

OPERATING MANUEL

Model : **DX-ECAP** CAPASITIVE LEVEL TRANSMITTER



Information in this manual is reviewed and completely reliable. Responsibility is not assumed due to any typing error. Products in this manual are available only for information purpose and they may be changed without notice.



Models :
 DX-ECAP 101/ 102 / 103 / 107
 DX-ECAP 202 / 203 / 204 / 205 / 20S
 DX-ECAP 304 / 305
 DX-ECAP 408A / 408B

Important Notes:

Used Symbols :

- : Caution
- : Note
- : Disposal

- Please read this manual carefully before installation of the **Capasitive level tansmitter**. User is responsible for accidents and losses arising from failure to comply with the warnings in this manual.
- In the event that **Capasitive level tansmitter**. is broken, take measures in order to prevent accidents and losses which can occur in its system.
- There is not any fuse and circuit breaker on the instrument; they should have been added to the system by the user.
- This manual should be stored in an easily accessible place for subsequent use.
- Do not operate the system before making assembly in compliance with the assembly chart related to the instrument.
- Do not make any modification on the instrument and do not try to repair it. Reparation should be made by authorized service personnel.
- The instrument's useful life, determined and announced by the ministry, is 10 years.
- Products which do not contain label and serial number are considered to be excluded from the warranty scope.

Table of Contents :

1. General Information	2
2. Installation	6
3. Failure Detection	19
4. Disassembly of Instrument	19
5. Service	19
6. Recalibration.....	19
7. Repair.....	19
8. Disposal	19
9. Terms of Warranty	19
10. Terms of Return	19

1. General Information :

1.1. Material Acceptance

DX-ECAP Capacitive level switch is a capacitive level sensor for level measurement of conductive liquid, nonconductive liquid, granulated materials with solid particles, adhesive and acid/basic liquids. When a material comes between electrode rod and tank wall, a capacitance change occurs and when this change exceed adjustment threshold, contact output is delivered. Designed for difficult process conditions. Refrigerated models can be manufactured for high temperature and pressure conditions. Calibrations of triggering point and relay operation range can be performed by the user under workplace conditions. It can be connected horizontally or vertically.

1.2. Information about Areas of Use

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

Oil tanks, CO2 liquid tanks, high temperature tanks, non-conductive liquids.

Grain stores, cement, sand feed, flour, milk powder, organic and plastic granule.

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

Ambient Conditions:

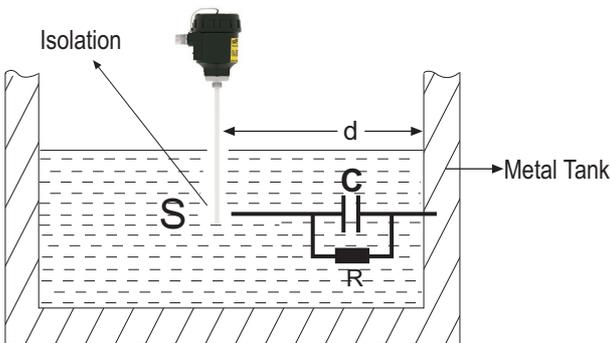
Relative Humidity: 5-98 %RH

Ambient temperature: 60C

(It is not used under -20 C)

1.3. Working Principle

Capacitance definition, assuming two parallel conductive plates are used;



C(Farad)
S,d (mt)

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

can be described by this formula

Advantages :

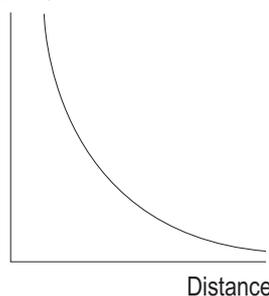
- * There are no moving parts.
- * High pressure and temperature resistant design.
- * Modular structure with easy assembly.
- * Not affected by foam, liquid splashes.
- * Not affected by vibration, has robust mechanical structure.
- * Zero span adjustment is easy.
- * Measurement along whole sensor.
- * Operability with reverse assembly.

However, there are scarcely any sensor type which this definition can be practically utilized.

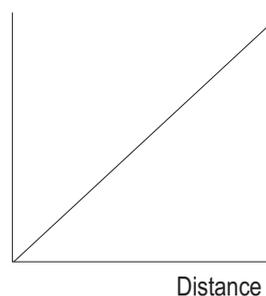
Above Formula can no longer be reliable especially when residual areas increase due to large distance (d) (which is usually the case).

Thus, measuring impedance for distance measurements give more accurate results than capacitance measurement.

Capacity



Impedance



Impedance definition $Z = R + jL\omega + (jC\omega)^{-1}$ R is defined as real component and represent ambient conductivity.

$j\omega L$ second component is defined as inductive reactance. This component is present even if we perform capacitive measurement. However we neglect this. Since we evaluate results based on electrostatic properties of the environment, no error will occur. Resulting impedance definition is $Z = R + (jC\omega)^{-1}$.

Measurement is made by charge transfer in our capacitive sensors. Total impedance is defined as $Z = V / I$.

I (current) $I = Q/t$

Q (Coulomb)

T (sec)

Capacitive reactance we desire to measure is $(jC\omega)^{-1}$. Meaning that charge and impedance have the same phase.

To summarize, charge transferred to medium is directly proportional with capacitive reactance.

For sensors manufactured as coaxial;

a: Central electrode radius

b: Outer screen radius

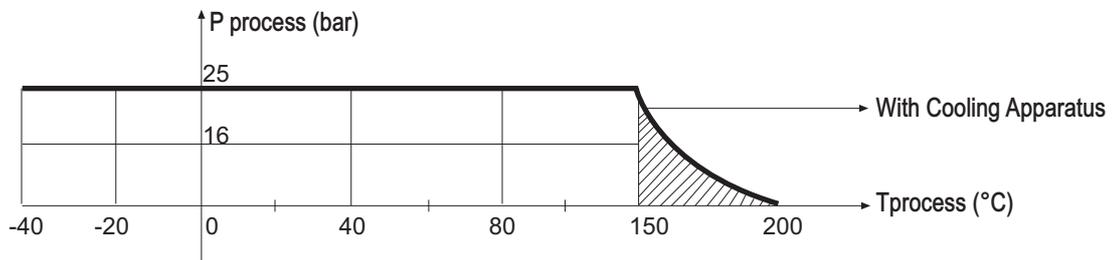
L: length

$$C = \frac{2 \cdot \pi \cdot \epsilon_0 \cdot \epsilon_r \cdot L}{\ln(b/a)}$$

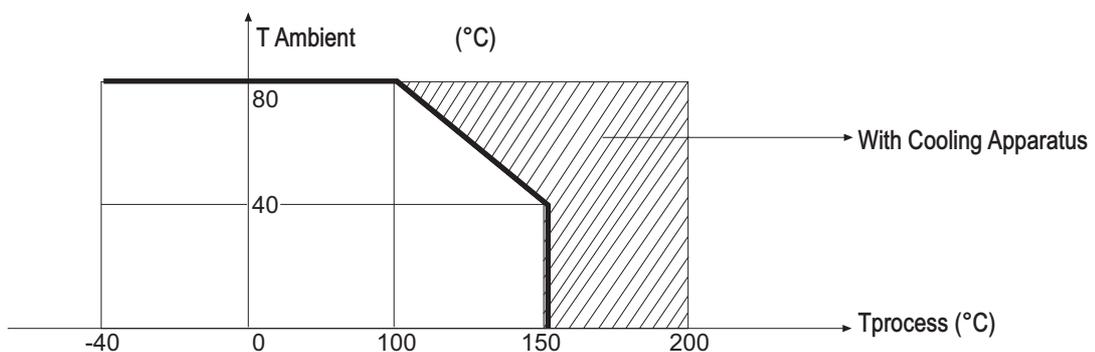
Impedance is calculated by this definition

Excitation applied between 10KHz...250KHz based on length for all our models. ($\omega = 2\pi \cdot f$)
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.

