



# LS-3N NSF Approved units

Instruction Bulletin No. 204601

Rev. A

**CE** This product is suitable for Class I and Class II applications only, per the requirements of standard EN60730 and any additional specific requirements for a particular application or medium being sensed. Class I compliance of metal bodied units requires a ground connection between the metal body and the earthing system of the installation. Class I compliance of plastic bodied units in contact with a conductive medium requires that the medium be effectively earthed so as to provide an earthed barrier between the unit and accessible areas. For Class III compliance, a supply at safety extra-low voltage (SELV) must be provided. Please consult the Factory for compliance information on specific part numbers.

### Important Points!

Product must be maintained and installed in strict accordance with the National Electrical Code and GEMS product catalog and instruction bulletin. Failure to observe this warning could result in serious injuries or damages.

\*\*\* Warning: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.

Pressure and temperature limitations shown on individual catalog pages and drawings for the specified level switches must not be exceeded. These pressures and temperatures take into consideration possible system surge pressures/temperatures and their frequencies.

Selection of materials for compatibility with the media is critical to the life and operation of GEMS level switches. Take care in the proper selection of materials of construction; particularly wetted materials.

Life expectancy of switch contacts varies with applications. Contact GEMS if life cycle testing is required.

Ambient temperature changes do affect switch set points, since the specific gravity of a liquid can vary with temperature.

Level switches have been designed to resist shock and vibration; however, shock and vibration should be minimized.

Liquid media containing particulate and/or debris should be filtered to ensure proper operation of GEMS products.

Electrical entries and mounting points may require liquid/vapor sealing if located in an enclosed tank.

Level switches must not be field repaired.

Physical damaged sustained by the product may render it unserviceable.

### Specifications . . .

|                                     |                                 |                                      |
|-------------------------------------|---------------------------------|--------------------------------------|
| <b>Materials</b>                    | Stem                            | Polypropylene                        |
|                                     | Float                           | Polypropylene                        |
|                                     | Clip                            | Kynar                                |
| <b>Maximum Pressure Rating</b>      | Operating @ ambient Temperature | 50 PSI Max.<br>(3.4 Bar)             |
| <b>Operating Temperatures</b>       | Mtg 21 - 1/8" NPT               | -40°F to +225°F<br>(-40°C to +107°C) |
|                                     | Mtg 33 - 3/8"-16                | -40°F to +225°F<br>(-40°C to +107°C) |
|                                     | Mtg 43 - G 1/8"                 | -40°F to +225°F<br>(-40°C to +107°C) |
|                                     | Mtg 52 - M12 X 1.75             | -40°F to +225°F<br>(-40°C to +107°C) |
| <b>Min. Liquid Specific Gravity</b> | .60                             |                                      |

Units are shipped normally open. To reverse circuit logic, remove clip, invert float on stem and reinstall float.

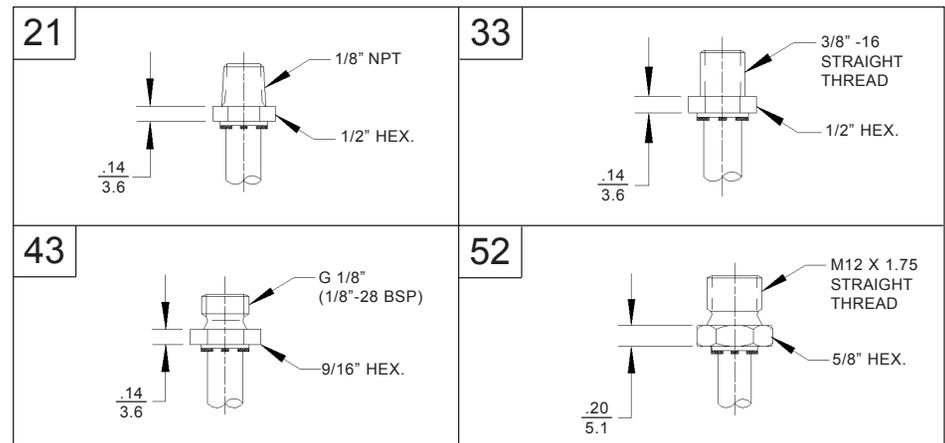
## NSF Directive - For use in water only

### Standard Part Numbers . . .

| Part Number | Mounting        | Switch |
|-------------|-----------------|--------|
| 209475      | 21 - 1/8" npt   | 20VA   |
| 209455      | 33 - 3/8"-16    |        |
| 209460      | 43 - G 1/8"-28  |        |
| 209465      | 52 - M12 X 1.75 |        |
| 208003*     | 52 - M12 X 1.75 | 10W    |

\* Special Connector

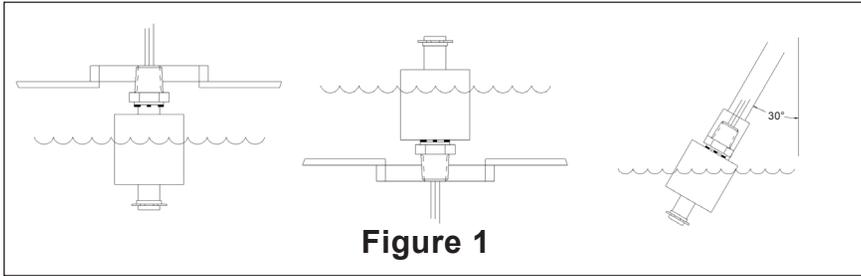
### Mounting Types . . .



