

CPC-C-36



- capacitive level meters
- for continuous level measurement of liquid or bulk-solid materials
- direct mounting into containers, silos, vessels, basins, reservoirs, etc.
- current (4...20 mA) or voltage (0...10 V) output
- possibility of linear measurements even in non-conductive and differently shaped vessels
- variants with rope electrode or with coated electrode for aggressive or electrically conductive media
- high temperature performance

Capacitive level meters **CPC-C-36** are designed for continuous level measurement of liquids, powders and bulk-solid materials in vessels, tanks, sumps, containers, silos, etc. Are resistant to any changes in the atmosphere above the surface (vacuum, pressure, vapours, dust). **CPC-C-36** consists of the stainless steel housing with electronic module and the measuring electrode. The electronic part converts the capacity into the current signal (4 ... 20 mA) or voltage signal (0 ... 10 V). Sensitivity (SPAN) and initial capacity compensation (ZERO) can be fluently set.

Level meters are produced in the following performances:

N: normal,

NT: high temperature.

CPC-C-36 are offered in variants with various types of process connection (thread, Tri-clamp).

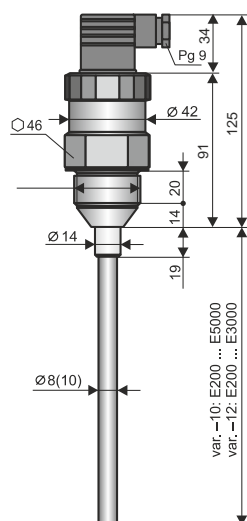
VARIANTS OF LEVEL METERS

- CPC-C-36_-10** **Non-insulated rod electrode**, for measuring the level of electrically non-conductive liquids (oil, diesel, gasoline) and bulk solid materials (flour, sand, cement, plastic granules, etc.). Electrode length from 0.2 m to 5 m (for materials with low permittivity $\epsilon_r < 10$, the minimum electrode length is 0.5 m).
- CPC-C-36_-11** **Insulated rod electrode (PFA)**, suitable for measuring the level of water and other electrically conductive liquids. Also suitable for contaminated liquids in metal tanks, concrete pits, etc. Electrode length from 0.2 m to 3 m.
- CPC-C-36_-12** **Insulated rod electrode (FEP)**, suitable for measuring the level of water and other electrically conductive liquids. Also suitable for contaminated liquids in metal tanks, concrete pits, etc. Electrode length from 0.2 m to 3 m.
- CPC-C-36_-20** **Non-insulated rod electrode with reference tube**, to measure the level of unpolluted and electrically non-conductive liquids (oil, diesel, gasoline). Electrode length from 0.2 m to 3 m.
- CPC-C-36_-22** **Insulated rod electrode with reference tube**, for measuring the level of clean electrically conductive liquids (e.g. in plastic and glass tanks) and for greater demands on measurement accuracy. Electrode insulation made of FEP material. Electrode length from 0.2 m to 3 m.
- CPC-C-36_-30** **Non-insulated stainless steel rope electrode and weights**, for measuring the level of loose materials (sand, flour, cement, etc.) Possibility of shortening the rope. Electrode length from 1 m to 20 m.
- CPC-C-36_-31** **Non-insulated stainless steel rope electrode and insulated dynamic anchorage**, to measure the level of bulk materials in higher silos. Electrode length from 1 m to 20 m.
- CPC-C-36_-32** **Insulated rope electrode (FEP) with insulated weight (FEP)**, designed to measure the level of electrically conductive and non-conductive liquids. Electrode length from 1 m to 15 m.

