OPERATING MANUEL

Model : DX-ELT

VIBRATING ROD TYPE LEVEL SWITCH

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-ELT 101 , 102 , 104 , 105
DX-ELT 201 , 202 , 204 , 205

CE 2284

Important Notes:

Used Symbols :

: Caution : Note : Disposal

- Please read this manual carefully before installation of the **vibrating level switch**. User is responsible for accidents and losses arising from failure to comply with the warnings in this manual.
- In the event that **vibrating level switch** 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.
- The manufacturer's liability cannot exceed the purchase price of the device according to the law.
- Do not make any modification on the instrument and do not try to repair it. Reparation should be made by authorized service staff.
- Do not operate the system before making assembly in compliance with the assembly chart related to the instrument.
- Products which do not contain label and serial number are considered to be excluded from the warranty scope.
- The instrument's useful life, determined and announced by the ministry, is 10 years.

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1. General Information :

1.1. Material Acceptance

Check that there is no damage on the packages during the transportation immediately after the material acceptance. If packages are damaged, open the packages immediately and check whether products are affected or not, if there is any damage, send your complaint report to the transporter company and its photocopy to the address of our company.

1.2. Information about Areas of Use

The DX-ELT vibrating level switch is one of the other types of level switches. Unlike other sensors, it is not affected by the sticking of materials on the probe and impacts. It has no jamming problem and has a high sensitivity range.

Ambient Conditions: **Relative Humidity:** 5-98 %RH **Ambient temperature:** 60C (It is not used under -20 C)

1.3. Working Principle

DX-ELT series sensors generate vibration by means of piezoelectric elements using the resonance principle. Only when solid particulate materials or liquids surround the probe, the vibration frequency drops drastically, resulting in the output signal.

Application Areas:

It can be used in process that containers , silos , free flowing dusts, granules and various types of small particule solids such ascereals, beans, edible oil process, sugar, animal feed, rice plants, detergents, dye powder, chalk, gypsum, fly-ash, cement, sand, plastic granules, spices, milk powder etc.

1.4. Technical Specifications and Material

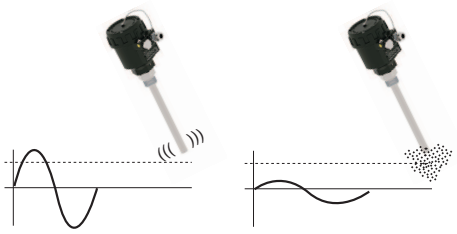
Fluid	Liquid , Solid , Powder
Wet Parts	316 Stainless Steel
Fork Holder	316 Stainless Steel
Housing Material	Aluminum
Max. Solid Particle Size	⩽ 10mm
Max. Liquid Viscosity	< 1000 mm² / sec
Measurement Density	For Solid ⩾ 0.1 g. / cm³ For Liquid ⩾ 0.7 g. / cm³
Vibration Frequency	280KHz (For DX-ELT102, 104, 105) 300 ± 50KHz (For DX-ELT101)
Delay Time	0.5 sec (Vibration Position) 1-2 sec (Vibration Onset) It can be adjusted between 1-60 sec.
Output (For DX-ELT102, 104) (For DX-ELT101, 105)	2 x 8A NO / NC Relay 24 VDC / 220 VAC 1 x 3A NO / NC Relay 30 VDC / 220 VAC
Supply	15-80 VDC , 15-260 VAC
Power consumption	2.5W
Connection	1”BSP (Std.) Male Thread Opt. flanged
Working pressure	Max. 20 bar (For ELT101, 105) Max. 40 bar (For ELT102, 104)
Housing	Aluminium, B21x
Working temperature	(-) 20 °C...(+) 145 °C (Std.)
Ambient temperature	(-) 20 °C...(+) 80 °C
Ambient Humidity	95%RH
Protection Class (EN60529)	IP 66 / 68

Certification

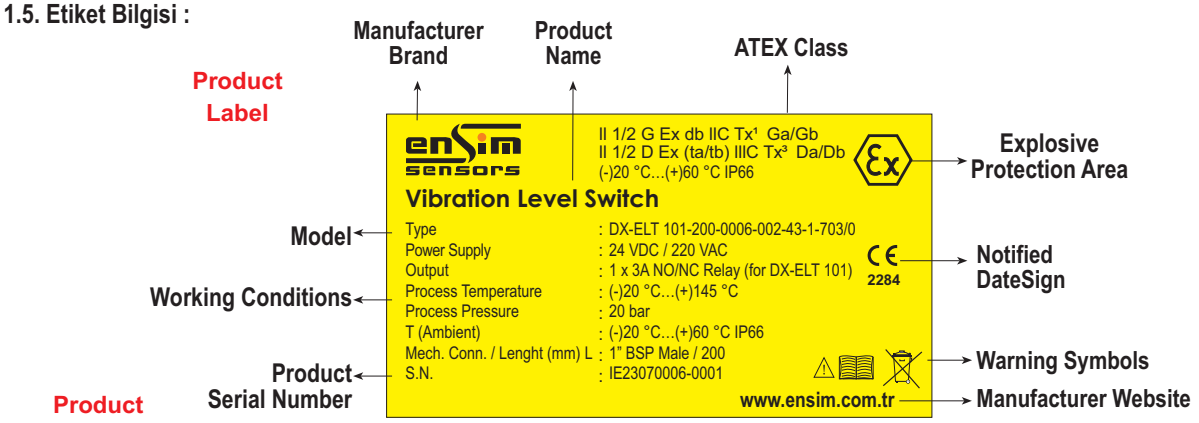
II 1/2 G Ex db IIC Tx[1] Ga/Gb
II 1/2 D Ex (ta/tb) IIIC Tx[3] Da/Db
(-)20 °C…(+)60 °C IP66
*** Have a look at the temperature class chart.**

