PSS 5000 Forecourt Controller

Product Guide

Petrol Station Forecourt Controller

About This Documentation

Purpose

This documentation provides a high-level description of the PSS 5000. It describes the most important features and the associated benefits that can be obtained by using a PSS 5000 in a petrol station automation system. It also lists the hardware elements and all the device protocols supported by the PSS 5000.

Audience

This documentation is designed for any person who is preparing to automate a petrol station forecourt. This could be:

- System integrators

- Oil company representatives

- POS suppliers

Contents

1 Introducing the PSS 5000

Description of the PSS 5000

The PSS 5000 enables you to control and monitor forecourt devices and integrate a commercial Point-Of-Sale (POS) system (built for dry-stock sales) in a petrol station environment, or to automate an unmanned site that does not have a POS.

The PSS 5000 offers generic interfaces to the various types of forecourt devices and their associated business logic. And with its modular design, the PSS 5000 can be tailored to almost any existing or new petrol station forecourt/POS system. The modular concept also gives scalability. When changes to a forecourt occur, then the PSS 5000 system adapts readily by the addition or change of modules.

The PSS 5000 also offers unprecedented connectivity, including TCP/IP (via both Ethernet or serial interface) as well as FTP and web server access for remote monitoring, remote control and diagnostics of the forecourt devices and their operation. Using these features, it is possible to monitor stock levels remotely and enable easy generation of wet stock reports and optimize distribution. It is also possible to gather information and make diagnostics on the equipment remotely, which saves on traveling costs and makes regular, planned maintenance easier – reducing downtime and keeping maintenance costs to a minimum.

The diversity of the equipment types on the forecourt, the protocols they use and their software versions require (sometimes rather complex) real-time control of the serial communication and a fast response to minimize customers' frustrations and impatience. This is often difficult to achieve with the operating systems used by POS systems, but the PSS 5000 is built to handle such requirements.

PSS 5000 generally provides the functionality and interfaces needed to integrate Point-Of-Sale solutions for supermarkets or shops into a petrol station environment. This enables fast time-to-market for POS suppliers, who may not have the necessary resources for these special tasks.

2   PSS 5000 Applications

Overview of PSS 5000 applications

How a PSS 5000 is integrated into a petrol station forecourt and some of the necessary considerations are described in the following topics:

2.1   Basic Scenarios for the PSS 5000

Situations for the PSS 5000

The PSS 5000 is a versatile tool that enables you to control many types of operations taking place on the forecourt. The basic processes are covered by the simple scenarios listed below:

- Attended, stand-alone system
- Unattended, stand-alone system
- Attended, integrated with a POS system

Attended, stand-alone

A simple example of an attended, stand-alone system where the PSS 5000 provides wet stock control is shown below:

Note: The term stand-alone is used when a POS is not present in the system.
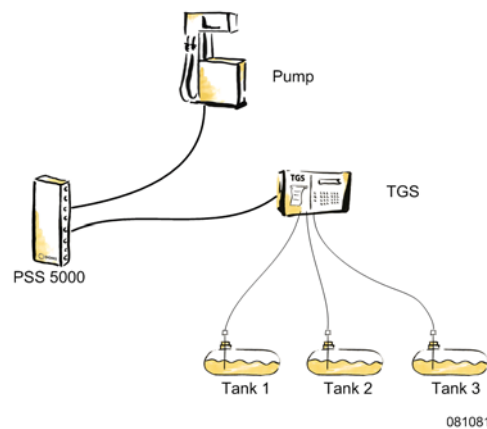
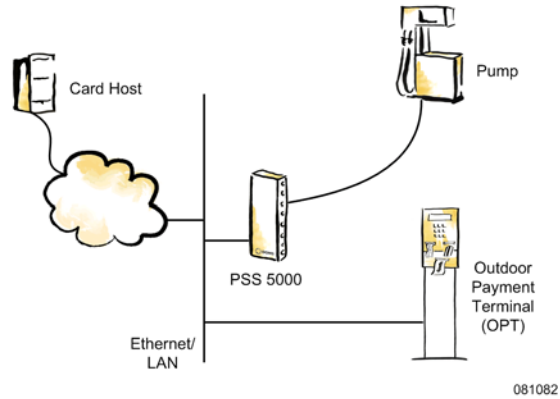

In this scenario, the PSS 5000 is used to provide transaction data to the Tank Gauge System (TGS) so it can verify that all the wet stock movements are legitimate.

The functionality of the attended, stand-alone site can be extended when a head office application, such as Site Info, is introduced. This enables price changes and similar services to be implemented remotely from the head office.

Unattended, stand-alone

A simple example of an unattended, stand-alone system for unattended self-service is shown below:

Note: The term stand-alone is used when a POS is not present in the system.

In this scenario, the PSS 5000 is used to control the fuel pump and authorization is controlled via a 3rd party payment solution for cards and/or bank notes.

