



# تهران دلیک

شرکت دانش بنیان

اولین و تنها سازنده سوئیچ و ترانسیمیتر سطح مغناطیسی ضد انفجار در ایران  
دارای گواهینامه بین المللی **IECEx** و **ATEX**



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## Introduction

Tehran Delik Co. was founded in 2000 with the aim of design and producing of instrumentation and markets all its products with GERYAL brand. At present, its products include magnetic level gauges and its accessories such as magnetic limit switches and transmitters, magnetic float and displacer level switches and float transmitters, a variety of glass level gauges and its accessories such as valves. Tehran Delik Co. is proud to be the first manufacturer of explosive magnetic level switches and transmitters with international ATEX and IECEx certificates in Iran.

## Special Products:

### ◆ PTFE Lining Gauges:

Many customers complain about deterioration effect of corrosive fluids. Good to know one of the most resistant polymers against such fluids is "PTFE". Tehran Delik Co. is proud to announce that it is the only manufacturer of PTFE Lining gauges with a minimum thickness of 3 mm in Iran.

### ◆ Explosion Proof Products (Magnetic Level Switch and Magnetic Level Transmitter):

Tehran Delik as a first manufacturer of explosion proof magnetic level switch and transmitter in Iran that approved by European ATEX and international IECEx, offers the LS/MD-Ex (magnetic level switch), LTR16-Ex and LLT14-Ex (magnetic level transmitter) in two types of intrinsically safe (Ex ia) and flameproof (Ex d) with individual features for hazardous areas. It is noted that this product is easily adjustable like as other GERYAL accessories.

### ◆ Multiple Spherical Floats:

One of the limitations of magnetic level gauges is their inefficiency or inappropriate performance at low densities (less than  $sg = 0.5$ ) and pressures above 30 barg. For this purpose, Tehran Delik team designed and exploited multi-spherical floaters after several research and experiments.

### ◆ Bicolor Glass Level Gauge

Tehran Delik co. offers a unique glass level gauge that provide a double color lighting system. Bicolor level gauge is a kind of transparent level gauges that distinguished the liquid and steam by red and green light.

## A Brief History of Tehran Delik Company:

### ◆ Acid unit:

- Bander Imam Petrochemical Company, FARAVARESH 1; 2024.
- HCL Acid tank -Aryasasol Polymer Company; 2017-2024.
- Sulfuric acid tank- Bandar Imam Petrochemical Company, ABNIROO Co.; 2003-2023.
- Acid tank (Acetic Acid, Propionic Acid & ...) Fanavaran Petrochemical; 2018-2023.
- HCL Asid tank-Mobin Petrochemical; 2022.
- Hydrazine tank- Qom Power Plant; 2015.
- HCL Acid tanks - Arvand Petrochemical Company; - 2014 and 2018.
- Sulfuric acid tank- Yazd Power Plant, 2018.
- Acid tank- Trasht Power Plant, 2017.
- Acid tank- Bandar Imam Petrochemical Company, BASPARAN Co.; 2008.

### ◆ Boilers, Deaerators, condensate source:

- Illam Petrochemical co; 2023.
- Kavian Petrochemical; 2023.
- Bandar Imam Petrochemical Company, ABNIROO; 2006-2022.
- Pakman Co. (Manufactures of boilers, thermal oil heaters & ...); Beginning Collaboration since 2004.
- Ramin Power Plant (High Pressure Heater); 2012.
- Jam Petrochemical Company; 2011.



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- Oil Refining of Kermanshah; 2015-2023.
- Montazer Qaem power plant ; 2022.
- Shahid Mohammad Montazeri Power Plant; 2012.
- Amir Kabir Petrochemical Company; 2015.
- Qom Power Plant; 2014.
- Bushehr Nuclear Power Plant; 2021.
- Aryasol Polymer Company; 2017-2023.
- Yazd Power Plant; 2018.
- Morvarid Petrochemical Company; 2016-2018.

### Cold unit:

- Jam Petrochemical Company- Olefin Unit; 2011-2023.
- Marun Petrochemical Company; 2023.
- Aryasol Polymer Company; 2023.
- Morvarid Petrochemical Company; 2016.
- Pars Petrochemical Company; 2014.
- Kavian Petrochemical Complex; 2014.

### Hazardous areas:

- Iranian Oil Pipeline and Telecommunication Company; 2018.
- South Zagros Oil and Gas Production Company; 2019.
- South Pars Gas Complex; (1&4 Refinery); 2023.
- Jam Petrochemical Company; 2019-2023.
- Iran Chemical industries investment co.; 2021.
- Marun Petrochemical; 2024.
- Metanol Apadana Petrochemical; 2023.
- Ghadir Petrochemical co; 2020-2023.
- Pars Petrochemical co; 2023.
- Shazand petrochemical complex; 2022.