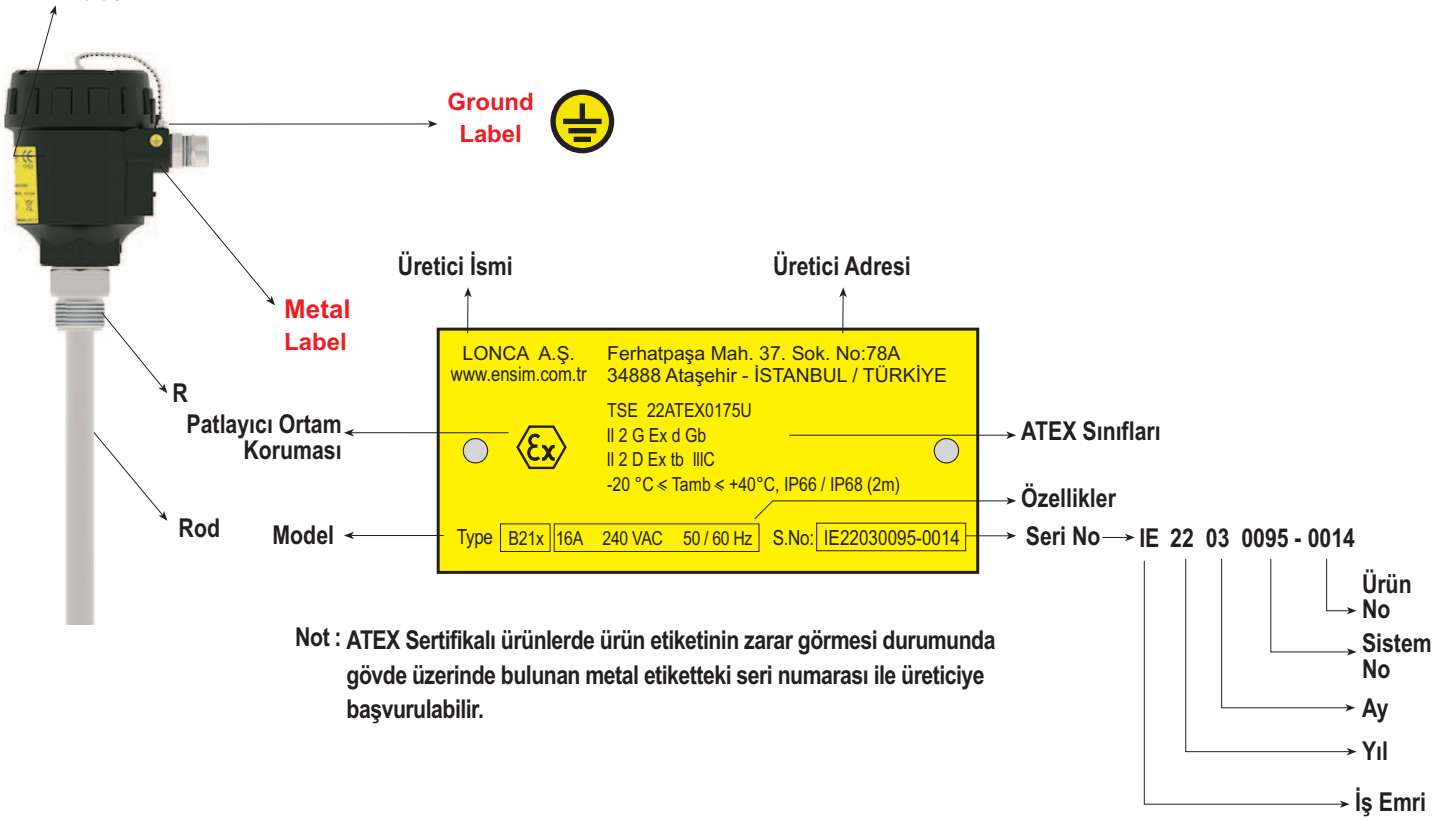
Advantages:

Suitable for side as well as top mounting
Minimum and maximum fail safe field selectable.
Process pressure max. 15 bar
Process temperature max. 145 °C
Low power consumption.
No Calibration Required
Settable switching delay as a standard feature
Durable Construction
Immune to External Vibrations



1.5. Etiket Bilgisi :

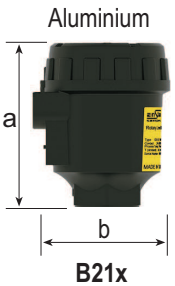




Not : ATEX Sertifikalı ürünlerde ürün etiketinin zarar görmesi durumunda gövde üzerinde bulunan metal etiketteki seri numarası ile üreticiye başvurulabilir.

