Department for
**Innovation,
Universities** &
Skills

SUPPLEMENT TO CERTIFICATE
Series: 023

Certificate No.	Supplement No.	Certificate No.	Supplement No.
1828/40*	54	2286	68
1918	84	2461/26*	34
1940	86	2486	65
1958/53*	67	2536	72
1967/66*	75	2616	12
2017	88	2619	54
2162	103	2650	66
2176	91	2780	19

(*) Refers to the dispenser only, the self service device described in these certificates is not part of this approval.

Submitted by: **Radiant Systems
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Authorisation is hereby given by the Secretary of State for Innovation, Universities and Skills for the following Certificate of approval relating to a pattern of a liquid flowmeter to be modified as described below.

As described in the following Certificates but modified to have an alternative self service device, as detailed in the descriptive annex, and having the following characteristics:-

DISPENSER(s):   Dispensers described in above certification numbers.

FORECOURT
CONTROL UNIT: DOMS PSS 5000 as described in the descriptive annex.

COMBINED KIOSK
CONTROL & POINT
OF SALE SYSTEM: Radiant POS (RPOS) – as described in the descriptive annex.

Signatory: M A Bokota
for   Chief Executive

Reference No: T1118/0034

Date: 4 September 2008

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1 INTRODUCTION

This certificate describes the Radiant POS (RPOS) self serve device system connected to fuel dispensers. The system consists of a Site Controller and several POS tills.

POS tills are connected to the Site Controller via a LAN switching hub. The site controller is the main control unit of the whole system. It is responsible for the transaction management, management of prices, products maintenance, and electronic payment system.

Every POS till has a touch sensitive screen and it is equipped with a barcode scanner, thermal receipt printer and cash drawer. These peripherals are connected to the POS till via COM serial ports. In addition, there is a customer display connected to POS till via VIDEO cable or serial cable.

Radiant supports two different solutions of handling communication with forecourt devices:
- **DOMS Controller (Figure 1)** – Site Controller is connected to DOMS Fuel Controller box which can handle different forecourt devices of different manufacturers and provide a uniform interface to these devices for any POS system.
- **IFSF LON (Figure 2)** – IFSF LON is a network operating with standardized IFSF devices. IFSF is a uniform way of communicating between forecourt devices of various manufacturers supporting the IFSF standard.

All POS tills are connected to the local area network (LAN) by means of category 5 or 6 cabling to the main LAN switch.

2 CONSTRUCTION

2.1 Architecture with DOMS PSS 5000

When using the DOMS for controlling forecourt devices, all the devices are connected to the DOMS unit by individual cables. The DOMS is connected to the Site Controller via a serial cable. If a fault-tolerance solution is required, one of POS's is also connected to the DOMS Fuel Controller so that if the connection between the Site Controller and the DOMS is broken, the connection to the DOMS is via a POS.

2.1.1 Forecourt controller DOMS

The DOMS PSS5000 forecourt controller comprises a metal rectangular box housing the following main components. The general arrangement is shown in Figure 3.

- A power supply
- A Central Processing Board (CPU) with 8 serial ports (CPB508):
  this has an LCD 16x2 character alphanumerical display and a keyboard comprising 5 keys for navigating the menu options. An adjacent legend describes the key functions, as shown in Figure 4.
- Hardware interface modules:
  dispensers are connected to the CPU board via an appropriate hardware interface module compatible with the communication protocol of the dispenser.

2.1.2 Software

The DOMS PSS5000 has a legal authority module (LAM) for the UK containing specific parameter values and functions. Reference to the PSS 5000 software version number is not normally required, but may be accessed as follows: typical LAM version number is 498-06-100 and 0D6C for the checksum number. These can be viewed by selecting the appropriate menu heading using the operator keys on the CPU. The LAM version number and checksum are accessed as follows:

When the PSS is powered on, the first line displays the application software version and the current time. The second line displays the W&M Service menu. Pressing the Down Arrow once, displays the W & M menu, which comprises 7 sub-menus, W.1 to W.7. Press the right button once to obtain W.1 – LAM INFO and press again to display Version and Checksum information.

