

ECAPr level transmitter is a capacitive level sensor for level measurement of conductive liquid, nonconductive liquid and acidic/basic liquids.

Full-empty calibration can be performed easily and safely.
Different designs and different solutions related to industrial level measurement are offered especially for machinery manufacturers.

Application Areas

Liquid tanks, food machines, cooling liquid tanks, shipping, glycol tanks, brine, waste water tanks.

Non-conductive liquid tanks like oil, liquidized CO2 etc.

Sticky hot and high viscosity liquid, acid and chemical liquids.



Technical Specifications:

Measurable Material	Low conductive liquids Adhesive and acid/basic liquids
Supply	9-36 VDC
Signal Output	3-330 Ohm, 3-180 Ohm, 13-1300 Ohm...
Accuracy	± % 2 , ± % 5
Probe Length	Min. 150 mm, Max. 2000 mm
Linearity	%0,5
Min. Di-Electric Constant	1,6 ϵ_r
Connection Material	Aluminium, 304 St.St. , 316 St.St. PVDF, PTFE
Isolation Material	PFA Std.Opt. PTFE
Housing Material	Polyamide (Fiber reinforced)
Working Temperature	Max. 80 °C 200 °C with cooling apparatus
Ambient Temperature	(-) 20 °C / (+) 60 °C
Power Consumption	Max.250 mW
Electrical Connection	Cable
Protection Class(EN60529)	IP 65
Test	EMC, Low voltage
Max.Tensile Force	Max. 10 Nm
Weight	358 g. for ECAPr 203 1000 mm 358 g.

ECAPr

CAPACITIVE LEVEL TRANSMITTER

ECAPr 203

ECAPr 408B , ECAPr 408T , ECAPr 408Tm

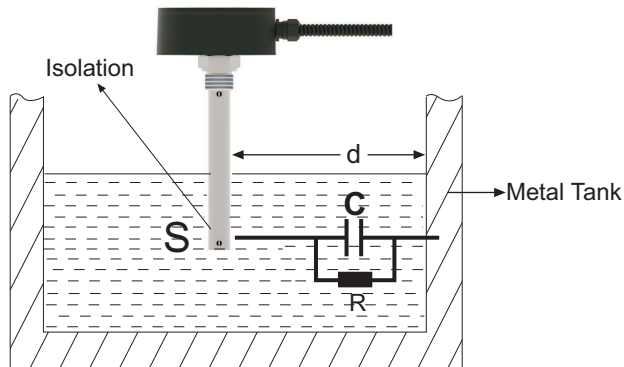
- * It can be able to calibrated by customer
- * There are no moving parts.
- * Modular structure with easy assembly.
- * Not affected by foam, liquid splashes.
- * Not affected by vibration, has robust mechanical structure.
- * Measurement along whole sensor.
- * Operable upside down.



Working Principle :

Capacitance definition, assuming two parallel conductive plates are used;

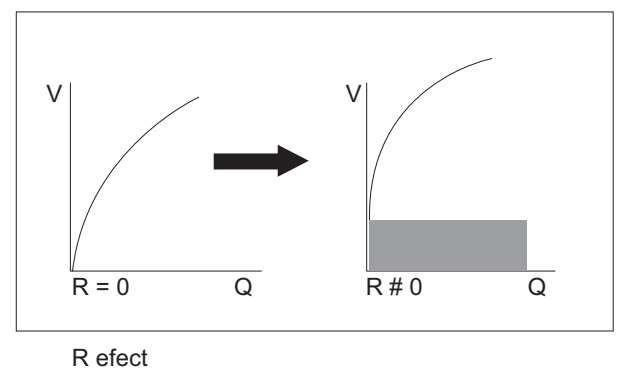
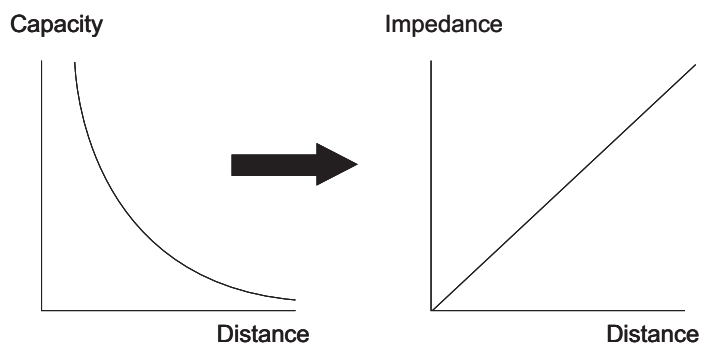
$$C = \frac{\epsilon_0 \cdot \epsilon_r \cdot S}{d}$$