Process Pressure / Temperature Chart



Environment Pressure / Temperature Chart



1.4. Technical Specifications and Material Knowledge

Measurable Material	Conductive liquids Low conductive liquids Solids particulate materials Adhesive and acid/basic liquids
Supply	9-36 VDC
Signal Output	4-20mA two wire Std. 0-20mA - 4-20mA, 0-10 V Three wire Opt.
Accuracy	± % 0,5 , ± % 0,8 , ± % 1
Linearity	%0,5
Capacity Range	1pF...3nF
Min. Di-Electric Constant	1,6 ϵ_r
Connection Material	304 St.St. Opt.316 St.St.
Isolation Material	PFA Std. Opt. PEEK, PTFE , Rubber, FKM
Housing Material	Aluminum Injection Molding - AlSi12Fe (Std) Black (RAL.9005)
Working Pressure	(-)1...25 bar (Depending on the model)
Working Temperature	(-) 40 / (+) 150°C (Depending on the model) 200°C with cooling apparatus (-) 196° For Cryogenic Tank (-) 50...+80°C For NBR FKM (-)30...+200°C
Ambient Temperature	(-)20 / (+) 60°C
Display	With LED-Power and Contact LED
Isolation	Max. 500 V
Power Consumption	Max. 50mW
Electrical Connection	Terminal
Protection Class(EN60529)	IP 66
Test	EMC, Low Voltage
Max.Tensile Force	Max. 40 NM
Weight	295 g. for DX-ECAP 101 250mm

Certification

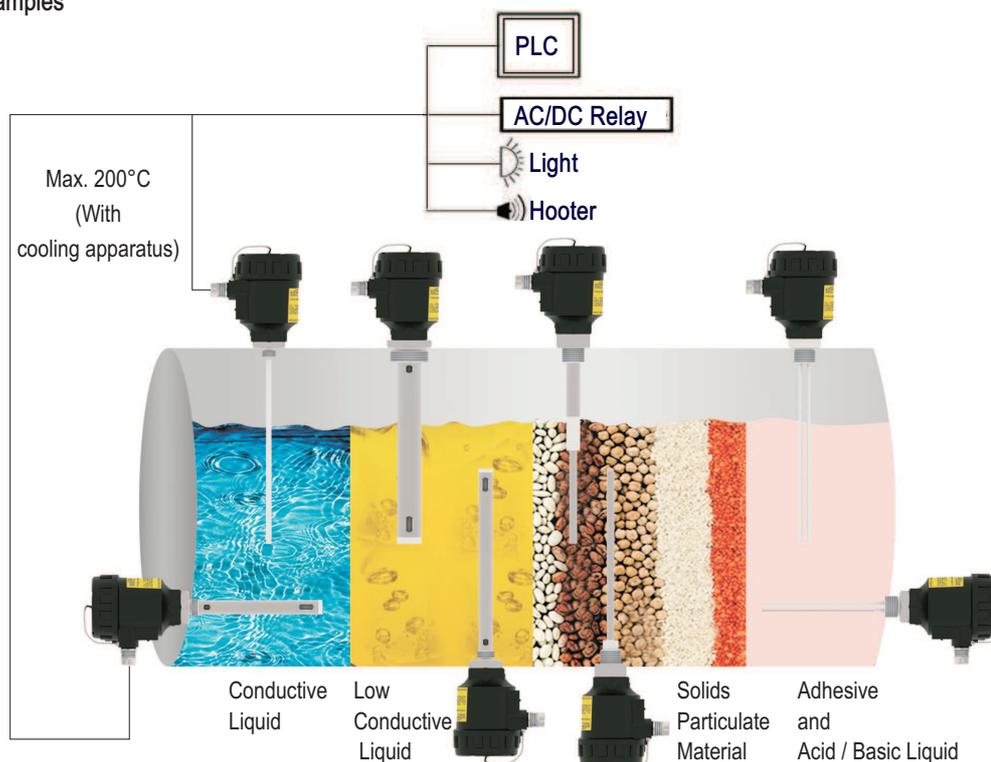


II 1/2 G Ex d IIC Tx*1 Ga/Gb For Gas

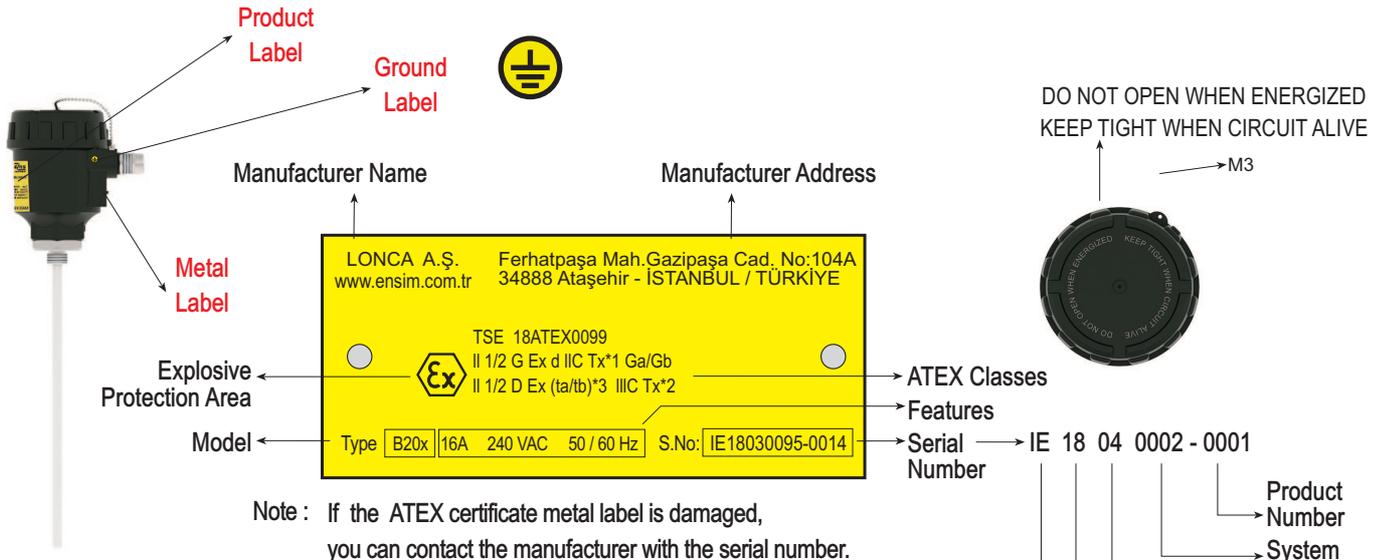
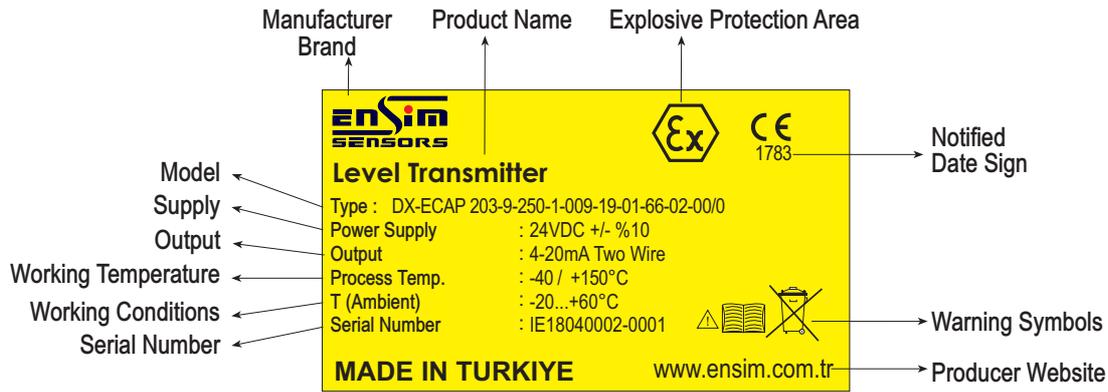
II 1/2 D Ex (ta/tb)*3 IIIC Tx*2 For Dust

*Have a look at the temperature class chart.

