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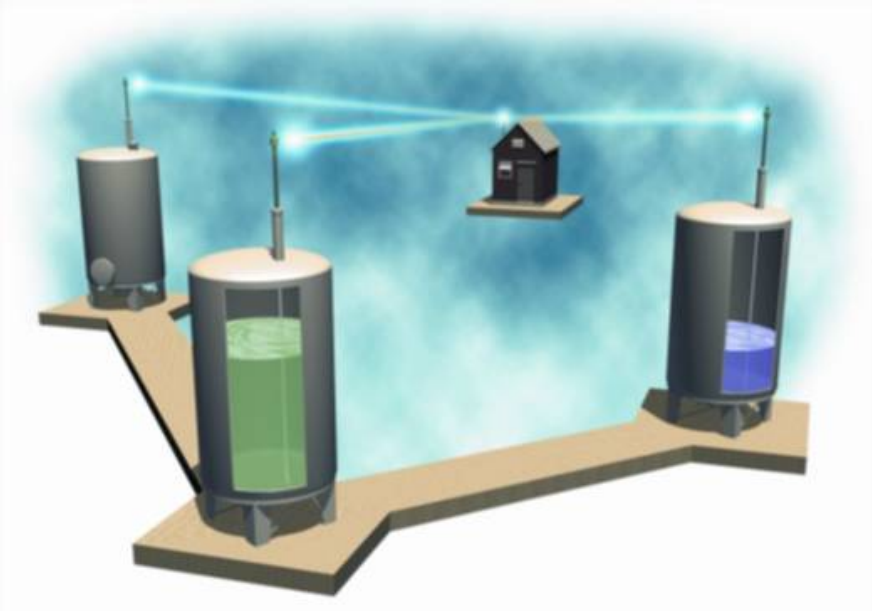
"The Industry's premier tank monitoring experts"



OEL8000II-W

TANK MONITORING SYSTEM

OMNTEC/INNOVATIVE SENSOR SOLUTIONS

Installation & Operating Manual

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READ ME!

Please verify sensors have been installed according to the worksheet provided before calling technical support.

Earth Ground Warning

The earth ground terminal must be connected to maintain intrinsic safety as well as UL and NEC.

This manual is specifically for the installation and operation of the wireless ***DataCheck™*** enabled version of the OEL800II. With this version, only the firmware has been modified to support the full functionality of the patented ***DataCheck™*** wireless sensor powering and control system, which includes ***FillCheck®*** wireless tank overfill protection and ***DataStik™*** wireless tank inventory management. With this version, the 8 Probe inputs (JP24 and JP224) are not supported; instead, only wireless DataCheck™ Probes are supported via the DataCheck™ Receiver, which is connected to COM4.

In this manual the term “OEL-8000II” is used to define functionality for any aspect of the controller, and the term “OEL-8000II-W” is reserved for defining functionality specific to this (wireless) firmware version.

The OEL8000II has been designed using intrinsically safe principals and is Underwriters Laboratories (U.L.) listed, CUL listed, and CE listed for petroleum storage tanks. It is approved for Class I, Groups C and D or Class I, Zone 0, Group IIB Hazardous locations when connected in accordance with control drawing number CDOEL8000II.

Use Proper Knockouts

If preformed knockouts are not used, warranty will be void.

⚠ WARNING

All work must be performed only by authorized personnel who are qualified using intrinsically safe design principles (NEC procedures) and are thoroughly familiar with the OEL8000II Installation Manual. At a minimum, it is the installer's responsibility to be familiar with and to comply with intrinsic design principles as defined in the *National Electrical Code*. It is also the installer's responsibility to be familiar with and to comply with applicable local codes.

Improper wiring or installation can compromise the intrinsically safe design of the system and create an electric shock or explosion hazard. YOU CAN CAUSE DEATH OR SERIOUS PERSONAL INJURY TO YOURSELF AND OTHERS AND EXTENSIVE PROPERTY DAMAGE.

⚠ WARNING

Observe the following rules. Failure to do so will create an electric shock or explosion hazard that can result in death, personal injury, or property damage.

1. Do not permit unauthorized personnel to install or service the equipment.

2. Power to the controller must be removed before installing or servicing the equipment.

IMPORTANT SENSOR INFORMATION

***

ONLY INSTALL BX-SERIES SENSORS WITH THE OEL8000II

***

Please verify sensors have been installed according to the worksheet provided before calling technical support.

Chapter 1 System Overview

1.1. System Description

The OMNTEC® Mfg., Inc. OEL8000II-W is a comprehensive tank gauging, overfill protection and leak detection. It provides simultaneous monitoring of up to 99 wireless DataCheck™ transmitters. Also, up to 44 wired sensors BX-Series Sensors can be monitored for detecting discrete liquid levels and leaks. When used with the wireless DataStik™ probes, the OEL8000II-W is an effective, user friendly, inventory management system that identifies usage and alerts the customer to low inventory and high tank levels. When used with the wireless FillCheck® sensors, the system provides effective real-time tank overfill protection so as to meet the guidelines of API RP2350 (overfill protection for aboveground storage tanks).

Figure 1-1 OEL8000II-W System Architecture

In this manual the term "OEL-8000II" is used to define functionality for any aspect of the controller, and the term "OEL-8000II-W" is reserved for defining functionality specific to this wireless firmware version.

The OEL8000II has been designed to be easy to use, but you can take full advantage of its capabilities by taking some time to read this manual. If you do nothing else, make certain that everyone who will have access to the controller reads the previous section – *Read This First!*

The system consists of a controller that is wall mounted in a non-hazardous location and a combination of wireless DataCheck probes and sensors for monitoring water and product levels, temperatures, and leaks. System programming and status reporting are achieved via the controller. Remote communication capability can be provided by an internal 14,400 baud fax / modem, RS232, RS485, 4-20 mA card, IB-NET card (internet) or relay outputs. Easy to read status and inventory data is provided on the controller's LCD display while a hard copy can be obtained from the 36 character thermal printer. Reporting is programmable or available on demand.

The OMNTEC OEL8000II is an intrinsically safe system and is Underwriters Laboratories listed for petroleum storage tanks. Refer to third party certifications for performance specifications.

1.2. Safety

To install or service any component of the OEL8000II system the individual must be qualified using intrinsically safe design principles (NEC practices) and must be familiar with the specifications and procedures described within this manual. It is the responsibility of the installer and operator to be familiar with and to comply with all codes and regulations. Before you begin, read *Section 3 – Applying Power*. When you have finished, return to the beginning, and read the entire manual. The following are some safety tips to be used during installation and servicing:

- **Do not** perform any installation or service procedures if you are not qualified to work with intrinsically-safe systems.
- **Do not** perform any installation or service procedures if you are not familiar with the National Electrical Code and all other federal, state, and local codes and regulations pertaining to this installation.
- **Do not** perform any installation or service procedures until you have read through and understand this **entire** manual.
- **Do not** install the controller in a hazardous location.
- **Do not drill** through enclosure
- **Do not** mount outdoors without ENC-4X weather proof enclosure
- **Do not** install RAS series remote Annunciators in hazardous locations.
- **Only** sensors and probes are to be installed within hazardous locations.
- **Do not** substitute components. The intrinsic safety design can become compromised creating an explosion hazard. It will also void the warranty.

- **Do not** apply power to the controller until all of the other installations and wiring have been completed and inspected. Read ***Section 3 – Applying Power***. Applying power to the controller and programming the controller are the **final** steps in the installation process.
- **Always remove power** to the controller before servicing.
- Take all safety precautions to avoid accidents.
- Keep work area clean.
- Block off work area when working on tanks and hazardous locations to prevent vehicles and pedestrians from entering the area.
- Use proper fire prevention measures to keep all sparks, flames, and other ignition devices away from the hazardous area.

1.3. Unpacking, Inspection and Damage Claims

Unpack and thoroughly inspect all equipment before accepting receipt from carrier. If you detect or suspect any damage or loss, do the following:

- Write a detailed description of the damage or loss on the front of the bill of lading and sign it.
- Have the carrier's agent sign the bill of lading.
- Immediately notify the carrier by phone and follow up in writing within 48 hours.

The buyer assumes all risk for damage or loss of merchandise incurred during shipping and is responsible for filing and settling any claims. If you report your loss to OMNTEC® Mfg., Inc. however, we will attempt to assist you with your claim.

1.4. Returns

You must obtain a Return Material Authorization (RMA) from OMNTEC® Mfg. before returning shipments. Shipments that are returned without such authorization will be rejected. It is also your responsibility to pre-pay all freight charges for returned material. Material for which an RMA has been provided may be shipped to:

OMNTEC Mfg., Inc.
1993 Pond Road
Ronkonkoma, New York 11779
RMA# __ __ __ __ __ __

NOTE: RMA # MUST APPEAR ON SHIPPING LABEL

1.5. Electrical Wiring

Do not apply power to the controller until you have read and complied with *Section 3 – Applying Power*. All electrical work should be performed by qualified personnel only and in accordance with the National Electrical Code and all federal, state, and local codes and regulations as pertains to this installation.

Failure to comply can create an electric shock or explosion hazard causing death, personal injury, or property damage.

Failure to make electrical splices, conduits, and junction boxes water-tight can result in system failure due to wet wires.

1.5.1. Wires and Cables

Observe the following when selecting and installing wires and cables:

- Run one four conductor cable for each sensor buss
- Up to twenty-two sensors may be connected to one buss
- Splice sensor wires using the SK-4 connector sealing kit
- Probe cables and sensor cables must be completely enclosed in conduit from the junction box to the console (contact factory for direct burial applications)
- All wiring must enter the controller through the designated preformed knockouts

Failure to comply can create an electric shock or explosion hazard causing death, personal injury, or property damage.

Note: Direct burial wring is available. Contact manufacturer.

1.5.2. Conduits

Base the location and number of conduits required for the installation on the number and diameter of the probe and sensor cables. Use a junction box inside the building to combine the cables as described below. **Observe the applicable codes pertaining to which cables may or may not be combined into a single conduit.**

You must have separate conduits as follows:

- 120 VAC Power cables must be combined in a separate (isolated) conduit.
- All Annunciator (RAS series) cables must be combined in a separate (isolated) conduit.
- Sensor cables may share a separate (isolated) conduit.
- RS-232, RS485, and Telephone cables may share a separate (isolated) conduit.
- Alarm relay cables must be combined in a separate (isolated) conduit

Use and select the proper conduit types and sizes in accordance with applicable codes. Even in situations where they are not required by code, it is recommended that they be used to protect wiring.

Note: Make certain that all conduits and junction boxes are dry and watertight. Wet wires can result in the faulty operation of the system.

Observe the following when selecting and installing conduit:

- Determine the conduit size based on the number and size of cables it will carry.
- Plan the conduit installation so that the junction box in the manway will not become submerged in water after a heavy rain.
- Rigid metal conduit, 3/4 inch or larger (use reducer coupling, do not drill into box) is recommended between the controller and the tank area.
- Do not combine probe and sensor cables with other wires in the same conduit.
- Install the conduit seal fittings in accordance with NFPA 70 (National Electrical Code) and NFPA 30 (Automotive and Marine Station Code).
- All wires should enter the controller via a conduit.
- Immediately after 3 ft from panel, be sure to allow 3 ft between sensor cable conduit and any other high voltage (120V or higher) or communications conduit.

Failure to comply can create an electric shock or explosion hazard causing death, personal injury, or property damage.

Chapter 2 Equipment

2.1 Controller

The OEL8000II-W controller must be mounted in a non-hazardous area and requires 100-240 VAC, 50/60 Hz, 60 watts. It monitors the DataCheck™ Receiver via COM4, and sensors providing status and alarm information on its LCD display or thermal printer. The controller can be programmed to respond to an alarm condition by activating alarm relays that can automatically shut off power to one or more pumps and/or dispensers. The OEL8000II has the capability of communicating alarm conditions and inventory status to a remote terminal or central station using an internal fax/modem, IB-NET card (internet), RS232, RS485, C4-20 or relay outputs. Audio/visual remote alarms (RAS series) can be connected to the controller as well.

Note: Alarm relays, RAS series remote annunciators, and remote communication are optional equipment.

Preparation

Perform the following steps before beginning construction or installation:

1. Inspect all of the parts for shipping damage.
2. Determine all of the conduit paths, probe and sensor installation locations, and controller and annunciator mounting locations.
3. Review the programming instructions, and prepare the required data in advance of programming the controller.
4. Review the National Electrical Code and the federal, state, and local codes applicable to this installation to ensure compliance.

Do not apply power to the controller until all of the other installations and wiring have been completed.

Failure to comply can create an electric shock or explosion hazard causing death, personal injury, or property damage.

2.2 Controller Installation

Observe the following installation requirements:

- Locate the controller indoors, **in a non-hazardous**, protected location.
- Locate controller at eye level, where it is easily accessible, and its alarms will be heard.
- Locate the controller in a dry area (avoid sweating or leaking pipes and areas where rain can enter).
- Locate the controller in areas where temperatures will stay between 20ºF and 140ºF (-7ºC and 60ºC).
- It is recommended that the controller be mounted on an inside wall that is close to where the conduits will be entering the building so as to ease installation.
- Use proper anchor bolts for wall type.
- Allow 6" clearance on the top and sides of the controller for air circulation.
- Make certain that there is sufficient clearance for opening the controller door.
- Allow for sufficient clearance around the controller for conduit access. All conduits will enter the controller through the designated preformed knockouts.
- Avoid installing in corners.
- Avoid swinging doors that can bang into the panel.

2.2.1 Mounting the Controller

The controller is mounted on the wall using the mounting flange. Do not attempt to remove the motherboard or any internal components (printed circuit board) in order to mount the panel from the inside.

1. Place the panel against the wall and use it as a template.
2. Install proper anchors and bolts for wall type.

Note: Drilling any holes in the controller will void warranty.

2.2.2 Wiring and Controller Knockout Designations

All wiring must be performed in accordance with Control Drawing No. CDOEL8000II. Before making any connections inside the panel.

- Control Drawing No. CDOEL8000II (required for installation)
- Components and Connections
- Power Supply Connections

All wiring enters the controller via conduit through the designated preformed knockouts as shown in Figure 2-2. You **must** adhere to the following wiring requirements, failure to do so will void warranty:

- K-1 and K-2 knockouts are reserved for the controller's AC power line. **AC input must come in tight and not contact the IS cover. The cover must be able to open freely.**
- K-3, K-4, K-5 and K-6 are reserved for the sensor cables only.
- Relay and option board wires enter the controller through K-7, K-8 or K-9.
- The RJ11 telephone knockout port for modem option is located at K10.
- The 9 pin RS-232 communications port is located on the left side panel.
- An additional 9 pin D communications knockout is located at K11.

WARNING

Failure to comply will defeat the intrinsically safe design of the system and will create an explosion hazard. Consult the National Electrical Code pertaining to voltage and wire specification requirments for merging wires into the same conduit.

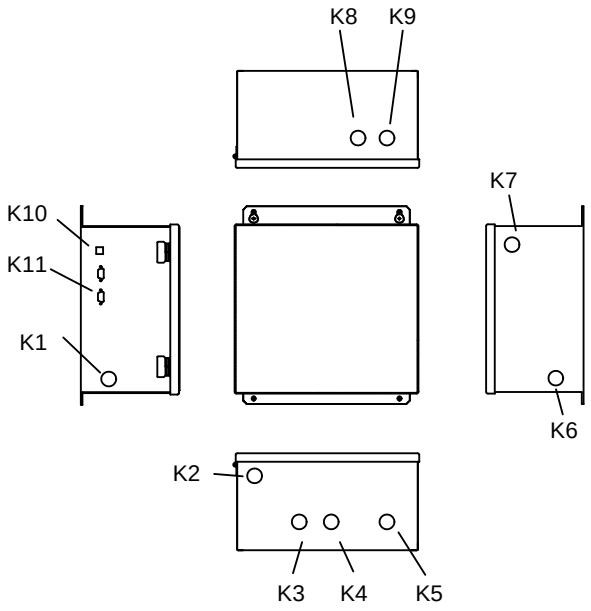


Figure 2-1 Wiring and Controller Knockouts

Note: K-3 through K-6 lead to intrinsically safe circuit location.

2.2.4 EYS Seal Off Fitting

Consult National Electrical Code and other applicable codes for EYS installation. Make installations as follows:

- Install EYS Seal-Off fittings in accordance with applicable codes.
- Prior to applying appropriate sealing compound in all EYS, be sure entire system is functioning properly.

2.2.5 AC Power Line

The AC power line will run from the control panel directly to a 15 Amp circuit breaker within a circuit breaker panel via conduit. **Select wire in accordance with code for this installation.**

Note: To maintain the intrinsically safe design principles and UL requirements, the field ground and earth ground must be installed properly.

2.2.6 Telephone Connections at the Controller

The OEL8000II can be used with a line sharing device; consult factory for details. Do not use any extensions or services such as *Call Waiting*. These features can interrupt communications.

Bring the telephone cable to the controller via conduit and connect to the RJ11 jack located on the left side of the controller.

All other remote communications devices (i.e., RS232 and RS485) should be connected to the OEL8000II using a 9 pin female or male connector. The remote communications ports are located on the left side panel of the controller (see Figure 2-1).

2.2.7 AC Power Connections at the Controller

The controller requires its own dedicated circuit. Bring the AC power line into the panel via the conduit knockout K-1 or K-2 as shown in Figure 2-2. Make the following connections inside the controller.

1. Connect the line voltage wire to the **L** terminal.
2. Connect the neutral wire to the **N** terminal.
3. Connect the field ground wire to the **F.G.** terminal. Refer to *Section 2.2.8 – Main Panel and Sub-Panel Grounding* for main panel grounding.
4. Connect the earth ground wire to the chassis ground lug.

AC input must come in tight and not contact the IS cover. The cover must be able to open freely.

Bring the other end of the AC power line into the circuit breaker panel and connect to a 15 Amp circuit breaker.

Electric Shock Hazard. Make certain that the circuit breaker is in the OFF position. Avoid touching other lines. Failure to comply can result in an electric shock causing death or personal injury.

2.2.8 Main Panel and Sub-Panel Grounding

Pull the wire through the rigid metal conduit and connect it directly to the ground bar of the **main** electrical service panel, not a sub-panel. Do **not** rely on the metal conduit as ground. See *Appendix D – OEL8000II Controller* for sub-panel wiring instructions.

Read This First!

The OEL8000II has been designed using intrinsically safe principals and is Underwriters Laboratories (U.L.) listed, CUL listed, and CE listed for petroleum storage tanks. It is approved for Class I, Groups C and D or Class I, Zone 0, Group IIB Hazardous locations when connected in accordance with control drawing number CDOEL8000II.

Do not attempt to make any other adjustments no matter how simple they may appear.

All work must be performed only by authorized personnel who are qualified using intrinsically safe design principles (NEC procedures) and are thoroughly familiar with the OEL8000II Installation Manual. At a minimum, it is the installer's responsibility to be familiar with and to comply with intrinsic design principles as defined in the *National Electrical Code*. It is also the installer's responsibility to be familiar with and to comply with applicable local codes.

Improper wiring or installation can compromise the intrinsically safe design of the system and create an electric shock or explosion hazard. YOU CAN CAUSE DEATH OR SERIOUS PERSONAL INJURY TO YOURSELF AND OTHERS AND EXTENSIVE PROPERTY DAMAGE.

WARNING

Observe the following rules. Failure to do so will create an electric shock or explosion hazard that can result in death, personal injury, or property damage.

1. Do not install or service the equipment yourself.
2. Do not permit unauthorized personnel to install or service the equipment.
3. Power to the controller must be removed before installing or servicing the equipment.
4. The only adjustments that you are allowed to make are:
   a. Loading the printer paper.
   b. Programming the controller as described in this manual.

2.3 DataCheck™ Receiver

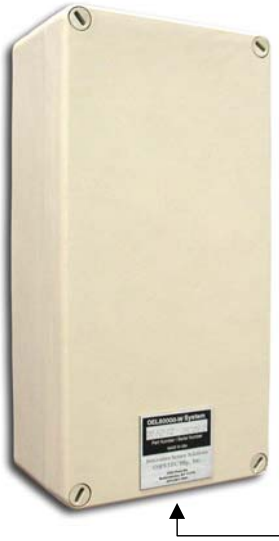
The DataCheck Receiver is installed in a weatherproof nonmetallic enclosure, and is supplied with a section of fiberglass mast and 50 ft. of serial cable used to connect it to COM4 on the OEL8000II-W. The DataCheck™ Receiver assembly should be mounted in a location where, if possible, it has line-of-site with all DataCheck™ Transmitters and Repeaters.

DataCheck™ Receivers receive transmissions from FillCheck® or DataCheck™ transmitters and convert this information into a serial data which can be monitored and interpreted by the OEL8000II-W. The DataCheck™ Receiver comes with a 50 ft length of serial cable.

Outdoor Serial Receiver part no. FI-RX-SR-O

- NEMA Type 1, 2, 3, 3R, 4, 4X, 5, 12 and 13
- IEC 529, IP66
- VO Flammability Rating

(6.46”W X 12.76”H X 3.94”D)
(164mm W X 324mm H X 100mm D)

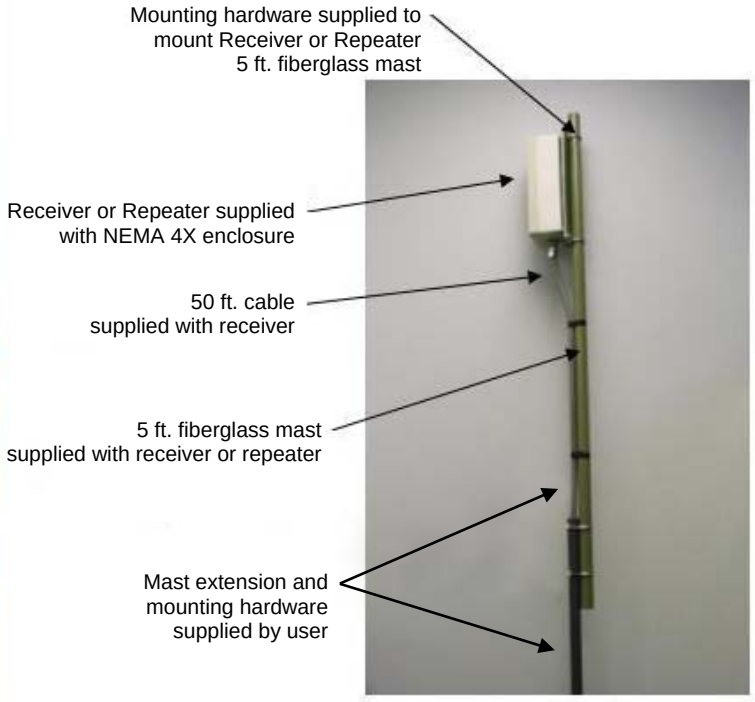


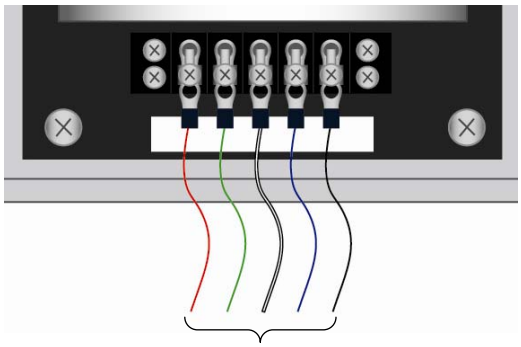
To OEL8000II-W controller

The diagram below shows the pinouts or connections for the indoor or outdoor version of the Serial Receiver (DC-RX-SR-O or FI-RX-SR-I).

Receiver or Repeater Mounting

Example of receiver mount on building





To OEL8000II or Alarm Manager
50 ft. of cable OMNTEC supplies

Figure 2-2 – Serial Receiver Pinouts

Features of the DC-RX-SR-X

- Reliable 900 MHZ operation
- Diversity antenna for enhanced reception
- 256 system identification codes and 99 transmitter identification codes
- Integrated connector for serial communications, transmitter programming, and power

When DataCheck™ Serial Receivers are to be connected to the OEL8000III-W, the COM4 DB9 connector must be employed to allow external powering of the receiver and to provide transmitter programming access. Furthermore, the firmware in the OEL8000II-W supervises the transmitters, allows inputting of the DataStik™ level and temperature offset correction values, and scaling of the transmitter ADC input channels. The OEL8000II-W stores all user-inputted setup and calibration data in non-volatile memory, and provides output data in MODBUS-RTU format into user-accessible memory registers.

2.4 Interface Boards (IB-Series)

Up to 24 alarm relays (4 relays per card) can be added to the controller. They are individually programmed and can be used to automatically shut down external equipment such as dispenser pumps when a leak is detected.

- IB-C420
- IB-12V
- IB-RB2
- IB-NET
- IB-RAS

Interface Board Wire

Select wire in accordance with code for this installation. Consult code if this wire is going to share the same conduit with other wires. There may be specific requirements pertaining to voltage levels and wire specifications.

2.5 Remote Communications

Access to the system by computer is achieved by adding either an internal 14,400 baud fax/modem or relay, or by utilizing the system's RS232 outputs. This allows for real time monitoring of the system and downloading of status information to any remote location, (See *Section 2.2.6 – Telephone Connections at the Controller*). A user friendly software program (OMNTEC-PC) or serial communication sheets are available; call OMNTEC® Mfg., Inc. for further information.

Chapter 3 Applying Power

3.1 Preparations

The final steps in this installation consists of applying AC power to the controller followed by programming the controller. **Before you apply AC power, do the following:** (1) review the **Checklist** below and (2) fill out the **System Start-up List** on the next page to confirm that all installation steps have been completed.

Do not make any wiring connections at the tanks, junction boxes, controller, or any other location when power is applied to the controller.

Failure to comply can create an electric shock or explosion hazard causing death, personal injury, or property damage.

3.2 Checklist

Before you apply power to the controller, re-inspect the installation using the following checklist as a guide:

- ☐ The DataCheck™ Receiver and all sensor installations have been completed.
- ☐ All conduit, junction boxes, and Eys installations have been completed (inside and outside the building).
- ☐ All cable and wiring connections have been completed.
- ☐ All wiring connections in the controller have been completed (including earth ground and field ground).
- ☐ Controller is field grounded to the main electrical service power, **not** a subpanel.
- ☐ All installations have been re-inspected.
- ☐ All installations comply with the instructions in this manual, National Electrical Code, and the federal, state, and local codes and regulations.
- ☐ Close the controller door.

3.3 System Start-up Checklist

SYSTEM START-UP LIST **Date:**_____ **OEL8000II Serial #**_____

✓	**INSTALLATION AND INTRINSIC SAFETY CHECKLIST**
	SENSORS AND MTG-PROBES
	Strain reliefs are properly sealed
	Sensor wiring is 22 gauge 4 conductor twisted shielded with a drain, (OMNTEC EC-4 cable)
	Sensor shield drain wire is connected to ground terminal at sensor connector in the controller
	OEL8000II sensor wiring runs not to exceed 2000ft from the controller to the furthest sensor
	DataCheck Receiver wiring does not exceed 50 ft.
	All outdoor wiring connections are sealed with SK-4 epoxy sealing kits
	Seal-offs are installed between building and tanks on sensor conduits
	Sensor wiring connections in tank area are installed in suitable weatherproof junction boxes
	Sensor wires are combined in a separate isolated conduit (must be kept in isolation from all other wires)

	OEL8000II MONITOR and MTG-PROBES
	OEL8000II monitor is installed indoors in an accessible location
	Conduits enter OEL8000II only through preformed knock-outs
	Power wires are installed in a separate isolated conduit
	Annunciator (RAS series) wires are installed in a separate isolated conduit
	OEL8000II monitor has an earth ground connected with 12 gauge wire
	Press test button
	Check print out for proper system response

	OEL8000II TRAINING GUIDELINES
	End user or facility manager should know:
	Complete and return Warranty Card to OMNTEC
	To review Owner's Manual
	Location of the console, printer, and remote annunciator
	The function of each push button on the key pad
	Location and purpose of probes and sensors
	What potential alarms could occur for this configuration
	How to adjust for day light savings
	How to change the paper
	How to print and acknowledge alarm(s)
	How to print out inventory reports
	How to enable auto alarm printout
	Only qualified and authorized personnel can install or service any component of the OEL8000II system

Start-up Installer
Name: _____

Address:_____

_____

_____

Signature: _____

Tel: _____-_____-_____Ext:_____

Construction site: _____

Tel: _____-_____-_____Ext:_____

Dealer/Manager/Owner
Name: _____

Site Address:_____

_____

_____

Signature: _____

Tel: _____-_____-_____Ext:_____

Signature: _____

Tel: _____-_____-_____Ext:_____

3.4 Connecting Power

When you have confirmed that the entire installation is complete, you may apply power to the controller by closing the circuit breaker.

Upon powering up, the controller will indicate if any problems were detected. The following identifies those problems and the corrective action to be taken:

Remove all power to the controller when performing repairs.

Failure to comply can create an electric shock or explosion hazard causing death, personal injury, or property damage.

- **Fault LED (red light) is on** – indicates a problem with the RAM, PROM, or other internal circuitry. Contact manufacturer.

Chapter 4 Programming

4.1 Preparation

Most systems are factory programmed. If your system is pre-programmed verify that all settings are accurate to your site needs.

This section describes the programming of the controller. It is the final step in the installation process and it is performed after all of the hardware has been installed and all of the electrical connections have been made. To complete this procedure, you will need tank data, probe and sensor data, and additional data to be obtained from the customer. Before you begin programming, it is recommended that you review this section and obtain all of the required information. You may use this part of the manual as a worksheet by recording all of the data in the appropriate sections.

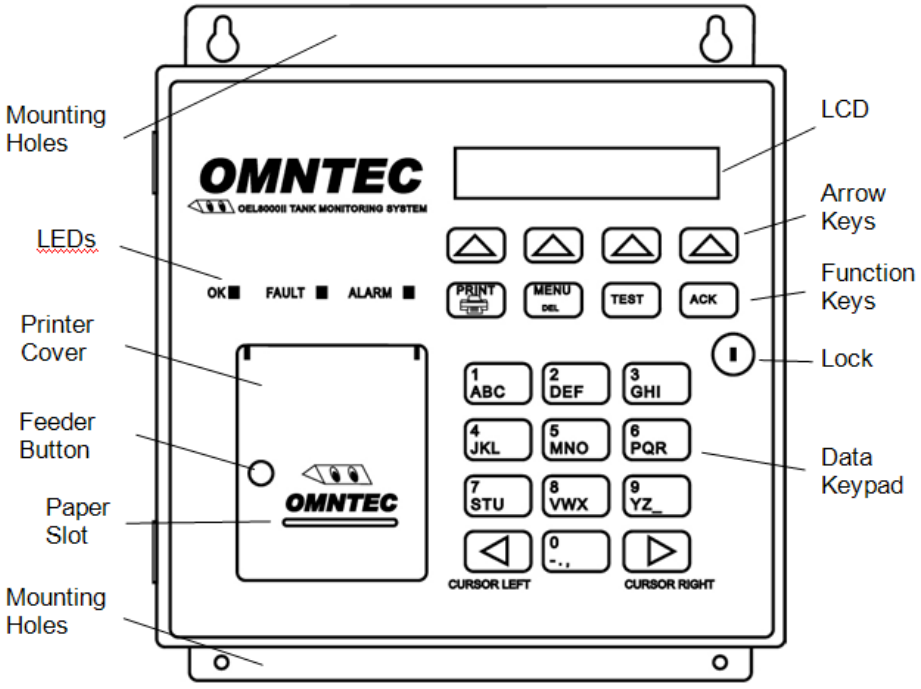


Fig. 4-1: OEL8000II Controller's Front Panel

4.2 Procedure

In order to program the controller you must become familiar the LCD display, the tactile keypad, and the printer (see Figure 4-1). The tactile keypad consists of the arrow keys, the function keys (directly below the arrow keys), and the data keypad.

4.2.1 LCD Display

The LCD provides a four line display with a maximum of forty characters per line. Figure 4-2 provides a sample display. During programming, the following will appear on the screen:

- First line: displays the day, date, time, and status.
- Second line: prompts you for specific data.
- Third line: displays the data you are entering.

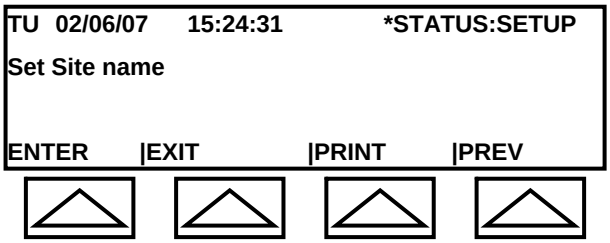


Fig. 4-2: Sample Screen

- Fourth line: displays up to four fields for navigating screens and selecting functions.

4.2.2 Tactile Keypad

This section describes the use of the tactile keypad during programming. Refer to the *OEL8000II Owner's Manual* for additional information on the controller's front panel displays and controls.

- **Arrow Keys** – Four upward pointing arrows point to the fields shown on the last line of the LCD display. Select the appropriate field by pressing the arrow that points to it.
- **Data Keypad** – The keypad resembles a telephone keypad and is used for entering data. You enter the number, letters, or characters shown on a key by repeatedly pressing that key. To enter the number **1**, for example, press the key with the number **1** on it just one time. To enter the letter **A**, press that same key two times. For the letter **B**, press it three times, and for the letter **C**, press it four times.
- **Cursor Keys** – The right cursor key moves the cursor to the right. The left cursor key moves the cursor to the left.

  *Note: The cursor will automatically advance when entering data. To use the same key consecutively, use the right cursor key to advance or wait for 2 seconds and the cursor will advance automatically. You can insert a blank by pressing the cursor key or by pressing the **9** key four times. This inserts a blank character and advances the cursor to the next position.*

- **DEL Key** – The delete key has the word **DELETE** below the word **MENU**. If the cursor is under a character, pressing the **DELETE** key will cause that character to be deleted. If the cursor is under a blank space, it will move to the left and delete the character in that position.

  Note: To change a character several positions back, use the left cursor key to get to that position and make the correction. By not using the DELETE key, you avoid deleting everything in-between.

4.2.3 Printer

To obtain a hardcopy printout, you can press the PRINT function key or the arrow beneath the PRINT field whenever it appears on the bottom line of the LCD.

4.3 Programming Procedures

The procedures discussed in the following sections provide instructions for programming the controller. If your controller has been factory programmed, you can use the same procedures for verifying or making modifications.

All programming begins at the MAIN Menu, which has a total of five screens (see Figures 4-2a through 4-2e). To advance from one screen to the next, select MORE on the bottom line of the LCD (press the arrow key directly beneath it). Selecting MORE in Screen #6 will return the LCD to Screen #1.

While in the Main Menu, the Status field should display NORMAL. If an alarm condition exists, it will display ALARM.

Note: Throughout the remainder of this manual, when directed to select a field on the bottom line of the LCD, press the arrow key directly beneath the field.

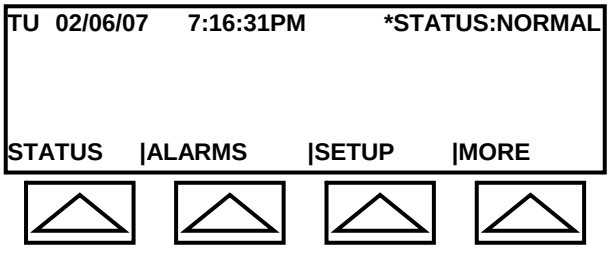


Fig. 4-2a: Main Menu – Screen #1

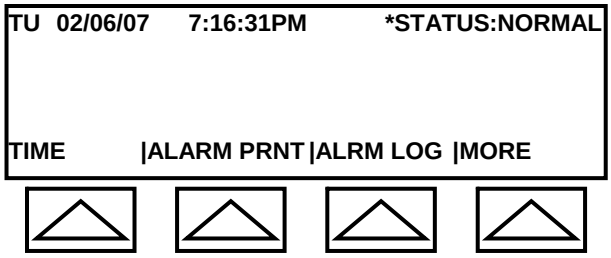


Fig. 4-2b: Main Menu – Screen #2

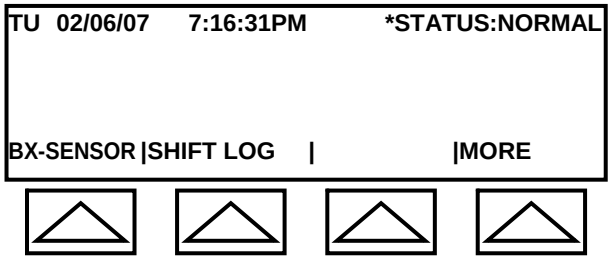


Fig. 4-2c: Main Menu – Screen #3

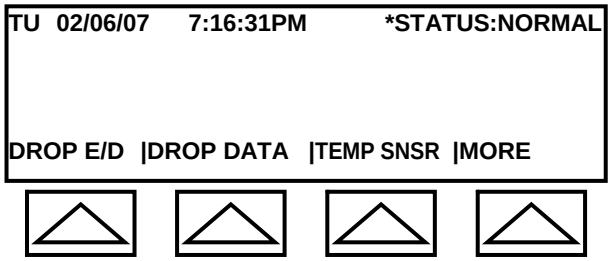


Fig. 4-2d: Main Menu – Screen #4

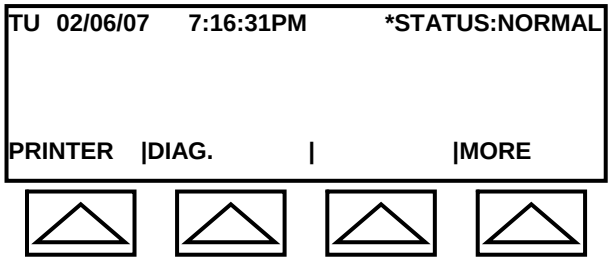


Fig. 4-2e: Main Menu – Screen #5

4.3.1 Entering the SETUP Mode

Starting in Screen #1 of the Main Menu, select SETUP.

System Response

The screen will appear as in Figure 4.3.

The first line of the screen remains unchanged.

The second line reads: **Enter In The Security Code**.

The third line contains a cursor and will display a series of X's to disguise the security code as you enter it.

The fourth line has ENTER and EXIT fields. The ENTER field will be selected after entering all of the data on the third line. If the EXIT field is selected, the LCD display will return to Screen #1 of the Main Menu (see Figure 4-2a) without entering the data.

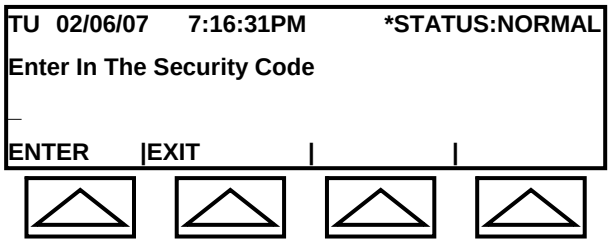


Fig. 4-3: Security Code

4.3.2 Entering the Security Code

You must enter the security code to continue. When programming the controller for the first time, use the default value (6 zeroes): **000000**.

1. Enter "000000".

   System Response

   The character **X** will appear in each of the first six columns on the third line. The actual security code that is entered is not displayed.

2. Press the arrow beneath ENTER.

   System Response

   If the wrong security code is entered, the system will return to Screen #1 of the Main Menu (see Figure 4-2a). If the correct security code is entered, the system will proceed to the Screen #1 of the SETUP Menu (see Figure 4.4a).

   The SETUP Menu has five screens (see Figure 4-4.a through Figure 4-4.e). Select MORE on the bottom line of the LCD to advance through the screens. Selecting MORE in Screen #5 returns the LCD to Screen #1.

   To exit the SETUP Menu, press the **MENU** key (below the arrow keys). The LCD will return to the MAIN Menu.

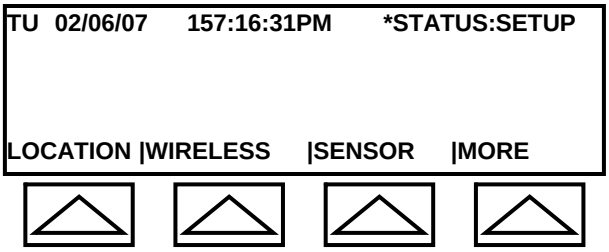


Fig. 4-4a: Setup Menu – Screen #1

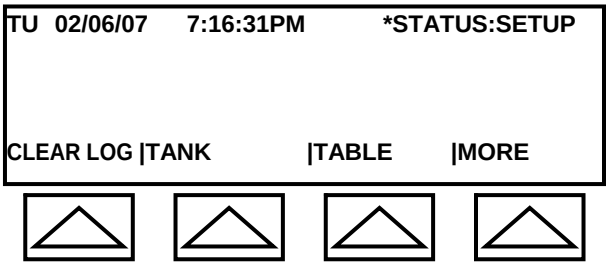


Fig. 4-4b: Setup Menu – Screen #2

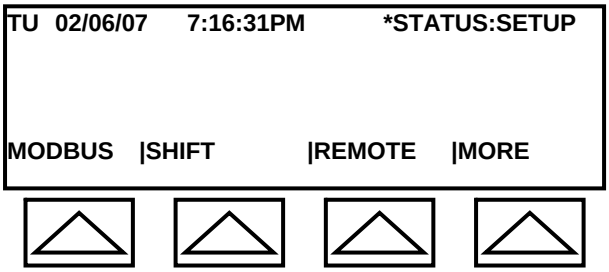


Fig. 4-4c: Setup Menu – Screen #3

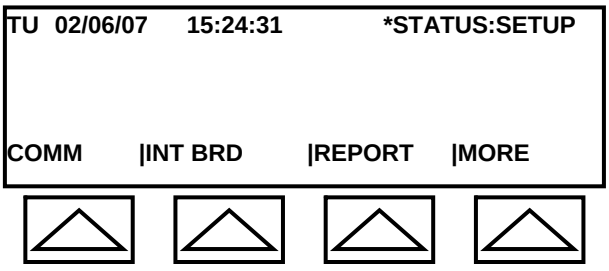


Fig. 4.4.d: Setup Menu – Screen #4

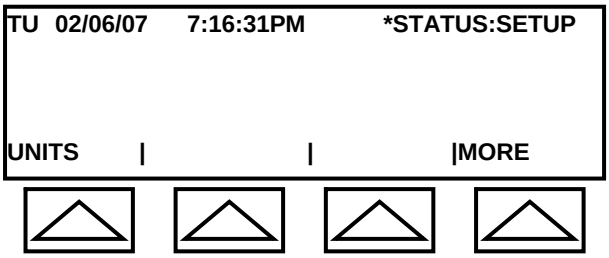


Fig. 4-4e: Setup Menu – Screen #5

4.3.3 Location Data

The Location Submenu allows you to enter site-specific data.

Starting in Screen #1 of the SETUP Submenu, select LOCATION.

*Note: To return to the MAIN Menu from the Location Submenu, select EXIT and then press the **MENU** key. The LCD returns to Screen #1 of the MAIN Menu (see Figure 4-2a).*

System Response

The screen will appear as in Figure 4-5.

Line 1 remains unchanged.

Line 2 reads: **Set site name**.

Line 3 shows a cursor.

Line 4 has a new set of fields.

Field Descriptions

- ENTER – select this field to save entered data and to advance to the next screen.
- EXIT – returns to Screen #1 of the SETUP Submenu.
- PRINT – provides a hardcopy printout of all Location Data.
- PREV – returns to previous screen.

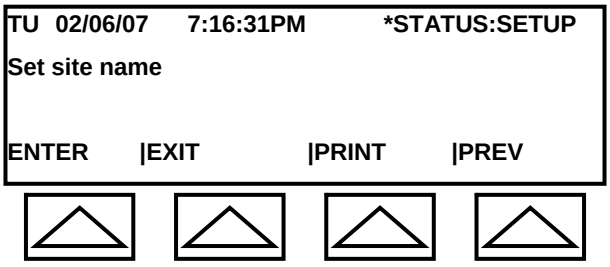


Fig. 4-5: Location Submenu

4.3.3.1 Site Name

1. Enter the site name.

System Response

The site name appears on line 3.

2. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-5 remain unchanged.

Line 2 reads: **Set security code, 6 Numeric Digits**.

Line 3 displays the default code **000000** or the current security code, if one has already been programmed into the system.

4.3.3.2 New Security Code

A security code consists of number only. To enter new code, begin with Step 1. If you wish to keep the existing security code, skip to Step 3.

