



## C-3110, C-3110.x.(Ex)

### Conductometer - concentration meter with a contact sensor



Conductivity meter is designed as a transmitter: a single channel monoblock or split measuring unit consisting of structurally combined an electronic unit and a sensor which is installing directly on a controlled facility: a pipeline or a tank.

The sensor is structurally connected to an electronic unit or can be placed at a distance of up to 5 m from the electronic unit (in split version).

It is designed for measurement and monitoring of specific electric conductivity (SEC), salts, alkalis and acids solutions.

Basing on known dependences between the SEC and the analyzed component concentration,

transmitters can be used as salinity meters and concentration meters (C-3110.K)

Application: heat power industry, chemical, petrochemical, pulp and paper, food processing, dairy, brewing and other industries. The analyzer can be used in the local Modbus (RTU, ASCII) network (option) or be connected to the measuring instrument by means of a current loop (option).

Analyzers C-3110.x.(Ex) (PT in the "I" enclosure) have an explosion protection type "flameproof enclosure" provided with a marking "1Ex d IIB T6 X".

#### BASIC TECHNICAL SPECIFICATIONS

Measuring range:

- C-3110.1	(0...1); (0...10); (0...100); (0..1000) µS/cm
- C-3110.2 (flow) <sup>1)</sup>	(0...1); (0...10); (0...100); (0..1000) mS/cm
- C-3110.K	(0...99) %; (0...230) g/l (see the order reference code)

Upper-range value for submersible sensors 100 mS/sm

Basic accuracy:

- for SEC analyzers (conductivities) in all the ranges	2,0 %
- for concentration analyzers (concentration meters), depending on the range	at least 5.0%

Operating temperature range:<sup>2)</sup> (5...95)°C

Reference temperature for termocompensation<sup>4)</sup> as in order

- default 25°C

Sensor material:

- by default	SS321L
- by ordering	titanium BT1-00, tantalum, SS316, SS904L

MI enclosure material aluminum alloy

Pressure of analyzed liquid, max 1,6 MPa

Sensors type flow or submersible

Flow range on analyzing liquid max 100 l/h

Linear velocity of liquid for submersible sensor max 0,5 m/sec

Water and dust protection IP65

Explosion protection (C-3110.Ex) 1ExdIIBT6 X

Climatic version: (-40..+50)°C

1) The upper limit of measurement for submersible sensors is 100 mS / cm.

2) The upper limit of the temperature of the liquid to be analyzed is determined depending on the specific medium.

3) The sensor of the conductometer C-3110 can be manufactured to a temperature of up to 120 ° C by special order; P <0,6MPa (execution of HT).

4) The reference temperature (° C) and the temperature coefficient (% per ° C) are set programmatically.

**Conductivity analyzers > Conductivity transmitters > C-3110**

Resistance to mechanical influences in accordance with GOST R 52931	V2
Weight with flowing sensor	max 1,3 kg
Indicator	LED, four-digit, seven-segment
Indicator color	green/ red
Output signals:	
-analogue	(0...5) or (4...20) mA (in accordance with the order)
-digital	interface RS-485 ModBus protocol
Transmitter connection	three or four-wire cable, wires cross-section — at least 0.35 mm <sup>2</sup>
Communication line length	max 800 m
Power supply	DC (12...36) V
Power consumption	max 3 VA

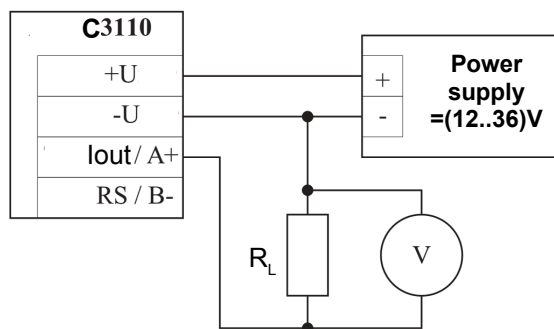
*The conductometer has a galvanic isolation between the input and output.*

*At the request of the consumer, the manufacturer specifies a specific measuring range. The user can reconfigure the conductometer to a different range within this model.*