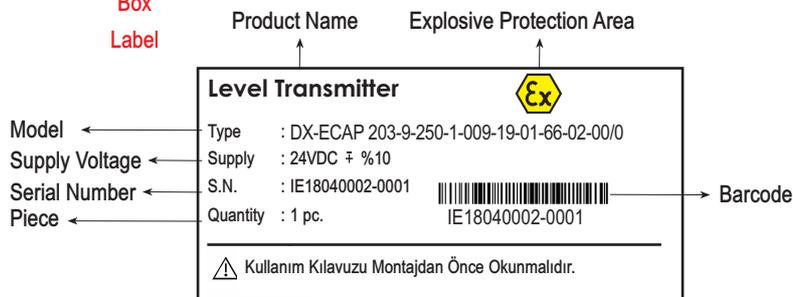
1.5.Application Examples



1.6. Label Information



Box Label



1.7. Package and package contents

Please check whether you have taken delivery of below listed content completely or not and check its conformity with criterions in your order:

*Capacitive Level Transmitter

*This operating manual

Std. Package



1.8. Target Group

This operating manual has been prepared for qualified technical personnel.

1.9. Security Notes



Please consider below notes for avoiding hazardous cases around operator and it's environment.

Only users that authorized in work safety and whom also have read the manual should setup this equipment.

Work safety , accident avoid regulations and national/local setup standards must be meet.

Equipment should only be used in stated specifications.

Equipment must only be mounted while there is no pressure.

1.10. Certifications and Approvals

CE	:	It shows that, product meets required conditions of EU with CE stamp and stipulate that product passed quality assessment stages
ATEX (2014 / 34 / AB)	:	TS EN 60079 - 0 : 2013 TS EN 60079 - 1 : 2014 TS EN 60079 - 31 : 2014
LVD (2014 / 35 / AB)	:	TS EN 61010 - 1 : 2012 TS 3033 EN 60529 : 1997
EMC (2014 / 108 / AT)	:	TS EN 61326 - 1 : 2013

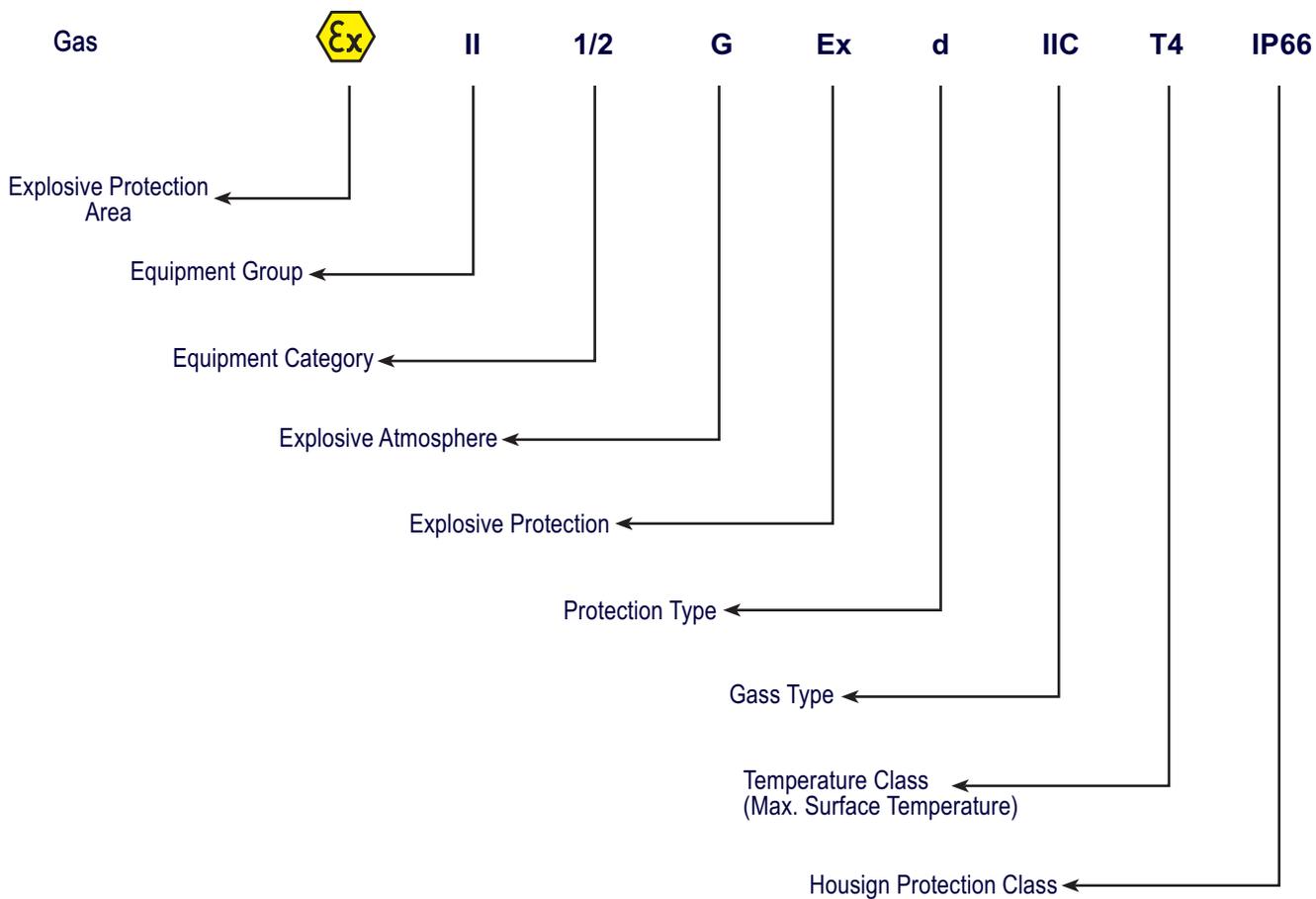
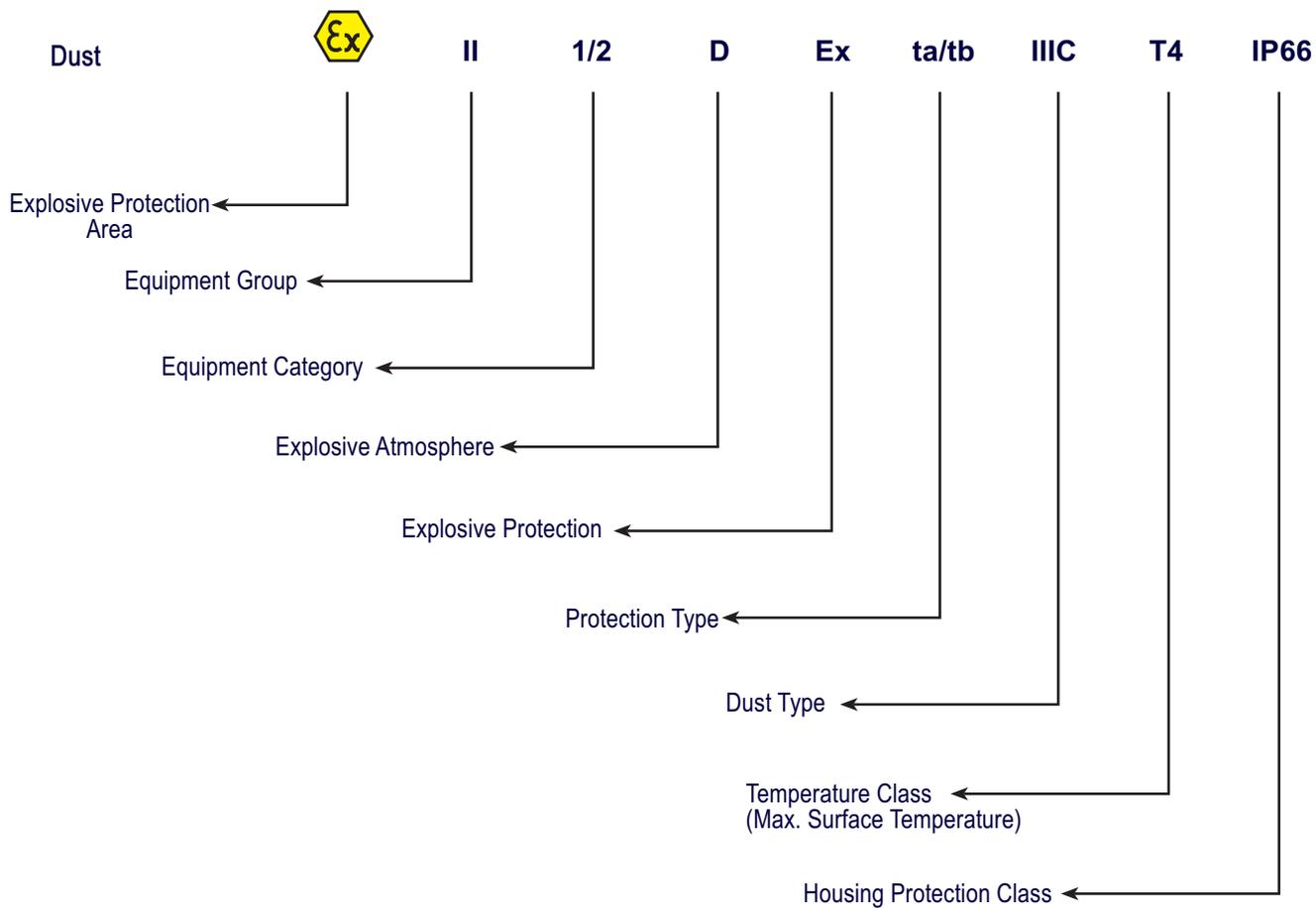
1.10. Safety Instructions (ATEX)



