

Prophet™
Wireless Remote Tank Unit

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FCC Statement

The radiated output power of this wireless radio is below the FCC radio frequency exposure limits. Nevertheless, the wireless radio shall be used in such a manner that the Antenna is 20 cm or further from the human body.

The level of energy emitted is less than the electromagnetic energy emitted by wireless devices such as mobile phones. However, the use of wireless radios may be restricted in some situations or environments, such as aboard airplanes. If you are unsure of restrictions, you are encouraged to ask for authorization before turning on the wireless radio.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device must not be allowed to cause harmful interference
- (2) This device must accept any interference that may cause undesired operation

1 4000 Series Introduction

1.1 Overview

The SupplyNet Communications Prophet™ 4000 Series is a wireless communication device that provides quick and easy access to remote information such as storage tank inventory. Intended for supplier-managed inventory programs, the Prophet™ utilizes the latest internet and cellular technology to provide instant access to inventory information around the globe. Coupled with the TankLink® information web site, the Prophet™ can provide a tremendous advantage over conventional systems for inventory management, asset control, or information exchange.

1.2 For Your Safety

This equipment contains a cellular radio which transmits at several times the power of a hand-held cellular phone. While it has been tested to comply with applicable FCC regulations and is approved for use in non-residential applications, it may still interfere with other electronic equipment. Therefore its use in certain situations is restricted.

Read these installation and operation instructions carefully. Failure to follow these instructions may be dangerous or illegal.

Only qualified service personnel must install or repair this equipment.

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2 Theory of Operation

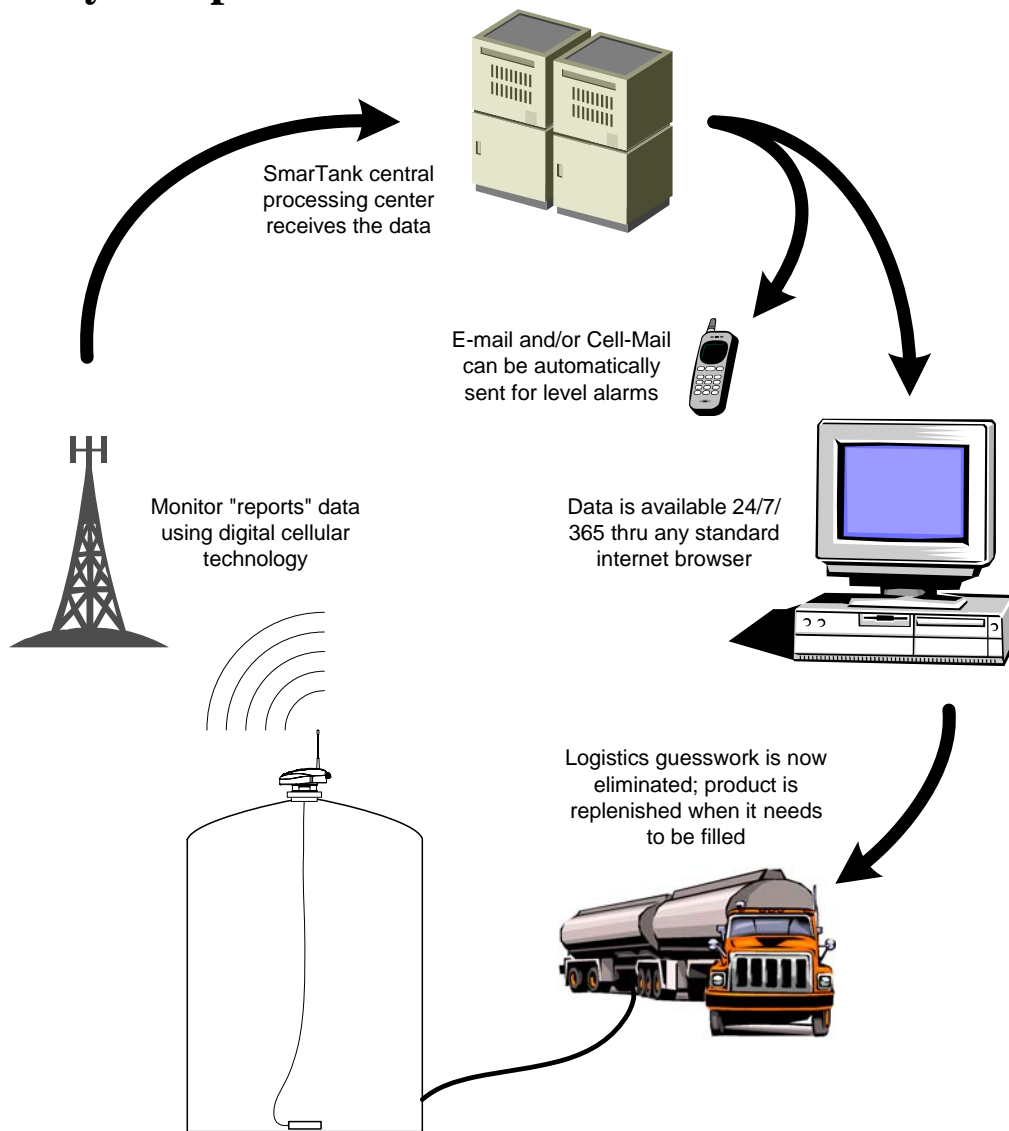


Figure 1

2.1 Transfer of Data

The Prophet™ communicates to the TankLink® data center using a wireless cellular technology called GSM Short Message Service. This technology allows the unit to transmit digital data to the TankLink® data center using the existing network of GSM cellular towers deployed throughout North America. In order to transmit a data packet, the local GSM cellular carrier must provide SMS (Short Message Service). Fortunately, nearly all areas in the United States have at least one GSM SMS enabled carrier. Many regions have two GSM SMS carriers. In these areas, our GSM modem selects the strongest signal automatically. No user selectable carrier is available in this unit. There is no difference in cost using one carrier over the other, unlike cellular telephone rate plans from competing companies. Once the data is at the TankLink® data center, it may be viewed over the internet using a standard web browser (i.e. Microsoft Internet Explorer or Netscape Navigator), downloaded to applications such as Microsoft Excel, or it may be used to trigger events such as an e-mail or page to a local sales or service representative. To access the data provided by the Prophet™ unit, a current monitoring service agreement with SupplyNet Communications is required. For help with accessing the TankLink® web site, see Chapter 5. Since the Prophet™ is a wireless device, care must be taken when installing the unit to minimize interference from nearby equipment or structures. For installation guidelines, please refer to Chapter 2.

2.2 Product Highlights

- No telephone line is required for communication.
- No external power source is required.
- Fast, simple installation.
- Flexible sensing technology.
- Fixed monitoring costs.
- Readily available replacement batteries.
- Unlimited applications.

3 Installation

3.1 Safety Precautions

The Prophet™ uses Radio Frequency (RF) waves for communication to the nearest cellular tower and can transmit at several times the power of a hand-held cellular phone. In general, if you can place a cellular telephone call in the location where you wish to install the unit, then the Prophet should be able to communicate properly. However, because of the inherent characteristics of RF communications, there are certain guidelines that should be followed when positioning the unit.

WARNING!

- **Do not** use the Prophet™ in hospitals or near medical equipment.
- **Do not** install the Prophet™ where hazardous vapors are present.
- **Do not** use the Prophet™ where blasting is in progress.
- Electrostatic discharge can damage sensitive electronic components. Be sure to discharge yourself by touching a grounded metal object before opening the unit.
- The unit should be installed in an area free from overhanging metal structures, large obstructions, or equipment which could generate RF or electrical interference.
- **Do not** install the unit below ground level unless provisions are made for an external antenna.
- Service may be limited in areas that do not have GSM cellular coverage and support SMS (Short Message Service).
- If the unit is installed in an area with poor signal strength, an external antenna may be required for reliable performance. If you have doubt about the suitability of a particular location for the Prophet™, or are having difficulty transmitting, please see Sections 3-2 and 3-3. If an external antenna is required, several optional antennas are available. Please contact SupplyNet Customer Service to determine your exact needs.

3.2 Initial Inspection

When you receive the Prophet™ unit, thoroughly inspect it for any damage which may have occurred during shipping. If there is any damage to the Prophet™, contact the shipping company as soon as possible. Locate the packing checklist in the shipping container. Check for any missing items before you begin installation of the Prophet™.

