PRODUCT BROCHURE

# FORTIMAG™

## High-pressure magnetic level gauge



Fortimag™ is built for extreme service: high pressure, high temperature, hazardous fluids and projects with full documentation requirements. The double-flanged chamber, with weld-neck flanges and dual internal stop springs, forms an all-metal pressure boundary that reduces potential leak paths.

Rated to 5,000 psig (345 bar) and +450 °C; Class 2500 flanges built to order. Each gauge is engineered to order for the vessel, the fluid and the piping code specified, with material traceability, NDE where required and pressure testing before shipment.

CONTENTS


- Industries served
- MagnaLine™ floats
- ClearView™ indicators
- Principle of operation
- Model code reference


REQUEST A QUOTATION →

lamontcontrols.com/request-a-quote

| 345 bar | −40 / +450 °C | to 222 in | Engineered |
|---|---|---|---|
| 5,000 psig | −40 / +842 °F | 5,640 mm | to order |
| with Class 2500 flanges | | | |
| PRESSURE | TEMPERATURE | LENGTH | CONFIGURATION |

# 01 Fortimag™ high-pressure magnetic level gauge

Design features of the Fortimag™ gauge, with LevelSync™ transmitter and SurePoint™ switch compatibility.

## Heavy-duty pressure boundary

**DESIGN FEATURE**

The chamber is double-flanged top and bottom, with weld-neck flanges and dual internal stop springs as standard. Full vacuum to 5,000 psig (345 bar); Class 2500 flanges built to order.

**IN SERVICE**

The pressure boundary is engineered to the same flange class as the process piping. Pressure and temperature ratings depend on materials, connections and configuration, and are confirmed at quotation.

## VaporGuard™ for flashing service

FORTIMAG ONLY

**DESIGN FEATURE**

VaporGuard™ prevents vapour entrapment under boiling or flashing conditions, for steam-drum and hot-hydrocarbon service. Available on Fortimag only.

**IN SERVICE**

Specified where the process liquid boils or flashes, such as high-pressure drum level and HRSG service. Ordered as option VG in the model code.

## Automation without new nozzles

**DESIGN FEATURE**

LevelSync™ transmitters and SurePoint™ switches clamp to the outside of the chamber and read the float's magnet. They add a standard 4–20 mA output, optional digital communication depending on configuration, and point-level alarms.

**IN SERVICE**

They have no wetted parts and require no additional vessel nozzle. They are fitted at the factory or in the field, and can be installed with the vessel in operation.

## Traceability, testing and documentation

**DESIGN FEATURE**

Full material traceability, with NDE (VT / RT / PT / PMI) where specified. Construction is industrial grade, ASME B31.1 or ASME B31.3, as specified in the model code. Pressure tested before shipment; hydrostatic test at not less than 1.5 × design pressure where specified. Test reports available.

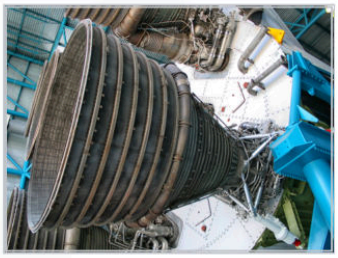
**IN SERVICE**

MTRs and NDE records are available. Fortimag suits projects with full documentation requirements: nuclear balance of plant, high-pressure hydrocarbon service and project-specified QA.

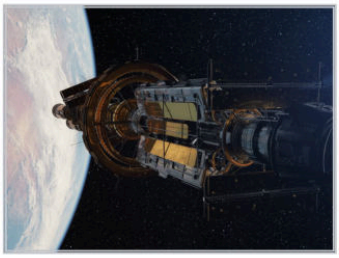
**CODES AND TESTING** | To 5,000 psig; Class 2500 flanges built to order · ASME B31.1 / B31.3 · Pressure tested before shipment

## 02 Industries served

Built for extreme service: high pressure, high temperature, hazardous fluids and projects with full documentation requirements.