Attended, with POS

A simple example of an attended site, with 2 POS connections, is shown below:
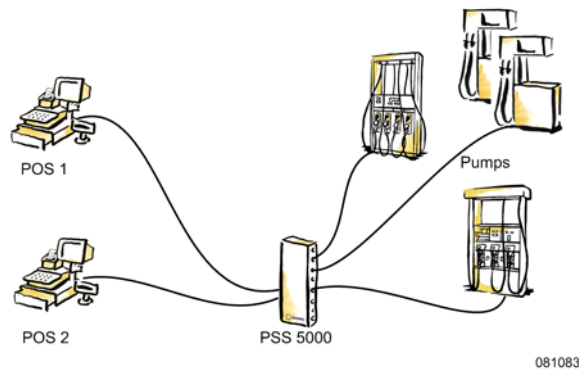
In this scenario, the PSS 5000 is used to control the fuel pumps and connect to the Point-Of-Sale (POS) terminals. Payments for the transactions take place via the POS terminals.

Vehicle Tagging, either attended or unattended

A simple example of an attended site that uses vehicle tagging is shown below:

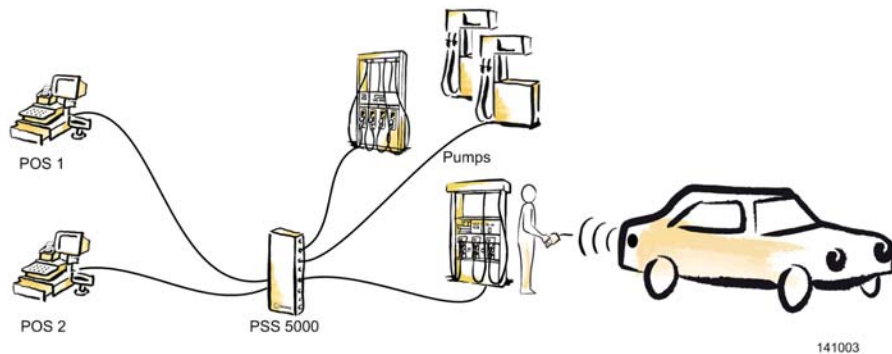In this scenario, the vehicle is identified using a vehicle inlet tag, which is read by the nozzle reader. When a valid tag is presented, the PSS 5000 is able to authorize the dispenser to start. If the connection between the vehicle tag and nozzle reader is broken, then the dispenser stops the fuelling until the two are reconnected. Payments for the transactions take place via the POS terminals.

2.2   Application Solutions

Combining the basic scenarios

By combining the basic scenarios, it is possible to provide a solution for the individual sites. The illustration below shows a combination of all the basic scenarios, which better represents the set up of a retail petrol station forecourt:
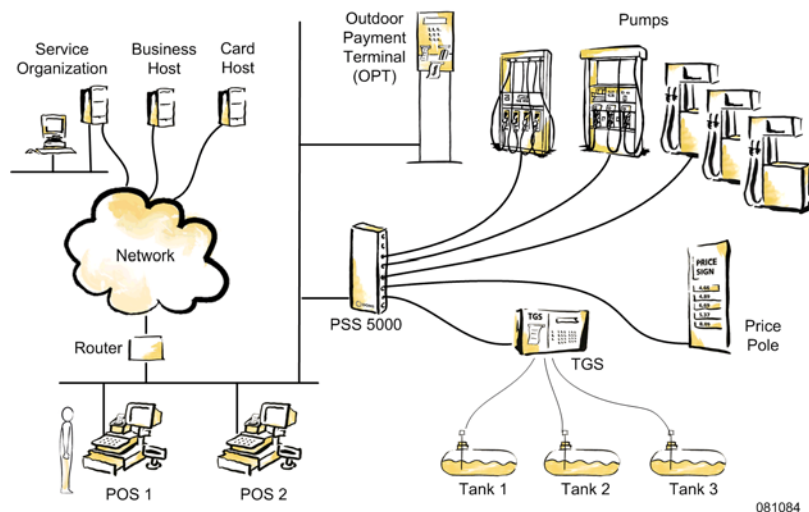
In this scenario, the PSS 5000 controls the operations of the forecourt pumps, price poles and payment terminals, and provides a generic interface to the Tank Gauge System for a readout of inventory data and deliveries. The PSS 5000 also ensures that any price changes are shown correctly on both the pumps and price poles.

Business hosts and service organizations are able to take advantage of the network connection to the PSS 5000. They are able to monitor the status of the sites, gathering diagnostics and stock movements. This helps them to perform planned maintenance tasks, optimize wet stock deliveries, and upload new software, which can provide new features or improve some of the current operations.

Changes to the forecourt environment

The modularity of the PSS 5000, with its hardware interface modules and associated application software, makes it easy for the PSS 5000 to match any changes made to the forecourt devices. By simply changing the modules to match the devices on the forecourt and updating the application software, the PSS 5000 is able to move forward as the site grows and changes. Because the PSS 5000 with its standardized interface to the POS is situated between the forecourt devices and the POS, then these device additions/changes rarely require changes to the POS.

