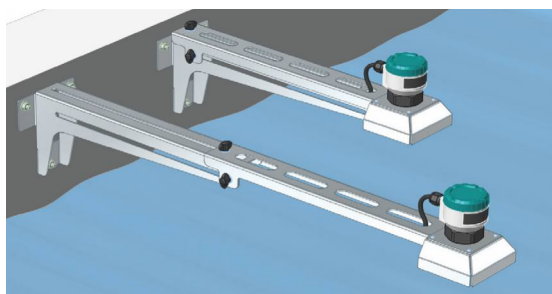


CPC-U-70



- ultrasonic level meters
- for continuous measurement of liquids (even if polluted), mash and paste materials in open or closed vessels, sumps, open channels, drains
- quick view measured values on the display
- easy adjustment without measured material
- elimination of false echoes
- zone temperature compensation
- current output (4...20 mA) with HART protocol or output RS-485 Modbus
- copying of level meter configuration using display module DM-70
- while used with horn adapter can be measured also some difficult media (foamy levels, bulk solids, etc.)
- optional VKD telescopic bracket



The **CPC-U-70** ultrasonic level meters are compact measurement devices including an electroacoustics converter, central processor unit and display module. Using the electroacoustics converter, the level meters transmit the sequence of ultrasonic pulses that spread towards the surface level. The converter recuperates reflected acoustic waves that are subsequently processed in the electronic module. The intelligent evaluation block filters out interfering signals, compares the cleaned received signal with the false reflection map (e.g. from mixers, ladders, reinforcement etc.) and selects a suitable reflection (echo). Based on the period during which the individual pulses spread towards the surface level and back and based on the measured temperature in the tank, the instant distance to the surface level is calculated. According to the level height, the level meter output is set: current 4 -20 mA with HART protocol or output RS-485 Modbus and the measured value is displayed on the display.

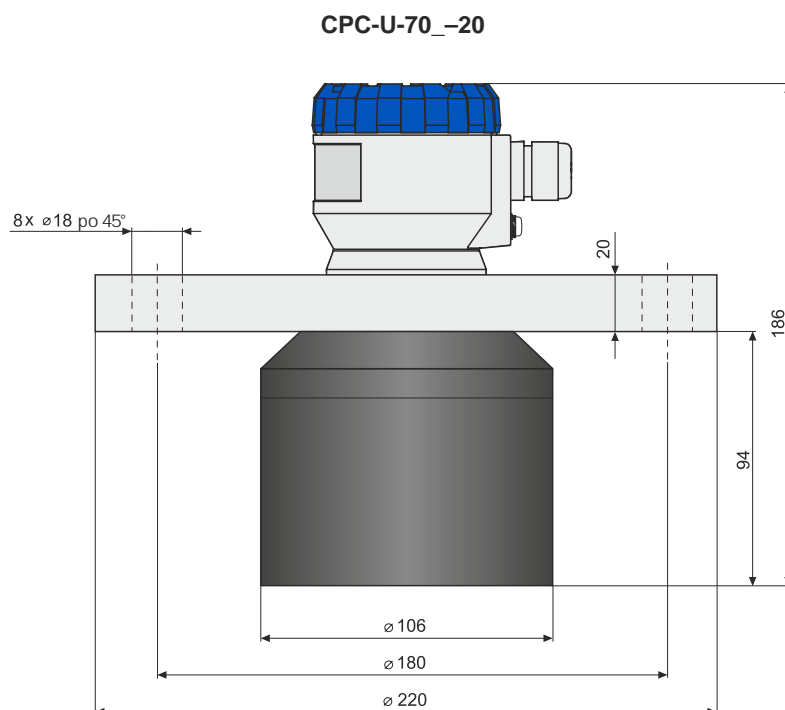
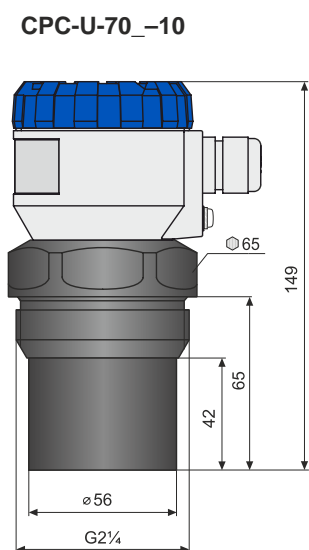
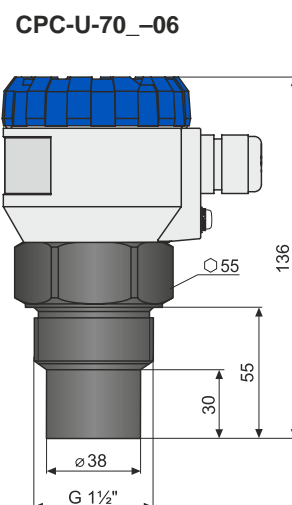
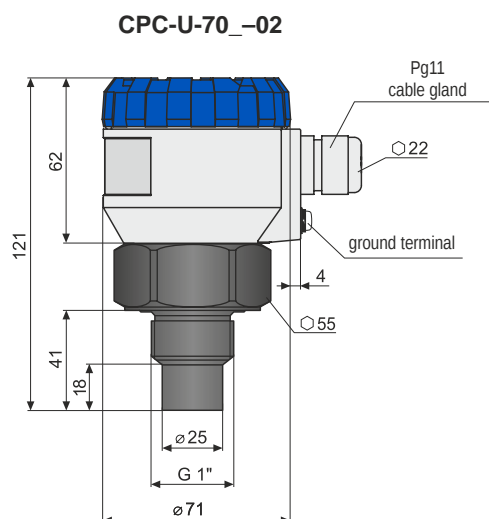
The level meters are suited to level measurement of various liquid materials, sewerage waters, mash and paste materials, suspensions in closed or open vessels, sumps, reservoirs and open channels. In case the level of bulk solids is measured, the measurement range is reduced. We recommend to consult the use with the manufacturer.