### Aerospace and propulsion test
Propellant run tanks, thrust-chamber coolant and high-pressure test-cell systems on engine test stands. Sealed indication with no glass, rated for high pressure and temperature, with full material traceability.



### Hypergolic and storable propellants
Hydrazine-family fuels (MMH / UDMH) and NTO / MON oxidizers in storage and fuelling systems, with a sealed, welded metal chamber and titanium floats.



### Hydrogen and energy transition
Liquid-level service in hydrogen plants: electrolyzer gas–liquid separators, KOH and water tanks, compressor knock-out drums and condensate pots.



### Mineral processing and autoclaves
Pressure-oxidation autoclaves and acid-leach circuits handling aggressive slurries at high temperature and pressure, with exotic-alloy construction on application review.



### Boiler drums and steam generators
High-pressure drum level and HRSG service, with VaporGuard™ for flashing conditions.



### Nuclear power
High-pressure balance-of-plant feedwater and auxiliary systems in non-safety-related service, with material traceability maintained throughout manufacturing.



### HP feedwater and deaerators
High-pressure feedwater heaters and deaerator storage under thermal cycling and vibration. Welded construction to ASME B31.1, with no glass.



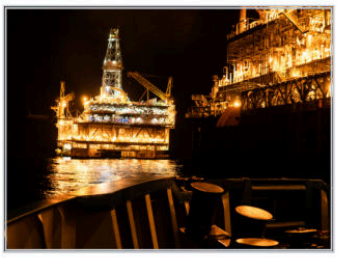
### Oil and gas: HP separation and gas processing
High-pressure separators, amine and glycol contactors and compressor scrubbers at Class 900 to 1500; Class 2500 built to order. Heat tracing available.



### Refining: hydrocracker and hydrotreater
High-pressure separators and recycle-gas knock-out drums in hydrocracker and hydrotreater units, in $H_2$ / $H_2S$ service.



### High-pressure reactors and synthesis loops
Separators and liquid inventory vessels in hydrogenation, ammonia, urea and methanol service, to 345 bar.



### Offshore and HP/HT upstream
High-pressure, high-temperature separators and test packages requiring rated, traceable construction.



### Defence, research and national labs
High-pressure test loops and specialty fuels, built to project specification.

*Also serving chlor-alkali and exotic corrosives · geothermal wells · pulp and paper digesters · methanol and ammonia synthesis.*

ENGINEERED TO ORDER

# Quality, testing and documentation

**Each gauge is engineered to order.** Chamber length is set to the vessel, and the float is precision-weighted for the fluid's specific gravity, temperature and pressure, with exotic alloys where the process requires them.

The approval drawing is issued after the purchase order. Material traceability is maintained throughout manufacturing; MTRs and hydrostatic test reports are available. Construction is industrial grade, ASME B31.1 or ASME B31.3, as specified in the model code. For severe service, VaporGuard™ protection, custom scales graduated to tank volume and special connections are specified with the gauge.

### DOCUMENTATION

- **Approval drawings** with every order
- **MTRs and test reports** available
- **Custom scale graduation** by volume or height
- **Engineered and exotic-alloy floats** per application
- **One point** of engineering contact



SS · Side–side | TB · Top–bottom | TS · Top–side | BS · Bottom–side | TM · Top mount

RENDER · STANDARD CHAMBER CONFIGURATIONS



**Engineered to order. Made in Canada. Approval drawing issued after the purchase order; MTRs and hydrostatic test reports available.**

## 03 MagnaLine™ floats

For extreme service, MagnaLine™ floats are engineered to the fluid, the pressure and the temperature, and precision-weighted for the fluid's specific gravity.




### Titanium

MAGNALINE™ STANDARD

Titanium, precision-weighted for the fluid's specific gravity and operating pressure. The standard float for high-pressure, high-temperature service.



### Ball-segment float

MAGNALINE™ ENGINEERED

Spherical geometry resists external collapse, for the highest pressure classes. Titanium or stainless, engineered per application.