2.3 Features of the PSS 5000

Positioning and internal workings of the PSS 5000

The typical position of the PSS 5000 Forecourt Controller and the functions it provides in the petrol station forecourt are illustrated below:
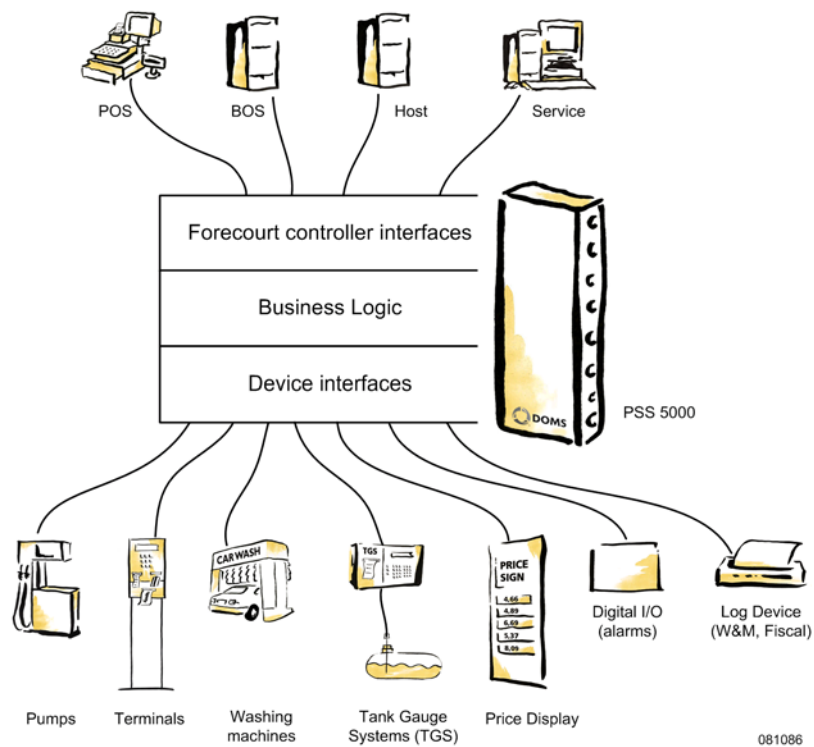
Equipment interfaces in the PSS 5000

The PSS 5000 provides interfaces to a wide variety of forecourt devices. These can be classified in the groups listed below:

Equipment Groups	Links to Supported Devices
Pumps	'List of pump protocols' on page 20
Price Displays	'List of price display protocols' on page 22
Tank Gauge Systems (TGS)	'List of TGS protocols' on page 23
Payment Terminals	'List of terminal protocols' on page 23.
Vehicle Tag Readers	'List of terminal protocols' on page 23

Equipment Groups	Links to Supported Devices
Attendant Tag Readers	'List of terminal protocols' on page 23
Car Wash Machines	'List of car wash protocols' on page 24
Digital I/O equipment	'List of digital I/O protocols' on page 25

PSS 5000 business logic

The PSS 5000 business logic provides a multitude of features. The major ones are listed in the table below:

Application Modules	Features
For Device Controllers	
Dispenser Controller	• Unattended and Attended Service • Calibration/Recirculation Service • Fallback Service (if POS is down) • Totals Monitoring (fraud detection) • Control of Pump and OPT light • On the fly price changes (no pump closures) • Various timers and values can be configured to enable personalized operation at individual sites
Vapor Recovery Controller	PSS can manage German VRM rules or interface to pumps that do.
Wash Controller	PSS has, using the IFSF protocol, two different modes for car washing machines. • Monitoring totals only • Full control
Price Display Controller	Fully configurable - determines which prices to send to the price poles.
Wetstock Controller	Depending on the forecourt devices, it is possible to provide information about: • Inventory • Deliveries In addition, the controller can send fuel transactions to connected tank gauges. This is for: • Auto-calibration • Reconciliation • Sudden Loss Detection
Payment Controller	This is a sequence controller between the payment server (with its card schemes/rules) and the application to drive the terminal user interface. It can work with both intelligent and unintelligent terminals, as well as various types of payment servers.
Log Controller	In some scenarios, the PSS 5000 supports: • EFT logging • W&M logging • Fiscal logging

Application Modules	Features
Digital I/O Controller	Supports outputs such as: • Pump indicator (OPT light) • Pump light (Red/Green light) • Timer controller out Also supports: • Programmable inputs for external sources. • Status events can be reported to remote applications, such as Doms Site Info.
Application Managers	
Configuration Manager	Handles various configuration methods. Primarily, PSS Configurator or direct POS Protocol commands.
Operation Manager	Manages operational changes due to, for example, the time of day or night, rush hour traffic, or a fall-back situation.
Transaction Manager	Controls storage, logging and clearance of transaction data from clients, POS terminals or a payment server.
Price Manager	Supports: • On the fly price updates of both pumps and price poles • Scheduled price changes • Price increases appear on price poles before they are sent to the pumps • Tagging of all transactions with price set ID.
Service Manager	Includes a web menu that provides: • Embedded trace tool • Error history of all devices • Real-time operational status of all devices
Embedded Payment Server	Supports: • Offline fuel card validation using white lists and black lists • Online fuel card validation using IFSF ISO 8583: Oil protocol • Attendant tag control and account management
Embedded Back Office System	Supports Open and Closed reports which contain, for example: • Pump totalizer period changes • Gauged wetstock changes • Till Totals
Performance Measurements	Measurements for each pump, for example peak and average flow-rates, time to start and activity (number of transactions).

