OMNTEC
Advanced Tank Monitoring & Leak Detection

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L2PD4-LF-HLO5L INSTALLATION GUIDE

SIX CHANNEL ALARM PANEL

Revision 2605

Document No. L2PD4-LF-HLO5L

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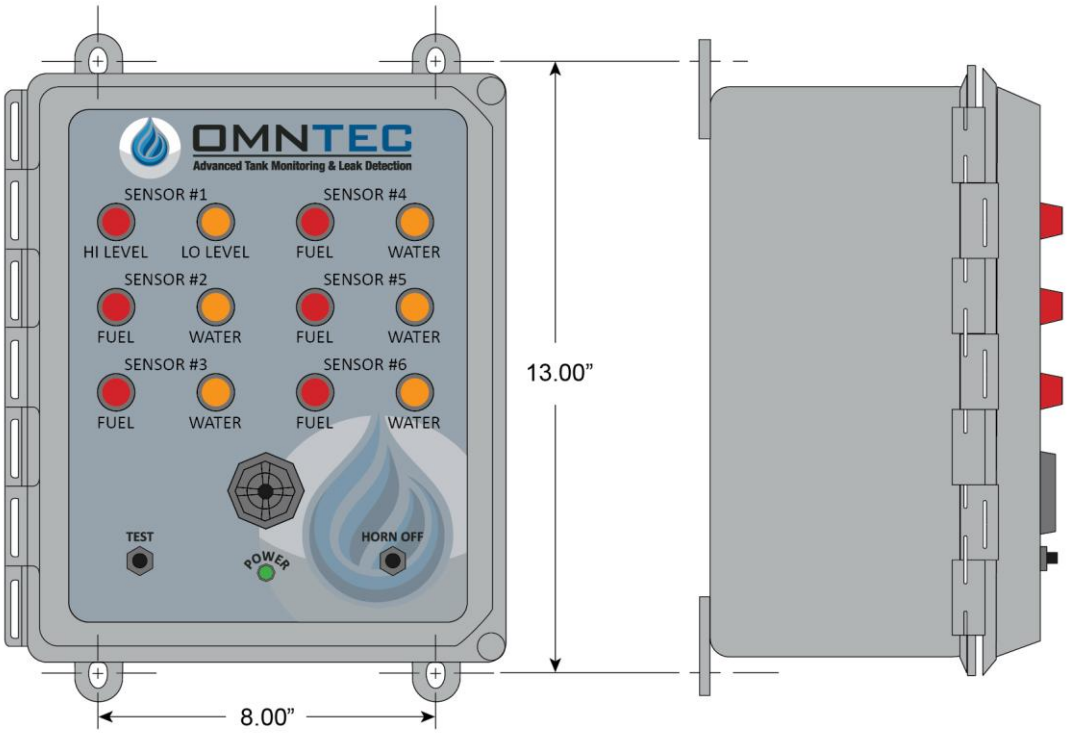
SIX CHANNEL ALARM PANEL



L2PD4-LF-HLO5L SPECIFICATIONS

POWER INPUT
85-125 VAC, 47-440 Hz
16 Watts maximum

POWER TO SENSORS
2 VDC @ 13 mA

RELAY OUTPUTS
(2) SPST normally open dry contacts 0.5 AMPS, 120 AC/DC switches when an alarm condition occurs

LOW VOLTAGE OUTPUTS
(6) 12 VDC low voltage outputs to signal RLY-RA-6

WEIGHT 8.75 LBS.

DIMENSIONS (W) 10.875” x (H) 12.25”

SENSOR CABLE
Shielded 22 AWG UL-E118830 CM
Maximum length 2000 feet

ENCLOSURE NEMA 4X

OPERATING TEMPERATURE -40° to 140° F

AUDIO/VISUAL CONSOLE
Audible Alarm - 95 dB pulsing horn with 30 second timeout
Red Light - Indicates either Hi Level alarm for LF-Series sensor or Fuel alarm for PD-Series sensor
Amber Light - Indicates either Lo Level alarm for LF-Series sensor or Water alarm for PD-Series sensor
Test Button - When pressed will test system electronics
Green Light - Indicates the power is on
Horn Off Button - Silences the audible alarm when pressed

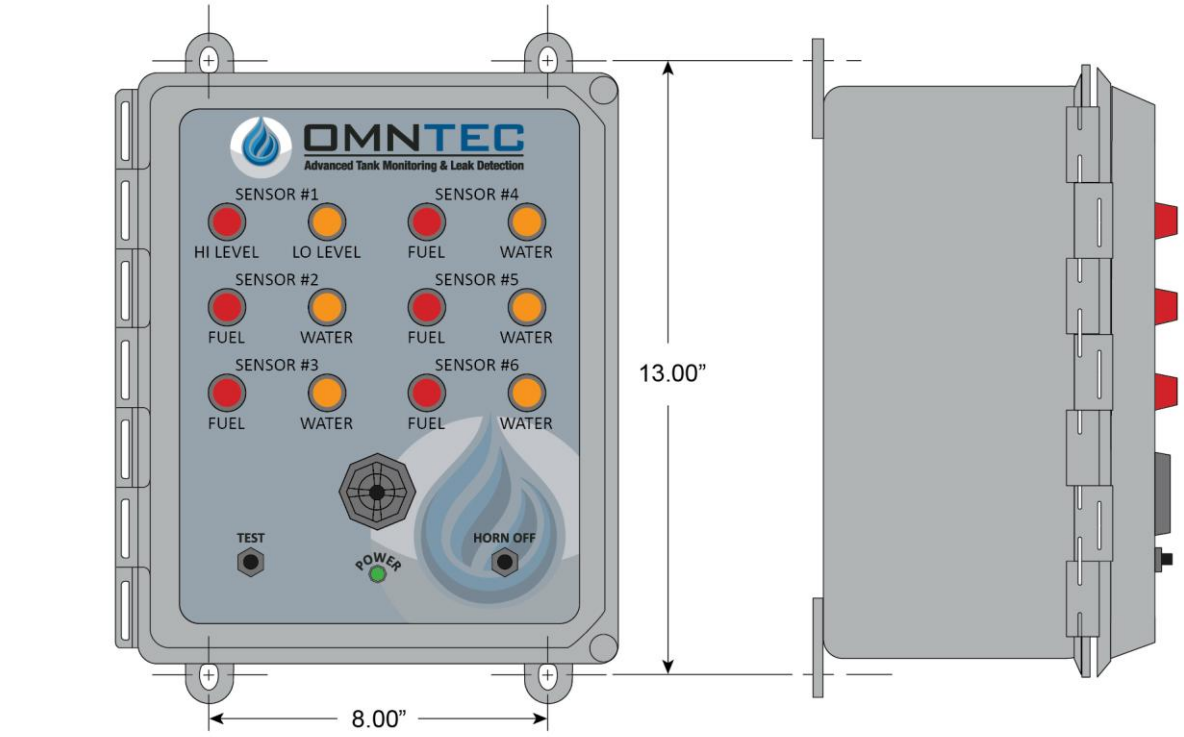
SENSORS
(1) LF-2 Two-point float sensor
(5) PD-Series Product distinguishing liquid optic sensor