Note: The Prophet™ is shipped with the antenna disconnected. It is located in a separate area within the shipping carton. Verify that the antenna is present before proceeding.

Tools Required for Installation:

- 3/16" Flat screwdriver
- Large adjustable wrench

3.3 Stainless Steel Tank Preparation

Please check the following before installation of the Prophet:

- A 2-inch diameter threaded opening is required for the installation of a Prophet. Stainless Steel tanks are typically built with one or more 2-inch threaded “bung” opening. The tank’s vent line can be modified to provide both tank venting and access for the Prophet, if the vent is the only 2-inch threaded opening available. Refer to the procedure below for the installation into a vent line.
- For Differential Pressure Prophet installations, verify that there is no mechanical agitation device within the tank which could damage the sensor.
- For Ultrasonic Prophet installations, verify that there are no obstructions within the tank which could alter the ultrasonic readings.

NOTE: The following procedure can only be used with a Differential Pressure Prophet. Ultrasonic Prophet’s must be installed directly into a bung opening.

3.4 Installation into a Vent Line

The following tools are required to complete this procedure:

- Two Pipe Wrenches
- 2-inch Vent Kit consisting of either non-metallic or Stainless Steel material
- one 2-inch Tee
- one 2-inch 90 Elbow
- two 2-inch Close Nipple

- 1) Using the two pipe wrenches, remove the existing vent assembly from the top of the tank.
- 2) Assemble the Vent Kit items in the manner shown in Figure 2.
- 3) Install the existing vent assembly onto the 90 Elbow as shown in Figure 2.
- 4) Install the Differential Pressure Prophet onto the top of the Tee as shown in Figure 2.

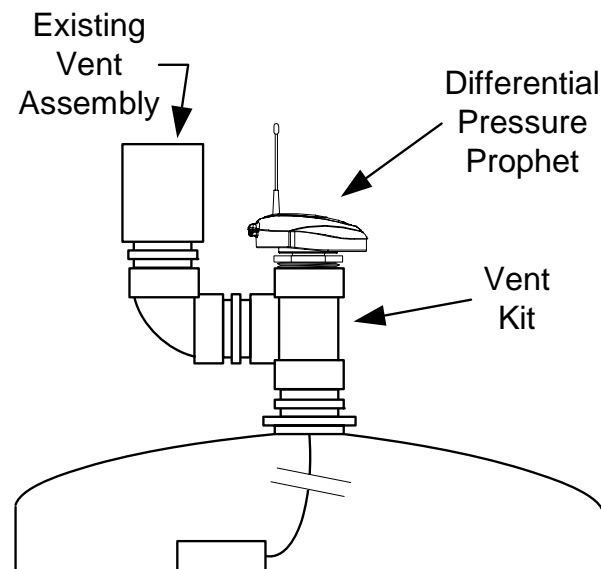


Figure 2
Vent Kit Installation

3.5 Poly Tank Preparation

Please check the following before installation of the Prophet:

- A 2 inch diameter threaded opening is required for the installation of a Prophet. If the tank does not have a threaded opening available, a hole must be cut into the top of the tank. Refer to the procedure below for the installing a plastic bung kit.
- For Differential Pressure Prophet installations, verify if a mechanical agitation device exists within the tank, which could damage the sensor.
- For Ultrasonic Prophet installations, verify no obstructions exist within the tank which could alter the ultrasonic readings.

3.6 Installing a Plastic Bung Kit

The following tools are required to complete this procedure:

Plastic bag for catching debris

Duct tape

Drill with a 3-inch holesaw bit

2 inch Plastic Bung Kit

- 1) Open the manway at the top of the tank.
- 2) Open the plastic bag and secure the opening to the approximate center where the hole will be drilled. The bag will catch any debris created by the holesaw while drilling the bunghole.
- 3) Using the drill and 3-inch holesaw bit, drill thru the plastic tank.
- 4) Once the hole is cut, remove the garbage bag. Use care in removing the bag and duct tape off the inside surface of the tank.
- 5) The 2 inch Plastic Bung Kit may now be installed. The Bung need only be tightened by hand. Refer to Figure 3 for proper assembly.

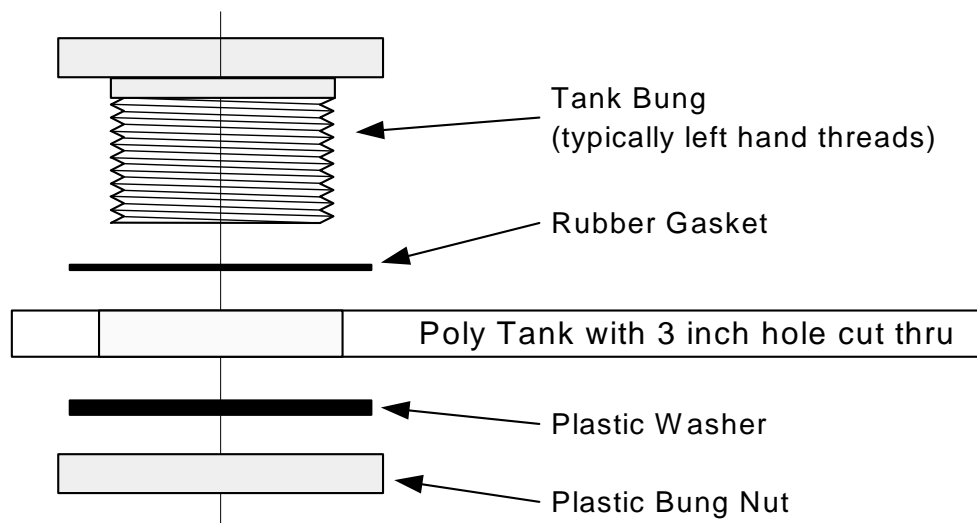


Figure 3
Plastic Bung Kit Installation

3.7 Mounting an Ultrasonic Unit

Ultrasonic Prophets operate using sound wave technology, which pulses sound waves from the bottom of the Prophet downward into the tank. A microprocessor measures how long it takes for the sound wave to bounce off the liquid level in the tank and return to the Prophet.

The transmitting and receiving of the sound waves take place from the bottom of the Prophet. Therefore, the location of the Prophet bottom in relation to the opening of the tank is critical.

CAUTION:

The bung opening must be plumb in reference to the overall tank.

The distance from the top of the bung opening to the inside surface of the tank can be no greater than 1.0 inch. Refer to Figure 4.

The bung opening must be at least 1/3 the overall tank diameter away from the tank edge. For example, if the tank diameter is 90 inches, the bung opening must be at least 30 inches from the tank edge. Refer to dimension 1 of Figure 5.

The distance from the top of the bung opening to the very bottom of the tank can be no greater than 144 inches. Refer to dimension 2 of Figure 5.

