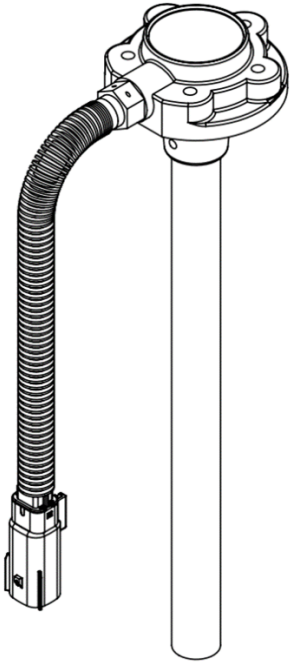


Aqua level sensor

(ALS)

DATASHEET

Serial number S

Date D

1 GENERAL INFORMATION

1.1 The sensor is designed to measure the level of liquids that are not aggressive to the materials of the product. Materials in contact with the measured liquid: aluminum alloys (AD-31, AMg6) polyacetal (PA-6).

1.2 The viscosity and wetting of the liquid must ensure free filling and flowing out of the gap (formed by diameters of 7 and 17 mm) between the measuring electrodes of the device.

1.3 The Sensor measures the level of a liquid in a tank and then transmits its readings to external devices via the RS-485 digital interface, analog output, frequency and periodic (impulse) outputs.

1.4 DO NOT USE LIQUIDS DURING OPERATION WHICH POSSIBLE CLOGGING OR SEDIMENTATION OF PARTICLES ON THE MEASURING SURFACES OF THE SENSOR.

1.5 IT IS NOT ALLOWED TO USE THE DEVICE FOR LIQUIDS, PRO-FREEZING DURING OPERATION.

1.6 DO NOT DISASSEMBLE THE SENSOR!

1.7 DO NOT USE THE SENSOR UNDER THE OPERATING CONDITIONS DIFFERENT FROM THE STATED IN THE PRESENT DATASHEET!

1.8 AVOID PHYSICAL DAMAGE TO THE SENSOR, ITS PARTS OR WIRES DURING THE INSTALLATION AND OPERATION.

1.9 DO NOT USE THE SENSOR TO MEASURE OIL DERIVATIVE PRODUCTS OR LUBRICATNS!

2 TECHNICAL CHARACTERISTICS

Name	Value / Measurement unit
Power supply voltage	9 ... 36 V
Power consumption, not more than	30 mA
Level indication output resistance	0 ... 110 Ohm (±10%)
Min measurable level of liquids (min level of liquids remaining in the tank)	10 ±2 %
Reduced measurement error in the effective range	not more than 1% UML
Digital outputs: - Communication interface - Data exchange protocol - Data exchange baud rate	 RS-485 LLS 19200 bps
Output data range: - digital data - frequency readings - analog readings - impulse readings	 0 ... 4095 units 300 ... 4395 Hz 0 ... 4.9 V 2 ... 1025 impulses
Ingress protection marking in accordance with ГОСТ (State Standard) 14254	IP 67
Electric shock resistance rating in accordance with ГОСТ (State Standard) 12.2.007.0	Class III
Operating conditions: - ambient temperature - min and max ambient temperature - ambient atmosphere pressure	 -45 ... + 50 °C - 60 ... +85 °C 84 ... 106,7 kPa
Dimensions, not more than	80x80x(L+21) mm, where L – length of the Sensor
Relative length of the Sensor	see the sticker (can be found in the Datasheet)
Weight, not more than	0,35 + 0,4xL, where L – length of the Sensor in meters

UML – upper limit of measurement

3 SCOPE OF DELIVERY

Name	Nmbr.	S/N	Notes:
Aqua level sensor	1		
Installation kit: Self-tapping screw 4.8 x 50 with rubber washer Self-tapping screw 5.5 x 51 with rubber washer Seal-tech plastic seal with unique number Sealing gasket MBS 001 Sealing wire Serialized seal Heat shrink cap	1 4 1 1 1 0,2m 1 2		
Extension cable	1		
Datasheet	1		
Packaging	1		

4 PRECAUTIONARY MEASURES

During the installation, operation and maintenance of the Sensor follow general safety instructions for electric devices and equipment.

5 SERVICE AND SHELF LIFE, WARRANTY

5.1 Guaranteed service and shelf life is 5 years after the Device is shipped to the customer.

5.2 Service life - 10 years.

5.3 The manufacturer guarantees that the Device meets all specifications and requirements if the user adheres to transportation, storage and operation requirements.

5.4 If any defect is found, contact the manufacturer.

5.5 The warranty does not cover defects caused by the customer's failure to meet the operation, storage and transportation requirements.

