Built on Tradition

LevelShield Series P

User Manual

Installation & Start-up Guide

Carefully read and follow the instructions in this manual.

Liquid Level Inventory Monitoring & Management







HT-6121

Warning and Disclaimer

!IMPORTANT! Installation of this system shall be completed by a qualified electrician or technician. Location of CommBox relative to the tank is the installer's decision. Always follow local codes for installing electronics around hazardous materials and storage tanks. Always inspect parts for damage when receiving shipment. Do not sign for the shipment if any damage is visible to the packaging or components. Please reject shipment or record damages and file a claim with the carrier. Highland Tank is not liable for damage that occurred during or after shipment to the site. Any damaged parts will need to be replaced to ensure proper system function. Please call Highland Tank for replacement parts at 814-893-5701.

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Introduction The High-LINK LevelShield Series P is a highly accurate and easy to install and use level monitoring system for any AST or UST used to store or contain petroleum products.

The system works using the High-LINK web-based software application. The application is accessible via any smartphone, tablet, or computer with a web browser. The software application stores and logs all level readings so that the system users can monitor the tank levels, reconcile inventory, monitor for water, cross-check fuel vendor bills, prevent theft and suspicious activity, configure e-mail or SMS alerts, and more.

Software training and support is included and will be scheduled with the High-LINK account administrator via a webinar conference. The LevelShield Series P consists of two parts: The Mag Probe and the CommBox. The Mag Probe measures for product level, water level, and temperature. The CommBox reports the data to the High-LINK Software Application for viewing current levels and level change history. The CommBox also includes LED lights and a siren that accepts two float-switch sensors that are intended for a 90% overfill alarm and an interstitial leak alarm. The sensors necessary are purchased separately and are available from Highland Tank. *

All data is synced with the cloud at 5-minute intervals. The system works using cellular data, which is included with the annual software and communication package.

*Please contact the Highland Tank inside sales representative on your order for more information about the leak and overfill alarm options if you did not order these parts but need to fulfill these requirements. Upon completion of installation, please call Zachary Pritts with Highland Tank at 814-893-6644 or email at zpritts@highlandtank.com and have the tank work order number ready. The work order number is on the delivery ticket received when the tank was delivered or on the silver sticker on the tank. The work order number is required to find the correct High-LINK system information.

Included Components



- 1) High-LINK Magnetostrictive Probe a) Features:
 - i) ³/₄" compression bushing for on-site probe height adjustment (see probe installation instructions)
 - ii) Two floats for measuring product level and water level
 - iii) Internal thermocouple
 - iv) 2m of 4-wire shielded weatherproof cable.



- 2) High-LINK CommBox
 - a) Features:
 - i) Latching polycarbonate enclosure
 - ii) Mounting tabs, cable glands, and a wiring diagram inside the door.
 - iii) Wiring diagram inside the door
 - iv) Pre-mounted and wired LED lights and buzzer for audible/ visual alarms (standard is for overfill and for interstitial leak).
 - v) Pre-wired internals for easy wiring connections in provided terminal blocks.
 - vi) Verizon-enabled Cellular Modem
 - vii) Weatherproof enclosure
 - 3) ¾"x2" Reducer Bushing to install probe into a 2" tank opening.

Site & Installer Requirements

- 1) Verizon signal of at least 2 bars or able to stream music or videos on a smart phone.
- 2) 120VAC power
- 3) 2" or greater tank to fitting, closest to the center of the tank as possible.
- 4) 14ga 4-wire shielded cable if probe wire extension is needed
- 5) Bolts/nuts or screws, depending on CommBox mounting location, determined by the installer.
- 6) Installation materials tools such as pipe thread sealant, pipe wrenches, conduit, junction boxes (if needed), conduit sealant and seal-off fittings, wire nuts or terminal blocks, drills, electrical screw drivers, misc. tools if needed. (supplied by others)

Installation

Probe Installation

new tank) to find the recommended placement of the probe on the tank. If this is a retrofit or the tank drawing is not available, please locate the probe in a 2" or larger fitting nearest to the center of the tank. If one is not available, please call Highland Tank for assistance. You may also find a video to help with installation at www.highlandtank.com

NOTE: Please refer to the tank drawing (if this is being installed on a

Magnetostrictive Probe



1) Before installing the probe, be sure to inspect the floats for chipping, cracking, or visible damage. Please make sure that the floats freely move along the probe shaft. The float marked H2O should be at the bottom with the arrow pointing up. The fuel float should be on top with the arrow pointing up. If the floats are not in this order, please remove the bottom ring and switch the positions. If floats or other parts are damaged in shipment, please contact Highland Tank for replacements.



2) Check the ring at the bottom of the probe shaft to ensure it is tight. This ring prevents the floats from falling off the probe shaft inside the tank, so it is very important this is on tight. Do not over-tighten the ring, which will cause it to break.

3) Verify the serial number of the probe (printed on the cap of the probe) matches the serial number recorded on the Highland Tank work order. If it does not, please record the serial number from the probe head and have it ready when calling to activate.



4) Measure the length of the probe shaft that will stick up above the top of the tank fitting and any bushings used. It is recommended, but not necessary, to use a riser pipe to protect the exposed probe shaft length, keeping the compression bushing as close to the probe head as possible.

5) Lightly loosen the compression fitting at the top of the probe shaft so that the probe height can be adjusted before installation.

6) Carefully insert the probe into the tank fitting, sliding the probe all the way down into the tank until it touches the bottom.

7) Tighten the reducer bushing into the tank fitting using thread sealant.

