



Fluid Handling Technologies

ENGINEERED FOR MEDICAL SCIENCES

PRODUCT BROCHURE



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



We've got the experience you need and the innovation you are looking for

Gems Sensors and Controls products have been field-tested around the world and across industries for over 60 years – and in the Medical Industry for over 20 years. We offer an extensive catalog of level, pressure and flow sensors, as well as miniature solenoid valves, available through our worldwide sales and distribution network. Our four, fully-equipped ISO certified manufacturing sites, located in North America (ISO:13485), Asia (ISO:9001) and Europe (ISO:9001), ship more than 4 million sensors annually.

Gems Sensors has earned an international reputation for developing and manufacturing a wide variety of quality, dependable fluidic components and systems. We use real-time customer and industry feedback to drive our manufacturing and quality initiatives. Once installed, our products run continuously in some of the world's harshest environments. There are Gems units in the field today that have been running for decades with no degradation in the original performance.

Put Gems Engineers to Work for You

A short list of services and advantages we bring to Medical OEMs includes:

- ✓ Collaborative Engineering Support or Turnkey Concept to Production
- ✓ Cost-Efficient Development
- ✓ Fast Prototyping and Quicker to Market Strategies
- ✓ Sophisticated Supply Chain Management
- ✓ Lean Manufacturing Protocols
- ✓ Certified Quality Processes

Experience firsthand our passion for engineering fluid handling solutions



We Get Results with Fluids

By leveraging Gems' engineering expertise and broad base of intellectual property, Gems is able to deliver custom, engineered fluidic systems, solutions and integrated sub-assemblies better than any other company in the world. We combine a unique array of intelligent sensors, world-class lean manufacturing tools and ISO registered quality processes to significantly increase efficiency, productivity and quality.

Gems' engineers collectively have more than 400 years of professional experience among active staff. We understand that the art of fluid handling begins with sound science, strict discipline and proven methodology.

Count on Gems for Concept Feasibility Through Commercial Manufacturing

Gems understands standard products may not be the best solution for you. We provide outsourced design and development services including custom components, feasibility studies or complete design and development of a complex fluid handling system. Your Gems' program manager will structure each project to meet your company's needs, timing and budget. Whether you don't have the time, resources, or the desire to take on development in-house, Gems is an ideal partner for your next development cycle.

Flexible, Global Manufacturing – Same High Standards on Three Continents

Your design or ours, we will build, test and ship quality sensors to fit your specific project timing and budget. Our facilities are designed to adjust to short-runs or high volume. At each facility, Gems utilizes Lean Manufacturing principles and processes to make significant improvements to safety, quality, delivery and cost. Areas of focus include:

- ✓ Assembly
- ✓ Testing
- ✓ Labeling/Packaging
- ✓ Documentation
- ✓ Production Process Validation and Control

COMMERCIAL
MANUFACTURING

DOCUMENTATION

PILOT
PRODUCTION

INNOVATION

DESIGN &
DEVELOPMENT

COLLABORATION

CONCEPT &
FEASIBILITY

*Gems' structured development process delivers
predictable, efficient fluidic
solutions that save time and money.*

*Talk to Gems Sensors and find out what
solutions we can engineer for you.*

Our sensors & controls are at the heart of fluid management technology for medical sciences

In Vitro Diagnostics

The Industry's Smallest Continuous Level Sensors

Gems XM-XT300 Series Level Transmitters are among the most compact continuous level transmitters in the world – giving you increased design flexibility. Gems' dependable line of level, flow and pressure sensors and valves are a critical component to many sophisticated, high-volume diagnostic machines. Gems Level sensors monitor and measure all fluids:

- ✓ Buffers/Diluent
- ✓ DI Water
- ✓ Reagents
- ✓ Waste
- ✓ Detergents

XM-XT300 SERIES CONTINUOUS LEVEL TRANSMITTER

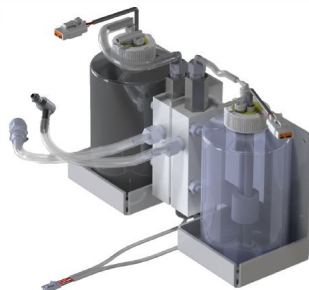
A complete line of small, polysulfone liquid level sensors ideal for shallow tanks and reservoirs. Compact and versatile, these plastic level sensors accommodate a broad choice of mountings and float materials.



Fluidic Systems

REAGENT MANAGEMENT SYSTEM

Integrated system design includes: high flow sensor, low flow sensor, continuous liquid level sensors, siphon tubes with check valves, quick disconnect fluid fittings, bottle, mounting bracket.



- ✓ Reduced long fluid lines through modular design
- ✓ Incorporated flow switches to ensure proper flow from bottle to machine
- ✓ Added leak-tight, quick-connect/disconnect fluid connectors for ease of assembly and to eliminate spillage

Sterilization

Autoclaves, Gas Plasma Sterilizers, VHP® Sterilizers

One of the most vital processes within critical environments is the sterilization of medical tools and devices. Patient safety relies heavily on the efficiency and reliability of sterilization devices.