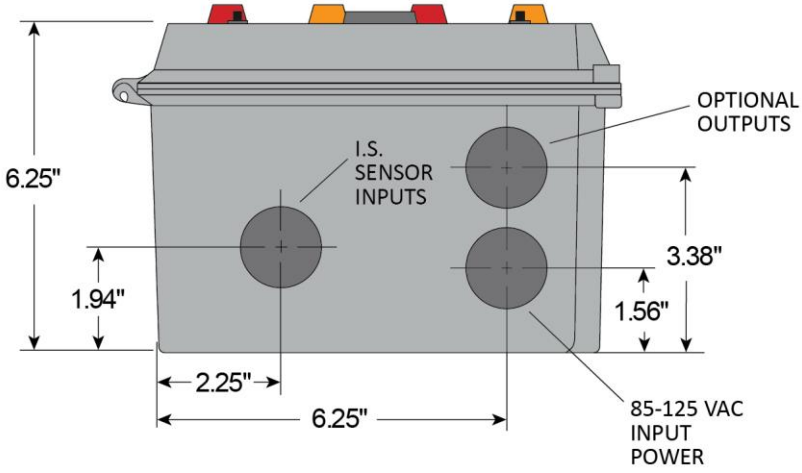
OPTIONAL ACCESSORIES
RA-Series Audio/visual remote annunciator
RLY-RA External relay box series

LABELS
Provided with controller

L2PD4-LF-HLO5L

DIMENSIONS FOR MOUNTING AND KNOCKOUTS





LPD-SERIES INSTALLATION INSTRUCTIONS

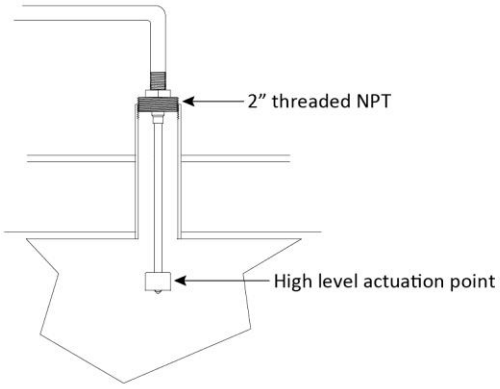
READ ALL INSTRUCTIONS PRIOR TO SYSTEM INSTALLATION. ALL WIRING IS TO BE DONE IN ACCORDANCE WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES. POWER IS TO BE OFF DURING ANY WIRING. WIRE AND TEST ENTIRE SYSTEM BEFORE UTILIZING SK-4 CONNECTOR SEALING KITS. STANDARD EQUIPMENT IS COMPATIBLE WITH MOST PETROLEUM PRODUCTS. SOME CHEMICAL AND SOLVENTS REQUIRE SPECIFIC MATERIALS OF CONSTRUCTION. IF UNSURE OF COMPATIBLE CONTACT MANUFACTURER.

1. L-SERIES & LF-SERIES

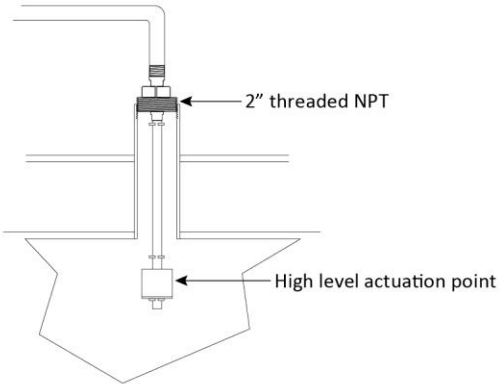
The level sensor is primarily used to detect a liquid level inside the tank. The sensor detects a single liquid level and is typically used for overfill protection at 90% tank capacity.

The level sensor is installed into the tank via the 2” bushing which is an integral part of the sensor. This sensor screws directly into a 2” female threaded NPT (use a reducer bushing if necessary).

OPTICAL LEVEL SENSOR INSTALLATION



FLOAT SENSOR INSTALLATION

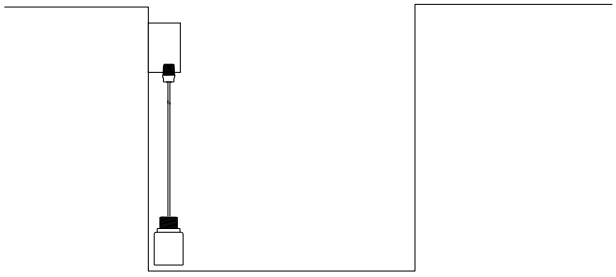


Connection of the sensor to the control unit cable is made in a junction box. For detailed wiring scheme refer to page 9, 10, and 11.