Safety instructions should be read and applied to the end.

- The following notes must be taken into attention to protect the operator and the environment from possible hazards.
- The device setup and maintenance of this device must be done by knowledgeable persons who has read the instructions and is familiar with the safety at work.
- It should be checked by the users that the products are fitted suitable to the zone maps.
- Work safety, must be observe by accident prevention regulations and national installation standards.
- The product should be used within the specification presented guideline.
- You can only mount the device when there is no pressure.
- These safety instructions are protected in terms of 1 / 2 D and 1 / 1 G category for **DX-ECAP** coded series and is compatible with TSE 18ATEX0099 and CE certificate.
- The Label should be used in appropriate environments.
- Because the environment is max. 60 C you should choose a suitable cable for use.
- Do not over tighten the cable gland in order not to affect the IP protection class.
- Make sure the cable entry and plug is tightened right.
- Ground connection must be done properly and checked without energizing.
- Before starting use make sure the lid is fully closed and the set screw is tightened.
- DX-ECAP** models are metal protected. It is Compatible with different supply voltages specified in the catalog.
- The metal enclosure must be in the 2D or 2G zone. **The pipe and float** section must be located in the 1D and 1G zone.
- Max. working temperature, max. Surface temperature can change depending on the model, Please read the document carefully before using.
- During the mounting it should be checked that there is no mechanical stress or deformation in the tank wall. When this happens, the sensor should not be energized without the necessary correction measures.
- Check that the pressure in the tank hasn't exceed the pressure shown in the catalog.
- The mounting sensor must be mounted properly in the tank filling system. In case it is not suitable, the sensor must be protected and the in-tank apparatus must be protected.
- The sensor is designed to withstand the chemical effects of the materials. Check the suitability of different materials.
- The Sensors are in suitable storage conditions and protected from dust and damp.
- Device repairs should only be done at the manufacturer Lonca Inc.
- Protect the device from friction and cleaning should be done without water.
- In case of improper circuit conditions, the main energy must be completely disconnected and safety measures should be taken without replacing the temperature circuit breaker with its backup. Changes should be made in a safe area.

1.12. ATEX Marking Sample Description



2. Installation :

2.1. General Notes :

The device installation is in 2014 / 34 / EU criteria to ensure the safety of atmosphere and people from explosions, must only be done by staff who knows the safeguards.

Do not apply force to the instrument during the installation!

Do not use the **Capacitive Level Transmitter** with a greater pressure than recommended pressure.

Do not forget that instrument is precise, carry it carefully and prevent not to be damaged.

It should be guaranteed that there are not any magnetic particles.

The Max. working pressure should not be exceeded.

2.2. General Installation Stages

*Remove **Capacitive Level Transmitter** from the box carefully

*Check whether gasket is appropriate for fluid or not. If is not appropriate, contact with the producer.

*Then, apply below mentioned explanations according to structure of the design.

2.3. Special Notes

*Please ensure that there is no mechanical stress on the shaft following installation. Such case will cause slipping in the characteristic curve.

***Capacitive Level Transmitter** must be placed upright or horizontal.

*Allocate valve certainly in the process connection while instrument is used.

*Allocate blowdown valve under bottom flange for blowdown.

*If instrument is mounted outside and if there is any danger of lightning or excessive pressure, take preventive measures by taking necessary measures.

*In the operating conditions, **Capacitive Level Transmitter** may be hot according to situation of fluid, in this case, do not touch the indicator, otherwise your skin is damaged.

*The grounding product must be done properly. (can be done outside or in housing)

2.4. Installation For Mechanical Connections

*Use appropriate O-Ring or gasket for tightness.

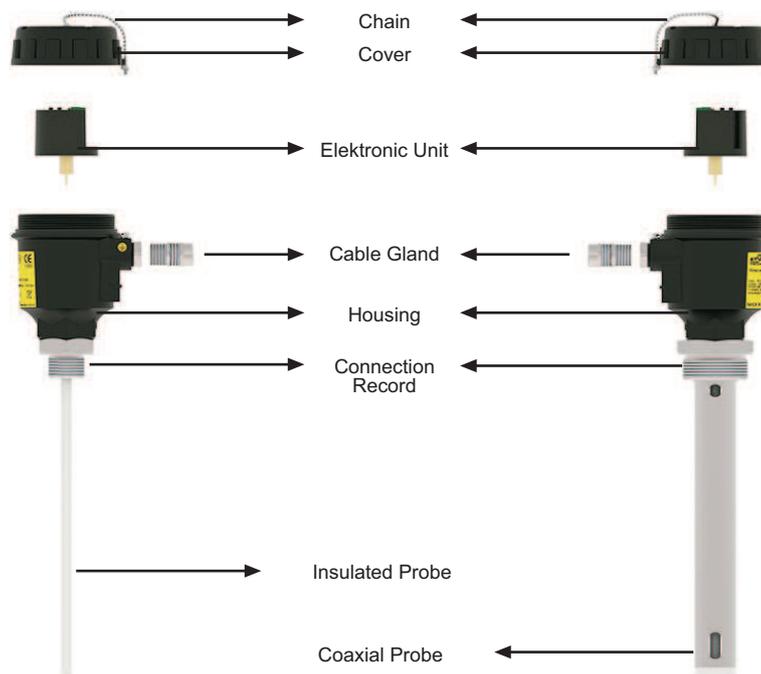
*Ensure that its surface is clean and smooth.

*Assemble the instrument manually.

*Connect the contacts as shown in the figure.