Forecourt controller
interfaces

The services present in the PSS 5000 are available through several interfaces. These, together with a brief description of what each interface offers, are listed in the table below:

Interfaces	Description
Doms POS Protocol	This is a connection-oriented protocol. It is designed to communicate with a POS terminal where a constant connection is required. It also supports communication with typical Back Office applications.
Doms Host Protocol	This is a connectionless protocol (uses HTTP). It is designed to communicate with remote applications where a constant connection is not required.
Web Service Menu	These 2 interfaces (web server and FTP server) are the primary user interfaces for technicians servicing the PSS 5000.
FTP Server	

3   Hardware in the PSS 5000

Overview of hardware elements in PSS 5000

The hardware components in the PSS 5000 are designed and built specifically for the petrol station environment. This ensures that they operate reliably and safely even when everyday situations, such as power surges and electrical emissions from other devices or lightning, occur. To learn more about the hardware, the individual components are described in the following topics:

Concept of the PSS 5000 hardware

Each PSS 5000 includes the following base elements:

- Cabinet, which functions as a connection box and houses the other hardware components.

- CPU Board, which provides the processing power of the unit.

- Power supply, which is selected to match the local mains supply.

After these base elements come the Hardware Interface Modules (HIMs). These must be selected to match the specific devices present on the individual petrol station forecourt. The number and types of HIMs are selected to fit the individual stations. If the connection requirements to the forecourt devices change, then new modules can be added and unused modules removed.

Illustration of the PSS 5000 cabinet and contents

The illustration below shows both the outside of the PSS 5000 cabinet and its contents (front door open).
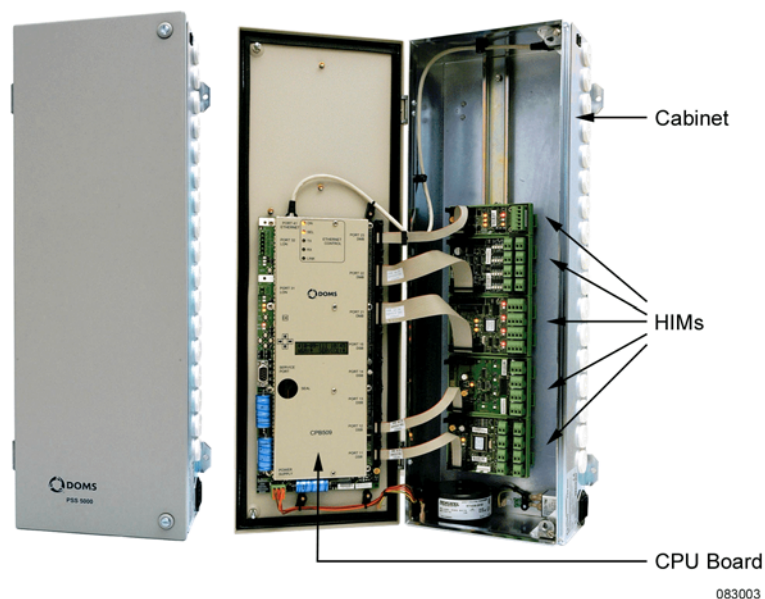
This is an example of a standard cabinet with a 230V power supply and a CPB509 processing unit.

3.1 Cabinet

Description of the PSS 5000 cabinet

The cabinet is a single box solution. It houses the hardware and software components of the PSS 5000, and it functions as a connection box for all the forecourt devices.

The cabinet is robust, which protects the contents from knocks and jolts, and when closed the cabinet ensures that the PSS 5000 retains its CE approval. It is designed to be mounted on a wall in a non-hazardous environment (electrical room or office). This gives easy access to the contents of the box via the hinged door on the front.

PSS 5000 cabinet specifications

For a full list of specifications for the cabinet, see 'PSS 5000 Cabinet specifications' on page 26.

3.2 CPU Board

List of CPU Board parts

The PSS 5000 has its own CPU Board, which consists of the following parts:

- CPU processor and operating system
- Flash-based program memory
- Ethernet support
- Number of physical ports
- Local Service Panel
- Battery-backup RAM
- Sealing plug socket

CPU Board processor and operating system

The CPU Board, with its processor and operating system provides a fast and stable platform for the PSS 5000 – a platform that is not shared by other demanding resources, such as a POS system. The exclusivity of this resource is essential for forecourt operations where customers are serving themselves and expect the devices to respond quickly. Failure to provide these fast responses can result in customers taking action that could stress the system and result in prolonged delays.

CPU Board physical ports

The CPU Board is fitted with a number of physical port connectors. The table below provides descriptions of the individual ports.

CPU Board Ports	Descriptions
DSB	These ports provide serial interfaces to the devices connected to the PSS 5000.
DMB	
Ethernet	The Ethernet port enables you to connect the PSS 5000 to a PC, either directly or through a Local Area Network (LAN).
RS232 (Service)	This Service Port provides direct access to the PSS 5000 Web Menu and FTP server. It is an alternative for personnel, such as service engineers, who may not have access via the network connection.

CPU Board Local
Service Panel

When a PC is not available, then access to the PSS 5000 is possible using the Local Service Panel. This consists of an LCD and 5 navigation buttons. The LCD enables you to read the Service Menus and information stored in the PSS 5000, while the buttons enable you to navigate through the menus shown on the LCD and change the values of parameters.