Note: If you are entering a new security code, make sure you write it down. ***You will no longer be able to use the old or the default security code.***

1. Press the **DEL** key 6 times to erase the old number.

System Response

Line 3 will become blank and show a cursor.

2. Enter 6 numbers.

System Response

The numbers will appear on line 3.

3. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-5 remain unchanged.

Line 2 reads: **Set the drop report threshold, (G)**.

Line 3 displays 100.0.

4.3.3.3. Preprogrammed Data

The drop report threshold and dwell time have been preprogrammed at the factory.

1. Select ENTER to advance through the screens. Lines 2 and 3 will show the changing prompt and its value (see below). Lines 1 and 4 will remain unchanged.

   If you choose to change values, use the data keypad then select ENTER (see comments below before changing values).

Line 2: Prompt	Line 3: Programmed Value
Set the drop report threshold (G)	100 contact mfg before you change this value
Set the drop report dwell time, (mins)	5.0 (Contact mfg. before you change this value.)

2. While in the **Set the drop report dwell time** screen, select ENTER.

   Note: The system permits you to enter two lines for site address. Only the street address is entered into site address line 1 and site address line 2. There are separate screens for city, state, and zip code.

   System Response

   Lines 1 and 4 of Figure 4-5 remain unchanged.

   Line 2 reads: **Enter the site address line 1**.

   Line 3 displays a cursor.

4.3.3.4 Site Address Line 1

1. Enter the first line of the site address (maximum of 20 characters).

   System Response

   The address will appear on line 3.

2. Select ENTER.

   System Response

   Lines 1 and 4 of Figure 4-5 remain unchanged.

   Line 2 reads: **Enter the site address line 2**.

   Line 3 displays a cursor.

4.3.3.5 Site Address Line 2

1. Enter the second line of the site address (maximum of 20 characters). If there is none, leave Line 3 blank and select ENTER.

System Response
The address will appear on line 3.

2. Select ENTER.

System Response
Lines 1 and 4 of Figure 4-5 remain unchanged.
Line 2 reads: **Set the site city**.
Line 3 displays a cursor.

4.3.3.6 Site City

1. Enter the city (maximum of 20 characters).

System Response
The city will appear on line 3.

2. Select ENTER.

System Response
Lines 1 and 4 of Figure 4-5 remain unchanged.
Line 2 reads: **Set the site state, (2 character)**.
Line 3 displays a cursor.

4.3.3.7 Site State

1. Enter the state (maximum of 2 characters).

System Response
The state will appear on line 3.

2. Select ENTER.

System Response
Lines 1 and 4 of Figure 4-5 remain unchanged.
Line 2 reads: **Set the site zip code**.
Line 3 displays a cursor.

4.3.3.8 Site Zip Code

1. Enter the zip code (maximum of 10 characters).

System Response
The zip code will appear on line 3.

2. Select ENTER.

System Response
Lines 1 and 4 of Figure 4-5 remain unchanged.
Line 2 reads: **Set the site phone #**.
Line 3 displays a cursor.

4.3.3.9 Site Phone Number

1. Enter the telephone number (maximum of 20 characters).

System Response
The telephone number will appear on line 3.

2. Select ENTER.

System Response
Lines 1 and 4 of Figure 4-5 remain unchanged.
Line 2 reads: **Set the site manager's name**.
Line 3 displays a cursor.

4.3.3.10 Site Manager's Name

1. Enter the site manager's name (maximum of 20 characters).

System Response
The manager's name will appear on line 3.

2. Select ENTER.

System Response
Lines 1 and 4 of Figure 4-5 remain unchanged.
Line 2 reads: **Site Identification**.

Line 3 displays a cursor.

4.3.3.11 Site Identification Number

This information is for factor use only. The site identification number is set by the manufacturer and cannot be changed in the field. This is the OEL8000II Controller Serial #.

1. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-3-3 remain unchanged.

Line 2 reads: **Set Print Header Line #1**.

Line 3 displays a cursor.

4.3.3.12 Site Print Header

This feature allows you to create a 4-line header that will appear on hard copy printouts.

1. Enter Print Header for Line #1.

System Response

The Print Header for Line #1 will appear on line 3.

2. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-5 remain unchanged.

Line 2 reads: **Set Print Header Line #2**.

Line 3 displays a cursor.

3. The system will repeat this process allowing you to enter up to four (4) header lines. Repeat the above instructions for each header line. To leave a blank line, just select ENTER. When the LCD displays: **Set Print Header Line #4**, enter a value (or leave it blank) and select ENTER.

After Line #4 of the header is entered, the LCD will return to Screen #1 of the SETUP Submenu (see Figure 4-4a).

4.3.4 Wireless

The Wireless submenu allows you to enable transmitters and assign them to a specific tank.

Starting in Screen #1 (figure 4-4a) of the SETUP Submenu, select WIRELESS.

*Note: To return to the MAIN Menu from the Tank Submenu, select EXIT and then press the **MENU** key. The LCD returns to Screen #1 of the MAIN Menu (see Figure 4-2a).*

4.3.4.1 Wireless

1. Select WIRELESS from menu screen figure 4-4a.

   System Response

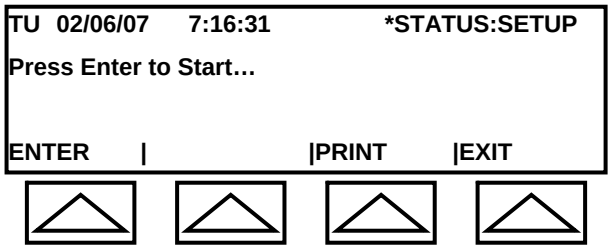


Fig. 4-6: "Wireless" Transmitter Submenu

   Will display the number of transmitters and the system ID.

   Select Enter

   System Response

   The screen will appear as in Figure 4-6.
   Line 1 remains unchanged.
   Line 2 reads: **Press Enter to Start…**
   Line 3 is blank.
   Line 4 has a new set of fields.

2. Select ENTER

   System Response

   The screen will appear as in Figure 4-6a.
   Line 1 remains unchanged.
   Line 2 reads: **Please enter wireless system ID:**

Line 3 XX

Line 4 has a new set of fields.

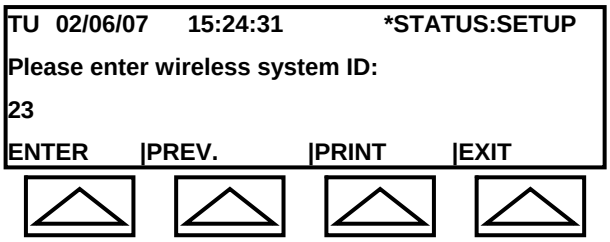


Fig. 4-6a: "Wireless" Transmitter Submenu

4.3.4.2 Wireless System ID

1.Enter Wireless System ID and select ENTER

System Response

The screen will appear as in Figure 4-6b.

Line 1 remains unchanged.

Line 2 reads: **Please enter transmitter ID(1..99):**

Line 3 0

Line 4 remains unchanged.

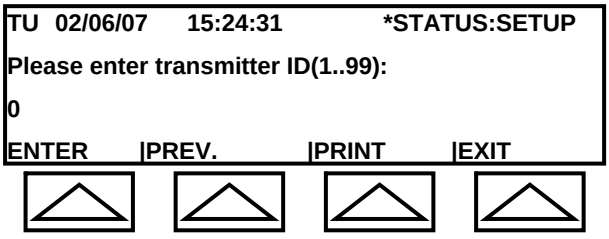


Fig. 4-6b: "Wireless" Transmitter Submenu

4.3.4.3 Transmitter ID

1. Enter the Transmitter number

System Response

The transmitter number appears on line 3.

2. Select ENTER.

System Response

The screen will appear as in Figure 4-6c.
Line 1 remains unchanged.
Line 2 reads: **Please enter tank number(1..99):**
Line 3 XX
Line 4 remains unchanged.

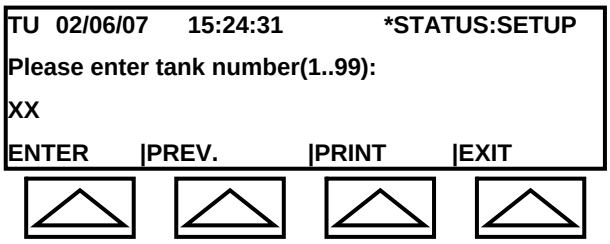


Fig. 4-6c: "Wireless" Transmitter Submenu

4.3.4.4 Tank Number

1. Enter the Tank number

System Response

The transmitter number appears on line 3.

2. Select ENTER.

System Response

The screen will appear as in Figure 4-6d.
Line 1 remains unchanged.
Line 2 reads: **INACTIVE ALARM (0=disable), Min:**
Line 3 XX
Line 4 remains unchanged.

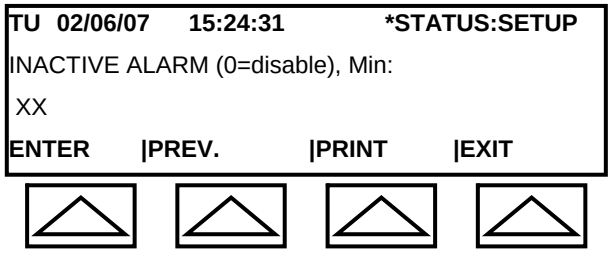


Fig. 4-6d: "Wireless" Transmitter Submenu

4.3.4.5 Inactive Alarm Time

1. Enter the Inactive Alarm time

If the OEL8000II does not receive a transmission from the wireless transmitter within the given Inactive Alarm time, the unit will go into alarm.

System Response

The Inactive Alarm time appears on line 3.

2. Select ENTER.

System Response

The screen will appear as in Figure 4-6e.

Line 1 remains unchanged.

Line 2 reads: **Enter: 0 = Open Warning; 1 = Hi Hi Alarm:**

Line 3 0

Line 4 remains unchanged.

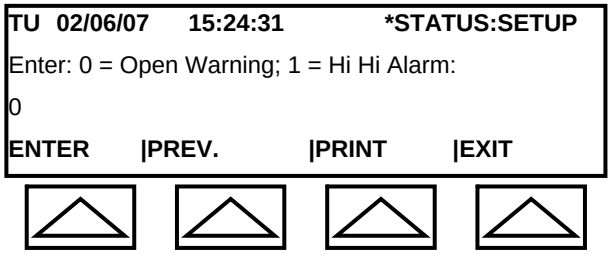


Fig. 4-6e: "Wireless" Transmitter Submenu

4.3.4.6 Probe Type

1. Enter the type of probe (0 for Data Stik, 1 for Fill Check).

System Response

The probe type appears on line 3.

2. Select ENTER.

System Response

The screen will appear as in Figure 4-6f.

Line 1 remains unchanged.

Line 2 reads: **Enter: 1 = Enable; 0 = Disable: 2 = Del:**

Line 3 0

Line 4 remains unchanged.

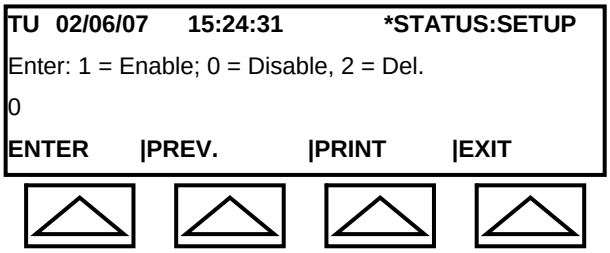


Fig. 4-6f: "Wireless" Transmitter Submenu

4.3.4.7 Alarm Enable

2. Enter 1 to enable alarms for this probe, 0 to disable alarms or 2 to delete

System Response

The probe alarm function appears on line 3.

2. Select ENTER.

System Response

The screen will appear as in Figure 4-6g.
Line 1 remains unchanged.
Line 2 reads: **Tx X, setup finished.**
Line 3 is blank
Line 4 remains unchanged.

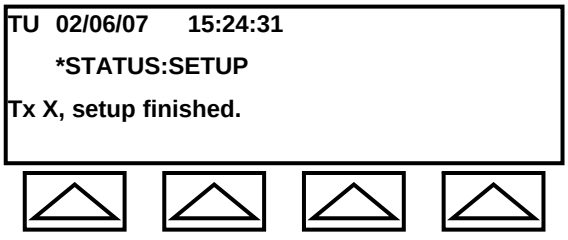


Fig. 4-6g: "Wireless" Transmitter Submenu

4.3.4.8 Wireless Set Up Finished

1. Select Enter

System Response

The screen returns to the Transmitter ID screen 4-6b.

2. Either select another Transmitter ID to program or select EXIT to return to the main setup menu 4.5.a

4.3.5 Tank Data

The Tank Submenu allows you to enter data for each tank. For systems with multiple tanks, repeat the following procedures for each tank.

Starting in Screen #1 (fig. 4-4a) of the SETUP Submenu, select MORE, then select TANK.

*Note: To return to the MAIN Menu from the Tank Submenu, select EXIT and then press the **MENU** key. The LCD returns to Screen #1 of the MAIN Menu (see Figure 4-2a).*

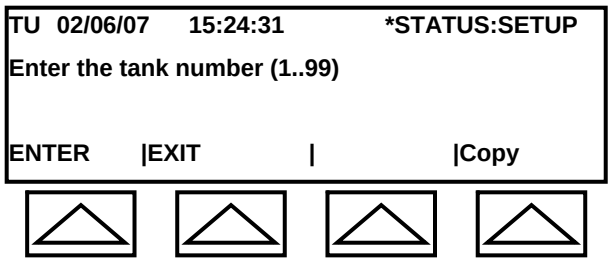


Fig. 4-7a: Tank Submenu

System Response

The screen will appear as in Figure 4-7a.

Line 1 remains unchanged.

Line 2 reads: **Enter the tank number, (1..99)**.

Line 3 shows a cursor.

Line 4 has a new set of fields.

Field Descriptions

- ENTER – select this field to save entered data and to advance to the next screen.
- EXIT – returns to Screen #1 of the SETUP Submenu.
- COPY – select this field to copy data from one tank to another tank.

Copying Tank Data

When programming the first (or only) tank or multiple tanks that are different, start with *Section 4.3.5.2 – Tank Identification.* When programming two or more similar tanks, you can save time by copying data from a previously programmed tank. To copy tank data, begin with *Section 4.3.5.1a – Copying Tank Data*.

4.3.5.1 Copying Tank Data

When you have two or more similar tanks, you can use this procedure to copy data from a previously programmed tank. **Note that not all of the copied data may apply to the new tank. After copying, review all data and make changes where applicable.**

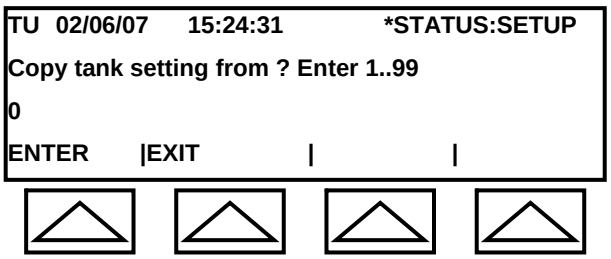


Fig. 4-7b: Copying Tank Data

CAUTION

Failure to comply with recommendations may result in improper operation of system.

1. Enter the number of the tank to be programmed.

   System Response

   The tank number appears on line 3.

2. Select COPY.

   System Response

   The screen will appear as in Figure 4-7b.

   Line 1 remains unchanged.

   Line 2 reads: **Copy tank setting from ? Enter 1..99**.

   Line 3 shows a 0.

   Line 4 shows ENTER and EXIT fields.

3. Enter the number of the tank to be copied.

System Response

The tank number appears on line 3.

4. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7b remain unchanged.

Line 2 reads: **Tank *Y* has been copied from tank *X***. (***X*** and ***Y*** represent the tank numbers entered in Step 1 and Step 3, above)

Line 3 continues to display the number of tank being copied.

The LCD will display this screen for a few seconds then revert to the Tank Submenu (see Figure 4-7a).

5. Proceed to *Section 4.3.52 – Tank Identification* to review copied data and make applicable changes.

4.3.5.2 Tank Identification

1. Enter the tank number.

System Response

The tank number appears on line 3.

3. Select ENTER.

System Response

The screen will appear as in Figure 4-7c.

Lines 1 and 4 are the same

Line 2 reads: **Set the product type**.

Line 3 shows Diesel

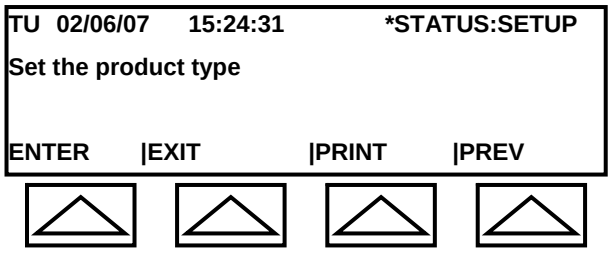


Fig. 4-7c: Tank Data

4.3.5.3 Product Type

1. Enter the product type (maximum of 18 characters).

System Response

The product type will appear on line 3.

2. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.
Line 2 reads: **Select Volume Correction Method**.
Line 3 shows options for Coef. API-6B API-24B API-54B.

4.3.5.4 Volume Correction Method

1. Choose volume correction method by using the cursor left and cursor right arrows.

2. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.
Line 2 reads, depending on option chosen above:

Set the coef. thermal expansion: XX.X
API 6B, Set the Gravity(60F): XX.X
API 24B, Set the Density(60F): X.XXX
API 54B, Set the Density (15C): XXX.X

Line 3 shows a cursor.

Note: When entering numerical values for physical criteria, use numbers and decimal points only, (no commas or spaces). Also, always measure and enter data based on specified units.

4.3.5.5 Coefficient of Thermal Expansion, Density, Gravity

1. Enter the coefficient of thermal expansion , density or gravity.

Note, for coefficient of thermal expansion: The system will automatically multiply the value entered by 10^{-5} (refer to Appendix A – Probes).

System Response

The coefficient of thermal expansion. density or gravity will appear on line 3.

2. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.

Line 2 reads: **Set the tank tilt, (In)**.

Line 3 shows a cursor.

4.3.5.6 Tank Tilt

Note: The tank tilt was calculated in Tank Tilt Section of Appendix

1. Enter the tank tilt in inches (maximum of 10 numerical characters).

System Response

The tank tilt will appear on line 3.

2. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.

Line 2 reads: **Set product Offset? Enter 1=YES; 0=NO**.

Line 3 shows a cursor and the current value for the Product Null (e.g. **P.N. 1.002 (In)**).

4.3.5.7 Product Height

The product height and water height (see *Section 4.3.5.8 – Water Height*) procedures must be performed at the same time. For each tank, you will have to obtain a stick-reading of the product height and water height and enter their measured values into the system. The system will automatically calculate the Product Null and Water Null.

Important!

To ensure accurate calculations, you must perform the product height and water height measurements at the same time and immediately enter the values into the system (during this procedure product must be stagnant).

Failure to comply with recommendations may result in improper operation of system.

If you do not wish to enter values at this time, you can skip these sections (enter **0** and select ENTER; repeat for Water Height). You may choose to return to this section after you have finished the rest of the programming.

To enter values, do the following:

1. Obtain stick-readings of the product height and of water height (for water height, use a water paste on the stick).

2. Enter **1** and select ENTER.

   System Response

   Lines 1 and 4 of Figure 4-7c remain unchanged.

   Line 2 reads: **Enter the product height, (In)**.

   Line 3 shows a cursor and the previously entered value for Product Height.

2. Enter the product height stick-reading (maximum of 10 numerical characters plus decimal point).

   System Response

   The product height will appear on line 3.

3. Select ENTER.

   System Response

   The system calculates the Product Null.

   Lines 1 and 4 of Figure 4-7c remain unchanged.

   Line 2 reads: **Set water Offset? Enter 1=YES; 0=NO**.

   Line 3 shows a cursor and the current value for the Water Null (e.g. **W.N. 1.502 (In)**).

4.3.5.8 Water Height

The product height and water height procedures are performed at the same time. The water height stick-reading was obtained in the previous section.

Important!

Read and perform the procedure in *Section 4.3.5.7 – Product Height,* before performing this procedure.

Failure to comply with recommendations may result in improper operation of system.

1. Enter **1** and select ENTER.

   System Response

   Lines 1 and 4 of Figure 4-7c remain unchanged.

   Line 2 reads: **Enter the water height, (In)**.

   Line 3 shows a cursor and the previously entered value for water height.

2. Enter the water height stick-reading that you obtained in the previous section (maximum of 10 numerical characters plus decimal point).

   System Response

   The water height will appear on line 3.

3. Select ENTER.

   System Response

   The system calculates the Water Null.

   Lines 1 and 4 of Figure 4-7c remain unchanged.

   Line 2 reads: **Set the high water alarm point, (In)**

   Line 3 shows **3.000**

4.3.5.9 High Water Alarm Point

This value has been factory programmed to 3.0” (default value). If the tank’s water level should rise to this level, the high water alarm will be activated. The water level is detected by the lower float on the magnetostrictive probe.

To change the value, do the following:

1. Enter the high water alarm point in inches.

System Response

The high water alarm point will appear on line 3.

2. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.

Line 2 reads: **Set low/low product alarm point, % tank**

Line 3 shows **15**.

4.3.5.10 Low/Low Product Alarm Point

The value is a percentage of the tank capacity. If the tank's product level drops to this level, the low/low product alarm will be activated. The factory programmed value is 15% (default value). The product level is detected by the upper float on the magnetostrictive probe.

To change the value, do the following:

1. Enter the low/low product alarm point in percent.

System Response

The low/low product alarm point will appear on line 3.

2. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.

Line 2 reads: **Set Delivery needed point, % tank (0=OFF)**.

Line 3 shows a cursor and displays: **('0' to Disable)**.

4.3.5.11 Delivery Needed Alarm Point

The value is a percentage of the tank capacity. If the tank's product level drops to this level, the delivery needed alarm will be activated. The factory programmed value is 0% (default value).

To change the value, do the following:

Note: This value must be greater than the low/low alarm point.

1. Enter the delivery needed point percent (enter **0** to disable feature).

System Response

The delivery needed point will appear on line 3.

2. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.

Line 2 reads: **Set low product point, % tank**.

Line 3 shows **0** and displays: **('0' to Disable)**.

4.3.5.12 Low Product Point

The value is a percentage of the tank capacity. If the tank's product level drops to this level, the low product point will be activated. The factory programmed value is 0% (default value).

To change the value, do the following:

1. Enter the low product point in percent (enter **0** to disable feature).

System Response

The low product point will appear on line 3.

Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.

Line 2 reads: **Set high product point, % tank**.

Line 3 shows **101** and displays: **('101' to Disable)**.

4.3.5.13 High Product Point

The value is a percentage of the tank capacity. If the tank's product level rises to this level, the high product point will be activated. The factory programmed value is 101% (default value).

To change the value, do the following:

1. Enter the high product point in percent (enter **101** to disable feature).

System Response

The high product point will appear on line 3.

Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.

Line 2 reads: **Set high product warning point, % tank**.

Line 3 shows **85**

4.3.5.14 High Product Warning Point

The value is a percentage of the tank capacity. If the tank's product level rises to this level, the high product warning point will be activated. The factory programmed value is 85% (default value).

To change the value, do the following:

1. Enter the high product warning point in percent.

System Response

The high product warning point will appear on line 3.

Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.

Line 2 reads: **Set Overfill alarm point, % tank (Max 90_**

Line 3 shows **101** and displays: **('101' to Disable)**.

4.3.5.15 Overfill Product Alarm Point

The value is a percentage of the tank capacity. If the tank's product level rises to this level, the overfill product alarm will be activated. The factory programmed value is 101% (default value). The maximum programmable value is 90%.

To change the value, do the following:

1. Enter the overfill product alarm point in percent (enter **101** to disable feature).

System Response

The overfill product alarm point will appear on line 3.

Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.

Line 2 reads: **Set high/high product alarm, % tank** (Max 95)

Line 3 shows **90**

4.3.5.16 High/High Product Alarm Point

The value is a percentage of the tank capacity. If the tank's product level rises to this level, the high/high product alarm will be activated. The factory programmed value is 90% (default value). The maximum programmable value is 95%.

1. Enter the high/high product alarm in percent.

System Response

The high/high product alarm will appear on line 3.

Note: Alarms and other system responses are discussed in Section 2.3 – Magnetostrictive (MTG) Probe.

Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.

Line 2 reads: **Set the probe length for the tank, (In)**

Line 3 shows 100.000

4.3.5.17 Probe Length

The probe length is the length of the magnetostrictive probe's shaft in inches.

1. Enter the probe length (see *Section 2.3.1 – MTG Probe Length*). You may enter up to10 numerical characters.

System Response

The probe length will appear on line 3.

Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.

Line 2 reads: **Set the label for the tank**.

Line 3 shows cursor

2. Select ENTER.

System Response

Lines 1 and 4 of Set the label for the tank.

Line 3 shows a cursor.

4.3.5.18 Tank Label

1. Enter the label for this tank

System Response

The tank label will appear on line 3.

2. Select ENTER.

System Response

The screen returns to figure 4.4b

4.3.6 Tank Table

The Table Submenu allows you to enter data for each tank. For systems with multiple tanks, repeat the following procedures for each tank.

Starting in Screen #1 of the SETUP Submenu, select MORE, then select TABLE.

*Note: To return to the MAIN Menu, select EXIT and then press the **MENU** key. The LCD returns to Screen #1 of the MAIN Menu (see Figure 4-2a).*

System Response

The screen will appear as in Figure 4-7a.

Line 1 remains unchanged.

Line 2 reads: **Enter the tank number, (1..99)**.

Line 3 shows a cursor.

Line 4 has a new set of fields.

4.3.6.1 Tank number, (1..99).

1. Enter the number for this tank

System Response
The tank number will appear on line 3.

2. Select ENTER.

System Response
Line 1 remains unchanged.
Line 2 reads: **The Capacity (G):**
Line 3 10000.000
Line 4 has a new set of fields.

4.3.6.2 Tank capacity.

1. Enter the volume tank capacity in gallons (maximum of 10 numerical characters).

System Response
The tank capacity will appear on line 3.

2. Select ENTER.

System Response
Lines 1 and 4 remain unchanged.
Line 2 reads: **Set a vol. offset (G)**.
Line 3 shows 0.000.

4.3.6.3 Volume Offset

Volume Offset is a calibration to compensate for consistent discrepancies that may be found between actual and displayed volume.

Important!

When initially programming the controller, leave the default value of zero (0.000).

1. Enter the volume offset in gallons (maximum of 10 numerical characters).

System Response
The volume offset will appear on line 3.

2. Select ENTER.

System Response
Lines 1 and 4 of Figure 4-7c remain unchanged.
Line 2 reads: **The Table Maximum Height (In):**
Line 3 shows a cursor.

4.3.6.4 Tank Diameter

The Table Maximum Height is the tank height.

1. Enter the diameter of the tank in inches (maximum of 10 characters).

System Response
The tank diameter will appear on line 3.

2. Select ENTER.

System Response
Lines 1 and 4 of Figure 4-7c remain unchanged.
Line 2 reads: The **Table Level Increment (In):**
Line 3 shows 50.000

4.3.6.5 Table Level Increment

This procedure will divide the overall tank diameter (height) by the height you enter in this section. The system will calculate the height (in inches) for each point and prompt you to enter the tank volume for that level. Refer to the tank manufacturer's Dipstick Calibration Chart for volume at specific levels. **The lower the number you enter for table level increment, the greater the accuracy.**

1. Enter the table level increment.

System Response
The table level increment will appear on line 3.

2. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-7c remain unchanged.

Line 2 reads: **First Height XX.XXX (In), enter (G) :**

Line 3 shows a cursor.

3. Enter the volume for the level indicated (maximum of 10 characters). To enter a decimal point, press the **ACK** key.

System Response

The volume will appear on line 3.

4. Select ENTER.

System Response

The system will respond as in Step 2 displaying the level for the next point. Enter the volume and select ENTER. This will be repeated until entries have been made for the total number of points entered in Step 1.

After the volume for the last point has been entered,

Line 2 will say Press Enter To Finish

2. Select ENTER.

System Response

the LCD will return to Screen #2 of the SETUP Submenu (see Figure 4-4b).

If you have additional tanks to program, return to Section 4.3.5. If you have completed programming all of the tanks, proceed to Section 4.3.7.

4.3.7 Programming

4.3.7.1 Programming the IB-C420 Board

Important: *IB- C420 programmable for Tank 1 thru Tank 8 only.*

In this procedure, you select a channel that will provide an analog output representing the volume or height of a selected tank.

1. Starting in the System Interface Boards Screen (see Figure 4-15a), select SLCT BRD to position the cursor on **4 to 20MA**.

2. Select PROG BRD.

System Response

The screen will appear as in Figure 4-15h.

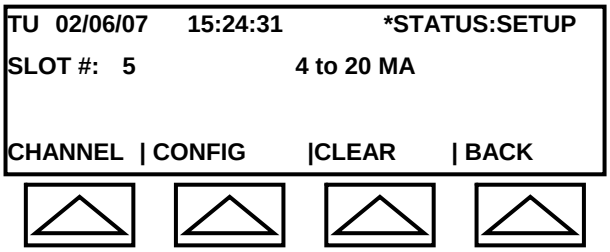


Fig. 4-15h: IB-C420

Field Descriptions

- CHANNEL – scrolls through the channel numbers (1 – 4).
- CONFIG – proceeds to configuration screen.
- CLEAR – clears entries.
- BACK – returns to previous screen.

3. Select CHANNEL to choose a channel number. Refer to IB-C420 wiring diagram for proper channel number.

4. Select CONFIG to accept the selected channel number.

System Response

Lines 1, 2, and 3 remain the same.

Line 4 displays fields: ASSIGN, CAL 20 MA, CAL 4 MA, BACK.

Note: CAL 20 MA and CAL4 MA are for factory use only.

5. Select ASSIGN.

System Response

Line 1 remains the same.

Lines 2 and 3 are blank.

Line 4 displays fields: MAG TANK and BACK.

6. MAG TANK allows you to scroll through the system tanks. Select MAG TANK to choose a tank (probe) number.

System Response

Lines 1, 2, and 3 remain the same.

Line 4 displays fields: MAG TANK, VOL/HGT, TEMP, BACK.

7. Select to VOL/HGT to choose volume or height.

IB-C420 interface boards are factory calibrated. Consult manufacturer for additional calibration instructions.

4.3.7.2 Programming the IB-12V Low Voltage Board

The IB-12V provides eight low voltage outputs. Programming procedures are the same as for the IB-RB2 (see *Section A-27 – Programming the IB-RB2 Relay Board*).

4.3.7.3 Programming the IB-NET Board

See *Appendix F – Interface Boards* for installation and configuration instructions.

4.3.8 Clearing Logs (Alarm and Drop)

The Alarm and Drop logs are accessed in Screen #2 of the SETUP Submenu (see Figure 4-4b). Select the MORE field on the bottom line of the LCD to advance screens.

*Note: To return to the MAIN Menu, press the **MENU** key. The LCD returns to Screen #1 of the MAIN Menu (see Figure 4-2a).*

The following procedure provides instructions for clearing logs. The Alarm Log is used for illustrative purposes.

1. Starting is Screen #1 of SETUP Submenu, select MORE to advance to Screen #2.

2. Select ALARM LOG.

System Response

The screen will appear as in Figure 4-11a.

Line 1 displays day, date, time, and status.

Line 2 indicates number of entries currently in log. It also in-

structs to enter **1** to clear the log.

Line 3 shows a cursor.

Line 4 has a new set of fields.

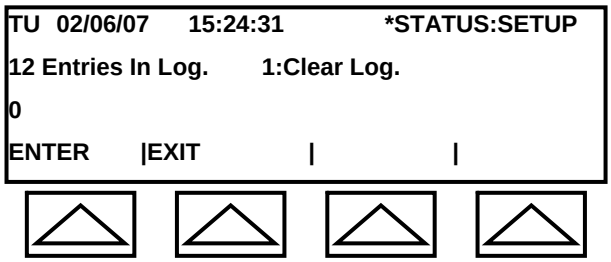


Fig. 4-11a: Clear Log Screen

Field Descriptions

- ENTER – enters value.
- EXIT – returns to Screen #2 of the SETUP Submenu (see Figure 4-4b).

3. To clear the log, enter **1** using the data keypad.

System Response

The value will appear on line 3.

4. Select ENTER.

System Response

The screen will appear as in Figure 4-11b for a few seconds then the LCD will display Screen #2 of the SETUP Submenu.

Lines 1, 3 and 4 remain unchanged.

Line 2 displays: **Alarm Log Empty**.

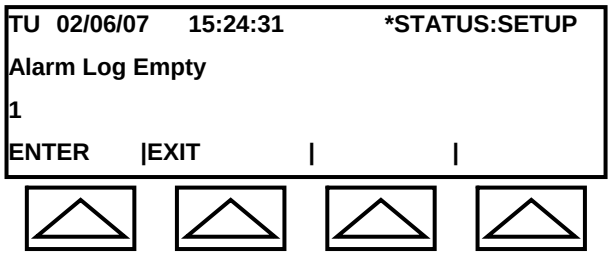


Fig. 4-11b: Log Cleared Screen

4.3.9 Shift Data

The Shift Submenu allows you to enter the number of shifts. It then prompts you for start and stop times.

*Note: To return to the MAIN Menu from the Shift Submenu, select EXIT and then press the **MENU** key. The LCD returns to Screen #1 of the MAIN Menu (see Figure 4-2a).*

1. Starting in Screen #1 of the SETUP Submenu, select MORE two times to advance to Screen #3.

2. Select SHIFT.

System Response

The screen will appear as in Figure 4-12.

Line 1 remains unchanged.

Line 2 displays: **Shift Print Enable/Disable (E/D)**.

Line 3 displays the current programmed value.

Line 4 has a new set of fields.

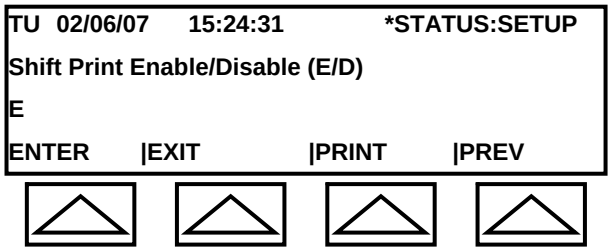


Fig. 4-12: Log Cleared Screen

Field Descriptions

- ENTER – enters value.
- EXIT – returns to Screen #1 of the SETUP Submenu (see Figure 4-4a).
- PRINT – provides a hardcopy printout of the Shift data.
- PREV – allows you to display the previous screen in the Shift Submenu.

3. Enter **E** for enable or **D** for disable.

   *Note: If any character other than **E** is entered, the system will automatically program the default value **D**.*

System Response

The character you entered will appear on line 3.

4. Select ENTER.

System Response

Lines 1 and 4 of Figure 4-12 remain unchanged.

Line 2 displays: **Shift Open Time**.

Line 3 displays the currently programmed value.

5. Enter the Shift Open Time for Shift #1 in standard military time and select ENTER

System Response

Lines 1 and 4 of Figure 4-12 remain unchanged.

Line 2 displays: **Number of shifts (1-4)**

Line 3 displays the currently programmed value.

6. Enter the number of shifts (1-4) and select ENTER

System Response

Lines 1 and 4 of Figure 4-12 remain unchanged.

Line 2 displays: **Shift End Time 1**

Line 3 displays the currently programmed value.

7. Enter in standard military time the end time for shift #1 and select ENTER.

System Response

Lines 1 and 4 of Figure 4-12 remain unchanged.

Line 2 displays: **Shift End Time 2**.

Line 3 displays the currently programmed value.

8. The screen will prompt you to enter the end time for the remaining shifts. Selecting ENTER will advance you to the next shift. When the last end time is entered the screen will return to Screen #3 of the SETUP Submenu (see Figure 4-4c).

A printout will be provided at the end of each shift to reflect that shift's start volume, end volume, and delta volume for each tank connected to the system.

4.3.10 Remote Data

The Remote Submenu allows you to program the site alarm acknowledge time and, and it allows you to enable/disable the remote horn time out feature.

*Note: To return to the MAIN Menu from the Remote Submenu, select EXIT and then press the **MENU** key. The LCD returns to Screen #1 of the MAIN Menu (see Figure 4-2a).*

1. Starting in Screen #1 of the SETUP Submenu, select MORE two times to advance to Screen #3.

2. Select REMOTE.

System Response

The screen will appear as in Figure 4-13.

Line 1 remains unchanged.

Line 2 displays: **Set site alarm ack. time, #### hour**.

Line 3 displays the default value 9999 hours or the currently programmed value.

Line 4 has a new set of fields.

Field Descriptions

- ENTER – enters value.
- EXIT – returns to Screen #1 of the SETUP Submenu (see Figure 4-4a).
- PRINT – provides a hardcopy printout of the Remote data.
- PREV – allows you to display the previous screen in the Remote Submenu.

4.3.10.1 Site Alarm Acknowledge Time

This feature serves as a snooze alarm. It allows you to set the length of time the controller will wait after an alarm has been acknowledged before sounding its horn again. An alarm is acknowledged by pressing the **ACK** key on the controller's front panel. This silences the horn. The horn will sound again after the programmed time if the alarm condition still exists.

1. To keep the current value, skip to Step 3. To change the value, press the **DELETE** key as often as necessary to erase the old number.

   System Response

   Line 3 will become blank and show a cursor.

2. Enter the time value in hours (maximum of 4 numerical characters).

   System Response

   The alarm acknowledge time in hours will appear on line 3.

3. Select ENTER.

   System Response

   Lines 1 and 4 of Figure 4-13 remain unchanged.

   Line 2 displays: **Set remote horn timeout, #### Min**.

   Line 3 displays the currently programmed value.

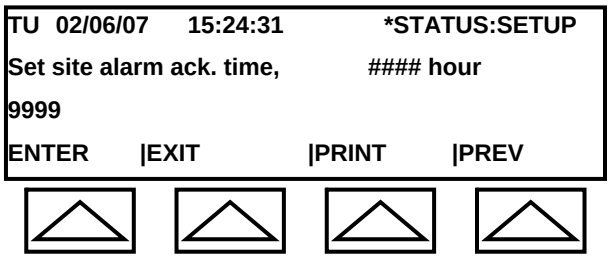


Fig. 4-13: Alarm Acknowledge Time Screen

4.3.10.2 Remote Horn Timeout

This is a time-out value for the RAS series remote annunciators. The annunciator's horn will respond to a high product alarm. If the horn is not shut off by pressing the annunciator's Horn Silence Switch, depressing the controller's **ACK** key, or correcting the alarm condition, the system will automatically shut off the annunciator's horn after this programmed time period. It does not affect the annunciator's LEDs.

*Note: This does not affect the controller's horn, which can only be shutoff by pressing the **ACK** key on the controller's panel or correcting the alarm condition.*

1. To keep the current value, skip to Step 3. To change the value, press the **DELETE** key as often as necessary to erase the old number.

   Note: If no value has been previously programmed, Line 3 will be blank.

   System Response

   Line 3 will become blank and show a cursor.

2. Enter the time-out value in minutes (maximum of 4 numerical characters).

   System Response

   The time-out value will appear on line 3.

3. Select ENTER.

   System Response

   Lines 1 and 4 of Figure 4-13 remain unchanged.

   Line 2 displays: **Set remote horn time enable, E/D**.

   Line 3 displays the default value (**E**) or the currently programmed value.

4.3.10.3 Remote Horn Time Enable/Disable

This permits you to enable or disable the Remote Horn Timeout discussed in the previous section. If you select disable, the annunciator's horn will not time-out. In the event of a high product alarm, the horn will sound until the annunciator's reset button has been pressed, the controller's **ACK** key has been pressed, or the alarm condition has been corrected.

1. To keep the current value, skip to Step 3. To change the value, press the **DELETE** key as often as necessary to erase the old number.

   System Response

   Line 3 will become blank and show a cursor.

2. Enter **E** for enable or **D** for disable.

   *Note: If any character other than **E** is entered, the system will automatically program the default value **D**.*

   System Response

   The character you entered will appear on line 3.

3. Select ENTER.

   System Response

   The LCD returns to returns to Screen #1 of the SETUP Submenu (see Figure 4-4a).

4.3.11 Report

This section allows you to obtain a hardcopy printout of the system parameters.

*Note: To return to the MAIN Menu from the Report Submenu, select EXIT and then press the **MENU** key. The LCD returns to Screen #1 of the MAIN Menu (see Figure 4-2a).*

1. Starting in Screen #1 of the SETUP Submenu, select MORE three times to advance to Screen #4 (see Figure 4-5d).

2. Select REPORT.

   System Response

   The screen will appear as in Figure 4-16.

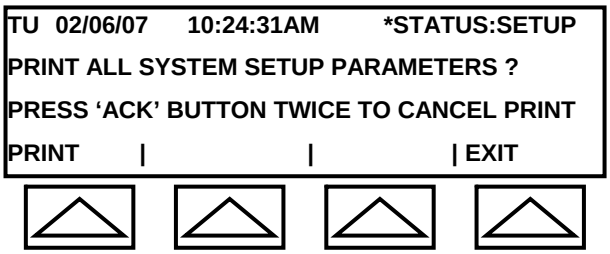


Fig. 4-16: Report

3. Select PRINT to obtain printout.

4.3.12 Units

This section allows you to select the following unit options for height, volume and temperature.

Inch (In) / Gallon (G) / Fahrenheit (F)

Centimeter (cm) / Liter (L) / Celsius (C)

Feet (Ft) / Barrel (BBLS) / Celsius (C)

Feet (Ft) / Barrel (BBLS) / Fahrenheit (F)

*Note: To return to the MAIN Menu from the Units Submenu, select EXIT and then press the **MENU** key. The LCD returns to Screen #1 of the MAIN Menu (see Figure 4-2a).*

1. Starting in Screen #1 of the SETUP Submenu, select MORE four times to advance to Screen #5 (see Figure 4-4e).

2. Select UNITS.

System Response

The screen will appear as in Figure 4-17.

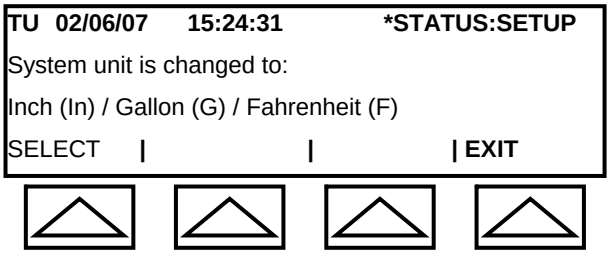


Fig. 4-17: Units

3. Using the SELECT arrow to scroll through the unit options.

System Response

Line 3 shows the unit combination selected.

4. Select ENTER.

System Response

The value is saved and the LCD returns to Screen #5 (see Figure 4-4e).

4.3.13 Language

This field appears in Screen #5 (see Figure 4-4e). It is reserved for future use.

4.3.14 Comm

This section explains how to program the system's communications options.

*Note: To return to the MAIN Menu from the Comm Submenu, select BACK and then press the **MENU** key. The LCD returns to Screen #1 of the MAIN Menu (see Figure 4-2a).*

1. Starting in Screen #1 of the SETUP Submenu, select MORE three times to advance to Screen #4 (see Figure 4-4d).

2. Select COMM.

System Response

The screen will appear as in Figure 4-14a.

Line 1 remains unchanged.

Lines 2 and 3 display: **Make a Selection or Press Menu to Exit Setup**.

Line 4 has a new set of fields.

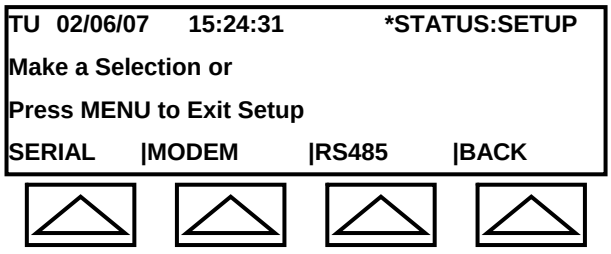


Fig. 4-14a: Comm Submenu

Field Descriptions

- SERIAL – for setting up COM1, COM2, and COM3 communications.
- MODEM –for setting up Auto Fax, Data Modem, and IP Modem.
- RS485 – for setting up RS485 communications.
- BACK – Returns to Screen #4 of the SETUP Submenu.

4.3.14.1 Serial

COM1 is used by the factory to download operating software for external devices (i.e., CM250 generator monitoring device, remote digital displays, etc.). COM2 is also used for external devices. COM3 is the most commonly used option for serial (RS232) communications.