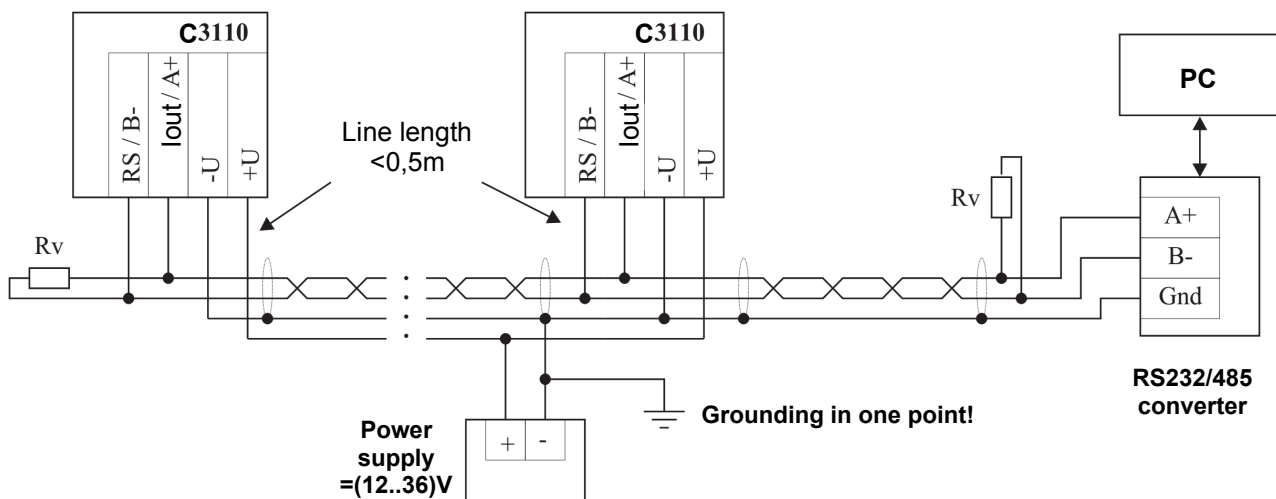
*At the request of the consumer, another measuring range can be set in the concentration meters in accordance with the normalized relationship between the SEC and the concentration of the analyte in the solution.*

*At the request of the consumer in concentration meters, indication can be set in percent or grams per liter in accordance with the normalized relationship between the SEC and the concentration of the analyte in the solution.*