2.2 Architecture with IFSF LON

LON is an industry two-wire network designed as Ethernet or ring topology. Every POS is connected to LON through XLON USB adapters (Figure 5). If the connection from the particular POS to LON is broken, the POS can reuse an existing connection to another POS.

2.3 PC based Site Controller

The Site Controller is a Radiant S4600 Site Controller as shown in Figure 6.

2.4 PC based Point of Sale (POS) units

The POS tills are PC devices that are equipped with a touch-screen monitor (with optional built-in card swipe) that has a set of standard device connections, a customer display unit, a printer, a scanner, a cash drawer and a confirmation order screen.

This system uses the following POS terminals:

-   Radiant 1520 (Figure 7)
-   Radiant P1220 (Figure 8)

The printer is an Epson TMT-88IV thermal receipt printer. Alternatively any compatible CE marked printer may be connected.

2.5 Uninterruptible power supply

The entire system must be powered by an Uninterruptible power supply to ensure that uncompleted fuel trans-actions can be completed for at least 15 minutes after the power is switched off.

2.6 Software

2.6.1 Operating System

Microsoft Windows XP operating system is installed on each POS terminal and the site controller.

2.6.2 RPOS software

The POS software consists of several modules. Every module is assigned with a version number. The version numbers are available to view from the POS application menu. The legally relevant files and version numbers are listed below:

Legally relevant file	Version number	MD5 Hash (checksum)
IFSF:		
IFSF_FuelManager.dll	2.2.153.0	039c431e5a710e8213555c1f2f130269
DOMS_Fuel Manager.dll	2.2.153.0	56993605ec4bb30b15a47744cfb7f3ba
Dispenser_FuelInterface.dll	2.2.153.0	2a7b832c1c81e472a20d8944b8cd9c7d
POS_FuelInteface.dll	2.2.153.0	e9a2e54b775679776033a6bfb30d0466
FuelPumps.dll	6.2.1703.0	f42ffa0a4050e04bffbc927b37faaaf8
FT-DOMS:		
Dispenser_FuelInterface.dll	1.0.0.19	b0f842ea629fd8460805b2a80e5e2ba7
DOMS_Controller.dll	1.0.0.19	c61630293af13e92fe593ade3e88f6c5
Doms_FuelManager.dll	1.0.0.19	e2e83c2f6cf2abe209eda5e531378a90
POS_FuelInteface.dll	2.2.153.0	e9a2e54b775679776033a6bfb30d0466
FuelPumps.dll	6.2.1703.0	f42ffa0a4050e04bffbc927b37faaaf8

To find out the version number of software running on POS:

1. Touch Other Function button on.
2. Touch Version Info button.
3. Scroll up and down when looking for the particular module. You can also print out the list by touching Print Details button (Figure 9)

2.6.2.1 Software verification method

The media verification tool is located on the site controller (SC) in folder 'C:\Support Tools\nwml_rpos_version_check'. There are two subfolders specifically for IFSF and FT-DOMS. This tool performs a validation of the certified files (DLL) and the version information; both are stored in subfolders 'certified'. Comparison is against the files stored in the paths 'c:\Program Files\Radiant\fastpoint\bin\' on the SC and POS's.

The following verification tools are used:
fsum.exe   freeware MD5 Checksum calculation and verification utility.
VerInfo.exe   freeware tool for extracting information about vendor and version of executable files (exe, dll)

1. On SC navigate to 'C:\Support Tools\nwml_rpos_check\IFSF' or 'C:\Support Tools\nwml_rpos_check\FTDOMS' depending on system configuration.
2. Read the readme.txt file in 'C:\Support Tools\nwml_rpos_check\' and run _start_test.bat script in the FTDOMS or IFSF directory.
3. Relevant dlls are downloaded from POS's and SC to 'downloaded\POSx' directories (x stands for POS number) and version information files are created for all of them. All these files are then verified against the files in the 'certified' directory and reports are created. The text 'Test passed!' should appear on the screen.
4. Reports are created for each POS in 'IFSF'/'FT_DOMS' folder. They are named 'POSx_report.log'. In the result file there is version information and MD5 checksums of all the downloaded dlls together with a summary of the verified hashes of the

certified and downloaded files. There should be 'OK' written next to all the dll files at the end of the report.