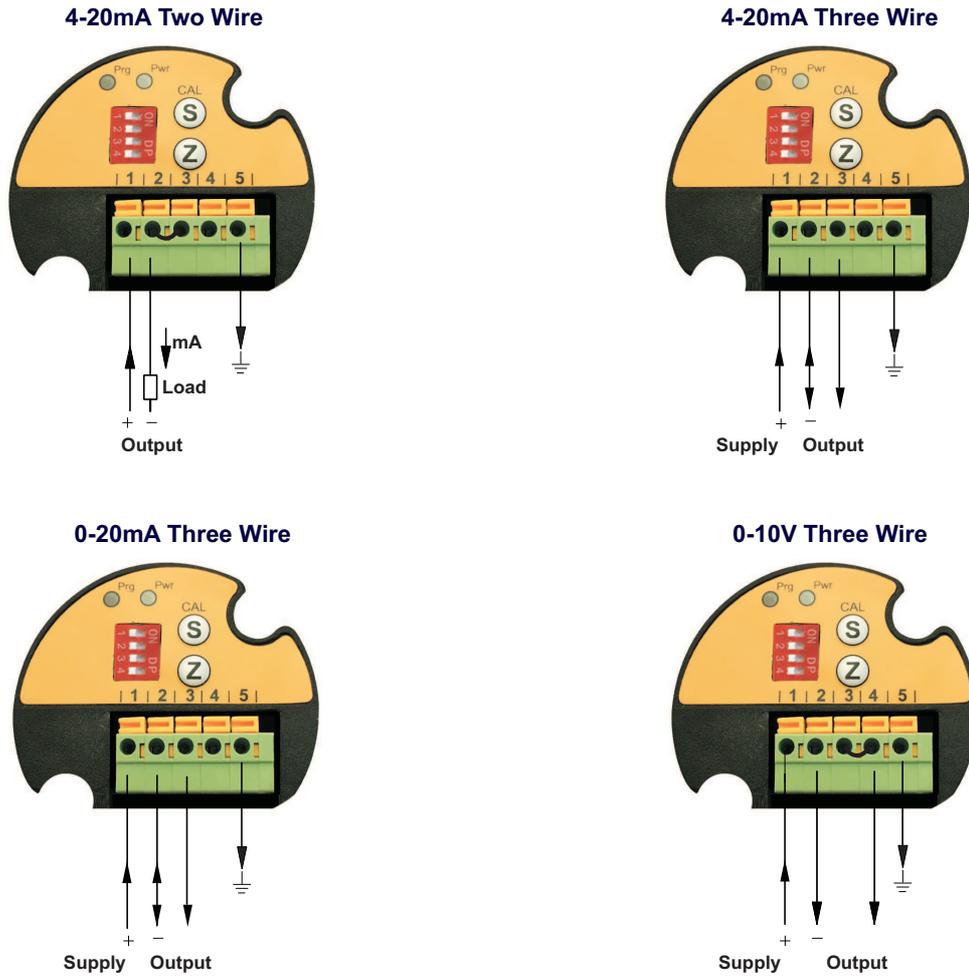
(For G1" max. 20 Nm, G 1 1/4", for G" 1 1/2" max. 30Nm)

2.5. Mechanical Parts

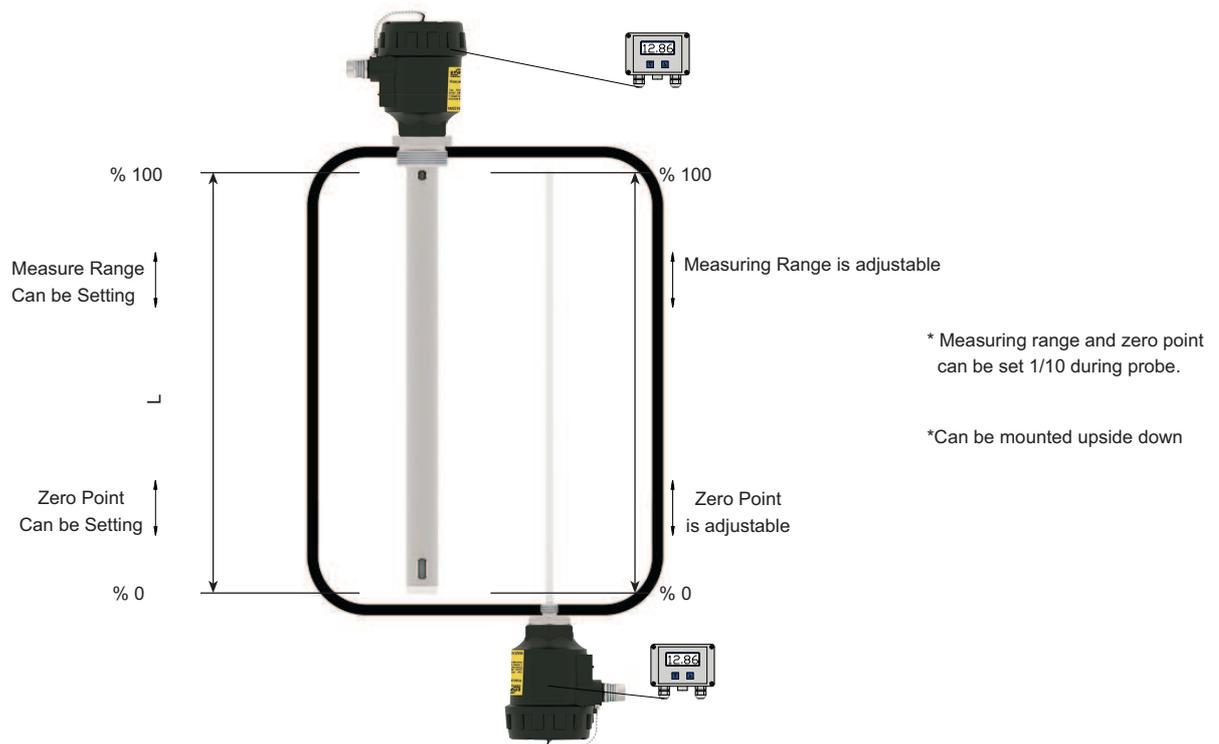


2.6. Electrical Installation

Make the electrical connection of the instrument according to details on its label, table and cable figures in this manual



Note : It has been produced according to IPC A 600 class 2 conditions and tested with 100 % E-test. Moreover, HASL (non-lead) surface test has been applied.



Identification of Calibration Buttons :

Z (Starting Range-Zero) : Measurement starting point - 4mA

Zero adjustment (zero): 4mA adjustment is performed at factory exit, assuming tank is completely empty. If adjustment is needed again, 4mA output adjustment can be performed by Z calibration after the tank is filled until initial level.

S (Measuring Range-Span): Measuring peak point - 20mA

Measurement field (span) adjustment: 20mA is adjusted at factory exit, assuming tank is filled up to length of electrode. If adjustment is needed again, 20mA output adjustment can be performed by S calibration after filling the tank up to a desired level.

Switch Settings of Output Signal :

When setting output signal, only the 3rd and 4th switches are active and configuration is defined only if the circuit energized.

Power Supply : 9-36VDC

Max. Load Resistance : $(R_L) = (V_{sup} - 3) / 0.02 \text{ } [\Omega]$

Changes are not effective during normal operation.



4-20mA Two Wire



4-20mA Three Wire



or



0-20mA Three Wire



0-10V Three Wire

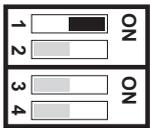
Calibration :

Only the switch 1 is active at first. When SW1 brought into "ON" position, red led light starts winking with 1 second interval.

Zero level adjust (SW1 is on position): Z button must be kept pressed until the green led is flashed.

Span level adjust (SW1 is on position): S button must be kept pressed until the green led is flashed.

After calibration, when SW1 brought into off position, it saves settings to memory and turn back into normal working condition.



S → Span Level
 Z → Zero Level

Shifting Span Point :



Make SW2 ON

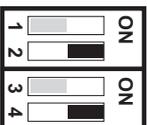
It becomes active when SW2 brought into ON position.



Make SW3 ON while SW2 ON.

If SW3 brought into ON position, while SW2 is in ON position.

The span point that's set before, shifts upper. When it came to the desired value, the switch should be taken to the off position.



Make SW4 ON while SW2 ON.

If SW4 brought into ON position, while SW2 is in ON position.

The span point that's set before, shifts down, towards. When it came to the desired value, the switch should be taken to the off position.

Shifting Zero Point :



Make SW2 ON before SW1 ON.

It becomes active when SW2 brought into ON position and then SW1 brought into ON position.



Make SW3 ON while SW2+SW1 ON.

If SW3 brought into ON position, while SW2+SW1 are in ON position.

The span point that's set before, shifts upper. When it came to the desired value, the switch should be taken to the off position.



Make SW4 ON while SW2+SW1 ON.

If SW4 brought into ON position, while SW2+SW1 are in ON position.

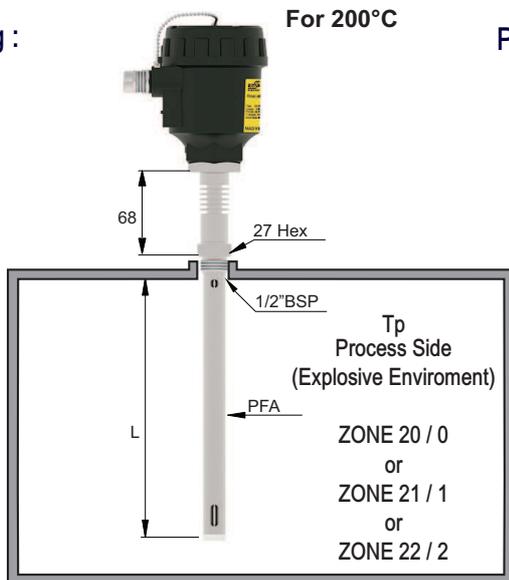
The zero point that's set before, shifts down. When it came to the desired value, the switch should be taken to the off position.

