



FIT[®]

Fuel Island Terminal *Installation and Operation Manual*

The material in this manual is subject to engineering changes and editorial revisions

Copyright ©2002 OPW Fuel Management Systems

OPW Fuel Management Systems - System and Replacement Parts Warranty Statement

Effective September 1, 2002

System and Replacement Parts Warranty

OPW Fuel Management Systems warrants that all OPW Tank Gauge and Petro Vend Fuel Control systems supplied by OPW Fuel Management Systems to the Original Purchaser will be free from defects in material and/or workmanship under normal use and service for a period of 12 months from the date of installation or 15 months from the date of shipment. Additionally, OPW Fuel Management Systems warrants that all upgrades and replacement parts (new and remanufactured) supplied by OPW Fuel Management Systems will be free from defects in material and workmanship under normal use and service for a period of 90 days from the date of installation or for the remainder of the system's original warranty, whichever is greater, as set forth in the first sentence of this statement. The foregoing warranties will not extend to goods subjected to misuse, neglect, accident, or improper installation or maintenance or which have been altered or repaired by anyone other than OPW Fuel Management Systems or its authorized representative.

The buyer's acceptance of delivery of the goods constitutes acceptance of the foregoing warranties and remedies, and all conditions and limitations thereof.

If a claim is made within the warranted time period that any equipment and/or remanufactured part is defective in material or workmanship under normal use and service, such equipment and/or remanufactured part shall be returned to OPW Fuel Management Systems, freight prepaid. If such equipment or remanufactured part is found by OPW Fuel Management Systems in its sole judgment, to be defective in material or workmanship under normal use and service, OPW Fuel Management Systems, shall, at its sole option, repair or replace such equipment and/or remanufactured part (excluding, in all instances, fuses, ink cartridges, batteries, other consumable items, etc.)

The warranties, as set forth above, are made expressly in lieu of all other warranties, either expressed or implied, including, without limitation, warranties of merchantability and fitness for any particular purpose and of all other obligations or liabilities on OPW Fuel Management Systems part. Further, OPW Fuel Management Systems neither assumes, nor authorizes any other person to assume for it, any other liability in connection with the sale of the systems, or any new/replacement part that has been subject to any damage from any act of nature or any *force majeure*.

The term "Original Purchaser" as used in these warranties shall be deemed to mean the authorized OPW Fuel Management Systems distributor to which the system or any new/replacement part was originally sold. These warranties may be assigned by the original purchaser to any of its customers who purchase any OPW Fuel Management Systems systems or new/replacement parts.

The sole liability of OPW Fuel Management Systems, for any breach of warranty, shall be as set forth above. OPW Fuel Management Systems does not warrant against damage caused by accident, abuse, faulty or improper installation or operation. In no event shall manufacturer's liability on any claim for damages arising out of the manufacture, sale, delivery or use of the goods exceed the original purchase price of the goods. In no event shall OPW Fuel Management Systems be liable for any direct, indirect, incidental or consequential damage or loss of product.

Contents

1.0 FIT Specifications	1
2.0 FIT Installation	3
2.2 Installing Relay Boards in the Pedestal	4
2.3 Receipt Printer Installation in the FIT	6
3.0 Conduit and Wiring Installation	9
3.1 Power & Petro-Net Conduit	9
3.2 Power Wiring	9
3.3 Pulser Wiring	9
4.0 Setup & Configuration	11
4.1 FIT DIP Switches	12
4.1.1 FIT Switch #1	12
4.1.2 FIT Switch #2	12
4.2 FIT Board LEDs	13
4.3 FIT Graphics Display Contrast	13
4.4 Receipt Printer Board Setup and Test	14
4.4.1 Receipt Printer Board DIP Switch	15
4.4.2 Other Printer Switches	15
4.4.3 Receipt Printer Board LEDs	16
Index	17

Notes:

1.0 FIT Specifications

You can install up to four Fuel Island Terminals in each system.

Each FIT has a programmable display to greet and guide a customer through the fueling process, a keypad for customer data entry, and card or key readers to restrict access. The FIT specifications are given in the table below.