Housing:

ORDER CODE	TYPE	MATERIAL	PROTECTION CLASS	TEMPERATURE (°C)	SIZE a x b (mm)
703	B21x	Aluminium	IP 66 / 68	(-) 40...(+) 200	132 x 104



Cover Seal : NBR Nitrile Rubber 120 °C, Opt. FPM (Viton) 200 °C)

EU-Type Examination Certificate Number : TSE 22ATEX 0175U

The marking of the equipment : II 2G Ex d IIC Gb
II 2D Ex tb IIIC

Protection Case :

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



1.6. 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:
***Vibrating level switch**
*This operating manual



Std. Box

1.7. Target Group

This operating manual has been prepared for qualified technical personnel.

1.8. Security Notes

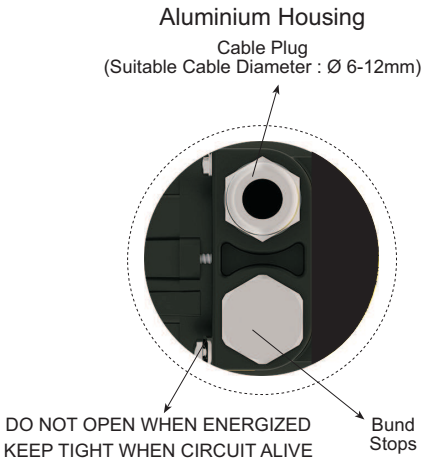
Please consider below notes for avoiding hazardous cases around operator and it's environment.

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.

1.9. Electrical Installation

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

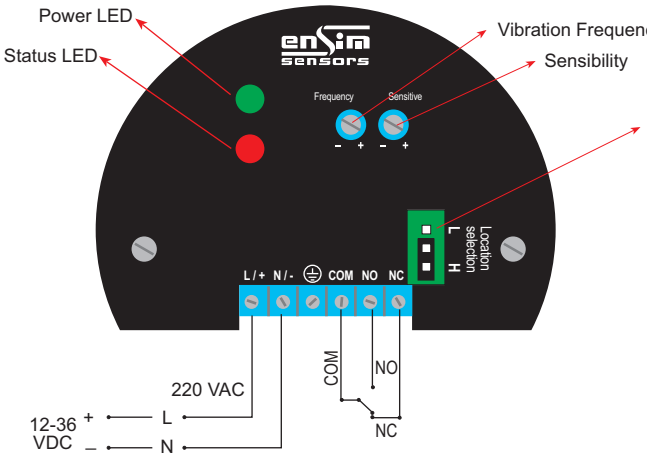




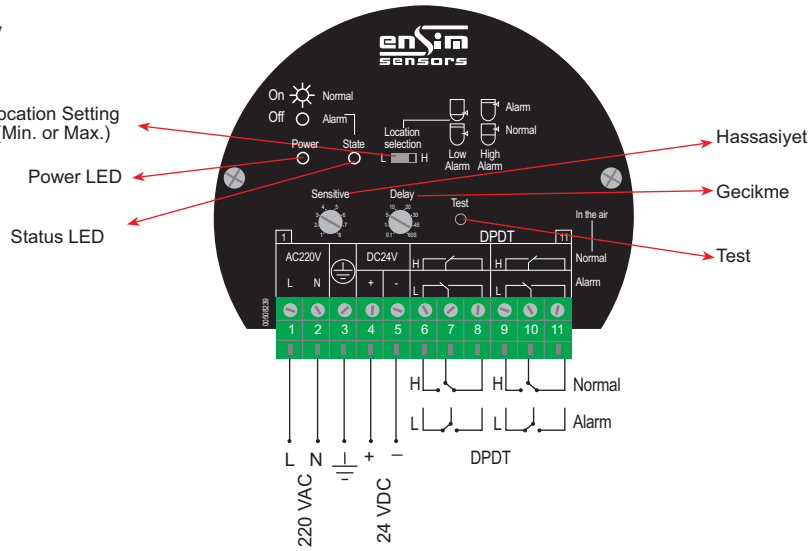


Electrical connection :

For DX-ELT 101, 105, 201, 205



For DX-ELT 102,104, 202, 204



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 IEC 60079 - 0 : 2018 TS EN 60079 - 1 : 2014 TS EN 60079 - 31 : 2014 TS EN 60079 - 26 : 2015
LVD (2014 / 35 / AB)	:	TS EN 60204 -1 : 2018
EMC (2014 / 108 / AT)	:	TS EN 61326 - 1 : 2021
		TS 3033 EN 60529 : 2014

Note : All the features and tests on this decument has manufactured with **DX-ELT** models at LONCA Inc.