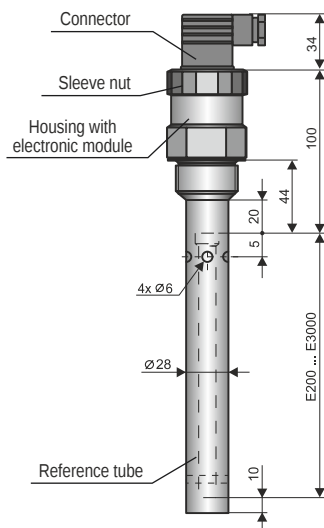


DIMENSION DRAWINGS

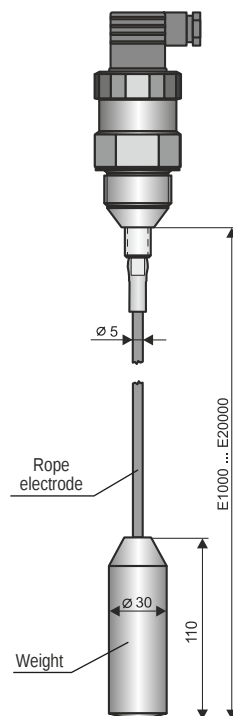
CPC-C-36 _10, 11, 12



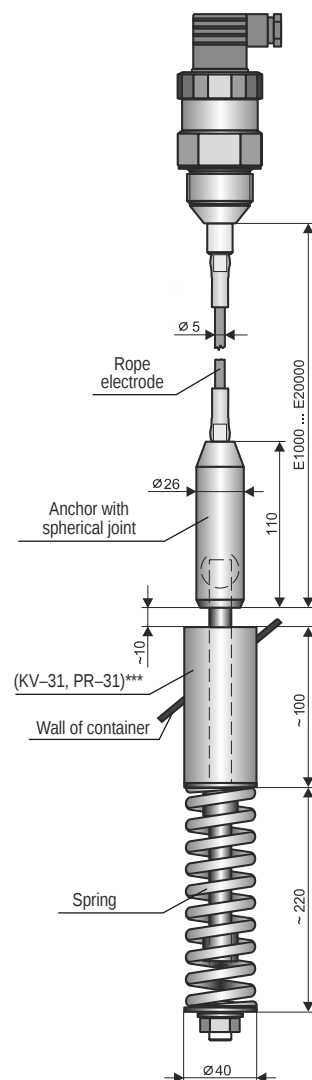
CPC-C-36 _20, 22



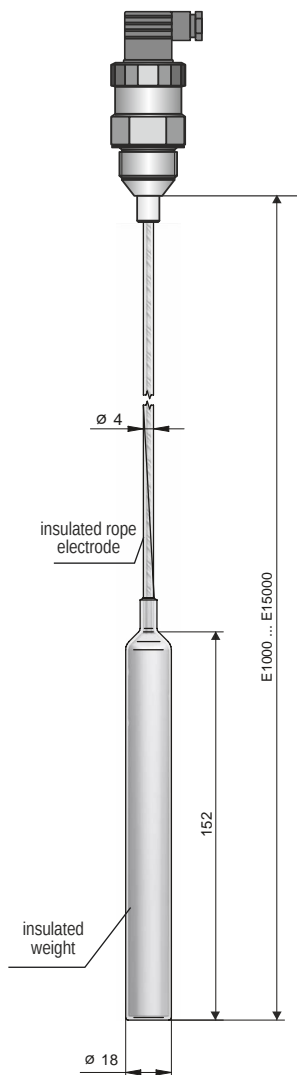
CPC-C-36 _30



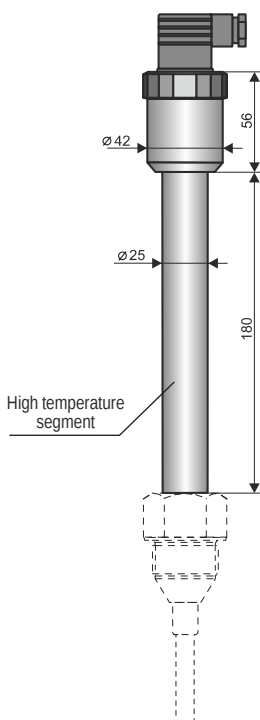
CPC-C-36 _31



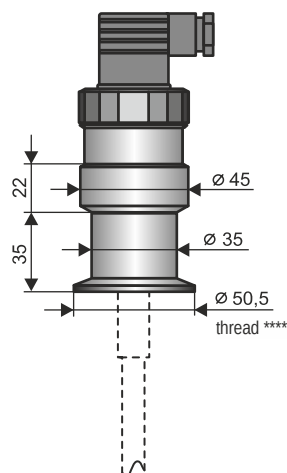
CPC-C-36 _32



High temperature variants
CPC-C-36 _T



Housing with Tri-clamp
coupling



* type threads: M36x2; G 1"

