



C-3101M.x. (Ex) Conductometer — concentration meter with contact or proximity inductive sensor



The analyzer is a single channel measuring device which consists of a primary transducer (PT) and a measuring instrument (MI).

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

Following the well known dependences between the SEC and the analyzed component concentration, conductometer may be used as salinity meter and concentration meter.

PM of conductometer can be equipped with a contact or proximity inductive sensor. Overall dimensions of the PT with inductive sensors are specified in the C-3130 analyzers description.

Application: heat power industry, chemical, petrochemical, pulp and paper, food processing, dairy, brewing and other industries.

In the dairy and brewing industry, it can be used as an indicator of phase separation: water - milk, water - washing solution, etc.

In the power industry it is used complete with the hydraulic panel with a cation exchange filter to provide control of highly demineralized water SEC.

Additional functions:

- manual or automatic selection of one of four measuring ranges (for C-3101M.1, C-3101M.2);
- selection of a temperature compensation mode: enabled, disabled, mode of ultra-pure water thermal compensation;
- bilinear function by the output signal;
- simplified calibration with one solution;
- linear approximation of output specification (for C-3101M.K) in case the solution concentration has a non-linear dependence of SEC.

C-3101M(Ex) analyzers (PT in the "I" enclosure) are of "X-proof enclosure" explosion protection type, provided with a marking "1Ex d IIB T6 X".

Execution with the index "E" meets the increased requirements for resistance to electromagnetic interference.

BASIC TECHNICAL SPECIFICATIONS

PRIMARY TRANSDUCER

Measuring range:

- C-3101M.1 (0..0,5); (0..1); (0..10); (0..100); (0..1000) μ S/cm
- C-3101M.2¹⁾ (0..1); (0..10); (0..100); (0..1000) mS/cm
- C-3101M.K²⁾ (0..99) %; (0..230) g/l (see order code)

Basic accuracy:

- for SEC conductometers
in all the ranges 2,0 % (Typical value 0,5 %)
- for concentration meters,
depending on the range max 5,0 % (is specified when ordering)

Operating temperature ³⁾

- contact sensor (5...95)°C
- inductive sensors SI 315 (5...80) °C
- inductive sensors ES-1-A (5...105) °C
- inductive sensors AST-37HT (5...150) °C

Reference temperature for termocompensation ⁴⁾.....

in accordance with the order

Temperature range of termocompensation relative reference temperature $\pm 15^\circ\text{C}$

Material of contact sensor

- default SS321
- by order SS904, SS316L, titanium BT1-00, tantalum

Material of inductive sensor

SI 315 - PVDF; ES-1-A - PP; AST-37HT - PEEK

Material of PT housing:

- type D (only for contact sensor) Aluminum alloy with polymer coating
- type I (with indication) Aluminum alloy with polymer coating, glass
- type T Titanium housing
- type S SS321

Operating Pressure for the contact sensor, max MPa

1,6

- for the inductive sensor, max MPa SI 315: **0,3**; ES-1-A: **0,6**; AST-37HT: **0,7**

Sensor type

flowing, submersible

Flow rate of the liquid for a flowing sensor

max 100 l/h

Linear velocity of liquid for submersible sensor

max 0,5 m/sec

Resistance to electromagnetic influence

IV according to GOST 32137 (Rus), criterion A

Degree of protection against water and dust according to GOST 14254

IP65

Conductivity analyzers > With active primary transducers (sensors) > C-3101M

Climatic version of PT: (-40..50)°C
 Resistance to mechanical influences in accordance with GOST R 52931 (Rus)..... V2
 Weight with flowing sensor max 1,3 kg
 1) upper measuring limit for submersible contact sensors 100 mS / cm
 2) the upper limit of the temperature of the analyzed liquid to be is determined depending on the medium.
 3) the sensor of the analyzer ECS-1.08 can be manufactured to a temperature of up to 120 ° C (HT version) by special order.
 4) reference temperature (° C) and the temperature coefficient (% per ° C) are set programmatically.

