

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.

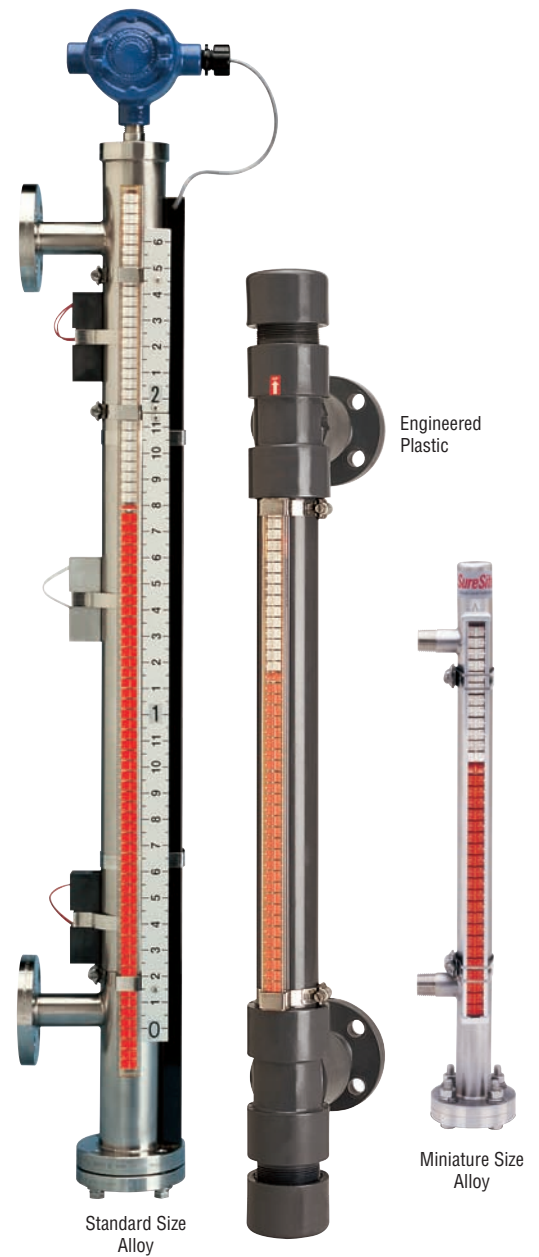
- Low Maintenance—No glass to break, durable housings
- OSHA Friendly—Accident incidence reduction
- Reduced Workload—Quick and easy viewing shortens monitoring chores
- EPA Friendly—Fewer seals and no glass protect against spillage
- Multi-Purpose—Not single purpose as with sightglasses; can replace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



LEVEL INDICATORS – VISUAL

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SureSite® Visual Liquid Level Indicators

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

LEVEL INDICATORS – VISUAL

Visual Indication

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

INDICATING SCALE
HIGH VISIBILITY INDICATOR FLAGS

Comprehensive Indication

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

EXPLOSION PROOF LEVEL SWITCHES
EXPLOSION PROOF CONTINUOUS OUTPUT TRANSMITTER

Cold Service Applications

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

FROST PROOF LENS
INSULATION BLANKET (Cut Away)

Hot Service Applications

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

INSULATION BLANKET (Cut Away)
HEAT TRACE

Oil/Water Applications

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

HI AND LO LEVEL SWITCHES FOR VALVE CONTROL

Acid Applications

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

HIGH LEVEL SWITCH FOR ALARM
CONTINUOUS OUTPUT TRANSMITTER
PVDF HOUSING AND FITTINGS

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.

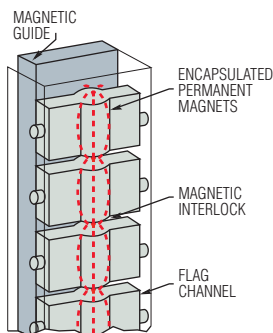


SureSite Indicators Are Superior To Other Magnetic Type Indicators. Here's Why:

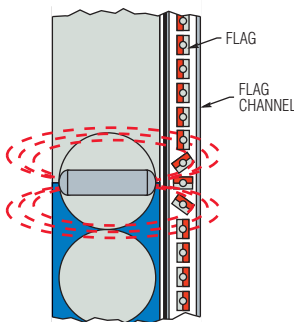
It begins with a patented Flag Assembly and integrated Magnetic Guide

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.

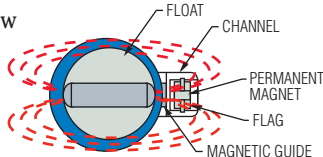
Flag Channel Assembly (partial close-up)



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

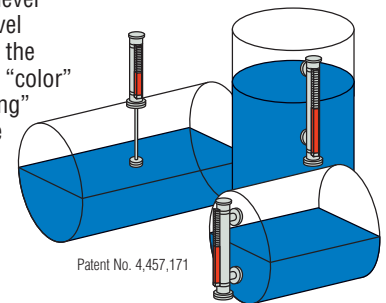
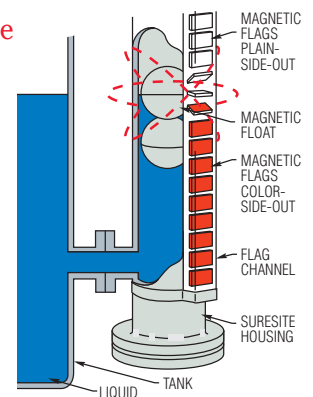
SureSite Indicators are manufactured to fill these requirements.

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.



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

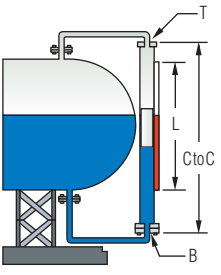
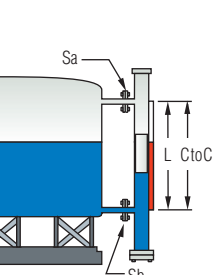
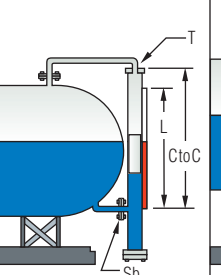
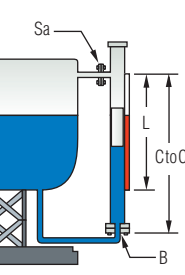
- ▶ Lengths to over 20 feet (6.1 meters)
- ▶ 316 Stainless Steel construction
- ▶ Pressures to 400 PSI (27 bar) – Temperature to 400°F (204°C)

