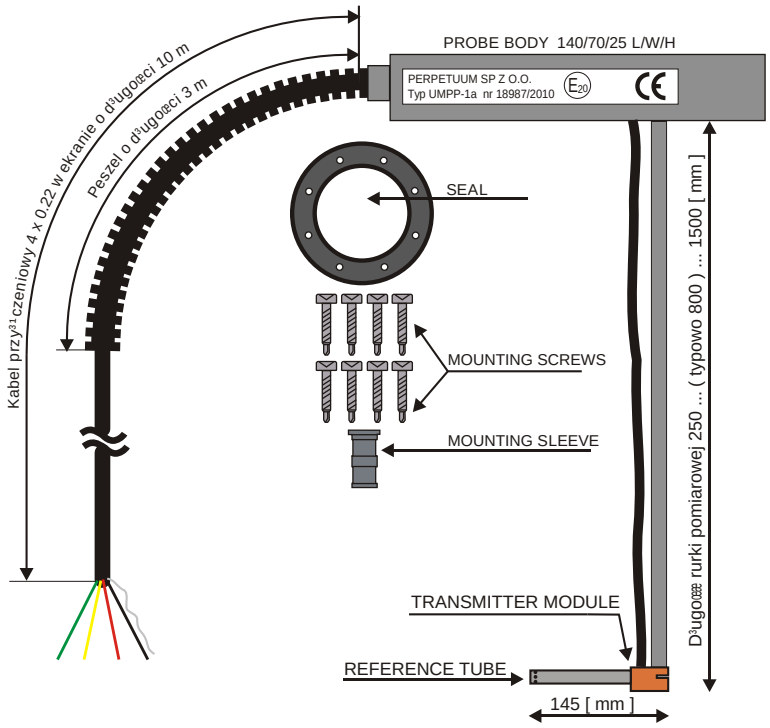
perpetuum

UMPP-1 Ultrasonic Fuel Measurement Meter
analog probe/digital probe



- high reliability
- high accuracy
- simple assembly
- measurement up to 1500 mm
- analog probe
- digital probe

DESTINY

The UMPP-1 ultrasonic probe is used to measure the fuel level in the tanks of diesel fuel-powered vehicles and machines. The probe is used in consumption monitoring systems and fuel management. It is a device that is easy to use and safe to use.

PRINCIPLE OF OPERATION and CONSTRUCTION

In measurements, the probe uses the properties of ultrasound. The transducer module shown in the figure emits an ultrasonic wave into the diesel fuel environment and then receives the echo signal. The level is determined by measuring the return time of the echo reflected from the fuel surface. The probe has a length standard - marked as a standard tube in the drawing - its presence allows the measurement result to be compensated for changes in: density, temperature and pressure. The possibility of constant calibration of the probe in the measured fuel means that the probe measurements are always stable and insensitive to changes in the type of fuel. In practice, this means accurate measurements of summer fuels, winter fuels and BIO fuels.

The construction of the probe ensures protection class IP68. The aluminum body - the electronics housing - is covered with a galvanic anti-corrosion coating. The plastic elements and cables used are made of oil-resistant materials. The connection cable is protected by a three-meter length of conduit. The mechanical design of the transducer module ensures automatic cleaning of the probe from deposits. An additional protective element is the included filter mesh sleeve.

Typically, the probe is equipped with a measuring tube 800 mm long, probes can be ordered with tubes up to 1500mm.

ANALOG PROBE

The analog probe has a voltage output signal, the value of which is proportional to the measured liquid height in the tank. The analog probe software provides the ability to adjust the full 0_10V range for a probe with a shortened measuring tube. This feature of the probe allows full use of the recorder input, and thus greater accuracy of recorded measurements. Adjusting the full range to the tube length is possible after rescaling the output.

DIGITAL PROBE

The digital probe is equipped with an RS-485 interface. The data sent by the probe contains the following information:

- fuel height in the tank - height given in millimeters with a resolution of 0.1 mm, example measurement result “264.3”

Or

- number of liters of fuel in the tank - information available after previous scaling. Scaling can be done for max. 100 points.