FUEL ISLAND TERMINAL	
Readers (<i>see NOTE opposite</i>) (<i>Each FIT can have one or two readers</i>)	Magnetic Stripe Card Motorized Magnetic Stripe Card Optical Card ChipKey [®]
Display (<i>One per FIT</i>) Standard Optional	2 lines x 16 characters 1 line x 40 characters Graphics (320 x 200 pixels)
Cabinet Dimensions	15" H x 18" W x 11" (38cm H x 46cm W x 28cm D)
Pedestal Dimensions (<i>see NOTE opposite</i>)	48" H x 14" W x 8" D (122cm H x 36cm W x 20cm D)
Power Requirements Standard Optional	120 VAC, 50/60 Hz; 200 watts max. 240 VAC, 50/60 Hz; 200 watts max.
Operating Temperature Range (<i>with optional heater</i>) (<i>heater required for receipt printer and/or graphics display</i>)	-409 F to 1229 F (-409C to 509 C)

NOTE

DIV.2 FITs is NOT available with a motorized magcard reader, receipt printer or pedestal-mounted pump control.

2.0 FIT Installation

This section explains basic pedestal installation, how to install relay boards in the pedestal, and how to install the optional receipt printer.

Up to four FITs can be connected to one site controller. Installation of a typical pedestal is shown in Figure 1 opposite. There are two basic types:

WITH mounts for internal pump relay boards. In this type of system, the pump control hardware is installed separately in an outdoor cabinet.

WITHOUT mounts. This is used when relay boards are installed with pump control hardware in an indoor cabinet.

2.1 Basic Installation

See Figure 1 opposite

1. Select a location at or near your fuel island for each FIT. Shield the FIT from direct sunlight, particularly in warmer climates.
2. To meet requirements, *standard* (non-DIV.2) FITs must be installed:

A minimum 18" (46 cm) from the nearest *conventional* pump/dispenser.

A minimum 24" (61 cm) from the nearest *overhead* pump/ dispenser.

ONLY DIV.2 FITs can be installed within the Division 2 area. See System2 Installation Manual for definition of hazardous areas.

3. Anchor each pedestal to cement with 3/8" (1 cm) bolts, *not* provided. Be sure the *front* of the pedestal (with the relay board opening) faces toward the user.
4. Mount each FIT cabinet, display side forward, onto its pedestal with the hardware provided. If the relay boards are being installed indoors, install the cover plate onto the front of the pedestal.

If relay boards are going into the pedestal, continue with the next section.

2.2 Installing Relay Boards in the Pedestal

(NOT Available with DIV.2 FITs)

This section is for *outdoor* PCT installations only. Systems with DIV.2 FITs must have *indoor* PCTs. See Figure 2 below.

IMPORTANT
Install the bottom relay boards *first* for proper ribbon cable placement.

