FIEDLER

ELECTRONICS FOR ECOLOGY

US1200, US3200, US4200

Ultrasonic water level meter and air temperature sensors

- *Measurement of water level and air temp.*
- *Measuring ranges from 0.15 m - 1 m (US1200) to 0.3 m - 4 m (US4200)*
- *The digital filter of the measured values of the level height refines the measurement*
- *Automatic temperature compensation*
- *Resolution 1 mm*
- *Sensors suitable for battery-powered systems (low current consumption up to 20 mA and first measurement within 2 sec from power on)*
- *RS485 output interface*
- *High IP67 protection*
- *Robust stainless steel sensor housing*
- *Adjustable cross in two perpendicular directions for vertical mounting of the sensor*
- *Alternatively, the sensors can be supplied with a radiation shield to reduce the effect of temperature changes on the accuracy of measurement (../RK)*

Basic description

Ultrasonic sensors of the US1200, US3200 and US4200 types are based on the principle of measuring the time delay between the transmitted and received reflected ultrasonic pulse. Because the speed of sound propagation is temperature dependent, an automatic temperature correction is also performed inside the sensor, which minimizes this measurement error.

The sensors are available in three ranges from 1 m (US1200) to 4 m (US4200). The so-called the dead band, which defines the unmeasurable range just below the sensor, is only 150 mm wide for the US1200 sensor.

The housing of the sensor is made of stainless steel and the ultrasonic sensor itself as well as the control and evaluation electronics are hermetically encapsulated inside the sensor. This mechanical design prevents water from penetrating the sensor body.

Economical operation for battery-powered stations

The supply voltage of the sensor is in the range of 10 to 26 VDC (type 12 VDC). The current consumption of the sensors does not exceed 20 mA and the sensors excel in a very short rise time - the first measurement is available within 2 seconds of connecting the supply voltage. YSX00 sensors are therefore very suitable for battery-powered systems, where low consumption and fast sensor start-up significantly saves battery capacity.

Application

The sensors are suitable for non-contact level measurement in open measuring channels and water-courses or for level and volume measurement in sumps and tanks. A modified version of the US4200/RK sensor is also suitable for measuring the height of snow cover.

If the functional or tabular dependence between the level height and the instantaneous flow is known (consumption equation), it is also possible to continuously calculate the instantaneous flow and the total flowed volume using the connected recording unit type Q2, H3, H7 or H2. Typical applications are flow meters at the outlet of wastewater treatment plants or limnographic stations on rivers.

Enviromonitoring
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Full range of products, demo access to the data server and complete price list on
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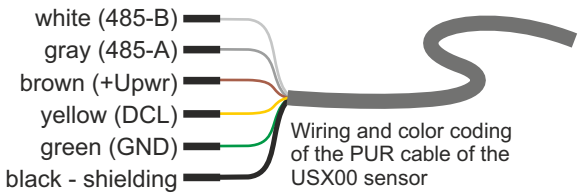
US1200, US3200, US4200

ULTRASONIC WATER LEVEL METER AND TEMPERATURE AIR SENSORS

Electrical connection

The sensor is supplied with a fixed PUR cable, which is used to power the sensor and to transfer the measured data from the sensor to the connected superior system via the RS485 bus under the Modbus RTU or FINET protocol. The standard length of the connecting cable is 3 m. When ordering the sensor, another required cable length can be specified.

The DCL (Digital Currrent Loop) signal is included in the cable due to the backward compatibility of these sensors with older types of recording units such as M4016 and M2001. In new installations, it is recommended to use the RS485 bus and insulate the DCL wire.



Wiring and color coding of the PUR cable of the USX00 sensor

Radiation shield

Sensors marked US1200/RK to US4200/RK are designed for accurate distance measurements in outdoor environments not protected from the radiant effects of sunlight. The sensor body is equipped with a robust plastic lamellar radiation cover, which reduces the measurement error caused by the different temperature of the sunlit sensor and the air temperature under the sensor. Sensors of this type are suitable, for example, for monitoring small rivers or snow depths.

DURK

Holder for ultrasonic sensor with radiation cover - assembly on the horizont. boom

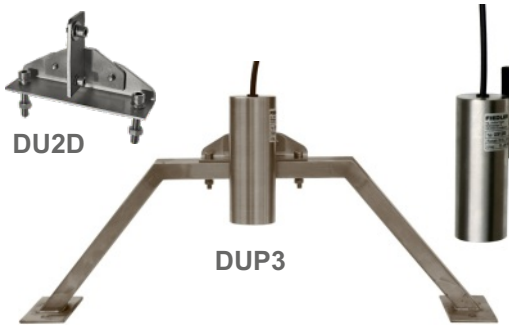
Holders for ultrasonic sensors

Each holder includes an adjustment mechanism, with the help of which the sensor can be mounted in the vertical direction so that the ultrasonic signal reflected from the measured level returns to the sensor (variability in two perpendicular directions).

Holders of the DUP1 to DUP9 type, which are sized for Parshall flumes P1 to P9, are intended for very frequent level (and consequently flow) measurements in the Parshall flumes.

The cantilever holders DU1-10 to DU1-100 are intended for measurements above the Thomson specific overflow or levels in sumps and tanks. The number after the dash expresses the length of the sensor extension from the wall in cm.

The DUK2 and DUK8-40 (-60, -100) holders are boom holders with a metal radiation cover, which protects the used ultrasonic sensor not only from radiant sunlight but also serves as mechanical protection of the sensor against vandalism.



DU2D

DUP3

DU1-20

DUK1 (vertical boom)
DUK2 (horizontal boom)

DUK8

Technical parameters

	US1200	US3200	US4200
Measuring range of sensor USX200 (/ RK):	0.15 m to 1 m	0.25 m to 3 m	0.30 m to 4 m
Measurement accuracy:	<0.2% of ± 1 mm range		
Resolution:	1 mm		
Data output:	RS485 - ModbusRTU or FINET protocol, DCL - 1200 Bd, 0/20 mA		
Communication address (default):	5		
Measuring channels:	K1 - Level [mm], K2 - Air temperature [°C]		
Supply voltage:	10 to 24 VDC (typically 12 VDC), Imax: 20 mA	Imax: 22 mA	Imax: 25 mA
Working temperature range:	-20 to +60 ° C		
Protection:	IP67		
Case material:	stainless steel		
Dimensions (diameter [mm] / height [mm]):	50/110	60/120	80/135
Weight (including 3 m PUR cable):	750 g	860 g	940 g

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