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

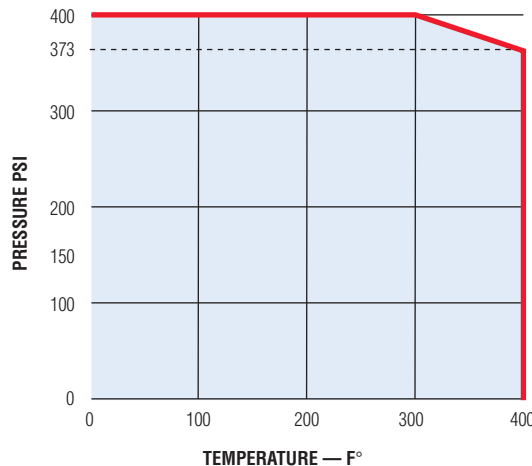
	Type AM	Type BM	Type CM	Type DM
	Top and Bottom Process Connections	Side and Side Process Connections	Top and Side Process Connections	Side and Bottom Process Connections
				
Typical Lengths*	C to C = L + 7.72" (196 mm)	C to C = L	C to C = L + 3" (76 mm)	C to C = L + 5" (127 mm)
Flag Material	Plastic (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)

	Blind		NPT				Flange		Weld	
	Fixed	Removable	Fixed		Removable		Fixed	Removable	Socket Butt	Removable Butt
			Female	Male	Female	Male				
TOP  T	T1 	T10 	T2 	T3 	T11 	T12 	T19 	T20 	T18 	T13 
Sanitary Connections							T7 	T8 		

	Blind	NPT		Flange	Sanitary Flange	Buttweld Nipple
		Male	Female			
SIDE  Sa	S1 	S2 	S3 	S4 	S5 	S6 
SIDE  Sb						

	Blind		NPT				Flange		Weld	
	Fixed	Removable	Fixed		Removable		Fixed	Removable	Socket Butt	Removable Butt
			Female	Male	Female	Male				
BOTTOM  B	B1 	B10 	B2 	B3 	B11 	B12 	B19 	B20 	B18 	B13 
Sanitary Connections							B7 	B8 		

— 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 Order! 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.

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).

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.

<p>FAX IT! 860-747-4244</p> <p>Photocopy This Form Use one form for each product type you are selecting.</p> <p><small>This form may also be completed online at gemssensors.com for RFQ.</small></p>	<p>This is a <input type="checkbox"/> Request for a Quote Name _____</p> <p style="padding-left: 40px;"><input type="checkbox"/> Order P.O.# _____ Company _____</p> <p>Quantity Needed _____ Street _____</p> <p>Date Required ____/____/____ City _____ State ____ Zip _____</p> <p>Shipping Method: _____ Phone (_____) _____</p> <p>Partials Accepted: <input type="checkbox"/> Yes Fax (_____) _____</p> <p style="padding-left: 40px;"><input type="checkbox"/> No</p>
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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.

- | | |
|---|---|
| <p>1. Pressure: Operating _____ psig Maximum _____ psig</p> <p>2. Temperature: Operating _____ °F Maximum _____ °F</p> <p>3. Liquid Media: _____</p> | <p>4. Specific Gravity @ Operating Condition: _____</p> <p>5. Viscosity: _____ SSU</p> <p>6. Application Location: <input type="checkbox"/> Indoors <input type="checkbox"/> Outdoors</p> |
|---|---|

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.**

Top T	NPT or Weld	Flange	
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 3/4" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 3/4" <input type="checkbox"/> 1" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# RF <input type="checkbox"/> 300# RF <input type="checkbox"/> Other _____
Side Sa	NPT or Weld	Flange	
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 3/4" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 3/4" <input type="checkbox"/> 1" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# RF <input type="checkbox"/> 300# RF <input type="checkbox"/> Other _____
Side Sb	NPT or Weld	Flange	
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 3/4" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 3/4" <input type="checkbox"/> 1" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# RF <input type="checkbox"/> 300# RF <input type="checkbox"/> Other _____
Bottom B	NPT or Weld	Flange	
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 3/4" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 3/4" <input type="checkbox"/> 1" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# RF <input type="checkbox"/> 300# RF <input type="checkbox"/> 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 ____/____/____



Gems Sensors & Controls
One Cowles Road
Plainville, CT
06062-1198

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fax 860.747.4244
www.gemssensors.com

ORDER IT!

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

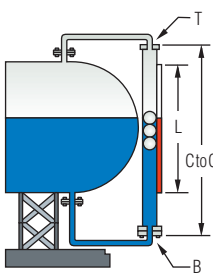
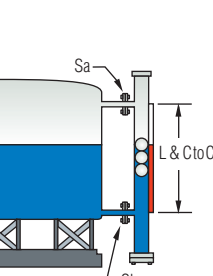
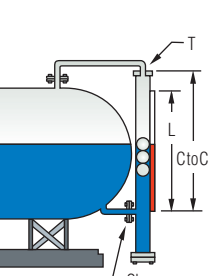
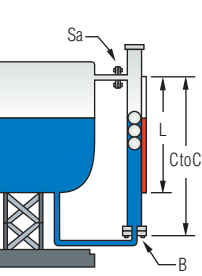
Standard Alloy Versions – Standard Size

- ▶ 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.

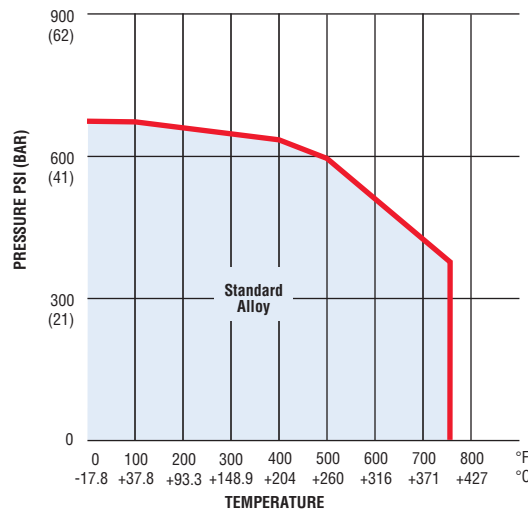
2. Material

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).



Type BA Shown

3. Connection Codes

(See complete descriptions below)

	TOP	T	Blind		NPT				Flange	
			Fixed	Removable	Fixed		Removable		Fixed	Removable
					Female	Male	Female	Male		
			T1	T2	T3	T5	T6	T8	T9	T10

SIDE	Sa	SIDE	Sb	SIDE	B	Blind		NPT		Flange	
						Fixed	Removable	Fixed		Fixed	Removable
								Male	Female		
						S1	S2	S3	S4		

BOTTOM	B	Blind		NPT				Flange	
		Fixed	Removable	Fixed		Removable		Fixed	Removable
				Female	Male	Female	Male		
		B1	B2	B3	B5	B6	B8	B9	B10

— 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.

LEVEL INDICATORS – VISUAL

Connection Code Descriptions

Please provide all connections when completing the Order! 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

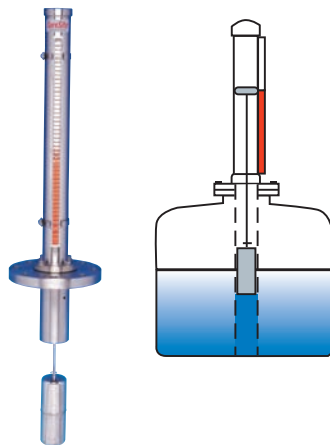
Sa & Sb Sides

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



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**.