### Syntactic foam float

MAGNALINE™ ENGINEERED

Solid buoyant core with no internal cavity to collapse, for extreme-pressure service. Moderate-temperature service.

### 316 stainless steel

MAGNALINE™ OPTIONAL

316/316L stainless steel for heavier fluids and general industrial service.

Coated, lined, exotic-alloy and specialty floats are engineered to order; consult factory.

## 04 ClearView™ indicators

Indication outside the chamber




The ClearView™ indicator gives continuous local level indication, with no mechanical linkage and no process penetration. The indicator is driven by the internal float's magnetic field; it mounts outside the chamber and has no contact with the process. Indicator styles, housing materials, sealing options and temperature ratings are available to suit the operating environment.

### Custom scales and readout units

Scales can be marked to suit the application. Standard linear scales are graduated in inches, feet or metric units. Dual scales and volumetric scales in gallons or litres, derived from the vessel geometry and graduated to tank volume, are also available.




### High-contrast aluminum scale

CLEARVIEW™ · ISFS-300 (STANDARD)

Stainless steel flags in an aluminum housing with a black etched aluminum scale. High-contrast graduation, resistant to UV and abrasion. Rated to 300 °C.



### No-scale flag indicator

CLEARVIEW™ · ISF-300

Stainless steel flags in an aluminum housing, without a scale, for flag-only level indication. Rated to 300 °C.




### High-temperature aluminum flags

CLEARVIEW™ · IAF-450

High-temperature aluminum flags with scale, for elevated-temperature service. Rated to 450 °C.




### Hermetically sealed

CLEARVIEW™ · HS-300

Hermetically sealed, argon-filled indicator in a stainless housing with scale, for humid, washdown or harsh atmospheres. Rated to 300 °C.

Also available: no-indicator configuration (IX) for transmitter-only or switch-only service.

## 05 Principle of operation

### 1 Float

- A sealed MagnaLine™ float carries a permanent magnetic assembly. The float is weighted for the fluid's specific gravity and floats at the liquid surface.
- As the level rises or falls, the float moves with it inside the sealed metal chamber.

### 2 Magnetic coupling

- The float's magnetic field couples through the chamber wall to the ClearView™ indicator mounted outside the chamber.
- The indicator follows the float and shows the level without contact with the process.

### 3 Visual indication

- Rotating flags in contrasting colours show liquid below the level and vapour above it.
- Indication is continuous across the full pressure range and, with the indicator matched to the service temperature, across the full temperature range. There is no glass in the pressure boundary and no wetted electronics.

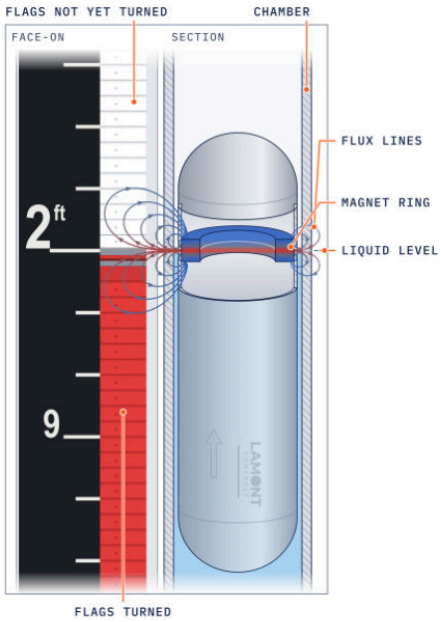



Illustration · section at the float magnet

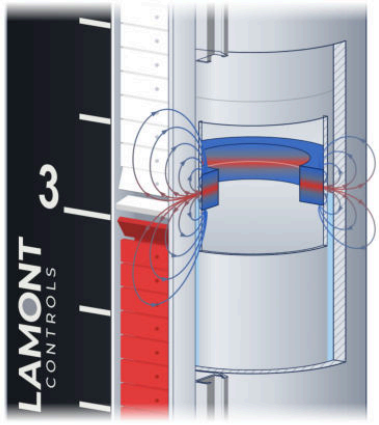



Illustration · flags turning at the liquid level

### Sealed, non-invasive design

- **Contained process:** The process fluid stays inside an all-metal pressure boundary.
- **Wetted parts:** The indicator, and any transmitter or switches, mount outside the chamber; only the chamber and float are wetted.
- **Fewer leak paths:** The sealed chamber reduces potential leak paths, emissions and contamination risk.

