SureSite® Visual Liquid Level Indicators

...the safe alternative to cloudy, breakable sight glasses.

High Visibility—Brilliantly colored flags are easy to read, even at great distances. The indicator is isolated from the measured media; therefore, SureSite Indicators can be used where sight glasses are not even a consideration.

Durability—Stainless steel, PVC, CPVC, PVDF, Hastelloy or other exotic housings, 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.

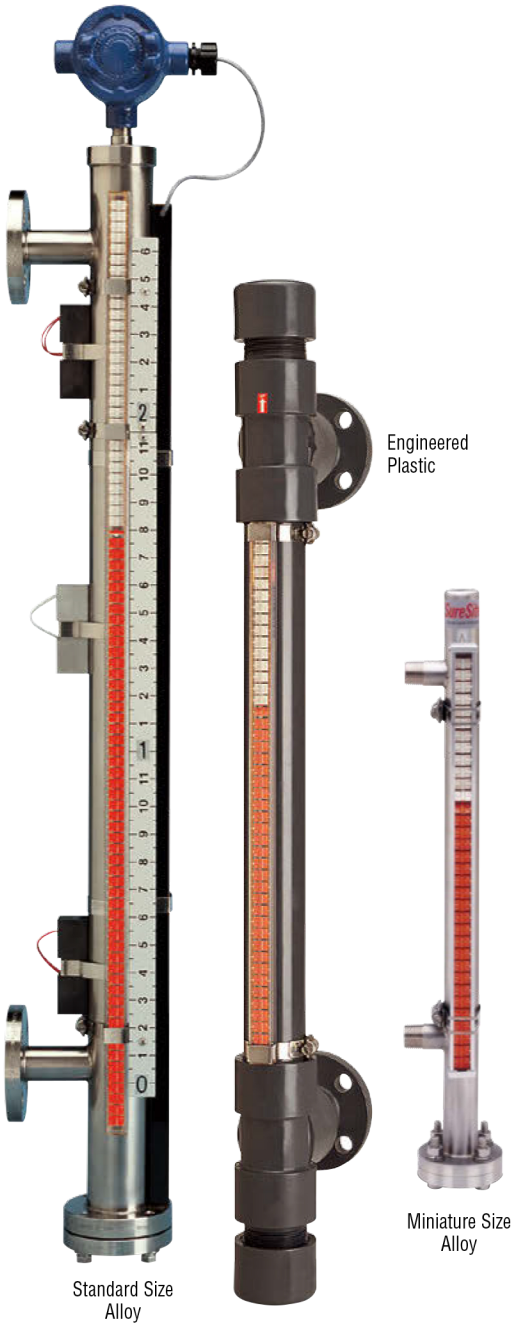
- Low Maintenance—No glass to break, durable housings
- OSHA Friendly—Accident incidence reduction
- Reduced Workload—Quick and easy viewing shortens monitoring chores
- EPA Friendly—Fewer seals and no glass protect against spillage
- Multi-Purpose—Not single purpose as with sightglasses; can replace simple tank gauging systems as a complete level gauge package

When Gems Sensors & Controls introduced SureSite® Liquid Level Indicators almost 30 years ago, no one had seen anything like them... sightglasses were the standard in liquid level indication. Well, we are happy to say that since that time SureSite Indicators have retired more sightglasses than we can count! Our success has spawned many imitators, but there is still only one SureSite Indicator with its many exclusive features, and more importantly there is no manufacturer so uniquely capable as Gems to be your sensor supplier.

Fifty years of experience has taught us which technologies and product characteristics will provide the most effective solutions to your requirements. And our engineering resources have long been helping customers solve their most challenging application problems. So, there is a good chance we've already dealt with the design criteria you are working on. If you don't see materials or configurations in the following pages to suit your needs, please give Gems a call for custom application assistance.

Gems Serves the OEM and End User

Gems welcomes any size order...whether a single unit or 100 units or more. Gems commitment is to meet your most stringent requirements of price, delivery and quality.



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Specifying and Ordering D-3
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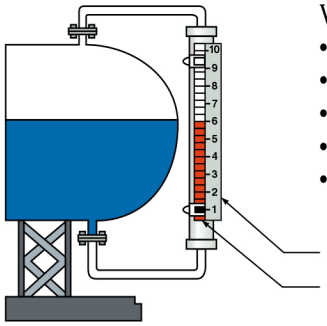
Miniature Size D-4
Standard Size D-7
High Performance SureSite D-10
Engineered Plastic Version D-13
Optional Transmitters D-16
Optional Switch Modules D-18
Optional Indicating Scale D-18

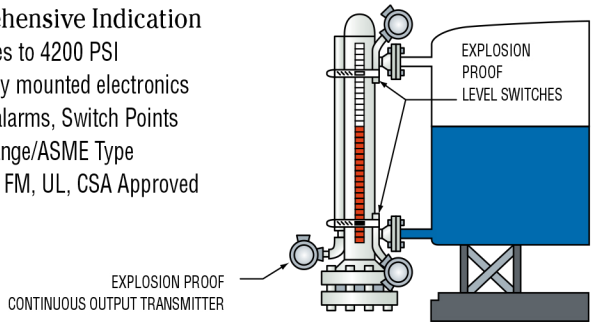
SureSite® Visual Liquid Level Indicators

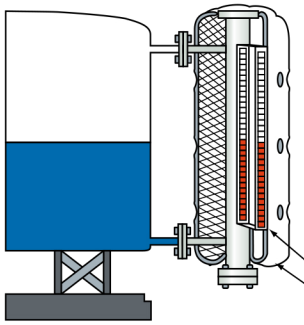
Simply the Most Versatile Liquid Level Monitoring System Available … and Tough Enough For All Kinds of Applications!



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

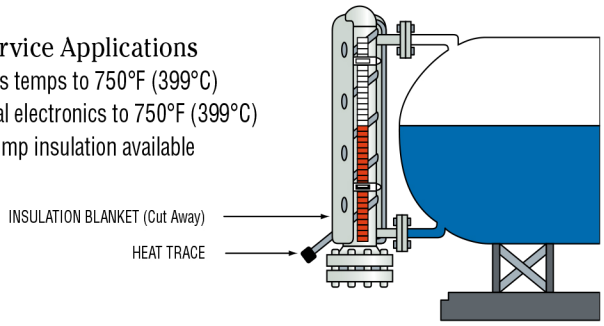
Comprehensive Indication
- Pressures to 4200 PSI
- Externally mounted electronics
- Hi/Low alarms, Switch Points
- ANSI Flange/ASME Type
- Cenelec, FM, UL, CSA Approved

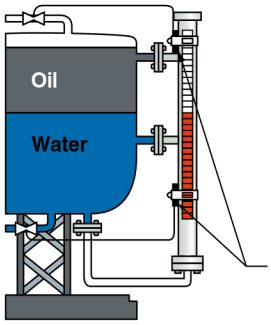




Cold Service Applications
- -200°F (-129°C)
- Frost proof lens
- Insulation (Cold Service)
- Magnified visibility

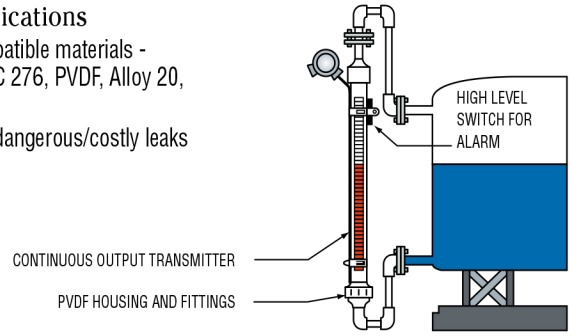
Hot Service Applications
- Process temps to 750°F (399°C)
- External electronics to 750°F (399°C)
- High temp insulation available





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



Top mount units available. Contact factory for details.

Versatile Design

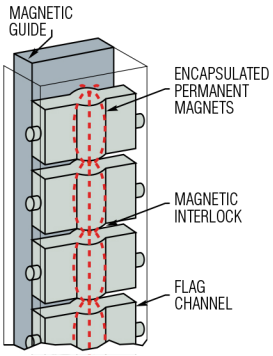
The SureSite Indicators described on the following pages represent only "basic designs." An infinite variety of configurations can be derived, custom built to your exact dimensions and application specifications on existing or new tank designs.

SureSite Indicators Are Superior To Other Magnetic Type Indicators. Here's Why:

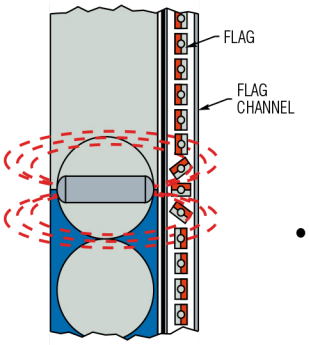
It begins with a patented Flag Assembly and integrated Magnetic Guide

Many magnetic flag type indicators look the same, but look closer and you'll see they are not made the same. SureSite® Indicators are unique. They incorporate a patented design and special features that provide the ultimate in performance and reliable operation.

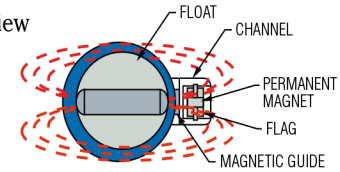
Flag Channel Assembly (partial close-up)



Profile View



Top View



- A permanent magnet, encapsulated into each flag, forms a secure magnetic interlock with adjacent flags. Proper alignment is assured, and is unaffected by shock, vibration, surges or rapid level changes.
- A Magnetic Guide (a SureSite exclusive) enables the use of a more powerful bar magnet in the float assembly. The guide is integrated into the flag channel, so regardless of positioning, the bar magnet within the float is always aligned for optimum performance and exactness.
- A powerful, permanent bar magnet lies in a horizontal position within the float. This preferred attitude directs the flux density of the magnetic field toward the flags. Flag rotation is positive and reliable.
- Float capability to handle liquid specific gravity range as low as 0.40.

SureSite® Indicators in the Process…

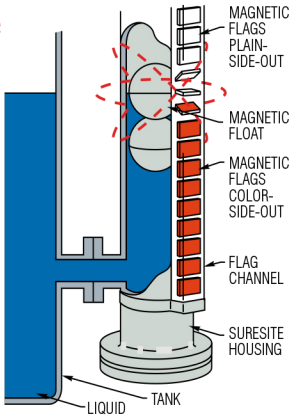
Many applications require high temperature/pressure capabilities, or strict adherence to industry standards such as

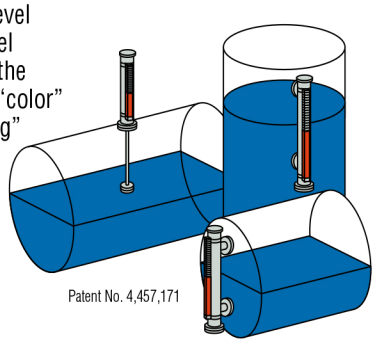
- ASME
- CENELEC
- CSA
- FM
- UL

Gems High Performance SureSite Indicators are manufactured to fill these requirements.
See pages D-10 and D-11.

Operating Principle

As liquid level rises, a magnet-equipped float within the unit inverts the magnetic flags in the external indicator to "color-side-out." The flags remain magnetically interlocked in a column until again inverted to "contrasting-side-out" by the float as liquid level falls. Liquid level is indicated by the junction of the "color" and "contrasting" portions of the column.





Patent No. 4,457,171

Ordering SureSite® Indicators

Order online or use our quick and easy OrderIt! Forms.

1. To specify this product, start by photocopying the appropriate OrderIt! PRODUCT CHECK LIST located on pages D-6, D-9, D-12, and D-15.
2. Next, using the product information supplied in this section, check off the boxes and fill in the blanks of the OrderIt! Check List to specify your desired product configuration. Accurate answers to each question will assure correct fit and function of your custom built product. Note: Use a separate Check List for each unique configuration.
3. To obtain a priced quotation, fax your completed OrderIt! Check List to Gems at **860-747-4244** or fax it to the Sales Partner nearest you. You can now configure and request quotes directly online at **www.gemssensors.com**. All of our Sales Partner locations, along with their fax numbers, are conveniently located on the Web at **www.gemssensors.com**.
4. To order your CUSTOM product, either place your order over the phone with one of our representatives, or use the OrderIt! method. Just photocopy the appropriate OrderIt! PRODUCT CHECK LIST (D-6, D-9, D-12, and/or D-15). Accurately complete all of the purchasing information that we'll need to process your order and fax it. These forms will provide us with the shipping and billing information we need, along with any prices or delivery dates quoted.

Alloy Versions–Miniature Size

ORDER IT!
Ordering is Easy! See Page D-6.
Easy online ordering too!

- Lengths to over 20 feet (6.1 meters)
- 316 Stainless Steel construction
- Pressures to 400 PSI (27 bar) – Temperature to 400°F (204°C)

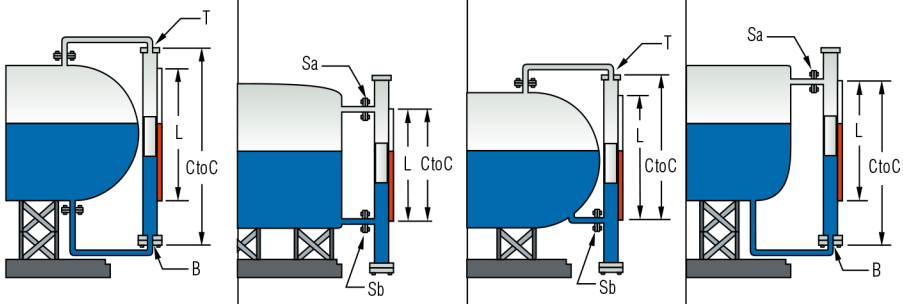
Use these Mini SureSite Indicators where space is tight—they feature a diameter of only 1-1/4˝! They can replace existing, antiquated sightglasses for excellent external, visual liquid level indication. Mini SureSite Indicators are ideal for use with clean, low viscosity liquids.

Typical Applications

- Pharmaceuticals
- Medical Equipment
- Food and Beverages
- Semiconductor Manufacturing
- Boilers

1. Mounting Configuration Types

L = Length of Visual Indication

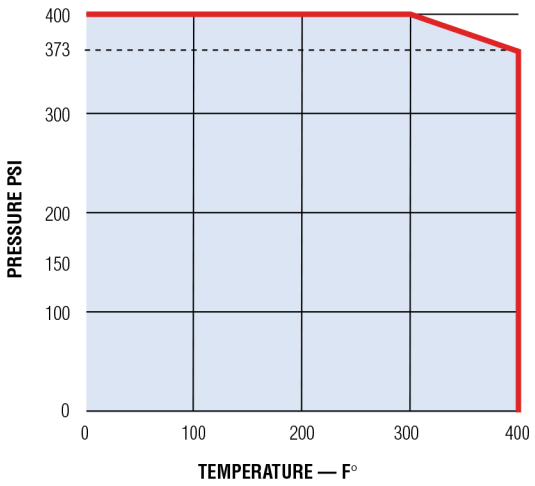


	Type AM **Top and Bottom** Process Connections	Type BM **Side and Side** Process Connections	Type CM **Top and Side** Process Connections	Type DM **Side and Bottom** Process Connections
Typical Lengths*	C to C = L + 7.72˝ (196 mm)	C to C = L	C to C = L + 3˝ (76 mm)	C to C = L + 5˝ (127 mm)
Flag Material	Plastic (300°F/148.9°C) or Aluminum (400°F/204°C)			
Length of Indication (Uninterrupted)	240˝ (610 cm)			

*Dimensions vary due to connections, material and specific gravity.
Note: Additional materials, floats, connections and manufacturing techniques are available to extend lengths and operational capabilities. Please contact Gems if the parameters above do not meet your requirements.