Select SERIAL to setup COM1, COM2, and COM3.

System Response

The screen will appear as in Figure 4-14b.

Line 1 remains unchanged.

Lines 2 and 3 are blank.

Line 4 provides the communications options.

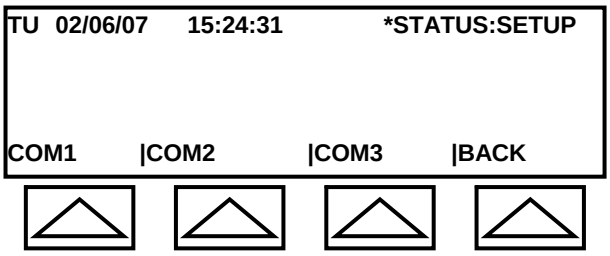


Fig. 4-14b: Serial Submenu

4.3.14.1.1 COM1

1. Select COM1 in the Serial Submenu (see Figure 4-14b).

System Response

The screen will appear as in Figure 4-14c.

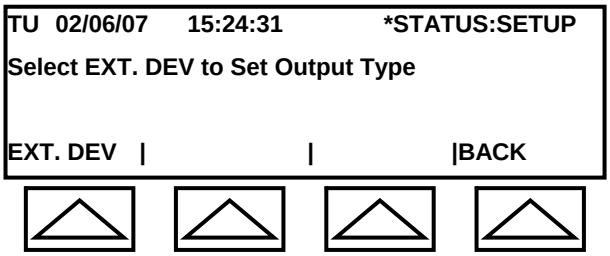


Fig. 4-14c: COM1

2. Select EXT DEV.

Contact manufacturer for additional information on this feature.

System Response

The screen will appear as in Figure 4-14d.

3. Select MORE to view additional options in second screen.

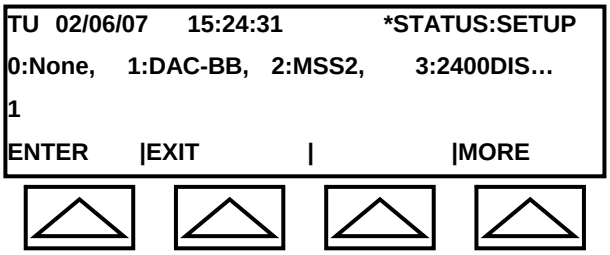


Fig. 4-14d: COM1 – Ext. Dev.

Note: Select MORE again to return to the first screen.

System Response

Lines 1, 3, and 4 remain unchanged..

Line 2 displays additional options: **4:9600DIS, 5:r200 DATA**.

4. Enter a number and select ENTER.

System Response

The LCD displays the Serial Submenu (see Figure 4-14b).

Lines 1 and 4 remain unchanged.

Lines 2 and 3 display: **Make a Selection or Press Menu to Exit Setup**.

4.3.14.1.2 COM2

1. Select COM2 in the Serial Submenu (see Figure 4-14b).

   System Response

   The screen will appear as in Figure 4-14e.

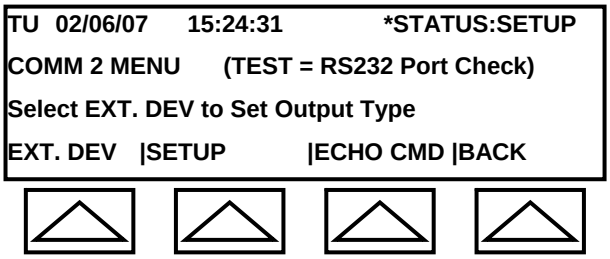


Fig. 4-14e: COM2

2. To perform RS232 Port Check, press the **TEST** key.

   System Response

   The screen will appear as in Figure 4-14f.

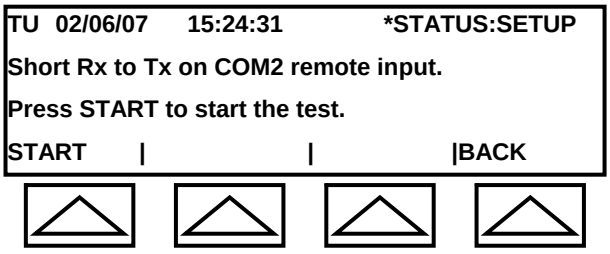


Fig. 4-14f: COM2

3. Use a jumper to jump the receive and transmit wires on COM2 (Pin 2 and pin 3 on the 9 pin D type connector located on the left side of the OEL8000II enclosure).

4. Select START. This runs the Loop Back Test.

   System Response

   The LCD will display the test results.

   "COM2 Loopback test passed (or failed)"

5. Select one of the options on Line #4.

4.3.14.1.2.1 Ext. Dev

Contact manufacturer for additional information on this feature.

1. Select EXT DEV.

System Response

The screen will appear as in Figure 4-14g

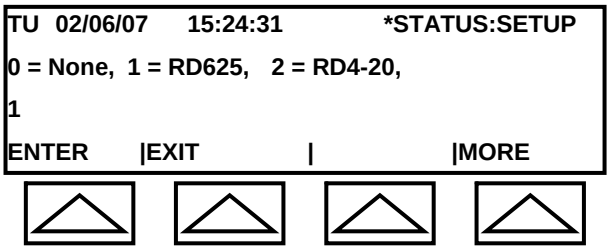


Fig. 4-14g: COM2 – Ext. Dev.

2. Select MORE to view additional options in second screen.

System Response

Lines 1, 3, and 4 remain unchanged..

Line 2 displays additional options: **0 = None, 1 = RD625, 2 = RD4-20…**

3. Select MORE to view additional options in third screen.

Note: Select MORE again to return to the first screen.

System Response

Lines 1, 3, and 4 remain unchanged..

Line 2 displays additional options: **Modbus = 3:RTU 4:RD625X10**

System Response

The screen will appear as in Figure 4-14h.

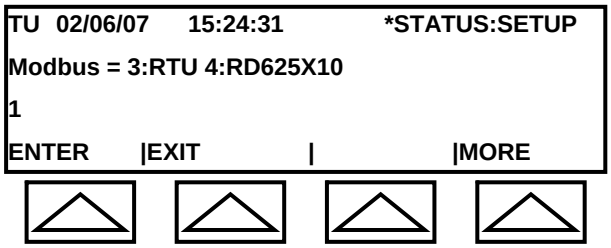


Fig. 4-14h: COM2 – Ext. Dev.

4. Enter a number and select ENTER.

System Response

The LCD displays the Serial Submenu (see Figure 4-14b.

Lines 1 and 4 remain unchanged.

Lines 2 and 3 display: **Make a Selection or Press Menu to Exit Setup**.

4.3.14.1.2.2 Setup

1. Select SETUP

System Response

The screen will appear as in Figure 4-14i.

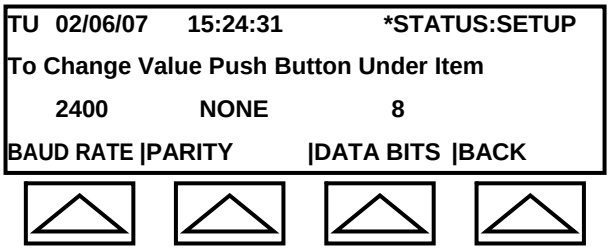


Fig. 4-14i: COM2 – Setup

Field Descriptions

- BAUD RATE – select to scroll through Baud Rate values.
- PARITY –select to scroll through: NONE, EVEN, ODD..
- DATA BITS – toggles between 7 and 8.
- BACK – Returns to Figure 4-14e.

2. Select one more fields on Line 4 and set to required values.

4.3.14.1.2.3 Echo Cmd

This feature allows the display of all incoming remote commands and part of the response string on the OEL8000II's display.

All incoming characters following the Control-A (start of command character) will be shown on the 3rd line of the display. Thirteen characters from the response string will also be displayed on the right side of the display. To turn on the echo command function (see Figure 4-14e), select (toggle) the arrow under ECHO CMD. The label will change to "ECHO ON". Exit setup by pressing the menu button.

4.3.14.1.3 COM3

The COM3 port is used to retrieve tank/sensor data or to change the settings in the OEL8000II.

1. Select COM3 in the Serial Submenu (see Figure 4-14b)

System Response

The screen will appear as in Figure 4-14j.

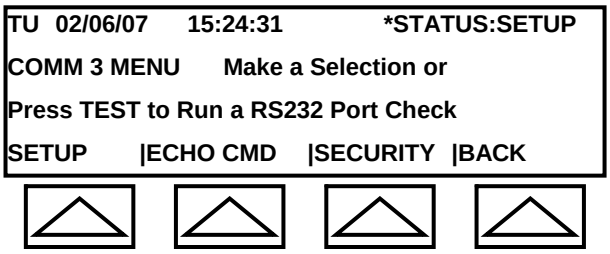


Fig. 4-14j: COM3

2. To perform RS232 Port Check (Loopback Test), see *Section 4.3.11.1.2 – COM2*, Step 2.

3. To Setup, see *Section 4.3.11.1.2.2 – Setup*.

4. Select ECHO CMD to toggle between ECHO ON and ECHO OFF, *see Section* . 4.3.11.1.2.3

5. To setup security, select SECURITY.

System Response

The screen will appear as in Figure 4-14k.

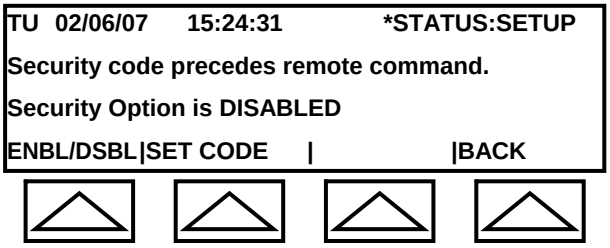


Fig. 4-14k: COM3 -- Security

a. Select ENBL/DSBL to toggle between Enable and Disable.

b. Select SET CODE to set a security code.

System Response

The screen will appear as in Figure 4-14l.

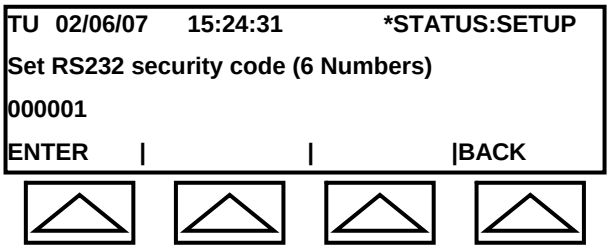


Fig. 4-14l: COM3 -- Security

c. Enter a 6-digit numerical code using the data keypad and select ENTER.

d. Select BACK to return to previous screen.

4.3.14.2 Modem

Select MODEM in the Com Submenu (see Figure 4-14a).

System Response

The screen will appear as in Figure 4-14m.

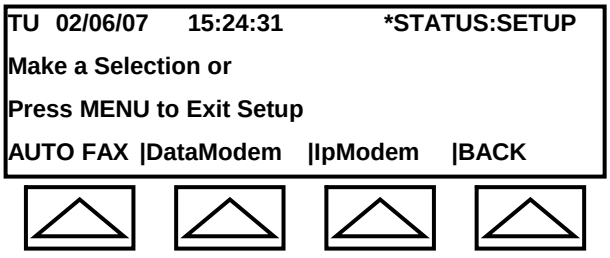


Fig. 4-14m: Modem Submenu

This feature allows you to enter telephone numbers for AUTOFAX and DATA-MODEM and allows you to enter IP address for the IP modem

Use DATAMODEM for OMNTEC PC software or other PC based terminal program communications. Use AUTOFAX to send reports to a fax machine. The IP Modem uses an IP address for transmitting data.

Note: DATAMODEM and AUTOFAX cannot be enabled at the same time. Enable one or the other.

Using IpMODEM, the system allows you to select up to 8 IP addresses for transmitting the same data.

4.3.14.2.1 Autofax and Datamodem

1. Select AUTOFAX or DATAMODEM in the Modem Submenu.

System Response

The screen will appear as in Figure 4-14n.

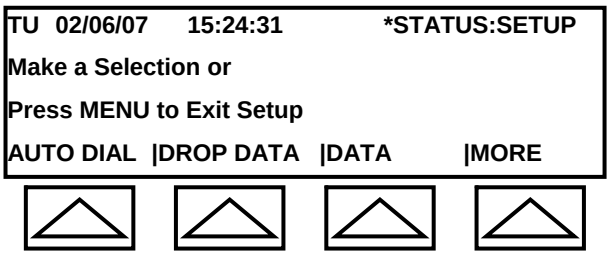


Fig. 4-14n: Telephone Number Entry

2. Select MORE to view additional options in second screen.

   Note: Select MORE again to return to the first screen.

System Response

Lines 1, 2, and3 remain unchanged..

Line 4 displays additional options: **ALRM DATA, SHIFT, BACK, MORE**.

Field Descriptions

- AUTO DIAL – allows you to enter 8 numbers to be used for transmitting data.
- DROP DATA – allows you to select up to 8 of the telephone numbers entered in AUTO DIAL for transmitting Drop Data.
- DATA – allows you to select up to 8 of the telephone numbers entered in AUTO DIAL for transmitting Data.

- ALRM DATA – allows you to select up to 8 of the telephone numbers entered in AUTO DIAL for transmitting Alarm Data.
- SHIFT DATA – allows you to select up to 8 of the telephone numbers entered in AUTO DIAL for transmitting Shift Data.
- BACK – returns to previous screen.
- MORE – advance to next screen or back to first screen.

3. In the first screen, select AUTODIAL.

System Response

The screen will appear as in Figure 4-14o.

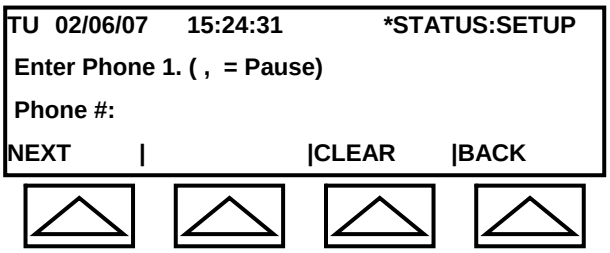


Fig. 4-14o: List Telephone Numbers

4. Enter the first telephone number and select NEXT. You will be prompted for the next telephone number. The system will assign a sequence number to be used in the following steps. Use CLEAR to erase the telephone number and the equal sign (=) to enter a pause before dialing the next number.

5. In the Modem Submenu (see Figure 4-14l), select DROP DATA, VLD DATA, ALARM DATA, or SHIFT DATA.

System Response

The screen will appear as in Figure 4-14p (illustration shows DROP DATA).

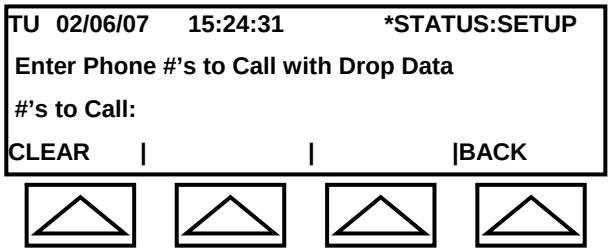


Fig. 4-14p: Select Telephone Numbers

Line 3 shows a cursor for enter telephone number sequence assigned in previous step.

6. For each telephone number to be dialed, enter the sequence number that was assigned in the previous step. Repeat this step for the other data types.

4.3.14.2.2 Ip Modem

This procedure allows you transmit the same data as discussed in *Section 4.3.11.2.1 – Autofax and Datamodem* using IP addresses instead of telephone numbers.

Using the same procedure as above, list all of the IP addresses in AUTODIAL and then select them for the different data types.

The IpModem has a third screen that can be accessed by selecting MORE allows you to enable/disable IP callout.

1. Select IpModem in the Modem Submenu.

2. List IP addresses and select data types as you did for Autofax and Datamodem in the previous section.

3. For the final step, while in Screen #2, select MORE.

System Response

The screen will appear as in Figure 4-14q (illustration shows DROP DATA).

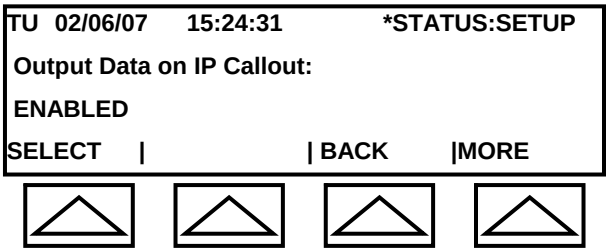


Fig. 4-14q: IP Callout Enable/Disable

4. Choose SELECT to toggle between ENABLED and DISABLED.

5. Select BACK to return to previous screen or select MORE to return to Figure 4-14m.

4.3.14.3 RS485

1. Select RS485 in the Com Submenu (see Figure 4-14r).

System Response

The screen will appear as in Figure 4-14r.

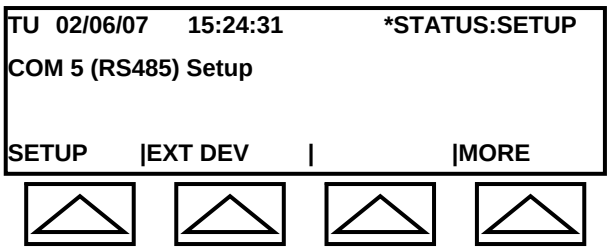


Fig. 4-14r: RS485 Submenu

2. To setup the RS485, select SETUP

System Response

The screen will appear as in Figure 4-14s.

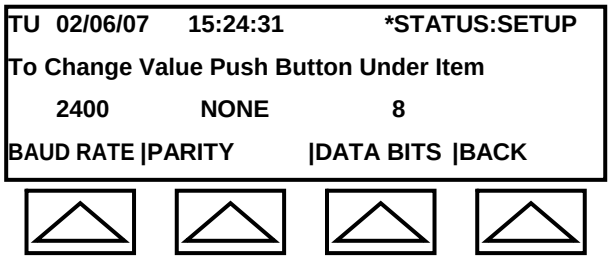


Fig. 4-14s: RS485 – Setup

Field Descriptions

- BAUD RATE – select to scroll through Baud Rate values.
- PARITY –select to scroll through: NONE, EVEN, ODD.
- DATA BITS – toggles between 7 and 8.
- BACK – returns to Figure 4-14r.

3. Select one more fields on Line 4 and set to required values.

4.3.14.3.1 Ext. Dev

Contact manufacturer for additional information on this feature.

1. Select EXT DEV.

System Response

The screen will appear as in Figure 4-14t

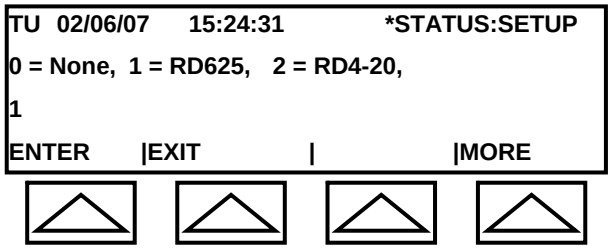


Fig. 4-14t: COM2 – Ext. Dev.

2. Select MORE to view additional options in second screen.

System Response

Lines 1, 3, and 4 remain unchanged..

Line 2 displays additional options: **0 = None, 1 = RD625, 2 = RD4-20…**

3. Select MORE to view additional options in third screen.

Note: Select MORE again to return to the first screen.

System Response

Lines 1, 3, and 4 remain unchanged..

Line 2 displays additional options: **Modbus = 3:RTU 4:RD625X10**

System Response

The screen will appear as in Figure 4-14u.

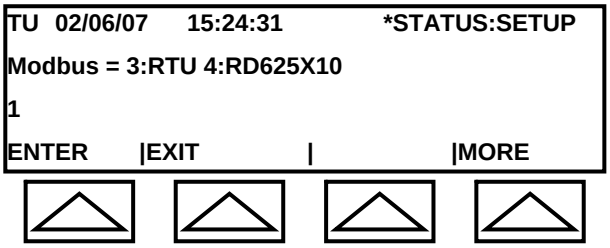


Fig. 4-14u: COM2 – Ext. Dev.

4. Enter a number and select ENTER.

System Response

The LCD displays the Serial Submenu (see Figure 4-14b.

Lines 1 and 4 remain unchanged.

Lines 2 and 3 display: **Make a Selection or Press Menu to Exit Setup**.

4.3.15 Int Brd

This section explains how to program the system's interface boards. Installation is discussed in *Appendix F – Interface Boards*.

*Note: To return to the MAIN Menu from the Int Brd Submenu, select BACK and then press the **MENU** key. The LCD returns to Screen #1 of the MAIN Menu (see Figure 4-2a).*

The controller has six slots inside the upper right corner for holding interface boards. When you select INT BRD, the system performs a search and displays on the LCD the slot number and the interface board found in that slot. All interface boards are programmed the same with the exception of the remote annunciator board (IB-RAS). It is factory programmed and cannot be selected here. To change its parameters, you must enter the tank programming section.

Pressing the PRINT key will provide a hardcopy printout of all interface board data for this system. Installation instructions for interface boards are provided *Appendix F – Interface Boards*.

1. Starting in Screen #1 of the SETUP Submenu, select MORE three times to advance to Screen #4 (see Figure 4-4d).

2. Select Int Brd.

System Response

The screen will appear as in Figure 4-15a.

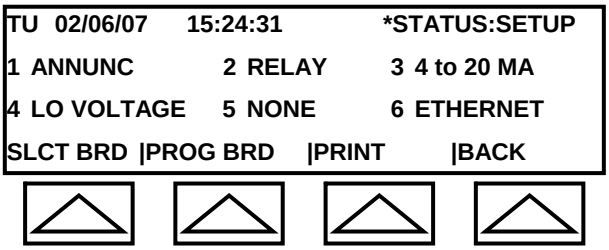


Fig. 4-15a: System Interface Boards

Field Descriptions

- SLCT BRD – allows you to choose a board by moving the cursor each time it is selected.
- PROG BRD – displays the PROG BRD submenu to program the selected board.
- PRINT – provides a hardcopy printout of all interface board data for this system.
- BACK – returns to Screen #4 of the SETUP Submenu (see Figure 4-5d).

4.3.15.1 Programming the IB-RB2 Relay Board

Each relay board has four relays. This section allows you to select each relay and program the conditions that activate it. Each relay can have multiple inputs. You may choose a tank (probe) condition and enable or disable it, or you may choose a sensor and enable or disable it.

1. Starting with the System Interface Boards Screen (see Figure 4-15a) Select SLCT BRD to move the cursor until it rest on the desired board. (For this illustration, we choose Slot #2 – the relay board).

2. Select PROG BRD.

System Response

The screen will appear as in Figure 4-15b (illustrates programming relay interface board in slot #2).

Line 1 is unchanged.

Line 2 displays the slot number and board for the interface board selected in Step 3.

Line 3 displays the relay output number.

Line 4 has a new set of fields.

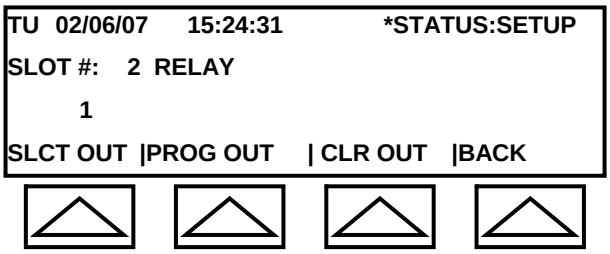


Fig. 4-15b: Programming Interface Board

Field Descriptions

- SLCT OUT – allows you to change the relay output number (1 – 4).
- PROG OUT – programs the selected relay output.
- CLR OUT – clears all selections for selected output.
- BACK – returns to previous screen.

3. Select SLCT OUT until desired relay (1 – 4) is displayed.

Note: Each relay board has 4 relays. SLCT OUT allows you select one of the four relays for programming.

System Response

Line 3 shows selected relay number.

4. Select PROG OUT.

System Response

The screen will appear as in Figure 4-15c (illustrates programming relay #1 of interface board in slot #2).

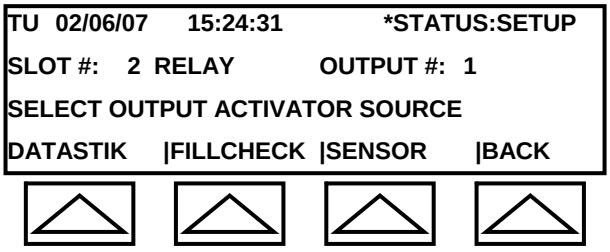


Fig. 4-15c: Programming Relay Board

Field Descriptions

- DATASTIK – selects DataStik as the activator source and displays tank conditions.
- FILLCHECK – selects FillCheck as the activator source and displays tank conditions.
- SENSOR – selects sensor as the activator source and displays tank conditions.
- BACK – Returns to previous screen.

5. Proceed to Step 6 of the appropriate subsection, below to complete programming for tank, non-product distinguishing sensor, product distinguishing sensor, or temperature sensor (BX-TC).

4.3.15.1.1 Tank Activation

Note: Continued from Section 4.3.12 – Int Brd.

6. For tank, select TANK.

System Response

The screen will appear as in Figure 4-15d.

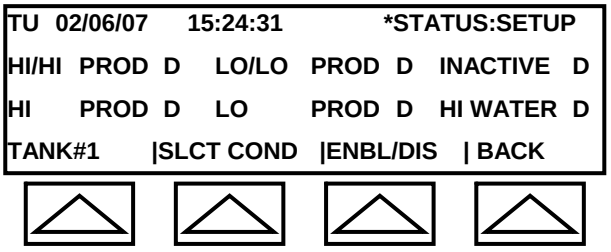


Fig. 4-15d-1: DataCheck Activator

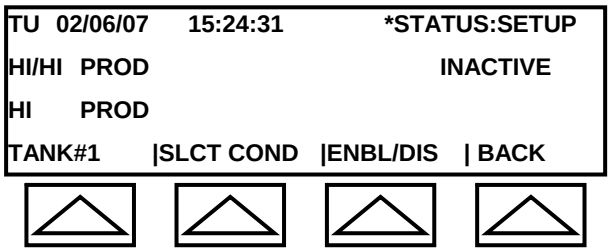


Fig. 4-15d-2: FillCheck Activator

Field Descriptions

- TANK# – selects tank number. The number is displayed in the tank field on line 4.
- SLCT COND – moves the cursor to the desired condition.
- ENBL/DIS – enables or disables the selected condition.
- BACK – returns to previous screen.

a. Select TANK# until the desired tank number is displayed in the field.

b. Select SLCT COND until the cursor rests on the desire condition.

c. Select ENBL/DIS to enable or disable the condition.

4.3.15.1.2 Sensor Activation (non-product distinguishing)

Note: Continued from Section 4.3.12 – Int Brd.

Note: Sensor selected for activating relays must be labeled (see Section 4.3.7.1.1 – Sensor Labeling).

6. For sensor select SENSOR.

System Response

The screen will appear as in Figure 4-15e (non-product sensor).

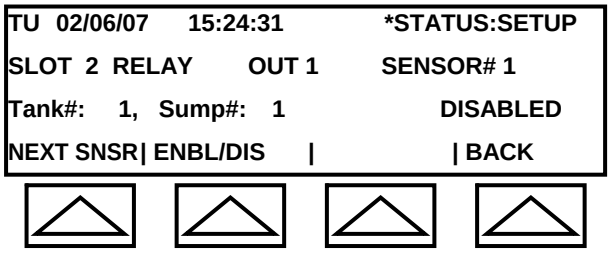


Fig. 4-15e: Sensor (Non-Product Distinguishing) Activator

Field Descriptions

- NEXT SNSR – scrolls through the sensors.
- ENBL/DIS – enables or disables the selected sensor.
- BACK – returns to previous screen.

a. Select NEXT SNSR until the desired sensor number is displayed in line 2.

b. Select ENBL/DIS to enable or disable the sensor.

4.3.15.1.3 Sensor Activation (product distinguishing)

Note: Continued from Section 4.3.12 – Int Brd.

6. If the sensor selected in Step 6 was a product distinguishing sensor, then water and fuel options would appear (see Figure 4-15f).

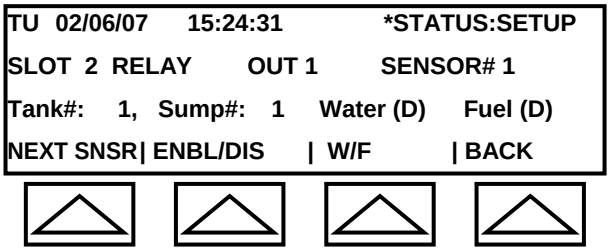


Fig. 4-15f: Sensor (Product Distinguishing) Activator

7. Toggle W/F to select water or fuel and then toggle ENBL/DIS to enable or disable each option.

4.3.15.1.4 Temperature (BX-TC) Sensor Activation

Note: Continued from Section 4.3.12 – Int Brd.

6. For temperature sensor select SENSOR.

System Response

The screen will appear as in Figure 4-15g.

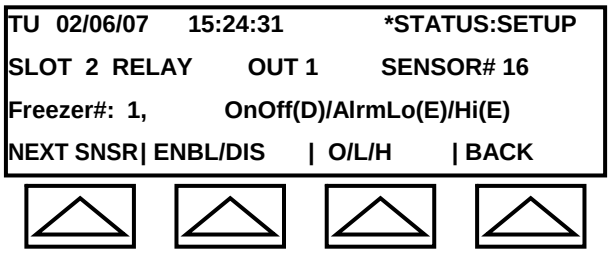


Fig. 4-15g: Temperature Sensor Activator

Both conditions, OnOff AlrmLo or AlrmHi, cannot be used at the same time.

Field Descriptions

- NEXT SNSR – scrolls through the sensors.
- ENBL/DIS – enables or disables the selected sensor.
- O/L/H – scrolls through OnOff, Alarm Lo, and Alarm Hi.
- BACK – returns to previous screen.

a. Select NEXT SNSR until the desired temperature sensor number is displayed in line 2.

b. Select O/L/H to choose OnOff, AlrmLo, or Hi.

c. Select ENBL/DIS to enable or disable the selected option.

On/Off changers the relay's state, and Alarm Lo/Alarm Hi are alarm levels.

Note: OnOff cannot be enabled if Alarm Lo or Hi is enabled. To enable both, you must use different relays.

Chapter 5 CONTROLLER OPERATIONS

5.1 Main Functions

The OMNTEC® Mfg., Inc. OEL8000II-W is an easy to use system that monitors underground and aboveground storage tanks and piping systems. It is used with single wall and double wall steel or fiberglass tanks. Its three main functions are to: 1) detect leaks when used with the BX series sensors, 2) prevent tank overfills when used with FillCheck® wireless level sensors, and 3) provide accurate and up-to-date tank inventory control when used with DataStik™ wireless tank monitoring probes.

A loud (up to 95 dB) horn and an LED (light emitting diode) on the controller panel are simultaneously activated to alert the owner when alarm conditions exist. The LCD (liquid crystal display) identifies the cause and location of the alarm condition, and the controller's optional printer can be used to provide a permanent record of all data and alarm occurrences.

5.2 System Components

The OEL8000II consists of a controller panel and a combination of probes and sensors. The probes and sensors are installed in the storage tanks, interstitial spaces, piping sumps, double wall piping, dispenser pans, dikes, and observation wells for monitoring the tank contents and detecting leaks. These are connected to the controller via electrical cables that are run inside conduit. Unlike other types of electrical installations, special installation and wiring techniques are used by authorized installers who are qualified using intrinsically safe design principles (NEC procedures) and are familiar with the OEL8000II Installation Manual.

All installations and repairs must be performed by authorized installers. Do not attempt to perform any repairs yourself. Failure to comply may create an electric shock or explosion hazard that can result in death, personal injury, or property damage.

5.2.1 OEL8000II-W Controller

The controller is a programmable device that is wall-mounted within a non-hazardous area where it can be easily seen and heard. It monitors all of the probes and sensors and alerts the owner when a warning or alarm condition occurs (see Figure 3-1). If

outdoor installation is required, an ENC-4X enclosure, heater, and thermostat are available. Contact OMNTEC® Mfg. Inc. for assistance.

5.2.1.1 Controller Front Panel Features

The following features are available or accessible at the Controller's front panel (see Figure 8-1).

Note: Some features must be enabled and/or programmed by an authorized installer.

- **LCD**

  The LCD allows for easy programming of the controller, provides status and inventory data, and provides immediate identification of warning and alarm sources.

- **Arrow Keys**

  The arrow keys are pushbuttons located below the LCD display. To select a field on the bottom line of the LCD, press the arrow key that points to the field. This will allow navigation through menus and select functions.

- **Function Keys**

  Four function keys, located directly below the arrow keys (**PRINT**, **MENU**, **TEST**, and **ACK**), allow you to obtain printouts, return to the previous or MAIN Menu, delete characters on the LCD, initiate system test, and acknowledge alarms.

- **Data Keypad**

  The data keypad resembles a telephone keypad containing alpha-numeric characters and is used for entering data. It also contains CURSOR LEFT and CURSOR RIGHT keys for positioning the cursor on the LCD.

- **LEDs**

  Three LEDs are used to indicate system status (**OK**), detection of a fault condition (**FAULT**), and indication of an alarm condition (**ALARM**).

- **Printer**

  A 36-character thermal printer can be activated manually or automatically to provide permanent records.

- **Lock and Keys**

  The OEL8000II controller has with a lock to prevent internal tampering. The end-user is provided with two keys. Do not open the controller yourself. Only authorized and qualified professionals may service or install components in the OEL8000II system. Contact OMNTEC® Mfg. Inc. for replacement of lost keys.

5.2.1.2 Self Test

When activated by pressing the green **TEST** key on the controller panel, the self-test program will test various elements of the system including the RAM, EPROM, LCD,

horn, front panel LED's, level probes, and the leak sensors. If an optional remote annunciator is installed, it will also test the annunciator by causing its lights to blink and horn to sound. The self-test feature includes an automatic printout (see Figure 5-1).

```
- - - OMNTEC
Tel: 1(631)981-2001
Fax: 1(631)981-2007

- - - SITE INFORMATION
ID#: OMNTEC++
VER w06.02.06.6 ENG090717
MAY 12, 2010 10:12 AM

- - - Testing PROM
Prom Tests OK

- - - Testing RAM                          PASSED

- - - Check Slot
Slot 1                          Low Voltage Board
Slot 2                                Relay Board
Slot 4                          Low Voltage Board
Slot 5                              Ethernet Board

- - - Testing Level Probes
T#   W# / PRODUCT TYPE                      TEST
3 Transmitter 3 MTG Probe                   P
       DIESEL

- - - Testing Leak Sensors
S#     P/N       LABEL                      TEST
01     BXTC1     COOLER                     P
       (S/N: 610054604)

S#= SENSOR NUMBER, P/N= PART NUMBER,
T#= TANK NUMBER, S/N= SENSOR SERIAL NUM-
BER, P=PASS, A=ALARM, F=FAIL, W=WARNING,
NR=NO REPLY, H= HIGH PRIORITY
```

Figure 5-1: Sample Self-Test Printout

5.2.1.3 Warnings, Alarms, and Setpoints

The OEL8000II controller will respond to certain conditions by initiating an alarm, warning condition, or a programmed response when the product level rises or drops to a specific setpoint.

The controller responds to a warning condition by displaying a message on its LCD. If the system includes a remote annunciator, its LED will flash.

In the event of an alarm, the controller will illuminate its red ALARM LED, activate its audible alarm, and display a message on its LCD. If the system includes a remote annunciator, its LED will illuminate and its audible alarm will also be activated. Pressing the **ACK** key on the controller's front panel will silence the horns, but the LEDs will remain illuminated, and the controller's LCD will continue to provide alarm data until the alarm condition has been eliminated.

	High/High Level Alarm	Overfill Alarm*	High Warning	High Product Level	Low Product Level	Delivery Needed Alarm	Low/Low Level Alarm	High Water Alarm	Sensor Alarm
OEL8000II Piezo Horn									
OEL8000II Alarm LED									
OEL8000II LCD Display	X	X	X			X	X	X	X
Remote Annunciator Solid LED									
Remote Annunciator Horn									
IB-RB2 Relay Trigger Point	X	X		X	X		X	X	
IB-12V Trigger Point	X	X		X	X		X	X	

 Audible Alarm

 Flashing LED

 Illuminated (solid) LED

X Other Response

Following is a description of the system's warnings, alarms and events. Table 5-1 shows how the system responds to these occurrences.

- High/High Level Alarm – occurs when the product level in the tank reaches an emergency height during a fill condition. The factory default value is 90%, but this can be adjusted up to 95%.
- Overfill Alarm – similar to High/High Level Alarm. It is factory disabled but can be enabled by the end user, and the trigger can be set at any level up to 90%.
- High Warning – occurs when the product level in the tank reaches the programmed high warning level.
- High Product Level – occurs when the product in the tank rises to the programmed high product level. This is a setpoint that can be used to initiate a programmed response such as triggering a relay. It is not a warning or an alarm.
- Low Product Level – occurs when the product in the tank drops to the programmed low product level. This is a setpoint that can be used to initiate a programmed response such as triggering a relay. It is not a warning or an alarm.

- Delivery Needed Alarm – occurs when the product level has dropped to a level at which point a delivery is needed.
- Low/Low Level Alarm – programmable feature, occurs when the product level in the tank drops to a critical level.
- High Water Alarm – programmable feature, it occurs when the water level in the tank is too high.
- Sensor Alarm – occurs when a leak has been detected.

For all alarms, the LCD and the printer will identify the probe or sensor that initiated the alarm.

5.2.1.4 Inventory Management

The controller provides product volume data for each tank and maintains logs showing changes in inventory volume due to deliveries and usage during shifts.

- **Inventory Increase Detection (DROP)**

  Inventory increase detection determines when a delivery is being made. This feature is automatically activated when the system detects an increase in volume that is in excess of a preprogrammed value. Upon activation, the system will wait for several minutes for the contents to settle and then store the data. The controller will store data for up to five deliveries per tank and up to forty (40) deliveries for the entire system. Afterwards, it will delete the oldest data each time a new delivery is made.

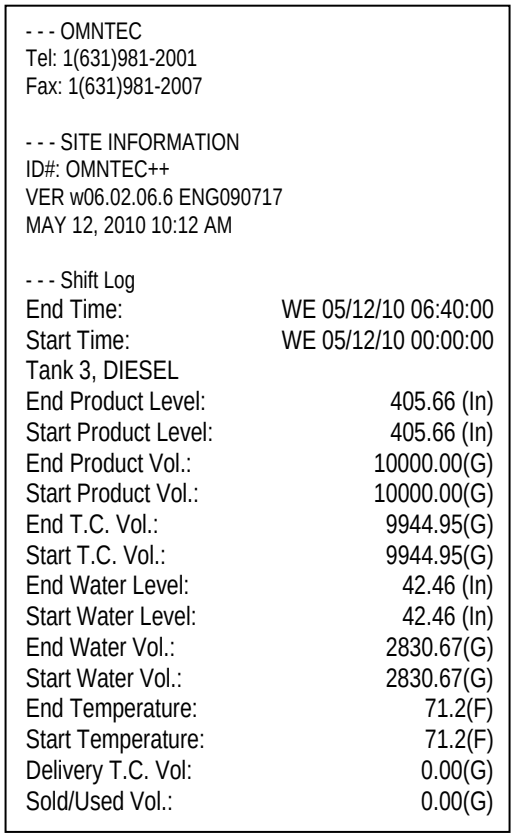
  Note: To obtain an automatic printout following a delivery, the DROP mode must be enabled (see Section 8.2.2.8 – DROP E/D Submenu).

Do not dispense product from tank between delivery and printout. Failure to comply will yield false data.

5.2.1.5 Shift Function

The Shift function is designed to automatically print tank volume information at the end of employee shifts or at predetermined. A printout is provided at the end of each employee shift to reflect that shifts start volume, end volume, and delta volume for each tank connected to the system. The Shift function can be designed for 1 to 4 different daily shift times. Below (see Figure 5-2) is an example of the automatic printout (in this case shift #1 begins at noon and ends at 8:00 PM).

Note: An authorized, qualified installer must program this feature. The installer should refer to the programming section in the OEL8000II-W Installation Manual.



- - - OMNTEC
Tel: 1(631)981-2001
Fax: 1(631)981-2007

- - - SITE INFORMATION
ID#: OMNTEC++
VER w06.02.06.6 ENG090717
MAY 12, 2010 10:12 AM

- - - Shift Log

End Time:	WE 05/12/10 06:40:00
Start Time:	WE 05/12/10 00:00:00
Tank 3, DIESEL	
End Product Level:	405.66 (In)
Start Product Level:	405.66 (In)
End Product Vol.:	10000.00(G)
Start Product Vol.:	10000.00(G)
End T.C. Vol.:	9944.95(G)
Start T.C. Vol.:	9944.95(G)
End Water Level:	42.46 (In)
Start Water Level:	42.46 (In)
End Water Vol.:	2830.67(G)
Start Water Vol.:	2830.67(G)
End Temperature:	71.2(F)
Start Temperature:	71.2(F)
Delivery T.C. Vol:	0.00(G)
Sold/Used Vol.:	0.00(G)

Fig. 5-2: Sample Shift Report Printout

5.2.1.6 System of Measurement

The OEL8000II-W can be configured in the SETUP submenu to display data using either the standard English system of measurement or the Metric system, but not both.

5.2.1.7 Communications

The OEL8000II-W system features the following communication ports:

- (4) RS-232 ports – communication via PC.
- RS-485 – allows for connecting an optional remote digital display (RD625) that shows tank(s) volume.
- (1) Fax/Modem (optional) – allows for remote communication with controller using Omntec PC software.

- IB-Net Card (optional) – allows for faster remote communication with controller using Omntec PC software.
- Modbus – communication protocol.

5.2.2 DataCheck™ Transmitters

When properly connected to a DataCheck™ Receiver, the OEL8000II-W will process transmissions from up to 99 DataCheck™ Transmitters. These DataCheck™ Transmitters can include DataStik™ (magnetostrictive) probes that will monitor product levels, water levels, and temperature in both underground and above-ground storage tanks, FillCheck® level sensors for tank overfill protection, and DataCheck™-A transmitters which accept analog and discrete inputs from various field-located sensors.

5.2.3 Sensors

The OEL8000II-W accepts up to a maximum of 44 Bright Eye series sensors (BX-series). BX-sensors are built with four-wire RS-485 multidrop buss technology, which allows up to 22 BX-sensors to be networked along the same cable on each buss line.

5.2.4 Optional Features

The OEL8000II-W functionality can be expanded with the installation of some of the optional features discussed below.

5.2.4.1 Annunciators (RAS-series Remotes)

Annunciators are high-level audiovisual remote alarm systems that can be mounted outdoors and in remote locations to ensure faster response to alarms. They should be installed in a non-hazardous location where they can be easily heard and seen by the filling operator. Their LED's flash when there is a high level warning. In case of a high level alarm, the LED stays lit and a 95 dB horn is activated. Annunciators that monitor more than one tank have an LED for each tank permitting immediate identification of the alarm source. For more detailed information, consult the OEL8000II Installation Manual.

5.2.4.2 Interface Boards

Optional alarm relays and low voltage annunciators can be integrated into the system to provide additional alert and control capability. The OEL8000II-W accepts up to six interface boards.

- Relay Boards (IB-RB2)
- Low Voltage Output Boards (IB-12V)
- 4-20 mA Output Card
- IB-NET Board

5.2.4.3 Remote Communications (OMNTEC-PC interactive software)

Access to the system by computer allows for real time monitoring and downloading of status information to any remote location. For serial information sheets or software, contact Omntec Mfg.

5.2.4.4 Additional Options

- For systems that need to be mounted outside, NEMA 4X Enclosures, heaters and thermostats are available.
- Fax / Modem
- Downloadable Upgrades
- RD-625
- Modbus
- Pump/valve control systems

Chapter 6 SYSTEM OPERATIONS / MENUS/ REPORTS

6.1 Control Panel

The OEL8000II-W Controller is the heart of the entire system. In addition to monitoring probes and sensors, and providing warnings and alarms; it is used for programming the system, entering data, and retrieving data. The LCD display, LEDs, arrow keys, **PRINT** key, **MENU/DELETE** key, **TEST** key, **ACK** key, data keypad, printer, and panel lock are accessible on the Controller's front panel (see Figure 6-1).