2. PDS SENSOR

The PDS sensor (see pg. 12) is designed to detect liquid in sumps or containment areas.

To install the PDS sensor as an above ground sump sensor mount a junction box between 2 and 3 feet above bottom of containment area. Attach sensor to junction box via conduit or cable clamp, leaving a ¼" clearance between the sensor end and the bottom of the containment area. For detailed wiring scheme refer to appropriate drawing (see pg. 9 and 12). Connect sensor cables to control unit cables in junction box using supplied SK-4 connector sealing kit.

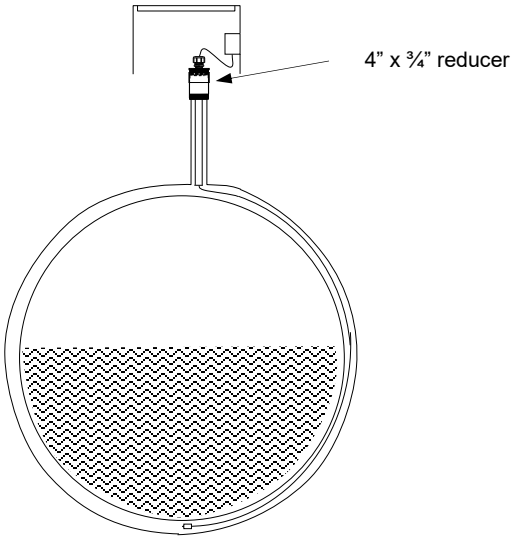


3. PDW-* SENSOR

PDW-* sensor (see pg. 11 and 12) is designed to detect liquid and differentiate water from hydrocarbons in the interstitial space of a double wall tank. The PDWF-* sensor is designed for fiberglass tanks and the PDWS sensor is designed for steel tanks.

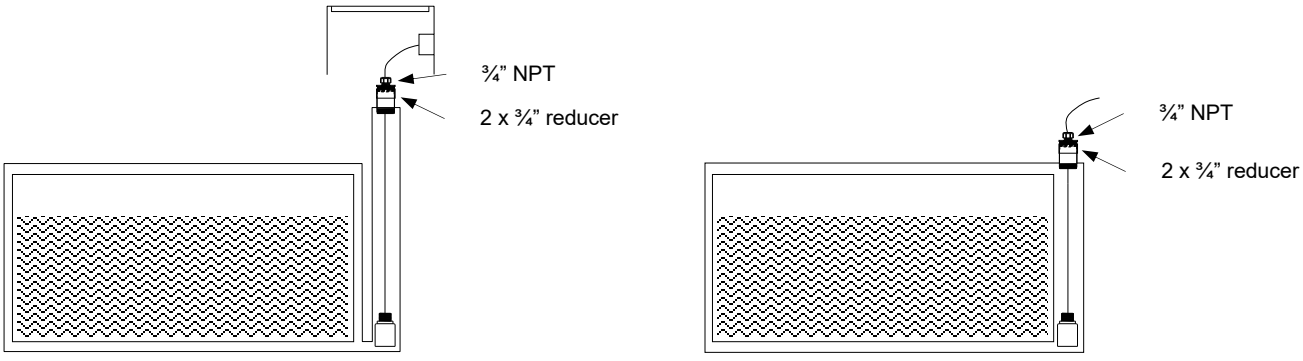
1. PDWF SERIES

The PDWF-* sensor is installed through the interstitial port. If the tank is pitched, locate the interstitial sensor at lowest elevation of tank. Insert sensor into the interstitial port and push down around outside of inner tank. When PVC handle contacts the inner tank the sensor should be located at the bottom of interstitial space. Reduce the riser to 3/4" NPT and install the supplied oiltight fitting. The oiltight fitting must be installed to prevent liquids from entering the interstitial space. Run conduit from interstitial manhole to the central junction box, located in the manway. Install a second oiltight on the sensor cable and pull sensor cable through conduit. Connect oiltight to conduit and tighten. For detailed wiring scheme refer to appropriate control drawing (see pg. 9 and 13). Connect sensor wires in central junction box to control unit cable(s) and use SK-4 connector sealing kit.



2. **PDWS**

To install the PDWS as a doublewall steel tank sensor remove the oiltight from the sensor cable. Feed the cable through the appropriate bushing required to adapt the interstitial port to 3/4” NPT (oiltight). Feed wires through oiltight, leaving it loose. Gently lower sensor down interstitial port until it rests on the bottom. Install oiltight into the bushing. Pull sensor up by the cable until it just comes off the bottom. Maintain this position and tighten the oiltight fitting. This is required to seal the interstitial port. All connections are made using the supplied SK-4 connector kit.



4. CONTROL UNIT

The control unit (see pg. 3) should be mounted in a manned area. Route sensor control cable through conduit from the junction box to the control unit. Sensor control cables enter the control unit through the output port only. The cables are wired as shown in the appropriate drawing (see pg. 9). The control unit accepts any possible combination of L-Series sensors.

1. INPUT POWER HOOKUP

Input power requirements are:
85-125 VAC
16 Watts max
47-440 Hz

Input power cable should be wired in accordance with all pertinent electrical codes. This cable should enter the control unit through the input power port only. The power is hooked up to the power supply and wired as per control drawing (see pg. 20). NOTE: EARTH GROUND TERMINAL MUST BE CONNECTED.