Battery-backup RAM

This battery powered backup RAM ensures that configurations and operational status are preserved during power drop-outs. Data can be kept for several weeks.

Sealing plug socket

The sealing plug enables the application software to be hardware sealed.

PSS 5000 CPU Board
specifications

For a full list of specifications for the CPU Board, see 'PSS 5000 CPU Board specifications' on page 27.

## 3.3   Hardware Modules

Types of modules in the
PSS 5000

These modules are the key to the connectivity and scalability of this product. The PSS 5000 can contain different types of modules:

- Hardware Interface Modules (HIMs)

    - Doms Serial Bus (DSB) modules (for addressable devices)

    - Doms Multiplexed Bus (DMB) modules (for non-addressable devices)

- Other Modules (or special modules):

    - Memory Module

    - Digital I/O Module

    - Car Wash Interface Module

    - Modem Interface Module

    - LON Module

    - Mechanical Pump Interface

3.3.1   Hardware Interface Modules (HIMs)

Description of the HIMs

Hardware Interface Modules are interface adapters. They provide a link between the many types of forecourt devices, with their proprietary serial inter-

faces, and the CPU Board of the PSS 5000. The illustration below is a simple example where 2 pumps are connected to their respective HIMs.
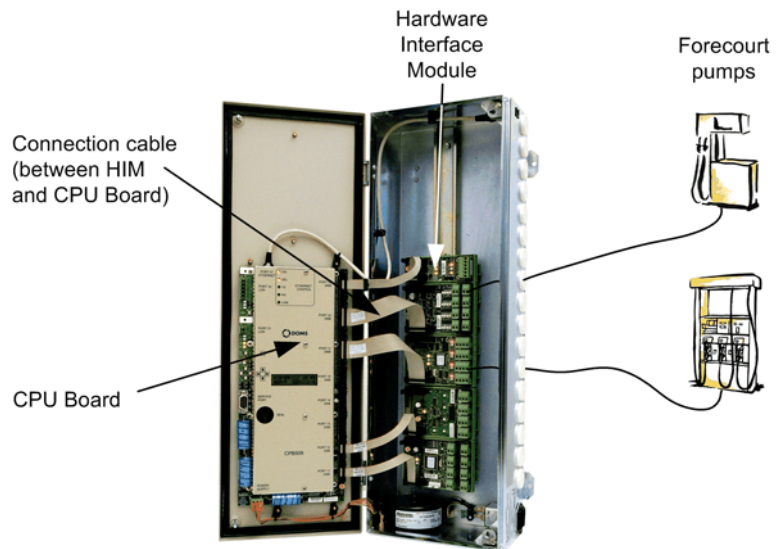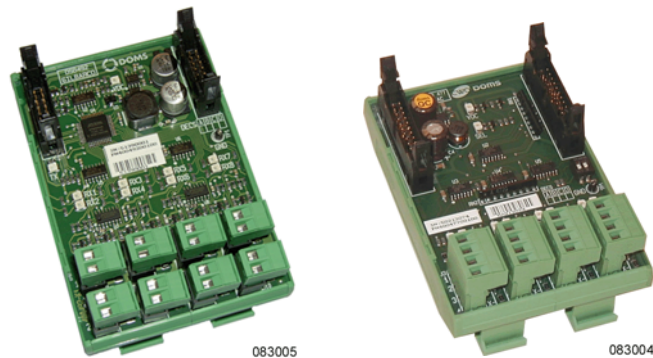

The HIMs provide a scalable solution too. When new devices are added to the forecourt configuration, or old devices replaced with new ones that use a different protocol, it is a simple matter of adding a new HIM or replacing an existing one to suit the new protocol.

Illustration of HIMs   Examples of a DSB HIM and a DMB HIM are shown below.

Remarque: The black serial connectors on the DMB modules are wider than those on the DSB models. This extra width is a result of more pins, which are required for the signals used to control the onboard multiplexer.

PSS 5000 HIM protocols   For a full list of protocols supported by the HIMs, see

3.3.2   Other Modules

Description of the Memory Module

This is a flash-based, non-volatile 8MB memory module. It is an option that provides W&M/MID-approved, long term storage for unattended transactions. Each module has a capacity for almost 100 000 unattended transactions. Up to 4 modules can be connected to a single DSB port.

Description of the Digital I/O Module

This is an eight channel parallel input/output module. Primarily, it is used as an output module to control devices such as light switches or as an input module to register alarms from external devices. These functions can have the following benefits:

*   Power control for remote, or isolated devices. Only after proper authorization is received is the power supply available to the device.

*   Implementation of status indicators – enabling users to see at a glance if the devices are available or already in use.

*   Alarm triggering on equipment outside the control of the PSS 5000. Reduces time by being able to monitor more from a central location.

*   Reduce utility costs by turning off services in certain areas during slow periods of the day.

The uses of such a module are varied. They can, for example, be used to control the power supply to remote dispensers, reducing the incidents of theft by providing a fail-safe, no by-pass of the devices.

Description of the Modem Interface Module

The Modem Interface Module is an RS232 module that supports the control signals necessary to control a modem. This enables serial remote access to the PSS 5000 when a network connection is not available.