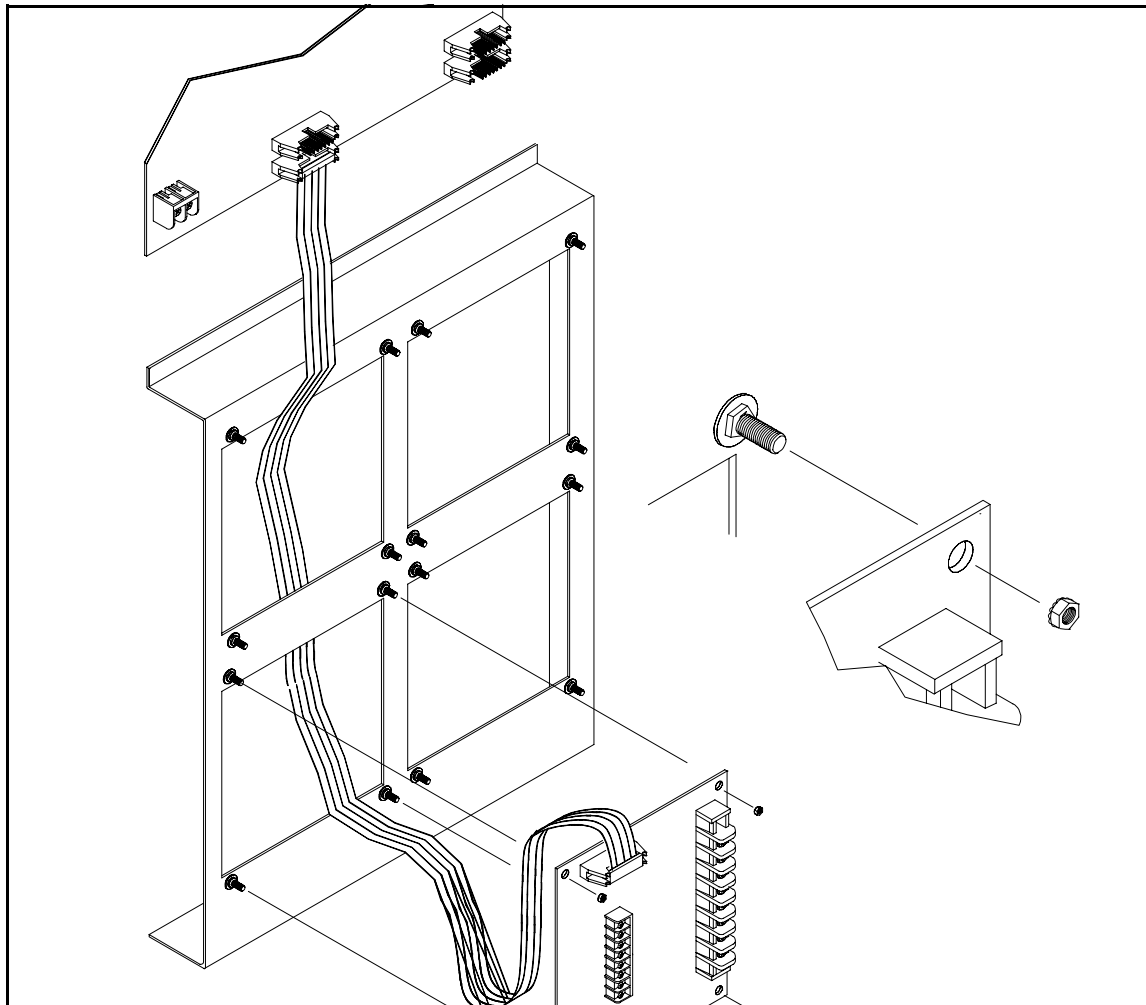


Figure 2 - Relay Board Installation

Pump relay boards, with 14-wire ribbon cables, are packaged separately from the pedestals. After mounting the FIT to its pedestal, install the pump relay board(s) into the pedestal as follows:

1. Starting with the bottom boards, place the boards on the mounting studs and secure with the four nuts provided (see Figure 2).
2. Install standard knockout bushings in the FIT cabinet(s) to protect the ribbon cables. Attach one end of the ribbon cables to the J1 connector on the relay board.
3. USING THE TABLE BELOW, attach the other end of the ribbon cable to the appropriate J1 to J4 connectors on the PCT board.

RELAY BOARD CABLE CONNECTIONS		
Pumps	Mounting Position in Pedestal	PCT Board Connector
1 & 2	Bottom Left	J1
3 & 4	Top Left	J2
5 & 6	Bottom Right	J3
7 & 8	Top Right	J4

2.3 Receipt Printer Installation in the FIT

(NOT available with DIV.2 FITs)

See Figure 3 below. Your optional receipt printer goes inside the FIT cabinet with two quick release hinges.