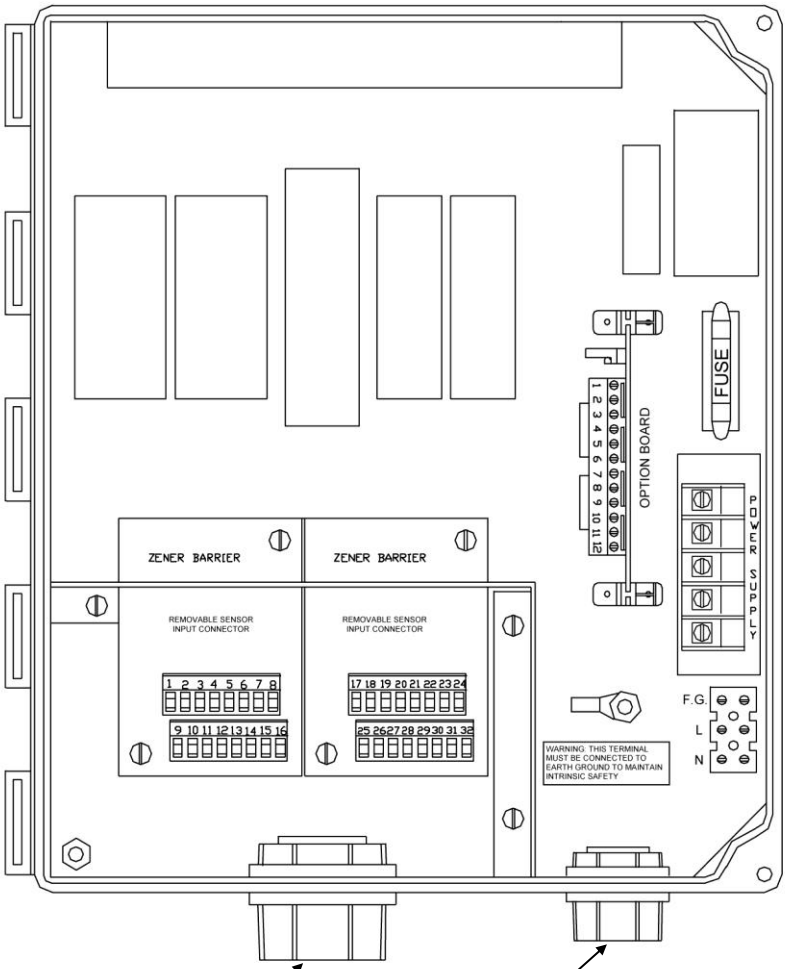
2. REMOTE ANNUNCIATOR OPTION

Mount remote annunciator (see pg. 15) within audio / visual range of the filling operator. NOTE: the remote must be outside of the HAZARDOUS AREA. Pull appropriate low voltage wire from the remote to the control unit. See appropriate drawing for wiring details. Run wires through output port. Connect color coded nuts.

3. SK-4 CONNECTOR SEALING KIT

Make all splices using SK-4 connector kit (supplied).

L2PD4-LF-HLO5L CONTROLLER CONNECTION DIAGRAM



NOTE: To maintain proper shielding, BLACK **sensor** wires and SHIELD DRAINS should **not** be connected together at sensors.

COLOR CODE

CABLES FROM SENSORS TO REMOVABLE SENSOR INPUT CONNECTORS

1	UNUSED	SENSOR #1 LF-2 HI LEVEL
2	WHITE	
3	RED	SENSOR #2 PD-SERIES LEAK
4	WHITE	
5	GREEN	
6	RED	SENSOR #3 PD-SERIES LEAK
7	WHITE	
8	GREEN	
9	BLACK & GREEN	FROM SENSORS #1 - #3
10	SHIELD DRAIN	
11	RED	SENSOR #1 LF-2 LO LEVEL
12	RED	SENSOR #4 PD-SERIES LEAK
13	WHITE	
14	RED	SENSOR #5 PD-SERIES LEAK
15	WHITE	
16	GREEN	
17	RED	SENSOR #6 PD-SERIES LEAK
18	WHITE	
19	GREEN	
20	GREEN	SENSOR #4 PD-SERIES LEAK
21	UNUSED	
22	UNUSED	
23	UNUSED	
24	UNUSED	
25	BLACK	FROM SENSORS #4 - #6
26	SHIELD DRAIN	
27	UNUSED	
28	UNUSED	
29	UNUSED	
30	UNUSED	
31	UNUSED	
32	UNUSED	

WIRES TO OPTION BOARD

WIRES FROM REMOTE

1	GREEN	- HORN
2	RED	+ HORN
3	BLACK	GROUND
4	WHITE	SENSOR #1 HI LEVEL
5	ORANGE	SENSOR #1 LO LEVEL
6	UNUSED	

WIRES FROM RELAY OUTPUTS

7	UNUSED	
8	UNUSED	
9	COMMON	SENSOR #1 LO LEVEL
10	NORMALLY OPEN	
11	COMMON	SENSOR #1 HI LEVEL
12	NORMALLY OPEN	

120 VAC

WIRES TO POWERSUPPLY

F.G.	FIELD GROUND
L	LINE
N	NEUTRAL

LF-SERIES SENSOR

LIQUID LEVEL FLOAT SENSORS

FEATURES

- Stainless Steel or Brass Mountings
- 1 to 6 Actuation Levels
- Lengths to over 11 feet
- UL Recognized, CSA Listed

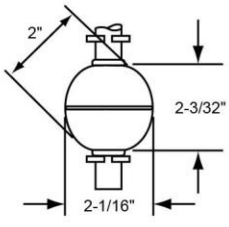
Stainless Steel or Brass Mountings
1 to 6 Actuation Levels
Lengths to over 11 feet
U.L. Recognized, CSA Listed

LF series float sensors have multiple options including material of construction, mountings and float sizes. This allows for the LF sensor to be extremely versatile in a wide range of applications such as water, oils, chemicals and corrosive liquid.

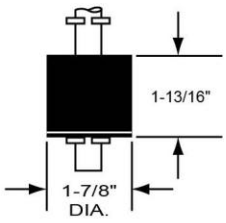
LF-* switches are U.L. Approved for Class I, Division 2, Groups A, B, C, D hazardous locations. FM Approved explosion proof junction box must be installed for Class I, Division I, Group D hazardous locations.