Housing :

ORDER CODE	TYPE	MATERIAL	PROTECTION CLASS	TEMPERATURE (°C)	SIZE a x b (mm)
25	B20x	Aluminium	IP 66	-40...+200	132 x 104



Cooling :



For 200°C

Protection Case :



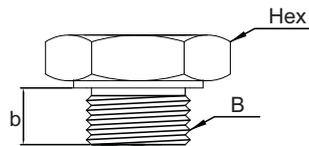
Ta
Factory Area
(Safe)

ZONE 21 / 1
or
ZONE 22 / 2

Material : 304 Stainless Steel
Welded manufacturing
Opens - Closes Hinged
To Protect Against external conditions.

2.7. Mechanic Connections :

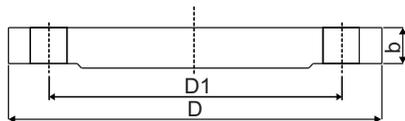
Thread



(ISO228-1)

Order Code	Dimension B	Hex [mm]	Stem Length b [mm]
003	3/8\"BSP	50	20
004	1/2\"BSP	50	14
005	3/4\"BSP	50	14
006	1\"BSP	50	23
007	1 1/4\"BSP	50	23
008	1 1/2\"BSP	60	23
009	2\"BSP	70	23

Flanged



(ISO1092-1)

Order Code	PN 16	D (mm)	D1 (mm)	b (mm)
103	DN25	165	85	16
104	DN32	140	100	16
106	DN50	165	125	18
108	DN80	200	160	20
109	DN100	220	180	20

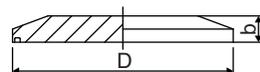
(ISO1092-1)

Order Code	PN 40	D (mm)	D1 (mm)	b (mm)
303	DN25	115	85	18
304	DN32	140	100	20
306	DN50	165	125	20
308	DN80	200	160	20
309	DN100	235	190	24

(ANSI B16.5)

Order Code	150 LBS	D (mm)	D1 (mm)	b (mm)
606	DN50	152,4	121	19
607	DN65	177,8	139,7	22,2
608	DN80	190,5	152,4	23,8
609	DN100	228,6	157,2	23,8

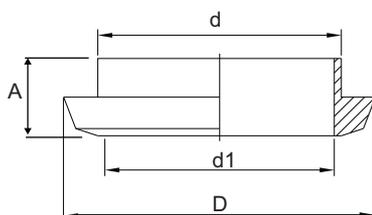
Clamp



(ISO2852)

Order Code	Dimension	Dia. D (mm)	b (mm)
851	DN32	50,5	15
852	DN50	64	17
853	DN65	91	17

Dairy



Order Code

Order Code	Dimension	Dimension	D (mm)	d1 (mm)	A (mm)
870	DN40	DN40	56	48	13
871	DN50	DN50	68	61	14
872	DN100	DN100	121	114	20

2.8. Sample Models:

CONDUCTIVE LIQUIDS

DX-ECAP 101
Fully Insulated Probe
Conductive Tank



Max. 4 m.
(-)1...+25 bar
(-)40...+150°C

DX-ECAP 102
Fully Insulated Coaxial Probe
Insulated Tank



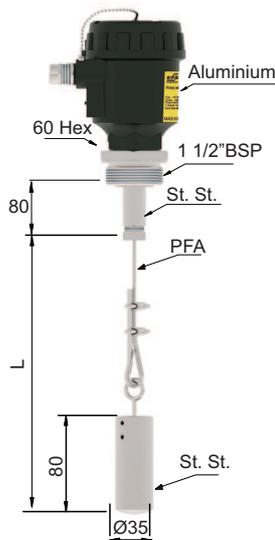
Max. 4 m.
(-)1...+25 bar
(-)40...+150°C

DX-ECAP 103
Fully Insulated Coaxial Probe
Insulated Tank



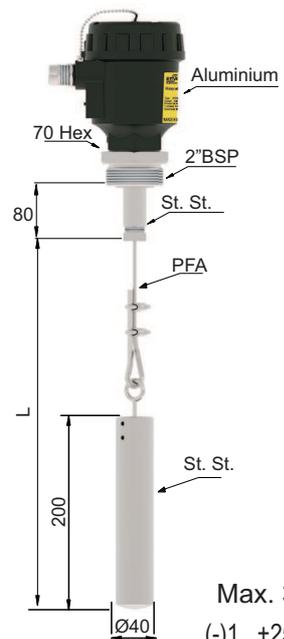
Max. 1 m.
(-)1...+25 bar
(-)40...+150°C

DX-ECAP 107
Fully Insulated Rope
Conductive Tank



L=1m.(Std) Max. 16 m.
(-)1...+25 bar
(-)40...+150°C

DX-ECAP 107
Fully Insulated Rope
Conductive Tank



Max. 32 m.
(-)1...+25 bar
(-)40...+150°C

Sample Models:

LOW CONDUCTIVE LIQUIDS

DX-ECAP 202
Partly Insulated Coaxial Probe
Conductive / Insulating Tank



Max. 4 m.
(-)1...+25 bar
(-)40...+150°C

DX-ECAP 203
Partly Insulated Coaxial Probe
Conductive / Insulating Tank



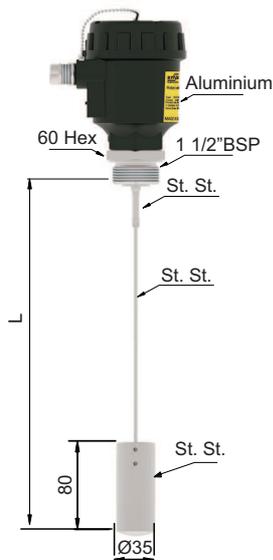
Max. 1 m.
(-)1...+25 bar
(-)40...+150°C

DX-ECAP 20S
Partly Insulated Coaxial Probe
Conductive / Insulating Tank



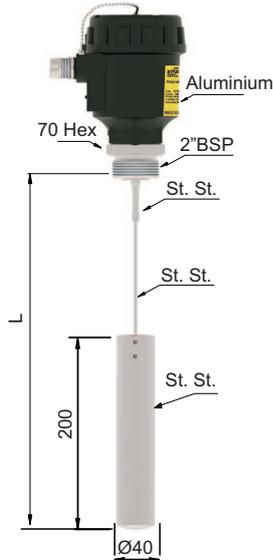
Max. 4 m.
(-)1...+25 bar
(-)40...+400°C

DX-ECAP 204
Partly Insulated Rope
Conductive Tank



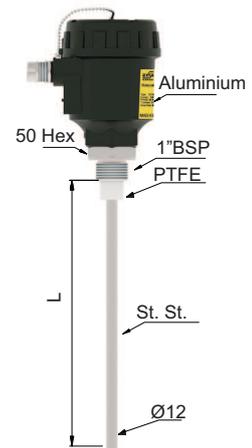
Max. 16 m.
(-)1...+25 bar
(-)40...+150°C

DX-ECAP 204
Partly Insulated Rope
Conductive Tank



Max. 32 m.
(-)1...+25 bar
(-)40...+150°C

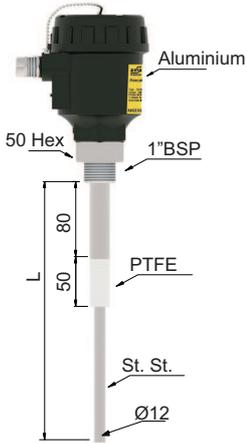
DX-ECAP 205
Partly Insulated Probe
Conductive Tank