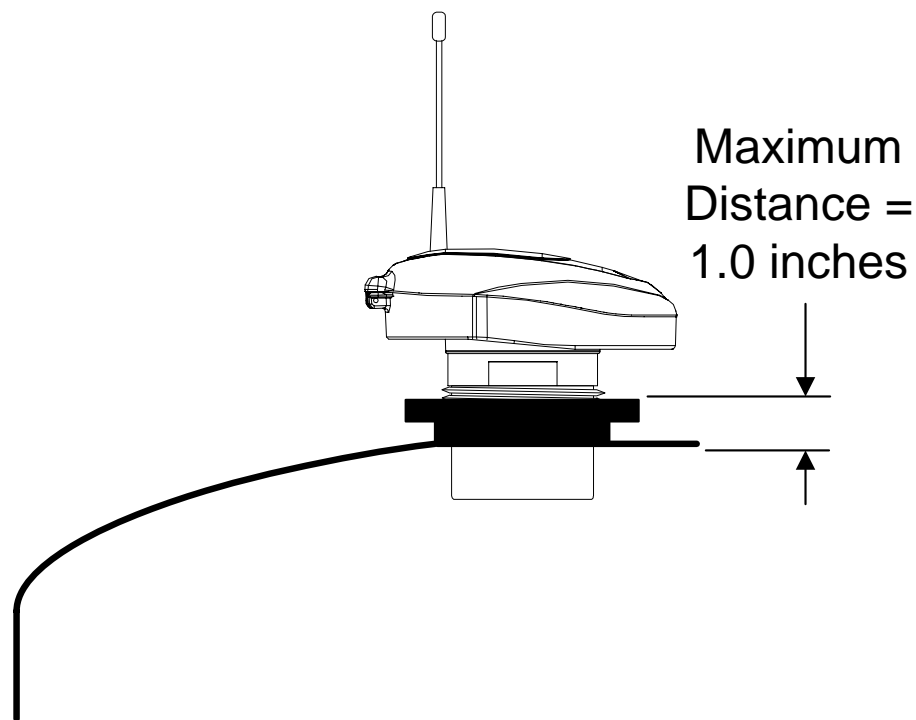


Figure 4

3.8 Ultrasonic Prophet Bung Distance

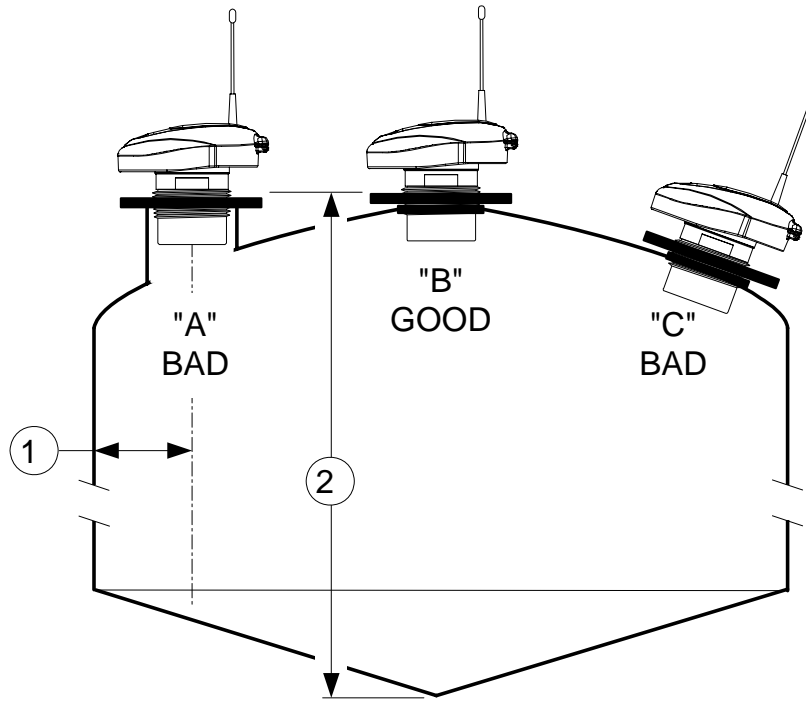


Figure 5

3.9 Ultrasonic Prophet Installations

“A” is NOT a good installation, since the bung opening is less than 1/3 the tank diameter away from the edge of the tank. In this example, a Differential Pressure Prophet will have to be used instead of the Ultrasonic Prophet.

“B” is a GOOD installation. The bottom of the Prophet is into the tank, and the Prophet is mounted plumb and close to the center of the tank.

“C” is NOT a good installation, since the Prophet cannot be mounted plumb. In this type of installation, the ultrasonic signal will not bounce directly from the product back to the sensor, but will instead bounce around the inside of the tank, causing inaccurate or even no reading. In this example, a Differential Pressure Prophet will have to be used instead of the Ultrasonic Prophet.

NOTE: For installation geometry other than those shown, contact SupplyNet Communications customer service.

Once the bung opening is verified to be a good Ultrasonic installation, ensure the bung threads have not been compromised. The Ultrasonic Prophet is now ready to be placed into service.

3.10 Mounting a Differential Pressure Unit

Differential Pressure Prophets operate by measuring the pressure (weight) of the liquid the sensor is submerged into. This pressure is proportional to the density of the liquid.

The opening on the end of the sensor contains an exposed diaphragm which responds to changes in liquid pressure as the tank is filled or emptied with product. This measured pressure is compared against atmospheric pressure, and is converted to a readable signal by a microprocessor in the Prophet.

Please note that the sensor and sensor cable must be clean when installed, to avoid contamination of the contents of the tank. These tanks are inspected for product contamination, and the Prophet installation cannot compromise the product in the tank.

Care must be taken before and during installation to not strike the sensor against any stationary surface. This can frequently occur during installation of the probe into the tank. Shock may damage the probe causing it to fail prematurely.

CAUTION:

- **Do not** install the sensor in a liquid that is susceptible to freezing or at the bottom of a tank with water in it that may freeze. If the liquid freezes, it will damage the probe which will not be covered under warranty.
- **Do not** install the sensor in a tank with a mechanical agitator.
- **Do not** drop or strike the sensor against a solid object. This may damage the sensor or cause a shift in the output of the probe.
- **Do not** kink the probe cable. This could restrict the breather tube in the cable and cause fluctuating readings.
- **Do not** install the sensor where sludge or sediment can clog the probe opening. If necessary, suspend the sensor above the maximum level of the sediment.
- **Do not** cut the sensor cable. The length is not user-adjustable and this will void the warranty.
- **Do not** use the Prophet housing to screw the unit into the tank. Use only the wrench flats on the bottom fitting.

Typically there will be more cable than what is required for the sensor to reach the bottom of the tank. If this “slack” cable can cause a problem, it should be looped and secured using plastic or non-metallic ties, so the loop will not come apart. A correct installation will result in the sensor just slightly resting at the bottom of the tank, with all excess slack secured in the loop. There should not be enough excess cable for the sensor to enter into the discharge piping. Refer to Figure 6. Verify that the sensor and cable

slack loop can pass thru all plumbing without having to disassemble the plumbing. Ensure the threads at the Prophet mounting point have not been compromised. The Differential Pressure Prophet is now ready to be placed into service.