** for materials with a low permittivity ($\epsilon_r < 10$) the minimum electrode length is E500.

*** Anchor welding cylinder or Dust-tight bushing (see accessories)

**** type of threads: Tri-Clamp CI50 (ϕ 50,5 mm)

| Technical specification | | |
|--|--|---|
| Supply voltage | CPC-C-36N(T)-__-__-I CPC-C-36N(T)-__-__-U | 9 ... 36 V DC 16 ... 36 V DC |
| Current output | | 4 ... 20 mA |
| Voltage output | | 0 ... 10 V * |
| Power consumption (no load) CPC-C-36N(T)-__-__-U | | approx. 8 mA |
| Sensitivity ranges | | 20; 30; 50; 100; 150; 300; 500; 1000 pF |
| Initial capacity regulation ratio | | min. 1:2 |
| Nonlinearity | | max. 1 % |
| Temperature error | | max. 0,05% / K |
| Voltage error for current and voltage output | | max. 0,3 μ A/V and 0,1 mV/V |
| Internal resistance / Electric strength (Electrode – Housing) | | 1 M Ω / 250 V AC |
| Coupling capacity / Electric strength (Housing – Supply leads) | | 51 nF / 250 V AC |
| Protection class | standard optional (Connector GAN-DADE 7A / DAEE 7A) | IP 67 (housing), IP 65 (connector) IP 67 |
| Maximal load (serial) resistance for current output (U = 24 V) | | R _{max} = 750 |
| Minimal load resistance for voltage output | | R _{min} > 1 k |
| Maximum tensile strength of the rope electrode | | 1400 kg |
| Recommended cable | | PVC 2 x 0,75 mm ² (3 x 0,5 mm ²) |
| Weight (exclude electrode) | Version N Version NT | approx. 0,5 kg approx. 1 kg |

*) Upon request, a different type of output terminal can be produced (e.g. 0 - 5 V)

| Used materials | | |
|---------------------------|--|--|
| Sensor part | Variants | Standard material* |
| Housing | All types, except Tri-Clamp Tri-Clamp | St. Steel W. Nr. 1.4301 (AISI 304) St. Steel W. Nr. 1.4404 (AISI 316 L) |
| Insulating bushing | All types | PTFE |
| Electrode | CPC-C-36_-10, 11, 12, 20, 22 CPC-C-36_-30, 31, 32 | St. Steel W. Nr. 1.4404 (AISI 316 L) St. Steel W. Nr. 1.4401 (AISI 316) |
| Electrode coating | CPC-C-36_-12, 22, 32 CPC-C-36_-11 | FEP PFA |
| Weight insulation | CPC-C-36_-32 | FEP |
| Weight / Anchor mechanism | CPC-C-36_-30, 31, 32 | St. Steel W. Nr. 1.4301 (AISI 304) |
| Reference tube | CPC-C-36_-20, 22 | St. Steel W. Nr. 1.4301 (AISI 304) |

* It is always necessary to verify the chemical compatibility of the material with the measured medium. You can also choose another type of material after agreement.

| Process connection | | |
|----------------------------------|-----------|---------|
| Type | Size | Marking |
| Metric thread | M36x2 | M |
| Pipe thread | G 1" | G1 |
| Jointless connection (Tri-Clamp) | ø 50,5 mm | CI50 |



| Working areas and area classification | | (EN 60079-0, EN 60079-10-1(2)) |
|---------------------------------------|---|--------------------------------|
| CPC-C-36N | Basic performance for non-explosive atmospheres. | |
| CPC-C-36NT | High-temperature basic performance for non-explosive atmospheres. | |

| Temperature durability | | | |
|-----------------------------|------------------|------------------|-----------------|
| Variants / Performance | temperature tm | temperature tp | temperature ta |
| CPC-C-36N-10, 20 | -40°C ... +300°C | -40°C ... +85°C | -40°C ... +85°C |
| CPC-C-36N-11, 12, 22 | -40°C ... +200°C | -40°C ... +85°C | -40°C ... +85°C |
| CPC-C-36N-30 | -40°C ... +200°C | -40°C ... +85°C | -40°C ... +85°C |
| CPC-C-36N-31 (incl. PR-31) | -40°C ... +130°C | -40°C ... +85°C | -40°C ... +85°C |
| CPC-C-36N-31 (incl. KV-31) | -40°C ... +250°C | -40°C ... +85°C | -40°C ... +85°C |
| CPC-C-36N-32 | -40°C ... +130°C | -40°C ... +85°C | -40°C ... +85°C |
| CPC-C-36NT-10, 20 | -40°C ... +300°C | -40°C ... +200°C | -40°C ... +85°C |
| CPC-C-36NT-11, 12, 22 | -40°C ... +200°C | -40°C ... +200°C | -40°C ... +85°C |
| CPC-C-36NT-30 | -40°C ... +250°C | -40°C ... +130°C | -40°C ... +85°C |
| CPC-C-36NT-31 (incl. PR-31) | -40°C ... +130°C | -40°C ... +130°C | -40°C ... +85°C |
| CPC-C-36NT-31 (incl. KV-31) | -40°C ... +250°C | -40°C ... +130°C | -40°C ... +85°C |
| CPC-C-36NT-32 | -40°C ... +200°C | -40°C ... +200°C | -40°C ... +85°C |