3   OPERATION

3.1   System Start-up

After the operating system on POS till is loaded, the main POS application automatically starts up. It is not possible to cancel loading of POS application without entering a password. When the application is loaded, it is not possible to exit the application and to have an access to operating system without entering a special password.

Login

When POS application is loaded, the user needs to log into the system by typing a Personal Identification Number.

3.2   POS Application overview

The Radiant POS screen is divided into several parts as shown in Figure x.

- **Task Bar**
  The taskbar in the lower level left corner of the screen has buttons for the most common tasks, including using the POS, using menus or using setup features

- **System Indicators**
  The system indicators provide information about how the POS terminal is operating

- **Main POS Menu**
  The main POS Menu displays buttons that for purchasing on fuel items and services.

- **Tender Buttons**
  The Tender buttons provide various payment options to facilitate payment process.

- **Virtual Receipt**
  When adding items to an order, they appear on the receipt display as individual line items and the total sales amount changes accordingly. This area is referred to as Virtual Receipt because you can select specific items on a receipt to be changed or modified.

- **Function Buttons**
  Next to the Virtual Receipt, the POS displays multiple function buttons. These buttons provide access to additional screens and functions that allow you to modify the receipt, perform advanced sales transactions, and access other functions (e.g. receipt functions – void receipt, hold, recall, coupons and refunds; drawer functions – pay in, pay out, open drawer, safe drop, drawer totals; operator functions – clock in/out, end shift, lock terminal, version information etc.).

- **Pump Icons**
  These icons provide information about store's fuel pumps. They are often used while ringing up fuel sales. As the pumps are used to dispense fuel, the amount of the sale for each pump is displayed in the pump icon.

-   **Fuel Sale Buttons**

    The Fuel Sale buttons are used when processing fuel sales. By clicking on the Fuel Sale Button, you can move the fuel sale to the virtual receipt, set a prepay, start/stop pump, etc.

3.3 Fuel Functions

On the top of POS screen, you can see a list of pump icons. These icons provide information about the store's fuel pumps. They are often used while ringing up fuel sales. As the pumps are used to dispense fuel, the amount of the sale for each pump is displayed in the pump icon.

3.3.1 Pump Authorization

When the customer picks up the nozzle, it is indicated on the POS. The pump can be authorized by touching the particular pump icon and pressing "Start" button. When the pump is authorized, the customer can start fuelling.
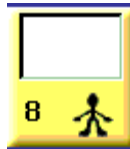
Pump Icon – calling. This symbol indicates that the customer has lifted up the handle of the pump and is waiting for authorization
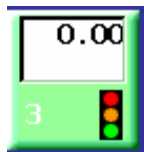
Pump icon – authorized. This symbol indicates that the cashier has touched Start Pump, but the customer has not squeezed the nozzle to begin the fuelling.

3.3.2 Fuelling

When customer is fuelling, the current value that is being dispensed is indicated in the pump icon.
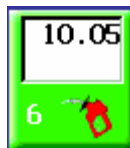
Pump icon – fuelling. This symbol indicates that the cashier has started pump and the customer is squeezing the nozzle

Pump icon – fuelling stopped. This symbol
indicates that the cashier has manually stopped
this pump.

While a customer is fuelling, it is possible to manually stop the pump by touching **Stop Pump** button under the fuel options. For example, if a pump's nozzle falls from a vehicle while fuel is being dispensed, it could cause fuel to be spilled, which creates a dangerous condition.

Stop Pump button

If the customer wants to continue with fuelling, the pump must be opened by touching **Start** button, the current transaction should be tendered and a new transaction should be started.
All pumps can be stopped simultaneously by touching the **STOP all Pumps** button.

Stop All Pumps button

3.3.3　　　Pay for Fuel

After the customer finishes pumping his fuel, the pump icon should return to the Idle icon, and the POS should display the Pay button under the Fuel Sale Buttons as seen in this illustration.

Pay for fuel

The fuel can be paid as follows:

1. Touch the pump icon.
2. Touch Pay button – the system adds the fuel to the virtual receipt display.
3. Touch Cash button (or another method of payment)
4. Touch Exact amount – the POS returns to the previous screen and displays a message on the virtual receipt that the transaction has been finalized. An appropriate text is also displayed on the customer display
5. Receipt is printed.