Max. 6 m.
(-)1...+25 bar
(-)40...+150°C

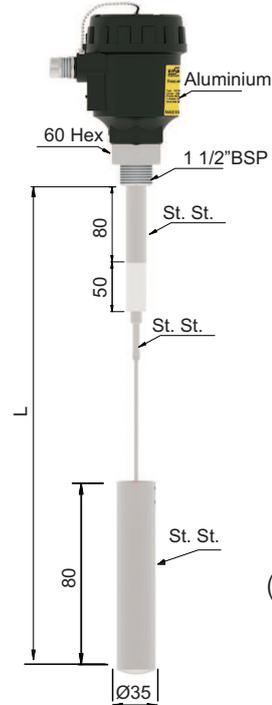
SOLID PARTICULATE MATERIALS

DX-ECAP 305
Partly Insulated Probe
Conductive Tank



Max. 6 m.
(-)1...+25 bar
(-)40...+150°C

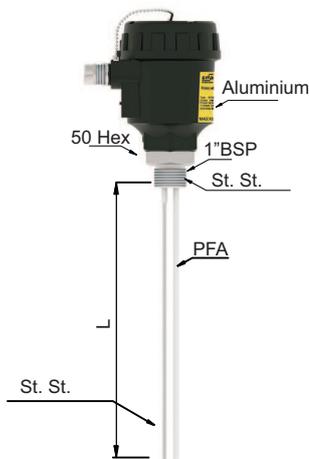
DX-ECAP 304
Partly Insulated Rope
Conductive Tank



Max. 16 m.
(-)1...+25bar
(-)40...+150°C

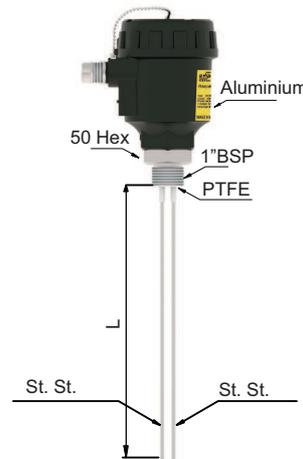
ADHESIVE AND ACID / BASIC LIQUIDS

DX-ECAP 408A
Double Probe (Single Fully Insulated)
Conductive / Insulating Tank



Max. 4 m.
(-)1...+25 bar
(-)40...+150°C

DX-ECAP 408A
Double Probe (Single Fully Insulated)
Conductive / Insulating Tank



Max. 6 m.
(-)1...+25 bar
(-)40...+150°C

2.9. Maximum Surface Temperature

Temperature Class Table

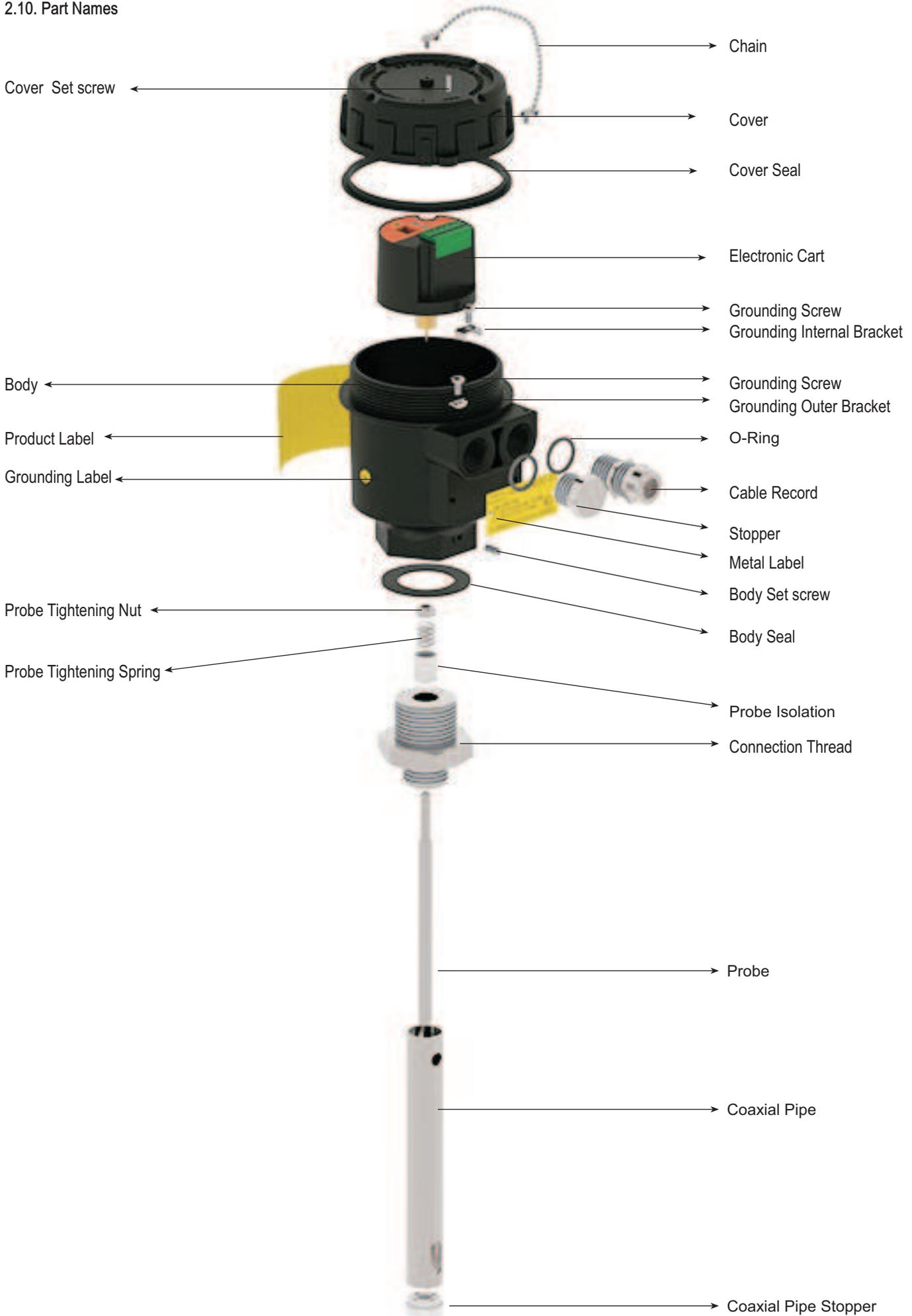
STD. MODEL	DX-ECAP	
Working Temperature	(-)40...(+)150°C	(-)40...(+)200°C (With cooling)
Without opening the cover standby time	30min.	40min.

Thermal Protection Insurance is 105 °C

(-) 20°C ≤ T Ambient ≤ (+) 30°C...(+) 60°C		Working Temperature :(-) 40...(+) 150°C	
DX-ECAP			
T Ambient MAX. AMBIENT TEMPERATURE ZONE 21 / 1	T Process MAX. PROCESS TEMPERATURE ZONE 20 / 0	T Surface MAX. SURFACE TEMPERATURE	TEMPERATURE CLASS
30°C	150°C	60°C	T6
40°C	150°C	67°C	T6
50°C	150°C	75°C	T6
60°C	150°C	88°C	T5

(-) 20°C ≤ T Ambient ≤ (+) 30°C...(+) 60°C		Working Temperature :(-) 20...(+) 200°C	
DX-ECAP (Metal)			
T Ambient MAX. AMBIENT TEMPERATURE ZONE 21 / 1	T Process MAX. PROCESS TEMPERATURE ZONE 20 / 0	T Surface MAX. SURFACE TEMPERATURE	TEMPERATURE CLASS
30°C	200°C	43°C	T6
40°C	200°C	46°C	T6
50°C	200°C	58°C	T6
60°C	200°C	70°C	T6

2.10. Part Names



1	MODEL DX-ECAP	
	Conductive Liquids.....1	Solids Particulate Materials.....3
	Low Conductive Liquids2	Adhesive and Acid/Basic Liquids.....4