Note: For correct function of the level meter must not be exceeded any of the temperature range (tp, tm or ta)
1) The temperatures are clearly explained on Fig.

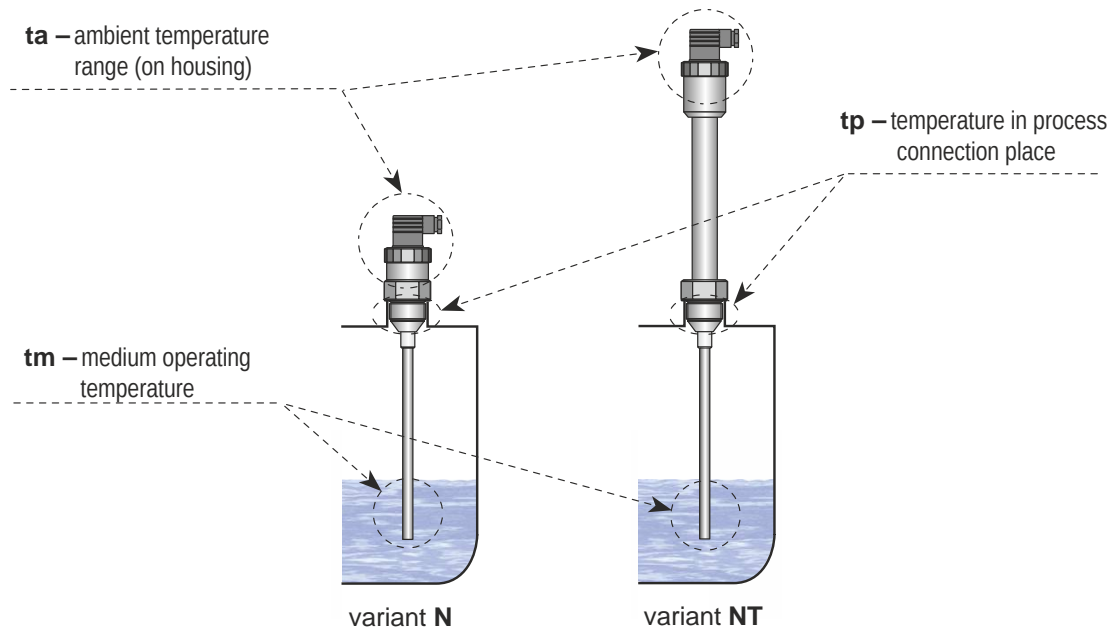
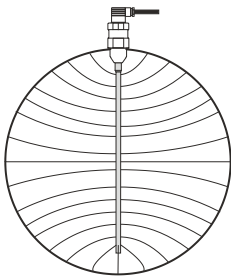


Illustration of areas for temperature measurement



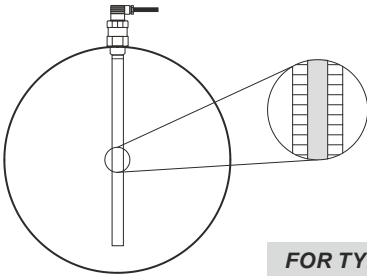
| Pressure durability | | | | | |
|------------------------|---|------------|-------------|-------------|-------------|
| Variants / Performance | Maximal operation pressure for temperature tp | | | | |
| | Up to 30°C | Up to 85°C | Up to 130°C | Up to 160°C | Up to 200°C |
| CPC-C-36N-10, 20 | 7 MPa | 5 MPa | – | – | – |
| CPC-C-36N-11, 12, 22 | 4 MPa | 2 MPa | – | – | – |
| CPC-C-36N-30 | 7 MPa | 5 MPa | – | – | – |
| CPC-C-36N-31 | – | – | – | – | – |
| CPC-C-36N-32 | 1 MPa | 0,5 MPa | – | – | – |
| CPC-C-36NT-10, 20 | 7 MPa | 5 MPa | 3 MPa | 2 MPa | 1 MPa |
| CPC-C-36NT-11, 12, 22 | 6 MPa | 4 MPa | 2 MPa | 1,5 MPa | 0,3 MPa |
| CPC-C-36NT-30 | 7 MPa | 5 MPa | 3 MPa | – | – |
| CPC-C-36NT-31 | – | – | – | – | – |
| CPC-C-36NT-32 | 1 MPa | 0,5 MPa | 0,1 MPa | – | – |