If the fuel is not paid for configured amount of time, it is indicated as drive-off and POS starts beeping.

3.3.4   Prepay for Fuel

This function is only permitted for dispensers equipped for this function i.e. having a two stage solenoid valve.

The customer can prepay for his fuel before actually pumping.

To prepay for fuel:

1. Touch the pump icon the customer will be using.
2. Touch **Prepay Pump**.
3. Use the keypad to enter the amount and touch **Enter** – the system applies the amount and returns you to the previous menu.
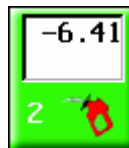4. Click any tender button and tender the transaction. A receipt will be printed.

Example:
- If you enter 10 pounds, the pump displays the amount prepaid as a negative amount:
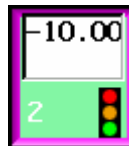
Prepaid fuel

- Once the customer starts fuelling, the pump displays a decreasing negative amount.

Fueling icon

- If the customer does not take the amount to zero before hanging up the nozzle, the system displays the remaining amount the **Refund** button.
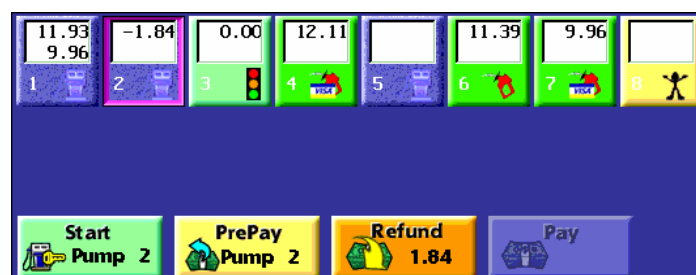
Refund button

5. Touch **Refund** if you need to perform a prepay refund.

6. Tender the refund as normal sale.

3.3.5   Void Fuel Item

When the item is on the virtual receipt and it has not been tendered yet, it is possible to remove the fuel item from there and the item gets back on the pump icon. The fuel transaction does not physically appear on the dispenser, the fuel item is only moved within the POS system.

3.3.6 Refund Fuel

Refunding of fuel refers to refunding fuel sales which have been already paid.

To refund fuel transactions, you must select a transaction to be refunded from the list of transactions. The process outlined below will place the fuel portion of the transaction back in fuel bar so it may be re-rung as a normal sale. The process, however, will not affect merchandise items. You can only refund a fuel transaction if it has been tendered in the current shift

To refund a fuel transaction:

1. Touch the **Other Function** button.
2. Touch the **Scroll Previous** button – the system displays the Scroll Transaction Screen.
3. Review past transactions using the **Back Arrow** button on the Scroll Transaction Screen until you find the correct fuel transaction.
4. Touch the **Erase** button to return to the fuel bar

3.3.7 Browse Previous Sales and Reprint Receipt

Scroll Previous Dialog can be also used for browsing previous sales and reprinting receipts. It is not possible print a copy of the receipt originated on previous business day.

To reprint a receipt:

1. Touch the **Other Function** button.
2. Touch the **Scroll Previous** button – the system displays the Scroll Transaction Screen.
3. Review past transactions using the **Back Arrow** button on the Scroll Transaction Screen until you find the correct fuel transaction. You can see the transaction on the virtual receipt.
4. To print out a copy of the receipt, touch **Print Receipt** button.

When a copy of the receipt is printed, the receipt is marked with "Copy" text.

3.3.8 Price Change

Changing of fuel prices is driven from the Radiant Site Manager software on the Site Controller. When the price change is required, it is sent to all the nodes (POS tills). Before price change takes place, "Fuel Price Change" alert buttons is shown in the Task Bar. This alert is usually shown several minutes (notification time) before the change is going to take effect (effective time).

