

## DESCRIPTION

Vizual® Magnetic Level Indicators (MLI's) are built to be simple, rugged, reliable and cost-effective. Vizual indicators have basic features but are precision engineered and manufactured to guarantee a long lifetime.

The Atlas® MLI's are higher end gauges offering a wider choice of materials, special finishes, higher pressure and temperature ratings.

MLI's are widely used to replace sight and gauge glass indicators because these often require more maintenance. Optional switches and transmitters transfer the local level readings to a remote DCS/PLC system.

For Atlas® gauges – consult bulletin BE46-138.

## FEATURES

- Rugged, shockproof and completely sealed for safety.
- Rail can be rotated to obtain better viewing position.
- One or more switches can be positioned on the indicator for separate alarm indication.
- Immediate and accurate response to level changes.
- Stainless steel flags in aluminium rail.
- Float failure warning (optional): blue/white.
- Standard 1/2" NPT vent and drain plug.
- Max hydrotest pressure of the float 85 bar (1230 psig).
- Max process temp. +160 °C (+320 °F) - optional to +400 °C (+750 °F).
- Min process temp. -50°C (-60°F).
- Measuring range up to 5,7 m (19 ft) – longer lengths at request.
- Standard SG range from 0,56 - 1,50.
- Floats are not vented nor gas filled.
- Options:
  - \* scale in cm or tailor made
  - \* hermetically sealed and vibration resistant SPDT micro-switches with silver plated contacts (gold optional).
  - \* reed type bi-stable switches
  - \* reed chain transmitter with 4-20mA output (HART® optional).

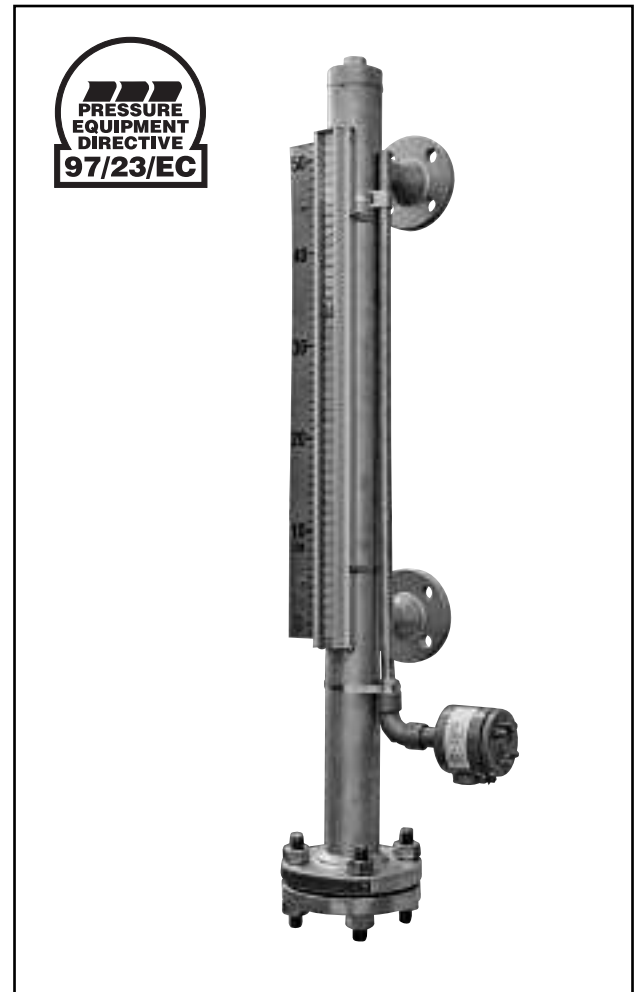
## APPLICATIONS

**MEDIA:** Clean liquids with a density between 0,56 and 1,50. Incl. aggressive, toxic and flammable liquids / liquified gases.

**VESSELS:** Most process and storage tanks up to rated operating pressure and process temperature.

**FUNCTION:** Continuous liquid level or liquid-liquid interface indication.

## Economic and simple



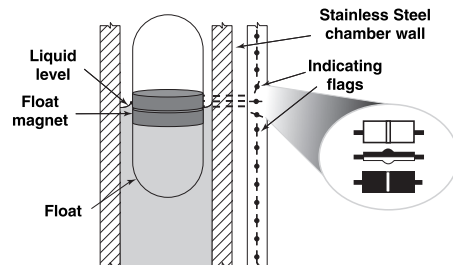
## AGENCY APPROVALS

Agency	Approval
LRS	Lloyds Register of Shipping (marine applications)
ATEX	II 1G EEx ia II C T6, intrinsically safe (for transmitter) II 2G EEx d II C T6, explosion proof (for micro switches) II 2G EEx ia II C T6, intrinsically safe (for reed switches) <sup>①</sup> II 2G EEx m II C T6 (for reed switches)

