



ELECTRONIC PAYMENT SPECIFICATION

FOR UNATTENDED POINT OF SALE (UPOS)

EVA EPS V 1.1



European Vending Association aisbl

44 rue Van Eyck, 1000 Brussels, Belgium

Tel.: +32 (0)2 512 00 75 - Fax: + 32 (0)2 502 23 42

vending@vending-europe.eu - www.vending-europe.eu



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Published by



Supported by



20 N. Wacker Drive; Suite 3500
Chicago, IL 60606

NOVEMBER 2013

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1 Acknowledgements

The EVA believes that Electronic Payment Vending has a strong future and fully supports technological development of these systems for the industry. The more information the Electronic Payment Committee can provide to all automatic merchandising players, the easier and faster they will be able to adapt and implement electronic payment vending solutions in their businesses.

The EVA believes that a standard should be as universal as possible. To achieve this goal the EVA will work with other European associations using electronic payment systems.

The EVA extends a special thank you to all the Committee members who have invested their time, energy and dedication to develop the new EVA-EPS (Electronic Payment Specifications) standard.

Committee advisor:

EVA Erwin Wetzel

Committee members:

Ingenico	Alain Huc (chairman)
24Vend	Neil Harrington
Astrosystems	Debbie Malin
Coges	Stefano Bertoldo
Coinco	Bob Miller
Crane Payment Systems	Horst Buschmann
Deutsche Telekom	Jürgen Göbel
Lyovel	Hubert Boyer
Mars Chocolate	Phil Searle
MEI	Ken McDonald
Microcoin	Robert Bird
NRI	Klaus Meyer-Steffens
N&W	Cristian Brugetti
Vendon	Georges Cywie
Verifone	Torsten Ide
Visa	Nick Mackie
VMC Ltd	Jim Birch

2 Revision History

Version	Date	Author	Object
V1	November 2013	EVA EPC WG	Initial version approved by the committee
V1.1	February 2014	EVA EPC WG	Minor change on chapter 7.2 to clarify EVA relation with EpasOrg



INTRODUCTION: History of electronic payment

“The times they are a-changing” – Bob Dylan’s prophecy has never been more applicable to the world of noncash payments than it is today. Many new players from international industries are launching entirely new currencies and ways of settling bills, countering what were previously conceived as the rules of mature markets just a few years ago. While the banking industry seems relatively slow to adapt to changing circumstances, internet-based companies are quickly seizing new opportunities.

Major developments arise from distinctive converging markets. Knowledge and insight are therefore key for merchants to be able to seize the obvious large scope that this new payment arena has to offer: New means of payment such as contactless and mobile are quickly becoming mainstream; check-out processes are faster and queues are dramatically reduced. Historically considered as a burden, payment has become a business leverage.

Retaining customers is of increasing importance, with competition growing and only small distinctions between the offerings. With the retailing world evolving at an ever faster pace, merchants are left with decisions that are both essential to their success but also too difficult to be made without expert knowledge. For this reason, retailers are turning to payment companies that offer a full spectrum of payment and loyalty solutions. With a comprehensive offering, one-stop shop solution providers act in the best interest of their clients – as a payment partner, leveraging business and boosting customer loyalty. They without question allow merchants to concentrate on what they do best: Selling.

A modern world without payments is unthinkable! A means of exchange that is separate from actual commodities is one of the bases of modern society. Such means of exchange have existed for thousands of years: the early seashell currencies of North-American Natives, coins, and modern day electronic and virtual payments all cater to the need to exchange products or services through an independent means that has a mutually accepted value.

In more recent years, electronic payments have evolved immensely. In the course of just one century, paying by card has become as commonplace as paying cash. More than any other region of the world, the United States of America has been at the forefront of this development. Since the introduction of the first plastic card, the Diners Club’s card in 1951, electronic payments have taken first the US and then the world by storm. Worldwide, their popularity continues to rise; today, in times of online shopping, electronic payments have long set the stage for new, virtual horizons.

Even if electronic payments are growing all around the world, the regions of North America and Europe remain at the head of this evolution. They account for the highest density and strongest markets with regard to existing electronic payment volumes and traffic.

The vending industry is certainly the last place to be converted at Electronic Payment. We will try with this specifications to help our industry to easily implement Electronic Payment Solutions. Standardisation will also be a cost effective driver.

This document is also published for all unattended self service industries, with the goal to be the reference.

3 Electronic payment overview

When it comes to stationary electronic payments at the POS, also called “card present” (CP) transactions, four major card types are available: Debit cards, credit cards, private label cards, and prepaid cards make up the main bulk of all CP transactions.

Even with regard to different card types and different payment technologies, the general principals of the electronic payments eco-system remain similar all around the globe.

To simplify the text we will use the term *card* as electronic payment scheme which is independent of the support. The payment could be implemented in different type of card: Chip, Contact less, Magnetic stripe, bare code and so on. It could also be a smart phone, a tag or any type of support.

The consumer identification may use a pin code or a biometric ID.

The payment could depend on a local transaction utilising a chip card or an on line transaction via a server.

3.1 DEBIT CARDS

In simplified terms, a debit card is linked directly to the customer’s account. He either uses the physical card itself or the respective card number in order to pay. Each single purchase transaction will be debited to the customer’s bank account and credited to the merchant’s account. Processing debit card payment transactions is usually carried out by a card processor or a payment service provider (PSP).

