

# OMEGA JR

## Fuel Control System

### Installation Guide





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# Omega JR Installation Guide

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## Purpose of this Documentation

This manual contains instructions for installation of the Omega JR Fuel Control System to electronic fuel dispenser computers and to peripheral equipment such as the point of sale terminal (POS).

Instructions for installing or servicing electronic fuel dispensers and POS terminals are not included. For more detail on any product not manufactured by PIE, always refer to that product's accompanying documentation. For use with PI DBox or PI Configurator, refer to the product's accompanying documentation.

## Notice

Progressive International Electronics reserves the right to revise and improve this document as required. This publication details our Omega JR Fuel Control System at this time, and may not accurately describe this product at all times in the future. Specifications are subject to change without notice.

## Patents

Progressive International Products are manufactured or sold under one or more of the following U.S. patents.

5,790,410	5,663,887	5,361,216
5,831,861	5,557,529	5,270,943
5,694,326	5,394,336	5,108,742

## History of Document Revisions

Rev. 1.0 — February 2013

- Initial Release

Rev. 1.1 — February 2015

- Added System Warnings in French
- Corrected Electrical Requirements

Rev. 1.2 — January 2016

- General Installation, added steps
- Field Upgrade, added steps
- Updated Table: Dispenser-Specific Configurations

Rev. 1.3 — September 2019

- Updated Diagram: Omega JR to Dispenser – DBox
- Added Diagram: Omega JR to Dispenser – Configurator
- Updated Diagram: Top View of Omega JR Main Board for 9000-11-2211
- Updated Table: Dispenser-Specific Configurations to add Mechanical and PMC

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## Explanation of Document Standards

The following documentation standards are applied throughout this document:

***I*** Comments are noted in *italics*.

***X*** Variable data formats are represented by X(s).



Electrical hazards and other warnings are indicated with this caution sign.

These abbreviations are used.

PIE	Progressive International Electronics
DBox	Pump manufacturer's distribution box
PI DBox	Distribution box manufactured by PIE
PC	Personal computer
POS	Point of sale terminal
SPD	Single product dispenser

## Manufacturer's Warranty

Progressive International Electronics, Inc. (SELLER) warrants to the Purchaser of the Omega JR fuel control equipment manufactured by Seller against defects in material or workmanship for one (1) year from date of shipment. Seller will replace or repair defective parts or replace and issue credits to the Purchaser's account in accordance with the following Conditions of Warranty.

### CONDITIONS OF WARRANTY

1. Credit will be applied only when the completed warranty request form and the defective parts are received and inspected.

**Decisions to repair or replace defective equipment are solely at the discretion of PIE.**

2. When parts shipments are made prior to receiving the required warranty request and defective parts, they will be billed to the Purchaser.
3. In all cases, approved warranty requests will be expedited by issuing the appropriate credit to the Purchaser's account and shipping replacement parts.
4. Credits will not be issued for parts and no cash refunds for warranty credits will be made.
5. All components and parts must be returned to the factory prepaid, and in turn, replacement components and parts will be returned prepaid by the factory.
6. Seller's warranty applies only if the equipment has been installed and used in accordance with Seller's instructions. The warranty is void if any unauthorized alteration or addition has been made to the equipment or if it has been subject to damage caused by abuse, misapplication, accident or improper operation.
7. The Seller's liability for any damages, including contribution and indemnification, arising out of or in any way connected with the supplying of the equipment or its use, shall not in any case exceed the cost of repair of the equipment as herein provided. Upon expiration of the warranty, all such liability, as well as any other liability, shall terminate.
8. Nothing contained herein shall make the Purchaser, its agents or employees, an agent or representative of Seller and Seller assumes no responsibility of any act, omission, representation or warranty by the Purchaser or anyone else except as expressly stated herein.
9. The final Decision as to the validity of any claims arising under the warranty shall be determined solely by the Seller.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE AFORESAID OBLIGATIONS AND ARE HEREBY DISCLAIMED AND EXCLUDED BY SELLER.

# System Installation Warnings



Safety hazards are inherent with all electrical equipment. Standard precautions must be taken at all times during installation and operation of the Omega JR systems. In addition to normal electrical precautions, the following points should be noted during installation.