5.6 The manufacturer reserves the right to make changes to the Sensor's design and to the scope of delivery without prior notice to the customer.

6 DATE OF MANUFACTURE AND ACCEPTANCE CERTIFICATE

Aqua level sensor is manufactured in accordance with ТУ 4214-001-59320438-16 regulations and the current technical documentation and is declared to be ready for use.

7 PACKING CERTIFICATE

Aqua level sensor is packed in accordance with the current technical requirements and ruling documentation.

8 INSTALLATION CERTIFICATE

Aqua level sensor S/n _S_D is installed in accordance with the current technical documentation for the device:

Name	serial number / public number
/	/
signature Full name	day, month, year

Notes

9 MAINTENANCE NOTES

9.1 Primary verification

DATE	RESULTS	VERIFICATION OFFICER SIGNATURE	VERIFICATIO N OFFICER SEAL

9.2 Periodic check

DATE	RESULTS	VERIFICATION OFFICER SIGNATURE	VERIFICATION OFFICER SEAL

10 TRANSPORTATION AND STORAGE

The Device shall be transported in the original packaging in enclosed vehicles. Store in a dry place at a temperature of -20 to +30°C and humidity up to 75% with no conductive dust, aggressive substances and their vapors that cause corrosion of parts and destruction of electrical insulation of the Device.

11 DISPOSAL AND RECYCLING

11.1 The Device shall be disposed by the customer according to the regulations.

11.2 The Sensor does not contain any hazardous materials.

11.3 The Device does not contain precious metals in the amount to be accounted for.

12 INSTALLATION ON MACHINERY UNITS (see more details in the Technical description or User Manual)

12.1 The length of the Sensor is discussed when ordering the Sensor(s).

12.2 If necessary, the tubes can be cut with a hacksaw but avoid metal shavings getting inside the tubes. The min length to cut the Sensor must be not shorter than 150 mm. Sand the tubes' edges to smoothen them.

12.3 Put the thermal shrink cap (art. 4 Annex 8) from the installation kit on the central rod of the sensor. Press it with a screwdriver or other appropriate tool to prevent it from shifting then treat it with heat using a heat gun.

12.4 When mounting the Sensor on a tank, place the sealing gasket (art. 2) between the Device's flange (art. 1) and the tank's top surface (art. 3). If necessary, apply automotive neutral (non-acidic) oil-resistant sealer.

12.5 The Sensor can be fixed on a tank by means of self-tapping screws.

12.6 Set max and min level (calibrate the sensor at full and empty tubes) using a USB-RS485 interface converter and the TD500.EXE configuration tool.

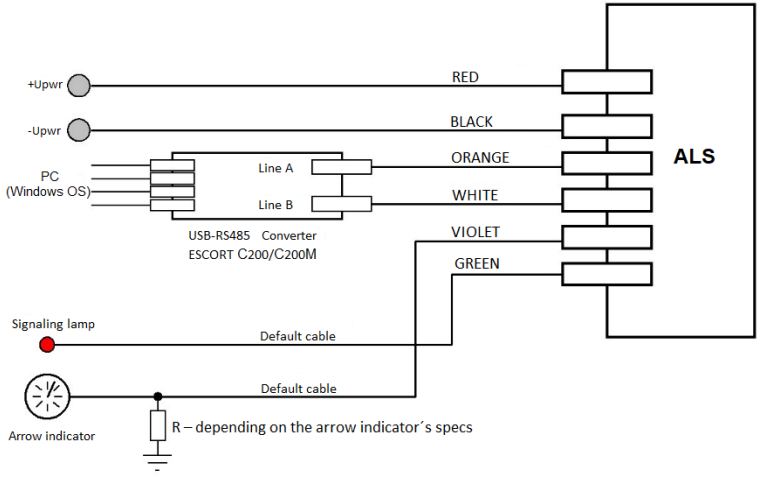
12.7 In case the Sensor's wires and the extension cable are not fitted with a corrugated hose or other means of additional insulation, be sure to provide them with such by covering them with a corrugated hose or any other means of insulation. Avoid placing the cables close to any sources of heat.

12.8 To connect a level indicator fitted with an arrow or a min level signaling lamp, use the default wires of the device you want to connect.