In some countries, however, banks process transactions in-house. That means on a global scale there are many kinds of payment processing workflows. Throughout Europe, a rich diversity of debit card schemes has developed. Although recent legislature in the framework of Single Euro Payments Area 5SEPA° aims at unifying European electronic payment schemes, so far almost every country has their own models. The most common are:





Some European examples



3.2 CREDIT CARDS

In contrast to the debit card payment process, credit card purchases are either charged to the card holder at fixed intervals in total (charge card) or in partial credit amounts. In the latter case, relevant interests from the issuing banks are added.

Until all payment sums of a certain period are debited from the card holder's account, credit card companies grant their customers credit – hence the name. As the most widely accepted electronic payment scheme in the world, credit cards are still the payment method of choice when it comes to cross-border commerce or travelling. Today, major credit card schemes such as MasterCard, VISA, American Express, Diners Club and Discover card – all originating from North America – are present all over the world. In addition, China Union Pay (CUP) and Japan Credit Bureau (JCB) are very popular card brands used in Asia. Outside their countries of origin, these cards are usually issued as co-branded/co-badged cards either with MasterCard or VISA.



3.3 PRIVATE LABEL CARDS

Pricing alone no longer constitutes a unique selling proposition. Therefore, offering service and additional value is becoming ever more important for companies as a way becoming more distinctive in competitive markets. With customers having to choose between virtually hundreds of offerings, the private label card provides a powerful tool to retain customers as well as raise brand awareness.

Private label cards serve as a medium for special offers or service campaigns. Incorporating debit card features, they can also be linked to promotional discount schemes and much more. Shops of all sizes employ private label cards as an integral part of their customer loyalty programs. By and large, the cards fall into one of four categories (Credit, Debit, Prepaid or loyalty).

3.4 PREPAID CARDS

Prepaid cards are issued in wide variety: As the traditional gift card, a payment means for special events with international scheme co-branding (e.g. festivals, hotel environments etc.), or as private label cards. Prepaid cards are quickly gaining momentum in terms of usage, becoming ever more important players in the card payment arena.

Prepaid cards can be either open or closed loop cards. In the case of closed loop prepaid cards, the issuer and the acceptance point are one and the same.. Open loop prepaid cards, on the other hand, can potentially be accepted at any given number of outlets, as long as they subscribe to the chosen payment scheme. As of today, all major international card companies are operating a variety of diverse prepaid programs.

In addition to their relevance in Europe and North America, prepaid cards have come to be widely used, especially in un-/under-banked regions where substantial parts of the population have no access to bank accounts.

3.4.1 Closed loop

Closed loop cards are restricted to use within a single company. Actually this type of payment represents 95% of electronic Payment schemes used in vending food and beverage industry. These types of schemes allow provision of discount, free products and restricted access generally managed by categories options of the owner. These types of schemes are generally managed off line; however some solutions, especially when the use of the card is shared between vending and catering, use on line capabilities.

3.4.2 Restricted loop

Restricted loop cards are accepted in a larger number of outlets and are not limited to only one company. Several stores, for example a local retail association, can set up a restricted loop card. This could be an opportunity for a large international vending operator.

3.4.3 Open loop

In contrast to closed or restricted loop cards, open loop systems make use of an existing payment scheme with a large scope, e.g. that of a credit card company or a widely accepted debit scheme. These cards can be used anywhere where the payment scheme in question is accepted.



4 Objectives (SCOPE)

The *Electronic Payment Specification (EPS)* specifies a minimum set of requirements to be supported by UPOS and Electronic Payment Devices to ensure:

1. Machine – Reader mutual compatibility (i.e. common interfacing).
2. A vending process which is user-friendly and consistent with that experienced by consumers using other payment methods.

The EVA EPS will specify the payment interface, the transaction flow for all existing type of payment scheme .

Note that the EVA cannot guarantee compliance with any specific Electronic Payment scheme, all of which may have varied/proprietary requirements. However the EVA works with payment schemes providers to impose EPS as the reference.



5 Overview

Throughout this EPS we will use the term of payment terminal for UPOS (Unattended Point Of Sale) will be used to be in line with attended payment vocabulary.

This EPS will include the definition of the mechanical integration requirement. The previous version EVA CVS 1.2 specified 2 compliant versions of Electronic Terminal: maxi and a mini style readers. These are replaced by Standard Door Module (SDM), Compact Door Module (CDM) and internal module (IM) already defined in EVA CVS 1.3

The Compact Door Module utilises the corresponding international specification published by German Tobacco Association BDTA, such that it is compliant with the largest number of electronic payment chip card readers existing in the field. The footprint of the mini style reader of previous specifications is compatible with this new format.

The Standard Door Module will take almost all the specifications of the old maxi style reader.

The Internal module based on extended version of EVA CVS 1.3 to offer the possibility to install the module in landscape or portrait orientations.

The EPS includes communication with UPOS based on two standards:

First, MDB V4.2 or later. For previous MDB versions, please refer to EVA EPS.

Second, UPOS protocol equipped with a powerful controller using a standard Operating System (OS) e.g. Window or LINUX, The selected protocol is based on the latest European specification for Electronic Payment and ISO 20022. It is defined by the European Payment Council, Card stakeholders Group. The EVA is member of vendor group.

The EPS includes

- The electrical specification: Power supply and connectors.
- The consumer interfaces: Buttons, display, LED's and sound.
- The consumer payment process with the goal to facilitate the use of self-service devices harmonizing the transaction flow.

