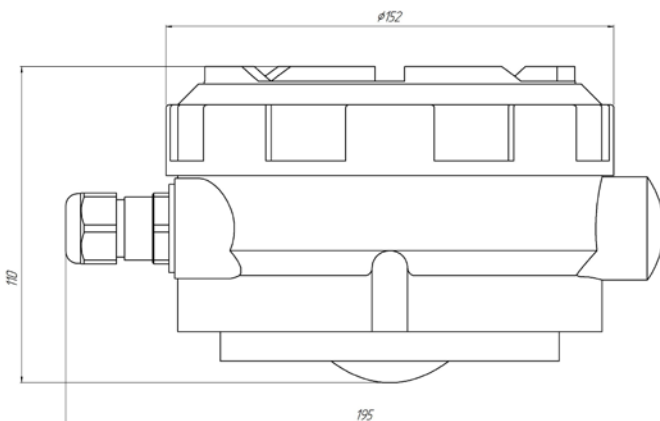
### Materials.

The level transmitter components contacting the tank medium are made of poly-tetra-fluoro-ethylene (PTFE) and stainless steel. The level transmitter can be insulated from the tank inner space by means of additional radio transparent gasket made of fluorine plastic (PTFE) or of ceramics.

### Location of Fixing Holes on the Mounting (Adapter) Flange of the ULM-31-HF Level Transmitter.



### ULM-31-HF-F Level Transmitter. Overall Dimensions.



Depending on the order, the ULM level transmitters can be completed with various mounting (adapter) flanges as per different standards (GOST, DIN, ANSI, etc.). Please request them when placing an order.

**Common-type flanges (adapter flanges) for supply of the ULM level transmitters comply with GOST 12821-80.**

Flange	D1 (mm)	D2 (mm)	D3 (mm)	Number of holes
DN50, PN6 (adapter)	140	110	14	4
DN50, PN16 (adapter)	160	125	18	4
DN100, PN6	205	170	18	4
DN100, PN16	215	180	18	8
DN150, PN6	260	225	18	8
DN150, PN16	280	240	22	8