### Interface:

- SPGC,phase 2 & 3; 2019-2020.
- Pars Oil and Gas Company, phase 17 & 18; 2021.
- South Zagros Oil and Gas Production Company; 2020.
- Pasargad Qeshm Heavy Oil Refinery; 2022.
- Fanavaran Pertochemical; 2020.
- Ghadir petrochemical; 2021-2024.

## ◆ Products

### LLI73

- Suitable instrument to measure and monitor the level of fluid.
- Safe, reliable, and high-visibility
- Appropriate for use in many services (toxic, noxious, flammable, hot, cold and...).
- Ability to control level of liquid by Mounting switches and transmitters on LLI 73.

### Manufactured of:

- ✓ Many kinds of stainless steels.
- ✓ Many types of polymers with regard to its resistance against corrosive liquids.
- ✓ Super alloys according to customer needs and requests.
- ✓ Stainless steel chamber with PTFE lining. Resistant against environmental conditions, destructive and corrosive liquids.



### ◆ LLI73SS:

- Manufactured of many kinds of stainless steels.
- High resistance.
- Applicable in different conditions of environment.

### ◆ LLI73(Super Alloy)

- Manufactured of super alloys according to customer needs and requests.

Max. Temperature: 550°C  
 Max. Pressure: 300 barg  
 Min.S.G: 0.35

Accessories: Switch \_ Transmitter  
 Ex-Switch \_ Ex-Transmitter



**GERYAL**

## LLI73(Polymer)



Manufactured of many types of polymers (PVDF PP PVC Fiberglass)  
 Resistance against corrosive liquids  
 Used in processes with temperature less than 100°C and pressure less than 6 barg.

Max Temperature: 100°C

Max Pressure: 6 barg

Min.S.G: 0.5

Accessories: Switch \_Transmitter  
 Ex-Switch \_ Ex-Transmitter

## LLI73SP

- Made of stainless steel chamber with PTFE lining inside.
- "PTFE", One of the high resistant polymers against corrosive liquids.
- Protected against environmental conditions by stainless steel body,

Max Temperature: 200°C

Max Pressure: 40 barg

Min.S.G: 0.5

Accessories: Switch \_Transmitter  
 Ex-Switch \_ Ex-Transmitter



### Accessories of Magnetic Level Gauges:

In addition to indication and measurement application of LLI73 magnetic level gauge, it can be equipped with transmitter or various switches to control the level of liquid in a set point or as an analog continuous output.

<b>Limit Switches</b>	LS2	LS/RS	LS/MS	LS/MD	<b>Limit Switches</b>	LS/MD-Ex i	LS/MD- Ex d
<b>Max. Switching Capacity</b>	80mA, 24 VDC	0.4 A, 24 VDC* 9W	3 A, 250 VAC 500 VA	3A, 250VAC 500 VA	<b>Ex Approval</b>	Ex ia IIC T6 Ga	Ex db IIC T6 Gb
<b>Switch Form</b>	Normally Open Normally close Change Over	SPDT	SPDT	DPDT	<b>Max. Switching Capacity</b>	0.5 A, 30 VDC	5A, 30VDC 3A, 230VAC
<b>Ambient Temperature</b>	-20...80°C -4...176°F	-20...80°C -4...176°F	-20...80°C -4...176°F	-20...80°C -4...176°F	<b>Switch Form</b>	DPDT	DPDT
<b>Process Temperature</b>	<200°C <392°F	<100°C <212°F	<550°C <1022°F	<550°C <1022°F	<b>Ambient Temperature</b>	-50...+80°C	-50 ... +75°C
<b>Housing Material</b>	<b>Standard</b>	Stainless Steel	Aluminum	Aluminum	<b>Process Temperature</b>	Standard: -50...+150 °C	Standard: -50...+150 °C
	<b>Option</b>	Stainless Steel	Stainless Steel	Stainless Steel		Option: -195...+460 °C	Option: -195...+460 °C
<b>Protection Category</b>	IP66	IP66	IP66	IP66	<b>Housing Material</b>	Aluminum Stainless Steel 316L (Dual Compartment Housing)	Aluminum Stainless Steel 316L (Dual Compartment Housing)
<b>Cable Entry</b>	PG 13.5 M20x1.5 others on request	PG 13.5 M20x1.5 others on request	PG 13.5 others on request	ISO M25x1.5 others on request	<b>Protection Category</b>	IP66	IP66
<b>Weight g/lb</b>	100/0.22	400/0.88	900/1.98	1000/2.20	<b>Cable Entry</b>	ISO M25x1.5 3/4" FNPT Adaptor others on request	ISO M25x1.5 3/4" FNPT Adaptor others on request