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.

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).

 <p>Photocopy This Form Use one form for each product type you are selecting. <small>This form may also be completed online at gemssensors.com for RFQ.</small></p>	This is a <input type="checkbox"/> Request for a Quote <input type="checkbox"/> Order P.O.# _____ Quantity Needed _____ Date Required ____/____/____ Shipping Method: _____ Partial Accepted: <input type="checkbox"/> Yes <input type="checkbox"/> No	Name _____ Company _____ Street _____ City _____ State ____ Zip _____ Phone (____) _____ Fax (____) _____
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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.

- | | |
|---|--|
| <p>1. Pressure: Operating _____ psig Maximum _____ psig</p> <p>2. Temperature: Operating _____ °F Maximum _____ °F</p> <p>3. Liquid Media: _____</p> | <p>4. Specific Gravity @ Operating Condition: _____</p> <p>5. Viscosity: _____ SSU</p> <p>6. Application Location: <input type="checkbox"/> Indoors <input type="checkbox"/> Outdoors</p> |
|---|--|

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.**

Top T	NPT	Flange			
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# (RF) <input type="checkbox"/> 600# (RF) <input type="checkbox"/> Other _____		
Side Sa	NPT	Flange			
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# (RF) <input type="checkbox"/> 600# (RF) <input type="checkbox"/> Other _____		
Side Sb	NPT	Flange			
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# (RF) <input type="checkbox"/> 600# (RF) <input type="checkbox"/> Other _____		
Bottom B	NPT	Flange			
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# (RF) <input type="checkbox"/> 600# (RF) <input type="checkbox"/> 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:** 115 VAC (Input) /24 VDC (Output) (Optional)
 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
 One Cowles Road
 Plainville, CT
 06062-1198

tel 860.747.3000
 fax 860.747.4244
 www.gemssensors.com

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

High Performance Versions – Standard Size

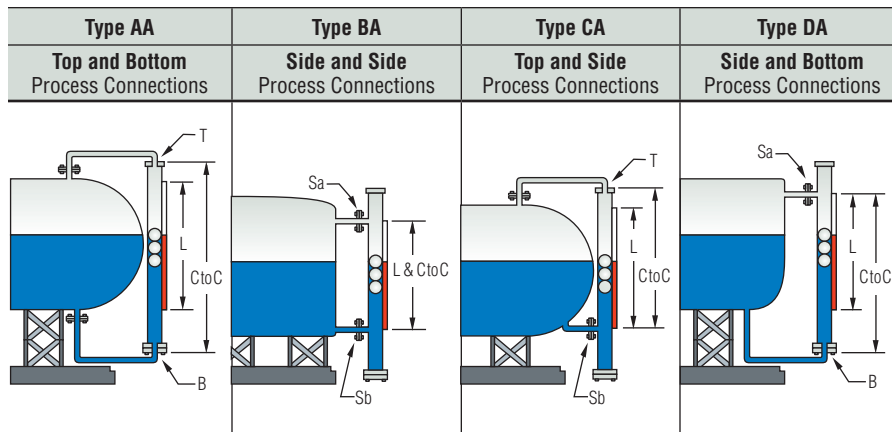
- ▶ Designed to meet the requirements of ASME B31.1/B31.3*
- ▶ Temperatures to 750°F (399°C)
- ▶ Pressures to 4200 PSI (290 bar)

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).



L = Length of Visual Indication

	Type AA Top and Bottom Process Connections	Type BA Side and Side Process Connections	Type CA Top and Side Process Connections	Type DA Side and Bottom Process Connections
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.

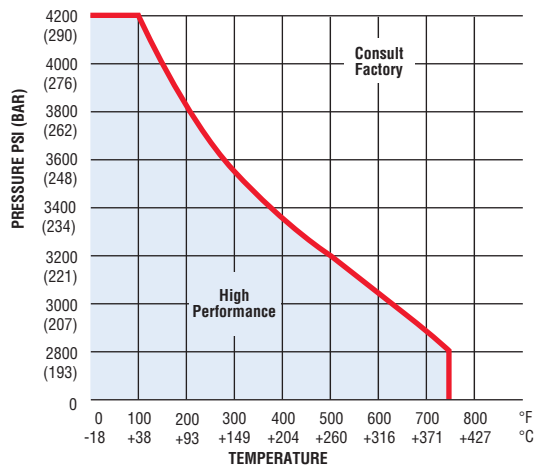
2. Material

Select desired material from those tabulated below. Mark the Code Number on your Order! 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.

LEVEL INDICATORS – VISUAL

3. Connection Codes

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

	Blind		NPT				Flange		Weld			
	Fixed	Removable	Fixed		Removable		Fixed	Removable	Fixed		Removable	
			Female	Male	Female	Male			Socket	Butt	Socket	Butt
TOP  T	T15	T16	T17	T19	T20	T22	T23	T24	T25	T26	T27	T28
SIDE  Sa		T29			T30	T32		T33			T34	T35
SIDE  Sb												
BOTTOM  B	B15	B16	B17	B19	B20	B22	B23	B24	B25	B26	B27	B28
		B29			B30	B32		B33			B34	B35

	Blind		NPT		Flange		Weld	
	Male	Female	Male	Female	Socket	Butt	Socket	Butt

— 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 Order! 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 butt weld 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 butt weld 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 butt weld nipple

Sa & Sb (Sides)

- S1. No connection
- S2. MNPT nipple
- S3. FNPT coupling
- S4. ANSI flange
- S5. Weldneck flange
- S6. Socketweld coupling
- S7. Butt weld 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).

<p>FAX IT! 860-747-4244</p> <p>Photocopy This Form Use one form for each product type you are selecting.</p>	<p>This is a <input type="checkbox"/> Request for a Quote <input type="checkbox"/> Order P.O.# _____</p> <p>Quantity Needed _____</p> <p>Date Required ____/____/____</p> <p>Shipping Method: _____</p> <p>Partials Accepted: <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Name _____</p> <p>Company _____</p> <p>Street _____</p> <p>City _____ State ____ Zip _____</p> <p>Phone (____) _____</p> <p>Fax (____) _____</p>
---	--	---

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.

