Innovative Controls Inc.
SL Series Tank Level Monitor
Innovative Controls SL Series Tank Level Monitor System

Bright, bold, easy-to-read graphics are sub-surface screened on a polycarbonate overlay, which protects the graphics from wear and UV degradation.

Functional Specifications:
Level Sensing Range: Four discrete factory and user adjustable sensing levels. Accuracy: 2.0% of set level
Supply Voltage Range: +10VDC to +26VDC supply voltage range with protective shutdown above 30VDC
Operating Temperature Range: -40°F to +150°F
Maximum Supply Current: 350mA @ 12VDC

Bid specifications available:

The decorative mounting bezel is chrome plated to the most stringent SAE standards.

Both 14 LED and 10 LED master and slave display modules feature 3 dimensional lenses for 180 degree visibility.

Both 10 LED and 14 LED dual displays are available as a more compact, economical, and easier-to-install alternative to individual tank level displays.

All display modules are self-calibrating for three common tank styles (rectangular, elliptical, and T-shaped). A user-friendly manual calibration mode is accessible, if desired, and can be done without any truck or system disassembly. An external magnet is held in front of the display to calibrate the system. The calibration information is stored in the display unit.

The decorative mounting bezel is chrome plated to the most stringent SAE standards.

The easy-to-install sender unit is constructed of stainless steel and features a vent to atmosphere, which prevents inaccuracy typically associated with altitude changes.

The sender unit remains accurate in all types of water and foam.

The sender’s electronics are encapsulated for protection from shock, vibration, water and dust.

All connectors are water and dust resistant and feature gold plated contacts for superior reliability.

Photo-eye automatically dims or brightens LEDs as ambient light conditions change.

Bid Specifications

Subject: SL Series Tank Level Monitor Bid Specifications - 10-LED Master Foam A Unit
Revision: A
Revision Date: 02/28/05
Standards No. 5000047 Date Originated: 02/28/05

10-LED Master Class A Foam Tank Level Monitor
An Innovative Controls SL Series Tank Level Monitor System shall be installed. The system shall include an electronic display module, a pressure transducer-based sender unit, and a 10’ connection cable. The display module shall show the volume of Class A foam in the tank using 10 superbright easy-to-see LEDs. Tank level indication is enhanced by the use of green LEDs at the full and near-full levels, amber LEDs between ¾ and ¼ tank levels, and red LEDs at the near-empty and empty levels. A wide-angle diffusion lens in front of the LEDs creates a 180° viewing angle. The electronic display module shall be waterproof and shock resistant being encapsulated in a urethane-based potting compound. The potted display module shall be mounted to a chrome plated panel-mount bezel with a durable easy-to-read polycarbonate insert featuring red graphics and a foam icon.

All programming functions shall be accessed and performed from the front of the display module. The programming includes self-diagnostics, manual or self-calibration, and networking capabilities to connect remote slave displays. Low tank level warnings shall include /f_lashing red LEDs starting below the ¼ level, down-chasing LEDs when the tank is almost empty, and an output for an audible alarm.

The display module shall receive an input signal from a pressure transducer. This stainless steel sender unit shall be installed on the outside of the foam tank near the bottom. All wiring, cables and connectors shall be waterproof without the need for sealing grease.

Location of Class A foam tank level monitor shall be:

5 LED mini slave displays feature the same rugged construction and related benefits as the larger display modules.

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Innovative Controls  SL Series
Tank Level Monitor System

10-LED Master Water Display
P/N 3030358-01

10-LED Large Slave Water Display
P/N 3030395-01

10-LED Master Foam Display - Class A
P/N 3030393-01A

10-LED Large Slave Foam Display Class A
P/N 3030396-01A

10-LED Master Foam Display - Class B
P/N 3030393-01B

10-LED Large Slave Foam Display - Class B
P/N 3030396-01B
10-LED Master Dual Water/Foam Display
P/N 3030359-01

10-LED Dual Large Slave Water/Foam Display
P/N 3030397-01

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10-LED Dual Master Foam Display - Class A & B
P/N 3030394-01

10-LED Dual Large Slave Foam Display - Class A & B
P/N 3030398-01
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10-LED Master Foam Display
P/N 3030393-01A

To 12 Volt Supply

6 Pin Slave Receptacle

Base-Mount Tank Sender
P/N 3030376-01
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10-LED Master Water Display
P/N 3030358-01

