



ULS LEVEL SENSOR

Hydrometric level measurement sensor based on the ultrasonic principle



PRODUCT DESCRIPTION

The ultrasonic sensors can detect, with millimetric precision, objects made in different materials, regardless of their shape and colour. The sensor, managed by a microprocessor, bases its operation on an ultrasonic transducer that sends a pulse to the surface whose distance is to be measured, and then reads the resulting reflected echo. To remedy the systematic measurement errors usually occurring in the ultrasonic sensors, it is necessary to take into account the influence that the changes in temperature (and also in the atmospheric pressure and relative humidity to a negligible extent) have on the speed of propagation of the sound in the medium. This value does not influence the measurement of the hydrometric level in the ULS sensor produced by ETG because the changes in speed of propagation of the sound are compensated using an internal air temperature sensor. It is for this reason that the transducer is housed inside a pagoda structure that guarantees its ventilation. The measurement principle of the ultrasonic sensors is based on the analysis of the time elapsing between sending and receiving the ultrasound or on the control of receiving the sent signal. The emitter and receiver are positioned in the same housing. Benefit: it is possible to safely read also non-reflecting or poorly reflecting objects.

OPERATION

The sensor is used to measure the height of the hydrometric level. The sensor, managed by a microprocessor, bases its operation on an ultrasonic transducer that sends a pulse to the surface whose distance is to be measured, and then reads the resulting reflected echo. To remedy the systematic measurement errors usually occurring in the ultrasonic sensors, it is necessary to take into account the influence that the changes in temperature (and also in the atmospheric pressure and relative humidity to a negligible extent) have on the speed of propagation of the sound in the medium. This value does not influence the measurement of the hydrometric level in the ULS sensor produced because the changes in speed of propagation of the sound are compensated using an internal air temperature sensor. Value relating to hydrometric zero.

MAIN FEATURES

Compensation device:

to remedy the systematic measurement errors usually occurring in the ultrasonic sensors, it is necessary to take into account the influence that the changes in temperature (and also in the atmospheric pressure and relative humidity to a negligible extent) have on the speed of propagation of the sound in the medium. This value does not influence the measurement of the hydrometric level in the ULS sensor produced by ETG because the changes in speed of propagation of the sound are compensated using an internal air temperature sensor. It is for this reason that the transducer is housed inside a pagoda structure that guarantees its ventilation. The measurement principle of the ultrasonic sensors is based on the analysis of the time elapsing between sending and receiving the ultrasound or on the control of receiving the sent signal. The emitter and receiver are positioned in the same housing. Benefit: it is possible to safely read also non-reflecting or poorly reflecting objects.

Easy maintenance:

the benefits that our ultrasonic hydrometric sensor offers are not limited to precision, but also include simple and quick maintenance due to the engineering of the sensor that simplifies the phases. The only preventive activity consists of controlling the levelling of the sensor and in cleaning the target struck by the sensor. In fact, there must be no obstacles between the emitter of the sensor and the free surface of the water.

Sturdy and reliable construction:

lastly makes it an instrument with a long lifetime, which safeguards the customer's investment. The instrument does not drift due to aging and requires no periodic calibrations.

INSTALLATION

The sensor was designed to operate outdoors continually. The target beneath the sensor must be kept free of rocks and various obstacles that might invalidate its measurement. The distance from the control unit must not exceed 200 metres. The sensor must be horizontally positioned at a height, as to the lowest level of the waterway, no greater than its full scale. Furthermore, the highest level of the waterway must reach no more than 50-100 cm depending on the full scale of the sensor. Lastly, there has to be an obstacle-free area of a ≥ 1.75 m radius as to the vertical of the sensor. Once the sensor is calibrated in order to get a pre-established output compared to a reference level, the sensor requires no particular maintenance work. Should failures occur, restoring operation of the station takes less than 1 hour, even if the sensor has to be replaced. The sensor is equipped with fast semiconductor electronic devices for protection from electric discharges.

COMPONENTS THAT CAN BE ADDED OR BE BUILT INTO THE PRODUCT

none

TECHNICAL SPECIFICATIONS

Specifications	
Sensor type	Ultrasonic
Range of measurement	Various versions, 6 m, 12 m, etc.
Electrical Output	4-20mA, 0-10V, RS232
Operative temperature	.-25°C... +70°C
Casing Material	Steel alloy (stainless) 1.4 305/AISI 303; Partin in PBT plastic
Transducer material	Mixture of epoxy resin / hollow glass balls; polyurethane foam

CERTIFICATIONS AND PROTOCOLS

Certifications	Reference Standards
EMC	EN 60947-5-2:2007
Proximity control devices	EN 60947-5-2:2007
Low voltage equipment	EN 60947-5-7:2003
Proximity control devices	EN 60947-5-7:2003