Miniature SureSite Performance

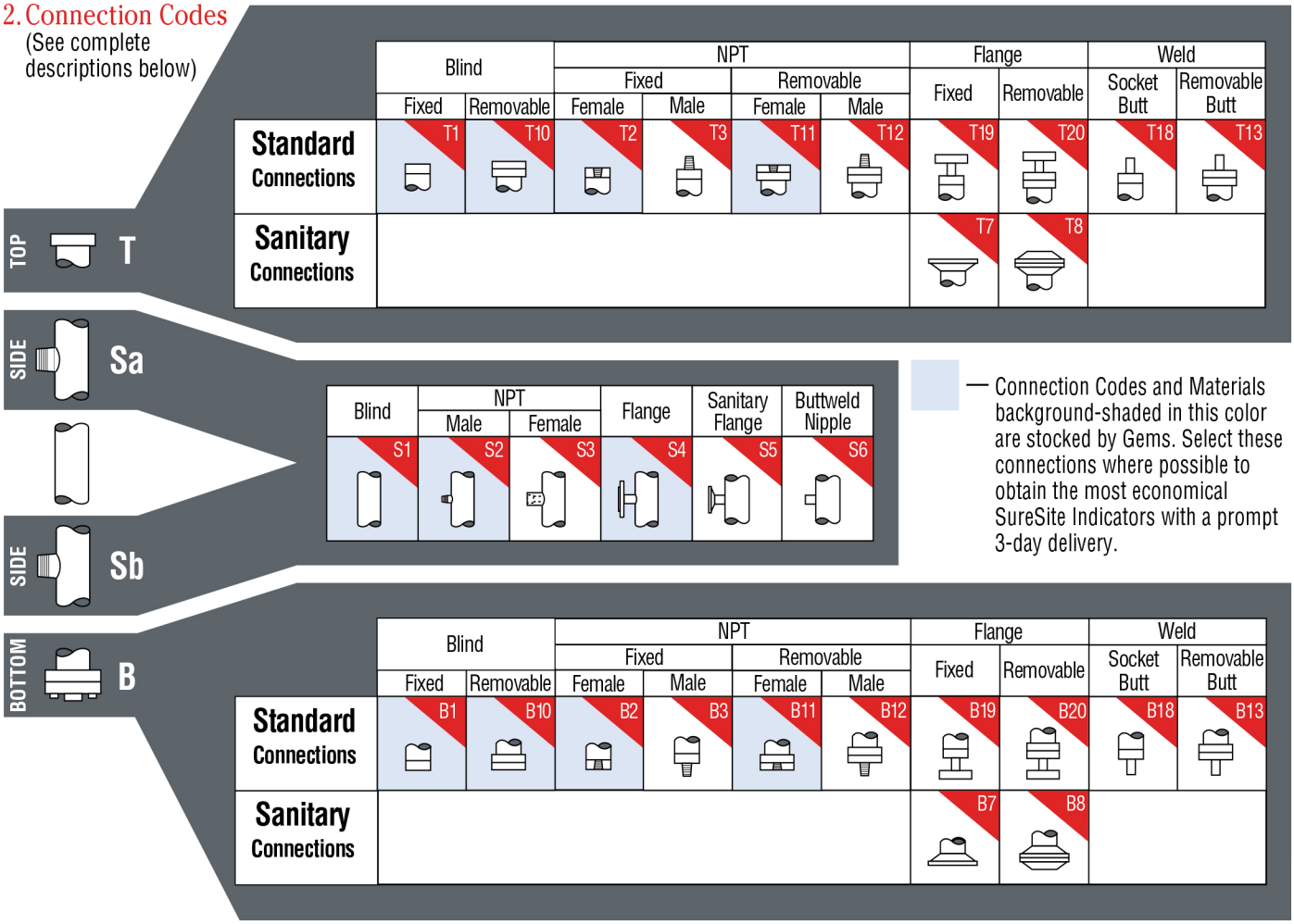
Gems configures Miniature SureSite Indicators, using various materials and fittings, to perform within the Pressure/Temperature parameters specified in the chart at right. Consult the factory with pressure/temperature requirements that fall outside the parameters shown here.



Note: SureSite Indicators are available for temperatures as low as -200°F (-129°C)

2. Connection Codes

(See complete descriptions below)



— Connection Codes and Materials background-shaded in this color are stocked by Gems. Select these connections where possible to obtain the most economical SureSite Indicators with a prompt 3-day delivery.

Note: Gems recommends a removable top and/or bottom connection for float access.

Connection Code Descriptions

Please provide all connections when completing the OrderIt! Product Check List (located on the following page).

Note: Before selecting your connections, consider incorporating your vent and drain requirements.

T & B (Top and Bottom)

T/B 1. Welded cap
T/B 2. Welded cap with FNPT
T/B 3. Welded cap with MNPT
T/B 7. Sanitary flange
T/B 8. Sanitary flange with mating blind flange
T/B 10. Standard fixed flange/mating blind flange
T/B 11. Standard fixed flange/mating FNPT reducing flange
T/B 12. Standard fixed flange/mating flange with MNPT nipple
T/B 13. Standard fixed flange/mating flange with butt weld nipple
T/B 18. Welded cap with butt weld nipple
T/B 19. Welded cap with ANSI flange
T/B 20. Standard fixed flange/mating reducing flange spool with ANSI flange

Sa & Sb (Sides)

S1. No connection
S2. MNPT nipple
S3. FNPT coupling
S4. ANSI flange
S5. Sanitary flange
S6. Buttweld nipple

Need it quick? Choose materials and components with the color shading for 3-Day manufacturing and shipping. See the Product Configurator section at www.gemssensors.com for further details.

Performance Notes:

1. As an option **either** the Switch Modules or Transmitter can be used on a Miniature SureSite Indicator - **Not Both.**
2. Minimum specific gravity is 0.7.
3. Standard O-ring seal material is Viton®. Others available upon request.
4. Electropolished Outer Diameter (OD) and/or Inner Diameter (ID) housings available upon request.

Accessories – Pages D-16 to D-18

Make more of your SureSite® Indicator with the productivity-enhancing accessories found at the end of this section.

- **Indicating Scales**
  Add graduations to your flag indication.
- **Switch Modules**
  Control pumps, valves, alarms, etc. Mount externally on housing for infinite positioning.
- **Continuous Output Transmitters**
  Signal conditioned for compatibility with most electronic instruments to 300°F (149°C).

☑ Product Check List

FAX IT!
860-747-4244

Photocopy This Form
Use one form for each product type you are selecting.
This form may also be completed online at gemssensors.com for RFQ.

This is a ☐ Request for a Quote
☐ Order P.O.# _____

Quantity Needed _____

Date Required ____/____/____

Shipping Method: _____

Partials Accepted: ☐ Yes ☐ No

Name _____

Company _____

Street _____

City _____ State ____ Zip _____

Phone (_____) _____

Fax (_____) _____

SureSite Indicators, Alloy Versions – Miniature Size

Process Conditions

This information is essential to the accurate and proper operation of your SureSite® Visual Level Indicators. Please complete fully and accurately.

1. Pressure: Operating _____ psig Maximum _____ psig

2. Temperature: Operating _____ °F Maximum _____ °F

3. Liquid Media: _____

4. Specific Gravity @ Operating Condition: _____

5. Viscosity: _____ SSU

6. Application Location: ☐ Indoors ☐ Outdoors

Physical Configuration

1. Mounting Configuration Types:

☐ Type AM ☐ Type BM ☐ Type CM ☐ Type DM

2. Connection Codes – **Complete all 4 connection code lines.** Check off NPT or Flange size where appropriate.

▼ Connection Code Number Goes Here. **Connection Code Numbers and their descriptions are on Page D-5.**

	NPT or Weld	Flange	
Top **T**	☐ 1/2″ ☐ 3/4″ ☐ Other _____	☐ 1/2″ ☐ 3/4″ ☐ 1″ ☐ Other _____	☐ 150# RF ☐ 300# RF ☐ Other _____
Side **Sa**	☐ 1/2″ ☐ 3/4″ ☐ Other _____	☐ 1/2″ ☐ 3/4″ ☐ 1″ ☐ Other _____	☐ 150# RF ☐ 300# RF ☐ Other _____
Side **Sb**	☐ 1/2″ ☐ 3/4″ ☐ Other _____	☐ 1/2″ ☐ 3/4″ ☐ 1″ ☐ Other _____	☐ 150# RF ☐ 300# RF ☐ Other _____
Bottom **B**	☐ 1/2″ ☐ 3/4″ ☐ Other _____	☐ 1/2″ ☐ 3/4″ ☐ 1″ ☐ Other _____	☐ 150# RF ☐ 300# RF ☐ Other _____

3. Length of Visual Indication – L: _____ inches (240″, Max.).

Connection to Connection Dimension – C to C: _____ inches.

4. Flag Type

Plastic flags available to 300°F (149°C).
Aluminum flags only for temperatures to 750°F (399°C).

☐ Plastic (Orange and White) ☐ Aluminum (Black and Silver)

☐ Non-Standard; Specify: _____ , consult factory.

5. O-Ring Material:

☐ Viton® (Standard) ☐ Ethylene Propylene

☐ Other _____

Special Instructions (Materials, Connections, etc.)

_____

_____

Accessories (Pages D-16 to D-18)

1. Switch Modules (Single Point): _____ Quantity

a. ☐ SPST ☐ SPDT ☐ DPDT 120 VAC ☐ DPDT 24 VDC

b. ☐ Standard – 300°F ☐ High Temperature

☐ Explosion Proof

2. Indicating Scales:

☐ Feet and Inches ☐ Inches ☐ Metric ☐ Blank

☐ Custom Graduations; specify: _____

3. Continuous Transmitter:

Output: ☐ 0-5 VDC ☐ 0-12 VDC ☐ 4-20 mA

J-Box: ☐ Standard ☐ Explosion Proof

Please contact GEMS Sensors Inc. for any configuration or special requirements not covered on this form. **800-378-1600**

Quote $ _____ Date Quoted ____/____/____

ORDER IT!

Standard Alloy Versions – Standard Size

ORDER IT!

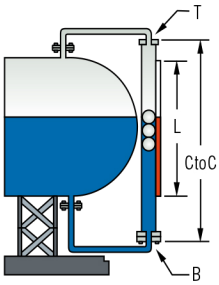
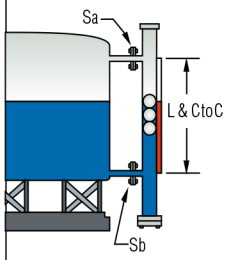
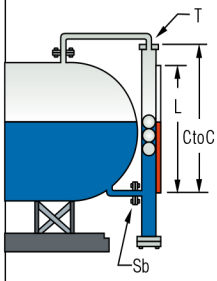
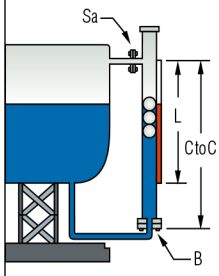
Ordering is Easy! See Page D-9.
Easy online ordering too!

- Temperatures to 750°F (399°C)
- Pressures to 700 PSI (48 bar)

Rugged, welded construction makes these 2-1/2″ (63.5 mm) diameter design, alloy SureSite Indicators dependable over a long service life indoors and out.

1. Mounting Configuration Types

To choose the best configuration for your application, focus on the process connections (connections where the liquid typically enters/leaves the SureSite).

	Type AA	Type BA	Type CA	Type DA
	Top and Bottom Process Connections	**Side and Side** Process Connections	**Top and Side** Process Connections	**Side and Bottom** Process Connections
L = Length of Visual Indication				
Typical Lengths*	C to C = L + 10-1/4″ (260.4 mm)	C to C = L	C to C = L + 3-3/4″ (95.2 mm)	C to C = L + 6-1/2″ (165.1 mm)
Flag Material	Plastic (300°F/148.9°C) or Aluminum (750°F/399°C)			
Length of Indication (Uninterrupted)	240″ (610 cm)			
Minimum Specific Gravity	0.39			

* Dimensions vary due to connections, material and specific gravity.
Note: Additional materials, floats, connections and manufacturing techniques are available to extend lengths and operational capabilities.
Please contact GEMS Sensors if the parameters above do not meet your requirements.

Type BA Shown

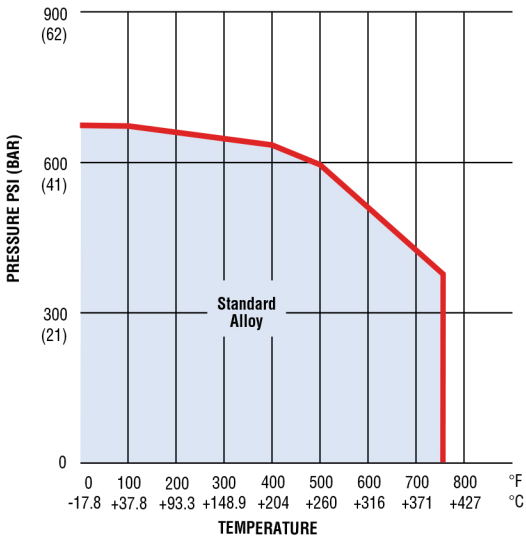
2. Material

Housing and Float: 316 Stainless Steel
Pressure/Temperature performance parameters for alloy SureSite versions are specified in the chart at right.
Please consult the factory with temperature/pressure requirements that fall outside the parameters shown here.

= Stock Material (Best economy and delivery).