Base-Mount Tank Sender
P/N 3030376-01

To 12 Volt Supply

1 Slave Display
2 Slave Displays
3 Slave Displays

Y-Connector
P/N 3030374

6 Pin Slave Receptacle
Monster Lights
Driver Module
P/N 3030362
Lamps: each 5 Amps Max @ 12 VDC
Orange
Blue
White
Green
Brown
+12 VDC
Red
Slave
Connection
Ground
Gray
Gray
+12 VDC
Supply
Ground
10-LED Master Water Display
P/N 3030358-01
6 Pin Slave Receptacle
Monster Lights
Relay Driver Module
P/N 3030362
Base-Mount
Tank Sender
P/N 3030376-01
Innovative Controls SL Series
Tank Level Monitor System
14-LED Master Water Display  
P/N 3030385-01  
14-LED Large Slave Water Display  
P/N 3030389-01  

14-LED Master Foam Display - Class A  
P/N 3030386-01A  
14-LED Large Slave Foam Display - Class A  
P/N 3030390-01A  

14-LED Master Foam Display - Class B  
P/N 3030386-01B  
14-LED Large Slave Foam Display - Class B  
P/N 3030390-01B  

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14-LED Dual Master Water/Foam Display
P/N 3030387-01

14-LED Dual Large Slave Water/Foam Display
P/N 3030391-01
14-LED Master Dual Foam Display - Class A & B
P/N 3030388-01

14-LED Dual Large Slave Foam Display - Class A & B
P/N 3030392-01

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14-LED Master Foam Display
P/N 3030386-01

Base-Mount Tank Sender Unit
P/N 3030376-01

Innovative Controls SL Series
Tank Level Monitor System
Monster Light Driver Module
P/N 3030362

Lights: each 5 Amps Max @ 12 VDC
Orange
Blue
White
Green
Brown

+12 VDC
Red

Slave Connection
Ground
Gray

Ground

6 Pin Slave Receptacle

14-LED Master Water Display
P/N 3030385-01

Monster Lights Relay Driver Module
P/N 3030362

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Base-Mount Tank Sender
P/N 3030376-01
5-LED Mini Slave Water Display
P/N 3030423-01

5-LED Mini Slave Foam Display
Class A
P/N 3030423-01A

5-LED Mini Slave Foam Display
Class B
P/N 3030423-01B

5-LED Mini Slave Water Display
P/N 3030372-01

5-LED Mini Slave Foam Display
Class A
P/N 3030373-01A

5-LED Mini Slave Foam Display
Class B
P/N 3030373-01B

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Base-Mount Tank Sender
IC P/N 3030376-01

- 1/4" NPT
- Molded durable cable strain relief
- Heavy-Duty 18 Gauge wire in a jacketed shielded cable
- Vent tube to atmosphere prevents inaccuracy typically associated with altitude changes

The easy-to-install sender unit is constructed of stainless steel and features a vent to atmosphere, which prevents inaccuracy typically associated with altitude changes.

The sender unit remains accurate in all types of water and foam.

The sender's electronics are encapsulated for protection from shock, vibration, water and dust.

Sensor is encapsulated in a durable stainless steel housing

The sensor is protected from contact with the foam or water by a stainless steel diaphragm to prevent freeze-up and other sensor malfunctions related to exposure.

A large bore allows the media to more easily flush and drain from the sensor housing, thereby preventing clogging caused by mineral deposits.

Pressure sensor
Orifice protected behind diaphragm.
Silicone film barrier
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SL Tester
P/N 3030589

To Display

To Sender

SL Tester
P/N 3030349

System Hook-ups

Voltmeter VDC Hook-ups

Red(+) Black(-)

To SL Level
Display

To SL Sender Unit

Display Voltage Output

Sender Signal Output

Display Voltage Output

Sender Signal Output

Display Output

Sender Output
Innovative Controls SL Series Tank Level Monitor System

10-LED Master Display
P/N-3030358

Base-Mount Tank Sender
P/N 3030376-01

Sensor (Deutsch 6 pin)
1 - White (Signal +VDC)
2 - Bare (Shield)
3 - Vent
4 - Vent
5 - Red (+5VDC)
6 - Black (-)

6 Pin Slave Receptacle

Plug installed when no slaves are used

Display (Deutsch 6 socket)
1 - White (+12 VDC)
2 - Bare (Shield)
3 - Green (Ground)
4 - Blue (Reset)
5 - Red (Clock)
6 - Black (Data)

To 12 Volt Supply

Systems with a single slave display plug directly into the master display. Systems with multiple slave displays, including mini displays and/or monster lights, utilize one or more Y-connectors to wire the network.

