PSS 5000

System Description

POS Responsibilities for MID Cert.

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1 Scope

The scope for this document is to describe what needs to be implemented in the POS system in order to use the already MID / OIML R-117 certified PSS 5000 functionalities, when creating a MID certified system using PSS 5000.

The aim of the PSS certification is to reduce the cost of certification of a complete system and to minimize the need for re-certifications when the system is updated.

2 MID Certification

In the EU measuring instruments must have a MID Type Examination Certificate (TEC).

A fuel Pump is a complete measuring instrument, which can measure, store, display and provide correct data in its communication interface, must have a MID TEC.

A complete measuring instrument can also be a self-service arrangement, with a fuel pump and connected self-service devices. In order to avoid re-evaluation of pumps each time they are included in a new instrument as actually foreseen by MID, WELMEC[1] has defined the "General and Administrative Aspects of the Voluntary System of Modular Evaluation of Measuring Instruments" (WELMEC 8.8), which can reduce the cost of MID certification.

Applying WELMEC 8.8 also means that when PSS 5000 is used in a self-service arrangement that needs MID Certification, the functionality covered by the PSS 5000 certification doesn't need to be evaluated again. This further reduces the cost and time for certification of a self-service arrangement using a PSS 5000.

For self-services devices connected to the pumps WELMEC has issued the "Guide on evaluating purely digital self-service devices for direct sales to the public" (WELMEC 10.7). This can be used by devices bearing a CE mark.

The PSS 5000 provides some functionalities of a "self-service device" and these have been certified according to WELMEC 10.7.

So, when a POS system is connected to a PSS 5000 in a self-service arrangement that needs MID Certification, only the POS functions related to the transport of data from the PSS 5000 and presentation of transaction data to the customers on a receipt printer or customer display must be certified according to WELMEC 10.7.

If the manufacturer of the complete instrument creates a system by combining components that already have been certified, the certification effort is minimized.

The WELMEC guide uses the term "voluntary", which means that MID certification of a self-service arrangement can also be obtained by other evaluation methods.

Despite the WELMEC guides that are applied, there are still different interpretations of MID among Notified Bodies[2], especially regarding certification of systems including pre-MID components.

[1] The principal aim of WELMEC is to establish a harmonised and consistent approach to European legal metrology
[2] A Notified Body in the European Union is an organization that has been accredited by a Member State to assess whether a product meets certain preordained standards.

3 Definition of W&M Terms

Attended Service	This is when the sales can be finally settled while the customer is on the site.
Checking device	A device or feature used to simulate an error condition, in order to verify that the systems checking facilities are working as expected.
Checking facilities	A feature to check that the system is working correctly and reports if something seems wrong.
Necessary Device	A device or feature necessary for legal W&M operation. If a necessary device fails, some services must be disabled/stopped.
Primary Indicator	Legal Necessary Device for transaction readout, e.g customer display, receipt printer or OPT Transaction Payment Log.
Stored Transaction	When the transaction is cleared from the pump (e.g. to allow a new transaction to start) and memorised elsewhere until the payment is settled, this is called a stored transaction.
Unattended Service	This is when there is no staff on site, so the sale cannot be finally settled in case of disputes.

4 Attended Service

4.1 Device Status

The PSS 5000 contains all the necessary status information and error indications for the forecourt devices as required by OIML R-117. It makes this information available to the POS system through the specific POS protocol, i.e. Doms POS Protocol.

The **POS must** present the device status information to the operator.

4.2 Error Handling

The PSS 5000 has a number of checking facilities as required according to OIML R-117. It sets the device into an error state whenever a faulty condition is detected. Information about the error is available to the POS System through the specific POS protocol.

The POS must present this error information to the operator.

The POS must clear an error state before the PSS 5000 puts the device back into operation.

The POS must have a special handling of transactions that are flagged by PSS 5000 as error transactions, as the data provided by PSS might not be correct. For transactions with errors, the normal settlement procedure cannot be used; instead the special exception handling which ultimately uses the display on the pump as a legal readout of the transaction is used to settle with the customer.

PSS is very strict regarding when to declare a transaction as an error transaction. This means that for transactions without errors the data can be trusted.

4.3 Security Telegram

In order to get approval for a self-service system, where the sale can be agreed with the customer remotely from the pump, the system will need a legal primary indicator, e.g. a customer display or a receipt printer, which is typically a POS function.

The PSS Security Telegram concept is used to check that the transaction data presented to the primary indicator on the POS is the same as that captured by the PSS from the pump after the fuelling finished.

The concept is that a security telegram including an authentication code is generated for each fuel transaction at the entry to the PSS system. This is then later checked in the POS system before it is presented to the customer as part of the sales process.

The POS must capture the security telegram from the PSS 5000 together with other transaction parameters, and check the transaction data and the security telegram as close to the primary indicator (e.g. printer/customer display) as possible. If the check fails, the transaction must be handled as an error transaction, which means that the provided transaction data might be incorrect and cannot be trusted.

Note: Security telegrams are not available for error transactions and zero transactions.

In order to make it easy for the W&M officer to verify that the POS has implemented the security telegram concept and the primary indicator has the required checking facilities, the PSS 5000 has a built-in checking device which the officer can use to corrupt the security telegram that the PSS sends out.

The telegrams are documented in the relevant POS Protocol specifications, but POS suppliers, who are going to implement the Security Telegram concept in the POS, need to contact Doms to get the "PssSecretKey", which is used in the security telegram algorithm.

4.4 Stored Transactions

Handling of stored transactions is normally limited by the PSS 5000 via a LAM Parameter to max one stored transaction per Fuelling Point, as specified in OIML R 117.

The PSS 5000 provides a facility to temporarily memorise transactions in the special Legal Authority Module, which means the POS doesn’t need this functionality.

The PSS also provides functionality to read-out the stored, but also current and a number of recently paid transactions per Fuelling Point using the PSS 5000’s Local Service Panel and Web Page, which can be used as a back-up in case the POS cannot present the stored transaction for the customer.

If the system certification is based on a POS having a necessary device (receipt printer/customer display) and this device is not working, operation with stored transactions must disabled.

If a POS client handling attended transactions contains a primary indicator for displaying transactions to the customer (receipt printer / customer display), the POS must provide the status for this device to PSS. See Doms POS Protocol specification regarding how this is done.

If no POS client is online with working device, the PSS 5000 will not store transactions.

5 Unattended Service

Card and bank note sales are normally handled totally automatically without the help of an operator or an attendant. This is called unattended service.

In this scenario disputes about the payment cannot be handled immediately, and therefore the system must have a memorising device for the long term storage (a log) of the relevant transaction information needed to settle disputes at a later point in time.

This "W&M log" for unattended transactions is not provided by the PSS and must be handled somewhere else in the system.

The security telegrams are supported for all transactions, so they can be used to check correct transport of unattended transactions in the same way as for attended transactions.

6 History

Date	Rev.	Init.	Comments
2001-03-22	02	HBH	Final release
2002-07-24	03	JyP	New Layout
2005-08-11	04	Mch	New Logo
2005-08-12	05/06	Mch	No changes, only archive corrections
2015-10-28	07	hbh	Restructured the content Removed “W&M Log” for unattended transactions. Changed the title from “ W&M Cert.” to “MID Certification”.