SPECIFICATIONS

	BUNA N	Stainless Steel
Operating Temperature	Water: to 180 F Oil: -40 F to +230 F	40 F to +300 F
Stem & Mounting Material	Brass	316 Stainless Steel
Max Length (Lo)	120" (305 cm)	
Float Stops*	Beryllium Copper	316 Stainless Steel
Compatible Controllers	Consult factory	
Approvals	U.L. Recognized, CSA Listed	



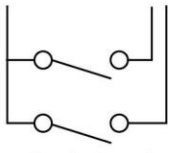
Stainless Steel Float



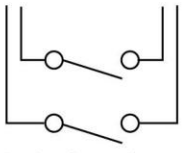
BUNA N Float

Consult factory for materials other than stainless steel and BUNA N.

Group 1
Switch (N.O. or N.C.):
SPST: 50 VA

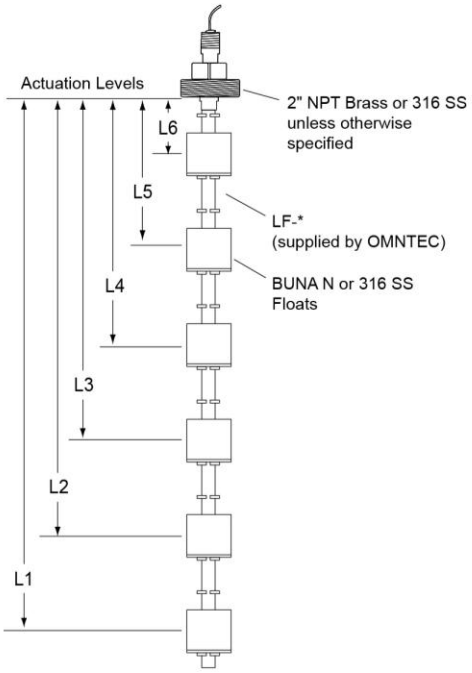


Group 2
Switch (N.O. or N.C.):
SPST: 50 VA



- For clarity, only two actuation levels are shown in each group diagram
- Standard setup is Group 2 unless otherwise specified.

LF-SERIES SENSOR



Switch actuation levels are determined following the guidelines below:

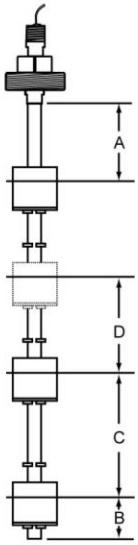
All units 72" or less overall unit length with Stainless Steel or BUNA N floats.

A = 1-1/2" (38.1mm) minimum distance to highest level (2" (50.8mm), Type 5 only)

B = 2" (50.8mm) minimum distance from end of unit to lowest level

C = 3" (76.2mm) minimum distance between levels

D = 1/4" (6.3mm) minimum distance between actuation levels (Note: One float for two levels can be used only when low level is N.C. dry and high level is N.O. dry)



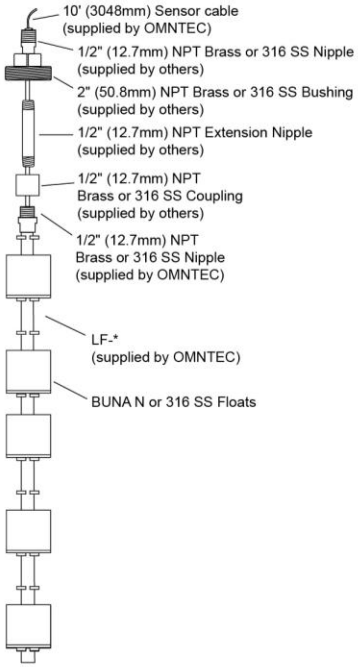
* Actuation level distances and L_0 (overall unit length) are measured from inner surfaces of mounting plug or flange.

** Length Overall $L_0 = L_1$ + Dimension B. See mounting Types for Maximum Length values.

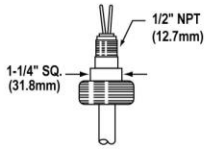
Notes:

1. A, B and C dimensions based on a liquid specific gravity of 1.0.
2. One float for two levels can be used only when 20VA switch is used.
3. Actuation levels are calibrated on descending fluid level, with water as the calibrating fluid, unless otherwise specified.
4. Tolerance on actuation levels is +/- 1/8" (3.2mm).