1.10. Safety İnstructions (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 enviroment 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.

-İt 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 presure.

-These safety instructions are protected in terms of 1 / 2 D and 1 / 1 G category for **DX-ELT** coded series and is compatible with TSE 18ATEX0099 and CE certificate.

-The Label should be used in appropriate environments.

-Because the enviroment 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-ELT** models are metal protected.İt 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 presure in the tank hasnt exceed the presure shown in the catalog.

-The mounting sensor must be mount 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.

- Flange surface smoothness must be maintained in flanged connection.

- Flange seating surface should not be scratched, and suitable liquid gasket should be used instead of sealing with gasket in counter flange mounting.

- Flanged connections are welded with the sensor part.

-The sensor is designed to withstand the chemical effects of the materials.Check the suitability of different materials.

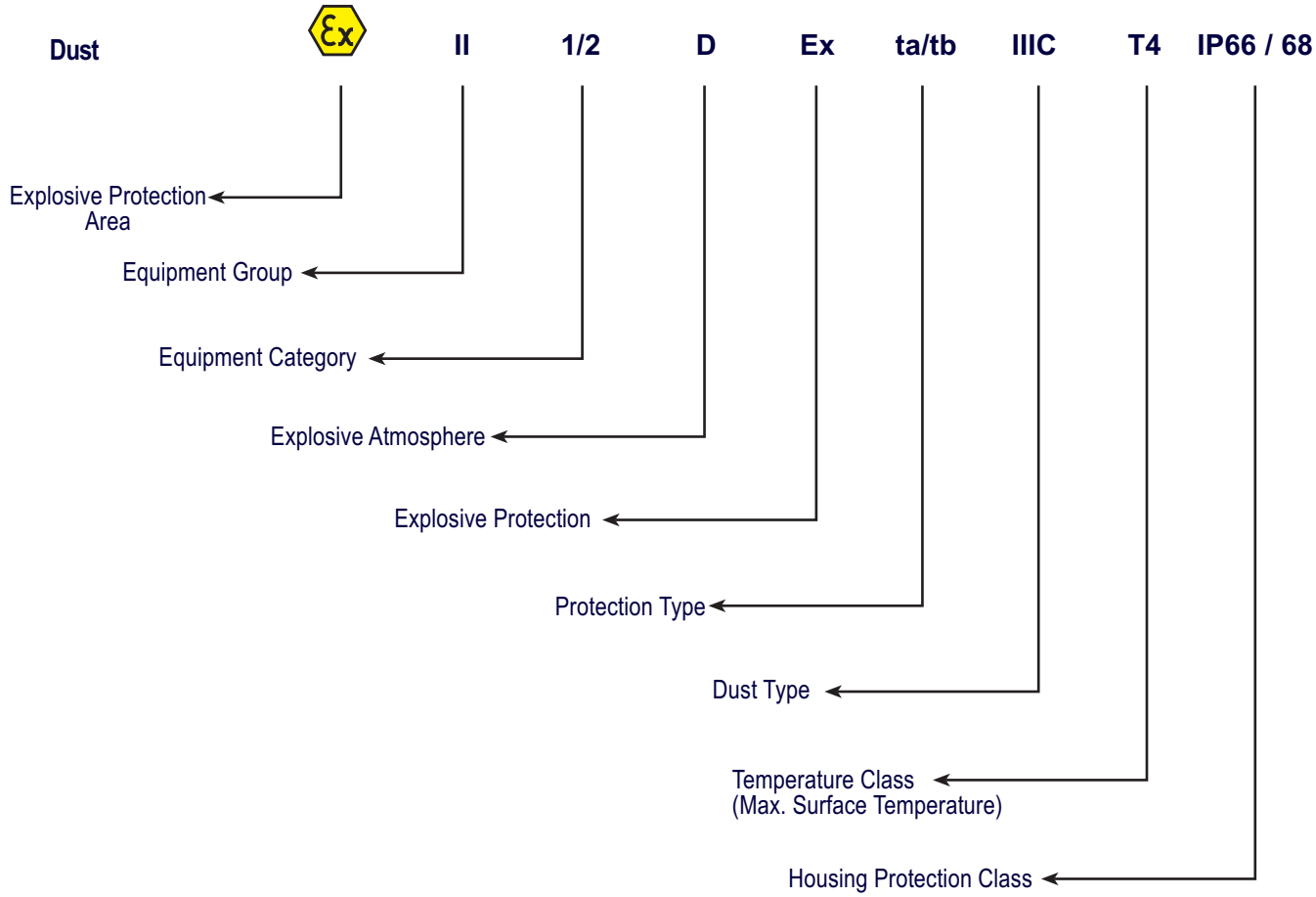
-The Sensors are in suitable storage conditions and protected from dust and damp.