- Installation must comply with the National Electrical Code, as well as Federal, State/Provincial, Local, and all applicable codes.
- High voltages are present in the Omega JR components, as well as the equipment to which it is attaching. To prevent personal injury or equipment damage, disconnect all power before proceeding with installation.
- Omega JR equipment must be installed in non hazardous areas. The main box must be protected from severe vibration, extreme temperatures and excessive humidity.
- All equipment connected to the Omega JR must be UL-approved and mounted in a nonhazardous location using standard RS232 communication.

## For Use in USA

Installation of the Omega JR fuel control system must comply with the requirements of the National Electrical Code (NFPA 70), the Automotive and Marine Station Code (NFPA 30A), and all Federal, State, Local, and applicable safety codes.

## For Use in Canada

Installation of the Omega JR fuel control system must comply with the requirements of the Canadian Electrical Code, the Flammable and Combustible Liquid Code, and all Federal, Provincial, Local and applicable safety codes.

The installation of the systems covered by this manual in conjunction with equipment not UL Listed has not been evaluated by the Underwriters Laboratories and is outside the intended use of this equipment. **Warning:** All dispensing equipment discussed in this manual is not UL Listed and the combination has not been evaluated by Underwriters Laboratories.

# Installation du Système



Risques de sécurité sont inhérents à tous les équipements électriques. Les précautions standard doivent être prises à tous les fois pendant l'installation et le fonctionnement des systèmes Omega JR. En outre à la normale électrique précautions, les points suivants doivent être pris pendant l'installation.

- L'installation doit se conformer au Code national de l'électricité, ainsi que fédérales, d'État/provincial, Local, et tous les codes applicables.
- Hautes tensions sont présentes dans les composants Omega JR, ainsi que l'équipement auquel il est la fixation. Pour prévenir les blessures ou des dommages matériels, débrancher l'alimentation avant procéder à l'installation.
- Équipements Omega JR doit être installé dans les zones non dangereux. La boîte principale doit être protégé de fortes vibrations, aux températures extrêmes et à l'humidité excessive.
- Tous les équipements connectés à l' Omega JR doit être homologué UL et monté dans un non dangereux emplacement en utilisant la communication RS232 standard.

## Pour Utilisation aux États-Unis

L'installation du système de commande de carburant Omega JR doit se conformer aux exigences de la National Electrical Code ( NFPA 70 ), l' Automobile et le Code Station Marine ( NFPA 30A ), et tous les fédéral, État, local, et les codes de sécurité applicables.

## Pour Utilisation au Canada

L'installation du système de commande de carburant Omega JR doit se conformer aux exigences de la canadienne Electrical Code, le Code liquides inflammables et combustibles, et tous les fédéral, provinciaux, étatiques, Codes de sécurité locales et applicables.

L'installation des systèmes couverts par ce manuel en conjonction avec un équipement non UL Inscrite n'a pas été évalué par les Underwriters Laboratories et est en dehors de l'utilisation prévue de cet équipement. Attention: Tous les équipements de distribution discuté dans ce manuel ne est pas UL et la combinaison n'a pas été évaluée par Underwriters Laboratories.



# INSTALLATION

## System Installation Requirements

In preparation for the Omega JR installation, ensure that the following requirements have been met.

1. Following the manufacturer's installation instructions, install the dispensing equipment (pumps and data distribution boxes.)
2. Test all dispensers in stand-alone (manual) mode.
3. On dispensers which have programmable identification numbers, ensure that the numbers are set correctly. If multiple dispensers contain the same ID number, communication conflicts will occur.

To ensure smooth system integration, it is recommended that the petroleum equipment service technician for the account be available to resolve dispenser-related issues.

## Description of Omega JR Components

Omega JR systems are made up of the components listed below. Using this checklist, identify and familiarize yourself with each of the components in your shipment.

### Component Checklist

- ✓ **Omega JR Box** — wall transformer is attached.
- ✓ **Serial Cable** — standard 6-foot cable which connects Omega JR to PI DBox or PI Configurator
- ✓ **Omega JR Installation Manual**

## Omega JR General Specifications

Physical Size	7.5" x 8.5" x 2"
Operating Temperature	32 to 120 degrees F
Storage Temperature	32 to 120 degrees F
Electrical Requirements	115VAC, 20 W Maximum (dedicated circuit)

## General Installation

*Read previous sections, as well as this entire section of the Installation Manual before attempting to install the Omega JR. Note System Installation Warnings in the previous section.*

1. A junction box must be provided which has only enough receptacle outlets to accommodate the transformers of the Omega JR system.