Optional Alternative Mounting for ½" NPT



2" (50.8mm) NPT



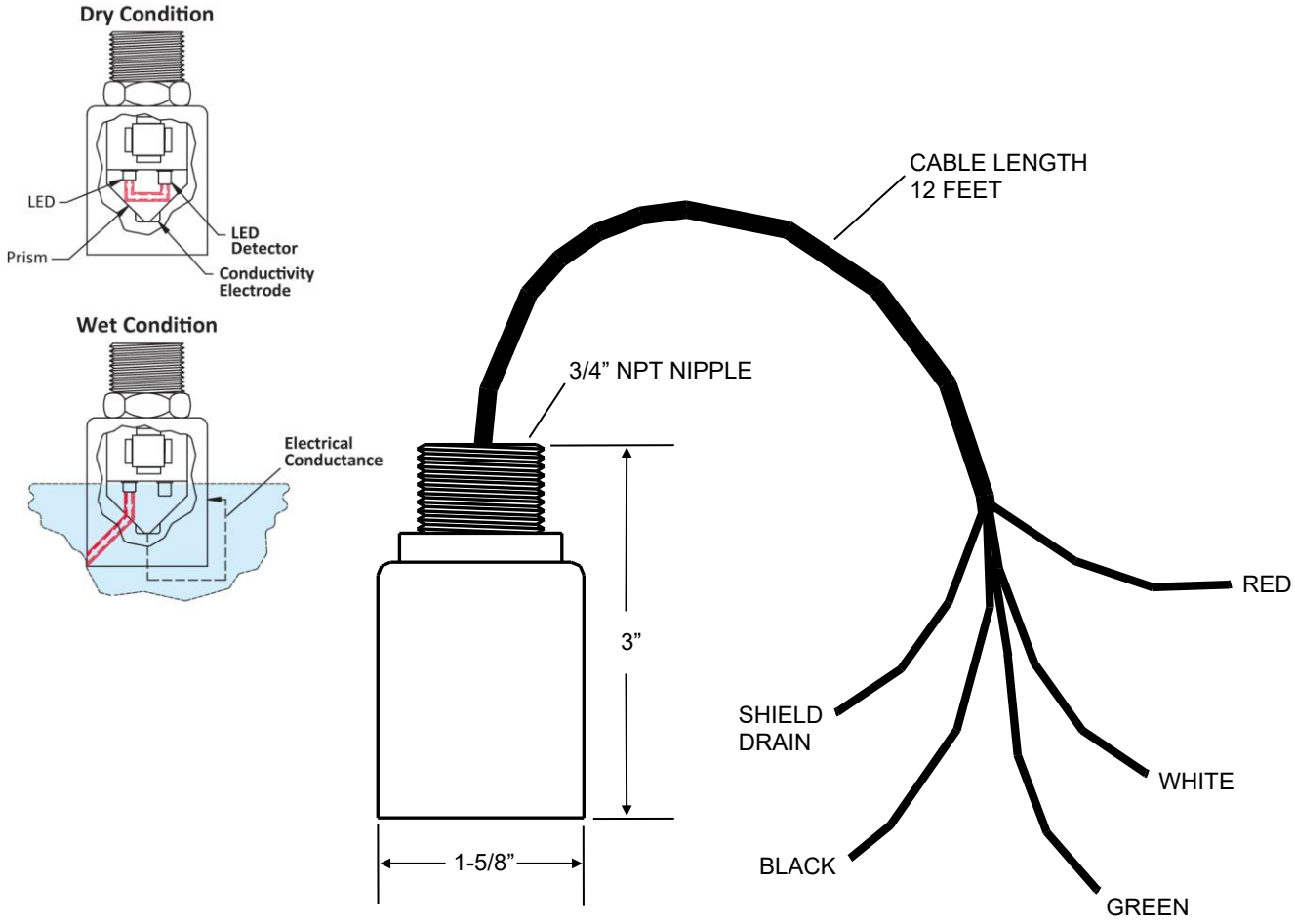
Stem & Mounting Material	Brass or 316 Stainless Steel
Max Length	140" (355.6 cm)
Mounting Position	Vertical 30 Inclination
Float Stops*	Brass Units: Beryllium Copper Grip Rings, Stainless Steel Units: S.S. ARMCO PH-15-7MO Grip Rings

* Units greater than 72" (1828mm) overall length are supplied with collars with setscrews (made of same material as stem and mounting) in place of float-stop rings. Collars are optional on units less than 72" (1828mm) overall length. Units requiring 316 SS float stops must be special ordered with 316 SS collars instead of grip rings. In some instances, the use of concentration of chlorine and other corrosive compounds in the media require the use of collar type float stops. Consult factory for details.

PDS SENSOR

PRODUCT DISTINGUISHING OPTIC SENSOR

PRINCIPLES OF OPERATION



PDS SPECIFICATIONS

U.L. LISTED 5L04
Intrinsically safe Class I, Group D Hazardous Locations when connected in accordance with control drawing nos. L1PD2, L2PD4, L3PD6

OPERATING TEMPERATURE
-40 to +140 F

POWER
2 VDC @ 13 mA

WEIGHT
1/2 pound

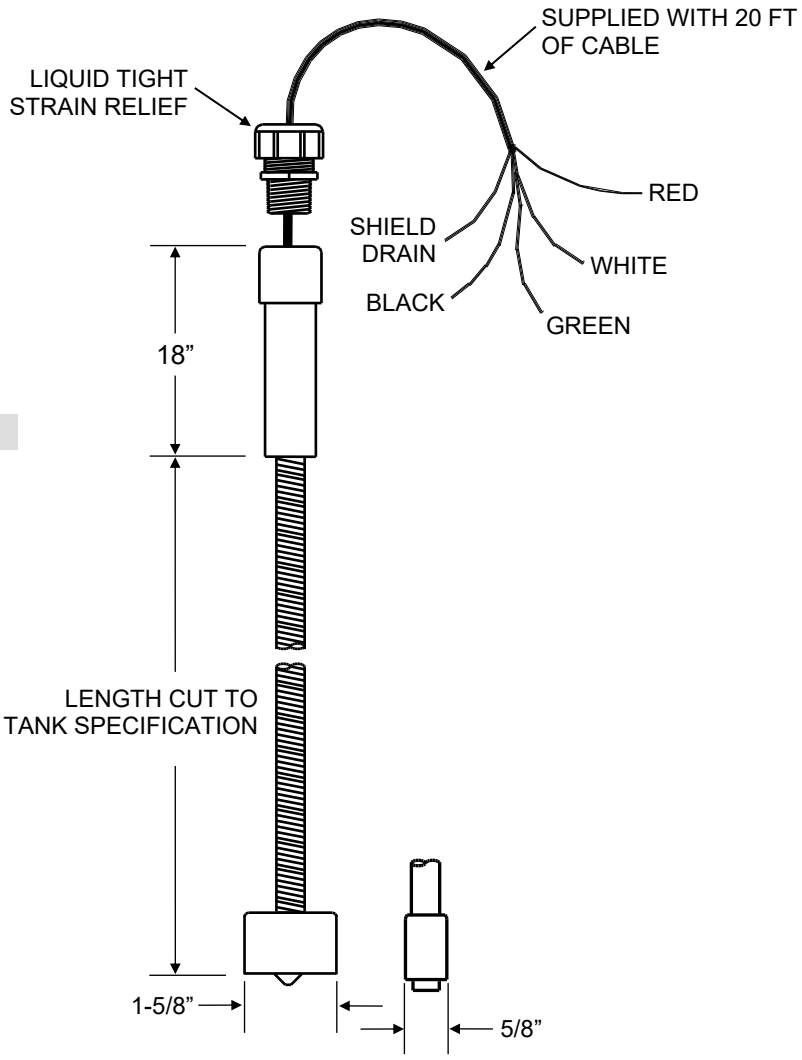
PRINCIPLES OF OPERATION
Liquids (ex: fuel, water) - Photo optic
Dry Condition - Normally closed light beam
Alarm Condition - Opens (refracts) normally closed light beam
Water Detection - Conductance