3.3.8.1 Price change alert

1. Touch "Fuel Price Change" button on POS.

2. Touch "Review" to review the price change or touch "Postpone" to postpone the price change.
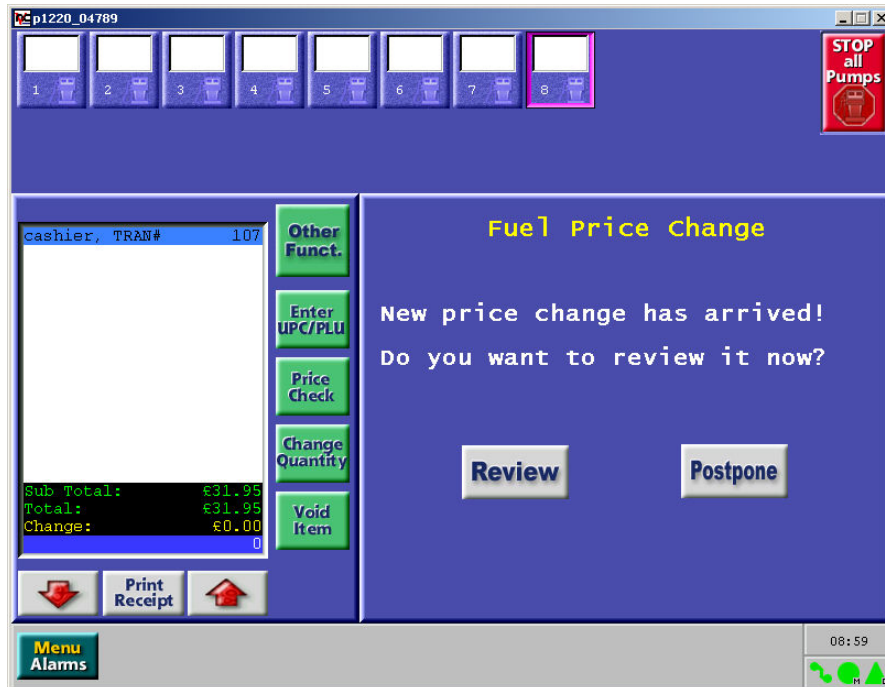
3. Touch "YES" to accept the changes or press "PRINT" to print out old and new prices.
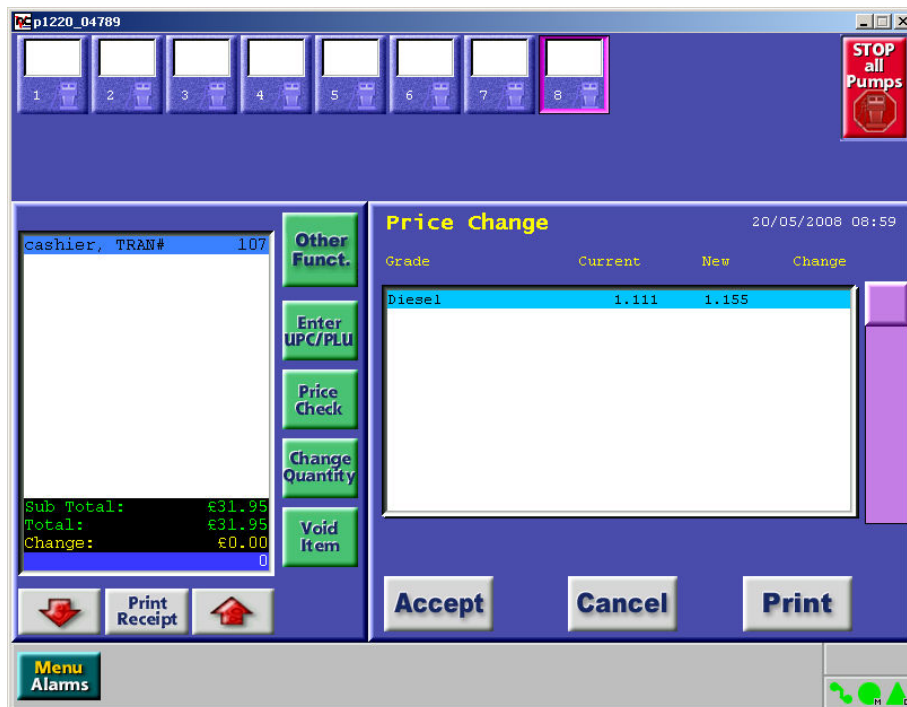
Change Price Request Confirmation Screen

3.3.9   Printing a Receipt

A sale receipt is printed after the completion of each sale. If the sale lines contain a fuel item, the format of the printed line will contain the following:

- Pump Number
- Product name
- Sale value
- Litre Amount
- Price (per litre)

3.3.10   Customer Display unit

For the benefit of the customer, a customer display unit (CDU) must be visible to the customer. The CDU is configured to display fuel transaction data. With respect to Fuel sales, the display will show the following details:
- Litres dispensed
- Price per Litre
- Pump No.
- Product Description.
- Sale Value (in £).
A typical display for a fuel sale is shown in Figure 11.