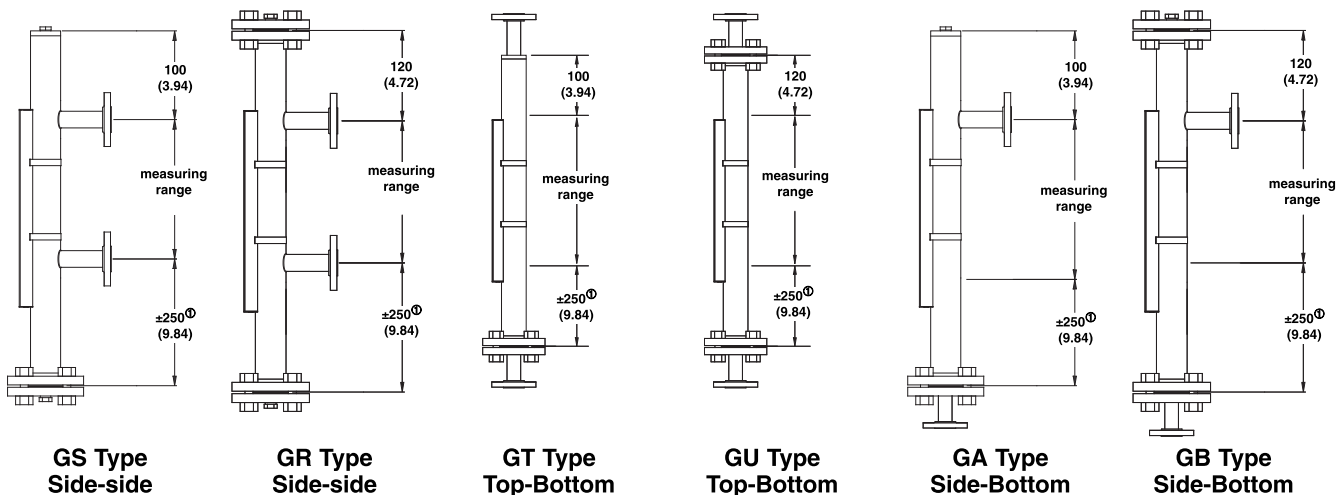
<sup>①</sup> Micro switches are accepted as simple apparatus and do not require any separate approval for use in ATEX, intrinsically safe area.

## PRINCIPLE OF OPERATION

The MLI (Magnetic Level Indicator) consists of a sealed by-pass cage, a float containing a magnet and a visual indicator rail with bi-coloured flags that individually contain a magnet. The indicator rail is external mount on the cage and its flags are magnetically coupled/aligned with the magnet of the float. As the level changes, the float will follow and its magnet will attract the magnets in the flags. This will cause the flags to rotate showing their opposite coloured side. The same electro-magnetic coupling will activate/deactivate switches or change the output of an externally clamped on reed chain transmitter.



## MOUNTING CONFIGURATIONS and DIMENSIONS in mm (Inches)



① Depending float size.

## AVAILABLE OPTIONS



GP/Exi

### MICRO SWITCHES

Hermet. sealed and vibration resistant  
Max 2A (0,5 A Exi) SPDT switches with  
IP 65, aluminium housing

Order code: **048-8510-004** - GP  
(M16 cable gland included)

Order code: **048-8510-002** - Exi (simple  
apparatus) (M16 cable gland included)

Order code: **048-8508-001** - Exd  
(3/4" NPT cable entry)



Exd



GP

### REED SWITCHES

Max 0,8 A SPDT (GP)  
Max 0,6 A SPDT (Exi and Exm) Bi-sta-  
ble type with:

- IP 67, Polyamide housing - GP
- IP 67, cast aluminium housing - Exi  
and Exm

Order code: **048-8509-002** - GP  
(5 m cable included)

Order code: **048-8509-001** - Exi  
(5 m cable included)

Order code: **048-8507-001** - Exm  
(5 m cable included)



Exi/Exm



GP/Exi

### REED CHAIN TRANSMITTER

With 4-20 mA output  
(HART® communication - optional)  
IP 67, ABS housing - GP and Exi  
IP 65, cast aluminium housing - Exd

Order code: **039-4052 - xxx** - GP  
(M16 cable gland included)

Order code: **039-4053 - xxx** - Exi  
(M16 cable gland included)

Order code: **039-4054 - xxx** - Exd  
(1/2" NPT cable entry)

**3 last digits of order code:** specify  
measuring range in cm (0.39") incre-  
ments: up to 600 cm (19.70').



Exd

## EXPEDITE SHIP PLAN (ESP)

Several Vizual's are available for quick shipment, within max. 3 weeks after factory receipt of purchase order, through the Expedite Ship Plan (ESP).

Models covered by ESP service are conveniently grey coded in the selection data charts.

To take advantage of ESP, simply match the grey coded model number codes (standard dimensions apply).

ESP service may not apply to orders of ten units or more. Contact your local representative for lead times on larger volume orders, as well as other products and options.