**EXTERNAL WIRING**

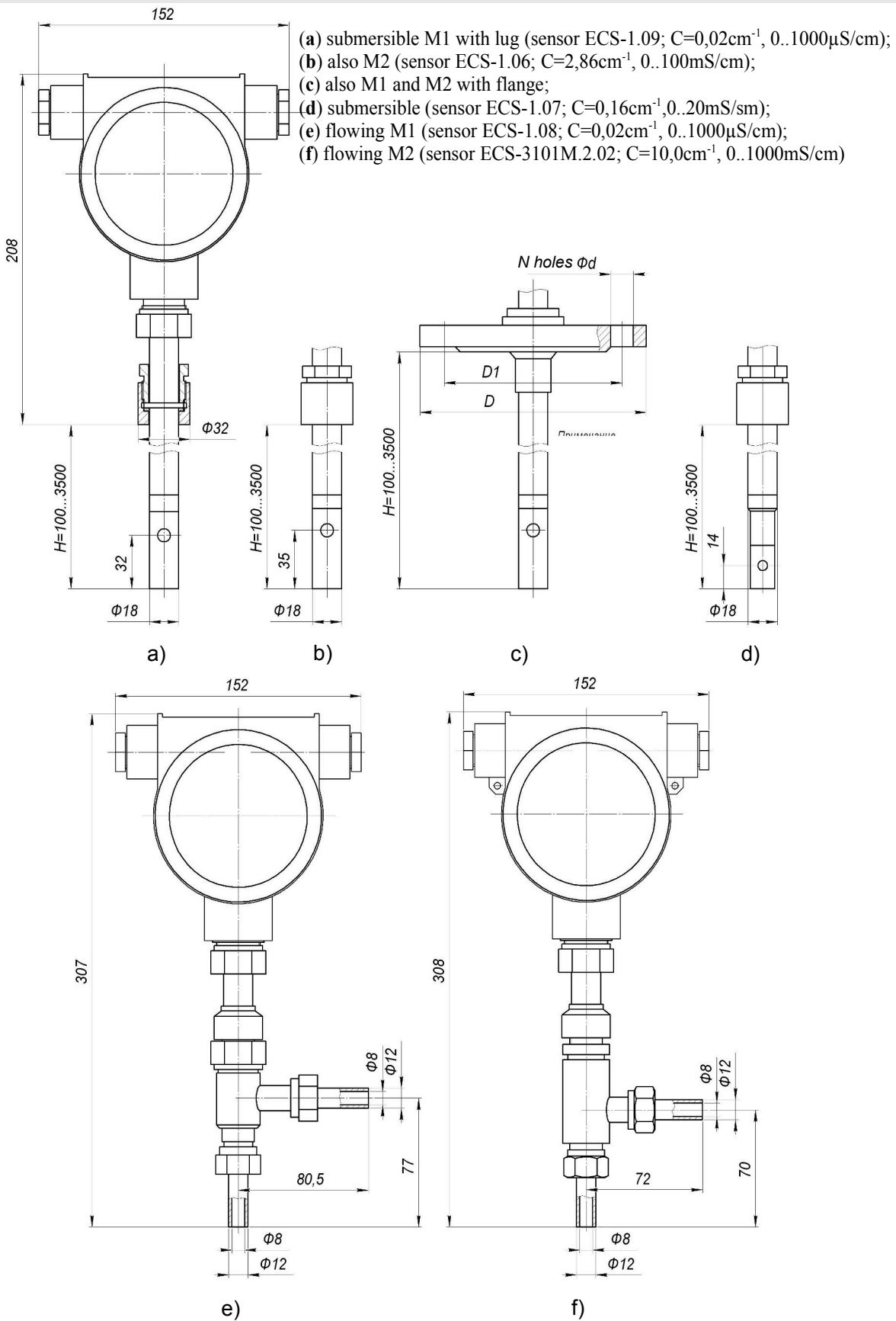


**Figure 1. Scheme of external connections of conductometers with current output**



**Figure 2. Conductometers connection into the Modbus network**

**ENCLOSURE DIMENSIONS**



**Figure 3. Overall and mounting dimensions of the conductometers**

**ORDER REFERENCE CODE:**

<b>C-3110.</b>	<b>x.</b>	<b>x.</b>	<b>x.</b>	<b>x.</b>	<b>x</b>	<p><b>-x</b></p> <p><b>Explosion protection:</b></p> <p><b>00</b> without explosion protection</p> <p><b>Ex</b> Type of protection "flameproof enclosure" - 1ExdIIBT6X</p> <hr/> <p><b>Color of the indicator:</b></p> <p><b>G</b> Green</p> <p><b>R</b> Red</p> <hr/> <p><b>Output Type:</b></p> <p><b>A</b> Analog output (0 ... 5) mA, (0 ... 20) mA or (4 ... 20) mA</p> <p><b>RS</b> Digital interface RS-485</p> <hr/> <p><b>Type of sensor and length of the submersible sensor:</b></p> <p><b>sXXX</b> Submersible sensor. XXX: Length of the submerged part, mm</p> <p><b>F</b> Flow sensor</p> <hr/> <p><b>Housing material of the electronic unit of the transmitter:</b></p> <p><b>I</b> Explosion proof aluminum alloy housing</p> <p><b>T</b> Titanium housing</p> <p><b>S</b> Stainless steel housing</p> <hr/> <p><b>Measuring ranges:</b></p> <p><b>1</b> (0...1); (0...10); (0...100); (0...1000) <math>\mu</math>S/cm</p> <p><b>2</b> (0...1); (0...10); (0...100); (0...1000) mS/cm</p> <p><b>K</b> H<sub>2</sub>SO<sub>4</sub>: (0...25) %; (95...100) %; HCl: (0...17) %, (23...50) % HNO<sub>3</sub>: (0...20) %, (35...70) %; Na<sub>2</sub>CO<sub>3</sub> (0...5) %; CH<sub>3</sub>COOH (0...7) % HF (1...30) %; NH<sub>4</sub>NO<sub>3</sub> (0...10) %; CaCl<sub>2</sub> (0...10) %; NaOH: (0...10) %; (20...40) %; KOH: (0...20) %; NaCl: (0...20) %; (0...230) g/l; NH<sub>4</sub>NO<sub>3</sub>: (0...100) g/l; Na<sub>2</sub>CO<sub>3</sub>: (0...5) %.</p> <p>For the submersible sensor, the measuring range shall be specified when ordering</p>
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**Example of decoding an order:**

"**C-3110.1.I.F.A.R-00** - the conductometer C-3110.1 (measuring ranges 0 ... 1; 0 ... 10; 0 ... 100; 0..1000  $\mu$ S / cm), the housing Electronic unit of the primary converter is made of aluminum alloy with powder coating, sensor type - flowing, analog output (4 ... 20) mA, the color of the indicator is red, without explosion protection".

**When ordering, in addition to the order code, write, please a specific measuring range and reference temperature**