MEASURING INSTRUMENT

Indicator LED, four-digit, seven-segment
 Indicator color green or red
 Alarm of the measured parameter 2 points
 (programmable values and operation hysteresis)
 Output signals :
 -analog (0...5) or (4...20) mA (according to order)
 -two discrete switching dry contact, ~240V, 3V
 Communication line between PT and MI three-wire, at least 0.35 mm2
 Communication line length max 1000 m
 Power supply ~ 220 V, 50 Hz
 Power consumption (with an "E" index) max 7 (15) VA
 Climatic version T=(+5..+50)°C
 Enclosure material aluminum alloy
 Resistance to mechanical influences in accordance with GOST R 52931 (Rus)..... N2
 Weight max 0,6 kg

At the request of the customer, C-3101M can be equipped with a hydropanel with a cation-exchange H-filter.

The measuring instrument has a galvanic isolation between the input and the 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 measurement range can be set in the concentration meters intended for measuring the concentration 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 the 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

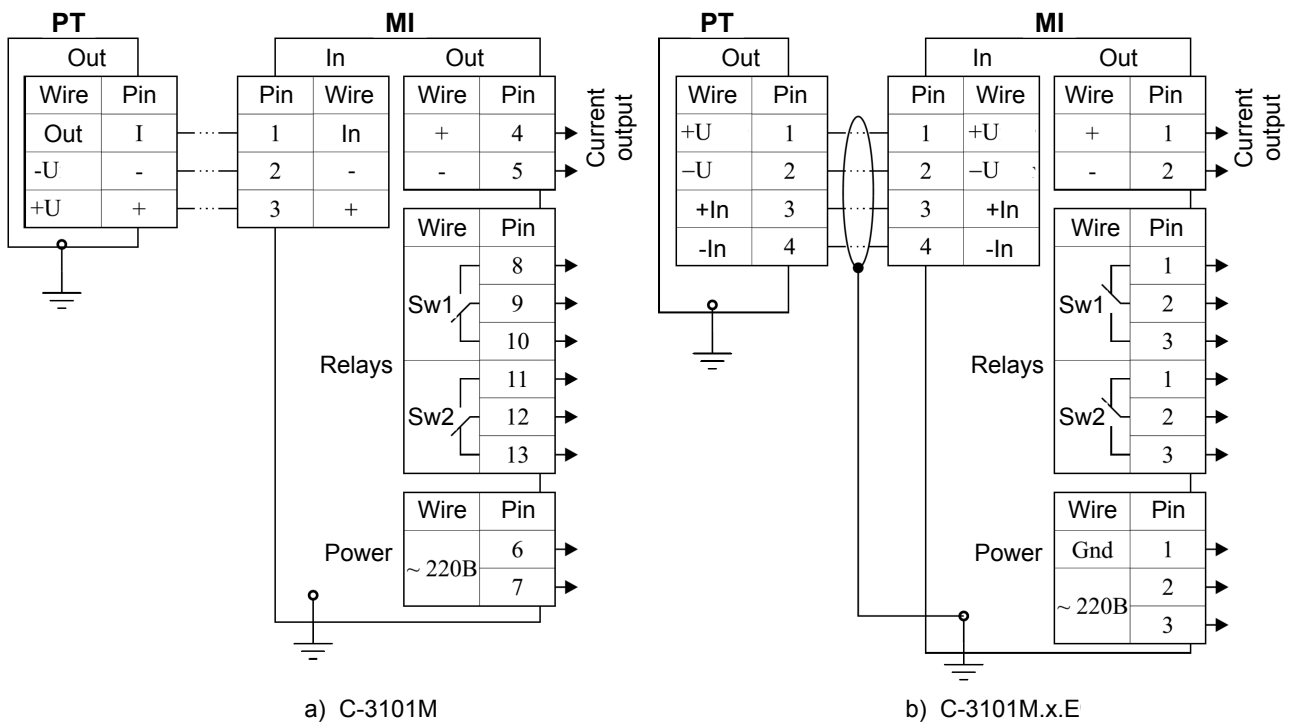


Figure 1. Connecting the primary transducer to the measuring instrument

OVERALL AND MOUNTING DIMENSIONS

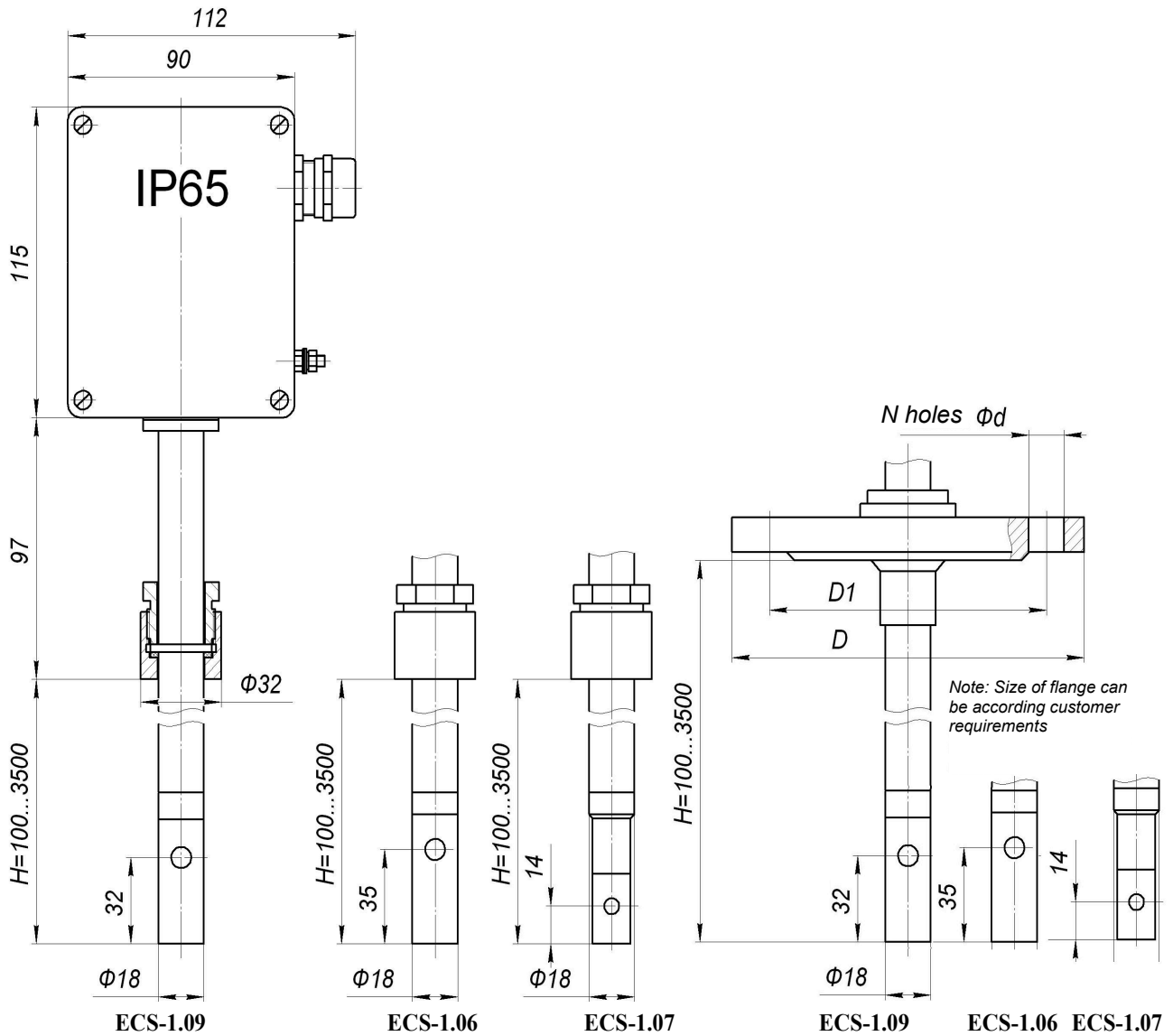


Figure 2. Overall and mounting dimensions of the submersible primary transducers of the (shown with the housing type "D", but may be with cases "N" and "I").

- with a lug

type M1 - sensor ECS-1.09 /C=0,02cm⁻¹,0..1000μS/cm;

type M2 — sensors: ECS-1.06 /C=2,86cm⁻¹, 0..100mS/cm; ECS-1.07/ C=0,16cm⁻¹, 0..20mS/sm;

- with flange

type M1 - sensor ECS-1.09 /C=0,02cm⁻¹,0..1000μS/cm;

type M2 — sensors: ECS-1.06 /C=2,86cm⁻¹, 0..100mS/cm; ECS-1.07/ C=0,16cm⁻¹, 0..20mS/cm.