Materials		Code
Housing	**Float**	
316L Stainless Steel	316L Stainless Steel	**2**
Carpenter 20	Hastelloy C276	**3***
Hastelloy C276	Hastelloy C276	**4***

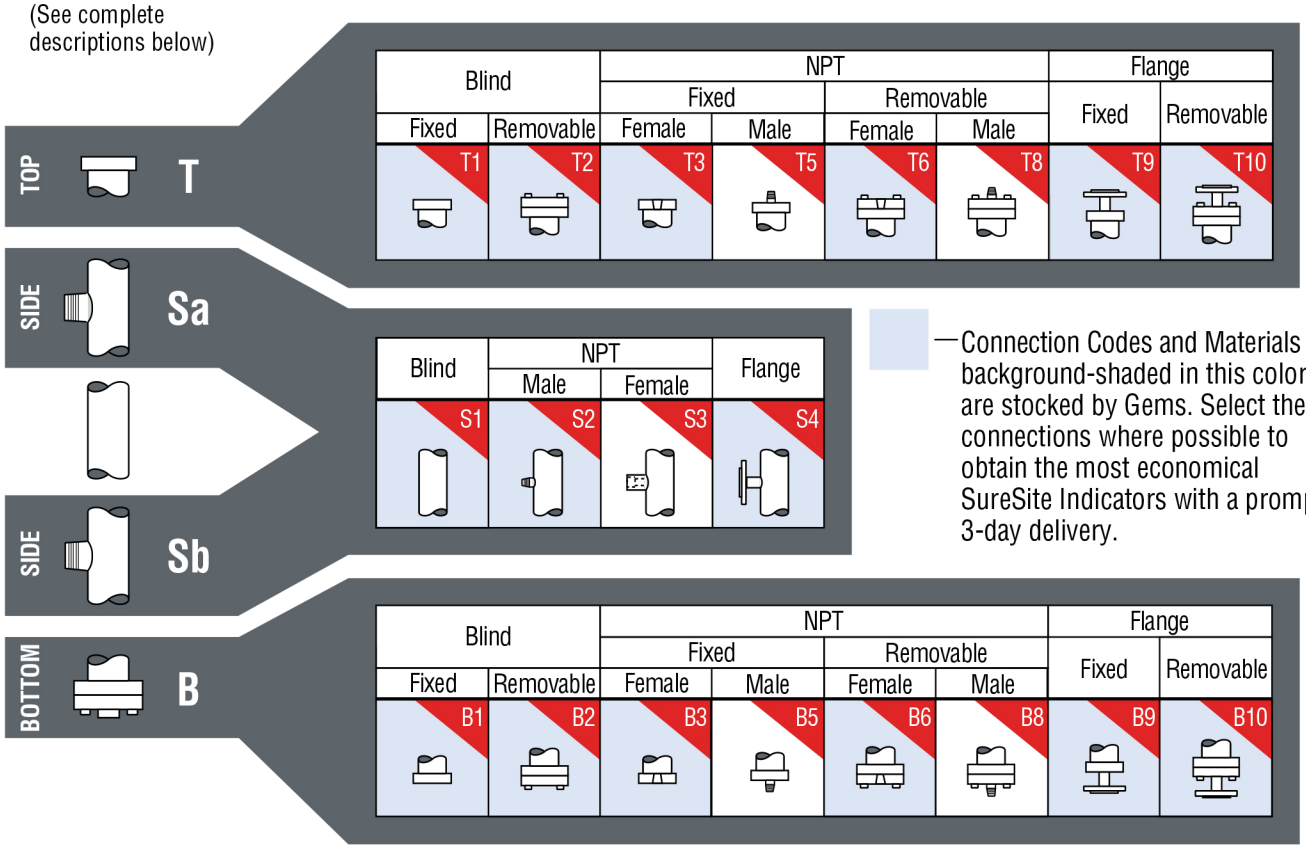
* Consult factory for pressure/temperature capabilities.



Note: SureSite Indicators are available for temperatures as low as -200°F (-129°C).

3. Connection Codes

(See complete descriptions below)



Connection Codes and Materials background-shaded in this color are stocked by Gems. Select these connections where possible to obtain the most economical SureSite Indicators with a prompt 3-day delivery.

Connection Code Descriptions

Please provide all connections when completing the OrderIt! Product Check List (located on the following page).

Note: Before selecting your connections, consider incorporating your vent and drain requirements.

T & B (Top and Bottom)

T/B 1. Welded pipe cap
T/B 2. Standard fixed flange/blind mating flange
T/B 3. Welded pipe cap w/FNPT
T/B 5. Welded pipe cap w/MNPT nipple
T/B 6. Standard fixed flange/mating FNPT reducing flange
T/B 8. Standard fixed flange/mating flange with MNPT nipple
T/B 9. Welded pipe cap with ANSI flange
T/B 10. Standard fixed flange/mating reducing flange spool

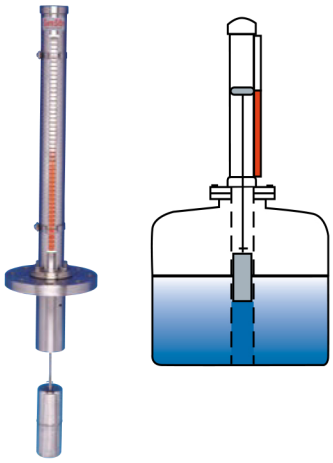
Sa & Sb Sides

S1. No connection
S2. MNPT nipple
S3. FNPT coupling
S4. ANSI flange

Need it quick? Choose materials and components with the color shading for 3-Day manufacturing and shipping. See the Product Configurator section at www.gemssensors.com for further details.

Top Mount Units

When it's not practical to access the side of a tank for liquid monitoring, look to SureSite Top Mount Indicators for the solution. Please consult with the factory for these specially configured indicators **1-800-378-1600.**



Accessories – Pages D-16 to D-18

Make more of your SureSite® Indicator with the productivity-enhancing accessories found at the end of this section.

- **Indicating Scales**
  Add graduations to your flag indication.
- **Switch Modules**
  Control pumps, valves, alarms, etc. Mount externally on housing for infinite positioning.
- **Continuous Output Transmitters**
  Signal conditioned for compatibility with most electronic instruments to 300°F (149°C).

✓ Product Check List

FAX IT!
860-747-4244

Photocopy This Form
Use one form for each product type you are selecting.
This form may also be completed online at gemssensors.com for RFQ.

This is a ☐ Request for a Quote
☐ Order P.O.# _____

Quantity Needed _____

Date Required ____/____/____

Shipping Method: _____

Partials Accepted: ☐ Yes ☐ No

Name _____
Company _____
Street _____
City _____ State ____ Zip _____
Phone (_____) _____
Fax (_____) _____

SureSite Indicators, Alloy Versions – Standard Size

Process Conditions

This information is essential to the accurate and proper operation of your SureSite® Visual Level Indicators. Please complete fully and accurately.

1. Pressure: Operating _____ psig Maximum _____ psig

2. Temperature: Operating _____ °F Maximum _____ °F

3. Liquid Media: _____

4. Specific Gravity @ Operating Condition: _____

5. Viscosity: _____ SSU

6. Application Location: ☐ Indoors ☐ Outdoors

Physical Configuration

1. Mounting Configuration Types:

☐ Type AA ☐ Type BA ☐ Type CA ☐ Type DA

2. Housing and Float Material

☐ Code 2 ☐ Code 3 ☐ Code 4

3. Connection Codes – **Complete all 4 connection code lines.** Check off NPT or Flange size where appropriate.

▼ Connection Code Number Goes Here. **Connection Code Numbers and their descriptions are on Page D-8.**

	NPT	Flange	
Top **T**	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 150# (RF) ☐ 600# (RF) ☐ Other _____
Side **Sa**	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 150# (RF) ☐ 600# (RF) ☐ Other _____
Side **Sb**	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 150# (RF) ☐ 600# (RF) ☐ Other _____
Bottom **B**	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 150# (RF) ☐ 600# (RF) ☐ Other _____

4. Length of Visual Indication – L: _____ inches (240″, Max.).

Connection to Connection Dimension – C to C: _____ inches.

5. Flag Type

Plastic flags available to 300°F (149°C).
Aluminum flags only for temperatures to 750°F (399°C).

☐ Plastic (Orange and White) ☐ Aluminum (Black and Silver)
☐ Non-Standard; Specify: _____ consult factory.

Special Instructions (Materials, Connections, etc.)

_____
_____
_____

Accessories (Pages D-16 to D-18)

1. Transmitters (Continuous Electrical Indication):
☐ Low Temperature – 300°F (149°C) ☐ Explosion-Proof
☐ High Temperature – 750°F (399°C)

2. J-Box/Signal Conditioners Accessories:
☐ Terminal Strip ☐ 4-20 mA Output
☐ 0-12 VDC Output ☐ 0-5 VDC Output

3. Power Supply: (Optional)
☐ 115 VAC (Input) /24 VDC (Output)
☐ 230 VAC (Input) /24 VDC (Output)

4. Switch Modules (Single Point): _____ Quantity (only if required)
a. ☐ SPST ☐ SPDT ☐ DPDT 120 VAC ☐ DPDT 24 VDC
b. ☐ Standard – 300°F (149°C) ☐ Explosion Proof
☐ High Temperature – 750°F (399°C)

5. Indicating Scales:
☐ Feet and Inches ☐ Inches ☐ Metric ☐ Blank
☐ Custom Graduations; specify: _____

Please contact GEMS Sensors Inc. for any configuration or special requirements not covered on this form. **800-378-1600**

Quote: $ _____ Date Quoted: ____/____/____

Gems™ Sensors & Controls

ORDER IT!

High Performance Versions – Standard Size

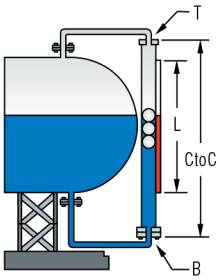
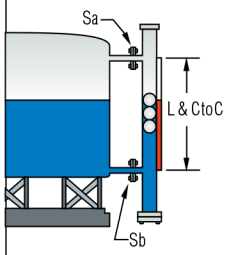
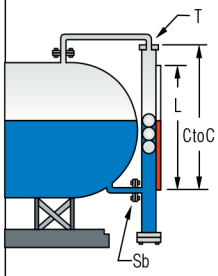
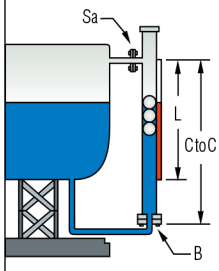
ORDER IT!
Ordering is Easy! See Page D-12.
Easy online ordering too!

- Designed to meet the requirements of ASME B31.3 "normal" fluid service*
- Temperatures to 750°F (399°C)
- Pressures to 4200 PSI (290 bar)

For your most demanding applications, these SureSite® Indicators feature ANSI flanges and fittings and construction to rigorous ASME standards. You can't specify a better visual level indicator.

1. Mounting Configuration Types

To choose the best configuration for your application, focus on the process connections (connections where the liquid typically enters/leaves the SureSite).

	Type AA	Type BA	Type CA	Type DA
	Top and Bottom Process Connections	**Side and Side** Process Connections	**Top and Side** Process Connections	**Side and Bottom** Process Connections
L = Length of Visual Indication				
Typical Lengths†	C to C = L + 10-1/4″ (260.4 mm)	C to C = L	C to C = L + 3-3/4″ (95.2 mm)	C to C = L + 6-1/2″ (165.1 mm)
Flag Material	Plastic (300°F/148.9°C) or Aluminum (750°F/399°C)			
Length of Indication (Uninterrupted)	240″ (610 cm)			
Minimum Specific Gravity	0.39			

† Dimensions vary due to connections, material and specific gravity.

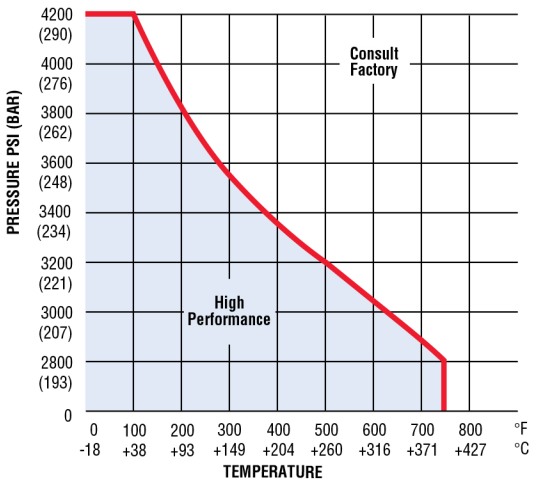
2. Material

Select desired material from those tabulated below. Mark the Code Number on your OrderIt! Check List. The pressure/temperature performance parameters are specified in the chart at right. Consult the factory with pressure/temperature requirements that fall outside the parameters shown here. These units are manufactured in Schedule 40, 80 or 160 pipe accordingly.

= Stock Material (Best economy and delivery).

Materials		Code
Housing	**Float**	
316L Stainless Steel	316L Stainless Steel 600 psi –	**2**
316L Stainless Steel	Titanium (Ti-6Al-4V) 600 psi+	**9**

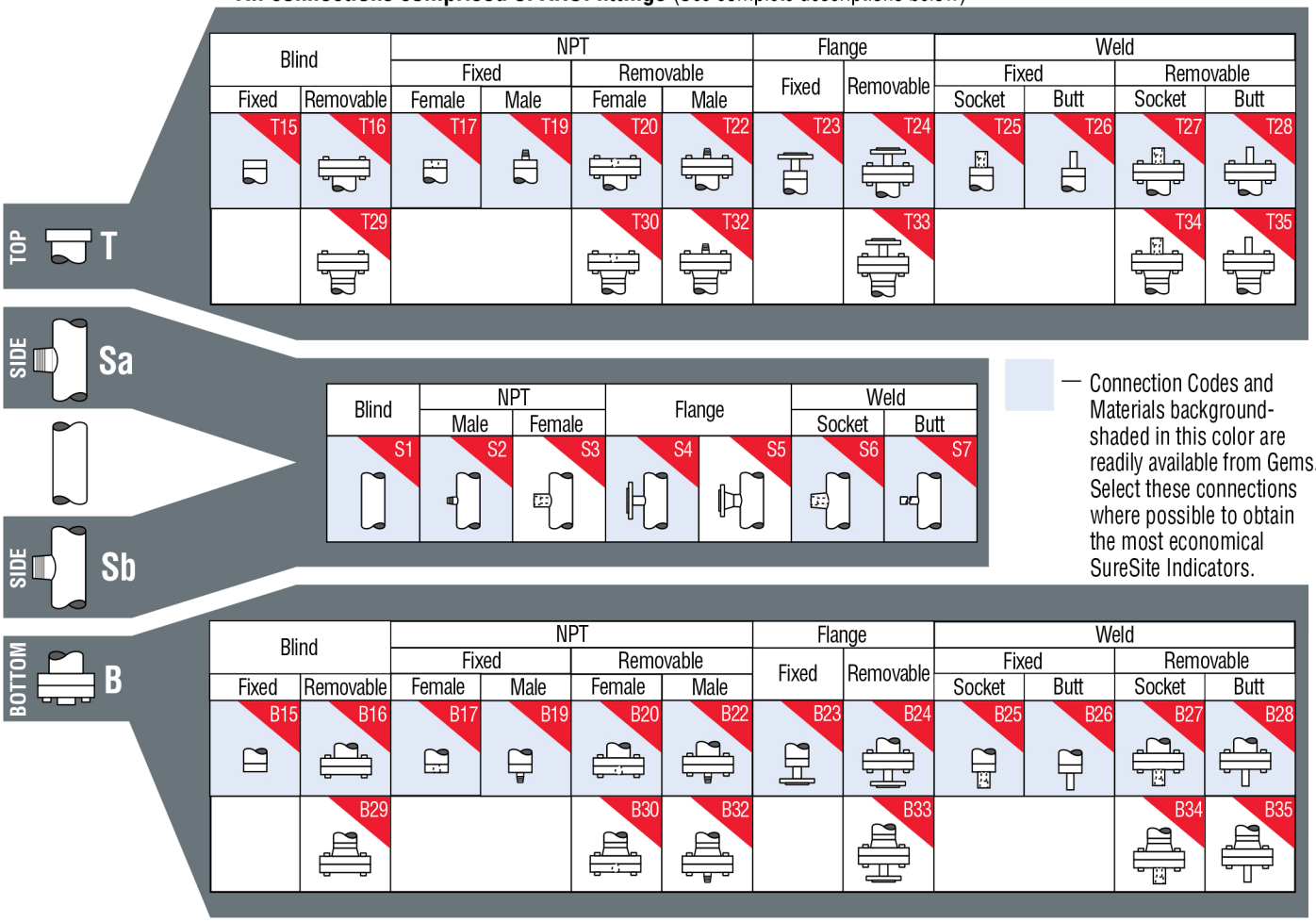
Note: Additional materials, floats, connections and manufacturing techniques are available to extend lengths and operational capabilities. Please contact Gems if the parameters above do not meet your requirements.