SENSOR CABLE
Shielded 22 AWG UL-E118830 CM
Maximum length 2000 feet

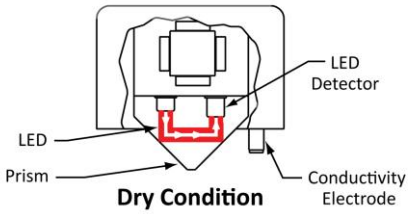
RESPONSE TIME
Immediate

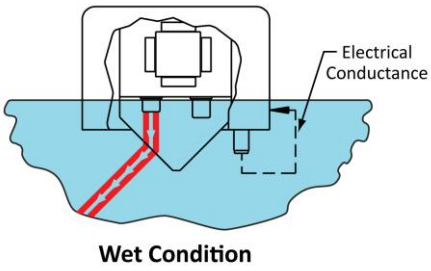
PDWF SENSOR

PRODUCT DISTINGUISHING FIBERGLASS TANK DRY INTERSTITIAL SENSOR



PRINCIPLES OF OPERATION





PDWF SPECIFICATIONS

U.L. LISTED 5L04
Intrinsically safe Class I, Group D Hazardous Locations when connected in accordance with control drawing nos. L1PD2, L2PD4, L3PD6

OPERATING TEMPERATURE
-40 to +140 F

POWER
2 VDC @ 13 mA

WEIGHT
1/2 pounds

PRINCIPLES OF OPERATION
Liquids (ex: fuel, water) - Photo optic
Dry Condition - Normally closed light beam
Alarm Condition - Opens (refracts) normally closed light beam
Water Detection - Conductance

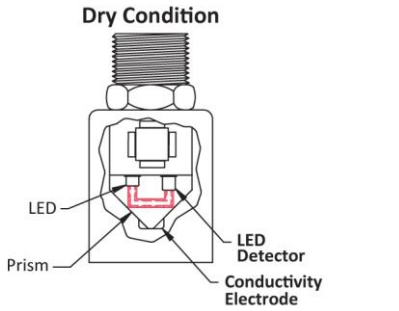
SENSOR CABLE
Shielded 22 AWG UL-E118830 CM
Maximum length 2000 feet