- | | |
|---|--|
| <p>1. Pressure: Operating _____ psig Maximum _____ psig</p> <p>2. Temperature: Operating _____ °F Maximum _____ °F</p> <p>3. Liquid Media: _____</p> | <p>4. Specific Gravity @ Operating Condition: _____</p> <p>5. Viscosity: _____ SSU</p> <p>6. Application Location: <input type="checkbox"/> Indoors <input type="checkbox"/> Outdoors</p> |
|---|--|

Physical Configuration

- | | |
|---|---|
| <p>1. Mounting Configuration Types:
 <input type="checkbox"/> Type AA <input type="checkbox"/> Type BA <input type="checkbox"/> Type CA <input type="checkbox"/> Type DA</p> <p>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.</p> | <p>2. Housing and Float Material – Housing: 316L/SS
 <input type="checkbox"/> Code 2 – 316L SS Float <input type="checkbox"/> Code 9 – Titanium Float</p> |
|---|---|

Top T	NPT or Weld	Flange		
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 1.5" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# (RF) <input type="checkbox"/> 600# (RF) <input type="checkbox"/> 900# (RF) <input type="checkbox"/> Other _____	
Side Sa	NPT or Weld	Flange		
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 1.5" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# (RF) <input type="checkbox"/> 600# (RF) <input type="checkbox"/> 900# (RF) <input type="checkbox"/> Other _____	
Side Sb	NPT or Weld	Flange		
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 1.5" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# (RF) <input type="checkbox"/> 600# (RF) <input type="checkbox"/> 900# (RF) <input type="checkbox"/> Other _____	
Bottom B	NPT or Weld	Flange		
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 1.5" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# (RF) <input type="checkbox"/> 600# (RF) <input type="checkbox"/> 900# (RF) <input type="checkbox"/> Other _____	

- | | |
|---|--|
| <p>4. Length of Visual Indication – L: _____ inches (240", Max.).
 Connection to Connection Dimension – C to C: _____ inches.</p> <p>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).
 <input type="checkbox"/> Plastic (Orange and White) <input type="checkbox"/> Aluminum (Black and Silver)
 <input type="checkbox"/> Non-Standard; Specify: _____ consult factory.</p> | <p>6. <input type="checkbox"/> ASME Stamp Required</p> <p>Special Instructions (Materials, Connections, etc.)</p> <p>_____</p> <p>_____</p> <p>_____</p> |
|---|--|

Accessories (Pages D-16 to D-18)

- | | |
|---|---|
| <p>1. Transmitters (Continuous Electrical Indication):
 <input type="checkbox"/> Low Temperature – 300°F (149°C) <input type="checkbox"/> Explosion-Proof
 <input type="checkbox"/> High Temperature – 750°F (399°C)</p> <p>2. J-Box/Signal Conditioners Accessories:
 <input type="checkbox"/> Terminal Strip <input type="checkbox"/> 4-20 mA Output
 <input type="checkbox"/> 0-12 VDC Output <input type="checkbox"/> 0-5 VDC Output</p> <p>3. Power Supply: <input type="checkbox"/> 115 VAC (Input) /24 VDC (Output) (Optional)
 <input type="checkbox"/> 230 VAC (Input) /24 VDC (Output)</p> | <p>4. Switch Modules (Single Point): _____ Quantity (only if required)
 a. <input type="checkbox"/> SPST <input type="checkbox"/> SPDT <input type="checkbox"/> DPDT 120 VAC <input type="checkbox"/> DPDT 24 VDC
 b. <input type="checkbox"/> Standard – 300°F (149°C) <input type="checkbox"/> Explosion Proof
 <input type="checkbox"/> High Temperature – 750°F (399°C)</p> <p>5. Indicating Scales:
 <input type="checkbox"/> Feet and Inches <input type="checkbox"/> Inches <input type="checkbox"/> Metric <input type="checkbox"/> Blank
 <input type="checkbox"/> Custom Graduations; specify: _____</p> |
|---|---|

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

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

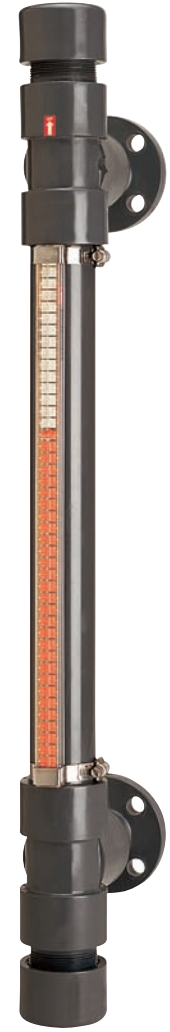


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Type BP Shown

LEVEL INDICATORS – VISUAL

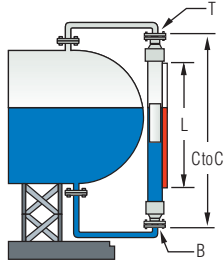
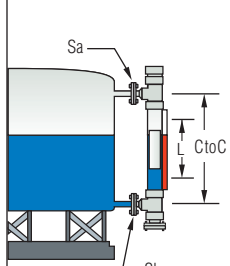
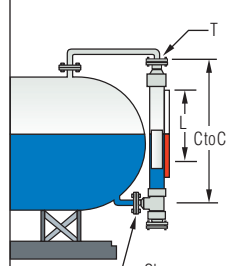
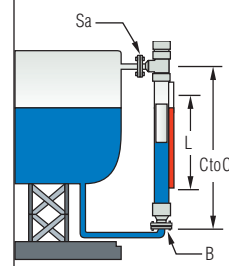
Engineered Plastics Versions – Standard Size

- ▶ 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.

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 Top and Bottom Process Connections	Type BP Side and Side Process Connections	Type CP Top and Side Process Connections	Type DP Side and Bottom Process Connections
				
Typical Lengths*	C to C = L + 11" (279 mm) Overall Length = C to C	C to C = L + 8" (203 mm) Overall Length = C to C + 11" (279 mm)	C to C = L + 9.5" (241 mm) Overall Length = C to C + 5-1/2" (140 mm)	C to C = L + 9.5" (241 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

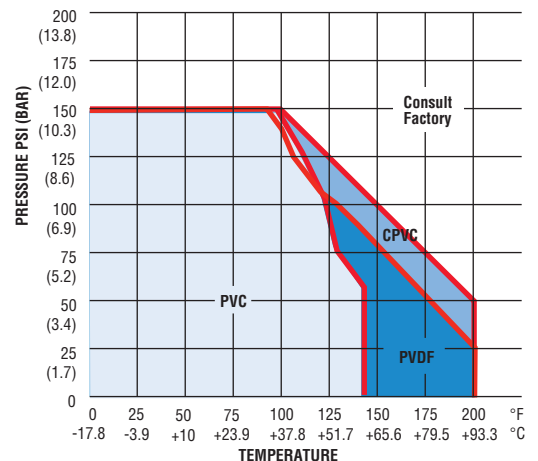
Select desired material from those tabulated below. Mark the Code Number on your OrderIt! Check List. The pressure/temperature performance parameters are specified in the charts at right. Consult the factory with pressure/temperature requirements that fall outside the parameters shown here.