Note: Flange dimensions according to GOST 12815-80 in accordance with the requirements of the Customer

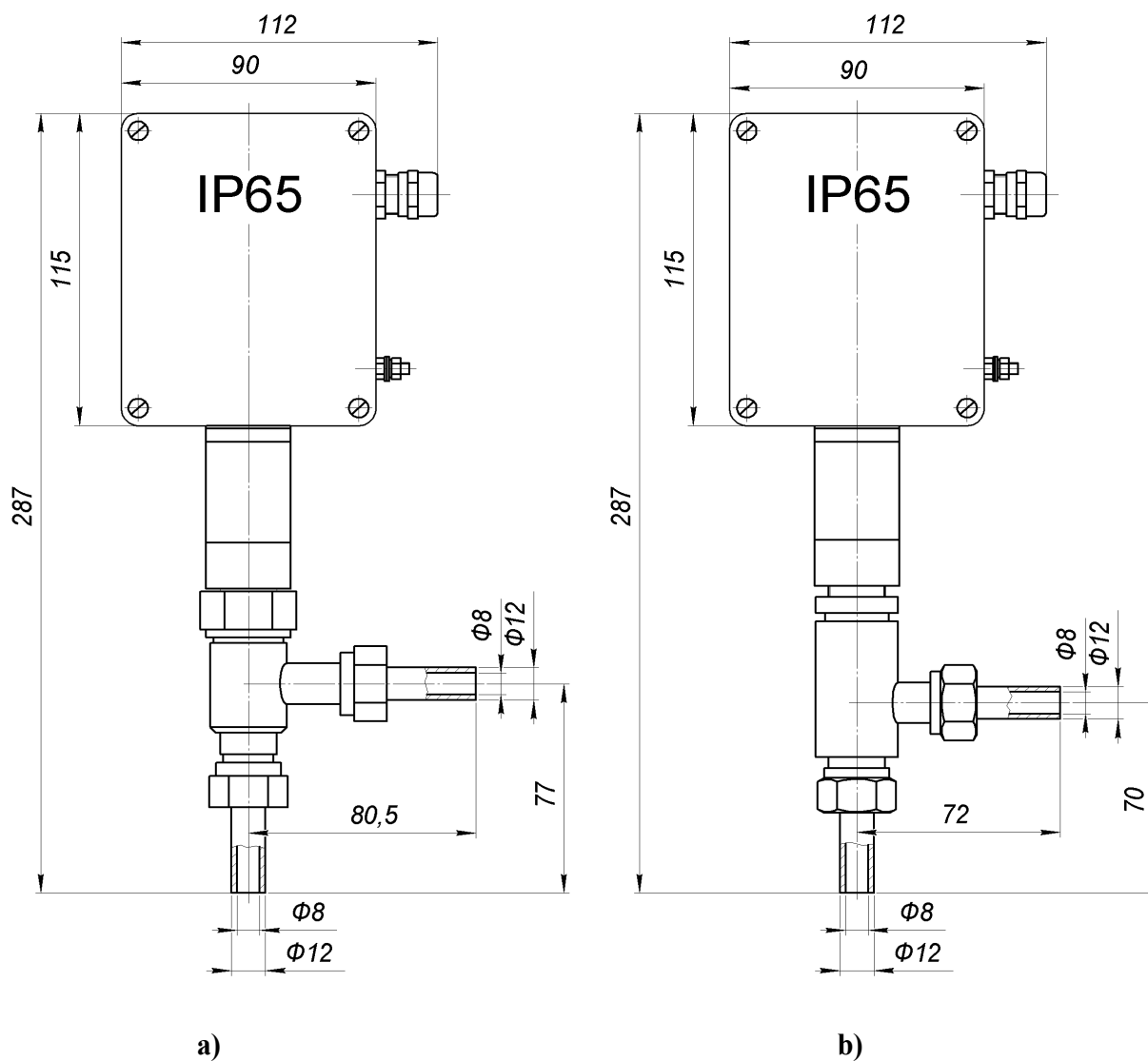


Figure 3. Overall and mounting dimensions of primary transducers
(a) flowing M1 (sensor ECS-1.08; $C=0,02\text{cm}^{-1}$, 0..1000 $\mu\text{S/cm}$);
(b) flowing M2 (sensor ECS-3101M.2.02; $C=10,0\text{ cm}^{-1}$, 0..1000 mS/cm)

