LIMACO
Radar level transmitters

ULMRADAR-4x

Series of no-contact radar level transmitters

Purpose

ULMRADAR-4X radar level transmitters are intended for non-contact level measurement of liquids (neutral or aggressive), viscous or bulk materials in open and closed tanks.

They are designed for use in technological systems for accounting of oil, fuel oil, dark petroleum products, gasoline, diesel fuel, alcohol, acids, alkalis, sludge, pulp, water, beer, ore, coal, cement, clinker, grain, soy, combined feed, sugar and many other liquid and bulk products and materials.

The extremely high operating frequency up to **140GHz** provides the best accuracy for the most reliable measurements. Level transmitters are equipped with protected sealed antenna, they are not in contact with the measured medium, which allows their use for measuring the level of both, neutral and aggressive products, including in complex environment. Explosion-proof design.

Radiation power of the level transmitter is a few milliwatts, which is well below the maximum allowable values and is completely safe for living organisms and humans.

Operating principle

The level transmitter emits a continuous frequency-modulated electromagnetic wave in millimeter range towards the measured product. Wave reflected from the product returns to the level transmitter antenna, where it is mixed with the radiated wave. Dedicated resulting frequency corresponds to distance to the measured product to enable calculation of the tank filling level and volume of the product in it based on the initial information about both, the tank and the product.

The circuitry and design solutions used as well as special algorithms for signal processing enable accurate and reliable level measurement regardless of the product reflection coefficient and mobility of its surface.

Advantages

- Extra high operating frequency up to **140 GHz**
- **Narrow measuring beam** that reduces requirements for the level transmitter installation location
- No **direct physical contact** of level transmitters with product
- **Protection of antenna** from external factors (high humidity, aggressive media fumes, dust) allows you to use the level transmitter in the most severe environments
- The highest **sensitivity and stability** of measurements ensure operation with a variety of products
- High measurement **accuracy** and **low temperature error** enables to obtain objective product data regardless of external climatic conditions
- Can be set up and configured by **smartphone** via Bluetooth
- **Built-in** indicator
- Option for 2-wire connection
- Level transmitters **do not require maintenance** during operation
- Level transmitter service life is at least **20 years**

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General specifications

Range of measurement ..... 0,6 – 40 m
Absolute error*..... ±1, ±2, ±3mm
Measuring beam width* ..... 2°, 4^0
Flanged ..... connection, from DN50
Ambient temperature:
- standard design..... -50.. +50°C
- special design ..... -60.. +50°C

Product temperature ..... unlimited
Electrical connection ..... 2- or 4- wire
Digital interface ..... RS485,ModbusRTU, HART
Analog interface ..... 4-20 mA
Wireless interface ..... Bluetooth
Supply voltage ..... 18-36 V DC
Explosion-proof design .....
Weight without flange ..... 8.5 kg max
* - depending on the modification