Materials	Code
Housing & Float	
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)

TOP	Blind			NPT				Flange		
	Fixed	Removable		Fixed		Removable		Fixed	Removable	
		Female	Male	Male	Female					
T	T1	T2	T3	T4	T5	T6	T7	T9	T10	T11

SIDE	Blind			NPT		Flange
	Male	Female	Female	Male	Female	Male
Sa	S1	S2	S3	S4		

BOTTOM	Blind			NPT				Flange		
	Fixed	Removable		Fixed		Removable		Fixed	Removable	
		Female	Male	Male	Female					
B	B1	B2	B3	B4	B5	B6	B7	B9	B10	B11

— 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.

LEVEL INDICATORS – VISUAL

Connection Code Descriptions

Please provide all connections when completing the Order! 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.

 <p>Photocopy This Form Use one form for each product type you are selecting.</p>	This is a <input type="checkbox"/> Request for a Quote <input type="checkbox"/> Order P.O.# _____	Name _____
	Quantity Needed _____	Company _____
	Date Required ____/____/____	Street _____
	Shipping Method: _____	City _____ State ____ Zip _____
	Partials Accepted: <input type="checkbox"/> Yes <input type="checkbox"/> No	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 | 4. Specific Gravity @ Operating Condition: _____ |
| 2. Temperature: Operating _____ °F Maximum _____ °F | 5. Viscosity: _____ SSU |
| 3. Liquid Media: _____ | 6. Application Location: <input type="checkbox"/> Indoors <input type="checkbox"/> 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.**

Top T	NPT	Flange	
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# (FF) <input type="checkbox"/> Other _____
Side Sa	NPT	Flange	
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# (FF) <input type="checkbox"/> Other _____
Side Sb	NPT	Flange	
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# (FF) <input type="checkbox"/> Other _____
Bottom B	NPT	Flange	
	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 1/2" <input type="checkbox"/> 1" <input type="checkbox"/> 2" <input type="checkbox"/> Other _____	<input type="checkbox"/> 150# (FF) <input type="checkbox"/> 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:

- 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: ____/____/____



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Plainville, CT
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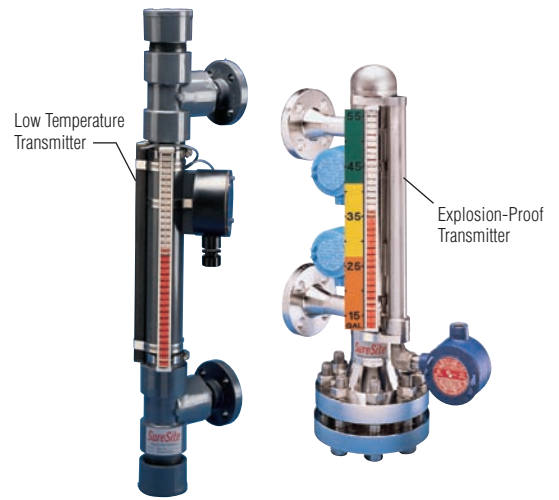
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fax 860.747.4244
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Continuous Electrical Output Transmitters for *all* SureSite Indicators



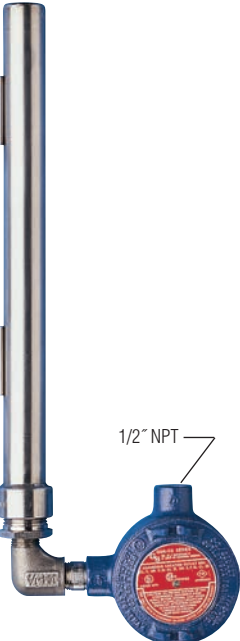
Broaden the SureSite Indicator's capabilities; add one of these transmitters. You can have visual indication and a continuous electrical output too without additional tank penetrations. Use them to know what's in your tank remotely, send the signal to your controller, schedule your next inventory.

These transmitters are compatible with the readout displays at the end of this Section (D-24 to D-26) 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).



LEVEL INDICATORS – VISUAL

	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 (Ferralloy 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.

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

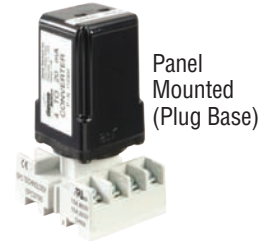
Select Part Number based on Output Signal desired and SureSite Indicator being used.

Electrical Termination Method	Output Signal	Input Voltage	Module Part Numbers For:	
			SureSite Low Temperature	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



J-Box Enclosure

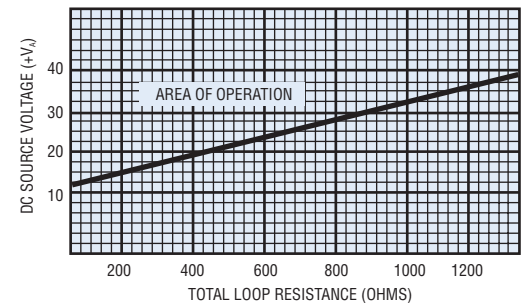


Panel Mounted (Plug Base)

Power Supply Module

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

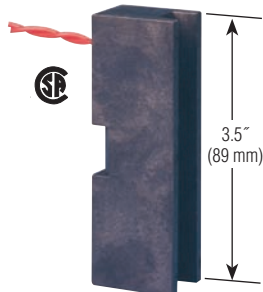
Operates on 115 VAC or 230 VAC inputs to supply a regulated 24 VDC to the signal conditioned transmitter where external VDC power is not available. Maximum Load: 70 mA.



LEVEL INDICATORS – VISUAL

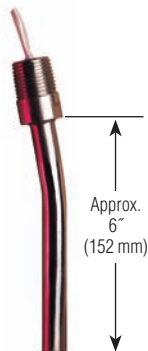
Switch Modules Provide High-, Low- or Intermediate-Level Alarms or Control Logic

Standard Switch Modules



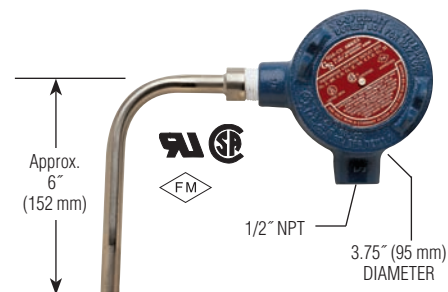
- CSA Approved
- Includes Stainless Steel Mounting Clamp
- Polysulfone Housing
- Withstands Temperatures to 300°F (148.9°C)
- Connection: 1/4" FNPT

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



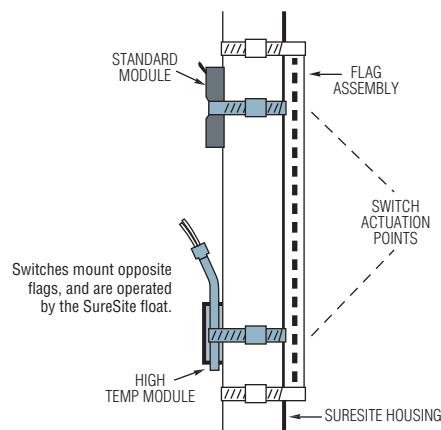
- UL, CSA, FM Approved
- Withstands Temperatures of 750°F (399°C)
- J-Box Terminated
- Stainless Steel Construction
- Includes Stainless Steel Mounting Clamp

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.