### Omega JR Power Requirements

The Omega JR and the PI DBox(es)/PI Configurator(s) must be powered from a dedicated 115 VAC single circuit breaker, with no other devices connected to wire or breaker. Do not use a switched neutral breaker. The neutral must come directly from the neutral bus in the electric supply panel. No other neutral circuits may be connected to this wire.

The electric supply system earth bond must connect to a driven ground rod or other earth bonding systems that comply with the National Electrical Code, Article 250.

**FAILURE TO COMPLY WITH THESE REQUIREMENTS WILL VOID WARRANTY.**

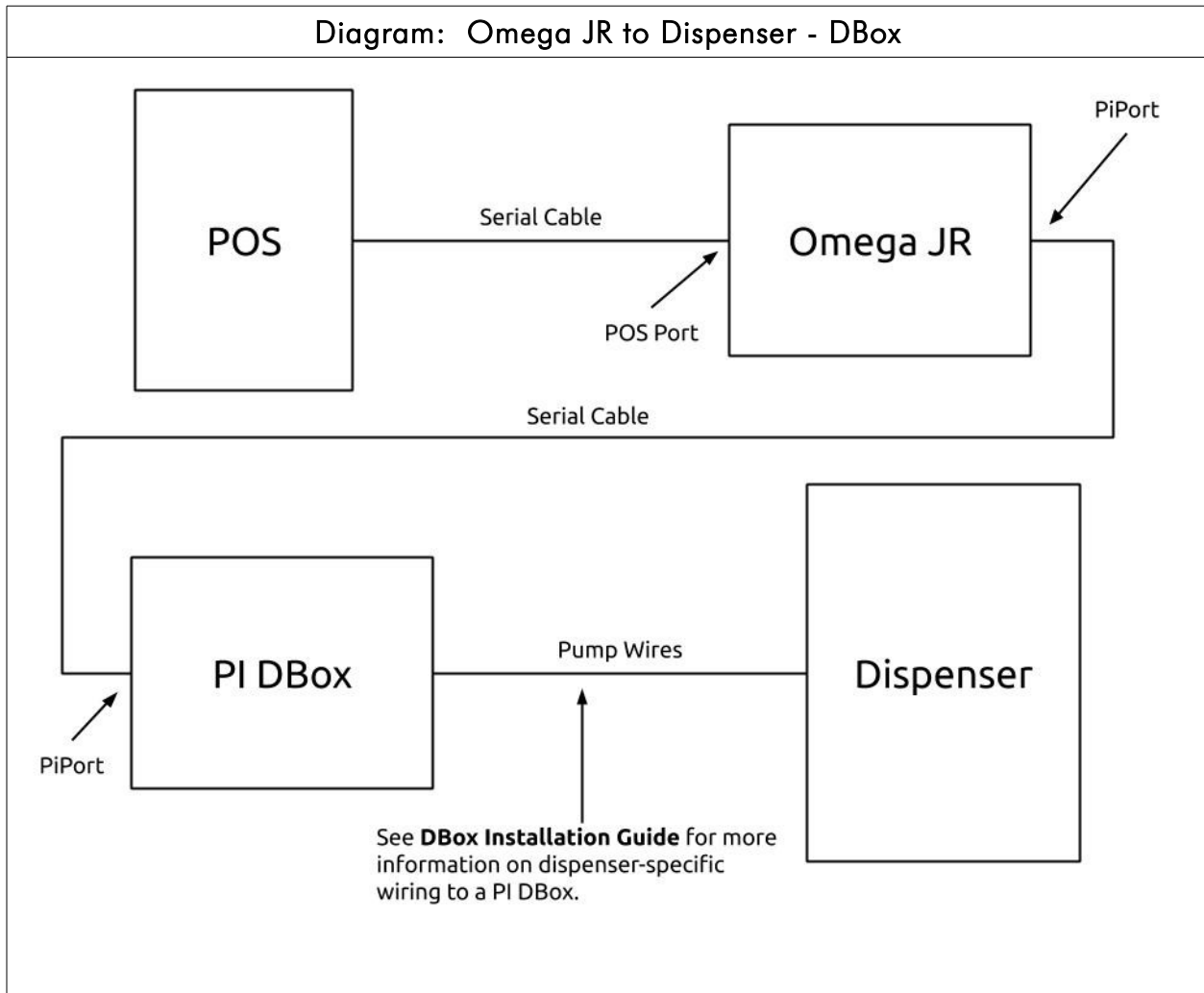
2. Securely mount the Omega JR main box and the PI DBox(es)/PI Configurator(s) in a nonhazardous location, with the box(es) within six (6) feet of the main box.
3. Connect an RS232 serial cable from the Com Port of the Point of Sale (POS) to the POS Port on the Omega JR main box.
4. Attach the serial cable (supplied by PIE) from the Pi Port of the Omega JR to the PiPort of the PI DBox/PI Configurator. *Refer to Diagram: Omega JR to Dispenser following this section.*
  - Pi Port 1 is used for the Dispenser Interface 1 (fueling positions 1-16)
  - Pi Port 2 is used for the Dispenser Interface 2 (fueling positions 17-32)
5. Referring to the supplied **PI DBox Installation Guide**, connect the pump wires to the PI DBox, or referring to the **PI Configurator Installation Guide**, connect the pump manufacturer's distribution box to the PI Configurator.