1 Slave Display

2 Slave Displays

2 Slave Displays

3 Slave Displays

Y-Connector
P/N 3030374

Monster Lights

Driver Module
P/N 3030362

Monster Lights

Ground

+12 VDC Supply

Ground
Note:
This calibration procedure must be performed to ensure that the indicated fluid levels on the display accurately match the actual levels in the tank. The tank can be full or empty to begin calibration, but must be filled before beginning Step 4. To ensure proper calibration, do not have water in the fill tower.

**Step 1: Install Tank Sender Unit**
To ensure proper drainage, it is highly recommended that the sender unit is mounted vertically on the side of the tank by using a 90 degree 1/4" NPT fitting. Connect sender unit to the display and the display to a 12 or 24 volt power source. Go to Step 2.

**Step 2: Initiate Calibration**
Within 1 min. of powering up the unit, place the magnet over the master display between the 1/2 and 3/4 levels. The 1/4, 1/2, 3/4 and FULL lights will flash in succession and then they will flash together - at the same time.

**Step 3: Calibrating The Probe**
With the 1/4, 1/2, 3/4 and FULL lights all flashing, fill tank - if not yet full. For a level-by-level calibration, do not fill tank and go to alt. instructions on page 2.

**Step 4: Tank Selection Mode**
Place the magnet over the display between 1/2 and 3/4 levels. The level lights will flash in sequence upward beginning the tank selection mode. You will now select the tank shape. For a rectangular tank, go to Step 5. For a T tank, go to Step 6. For an elliptical tank go to Step 7.

**Step 5: Rectangular Tank**
When the 1/4 level light begins to flash, place the magnet back onto the master display before the lights flash for the fifth time. Remove the magnet. Calibration for a rectangular tank is now complete. If the magnet is not placed in time, wait until tank shape sequence begins again.

**Step 6: T-Shaped Tank**
When the 1/2 level lights begin to flash, place the magnet back onto the master display before the lights flash for the fifth time. Remove the magnet. Calibration for a T-shaped tank is now complete. If the magnet is not placed in time, wait until tank shape sequence begins again.

**Step 7: Elliptical Tank**
When the 3/4 level lights begin to flash, place the magnet back onto the master display before the lights flash for the fifth time. Remove the magnet. Calibration for an elliptical tank is now complete. If the magnet is not placed in time, wait until tank shape sequence begins again.

Notes:
If the magnet is not placed in front of the display to select a tank shape, the tank selection sequence will continue and the FULL light will flash 5 times. After the FULL light flashes 5 times the tank shape selection sequence will begin again. (Step 5) The tank shape selection sequence will repeat 3 times. If no tank shape selection is made in this time, the display will default to a rectangular tank.

If the display was calibrated incorrectly, remove power from the display and repeat the process. Recalibration cannot occur without cycling power.
Note:
If none of the 3 calibration modes described on the previous page is acceptable, use this special calibration mode to set each of the water or foam levels independently. Perform Steps 1, 2, and 3 on previous page before starting Alt. Step 4.

Alt. Step 4
With the tank empty and the 1/4, 1/2, 3/4 and FULL lights flashing, place the magnet over the master display between the 1/2 and 3/4 levels.

Alt. Step 5
Wait until the FULL level is flashing and place the magnet over the display.

Alt. Step 6
Fill the tank to the desired 25% level. Check level visually or by measuring depth.

Alt. Step 7
Place the magnet over the display. The 1/4 lights will stay on while the 1/2 lights begin to flash.

Alt. Step 8
Fill the tank to the desired 50% level. Check level visually or by measuring depth.

Alt. Step 9
Place the magnet over the display. The 1/4 and 1/2 lights will be on while the 3/4 lights begin to flash.

Alt. Step 10
Fill the tank to the desired 50% level. Check level visually or by measuring depth.

Alt. Step 11
Place the magnet over the display. The 1/4, 1/2 and 3/4 lights will be on while the FULL lights begin to flash.

Alt. Step 12
Fill the tank to the desired FULL level.

Alt. Step 13
Place the magnet over the display to complete the alternate calibration process.

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Calibration Instructions