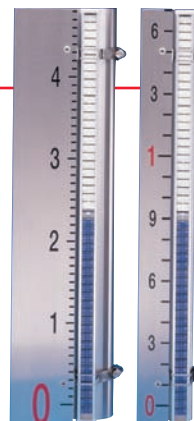
⚡ = Stock item

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.



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.

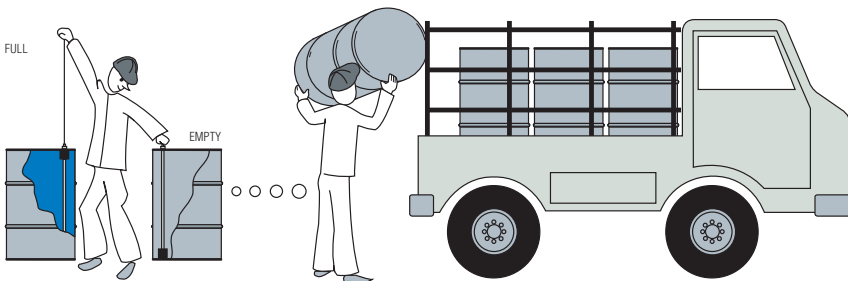
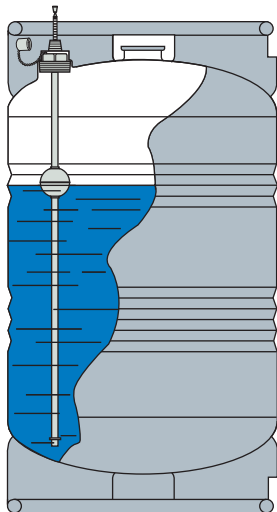
Custom-configurable DIPTAPE Indicators described on the following pages are available in a broad range of materials and mounting types in lengths to six feet (1.8 m). For lengths six to ten feet, consult factory.

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.



LEVEL INDICATORS – VISUAL

Contents	Page Start
All-PVC Versions	D-20
Engineered Plastic Versions	D-21
Alloy Versions	D-22

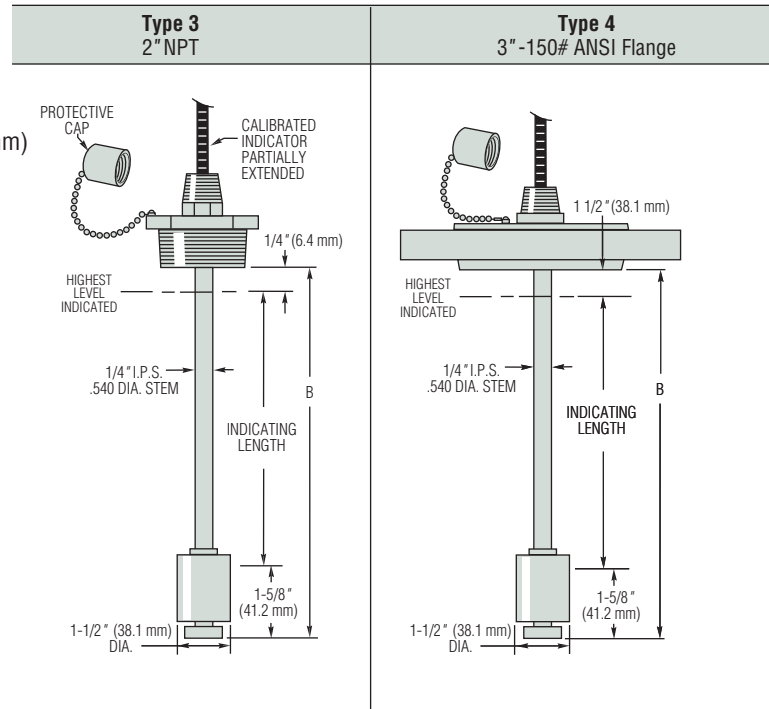
All-PVC Versions Are Economical for Light Duty

- ▶ 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)



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-23.
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-23.
 Easy online ordering too!

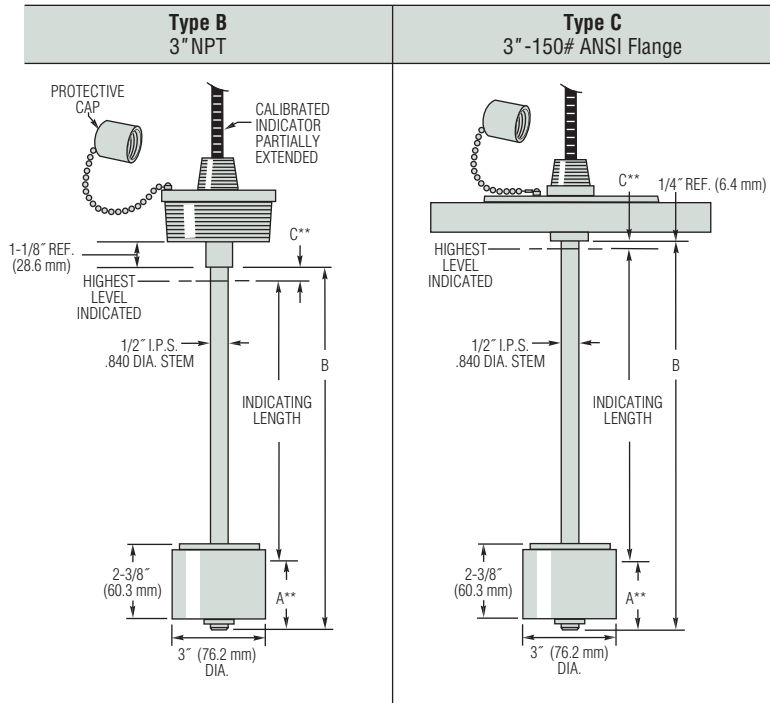
- ▶ Temperatures to 140°F (60°C)
- ▶ Pressures to 50 PSI (3.4 bar)

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.