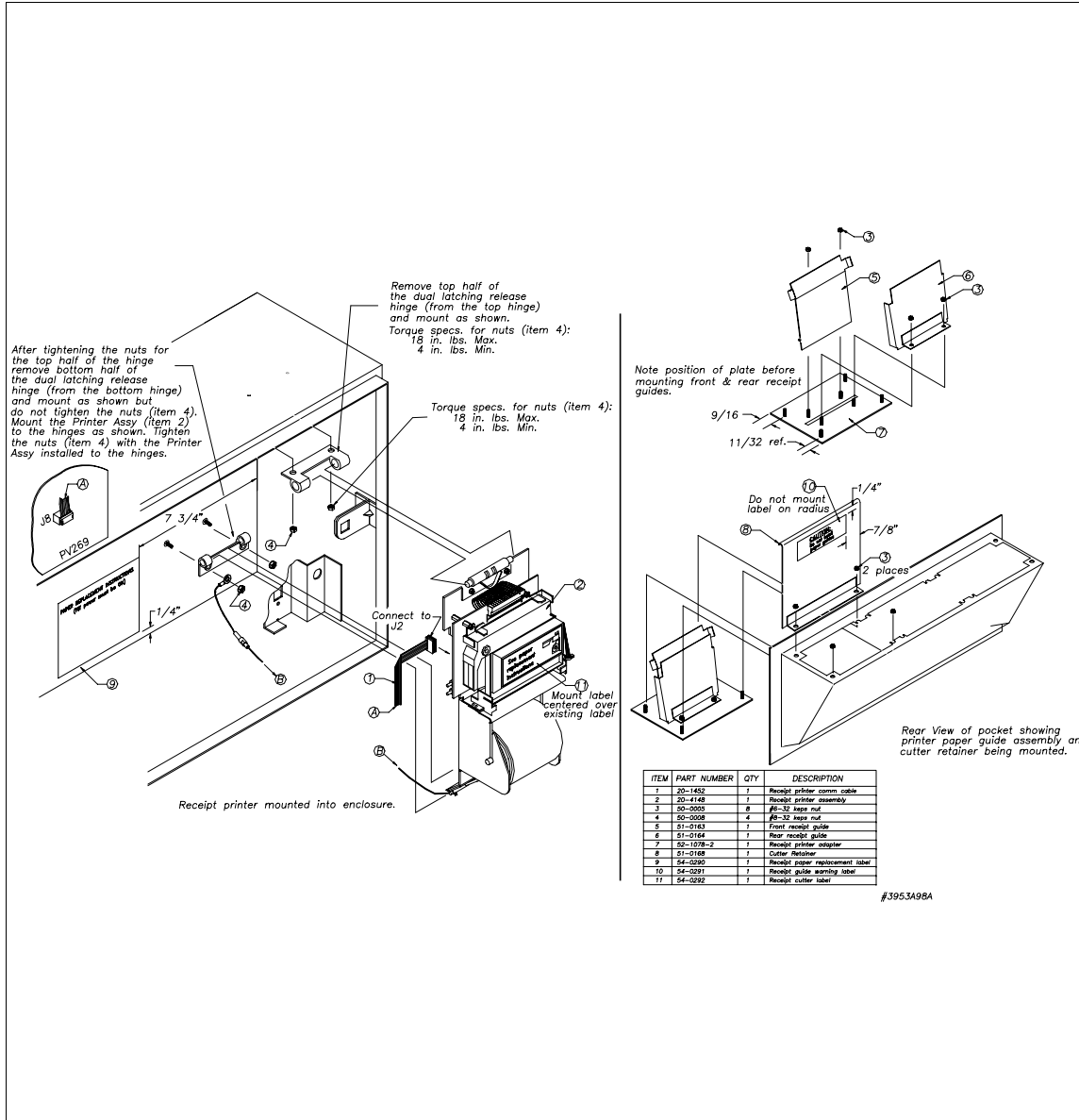


Figure 3 - Receipt Printer Installation (not available with DIV.2 FITs)

To install your receipt printer, refer to Figure 3 and do the following:

1. Remove the half of the hinges that are not attached to the printer chassis by squeezing the hinge clips.
2. Place the top hinge on the two studs in the FIT enclosure and secure with the two supplied #8-32 keps nuts. Tighten the nuts to 4 - 18 inch-pounds.
3. Place the bottom hinge on the studs in the enclosure, and attach it with the two remaining keps nuts. **DO NOT** completely tighten these nuts.
4. With the paper roll at the bottom, squeeze the bottom hinge clips on the printer, and place it on the bottom hinges. Swing the printer upward, squeeze the top hinge clips together, and push the printer onto the top hinges in the FIT.
5. Tighten the two bottom keps nuts to 4 - 18 inch-pounds. Test the hinge alignment by removing the assembly: press the hinge clips together, remove the printer, then put it back onto the hinges to see if everything slides easily.
6. Attach the 10-pin ribbon cables between the J2 connector on the PV267 printer board and the J8 connector on the PV269 FIT board.
7. The receipt guides and cutter retainer mount to the door pocket. Remove and discard the blank adaptor plate from the pocket. Mount the guides to the new slotted adaptor plate as shown.

NOTE: *When the door is open, the receipt guides appear close together. The guides and cutter retainer are self-aligning, however, and **DO NOT** need adjustment.*

Notes:

3.0 Conduit and Wiring Installation

This section gives ideas on installing conduit to your FIT, and then running various types of wiring through the conduit.