2	CERTIFICATE	
	No.....0	(EN10204-3-1) Material Certification.....1

3	PROBE TYPE (MAX. LENGHT)	
	Single Probe - Insulated (Max 4m) 1	Double Probe - Single Fully Insulated (Max 4m)8A
	Single Probe - Coaxial (max 4 m) Ø38 2	Double Probe - Partly Insulated (Max 6 m)8B
	Single Probe - Thin Coaxial (max 1 m), Ø21 ... 3	Ceramic Partly Insulated Probe (Max 4 m) S
	Rope - Partly Insulated (Max 32 m).....4	Special x
	Single Probe - Partly Insulated (Max 6 m) 5	
	Rope - Fully Insulated (0 ... 32mt) 7	

4	PROBE DIAMETER (Ø)	
mm	Special x

5	STEM LENGHT	
mm	

6	PROCESS TEMPERATURE	
	150°C Standard0	(-)196°C For Cryogenic Tank2
	200°C with Cooling Apparatus1	230°C with Peek Insulated3

7	CONNECTION				
	<u>Thread (ISO 228-1)</u>	<u>Clamp (ISO 2852)</u>	<u>ISO Flange (1092-1)</u>	<u>ASA Flange (B16.5)</u>	<u>Special Flange</u>
	1/2" BSP.....04	DN25 - PN16 ... 21	DN25 - PN40 ... 26	DN50 - 150lb ... 41	Ø70 Flanged...71
	3/4" BSP.....05	DN50 - PN16 ... 23	DN32 - PN40 ... 27	DN80 - 150lb ... 43	Special.....x
	1" BSP.....06		DN50 - PN40 ... 28	DN100 - 150lb ... 44	
	1 1/2" BSP08		DN80 - PN40 ... 29		
	2" BSP.....09		DN100 - PN16 ... 30		
	1/2" NPT.....12				
	3/4" NPT.....13				

8	OUTPUT	
	4-20mA Two Wire.....19	3 -180 ohm23
	4-20mA Three Wire20	10-180 ohm24
	0-10V Three Wire21	240-33 ohm25
	0-20mA Three Wire.....22	4-20mA Two Wire+Relay.....26
		Special x

9	HOUSING	
	Aluminium Housing, B20x.....25	Special.....x

10	INSULATION MATERIAL	
	PBT.....65	Polyamide.....69
	PTFE.....66	Rubber.....81
	PFA.....67	FKM.....84
	PEEK.....68	Special.....x

11	CONNECTION MATERIAL	
	316 Stainless Steel.....02	Special.....x
	Brass.....41	

12	ELECTRICAL CONNECTION	
	With Terminal.....00	Special.....x

13	OPTIONAL	
	No...../ 0	Wall Apparatus...../ W
	By - Pass Tube...../ T	Special...../ x

SAMPLE

DX-ECAP 101 -10 - 300 - 0 - 006 - 21 - 25 - 66 - 02 - 00 / 0

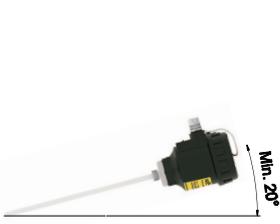
For Cond. Liquid,, L=300mm, 1"BSP, 0-10V, Aluminium Housing , Ø10 Probe

2.12.

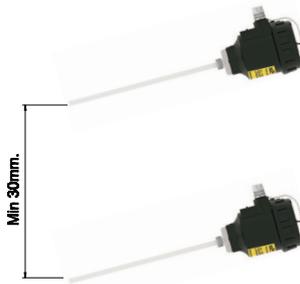
WARNING !!!



Please pay attention to following matters in order to operate your flow switch properly.



When connecting the switch to the tank
Connect with 20 degree angle.



Switch from 30 cm each other
do not connect close



Please keep away from magnetic materials
like iron board ; otherwise the
characteristics might be affected



Please do not drop ,
otherwise the characteristics
might be changed.



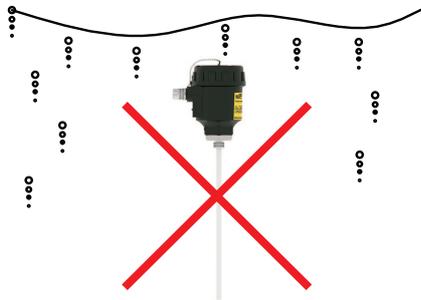
Please do not dip cables
poting into liquids, otherwise
instulation problem may cause.



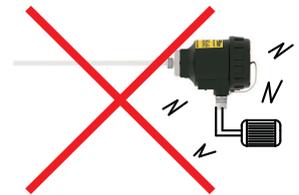
Do not fasten switch reversely ,
otherwise its characteristics
might be changed.



Vibration might be caused instability.



Do not fasten switch reversely ,
otherwise its characteristics
might be changed.



Excess current , to be drawn as
a result of direct connection to motor,
may burn relay of switch



Do not remove the plastic parts
of the bottom of the switch body ,
do not loosen.



Do not connect the switch in reverse.
Their characteristics may vary.



Do not pull the cable strongly,
otherwise the characteristics
might be changed.

3. Failure Delection



Your device must be repair only at an authorized serviced.

Breakdown	Probable cause	Failure detection\correction
Power Led does not work.	* Supply voltage may not be work. * Power led might be faulty. * Electronic card might be faulty due to supply.	* The supply voltage must be checked. * Please apply to service. * Please apply to service.
Non-Calibration	* The applied process may not be suitable for the probe. * Grounding connection either poor or disconnected. * There might be low power supply. * Grounding might be done correctly. * PTFE coat around the probe might be damaged.	* Appropriate probe material and product selections should be made * Checking the grounding connections * The supply voltage must be checked. * Please check grounding wire * Protection of the exterior cover of probes.
Increase of the output current	* Variety of applied process * PTFE coat around the probe might be damaged. * Grounding might be done correctly.	* Appropriate probe material and product selections should be made. * Protection of the exterior cover of probes. * Please check grounding wire

If you find an error, try to eliminate it by using this table or send the instrument to our service address for repair.



The instrument should be repaired only by authorized service! Serial number shall be indicated to the authorized service center.

4. Disassembly of Instrument

Instrument should be disassembled while feeding and pressure is not available!

5. Service

The instrument does not require maintenance. If it is desired, residue accumulated inside should be blown according to kind of fluid and instrument can be cleaned with soft cleaning solutions. Measures should be taken during the disassembly.

6. Re-Calibration

During long period usage of capacitive level switch, there might be deviations on measurements. In those cases, recalibration is recommended. Re-calibration could be made by your technical staff or you could send to manufacturer company. According to IEC 60017, ex proof devices must be go through detailed inspection every 3 year from purchase date. Responsibility of inspections are belong to the user (IEC: International Electrotechnical Commission)

7. Repair – Manufacturer Address

If irreparable breakdowns occur, the instrument should be sent to us for repair purpose. Before this, the instrument should be cleaned carefully and packaged so as not to be broken. Furthermore, you should also add a detailed explanation which describes the breakdown while instrument is sent. If your instrument contacts with harmful substances, decontamination report should be also sent additionally. In the event that instrument does not have any decontamination report or our service department has doubts about instrument, repair process will not start until an acceptable report is sent.

If the instrument contacts with hazardous substances, necessary measures should be taken for decontamination!

Service -Manufacturer Company Name and Address:



LONCA PAZ. MAK. SAN. TİC. A.Ş. Ferhatpaşa Mah. Gazipaşa Cad. No: 104A Ataşehir - İSTANBUL - TÜRKİYE
Tel:+90 216 50 50 555 Faks:+90 216 515 45 84 E-Mail: lonca@ensim.com.tr Web: www.ensim.com.tr

8. Disposal

The instrument should be disposed according to 2002/96/EC and 2003/108/EC European Directives (waste electrical and electronic instruments).
Waste electrical and electronic equipment should not be mixed with domestic wastes!



If the instrument has contacted with harmful substances, special attention should be paid for its disposal!

9. Terms of Warranty

The instrument has warranty legally for 24 months after delivery date. Warranty demands are not accepted in case of inappropriate operation, damage on the instrument or any modification on the instrument.

10. Terms of Return

In the return of materials, user should send an open list related to damage or problem, malfunction of the material to be returned or its operation in the different modification, with the instrument. If it is required to return the material, used in the dangerous, corrosive or toxic fluid, in this case, used part should be cleaned very carefully. Security of personnel should be ensured. All products to be returned should be sent to our company address, which we have stated.