Instrument Type	LTR16-Exi	LTR16-Exd
Ex Approval	Ex ia IIC T6 Ga	Ex db IIC T6 Gb
Overall Length Standard option	≤400 cm ≤600 cm	≤400 cm ≤600 cm
Resolution Standard Option	10mm (0.39 in) 5mm (0.2 in) 15mm (0.59 in)	10mm (0.39 in) 5mm (0.2 in) 15mm (0.59 in)
Ambient Temperature	-50...+80°C (-58...+176°F)	-50...+80°C (-58...+176°F)
Process Temperature Standard Option	-50...+150°C -195...+460°C	-50...+150°C -195...+460°C
Material Housing Tube	Stainless Steel 316L, Aluminum Stainless Steel 316L	Stainless Steel 316L, Aluminum Stainless Steel 316L
Protection category	IP67	IP67
Output Standard Option	4...20mA Hart Profibus Foundation Fieldbus	4...20mA Hart Profibus Foundation Fieldbus
Power Supply	8...30 VDC	8...30 VDC
Max. load	900 Ω (20 mA)	900 Ω (20mA)



Instrument Type	LTR16/ LTM16
Overall Length Standard option	≤400 cm ≤600 cm
Resolution Standard (LTR16) Option (LTM16) Magnetoelectric (LTM16)	10mm (0.39 in) 5mm (0.2 in) 1mm (0.04in)
Measuring error Standard (LTR16) Option (LTM16) Magnetoelectric (LTM16)	±10mm (±0.39 in) ±5mm (±0.2 in) ±1mm (±0.04in)
Ambient Temperature	-20...+70°C (-4...+185°F)
Process Temperature Standard Option	-20...+100°C -200...+550°C
Material Housing Tube	Stainless Steel 316L, 304L, Aluminum, P.P. Stainless Steel 316L, 304L, P.P.
Protection category	IP66
Output Standard Option	4...20mA Hart Profibus Foundation Fieldbus
Power Supply	8...30 VDC
Max. load	500 Ω (20mA)



## LLS73



This type of magnetic level switch operates by displacer or float. Changing of level moves the displacer or float and actuates the switch through magnetic field.

Max Temperature: 550°C  
Max Pressure: 300 barg  
Min.S.G: 0.35

## LLS14

In type LLS14, a sensor tube and one or more floats are used to control the level of liquid in one or more points of it.

Max Temperature: 130°C  
Max Pressure: 30 barg  
Min.S.G: 0.4  
Max Voltage: 250 VAC/DC  
Max Rating: 60 W(VA)



## LLS16



The LLS16 is a horizontal mounted buoyancy level switch which has minimal impact to the changes in process fluid specific gravity.

Max Temperature: 550°C  
Max Pressure: 300 barg  
Min.S.G: 0.35



## LLT14 & LLT14-Ex

This type of magnetic level transmitter operates by float.

The level transmitter generates current signal output (4 to 20 mA, Hart, Profibus or foundation fieldbus) due to changes of liquid level.

Min.S.G: 0.4

Approvals: Ex ia IIC T6 Ga

Ex db IIC T6 Gb



## Displacer Level Transmitter

### LTD60 & LTD08

This type of Magnetic transmitter actuated by displacer. Both models are two-wire, loop-powered instruments utilizing simple buoyancy principle to detect and convert liquid level changes into a stable output signal.

Max Temperature: 550°C

Max Pressure: 300 Barg

Min.S.G : 0.35

## LLG

Glass level gauge is a suitable instrument for measuring and monitoring liquid level of open and pressurized vessels. LLG series are used in many industries and can be mounted on vessels easily by their connections. The Liquid enters to the chamber of gauge and can be observed through the glass part. There is a graduated scale next to the glass part where you can measure the level.

- Direct Reading
- Simple
- Long Life
- Without Electrical Power Supply

## Transparent



- The liquid is contained within two smooth glass and easily visible.
- The ability to install illuminator for better visibility
- Can be used for measuring both total and interface level of liquid.
- Use Protective mica shield in steam services.

Max Temperature: 400°C

Max Pressure: 250 barg

Accessories: Drain/Vent Cocks, External Heating or Cooling, Non-Frosting Block, Graduated Scale, Illuminator, Mica Shield

Max Temperature: 400°C

Max Pressure: 250 barg

Accessories: Drain/Vent Cocks, Graduated Scale, color Illuminator, Mica Shield

## Transparent Bicolor



- A kind of transparent level gauges
- With special illuminator to obtain a double lighting system.
- Distinguishes the liquid and steam or air by red and green light.
- The red color indicates the steam/air
- The green color indicates the liquid

