

## SONAR-410 FTS-Flex D

### Ultrasonic Level Sensor

The SONAR-410 FTS-Flex D is a level sensor designed specifically for vertical storage tanks (VSTs), along with a console.



### The Description of Functions

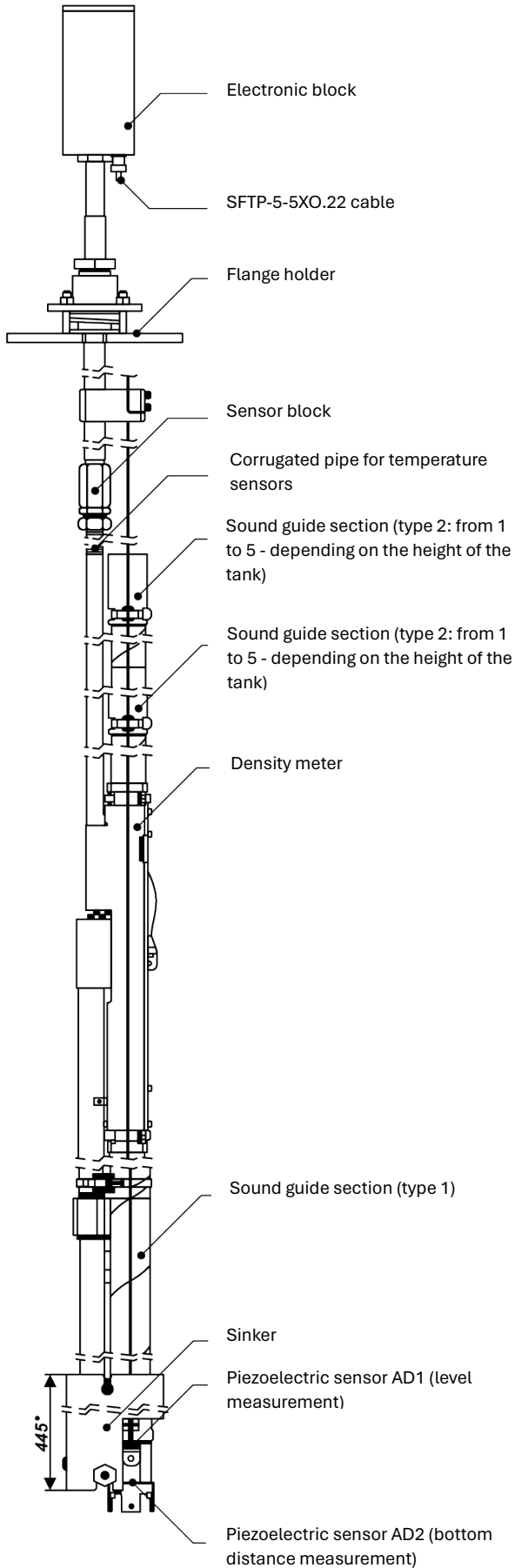
When measuring the liquid level, the principle based on pulse ultrasonic echolocation is employed. The ultrasonic probe is based on a sensor block made of stainless-steel corrugated pipe with two piezoelectric sensors (for level measurement and distance measurement to the bottom) and a set of sound guide modules (2 m in length - up to 5 inclusive), enabling the measurement of liquid level in

the tank up to 14 m. The special design allows bending the probe in any direction, facilitating its compact packaging to reduce transportation costs. The probe has a very simple mounting construction. This configuration also includes an option for measuring density. The density of the liquid is measured by a densitometer installed on the sound guide.

### Technological Advantages of Freiberg Technologie

- Implementation of the method does not require high demands on the wear resistance and durability of equipment construction.
- Measurement results and calculations are displayed on the level gauge operator's monitor and transmitted to the facility's ACS.
- The simplicity of the converter design and installation method onto/in tanks, results in ease of service maintenance and simplified service support procedures, without the need for expensive spare parts.
- Supplied with a densitometer as part of the package.





## The main technical characteristics of the level gauge modification **FTS-Flex D**

- Measurement range for liquid levels: from 100 mm up to 14000 mm.
- Maximum permissible error in liquid level measurement:  $\pm 1.0$  mm.
- Measurement range for sub-product water level: from 5 mm up to 100 mm.
- Maximum permissible error in sub-product water level measurement:  $\pm 1.0$  mm.
- Measurement range for the liquid temperature inside the tank: from  $-10^{\circ}\text{C}$  to  $+30^{\circ}\text{C}$ .
- Maximum permissible error in temperature measurement:  $\pm 0.5^{\circ}\text{C}$ .
- Density measurement ranges for light petroleum products:
  - Current values: from  $720.0 \text{ kg/m}^3$  to  $770.0 \text{ kg/m}^3$  inclusive; from  $770.0 \text{ kg/m}^3$  to  $870.0 \text{ kg/m}^3$  inclusive.
  - Values adjusted to a temperature of  $15^{\circ}\text{C}$  from  $730.0 \text{ kg/m}^3$  to  $770.0 \text{ kg/m}^3$  inclusive; from  $770.0 \text{ kg/m}^3$  to  $860.0 \text{ kg/m}^3$  inclusive.
  - Maximum permissible error in light petroleum product density measurement:  $\pm 0.5 \text{ kg/m}^3$ .
- Operating temperature of probe components:
  - Sensor block: from  $-40^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ ;
  - Electronics block: from  $-40^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ .
- Protection degree of level gauge components against water, dust, and foreign solid particle penetration:
  - IP68 for the sensor block of the probe;
  - IP65 for the electronics block of the probe.
- Probe components have explosion-proof design and explosion protection marking:
  - Sensor block "0Ex ia IIB T4 Ga"
  - Electronics block "1Ex ib [ia Ga] IIB T4 Gb"
 Can be installed (used):
  - in hazardous area Class 0 for the sensor block
  - hazardous area Class 1 for the electronics block
- The probe can be used to measure the level of acoustically transparent liquids that are non-aggressive to the materials of the probe components in contact with the medium:
  - Stainless steel 12X18H9T;
  - Fiberglass pipe covered with antistatic enamel ;
  - Steel St10