6 Mechanical requirements

As stated in section 5, maxi and mini reader profiles have been replaced by mechanical specifications for *door mounted* and *internally mounted* modules. As a minimum, a certified reader must incorporate a door module, and *optionally*, it may also include an internal module.

Appendix C specifies the *minimum mechanical space available* into which door and/or internal modules must be fitted. Being a *minimum* specification, these dimensions (or clearances) are primarily directed at machine manufacturers. *All certified machines must provide, at the very least, space into which operators can fit certified readers.* Manufacturers must be able to fit their readers into the minimum space specified, *including cables and access to Security Access Modules (SAMs)* (as required).

6.1 DOOR MODULE

This EPS now specifies two separate door module types:

1. *Standard Door Module.*
2. *Compact Door Module*

Modules must be able to coexist on the door of the machine as defined in the matrix below.

Appendix C, figures 1 and 2 specify the minimum space clearance for both door modules. Note that the Compact door module is *radically smaller* than its Standard counterpart, and has been introduced for use in small/table-top vendors, or machines on which door space is very limited. The Compact door module can also be used for insertion or contactless card readers in a combined payment solution like chip and pin.

6.2 INTERNAL MODULE

An Internal Module might incorporate control electronic hardware (processing, memory etc) as well as machine electrical and/or operator interfaces.

When used together, a Door Module (Standard or Compact) plus an Internal Module comprise a *2-part reader*. Whilst this combination may be made with either door module, it's more likely that the smaller *Compact Door Modules* will be used with an Internal Modules.

Appendix C, figure 3 specifies the minimum space available for fitting an Internal Module mounting arrangement.



6.3 DOOR & INTERNAL MODULE MOUNTING ARRANGEMENT

As stated the module mountings are specified in Appendix C. Additional rules apply to *reader manufacturers and suppliers* as follows:

- It is always the reader manufacturers' (or suppliers) responsibility to ensure that their products can be fitted using the mounting arrangements specified in Appendix C. For example, an Operator may wish to install a Compact Door Module reader on to a machine with a Standard Door Module mounting. Given the mechanical differences, it is the *reader manufacturer's (or supplier's) responsibility* to provide an adaptor plate which allows the installation to be completed.
- The same condition applies for Internal Module mounting.
- Note that *no mounting studs/holes* are specified for mounting a Compact Door Module. Appendix C figure 2 specifies the minimum footprint (i.e. area) into which a reader manufacturer's Compact Door Module must fit, and the area which a machine manufacturer must leave vacant to allow for mounting the door module.
- Note that machine manufacturers *must* ensure that the minimum footprint is provided for a *flat rather than a curved panel*.
- Note that machine manufacturer may claim compliance by orientating the minimum footprint specified in appendix C figure 2 *either* horizontally (as shown) or vertically at 90°.

6.4 MECHANICAL SECURITY

Both Standard and Compact Door Modules must be mounted such that they cannot be easily removed using basic hand tools, *without* having opened the machine door. In particular, no fasteners used in the mounting or in the construction of the door modules should be easily removable allowing the reader to be withdrawn from the machine. The machine mounting plate should be thick to withstand impact

6.5 DISABILITY ACCESS

With regard to accessibility by the disabled, machine manufacturers must be compliant with local or international rules. This compliancy is out of the scope of this document.

6.6 REGISTERING MECHANICAL COMPLIANCE

When completing the self-certification form, a terminal manufacturer must state which type of door modules they are certifying *and* if any additional internal module is required.

Machine manufacturers do not have to certify the machines. However, the EVA recommends that clear indication of supported modules, type of supply provided and protocol used is declared.





6.7 CONFIGURATION TABLE

These tables provide recommendations on reservation slot depending on the type of payment or depending on the type of machine

Table type of payment matrix

Type of payment	Compact Door Module	StandardDoor Module	Internal module	Comment	Quantity recommended location in the machine
Universal EMV payment including contact less and CVM	Mandatory	1 unit mandatory 2 recommended	Recommended	The most universal payment system	2 SDM +1 CDM + 1 IM (recommended) or 1 SDM + 1CDM +1 IM
Universal EMV payment without contact less and CVM	Mandatory	Mandatory	Recommended	Today use for high value product delivery	1 SDM +1 CDM + 1 IM
Universal EMV payment with contact less and NO CVM	Recommended	Mandatory	Recommended	Use for vending and parking. Could be in two front modules or all in one	1 SDM +1 CDM + 1 IM (recommended) or 1 SDM + 1 IM
Universal EMV payment without contact less and no CVM	Minimum	Recommended	Recommended or Mandatory with CDM	Use for vending and parking generally using a secure reader.	1 SDM or 1 CDM (SDM recommended) + 1 IM
Universal EMV contact less payment , Card or NFC		Mandatory	Recommended	Today use for small value product in public area	1 SDM + 1 IM
Close loop contact less	Minimum	Recommended	Recommended	95% of vending market	1 SDM or 1 CDM (SDM recommended) + 1 IM





Table type of machine matrix

Type of machine	Compact Door Module	Standard Door Module	Internal module	Comment
Ticketing transport , car park and all type of kiosk.	Mandatory	2 locations Mandatory	Mandatory	Type of machine who accept all payment means
Self check out car park	Mandatory	Mandatory	Recommended	Base on no CVM payment
Pay at pump	Mandatory	2 locations Mandatory	Mandatory	Not compliant terminal is all in one with touch screen
Table top vending machine	Minimum	Recommended	Recommended or Mandatory with CDM	Use prepaid card or no CVM EMV payment
Stand alone vending machine for low product price	Recommended	Mandatory	Recommended	95% of vending market
Stand alone vending machine for high product price or in some countries opening all payment schemes for vending (eg: Scandinavia)	Mandatory	Mandatory 2 locations recommended	Recommended	