3.4   **Transaction locking features**

3.4.1   With both current and stored sales for a pump in the **not paid** status, no further Sales may be authorised on that pump until either of the sales for that pump has been paid. On the operator display each fuel transaction is accompanied by a sequence number 1 or 2 as shown below.


```
1  3.94L UNL92  £4.81
2  2.38L UNL92  £2.90
1  BACON SANDWI £31.95



       Subtotal £39.66
```

3.4.2   Prices changes are communicated to the DOMS, which ensures that each dispenser prices change cannot be implemented until the current delivery for that dispenser is completed.

3.4.3   Any single transaction can only be processed by one POS unit. Upon selection, other POS units are precluded from opening the transaction**.**

3.4.4   A maximum of only two outstanding fuel transactions is permitted against any particular pump, and until one or both of them are cleared, no further fuelling can commence on that pump.

4   **AUTHORISED ALTERNATIVES**

4.1   **Printer**
Any compatible CE marked printer may be connected to the POS till.

4.2   **Barcode scanner**
Any compatible CE marked scanner may be used.

4.3   **Cash drawer**
This may be any CE marked simple cash drawer with a solenoid release.

5   **RECOMMENDED TESTS**

5.1   Check that the legally relevant software version numbers and checksum number are correct for the system configuration (see 2.6.2).

5.2   Check that the UPS maintains power to the system allowing uncompleted fuel trans-actions to be completed for at least 15 minutes after the power is switched off.

5.3   Check that the volume and calculated price shown on the dispenser(s) correspond with the customer display and point of sale receipt. For installations with more than one dispenser, the dispenser number must accompany the volume and calculated price.

5.4   Check that no more than one additional transaction can be stored for each dispenser. Each transaction must be accompanied by a clear indicator representing the current or stored transaction.
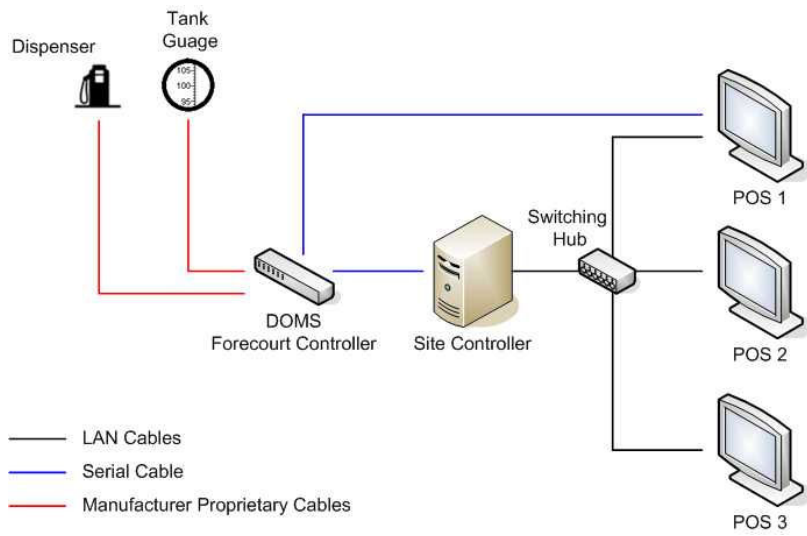
Figure 1   Solution architecture with DOMS Controller

