

Flexible magnetostriction level gauge

SENS-U1

NPP SENSOR Datasheet LS 17.09



Application

Used for continuous high-accuracy measurement of liquid products level in large storage tanks during accounting and process operations.

Used for low viscosity liquid media in the absence of suspended particulates.

Operated on sites of chemical, pharmaceutical, food, oil and gas, fuel and energy, machine engineering industries.

Can be installed on open sites in conditions of precipitation and sun radiation exposure, in explosion hazardous areas of the rooms and outdoor installations.

Features

- Vandal-proof enclosure made of corrosion-resistant steel.
- Explosion protection level – very high safety in case of explosion.
- A large selection of cable shield mounting devices.
- High accuracy measurement.
- Ambient operational temperature range is from minus 50 to plus 100 °C.
- Measurement range up to 25 meters.

Description

Within the enclosure formed by the case and guide of the level gauge, an electronic module consisting of a probe inside the guide and signals processing unit is located. The probe contains an acoustic duct made of magnetostrictive material. The acoustic duct is inserted into the fluoroplastic tube which has a winding all over its length. Signals processing unit with terminal clamp for connection of external circuits is installed inside the case of the level gauge. The level gauge has both internal and external earthing clamps.

The principle of operation is based on the magnetostriction effect.

The float with a built-in magnet slides freely along the guide surface, taking a position relative to the probe depending on the level of the controlled medium. A current pulse is supplied to the probe winding, causing a magnetic field pulse along the entire length of the acoustic duct. At the location of the float with permanent magnet, an elastic deformation pulse occurs due to impact of the magnetostriction effect, it is going through the acoustic duct. The pulse reaches the end of the acoustic duct and is captured by the signals processing unit using a piezoelement. Signal processing unit measures time intervals from the moment of formation of a current pulse in the winding of the probe until receiving of elastic deformation pulse from the float. As the velocity of the elastic deformation pulse in the acoustic duct is constant, it allows to determine the distance to the float location, which is defined by the level of a controlled medium.

Signals processing unit forms the level gauge output signals in accordance with the measured level, and it also provides operation via HART protocol.

For optimal selection of the level gauge kit (cable entries kit, interface) we suggest you to use technical advice on application.