## 06 Why a magnetic level gauge

Magnetic level gauges provide sealed, non-invasive liquid level indication for process applications where safety, reliability and maintenance access are critical. There is no glass in the pressure boundary and no wetted electronics.

01

### Safety

*Sealed metal boundary, no glass*

**No glass in the pressure boundary:**
A welded, all-metal chamber replaces the glass assembly.

**Shock and impact:**
No glass to break under pressure spikes, thermal shock or impact.

**Reduced exposure:**
Reduces personnel exposure to hazardous or corrosive fluids.

02

### Low maintenance

*and long service life*

**Externally mounted components:**
Indicator assemblies are isolated from the process fluid.

**No wetted wear parts:**
No wetted seals, packing or electronics in the indication path.

**Simplified inspection:**
Less inspection effort and lower maintenance over the life of the gauge.

03

### Mechanical reliability

**Magnetic coupling:**
The float and the external indicator are coupled magnetically through the chamber wall.

**No power to read:**
Local indication requires no electronics, power supply or calibration.

**Severe service:**
Mechanical indication for high-pressure, high-temperature and hazardous service.



**Engineered, manufactured, and tested in the Greater Toronto Area, Ontario, Canada.**

**LEAD TIME** | Engineered to order and made in Canada. Expedited builds available; contact Lamont Controls Engineering for current lead times.

## 07 Technical specifications

| CATEGORY | OPTIONS / SPECIFICATIONS | |
|---|---|---|
| **Chamber configurations** | Side–Side · Top–Bottom · Top–Side · Bottom–Side · Top Mount. Custom-engineered dual-chamber arrangements available on request (option X). | |
| **Chamber diameters** | 1.5″, 2″ (standard), 2.5″ (Class 1500); Class 2500 and special sizes built to order on application review. | |
| **Chamber construction** | Heavy-duty chamber design with double flanged ends (top and bottom) and dual internal stop springs to limit float travel and protect internal components under severe service conditions. | |
| **Measuring range** | Standard lengths to 222 in (5,640 mm) centre-to-centre; longer lengths on request. | |
| **Accuracy** | Typical ±10 mm (±0.4 in), subject to float design and application conditions. | |
| **Specific gravity range** | ≥ 0.34 minimum, subject to float design and application conditions. | |
| **Pressure range** | Full vacuum to 5,000 psig (345 bar); Class 2500 flanges built to order. Flange classes: ANSI 150 / 300 / 600 / 900 / 1500 / 2500 · DIN PN10 / 16 / 25 / 40 · JIS J5K–J20K (DIN / JIS: special-order flanges). Pressure and temperature ratings depend on materials, connections and configuration, and are confirmed at quotation. | |
| **Temperature range** | −40 °C to +450 °C (−40 °F to +842 °F), depending on chamber material and application conditions. Lower temperatures on application review. | |
| **Float materials — MagnaLine™** | Standard | Titanium (TI) |
| | Optional | 316 SS |
| | Custom (CU) | Consult factory |
| | Minimum SG | 0.34 |
| **Chamber materials** | SS316 (standard). Custom / exotic alloys and linings (CC) — consult factory. | |
| **Construction code** | IG | Industrial Grade |
| | B1 | ASME B31.1 Power Piping |
| | B3 | ASME B31.3 Process Piping |
| **Process connections** | Flanged, threaded (FNPT / MNPT), or welded (Weldolet, Sockolet). ANSI / NPT ½″–4″; DIN DN15–DN65; JIS 15A–50A. | |
| **Indicator options — ClearView™** | ISFS-300 | Stainless steel flags, aluminum housing with scale — max 300 °C (standard) |
| | ISF-300 | Stainless steel flags, aluminum housing, no scale — max 300 °C |
| | IAF-450 | High-temperature aluminum flags, with scale — max 450 °C |
| | HS-300 | Hermetically sealed indicator, argon-filled, stainless housing with scale — max 300 °C |
| | IX | No indicator |