*Units requiring ASME certification must be specified at time of request.

3. Connection Codes

All connections comprised of ANSI fittings (See complete descriptions below)



— Connection Codes and Materials background-shaded in this color are readily available from Gems. Select these connections where possible to obtain the most economical SureSite Indicators.

Note: Gems recommends a removable top and/or bottom connection for float access.

Connection Code Descriptions
Please provide all connections when completing the OrderIt! Product Check List.
Note: Before selecting your connections, consider incorporating your vent and drain requirements.

T & B (Top and Bottom)

T/B 15. ANSI welded pipe cap
T/B 16. ANSI fixed slip-on flange/blind mating flange
T/B 17. ANSI welded pipe cap with FNPT
T/B 19. ANSI welded pipe cap with MNPT nipple
T/B 20. ANSI fixed slip-on flange/mating FNPT reducing flange
T/B 22. ANSI fixed slip-on flange/mating flange w/MNPT nipple
T/B 23. ANSI welded pipe cap with ANSI flange
T/B 24. ANSI fixed slip-on flange/mating reducing ANSI flange spool
T/B 25. ANSI welded pipe cap with socketweld coupling
T/B 26. ANSI welded pipe cap with buttweld nipple
T/B 27. ANSI fixed slip-on flange/mating flange with socketweld coupling
T/B 28. ANSI fixed slip-on flange/mating flange with buttweld nipple
T/B 29. ANSI fixed weldneck flange/blind mating flange
T/B 30. ANSI fixed weldneck flange/mating FNPT reducing flange
T/B 32. ANSI fixed weldneck flange/mating flange w/MNPT nipple
T/B 33. ANSI fixed weldneck flange/mating reducing flange spool
T/B 34. ANSI fixed weldneck flange/mating flange with socketweld coupling
T/B 35. ANSI fixed weldneck flange/mating flange with buttweld nipple

Sa & Sb (Sides)

S1. No connection
S2. MNPT nipple
S3. FNPT coupling
S4. ANSI flange
S5. Weldneck flange
S6. Socketweld coupling
S7. Buttweld nipple

Accessories – Pages D-16 to D-18

Make more of your SureSite® Indicator with the productivity-enhancing accessories found at the end of this section.

- **Indicating Scales**
  Add graduations to your flag indication.
- **Switch Modules**
  Control pumps, valves, alarms, etc. Mount externally on housing for infinite positioning.
- **Continuous Output Transmitters**
  Signal conditioned for compatibility with most electronic instruments to 300°F (149°C).

☑ Product Check List

FAX IT!
860-747-4244

Photocopy This Form
Use one form for each product type you are selecting.

This is a ☐ Request for a Quote
☐ Order P.O.# _____

Quantity Needed _____

Date Required ____/____/_____

Shipping Method:_____

Partials Accepted: ☐ Yes
☐ No

Name _____

Company _____

Street _____

City_____ State ____ Zip_____

Phone (_____) _____

Fax (_____) _____

SureSite Indicators, High Performance Versions

Process Conditions

This information is essential to the accurate and proper operation of your SureSite® Visual Level Indicators. Please complete fully and accurately.

Use this page for high performance units only.

1. Pressure: Operating _____ psig Maximum _____ psig

2. Temperature: Operating _____ °F Maximum _____ °F

3. Liquid Media: _____

4. Specific Gravity @ Operating Condition: _____

5. Viscosity: _____ SSU

6. Application Location: ☐ Indoors ☐ Outdoors

Physical Configuration

1. Mounting Configuration Types:

☐ Type AA ☐ Type BA ☐ Type CA ☐ Type DA

2. Housing and Float Material – Housing: 316L/SS

☐ Code 2 – 316L SS Float ☐ Code 9 – Titanium Float

3. Connection Codes – **Complete all 4 connection code lines.** Check off NPT or Flange size where appropriate.

▼ Connection Code Number Goes Here. **Connection Code Numbers and their descriptions are on Page D-11.**

	NPT or Weld	Flange	
Top T	☐ 1/2″ ☐ 1″ ☐ 1.5″ ☐ Other _____	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 150# (RF) ☐ 600# (RF) ☐ 900# (RF) ☐ Other _____
Side Sa	☐ 1/2″ ☐ 1″ ☐ 1.5″ ☐ Other _____	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 150# (RF) ☐ 600# (RF) ☐ 900# (RF) ☐ Other _____
Side Sb	☐ 1/2″ ☐ 1″ ☐ 1.5″ ☐ Other _____	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other_____	☐ 150# (RF) ☐ 600# (RF) ☐ 900# (RF) ☐ Other _____
Bottom B	☐ 1/2″ ☐ 1″ ☐ 1.5″ ☐ Other _____	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 150# (RF) ☐ 600# (RF) ☐ 900# (RF) ☐ Other _____

4. Length of Visual Indication – L: _____ inches (240″, Max.).

Connection to Connection Dimension – C to C: _____ inches.

5. Flag Type

Plastic flags available to 300°F (149°C). Specify aluminum flags for temperatures of 301°F to 750°F (149°C to 399°C).

☐ Plastic (Orange and White) ☐ Aluminum (Black and Silver)

☐ Non-Standard; Specify:_____ consult factory.

6. ☐ ASME Certification Required

Special Instructions (Materials, Connections, etc.)

_____

_____

_____

Accessories (Pages D-16 to D-18)

1. Transmitters (Continuous Electrical Indication):
☐ Low Temperature – 300°F (149°C) ☐ Explosion-Proof
☐ High Temperature – 750°F (399°C)

2. J-Box/Signal Conditioners Accessories:
☐ Terminal Strip ☐ 4-20 mA Output
☐ 0-12 VDC Output ☐ 0-5 VDC Output

3. Power Supply: (Optional)
☐ 115 VAC (Input) /24 VDC (Output)
☐ 230 VAC (Input) /24 VDC (Output)

4. Switch Modules (Single Point): _____ Quantity (only if required)
a. ☐ SPST ☐ SPDT ☐ DPDT 120 VAC ☐ DPDT 24 VDC
b. ☐ Standard – 300°F (149°C) ☐ Explosion Proof
☐ High Temperature – 750°F (399°C)

5. Indicating Scales:
☐ Feet and Inches ☐ Inches ☐ Metric ☐ Blank
☐ Custom Graduations; specify: _____

Please contact Gems for any configuration or special requirements not covered on this form. **800-378-1600**

Quote: $ _____ Date Quoted:____/____/____

Gems™ Sensors & Controls

ORDER IT!

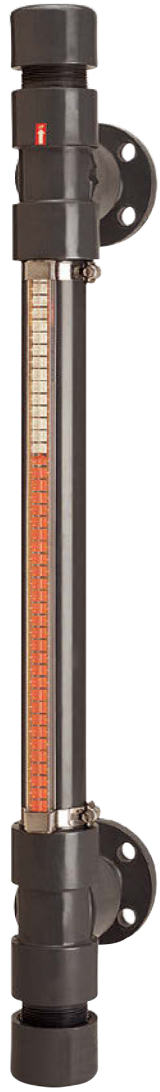
Engineered Plastics Versions – Standard Size

ORDER IT!

Ordering is Easy! See Page D-15. Easy online ordering too!

- Temperatures to 280°F (139°C)
- Pressures to 150 PSI (10.3 Bar)
- Up to 19 feet (5.8 meters) of continuous visual indication

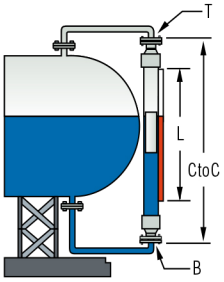
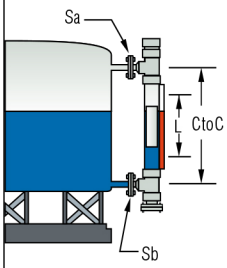
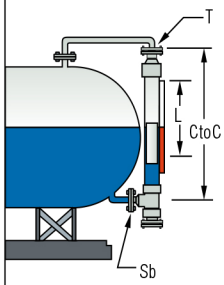
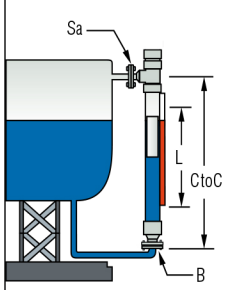
The 2˝ Schedule 80 pipe design is ideal for use on chemical storage tanks, or with almost any liquid where temperature and pressure requirements are moderate. All SureSite Indicators feature the same patented flag and guide assemblies used on our alloy versions, so you can be assured of excellent visibility and long-life reliability.



Type BP Shown

1. Mounting Configuration Types

To choose the best configuration for your application, focus on the process connections (connections where the liquid typically enters/leaves the SureSite).

	Type AP	Type BP	Type CP	Type DP
	Top and Bottom Process Connections	**Side and Side** Process Connections	**Top and Side** Process Connections	**Side and Bottom** Process Connections
L = Length of Visual Indication				
Typical Lengths*	C to C = L + 11˝ (279 mm)	C to C = L + 8˝ (203 mm)	C to C = L + 9.5˝ (241 mm)	C to C = L + 9.5˝ (241 mm)
	Overall Length = C to C	Overall Length = C to C + 11˝ (279 mm)	Overall Length = C to C + 5-1/2˝ (140 mm)	Overall Length = C to C + 5-1/2˝ (140 mm)
Flag Indicator Material	Plastic			
Length of Indication, Max.	228˝ (579 cm)			

*Dimensional data varies due to connections, material and specific gravity.
Note: Additional materials, floats, connections and manufacturing techniques are available to extend lengths and operational capabilities. Please contact GEMS Sensors if the parameters above do not meet your requirements.

2. Material

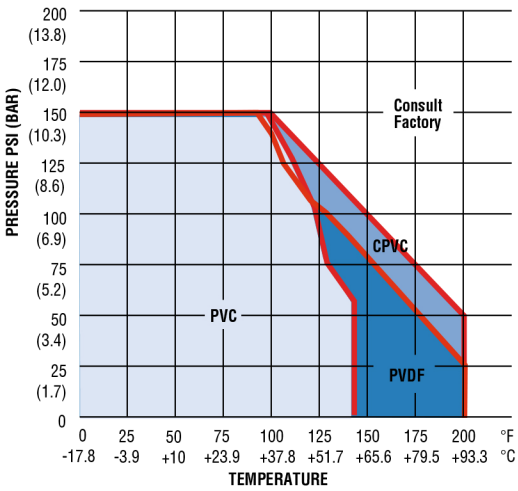
Select desired material from those tabulated below. Mark the Code Number on your OrderIt! Check List. The pressure/temperature performance parameters are specified in the charts at right. Consult the factory with pressure/temperature requirements that fall outside the parameters shown here.

Materials Housing & Float	Code
PVC	1
Clear PVC Housing/ PVC Float	1A*
CPVC	2
PVDF	4

* 2" Schedule 40 pipe

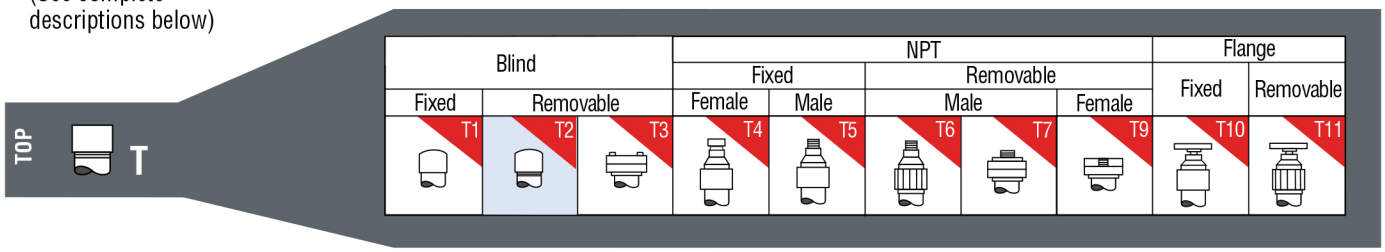
= Stock Material (Best economy and delivery).

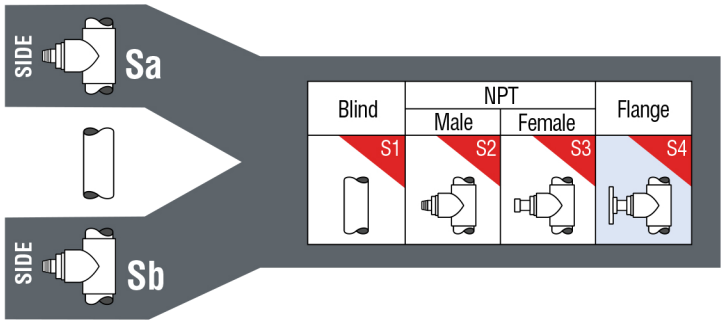
Pressure/Temperature Performance



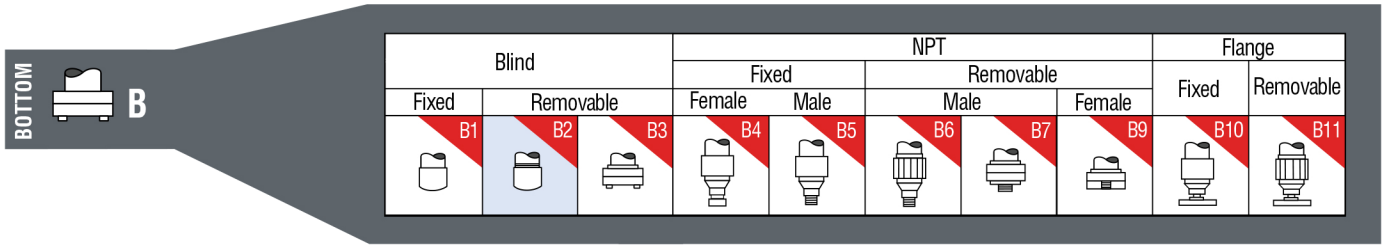
3. Connection Codes

(See complete descriptions below)





— Connection Codes and Materials background-shaded in this color are stocked by Gems. Select these connections where possible to obtain the most economical SureSite Indicators.



Connection Code Descriptions

Please provide all connections when completing the OrderIt! Product Check List.

Note: Before selecting your connections, consider incorporating your vent and drain requirements.