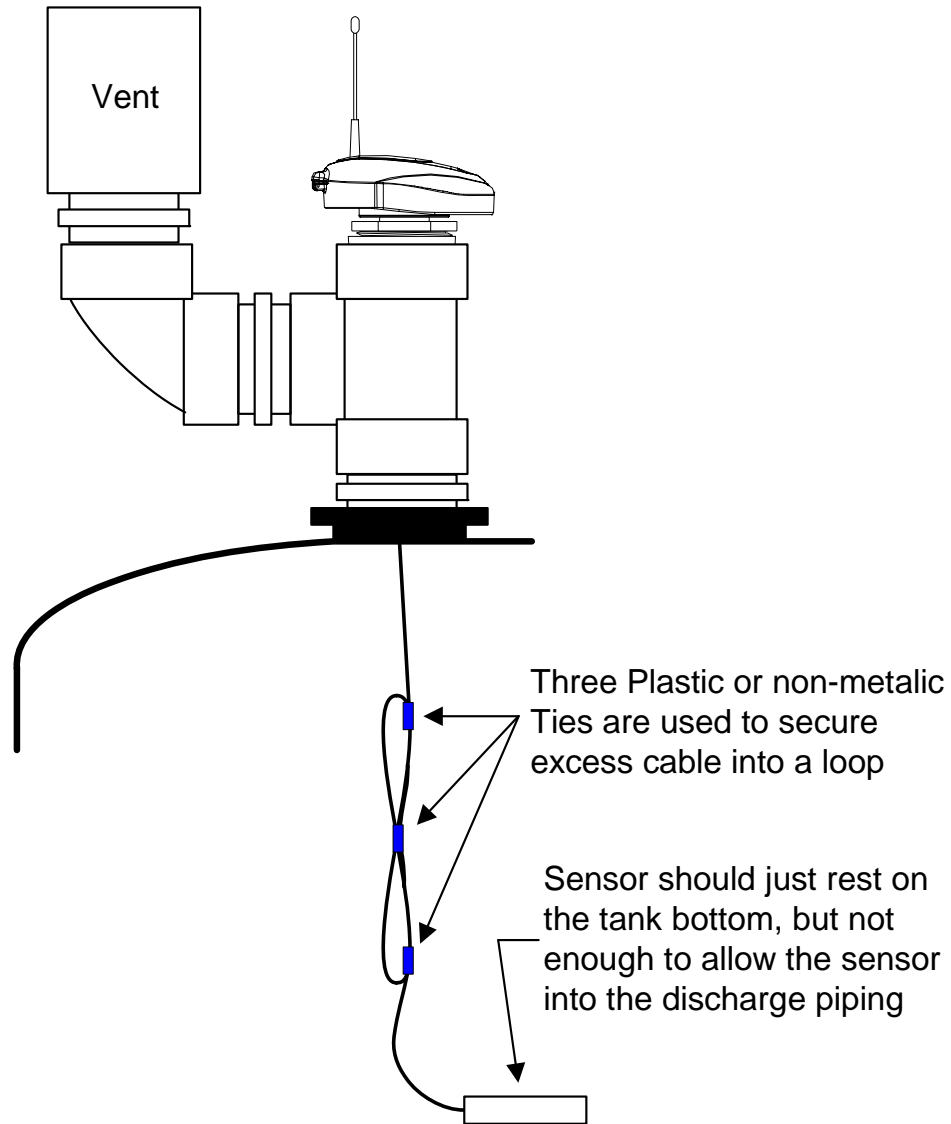


Figure 6
Pressure Differential Prophet Installation

3.11 Tank Measurements

Accurate tank measurements are required to properly complete the installation process. The Prophet can easily determine the product level, however, accurate tank dimensions are required to convert a measured product level into a calculated product volume.

Figure 7 illustrates tank terminology used for the calculation of the capacity of the tank. Tank capacity is typically the tank volume up to the “Top Tangent Line”. Any dome or dish on the top of the tank is not included in the capacity determination.

The orientation of the tank below the “Bottom Tangent Line” can greatly affect the product volume calculation. The distance below the bottom tangent line is measured by first measuring the distance from the bottom tangent line to the ground, then subtracting the distance from the ground to the absolute bottom of the tank.

Some tanks have a small cube “Box” at the very bottom of the tank, typically at the bottom of a cone. This box can be easily measured and depending on the size of the box, can affect product volume calculation.

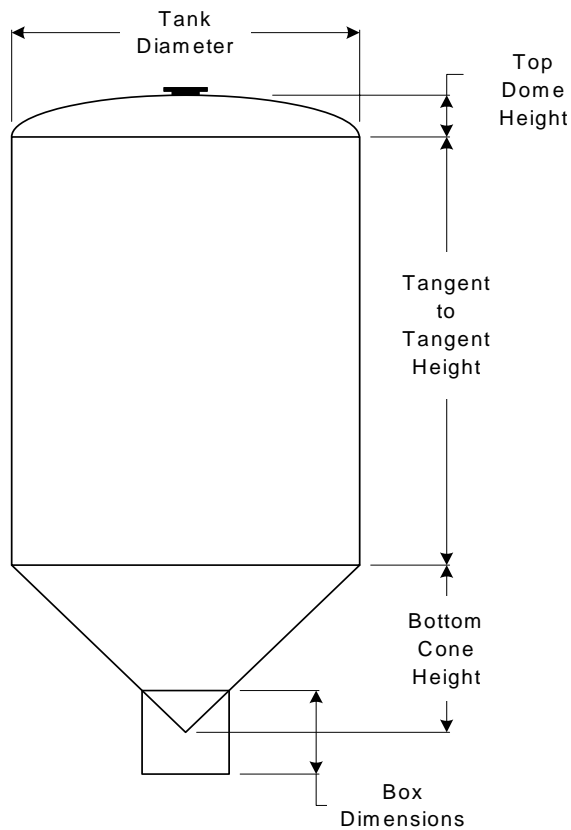


Figure 7
Typical Tank Measurements

Mounting an Uplink Unit

The Prophet Uplink Unit comes standard with a 3/4 inch female NPT connection on the bottom of the housing for direct connection into standard instrumentation. The wiring will pass thru this 3/4 inch connection to the terminal strip.

Wiring the Current Loop

The wiring for the current loop passes thru the bottom of the housing, thru the hole in the electronics board, and connects at terminal strip J3. Refer to Figure 8.

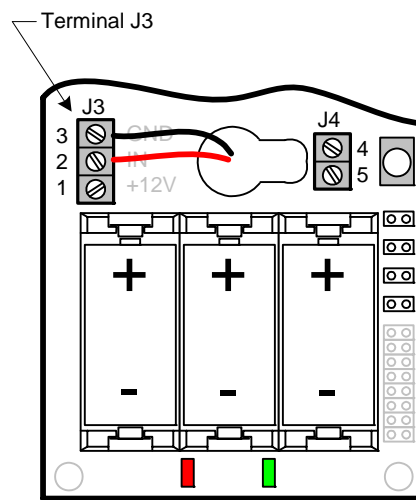


Figure 8
Uplink Terminal Strip J3

Uplink units will come from the factory with the wiring connected to IN and GND, which is correct for applications where there is an existing powered current loop. For applications where the Uplink will be powering the current loop, the wiring needs to be moved to +24 and IN. Refer to the three illustrations below for three wiring configurations.

3.12 Uplink Unit Providing Current Loop Power

In this scenario, the Prophet Uplink is providing the power for the sensor thru the current loop. Typically the Prophet Uplink is mounted directly to the sensor using a 3/4-inch NPT connection. The Uplink can supply no more than 24 mA to the sensor. Please note the return wire is connected to JP3 - 2 (IN), and not to GND. The electronics of the Uplink unit route the return to ground internally.

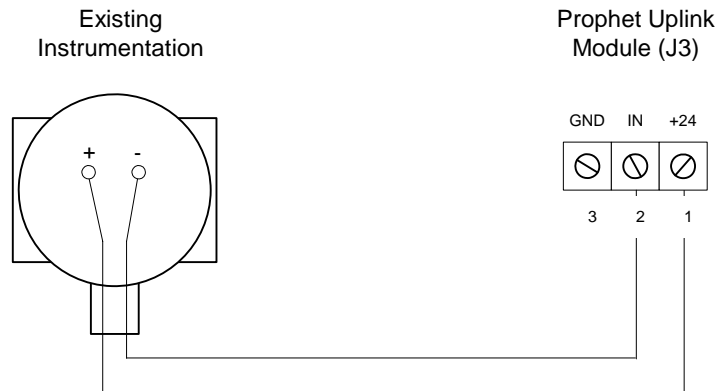


Figure 9
Uplink Providing Current Loop Power

3.13 Uplink Unit Placed in Series with Existing Current Loop (Between +24VDC and existing instrumentation)

In this scenario, the Prophet Uplink is wired into an existing, established current loop on the positive side (between the current loop source and the instrumentation).

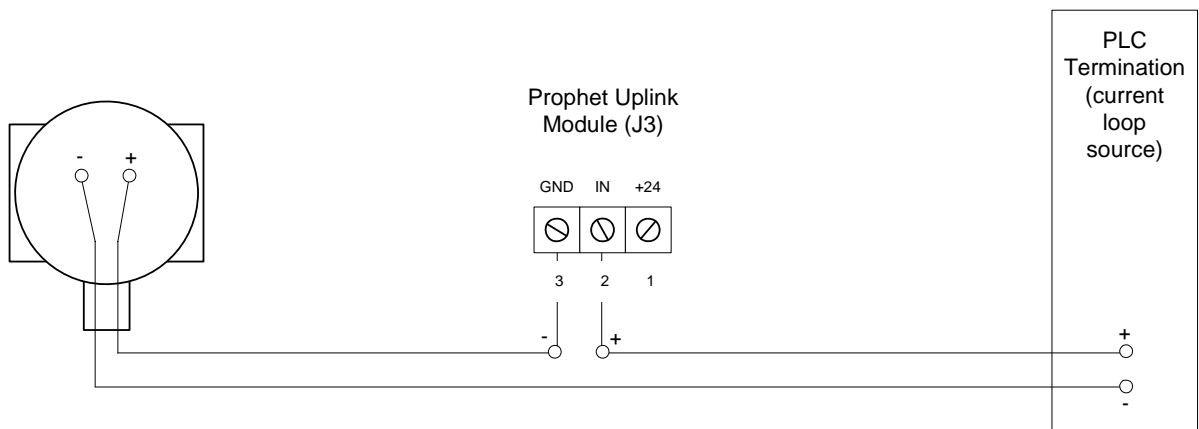


Figure 10
Uplink Installed in an Existing Current Loop

3.14 Uplink Unit Placed in Series with Existing Current Loop (Between existing instrumentation and return)

In this scenario, the Prophet Uplink is wired into an existing, established current loop on the return side (between the instrumentation and ground).