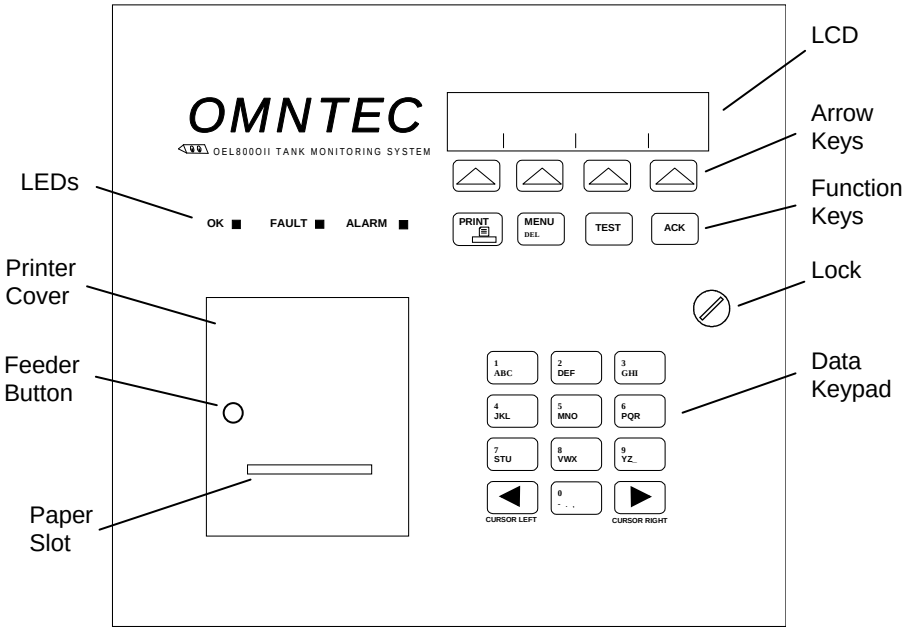


Fig. 6-1: OEL8000II-W Controller Front Panel

6.1.1 LCD Display Screen

The LCD features a four-line display with a maximum of forty characters per line. During normal operation, the LCD displays the Main Menu (see Figure 6-2).

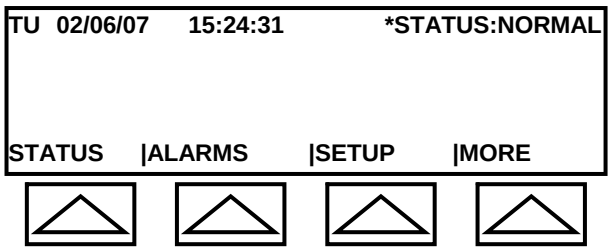


Fig. 6-2: LCD Display (Main Menu) with Arrow Keys

6.1.2 LEDs

Three LEDs located on left side of panel above the printer indicate the status of the system.

- OK – a green LED that is illuminated whenever the system status is in the NORMAL or SETUP mode as indicated in the top right corner of the LCD.
- FAULT – a red LED that illuminates if a problem occurs with the internal circuitry or flashes while the system is in diagnostic mode. If this LED lights up, contact your installer or the manufacturer.
- ALARM – a red LED that illuminates whenever an alarm condition occurs. The LCD will provide more specific information about the condition. It is extinguished only when the alarm condition is corrected.

  (*All lights will be illuminated when receiver is not conntected.*)

All repairs must be performed by authorized installers. Do not attempt to perform any repairs yourself. Do not touch anything inside the panel. Failure to comply will create an electric shock or explosion hazard that can result in death, personal injury, or property damage.

6.1.3 Arrow Keys

Four upward pointing arrow keys point to the fields shown on the last line of the LCD display. Select a field by pressing the arrow that points to it. A field represents either a submenu or a function button. A submenu has its own screen or set of screens. A function is an action key, such as MORE, which scrolls through the screens within a menu.

6.1.4 Function Keys (PRINT, MENU, TEST, and ACK)

The **PRINT**, **MENU/DELETE**, **TEST**, and **ACK** keys are located directly below the arrow keys and have the following functions:

6.1.4.1 PRINT Key

Press the **PRINT** key to provide a printout of site data, alarm data for currently active alarms, and an inventory report.

6.1.4.2 MENU/DELETE Key

MENU and **DELETE** appear on the same key. While in a submenu, pressing this key will return the LCD to one of the four Main Menu screens. While entering data using the keypad, the same key can be used to delete a character.

*Note: Throughout the remainder of this manual, the term **MENU** key will be used when changing menus, and the term **DELETE** key will be used when deleting characters.*

To delete a character, simply move the cursor underneath the character (use the **CURSOR LEFT** or **CURSOR RIGHT** key) and press the **DELETE** key. If the cursor is under a blank space, pressing the **DELETE** key will move the cursor to the left and delete the character in that position.

*Note: You can exit a submenu by pressing the **MENU** key. If EXIT is displayed on the bottom line of the LCD, press the arrow key beneath it.*

6.1.4.3 TEST Key

Pressing the **TEST** key will activate the self-test feature. The system will test the following:

- RAM
- MTG Probes
- EPROM
- BX-series sensor
- LCD
- LEDs (LEDs on optional remote annunciator will also be tested, if installed)
- Horn (horn in optional remote annunciator will also be tested, if installed)

- Transmitters
- Shows card slots

The controller will automatically determine if the RAM, Mag Probe, EPROM and BX-series sensor tests are successful. The user must determine if the LCD and LEDs are operational by visual observation, and if the horns are operational by listening to the controller and annunicators, if applicable.

Observe the LCD during the self-test operation. The controller will fill every space with a character starting with the number 1 and ending with the number 8. If you see any discrepancies, there may be a malfunction. Also observe the LEDs and listen to the horns on the controller and annunciator(s). If any of the LEDs fail to light up, or if any of the horns fail to sound, there may be a malfunction. An automatic printout accompanies the self-test program.

There is an approximate 45-second delay between pressing the **TEST** key and the activation of the LEDs and horn(s). This should give you enough time to check the LEDs and horns on remote annunciators.

In the event of a malfunction, do not attempt to make any repairs yourself. Installation and servicing must be performed by authorized personnel only. Failure to comply will create an electric shock or explosion hazard that can result in death, personal injury, or property damage.

6.1.4.4 ACK Key

Press the **ACK** key to silence the horn upon the occurrence of an alarm. The ALARM LED will remain illuminated until the alarm condition has been corrected. If a value has been programmed for the Alarm Acknowledge Time (i.e., snooze alarm for controller), the horn will sound again after the elapsed time period providing the alarm condition still exists. This option can only be programmed by an authorized technician.

6.1.5 Data Keypad

The keypad resembles a telephone keypad and is used for entering data. You enter the number, letters, or characters shown on a key by pressing that key. For example:

- To enter the number **1**, press the key with the number **1** on it just one time.
- To enter the letter **A**, press the same key two times.
- To enter the letter **B**, press the same key three times.
- To enter the letter **C**, press the same key four times.

6.1.6 Printer

The printer is located at the lower left side of the panel. Printouts can be obtained by pressing the **PRINT** key or the arrow key beneath a print field when it appears on the bottom line of the LCD. The printer can also be programmed to provide automatic printouts under certain conditions such as the occurrence of an alarm and when an alarm is acknowledged. Automatic printouts can also be obtained of DROP and SHIFT reports.

The **FEED** button on the printer is used to advance the paper. The message, **Paper is out** will appear on the LCD display when the paper runs out (to change paper, see *Appendix A – Installing Thermal Paper*).

Note: Red margins will appear on the printer paper when the paper is starting to run low. The paper must be replaced when the red margins start to fade.

6.1.7 Lock and Keys

The front panel contains a lock to prevent unauthorized personnel from accessing the inside of the controller. Two keys are provided with the system.

6.1.8 Horn

A horn located inside the controller provides an audible signal when an alarm condition occurs. It is silenced by pressing the **ACK** key.

6.2 Menus, Screens, and Printouts

The LCD displays a number of menus that provide different types of information and options for you to select. Because some menus have too many options to fit on the LCD display, they are divided into multiple screens. You can advance from one screen to the next by pressing the arrow key beneath the word MORE. When you find the option you are looking for, press the arrow key beneath it. When you get to the last screen of a menu, press the arrow beneath MORE to return to the first screen of that menu.

To get a hard copy printout of the information available within a particular menu, advance the screens until you find a PRINT field on the bottom line and press the arrow key beneath it.

Throughout the remainder of this manual, when you are instructed to select a field on the bottom line of the LCD, you must press the arrow key directly beneath that field.

6.2.1 MAIN Menu

The MAIN menu is divided into six screens. These screens provide the access points to all other menus and functions. Under normal operating conditions, the LCD displays Screen #1 (see Figure as shown in Figure 6-3a). The upper left corner (line #1) shows the day, date, and time, and the upper right corner shows the status. This will usually read NORMAL. The bottom line (line #4) allows you to select different options by using the corresponding arrow keys.

When the status is NORMAL, lines 2 and 3 will remain blank. If an alarm occurs and is acknowledged, the status will continue to show ALARM (see Figure 6-3b) until the condition is corrected.

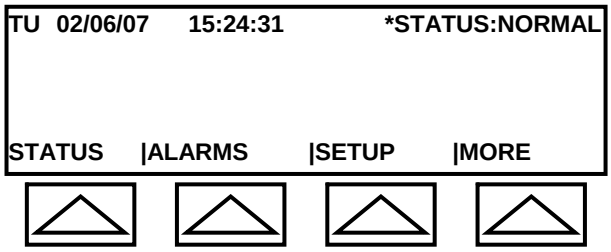


Fig. 6-3a: Main Menu – Screen #1 (Status: Normal)
Press arrow under setup two times for diagnostic codes.

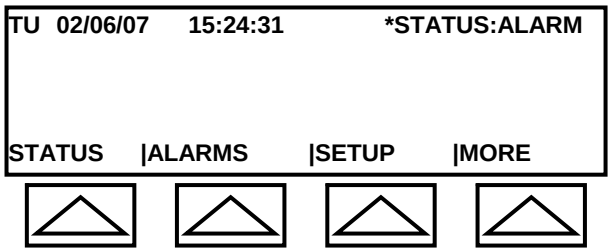


Fig. 6-3b: Main Menu – Screen #1 (Status: Alarm)

6.2.1.1 Screen #1 (MAIN Menu)

Screen #1 of the MAIN menu is displayed under normal operating conditions, and it is the starting point from where submenus and functions can be accessed. The bottom line provides the following options:

- STATUS – enters the STATUS submenu that provides data based on all probes and sensors that are connected to the controller and are enabled. This can include tank data, interstitial data, sump data, etc. (see *Section 6.2.2.1 – STATUS Submenu*).

- ALARMS – this submenu provides detailed information when an alarm occurs (see *Section 6.2.2.2 – ALARMS Submenu*).
- SETUP – enters the SETUP submenu to program the controller. The SETUP submenu may be accessed only by an authorized installer (see *Section 6.2.2.3 – SETUP* Submenu).
- MORE – advances to Screen #2 of the Main Menu, which provides additional options.

*Note: To return to a MAIN Menu screen, press the **MENU** key or select the EXIT function when it is displayed on the bottom line of the LCD.*

6.2.1.2 Screen #2 (MAIN Menu)

Selecting MORE on the bottom line of the LCD, advances the LCD to Screen #2 (see Figure 6-4a).

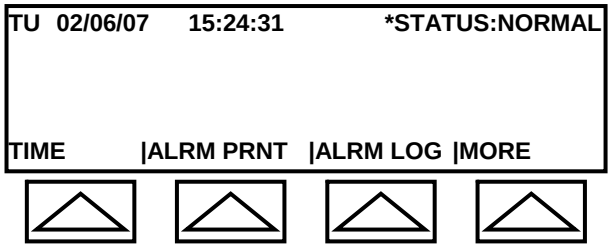


Fig. 6-4a: Main Menu – Screen #2 (Status: Normal)

The bottom line of the screen changes and provides the following additional options:

- TIME – allows you to program the current day, date, and time into the controller (see *Section 6.2.2.4 – TIME Submenu*).
- ALRM PRNT – permits enabling/disabling automatic printouts when an alarm events occur (see *Section 6.2.2.6 – ALRM PRNT Submenu*).
- ALARM LOG – displays the number of alarm entries in the alarm log and allows you to get a printout of the log (see *Section 6.2.2.5 – ALRM LOG*). The controller will store up to 128 alarm entries.

  *Note: Do not select PRINT LOG unless you actually want to print out all of its contents. To abort a printout, press the **ACK** key 3 times.*
- MORE – advances to Screen #3 of the Main Menu, which provides additional options.

  Note: T.C. volume is temperature compensated volume. It is the gross volume (product plus water) at the industry standard temperature of 60^{o}F.

6.2.1.3 Screen #3 (MAIN Menu)

Selecting MORE on the bottom line of the LCD, advances the LCD to Screen #3 (see Figure 6-5).

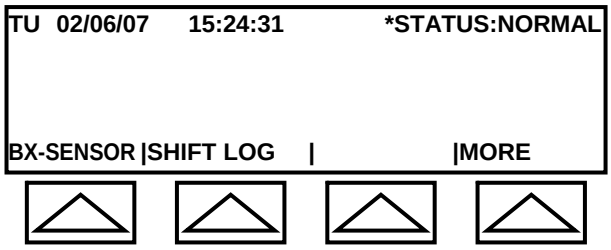


Fig. 6-5: Main Menu – Screen #3 (Status: Normal)

The bottom line of the screen changes and provides the following additional options:

- BX-SENSOR – allows viewing of BX-SENSOR information.
- SHIFT LOG – allows you to print out a Shift Log report (see *Section 6.2.2.11 – SHIFT LOG Submenu*).
- MORE – advances to Main Menu Screen #4 for more options.

6.2.1.4 Screen #4 (MAIN Menu)

Selecting MORE on the bottom line of the LCD, advances the LCD to Screen #4 (see Figure 6-6).

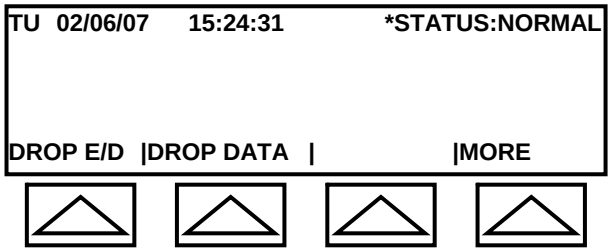


Fig. 6-6: Main Menu – Screen #4 (Status: Normal)

The bottom line of the screen changes and provides the following additional options:

- DROP E/D – permits enabling/disabling automatic printout whenever a delivery (DROP) occurs (see *Section 6.2.2.8 – DROP E/D Submenu*).
- DROP DATA – permits viewing and obtaining a printout of the Delivery Log (see *Section 6.2.2.9 – DROP DATA*).
- MORE – advances to Main Menu Screen #5 for more options.

6.2.1.5 Screen #5 (MAIN Menu)

Selecting MORE on the bottom line of the LCD, advances the LCD to Screen #5 (see Figure 6-7).

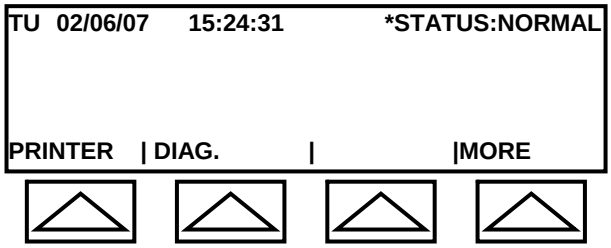


Fig. 6-7: Main Menu – Screen #5 (Status: Normal)

The bottom line of the screen changes and provides the following additional options:

- PRINTER – displays a submenu that allows you set the print direction. The choices are: no actions, paper, LCD, comm2, and comm3 (see Section 6.2.2.13 – PRINTER Submenu).
- DIAG. – allows you to enable/disable communications with remote sites and test alarms for product and water levels (see *Section 6.2.2.12 – DIAG. Submenu*).
- MORE – advances to Main Menu Screen #6 for more options.

6.2.2 Submenus

The submenus are examined in order of their occurrence starting from MAIN MENU screens #1 through #6 (STATUS, ALARMS, SETUP, TIME, ALRM LOG, ALRM PRNT, DROP E/D, PRNT DROP, SHFT LOG, DIAG, PRINTER).

6.2.2.1 STATUS Submenu

The STATUS Submenu provides information based on the DataStik probes and overfill (FillCheck) sensors that are connected to the controller and have been enabled. This can include tank inventory data, where a magnetostrictive probe has been installed.

The STATUS Submenu is entered from Screen #1 of the MAIN Menu by selecting STATUS on the bottom line of the LCD. It is divided into six screens, and you advance to each screen by selecting MORE. To enhance readability, this manual has numbered the screens and discusses them in numerical order.

*Note: While in the STATUS Submenu, pressing the **MENU** key will return the LCD to Screen #1 of the MAIN Menu.*

The bottom line in each of the six STATUS screens provides the following options:

- TANK#– increments the tank number. When viewing tank data the same data will be shown for each enabled tank as the tank number is incremented by selecting TANK#.
- PREV – the opposite of TANK#. When viewing tank data the LCD will display the same data for the previous enabled tank as the tank number is decremented by selecting PREV.
- MORE – advances to Screen #2 of the STATUS Submenu.
- EXIT – allows you to exit the STATUS menu and return to Screen #1 of the MAIN MENU.

Note 1: Selecting TANK# allows viewing the same data for different tanks. To view additional data for the same tank or select MORE. Pressing the PRINT button provides an inventory report of the tank currently displayed on the LCD (See Figure 6-9)

Note 2: FillCheck status does not have MORE key.

Note 3: To print inventory report press print icon on front panel.

JAN 01, 2007 12:56 PM

LABEL: 40K DIESEL
Tank 1, DIESEL

VOLUME:	56.51 (In)
VOLUME:	2943.11 (G)
T.C. VOLUME	2943.79 (G)
TEMPERATURE	72.1 (F)
Water	16.61 (In)
Water	864.90 (G)
Shift Start	56.51 (In)
Shift Start	2943.11 (G)

CODE B15,B13=00
CODE=00: Normal

Figure 6-9: PRINT

6.2.2.1.1 STATUS Submenu (Screen #1)

This manual chooses to label the following screen (see Figure 6-10) as Screen #1. This may not be the first screen that you will see when you select STATUS in the MAIN Menu. To follow along, repeatedly select MORE until you see the same screen.

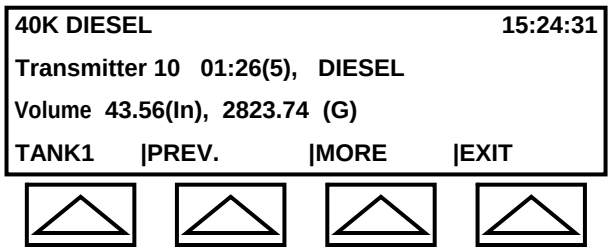


Fig. 6-10: Status Submenu – Screen #1

This screen provides product height and volume for TANK1. Line 1 Displays the Tank Label and the system STATUS. Line 2 displays the Transmitter ID, a counter that displays the elapsed time since the last transmission was received, and the Product Type. Line 3 displays the height and volume for the given Tank.

- Product Type – describes the product in the tank such as Hi Test, Premium, Diesel, Regular, etc.
- HEIGHT – shows the levels in inches for the product and water. The Magnetostrictive (MTG) probe in the tank has a water float that indicates the actual height of the water. It also has a product float that indicates the height of all liquid in the tank, not the actual height of the product. The product height is calculated by subtracting the reading of the water float from the product float.

To view the same data for other tanks, press the arrow beneath TANK1.

Note: After all enabled tanks have been displayed, the LCD will show available sensor data and then go back to the first screen that was displayed..

6.2.2.1.2 STATUS Submenu (Screen #2)

Selecting MORE on the bottom line of the LCD, advances the LCD to Screen #2 (see Figure 6-11) of the STATUS Submenu.

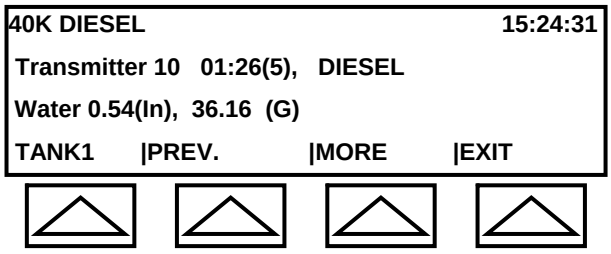


Fig. 6-11: Status Submenu – Screen #2

This screen provides water height and volume data for the tank number shown. The top line remains unchanged showing the Tank Label and current time.

6.2.2.1.3 STATUS Submenu (Screen #3)

Selecting MORE on the bottom line of the LCD, advances the LCD to Screen #3 (see Figure 6-12) of the STATUS Submenu.

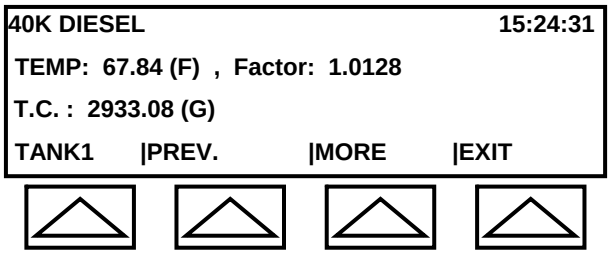


Fig. 6-12: Status Submenu – Screen #3

This screen provides temperature and T.C. Volume data for the tank number shown. The top line remains unchanged showing the Tank Label and the current time. The next two lines provide the following data:

- TEMP – shows the current temperature (°F) in the tank.
- Factor – Temperature Correction Calculation
- T.C. – the calculated Temperature Compensated Product Volume to 60°F.

6.2.2.1.4 STATUS Submenu (Screen #4)

Selecting MORE on the bottom line of the LCD, advances the LCD to Screen #4 (see Figure 3-13) of the STATUS Submenu.

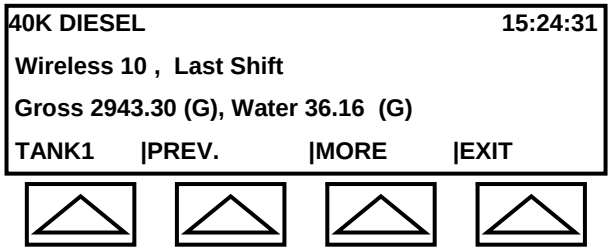


Fig. 6-13: Status Submenu – Screen #4

This screen provides data for the Last Shift for the tank number shown. The top line remains unchanged showing the Tank Label and current time. The next two lines provide the following data:

- WATER – shows the volume of water (gallons) in the tank.
- Gross – shows the total volume of liquid (product plus water) in the tank.
- *Note: If there is no Shift information available the third line will display: Shift Message was cleared.*

6.2.2.1.5 STATUS Submenu (Screen #5)

Selecting MORE on the bottom line of the LCD, advances the LCD to Screen #5 (see Figure 6-14) of the STATUS Submenu.

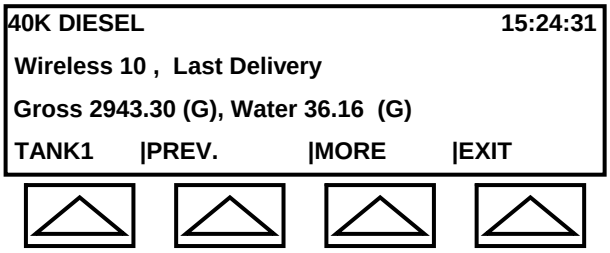


Fig. 6-14: Status Submenu – Screen #5

This screen provides data on the last delivery.

- *Note: If there is no Delivery information available the third line will display: Delivery Message was cleared.*

6.2.2.1.6 STATUS Submenu (Screen #6)

Selecting MORE on the bottom line of the LCD, advances the LCD to Screen #6 (see Figure 6-15) of the STATUS Submenu.

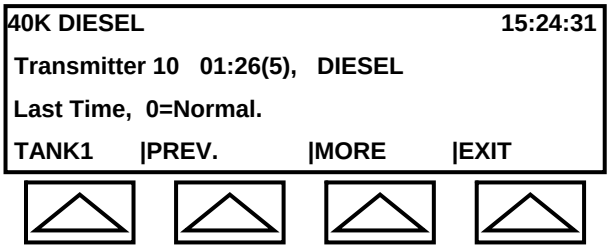


Fig. 6-14: Status Submenu – Screen #6

This screen provides data on the current status of the transmitter. Any diagnostic or trouble codes pertaining to the transmitter such as a Low Battery alarm will be displayed here.

6.2.2.2 ALARMS Submenu

The ALARMS Submenu is entered from Screen #1 of the MAIN Menu by selecting ALARMS. It displays information pertaining to any alarms that currently exist.

If ALARMS is selected when there is no alarm or warning condition, the LCD will remain in Screen #1 of the Main Menu and the second line will display a message that there are no active alarms (see Figure 6-15a). This will be displayed for a few seconds and then cleared.

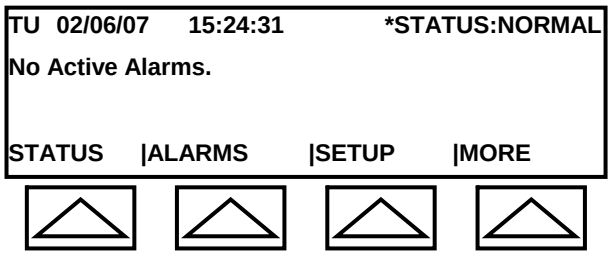


Fig. 6-15a: Main Menu – Screen #1 (Status: Normal)

When there is an active alarm or warning, selecting ALARMS will display the ALARMS Submenu. The LCD will alternate between two messages (see Figures 6-15b and 6-15c). The following figures assume the presence of a high water alarm.

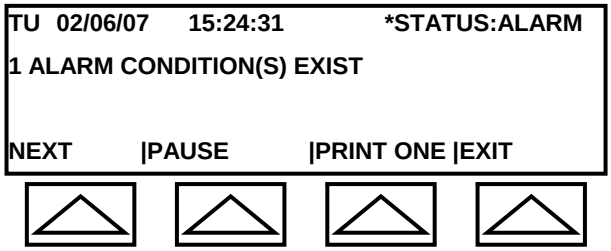


Fig. 6-15b: Alarms Submenu

The second line in the above screen indicates the number of alarms currently in effect.

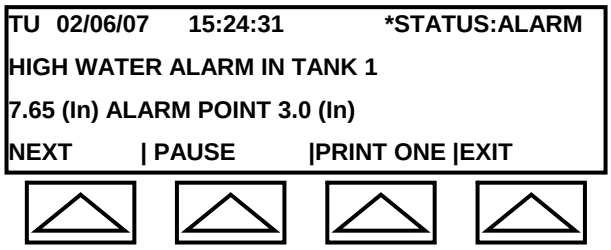


Fig. 6-15c: Alarms Submenu

The second line in the above screen identifies the alarm (high water level). The third line provides additional information about the alarm. In this case it show the actual water level and the level at which the alarm was triggered.

The bottom line of the ALARMS Submenu provides the following additional options:

- NEXT – displays the next alarm that is currently in effect.
- PRINT ONE – provides a printout of the Alarm Displayed (see Figure 6-16d).
- PAUSE – freezes the LCD and prevents it from alternating between the two screens shown above. Select NEXT or PREV. to resume alternating between the screens.
- EXIT – allows you to return to Screen #1 of the Main Menu.

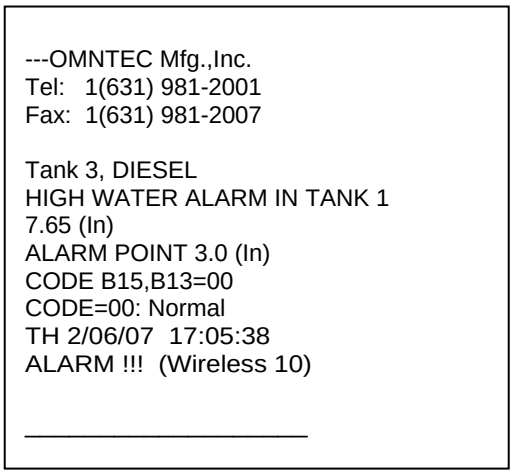


Figure 6-16d: Alarm Report

A printout of the Alarm Log can be obtained in the ALRM LOG Submenu (see *Section 6.2.2.5 – ALRM LOG Submenu*) that can be accessed in Screen #2 of the MAIN Menu. The Alarm Log can store up to 128 events. Also, the printer can be enabled (or disabled) to provide an automatic printout upon the occurrence of an alarm or warning in the ALRM PRNT Submenu (see *Section 6.2.2.6 ALRM PRNT Submenu)* that can be accessed in Screen #2 of the MAIN Menu.

6.2.2.3 SETUP Submenu

The SETUP Submenu is entered from Screen #1 of the MAIN Menu by selecting SETUP. This section is discussed in the OEL8000II-W Installation Manual, and it can be accessed only by authorized installers. Entry is blocked by a security code.

Authorized installers are required to be familiar with intrinsic design safety principles. DO NOT ATTEMPT TO CIRCUMVENT THE SECURITY CODE TO ACCESS THE SETUP SUBMENU.

Unauthorized entry into the SETUP Submenu can create a hazard that may result in death, personal injury, or property damage.

6.2.2.4 TIME Submenu

The TIME Submenu is entered from Screen #2 of the MAIN Menu by selecting TIME. It allows you to change the day, date, and time. When you enter the submenu, the second line displays **Adjust The Day of the Week**. The third line shows the cursor flashing on the day (see Figure 6-17).

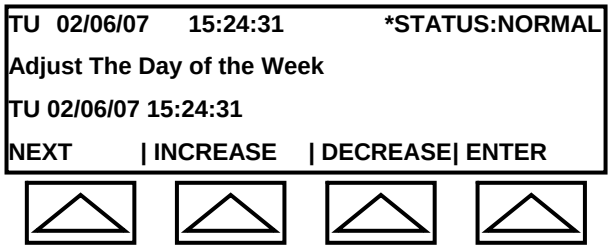


Fig. 6-17: Time Submenu

The bottom line of the TIME Submenu allows you to make changes to the time as follows:

- NEXT – to change a field, you must first move the cursor on the third line to the field. Selecting NEXT, moves the cursor to the next field to the right. The second line identifies the field (i.e., day, month, date, year, hour, minutes, second).
- INCREASE – select INCREASE to increase the value of the field where the cursor is currently positioned.
- DECREASE – select DECREASE to decrease the value of the field where the cursor is currently positioned.
- ENTER – select ENTER to save the changes and return to Screen #2 of the MAIN Menu.

  Note: If you made no changes and wish to exit the TIME Submenu, select ENTER.

6.2.2.5 ALRM PRNT Submenu

The ALRM PRNT Submenu is entered from Screen #3 of the MAIN Menu by selecting ALRM PRNT (see Figure 6-19). It allows you to enable or disable the printer to provide an automatic printout (see Figure 6-16d) upon the occurrence of an alarm. A printout will also be automatically provided when the alarm is acknowledged.

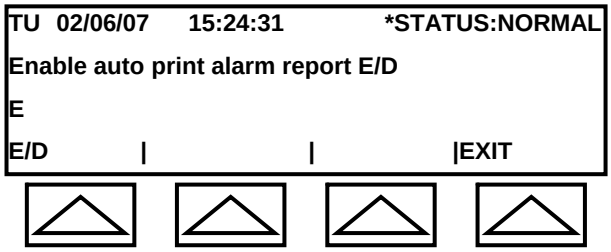


Fig. 6-19: Alarm Print Submenu

The bottom line of the ALRM PRNT Submenu provides the following features:

- E/D – allows toggling between **E** (enable automatic printout) and **D** (automatic printout).
- EXIT – returns to Screen #2 of the MAIN Menu.

6.2.2.6 ALRM LOG Submenu

The ALRM LOG Submenu is entered from Screen #2 of the MAIN Menu by selecting ALRM LOG. It displays the most recent alarm entries in the alarm log first (see Figure 6-18a), and allows you to obtain a printout of any alarm in the log. To obtain a printout of the entire log press the PRINT button. Entries show when an alarm occurred and if and when it was cleared (see Figure 6-18b).

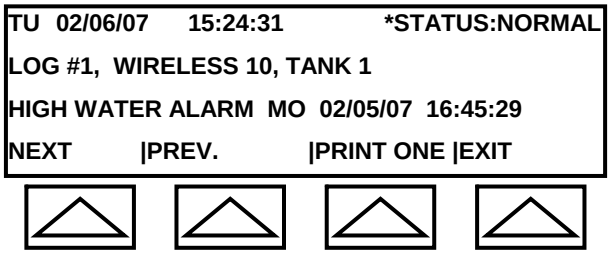


Fig. 6-18a: Alarm Log Submenu

Tel: 1(631) 981-2001
Fax: 1(631) 981-2007

---SITE INFORMATION:
ID#: EL104050
VER W06.02.06.6 ENG090717
MAY 12, 2010 10:30 AM

ALARM LOG REPORT

Tank Number 1 (Wireless 10)
DIESEL
HIGH WATER ALARM CLEARED
CODE B15,B13=00
CODE=00: Normal
Event Time: MO 02/05/07 17:05:38

Tank Number 1 (Wireless 10)
DIESEL
HIGH WATER ALARM
CODE B15,B13=00
CODE=00: Normal
Event Time: MO 02/05/07 16:45:29
15.22 (In)

Figure 6-18b: Alarm Log

The bottom line of the ALRM LOG Submenu provides the following features:

- NEXT – allows you to view the next alarm stored in the ALARM LOG.
- PREV – allows you to view the previous alarm stored in the ALARM LOG.
- PRINT ONE – select PRINT ONE to obtain a printout of the alarm currently being viewed.
- EXIT – allows you to return to Screen #2 of the MAIN Menu.

*Note: The Alarm Log holds up to 128 entries. Do not select PRINT unless you actually want to print out all of its contents. To abort a printout, press the **any** key during the print cycle.*

6.2.2.7 BX-SENSOR

The BX-SENSOR Submenu allows you to monitor all sensors configured with the OEL8000II-W.(see Figure 6-20a) The PRINT Button allows you to obtain a status printout of all sensors.

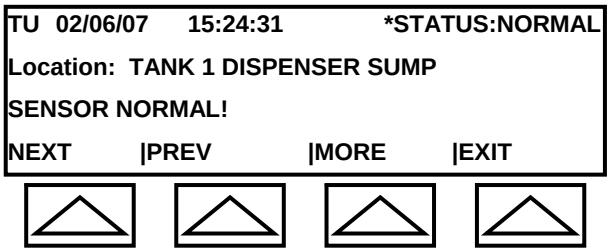


Fig. 6-20a: BX-SENSOR Submenu

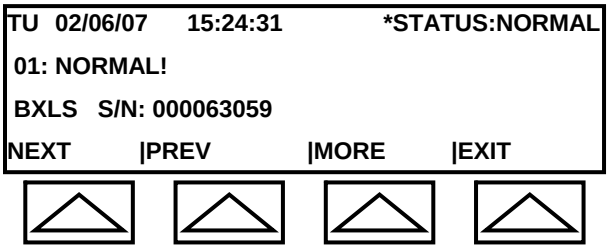


Fig. 6-20b: BX-SENSOR Submenu

- NEXT – this allows you to view the next sensor in the system
- PREV – this allows you to view the previous sensor
- MORE – provides more information for the current sensor such status and S/N.
- EXIT – returns to Screen #3 of the MAIN Menu.

6.2.2.8 SHIFT LOG Submenu

The SHIFT LOG Submenu (see Figure 6-24a) is entered from Screen #3 of the MAIN Menu. It allows you to obtain a printout of the Shift Report (see Figure 6-24b). The Shift Report provides an inventory report only for enabled tanks and for the specified shift(s).

The second line of the LCD prompts you to enter the number of shifts to be printed (maximum is 18), and you enter the number on the third line using the data keypad.

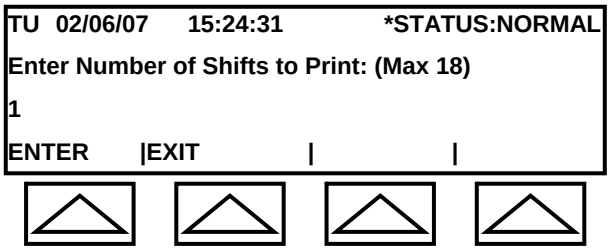


Fig. 6-24a: Shift Log Submenu

The bottom line of the SHIFT LOG Submenu provides the following features:

- ENTER – enter the number of shifts to be printed using data keypad then select ENTER to print the report and return to Screen #3 of the MAIN Menu.
- EXIT – returns to Screen #3 of the MAIN Menu.

```
.---Shift Log
End Time          FR  02/02/07 18:00:00
Start Time        TH  02/01/07 12:00:00
Tank1, DIESEL
End Product Level:          43.56(In)
Start Product Level:        43.60(In)
End Product Vol.:         2942.97(In)
Start Product Vol.:       2945.66(In)
End T.C. Vol.:            2934.10(G)
Start T.C. Vol.:          2935.80(G)
End Water Level:            2.90(In)
Start Water Level:          2.85(In)
End Water Vol.:           195.68(In)
Start Water Vol.:         192.68(In)
End Temperature:            67.2(F)
Start Temperature:          68.0(F)
Delivery T.C. Vol.:         0.00(G)
Sold/Used Vol.:             2.70(G)
```

Figure 6-24b: Shift Log Data

6.2.2.9 DROP E/D Submenu

- The DROP E/D Submenu (see Figure 6-21) is entered from Screen #4 of the MAIN Menu. It permits enabling or disabling the printer to provide an automatic printout whenever a delivery (DROP) occurs. The system can store up to 40 Drops in the log.
- The second line in the LCD indicates that automatic printout can be enabled or disabled by selecting E or D. The third line indicates the current status. In the example below, automatic printout is enabled.

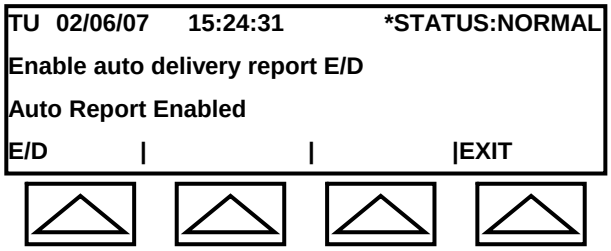


Fig. 6-21: Drop E/D Submenu

The bottom line of the DROP E/D Submenu provides the following features:

- E/D – allows toggling between **E** (enable automatic printout) and **D** (disable automatic printout).
- EXIT – returns to Screen #4 of the MAIN Menu.

6.2.2.10 DROP DATA Submenu

The DROP DATA Submenu (see Figure 6-22a) is entered from Screen #4 of the MAIN Menu. It displays a menu that allows you to select TANK#, which will change the TANK# DROP DATA you are viewing. SELECT allows you to select which drop to view. The system can store up to 40 Drops in the log.

The second line on the LCD indicates the number of entries currently stored in the system.

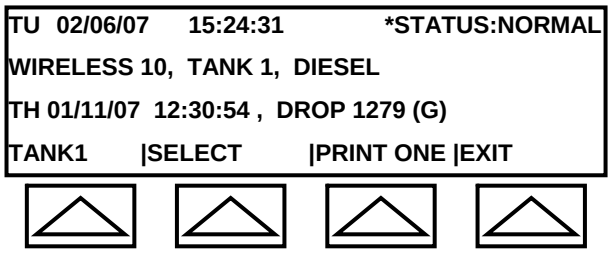


Fig. 6-22a: DROP DATA Submenu

The bottom line of the DROP E/D Submenu provides the following features:

- TANK# – allows you to view DROP DATA for a different tank (see Figure 6-22b).
- SELECT – allows you to select which DROP you want to view.
- PRINT ONE – allows you to print the current DROP DATA
- EXIT – returns to Screen #4 of the MAIN Menu.

```
---Delivery Log

TANK 1
PRODUCT TYPE          :DIESEL
Start Time:           TH 01/11/07 12:00:01
Stop Time:            TH 01/11/07 12:30:54
Start T.C. Vol.:            2666.06(G)
End T.C. Vol.:              3942.33(G)
Delta T.C.:                 1276.27 (G)
Start Gross Vol.:           2673.27(G)
End Gross Vol.:             3952.66(G)
Delta Gross:                1279.35(G)
Start Water Vol.:            191.37(G)
End Water Vol.:             1777.76(G)
Start Product Level:          39.56 (In)
End Product Level:            58.50 (In)
Start Water Level:             2.83 (In)
End Water Level:              26.31 (In)
Start Temperature:            66.47(F)
End Temperature:              66.98(F)
```

Figure 6-22b: Delivery Log

6.2.2.11 PRINTER Submenu

A number of menus provide access to the PRINTER Submenu (see Figure 6-26b) that allows you to determine where data is sent. Choose the preferred option by entering a number with the data keypad.

The screen in Fig 6.26a will appear first showing the current Print data direction. To change the print data direction the PRINTER button is pressed again and will bring

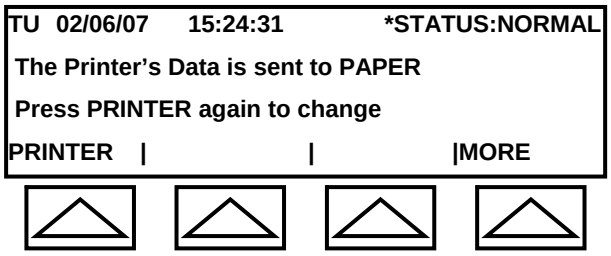


Fig. 6-26a: Printer Submenu

you to the screen shown in Fig. 6.26b.

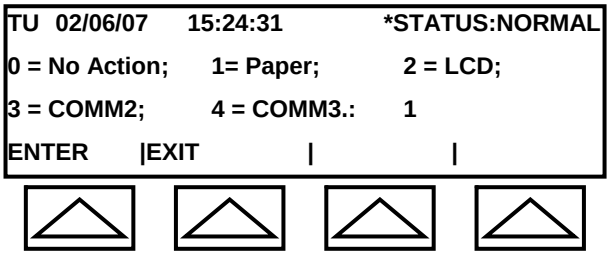


Fig. 6-26b: Printer Submenu

The bottom line of the PRINTER Submenu provides the following features:

- ENTER – choose an option by entering its number using the data keypad then select ENTER. LCD returns to Screen #1 of the MAIN Menu.
- EXIT – returns to Screen #5 of the MAIN Menu.

6.2.2.12 DIAG Submenu

Note: The DIAG-MODE P/W/O feature is not applicable in the OEL8000II-W

The DIAG Submenu (see Figure 6-25a) is entered from Screen #5 of the MAIN Menu. It allows you to enable/disable communications with remote sites and test alarms for product and water levels

The second and third lines indicate whether CALLOUT is enabled or disabled. At times, it may be necessary to prevent the system from calling out. This is because the system will prevent access to its controls while a callout is in progress. To avoid being locked out of the system while working on it, you can disable callout until work is finished.

The second and third lines also identify the current setting for DIAG MODE (diagnostic mode): DIAG-Prod (diagnostics for product), DIAG-Water (diagnostics for water), and DIAG-OFF (diagnostic mode is off).

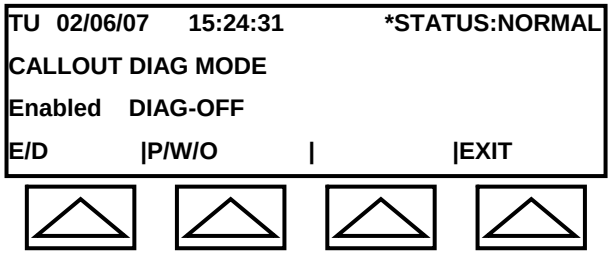


Fig. 6-25a: DIAG Submenu (Off)

The bottom line of the DIAG Submenu provides the following features:

- E/D – Enables/Disables callout. It permits toggling between enabling and disabling callout. To prevent lockout from system control while callout is in progress, disable callout. Select E/D again to enable callout.

  Note: While callout is disabled, the system will not be able to communicate with remote sites. If you require this capability, make certain to re-enable callout when you have completed work.
- P/W/O – permits testing alarms to ensure that they will trigger when product or water reaches programmed levels. Repeatedly selecting this field will cycle through product, water, and off. When you select OFF, the LCD will display Fig-

ure 6-25a. When you select water, it will display Figure 6-25b, and when you select product, it will display Figure 6-25c.

- EXIT – returns to Screen #5 of the MAIN Menu.