T & B (Top and Bottom)

T/B 1. Welded cap
T/B 2. Threaded cap (PVC/CPVC only)
T/B 3. Fixed flange/blind mating flange
T/B 4. Welded coupling/FNPT
T/B 5. Welded coupling/MNPT
T/B 6. Threaded union/MNPT
T/B 7. Fixed flange/mating flange MNPT
T/B 9. Fixed flange/mating flange/FNPT
T/B 10. Welded coupling flange
T/B 11. Threaded union flange

Sa & Sb (Sides)

S1 – Blind–No Connection
S2 – MNPT nipple
S3 – FNPT coupling
S4 – ANSI flange

Accessories – Pages D-16 to D-18

Make more of your SureSite® Indicator with the productivity-enhancing accessories found at the end of this section.

- **Indicating Scales**
  Add graduations to your flag indication.
- **Switch Modules**
  Control pumps, valves, alarms, etc. Mount externally on housing for infinite positioning.
- **Continuous Output Transmitters**
  Signal conditioned for compatibility with most electronic instruments.

FAX IT!
860-747-4244

Photocopy This Form
Use one form for each product type you are selecting.

This is a ☐ Request for a Quote
☐ Order P.O.# _____

Quantity Needed _____

Date Required ____/____/_____

Shipping Method:_____

Partials Accepted: ☐ Yes
☐ No

Name _____

Company _____

Street _____

City_____ State ____ Zip_____

Phone (_____) _____

Fax (_____) _____

SureSite Indicators, Engineered Plastic Versions – Standard Size

Process Conditions

This information is essential to the accurate and proper operation of your SureSite® Visual Level Indicators. Please complete fully and accurately.

1. Pressure: Operating _____ psig Maximum _____ psig

2. Temperature: Operating _____ °F Maximum _____°F

3. Liquid Media: _____

4. Specific Gravity @ Operating Condition: _____

5. Viscosity: _____ SSU

6. Application Location: ☐ Indoors ☐ Outdoors

Physical Configuration

1. Mounting Configuration Types:

☐ Type AP ☐ Type BP ☐ Type CP ☐ Type DP

2. Housing and Float Material:

☐ Code 1 ☐ Code 1A ☐ Code 2 ☐ Code 3 ☐ Code 4

3. Connection Codes – **Complete all 4 connection code lines.**

Check off NPT or Flange size where appropriate.

▼ Connection Code Number Goes Here. **Connection Code Numbers and their descriptions are on Page D-14.**

	NPT	Flange	
Top **T**	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 150# (FF) ☐ Other _____
Side **Sa**	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 150# (FF) ☐ Other _____
Side **Sb**	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 150# (FF) ☐ Other _____
Bottom **B**	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 1/2″ ☐ 1″ ☐ 2″ ☐ Other _____	☐ 150# (FF) ☐ Other _____

4. Length of Visual Indication – L: _____ inches (228″, Max.).

Connection to Connection Dimension – C to C: _____ inches.

5. Flag Type: Plastic (Orange and White)

Special Instructions (Materials, Connections, etc.)

_____

_____

Accessories (Pages D-16 to D-18)

1. Transmitters (Continuous Electrical Indication):
☐ Standard – 300°F (149°C) ☐ Explosion-Proof

2. J-Box/Signal Conditioners Accessories:
☐ Terminal Strip ☐ 4-20 mA Output ☐ 0-5 VDC Output
☐ 0-12 VDC Output

3. Power Supply: (Optional)
☐ 115 VAC (Input) /24 VDC (Output)
☐ 230 VAC (Input) /24 VDC (Output)

4. Switch Modules (Single Point): _____ Quantity (only if required)
a. ☐ SPST ☐ SPDT ☐ DPDT 120 VAC ☐ DPDT 24 VDC
b. ☐ Standard – 300°F (149°C) ☐ High Temperature
☐ Explosion Proof

5. Indicating Scales:
☐ Feet and Inches ☐ Inches ☐ Metric ☐ Blank
☐ Custom Graduations; specify: _____

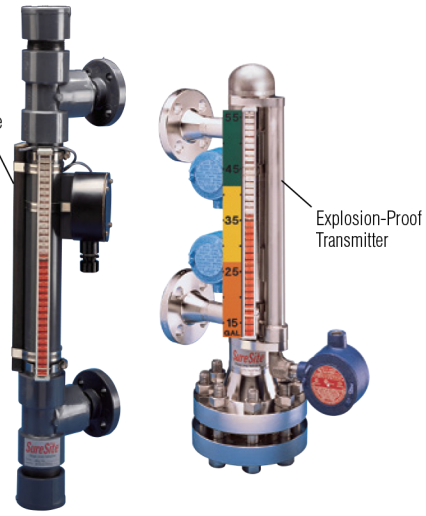
Please contact Gems for any configuration or special requirements not covered on this form. **800-378-1600**

Quote: $ _____ Date Quoted:____/____/____

Gems™ Sensors & Controls

ORDER IT!

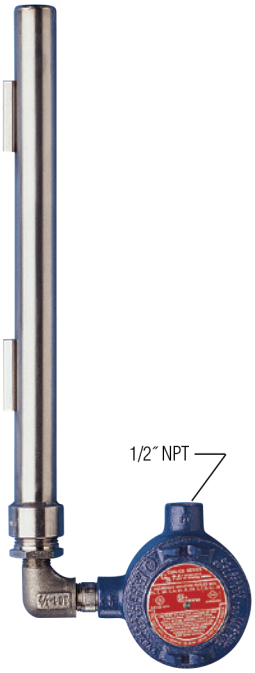
Continuous Electrical Output Transmitters for all SureSite Indicators



Broaden the SureSite Indicator's capabilities; add one of these transmitters. You can have visual indication and a continuous electrical output too without additional tank penetrations. Use them to know what's in your tank remotely, send the signal to your controller, schedule your next inventory.

These transmitters are compatible with the readout displays at the end of this Section (D-28 to D-30) or can interface directly to your equipment by specifying the appropriate output.

Select your transmitter preference on the SureSite Product Check List (pages D-6, D-9, D-12 and D-15).

	Low Temperature Transmitter	Explosion-Proof Transmitter	Explosion-Proof / High Temperature Transmitter
			
Compatible SureSite Types	Plastic and Standard Alloy Units	Mini Alloys	Standard Alloy and High Performance Alloy Units
Operating Temperature, Max.	+300°F (149°C)	+300°F (149°C)	+750°F (399°C)
Housing Materials	Polysulfone	316 Stainless Steel	
Output Termination	Cable	Junction Box (Feralloy Iron)	
Transmitter Resolution	3/8˝ (9.5 mm)		
Accuracy	3/8˝ (9.5 mm)		

Signal Conditioned Modules

Gems offers a variety of electrical Junction Boxes with built-in Signal Conditioners to increase the versatility of SureSite Indicators. Voltage outputs available:

- 0-5VDC
- 0-10VDC
- 0-12 VDC

Current output available:

- 4-20mA (loop powered)

Electrical specifications and ordering information for these units are found on Page D-17. Junction boxes with terminal blocks are also on Page D-17.

Intrinsic Safety

Operation is intrinsically safe when transmitters are properly connected with a Gems, or other appropriate, zener barrier in Section L.

Signal Conditioning Modules, 0-5 VDC, 0-12 VDC and 4-20 mA Outputs

Provide signal conditioning as an integral part of the SureSite® Level Indicators

- Stem Mounted
- J-Box Enclosed
- Panel Mounted

Gems signal conditioners provide outputs for direct connection to a wide range of instrumentation. They are ideal for large, multi-tank complexes. Units with 4-20 mA outputs are particularly well suited for instrumentation control loops. No intermediate receiver is required.

J-Box Enclosure

Panel Mounted (Plug Base)

Specifications (Not included in table below)

Operating Temperature	+5°F to +160°F (-15°C to +71°C)
Storage Temperature	-40°F to +212°F (-40°C to +100°C)
Output Temperature Coefficient (% of full scale, max.)	±0.00388%/°F (±0.007%/°C)
4-20 mA Types	To within ±1% of 16 mA

Excitation Required for Transmitters using 4-20 mA Signal Conditioners

The minimum excitation required for operation of transmitters with 4-20 mA, DC signal converters (See chart at right) can be determined for a given total loop resistance from the graph shown. (Total loop resistance = the sum of the DC termination resistance plus loop resistance.) For optimum operation, which is a function of source voltage ($+V_A$) and total loop resistance, the source voltage value used should be above the minimum load line for the related loop resistance.

How To Order

Select Part Number based on Output Signal desired and SureSite Indicator being used.

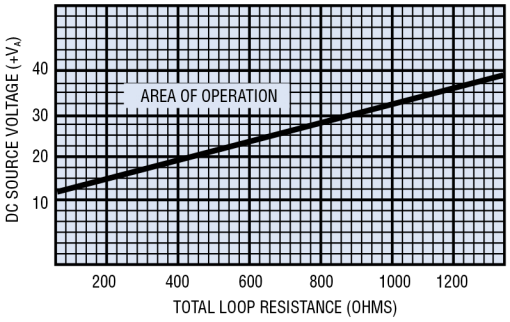
Electrical Termination Method	Output Signal	Input Voltage	Module Part Numbers For: SureSite Low Temperature	Module Part Numbers For: SureSite High Temperature
Junction Box	0-5 VDC	8-24 VDC	**86156**	**52536**
	0-12 VDC	15-30 VDC	**85997**	**52537**
	4-20 mA	10-40 VDC	**86158**	**152800**
Panel Mount with Plug-In Base	4-20 mA	10-40 VDC	**112300** ⚡	**112300** ⚡

⚡ = Stock item

Power Supply Module

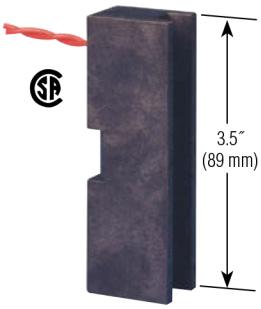
Input Power	Part Number
115 VAC, 60 Hz	**52560**
230 VAC, 60 Hz	**52570**

Operates on 115 VAC or 230 VAC inputs to supply a regulated 24 VDC to the signal conditioned transmitter where external VDC power is not available. Maximum Load: 70 mA.



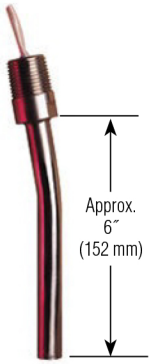
Switch Modules Provide High-, Low- or Intermediate-Level Alarms or Control Logic

Standard Switch Modules



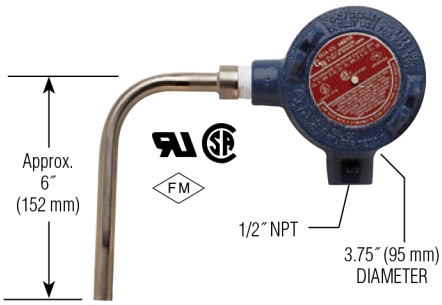
- CSA Approved
- Includes Stainless Steel Mounting Clamp
- Polysulfone Housing
- Withstands Temperatures to 300°F (148.9°C)
- Connection: 1/4″ FNPT

High Temperature Switch Module



- Withstands Temperatures of 750°F (399°C)
- 316 Stainless Steel Construction
- 1/2″ MNPT Conn.
- Includes Stainless Steel Mounting Clamp

Explosion-Proof Switch Module



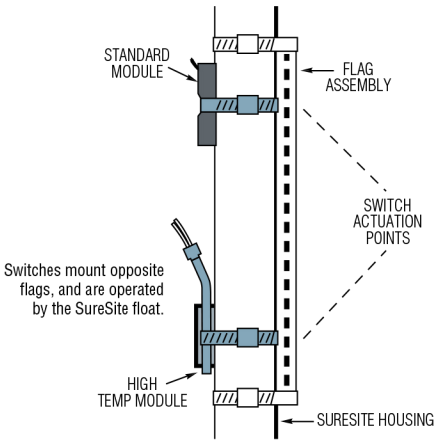
- UL, CSA, FM Approved
- Withstands Temperatures of 750°F (399°C)
- J-Box Terminated
- Stainless Steel Construction
- Includes Stainless Steel Mounting Clamp

Switch Logic (All Models)

Lead Wires Up	Switch closes on rising level and remains closed until opened by falling level.	**For Intrinsic Safety**...These switch modules can be rendered intrinsically safe with the use of GEMS SAFE-PAKS® and Zener Barriers. See Section L.
Lead Wires Down	Switch opens on rising level and remains open until closed by falling level.	

Mounting

Switches mount opposite flags (180°) and may be positioned next to each other for multiple actuation requirements.



How To Order

Switch modules can be added to any SureSite Indicator at any time. Specify the Part Number and quantity of switches desired on Product Check List.

Switch Type		Rating*	Part Numbers – Based on SureSite Version		
			Alloy & ASME SureSite	Mini SureSite	Plastic SureSite
Standard	SPST	20VA	**86435** ⚡	**86567** ⚡	**80469**
Hi-Temp	SPST	20VA	**83150**	**83150-M**	**83150-P**
	SPDT	20VA	**84320**	**84320-M**	**84320-P**
Explosion-Proof	SPST	20VA	**83130**	**83130-M**	**83130-P**
	SPDT	20VA	**84330**	**84330-M**	**84330-P**
	DPDT, 120 VAC	10A	**83100**	**83100-M**	**83100-P**
	DTDT, 24 VDC	10A	**83110**	**83110-M**	**83110-P**

* See "Electrical Data" on Page X-5 for more information. ⚡ = Stock item

Indicating Scales

These optional stainless steel indicating scales provide a numerical readout of the liquid level in addition to the flag indication. They mount alongside the flag assembly for easy viewing.

- Available in 1.5″ and 3″ wide versions.
- Markings: Feet and Inches
  Inches
  Metric (Decameter, centimeter, millimeter)

Custom marked graduations such as gallons, liters or percentage available.

LED Transmitter Versions – Miniature Size

- LED indicators ideal in low or no ambient light
- Integral transmitter with choice of signal conditioned output
- Lengths to 10 feet (3 meters)
- Pressures to 400 PSI (27 bar) – Temperature to 300°F (149°C)

These Mini SureSite Indicators excel where zero and low ambient light make visual indicators difficult to read. These mini indicators feature all the benefits of a SureSite, like safe and durable stainless steel process fluid containment, while combining a continuous output transmitter with a bright LED channel.

The LED indicator assembly integrates a continuous level transmitter reducing overall footprint. A variety of signal conditioners provide the output you require. Forget the flashlights and squinting required to view antiquated sightglasses.