Description of LON Module

The LON interface with the PSS 5000:

Option	Description
LON Interface module (DSB522)	This option uses a single module that has 12 connectors, each of which provides a terminated LON interface. This module requires a software driver, which is integrated with the PSS 5000 Application software. To ensure that the module operates correctly, make sure that the correct PSS software is installed.

Remarque: Only one LON interface can be installed on each PSS 5000 system.

This provides an Echel 2-wire twisted pair LON interface, which meets the IFSF signal requirements, and supports a "free" topology, which means that the LON interface can be connected to a number of devices without point-to-point terminations.

Illustration of LON
Interface Module

The graphic below shows the DSB522 LON Interface Module.

3.4   Upgrading from a PSS 2000

Benefits of an upgrade

The PSS 5000 offers:

- Improved performance from a faster CPU.

- More data storage.

- Electronic distribution of application software due to the use of flash memory.

- Improved connectivity through the LON and Ethernet ports

Requirements for an
upgrade

To upgrade an existing PSS 2000 to a PSS 5000 you need a new PSS 5000, where you can reuse your HIMs.

3.5   Service and Maintenance

Mean Time Between Failure

Using repair statistics for 2008, the result of the Mean Time Between Failure (MTBF) calculation for the PSS 5000 is shown below:

Parameters	Amount
Installed systems stats.	
Estimated number of PSS 5000 systems in operation per Dec. 31, 2008:	29 000
Repair stats.	
Number of parts received for repair in 2008	480
Number of received parts with no faults	190
Number of repairs (in 2008), approximately	290
MTBF calculation	
Assumption: Doms repairs 50% of all failed parts.	
Total number of failed parts per year:	580
Failure Rate (FR) = 580 / 29 000	0.02 / year
MTBF = 1/ FR = 1 / 0.02	50 years

4 Software in the PSS 5000

Software in the PSS 5000

The PSS 5000 is delivered with several types of software. The different types and how they can be configured are described in the following topics:

4.1 Software Structure in the PSS 5000

Concept of software structure

The software in the PSS 5000 has been separated in to 3 types:

- Boot – contains basic functions to initialize the CPU and upload software.
- LAM (Legal Authority Module) – country specific module that controls legally relevant features.
- Application program – this contains all the forecourt controller functions and interfaces. (Integrity of different parts ensured by Doms).

This architecture, with a separate LAM, makes it possible to update the application software without having to apply for new approvals from controlling authorities.

4.2 Operating System

Description of the Operating System

The tailor made PSS 5000 Operating System, which is based on a MQX Real Time Kernel, provides the stability and performance needed. It also ensures that only PSS 5000 software can run on the platform, which gives the system very good protection against viruses.

4.3 Web Server

Description of the web server

The embedded web server enables you to access the PSS 5000 Service Menus using a PC with a standard web browser.

This provides a user-friendly graphics interface for the Service Menus, where you are able to perform a multitude of tasks, such as obtaining software version numbers, installation details, operational details and service diagnostics. It is also an excellent entry point to the W&M menus.

For more information, see '8 PSS 5000 Embedded Service Tools' on page 30.

4.4 FTP Server

Description of the FTP server

The FTP server enables you to connect to the PSS 5000, see the internal file structure and upload software applications. It also enables you to extract data logs from remote locations.

5 PSS 5000 Protocols

List of types of devices
using protocols

The outstanding connectivity of the PSS 5000 is achieved by its ability to use many different device protocols. The complete list of protocols is divided into the following topics:

5.1 Pump Protocols

List of pump protocols

The pump protocols currently supported by the PSS 5000 are shown in the table below:

Protocols
Adast Easycall
AG Walker SPDC-1/MPDC-1
Aplab Serial
Auto Tank AT500/AS
Auto Tank ATCL
Avery Single Hose
Bennett
BP Standard
Cetil EAS1
Doms Pump Protocol
Dong Hwa Prime
Dresser Wayne SC82/SC86 (DL, Duplex, iGEM)
Droher-Condohr
Droher-Current Loop
Dunclare
Dunclare Submersible Pump Control
Eedac
EIN
ELREM Tank2000
EMR3

Protocols
Gascomm
GC21 XP
Gilbarco 2-wire
Hengshan HS01
Hong Yang
IFSF / LON
Kontrel Domino LPG
Koppens EPS-3/5
Larsen & Toubro Z-line
Larsen & Toubro MPD/QUAD
Logitron Pumalan
Maser GMS
Mechanical Pump Interface
Midco
MKS ER 3/2 (ER3/ER4)
MMPetro
Nara 1
Nara 2
Novotec
Nuovo Pignone
Petrotec CEM 03
Prompribor LIVNY
Prowalco SPDC-1/MPDC-1
RongXing MPD
Satam 008
Satam 82D (82, SEV2, SEV4)
Scheidt & Bachmann T01/T02
Scheidt & Bachmann V.11 T20 - T10/8
Schlumberger IVPE/M3000/M4000
Schwelm ZSR83
Seetax MPD
Seetax TK
South West MLPC3
Tatsuno (Doms MPI)