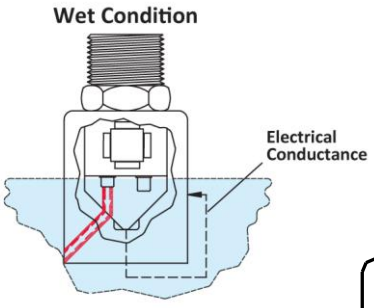
RESPONSE TIME
Immediate

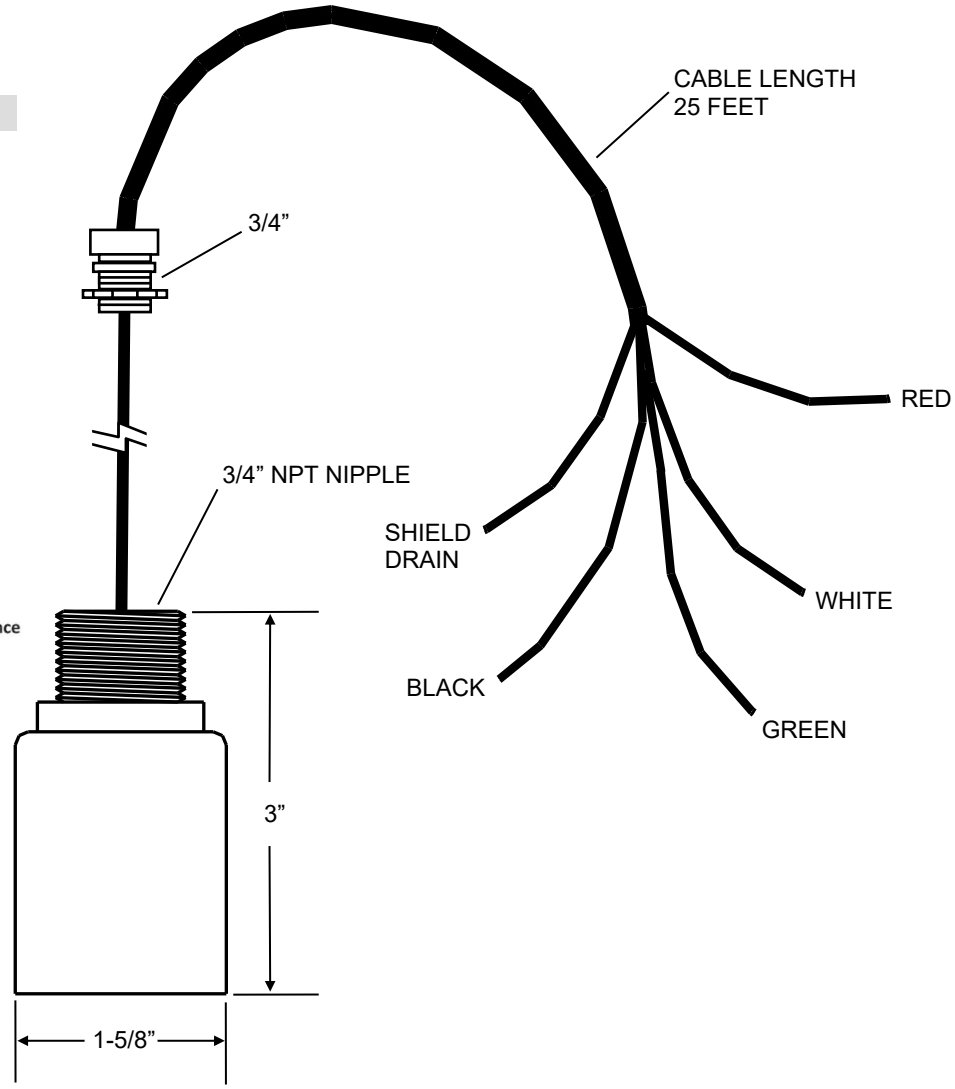
PDWS SENSOR

PRODUCT DISTINGUISHING STEEL TANK DRY INTERSTITIAL SENSOR

PRINCIPLES OF OPERATION







PDWS SPECIFICATIONS

U.L. LISTED 5L04
Intrinsically safe Class I, Group D Hazardous Locations when connected in accordance with control drawing nos. L1PD2, L2PD4, L3PD6

OPERATING TEMPERATURE
-40 to +140 F

POWER
2 VDC @ 13 mA

WEIGHT
1/2 pound

PRINCIPLES OF OPERATION
Liquids (ex: fuel, water) - Photo optic
Dry Condition - Normally closed light beam
Alarm Condition - Opens (refracts) normally closed light beam
Water Detection - Conductance

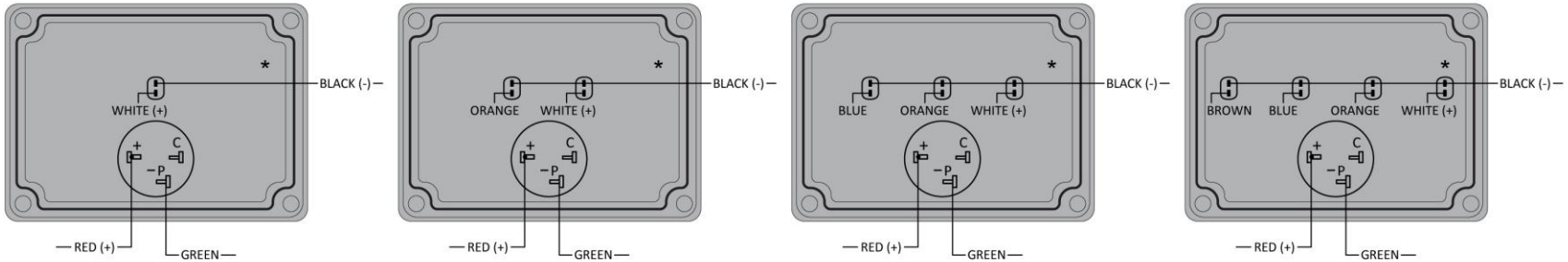
SENSOR CABLE
Shielded 22 AWG UL-E118830 CM
Maximum length 2000 feet

RESPONSE TIME
Immediate

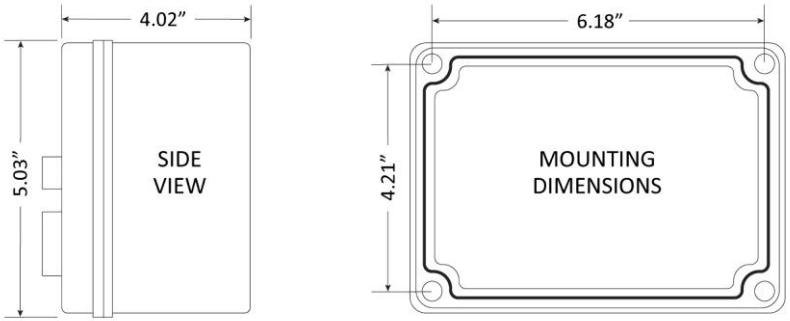
RA-SERIES REMOTE HIGH-LEVEL ALARM

RA-1 **RA-2** **RA-3** **RA-4**

INTERNAL WIRING COLOR CODE



*Warning Label Placed Here **WARNING: LOW VOLTAGE INPUTS ONLY**



Note: It is recommended that knockouts be placed in the bottom of enclosure.

SPECIFICATIONS	
Audible Alarm	95 dB pulsing horn
Red Light	Liquid-high-level alarm
Response Time	Immediate
Power Input	12VDC @200mA maximum from controller
Wire	22 AWG minimum
Weight	1 lb.

OMNTEC
Advanced Tank Monitoring & Leak Detection

LOG SHEET

DATE	NAME	SYSTEM STATUS	SIGNATURE

WARRANTY

The seller OMNTEC Mfg., Inc. warrants to buyer defects when properly installed, and maintained by user. The seller's sole obligation is to repair or replace parts found to be defective, or non-conforming for one year and only after evaluation by factory. The liability of the seller shall not exceed the price paid for the components found to be defective. The above warranty is exclusive of all other warrantees whether implied or expressed. Seller assumes no obligation for special or, indirect damages incurred by user.

All standard tank gauging systems are free of defects when properly installed and maintained by user. Warranty on tank gauging systems will only be effective after proper documentation has been submitted by the buyer to OMNTEC Mfg., Inc. The seller's sole obligation is to repair or replace parts found to be defective, or non-conforming for one year and only after evaluation by factory. Technical support must be contacted for a Return Material Authorization (RMA #) prior to sending any potentially defective parts. The liability of the seller shall not exceed the price paid for the components found to be defective. The above warranty is exclusive of all other warrantees whether implied or expressed. Seller assumes no obligation for special or indirect damages incurred by user.

All standard replacement parts, "add-ons", or spare parts are free of defects when properly installed and maintained by user. The seller's sole obligation is to repair or replace parts found to be defective or non-conforming for 90 days and only after evaluation by factory. The liability of the seller shall not exceed the price paid for the components found to be defective. The above warranty is exclusive of all other warrantees whether implied or expressed. Seller assumes no obligation for special or indirect damages incurred by user.

Equipment not covered by this warranty includes but is not limited to: custom equipment and control systems.