## 07 Technical specifications · continued

| CATEGORY | OPTIONS / SPECIFICATIONS | |
|---|---|---|
| **Scale options** | Feet & Inches (IMP) · Metres / cm (MET) · Percent 0–100 % (PER) · Gallons (GAL) and Litres (LIT), each custom-graduated to tank volume · No Scale (NS) · Custom (CUS). | |
| **Scale material** | Etched aluminum scale resistant to UV exposure, abrasion, and chemical attack. Marking compliant with MIL-STD-130N and related identification standards. Optional non-metallic scales available for enhanced chemical resistance. | |
| **Vent & drain options** | Threaded (MNPT / FNPT) ⅛″, ¼″, ⅜″, ½″, ¾″, 1″; flanged (FL) ½″, ¾″, 1″; or custom machined ports (CS). No vent = NV-00 · No drain = ND-00. | |
| **Surface finishes & treatments** | PA — Passivated | Full-immersion per ASTM A380 / A967 (standard, stainless) |
| | EP — Electropolished | External surfaces per ASTM B912 |
| | PT — Painted | External finish |
| | PC — Powder Coated | External finish |
| **Options & accessories** | MLT | LevelSync™ magnetostrictive level transmitter |
| | PLS-1 to PLS-8 | SurePoint™ clamp-on switches (Qty 1–8) |
| | FS | FloatSense™ float-integrity monitoring (NF = none, default) |
| | IB | Insulation blanket |
| | HT | Heat tracing |
| | INTSGX.XX | Interface service — second liquid SG (specify, e.g. INTSG0.85) |
| | VG | VaporGuard™ flashing-service float protection (Fortimag only) |
| | X | Custom options |
| **Testing & quality assurance** | Material traceability | Maintained throughout manufacturing; MTRs available. |
| | NDE | Performed in accordance with applicable project-specified codes and standards (e.g., ASME B31.1, ASME B31.3, or other governing codes), where required: |
| | — Visual (VT) | Of welds and final assembly |
| | — Dye penetrant (PT) | Of fillet welds, where applicable |
| | — RT / UT | Radiographic / ultrasonic examination of full-penetration butt welds, where specified |
| | — PMI | For alloy verification, where specified |
| | Pressure testing | Pressure tested before shipment; hydrostatic test at not less than 1.5 × design pressure where specified. Test reports available. |
| | Additional | Inspection, testing, and documentation available upon request. |

# 08 Model code reference

A Fortimag™ gauge is defined by an 18-position model code. Each position selects a chamber, float, indicator or construction option.

*Codes such as ISFS-300 and HS-300 are single field values; positions are delimited by field, not by every hyphen.*

| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|---|---|---|---|---|---|---|---|---|
| PRODUCT | CONFIG | MATERIAL | SIZE | FLOAT MATL. | FLOAT SG | PRESSURE | CONSTRUCTION | CONN TYPE |

| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|
| CONN SIZE | INDICATOR | FLOATSENSE | SCALE | C-C LENGTH | VENT | DRAIN | FINISH | OPTIONS |

## POSITION REFERENCE · 01–10

### 01 Product Type

| | |
|---|---|
| FM | Fortimag — heavy-duty / high-pressure |

### 02 Chamber Configuration

| | |
|---|---|
| SS | Side–Side (standard) |
| TB | Top–Bottom |
| TS | Top–Side |
| BS | Bottom–Side |
| TM | Top Mount |

### 03 Chamber Material

| | |
|---|---|
| 316 | SS316 (standard) |
| CC | Custom / exotic — Hastelloy, Monel K-500, Inconel 625, coated / lined (consult factory) |

