

ORION ECHO

ECH0201
User Manual
Ver. 1.03

ENGLISH

TABLE OF CONTENTS	
1.0 Orion ECH 0201 Ultrasonic level transmitter	3
1.1 Ech_0201 Dc Error Checking Features	3
1.2 Applications	3
1.3 Technical Specifications	3
1.4. Ech_0201 Program installation	4
2.0 Mechanical assembly	4
3.0 Orion Echo 0201 Ultrasonic dimensions	6
4.0 Wiring scheme for usage	7
4.1 Wiring scheme for programming	7
5.0 On-device indicator leds	8
5.1 Program Settings	8
5.2 Comm	8
5.3. Adjustable Parametric Values	9
5.3.1. Type	9
5.3.2. Mps	9
5.3.3. Filter	9
5.3.4. Temp Off	9
5.3.5. Level Ref	10
5.3.6. Span Min	10
5.3.7. Span Max	10
5.4. Indicator belonging to instantaneous values	10
5.4.1 Distance	10
5.4.2 Level	10
5.4.3 Current	10
5.4.4 Temp	10
5.4.5. Official compatibility	10

1.0. ORION ECH 201 Ultrasonic level transmitter

- ECH_0201_DC type ultrasonic level transmitters; ultrasonic sensor, signal transducer, Level Controller are inside IP68 PP case which is programmed with computer interface.
- Transmitter is 15-30 VCD fed; it includes one digital input/ Data (senc-latch), one 4-20 mA output.
- Filter feature processes rotary echo by controlling and eliminates interferences.
- It can show the measured value as level or distance

1.1. ECH_0201_DC Error Checking Features:

Signal loss, energy loss, minimum and maximum level alarm turns on error led at the end of definable time; filter feature controls rotary echo and takes them into process and eliminates interferences. Number of filter, measuring distance, reference depth for level measuring, measuring frequency, a-20 mA scaling can be configured through configuration software and patch cord. If a signal is given to **Senc_latch** input that its sensor front is closed for tanks containing mixer; it saves the last value and keep the analog input constant and reactivates the output again after signal goes and it can be used in applications containing mixer arm scraper. When transducer with auxiliary more than one is to be attached to a single tank, senc-latch inputs are used by measuring permission and measuring is taken respectively and compared and measurement safety can be increased.

1.2.Applications

- Continuous level without contact in open and close tanks.
- Level measuring inside mixer
- Distance and movement control
- Hydraulic engineering, Water treatment and process technology
- Food industry
- Chemistry and drug industry

1.3. TECHNICAL SPECIFICATIONS

Feeding Voltage	: 24V DC +- %30 / 2W Max
Analog outlet	: 4-20mA isolated 2kv 14bit
Serial Com / Senc-Latch	: + 24VDC digital input with RS232 interface
Operation temperature	: -10 °C to +60 °C
Probe protection class	: IP68
Resolution	: 14Bit/4-20mA
Linearity	: better than 0,6%i
Measuring speed	: 50 pcs per second according to measuring distance (Maximum)
Operational pressure	: 3 Bar Maximum Max.
measuring	: 20cm (min),4m (max) (for water surface)
Sound conic angle	: 10 degree maximum
Sensor frequency	: 75 Khz
Compensation	: affect of change of ambient temperature on sound propagation speed

1.4.ECH_0201 Program and Installation

Windows Xp should become installed to the computer which is necessary for installation of the program; and one serial port or USB Serial Port converter should exist. Program uses USART communication. Program installation should be directly loaded in windows interface.

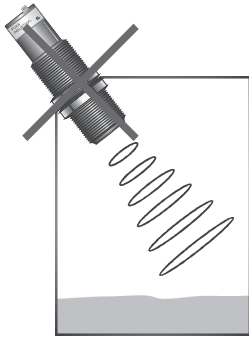
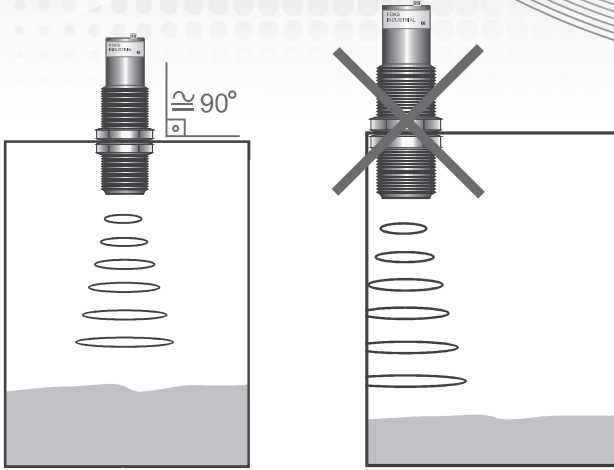
2.0. Mechanical assembly

Protection class is IP68. Measuring area should be empty and internal pressure should be more than +3 bar. Operation conditions are from -10°C to +60°C and up to 95% RH humidity. It is suitable for open reservoir, silo and tank etc. assembly at any height. It should be pay attention to make it perpendicular to measuring surface in order to realize a accurate measuring.