VARIANTS OF LEVEL METERS

- CPC-U-70N-02** Measuring range from 0,15 m do 2 m, plastic PVDF transmitter and plastic body (PP+HDPE), process connection with thread G 1"
- CPC-U-70N-06** Measuring range from 0,25 m do 6 m, plastic PVDF transmitter and plastic body (PP+HDPE), process connection with thread G 1 1/2"
- CPC-U-70N-10** Measuring range from 0.4 m to 10 m, plastic PVDF transmitter and plastic body (PP+HDPE), process connection with thread G 2 1/4"
- CPC-U-70N-20** Measuring range from 0.5 m to 20 m, with plastic PVDF transmitter and plastic body (PP+HDPE), aluminium alloy flange

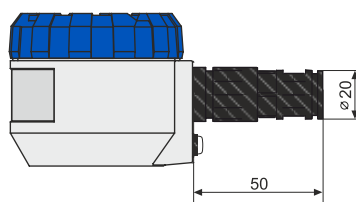


DIMENSION DRAWINGS



Flange (for type 20) according to standard: DIN 2527, PN10, DN100

**variant CPC-U-70
with protective conductor**



Technical specifications – Level meter		
Measuring range ¹⁾	CPC-U-70N-02 CPC-U-70N-06 CPC-U-70N-10 CPC-U-70N-20	0.15 ... 2 m 0.25 ... 6 m 0.4 ... 10 m 0.5 ... 20 m
Adjustable measuring range (SPAN)		Min. 200 mm
Supply voltage	CPC-U-70N-__	18 ... 36 V DC
Output	CPC-U-70N-__-I CPC-U-70N-__-M	4 ... 20 mA (limit values 3.9 ... 20.5 mA), HART® RS-485 with protocol Modbus RTU
Current consumption	CPC-U-70N-__-I CPC-U-70N-__-M	4 ... 20 mA / Max. 22 mA Max. 20 mA
Resolution	CPC-U-70N-02 ; 06 CPC-U-70N-10 CPC-U-70N-20	< 1 mm < 2 mm < 2,5 mm
Accuracy (within the total range)		0,15 %
Temperature error		Max. 0,04% / K
Operating frequency	CPC-U-70N-02 CPC-U-70N-06 CPC-U-70N-10 CPC-U-70N-20	120 kHz 75 kHz 50 kHz 30 kHz
Beamwidth (-3 dB)	CPC-U-70N-02 ; 10 CPC-U-70N-06 CPC-U-70N-20	10° 14° 12°
Ambient temperature range	CPC-U-70N-02 ; 06 CPC-U-70N-10 ; 20	-30 ... +70°C -30 ... +60°C
Short-time temperature stress resistance		+90°C / 1 hod.
Max. operation overpressure (on transmission surface)		0,1 MPa
Sensitivity		3 steps (low – medium – high)
Damping		0 ... 99 s
Measuring period		1 ... 4 s
Rise time		cca. 30 s
Protection class		IP67
Failure indication (echo loss, level in dead zone ³⁾ , internal failure)		Adjustable in modes: 3.75 mA ; 22 mA ; Last measured value
Mechanical connection	CPC-U-70N-02 CPC-U-70N-06 CPC-U-70N-10 CPC-U-70N-20	Screwing with thread G 1" Screwing with thread G 1½" Screwing with thread G 2¼" Aluminium alloy flange
Recommended cable	CPC-U-70N-__-I CPC-U-70N-__-M	PVC 2 x 0,75 mm ² PVC 2 x 2 x 0,25 mm ² (twisted pair, shielded)
Maximal resistance of current output load	U = 24 V DC U = 22 V DC U = 20 V DC U = 19 V DC	R _{max} = 270 ²⁾ R _{max} = 180 R _{max} = 90 R _{max} = 45
Weight	CPC-U-70N-02 CPC-U-70N-06 CPC-U-70N-10 CPC-U-70N-20	0.3 kg 0.4 kg 0.7 kg 3.1 kg