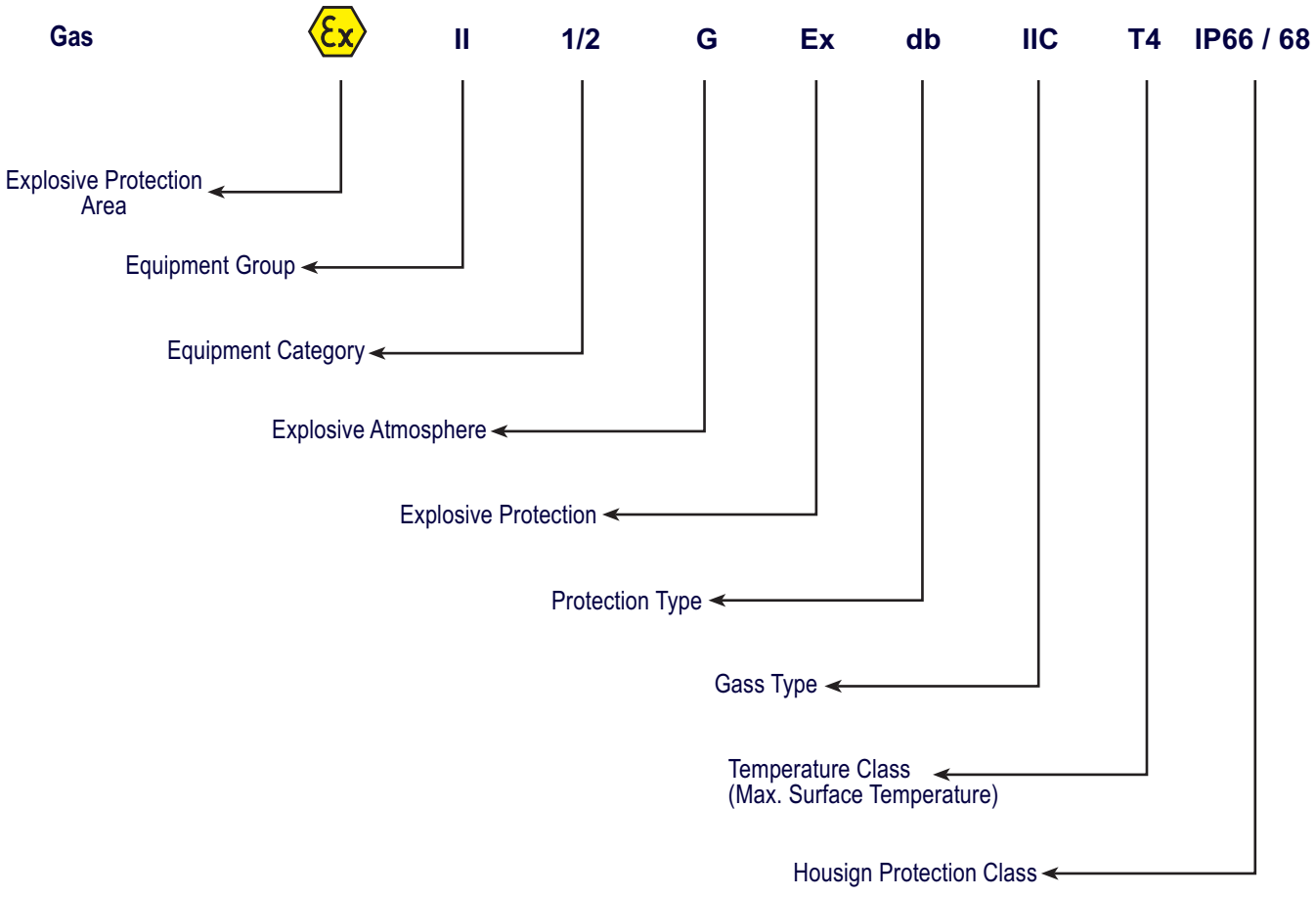
-Device repairs should only be done at the manufacturer Lonca Inc.

-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.

1.11. 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 **vibrating level switch** 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 pesure should not be exceeded.

2.2. General Installation Stages

*Remove **vibrating level switch** 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

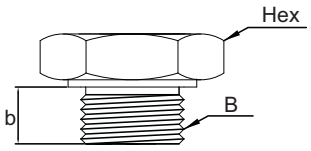
*Please ensure that there is no mechanical stress on the shaft following installation. Such case will cause slipping in thecharacteristic curve.
***vibrating level switch** must be placed upright or horizontal.
*Allocate valve certainly in the process connection while instrument is used.
*Allocate blowdown 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, **vibrating level switch** 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. Mechanic Connections :

Thread (Connection has been welded with sensor)



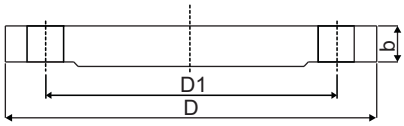


(ISO228-1)

Order Code	Dimension B	Hex [mm]	Stem Lenght b [mm]
0001	1/8"BSP	17	12
0002	1/4"BSP	17	12
0003	3/8"BSP	24	20
0004	1/2"BSP	27	14
0005	3/4"BSP	32	14
0006	1"BSP	41	23
0008	1 1/4"BSP	51	23
0009	1 1/2"BSP	60	23
0012	2"BSP	70	23

Flanged (Connection has been welded with sensor)