6. Set the Omega JR to the appropriate Baud Rate by using the dip switches on the Omega JR main board. *Refer to Diagram: Top View of Omega JR Main Board to locate the dip switch SW1, and refer to Table: Baud Rate Settings to properly set the switches.*

Baud Rate	1 (for POS 1)	2 (for POS 1)	3 (for POS 2)	4 (for POS 2)
2400	ON	ON	ON	ON
4800	OFF	ON	OFF	ON
9600	ON	OFF	ON	OFF
19200	OFF	OFF	OFF	OFF

7. Plug in the wall transformers for the Omega JR and the PI DBox(es)/PI Configurator(s) to the dedicated outlets.
8. Configure the Dispenser Brand in the Omega JR. **The Omega JR is not set for a brand when it leaves the factory and will not work until set correctly.** *Refer to the Configuring the Dispenser Brand section for details.*
9. Set any necessary Dispenser-Specific settings in Diagnostics. Certain dispenser brands require that each model type is configured in order to function properly. *Refer to the Dispenser-Specific Settings section for more information.*
10. Carefully following the vendor's setup instructions, run the POS application. The Omega JR will not begin communication until prices have been sent to the dispensers. *If the system fails at this point, contact the vendor for additional instructions.*

For the POS/Omega JR system to function properly, the POS must be programmed for the exact number of dispensers to be controlled by the POS/Omega JR system. (An MPD has multiple hoses, but is considered to be only two dispensers — one dispenser on either side.)