¹⁾ In case the level of bulk-solid materials is measured, the measurement range is reduced.

²⁾ Including 250R resistor in case of HART connection.

Technical specifications – display module		
Type of display		matrix OLED, LCD ¹⁾
Resolution		128 x 64 pixels
Height of digits / Number of display digits of measured values		9 mm / 5 digits
Colour of display	OLED	yellow
	LCD	black with white background light
Type of buttons		membrane
Ambient temperature range	OLED	-30 ... +70°C
	LCD	-20 ... +70°C
Weight		46 g

1) OLED- suitable for indoor and low-light applications. LCD – suitable for outdoor applications particularly with direct sunlight.

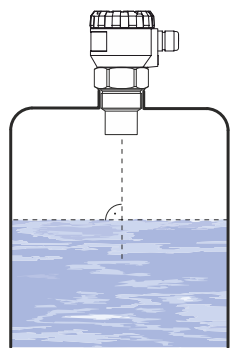


Used materials		
Sensor part	Variants	Standard material
Lid	All types	aluminium alloy with powder coating
Glass	All types	polycarbonate
Body	All types	aluminium alloy with powder coating
Housing with thread	All types	plastic PP
Electroacoustic converter	All types	plastic PVDF
Display module	CPC-U-70N...-D (with display)	plastic POM
Cable gland	All types	plastic PA
Flange	CPC-U-70N-20-F	aluminium alloy with powder coating

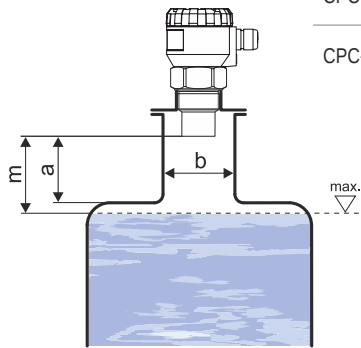
INSTALLATION

Level meter is installed into the upper lid of the tank (vessel), using a fixing nut or a flange.
If installed in an open channel (sumps, reservoirs, etc.), install the level meter as closest as you can to the maximum level expected.
The front of the level meter must be vertically to the measured level.
Foam on the level absorbs the acoustic wave reflection which might cause malfunction of the level meter. If possible select the location where the foaming is as low as possible.
Protect the level meter against direct sunlight.
In the case of uncertainty we recommend to consult the application with the producer.

MOUNTING RECOMMENDATION

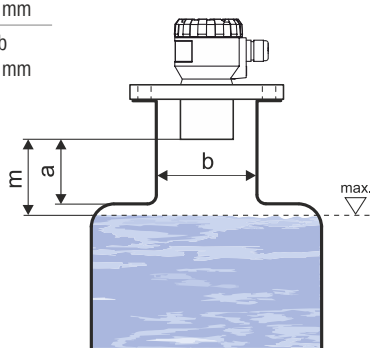


Recommended installation

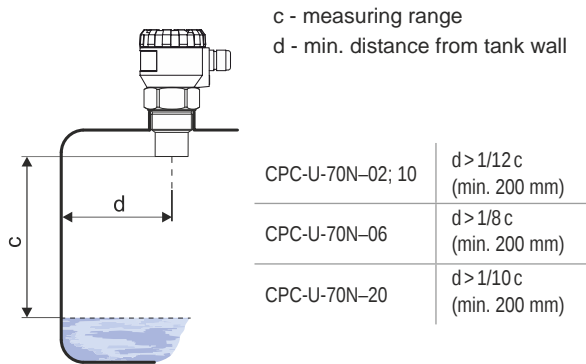


CPC-U-70N-02; 06	$a < 3b$ $b > 100\text{ mm}$
CPC-U-70N-10	$a < 1,5b$ $b > 100\text{ mm}$
CPC-U-70N-20	$a < 1,5b$ $b > 150\text{ mm}$