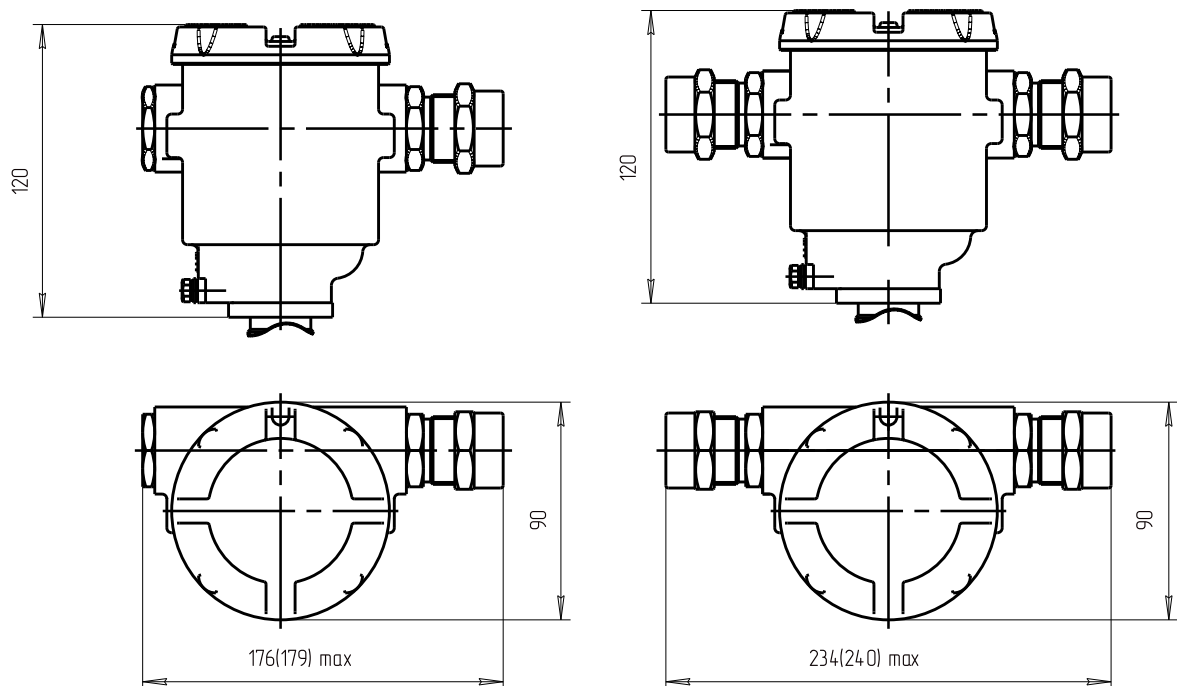
Certification

Ex-EAC	CU RU C-RU.ГБ05.B.00333
ISO 9001-2015	RU228579Q-U

Main specifications

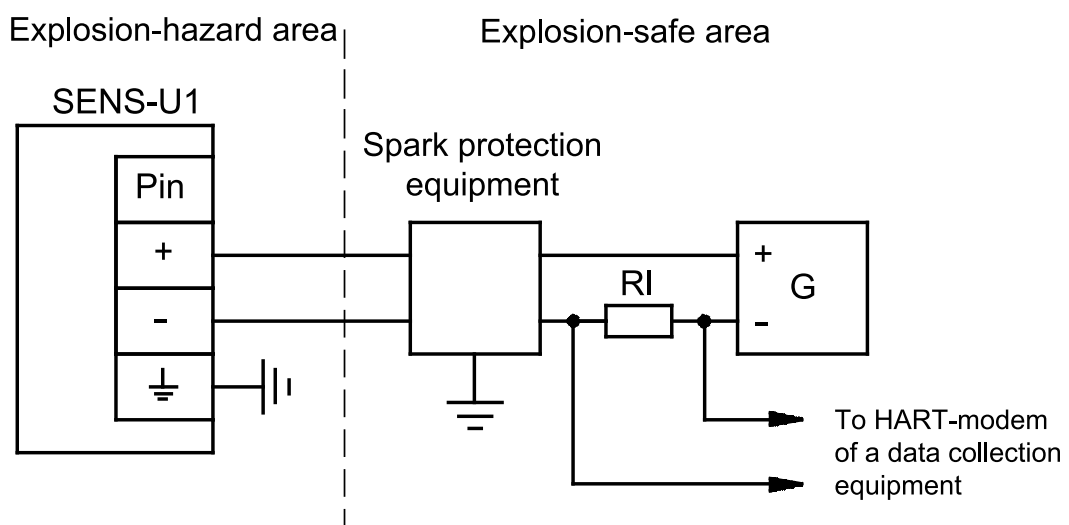
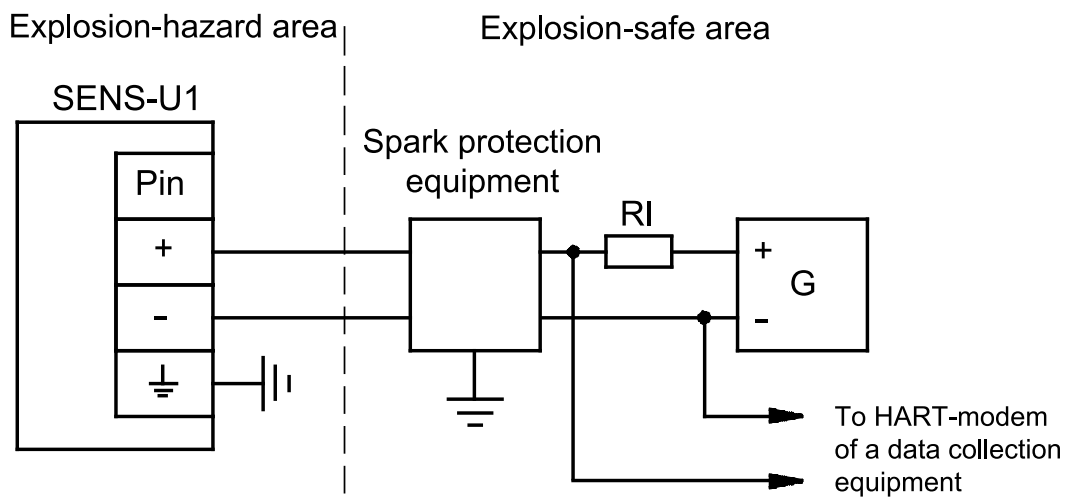
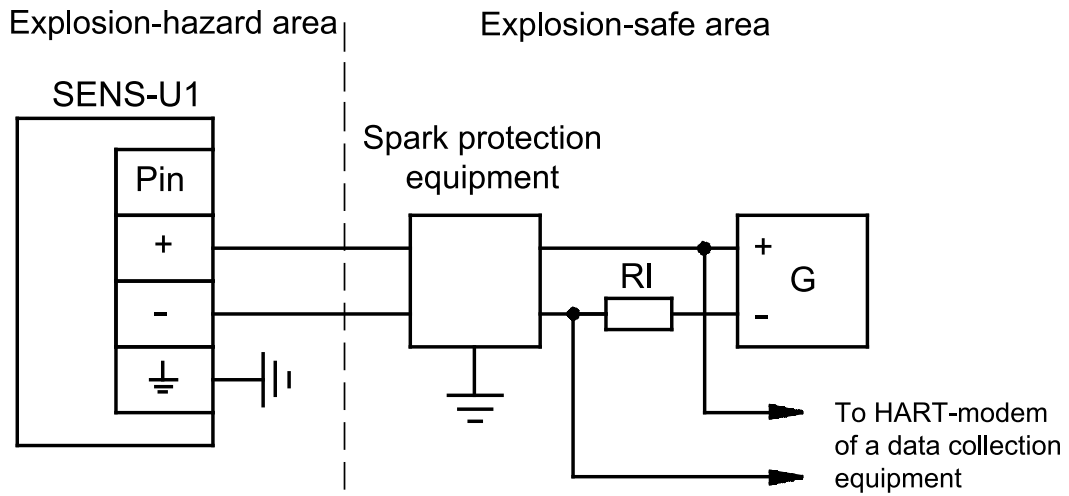
Materials contacting the controlled medium	stainless steel AISI 304, tetrafluorethylen polymer (Teflon)
Length of a flexible element, m	from 1 to 25
Controlled medium density, kg/m ³	from 600 to 1500
Pressure of medium, MPa, not more than	0.15
Controlled medium temperature, °C	from -50 to +100 (in absence of freezing)
Limits of acceptable main inaccuracy for level measurement (for current signal 4 - 20 mA)	± 2 mm or ± 0.05 % of the measurement range (higher value is assumed)
Limits of acceptable main inaccuracy for level measurement (for digital signal HART)	± 2 mm
DC power supply voltage, V:	
– nominal	24
– acceptable	from 9 to 30
Power consumption, W, not more than	1
Ingress Protection Rating in accordance with GOST 14254	IP66
Marking of explosion protection	0ExialIBT5GaX
Full service life, years	15
Mass, kg, not more than	10

General view, overall dimensions



Overall dimensions depend on the guide length

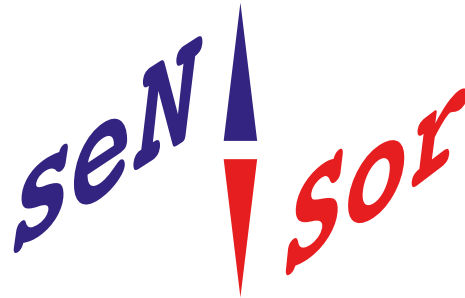
Connection diagram



G – power source;

RI – total resistance of the connected devices (indication instruments, controllers, etc.).

Note – To ensure HART-modem operation, R_n shall be at least 230 Ohm.



CONTACT INFORMATION

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