INFLUENCE OF THE TANK SHAPE ON A LINEARITY OF MEASUREMENT



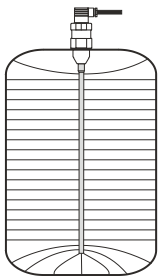
In a curved tanks (most frequently horizontal cylinder) capacity change during measuring of electrically non-conductive material is non-linear.

**FOR TYPE: CPC-C-36_-10, 11, 12
CPC-C-36_-30, 31, 32**



Linearity is done by reference tube (CPC-C-36_-20, CPC-C-36_-22).

FOR TYPE: CPC-C-36_-20, 22



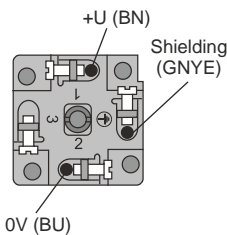
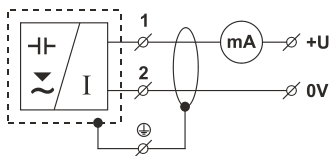
In the tank with straight wall (for example vertical cylinder) and with the sensor placed parallelly with the wall capacity change is linear.

FOR TYPE: all types

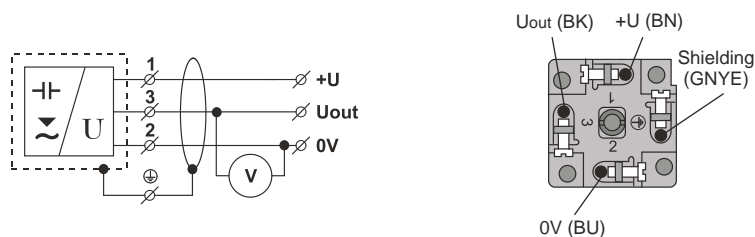
ELECTRICAL CONNECTION

The level meter is designed to be connected to supply unit or to controller through a cable with the outer diameter of 6 ÷ 8 mm (recommended cross-section of cores 0.5 ÷ 0.75 mm²) by means of connector which is standard part of CPC-C level meter. The diagram and the inside view of the connector are shown in the figures. Disassemblable connector IP67 with a 5 m long PVC cable can be supplied as an above-standard accessory.

Connection scheme with current output:

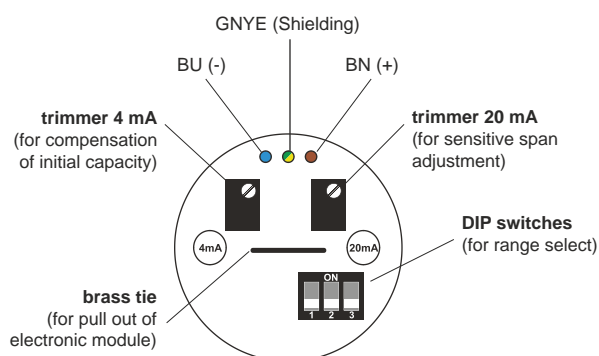


Connection scheme with voltage output:

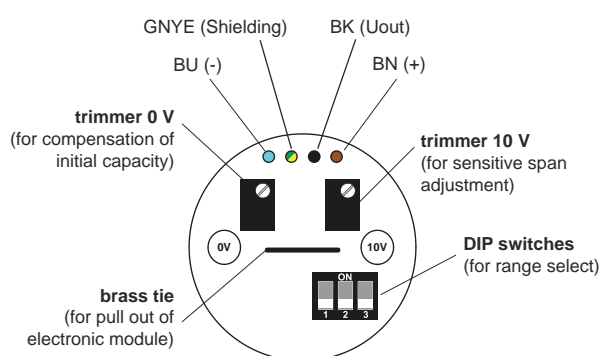


SETTINGS

The adjustment of level meter is by DIP switches and two trimmers 4 mA and 20 mA (to set min. and max. level). These adjustment elements are placed under outlet nut of level meter. For detailed information please read at the instructions.