Typical Applications

• Pharmaceuticals • Medical Equipment • Food and Beverages
• Marine • Rail • Boilers

Specifications

Indication Length	5˝ to 120˝ (13 to 305 cm) in 0.5˝ (13 mm) increments
Media	Waters, Coolants, Light Oils, Diesel, Hydraulics
Specific Gravity	Minimum 0.8 SG to 1.2 SG
Materials	
Chamber Housing	316/316L Stainless Steel
Float	316/316L Stainless Steel
Shroud	Polycarbonate
O-Ring (Wetted)	Viton®, unless otherwise specified
J-Box Enclosure	Die cast Aluminum
Reliability and Durability	Expected 10 year service life
Performance	
Resolution	3/8˝ (9.5 mm)
Accuracy	±1/2˝ (13 mm)
Output Signal	4-20 mA to within ±3% of full scale
Temperature Ranges	
Process	-40°F to +300°F (-40°C to +149°C)
Ambient	-40°F to +160°F (-40°C to +71°C)
Operating Pressure	Vacuum to 400 psig (27.6 bar)
Environmental	Enclosure: NEMA 4X IP65 (Water Resistant)
Input Power	20 to 28VDC, @100mA. Consult Factory for other voltages
Outputs	4-20 mA continuous current loop (3 wire) 0-5 V continuous (3 wire) 0-10 V continuous (3 wire)
Mechanical Interface	Custom configured for tank (per mini SureSite offering), 1/2˝ NPT to junction box
Mounting Orientation	
Unit Positions	AM-L, BM-L, CM-L, DM-L
Shroud Position	See Selection Guide; Step 2 for Codes
Calibration	Field Adjustment Null and Span/Factory Calibrated

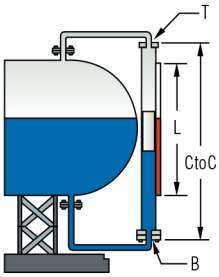
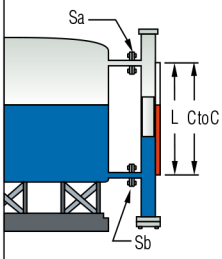
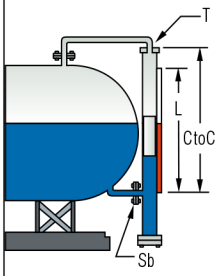
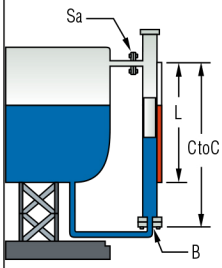
ORDER IT!
Ordering is Easy! See Page D-22.
Easy online ordering too!

1. Mounting Configuration Type

Based on process connection locations.

L = Length of Visual Indication

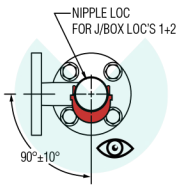
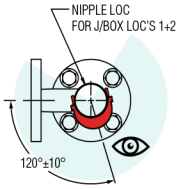
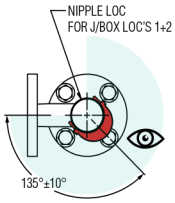
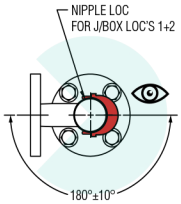
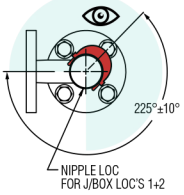
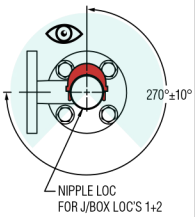
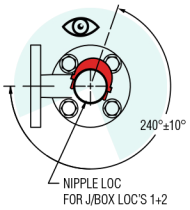
C to C = Length between process connections.* Gems will aid in determining this value.

	Type AM-L	Type BM-L	Type CM-L	Type DM-L
	Top and Bottom Process Connections	**Side and Side** Process Connections	**Top and Side** Process Connections	**Side and Bottom** Process Connections
				
Typical Lengths*	C to C = L + 9.5˝ (241 mm)	C to C = L	C to C = L + 6˝ (152 mm)	C to C = L + 6˝ (152 mm)
Length of Indication (Uninterrupted)	120˝ (305 cm), Maximum			

* Formula provided is for approximation only. Final dimensions will vary due to connections type, position, cable or junction box location, and specific gravity of process liquid. Gems will confirm final dimensions before manufacturing.

2. LED Transmitter Assembly Location

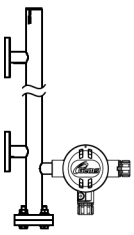
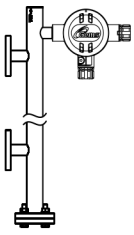
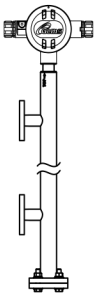
Position relative to process connection location. All illustration views are from the top. Codes with "+" indicate views when 3/4" side ports are used.

Transmitter Assembly Location Code						
A	**A+**	**B**	**C**	**D**	**E**	**E+**
						

Approximate angle of view - 270°

3. J-Box Location

Drawings are typical, and for reference only. Final, specific locations are determined at time of manufacture.

J-Box Location Code		
1 Side Mount Below Bottom Port	**2** Side Mount Above Top Port	**3*** Top Mount
		

* Requires a Blind Fixed Top Connection. See Connection Code T1 in the chart on next page.

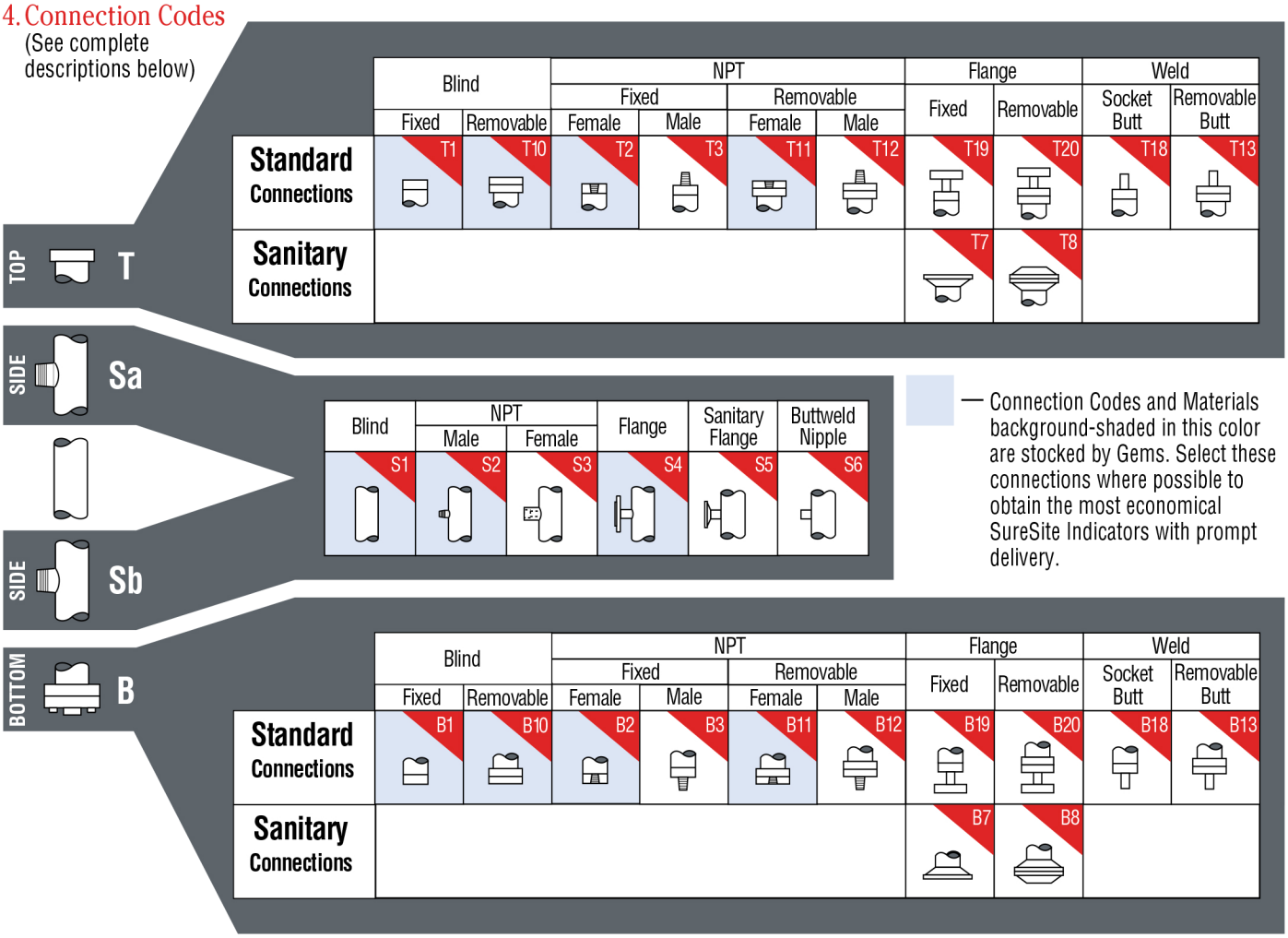
LED Assembly Cable Egress

For J-Box Location 1, LED Transmitter Assembly cable will egress from the bottom of the assembly.

For J-Box Locations 2 and 3, the cable will egress from the top of the assembly.

4. Connection Codes

(See complete descriptions below)



— Connection Codes and Materials background-shaded in this color are stocked by Gems. Select these connections where possible to obtain the most economical SureSite Indicators with prompt delivery.

Note: Gems recommends a removable top and/or bottom connection for float access.

Connection Code Descriptions

Please provide all connections when completing the **OrderIt!** Product Check List (located on the following page).

Note: Before selecting your connections, consider incorporating your vent and drain requirements.

T & B (Top and Bottom)

T/B 1. Welded cap
T/B 2. Welded cap with FNPT
T/B 3. Welded cap with MNPT
T/B 7. Sanitary flange
T/B 8. Sanitary flange with mating blind flange
T/B 10. Standard fixed flange/mating blind flange
T/B 11. Standard fixed flange/mating FNPT reducing flange
T/B 12. Standard fixed flange/mating flange with MNPT nipple
T/B 13. Standard fixed flange/mating flange with butt weld nipple
T/B 18. Welded cap with butt weld nipple
T/B 19. Welded cap with ANSI flange
T/B 20. Standard fixed flange/mating reducing flange spool with ANSI flange

Sa & Sb (Sides)

S1. No connection
S2. MNPT nipple
S3. FNPT coupling
S4. ANSI flange
S5. Sanitary flange
S6. Buttweld nipple

5. Signal Conditioner Assemblies

Gems signal conditioners provide outputs for direct connection to a wide range of instrumentation. They are ideal for large, multi-tank complexes. Units with 4-20 mA outputs are particularly well suited for instrumentation control loops. Consult LED SureSite Installation, Operation and Maintenance bulletin.

☑ Product Check List

FAX IT!
860-747-4244

Photocopy This Form
Use one form for each product type you are selecting.
This form may also be completed online at gemssensors.com for RFQ.

This is a ☐ Request for a Quote
☐ Order P.O.# _____

Quantity Needed _____

Date Required ____/____/_____

Shipping Method:_____

Partials Accepted: ☐ Yes
☐ No

Name _____

Company _____

Street _____

City_____ State ____ Zip_____

Phone (_____) _____

Fax (_____) _____

Email _____

LED SureSite Indicator/Transmitter, Alloy Versions – Miniature Size LED

Process Conditions

This information is essential to the accurate and proper operation of your SureSite® Visual Level Indicators. Please complete fully and accurately.

1. Pressure: Operating _____ psig Maximum _____ psig

2. Temperature: Operating _____ °F Maximum _____°F

3. Liquid Media: _____

4. Specific Gravity @ Operating Condition: _____

5. Viscosity: _____ SSU

6. Application Location: ☐ Indoors ☐ Outdoors

Physical Configuration

1. Mounting Configuration Types:

☐ Type AM-L ☐ Type BM-L ☐ Type CM-L ☐ Type DM-L

Length of Visual Indication – **L**: _____ inches (120˝, Max.)

Connection to Connection – **C to C**: _____ inches (calculated)

2. LED Transmitter Assembly Location:

1/2˝ Side Ports: ☐ A ☐ B ☐ C ☐ D ☐ E

3/4˝ Side Ports: ☐ A+ ☐ C ☐ E+

3. J-Box Location:

☐ 1 ☐ 2 ☐ 3

4. Connection Codes – **Complete all 4 connection code lines.** Check off NPT or Flange size where appropriate.

▼ Connection Code Number Goes Here. **Connection Code Numbers and their descriptions are on Page D-21.**

		NPT or Weld	Flange	
_____	Top **T**	☐ 1/2˝ ☐ 3/4˝ ☐ Other _____	☐ 1/2˝ ☐ 3/4˝ ☐ 1˝ ☐ Other _____	☐ 150# RF ☐ 300# RF ☐ Other _____
_____	Side **Sa**	☐ 1/2˝ ☐ 3/4˝ ☐ Other _____	☐ 1/2˝ ☐ 3/4˝ ☐ 1˝ ☐ Other _____	☐ 150# RF ☐ 300# RF ☐ Other _____
_____	Side **Sb**	☐ 1/2˝ ☐ 3/4˝ ☐ Other _____	☐ 1/2˝ ☐ 3/4˝ ☐ 1˝ ☐ Other _____	☐ 150# RF ☐ 300# RF ☐ Other _____
_____	Bottom **B**	☐ 1/2˝ ☐ 3/4˝ ☐ Other _____	☐ 1/2˝ ☐ 3/4˝ ☐ 1˝ ☐ Other _____	☐ 150# RF ☐ 300# RF ☐ Other _____

5. Supply/Conditioner:

Supply Voltage: ☐ 5 VDC ☐ 12 VDC ☐ 24 VDC

Output: ☐ 4-20mA ☐ 0-5 VDC ☐ 0-10 VDC

6. O-Ring Material:

☐ Viton® (Standard) ☐ Ethylene Propylene

☐ Other _____

Special Instructions (Materials, Connections, etc.)

_____

_____

Special Instructions (Materials, Connections, etc.)

_____

_____

Please contact GEMS Sensors Inc. for any configuration or special requirements not covered on this form. **800-378-1600**

Quote $ _____ Date Quoted ____/____/____

Gems™ Sensors & Controls

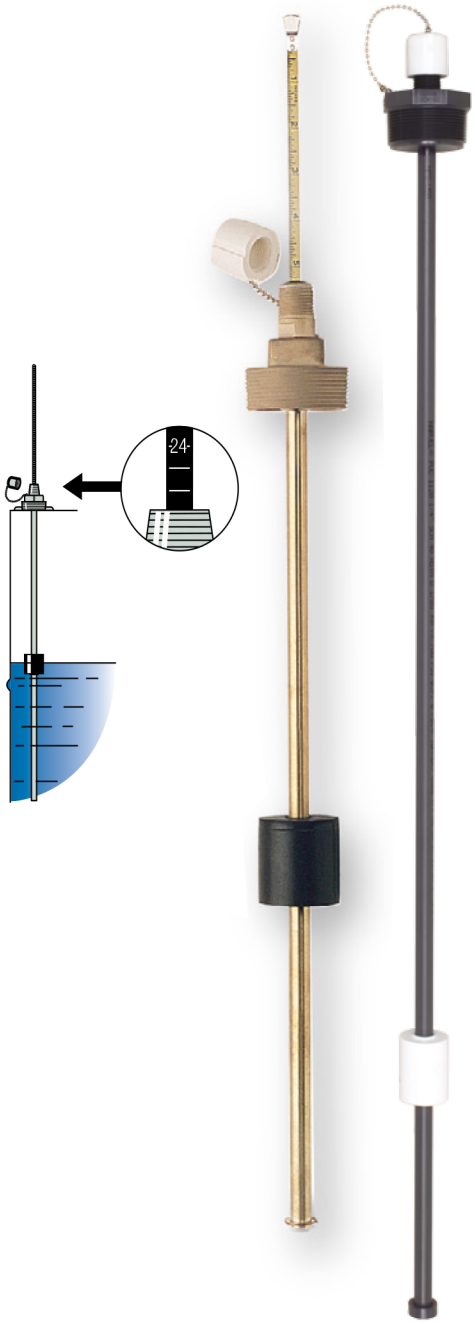
ORDER IT!