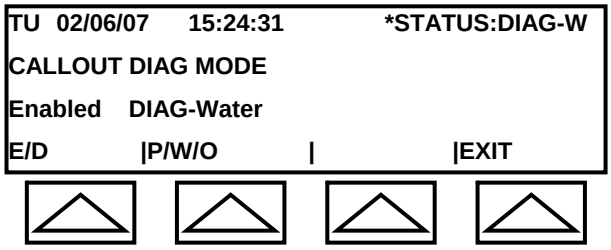


Fig. 6-25b: DIAG Submenu (Water)

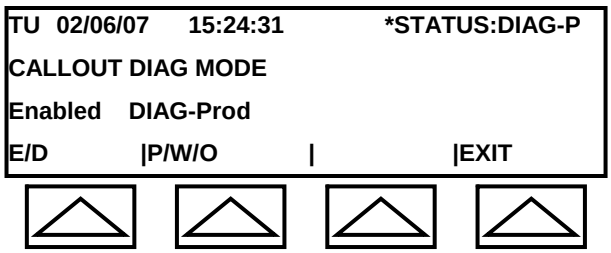


Fig. 6-25c: DIAG Submenu (Product)

Procedure for running P/W/O

To perform a test:

1. Select water or product. LCD will display selected test (see Figures 6-25b and 6-25c).
2. Select EXIT.
3. Press the **MENU** key.
4. Select STATUS. The LCD will display the volume for water or product (whichever you selected in Step 1).
5. Use the CURSOR LEFT key or CURSOR RIGHT key to adjust height until alarm sounds.
6. Press the **ACK** key to acknowledge alarm and silence horn.
7. Return to the DIAG submenu screen, and select O (off), and select EXIT to exit the submenu. The height levels will return to their actual settings.

   Note: If no keys are pressed on the controller panel for 15 minutes, the system will automatically exit DIAG. and height levels will return to actual settings.

Chapter 7 FUNCTIONS and PROCEDURES

7.1 Basic Functions and Procedures

This section identifies commonly used functions and either provides instructions or directs you to the proper subsection in *Section 8 – System Operations* for additional information.

7.1.1 Printouts

The following provides instructions for obtaining printouts and enabling/disabling printer for automatic printouts.

7.1.1.1 System Inventory Printout

Press the PRINT key from Screen #1 of the MAIN Menu to obtain an inventory printout of each enabled tank in the system as well as an alarm report for currently active alarms.

7.1.1.2 Inventory Printout for Specific Tank

Starting in Screen #1 of the MAIN Menu, do the following:

1. Select STATUS. The STATUS Submenu is displayed (see *Section 8.2.2.1.5 – STATUS Submenu*).
2. Repeatedly select NEXT to find the desired tank.
3. Select PRINT.

7.1.1.3 Printout of Alarms and Warnings in Effect

Starting in Screen #1 of the MAIN Menu, do the following:

1. Select ALARMS. The ALARMS Submenu is displayed (see *Section 8.2.2.2 – ALARMS Submenu*).

2. Select PRINT.

7.1.1.4 View/Print Alarm Log

You can obtain a printout of the last alarm or the entire log. The log can hold data for up to 128 alarms.

Starting in Screen #1 of the MAIN Menu, do the following:

1. Select MORE to advance to Screen #2.

2. Select ALRM LOG. The ALRM LOG Submenu is displayed (see *Section 8.2.2.6 – ALRM LOG Submenu*).

3. Use the NEXT and PREV. Buttons to select a specific alarm and press PRINT ONE to print the currently selected alarm.

4. Press the PRINT Button to obtain a printout of the entire log.

7.1.1.5 Printout Drop Information

You can obtain a printout of the last drop or the entire log.

Starting in Screen #1 of the MAIN Menu, do the following:

1. Select MORE (three times) to advance to Screen #4.

2. Select DROP DATA to enter the DROP DATA Submenu (see *Section 8.2.2.10 – DROP DATA Submenu)*.

3. Select PRINT ONE for printout of most recent drop, or press the PRINT key to printout contents of the entire log.

7.1.1.6 Printout Shift Log Report

Starting in Screen #1 of the MAIN Menu, do the following:

1. Select MORE (two times) to advance to Screen #3.
2. Select SHIFT LOG. The SHIFT LOG Submenu (see *Section 8.2.2.8 – SHIFT LOG Submenu*) is displayed.
3. Enter the number of shifts to be printed using the data keypad then select ENTER.

7.1.1.7 Enable/Disable Automatic Printout for Alarm

The printer can be enabled or disabled to provide an automatic printout upon the occurrence of an alarm.

Starting in Screen #1 of the MAIN Menu, do the following:

1. Select MORE to advance to Screen #2.
2. Select ALRM PRNT to enter the ALRM PRNT Submenu (see *Section 8.2.2.5 – ALRM PRNT Submenu*).
3. Select E/D to toggle between enable and disable.

7.1.1.8 Enable/Disable Automatic Printout upon Drop

The printer can be enabled or disabled to provide an automatic printout after a delivery (drop).

Starting in Screen #1 of the MAIN Menu, do the following:

1. Select MORE (three times) to advance to Screen #4.
2. Select DROP E/D to enter the DROP E/D Submenu (see *Section 8.2.2.9 – DROP E/D Submenu*).
3. Select E/D to toggle between enable and disable.

7.1.2 View Inventory Data

In Screen #1 of the MAIN Menu, select STATUS (see *Section 8.2.2.1 – STATUS Submenu*).

7.1.3 View Alarms Currently in Effect

In Screen #1 of the MAIN Menu, select ALARMS (see *Section 8.2.2.2 – ALARMS Submenu*).

7.1.4 System Setup

System setup occurs in the SETUP Submenu, which is discussed in the OEL8000II-W Installation Manual. It is accessible only to authorized, qualified personnel.

7.1.5 Changing the Date and Time

The data and time are changed in the TIME Submenu. In Screen #2 of the MAIN Menu, select TIME (see *Section 8.2.2.4 – TIME Submenu*).

7.1.6 Enable/Disable Communications

While remote communication is in effect, access to system controls is inhibited. To prevent being locked out of system while working, disable communications. Starting in Screen #1 of the MAIN Menu, do the following:

1. Select MORE (four times) to advance to Screen #5.
2. Select DIAG. The DIAG Submenu (see *Section 3.2.2.12 –DIAG Submenu*) is displayed.
3. Select E/D to enable or disable communications.

7.1.7 Testing Alarms for Product and Water

Note: This function is not applicable in the OEL8000II-W system.

Alarms are tested by adjusting the product or water height until alarm is triggered (see *Section 3.2.2.12 – DIAG Submenu*).

7.1.8 Data Direction

Choose where data is to be sent (i.e., printer, lcd, etc). The procedure is provided in *Section 3.2.2.11 – PRINTER Submenu*.

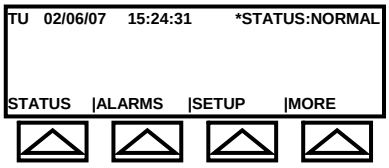
7.1.9 Remote Testing of RAS Annunciator

The RAS Annunciator is always tested whenever the **TEST** key is selected on the controller's front panel. For remote testing, press and hold (for two seconds) then release the horn silence button on the annunciator itself. Lights will blink and horn will sound on both the controller and the annunciator.

7.2 Responding to Alarms

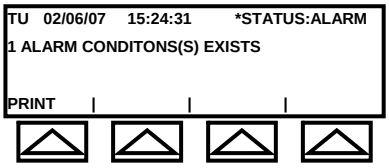
The following procedure describes how to respond to alarms and retrieve alarm data.

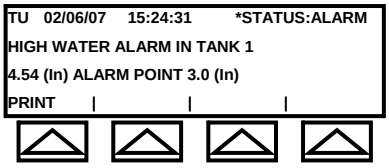
1. When the green **OK** LED is illuminated, the system is operating properly and no alarm conditions exist.
   OK **FAULT** **ALARM**



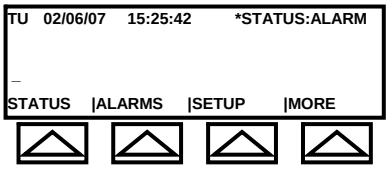
2. When an alarm condition occurs:

   - Horn will sound.
   - Red **ALARM** LED illuminates.
   - LCD shows status as ALARM. Remaining displays alternates between showing the number of alarms and identifying the individual alarms.
   - If auto print is enabled (see *Section 3.2.2.6 – ALRM PRNT Submenu*), system will provide an automatic printout.

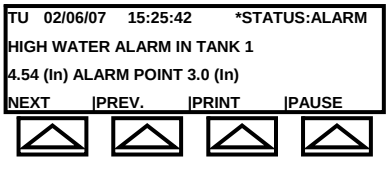




3. Press **ACK** to silence the horn.



   - Horn will silence.
   - LCD will clear and LCD will continue to display **STATUS:ALARM**.
   - If auto print is enabled, system will print the date and time of acknowledgment.



4. To review alarms on the LCD, select ALARMS in Screen #1 of the MAIN Menu. To obtain a printout, select ALARMS in Screen #1 of Main Menu then select PRINT in the ALARMS Submenu.

5. The red **ALARM** LED will remain illuminated and the LCD will display **STATUS:ALARM** until all alarm conditions have been corrected.

6. Report all alarm conditions immediately to site manager:_____ .

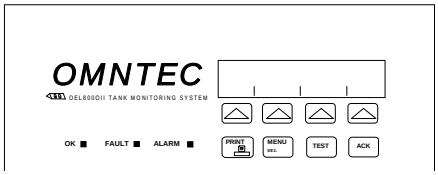
7.3 Faults

A system failure is indicated when the red **FAULT** LED is illuminated. Consult a authorized service contractor immediately:_____.

OK **FAULT** **ALARM**

7.4 Testing Systems

To test system, press the **TEST** key. The OEL8000II will test the controller, sensors, probes, and remote annunciators and print out a status report.



OK **FAULT** **ALARM**

Every Alarm, fault, and test should be recorded, date, and signed in a log.

For authorized service contractor, please contact OMNTEC at 631-981-2001.

7.5 LCD Fields in MAIN Menu

1. Status – shows tank data.

2. Alarms – shows alarms and warnings currently in effect.

3. Setup – enters programming. Accessible only to authorized personnel.

4. Time – set the systems date and time.

5. Alarm Print – enables printer to provide an automatic printout upon occurrence of an alarm event

6. Alarm Log – provides printout of alarm log report.

OK **FAULT** **ALARM**

7. BX-Sensor – allows monitoring of sensors configured with the OEL8000II-W
8. Shift Log – prints shift log.
9. Drop E/D – enables printer to provide an automatic printout following a delivery.
10. Drop Data – provides printout of last drop or of the entire drop log (up to 5 drops per tank and a maximum of 40 drops for the entire system).
11. Printer – directs data to printer, LCD, etc.
12. Diag – enables/disables callout and tests alarm levels for product and water.

Chapter 8 INSTALLING THERMAL PAPER

8.1 Installing Thermal Paper in the Printer

The following procedure provides instructions for replacing the printer's thermal paper. The circled numbers in the diagrams refer to the instruction numbers where parts are identified..

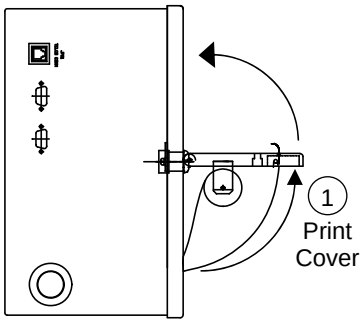


Fig. A-1: Print Cover (Side View)

1. Life printer cover (see Figure A-1).
2. Lift feeder arm (see Figure A-2).
3. Gently remove old paper roll. **Do not discard the core pin**.
4. Slide core pin into center of new paper roll and place into paper bracket.
5. Slide paper edge into the paper feed roller. The feeder will automatically advance the paper.
6. Press feeder button to advance enough paper to slide through paper slot in the printer cover.

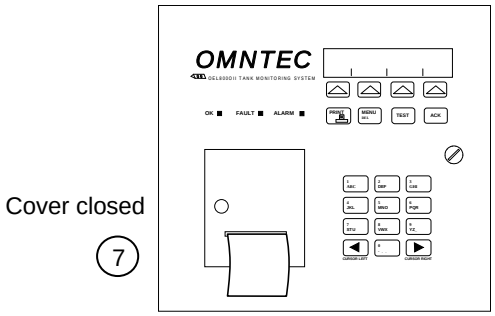


Fig. A-3: Print Cover Closed

7. While lowering the print cover, feed the paper through its paper slot (see Figure A-3).

Chapter 9 DATASTIK OVERVIEW

DataStik™ System Overview

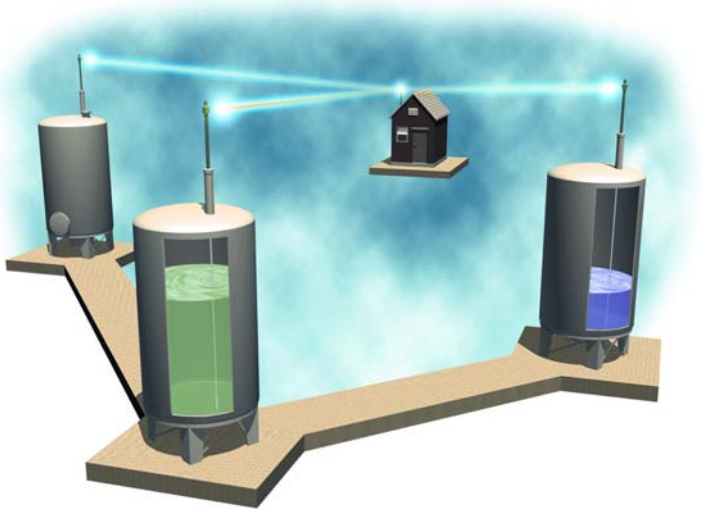
Omntec/Innovative Sensor Solutions have teamed up to develop **DataStik™**: a truly wireless and continuous tank gauging system. It is ideal for liquid level monitoring of product level, interface level and leak detection in a wide variety of liquid media in both above ground and underground storage tanks.

DataStik™ employs the patented Innovative Sensor Solutions battery-powered, intrinsically safe, 900MHz **DataCheck®** spread spectrum transmitter. The system provides continuous level measurement for inventory control and supply chain management. Since the system does not require power at the tank, it is ideal for monitoring tanks that have not had any electronic instruments installed or are in remote areas where it would be costly to bring power and signal wiring to the site.

The ***7255 Series Digital Stik™*** is available in 2 versatile packages to suit virtually any level monitoring application. The 316 stainless steel version (X Model) is totally welded construction, and has a cathodic protection boot for use in a wide variety of applications. The flexible versions (V and VB Models) employ a flexible PVDF housing and provides cost effective level monitoring in deep tanks.

This breakthrough in package design eliminates the bulky electronics enclosure at the top of the sensor and offers greater options for insertion and mounting in tanks and vessels. In addition, continuous self-diagnostic monitoring is part of the level measurement.

All **DataStik™** models provide 5 high resolution temperature measurements and the ability to add a high density float to measure the level of the interface between the product and any water that may be present.



True “Stand-Alone” Tank Monitoring:
Battery Powered!

Figure 1

The **DataCheck™** Receiver provides RS-232 output into any SCADA or computer system, and an optional MODBUS-RTU protocol RS-232 to RS-232/485 output is optionally available.

Figure 2 - DataStik™ Installed on Tank (VB Model shown)

DataStik™ System is comprised of 4 basic components; namely:

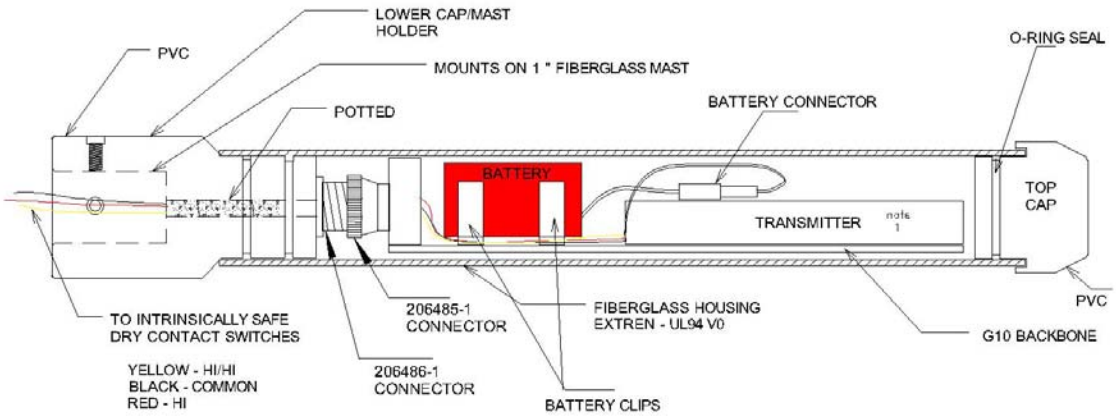
1. **DataCheck™** Transmitter (Part Number DC-TX-S1)
2. **DataCheck™** Repeater (if needed) (Part Number DC-RP-12)
3. **DataCheck™** Serial Receiver (Part Number DC-RX-SR-O)
4. **DataCheck™** Controller (Part Number OEL8000-W)

DataStik™ is designed for easy installation, convenient calibration, and very low maintenance. It is specifically designed to provide gauging for vessels where electrical power and/or signal wiring back to a supervised point are not available. The following chapters will describe the principle of operation, installation considerations, and system calibration and operation.

Chapter 10 DATASTIK TRANSMITTER

DataStik™ Transmitter Section

DataStik™ is equipped with a state-of –the-art DataCheck™ Transmitter MODEL DC-TX-D1. This transmitter is a 900 MHz spread spectrum device that contains an onboard processor and non-volatile ROM. Included with this transmitter is a Data Interface board giving the option to accept Serial Data from another intrinsically safe device. The transmitter is enclosed in a fiberglass housing, and contains the following components as shown in the diagram below:



Note: FI-BA-IS Battery must be used with DC-TX-D1

TOLERANCES (EXCEPT AS NOTED)	REVISIONS NO.	DATE	BY	DC-TX-D1 FillCheck Transmitter Assembly
DECIMAL +/- N/A	1			OMNTEC Mfg., Inc.
FRACTIONAL +/- N/A	2			
ANGULAR +/- N/A	3			DRAWN BY PRB; SCALE N/A; MATERIAL
	4			CHK'D; DATE 1/16/09; DRAWING NO. 301204
	5			TRACED; APP'D

Figure 3 – DataCheck™/ DataStik™ Transmitter Section

Installing or replacing a transmitter

The initial setup and verification of the transmitter assembly should be performed at the receiver location with receiver and display system powered up.

1. Remove the stainless cap screw on the lower part of the fiberglass housing.
2. While pulling up on fiberglass housing, rotate to break the o-ring seal and **carefully** slide housing up just high enough (3-4 inches) to provide access for your fingers to rotate the connector. Support the weight of the transmitter assembly by the fiberglass housing until removed from the connector making certain not to cause any bending in the connector.
3. Rotate the connector CCW on the lower cap and remove transmitter assembly by the fiberglass housing. Be sure to cup your hand under the fiberglass housing to prevent the transmitter assembly from falling out. Then, carefully remove the transmitter assembly from the fiberglass housing.
4. Connect the **red** battery (B-1) 2 pin connector to the 2 pin connector located on the transmitter.
5. Connect the **black** battery (B-2) 2 pin connector to the 2 pin connector located on the transmitter.
6. Once the batteries are connected, press the Reset button located on the lower end of the transmitter.
7. Verify transmitter operation by observing the screen on the software package. The transmitter is factory programmed as to ID code and Transmitter number.
8. Carefully reconnect the transmitter assembly to the connector, supporting the connector until the fiberglass housing is installed.
9. Place a (small) amount of lithium grease on the O-ring to insure a good seal and install the fiberglass housing over the transmitter assembly, rotating as it slides on.
10. Secure with the stainless cap screw.
11. Install transmitter at selected location and verify operation by viewing data on the control room display.

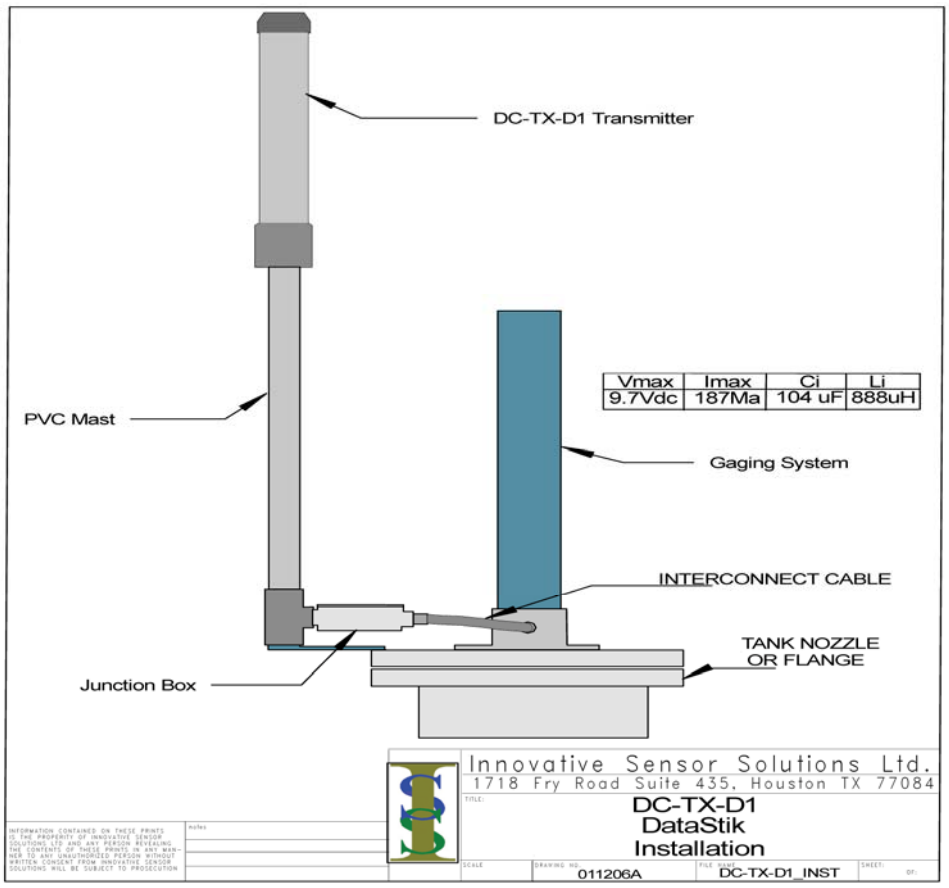


Figure 4 – Installing Transmitter on Tank

Installing or Replacing Transmitter Batteries

Safety Warning: The battery must be changed in an area known to be non-hazardous.

1. Remove the stainless cap screw on the **LOWER** part of the fiberglass housing.
2. While pulling up on fiberglass housing, rotate to break the o-ring seal and **carefully** slide housing up just high enough (3-4 inches) to provide access for your fingers to rotate the connector. Support the weight of the transmitter assembly by the fiberglass housing until removed from the connector making certain not to cause any bending in the connector.
3. Rotate the connector CCW on the lower cap and remove transmitter assembly by the fiberglass housing. Be sure to cup your hand under the fiberglass housing to prevent the tranmitter assembly from falling out. Then, carefully remove the transmitter assembly from the fiberglass housing.
4. Disconnect the old batteries and remove from transmitter, discarding the batteries following proper procedures. (see Appendix C in manual)

5. Insert new battery into clips observing battery locations.

6. Connect the red battery (B-1) 2 pin connector to the 2 pin connector located on the transmitter.

7. Connect the **black** battery (B-2) 2 pin connector to the 2 pin connector located on the transmitter.

8. After battery is installed, press the Reset button located on the end of the transmitter.

9. Reconnect the transmitter assembly. Support the weight of the transmitter assembly after the connection is made.

10. Place a (small) amount of O-ring lubricant on the O-ring to insure a good seal and install the fiberglass housing over the transmitter assembly, rotating as it goes on.

11. Secure with the stainless cap screw.

12. Install transmitter at selected location and verify operation by viewing data on the control room display.

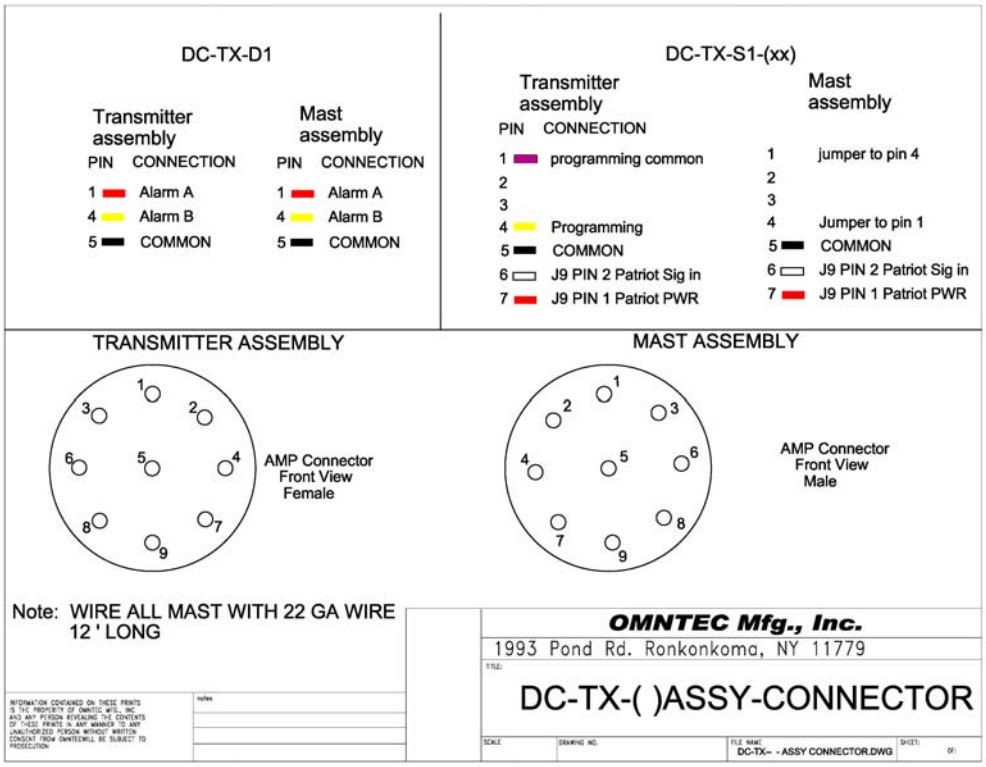


Figure 5–DataCheck™ Transmitter Connector

Figure 6 – Transmitter Plate

In-Tank Calibration of DataStik™ Systems

After DataStik™ Systems are installed; they must be calibrated so that their outputs are referenced to the tanks into which they are installed. This is accomplished by manually gauging the tank **at the reference datum** and comparing this value with the digital product level reading from the DataStik™ Probe. The difference between the reference innage gauge and the Data-Stik™ Probe product level output is referred to as the ***reference innage offset***.

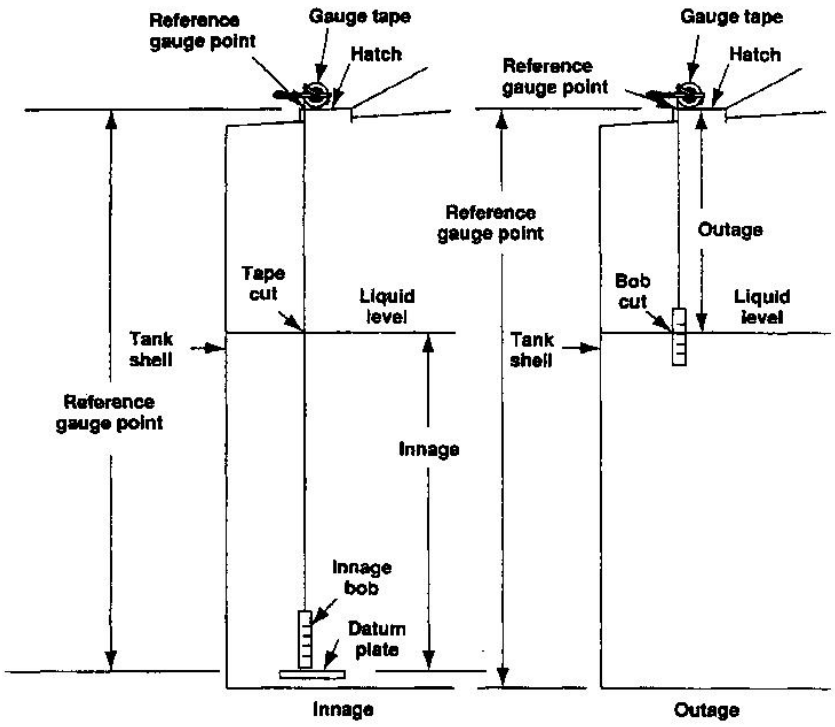


Figure 7 – Tank Innage and Outage Gauge Measurements

All DataStik™ Probes are innage gauges; that is, they measure upward rather than downward. The reference datum for a DataStik™ Probe is the reference magnet located near the bottom of the Probe. The unit of measurement is hundredths of an inch, measured upward from this reference magnet. When a gauge calibration is performed, the location of the reference magnet on the DataStik™ Probe is simply being offset so that the Probe's output is now referenced to the datum plate in the tank.

Because the magnetostrictive DataStik™ Probes are extremely linear, this simple, single-point calibration is usually sufficient to meet the accuracy specifications of the sensor. It should be noted that on Flexible PVDF DataStik™ Probes, the outer PVDF sheath is not bonded to the inner magnetostrictive displacement sensor and

possesses a high thermal coefficient of expansion relative to the inner sensor. Therefore, the outside PVDF sheaths on these Flexible DataStik™ Probes do not provide a stable linear reference and it is pointless to attempt to use them for any reference markings. The simple procedure below is completely adequate for performing reference gauging calibrations.

1. Make sure the tank is static (i.e., not being filled or emptied and that any agitation is shut down).
2. Perform multiple level measurements at the tank reference gauge point as per API or applicable standard to arrive at the most accurate innage level value possible. If an outage tape is used, the outage gauge must be converted to a innage gauge by subtracting the outage gauge from the tank's reference gauge height.
3. Convert the innage gauge value to hundredths of an inch since this is the raw output unit for all DataStik™ Probes.
4. Subtract the DataStik™ Probe product level reading from the reference innage gauge to arrive at the reference offset value. This reference innage offset should be added to the DataStik™ Probe product level reading to correct the probe level to the tank level.
5. The manual reference innage gauge will be greater than the DataStik™ product level output unless the DataStik™ Probe is installed in a sump and the reference magnet is lower that the datum plate in the tank.
6. Because it takes up to a week for the Flexible PVDF sheath on the DataStik™-V and –VB Models to relax and become perfectly straight, this procedure should be repeated after a week or 10 days for maximum accuracy.

Calculation of Tank Fluid Volumes

In the USA, all measurements and calibrations made to determine net volume must be in accordance with the most recent edition of the API Manual of Petroleum Measurement Standards. Certified capacity tables shall mean capacity tables prepared by an independent inspector or any independent surveyor. In addition, the following specific standards should be used as applicable:

1. API Manual of Petroleum Measurement Standards Chapter 7, Method of Measuring the Temperature of Petroleum Products (API 2543/ASTM D 1086
2. API Manual of Petroleum Measurement Standards Chapter 9, Section 1, Density Determination (ASTM D 1298).

3. API Manual of Petroleum Standards Chapter 3, Method of Gauging Petroleum Products (API 2545/ASTM D 1085).
4. API Manual of Petroleum Measurement Standards Chapter 11.1, Volume Correction Factors (API 2540/ASTM D 1250/IP 200). Either the printed version or the computer subroutine version of the standard may be used. Use Volume XIII, Tables 5D and 6D (or Volume XIV, Tables 53D and 54D) for lubricating oils.

Chapter 11 DATACHECK REPEATER

DataCheck™ Repeater DC-RP-12

Overview:

The DataCheck™ Repeater is a microprocessor-controlled transceiver which identifies signals from DataStik™ FillCheck® DataCheck™ transmitters and re-broadcasts those signals at full power. A DataCheck™ Repeater may be used alone or with additional repeaters to extend transmission range and to overcome site RF obstructions. Proprietary technology permits extensive transmission redundancy without localized RF saturation.

DataCheck™ Repeaters may be deployed as basic "plug and play" units to repeat signals, or may be programmed into the receiver as a supervised point. DataCheck™ Repeaters can be supervised for low backup battery and inactive status, and can be wired for case tamper detection.

DataCheck™ Repeater Features:

- Stand-alone "plug and play" capability.
- Supervision capability: The repeater can be programmed to send supervisory low battery and inactive reports to the receiver.
- Test transmissions can be initiated by pressing a button on the repeater.
- Includes I2VDC 1.2AH backup battery (approx. 12 hrs.).
- Weatherproof housing. (NEMA 4X)
- String or cluster combinations of repeaters to improve reception.
- Proprietary technology allows virtually unlimited combinations of repeaters to solve range or saturation problems.

DC-RP-12 Repeater Technical Specifications:

Enclosure:	NEMA 4X
Dimensions (enclosure):	6.89" x 6.89" x 3.25" (Hoffman A-773PC1)
Weight:	22.5 oz
Power requirement:	12VAC to 20VAC
Power consumption:	70ma (typical)
Low backup battery threshold:	11 .7V
Receiver type:	narrow band spread spectrum
Operating frequency:	902-928 MHz
Bandwidth:	100 kHz

The DataCheck™ Repeater can be used to create multiple and redundant pathways between transmitters and receivers. Transmissions can be shuttled around obstacles, such as intervening terrain. Redundant transmission pathways provide an RF link even when some paths are temporarily blocked. (For example, foliage or vehicles may block transmissions.)

Note that it is also possible to have multiple repeaters at any of the locations indicated. System performance is statistically improved with more than one repeater at a given repeater location.

Supervised vs. Unsupervised Operation:

DataCheck™ Repeater status can be supervised or unsupervised. Supervision includes low backup battery warning and inactive status.

Unsupervised operation requires only that the repeater be mounted and powered. No programming is required when used in this mode of operation.

Supervised operation requires that the repeater be programmed with the sites System ID and a Transmitter ID (usually 90 to 99). The programming must be performed at the factory before mounting the repeater. The OEL8000II-W must also be programmer to respond to the repeaters supervisory signal. The OEL8000II-W's programming can be done at the site.

Location, Pre-installation and Mounting:

Probably the most important decision regarding the use of DataCheck™ Repeaters is the repeater is enclosed in a NEMA 4X fiberglass housing and thus must be installed in an appropriate area to obtain maximum benefit. After the Repeater location is selected, practical considerations such as power availability will

affect the final placement of the repeater. The decision to use more than one repeater is usually made after the first repeater is installed. If it is expected that a repeater will be needed in an application, it is extremely useful to use an actual repeater in conjunction when performing the preliminary site RF survey. W*hen in doubt, always use a repeater* to ensure reliable system operation!

Before Mounting Repeaters:

At the time of repeater installation, it is a good idea to conduct a checkout of the system before actually mounting repeaters. On large jobs it is also a good idea to have extra repeaters available to solve unforeseen problems. First, program and install all transmitters in the system. Begin with the transmitters closest to the receiver, cause an alarm and restore at each transmitter. If a signal is not received consistently, position a repeater, power it with backup battery and check the transmitter. *If it is necessary to move previously installed transmitters or repeaters always backtrack to confirm good transmitter links.*

Troubleshooting range problems: work from the problem transmitter closest to the receiver out to the farthest, methodically installing repeaters to re-establish a good RF link.
The repeater housing uses a rigid conduit hub or a liquid tight strain relief connector to allow access from the bottom of the enclosure. Connect backup battery terminals to red connector going to *BAT+* and black connector to *BAT-*. Supply transformer power to terminals marked *AC* on the 7-position terminal block. Units can be mounted directly to wall or a support mast.

In some applications, special mounting devices can be used to permit optimal orientation of the repeater. Always check orientation of the repeater having the transmitter side (the housing cover) pointing as much as possible toward the system receiver.

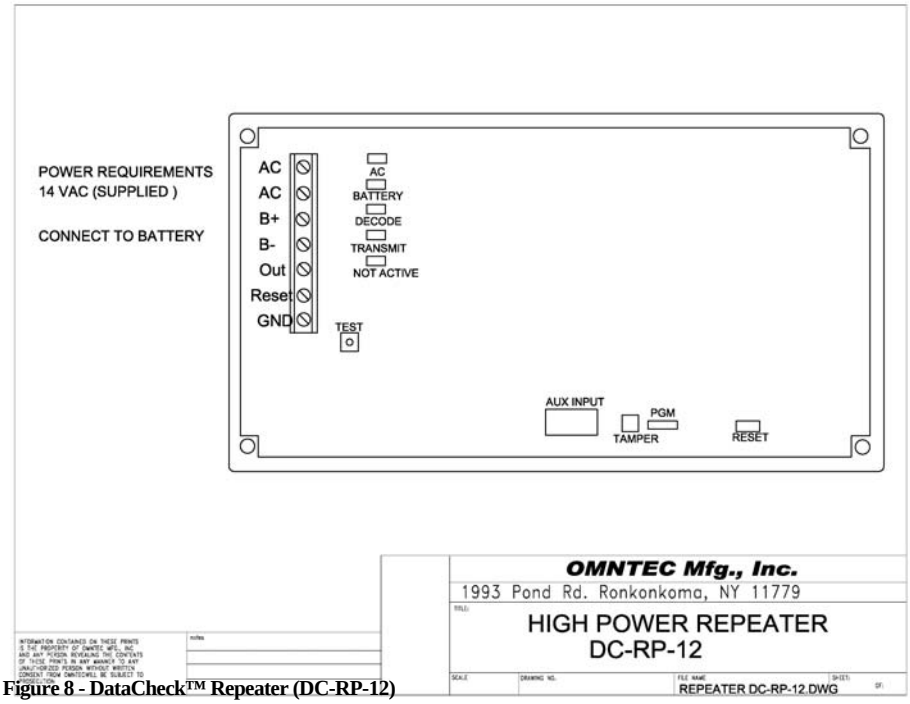


Figure 8 - DataCheck™ Repeater (DC-RP-12)

Installation of DataStik™ Probes

Identifying DataStik™ Probe Models

There are 2 basic types of DataStik™ Probes; namely:

1. Rigid Stainless Steel DataStik™-X Probe, up to 22 ft. length
2. Flexible PVDF DataStik™ Probe, up to 50 ft. length
   a. DataStik™-V Model, suspension mounted from top of tank
   b. DataStik™-VB Model, fixed-bottom design with constant-tension spring for measurement close to floor of tank

Each type of DataStik™ Probe has its own handling and installation requirements; hence, this chapter contains separate sections for the proper procedures for each.

To identify the type and dimensions of a DataStik™ Probe, please refer to the durable vinyl label attached to the wire leads at the top of the probe. The probe type and manufactured dimensions are imbedded in the Catalog Number shown on the label. For a key to deciphering the Catalog Number, please refer to Appendix B.

Preparing Tanks For DataStik™ Probe

Whenever DataStik™ Probes are installed into tanks, some planning and preparation are required. While this section is designed to serve as a basic guide for preparing a tank for the probe, it must be noted that there are so many possibilities for installation that all variations cannot possibly be covered in this section.

1. As a basic guide, the following factors should be considered. All DataStik™ Probes consist of a 5/8" OD shaft, either 316 stainless steel or PVDF, on which are installed either a single (product level only) or dual (product level and interface level) 2" OD or larger floats. The installation must provide for free, unencumbered movement of the floats. The shafts must be vertical and not be installed too close to any obstructions which could impede movement of the floats.

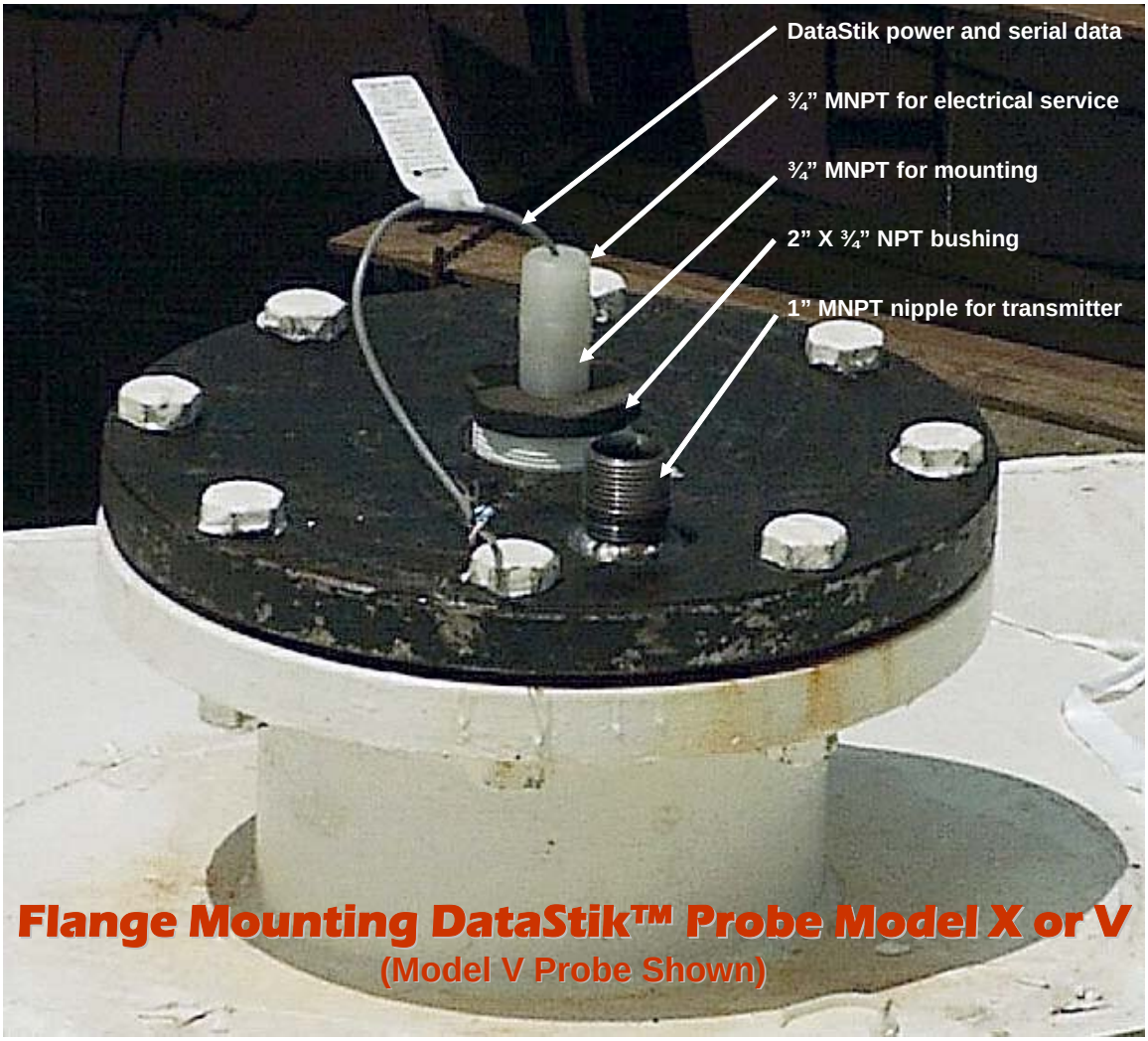


Figure 9 – Mounting DataStik™ Model-V on 4" Flange

2. The principle of operation of DataStik™ is magnetostriction. Some ferrous surfaces in storage tanks become magnetized; thus, the probe should be installed as far from steel tank appurtenances as possible to minimized the effects of magnetic anomalies.

3. DataStik™ Probes have ¾" MNPT threads for installation. The downward-facing threads are used to support the probe; the upward-facing threads on the PVDF DataStik™ Probes are designed only for electrical connections only and should never be used to suspend the probes.