Protocols
Tatsuno-Benc PDEX
Tatsuno Sunny Ex
TIM
Tokheim
Tokheim Hengshan
Tokheim Kaizen
Topaz 1
Topaz 2
Wayne Autocourt/Ferranti
Wayne Dart
Wayne Europe/Ljungmans (Current Loop)

5.2 Price Display Protocols

List of price display protocols

The price display protocols currently supported by the PSS 5000 are shown in the table below:

Protocols
CBS Price Pole
Digitekno Price Pole
EIN Price Pole
IBIS
IFSF / LON
Imago
Inno-Sign
Linetron
MKS ER 3/2
Nautica
Novyc RS-232
PWM-InHouse-Ethernet
Rosel
Scheidt & Bachmann V.11 T10/8 Price Pole
Tammerneon LED
Totem Price Pole
VDS

Protocols
Wayne Marketer Price Pole

5.3 Tank Gauge Systems (TGS) Protocols

List of TGS protocols

The Tank Gauge System (TGS) protocols currently supported by the PSS 5000 are shown in the table below:

Protocols
4Tech Fuelcom 501
B Control A (CMS)
Egemin LGS2
Enraf STIC 867 (GPU)
Fafnir Visy-Quick
Hectonic H-Protocol
Hectronic HLS Protocol
IFSF / LON
IGLA
Lemis DC-400 (density only)
MTS
Petrovend4
Sense PMP
Struna-M
Veeder-Root

5.4 Terminal Protocols

List of terminal protocols

The Outdoor Payment Terminal (OPT) protocols currently supported by the PSS 5000 are shown in the table below:

Protocols
ACG Mifare Tag Reader
A. G. Walker Pump Tag
AutoTank ATCL
Banksys
Codab C-bus
Doms FlexPay

Protocols
Doms Standard
Doms POS (for intelligent terminals, e.g. Wincor Paylane)
EIN DAC
FasTrack
Gilbarco Generic CRIND
Gilbarco SPOT
Hectronic AVR
Intaba S2D
MPI Tag
Octane 2000 Tag Terminal
Orpak VIT (Vehicle Identification)
PetroPay 4000
POSTEC PRISM OPT
POSTEC TVD Tag Reader
Prowalco Pump Tag
Prowalco Remote Tagging ZA-069 (IRIU)
Tokheim DAC MPA V5
Tokheim Pump Tag
Wayne CL Terminal
Wayne CL/EPS-42 Terminal

5.5 Washing Machine Protocols

List of car wash protocols

The washing machine protocols currently supported by the PSS 5000 are shown in the table below:

Protocols
IFSF Car wash (via LON, see 'Description of LON Module' on page 16)

5.6 Vapor Recovery Protocols

List of vapor recovery protocols

The vapor recovery protocol currently supported by the PSS 5000 is shown in the table below:

Protocols
Fafnir DVRC
Fafnir DVRC-2

5.7 Digital I/O Protocols

List of digital I/O protocols

The digital I/O protocol currently supported by the PSS 5000 is shown in the table below:

Protocols
Digital I/O

Note: This Digital I/O protocol is a proprietary Doms Digital I/O protocol for use with the HIM DSB451.

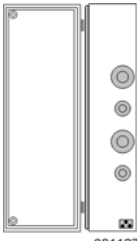# 6 PSS 5000 Product Specifications and Approvals
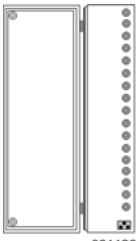
List of specifications
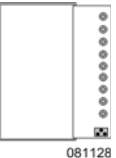
The specifications and approvals for the PSS 5000 are detailed in the following topics:

6.1 PSS 5000 Hardware Specifications

CPB/Cabinet/Power supply combinations

The PSS 5000 is available in several versions, depending on the CPB requirements, the size of the cabinet and the local power supply available. This table shows which combinations are available and the relevant Doms Stock number (order number).

		CPU Board Version	
		CPB509 081124	CPB505-2 081125
081127	**120V**	140232	144752
081126	**230 V**	140295	144609
081128	**120 V**	n/a	144740
	230 V	n/a	144610

PSS 5000 Cabinet specifications

The product specifications for the PSS 5000 cabinets are presented in the table below:

Note: The weights given are for the basic cabinet with a power supply and CPU board (HIMs are not included).

	System Version					
	140295	**144609**	**140232**	**144752**	**144610**	**144740**
Power supply	230 V		120 V		230 V	120 V
CPB version	CPB509	CPB505-2	CPB509	CPB505-2	CPB505-2	
Max. number of single-width modules	14		14		6	
Dimensions (HxWxD)	600 x 200 x 124 mm (23.5 x 7.9 x 4.9")		600 x 200 x 124 mm (23.5 x 7.9 x 4.9")		363 x 200 x 100 mm (14.3 x 7.9 x 3.9")	
Cabinet Material:	Metal		Metal		Metal	
Weight:	8kg (17.6 lbs)		8kg (17.6 lbs)		5kg (11 lbs)	
Approval Ratings:	CE + UL approved		CE + UL approved		CE + UL approved	
Access to contents:	Hinged door		Hinged door		Hinged door	

PSS 5000 CPU Board specifications

The product specifications for the CPU board of the PSS 5000 are presented in the table below:

Parameters	CPU Board Version	
	CPB505-2	**CPB509**
CPU Specs		
CPU Type	ColdFire MCF5307	ColdFire MCF5307
CPU Bus (bit)	32	32
Flash (MB)	16	16
SRAM (MB)	4	4
Backup Battery	14 days	14 days
Real-time Clock	Yes	Yes
Port Types and Number		
DSB	3	5[1]
DMB	1	3[1]
Ethernet	1	1
Service (RS232)	0[3]	1
Ports with speed rating[2]		
Port 11 - DSB	Standard	High-speed
Port 12 - DSB	Standard	Standard
Port 13 - DSB	Standard	Standard

Parameters	CPU Board Version	
	CPB505-2	CPB509
Port 14 - DSB	n/a	Standard
Port 15 - DSB	n/a	Standard
Port 16 - DSB	n/a	n/a
Port 17 - DSB	n/a	n/a
Port 21 - DMB	Standard	High-speed
Port 22 - DMB	n/a	Standard
Port 23 - DMB	n/a	Standard

[1] : one of the ports is a high-speed port
[2] : the actual baud rate of the ports are determined by the devices and the HIM modules connected to the ports
(where the maximum baud rate for a port is: Standard = 9600 bit/s, High-speed = 115 200 bit/s)
[3]: The boot program only supports PPP on the Service port. Software uploads on boards with no Service port must take place via the Ethernet port.

6.2 Approvals and Certificates

PSS 5000 approvals and certificates

The PSS 5000 system (hardware and software) complies with the following:

Approvals/Certificates	Description
CE marking	Conforms to: • EMC, 89/336/EC (standards: EN50081-1: 1993 and EN50082-1: 1995) • Low Voltage Directive, 72/23/EC (UL60950-1:2003)
FCC	Part 15 (2003) Class A digital devices
UL	UL60950-1:2003
CB Test Certificate	• IEC 60950-1:2001 • GOST-R
OIML Recommendation R-117	Compliant for measuring systems for liquids other than water.

7   PSS 5000 Development Package

Introduction to the
Development Package

Doms has produced a PSS 5000 Development Package. It is designed for system developers who are creating interfaces to the PSS system, and indirectly to the pumps, tank gauge systems, price poles and outdoor payment terminals found on petrol station forecourts.

Tools in the
Development Package

The Development Package contains the following tools:

Tools	Description
PSS 5000 Forecourt Controller	This enables you to become familiar with the product and includes: • Standard hardware components • Standard application software
Demo POS	This enables developers to get to know the system. It provides hands-on experience to ensure an understanding of the documentation and includes: • Demo POS • Demo Card Server • Configuration files for several different forecourt configurations
Forecourt Device Simulators	This enables developers to test, or practice, using "virtual" devices. Simulators for the following device types are included: • Pumps • Tank Gauge System • Price Poles • Terminals
Standard Windows (COM) Interface Components	Provides a COM interface to the PSS for easy integration with POS applications as an alternative to implementing the protocol directly.
System Diagnostic Tool	This tool includes: • Peep show translator – shows stored encrypted communication data as either HEX or ASCII text. • Transport Level Test – enables you to send and view individual commands sent in an application.
Java Configurator Tool (not included in Development Package, but available on request from Doms Support)	A GUI based configuration tool that enables you to configure all the forecourt devices connected to the PSS 5000.

8 PSS 5000 Embedded Service Tools

Service tools via the Web Service Menu

The Service tools, which provide a way to view status information and run diagnostics when errors occur, are present in the embedded web server in the PSS 5000. Access is via a browser, which provides a graphical interface.

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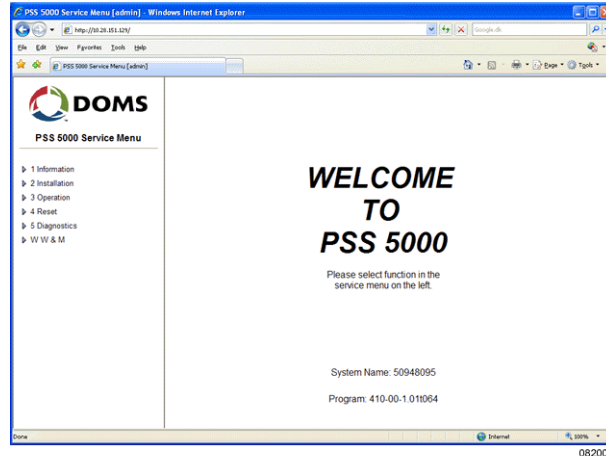
Information available from the Service Menu

The table below shows what is available from the menu options in the Service Menu.

Menu Options	Provides Access to...
Information	• Program versions • CPU Board • Software blocks • Protocols available • Current LAM (Local Authority Module) version
Installation	• Protocol to port assignments • RTC settings (date and time) • Communication settings (TCP/IP, Service Port, Modem, etc) • System profile (Passwords, Site ID, etc) • Software uploads • Backup
Operation	• Fall back mode • Product prices • Transaction data • System profile • Payment server status • Operational mode and status
Reset	• Soft Reset • Master Reset • Super Master Reset
Diagnostics	• List of online forecourt devices • Error history of forecourt devices • Device test functions • System logs • Communication status • Peeper – embedded trace tool

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