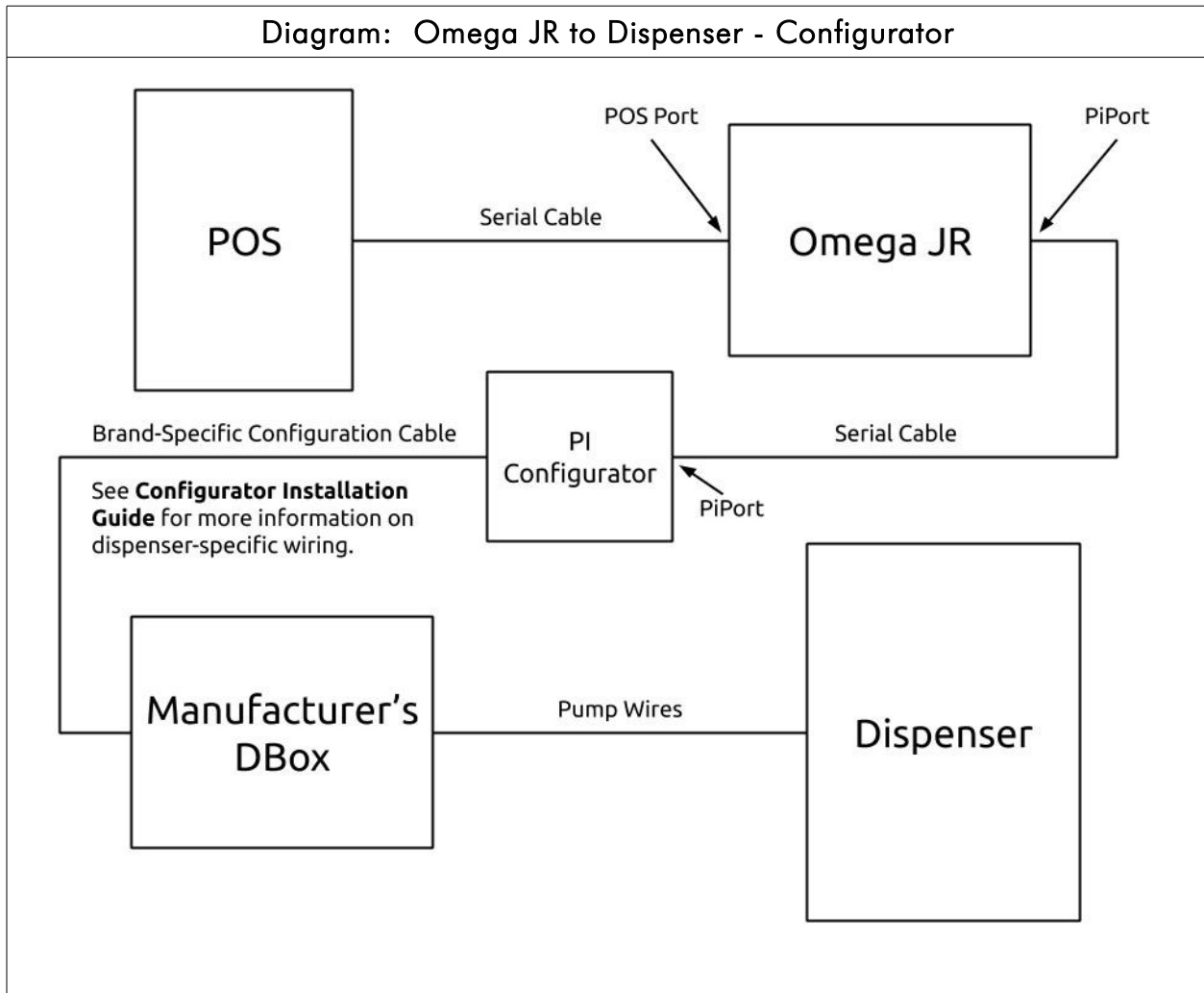


Diagram: Omega JR Front Panel

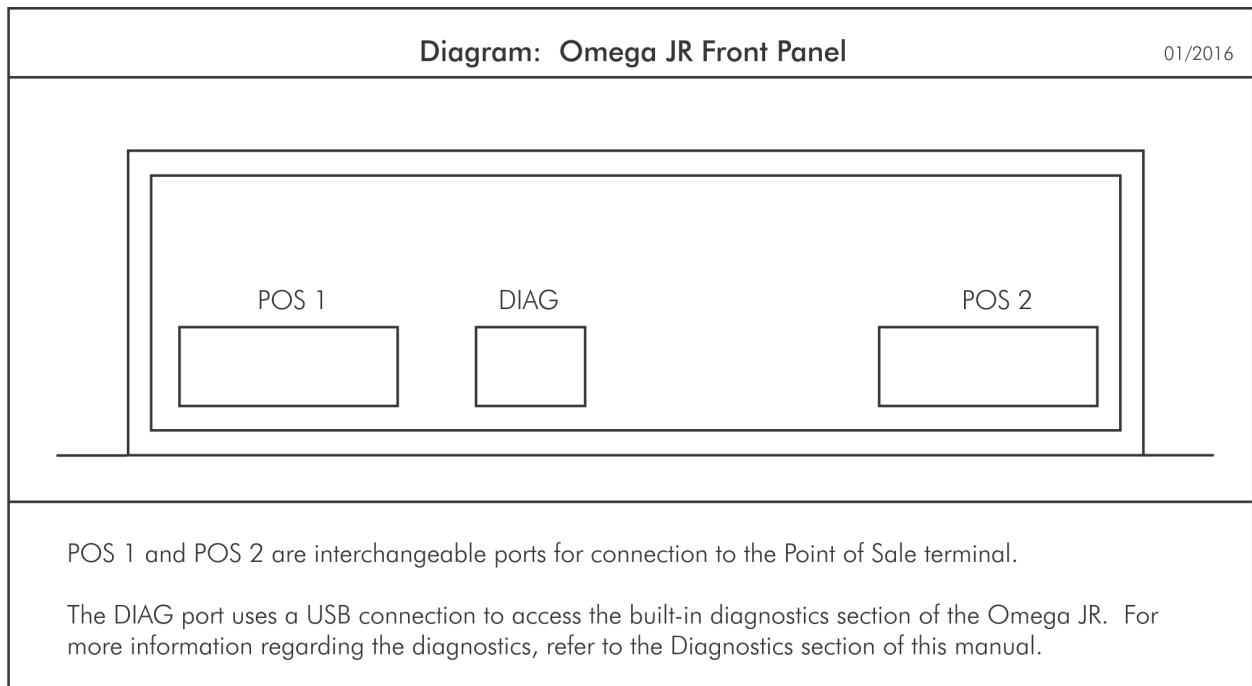


Diagram: Omega JR Rear Panel

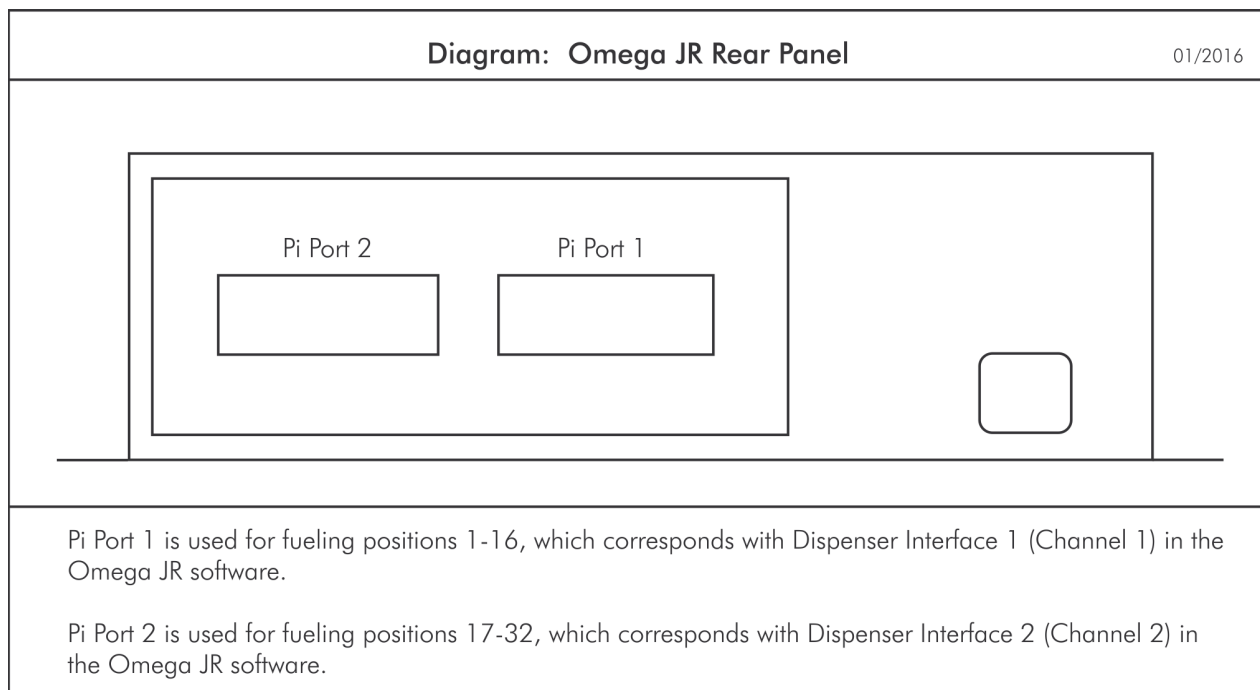
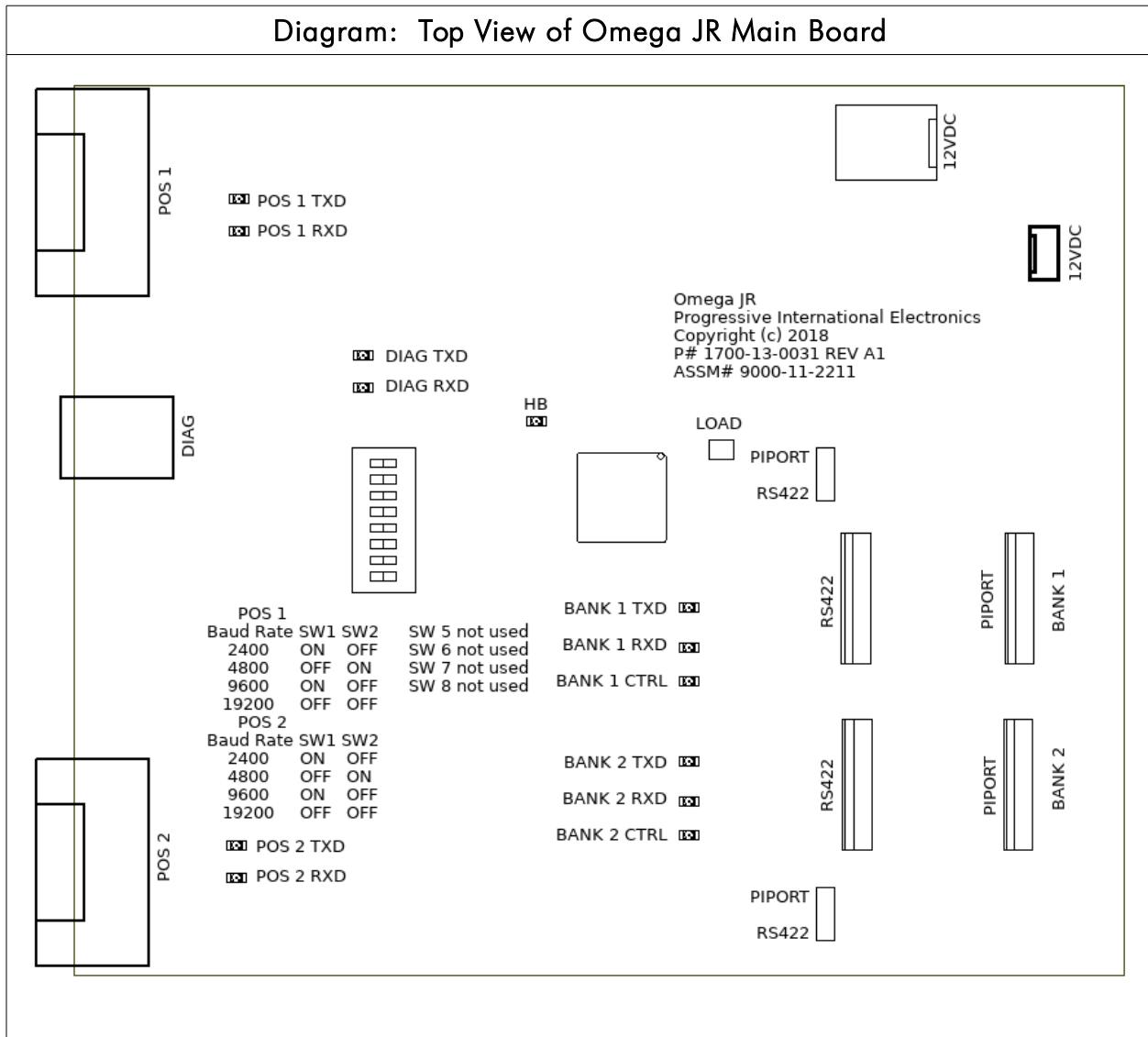


Diagram: Top View of Omega JR Main Board



## DIAGNOSTICS

### Features and Operation of the Omega JR Diagnostic Port

Configuration settings and data collection are available to the user through the Omega JR's built-in Diagnostic Port which is physically located on the front panel of the Omega JR and labeled DIAG. *Refer to Diagram: Omega JR Front Panel View.* Accessing the Diagnostic Port requires a computer running a terminal emulation program such as HyperTerm or PuTTY. Physical connection is made using a USB cable. Once the connection is established, power up the Omega JR and a list of menu options will appear. To view a help menu, type a question mark (?) at the prompt.

Diagnostics is used to configure the brand(s) of dispensers that the Omega JR controls. *Refer to Configuring the Dispenser Brand section, which follows.* This is also where dispenser-specific settings can be configured. *Refer to Configuring Dispenser-Specific Settings section, which follows.* If you have more questions regarding the Diagnostics, please call your distributor.

