



# FACTORY SENSING SOLUTIONS

**Gems**™ Sensors  
& Controls

OUR EXPERIENCE • YOUR SOLUTION

LEVEL | FLOW | PRESSURE | TEMPERATURE | SOLENOID VALVES | FLUIDIC SYSTEMS



# Your Fluid Sensing Partner

## Practical, dependable solutions for your plant or factory

Gems Sensors & Controls is a leading manufacturer of liquid level, flow, and pressure sensors, miniature solenoid valves, solid-state electronics and fluidic systems. Working around the world with global resources, and to exact customer application and manufacturing requirements, products from Gems Sensors & Controls are used in almost every industry.



We offer thousands of variations of fluid sensors and controls. We're proud of our wide array of products, yet we know that no matter how many variations we manufacture, what is considered a "Standard" product may not be exactly what you need. Gems will work with you to modify components that deliver solutions to meet specific performance and installation requirements.

## If you are sensing fluid or air, Gems is there.

Gems products are used to measure, monitor, and control fluids, so consider Gems for your common industrial applications like:



- Water level monitoring
  - Day tank level sensing
  - High/Low liquid level alarm
  - Low Level cut off
  - Overfill protection
  - Pump control
  - Valve control
  - Industrial Chemical liquid level sensing
  - Fuel storage tank visual indication
  - Lube oil level monitoring
  - Petrochemical sump liquid sensing
  - Coolant level sensing
  - Pump flow monitoring
  - Wastewater point level indication
  - Submersible pressure for liquid level sensing
- And many more...

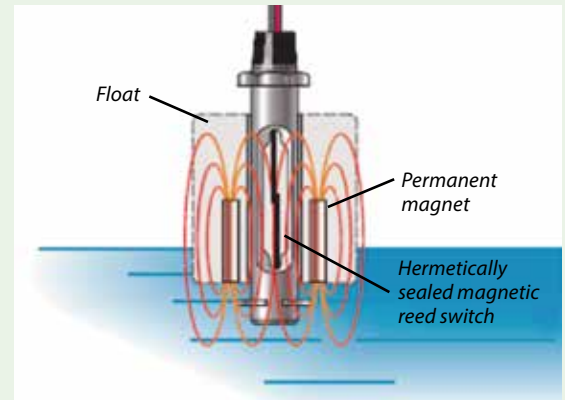


# Gems Liquid Level Sensors

**DELIVERING HIGHLY RELIABLE FLUID MONITORING THROUGHOUT A WIDE RANGE OF FLUID MEDIA.**

## Rugged, dependable performance

Gems Level Switches operate on a direct, simple principle. In most models, a float encircling a stationary stem is equipped with powerful, permanent magnets. As the float rises or lowers with liquid level, the magnetic field generated from within the float actuates a hermetically sealed, magnetic reed switch mounted within the stem. The stem is made of non-magnetic metals or rugged, engineered plastics. When mounted vertically, this basic design provides a consistent accuracy of +/- 1/8 inch.



## NON-MOVING PARTS

### ELECTRO-OPTIC

Small, solid-state sensors feature a small footprint, great dependability, and long service life.



### CAPACITIVE

An excellent choice for turbulent or coating liquids. Gems offers multiple solid-state capacitive point level switches, including non-contact versions.



### ULTRASONIC

No moving parts.  
Zero maintenance sensor ignores condensation and foam.  
An ideal sensor for various medias including oil, water, and chemicals.



### FLOAT TYPE

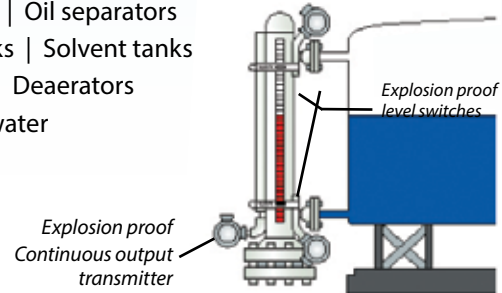
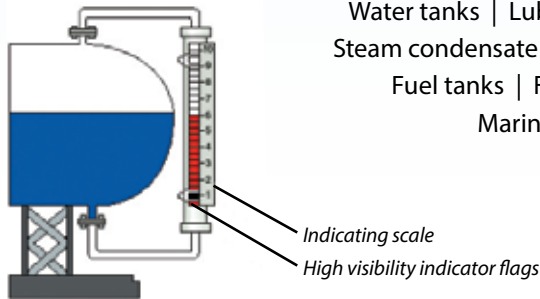
Gems offers the broadest selection of float-type level switches anywhere. Using a proven reed switch design, float type switches deliver long, trouble-free service with precise repeatability. Available in single point and multi-point configurations for monitoring up to six levels with a single unit.