8) Slide the probe up through the loosened compression fitting at least 10mm (3/64") so that the probe is not touching the bottom of the tank.

9) Tighten the top of the compression fitting to hold the probe at the appropriate height off the bottom of the tank. The probe should not move up and down.

!IMPORTANT! It is crucial to lift the probe up off the tank bottom at least 10mm (3/64") to allow for the tank to flex without applying pressure to the probe. Applying pressure to the probe shaft will cause the shaft to bend slightly, causing irreversible damage to the internal electronics. Tighten the top of the compression fitting so the probe will not slide back down. Do not overtighten.



1) Always follow local electrical codes when installing electronics.

2) Choose a location to install the CommBox. The enclosure is rated for outdoor installation. It is recommended to install the CommBox so that the overfill & leak alarms on the front of the unit are visible to site personnel and fuel delivery drivers to see and hear the alarms.

3) Mount the CommBox using the supplied mounting tabs. Use appropriate-sized bolts/nuts, mounting screws, or another secure mounting method to attach the CommBox to the desired surface.

a) The CommBox location should not require the wiring from the single probe or the furthest probe in the chain to be longer than 1,000 ft as measured from the probe head to the terminal strip in the CommBox to ensure proper signal strength. The shorter the wire length, the better.

4) Ensure the CommBox mounting location has at least 2 bars of Verizon Cellular service. If not, choose a new location. If cellular service if not available at your location, please call Highland Tank.

5) Ensure that the Door is kept closed and the latches are tight to prevent excess water from entering the inside of the enclosure.

6) If moisture build up from condensation occurs inside the CommBox, a desiccant may be placed in the box to absorb excess moisture.

Wiring Installation

1) Using the wiring diagram printed on the inside of the CommBox door, bring 120VAC power into the box through the supplied cable glands. Land the wires on the provided terminal blocks as indicated by the wiring diagram. Make sure that the internal circuit breaker is turned off (down position) before sending power to the unit from the on-site circuit breaker.

2) The probe is supplied with 2m of 14ga 4-wire shielded cable. The cable is weatherproof and may be used outdoors without being in conduit. It is not recommended to cut the wire that is supplied.

3) For multi-compartment tanks or more than 1 tank using the same system, the probe wiring may be paralleled (sometimes referred to as "daisy-chained") to other probes for ease of installation into one CommBox. Every probe supplied by Highland Tank will have the same 4 wires – red, brown, blue, and white. Wires of the same color should be wired together, either with a terminal strip, wire nuts, or another approved wire joining method to ensure a good connection.

a) One CommBox should not be used for more than two probes together. If more are necessary, please call Highland Tank to discuss options.

4) If extending the wires are necessary, please be sure to use the same color wires for ease of installation. If the same color wires are not available, please note which color probe wire is extended by which color extension wire.

a) **!Important!** Please retain these notes and leave the note inside the CommBox for future reference.

5) Once the probe wiring setup is complete, bring the wires through the second supplied cable gland and land the wires from the probe on the terminal blocks as indicated on the wiring diagram printed inside the door.

a) **!Important!** Do not mix the communication/low voltage wires with high voltage power wires in the same conduit.

6) If the optional interstitial (leak) and overfill sensors are used, those wires may be in the low-voltage conduit with the probe wires. Land the wires for the optional sensors on their respective terminal blocks as indicated by the wiring diagram on the inside of the CommBox door. The interstitial and overfill sensors are float-switch two wire sensors, and do not need shielded cable for wire extensions. Installation of those sensors shall be performed according to the sensor manufacturer's instructions.

Magnetostrictive Sensor Only Power Input - 12-14 Gauge 120v 60 Hz



Initial Power-Up

1) Once all steps above are completed, the system is ready to be powered up.

- 2) First, turn on the on-site power to the system.
- 3) Second, turn on the circuit breaker inside the CommBox.

- 4) You will see several lights inside the box. (show lights & call out)
 - a) The first is the green light on the AC/DC power inverter. Green indicates on and working.
 - b) The other lights will be on the cellular modem. First the initial power lights will come on, and then subsequently the other lights will flash and stay on. The final lights will be the signal lights.

5) While the cellular modem is booting up, unscrew the probe head and check to see that the wires are firmly in place in the green wiring connector, and that the connector is securely in place attached to the board. You will see a steady green light and a flashing red light. All four dipswitches should be pre-set in the down position. If they are not, please take a photo of what you see and contact Highland Tank for further instruction.



System Activation

1) If all the above is completed without issue, the system is ready for activation. Please contact Highland Tank if the above steps could not be completed as instructed.

2) Call Highland Tank and be sure to have the tank work order number, purchase order number, or drawing number ready. If none of this is available, please write down the serial number of the probe and the CommBox and have it ready when calling.

a) The tank work order number is typically available on the signed copy of the bill of lading that was received when the tank was delivered. It can also be found on the silver sticker on one of the tank heads.

3) Please have the site administrator, if possible, call to activate the system. Information about the site such as contact information, emergency contact information, payment methods, and other information will be collected in order to activate the LevelShield Series P System.

Your High-LINK LevelShield Series P is now ready for use.

You will schedule an initial software training at the time of activation with Zachary Pritts from Highland Tank. Please call 814.893.5701 or email zpritts@highlandtank.com for support, help, or questions.

Thank-you for choosing High-LINK LevelShield Series P as your tank level monitoring system!

LevelShield **Series P**

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www.highlandtank.com zpritts@highlandtank.com





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MADE IN

U. S. A.

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