OMNTEC
Advanced Tank Monitoring & Leak Detection

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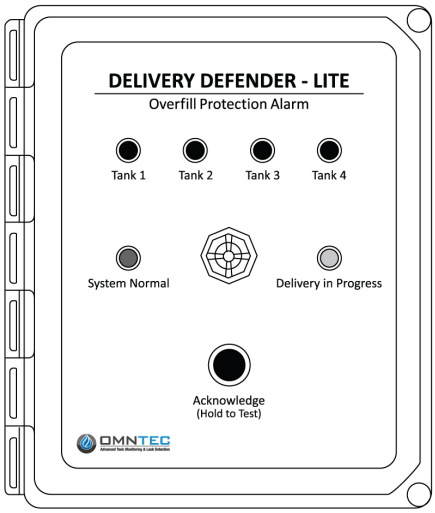
DELIVERY DEFENDER LITE™ INSTALLATION MANUAL



DDL Series
OVERFILL PROTECTION ALARM

Revision 1.1

Document No. DI00006

OMNTEC Mfg., Inc. has been certified by DQS Inc. to ISO 9001:2015

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Delivery Defender Lite™ (DDL-#)

The **Delivery Defender Lite™ (DDL)** is a universal remote overfill alarm in a compact NEMA 4X enclosure. This unit can connect to our PROTEUS® and OEL8000II series ATG's as well as most industry standard tank gauging systems. The **DDL** provides delivery and alarm indication outside, where your fuel provider can observe current tank conditions. Equipped with high-intensity and sunlight-visible LED indicators, high-decibel horn, general alarm light, and API color coded symbols for product identification, the **DDL** provides critical information to the filling operator.

The **Delivery Defender Lite™** connects using a RS-232 or RS-485 connection. There is an optional RS-485 to RS-232 converter that is used to extend the range with the ATG if it does not support RS-485.