Max Temperature: 400°C

Max Pressure: 250 barg

Accessories: Drain/Vent Cocks, Graduated Scale, color Illuminator, Mica Shield

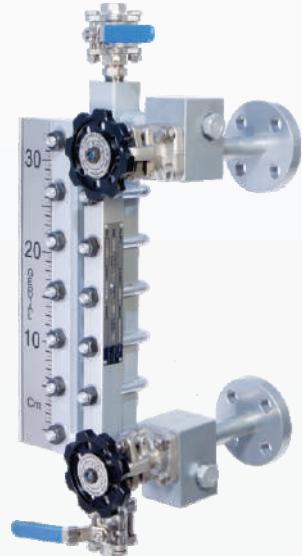
## Reflex

- The side of glass that is exposed to the liquid has a prismatic surface,
- other side is smooth.
- The liquid level is indicated as a result of light reflection.
- Lower purchase and maintenance costs.
- not suitable for two phases liquids and observing the color of liquid.

Max Temperature: 400°C

Max Pressure: 250 barg

Accessories: Drain/Vent Cocks, External Heating or Cooling, Non-Frosting Block, Graduated Scale



## Tubular



- Consisted of a borosilicate glass tube and connected to isolation valves from top and bottom.
- It isn't appropriate for high pressure and high temperature liquids.

Max Temperature: 250°C

Max Pressure: 20 barg

Accessories: Drain/Vent Cocks, External Heating or Cooling, Graduated Scale, Guard Rods, Plastic Tubular Guards, Four Side Glass Frame, Three Sides Metal Frame



## Sight Flow Indicator



- No power or special installation requirements.
- Wide variety of special materials to suit the most diverse applications.
- Several indication styles available
- Single, inexpensive means of monitoring flow.
- Visible indication allows flow characteristic to be observed.
- Instrument taps allow insertion of additional monitoring equipment.
- Lined units available to satisfy most corrosive environments.
- Different types of sight flow indicator
  - 1.Rotor type
  - 2.Flapper type
  - 3.Full view type

Max Temperature: 350°C

Max Pressure: 175 Barg

## Float & Tape level gauge

### LLI42

- Measure and indicate liquid level in tanks under different pressure
- Suitable for long lengths
- Applicable for refinery, petrochemical, chemical, power, radioactive, fertilizer, food, pharma, metal industry applications.
- Available in two types: Guided Type & Unguided Type
- Indicate in two types: Scale board or Dial
- Manufactured of many kinds of stainless steel, polymers or super alloys according to customer need



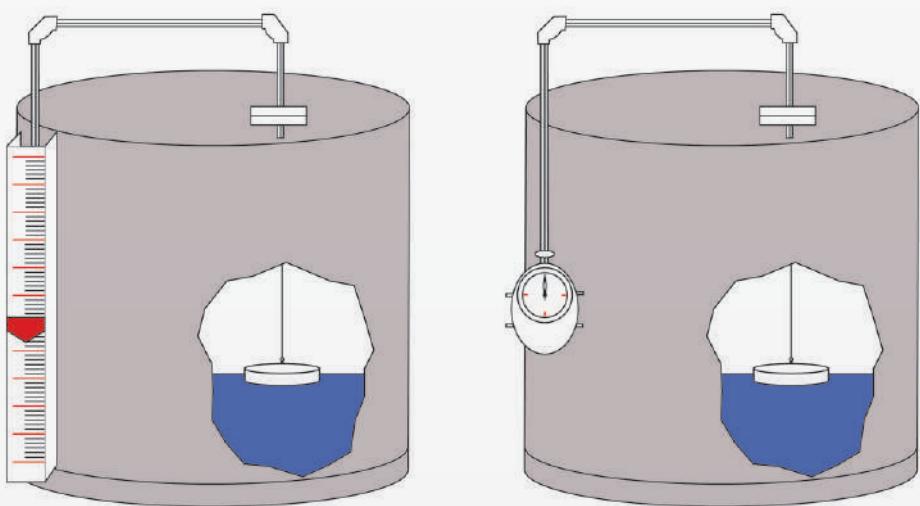
Measuring Range: 0...30m

Max Temperature: 200°C

Max Pressure: 40 Barg

Min. S.G: 0.4

Resolution: ±1mm



# Certificate



<b>IP TEST REPORT</b>	
<p>Product Name: <b>IP Camera</b>            Model Number: <b>IPC-A21</b>            Serial Number: <b>1234567890</b></p>	
<p>Manufacture by: <b>TELEVIEW</b>  <b>TELEVIEW</b> is a registered trademark of <b>TELEVIEW</b> Inc.</p>	
<p>Test Standard: <b>EN 300-328-2</b>            Test Date: <b>2023-09-15</b>            Test Time: <b>10:00:00</b></p>	
<p>Test Result: <b>Pass</b>            Test Report ID: <b>IP-2023-09-15-1234567890</b></p>	
<p>Comments: <b>None</b></p>	
<p>Signature: <b>John Doe</b></p>	