The terminal emulation program must be set to the following parameters to work properly.

Baud rate	57600
Data bits	8
Parity	None
Stop bits	1
Flow control	None
Terminal emulation setting	ANSI



## Configuring the Dispenser Brand

The Omega JR can be configured to control a variety of dispenser brands using Diagnostics.

1. At the top level of Diagnostics, select **S** to enter a security Code.
2. An Access Code appears. This numeric value is subtracted from 100. The two digits which result should be reversed and entered at the Enter Security Code prompt. (For example, if the Access Code is 79, subtract 79 from 100 for a result of 21. Reverse these two digits and enter 12 at the Enter Security Code prompt.) Press Enter.
3. Select **C** to Configure Dispenser Brand.
4. To configure Channel 1, select **A** to cycle through the available dispenser brands.
5. To configure Channel 2, select **B** to cycle through the available dispenser brands.
6. Select ESC to exit and save the settings.

## Dispenser-Specific Settings

Some dispenser brands have specific configurations available. Follow the steps below to change the configuration for each fueling position.

1. At the top level of Diagnostics, select **D** to enter Section Diagnostics.
2. Select the Dispenser Interface Section to be configured (1 or 2).
3. Select **P** for Pump Diagnostics.
4. If the dispenser brand has specific settings, select **C** to Configure Pump. *If the dispenser does not have settings, this option will not be available.*
5. Settings are for an individual fueling position, so the configuration must be changed for all dispensers that the Omega JR will be controlling. *Some dispenser brands may also have global settings which affect the entire channel.*

Table: Dispenser-Specific Configurations	
Brand	Available Settings (Options)
Bennett	Number of PPU Displays (1 or 2) Model Type (all model types available)
Deer	Number of PPU Displays (1 or 2) Volume Decimal Digits (2 or 3) Preset Digits (4 or 6) PPU Decimal Places (0, 1, 2, or 3)
Gilbarco	Communication Speed (Modular or Legacy) [Channel Setting] Special Function Commands (yes or no) Hose Test (yes or no) Dollar Decimal Point (0, 1, or 2) Volume Decimal Point (2 or 3) PPU Decimal Point (0, 1, 2, or 3)
Kraus	Pump Head Type (Kraus or MTI) PPU Decimal Point (0, 1, 2, or 3) Volume Decimal Point (0, 1, 2, or 3) Dollar Decimal Point (0, 1, 2)
Mechanical	Handle for Authorization (yes or no)
PMC	Preset Type (Volume or Dollar)
Tatsuno	Dollar Decimal Point (0, 1, or 2) Volume Decimal Point (0, 1, 2, or 3) PPU Decimal Point (0, 1, 2, or 3)
Tokheim	Unit of Measure (Litres or Gallons) Volume Decimal Point (2 or 3) Model Type (all model types available)
Wayne	BCD (enabled or disabled) MOP Switches (yes or no) Blender with Single Product (3+1) (yes or no) Number of PPU Displays (1 or 2) Dollar Decimal Point (0, 1, or 2) Volume Decimal Point (2 or 3) PPU Decimal Point (0, 1, 2, or 3)

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## FIELD UPGRADE

### Download Application

Contact PIE for upgrade files that can be loaded via PIE's STM32 Update Loader. This utility is available on our website: [www.pie-corp.com](http://www.pie-corp.com).

1. Power down the Omega JR
2. Press and hold the LOAD button while powering up the Omega JR. *Refer to Diagram: Top View of Omega JR Main Board to locate this jumper.*
3. Open STM32 Update Loader and use these settings:

Port Name	Com Port # for Diagnostics
Baud Rate	256000
Parity	Even
Echo	Disabled
Timeout(s)	10

4. The screen will read: "Target is readable. Please click "Next" to proceed." If it does not have this message (or a similar message), go back and verify that the jumper is set correctly and that all of the settings on the previous page are correct. Also check that no other device is trying to use the Diagnostics Com Port (HyperTerm, for example).  
Select Next.
5. Change Target to STM32\_XL-density\_1024K  
Select Next.
6. Make sure that "Download to device" and "Global Erase" are selected. Select the file in "Download from file". Leave all other options on this page as they are.  
Select Next.
7. Close STM32 Update Loader when complete.
8. Power down the Omega JR.