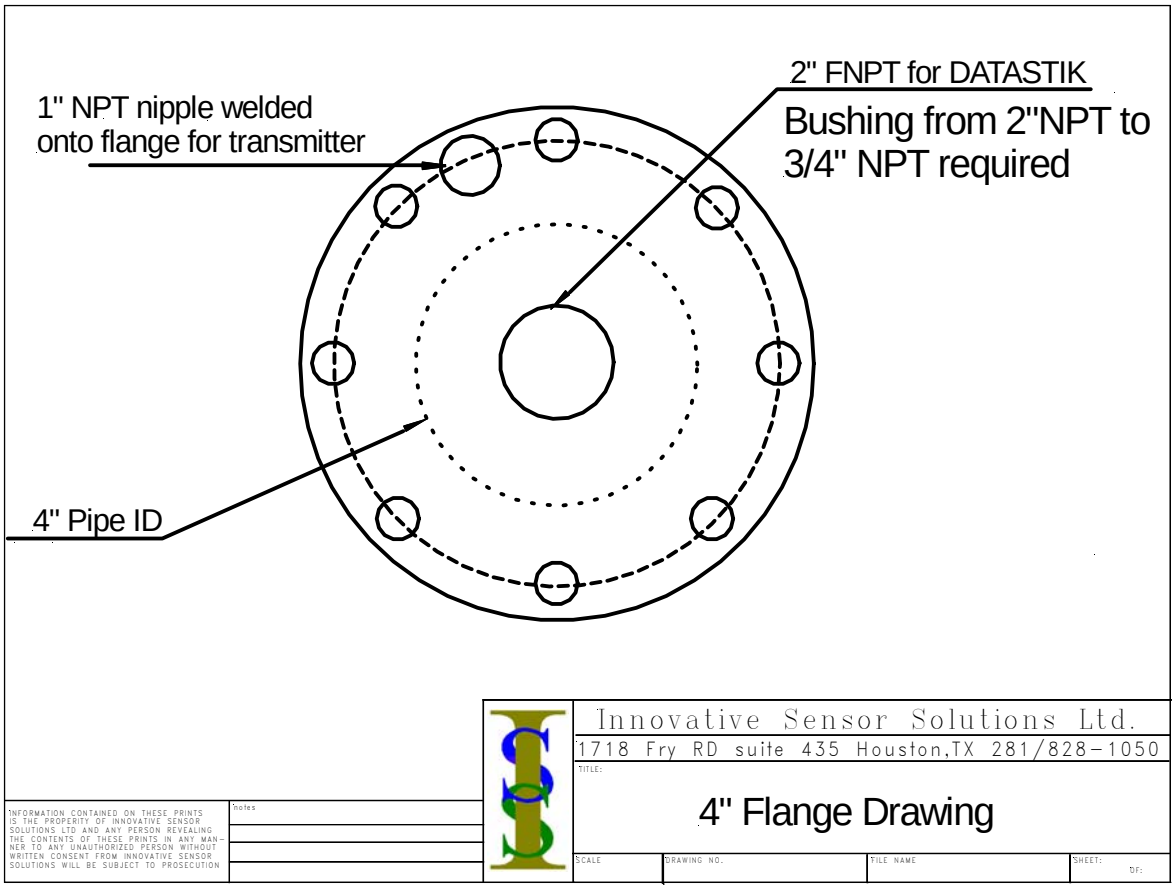


Figure 10 – Modifications to 4" Flange

Whenever DataStik™ Probes are installed, the following guidelines must be considered:

1. The overall probe length must be very carefully measured at the exact point of installation in the tank. The thickness of any flanges and seals which add to the overall length requirement must be noted. A DataStik™ Application Data Sheet with instructions for measuring the tank can be found on our website at www.innovative-sensor.com. Please contact our Technical Support staff should you have any questions as these measurements are critical to the successful implementation of the DataStik™ system.

2. Be sure to carefully consider any clearance issues above the point on the top of the tank where the DataStik™ Probe will be installed, especially with DataStik™-X Probes since the probes are rigid and will have to be placed in the vertical position to install them into the tanks. Be sure the probes can be supported properly in the vertical orientation and installed safely without contacting trees, power lines, or other overhead obstructions. Be sure to take wind velocity and other meteorological conditions into account before attempting to install probes into tanks.

3. If DataStik™ Probes are to be installed under flanges, manway covers, or gauge hatches, be sure to allow sufficient overhead clearance for any required electrical connections or junction boxes which may be necessary to connect the probe to its DataCheck™ Transmitter.

4. If probes are to be installed through flange blinds, it is imperative these fittings be **securely** suspended above the flanges to which they are to be attached while the installation is being conducted. Be sure to suspend them high enough so that there is enough vertical space underneath to permit easy installation of weights and floats. These manway covers or blinds must be sufficiently secured such that they cannot move, thus causing damage to the DataStik™ Probe or injury to personnel.

Figure 11 – Proper suspension of flange blind

5. If DataStik™ Probes are to be installed through very large heavy manway covers, it is recommended that these heavy pieces be modified by welding on a fitting (i.e., a 2" FNPT half-coupling as shown in Figures 13 and 14) just large enough to accommodate the weights and floats so as to permit easy probe insertion and removal without removing the manway cover.

1.1 Unpacking Probe

Carefully remove the contents of the shipping carton and check each item against the packing list before destroying any packing materials. If there is any shortage or damage, report to the Distributor! Most rigid probes are shipped in a Tube. To remove the end cap, use a large, flat blade screwdriver or a metal rod and tap on the inner edge of the cap until it pivots. Grab the cap and pull it out

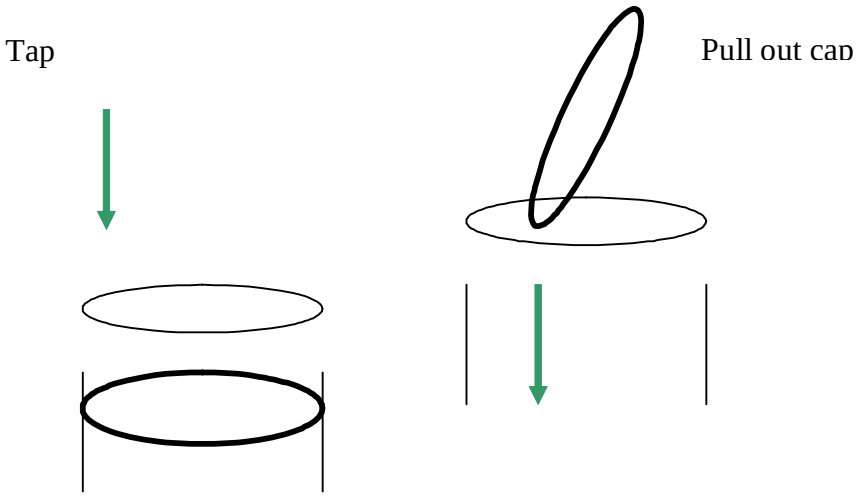


Figure 12 – Unpacking DataStik™-X Probe

If you have an RMA warranty claim, pack the probe in a shipping tube or with stiff reinforcement to prevent the probe from being bent in transit.

1. **When installing probes, do not bend rigid probes. Permanent damage may result.**
2. **Flexible PVDF probes are intended for coiling into a 4-foot (1.2m) diameter or greater. Flex probes 192" or less are shipped in a tube since they are not long enough to make one complete coil.**
3. **Rigid probes, longer than 10 ft., need to be supported at both ends while handling. Remove the Caution Tag before installing.**
4. **Probes are built sealed at the factory and have electronic circuits inside. Do not attempt to open probe or weld the tube.**

Mount the probe perpendicular with gravity. Float should have free movement along probe. Float dimensions are shown in

Float Retention Clip should be in place at base of probe after the float is on the tube.

Be sure to read and understand all of the Installation Section before beginning the procedure.

1.2 Mounting Conditions

Mounting may vary from use of flanges to compression fitting depending on the application. For underground tanks, the probe is generally mounted in the riser, resting on the bottom of the tank. Spacers are used to hold the sensor in the riser and a cable is suspended for the tank cap.

While most underground tanks are horizontal and fairly standard in design, above ground tanks vary considerably. The requirements for mounting these probes are fairly simple. Since the sensor requires a float to provide level position, there is a minimum size required for insertion of the float into the tank. It is recommended that a minimum of 2" diameter be used for the most reliable system. If a 2" NPT process connection is available, an adapter with compression fitting can be used. If the process connection is a nozzle with a flange is available, either a ¾" NPT or 2" NPT process connection can be used.

The size and material of the float being used will have a slight impact on the overall accuracy of the measuring system. In general, the larger the float the easier it is to provide a high accuracy measurement.

1.3 Stainless Steel Probe Mounting

Insertion Length is actual length from mounting point to bottom of tank. Overall length of probe is Insertion length plus 2 inches (51mm) for Flange mounted probe and Insertion Length plus 6 inches (152mm) for Compression Fitting mounted probe.

If the probe rests on bottom of tank, then the Active Range of probe is Overall Length minus 10 inches (254mm) [2 inches (51mm) dead band at bottom of probe and 8 inches (203mm) for null zone at top of probe].

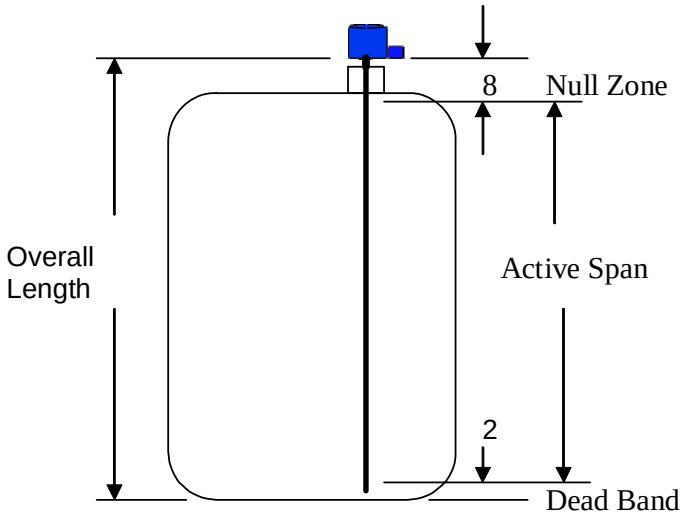


Figure 13 - DataStik™-X Probe Mounting

NOTE

The Active Range in the tank is slightly different depending on the mounting style.

Handling Procedure

The Flexible **DataStik™** Probe (-V and –VB Models) is a unique measuring sensor that provides the accuracy of in-ground tank gauging for tanks up to 50 feet (15 meters) in depth. Because of the unique, patented design, it is important to follow the handling instructions to avoid damaging the probe and voiding the warranty. During the unpacking and installation of the Flex Probe, always keep diameter of the coils between 40" and 48" (about1 meter) and parallel with each other.

UNPACKING THE FLEX PROBE:

1. **DO NOT CUT THE TIE WRAPS holding the Flex Probe together before installation! The probe is foam packed and palletized to protect the sensor. The accessories are in a box in the center of the carton.**

Figure 14 – Unpacking the DataStik™ Probe

2. **ALWAYS KEEP THE COILS PARALLEL! When the tie wraps are removed, DO NOT LIFT ONE COIL SEPARATELY OR TWIST ONE COIL 90° FROM THE OTHER COILS!**

3. **DO NOT ASSEMBLE THE WEIGHTS AND FLOATS ON THE FLEX PROBE UNTIL YOU ARE READY TO INSTALL THE SENSOR IN THE RISER! Carry the Flex Probe and other parts to the top of the tank before assembling the probe components.**

Figure 16 – Carrying the Probe

4. **DO NOT BEND THE TOP 2 FEET OF THE PROBE!**

Figure 15 – Keep Coils Parallel

Installation and Set-up Procedure

ASSEMBLY OF THE DATASTIK™ PROBE:

1. **The weight holds the probe on the bottom of the tank, while a spring loaded mechanism keeps the PVDF tube taut and permits the PVDF tube to expand and contract.**

2. **The Water Float, Product Float and Tank Mounting components are in a separate box. Modifications may be made to the existing flange or cover on the process connection. While a minimum 2" connection is needed, we recommend a 6" to 8" opening.**

3. **Unless otherwise noted, the Customer provides the following process connection;**

    a. **Appropriate Flange with 2" NPT process connection adapter.**

    b. **Flange or Metal cover for the Tank Riser.**

    c. **Recommended minimum 6" process connection.**

4. **Carry the Flex Probe in the coil over your shoulder and the other components separately to the top of the tank. Do not unwrap the Flex Wrap. Two (2) people should be available for installation.**

5. **Assembly of the Flex Probe has a specific sequence:**
    a. **2" Threaded coupling.**
    b. **Flange with 2" NPT connection (if required).**
    c. **Product Float.**
    d. **Water Float (urethane or 316SS).**
    e. **Stainless Steel Weight (with machined recess down).**
    f. **Stainless Pin.**

2” Stainless Product and Interface Floats on PVDF DataStik™

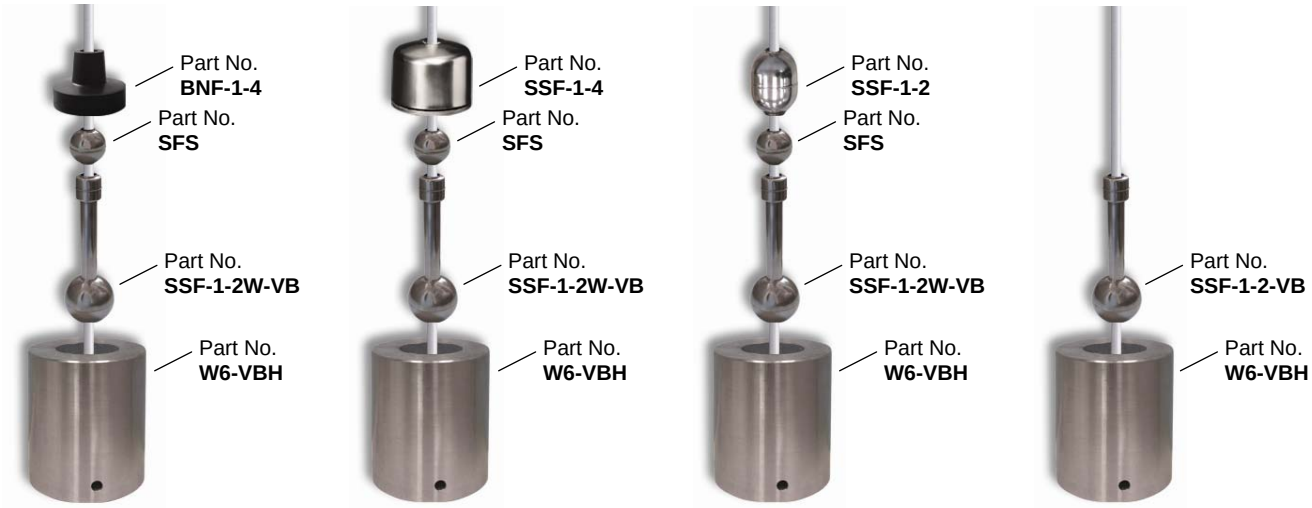


Figure 17 – Float and Weight Options

6. **CUT THE TIE WRAP AT THE END OF THE TUBE WITH A HOLE IN THE PLUG ONLY! Leave the other tie wraps intact. This will prevent the coil from unwrapping before installation.**

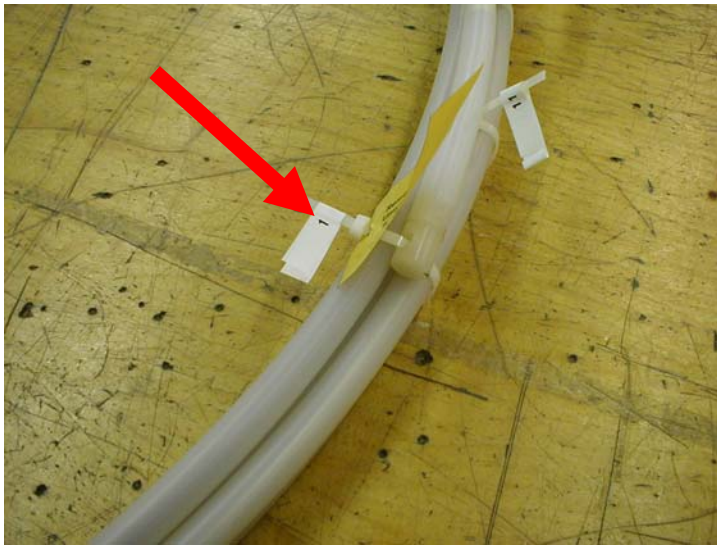


Figure 18 – Cutting First Tie Wrap

7. **Install all the appropriate accessories on the end of the probe in the**

following order (two people are needed for assembly):

Threaded Coupling (and Flange if required)

1) **Product Float**
2) **Water Float**
3) **Stainless Steel Weight**
4) **Stainless Pin**

Note: If a flange fitting is required, it should be positioned between the coupling and product float

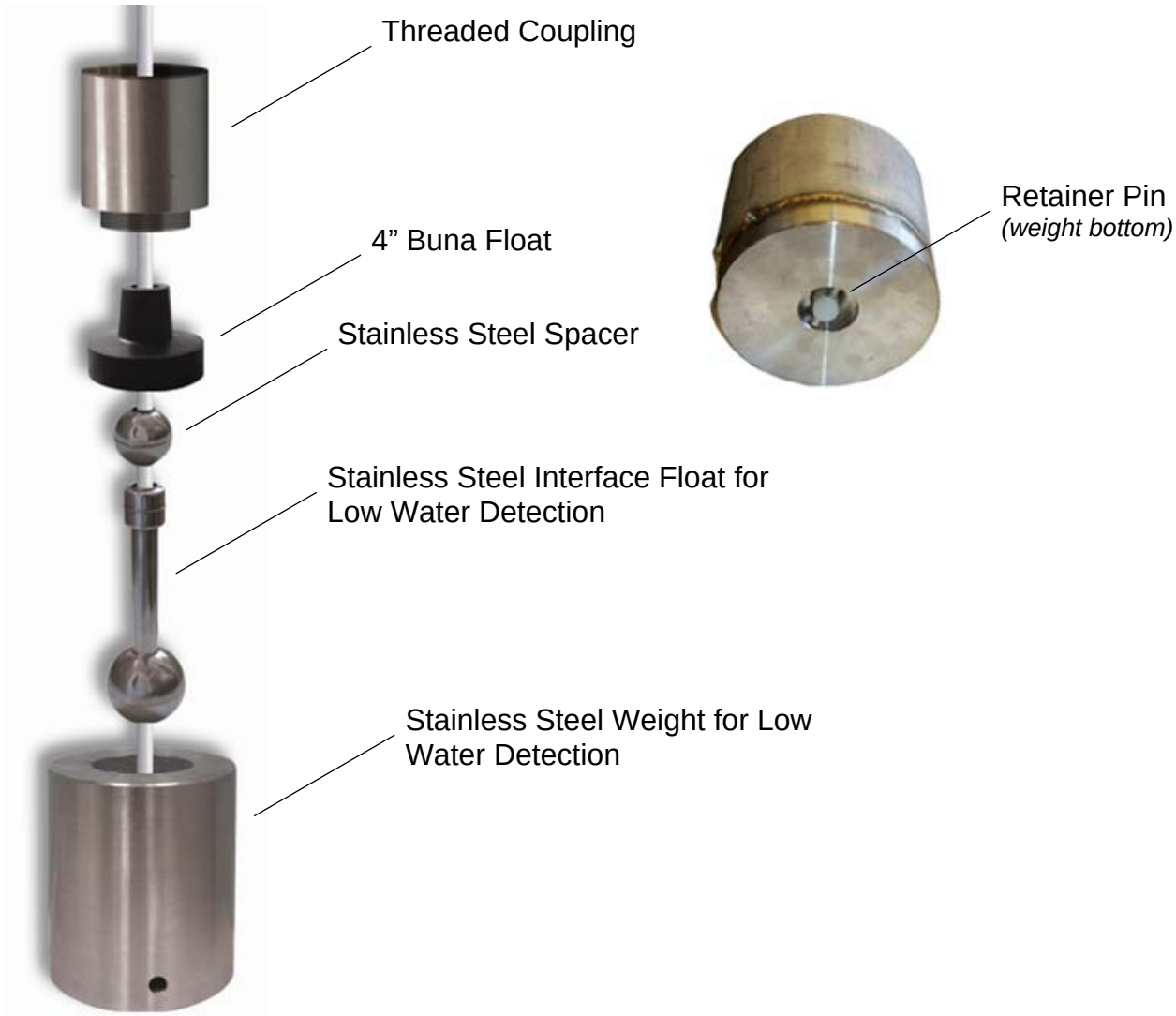


Figure 19 – Buna Product Float with Stainless Steel Interface Float for Low Water Detection on DataStik™ Probe (VB Model shown)

INSTALLATION OF THE **DATASTIK™** PROBE into the tank:

1. **One person should hold the weighted end of the probe while the other person holds the coiled probe. Slowly feed the probe into the riser or stilling well, cutting the remaining tie wraps, one by one, as you go. Do not cut all of the tie wraps at once. They have been sequentially marked so that you will know which ones to cut. Start with Number 1 at the end of the probe.**

Figure 20 – Feeding DataStik™ Probe Into Tank (VB Model shown)

a. **FEED THE WEIGHT IN WHILE UNCOILING! Do not drop it the full length of the probe or it may damage the end of the probe. During installation THE WEIGHT MUST ALWAYS HANG DOWN, NOT HORIZONAL!**

b. **DO NOT TWIST THE PROBE DURING INSTALLATION! Always keep the coils of the probe parallel.**

c. **DO NOT LET THE COIL BECOME LESS THAN 40" (1 meter) IN DIAMETER WHILE UNCOILING!**

2. **The Top of the Probe has electronic components mounted inside of the tube. DO NOT BEND THE TOP 2 FEET OF THE PROBE!**

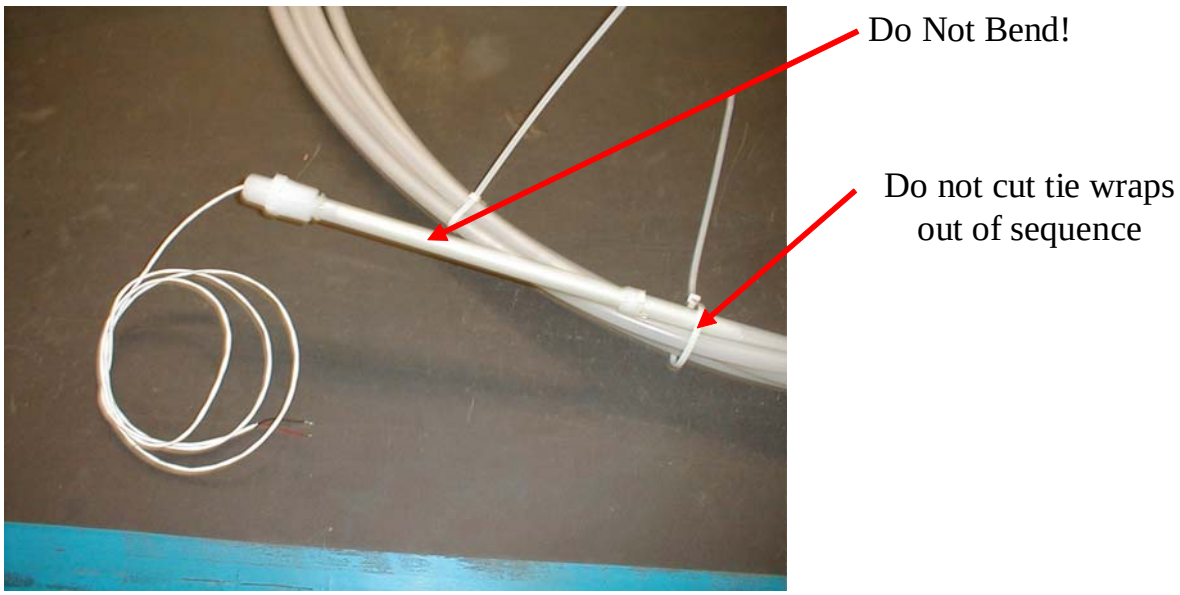


Figure 21 – Do Not Bend top 2 Feet of Probe (V Model shown)

3. **DO NOT LIFT THE PROBE BY ITS ELECTRICAL CABLE!**

4. **Thread and tighten the 4"x 3/4" adapter to the Top of the Probe and mount in the Flange, Cover or Riser.**

5. **The Coupling for a Standard 7255 V probe includes a housing. The cable is passed through the housing cap. The cord grip is tightened and the cable extends into the transmitter mounting mast. See the instruction for Data Check transmitter for the wiring diagram. The 7243 VB has a specially designed housing with a constant tension spring assembly.**

Installing DataStik™-V Probe

Figure 22 - Tools Needed

1. Tools needed.

   B. Pipe Wrench

   C. Channel Lock Pliers

   D. Screwdriver

   E. Wire Stripper

   F. Wrenches for Flange Bolts

2. Organize parts on tank.

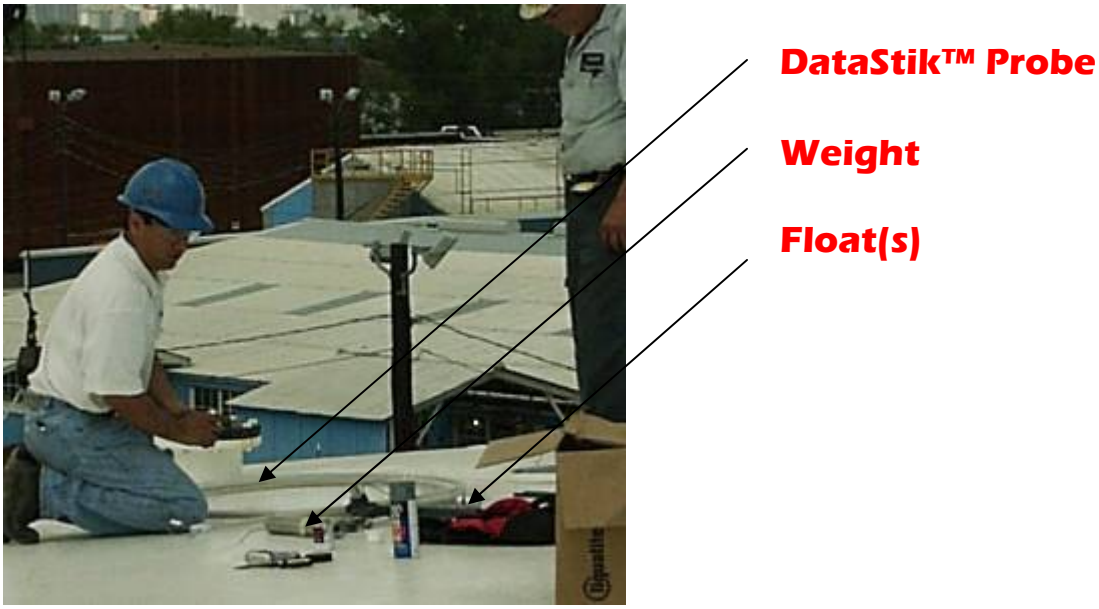


Figure 23 - Organizing Parts on Tank

3. Install ¾” x 2” bushing first followed by the Float or Floats and weight assembly last. Making sure to have weight keeper pin installed correctly. The DataStik™ Probe will not operate if kinks or sharp bends are made in the measurement section. Cut Tie Wraps in number sequence.

Figure 24 - Cut Tie Wraps in Sequence

4. Continue inserting DataStik™ Probe into tank. Observe the electronics section. It must remain straight.

Figure 25 - Feeding DataStik™ into Tank

5. Screw PVDF into bushing screwed into flange. Do not apply too much torque.

6. Electrical hook-up starting point.

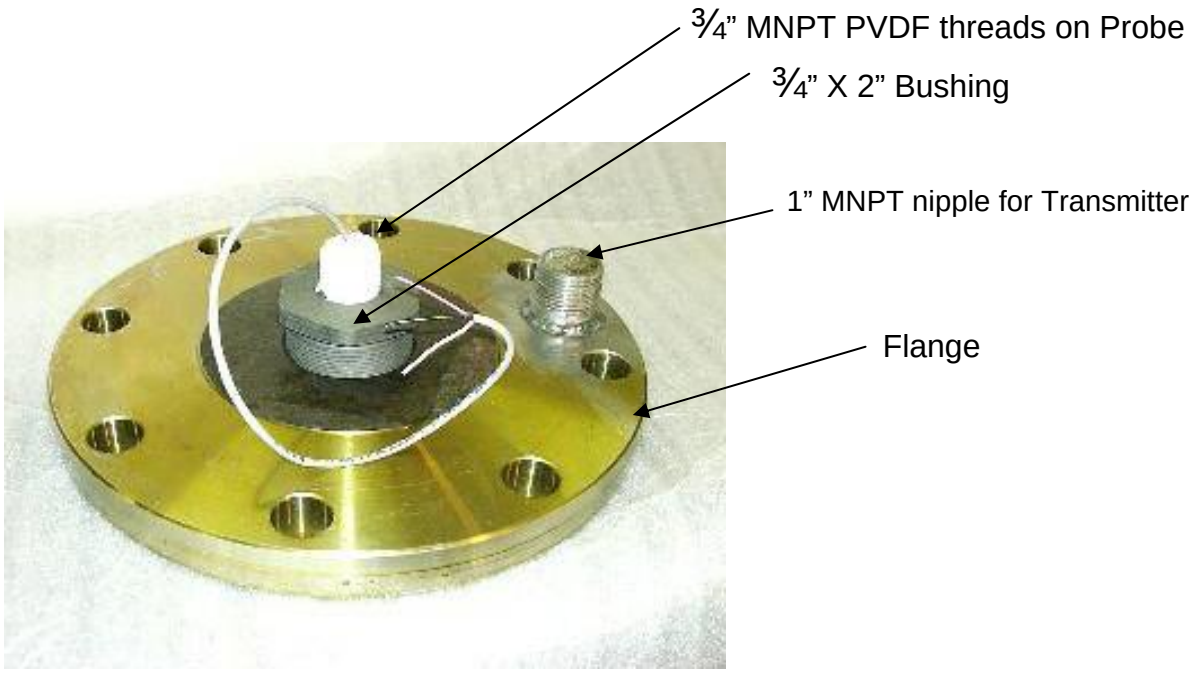


Figure 26 – Electrical Hookup Starting Point

9. J-box contains 2 poly-bags, 3 tie wraps, 4 wire nuts.

Figure 27 – Contents of J-Box

10. Fish wire through j-box and screw box to PVDF PROBE. Connect transmitter mast to 1", nipple located on flange.

Figure 28 – Fishing Wire Through J-Box

11. Install on each end of Liquid-Tight place slip nut, retaining ring, and cap. Fish wire through the conduit assembly.

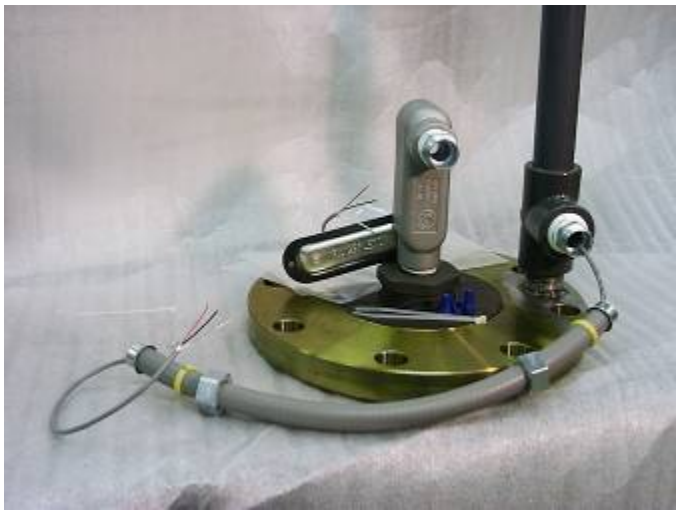


Figure 29 – Liquid-Tight Fitting

12. Fish wire through the j-box and attach conduit assembly at both ends.

Figure 30 – Attaching Flexible Conduit

13. Strip wires and connect the like-colored wires together using the wire nuts provided. Tie wrap the two cables together, as shown.

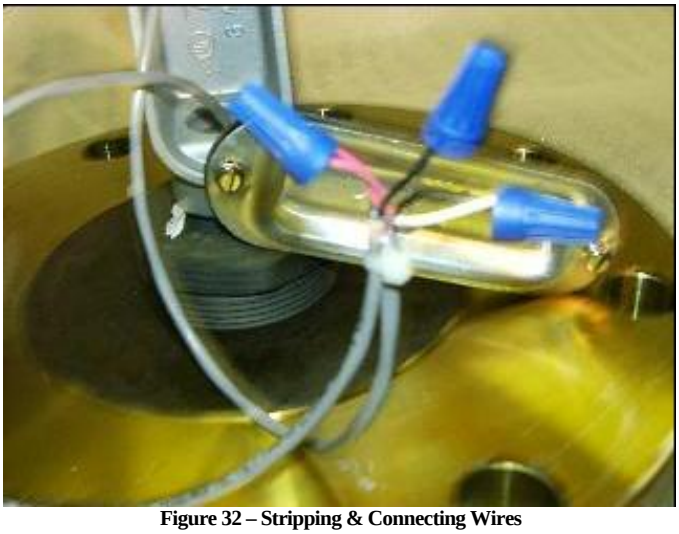


Figure 32 – Stripping & Connecting Wires

14. Squirt a generous amount of non-conductive grease in the poly bag. Place the two cables into the grease submerging the wire nuts to approximately 2" above the outer grey insulation.

Figure 31 – Greasing the Wire Nuts

15. Roll poly-bag with cable accordingly then tie wrap bag.

Figure 33 – Tie-wrapping Polybag

16. Place poly-bag and excess wire into the j-box with wire nuts facing the bottom.

Figure 34 – Installing Wiring Into J-Box

17. Secure cover.

Figure 35 – Securing J-Box Cover

18. Install transmitter assembly on top of mast. Press reset on transmitter and continue by placing fiberglass cover over assembly. Verify operation on receiver system being used.

NOTE A: Use Teflon tape for a good seal on all threads.

NOTE B: Always leave a service loop in the wires.

NOTE C: Use only non-conductive grease. The PVDF will stretch with temperature thus creating a vacuum inside and sucking air through the insulation on the wiring.

Installing DataStik™-VB Model

Figure 36 - Installing DataStik™-VB Model

ASSEMBLY OF THE *DataStik™-VB* FIXED BOTTOM HOUSING:

The new DataStik™-VB has been designed to measure closer to the bottom of the tank. While it is not necessary to measure within 4" to 6" from the bottom on all tanks, there are application where this is required. To make this measurement, it was necessary to design a probe that will allow for thermal expansion of the PVDF sheath to extend out of the top of the tank. This system utilizes a constant-tension spring to take up the slack in the PVDF tube as it expands or contracts, thus keeping the probe straight and vertical inside the tank.

Figure 37 – Assembly of DataStik™-VB Fixed Bottom Probe

Figure 38 - DataStik™-VB showing Constant Tension Spring

Figure 39 – Constant Tension Spring Installed in Hlaf Cap Bracket

1. Once the Probe is in the tank and the tank coupling has been threaded into the cover or flange, Insert the 3 Stainless Steel Rods and into the coupling.

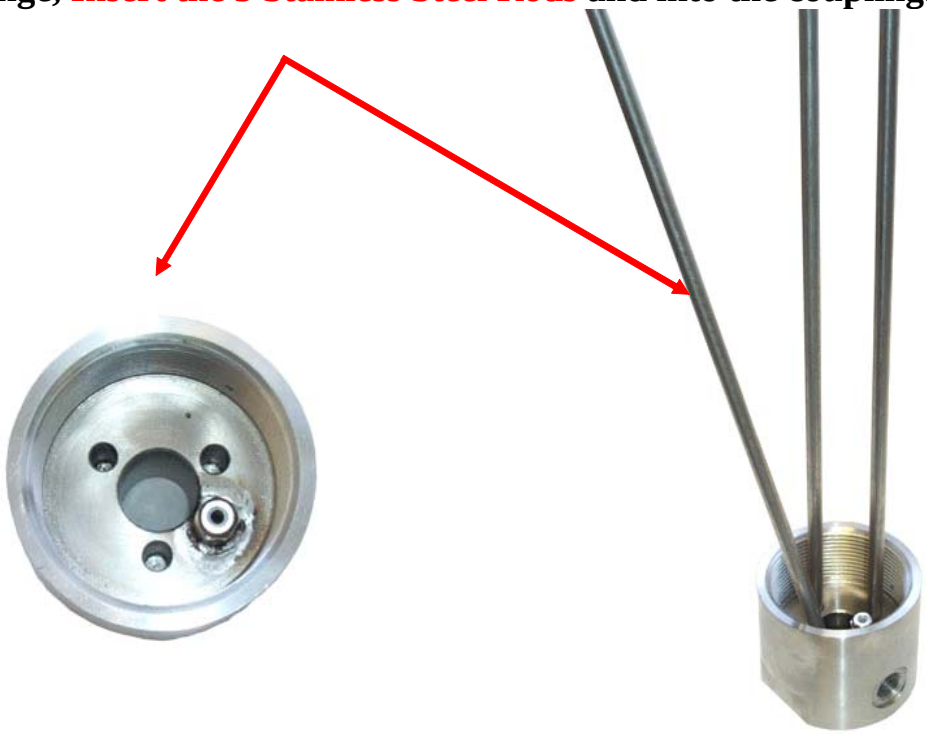


Figure 40 – Insert 3 Stainless Rods

2. Put half caps together and place on rods. Hook the Spring assembly with pin in the half cap bracket. Adjust the half caps and coupling so that the probe is straight and the cable gland is easily accessible.

Figure 41 – Installing Spring into Half Cap Brackets

Tank mounting of the assembly

Figure 48 – Tank Mounting Spring Assembly

3. **After the spring has been mounted, release the probe so that the weight is resting on the bottom of the tank. If there is sediment on the bottom of the tank, the probe may drop several inches. Pull the cable through the cord grip in the coupling**

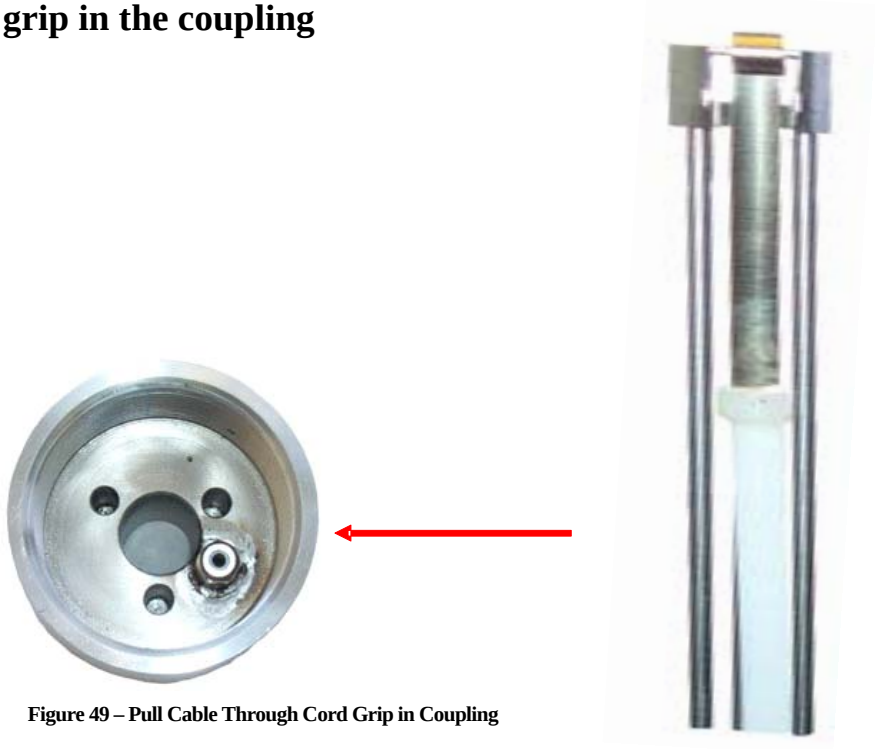


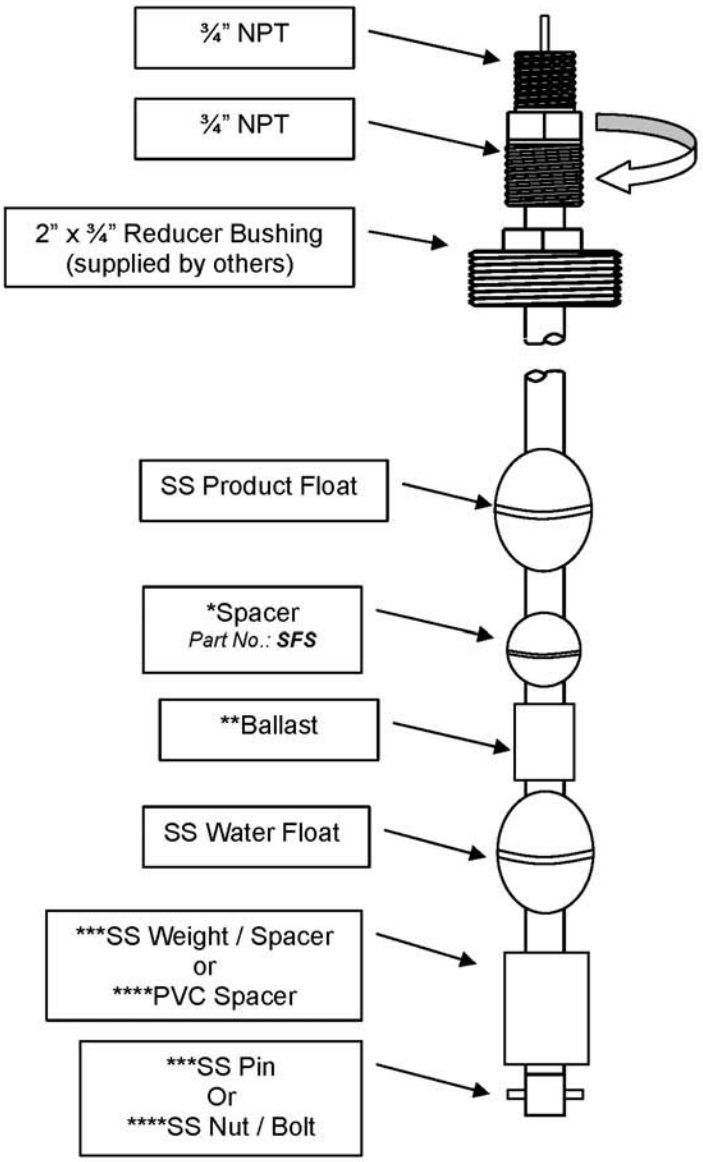
Figure 49 – Pull Cable Through Cord Grip in Coupling

4. **The housing for the constant spring assembly is a 3” Stainless Steel pipe which has a threaded section on it to screw into the base of the assembly.**

5. **Tighten the housing and cap to insure a weather tight connection.**

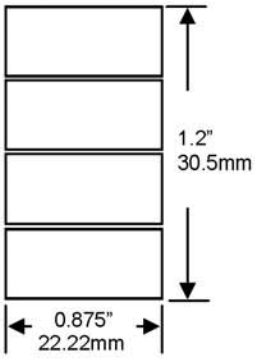
OMNTEC DS-V with SSF-2

2" Stainless Steel Float Installation for Wireless Flex Probe

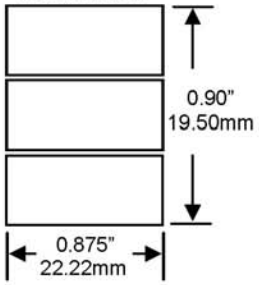


Step 1: Remove Pin
Step 2: Remove Spacer
Step 3: Install Product Float
Step 4: Install Spacer
**Spacer required for probe sizes 288" or greater*
Step 5: Install Ballast
***See dimensions below*
Step 6: Install Water Float
Step 7: Install Spacer/Weight
****See Weight/Spacer Dimensions below for sizing*
Step 8: Install Pin

****DIESEL BALLAST**



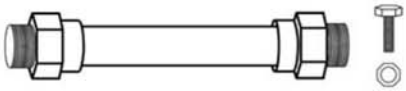
****GAS BALLAST**



*****Weight/Spacer Dimensions**

Overall Length	Weight (2" diameter)		Weight or Spacer
47" – 144"	W2-144	5"	Spacer
145" – 288"	W2-288	7"	Weight
289" – 432"	W2-432	11"	Weight
433" – 600"	W2-600	14"	Weight
601" – 720"	W2-720	16"	Weight
721" – 840"	W2-840	18"	Weight

******PVC Spacer and Stainless Steel Nut / Bolt**



***PVC spacer and stainless steel nut / bolt for probes 10' or less. Anything larger use stainless steel weight / spacer and pin.