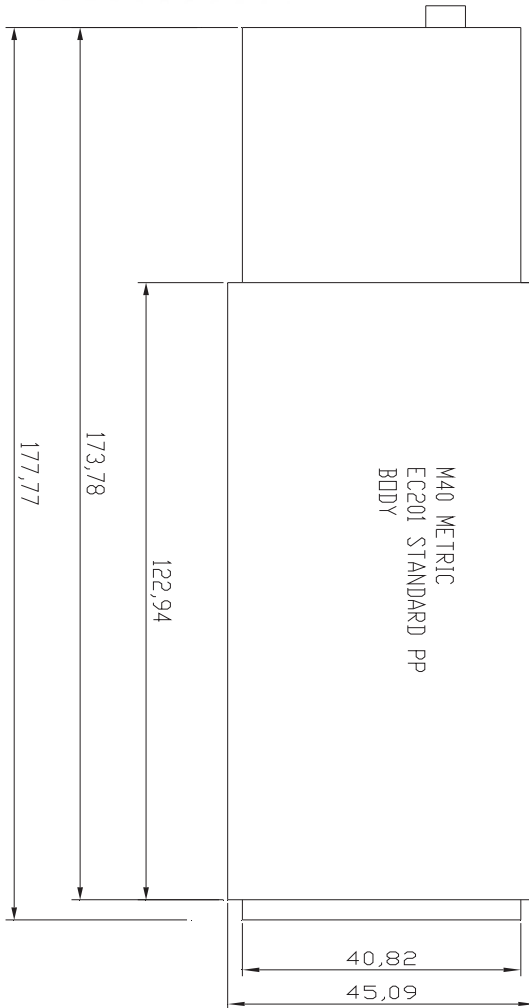
Calculation of minimum distance of the device to the side during its assembly is the value calculated by the flowing formula.

Minimum distance to the side = $\tan(12^\circ)$ *height

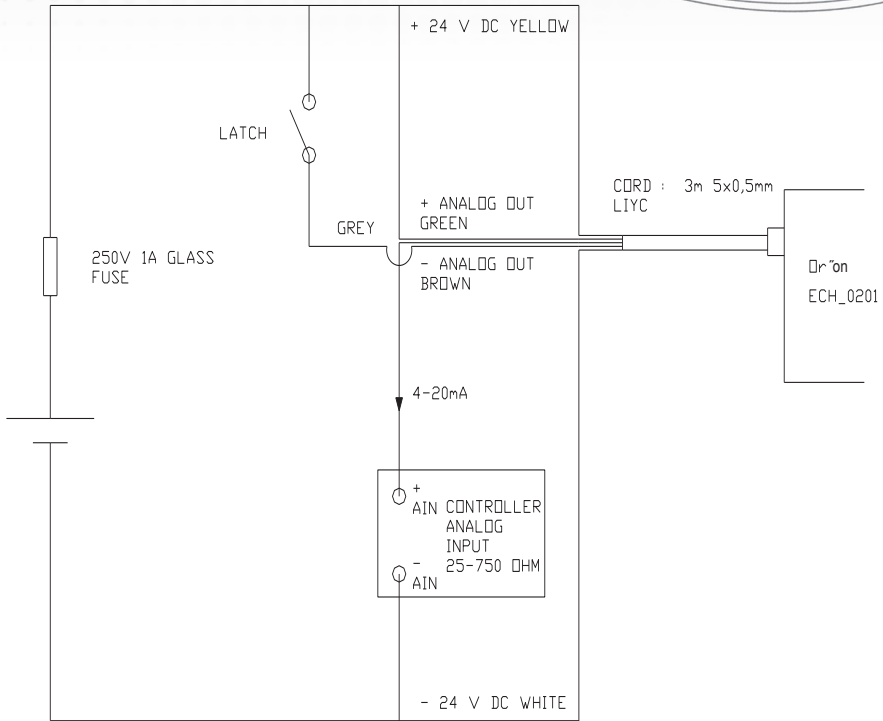


3.0. Orion Echo_0201 Ultrasonic dimensions

ENGLISH

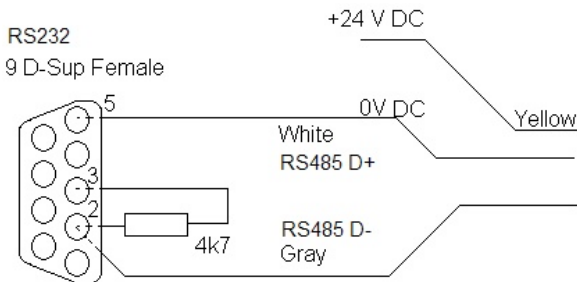


4.0. Wiring scheme for usage



ENGLISH

4.1. Wiring scheme for communication with RS232/485



5.0. On-device indicator leds

Red and **green** led existing on the device indicates the following meaning; green led indicates that sound wave is shown at that time and turning on situation of red led indicates error formation