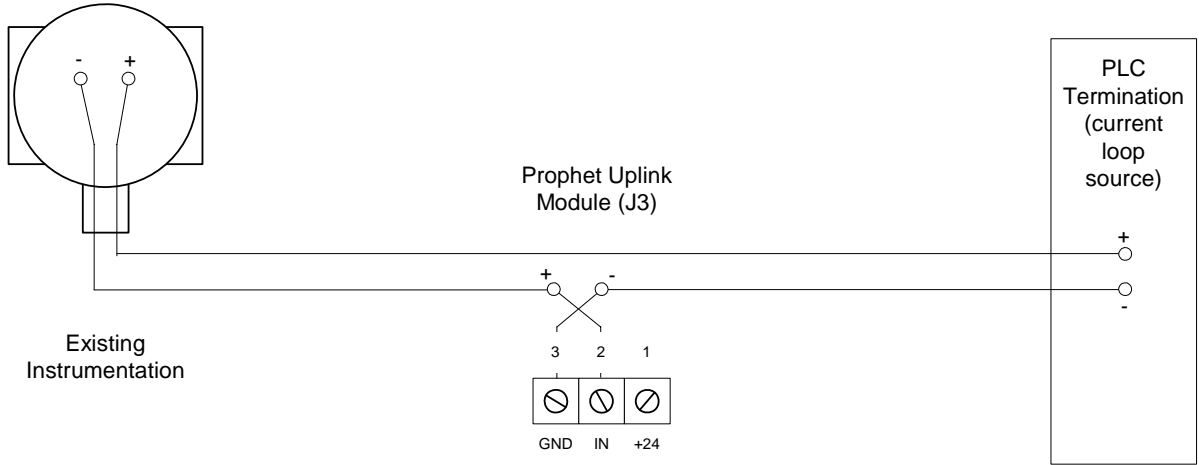


Figure 11
Uplink Installed in Existing Current Loop Return

4 Unit Activation

4.1 Verifying GSM Signal Strength

During installation, you can determine your GSM signal suitability by operating a GSM cellular phone and confirming its operation capability by placing a call.

4.2 Amplifying a Weak Carrier Signal

If the signal strength is weak as indicated by Error Code 7 in Section 7.1, or if data transmissions are intermittent, an external antenna can be used as a replacement to the small antenna supplied with the Prophet. The external antenna connects directly to a Prophet with no adapter connector necessary, thereby improving the antenna's performance. Please contact SupplyNet Customer Service at **1-888-TANKLINK** for the available and supported external antenna options. The following outlines the most common external antenna installation steps.

- 1) Position the external antenna at a location within cable reach of the Prophet's installation and attach it to the Prophet replacing the small antenna.
- 2) Holding the external antenna at the same location where the Prophet is installed (typically the top of the tank).
- 3) Test unit by initiating a data transmission with the external antenna, and observing the Error Code output in Section 7.1.
- 4) If the above test doesn't produce any Error Codes as defined in Section 7.1, proceed to the next step. If the Error Code 4, Error Code 7 or Error Code 8 still appears, see if the external antenna can be moved to a different location, possibly outside the building or higher into the buildings roof.
- 5) Secure the external antenna using either the magnetic base, or the clamp base supplied with the antenna.

4.3 Setting the Number of Callouts per Day

The Prophet can be jumper set to transmit the current data once every 8 hours, or once every 24 hours. The first callout is set when the white button is pressed for a forced transmission.

For instance:

The white button is pressed during commissioning at 9:00 am. For a transmission every 24 hours, an automatic reading will be transmitted every day at 9:00 am. For a transmission every 8 hours, the reading will be transmitted at 9:00 am, 5:00 pm, and 1:00 am.

CAUTION:

If you set the number of calls to a number greater than the number of calls included in your service agreement, then an additional fee will be charged for each call above your allotment.

Jumpers J1 and J2 within the Prophet control the number of callouts. The table below describes the four possible combinations:









| | | | |
|----|---|------------|---|
| J1 |  | OFF | One data transmission per 24 hours. |
| J2 |  | OFF | |
| J1 |  | OFF | One data transmission per 24 hours, plus data transmission upon a 3% change in product level based on sensor range. |
| J2 |  | ON | |
| J1 |  | ON | Three data transmissions per 24 hours. |
| J2 |  | OFF | |
| J1 |  | ON | One data transmission every hour. (for factory testing only) |
| J2 |  | ON | |

Figure 12 illustrates the location of Jumpers J1 and J2.

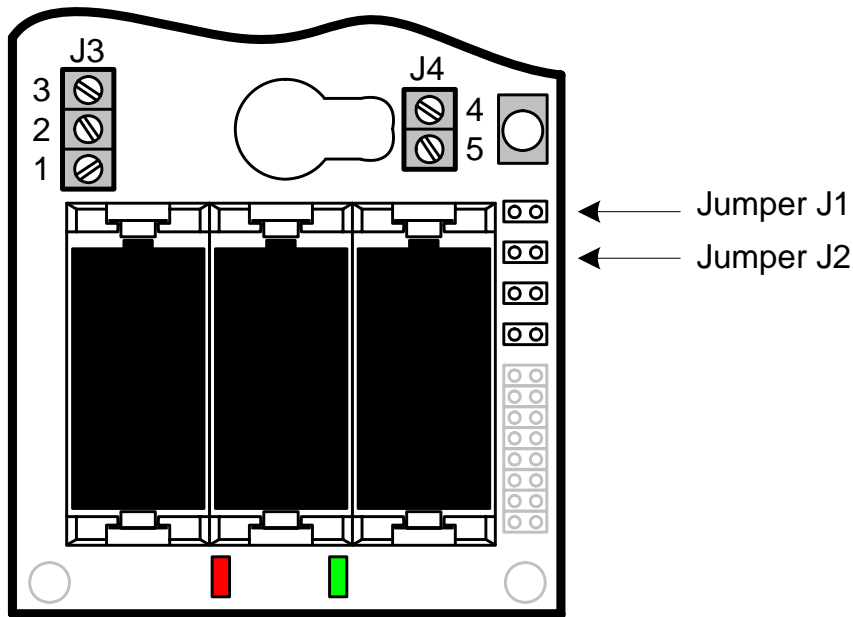


Figure 12
Jumper Locations

4.4 Establishing Communication

Once all tank preparation has been completed, the Prophet is properly mounted to the tank, the GSM SMS (Short Message Service) is available, signal strength has been verified and amplified (if necessary), and the number of callouts per day has been properly set, it is now time to establish communications with the SupplyNet Monitoring Center.

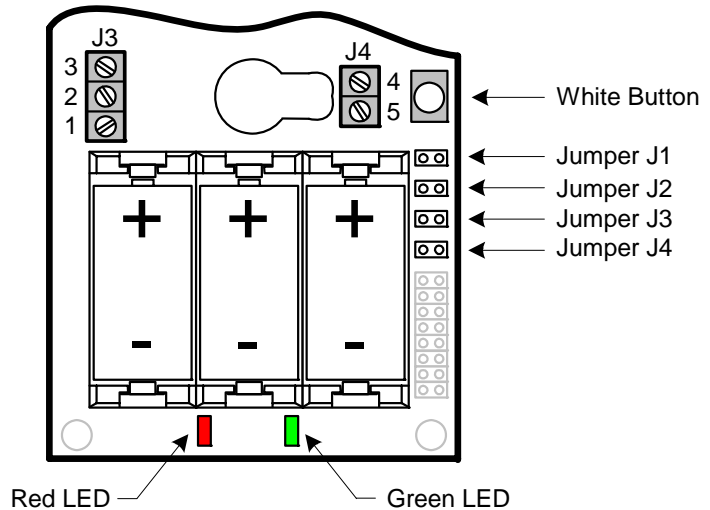
- 1) Open the top cover of the Prophet opened by loosening the screw at the front of the lid using a 3/16" flat screwdriver. Insert the three batteries into the battery holders at the inside-front of the housing.
- 2) Verify that the Prophet's antenna is pointing straight up.
- 3) Press the white button on the right side of the unit. A green LED will light up at the inside front of the housing.
- 4) The green LED will flash fast (half second ON, half second OFF).
- 5) Once a cellular network is found, the green LED will flash slow (one second ON, one second OFF).
- 6) The green LED will go to solid ON for about 60 seconds while the unit is transmitting data to the TankLink[®] Monitoring Center.
- 7) After a successful transmission, the green LED will flash and then go out. The Prophet is now in sleep mode, and will remain in sleep mode until the next scheduled transmission time (determined by Jumpers J1 & J2 – Number of Callouts per Day), or until the white button is pressed again.