Contaminants can become highly resistant to disinfection, which results in the need for high-performance sterilization methods that will ensure sterile equipment.



3500 SERIES PRESSURE TRANSDUCER

- ✓ 0-5 to 0-600 psi pressure ranges (0-0.35 to 0-40 bar)
- ✓ Compound versions with vacuum to -1 barG (-15 psig)
- ✓ 316L stainless steel wetted parts to stand up to any condition
- ✓ All welded hermetically pressure cavities to eliminate leaks
- ✓ 0.25% Full Scale (FS) for more than 100M repeatable cycles
- ✓ < 0.2% long-term drift
- ✓ CE, RoHS, and UL approvals

PRO-16 PROFILE CONTROLLER

- ✓ Up to 16 profiles x 16 segments
- ✓ Programming software available
- ✓ Universal input (TC, RTD, DC linear, mA/mV)
- ✓ Up to 4 digital inputs
- ✓ Customer-specific linearization for all sensors
- ✓ CE, cULus





Medical Lasers

HELPING LASERS STAY COOL

To prevent overheating and machine shut down, Gems' flow switches detect minimum flow of liquids in the laser's cooling loop. And, Gems' valves control coolant in the handheld laser wand. Gems' products measure and control water, gases, cleaning solutions, dialysate, coolant and air. Gems' laser product offerings include:

FS-500 FLOW SWITCH

Compact and easy to maintain because the bonnet and shuttle can be removed while leaving the housing and pipework intact.



- ✓ Low pressure drop design
- ✓ 0.25 GPM to 5 GPM flow rate settings
- ✓ 0-125 psi pressure range (0-8.6 bar)
- ✓ Durable polypropylene construction
- ✓ 3/4" NPT port size
- ✓ Fixed setting type

FS-380P FLOW SWITCH

Ensures laser generator receives adequate cooling to prevent over heating and machine shut down.



- ✓ Low pressure drop design
- ✓ 0.25 GPM to 2 GPM flow rate settings
- ✓ Port size of 3/8" NPT Male and 1/4" Quick Disconnect (QDC) Male
- ✓ 0-125 psi pressure range (0-8.6 bar)
- ✓ Fixed setting type
- ✓ Durable polypropylene construction

Gems provides high-quality components at competitive pricing. Our engineers continue to innovate for laser treatments for skin resurfacing, tattoo removal, hair removal and vascular treatment.

Respiratory Care

Controlling Critical Flow

Respiratory care is crucial to diagnose, treat, and manage respiratory problems like asthma, COPD, pneumonia, and lung cancer. It improves patient's quality of life by managing symptoms, preventing complications, and enhancing lung function.

Oxygen therapy equipment like concentrators, tanks, and masks deliver oxygen to patients with low levels. Ventilators help patients breathe when they cannot do it themselves.

Subminiature Solenoid Valves

E, EH, G, GH, & M SERIES

- ✓ 2- and 3-way functions
- ✓ Flow Coefficients (Cv) of 0.018 to 0.070
- ✓ NPT port, manifold, or barbed connections
- ✓ Body materials in brass, stainless steel, and aluminum
- ✓ Pneumatic and liquid applications



CUSTOM SOLUTIONS

- ✓ Ventilators: Oxygen blender
- ✓ 4 solenoid valve system with low-flow needles
- ✓ Integrated filtration and poly tubing
- ✓ Custom body and electrical connector
- ✓ Additional testing at Gems



Find the Right Solution for You

Medical Applications



MEDICAL DEVICES



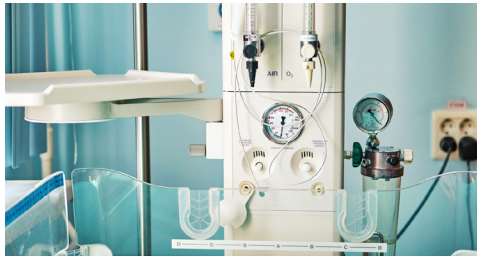
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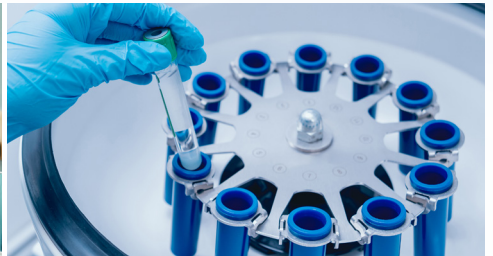
STERILIZATION



VENTILATORS



GAS DELIVERY METERING



LAB/ANALYTICAL



ANESTHESIA



ENDOSCOPE REPROCESSING



DIALYSIS



X-RAY



RENAL



MEDICAL CHILLERS

We provide a wide range of products to suit your application

- ✓ Point Level
- ✓ Continuous Level
- ✓ Pressure Switches
- ✓ Pressure Transducers
- ✓ Flow Switches
- ✓ Flow Rate Sensors
- ✓ Valves & Valve Manifolds
- ✓ Temperature & Process Controllers
- ✓ Product Customization
- ✓ Fluidic Systems





GLOBAL CORPORATE HEADQUARTERS

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