**Gems Sensors Inc.**  
One Cowles Road  
Plainville, CT  
06062.1198  
tel 860.747.3000  
fax 860.747.4244

## Installation . . .

A standard female boss in tank top, bottom or side is all that is required. Units operate in any attitude - from the vertical to a 30° inclination - with lead wires up or down. **(Figure 1)**



**Figure 1**

### CAUTION

Most of GEMS level products incorporate a potting cap or are fully potted. Due to the bonding characteristics of the potting to the wire leads, there is no way of assuring a water-tight seal at the potting joint. Our potting cap will resist moisture to some degree. Consult your GEMS representative for suggestions on how to lessen the effects of moisture.

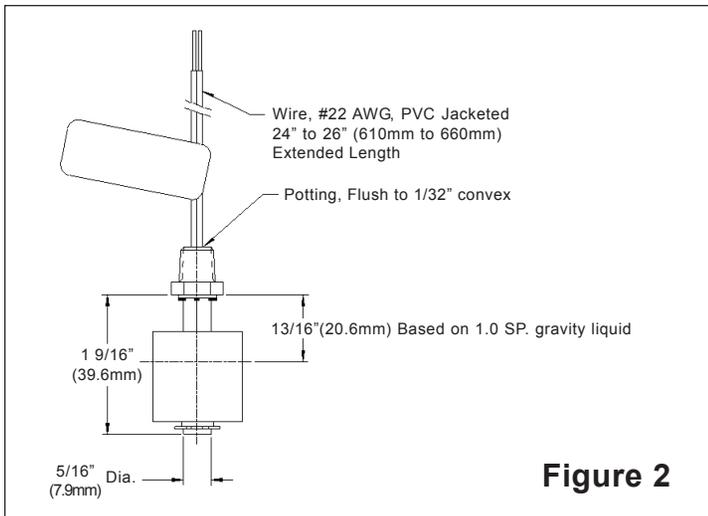
### Thread Treatment

1. **Sealing:** When threading metal threads into a metal coupling a pipe sealant is recommended. Due to potential compatibility problems, when sealing plastic threaded units, an NSF approved sealant such as **No More Leaks™** from Permatex® is recommended.

**No More Leaks** is a trademark of Permatex® Industrial Corp., a subsidiary of Loctite Corporation.

2. **Tightening:** When threading a plastic level switch into a metal coupling, the installer should use a suitable wrench and tighten the threads one to one and one-half additional turns past hand-tight. Over-torquing of the threads will result in damage to the plastic mounting plug.

## Dimensions . . .



**Figure 2**

## Electrical Data . . .

Standard reed switches in GEMS level switch units are hermetically-sealed, magnetically actuated, make-and-break type. Switches are SPST and are rated in Volt-Amps (VA).

See the chart below for maximum load characteristics of GEMS level switches. **CAUTION:** Contact protection is required for transient or high in-rush current. Refer to GEMS Bulletin #133702 or call your GEMS representative.

| VA                | Volts | Amps AC | Amps DC |
|-------------------|-------|---------|---------|
| 10<br>General Use | 0-50  | .2      | .13     |
|                   | 120   | .08     | N.A.    |
|                   | 100   | N.A.    | .10     |
| 20<br>Pilot Duty  | 0-30  | .4      | .3      |
|                   | 120   | .17     | .13     |
|                   | 240   | .08     | .06     |
| 50<br>General Use | 0-50  | 0.5     | 0.5     |
|                   | 120   | .4      | .4      |
|                   | 240   | .2      | .2      |
| 100*              | 120   | .8**    | N.A.    |
|                   | 240   | .4      | N.A.    |

\* Not U.L. Recognized    \*\* Limited to 50,000 operations

### Typical Wiring Diagrams

(Circuit Condition Dry)

**SPST, Normally Open or Closed**



## Ordering Specifications for Non-Standard Versions . . .

**LS-3N-XX-PP-1-HPP-XXX**

Mounting Type \_\_\_\_\_

- 21 - 1/8" NPT
- 33 - 3/8"-16 SAE Straight Thread
- 43 - G1/8" (1/8"-28 BSP)
- 52 - M12 x 1.75

Stem Material \_\_\_\_\_

PP - Polypropylene (NSF Std 61 Approved)

Electrical Connections \_\_\_\_\_

1 - Lead Wires, #22 AWG, PVC Jacketed

Float Type \_\_\_\_\_

HPP - Polypropylene, Molded, Hollow  
(NSF Std 61 Approved)

Electrical Rating \_\_\_\_\_

- 010 - SPST 10VA
- 020 - SPST 20VA
- 050 - SPST 50VA
- 100 - SPST 100VA