Appendix to Wireless Manual

Bright Eye Sensor Installation Worksheet

OEL8000II Sensor Installation Worksheet

IMPORTANT **This form MUST be filled out prior to sensor installation**

Instructions:

1. Prior to installation you must know each part number and it's corresponding serial number
2. During installation you must document the location of each sensor
3. During programming you must document the sensor # assigned by the OEL8000 II in coordination with it's serial #

SENSOR P/N	SERIAL #	LOCATION	TANK #	SENSOR #
EXAMPLE: PDS	**200999999**	**piping sump**	**1**	**<<assigned by OEL8000 II>>**

Site Information:

Name: _____

Address: _____

City: _____

State: _____ Zip _____

Phone: _____

Contact: _____

Installed by: _____

Company: _____

Address: _____

City: _____

State: _____ Zip _____

Phone: _____

Name: _____

I hereby certify that this system has been installed in accordance with the specifications set forth in the OMNTEC installation manual. Failure to follow OMNTEC procedures will void warranty.

Signature of installer:

_____

SK-4 Connector Sealing Kit

SK-4 CONNECTOR SEALING KIT — ASSEMBLY INSTRUCTIONS

READ THIS FIRST!!!

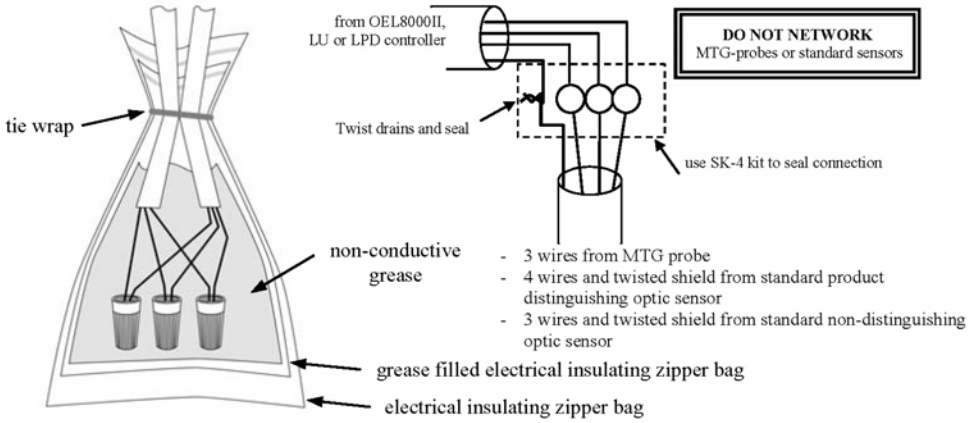
Failure to use OMNTEC SK-4 kits will void warranty. All work must be performed by qualified installers familiar with intrinsically safe design principles, Read the OEL8000II Installation Manual pertaining to installation and safety requirements. **You must comply with the National Electrical Code and all of the federal, state, & local codes & regulations concerning the installation. You can cause DEATH or SERIOUS PERSONAL INJURY to yourself & others, & extensive property damage.** Be alert at all times to using proper installation procedures.

Use the SK-4 connector sealing kit to create a water-tight seal for wiring splices. Wet wires can affect system's performance & cause it to fail.

WARNING Remove all power to controller & to all wires entering the controller panel before doing any installation or servicing. Failure to comply will create an electric shock/explosion hazard that can result in death, personal injury, or property damage.

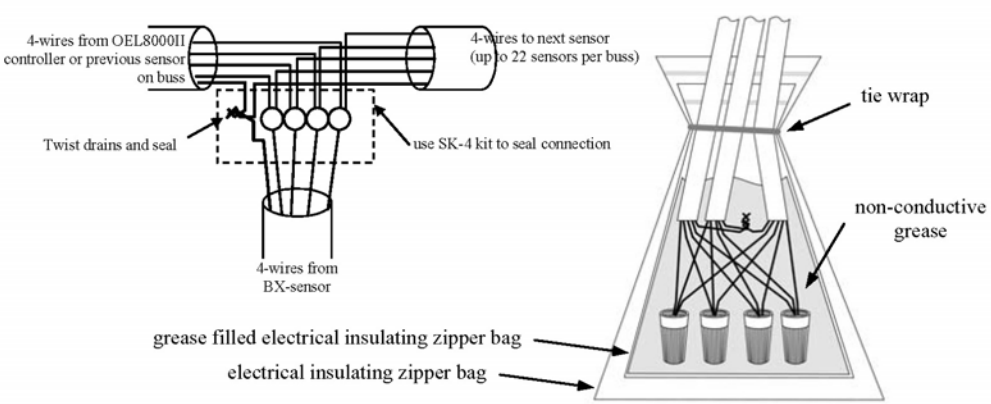
for MTG Probes and standard sensors

1. Remove 1" of outer insulation from each cable. (be sure to strip back approximately ¼" of insulation from individual wires.)
2. Before inserting wires into wire nut, twist together. Insert twisted wires into wire nut (supplied in SK-4 kit) and twist to insure a proper connection. For MTG probes and standard sensors there will be two wires in each wire nut. MTG-probes should have three wire nuts in each non-conductive grease bag. Standard sensors will have 3 or 4 wire nuts and all drains twisted.
3. Cover cable assembly with zipper bag filled with non-conductive grease. Move grease in bag to ensure all wire nut cavities are filled. Make certain cable jacket is in non-conductive grease.
4. Close grease filled zipper bag.
5. Cover cable assembly with second larger zipper bag.
6. Close second zipper bag.
7. Secure bags to cable assembly using small tie wrap.
8. Finish wiring assembly by cutting and removing loose tail of tie wrap.



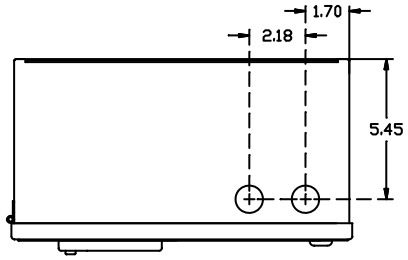
for BX sensors

1. **Refer to document #500129 for bus termination instructions.**
2. Remove 1" of outer insulation from each cable. (be sure to strip back approximately ¼" of insulation from individual wires.)
3. Before inserting wires into wire nut twist together. Insert twisted wires into wire nut (supplied in SK-4 kit) and twist to insure a proper connection. A BX-sensor can have up to three wires in each wire nut. The drains should be twisted together.
4. Cover cable assembly with zipper bag filled with non-conductive grease. Move grease in bag to ensure all wire nut cavities are filled. Make certain cable jacket is in non-conductive grease.
5. Close grease filled zipper bag.
6. Cover with second larger zipper bag.
7. Close second zipper bag.
8. Secure bags to cable assembly using small tie wrap.
9. Finish the wiring assembly by cutting and removing the loose tail of the tie wrap.

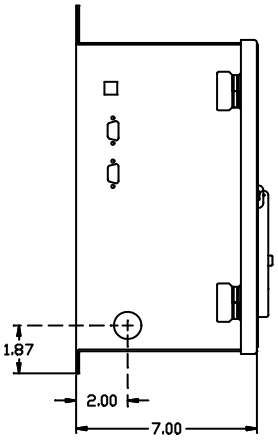


OEL8000II Knockouts

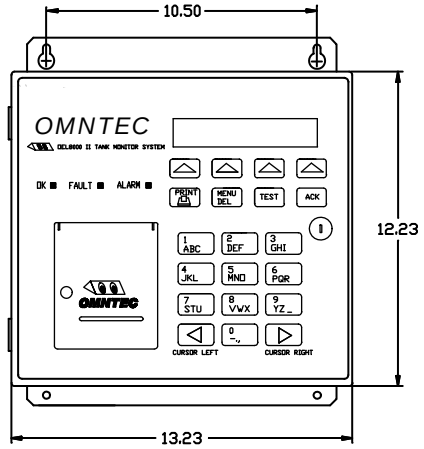
OEL8000II Knockouts

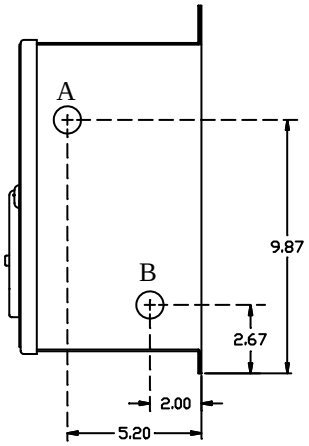


Top panel knockouts – conduit entry for Relay and Option boards

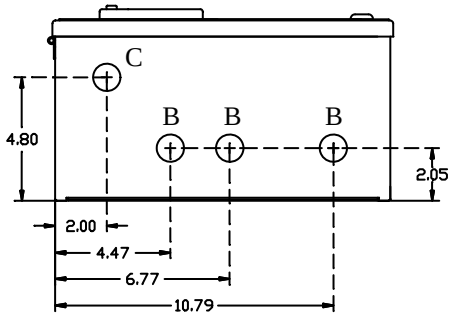


Left side panel knockout – conduit entry for controller's AC power line





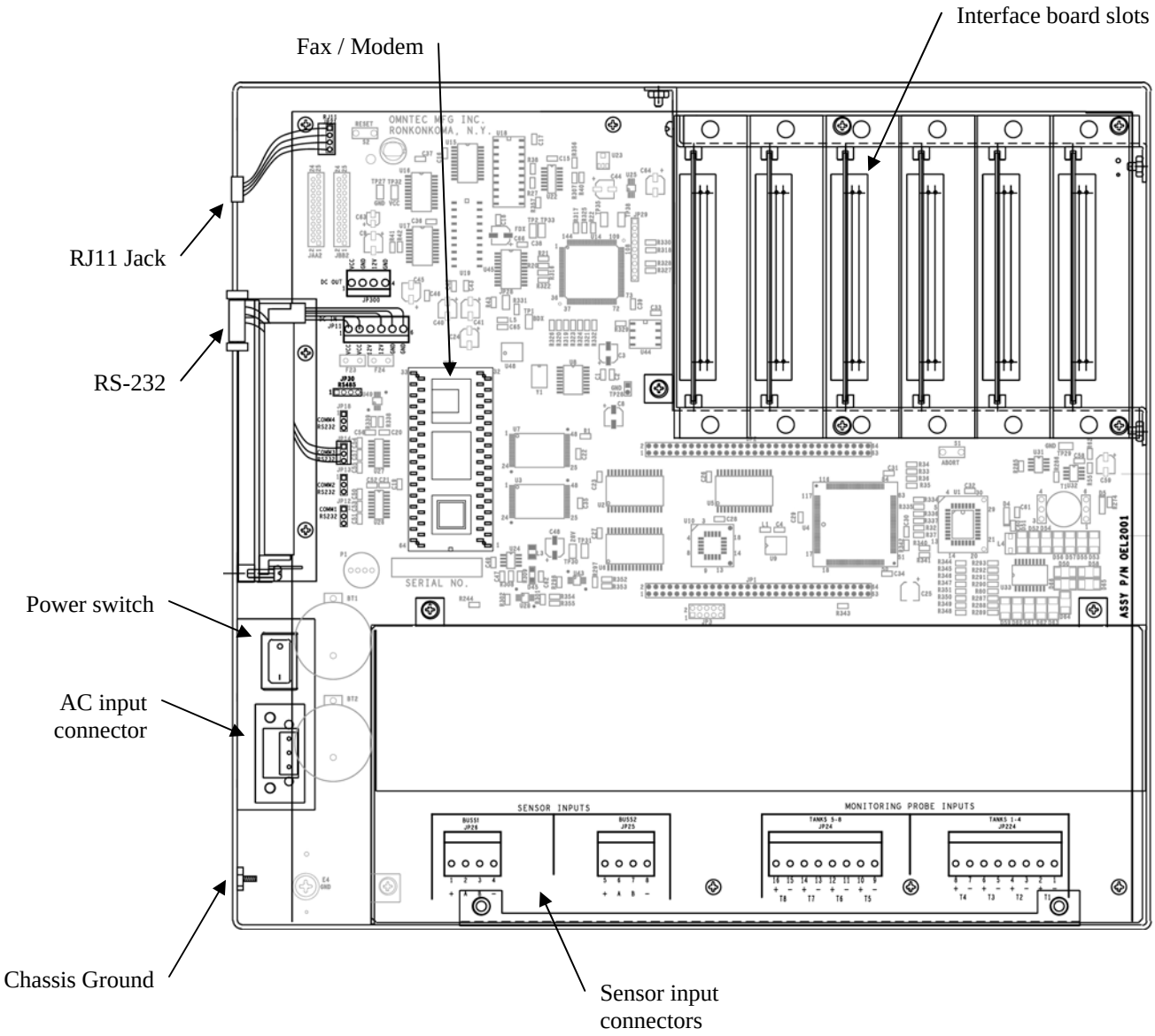
Right side panel knockouts –
A) conduit entry for Relay and Option boards
B) conduit entry for sensors and probes



Bottom panel knockouts –
C) conduit entry for controller's AC power line
B)conduit entry for sensors and probes

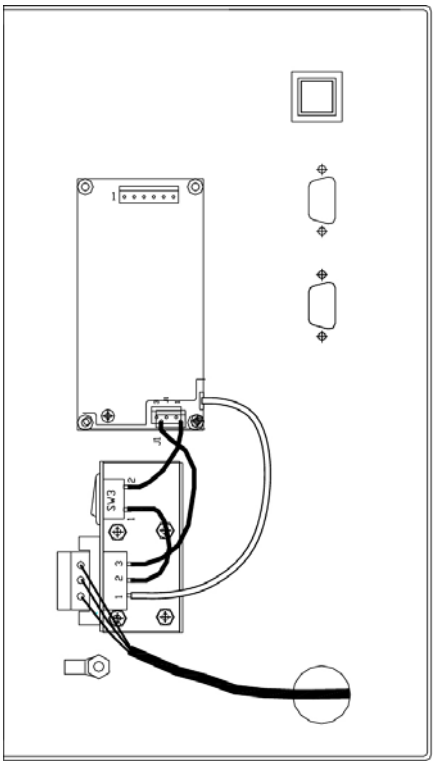
Motherboard Components and Connections

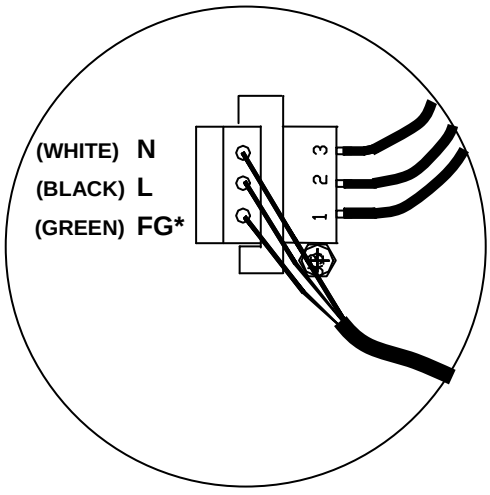
Motherboard Components and Connections



Power Supply Connections

Power Supply Connections





***Field ground must be grounded to Main panel. See section 2.28.**

IB-RB2 Interface Board Installation

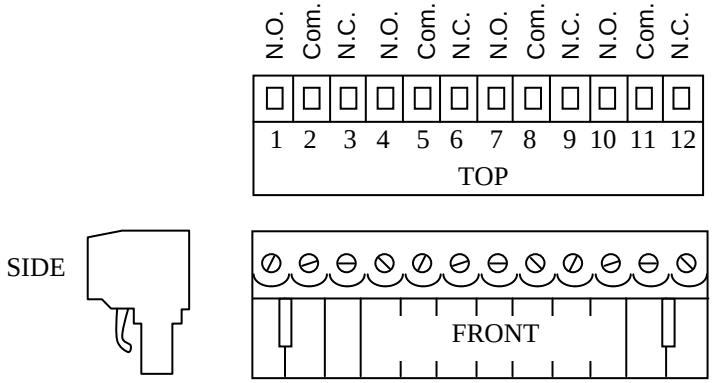
IB-RB2 Interface Board Installation

Dry contacts rated at 120VAC @ 5 amps resistive

1. Attach wires to the top of the removable connector.

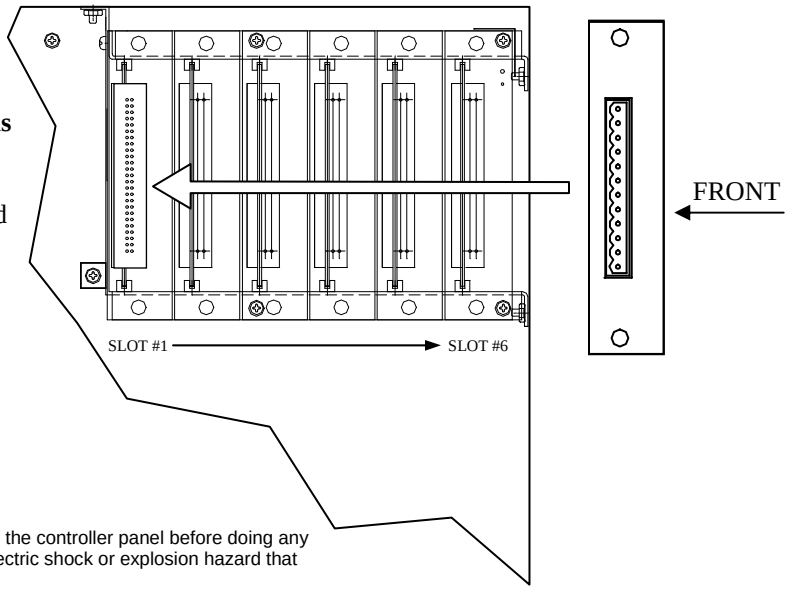
IB-RB2 In an energized unalarmed state:

1	-	Normally Open	
2	-	Common	R1
3	-	Normally Closed	
4	-	Normally Open	
5	-	Common	R2
6	-	Normally Closed	
7	-	Normally Open	
8	-	Common	R3
9	-	Normally Closed	
10	-	Normally Open	
11	-	Common	R4
12	-	Normally Closed	



2. Insert IB-RB2 interface board into the designated card slot in the OEL8000II beginning with the left most slot (slot #1) and inserting other interface boards sequentially to the right.

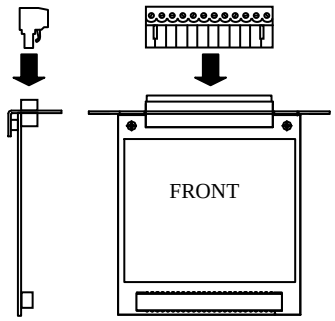
NOTE: Once a board is installed it should not be removed. *If a board needs to be removed consult factory.



WARNING

Remove all power to the controller and to all wires entering the controller panel before doing any installation or servicing. Failure to comply will create an electric shock or explosion hazard that can result in death, personal injury, or property damage.

3. Attach removable connector to IB-RB2 (The IB-RB2 should already be inserted into the card slot in the OEL8000II).



Doc.500115

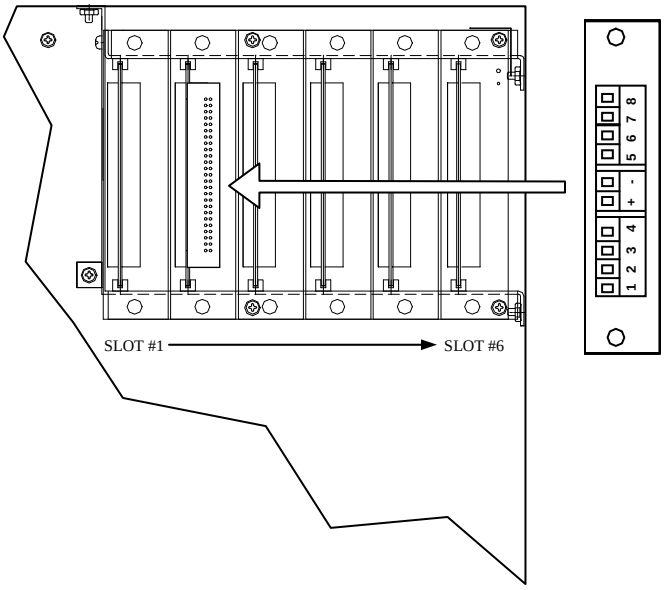
IB-RB2 Programming

IB-RB2 Programming

1. Power OFF
2. Insert IB-RB board (as shown)
3. Power ON
4. Enter “SETUP” via. Front keypad
5. Enter security code (default code is 000000)
6. Select “MORE” 4 times
7. The screen options will read: COMM | INT BRD | | MORE
8. Select “INT BRD”
9. Screen options: SLCT BRD | PROGBRD | PRINT | BACK
10. Pressing “SLCT BRD” will scroll through a list of interface boards. Press “PROG BRD” to program the selected “RELAY” board.
11. The screen will display which slot the board is in and identify the board. Options on this screen are:
    SLCT OUT | PROGOUT |CLR OUT |BACK
12. Pressing “SLCT OUT” will toggle through outputs 1 – 4. CLR OUT will clear programmed output for the selected board.
13. Select “PROG OUT”
14. Screen options: TANK | SENSOR | | BACK
    - TANK
      TANK#1 | SLCT COND | ENBL/DIS | BACK
      1st. - TANK#1 – select tank
      2nd. - SLCT COND – select condition to set as output activator source
      3rd. - ENBL/DIS – enable or disable selected condition
      4th. - BACK or MENU to return to Main Menu and accept parameter changes

    - SENSOR
      Options for Sensors will change according to sensor type. The sample listed below is for a product distinguishing sensor.
      NEXT SNSR | ENBL/DIS | W/F | BACK
      1st. - NEXT SNSR – Select sensor
      2nd. - W/F – Select Water or Fuel
      3rd. - ENBL/DIS – Enable or disable selected option
      4th. - Select BACK or MENU to return to Main Menu and accept parameter changes

IB-C420 Programming



Power OFF

Insert IB-C420 (as shown)

Power ON

Enter "SETUP" via. Front keypad

Enter security code (default code is 000000)

Select "MORE" 3 times

The screen options will read:

COMM | INT BRD | | MORE

Select "INT BRD"

Screen options:

SLCT BRD | PROG BRD | PRINT | BACK

Pressing "SLCT BRD" will scroll through listed options. When the "4-20mA" option is selected press "PROG BRD"

The screen will display which slot the board is in and identify the board. Options on this screen are:

CHAN# | PROG CHN | |BACK

Pressing "CHAN #" will toggle through channel 1 – 4. Refer to the IB-C420 wiring diagram for proper channel number.

Select "PROG CHN"

Screen options:

ASGN CHNL | CAL 20mA | CAL 4mA | BACK

Select "ASGN CHNL"

You will then have the option to program either a MTG-probe (Magnetostrictive) or a PT-sensor (Pressure Transducer)

Select "MAG TANK" to program an MTG-probe
- Scroll through to select tank number
- Select "Volume" or "Height"
- IB-C420 boards are factory calibrated. Press the "MENU" button to return to the main menu. For further calibration instructions consult factory*.

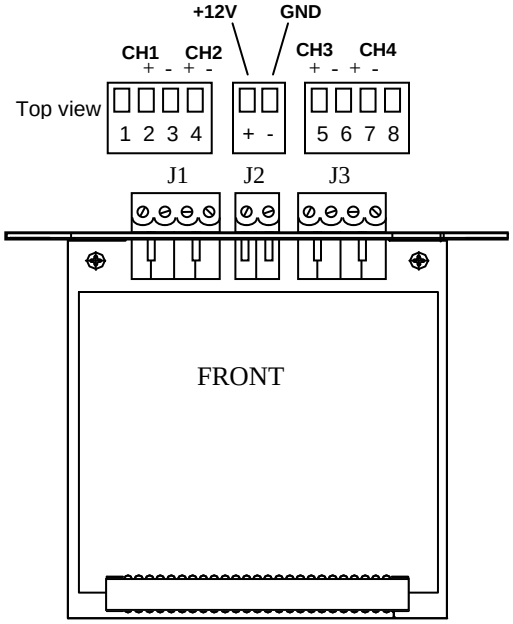
Select "PT TANK" to program a PT-sensor
- Select "Volume" or "Height"
- IB-C420 boards are factory calibrated. Press the "MENU" button to return to the main menu. For further calibration instructions consult factory*.

*For Version 5.53 ENG 030607 or greater, the IB-C420 boards can be calibrated using the front panel and a digital multimeter for greater accuarcy (resolution). After assigning channel (step 14), press CAL 20mA while multimeter is installed. As shown in test procedure, you can press the left and right cursor keys to adjust milliamps to 20.0. Next press CAL 4mA to adjust meter to 4.0.

OMNTEC IB-C420

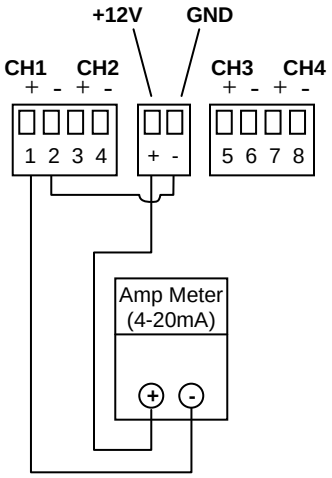
1	Channel 1 "+"	J1		
2	Channel 1 "-"			
3	Channel 2 "+"			
4	Channel 2 "-"			
+	+12V	J2	For non-isolated 4-20mA output	
-	Ground			
5	Channel 3 "+"	J3		
6	Channel 3 "-"			
7	Channel 4 "+"			
8	Channel 4 "-"			

IB-C420



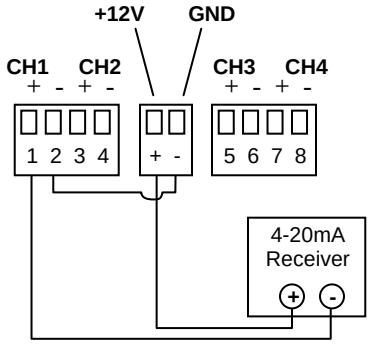
Test Procedure

(Channel 1 is shown)



Non-Isolated Installation

(Channel 1 is shown)



Isolated Installation

(Channel 1 is shown)

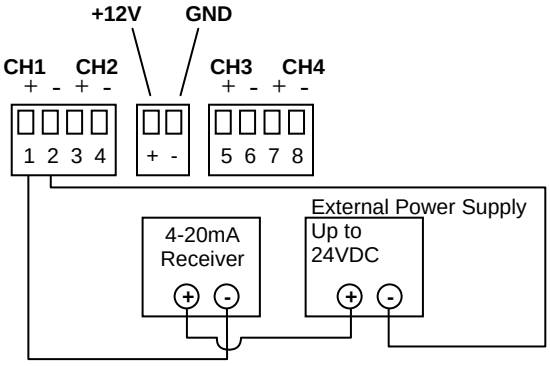


Table of Thermal Coefficients of Expansion

Table of Thermal Coefficients of Expansion

PRODUCT	US THERMAL COEFFICIENT X 10^{-5}
Aviation Gas	75
Regular Unleaded	70
Premium	70
Leaded	70
Gasohol	69
Kerosene (fuel oil #1)	50
Jet Fuel	47
Motor Oil	47
Fuel Oil #4	47
Gear Oil,90W	47
Hydraulic Oil	47
Transmission Fluid	47
Turbine Oil	47
Washer Fluid	47
Used Oil	47
Diesel (fuel oil #2)	45
Ethylene Glycol	37
Water	12

* Numbers listed in this column are entry numbers for system setup. Controller will automatically add 10^{-5} multiplier.

OEL8000II System Responses to MTG Condition

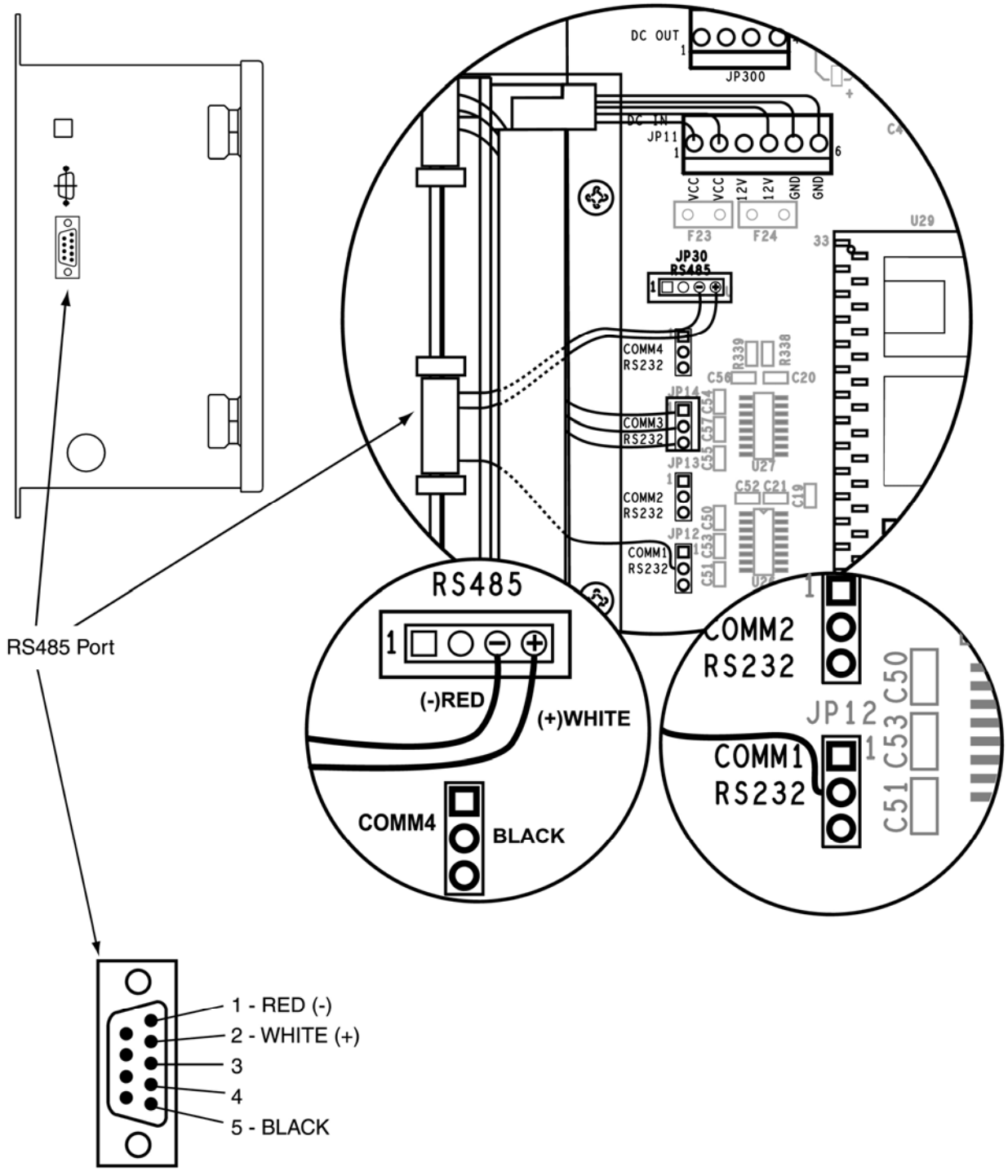
OEL8000II SYSTEM RESPONSES TO MTG CONDITIONS

refer to section 2.3 and 4.3.4.10 in the OEL8000II installation manual	OEL8000 II Piezo Horn	OEL8000 II Alarm LED	OEL8000 II LCD Display	Remote Annunciator Flashing Light	Remote Annunciator Solid Light	Remote Annunciator Horn	IB-RB2 Relay Trigger Point	IB-12V Trigger Point
High Water Alarm	X	X	X				X	X
Low/Low Level Alarm	X	X	X				X	X
Low Level Point							X	X
High Level Point							X	X
High Warning Level			X	X				
High/High Level Alarm	X	X	X		X	X	X	X

*NOTE: not included on this chart are automatic print-out and automatic fax responses.

RS-485 Installation

OMNTEC RS-485 Installation

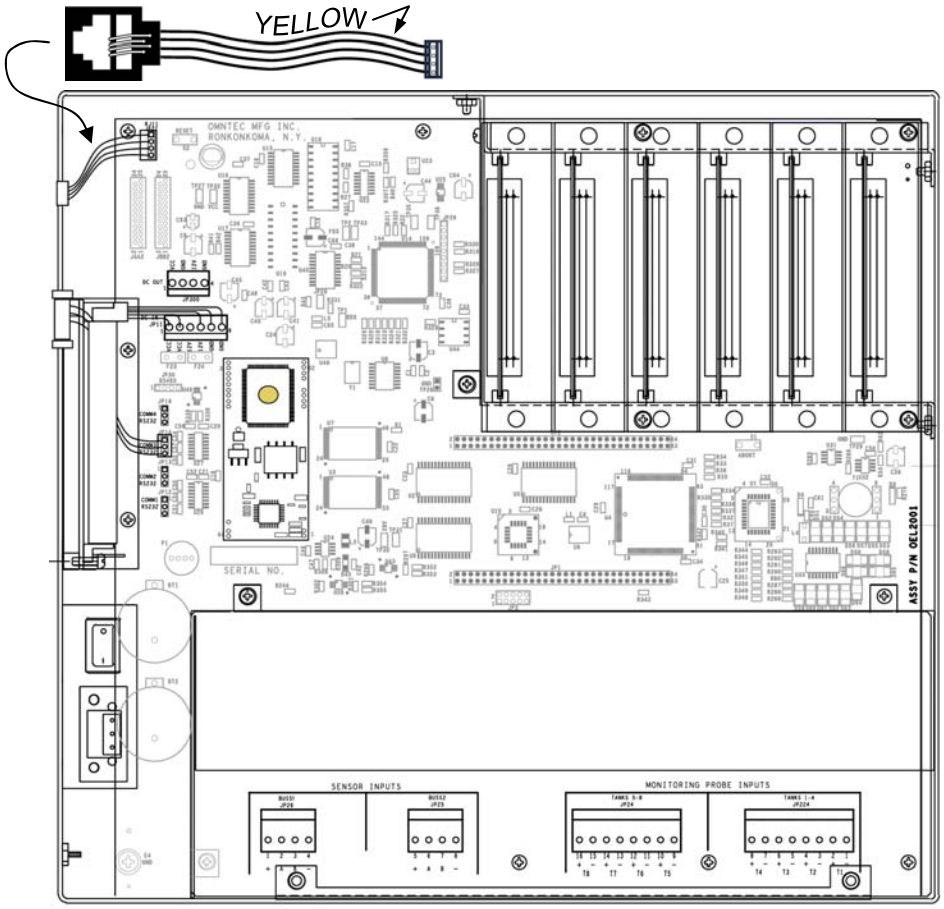


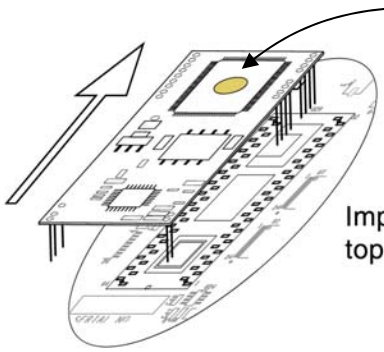
Doc.500132

Modem Installation

OMNTEC Modem Installation

1. Power down system. *Be sure power is OFF
2. Install the modem with the yellow dot on the upper half of the modem.
3. Remove knockout and install RJ11 jack. The yellow wire should be on top when the connector is attached to the RJ11 port on the motherboard.
4. Power up system



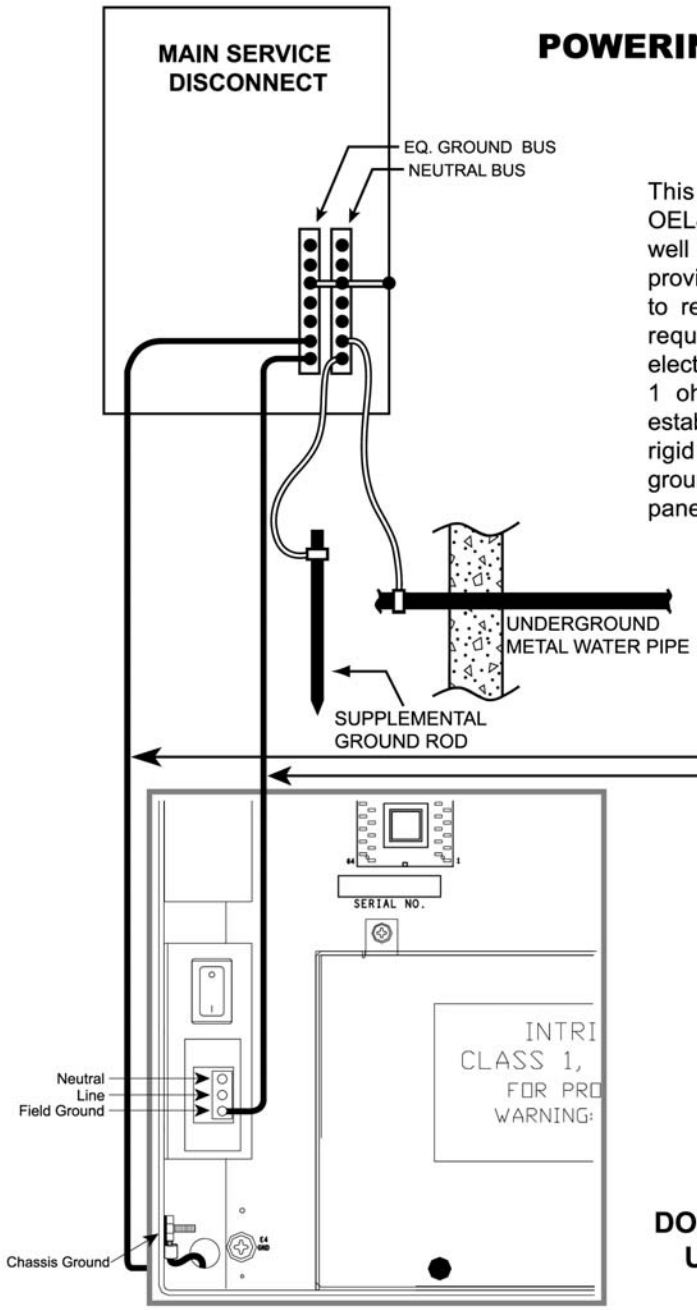


Important: Be sure the yellow dot is on the top of the modem. DO NOT install up-side down.

Doc.500130

Sub-Panel Grounding

OMNTEC **OEL8000II Isolated Grounding**



POWERING OEL8000II VIA MAIN PANEL OR SUB PANEL

This product must be properly grounded. Each OEL8000II requires a 12-gauge earth ground wire as well as a 12 guage field ground wire. Grounding provides a path of least resistance for electric current to reduce the risk of electric shock. Grounding is required to protect the OEL8000II from external electrical noise generating devices. Ground must be 1 ohm (or less) resistance to earth ground. To establish good earth ground pull the wire through the rigid metal conduit and connect it directly to the ground bar of the MAIN service disconnect, not a sub-panel. Do NOT rely on the metal conduit as a ground.

EARTH GROUND
12 AWG

ISOLATED GROUND
12 AWG IN METAL CONDUIT
AS PER NEC 250.146 (D)
FOR ISOLATED RECEPTACLES

WARNING:
Failure to properly ground the equipment can cause injury or damage to the equipment.

DO NOT USE WIRE NUTS ON GROUND WIRES.
USE COMPRESSION CONNECTORS ONLY.

Note: Current published specifications are subject to change without notification. Verify specifications with manufacturer.

Sensors

1. Sensor Data

The Sensor Submenu allows you to configure (label), test, set priority level, and delete system sensors. It also allows you to program certain sensors.

If your system includes a temperature sensor (BX-TC-1), vapor sensor (BX-VS), or a humidity sensor, label them (see *Section 1.2 – Sensor Labeling*), and then program them (see *Section 1.5 – Temperature Sensor Programming* and *Section 1.6 – Vapor Sensor Programming*). Contact the manufacturer if your system includes a humidity sensor.

Starting in Screen #1 of the SETUP Submenu (see Figure 4-4a of manual), select SENSOR.

*Note: To return to the MAIN Menu from the Sensor Submenu, select EXIT and then press the **MENU** key. The LCD returns to Screen #1 of the MAIN Menu (see Figure 4-2a of manual).*

System Response

The screen will appear as in Figure 1a.

Lines 2 and 3 are blank.

Line 3 shows a cursor.

Line 4 has a new set of fields.

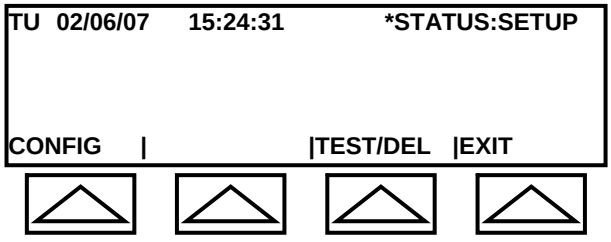


Fig. 1a: Sensor Submenu

Field Descriptions

- CONFIG – select this field to enter the Config Submenu. It searches for all system sensors and prompts you to provide labels.
- TEST/DEL – select this field to enter the Test Submenu. It allows for testing all system sensors, setting priority, and deleting sensors from the configuration.
- EXIT – select this field to return to Screen #1 of the SETUP Submenu.

Printing

While in the Sensor Submenu, you can obtain a hardcopy printout by pressing the The printout (see Figure 1b) provides the sensor number, serial number, part.

```
S#   P/N      LABEL                  TEST
01   BXLS     T ?,    Label #:  0      P
     (S/N:  000064787 )
02   BXPDS T  ?,      Label #:  0      P
     (S/N:  200064796 )
03   BXUT1  T 1,      Interstic#: 1    P
     (S/N:  500064832 )
```

Figure 1b: Sensor Submenu Printout

PRINT key. This will also test each sensor and provide the results in the printout.

1.1. Config (Sensor) Submenu

The following procedure applies when programming the controller for the first time.

Select CONFIG in the Sensor Submenu.

System Response

1. The system will search for system sensors. While searching, the LCD display will alternate between Figure 1.1a and Figure 1.1b.
2. Each time a sensor is found, the system will assign it a number and briefly display it on the LCD as illustrated in Figure 1.1c.
3. When the search is completed, the LCD will display the total number of sensors found as illustrated in Figure 1.1d.

Note: When selecting CONFIG during subsequent programming, Figure 1.1a will be displayed only if new sensors are found.

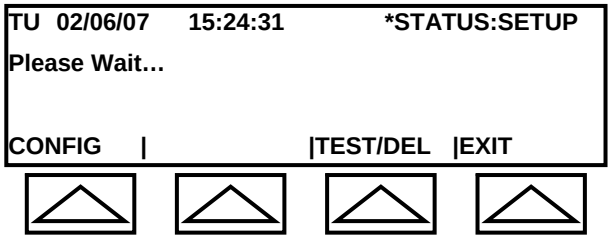


Fig. 1.1a: Config. – Searching Sensors

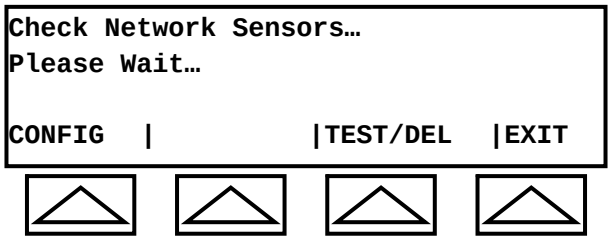


Fig. 1.1b: Config. – Searching Sensors

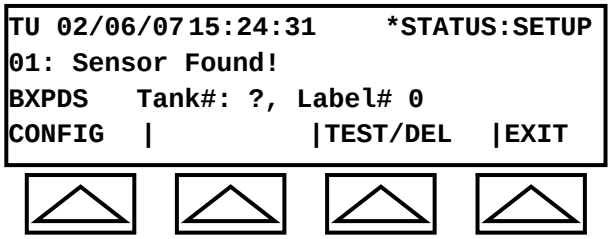


Fig. 1.1c: Config. – Finding Sensors

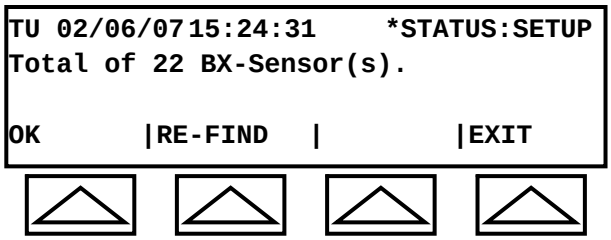


Fig. 1.1d: Config. – Search Results

Field Descriptions

- OK – displays the sensor labeling screen (see Figure 1.2a).
- RE-FIND – repeats the search for sensors. Use this function if one or more sensors on the system are not found.
- EXIT – returns to Screen #1 of the SETUP Submenu (see Figure 4-4a of manual).