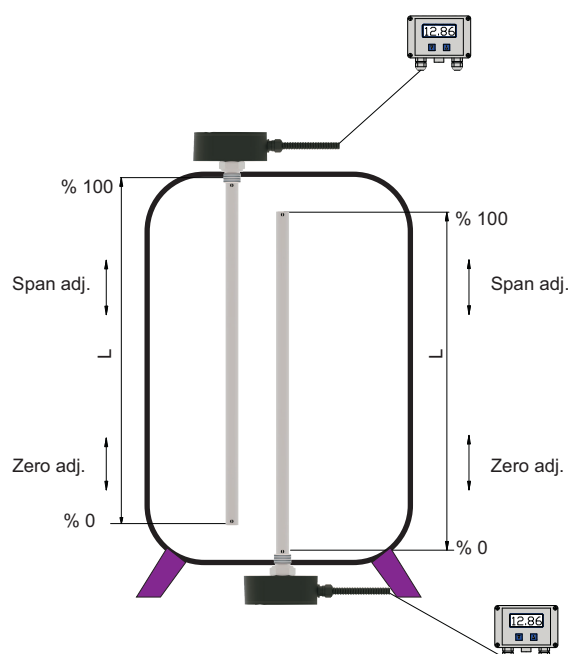
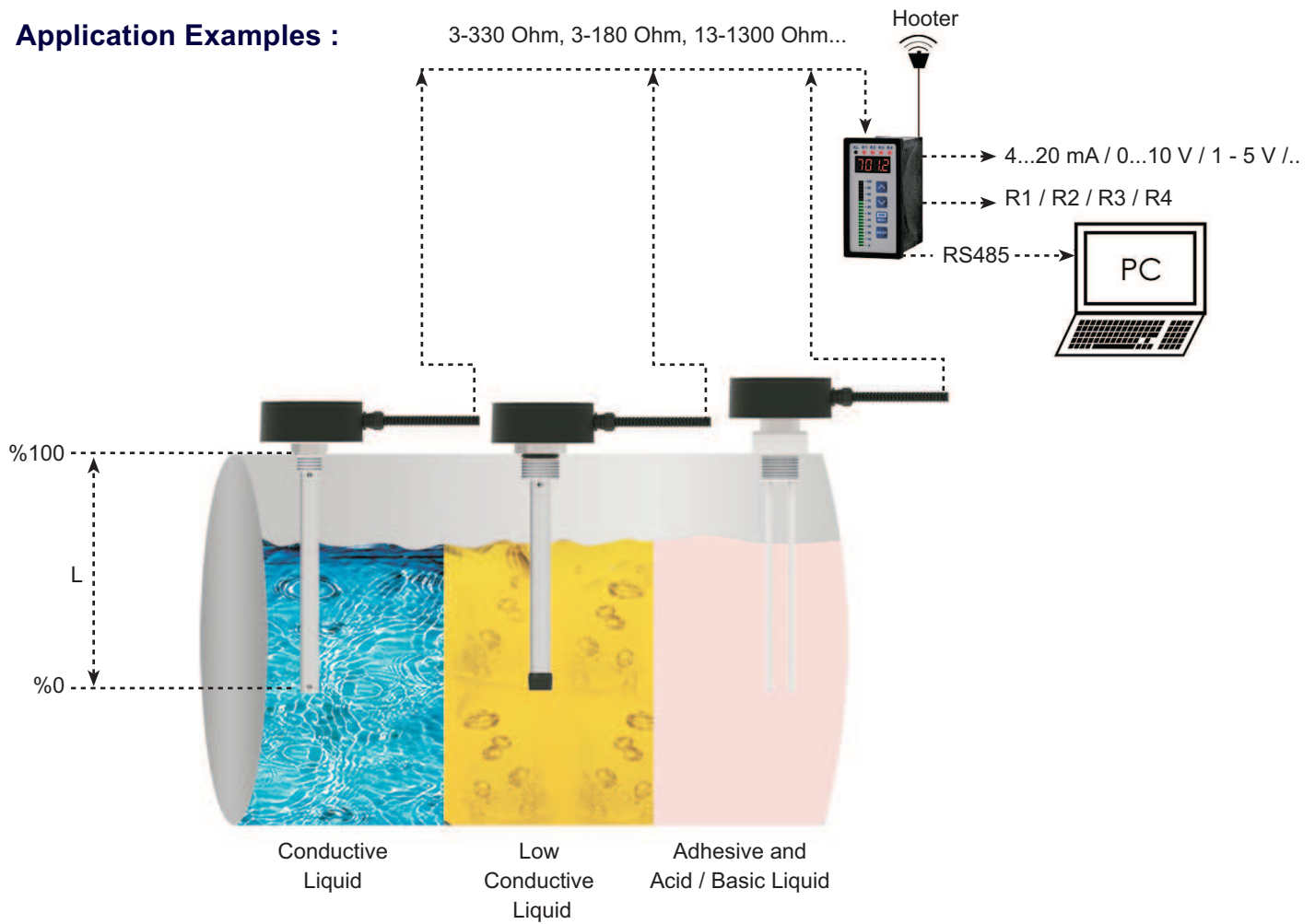
C: Capacity , Farad
S: Surface Area , m²
d: Distance , m.