Figure 1   Solution Architecture with IFSF LON

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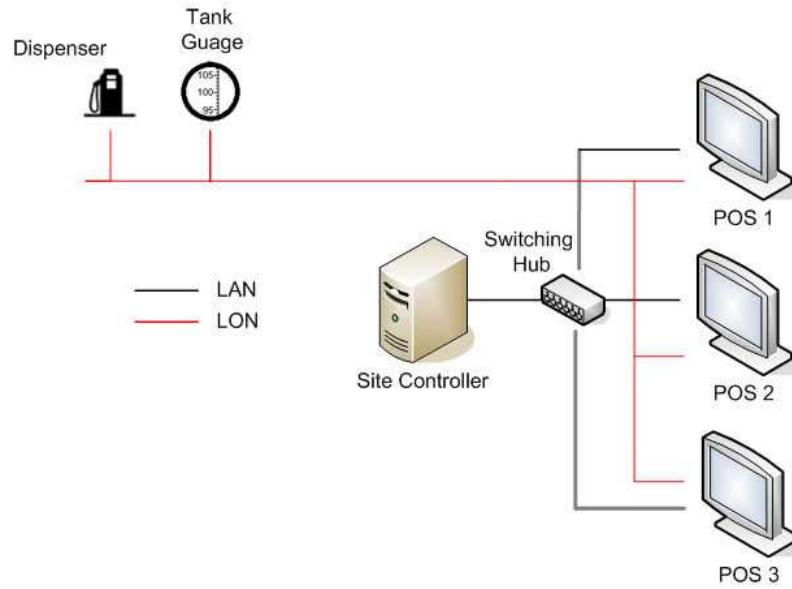
Figure 3   **DOMS PSS 5000**

Figure 4   **Central Processing Board (CPB508) display and menu navigation keys**

Figure 5   XLON USB adaptor

Figure 6   Radiant S4600 Site Controller

Figure 7   Radiant 1520 POS terminal
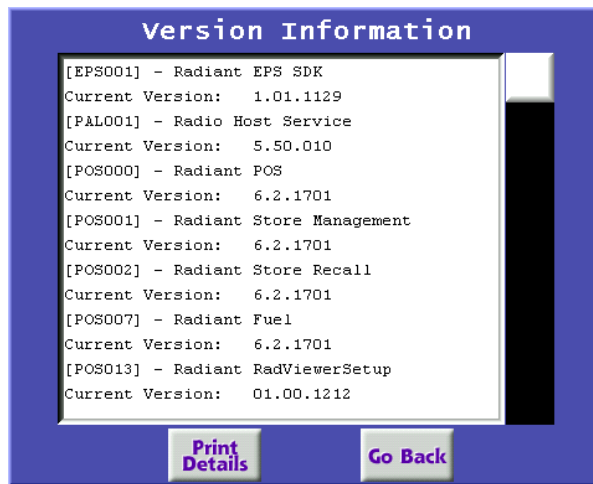
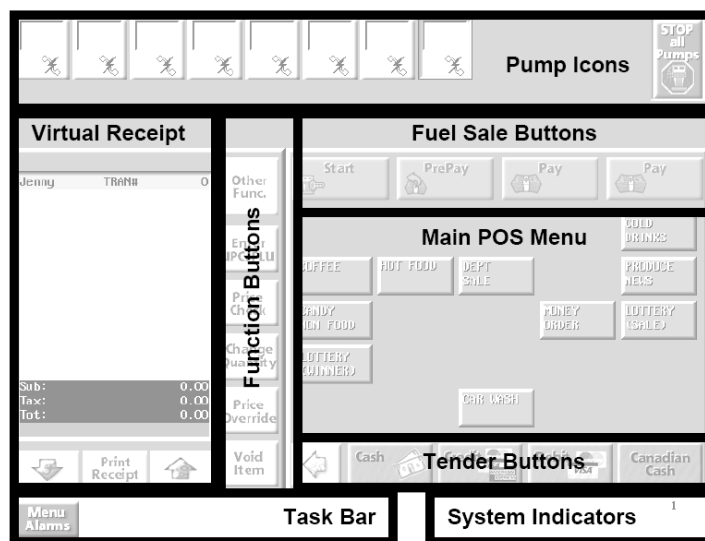**Figure 8   Radiant P1220 POS terminal**

Figure 9   Software version information window

Figure 10   Operator screen layout

Figure 11   Customer display layout

Figure 12   Sample customer receipts (standard and prepay)