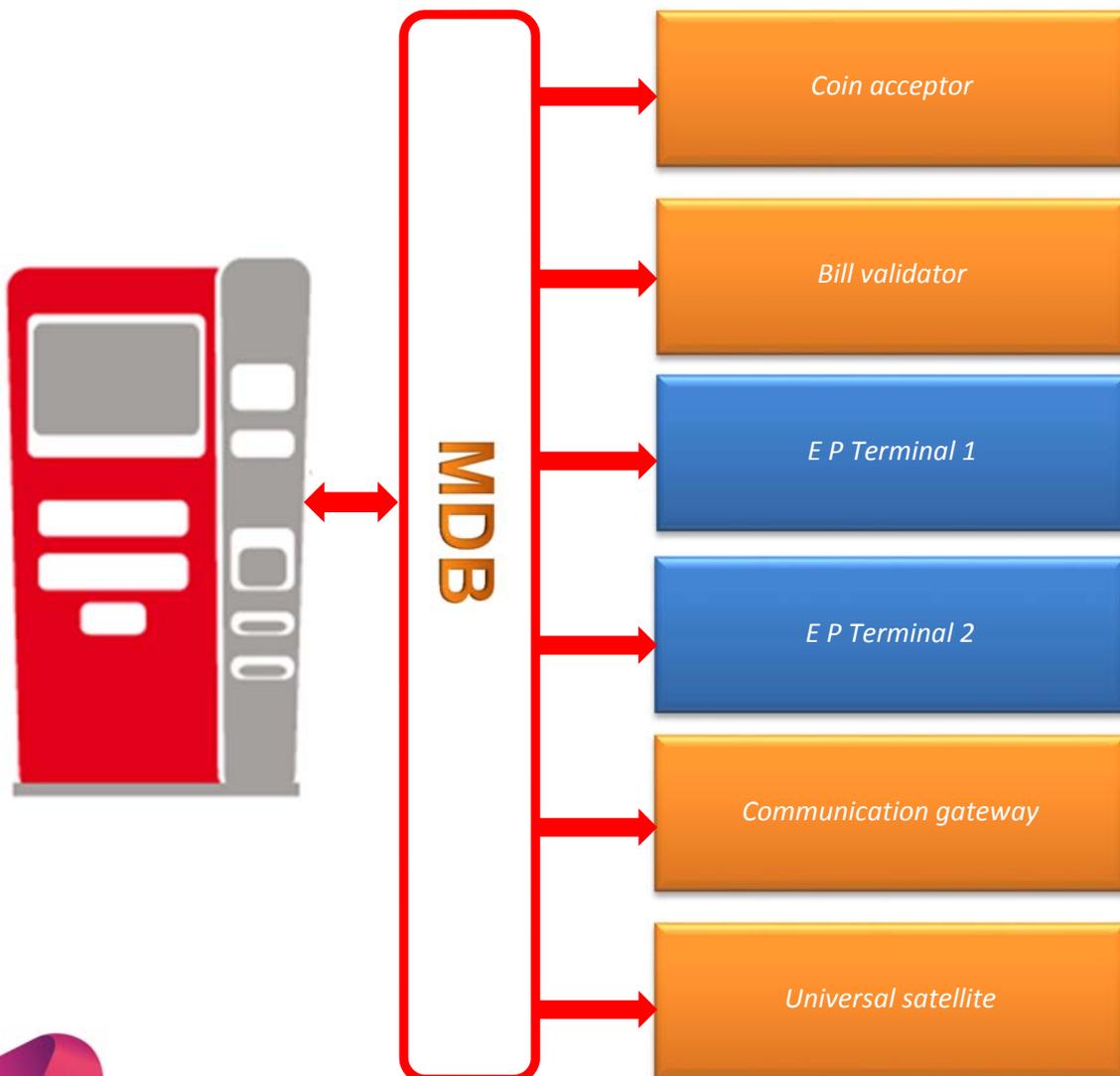
7 Communication standard

7.1 ELECTRICAL & COMMUNICATIONS INTERFACE IN MDB UPOS

The figure below illustrates the schematic electrical interface (power and communications) for an Electronic Payment terminal. This complies with the **MDB/ICP** UPOS protocol, and uses the Electronic Payment first payment peripheral address for command and data exchange. Where if the Electronic Payment first address is in use, then the Electronic Payment Terminal may use the 2nd payment address.

Note that compliance with this specification mandates reader manufacturers to support only the Electronic Payment first peripheral; support for the Electronic Payment second peripheral is optional (i.e. not mandatory).

By implication, the UPOS must provide support for the Electronic Payment Terminal **MDB/ICP**. If the UPOS (i.e. the UPOS Controller) integrates the functionality of a Electronic Payment terminal, it must also provide support for an additional reader using the Electronic Payment second address, in order to meet the requirements of this EPS.



7.2 COMMUNICATIONS INTERFACE IN PC BASED UPOS

Tipping Point

Simply stated, as vending operators use more and more powerful PC based implementations, combined with interactive touch screens, they wish to offer more interaction between electronic payment terminal and UPOS.