The top view on the internal electronic module with current output (variant -I)

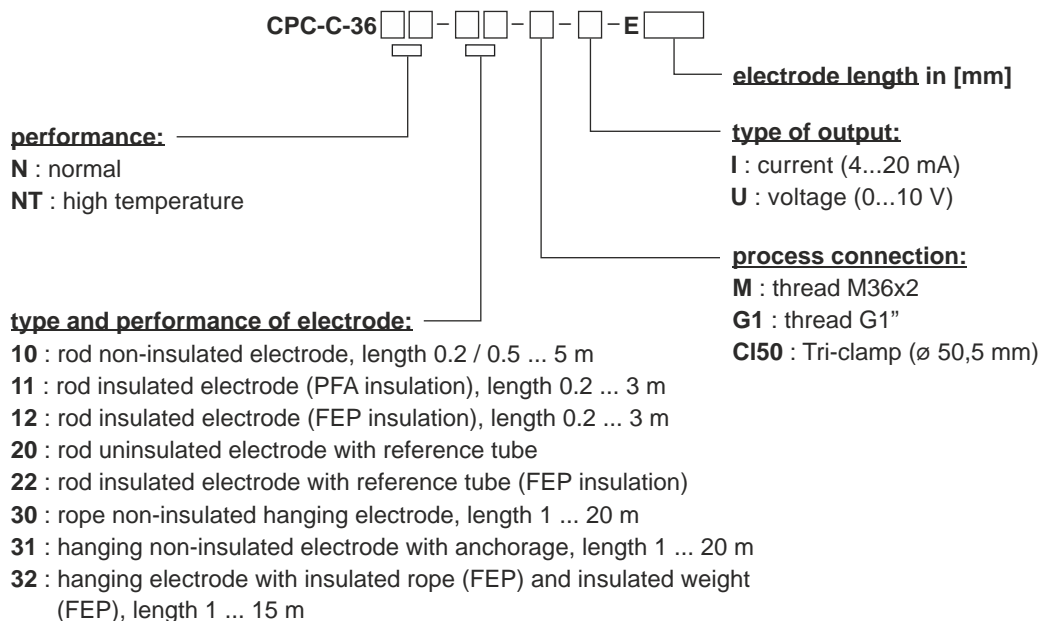


The top view on the internal electronic module with voltage output (variant -U)

Legend:

GNYE – green-yellow BK – black
BN – brown BU – blue

ORDER CODE



CORRECT SPECIFICATION EXAMPLES

CPC-C-36N-10-G1-I- E1000

(**N**) normal performance; (**10**) uncoated St. steel rod electrode; (**G1**) process connection thread G1"; (**I**) current (4 ... 20 mA); (**E1000**) length electrode 1000 mm

CPC-C-36NT-30-G1-I-E9750

(**NT**) high-temperature performance; (**30**) uncoated St. steel rope electrode; (**G1**) process connection thread G1"; (**I**) current (4 ... 20 mA); (**E9750**) length electrode 9750 mm.

ACCESSORIES

Standard (included in the level meter price):

- 1 x of seal, other seals are on request (PTFE, Al, etc.) *
- 1 x connector socket
- 1 x screwdriver for adjustment (each 5 pcs)

* Pressure resistance - see the table in the accessories datasheet in the "seals and gaskets".

Optional (for a surcharge):

- Connector with protection class IP67 (GAN-DADE 7A) with 5 m cable (current output)
- Connector with protection class IP67 (GAN-DAAE 7A) with 5 m cable (voltage output)
- Steel welding flange ON-36x2
- St. steel welding flange NN-36x2
- St. steel fixing nut UM-36x2
- Anchor welding cylinder KV-31 (only CPC-C-36-31)
- Dust-tight bushing PR-31 (only CPC-C-36-31)

SAFETY, PROTECTIONS AND COMPATIBILITY

Level meter is equipped with protection against electric shock on the electrode, reverse polarity, output current overload, short circuit and against current overload on output.

Protection against dangerous contact is provided by low safety voltage according to 33 2000-4-41. Electromagnetic compatibility is provided by conformity with standards EN 55022 / B, EN 61326-1, EN 61000-4-2 to -6.

A declaration of conformity was issued for this device in the wording of Act No. 90/2016 Coll., as amended. Supplied electrical equipment matches the requirements of valid European directives for safety and electromagnetic compatibility.