a - neck height
b - neck width
m - dead zone

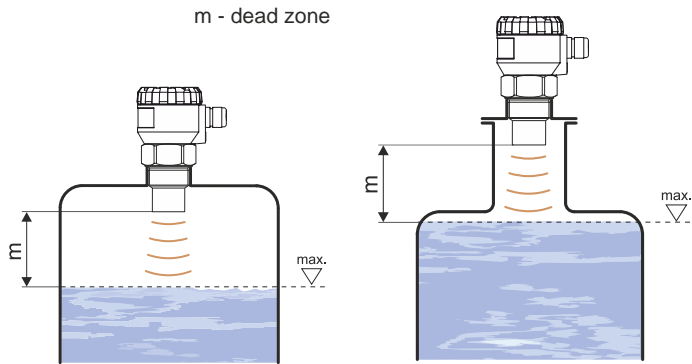


Possible installation through the neck



Installation distance from the tank wall

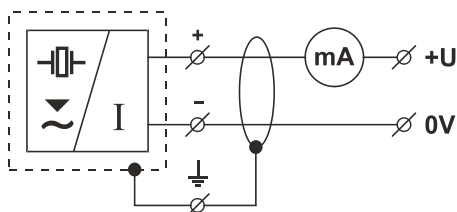
	c - measuring range d - min. distance from tank wall
CPC-U-70N-02; 10	$d > 1/12 c$ (min. 200 mm)
CPC-U-70N-06	$d > 1/8 c$ (min. 200 mm)
CPC-U-70N-20	$d > 1/10 c$ (min. 200 mm)



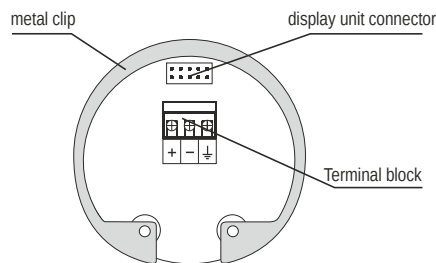
Maximum level distance from CPC-U-70

ELECTRICAL CONNECTION

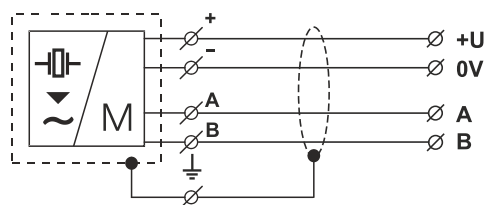
The level meter is connected to consequential (evaluating) device with a suitable cable with the outer diameter of 6 to 8 mm using screw terminals located under the display module. The recommended cross section of cores for the current version $2 \times 0,5 \div 0,75 \text{ mm}^2$ and for the version with Modbus communication $2 \times 2 \times 0,25 \text{ mm}^2$ (twisted pair, shielded). Plus pole (+U) is connected to the terminal (+), minus pole (0 V) to the terminal (-) and the shielding (only for shielded cables) to the terminal (\perp). Communication wires A and B of the line RS-485 (for version "M" - Modbus) are connected to the terminals A and B.



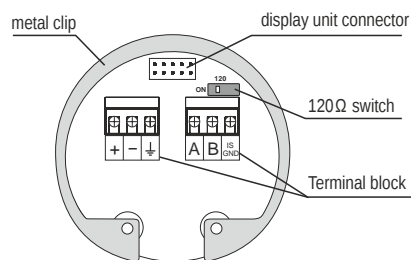
Wiring diagram of the level meter with current output CPC-U-70_--_I



Inside view of screw terminals of the level meter with current output CPC-U-70_--_I



Wiring diagram of the level meter with Modbus CPC-U-70_--_M



Inside view of screw terminals of the level meter with Modbus CPC-U-70_--_M

Electrical connection must be done in de-energized state!

The supply voltage source should be preferably realized as a stabilized power supply unit with safe voltage from 18 to 36 V DC, which can be a part of the evaluation or display device. If it is necessary to ground the device, it will be done using a screw placed on the head of the level meter under the cable outlet. VIn case of strong electromagnetic interferences (EMI), parallel cable ducting with power lines, or when cable length exceeds 30 m we recommended to use shielded cable.

SETTINGS

Set the level meter using 3 buttons placed on the display module. All settings are accessible in the CPC-U-70 set-up mode access. For detailed information please read at the instructions manual.