Other markets of the self service industry wish to have a universal protocol for payment, MDB could be the way for simple machines like parking meters, but it is not simple to implement in a popular operating system (OS's) like Windows® or Linux. These popular OS's require a protocol based on an industry standard like XML and independent of type of link (USB, Ethernet or Serial RS232 (not recommended))

Basic requirements

The protocol must be compliant with PCI SSC security requirements and based on a payment industry open standard. The EVA Electronics Payment Committee (EPC) has selected the new protocol "EPAS retailer V2.1" published by EPASOrg. It describes a Metadata Repository containing descriptions of messages and business processes. Current version is V2.1 <http://www.epasorg.eu/spip.php?rubrique95> .

EVA is member of different initiatives in Europe among which, the Card Stakeholders Group, which was created by the European Payment Council (EPC) in 2009 and composed by principal (elected) and associate members from the five key sectors active in the cards payment industry, including retailers, banks, schemes, processors and vendors. This group is responsible for the drafting and maintenance of the SEPA Cards Standardisation Volume. EVA is an Associate member of the Card stakeholders Group Vendor Sector, representing the interests of the Vending Industry.

This protocol uses the same principles to that of the future NAMA VDI S2S Cashless Messaging standard.



8 Electrical specification power supply

8.1 MACHINES ENERGY SUPPLIED.

The machine must supply energy for the Electronic Payment Terminal.

On MDB compliant machines, the MDB specification also defines the power supply requirements.

Note: Although MDB allows the use of a 20V non-filtered voltage;
The EVA EPS does **NOT** recommend this option.

8.1.1 Voltage Output recommended in MDB UPOS:

Minimum = 20 VDC rms.(rectified and filtered) (Non filtered NOT recommended)

Nominal = 34 VDC unregulated. (Rectified and filtered)

Maximum = 42.5* VDC (ripple voltage upper limit)

High line input may allow 45 VDC peak (max.).

8.1.2 Power delivery in MDB UPOS

The MDB specify a maximum operating mode consumption of 6VA in idle mode and a maximum of 30VA @ 50% duty cycle up to 5 seconds.

8.1.3 Voltage Output recommended in other UPOS:

Two possibilities:

First the UPOS provided a voltage across the data connection; in this case the voltage is defined by the standard:

- USB provided 5V DC regulated.
- POE provided 48V DC regulated

Second the UPOS provided a voltage across an embedded power supply, in this case EVA EPS recommended to provide voltage between 10 V DC and 48 VDC regulated.

8.1.4 Power delivery in other UPOS

USB power being 2.5VA (5V, 0,5A), is insufficient for terminal that include EMV contactless and GPRS. The EVA EPS therefore recommends having a USB port with 1 A current capability (5VA) or to use a special cable to merge two USB outputs.

POE 802.3at Type 1 limitation is 15VA

POE 802.3at Type 2 limitation is 34VA

EVA EPS recommends providing at least 5VA to the UPOS payment terminal

8.2 CONNECTOR

8.2.1 MDB

The EVA EPS recommends utilising the MDB standard for both MDB and non-MDB payment terminal connectivity. The Type of connector used for direct PCB mounting is defined below:

Vertical Header: Male Contacts (pins), Tin
Molex 39-28-1063
AMP P/N 794664-6
Right Angle Header: Male Contacts (pins), Tin
Molex 39-30-1060
AMP P/N 794448-1

Connector Pin-out:

Line 1 - 34 VDC
Line 2 - DC Power Return
Line 3 - N/C or wake up Pin
Line 4 - Master Receive MDB protocol
Line 5 - Master Transmit MDB protocol
Line 6 - Communications Common MDB protocol

8.2.2 USB and Ethernet connector:

Ethernet link use universal RJ45 standard.

USB is slave and connector type B, standard is preferred instead mini or micro USB.
The EVA expressly recommends to pay particular attention to fastening the USB connector into the machines subject to vibration.

8.3 PAYMENT TERMINAL

8.3.1 The electronic payment terminal operating voltage

The minimum requirement is MDB in filtered mode

MDB allows provision of non-filtered voltage. EVA EPS does NOT recommend using this option.

To be compliant with other types of machine the EVA EPS recommends to accept the following voltage:

Minimum = 5 VDC rms.(regulated)
Maximum = 48 VDC (regulated)
This also allows USB supply, POE supply or 12V battery operation.



8.3.2 The electronic payment Terminal consumption

The MDB specifies a maximum operating mode consumption of 6VA in idle mode and a maximum of 30VA @ 50% duty cycle up to 5 seconds.

As USB powered terminals must not exceed 2.5VA, is insufficient for terminal that includes EMV contactless and GPRS.

POE 802.3at Type 1 limitation is 15VA

POE 802.3at Type 2 limitation is 34VA

The EVA EPS recommends limiting the terminal consumption at 5VA for non-motorised terminals.

8.3.3 The electronic payment terminal battery operated

For MDB compliant battery operated UPOS, the idle state recommended maximum current consumption is 10 μ A.

However, if the terminal accepts large voltage input range and if some functionalities of the terminal must remain active for security reasons, e.g. intrusion watch in the case of PCI PTS approved terminal, the power consumption could reach 0.01 VA.

Within this special battery operation, the pin 3 of MDB/ICP connector is used as a wake-up signal.

9 Interfaces

9.1 USER (CARDHOLDER) INTERFACE

9.1.1 Magnetic stripe card.

In all instances, it should be clear to users how they insert or swipe their cards, such that the number of erroneous readings is minimised. Where necessary, a reader's user interface must display clear instructions to meet this requirement.