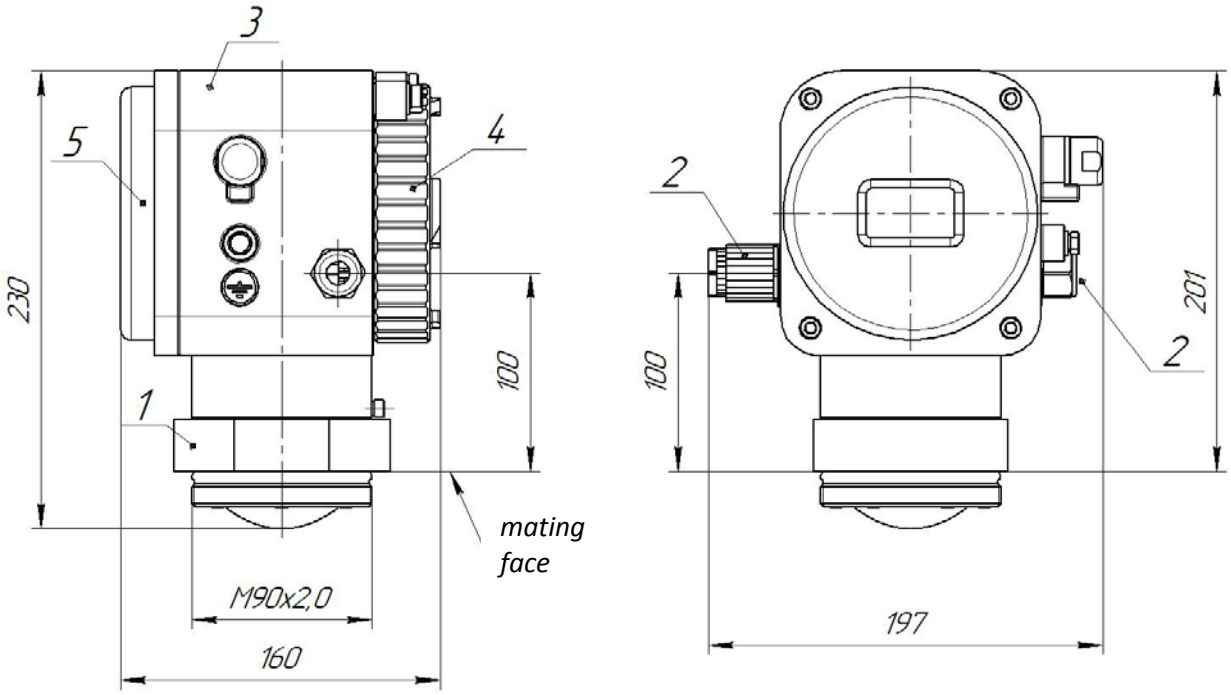
Housing

The housing is made of powder-coated anodized aluminum. Explosion protection of level transmitters is provided by explosion-proof enclosure “d” and spark-safe circuit “i”. Explosion-proof design:
1Ex de [ia Ga] IIBT6 Gb / Extb [ia Da] IIICT80°C Db
1Ex deIIBT6 Gb / ExtbIIICT80°C Db.
Dust and water protection rate: IP66.

Materials

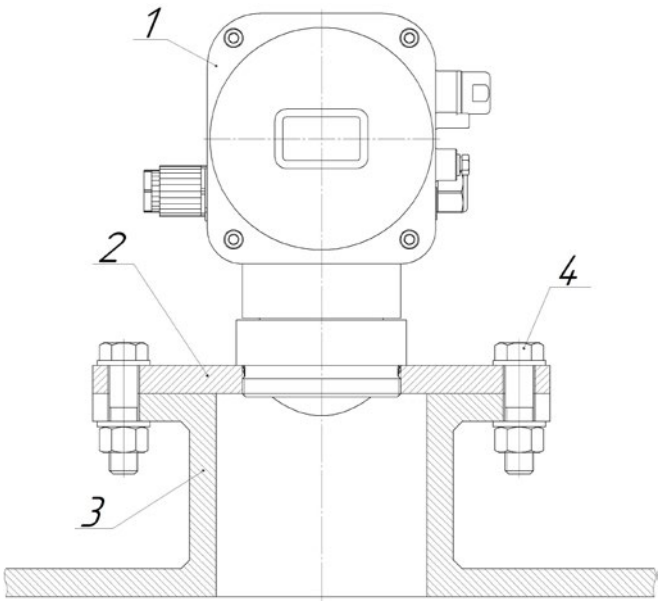
Parts in contact with the tank environment are made of PTFE and stainless steel.

ULMRADAR-4x level transmitters. Overall dimensions

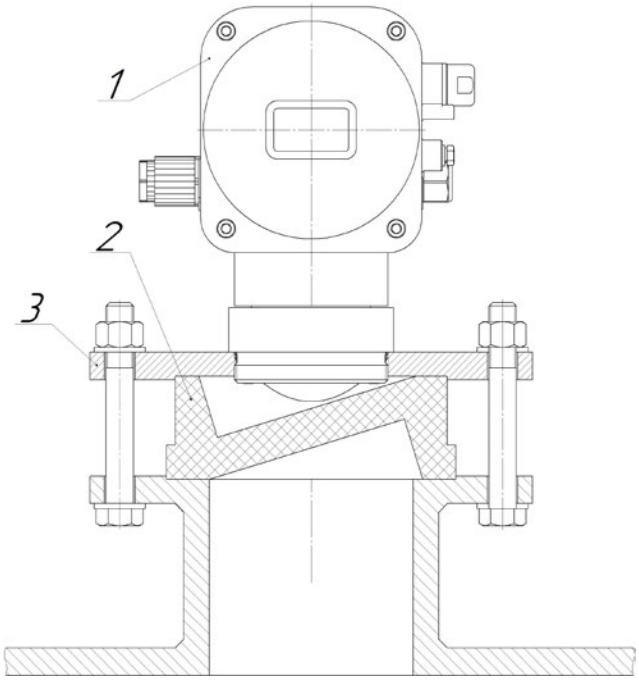


1. Antenna
2. Cable gland
3. Electronic unit
4. Cover
5. Cover

Mounting options for the ULMRADAR-4x level transmitters on tanks



1. Level transmitter
2. Transition flange
3. Tank branch
4. Fastening bolts
5. Cable gland



1. Level transmitter
2. Insulating gasket
3. Flange

ULMRADAR-4X level transmitters may be equipped with various mounting (transition) flanges on DN50, DN80...200 branches in accordance with various standards (GOST, DIN, ANSI etc.). Detailed information on flange types and sizes can be requested when placing your order.

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