Visit www.GemsSensors.com for most current information.

DIPTAPE Visual Level Indicators – Manually Operated

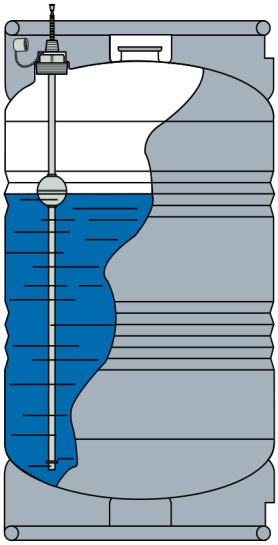
These manually-operated indicators are compact and completely self-contained. They need no electricity to provide continuous indication of liquid level in storage tanks and vessels. DIPTAPE Indicators are ideal for quick, periodic readouts that are accurate to 1/16 inch or 1 mm; especially in remote areas where power is unavailable, or undesirable. Only the float and stem contact the liquid, so the readout tape is always clean and readable.

Custom-configurable DIPTAPE Indicators described on the following pages are available in a broad range of materials and mounting types in lengths to six feet (1.8 m). For lengths six to ten feet, consult factory.



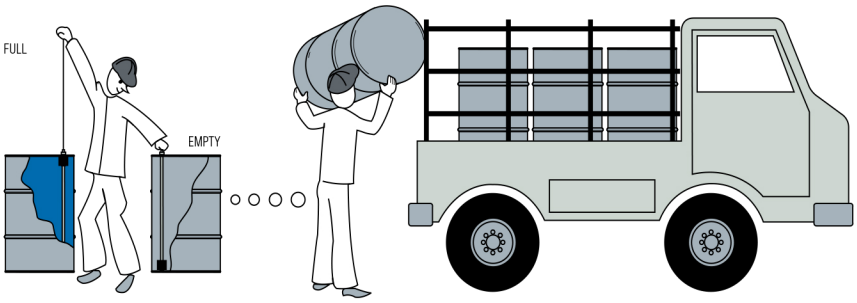
General Operating Principle

A magnet-equipped float moves with liquid level along the unit stem, inside the storage vessel. Level readout is obtained by simply removing the protective cap atop the unit and lifting the calibrated indicator (within the unit) until magnetic interlock with the float is felt. The indicator is held at this point and level is read where the calibration aligns with the top of the mounting. The indicator is then lowered back inside the unit for storage and is protected by the screw type cap when not in use.



Typical Application

Refillable, portable chemical tanks are monitored and exchanged when empty. DIPTAPE Indicators maintain a "closed" system on tanks or drums containing environmentally hazardous liquids and vapors. Plus, their rugged construction stands up to the rigors of transportation.



Contents — Page Start

All-PVC Versions D-24
Engineered Plastic Versions D-25
Alloy Versions D-26

Visit www.GemsSensors.com for most current information.

All-PVC Versions Are Economical for Light Duty

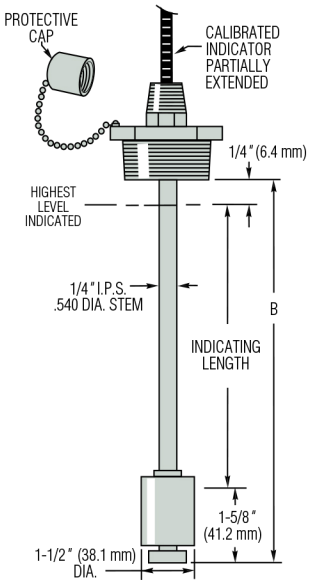
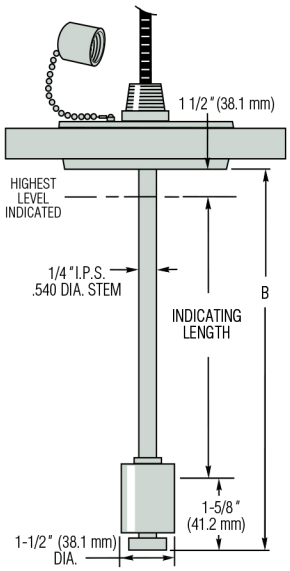
ORDER IT!
Ordering is Easy! See Page D-27.
Easy online ordering too!

- Temperatures to 140°F (60°C)
- Pressures to 15 PSI (1 bar) Max.

Ideal for chemical storage tanks, our all-PVC DIPTAPE Indicators provide one of your best values for liquid level monitoring. These light duty versions are recommended for use in calm liquids and ambient temperature and pressure levels. See Engineered Plastic versions on the next page for enhanced performance characteristics.

1. Mounting Types

"B" Dimension (Length Overall):
Indicating Length +1-7/8″ (47.6 mm)

Type 3 2″NPT	Type 4 3″-150# ANSI Flange
	

Stem, Float and Mounting Material	PVC
Min. Liquid Specific Gravity	0.65
Operating Temperatures	0°F to +140°F (-17.7°C to 60°C)
Operating Pressure, Max.	15 psi (1 bar)
Indicating Length*	6″to 72″(15.2 cm to 182.9 cm)
Std. Indication Markings	1/16″or 1 mm increments

*For longer lengths, please consult factory.

Ordering Is Easy

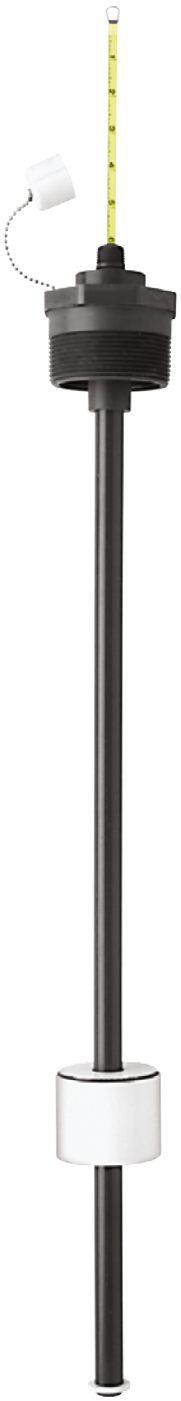
1. To specify DIPTAPE Level Indicators, start by photocopying the OrderIt! Product Check List located on Page D-27.
2. Use the product information in this section to make your selections on the Check List. Please use a separate Check List for each unique configuration.
3. Fax your completed OrderIt! Check List to Gems for a price quotation.
   Fax: 860-747-4244

Engineered Plastic Versions Offer Best Chemical Resistance

ORDER IT!
Ordering is Easy! See Page D-27.
Easy online ordering too!

- Temperatures to 140°F (60°C)
- Pressures to 50 PSI (3.4 bar)

With a choice of three highly resistive, engineered plastic materials, large floats and 1/2 inch IPS stems, these DIPTAPE Indicators provide rugged durability in almost any chemical tank. For higher temperature and pressure capability, review the alloy versions on next page.

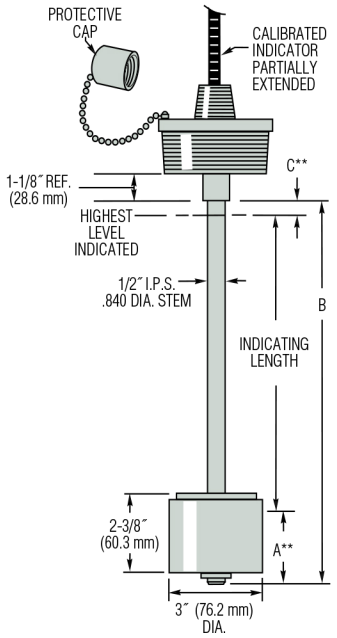


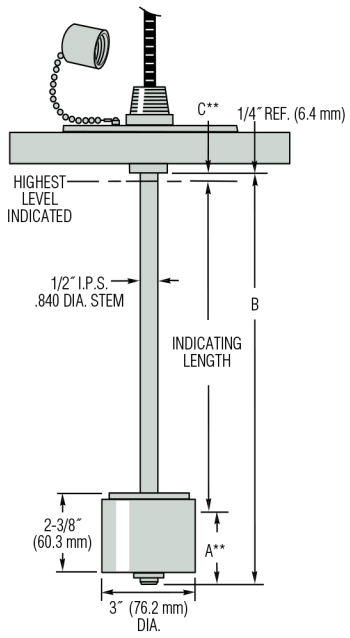
1. Mounting Types

"B" Dimension
(Length Overall):
Indicating Length + A + C

Note: Dimensions "A" and "C" are dependent on float selected. See Float Types below.

Type B 3″NPT	Type C 3″-150# ANSI Flange





Stem and Mounting Material	PVC, PVDF or Polypropylene
Indicating Length*	6″ to 72″ (15.2 cm to 182.9 cm)
Std. Indication Markings	1/16″ or 1 mm increments

*For longer lengths, please consult factory.
**Dimensions listed below, under "Float Types."

2. Float Types

Float Material	PVC	Polypropylene	PVDF
Part Number	**71741**	**73742**	**73740**
Min. Liquid Specific Gravity	0.65	0.46	0.83
Operating Temperatures	+40°F to +140°F (+4.4°C to +60°C)		
Operating Pressure, Max.	50 psi (3.4 bar)		
"A" Dimension (From Mounting Types)	1-3/4″ (44.4 mm)	1-3/8″ (34.9 mm)	2-3/16″ (55.6 mm)
"C" Dimension (From Mounting Types)	15/16″ (23.8 mm)	1-5/16″ (33.3 mm)	1/2″ (12.7 mm)

DIPTAPE™ Indicators – Alloy Versions

ORDER IT!
Ordering is Easy! See Page D-27.
Easy online ordering too!

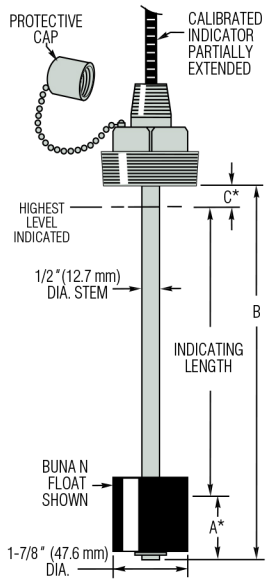
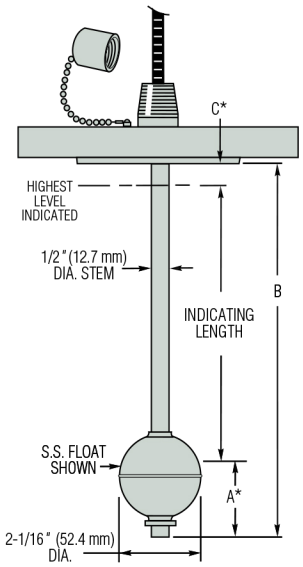
- Temperatures to 300°F (148°C)
- Pressures to 750 PSI (52 bar)

Rugged brass or stainless steel units are ideal for use in water and oils. Select these units for best temperature and pressure capabilities.

1. Mounting Types

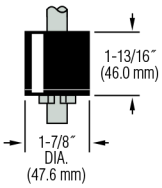
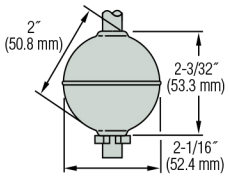
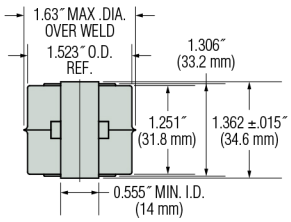
"B" Dimension
(Length Overall):
Indicating Length + A + C

Note: Dimensions "C" and "A" are dependent on float selected. See Float Types below.

	Type 3 2" NPT	Type 4 3"-150# ANSI Flange
		
Stem and Mounting Material	Brass or 316 Stainless Steel	316 Stainless Steel Stem with Carbon Steel or 316 Stainless Steel Flange
Indicating Length**	6" to 72" (15.2 cm to 182.9 cm)	
Std. Indication Markings	1/16" or 1 mm increments	

* Dimensions listed below, under "Float Types."
** For longer lengths, please contact factory.

2. Float Types

	Buna N*	Stainless Steel	
			
Float Part Number	**73710**	**73709**	**138935**
Min. Liquid Specific Gravity	0.45	0.67	0.67
Operating Temperatures	Oil: -40°F to +230°F (-40°C to +110°C) Water: to 180°F (+82.2°C)	-40°F to +300°F (-40°C to +148.8°C)	-40°F to +220°F (-40°C to +104°C)
Operating Pressure, Max.	300 psi (21 bar) max. @ 77°F (25°C)	750 psi (52 bar) Mounting Type 3 150 psi (10 bar) Mounting Type 4	150 psi (10 bar)
"A" Dimension (From Mounting Types)	1-1/4" (31.7 mm)	1-3/8" (34.9 mm)	1" (25.4 mm)
"C" Dimension (From Mounting Types)	11/16" (17.5 mm)	3/4" (19.05 mm)	9/16" (14.3 mm)

*Other Wetted Material: Hysol.

FAX IT!
860-747-4244

Photocopy This Form
Use one form for each product type you are selecting.
This form may also be completed online at gemssensors.com for RFQ.

This is a ☐ Request for a Quote
☐ Order P.O.# _____

Quantity Needed _____

Date Required ____/____/_____

Shipping Method:_____

Partials Accepted: ☐ Yes
☐ No

Name _____

Company _____

Street _____

City_____ State ____ Zip_____

Phone (_____) _____

Fax (_____) _____

DIPTAPE Level Indicators

Application Environment Conditions

This information is essential to the accurate and proper operation of your DipTape Level Indicators. Please complete fully and accurately.

1. Liquid Media: _____

2. Pressure: Minimum_____psig Maximum _____ psig

3. Temperature: Minimum _____ °F Maximum _____°F

4. Specific Gravity: Minimum _____ Maximum _____

5. Viscosity: _____ SSU

6. Tank Material: _____

7. Tank Depth: _____

1. Mounting Type:

☐ Type B ☐ Type C
☐ Type 3 ☐ Type 4

2. Material:

☐ PVC ☐ PVDF ☐ Polypropylene
☐ Brass ☐ 316 Stainless Steel
Flange – Alloy Version:
☐ 316 Stainless Steel ☐ Carbon Steel

3. Float Types:

☐ PVC ☐ PVDF ☐ Polypropylene
☐ Buna N ☐ 316 Stainless Steel

4. Stem Length (Length Overall) "B"

Dimension B = _____ ☐ inches ☐ centimeters
Max. indicating length 72″.
Other lengths, consult factory.

ORDER IT!