Recommended: The Swipe reader vertical and located on the right side of the terminal, with stripe on the left and with the possibility to read the stripe both ways.

Alternative: A Hybrid reader with stripe down and right and with the possibility to read both ways.

9.1.2 Chip Card Insertion

In all instances, it should be clear to users how they insert their cards such that the number of erroneous insertions is minimised. Where necessary, a reader's user interface must display clear instructions to meet this requirement.

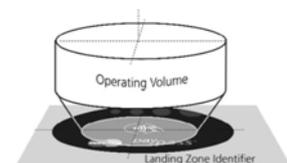
Recommended: Horizontal card aperture/insertion

- For horizontal card apertures, contacted cards to be inserted: *chip-up and chip first.*
- For vertical card apertures, contacted cards to be inserted: *chip-left and chip-first.*

9.1.3 Non-Insertion (Proximity) Readers

Proximity cards do not have to be inserted into a compatible reader. Instead the card may be presented; i.e. held in close proximity to the reader to enable vends. In this case, as contactless transactions will be conducted by the cardholder, as a minimum the cardholder interface must provide a visual and audio indication that the contactless portion of the transaction has completed successfully. Note that presenting the card should not obscure any visual display which could confuse the user.

Close proximity implies an active (enabled) range between minimum 50mm and maximum 100mm from the identified landing zone of the terminal. Those requirements are mandatory for EMV cashless payment and recommended for other contactless payment.



The landing zone must be a clearly distinguishable area on the terminal. To ensure a consistent approach of identifying the landing zone, the contactless symbol below must be placed in the center of the landing zone in a position on the terminal that indicates the strongest part of the radio frequency signal that the terminal generates.



The EMV contactless Symbol is intended only for use at the point-of-sale on EMV specification compliant terminals, and within associated marketing material directing consumers where to make contactless payments. A Trademark License Agreement must be in place with EMVCo, LLC for the right to use the EMV Contactless Symbol.

Refer to EMV document:

Contactless_symbol_guidelines_20130417034048291.pdf

Available at the following address

http://www.emvco.com/best_practices.aspx?id=117

For non-EMV certified terminals a different but similar logo like those below may be used:



Note, during idle state, the EMV Contactless interface shall always be powered off.

For non-standard system like contactless keys with insertion reader, these parts of specifications do not apply. Only mechanical specifications are mandatory.

9.2 USER SOUND AND VISUAL INTERFACE

9.2.1 Sound

This EPS imposes no obligations for manufacturers to provide an audible alarm on Electronic Payment terminals.

However, the EMV contactless specification imposes a sound sequence with determined frequency and level. It is highly recommended to design the terminal with a sound generator system able to be driven in terms of frequency and volume. The most commonly used frequency is 1500Hz.

When this feature exists it could be use also to:

- Highlight when a card has been left in a reader (i.e. forgotten) without having initiated a vend, or following the last vend taken; i.e. highlighting when users remove their cards.
- Assist visually impaired people when using Electronic Terminals.

The alarm noise level must be limited as follows:

- A-weighted sound pressure level of the appliance <70db(A) measured 1m from the reader.

Text to speech:

- Optional text to speech functionalities to assist visually impaired consumers is not covered by this specification.



9.2.2 Visual LEDs and Display Interface

a) Display:

The EPS imposes no obligations for manufacturers to design an electronic Payment terminal with display.

However the EMV contactless specification requires that the terminal displays the amount of the transaction before the consumer presents his card. "TAP the Card" means that the client agrees to pay.

Display options specified for Electronic Payment terminals are:

- Minimum 2 lines each with 16 alpha numeric characters (8X5 dot matrix) per line with a minimum height (upper case) not less than 3.5 mm.

b) Status LEDs and display:

The Previous specifications recommended to install LED's in an R/Y/G traffic light sequence.

The LED sequence relating to reader status is specified in Appendix G. Those specifications are relevant for offline close loop purse terminals unable to process transactions with EMV contactless cards and if the terminal manufacturer does not implement a display.

If they are implemented then vertical traffic light orientation is preferred.

EMV contactless European specifications recommend either a set of four clearly visual single color status indicators (for example green LEDs) or a display that allows a graphical representation of the four indicators that represent the status of the contactless payment application.

If LED's are to be used they should be equally spaced apart and shall be always visible to the cardholder while the card or device is being tapped.

The cardholder interface should contain both LED's and a display or only a display if it is able to show graphical representation of the indicators.

In the case where only a display is being used it should contain a minimum of three lines of characters to allow the display of the status indicators in the top line followed by two lines for cardholder messages.

As a minimum any display must be capable of displaying two lines of sixteen 8x5 dot matrix with a minimum height (upper case) not less than 3.5 mm. This type of display requires to have four Green LED's to inform the consumer of the transaction process achievement.

The EMV four LED's requirement could be confused with traffic light status indicator. To indicate clearly the status of the terminal, manufacturers can use a different option:

- The product could use the same four LED's for the consumer interface using tri colour LED's following the sequence described in appendix G, but during the payment process when card presentation is required the LED sequence must follow schemes rules.
- Minimum use of the four LED's to give the terminal status must follow scheme rules. For readers connected to a mains electrical supply, when the reader is idle and it is possible to initiate a contactless transaction (i.e. the reader is powered on, correctly connected to and capable of communication with the POS system), the first status indicator shall flash at a rate of approximately 200ms on, five seconds off. The remaining status indicators shall not be lit and no tone shall be sounded
- The product could also use a colour display back ground or contactless logo colour backlight to follow the sequence described in appendix G
- The display is also a part of the status information; the screen shall display a suitable error message such as "Sorry, not in use".