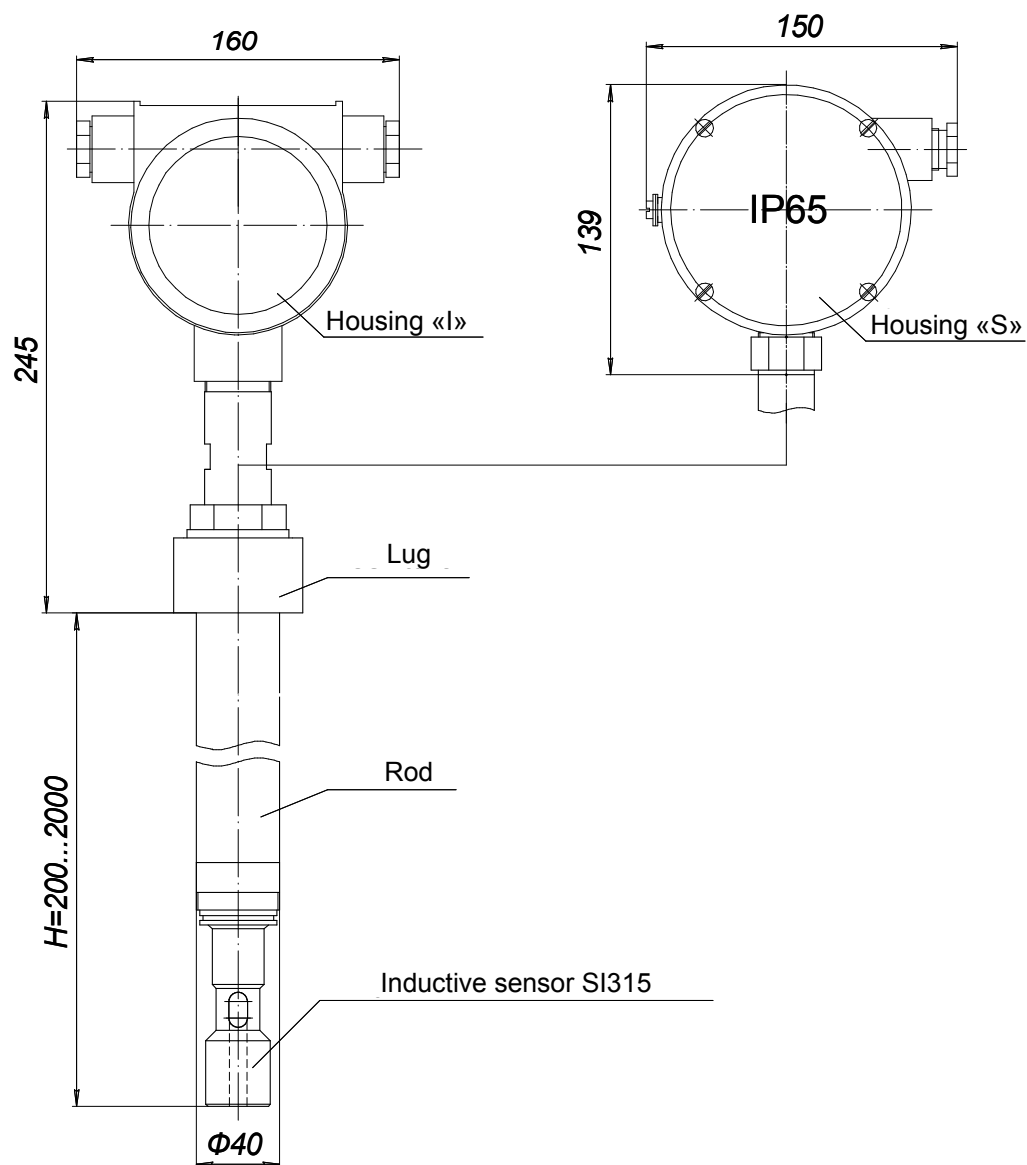


Figure 4. Overall and mounting dimensions of the primary transducer with inductive sensor SI-315
For other variants of holders see the chapter "Holders for sensors"