3.1 Power & Petro-Net Conduit

The conduit described in these instructions must be *rigid steel* conduit. Plastic conduit, or any other material, cannot be used.

1. First, mount a junction box within three feet of your indoor site controller.
2. Install rigid steel conduit(s) from the FIT(s) to the Petro-Net junction box.

There will be five conductors going through this conduit: three 14 AWG power wires, and two 18 AWG Petro-Net wires (as a twisted pair). ONLY FIT power and Petro-Net wires can be in this conduit!

The total length of Petro-Net wiring cannot exceed 5,000 feet.

3. When installing multiple FITs, connect conduit and wiring in "daisy chain" fashion (from one FIT to the next) or in a "Y," where all terminals connect back to one common point.

3.2 Power Wiring

For each FIT, pull three #14 AWG power and ground wires through conduit from the circuit breaker panel.

3.3 Pulsar Wiring

If pulser wiring is run in the same conduit as the pump power wiring, the pulser cable *must be shielded*. Shielded pulser cable is available from Petro Vend: For two-conductor cable order part number 12-1025. For four-conductor cable, order number 12-1026.

Notes:

4.0 Setup & Configuration

This section explains the FIT DIP switches, the FIT LEDs, setting the contrast of the FIT screen (if equipped), and receipt printer board setup (all shown in Figure 4, below).

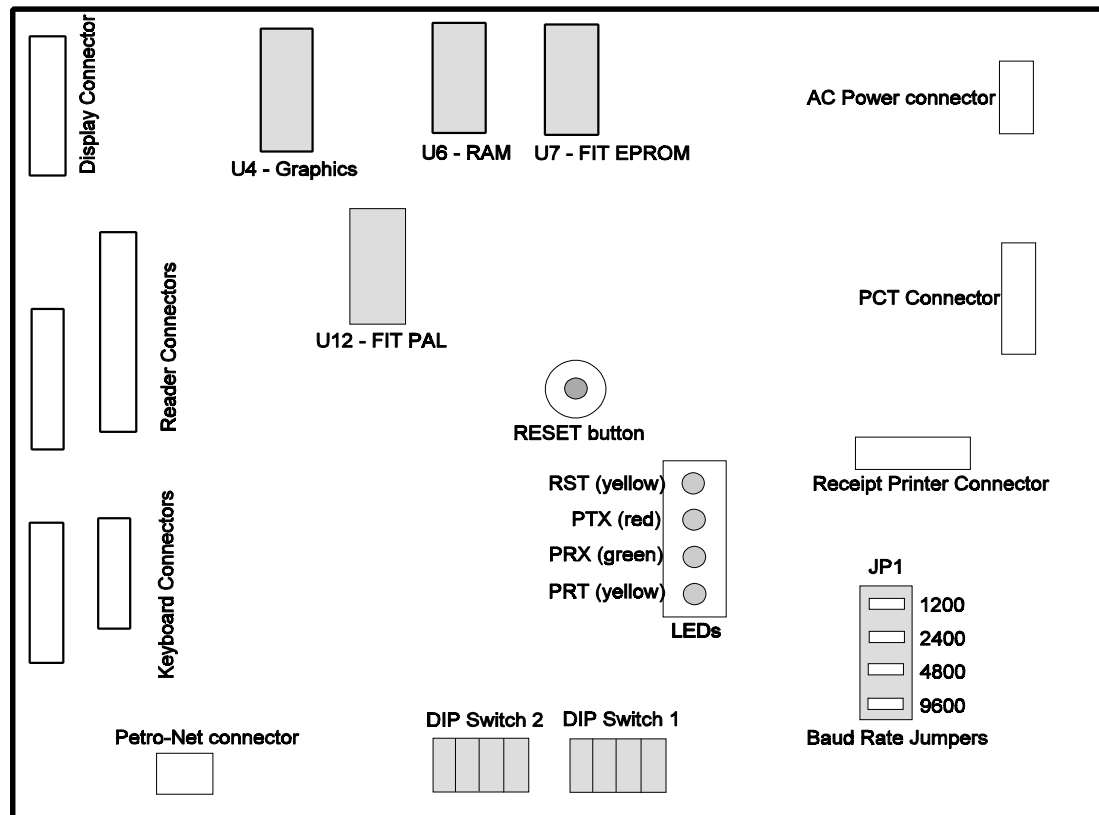


Figure 4 - FIT PC Board Overview (PV269)

4.1 FIT DIP Switches

Refer to Figure 4 on the previous page for switch location.