In brief, except for devices used only for the treatment of close loop e-purse, it is highly recommended that the terminal possess a display. It must have more than four green LED's status if it has reads EMV cards and does not have a display of at least 3 lines or graphics.

Indications of status and payment processes must be as clear as possible in order to give the consumer an instant vision of the stages of payment. To achieve this purpose, the device can use various bespoke solutions respecting the appendix G colour guidance

9.2.3 Buttons

Two buttons (highly recommended) could be available on the terminal to start the transaction process or to avoid the selection with select first UPOS :

In the case of two buttons this must be:

The first one, a stop sign to avoid the transaction with round, octagonal or rectangular shape, background color primary red , text "STOP" white upper case letters Arial Black font.



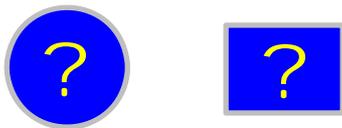
The second one, to start the payment process or to validate information, when it is not provided by the machine. The Design must be round or rectangular shape, background color primary green , text "START" Black or Dark grey with upper case letters Arial Black font.



An optional third button could be added especially when the electronic payment terminal accepts electronic wallet and EMV card.

As the electromagnetic field is so close, it is impossible for the consumer to check the card balance, the third button could be used to temporarily open the near field to read the wallet and display the balance.

For this use, the design could be round or rectangular shape, background color primary blue, text is a yellow question mark Arial Black font.



9.3 OPERATOR INTERFACES

9.3.1 Security Access Module (SAM) Sockets

Security Access Module (SAM) or GSM Subscriber Identity Module (SIM); Modules that are used to store configuration data, encryption keys and (possibly) audit data.

This specification imposes no obligations for manufacturers to provide SAM sockets on Electronic Payment terminals.

Any such obligation is usually determined by the specific Electronic Payment scheme provider. Where there are SAM sockets, these must be fitted such that they are only accessible from inside the machine. Furthermore, the space enclosing the reader internally must be NOT be infringed by any machine components, i.e. the enclosure space must be freely accessible.

For dimensions of the enclosure space please see appendix C.

9.3.2 Infra-red (IR) Interface

This specification imposes no obligations to provide IR communications on a Electronic Payment terminal.

Where any such reader does have fitted an IR data transceiver fitted, then *it must* exchange data with a compatible hand-held device using the *EVA Data Transfer Standard* (see reference 1).

9.3.3 Bluetooth

This specification imposes no obligations to provide Bluetooth communications on a Electronic Payment terminal.



10 ELECTRONIC TERMINAL PAYMENT PROCESS WITH MDB UPOS.

10.1 START BUTTON OPERATION FOR MACHINE UNABLE TO AUTHORISE SELECTION FIRST

Step	Machine	Consumer	Payment Terminal	Display
1	In use	Non present	Idle state	For electronic payment Press the START Button
2	In use	Press "START" Button	Send a begin session	Make your choice
3	Ready for selection	Press selection button	Wait	Make your choice
4	Send a vend request	Wait	Acknowledge	Amount XX,XX € Pay or press stop
5	Wait	Make the payment	Process the payment	Wait transaction in progress
6	Wait	Wait	Send vend approved	Vend in Progress
7	Deliver product	Wait	wait	Vend in Progress
8	Send a vend success	Take the product	End session	Debit XX,XX €

If the UPOS cannot deliver the product and issue a vend failure, the terminal must cancel the transaction and refund the credit if necessary.

Example issued messages are shown in the table above. They indicate the specific actions that consumers should take or the type of information's which must be provided.

If payment scheme imposes specific messages for the consumers they must be prioritised.

10.2 SELECTION FIRST OPERATION WITH MDB V4.2

The recommended operation mode:

Step	Machine	Consumer	Payment Terminal	Display
1	Ready for selection	Non present	Idle state	Make your choice
2	Ready for selection	Press selection button	Wait	Make your choice
3	Send a vend request	Wait	ack	Amount XX,XX € Pay or press stop
4	Wait	Make the payment	Process the payment	Wait transaction in progress
5	Wait	Wait	Send vend approved	
6	Deliver product	Wait	Wait	Vend in Progress
7	Send a Vend Success	Take the product	End session	Debit XX,XX €



If the UPOS cannot deliver the product and issue a vend failure, the terminal must cancel the transaction and refund the credit if necessary.

Example issued messages are shown in the table above. They indicate the specific actions that consumers should take or the type of information's which must be provided.

If payment scheme imposes specific messages for the consumers they must be prioritised.

10.3 SELECTION FIRST ISSUES

The selection first process has one main issue: It is at the risk for the consumer to receive the wrong product; for two reasons:

- The previous consumer presses a selection key but does not purchase the product.
- The consumer presses the wrong key and after he presses the correct one without using the stop button first.

The MDB protocol does not have a command to inform UPOS controller that a transaction is in progress and also it is impossible for the UPOS to send a new "vend request" when the first one was sent but not paid, so the consumer could pay the price for the first vend and actually receive the second one that completes the vend cycle

To limit these consequences, EVA EPS recommends implementing two time outs:

- Time-out 1 within the payment terminal triggered when the terminal receives a "vend request" and stopped only when the consumer starts to process the payment. If the Time-out 1 elapses the terminal will send a "vend denied" to stop the process.
- Time-out 2 within the UPOS controller to cancel the session sending a "session complete". Time-out 2 is triggered when the consumer presses the selection key and it is stopped when the controller receives a "vend approved" or a "vend denied".