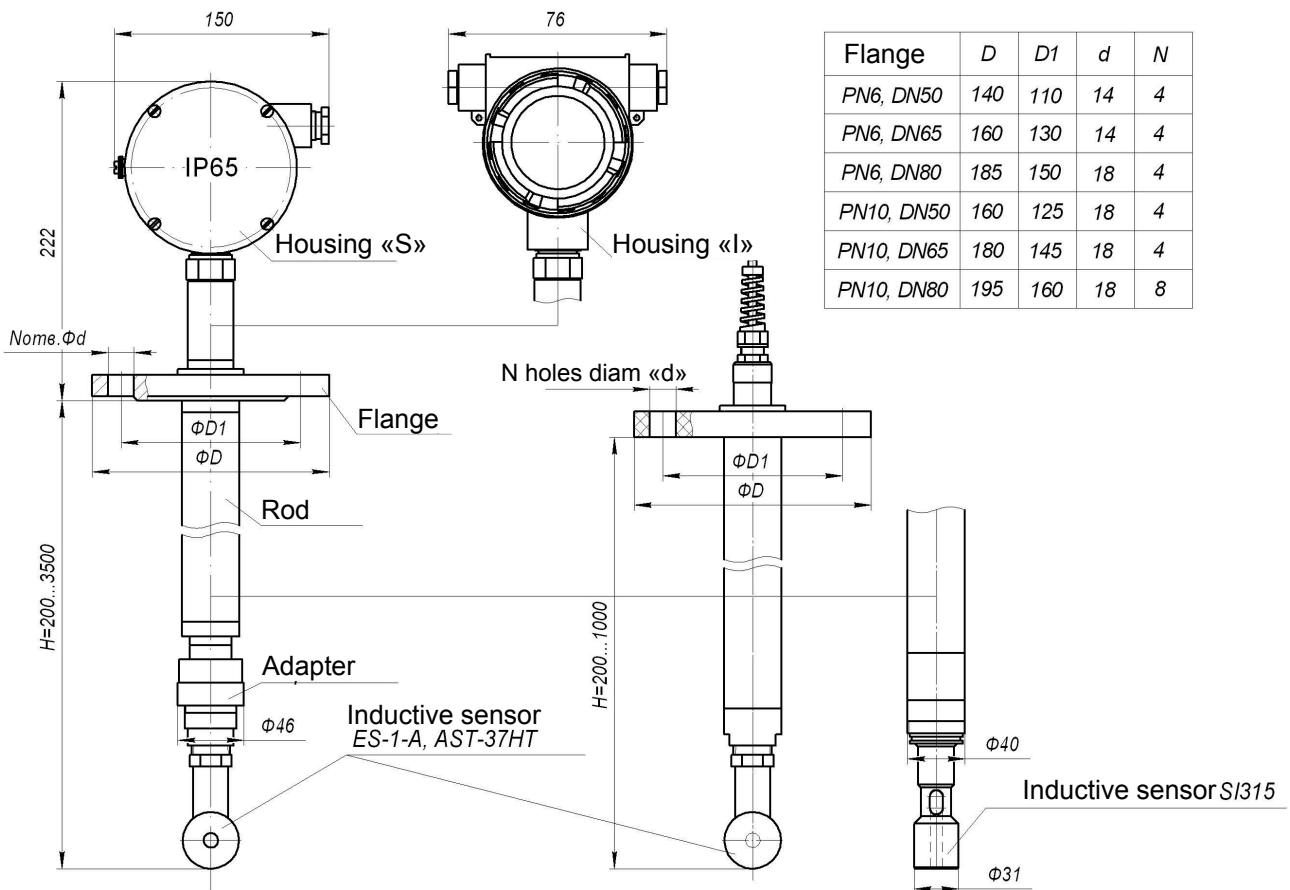


Figure 5. Overall and mounting dimensions of the primary transducer with inductive sensor ES-1-A, AST-37HT
 For other variants of holders see the chapter "Holders for sensors"