Order Code	(ISO1092-1) PN 16	D (mm)	D1 (mm)	b (mm)
0502	DN 25	165	85	16
0503	DN 32	140	100	16
0505	DN 50	165	125	18
0507	DN 80	200	160	20
0508	DN 100	220	180	20



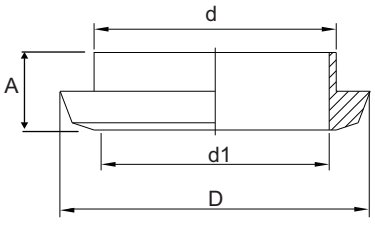


Order Code	(ISO1092-1) PN 40	D (mm)	D1 (mm)	b (mm)
0702	DN 25	115	85	18
0703	DN 32	140	100	20
0705	DN 50	165	125	20
0707	DN 80	200	160	20
0708	DN 100	235	190	24

Order Code	(ANSI B16.5) 150 LBS	D (mm)	D1 (mm)	b (mm)
1005	DN 50	152,4	121	19
1006	DN 65	177,8	139,7	22,2
1007	DN 80	190,5	152,4	23,8
1008	DN 100	228,6	157,2	23,8

Dairy (Connection has been welded with sensor)

Order Code	Dimension	Dimension	D (mm)	d1 (mm)	A (mm)
1600	DN40	DN40	56	48	13
1601	DN50	DN50	68	61	14
1602	DN100	DN100	121	114	20





2.6. Maximum Surface Temperature

Temperature Class Table

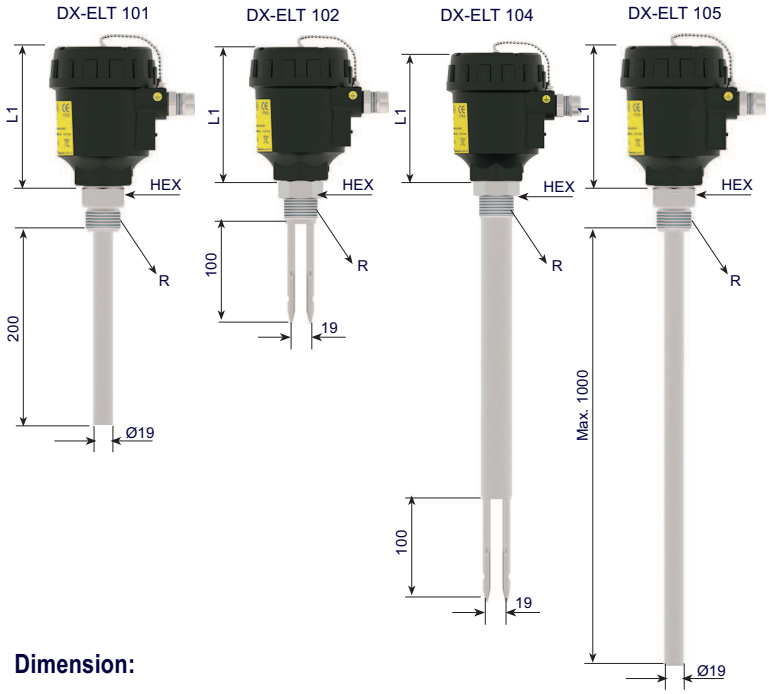
STD. MODEL	DX-ELT (Metal)
Working Temperature	(-) 20 °C... (+) 145 °C
Without opening the cover standby time	20min.

Thermal Protection Insurance is 105 °C

(-) 20° C < T Ambient < (+) 30° C...(+) 60° C	Working Temperature :(-) 20...(+) 145°C	GROUP II
DX-ELT (Metal)		
T Ambient MAX. AMBIENT TEMPERATURE ZONE 21 / 1	T Process MAX. PROCESS TEMPERATURE ZONE 20 / 0	TEMPERATURE CLASS
60°C	<80°C	T6
60°C	<95°C	T5
60°C	<130°C	T4
60°C	<145°C	T3

(-) 20° C < T Ambient < (+) 30° C...(+) 60° C	Working Temperature :(-) 20...(+) 145°C	GROUP III
DX-ELT (Metal)		
T Ambient MAX. AMBIENT TEMPERATURE ZONE 21 / 1	T Process MAX. PROCESS TEMPERATURE ZONE 20 / 0	TEMPERATURE CLASS
60°C	<60°C	T60°C