1.2. Sensor Labeling

The labeling screen provides label choices for each type of sensor. These appear as fields in Line 4 on the LCD (see Figure 1.2a). Table 1.2 identifies the labels that will appear for the different types of sensor.

Sensor	Available Labels (Fields in 4th line of LCD
BX-PDS BX-LS	**Sump |DbleWall |Disp |Other**
BX-LV	**HiLevel |HiHiLevel |CautLevel |Other**
BX-PDWF BX-LWF	**Interstic |Annular | DbleWall |Other**
BX-VS	**Vault |Well | Sump |Other**
BX-UT1	**Interstic | HiLevel | LowLevel |Other**
BX-TC-1	**Refrig | | Freezer |Other**
BX-LSR	**Sump | | Disp |Other**

Table 1.2: Sensor Labels

The following procedure uses the BX-LS sensor as an example. Use this procedure as a guide when labeling the other types of sensors. Labeling instructions for temperature and vapor sensors are discussed in separate sections (see *Section 4.3.5.1.4 – Temperature Sensor Labeling* and *Section 4.3.7.1.5 – Vapor Sensor Labeling*).

1. Select OK in the Config. – Search Results Screen (see Figure 1.1d).

System Response

The Label Screen is displayed (see Figure 1.2a).

Line 1 remains unchanged.

Line 2 displays the assigned sensor number, sensor type, and sensor serial number.

Line 3 displays: **Need Location Label…**

Line 4 displays label options.

Note: Figure 1.2a will not be displayed for sensors that had already been labeled in previous programming. The Label Edit Screen (see Figure 1.4a) will be displayed instead allowing you to make edits (see Section 1.4 – Editing Labels).

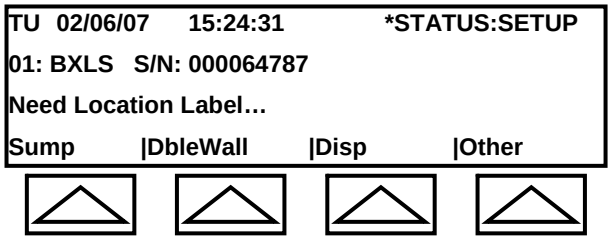


Fig. 1.2a: Label Screen

Note: You can use the CURSOR LEFT and CURSOR RIGHT arrow keys on the data keypad to scroll from sensor to sensor.

2. Select Sump.

System Response

The screen will appear as in Figure 1.2b.

Lines 1 and 2 remain unchanged.

Line 3 displays: **Tank# ?, Sump# ?**. DbleWall or Disp would be displayed instead of Sump had you selected one of these labels.

Line 4 has a new set of fields.

Note: Some sensors, such as the temperature sensor, will not prompt for a tank number.

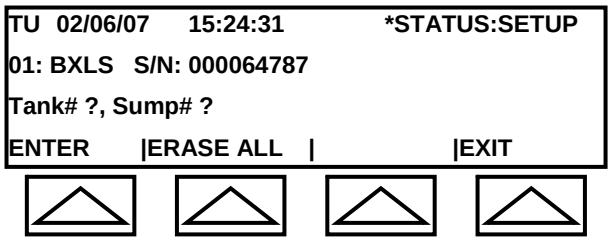


Fig. 1.2b: Entering Labels Screen

Field Descriptions

- ENTER – advances the cursor from Tank to Sump and then to the next sensor.
- ERASE ALL – erases all data entered on line 3. If no data was entered, the LCD displays the Label Screen (see Figure 1.2a).
- EXIT – returns to the Sensor Submenu (see Figure 1.1a).

3. Enter a tank number.

   System Response

   The tank number will appear on line 3.

4. Select ENTER.

   System Response

   The cursor moves to Sump (location label) on line 3.

5. Enter a sump number.

   Note: This number is important if there is more than one sensor with the same tank number and same label.

   System Response

   The sump number will appear on line 3.

6. Select ENTER.

   System Response

   The Label Screen (see Figure 1.2a) will be displayed for the next sensor.

   Line 1 remains unchanged.

   Line 2 displays the sensor number, type, and serial number.

   Line 3 displays: **Need Location Label…**

   Line 4 displays the appropriate labels for the sensor (see Table 1.2).

7. Continue labeling the remaining sensors. After labeling the last sensor, select EXIT.

   System Response

   The Sensor Submenu (see Figure 1.1a) is displayed.

1.3. Other Label

In addition to the displayed labels, you can also choose Other to provide your own label.

1. Starting in the Label Screen (see Figure 1.2a), select Other.

System Response

The screen will appear as in Figure 1.3a.

Lines 1 and 2 remain unchanged.

Lines 3 displays: **Location:** and the cursor.

Line 4 has a new set of fields.

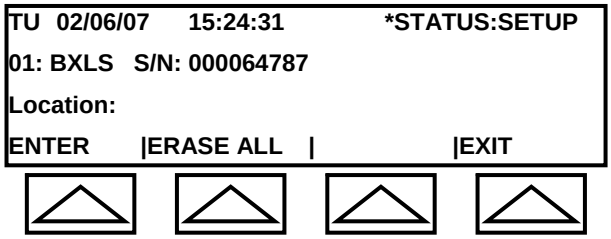


Fig. 1.3a: Other Label Screen

2. Enter the location using the keypad.

System Response

The location will appear on line 3.

3. Select ENTER.

System Response

The Label Screen (see Figure 1.2a) will be displayed for the next sensor.

Line 1 remains unchanged.

Line 2 displays the sensor number, type, and serial number.

Line 3 displays: **Need Location Label…**

Line 4 displays the appropriate labels for the sensor (see Table 1.2).

Important!

If your system includes a temperature sensor (BX-TC-1), vapor sensor (BX-VS), or humidity sensor, you must program them. Complete labeling all system sensors then proceed to the appropriate section below for programming instructions. Contact the manufacturer if your system includes a humidity sensor.

1.4. Editing Sensor Labels

When you select OK in the Config – Search Results Screen (see Step 1 in *Section 1.2 – Sensor Labeling*), the Label Screen (see Figure 1.2a) is displayed prompting you to select a label. If a sensor had already been labeled during previous programming, the

Label Edit Screen (see Figure 4-9h) will be displayed instead allowing you to make edits.

To edit a previously labeled sensor, do the following:

1. Starting in the Sensor Submenu (see Figure 1.1a), select CONFIG.

2. After the system has completed searching for sensors, select OK in the Config. – Search Results Screen (see Figure 1.1a).

3. Use the CURSOR LEFT or CURSOR RIGHT arrow key to search for the sensor to be edited.

System Response

The screen will appear as in Figure 1.4a.
Line 1 displays the day, date, time, and status.
Line 2 displays the sensor number, type, and serial number.
Line 3 displays the sensor label data
Line 4 displays ENTER, EDIT, and EXIT.

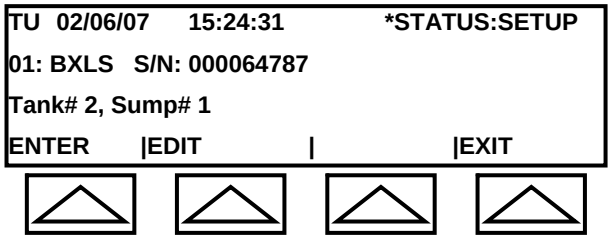


Fig. 1.4a: Label Edit Screen

Field Descriptions

- ENTER – advances LCD to the next sensor.
- EDIT – displays the Editing Screen Figure 1.4b).
- EXIT – returns to the Sensor Submenu (see Figure 1.1a).

4. Select EDIT.

System Response

The screen will appear as in Figure 1.4b.
Lines 1, 2, and 3 remain unchanged.
Line 3 shows a cursor.
Line 4 replaces the EDIT field with an ERASE ALL field.

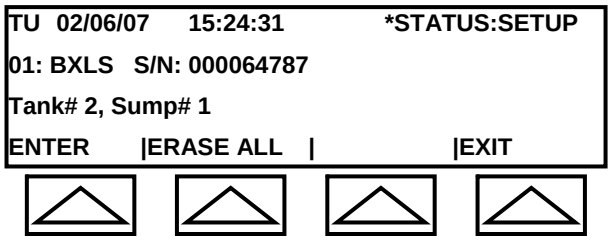


Fig. 1.4b: Edit Screen

Field Descriptions

- ENTER – advances cursor on line 3.
- ERASE ALL – deletes displayed data.
- EXIT – returns to the Sensor Submenu (see Figure 1.1a).

5. Select ERASE ALL to delete label values. Select ERASE ALL again to delete labeling.

1.5. Temperature Sensor Programming

The temperature sensor (BX-TC-1) can be used for monitoring the temperature in a refrigerator or freezer. If your system includes a temperature sensor, you already selected one of these location labels (see *Section 1.2 – Sensor Labeling*). In this section, you will set the levels for its control points. Refer to *Section 4.3.12.1.2 or 3 – Temperature (BX-TC) Sensor Activation of manual* to enable and disable the control and alarm relays.

1. Starting in the Config. – Search Results Screen (see Figure 1.1d), select OK.

2. Select ENTER or use the CURSOR LEFT or CURSOR RIGHT arrow key to scroll through the sensors until you find the temperature sensor.

System Response

The Temperature Sensor Screen is displayed (see Figure 1.5a).

Line 1 remains unchanged.

Line 2 displays the sensor number, type, and serial number.

Line 3 displays the selected location (illustration shows Freezer) and current settings for Low (L), High (H), On, and Off.

Line 4 displays ENTER, EDIT, and EXIT.

Note: Label options such as those shown in Line 4 of Figure 1.2a, are displayed only for sensors where a label has not been assigned. When a label has already been assigned, Line 4 will appear as shown in Figure 1.5a.

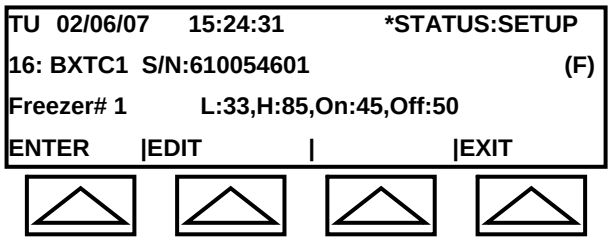


Fig. 1.5a: Temperature Sensor Screen

Field Descriptions

- ENTER – allows scrolling through sensors.
- EDIT – displays the edit screen.
- EXIT – returns to the Sensor Submenu (see Figure 1.1a).

3. Select EDIT.

System Response

The screen will appear as in Figure 1.5b.
Lines 1 and 2 remain unchanged.
Line 2 displays the sensor number, type, and serial number.
Line 3 displays the current settings for Low, Hi, On, and Off.
Line 4 has a new set of fields.

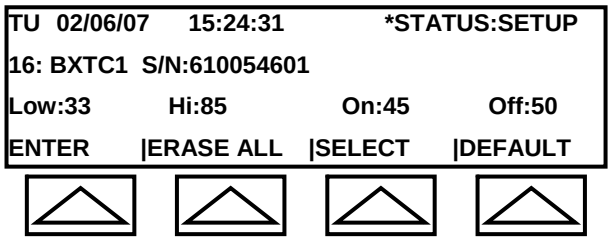


Fig. 1.5b: Temperature Sensor Edit Screen

Field Descriptions

- ENTER – select ENTER after entering a value using the data keypad.
- ERASE ALL – deletes entered data.
- SELECT – moves cursor to next value.
- DEFAULT – restores factory settings.

4. Use SELECT to move cursor to value to be changed.

5. Enter new value using data keypad and select ENTER.

6. Repeat Steps 4 and 5 for other values to be changed.

1.6. Vapor Sensor Programming

If your system includes a vapor sensor (BX-VS**)**, you already selected one of the labels show in Table 1.2. In this section, you will set its alarm level.

1. Select TEST/DEL in the Sensor Submenu (see Figure 1.1a).

System Response

The screen will appear as in Figure 1.6a.

The system scrolls through the system sensors, tests each sensor, and displays the results.

Lines 1displays the serial number of the sensor being displayed.

Line 2 indicates the sensor number and its test results.

Line 3 displays the sensor type and location label.

Line 4 has a new set of fields.

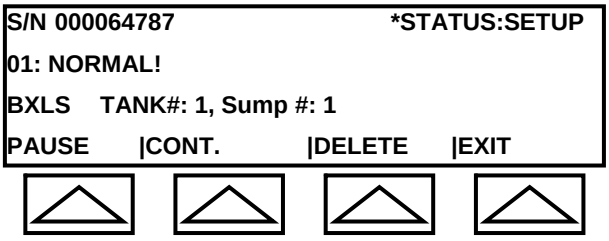


Fig. 1.6a: Test/Del Screen

Field Descriptions

- PAUSE – stops the automatic scrolling through sensors.
- CONT. – resumes automatic scrolling.
- DELETE – allows you to delete the sensor from the system configuration.
- EXIT – returns to the Sensor Submenu (see Figure 1.1a).

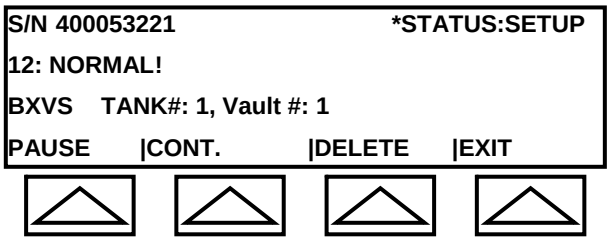


Fig. 1.6b: Vapor Sensor Screen

2. Select PAUSE when the vapor sensor is displayed.

   System Response

   The screen will appear as in Figure 1.6b (illustration shows that vault was the selected label).

3. Select PAUSE two more times.

   System Response

   The screen will appear as in Figure 1.6c.

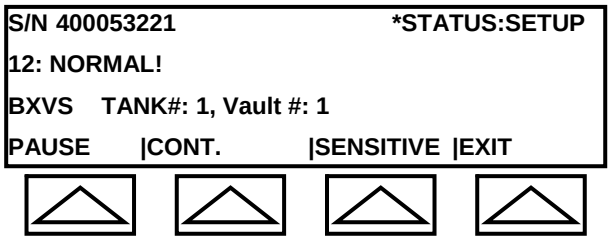


Fig. 1.6c: Vapor Sensor Screen

4. Select SENSITIVE.

   System Response

   The screen will appear as in Figure 1.6d.

   Line 1 remains unchanged.

   Line 2 displays the sensor number and shows that sensitivity range is 0 to 100.

   Line 3 shows current sensitivity setting.

   Line 4 has a new set of fields.

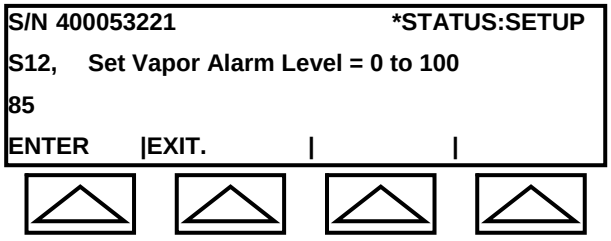


Fig. 1.6d: Vapor Sensor Screen

5. Enter a value between 0 and 100 (sensitivity decreases as the number increases).

   System Response

   The screen will appear as in Figure 1.6e. and then redisplay

Figure 1.6c. Illustration shows 10 as sensitivity setting.

Lines 1 and 4 remain unchanged.

Lines 2 and 3 show new setting.

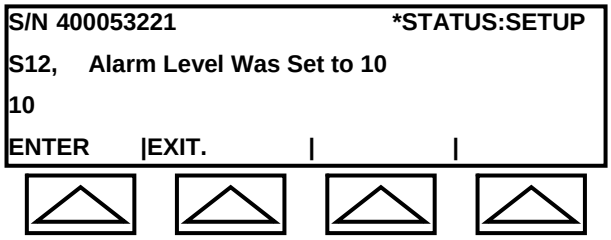


Fig. 1.6e: Serial Submenu

1.7. Test/Del (Sensor) Submenu

The Test/Del Submenu allows you to test each sensor, delete sensors from the configuration, and set a sensor's priority level.

1.8. Testing and Deleting Sensors

1. Starting in the Sensor Submenu (see Figure 1.1a), select TEST/DEL.

System Response

The screen will appear as in Figure 1.8a.

The system scrolls through the system sensors, tests each sensor, and displays the results.

As the sensors scroll, an audible chirp is sounded.

Line 1displays the serial number of the sensor being displayed.

Line 2 indicates the sensor number and its test results.

Line 3 displays the sensor type and location label.

Line 4 has a new set of fields.

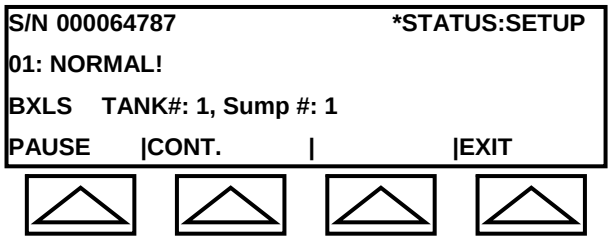


Fig. 1.8a: Test/Del Screen

Test Results

The three most common responses to sensor testing are:

- NORMAL – indicates the sensor is working and operating correctly.
- ALARM – the sensor is detecting an alarm condition. The LCD will provide an alarm description.
- NO REPLY – system did not find the sensor or the sensor is malfunctioning.

2. To stop scrolling, select PAUSE. To resume scrolling, Select CONT.

3. To delete a sensor, select PAUSE when the sensor is displayed.

System Response

The screen will appear as in Figure 1.8b.

Scrolling stops.

Lines 1, 2, and 3 remain unchanged.

Line 4 has a new set of fields.

Note: If line 4 displays PRIORITY instead of DELETE, select PAUSE one more time.

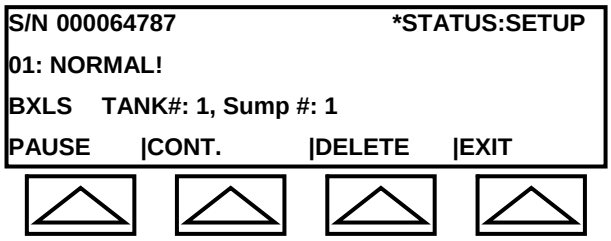


Fig. 1.8b: Paused Screen

Field Descriptions

- PAUSE – toggles the third field between DELETE and PRIORITY.
- CONT. – resumes automatic scrolling.
- DELETE – allows you to delete the sensor from the system configuration.
- EXIT – returns to the Sensor Submenu (see Figure 1.1a).

4. Select DELETE.

System Response

The screen will appear as in Figure 1.8c.

Line 1 remains unchanged.

Line 2 displays: **Delete S#01 ? Enter 0:NO, 1:YES**.
(The illustration assumes sensor #01 is being deleted.)

Line 3 shows a cursor.

Line 4 has a new set of fields.

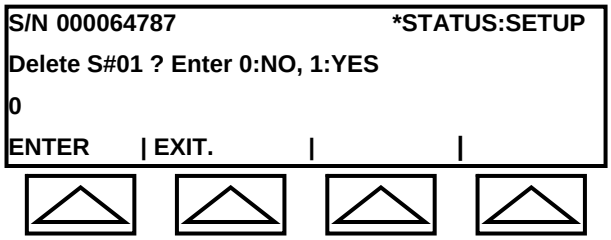


Fig. 1.8c: Delete Screen

Field Descriptions

- ENTER – enters value.
- EXIT – returns to scrolling through sensors (see Step 1).

5. Enter **1** using the data keypad then select ENTER.

System Response

The sensor is deleted and the system resumes scrolling through the remaining sensors (see Step 1).

1.9. Setting Sensor Priority

You can set a sensor's priority to Low or High.

1. Starting in the Sensor Submenu (see Figure 1.1a), select TEST/DEL.

System Response

The screen will appear as in Figure 1.8a.

The system scrolls through the system sensors, tests each sensor, and displays the results.

As the sensors scroll, an audible chirp is sounded.

Line 1displays the serial number of the sensor being displayed.

Line 2 indicates the sensor number and its test results.

Line 3 displays the sensor type and location label.

Line 4 has a new set of fields.

2. To set a priority for a sensor, select PAUSE when the sensor is displayed.

System Response

The screen will appear as in Figure 1.8b.

Scrolling stops.

Lines 1, 2, and 3 remain unchanged.

Line 4 has a new set of fields.

3. Select PAUSE again.

System Response

The screen will appear as in Figure 1.9a.

Lines 1, 2, and 3 remain unchanged.

Line 4 replaces the DELETE field with the PRIORITY field.

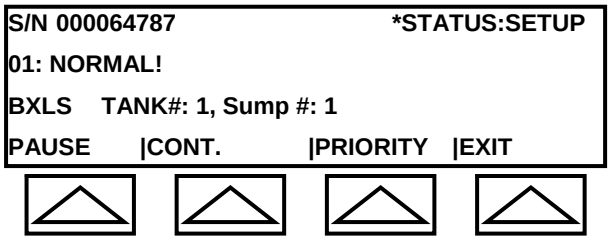


Fig. 1.9a: Priority Screen

4. Select PRIORITY.

System Response

The screen will appear as in Figure 1.9b.

Line 1 remains unchanged.

Line 2 displays: **Delete S#01 ? Enter 0:NO, 1:YES**. (The illustration assumes sensor #01 is being deleted.)

Line 3 shows a cursor.

Line 4 has a new set of fields.

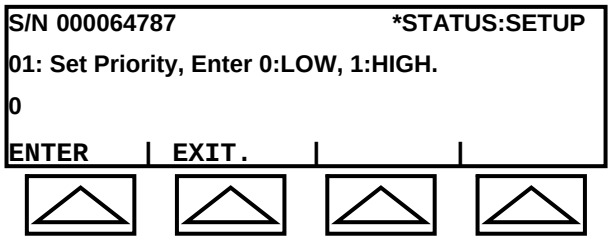


Fig. 1.9b: Priority Screen

5. Enter **1** using the data keypad then select ENTER.

System Response

The screen briefly displays Figure 1.9c and then redisplays the Test/Del Screen (see Figure 1.8a).

Lines 1and 4 remain unchanged.

Line 2 displays: **01: Set Priority HIGH**. Had you entered **0** in Step 5, Line 3 would have displayed: **01: Set Priority LOW**.

Line 3 shows the entered value.

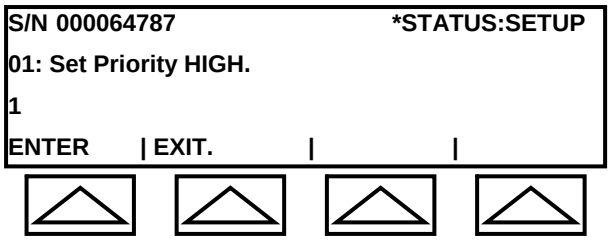


Fig. 1.9c: Priority Set Screen

Programming the DataStik Transmitter

Programming the DataStik Transmitter for 7255 / 7243 Series Probes using PETRO or PETRO2 or **PETRO3 Software and the Omntec Programming Adapter**

This document describes how to reprogram a Datastik Transmitter DC-TX-S2-55 for System and Transmitter ID's, and for probe data transmission times.

The transmitter has three check points where we can increase the transmission times:
(Each point must be 'Enabled' to work.)

1. Emergency High point (EHAP)
   After this level is reached (higher) the transmitter will transmit at the faster rate (QTR).

2. Increase in level check (RAP)
   After this level is reached (higher) the transmitter will check the probe more often.
   If the probe readings also are increasing at a rate higher then the setting (RT) the transmitter will transmit at the faster rate (QTR) until the rate of change drops lower then the set rate (RT) for (RTR) minutes.

3. Decrease in level check (OAP)
   After this level is reached (lower) the transmitter will check the probe more often.
   If the probe readings also are decreasing at a rate higher then the setting (OT) the transmitter will transmit at the faster rate (QTR) the rate of change drops lower then the set rate (OT) for Reset Rate (RTR) minutes.

The battery life will decrease by having the increase in transmissions. So be careful not to set the trip points and rates to low.

Omntec enables the Emergency High point as default. The Receive and Offload points are set by customer requirements. They are needed to increase readings when levels get closer to the OEL8000II high and low alarm points.

The Omntec Data Stick Transmitter Programming kit comes with 4 items.

1. Petro programming software:

   Petro.exe program is used for **7243 series** (older style) probes.
   Petro2.exe and **Petro3.exe** programs are used for **7255 series** probes.

2. USB to Serial Adapter. Since most new computers and laptops come without a serial port, we supply a RS232 Adapter with this kit.

3. Programming cable for Transmitters with the newer 10 pin programming connector.

4. Programming Adapter for Transmitters with the older style RJ-45 programming connector.

Installing the RS232 Adapter

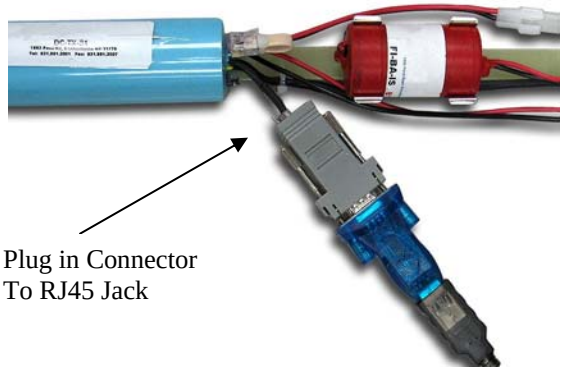
1) Install the software Driver for the adapter. Place the Omntec CD into your computer.

   Select the **USB Adapter** directory**.**
   Select your computers operating system (Ex. **win_98se_me_2000_XP** for windows XP)
   Run the setup file (Ex. **PL-2303 Driver Installer.exe** for windows XP) to install the Driver.

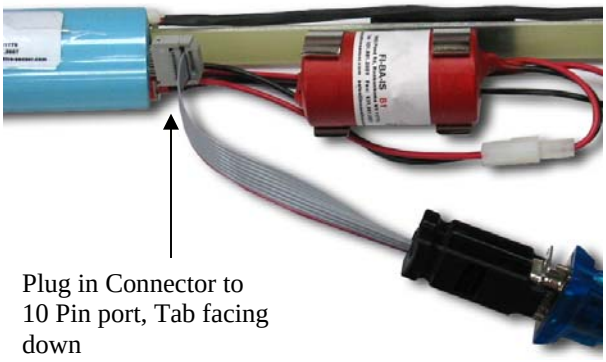
2) After the driver is installed connect the USB connector to your computer.

3) Connect the adapter to the transmitter RJ45 connector of the transmitter (which has the black shrink wrap over the wires or the one which has only 4 wires coming from the transmitter) or to the 10 Pin connector (See Diag Below).

Programming Port Connection for the 7255 Series Transmitters



Model 7255 Transmitter (RJ45 Connection)



Model 7255 Transmitter (10-Pin Connection)

NOTE: Be sure to select the right software and connectors for the probes and transmitters you have. All new probes will be 7255 series, and new transmitters will use Petro3 software.

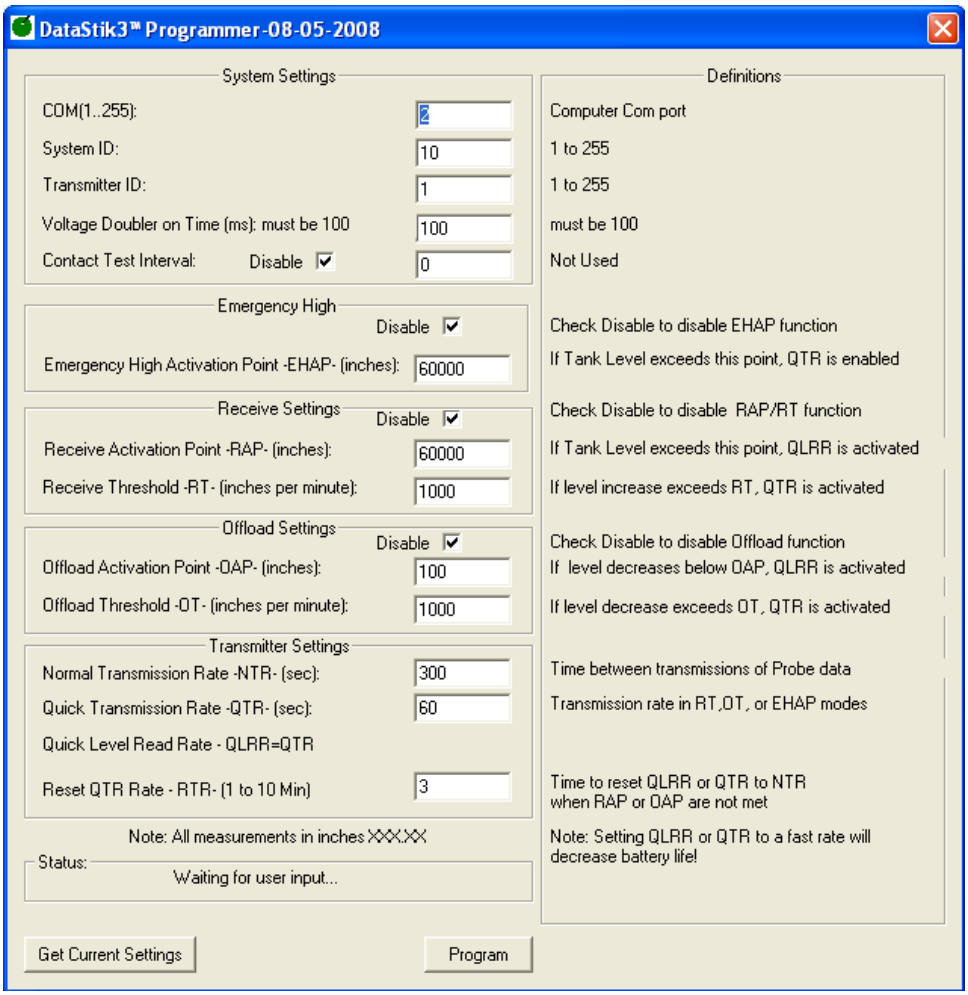
7255 Series Probes

There are two programs used to program the transmitters for Series 7255 MAG probes:

Petro3 – New style Transmitters with 10 pin programming connector and firmware (Rev 0.05, Aug 18, 2008 Hardware Ver 2.0+).
Petro2 – Old Style Transmitters with RJ-45 programming connector.
New style Transmitters with 10 pin programming connector and Rev 0.04 and older firmware.

Programming a Transmitter with Petro3 software:

The Petro3 software is used to program all new transmitters (firmware Rev 0.05, Aug 18, 2008 Hardware Ver 2.0+). The new transmitter firmware adds High and low level trip points for transmission rate changes during deliveries and offloading.



Com: Serial Port number on your computer. **You must use Com 1,2 or 3 only with this software**.

System I.D. The system identification number, to keep systems isolated from each other. Use one System I.D. number for all probes at the site.
Input the correct System ID, 1 to 99.

Transmitter I.D. The transmitter identification number, to keep transmitters isolated from each other. Each probe must have a unique I.D. number.
Input the correct Transmitter ID number, 1 to 99.

Emergency High Point' When enabled, and the level in the tank exceeds the **'Emergency High Activation** the transmitter will transmit data at the faster **'Quick Transmission Rate'**.

Receive Settings When enabled, and the level in the tank exceeds the **'Receive Activation Point'** the transmitter will check the probe more often. If the rate of level change is higher then the **'Receive Threshold'** the transmitter will transmit data at the faster **'Quick Transmission Rate'**.

Offload Settings When enabled, and the level in the tank goes below the **'Offload Activation Point'** the transmitter will check the probe more often. If the rate of level change is higher then the

'Offload Threshold' the transmitter will transmit data at the faster **'Quick Transmission Rate'**.

Transmitter Settings

'Normal Transmission Rate' is the time interval between, the transmitter sending data back to the controller

'Quick Transmission Rate' is the time interval between, the transmitter sending data back to the controller, when the high or low level trip point is reached (**'Emergency High Activation Point' or 'Receive Activation Point' or 'Offload Activation Point'**)

'Reset QTR Rate'. If the transmitter is transmitting at the quick transmission rate, the transmitter's transmission rate will change back to the '**Normal Transmission Rate'** after

the **'Reset QTR Rate'** time has elapsed and the rate of level change has gone below the **Offload or Receive Threshold**.

1) Check current settings by clicking on **'Get Current Settings'** button and pressing on the transmitter reset button.

   a. When data is read the table will be display the current readings.

   b. It may take two cycles for the operation to complete.

2) Make the necessary changes to the programs selections.

3) Click on the **'Program'** button and then press the reset on the transmitter.
   The status will change to transmitting and after approx 15 to 30 seconds a popup will appear and say if the update was good or not. It may take several times to have the data transmitted to the processor.

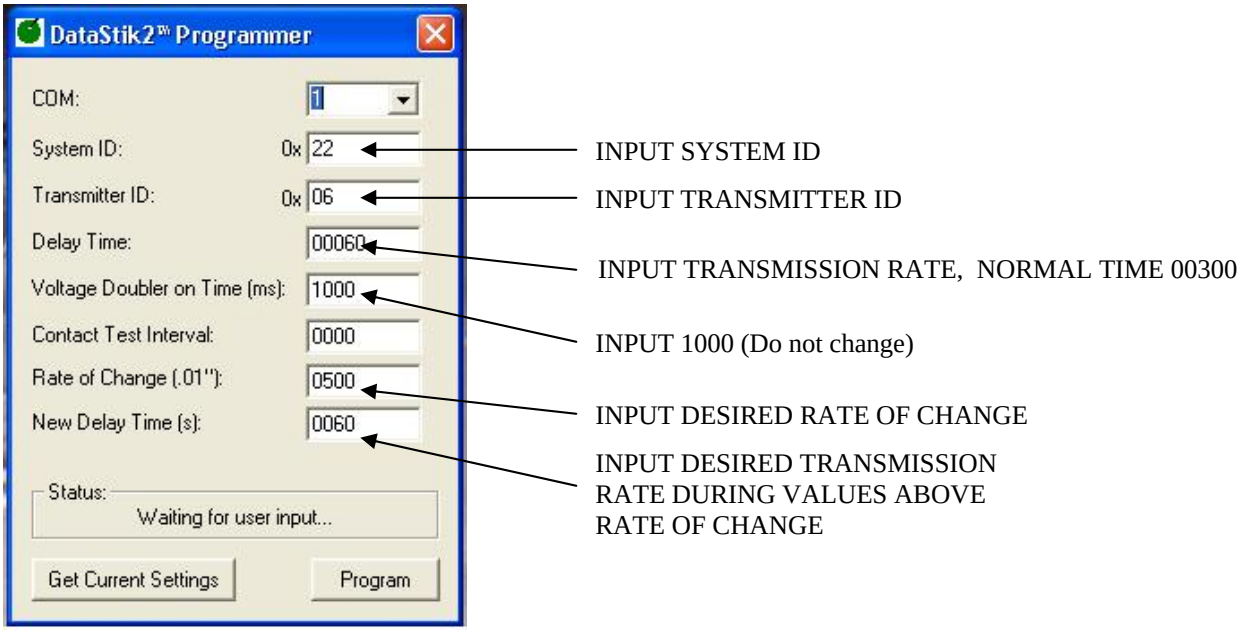
Note:

1) Do not change the '**Voltage Doubler** (100)' or '**Contact Test Interval** (0)' times unless specifically told to by Omntec.

2) If your computer sets the adapters Com port number higher then 3, you must change the Com port number.
   See Troubleshooting below.

Programming a Transmitter with Petro2 software:

Run the **Petro2.exe** software on your computer. Copy the software to a directory on your. Go to the Perto2 directory and run the Petro2 file.



Com: Serial Port number on your computer. **You must use Com 1,2 or 3 only with this software**.

System I.D. The system identification number, to keep systems isolated from each other. Use one System I.D. number for all probes at the site.
Input the correct System ID number in HEX. Two digits are required 00 thru FF.

Transmitter I.D. The transmitter identification number, to keep transmitters isolated from each other. Each probe must have a unique I.D. number.
Input the correct Transmitter ID number in HEX. Two digits are required 00 thru FF.

Delay Time Transmission time of transmitter in normal operation mode. Programmable in seconds.
Note: Making the update time faster will decrease the battery life. Default = 5 min (300sec)

Rate of change Change in height of product (in hundredths of inch) which will initiate the delivery mode 'New Delay Time' transmission rate when a delivery starts. Default is 0300 = 3 inches.

New Delay Time New transmission rate time, when the programmed rate of change is detected from a delivery. (Transmission rate during a delivery)

1) Check current settings by clicking on **'Get Current Settings'** button and pressing on the transmitter reset button.

   a. When data is read the table will be display the current readings.

   b. It may take two cycles for the operation to complete.

2) Make the necessary changes to the programs selections.

3) Click on the **'Program'** button and then press the reset on the transmitter.

The status will change to transmitting and after approx 15 to 30 seconds a popup will appear and say if the update was good or not. It may take several times to have the data transmitted to the processor.

Note:

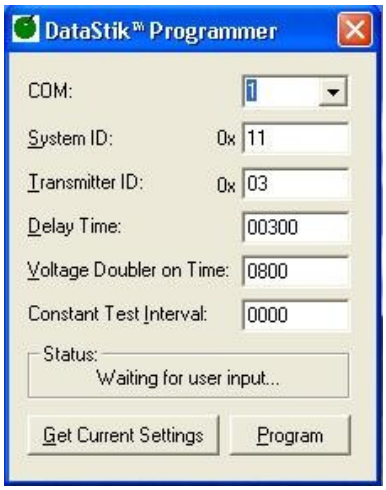
1) Do not change the '**Voltage Doubler** (1000)' or '**Contact Test Interval** (0000)' times unless specifically told to by Omntec.

2) If your computer sets the adapters Com port number higher then 3, you must change the Com port number.

See Troubleshooting below.

7243 Series Probes

Petro.exe program is used for **7243 series** (older style) probes. Program the probes the same way as above. There is no 'Rate of Change' setting for these older probes.



Troubleshooting Programming Issues

1) Sometimes when Getting Current Settings or Programming the transmitters the communications will give an error message like 'No Response from Remote'. Retry the programming a few times. If still failing, restart your computer and retry again. Remember to press Reset on the transmitter.

2) If your computer sets the adapters Com port number higher then 3, you must change the Com port number for the Petro2 software to work properly.

Go to **Device Manager**, find **Ports (Com & LPT)**.

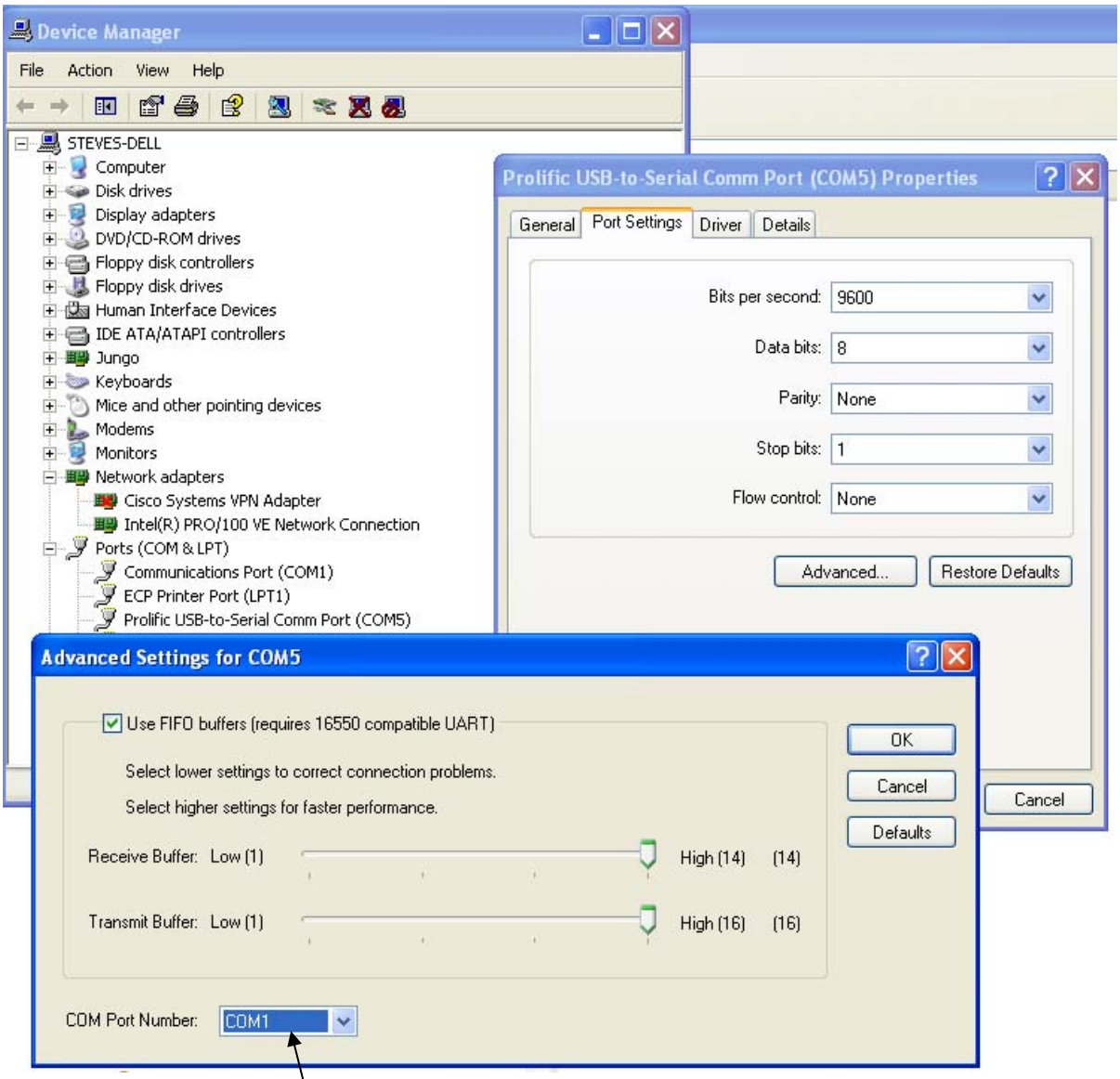
Select the adapters name, usually 'Prolific USB-to-serial Comm Port (COM5)'.

Right click over the name and select **Properties**.

Select the **Port Settings** tab.

Select the **Advanced** button.

Look for **Com Port Number** selection and change the com port number to 1 or 2 (if they are not used for another communications device).



Warranty

Warranty

The seller, OMNTEC Mfg., Inc. warrants to buyer that product is free of defects when properly installed and maintained by user. Warranty period is one year from date of installation or 15 months from date of shipment from factory, whichever occurs first. The seller's sole obligation is to repair or replace parts found to be defective upon evaluation by OMNTEC. Parts can be returned for evaluation by requesting an RMA (Return Material Authorization) from OMNTEC. The liability of the seller shall not exceed the price paid for components found to be defective. The above warranty is exclusive of all other warranties whether implied or expressed. Seller assumes no obligation for special or indirect damages incurred by user.

OMNTEC warranty for custom probes, custom controllers, add ons, spare or replacement parts is for 90 days from date of shipment. All items must be properly installed for warranty to be valid. Any items found to have factory defects after evaluation by OMNTEC through return material authorization process, will be repaired or replaced. The liability of seller shall not exceed price paid for item found to be defective by factory evaluation. The above warranty is exclusive of all other warranties whether implied or expressed. OMNTEC assumes no responsibility or obligation for special or indirect damages incurred by user.

Electrical Ratings

Electrical Ratings

MODEL **OEL8000II**

TANK GAUGING LEAK DETECTION

CONTROLLER

SERIAL NUMBER _____

LISTED
5L04

Associated Apparatus; non-hazardous locations; [AEx ia] IIB; [Ex ia] IIB provides intrinsically safe outputs for use in Class I, Div.1, Groups C and D or Class I Zone O, Group IIB hazardous locations when connected in accordance with control drawing number CDOEL8000II or CDOEL8000II-ENTITY-A.

ELECTRICAL RATINGS

INPUT: 100-240 VAC, 60 W max, 47-63 Hz
OPTIONAL RELAY OUTPUTS: 120 VAC @ 5 A RESISTIVE

ENTITY PARAMETERS

SENSOR INPUT 12 V BARRIERS: Voc = 12.6 V, Isc = 590 mA, Ca (or Co) = 7.1 µF, La (or Lo) = 410 µH, Po = 1.9 W
PROBE INPUT 28 V BARRIERS: Voc = 29.4 V, Isc = 65 mA, Ca (or Co) = 0.5 µF, La (or Lo) = 33 mH, Po = 484 mW

OMNTEC Mfg., Inc. Ronkonkoma, New York

N.Y.F.D. C. of A. #4988

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