### 04 Chamber Size

| | |
|---|---|
| 15 | 1.5" |
| 02 | 2" (standard) |
| 25 | 2.5" |
| SP | Special |

*Class 1500 uses the 2.5" chamber; Class 2500 is built to order (SP).*

### 05 Float Material

| | |
|---|---|
| TI | Titanium (standard) |
| SS | 316 Stainless Steel |
| CU | Custom / consult factory |

*CU covers coated, lined and exotic floats — consult factory.*

### 06 Float Specific Gravity

| | |
|---|---|
| SGX.XX | User-specified (e.g. SG1.00, SG0.88, SG0.34) |

*Fortimag minimum SG ≥ 0.34.*

### 07 Pressure / Flange Class

| | |
|---|---|
| ANSI | 150 · 300 · 600 · 900 · 1500 · 2500 |
| DIN | PN10 · PN16 · PN25 · PN40 — special-order flanges |
| JIS | J5K · J10K · J16K · J20K — special-order flanges |
| SP | Special (incl. PN63 / PN100) |

### 08 Construction Code

| | |
|---|---|
| IG | Industrial Grade |
| B1 | ASME B31.1 Power Piping |
| B3 | ASME B31.3 Process Piping |

### 09 Process Connection Type

| | |
|---|---|
| FL | Flanged |
| FNPT | Female NPT |
| MNPT | Male NPT |
| WO | Weldolet |
| SO | Sockolet |
| CS | Custom |

### 10 Process Connection Size

| | |
|---|---|
| ANSI / NPT | 05 (½") · 075 (¾") · 01 (1") · 125 (1¼") · 15 (1½") · 02 (2") · 25 (2½") · 03 (3") · 04 (4") |
| DIN | DN15 · DN20 · DN25 · DN32 · DN40 · DN50 · DN65 |
| JIS | 15A · 20A · 25A · 32A · 40A · 50A |
| CS | Custom / special |

*Standard-aware: only sizes valid for the chosen flange standard apply.*

# 08 Model code reference · continued

## POSITION REFERENCE · 11–18

### 11 Indicator Configuration

| | |
|---|---|
| ISF-300 | Stainless steel flags, aluminum housing, no scale — 300 °C |
| ISFS-300 | Stainless steel flags, aluminum housing with scale — 300 °C (standard) |
| IAF-450 | High-temperature aluminum flags, with scale — 450 °C |
| HS-300 | Hermetically sealed indicator, argon-filled, stainless housing with scale — 300 °C |
| IX | No Indicator |

### 12 FloatSense

| | |
|---|---|
| NF | No FloatSense (standard) |
| FS | FloatSense™ float-integrity monitoring |

### 13 Scale

| | |
|---|---|
| IMP | Feet & Inches (Imperial) |
| MET | Metres / cm (Metric) |
| PER | Percent 0–100 % |
| GAL | Gallons — custom-graduated to tank volume |
| LIT | Litres — custom-graduated to tank volume |
| NS | No Scale |
| CUS | Custom |

### 14 Centre-to-Centre Length

| | |
|---|---|
| XX.XV | Inches — e.g. 66.0V |
| XXXXE | Millimetres — e.g. 2154E |

*Standard lengths to 222 in (5,640 mm) centre-to-centre; longer lengths on request.*

### 15 Vent — Type

| | |
|---|---|
| M | MNPT |
| F | FNPT |
| FL | Flanged — ½″ and up |
| CS | Custom machined port |
| NV | No Vent |

### 15 Vent — Size

| | |
|---|---|
| 18 | 0.125" |
| 025 | 0.25" |
| 38 | 0.375" |
| 05 | 0.5" |
| 75 | 0.75" |
| 1 | 1" |
| 00 | No Vent |

*No vent = NV-00. Flanged vents (FL) are ½" and up; smaller sizes are threaded only.*

### 16 Drain — Type

| | |
|---|---|
| M | MNPT |
| F | FNPT |
| FL | Flanged — ½″ and up |
| CS | Custom machined port |
| ND | No Drain |