5.1. Program Settings

When you run the program, the following interface forms after establishment of connection with ECH_0201. Program is separated into two different sections; firstly **Distance, Level, Current, Temp** parts existing on the top line are the nonprogrammable region showing instantaneous measured values by ECH_0201. Secondly, programmable parameters such as **Type, Mps, Filter, TempOff, Level Ref, Span min, Span Max** encounter us and ECH-0201 shows the predefined values.

The screenshot shows a software window titled "Ver:1.02" with the URL "www.foks-automation.com". The interface is divided into several sections:

- Values Section:** Contains input fields for "Distance" (181.4cm), "Level" (168.6cm), "Current" (11.83mA), and "Temp" (21.0C°).
- Configuration Section:** Includes a dropdown for "Type" (set to "Distance"), "Mps" (2), "Filter" (4), "TempOff" (0.0C°), "Level Ref" (350.0cm), "Span Min" (20.0cm), and "Span Max" (350.0cm).
- Device Information Section:** Shows "Device" details with "Softw Ver" (1.03) and "Harw Ver" (1.03).
- Communication Section:** Features a "Comm" dropdown (set to "Com3") and a radio button for "Echo" (currently unselected).

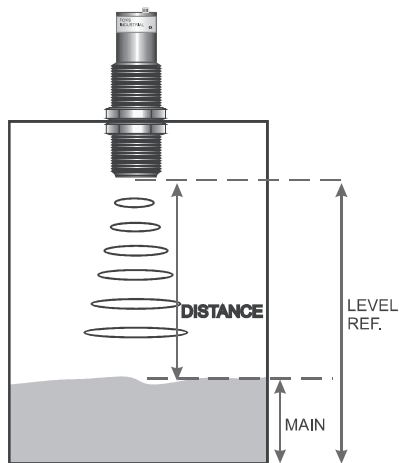
5.2. Comm

It enables indication of serial port and connection with ECH_0201 and then selection of the right port for performing the calibrations. When the selection is right, connection is automatically established with the device and values in relation with Softw Ver, Harw Ver on right top section are seen.

5.3.0. Adjustable Parametric Values

5.3.1. Type

These are parameters that can be selected as **Level** or **Distance**. If **Level** is selected, distance is extracted from value entered to Level Ref and then Level becomes calculated. Depending on selection of this parameter, output current is calculated according to the selected value.



5.3.2. Mps

It symbolizes the number of sound wave to be sent for measuring per second. Lower number should be entered for the places where the distance is far. Updating of current value at output becomes in shorter time when the number is high. Maximum enterable value is 34.

5.3.3. Filter

It is the parameter where stated average of how many values is to be taken.

Average of values added as a result of performed measurements is taken, thus a more accurate result is obtained. Maximum enterable value is 16.

5.3.4. Temp Off

It is used for the situations when sensor internal temperature value is not equal to outer ambience. It is the parameter place where you will enter offset value for compensation.

5.3.5. Level Ref

It is the enterable value after selection of **Level** from **Type** section. It is used to calculate of material level existing inside.

Enter level for which the measurement will be made. (For example, level of tank that is max full is 300 cm etc.)

Max and min level values should be taken into consideration when level to be measured is entered. (Max : 400cm- Min: 20cm)

5.3.6.. Span Min

Value for which **4mA** value belonging to current output desired to be seen is entered. It belongs to the parameter which is being selected depending on selection of **Level/Distance** in **Type** parameter

5.3.7. Span Max

Value for which **20mA** value belonging to current output desired to be seen is entered. It belongs to the parameter which is being selected depending on selection of **Level/Distance** in **Type** parameter

5.4.0. Indicator belonging to instantaneous values

These values do not contain enterable parameter. It shows just values measured and given to the output by the device at that moment.

5.4.1. Distance

It states distance from end of the device to the measured surface.

5.4.2. Level

As a result of selection as **Type Level**, it is the value calculated by extracting **Distance** from the value entered for **Level Ref.**

5.4.3. Current

It is instant output current value that is calculated depending on Span Min and Span Max value which has connection with **Level** or **Distance** selected from **Type** section. Span Min and Span Max interval is scaled, then it shows how much the desired current value is at output instantaneously.

5.4.4. Temp

It is the value of temperature measured instantaneously.

5.4.5. Official compatibility

CE compatibility

EN 61010-1

EMC EN 61326-A1