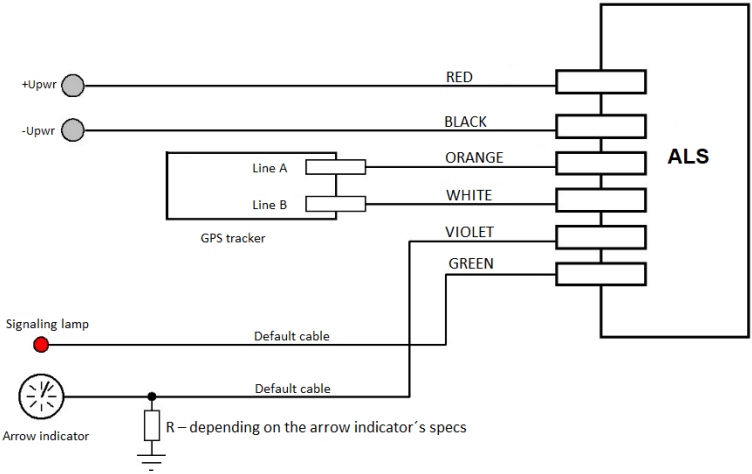
12.9 The min distance between the tubes of the Sensor and the tank's bottom must be not less than 5 mm. For more information about the Device see the Annexes.

ATTENTION! When calibrating the Sensor by submerging it in the liquid, be sure to submerge the Sensor´s tubes and the part with the drainage holes so that the liquid touches the lower edges of the Sensor´s head.

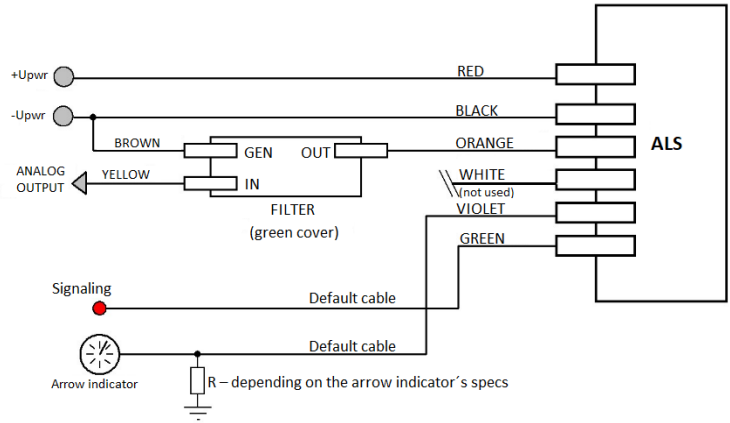
ANNEX 1. Wiring graph of the Sensor's connection to PC



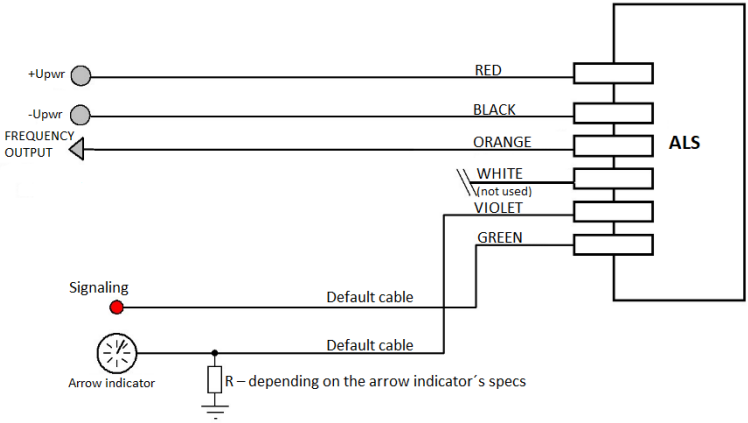
ANNEX 2. Wiring graph of the Sensor's connection via RS-485 interface



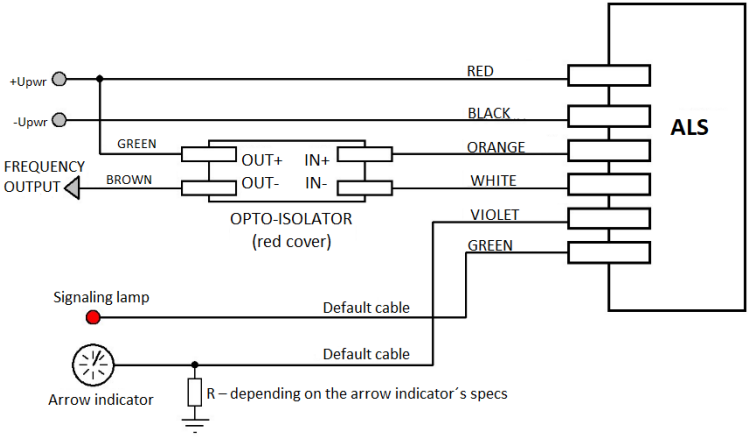
ANNEX 3. Wiring graph of the Sensor's connection via analog output