LEVEL INDICATORS – VISUAL

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

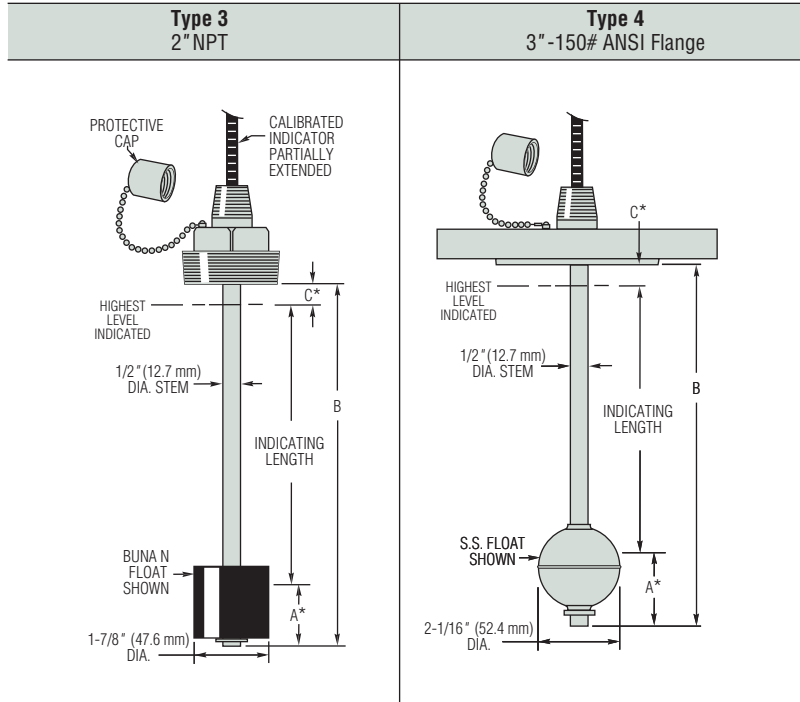
- ▶ Temperatures to 300°F (148°C)
- ▶ Pressures to 750 PSI (52 bar)

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.



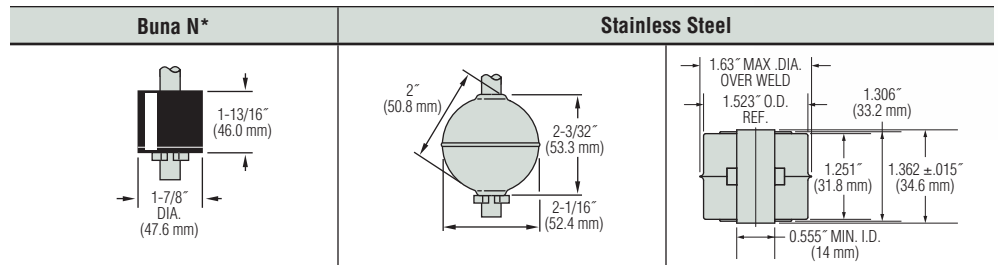
Stem and Mounting Material	Brass or 316 Stainless Steel	316 Stainless Steel Stem with Carbon Steel or 316 Stainless Steel Flange
Indicating Length**	6" to 72" (15.2 cm to 182.9 cm)	
Std. Indication Markings	1/16" or 1 mm increments	

* 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.

ORDER IT!
Ordering is Easy! See Page D-23.
Easy online ordering too!

 <p>FAX IT! 860-747-4244</p> <p>Photocopy This Form</p> <p>Use one form for each product type you are selecting.</p> <p>This form may also be completed online at gemssensors.com for RFQ.</p>	This is a <input type="checkbox"/> Request for a Quote <input type="checkbox"/> Order P.O.# _____ Quantity Needed _____ Date Required ____/____/____ Shipping Method: _____ Partials Accepted: <input type="checkbox"/> Yes <input type="checkbox"/> No	Name _____ Company _____ Street _____ City _____ State ____ Zip _____ Phone (____) _____ Fax (____) _____
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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: _____ | 5. Viscosity: _____ SSU |
| 2. Pressure: Minimum _____ psig Maximum _____ psig | 6. Tank Material: _____ |
| 3. Temperature: Minimum _____ °F Maximum _____ °F | 7. Tank Depth: _____ |
| 4. Specific Gravity: Minimum _____ Maximum _____ | |

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.

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

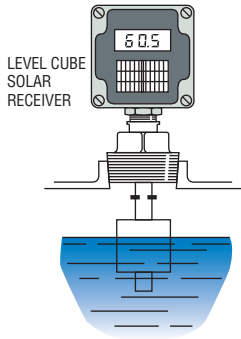
Quote: \$ _____ Date Quoted: ____/____/____



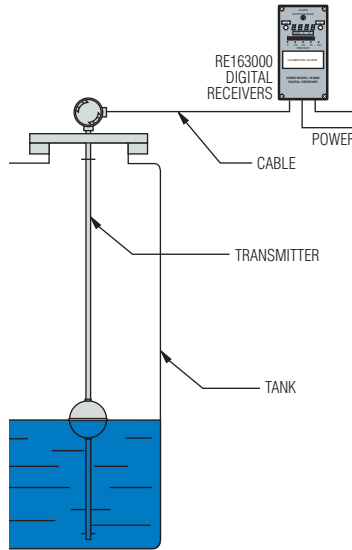
Gems Sensors & Controls
 One Cowles Road
 Plainville, CT
 06062-1198
 tel 860.747.3000
 fax 860.747.4244
www.gemssensors.com

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

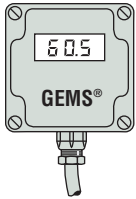
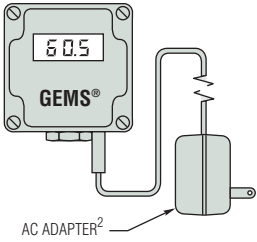
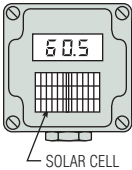
*Mounting Definitions:
 Wall: Mounted **onto** a surface; i.e., wall, bulkhead, deck, etc.
 Panel: Mounted **into**, and approximately flush with, a surface through a cutout.
 Transmitter: Mounted directly to the top of the transmitter.

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
FM Approved, Intrinsically Safe, Class I, Division 1, Groups C & D		—

Notes:

- 9-V Alkaline Battery Powered Units:** Two batteries (supplied) are snapped into terminals in Cube. On/Off switch available
- 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.
- 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.

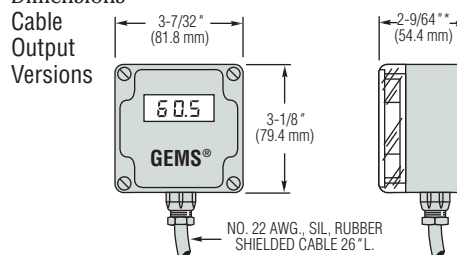
How To Order – Standard Models

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

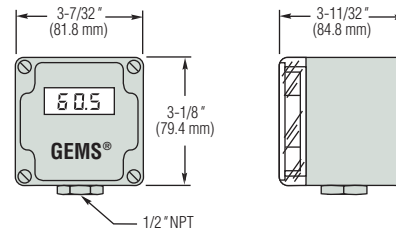


Dimensions

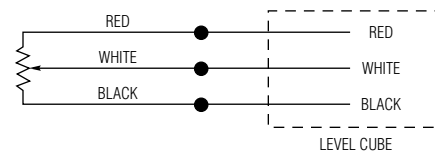


* P/N 118600 9-V Battery = 3-11/32" (84.8 mm) only.