** Note: "#" indicates the number of tanks. **

Specifications subject to change

Dimensions

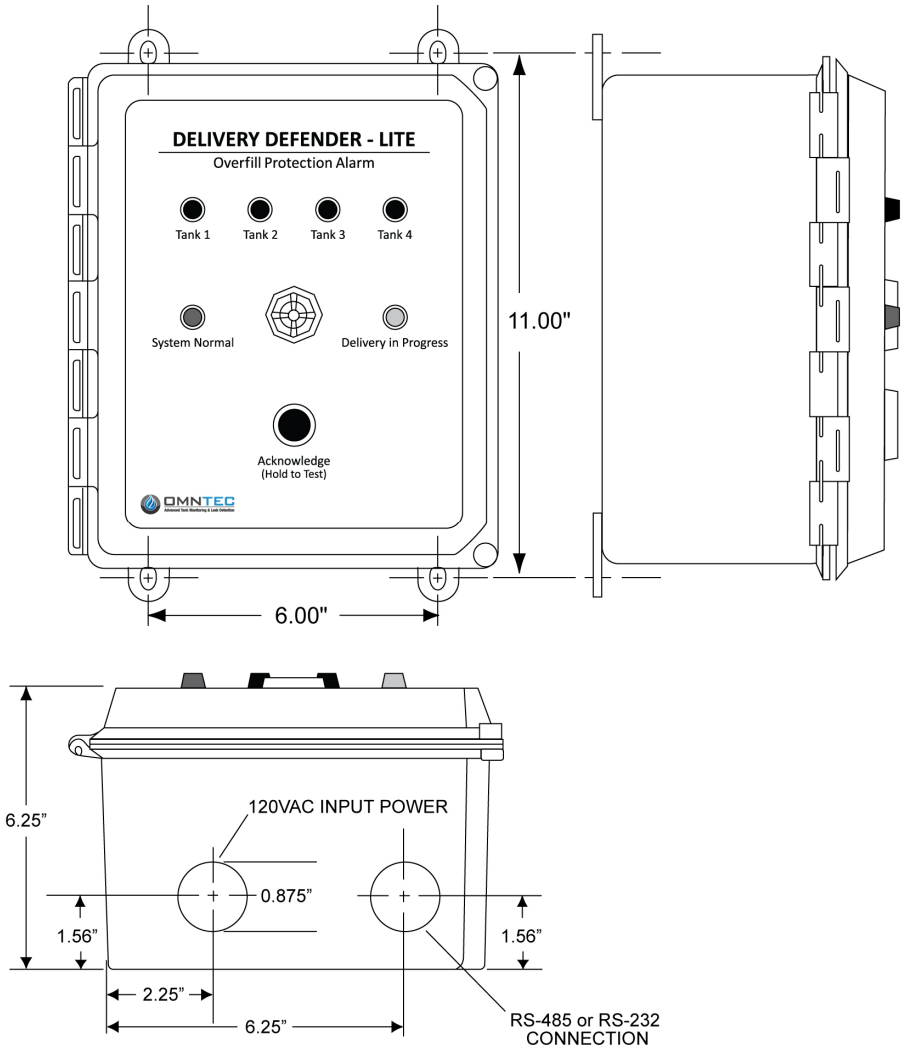
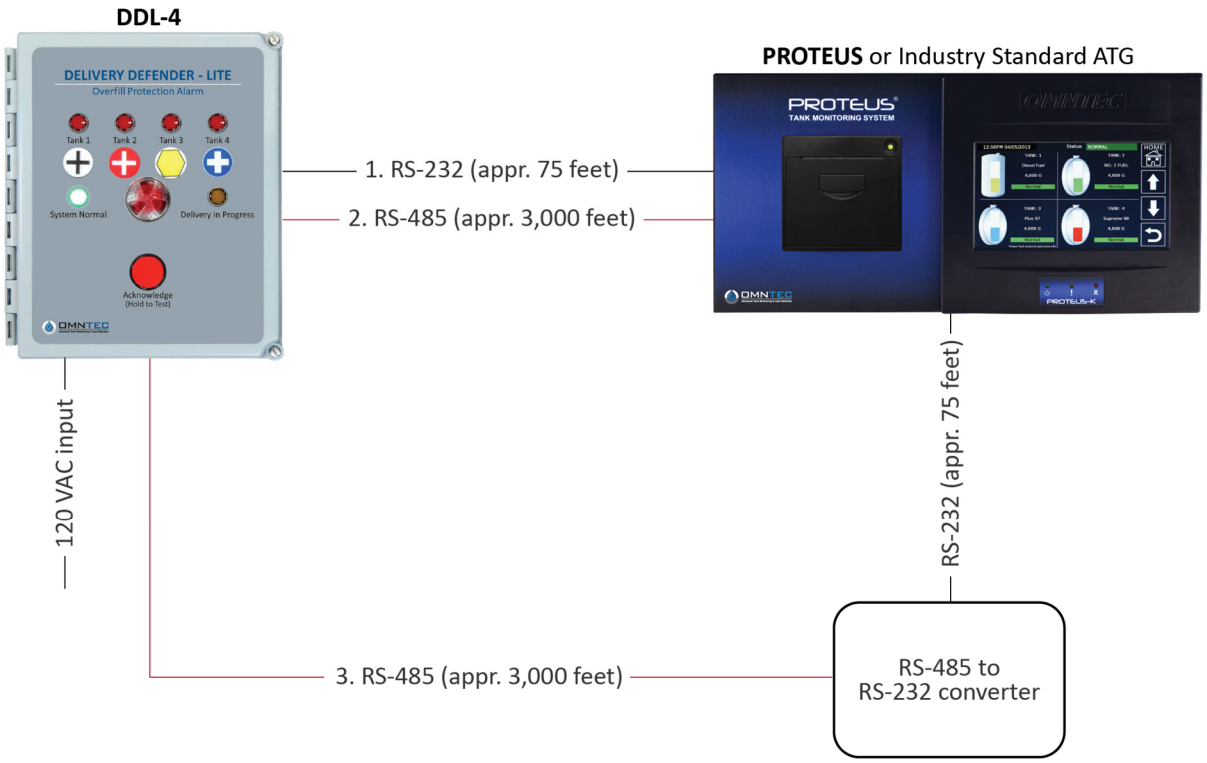


Figure 1.0

The **Delivery Defender Lite™** has two knockouts. One is used for 120 VAC power cable; the other knockout is for RS-485 or RS-232 communication cables depending on site's layout.

Block Diagram



The **Delivery Defender Lite™** can be wired one of three ways:

1. RS-232 (appr. 75 feet)
2. RS-485 (appr. 3,000 feet)
3. RS-485 with RS-232 converter if ATG does not support RS-485

May also use one conduit for AC power and RS-485

if communication cable is rated for 600 VAC (EC4-600V)*

Connecting Power

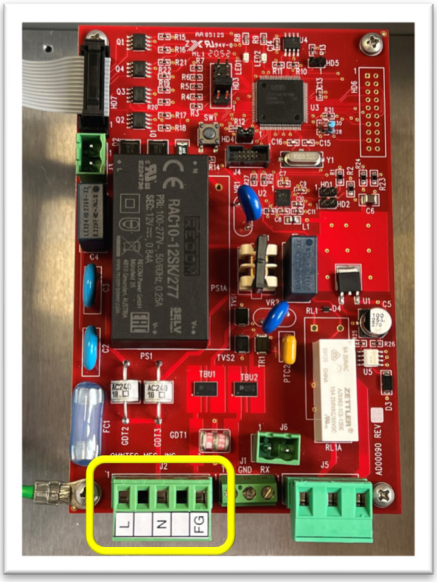


Figure 2.0

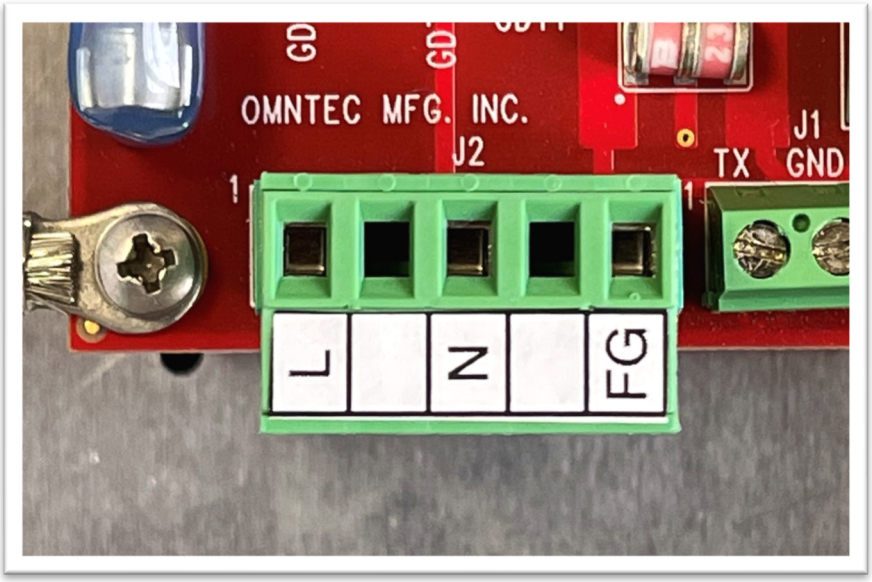


Figure 2.1

External 120 VAC power is required. Use the knockout for AC power on the bottom-left of the enclosure. Connections are to be made as follows:

Green Wire	Field Ground (F.G.)
Black Wire	Line Voltage (L)
White Wire	Neutral (N)

** Note: Install per NEC and local code in your area. **

Communication Connection

Relay positioning (HD3) for RS-485 (yellow frame; Figure 3.0):

**** Make jumper selections for HD3 before powering up the unit. If you need to change your settings at any time, put the jumpers in the correct configuration and press the reset button on the board (green frame; Figure 3.1) ****

The default communication settings for the **Delivery Defender Lite™** are 9600 baud, 8 data bits, no parity, 1 stop bit for both RS-485 and RS-232 on the Proteus® controller within SETUP MENU > COMM PORTS.

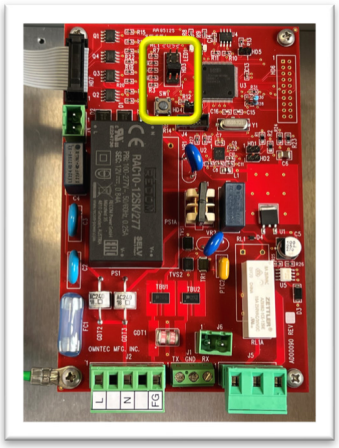


Figure 3.0

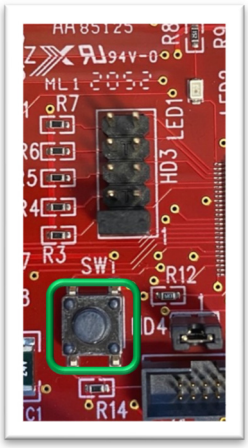


Figure 3.1

- First position of HD3 (bottom jumper; Figure 3.2) is the termination resistor. This should be on if the DDL is at the end of your RS-485 bus.

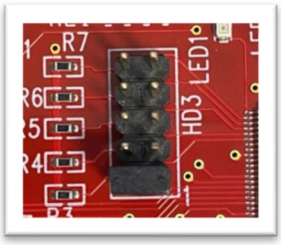


Figure 3.2

- Second position (fourth down from top) determines communication mode. Jumper on this position enables RS-232 (Figure 3.3). Jumper off this position enables RS-485.