# SureSite<sup>®</sup> Visual Liquid Level Indicators

## Typical applications:

Water tanks | Lube oil tanks | Oil separators  
 Steam condensate | Acid tanks | Solvent tanks  
 Fuel tanks | Feedwater | Deaerators  
 Marine potable water

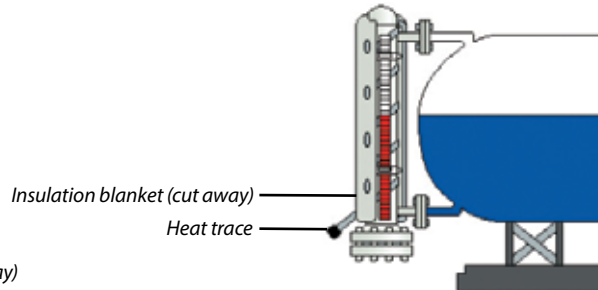
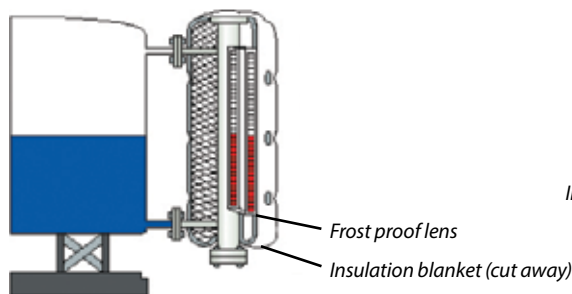


## Visual Indication

- Handles full vacuum to high pressure
- Highly visible from over 100 ft. (30m)
- Eliminates down time
- Virtually maintenance free
- Custom configured units

## Comprehensive Indication

- Pressures to 4200 PSI
- Externally mounted electronics
- Hi/Low alarms, Switch Points
- ANSI Flange/ASME Type
- Cenelec, FM, UL, CSA Approved

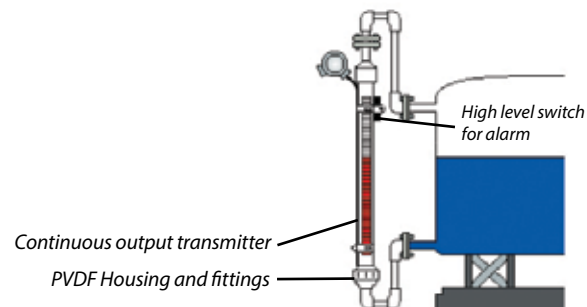
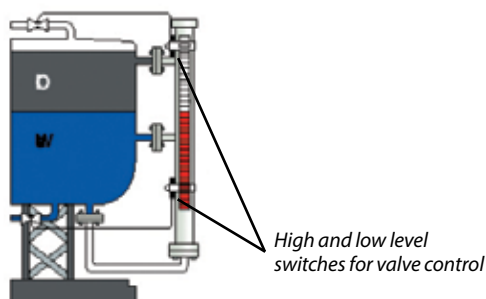


## Cold Service Applications

- -200°F (-129°C)
- Frost proof lens
- Insulation (Cold Service)
- Magnified visibility

## Hot Service Applications

- Process temps to 750°F (399°C)
- External electronics to 750°F (399°C)
- High temp insulation available



## Oil/Water Applications

- Interface application
- Materials: Stainless Steel, engineered plastics
- Multiple process ports required
- Electronics for pump control
- Valves available
- Consult factory for details