Button

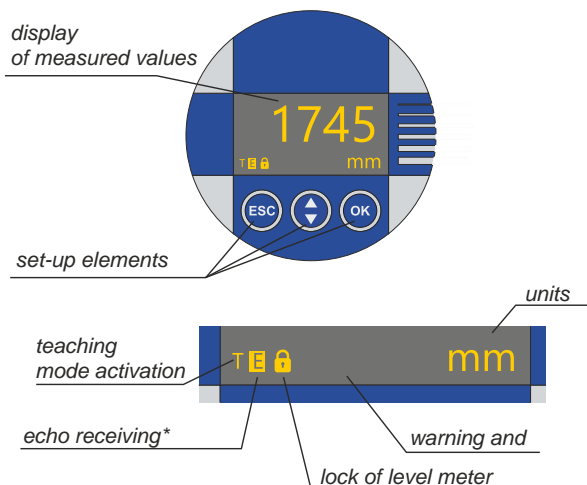
- Set-up mode access
- Confirmation of selected item in the menu
- Move the cursor in the line
- Saving of set-up data

Button

- Move in the menu
- Change of values

Button

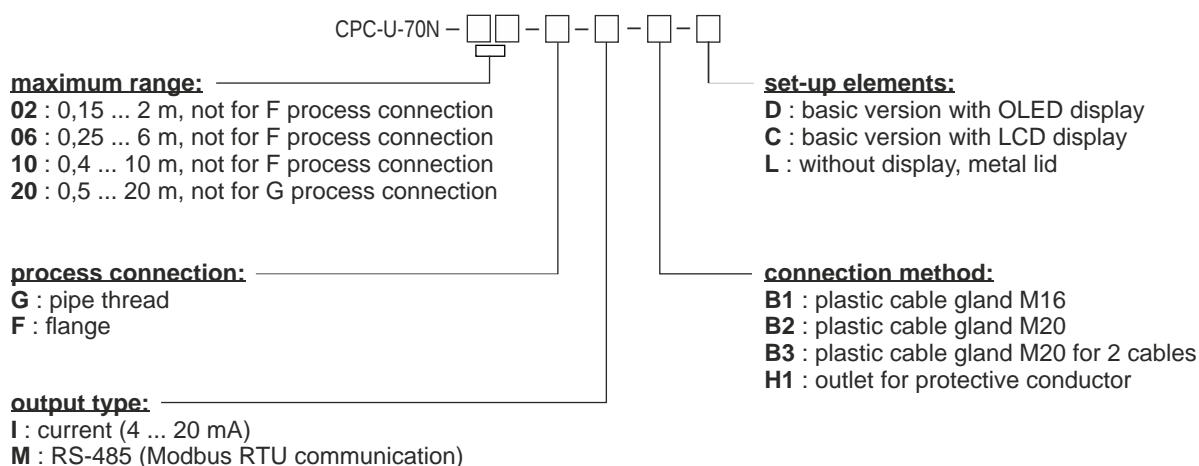
- Cancelling of carried out changes
- Shift one level up



AREAS OF APPLICATION

For continuous non-contact level measurement of liquids (water solutions, sewerage water, etc.), mash and paste materials (sediments, sticks, resins etc.) in closed or open vessels, sumps, reservoirs and open channels. In case the level of bulk-solid materials is measured, the measurement range is reduced. We recommend to consult the use with the manufacturer.

ORDER CODE



CORRECT SPECIFICATION EXAMPLES

CPC-U-70N-02-G-I-B2-D

(**02**) maximum range 0,15 ... 2 m; (**G**) process connection pipe thread; (**I**) current output (4 ... 20 mA); (**B2**) plastic cable gland M16; (**D**) basic version with OLED display

CPC-U-70N-10-G-M-H-L

(**10**) maximum range 0,4 ... 10 m; (**G**) process connection pipe thread; (**M**) RS-485 (Modbus RTU); (**H1**) outlet for protective conductor; (**L**) without display, metal lid

ACCESSORIES

Standard – incl. in the price of the level sensor

- 1 pc of seal (for CPC-U-70_–02–I, 06–I)
- for version with Modbus software
Basic Scada Level is possible to download

Optional – for extra charge

- Fixing nuts G1" and G1 ½"
- Horn adapter ST–G1 and ST–G1,5
- for version with Modbus convertor SRS-U4

SAFETY, PROTECTIONS AND COMPATIBILITY

The level meter CPC-U-70 is equipped with protection against reverse polarity and output current overload.

Protection against dangerous contact is secured by low safety voltage that complies with EN 33 2000-4-41.

Electromagnetic compatibility according to EN 55022/B, EN 61326/Z1 and EN 61000-4-2 to 6.