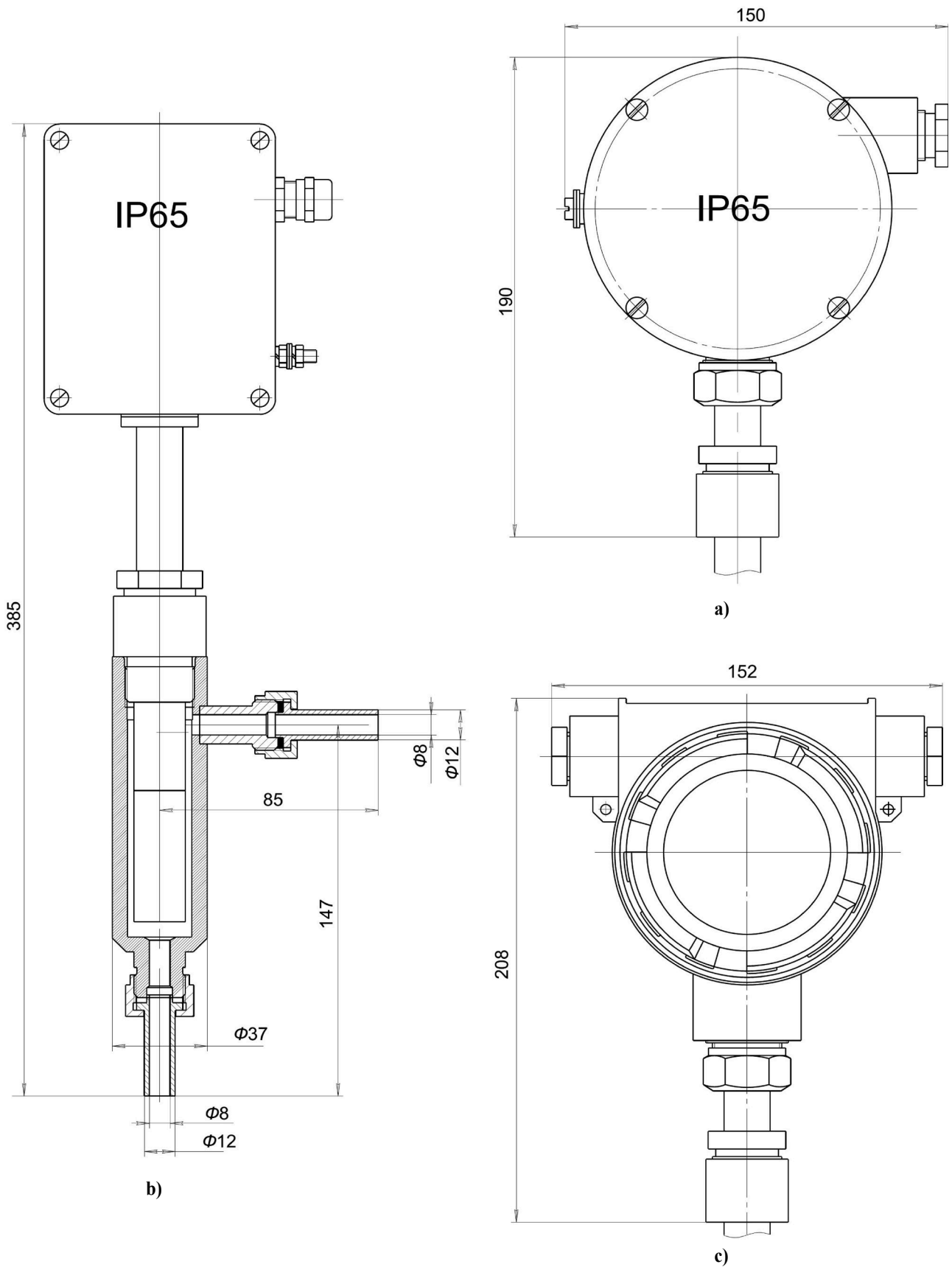


Figure 6. Overall and mounting dimensions

(a) of the primary transducers with housing type "S";

(b) of the submersible primary transducers M1, M2 in flowing cell;

(c) with housing of electronic unit type "I"

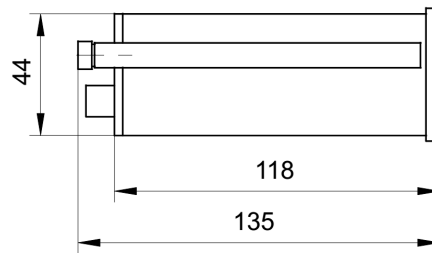
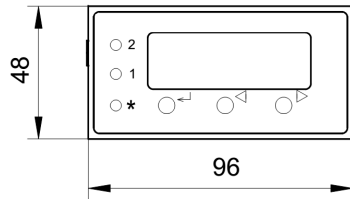


Figure 7. Measuring instrument C-3101M.