## Acid Applications

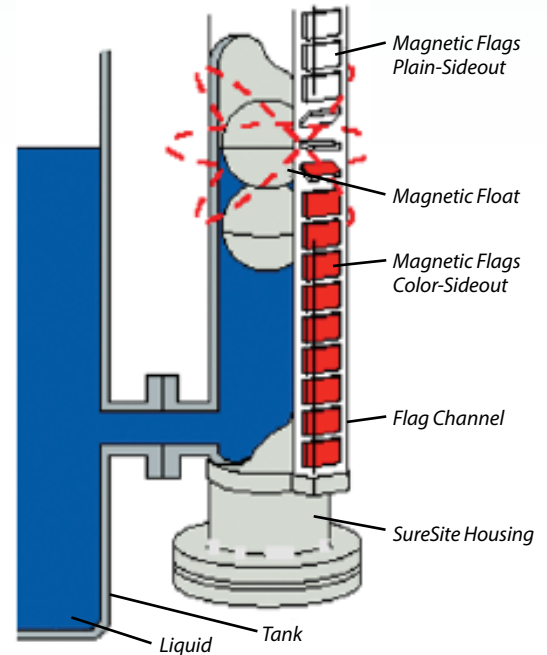
- Fluid compatible materials - Hastelloy C 276, PVDF, Alloy 20, Titanium
- Eliminate dangerous/costly leaks



## EASY-TO-READ CONTINUOUS LEVEL INDICATION

A more durable and safer alternative to breakable sight glasses. SureSite visual level indicators feature stainless steel, alloy or engineered plastic housings that mount externally to top or sides of tanks to provide easy-to-read, continuous level indication. Magnetic flags flip to change color as an internal float moves with the liquid surface. Optional switches, transmitters and scales increase control capabilities. Available in alloy and engineered plastic. LED version available for low-light environments.

- **High Visibility** – Brilliantly colored flags are easy to read, even at great distances.
- **Durability** – Stainless steel, PVC, CPVC, PVDF, or other materials, whatever the media requirements, provide years of maintenance-free service.
- **Environmentally Safe** – Monitored liquid is contained inside a pressure-tight housing.
- **Efficient** – Continuous level indication without external power.
- **Electronic Control** – Attach optional point level switches and/or continuous level transmitters to extend capabilities beyond those of a simple sight glass.



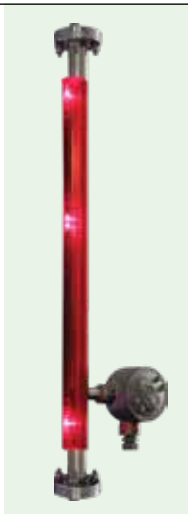
### How it works

As liquid level rises, a magnet-equipped float within the unit inverts the magnetic flags in the external indicator to "colourside-out." Liquid level is indicated by the junction of the "color" and "contrasting" portions of the column.

### LED SureSite®

Designed for low light environments

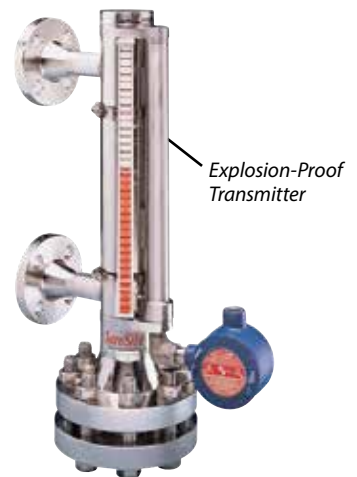
- Bright LED illuminated level sensor
- Continuous Level transmitter and visual indicator
- 270 degree viewing range
- Built to withstand the most difficult environments