The standard software provides for sending information about the measured value after a prior inquiry by the master device. Probes can be addressed (numbering 0 ... 9), assigning addresses allows many probes to work with one recorder input.

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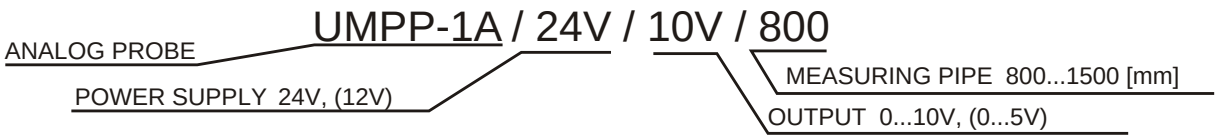
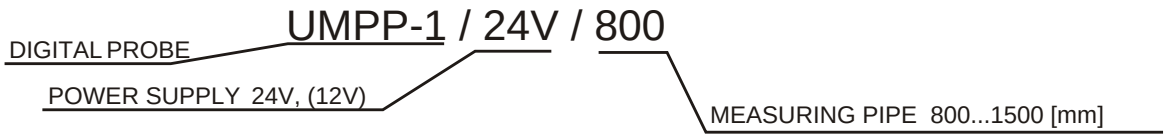
Podstawowe dane techniczne:
UMPP-1A analog probe

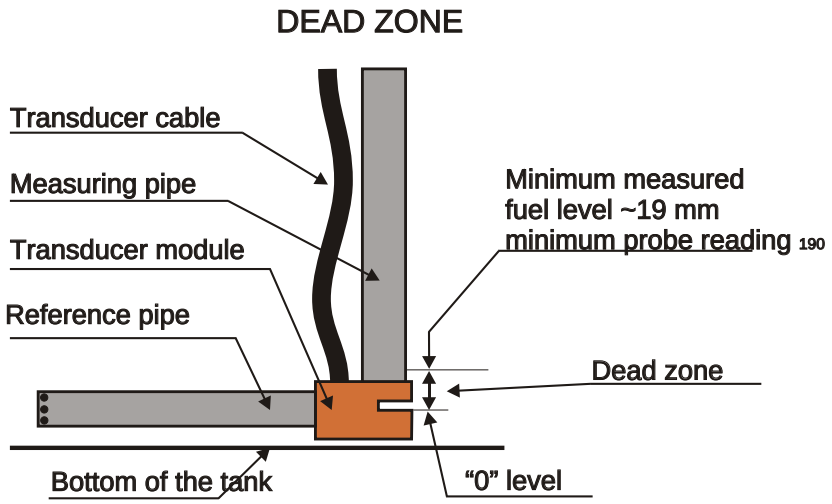
- supply voltage: 18 ... 30 V dc (10 ... 18 V dc).
- rated power: 0.25 W
- ambient temperature: - 30 ... +50C
- housing protection level: IP-68
- type of fuel measured: PN-EN590 (diesel oil)
- maximum measurement level: 1500 mm
- dead zone*: => 27 mm
- output signal: 0 ... 10 V (0... 5 V)
- measurement error: < 1%
- resolution: 10 bits: 9.7 mV for 0...10V or 4.7 mV for 0...5 V



UMPP-1 digital probe

- supply voltage: 10 ... 30 V dc
- rated power: 0.25 W
- ambient temperature: - 30 ... +50C
- housing protection level: IP-68
- type of fuel measured: PN-EN590 (diesel oil)
- maximum measurement level: 1500 mm
- dead zone*: => 27 mm
- output signal: RS-485
- measurement error: < 1%
- resolution: 0.1 mm





The dead zone is the height of the liquid column not covered by the measurement - its presence results from the properties of the measurement method. It is relatively small - it is approximately 15 liters of fuel for a 600 liter tank, which is well below the minimum operating requirement for the truck. The size of the dead zone is influenced by the distance between the bottom of the tank and the edge of the transducer module - it is approximately 2...3 mm for correct