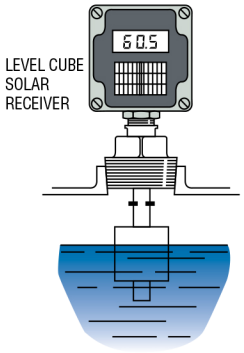
Please contact Gems for any configuration or special requirements not covered on this form. **800-378-1600**

Quote: $ _____ Date Quoted:____/____/____

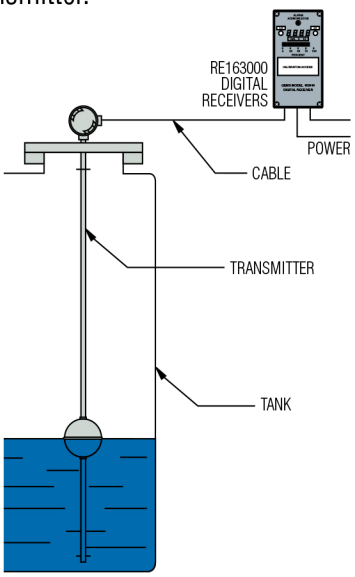
Gems™ Sensors & Controls

GEMS Receivers Tell You What Your Sensors Already Know

GEMS Receivers house a numerical digital readout, and all of the calibration adjustments for a complete Continuous Level Indication system. Those receivers designed for the XM-Series transmitters also include a power supply for the transmitter.



Level Cube with 1/2″ NPT shown mounted directly on GEMS XM-Series Transmitter. Or, they may be mounted remotely, up to 100 feet from the transmitter.



3-Digit Level Cube Receivers

Digital Bargraph Receivers

These units feature a large 4-digit display and bright LED bargraph to visually clarify relative tank content level.

Selector Guide

The Selector Guide below lists standard GEMS Receivers and the transmitter series with which they are normally configured. GEMS doesn't stop, however, with the standard designs shown in this catalog. Our experienced engineering staff will custom design receivers to suit your application. Don't hesitate to contact us about your special requirements.

Receivers	Mounting*	Alarm	Operating Voltage	Compatible GEMS Products
3-Digit Level Cube Receivers	Wall or Transmitter	None	9V Battery, 9 VDC / 117 VAC, Solar	XM-Series (1/4″ or 1/2″ Resolution), and SureSite Transmitters
RE163000	Panel or Wall	2 Alarm	90-120 VAC, 20-50 VDC	All Continuous Transmitters, SureSite Transmitters, Pressure Transmitters

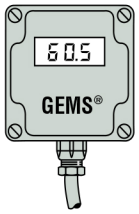
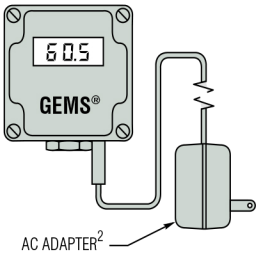
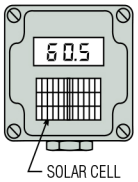
*Mounting Definitions:
Wall: Mounted **onto** a surface; i.e., wall, bulkhead, deck, etc.
Panel: Mounted **into**, and approximately flush with, a surface through a cutout.
Transmitter: Mounted directly to the top of the transmitter.

3-Digit Level Cube Receivers

For use with GEMS Transmitters and SureSite® Transmitters.

These compact, low-cost Level Cubes provide accurate, continuous 3-digit readout of liquid level. The indicating range and decimal point location on the display are quickly and easily selectable with the readout plainly visible.

3 Power Choices with NPT or Cable Mounted

9-V Battery Powered	9 VDC/117 VAC Powered	Solar-Powered
		
Part Numbers: **118600—Cable Output** **119250—1/2″ NPT**	**Part Numbers:** **118620—Cable Output** **119270—1/2″ NPT**	**Part Numbers:** **118610—Cable Output** **119260—1/2″ NPT**

Notes:
1. **9-V Alkaline Battery Powered Units:** Two batteries (supplied) are snapped into terminals in Cube. On/Off switch available
2. **9 VDC/117 VAC Powered Units:** Power is supplied from AC adapter. A plug, Part Number 119218, is available for use where 7-VDC power is supplied by customer. These units are not watertight.
3. **Solar-Powered Units:** Sunlight or a flashlight beam directed on a solar cell in the front cover is all that's needed to operate.

Specifications

Housing Material	Polycarbonate, NEMA-4X, watertight*
Cable Distance from Transmitter	100 feet, Max.
Operating Temperature	+23°F to 131°F (-5°C to +55°C)
Accuracy	± 2%

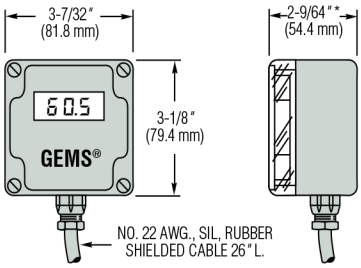
*Except for 9 VDC/117 VAC Powered Units which are not watertight.

How To Order – Standard Models

Style	Mounting	Part Number
9-V Battery	Cable Output	**118600**
	1/2″NPT	**119250**
9 VDC / 117 VAC	Cable Output	**118620**
	1/2″NPT	**119270**
Solar	Cable Output	**118610**
	1/2″NPT	**119260**

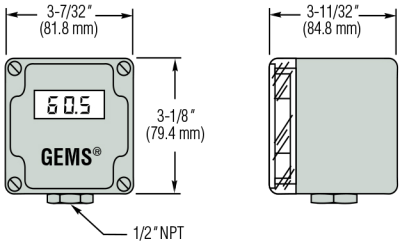
NPT or Cable Mounted

Dimensions
Cable Output Versions

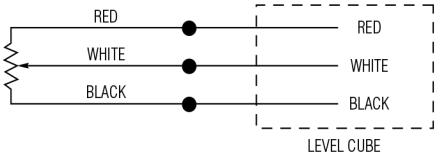


* P/N 118600 9-V Battery = 3-11/32″ (84.8 mm) only.

1/2″ NPT Versions

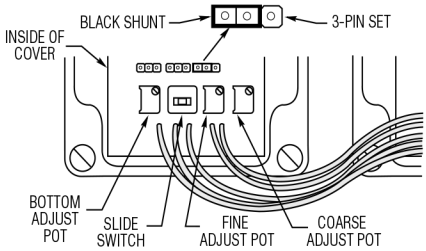


Typical Wiring Diagram



Note: For ullage indication, transpose red and black connections.

Easy to Adjust and Calibrate
Adjustments must be performed with cover removed (see illustration) and power applied. Results are observed on the front display.



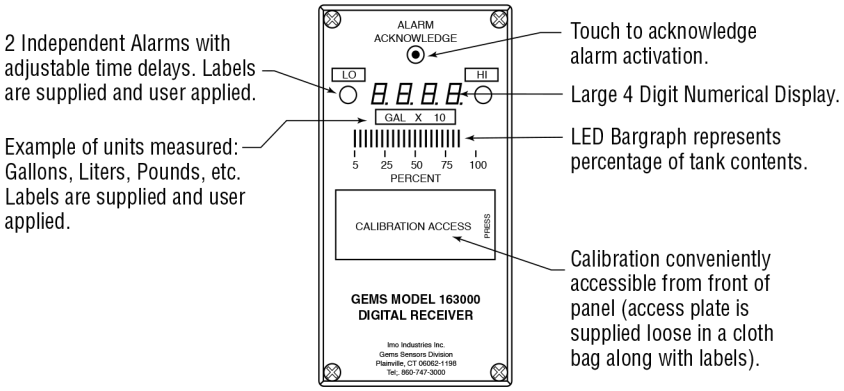
To position decimal point: Place black shunt over left two pins of proper 3-pin set for desired decimal in display. For no decimal, place shunt over right two pins of any set.

Digital Bargraph Display Receivers - 163000 Series

Gems Digital Bargraph Receivers improve the way you are able to visualize the data being received from your liquid level transmitters. These new receivers display liquid level information in digital numerals in conjunction with a 0-100% LED bargraph readout. The numeric portion is a 1/2″ 4-digit display that provides detailed quantification of tank contents, while the bright LED bargraph represents the tank contents as a bar length relative to the percentage of fluid volume within the tank.

If you have a non-linear tank, such as a sphere or a cylinder laying on its side, these receivers are a blessing. They can be calibrated easily so that the digital and bargraph displays will indicate accurate content information for “odd” shape tanks. See “Linearization” below.

In addition to the dual visual displays, the Gems Bargraph Receiver features two independent alarms with adjustable time delays, 10 amp auxiliary dry contacts and easy user set-up. The receiver is available in component form for mounting into custom enclosures or panels, or housed within a NEMA 4X enclosure.



Panel Mounted Versions

Enclosed Versions

Linearization

Certain tanks, like a sphere or a cylinder laying on its side, are considered “Non-Linear” in terms of volume versus tank height. In these cases this receiver may be linearized according to your tank parameters so that the correct volume is displayed. Any units may be displayed by the receiver. Gallons, inches, tons, cubic inches, liters and etc.

The receiver uses a scheme where 9 points or 8 straight lines are used to calculate the numbers to be displayed. These 8 lines approximate the curve of the non-linear tank.

Examples of Non-Linear Display Values.

1.Gallons in a spherical tank.
2.Gallons in a cylindrical tank laying down.
3.Pounds of liquid in a spherical tank.
4.Cubic meters in a conical shaped tank.
5.Gallons in a non-linear shaped tank.

IMPORTANT: Customer must supply a sounding table, capacity curve and/or tank drawing for linearization of the digital bar graph display receiver.

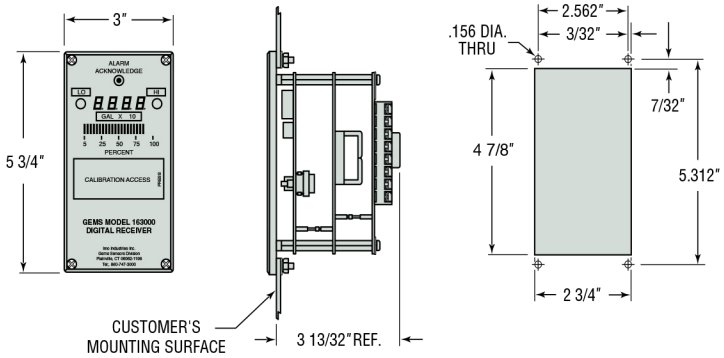
Specification

Input Signal	4-20mA, Proportional Voltage*, Serial
Accuracy Over Given Range	± 1.0%
Operating Voltage	24VDC or 115VAC
Operating Temperature	32°F to 122°F (0°C to 50°C)
Alarm Contacts, Load	10Amp, Dry Contact
Digital Readout	0000 to 9999

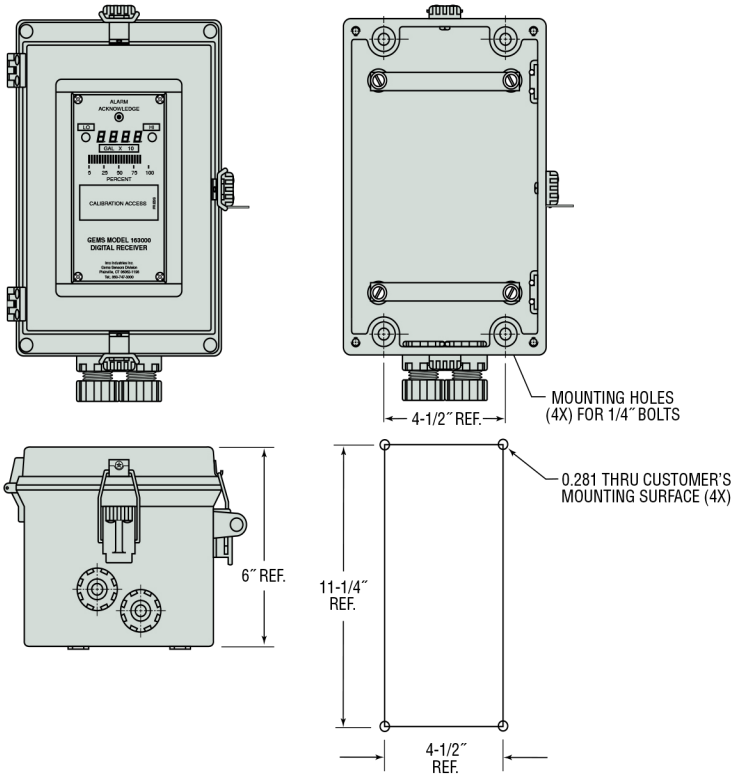
* Proportional voltage as produced by the non-signal conditioned Gems Liquid Level Transmitters (Section H) and SureSite Transmitters (Section G).
Note: Customer alarms (High & Low) set upon request.

Dimensions

Panel Mounting Recievers

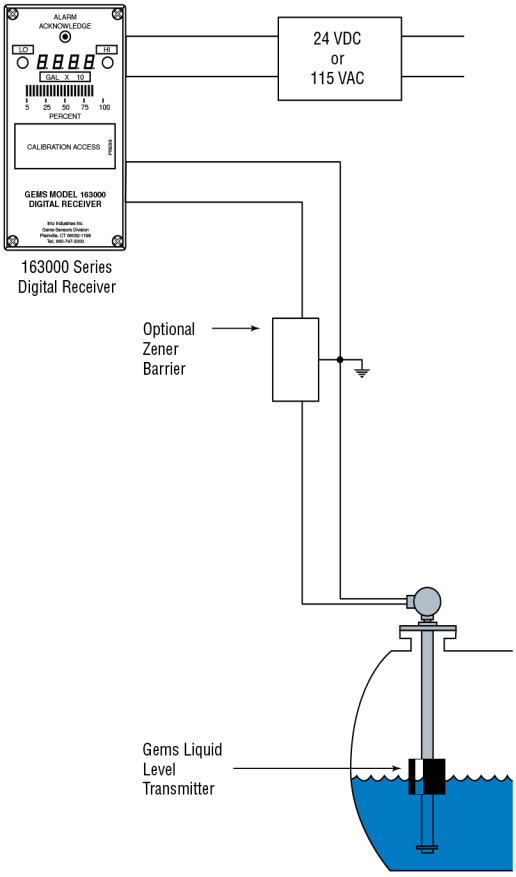


NEMA 4X Enclosed Receivers



Static Sensitive.
Handling Precautions Required.

Typical Installation



How To Order - Standard

Select reciever type by Part Number based on Input Power and Input/Output Signals required.

Input Power	Input/Output Signals		Part Number	
	Input	Output	Panel Mount	NEMA 4X Fiberglass Enclosed
24 VDC	Transmitter*	None	**170680-0100**	**170690-0100**
	Serial	None	**170681-0100**	**170691-0100**
	Transmitter*	4-20mA	**170682-0100**	**170692-0100**
	4-20mA	4-20mA	**170683-0100**	**170693-0100**
		None	**170684-0100**	**170694-0100**
115 VAC	Transmitter*	None	**170685-0100**	**170695-0100**
	Serial	None	**170686-0100**	**170696-0100**
	Transmitter*	4-20mA	**170687-0100**	**170697-0100**
	4-20mA	4-20mA	**170688-0100**	**170698-0100**
		None	**170689-0100**	**170699-0100**

* Proportional voltage as produced by the non-signal conditioned Gems Liquid Level Transmitters (Sections C) and SureSite Transmitters (Section D). When used in conjunction with RE-163000, no additional signal conditioning required.

Visit www.GemsSensors.com for most current information.