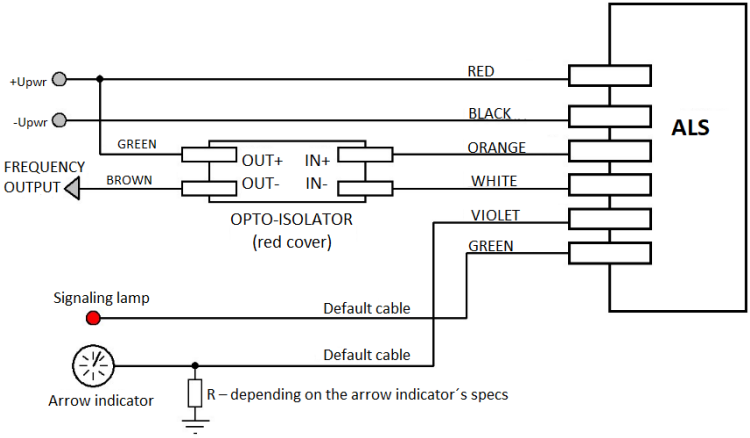
ANNEX 4. Wiring graph of the Sensor's connection via frequency output



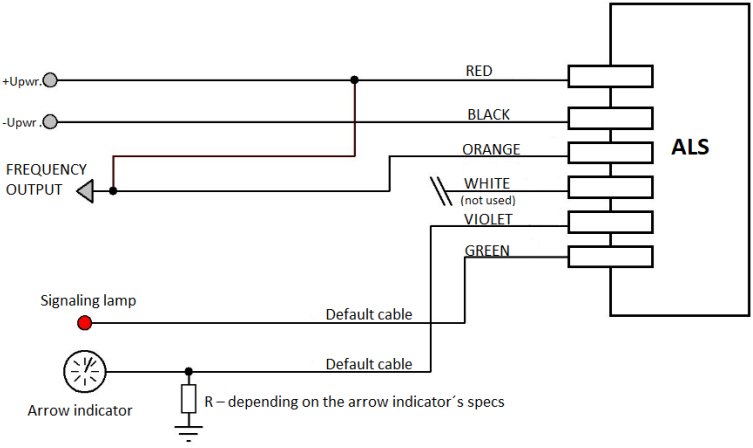
ANNEX 5. Wiring graph of the Sensor's connection via frequency output amplified by the power input



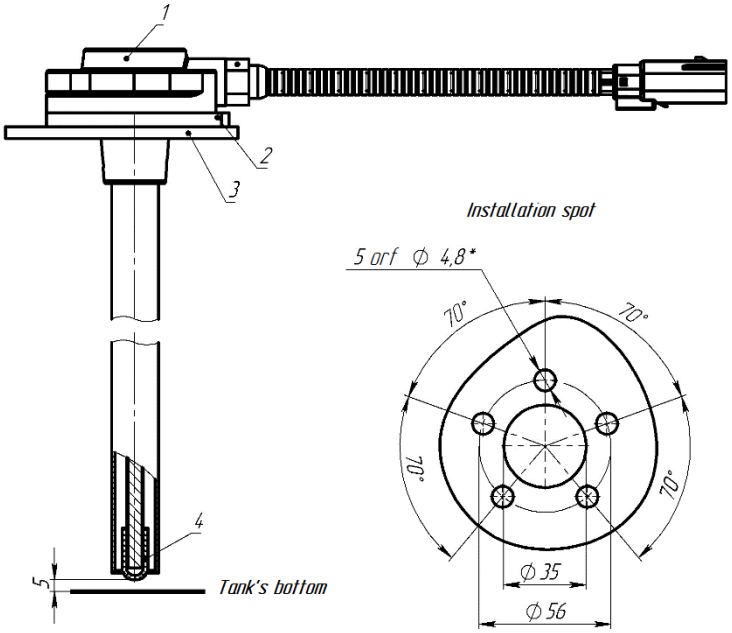
ANNEX 6. Wiring graph of the Sensor's connection via frequency output amplified by the GND



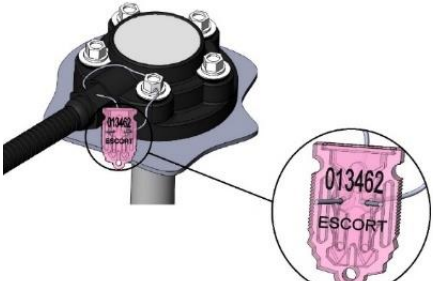
ANNEX 7. Wiring graph of the Sensor's connection via frequency output modified by the power input via resistance



ANNEX 8. Installing the Sensor on a tank with liquid.



ANNEX 9. Sealing the Device's head and the cable's connector.



For notes