- 8) If the data transmission was not successful, a red LED will light and the green LED will flash an error code. Refer to Section 8-1 of this manual for information on the error codes.
- 9) Contact SupplyNet Customer Service at **1-888-TANKLINK** to verify a successful data transmission, and to verify tank information.
- 10) Secure the top cover. **Do not over tighten the screw.**

4.5 Normal Operation

After communication has been established, and the tank information has been given to the SupplyNet Monitoring Center, the Prophet will continue to transmit data based upon the number of callouts per day set.

This tank data can be accessed thru the internet. Refer to Chapter 5 of this manual for information on accessing this data.



The real power behind the TankLink[®] Inventory management system is the TankLink.com web site. On this web site, you may view the current level and status of your devices using a standard web browser (i.e. Microsoft Internet Explorer[®] or Netscape Navigator[®]), download your historical data to applications such as Microsoft Excel[®], or set up alarm levels to automatically trigger events such as an e-mail or page to a local service or sales representative. On this web site you may also check to see if GSM SMS (Short Message Service) is available in your area of the country. The TankLink.com web site is a secure web site which utilizes the latest in internet encryption technology to ensure that your data stays confidential. It is constantly being upgraded and new features are being added periodically. To obtain the latest details on how to use the new features of the web site, follow the links to the help section of the web site. Additionally, you may also visit the following Web Sites to verify GSM coverage by Zip Code in your area by these providers – <http://www.cingular.com/coverageviewer> and <http://www.t-mobile.com/coverage/>.

5 Accessing the TankLink Web site

The web site for accessing the tank data may be accessed from any computer with internet access by going to the following URL:

<http://www.tanklink.com>

This will bring you to the SupplyNet Communications tank data Logon page.

To view your data on the web you must first have a Logon and Password. A Logon and Password will be provided to you or to your representative when the service agreement with SupplyNet Communications is finalized. If you have forgotten your logon or password or need a new one, please contact the SupplyNet Customer Service at **1-888-TANKLINK**.

Once a valid logon and password have been entered, you may select which tanks to view. Tanks may be viewed by geographical location, product type, region, etc. Once the tank levels are viewed, detailed information for each tank may be viewed, edited, or the historical data for the tank may be viewed.

When a unit is sold by SupplyNet Communications, a default tank entry is set up on the web site and it is assigned to the logon. When the unit is installed, the pertinent information will need to be set up on the web site by the customer. This includes: Tank Name, Product type, Tank Location, Contact information, etc.

6 Prophet Specifications

Performance Specifications:

| | |
|--|------------------------------------|
| Output Voltage | Nominally 24V \pm 5% |
| Output Current | Rated from 0 – 24 mA |
| Load Regulation | 0.5% from a 24 mA load |
| Ripple | 50 mV Peak-to-Peak |
| Output Short Circuit Protection | Output is current limited to 24 mA |
| Accuracy | \pm 1% of Span |

Hardware Specifications:

| | |
|-------------------------------------|--|
| Differential Pressure Sensor | SS316; 1 inch (25 mm) OD x 3 inch (76 mm) length; 0-30 psi (0-2.1 kg/cm ²) operating range for 34 ft (10.3 meter) cable; 7.5 psi (0-0.53 kg/cm ²) for 17 ft (5.1 meter) cable. 2" Polypropylene NPT fitting. |
| Ultrasonic Sensor | PVDF Kynar construction exposed to wetted portion of the tank. |
| Housing | NEMA 4X; weatherproof; UL approved (UL94HB); glass-filled nylon |
| Area Classification | General Purpose environment |
| Unit Gross Weight | With Ultrasonic Level Sensor: 2.0 lbs (0.91 kg) With 7.5 psi range Submersible Differential Pressure Sensor: 2.1 lbs (0.95 kg) With 15 psi range Submersible Differential Pressure Sensor: 2.6 lbs (1.18 kg) |

Battery:

| | |
|------------------------------|--|
| Type | Three Replaceable Lithium-Ion Batteries (CR-123A) |
| Expected Battery Life | One call out per day – up to 3 years Three call outs per day – up to 1 year |

Environment:

| | |
|------------------------------------|--------------------------------|
| Storage Temperature Range | -40°F to 185°F (-40°C to 85°C) |
| Operating Temperature Range | -22°F to 167°F (-30°C to 75°C) |

6.1 Antenna Connector

| | |
|------------------------|--|
| Type | Standard SMA |
| Frequency Bands | 850 (824 – 894) MHz 1900 (1850 – 1990) MHz |

7 Servicing and Troubleshooting

7.1 Error Codes

If the data transmission was not successful from a Prophet, a red LED will light and the green LED will flash an error code.









| Number of Red Flashes | Error Code Description |
|-----------------------|--|
| 1 | Internal Hardware Error: Prophet could not initialize properly due to an internal hardware error. If this problem continues, replace the Prophet unit. |
| 2 | Low Battery Voltage: Prophet could not transmit due to a low battery voltage. Replace the batteries and re-try a data transmission. |
| 3 | Radio Error: The Prophet's wireless transmitter did not power on properly. Re-try a data transmission. If this problem continues, replace the Prophet unit. |
| 4 | Cellular Service Error: The unit did not detect cellular service. Verify that there is service in the area using the technique in Section 4.2 or check GSM coverage information on Web Sites in Section 4.6. Ensure that the antenna is tightly connected to the unit and is vertical. If still not successful, contact SupplyNet Customer Service for confirmation of data channel availability. |
| 5 | Cellular Busy Error: The Prophet could not transmit because the cellular network is busy. Re-try data transmission. |
| 6 | Radio Respond Error: The Prophet's wireless transmitter did not respond to the command to transmit data. Re-try a data transmission. If this problem continues, replace the Prophet unit. |
| 7 | Low RSSI Error: The data transmission failed due to low signal strength Error Code 7 in Section 7.1. Apply the technique indicated in Section 4.3 to establish the best location for an external antenna to improve the signal strength. |
| 8 | Failed Transmission Error: The data transmission failed. Insert new batteries into the unit and re-try a data transmission. If this problem continues, contact SupplyNet Customer Service. |
| 9 | Radio Error: The Prophet's wireless transmitter did not initialize properly. Re-try the data transmission. If this problem continues, replace the Prophet unit. |
| 10 | Memory Error: The Prophet's memory has been corrupted. If this problem continues, replace the Prophet unit. |

7.2 Jumper Settings

There are four jumpers located in the Prophet (J1 thru J4). Below are the descriptions:

| | |
|-----------|--|
| Jumper J1 | In combination with J2 sets up the frequency of daily call-outs if present (Refer to Setting number Callouts Section). |
| Jumper J2 | In combination with J1 sets up the frequency of daily call-outs if present (Refer to Setting number Callouts Section). |
| Jumper J3 | Designated for RF Channel selection for the RF LAN (Client/Host) function in conjunction with J4. |
| Jumper J4 | Designated for RF Channel selection for the RF LAN (Client/Host) function in conjunction with J3. |

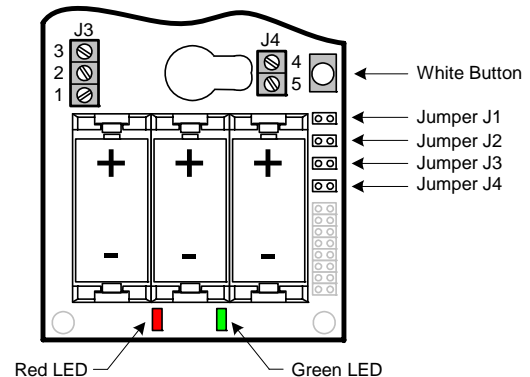
Jumpers J1 and J2 are used together to determine the number of data transmissions per 24 hour period. The table below illustrates the four combinations possible:

| | | | |
|----|---|------------|---|
| J1 |  | OFF | One data transmission per 24 hours. |
| J2 |  | OFF | |
| J2 |  | OFF | One data transmission per 24 hours, plus Event Driven. The monitor “wakes up” every three hours and takes a level reading. If there is a 3% change in product level, the monitor makes an additional data transmission. |
| J4 |  | ON | |
| J1 |  | ON | Three data transmissions per 24 hours. |
| J2 |  | OFF | |
| J1 |  | ON | One data transmission every hour. (for factory testing only) |
| J2 |  | ON | |

7.3 Battery Replacement

The Prophet tank monitor operates on 3 CR-123A disposable lithium batteries. The Prophet estimates the remaining battery life using a sophisticated algorithm based on the battery voltage and temperature, cellular signal strength and the number of transmissions and retries that the unit has made. This estimate is transmitted to the TankLink monitoring center and displayed on the internet. The procedure below outlines the steps necessary to change dead batteries.