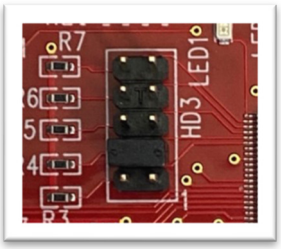


Figure 3.3

- Fifth position of HD3 (top jumper; Figure 3.4) puts the unit in Receiver mode. Leaving the jumper off puts the unit in Transmitter mode. ***Only used with RS-485***.

Figure 3.4

Relays (yellow frame; Figure 4.0 and 4.1):

Pin 1 (left; common)

Pin 2 (middle; normally open)

Pin 3 (right; normally closed)

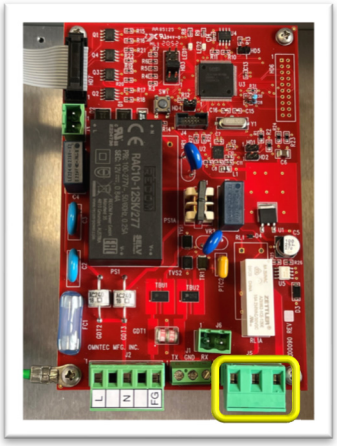


Figure 4.0

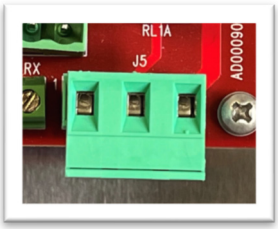


Figure 4.1

Wiring for RS-485 to the J1 connector (yellow frame; Figure 5.0 and 5.1):

Pin 1: TX = RS-485 A signal

Pin 2: Ground

Pin 3: RX = RS-485 B signal

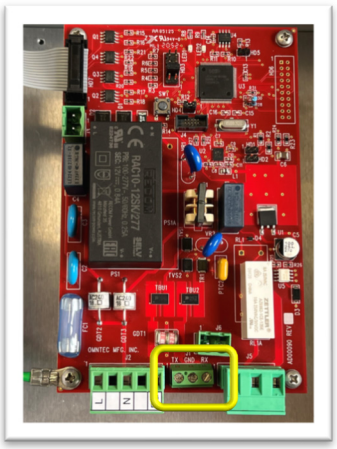


Figure 5.0

Figure 5.1

Wiring for RS-232 to the J1 connector (yellow frame; Figure 5.0 and 5.1):

The RS-232 pinout on the bottom left of the enclosure is as follows (see Figure 5.1):

Pin 1	RS-232 Tx
Pin 2	RS-232 Ground
Pin 3	RS-232 Rx

** Note: Swapping the Tx and Rx wires will create a null modem connection. **

** RS-232 has a limited distance of approximately 75 feet. **

ATG Settings

Communication Settings:

- Set the ATG for 9600 baud, 8 data bits, no parity, 1 stop bit.
- DDL for RS-485 Transmit mode: set the COMM PORT TYPE on the Proteus® to **REMOTE;** under UTILITIES>SETUP MENU>COMM PORTS (COMM PORT toggled to RS-485).
- DDL for RS-485 Receiver mode: set the COMM PORT TYPE on the Proteus® to **RD7CTS;** under UTILITIES>SETUP MENU>COMM PORTS (COMM PORT toggled to RS-485).

Recommended Settings**:

NOTE: Each site should be assessed and programmed accordingly.

- Set the Overfill alarm to 90% on each tank.
- Set the High Product alarm to 90% on each tank.
- Set the Drop Threshold value to a reasonable level corresponding to each tank's capacity and fill rate. Recommended value is 50 gallons.
- Set the Drop Dwell Time as minimal as possible. Some ATG systems already have a built-in delay.

**** Note: To be taken as recommendation only. Program each tank to site's specifications.**

Features

	Tank 1	Tank 2	Tank 3	Tank 4	Horn	System Normal	Delivery in Progress
Normal Condition							
Pushbutton (Hold for 5 seconds to test)							
Receiving Delivery (flashes)							
High Level Alarm							
Overfill Alarm							
Comm Loss / Time Out							

Figure 7.0

The above table will explain the functions of the **Delivery Defender Lite™** (See Figure 7.0).

Notes:

Green Light - Indicates power available and there are proper communications with the ATG.

Amber Light - Flashes during delivery in progress.

Red Tank Lights - Indicates which tank has reached a high level and remains illuminated until condition is satisfied; flashes when tank is in delivery.

General Horn/Light - Activates upon High Product, Overfill, Max Height, Probe Timeout or ATG communication failure. **IMPORTANT!!!!** High level and Overfill alarm thresholds are received and programmed at the main ATG.

Acknowledge Button - Acknowledges alarm conditions by deactivating general horn/alarm light. Pressing and holding for 5 seconds will test all lights and horn. Lights will blink on/off three times