2.7. Sample Models :



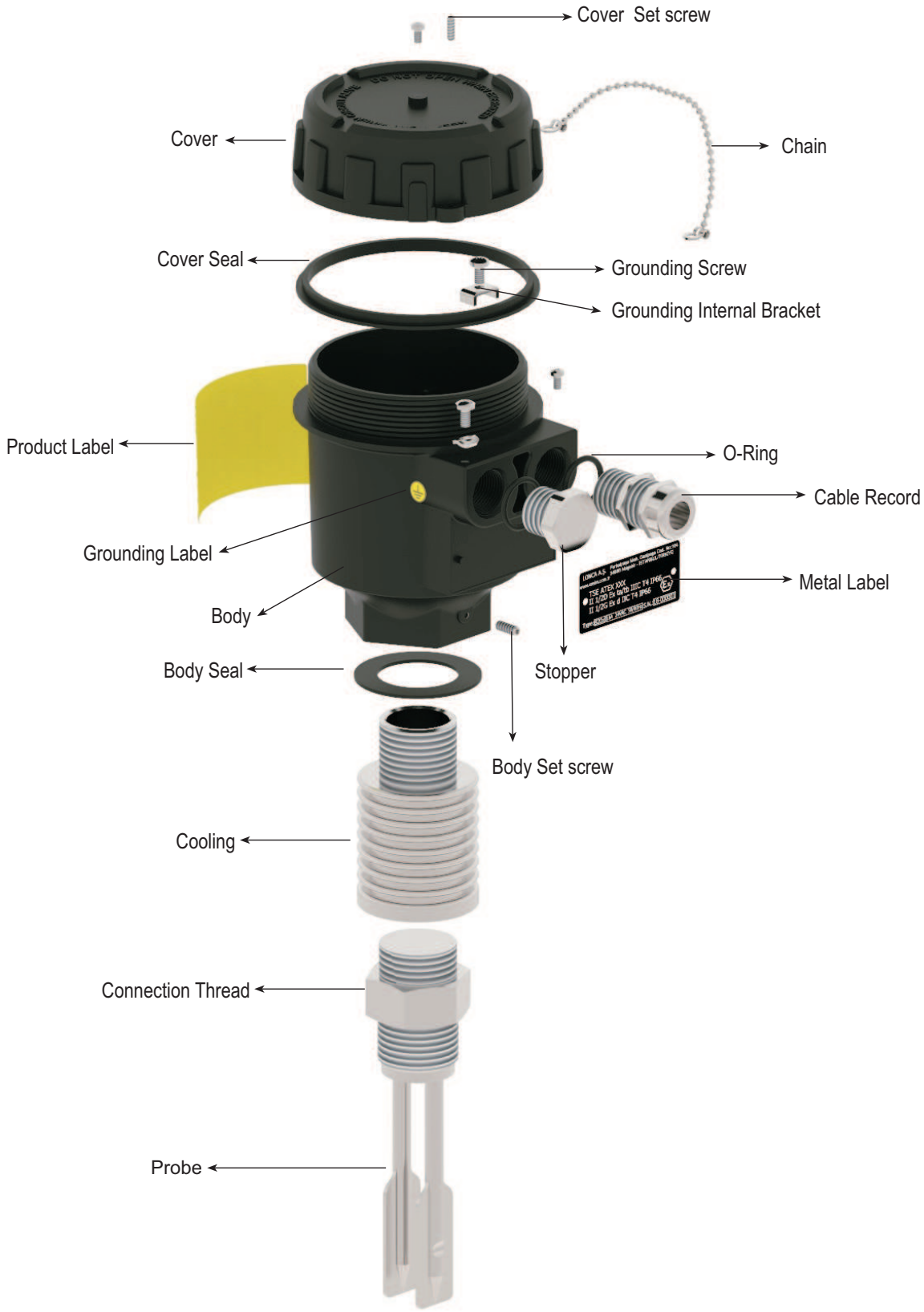
Detachable Housing (Opt. Selectable)



Dimension:

	Connection BSP (mm)	L (mm)	L1 (mm)	HEX (mm)
DX-ELT 101	1" BSP	220	134	40
DX-ELT 102	1" BSP	125	134	38
DX-ELT 104	1" BSP	Max.1500	134	38
DX-ELT 104	1" BSP	Max.1000	134	38

2.8. Parça İsimleri



Order Form : Please consider sample models when coding

1 MODEL DX-ELT

Std. Type.....1
High Temperature Type.....2

2 CERTIFICATE

None.....0
(EN10204-3-1) Material Certification.....1

3 CONNECTION TYPE

Thread Rod Type.....1
Thread Fork Type 2
Long Fork Type 4
Long Rod Type 5
Special.....x

4 STEM LENGHT (mm) L

Std. (For DX-ELT102,104,202,204).....100
Std. (For DX-ELT101, 201).....200
Special.....x

5 CONNECTION (The connection is welded with the sensor)

1” BSP (Std.) 0006
1 1/2” BSP (Std.) Single Probe.....0008
DN 50 - PN 16 (Std.).....0505
DN 80 - PN 16.....0507
DN 100 - PN 16.....0508
Special.....x

6 WETTED PART MATERIAL

316 Stainless Steel (1Cr18Ni9Ti).....002
Special.....x

7 OUTPUT

2 x 8A NO / NC Relay 12
(For ELT102, 104, 202, 204)
1 x 3A NO/NC Relay (For ELT101,105, 201, 205)....43
Special.....x