1. Carefully loosen the captive screw at the front of the housing using a 3/16" flat screwdriver, then lift the top cover to expose the electronics and batteries.
2. Remove all three batteries from the battery holder. Wait 30 seconds to allow the Prophet memory to initialize. Install three new batteries, making sure the positive end of each battery is towards the back of the electronics.
3. Press the white Start button on the right side of the Prophet. The green LED will begin flashing.
4. The green LED will stay on solid approximately 70 seconds while the unit is transmitting data to the TankLink data center.
5. After a successful transmission, the green LED will flash and then go out. The Prophet is now in sleep mode, and will remain in sleep mode until the next scheduled transmission time (determined by Jumpers J1 & J2 – Number of Callouts per Day), or until the Start button is pressed again.
6. If the data transmission was not successful, the red LED will light and the green LED will flash an error code. Refer to Section 8-1 of this manual for information on the error codes.
7. Once the unit has finished transmitting, call SupplyNet Customer Service at **1-888-TANKLINK** to verify that the transmitted data is correct and that the battery indicator on the internet is at 100% full.
8. Secure the top cover. **Do not over tighten the screw.**



7.4 Troubleshooting

Nothing happens when the Start switch is pressed.

- ✓ Remove all of the batteries. Wait 30 seconds to initialize the Prophet memory and then reinsert the batteries. If the green LED does not come on when the switch is pressed, replace the batteries with new ones.

Unit cannot transmit to data center.

- ✓ Verify that the RSSI is greater than 20.
- ✓ Verify that there is GSM SMS (Short Message Service) on the side selected in the carrier preference setting.
- ✓ Check for interfering structures such as tanks, buildings, or large equipment.
- ✓ Reposition the unit if possible.
- ✓ Check that the antenna connection to the unit is tight.
- ✓ Verify the Serial Number of the unit on the web site.
- ✓ Use an external antenna.

The level reading is incorrect.

- ✓ Normally, all of the sensor parameters are set up by your TankLink account representative when the tank is initially configured. On rare occasions, the information may not be correctly entered. If you have verified the tank information and the tank level is still incorrect, there may be several causes for the incorrect reading. If it is a differential pressure sensor, verify the settings for the probe offset and the SGU. Either one of these settings may cause the reading to be off. If this is a 4-20mA current loop sensor, verify the 4mA and 20mA settings. If either of these settings is incorrect, then the level that is calculated from the sensor data will be wrong.
- ✓ Verify the tank height.

The level reading is correct but volume is off.

- ✓ Verify the tank capacity. This should be the volume in the tank at the tank height. If the tank has a slight cone top but a standard vertical strapping chart is used, then the tank height should be only to the shoulder of the tank.
- ✓ Verify that the correct strapping chart is used.

The unit has stopped calling.

- ✓ Replace the batteries.
- ✓ Ensure that the antenna is tight and vertical.

7.5 Obtaining Technical Support

If you still are having trouble, contact SupplyNet Customer Service at:

1-888-TANKLINK (1-888-826-5546)

You will need the following information:

- Prophet Serial Number (label on the bottom of the unit or on the inside of the unit).
- Tank location (city/state).
- Tank product

REMEMBER:

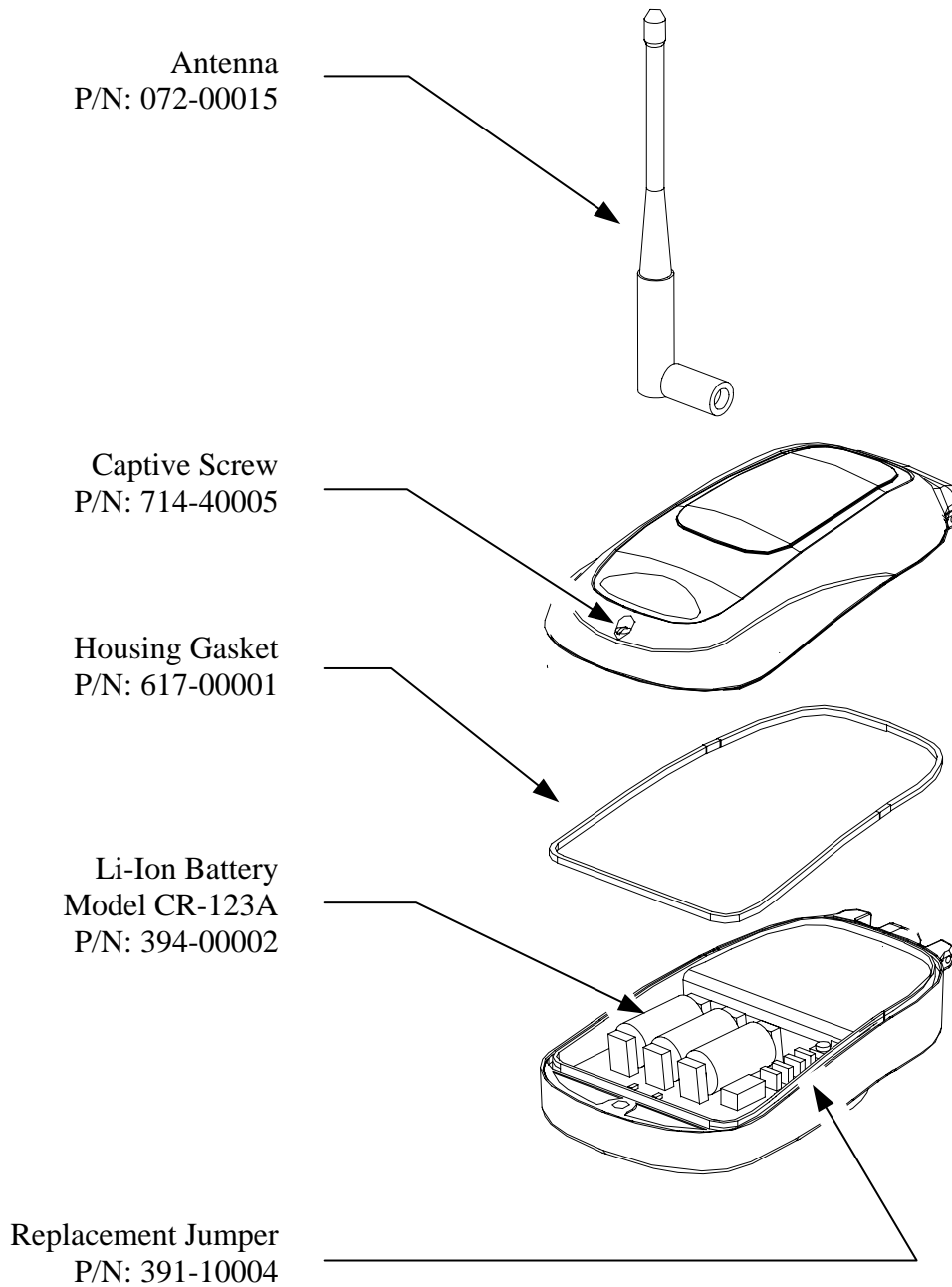
For security reasons, no one from SupplyNet Communications will ever ask you for your logon or password.