Low Temperature Transmitter



Explosion-Proof Transmitter

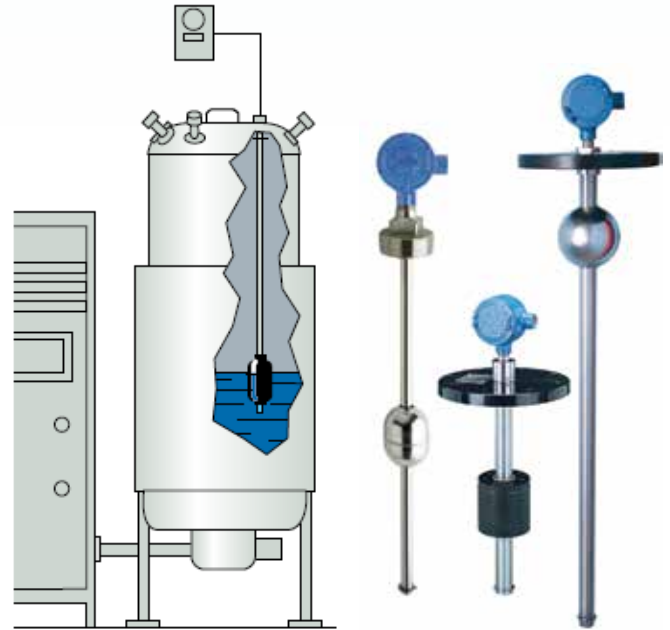


# Liquid Level Transmitters for continuous in-tank monitoring

Consider Gems' versatile liquid level transmitters for all of your continuous liquid level monitoring needs – water, diesel, lube oils and fuels, as well as various chemical and petrochemical liquids.

Gems float type liquid level transmitters provide reliable and durable remote tank gauging. A wide variety of material combinations make them compatible with most liquid media. The XM & XT-800 Series provide solutions for medium and large tanks, while the XM & XT-700 is good for small tanks. For very large tanks, look to the 36000 and 66000 series.

- Gems liquid level transmitters provide measurement from a few inches to 18 feet
- Choose from a variety of materials for mountings, stems, and floats that includes PVC, Polypropylene, PVDF, stainless steel, brass and Buna N
- Electronic outputs 4-20 mA, 0-5 VDC, 0-12 VDC, and others, are available



## ADDITIONAL OPTIONS ON FLOAT TYPE LEVEL SENSORS:

- Integrated Temperature Sensor Option Available
- Explosion-Proof Junction Box Option Available

## RLI-G / GUIDED WAVE RADAR LIQUID LEVEL SENSOR

Gems RLI-G Guided Wave Radar Level Sensor is a no-moving parts continuous level sensors with advanced radar level sensing technology for reliable performance in your most challenging industrial tank level applications such as:

- Day & Storage Tanks
- Water, Feedwater & Condensate
- Lube & Hydraulic Oil
- Coolants & Solvents

The RLI-G Series comes standard with 4-20 mA and HART output, as well as offering:

- Installation flexibility
- LCD Display Module
- Time Domain Reflectometry (TDR) Sensing Technology
- Multiple Sensing Probe Options
- Multiple Mounting Options



## UCL SERIES CONTINUOUS NON-CONTACT TRANSMITTERS

Mounted at the top of a tank, the sensor continuously transmits pulses of high-frequency sound waves that travel away from the sensor, hit the surface of the liquid and return to the sensor. UCL series have multi-point switch and transmitter options.



# Customized Liquid Level Sensors fit your specific needs

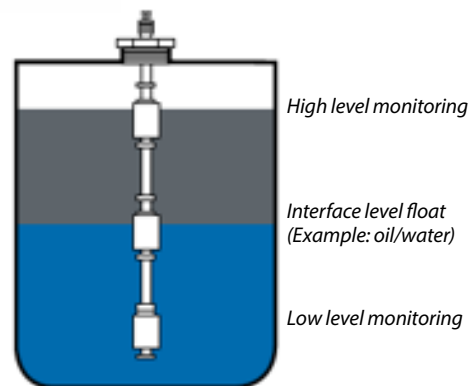
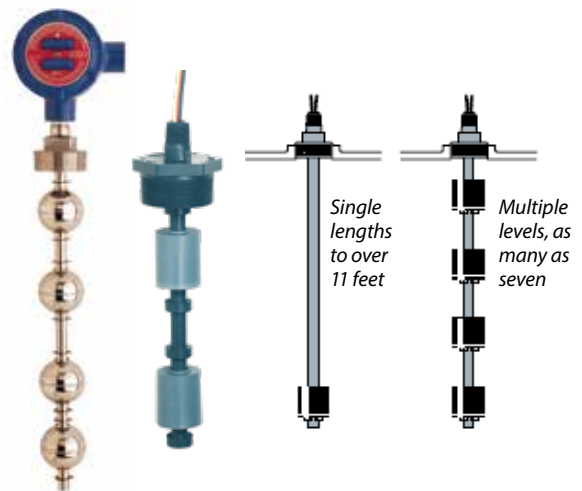
Gems custom length, multi-point level switches are an extremely versatile and cost effective way to monitor multiple liquid level points within a single tank. These multi-point units can be configured with two to seven independent switch actuation levels, depending on the series type. Only a single entry point into the tank is required, and all electrical wiring emanates from a single source.