However, there are scarcely any sensor type which this definition can be practically utilized. Above Formula can no longer be reliable especially when residual areas increase due to large distance (d) (which is usually the case). Thus, measuring impedance for distance measurements give more accurate results than capacitance measurement.

Excitation applied between 10KHz...250KHz based on length for all our models. ($\omega = 2\pi f$) Linearity error that may be caused by conductivity component (R) effect is prevented by electronic circuit design and mechanical design. Reduced to a level lower than 1ppm, acceptable as zero.



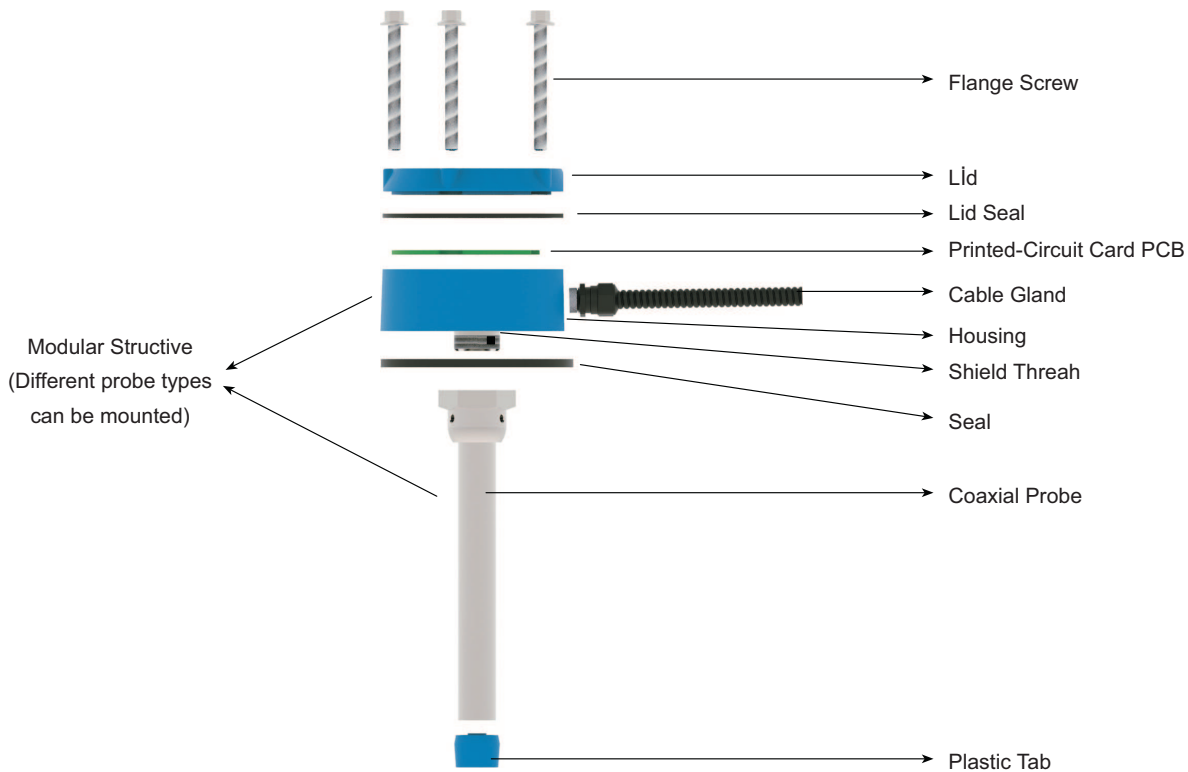
Application Examples :