If it should be necessary to return this unit to SupplyNet Communications for service:

- 1) You must first obtain a Return Authorization Number from SupplyNet Communications.
- 2) This number must be clearly marked on the outside of the shipping container and on the service card which was supplied with the unit.
- 3) Place the unit with the service card in the original container and ship it prepaid to the address on the service card.

8 Replacement Parts

The following parts are field replaceable and can be purchased thru SupplyNet Customer Service at **1-888-TANKLINK**.



9 Ordering Information

| | | | | | | | | | | | |
|--|--|------------------------------------|--------------------------|-----------------------|--|--|--|--|--|----------------------|--|
| Code Remote Wireless Transmitter | | | | | | | | | | | |
| 40 | Battery Powered Instrument/Sensor Remote Transmitter Interface w/ 3/4" FNPT process connection | | | | | | | | | | |
| Code Remote Wireless Transmitter Sensor Options | | | | | | | | | | | |
| | 10 | UpLink Module – no sensor included | | | | | | | | | |
| Code Data Communication | | | | | | | | | | | |
| | | E | GSM (Europe) | | | | | | | | |
| | | G | GSM (US) | | | | | | | | |
| | | L | 900 MHz FHSS | | | | | | | | |
| | | M | Control Channel Cellular | | | | | | | | |
| Code Input Type | | | | | | | | | | | |
| | | | 0 | 4-20 mA Current Input | | | | | | | |
| | | | 1 | 0-5V Voltage Input | | | | | | | |
| Code Reserved | | | | | | | | | | | |
| | | | 000 | Reserved | | | | | | | |
| 40 | 10 | M | 0 | 000 | | | | | | Typical Nomenclature | |

| | | | | | | | | | | | |
|--|--|---|--------------------------|--|---|---|---|-----|---|-----|----------------------|
| Code Remote Wireless Transmitter | | | | | | | | | | | |
| 40 | Battery Powered Remote Tank Unit w/ 2" MNPT process connection | | | | | | | | | | |
| Code Remote Wireless Transmitter Sensor Options | | | | | | | | | | | |
| | 20 | Integrated Differential Pressure Sensor | | | | | | | | | |
| Code Data Communication | | | | | | | | | | | |
| | | E | GSM (Europe) | | | | | | | | |
| | | G | GSM (US) | | | | | | | | |
| | | L | 900 MHz FHSS | | | | | | | | |
| | | M | Control Channel Cellular | | | | | | | | |
| Code Sensor Construction | | | | | | | | | | | |
| | | | S | Stainless Steel | | | | | | | |
| | | | T | Titanium | | | | | | | |
| Code Pressure Range | | | | | | | | | | | |
| | | | 000 | Pressure Range in PSI (27.67" H2O per PSI) | | | | | | | |
| Code Cable Type | | | | | | | | | | | |
| | | | H | Hytel | | | | | | | |
| | | | O | Polyolefin | | | | | | | |
| | | | U | Polyurethane | | | | | | | |
| | | | T | Tefzel | | | | | | | |
| Code Pressure Venting | | | | | | | | | | | |
| | | | 0 | Atmospheric Pressure Reference | | | | | | | |
| | | | 1 | Internal Tank Pressure Reference | | | | | | | |
| Code Temperature Sensor | | | | | | | | | | | |
| | | | N | No Temperature Sensor | | | | | | | |
| | | | T | Temperature Sensor | | | | | | | |
| Code Reserved | | | | | | | | | | | |
| | | | 000 | Reserved | | | | | | | |
| Code Sensor Length | | | | | | | | | | | |
| | | | XXX | Cut-To Length in inches | | | | | | | |
| 40 | 20 | M | S | 075 | H | 1 | T | 000 | - | 094 | Typical Nomenclature |

| Code | | Remote Wireless Transmitter | | | | |
|------|--|--|-----|---|-----|-------------------------------|
| 40 | Battery Powered Instrument/Sensor Cellular Transmitter Interface w/ 2" MNPT process connection | | | | | |
| Code | | Remote Wireless Transmitter Sensor Options | | | | |
| 30 | Integrated Ultrasonic Sensor – 14ft. range | | | | | |
| Code | | Data Communication | | | | |
| E | GSM (Europe) | | | | | |
| G | GSM (US) | | | | | |
| L | 900 MHz FHSS | | | | | |
| M | Control Channel Cellular | | | | | |
| Code | | Reserved | | | | |
| 000 | Reserved | | | | | |
| Code | | Data Communication | | | | |
| 000 | Sensor Extension Length in inches | | | | | |
| 40 | 30 | M | 000 | - | 006 | Typical Integral Nomenclature |

10 Terms and Conditions of Service

This section explains the relationship between the user of this equipment and SupplyNet Communications Inc. It explains our respective legal rights concerning all aspects of our relationship, including:

- Billing and extra charges
- Starting and ending service
- Privacy and confidentiality
- Early Termination fees (if applicable)
- Limitations of liability and warranty

If you use the service or the equipment, or if you pay any amount billed to your account, you consent to the terms and conditions set forth in this agreement. If you do not agree with these terms and conditions, do not use the service and equipment and notify us immediately to cancel service.

1. Service

This is an agreement for Remote Data Delivery and associated Services between you and SupplyNet Communications. The term "Unit" is the device which is used to communicate the data to the SupplyNet Communications Data Center.

The term of this agreement depends on the rate plan which was defined in a separate document which is also a part of this agreement. The term of this agreement begins on the date that we activate Service for the Unit. There may be an activation fee associated with the rate plan that you select. In addition, if you select a rate plan which requires a fixed term of more than one month (such as a one-year plan), you agree to purchase service for the full term. After the term expires, or if there is not a fixed term associated with the service, then this agreement will continue in force until terminated by either party with a 30-day notice. If you select a rate plan with a fixed term of more than one month, you may terminate service within the first 30 days without a penalty. If you terminate service after the initial 30 days but prior to the end of the term, or we terminate following your default, you will be in material breach of this agreement and agree to pay a cancellation fee as set forth in the rate plan document.

2. Rates

Your Service rates are described in your rate plan document. Your service rate may be based on fees for data communication from your Unit and on fees for remote access to your data via the internet or other electronic means. Additional fees may be added to your monthly fee for services above your base rate. These additional fees and how they are calculated are described in your rate plan document.

3. Data Availability and Service Interruptions

Wireless Data Transmission Service to the TankLink[®] data center is normally available to your unit when it is within the coverage area of a GSM Cellular Service provider who is under contract to provide GSM SMS Data Service. Service is subject to transmission limitation or interruption caused by weather, terrain, obstructions such as trees or buildings, and other conditions. Service may be limited in areas where GSM SMS coverage is not available or may be temporarily limited due to system capacity limits (such as during peak usage periods), system repairs, or modifications. In addition, access to your information via the internet or other electronic means of transmission may be temporarily limited due to system capacity limitations or maintenance. Service interruption may also result from non-payment by you.

4. Use of Service/Unit

You agree not to use the unit or service for any unlawful purposes. You may not resell your service without prior written contractual agreements with SupplyNet Communications Inc.

11 Product Warranty and Notices

SupplyNet Communications Inc. (“SupplyNet”) warrants that the equipment is and will remain free from defects in workmanship and materials for a period of one (1) year from the date of delivery.

Within the warranty period, SupplyNet shall, without charge for labor or materials, repair or replace any defective components provided that reasonable care has been exercised in protecting the equipment from adverse conditions and rough handling.

This warranty does not cover customer instruction, installation, set up adjustments, or signal reception problems. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, or modification of, or to any part of this equipment, including the antenna. This warranty does not cover damage due to improper operation or maintenance, connection to an improper voltage supply, or attempted repair by anyone other than an authorized service facility. This warranty does not cover consumables such as a fuse or battery.

This Limited Warranty is in lieu of all other warranties, express or implied (including implied warranties of merchantability and fitness for a particular purpose), and of all obligations or liabilities of SupplyNet for damages, including but not limited to consequential and incidental damages, arising out of or in connection with the use or performance of the equipment.

SupplyNet shall not be liable for any damages or loss arising from the use of the data from this equipment or the TankLink.com web site.

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