Gems multi-point level switches are available in engineered plastic or metal alloy with a broad range of mounting options and float materials. Gems multi-point level sensors are offered with integrated siphon tubes and temperature sensors to provide cost savings and limit the number of intrusions into a tank.

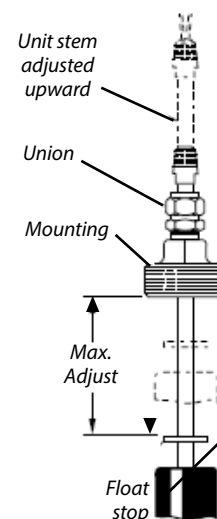
- Gems custom length models can be configured with “up to seven” independent switch actuation levels, depending on the series type.
- These “multi-station” units offer the most practical way to monitor multiple liquid level points within a single tank, using a single process connection
- “Multi-station” level switches are ideal for monitoring liquid interfaces and emulsions in vessels simultaneously containing two or more liquids.

In addition to sensing one type of fluid in a tank, multi-point level sensors are used to monitor dissimilar liquids in tanks, also known as “interface monitoring.”

## LS-700 AND LS-800 GO-TO PRODUCTS



**Intrinsically-Safe Relays**  
Using Gems SAFE-PAK® relays and barriers, these switches provide automatic refills/pumpdown and are intrinsically-safe without explosion-proof housing and piping.



**Available for LS-800 series:**  
Special cinch-nut mounting allows stem to travel up or down for fine tuning actuation points.

# Pressure Sensors that are ready to serve your most demanding applications

Gems offers a expansive range of pressure transducers and pressure switches for a wide range of applications. Each is ruggedly designed to address customer measurement challenges in various applications:

- General purpose, vacuum, and specialty pressure sensors
- Differential pressure sensors for liquids or air
- Submersible pressure transducers
- 3A sanitary transducers
- Hazardous location transducers
- Pressure Switches



## CHEMICAL VAPOR DEPOSITION

Gems Chemical Vapor Deposition (CVD) pressure transducers provide superior long-term drift performance in a small and rugged platform. CVD construction offers excellent prices and performance.

## PISTON/DIAPHRAGM & SEALED PISTON

Gems offers a choice of pressure switches, from compact cylindrical models for OEM use, to larger enclosed units for rugged process applications. A piston/diaphragm design, incorporating the high proof pressure of piston technology allows these switches to operate with the sensitivity and accuracy of a diaphragm design.

## CAPACITIVE

Capacitive transducers are simple, durable and fundamentally stable. They can sense extremely low pressure and vacuum levels and their robust construction enables use in a wide variety of applications.

Contact Gems for information on approvals, which include:

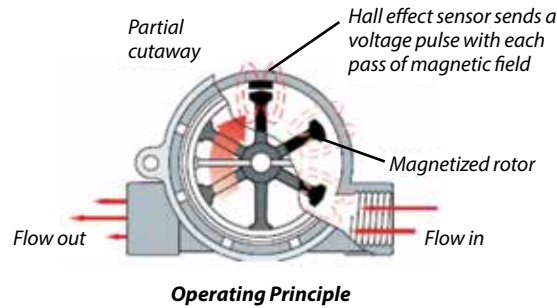




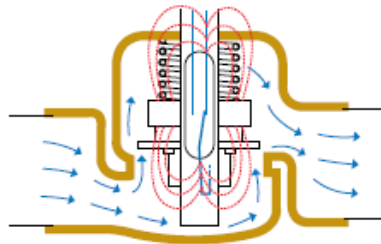
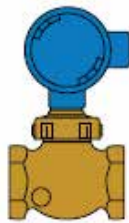
# Gems' versatile, high performance Flow Sensors

Gems designs and manufactures a complete range of flow sensors and switches for the reliable and effective measurements of both conductive and non-conductive fluids, as well as gases. At preset rates ranging from 50 cc/min to 100 GPM, rugged Gems flow switches will initiate alarm actuation or automatic system shutdown, making them a vital component of any predictive maintenance strategy. They are commonly specified for rotating equipment, conveyors, gas sampling and distilling, water purification systems, welders, semiconductor equipment, chemical processing, machine tool and robotics applications.