8 WORKING TEMPERATURE

(-) 20 °C...(+) 145 °C.....1
Special.....x

9 HOUSING

Aluminium Housing , B21x IP 66 / 68.....703
Special.....x

10 OPTIONAL

None...../ 0
Protection Cover - 304 Rust for outside of tank St. St..../ K2
Reduction R 1"-R 2"...../ 106
Separable Housing - St.St. Flexi Spiral (**It depends on the model**).../ S1
Separable Housing - Plastic Flexi Spiral (**It depends on the model**)..../ S2
Special...../ x

SAMPLE DX-ELT -101-200-0006-002-43-1-700/0

Vibrating Type Level Switch, Model DX-ELT101, L=200 mm, 1” BSP Male Thread, Single Contact

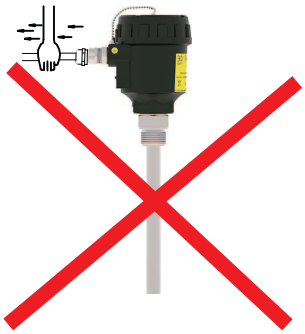
2.10.

WARNING !!!

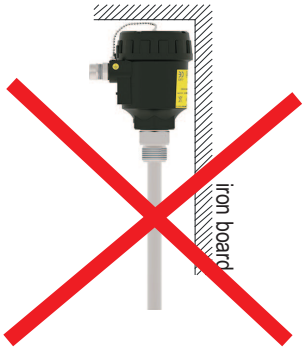
Please pay attention to following matters in order to operate your flow switch properly.



No material should come on the probe.
You should put a guard plate on the top.



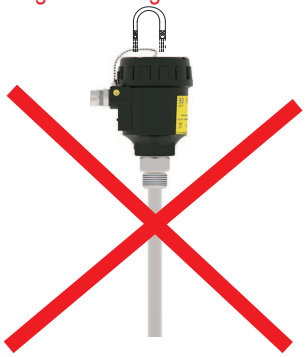
Do not pull the cable strongly, otherwise the characteristics might be changed.



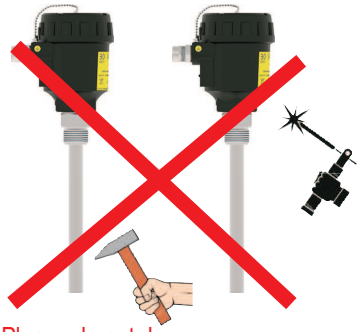
Please keep away from magnetic materials like iron board ; otherwise the characteristics might be affected



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



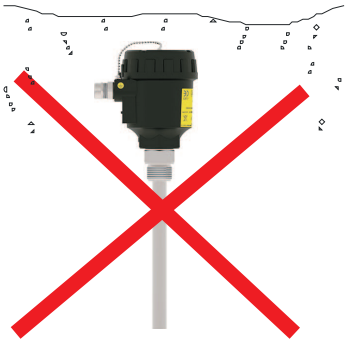
Do not fasten switch reversely , otherwise its characteristics might be changed.



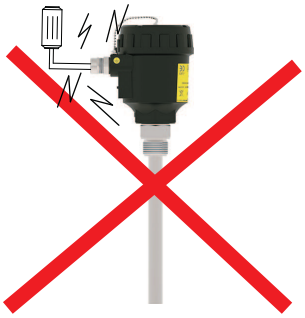
Please do not drop , otherwise the characteristics might be changed.



Vibration might be caused instability.



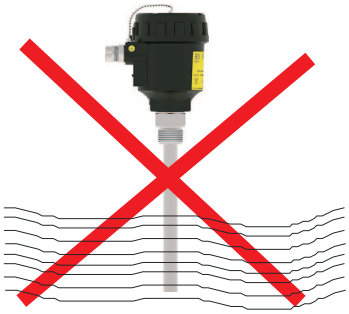
Do not fasten switch reversely , otherwise its characteristics might be changed.



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.



Please avoid using with liquids which damage materials of parts ,otherwise quality can not be maintained accurately.



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

3. Failure Delection

Breakdown	Probable cause	Failure detection\correction
No relay output / Continous relay output	-The contact may be burnt out. -Connection angle is not properly connected. -Applied values higher than the application current or voltage. -Swich setting is not correct.	-Notify the authorized service. -Adjust the connection angle to the proper position. -Notify the authorized service. -Check the swich setting.
Unstable Switch	-Product was dropped or hit from outside -Swich setting is not correct. -The product is exposed to excessive vibration	-Notify the authorized service. -Check the swich setting. -It should be prevented from vibration affecting the product or it must connected to a place where vibration will not occur.
Fork broken or bent	-The size of the particles are larger than measurable size	Appropriate products should be used Please contact the manufacturer for another model selection.
Broken or dissolved housing	-Physical damage is received from working environment. -Housing damaged from chemical effect.	-Outer physical effects must be prevented. Change of equipment position is advised. -Housing type can be changed for more protection against outer effects, please contact with manufacturer with determined environment conditions.

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!

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. Recalibration

Calibration is not required during long period useful life of a level switch.

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 MAK. SAN. TİC. A.Ş. Ferhatpaşa Mah. 37. Sok. No: 78A Ataşehir - İSTANBUL - TÜRKİYE
Phone:+90 216 50 50 555 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.