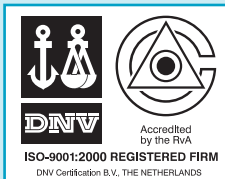
## PHYSICAL SPECIFICATIONS

Description	Specification
Measured value	Liquid level and liquid-liquid interface
Density range	Standard models: min S.G. 0,56 - max S.G. 1,5 - Consult factory for different S.G.'s Interface units: min. S.G. difference between upper and lower liquid > 0,1 (consult factory for smaller differences)
Measuring range	From 30 cm (12") up to 570 cm (224"). Consult factory for longer lengths
Indicator	≤ +250 °C (+480 °F): Polycarbonate window / aluminium rail / SST flags > +250 °C (+480 °F): Glass window / aluminium rail / SST flags Red-white flags (optional float failure warning: blue-white)
Resolution	10 mm (0.4") - height of flapper
Scale (Optional)	In cm or tailor made (at request) in 304 stainless steel
Materials	Cage/Flanges: 316/316L stainless steel Float: 316 Ti SST (1.4571) standard. Titanium for custom made floats
Process connections	Threaded, socket welded or flanged (ANSI - EN/DIN)
Design standards	In compliance to PED regulations and essential safety requirements
Hydro test	1,5 x operating pressure (without float)

## ELECTRICAL SPECIFICATIONS

Description	Specification
Switch ratings	Micro switch 24 ... 240 V AC / V DC      0,5 A / 30 V A / 20 W      – Exi (simple apparatus) 240 V AC      2 A / 100 V A / 40 W      – General Purpose / Exd
	Reed switch 24 ... 240 V AC / V DC      0,8 A / 60 V A / 40 W      – General Purpose 0,6 A / 45 V A / 45 W      – Exm/Exi
Switch Repeatability	< 2 mm (0.08")
Signal output	Switches SPDT micro-switches (optional DPDT), bi-stable SPDT reed switches
	Transmitter 8-30 V DC Loop powered transmitter: reed chain type: 4-20 mA output (opt. HART®) Accuracy: < 5 mm.
Approvals	LRS (marine applications) ATEX II 1G EEx ia II C T6, intrinsically safe (for reed chain transmitters) ATEX II 2G EEx d II C T6, explosion proof (for micro switches) ATEX II 2G EEx ia II C T6, intrinsically safe (for reed switches) ATEX II 2G EEx m II C T6 (for reed switches)
Temperature ranges	Micro switch -50 °C to +380 °C (-55 °F to +715 °F) – General Purpose / Exi (simple apparatus) -50 °C to +300 °C (-55 °F to +570 °F) – Exd
	Reed switch -25 °C to +75 °C (-10 °F to +165 °F) – General Purpose -25 °C to +85 °C (-10 °F to +185 °F) – Exm/Exi
	Reed chain transmitter -40 °C to +150 °C (-40 °F to +300 °F) – General Purpose -40 °C to +120 °C (-40 °F to +250 °F) – Exi/Exd (higher temp. at request)
Housing	Micro switch IP 65, Aluminium with M20 x 1.5 cable entry (cable gland incl.) – GP/Exi (simple apparatus) IP 65, Cast aluminium with dual 3/4" NPT cable entries – Exd
	Reed switch IP 67, Polyamide with flying leads (5 m of cable included) – General Purpose IP 67, Cast aluminium with flying leads (5 m of cable included) – Exm/Exi
	Reed chain transmitter IP 67, ABS with M16 x 1.5 cable entry (cable gland included) – General Purpose / Exi IP 65, Cast aluminium with 1/2" NPT cable entry – Exd

### QUALITY ASSURANCE - ISO 9001:2000



THE QUALITY ASSURANCE SYSTEM IN PLACE AT MAGNETROL GUARANTEES THE HIGHEST LEVEL OF QUALITY DURING THE DESIGN, THE CONSTRUCTION AND THE SERVICE OF CONTROLS.  
OUR QUALITY ASSURANCE SYSTEM IS APPROVED AND CERTIFIED TO ISO 9001:2000 AND OUR TOTAL COMPANY IS COMMITTED TO PROVIDING FULL CUSTOMER SATISFACTION BOTH IN QUALITY PRODUCTS AND QUALITY SERVICE.

### PRODUCT WARRANTY

ALL MAGNETROL MECHANICAL LEVEL CONTROLS ARE WARRANTED FREE OF DEFECTS IN MATERIALS AND WORKMANSHIP FOR FIVE FULL YEARS FROM THE DATE OF ORIGINAL FACTORY SHIPMENT.

IF RETURNED WITHIN THE WARRANTY PERIOD; AND, UPON FACTORY INSPECTION OF THE CONTROL, THE CAUSE OF THE CLAIM IS DETERMINED TO BE COVERED UNDER THE WARRANTY; THEN, MAGNETROL INTERNATIONAL WILL REPAIR OR REPLACE THE CONTROL AT NO COST TO THE PURCHASER (OR OWNER) OTHER THAN TRANSPORTATION.

MAGNETROL SHALL NOT BE LIABLE FOR MISAPPLICATION, LABOR CLAIMS, DIRECT OR CONSEQUENTIAL DAMAGE OR EXPENSE ARISING FROM THE INSTALLATION OR USE OF THE EQUIPMENT. THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED, EXCEPT, SPECIAL WRITTEN WARRANTIES COVERING SOME MAGNETROL PRODUCTS.



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SUPERSEDES:

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UNDER RESERVE OF MODIFICATIONS

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