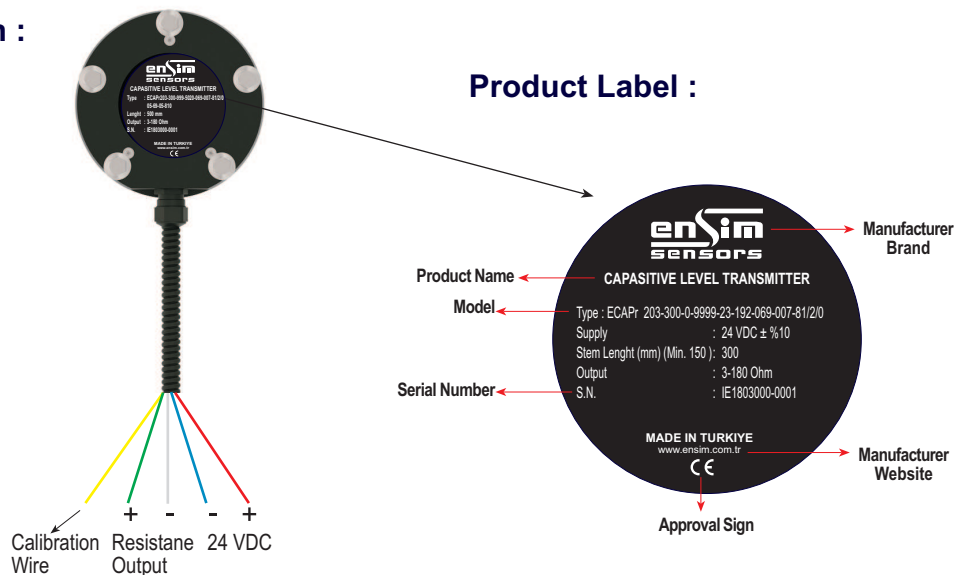
* Measuring range can be set 1/10 during probe.

*Can be mounted upside down

Parts :



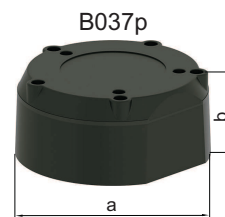
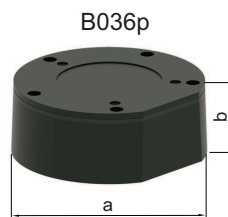
Electrical Connection :



Calibration :

Energize the probe. Emerge the probe into liquid about 0,5-1 cm from bottom. Wait 10 seconds and connect - touch- the calibration wire with (-) supply (chassis). Zero point calibration done. Now Emerge the probe up to max. level and do the same procedure with zero cal. Calibration is ended and cal. data saved.