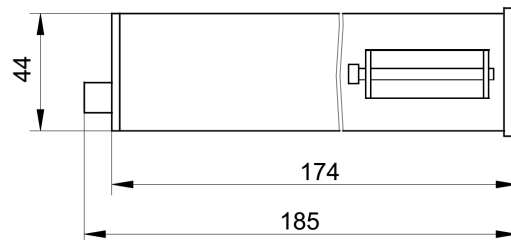
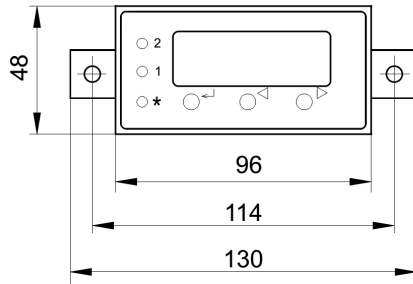


Figure 8. Measuring instrument C-3101M.E

ACCESSORIES

Holders used with C-3101M.E see the chapter Holders for sensors

Proximity inductive sensors: ES-1-A, SI 315, AST-37HT

ORDER CODE

C-3101M.	x.	E.	x.	x.	x	-x	
<p>The presence of explosion protection (only for PT in the housing "I")</p> <p>00 Without explosion protection</p> <p>Ex With type of protection "flameproof enclosure"</p> <p>Sensor type</p> <p>Ind inductive</p> <p>C contact</p> <p>Type of sensor and length of the submersible sensor:</p> <p>sXXX Submersible sensor. XXX: Length of the submerged part, mm</p> <p>F Flow sensor</p> <p>Housing material of the electronic unit of the transmitter:</p> <p>S Stainless steel housing</p> <p>D Duralumin with a powder coating</p> <p>T Titanium housing</p> <p>I Explosion proof aluminum alloy housing with indication</p> <p>Increased resistance to electric influence</p> <p>E Needed</p> <p>N Not needed</p> <p>Measuring ranges:</p> <p>1 (0..1); (0..10); (0..100); (0..1000) μS/cm</p> <p>2 (0..1); (0..10); (0..100); (0..1000) mS/cm</p> <p>K H₂SO₄: (0..25) %; (95..100) %; HCl: (0..17) %; (23..50) % HNO₃: (0..20) %; (35..70) %; Na₂CO₃ (0..5) %; CH₃COOH (0..7) % HF (1..30) %; NH₄NO₃ (0..10) %; CaCl₂ (0..10) %; NaOH: (0..10) %; (20..40) %; KOH: (0..20) %; NaCl: (0..20) %; (0..230) g/l; NH₄NO₃: (0..100) g/l; Na₂CO₃: (0..5) %.</p> <p>For the submersible sensor, the measuring range shall be specified when ordering</p>							

Example of decoding an order:

"C-3101M.1.N.D.F.C-00 - conductometer C-3101M.1, measurement ranges 0..1; 0..10; 0..100; 0..1000 μ S / cm, without increased e/m protection, the housing of the electronic unit of the primary transducer is duralumin with a powder coating, the sensor type is flowing (Figure 3), contact, without explosion protection".

"C-3101M.1.N.D.s100.C-00 - conductometer C-3101M.1, measurement ranges 0..1; 0..10; 0..100; 0..1000 μ S / cm, without increased e/m protection, the housing of the electronic unit of the primary transducer is duralumin with a powder coating, the sensor type is submersible (submersible part 100mm), contact (Figure 2 with lug), without explosion protection".

When ordering, in addition to the order code, write, please a specific measuring range, reference temperature, analog output parameters, color of the indicator, and Figure number.