4.1.1 FIT Switch #1

POSITION 1 OPEN for normal operation. CLOSE to enable Test Mode (contact Petro Vend for instructions on using this mode).

POSITIONS 2-4 Sets the type of display in your FIT:

SWITCH #1 POSITIONS 2, 3, 4			
Display	Status		
	Position #2	Position #3	Position #4
1 x 40	OPEN	OPEN	CLOSED
2 x 16	OPEN	CLOSED	CLOSED
Epson graphics	CLOSED	CLOSED	CLOSED
Stanley graphics	OPEN	OPEN	OPEN

4.1.2 FIT Switch #2

Position 1 determines which tracks on a magnetic card are read by the FIT reader (OPEN is default setting):

POSITION 1 If OPEN, only card Track 2 data is read. If CLOSED, both Tracks 1 and 2 are read.

POSITIONS 2, 3 FIT address. *Each FIT must have a unique address, below.*

SWITCH #2 POSITIONS 2, 3		
FIT		
	Position #2	Position #3
1	OPEN	OPEN
2	OPEN	CLOSED
3	CLOSED	OPEN
4	CLOSED	CLOSED

POSITION 4 Allows (OPEN) or prohibits (CLOSED) card number entry on the keyboard after three bad card reads.

4.2 FIT Board LEDs

The table below identifies the LEDs on the FIT board:

PV269 FIT BOARD LEADS		
Label	Color	Function
CR2	Yellow	Reset
CR3	Red	RS-485 Petro-Net Transmit
CR4	Green	RS-485 Petro-Net Receive
CR5	Yellow	RS-485 Petro-Net TX Enable

4.3 FIT Graphics Display Contrast

If you are having trouble reading the characters on the FIT graphics display, adjust potentiometer R5, located inside the FIT on the Display PC board. This PC board is mounted on the inside of the FIT door. The potentiometer is a small, square component in the upper-right area of the PC board.

The potentiometer is single-turn. Use a small screwdriver to either INCREASE contrast (turn clockwise) or DECREASE contrast (turn counterclockwise).

A “normal” contrast setting is obtained when R5 is centered.

4.4 Receipt Printer Board Setup and Test

The receipt printer board (Figure 5) is beneath the receipt printer in the FIT enclosure.