### 16 Drain — Size

| | |
|---|---|
| 18 | 0.125" |
| 025 | 0.25" |
| 38 | 0.375" |
| 05 | 0.5" |
| 75 | 0.75" |
| 1 | 1" |
| 00 | No Drain |

*No drain = ND-00. Flanged drains (FL) are ½" and up; smaller sizes are threaded only.*

### 17 Finish

| | |
|---|---|
| PA | Passivated (standard) |
| EP | Electropolished — external surfaces |
| PT | Painted — exterior / non-wetted |
| PC | Powder Coated — exterior / non-wetted |

### 18 Options (stackable)

| | |
|---|---|
| MLT | LevelSync™ magnetostrictive level transmitter |
| PLS-1 to PLS-8 | SurePoint™ clamp-on switches, Qty 1–8 |
| IB | Insulation Blanket |
| HT | Heat Tracing |
| INTSGX.XX | Interface service — second liquid SG (specify) |
| VG | VaporGuard™ — flashing-service float protection (Fortimag only) |
| X | Custom Options |

## SAMPLE CONFIGURATIONS

Class 900 · B31.1 · custom-machined ports · transmitter

`FM-SS-316-02-TI-SG0.88-900-B1-FL-01-ISFS-300-NF-IMP-66.0V-CS-05-CS-05-PA-MLT`

Class 1500 · extreme pressure · flanged · electropolished

`FM-SS-316-25-TI-SG1.00-1500-B3-FL-02-ISFS-300-NF-IMP-96.0V-FL-05-FL-05-EP`

FloatSense · high-temp indicator · JIS flange

`FM-SS-316-02-TI-SG0.95-J16K-B3-FL-25A-IAF-450-FS-MET-2438E-FL-05-FL-05-EP`

NEXT STEP

# Specify a Fortimag™ gauge

Send the process conditions to Lamont Controls Engineering, or request a quotation online.

REQUEST A QUOTATION →

lamontcontrols.com/request-a-quote

RELATED PRODUCTS

## Lamont Controls product family

### Magnamont™

INDUSTRIAL SERVICE

316 stainless steel magnetic level gauge; glass-free indication to 3,400 psig (234 bar) and +450 °C.

### Polysight™

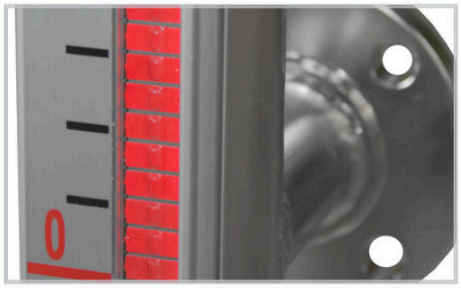
CORROSIVE SERVICE

CPVC and PVDF magnetic level gauge for corrosive and chemically aggressive service.

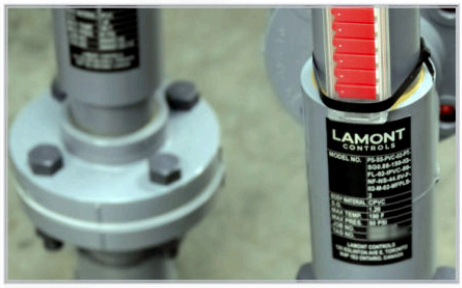
### LevelSync™ and SurePoint™

AUTOMATION

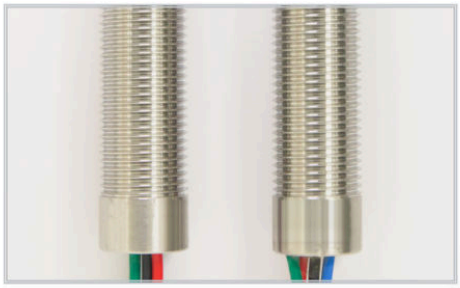
Magnetostrictive level transmitters and magnetic point-level switches for continuous and point-level measurement.



MAGNAMONT™




POLYSIGHT™



SUREPOINT™ SWITCHES

LAMONT CONTROLS

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