## ROTORFLOW



## FS-200



**Typical flow diagram showing switch actuated.**  
This reed switch, when actuated, can be used to operate remote alarms or indicators, or may be integrated into automatic system controls.

## FS-10798



Flow actuation adjustment

**Externally Adjustable Switches**  
The FS-10798 Series offers infinite flow settings from 0.5 to 20 GPM. Versions suitable for gas flow monitoring are also available.

## FS-550





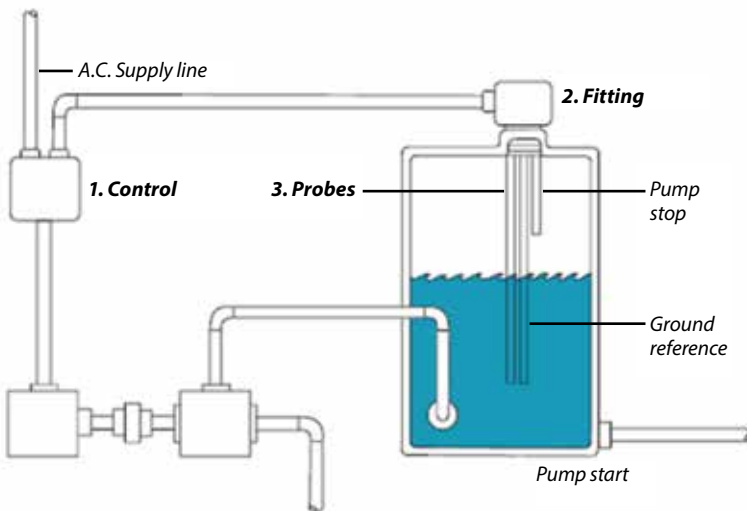
# Warrick Controls

## WARRICK® SENSOR FITTINGS AND PROBES

The concept of Warrick® Conductivity level control systems is simple: take advantage of a liquid's conductive properties to complete a circuit and cause a control relay to actuate. These single- or multi-point sensors have no moving parts and the stainless steel corrosion-resistant electrodes can be cut to the desired length. Multiple probes per fitting allow control of several functions in less space with less expense for equipment and installation. The versatility of the Warrick® design makes these sensors ideal for a diverse range of applications.

Examples include:

- Food and Beverage
- Pharmaceuticals
- Caustics and Acids
- Boilers and Steam Generators
- Sumps
- Ponds
- Reservoirs
- Sewage and Wastewater



### Typical "Pump Up" System

Permanently mounted stationary electrodes give the user precise accuracy, repeatability, and no-moving-parts reliability.

## INTRINSICALLY SAFE RELAYS AND CONTROLS

Render any non-voltage-producing sensor, switch or conductivity electrode intrinsically safe with these relays and barriers from Gems. They amplify sensor load-handling capabilities in a wide range of AC and DC control switching applications and are easy to install in standard circuit boxes in non-hazardous areas. The amount of energy they send to sensors and switches within hazardous areas is insufficient to cause ignition of a specific hazardous atmospheric mixture in its most ignitable concentration. Select from a broad choice of SAFE-PAK® and Warrick models.



Warrick® Series 47 4-channel relay alarm panel control and Warrick® Series 17/27 conductivity level control



SAFE-PAK® relays & Zener barriers

## STANDARD RELAYS AND CONDUCTIVITY LEVEL CONTROLS

These relays boost our sensor's load-handling ability in non-hazardous locations with the reliability and advantages inherent in solid-state controls.



Warrick® Dual Function Series DF and Warrick® Series 16/26M



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