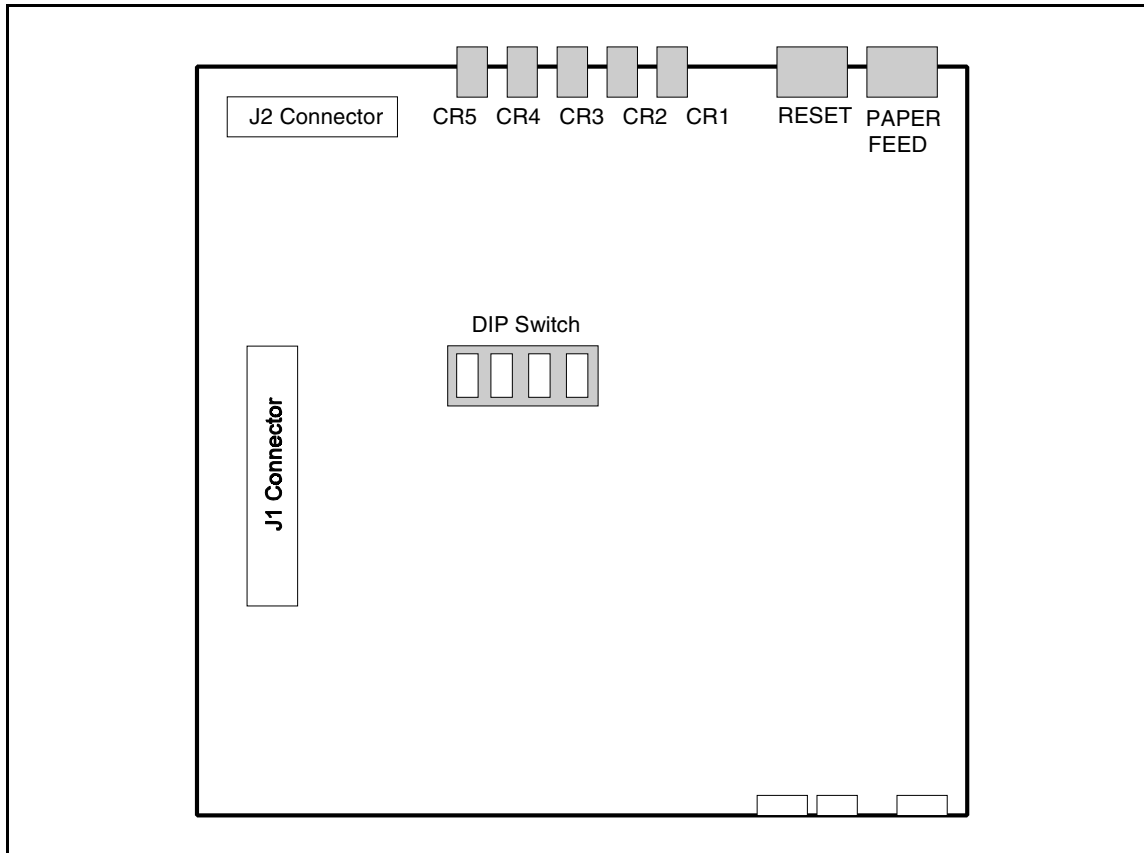


Figure 5 - RECEIPT PRINTER BOARD (PV267)

4.4.1 Receipt Printer Board DIP Switch

See Figure 5 on previous page.

POSITION 1 Printer format, either "US" or "UK". See table below.

POSITIONS 2, 3, 4 *Not currently used - leave OPEN.*

PV267 RECEIPT PRINTER BOARD SWITCH		
Position	Status	Function
1	OPEN	USA format
	CLOSED	UK format
2	OPEN	<i>not used</i>
3	OPEN	<i>not used</i>
4	OPEN	<i>not used</i>

The USA format uses the dollar sign ("\$\$") to indicate product prices and totals. The UK format uses the pound/sterling sign ("£") for these values.

4.4.2 Other Printer Switches

FEED/CUT The paper FEED/CUT switch does two things:

1. Press and hold the switch to feed paper through the printing mechanism as long as the switch is pressed.
2. Press and *immediately release* the switch to activate the paper cutter.

RESET Resets the printer. If the printer jams (LED CR2 flashes), press the reset button after clearing the jam.

Printer Test Press *both* the FEED/CUT and RESET switch *simultaneously*. Then, release RESET and hold FEED/CUT until printing begins. When the printer is properly installed and functioning, it prints a message with the printer software version, three type sizes in both red and black, the position of DIP switch #1, and the selected currency symbol. When the test is completed, the receipt is cut.

4.4.3 Receipt Printer Board LEDs

The five LEDs on the receipt printer board indicate the following:

PV267 RECEIPT PRINTER BOARD LEDES		
Label	Color	Function
CR5	Green	RXD
CR4	Red	TXD
CR3	Yellow	DTR
CR2	Yellow	Error
CR1	Yellow	Reset

RESET (CR1) - flashes continuously if the program for the printer microcontroller is disrupted or if the microcontroller has failed.

ERROR (CR2) - indicates an error with a flashing sequence. The LED flashes once, twice, or three times, pauses, and then repeats the sequence. CR2 flashes once when the printer motor is jammed, twice when paper is low (or out), and three times when the printer cutter is jammed.

RXD, TXD, DTR (CR1, 2, 3) - These three LEDs indicate data being received, being transmitted and data terminal ready state.

Index

DIP Switches	12
Display Contrast adjust	13
DIV.2	1
FIT	
DIP switches	12
Graphics contrast	9, 13
PC board layout	11
Wiring	9
FIT overview	1
Installation	3
Journal printer	
Switches	15
Test	15
LEDs	13
Receipt printer	6
Relay boards	4
Specifications	1
Test mode	12
Three Bad Read setting	13
Track 1/Track 2 Reads	12
Wiring	9



OPW Fuel Management Systems
6900 Santa Fe Drive
Hodgkins, IL 60525
708-485-4200