1/2" NPT Versions



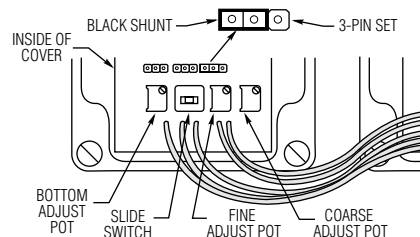
Typical Wiring Diagram



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.

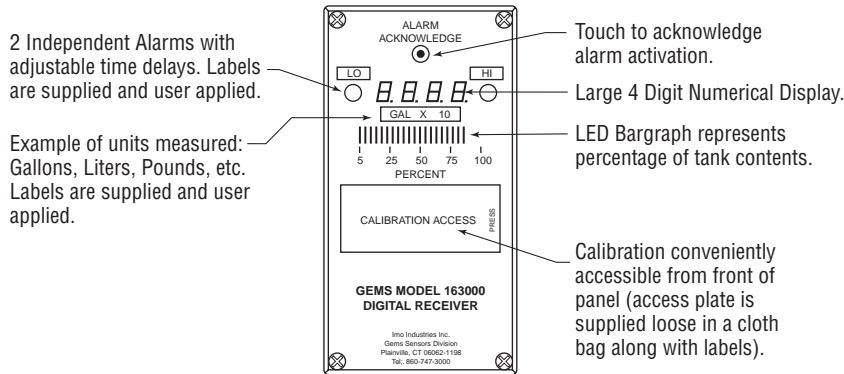
If you have a non-linear tank, such as a sphere or a cylinder laying on its side, these receivers are a blessing. They can be calibrated easily so that the digital and bargraph displays will indicate accurate content information for "odd" shape tanks. See "Linearization" below.

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



LEVEL INDICATORS - VISUAL



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.

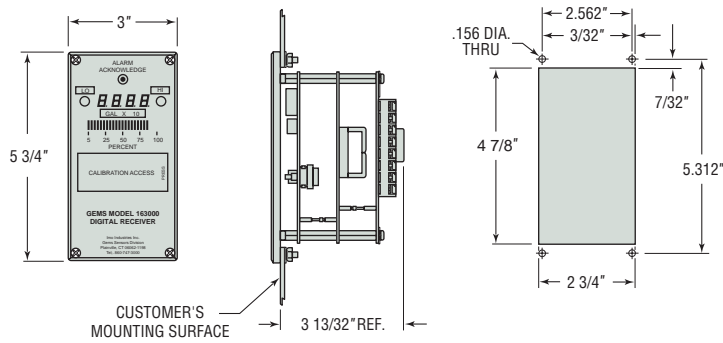
Specification

Input Signal	4-20mA, Proportional Voltage*, Serial
Accuracy Over Given Range	± 1.0%
Operating Voltage	24VDC or 115VAC
Operating Temperature	-4°F to +140°F (-20°C to +60°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.

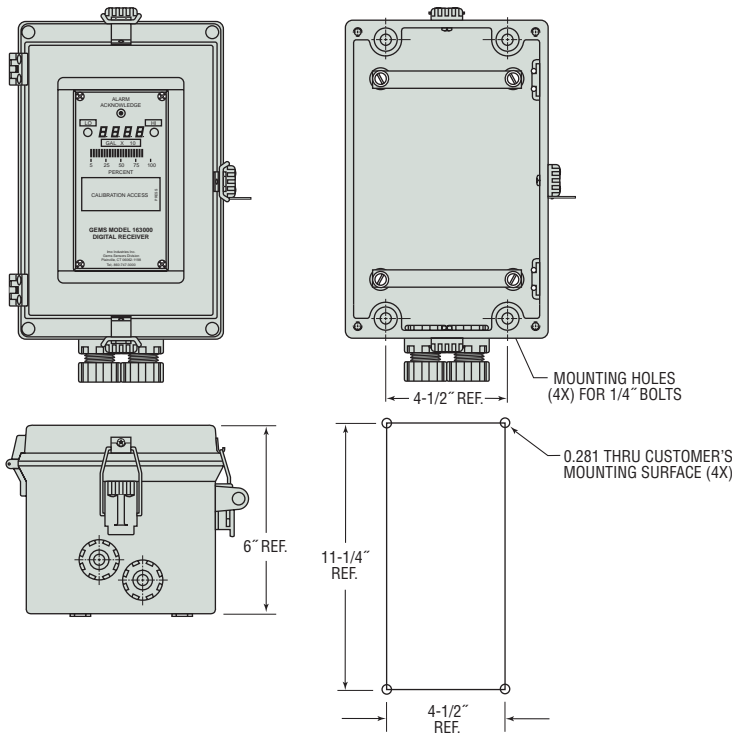
Dimensions

Panel Mounting Receivers

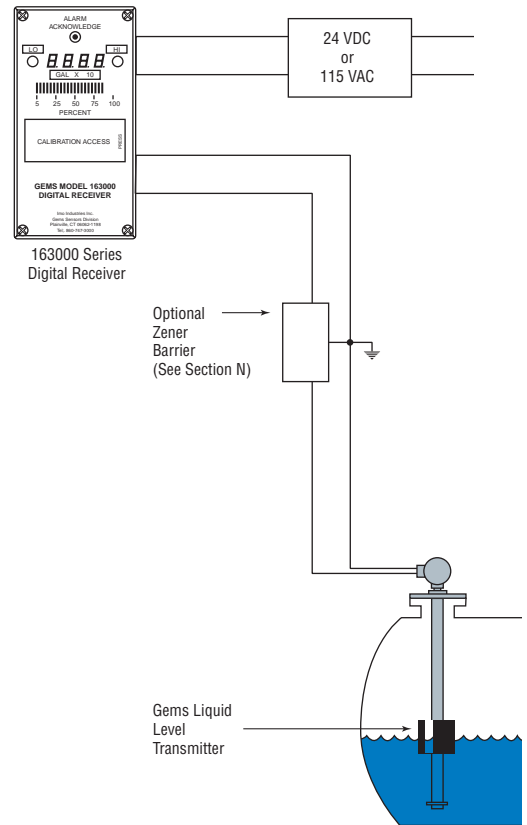


Static Sensitive.
Handling Precautions Required.

NEMA 4X Enclosed Receivers



Typical Installation



How To Order - Standard

Select receiver 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.

LEVEL INDICATORS - VISUAL

NOTES

A large grid of red dashed lines for taking notes, consisting of 20 columns and 30 rows.