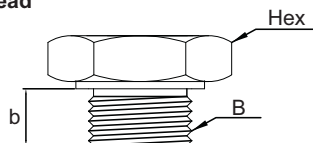
Housing :



ORDER CODE	TYPE	MATERIAL	PROTECTION CLASS	TEMPERATURE (°C)	SIZE a x b (mm)
192	B036p	Plastic	IP 65	(-) 30...(+) 100	Ø 93 x 35
193	B037p	Plastic	IP 65	(-) 30...(+) 100	Ø 93 x 43

Mechanical Connection :

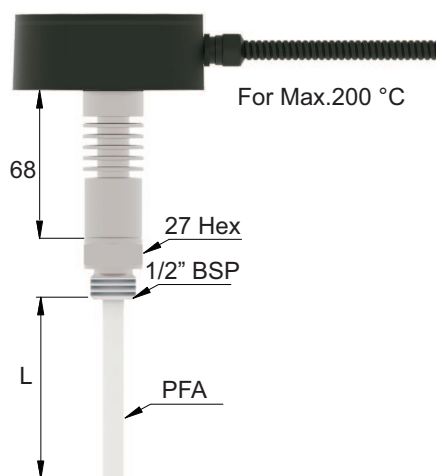
Thread



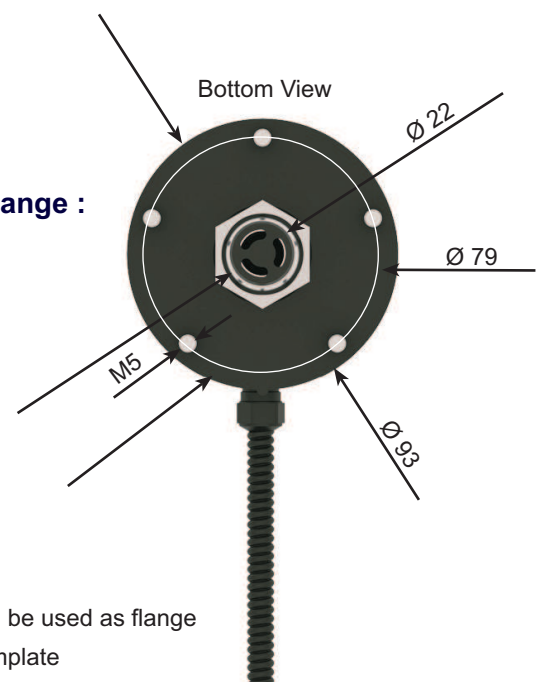
(ISO228-1)

Order Code	Dimension B	Hex [mm]	Screw Length b [mm]
0004	1/2" BSP	27	14
0005	3/4" BSP	27	14
0006	1" BSP	32	14
0008	1 1/4" BSP	36	23
0009	1 1/2" BSP	51	23
0012	2" BSP	60	23

Cooling :



Flange :



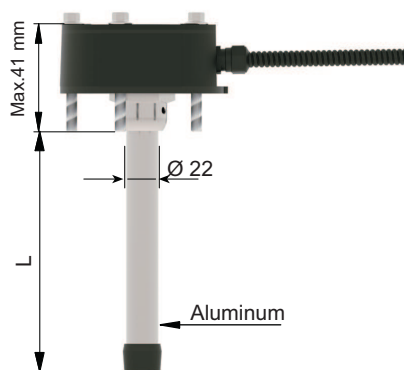
Note : Seal can be used as flange
hole Template

Sample Models:

LOW CONDUCTIVE LIQUIDS

ECAPr 203

Coaxial Probe
Conductive / Insulated Tank

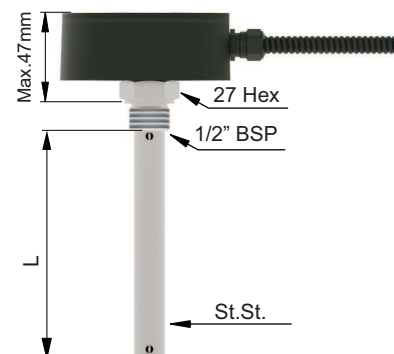


Max. (+) 80 °C
L=Max. 2 m. / Min. 150 mm

CONDUCTIVE LIQUIDS

ECAPr 203

Coaxial Probe
Conductive / Insulated Tank

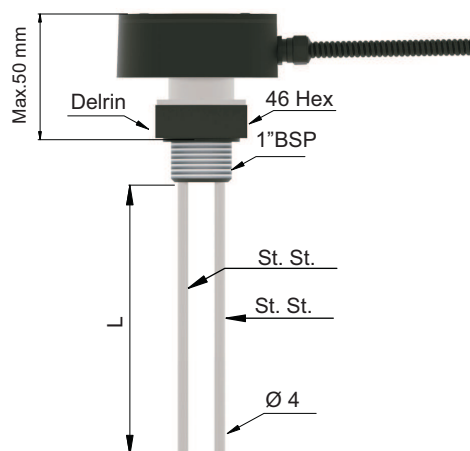


Max. (+) 80 °C
L=Max. 2 m. / Min. 150 mm

ADHESIVE AND ACID / BASIC LIQUIDS

ECAPr 408B

Double Probe - Non Insulated
Conductive / Insulated Tank

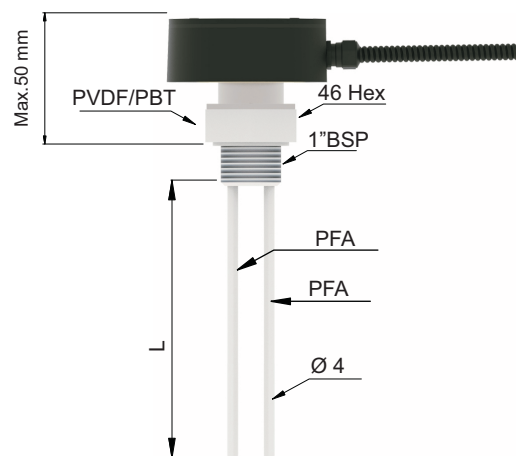


(-) 1 bar...(+) 25 bar
Max.80 °C
L=Max. 2 m. / Min. 150 mm

ADHESIVE AND ACID / BASIC LIQUIDS

ECAPr 408Tm / 408T

Double Probe - Non Insulated
Conductive / Insulated Tank



(-) 1 bar...(+) 25 bar
Max.120 °C / 150 °C
L=Max. 2 m. / Min. 150 mm

Order Form : Please consider sample models when coding.**1 MODEL ECAPr**

Low Conductive Liquids 2 Adhesive and Acid/Basic Liquids.....4

2 CERTIFICATE

No 0 (EN10204-3-1) Malzeme Sertifikasyonu.....1

3 PROBE TYPE

Coaxial Probe (Max 1000mm) ...Ø13 or 21 mm.....3 Double Probe - Non Insulated (Max.1000 mm).....8B
Double Probe - Double Insulated (Max.1000 mm).....8T
Thin Double Probe - Double Fully Insulated (Max.1000 mm).....8Tm
Special.....X

4 STEM LENGHT (Min. 150 mm) L

...mm.....0

5 PROCESS TEMPERATURE

Max.85 °C Standard 0 80 °C For Plastic (Delrin) Model.....2
200 °C with Cooling Apparatus 1 120 °C For Plastic (PVDF) Model 3
150 °C For Plastic (PBT) Model.....4

6 CONNECTION

Flanged with 5 poles (on body).....9999 1 1/4" BSP.....0008
1/2" BSP 0004 1 1/2" BSP 0009
3/4" BSP 0005 2" BSP.....0012
1" BSP.....0006 Special.....X

7 OUTPUT

3-180 Ohm.....23 Special.....X
10-180 Ohm.....24
240-33 Ohm.....25

8 HOUSING

Plastic , B036p Flanged 192 Special.....X
Plastic , B037p for OEM 193

9 INSULATION MATERIAL

PBT.....065 Polyamide.....069
PTFE.....066 Ceramic.....070
PFA.....067 Rubber.....081
PEEK.....068 FKM.....084
Special.....X

10 CONNECTION MATERIAL

304 Stainless Steel 001 PVDF.....064
316 Stainless Steel 002 PBT.....065
Aluminum (Std.).....007 PTFE.....066
Polypropylene.....062 Special.....X
Delrin.....063

11 ELECTRICAL CONNECTION

PVC Cable (Max.105 °C).....81 Silicon Cable (Max.200 °C).....82
Special.....X

12 CABLE LENGHT (m.)

m.

13 OPTIONAL

No...../ 0 Special...../ X

SAMPLE

ECAPr 203-300-0-9999-23-192-069-007-81/2/0

ECAPr for Low Conductivity Liquid, L=300 mm, Flanşlı (5 poles), 3-180 Ohm, PVC Cable, 2m.