One time-out 2 must be much longer than Time-out 1 in order to allow the terminal to process on-line authorisation; normally it will be never used if the MDB communication is established because the terminal time-out has the priority. The time-out perceived by the consumer will be that the terminal is waiting for his card.

The EVA EPS recommends to set the Terminal time out (Time-out 1) to around 10 seconds and UPOS controller time-out (Time-out 2) to around 30 seconds.



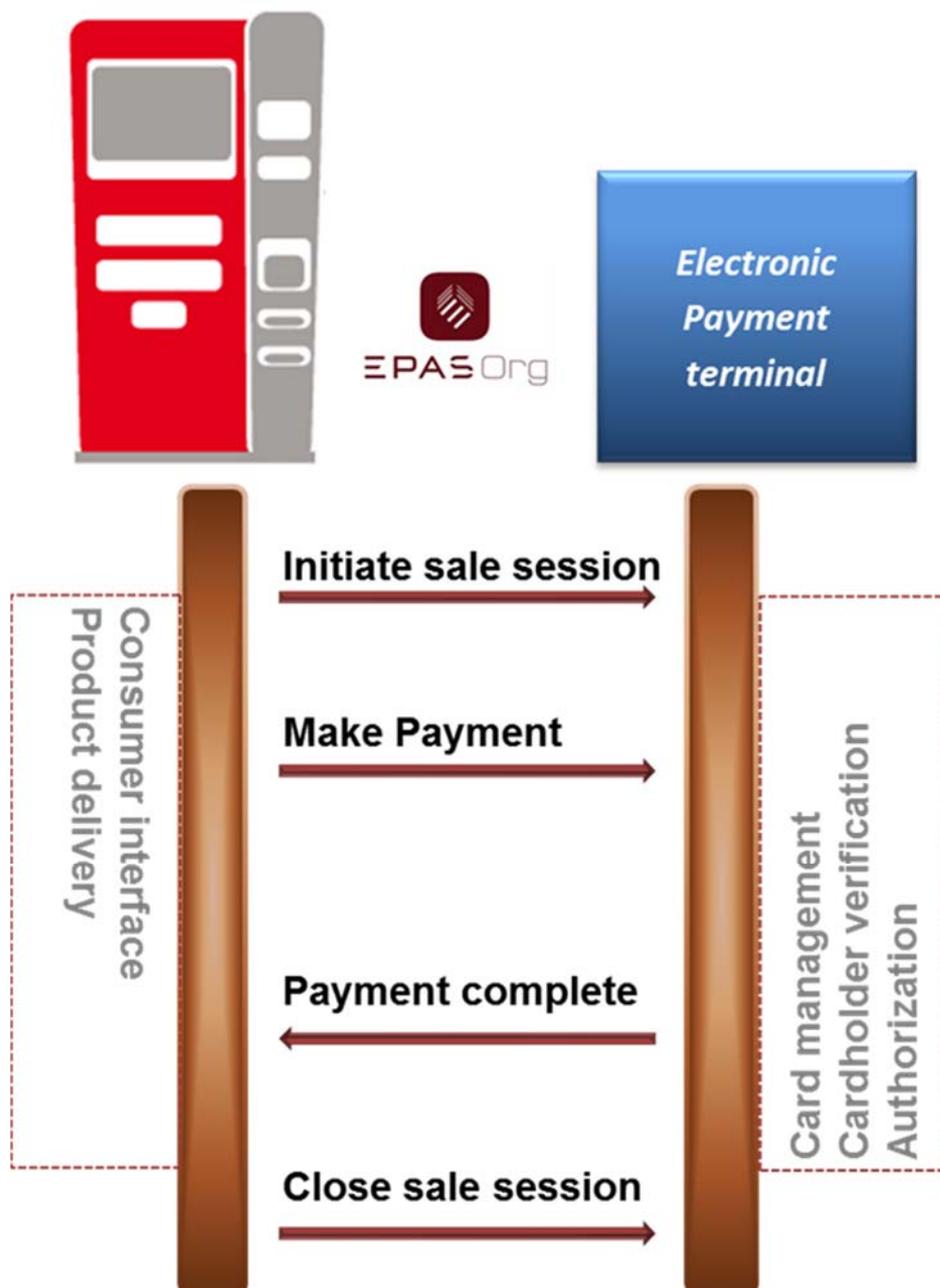
11 ELECTRONIC TERMINAL PAYMENT PROCESS WITH PC BASED UPOS.

PC Based UPOS utilise selection first as the main part of the consumer dialogue is performed by the PC.

The EPAS protocol is particularly well adapted for this type of machine.

As the electronic payment system is a slave peripheral, it secures and performs the transaction. The messages displayed could be the same.

In all cases the messages must be compliant with payment scheme rules.



12 ELECTRONIC TERMINAL PAYMENT PROCESS WITH MIXED PAYMENT AND REVALUE

12.1 CASH & ELECTRONIC MIXED PAYMENT

When both a cash acceptance device and a terminal for Electronic Payment are installed in a UPOS Vending Machine (VM) the priority of using Electronic Payment and cash is open to interpretation. In all instances, manufacturers should follow the *MDB best practice guidelines*. The EPS does NOT recommend implementing scenarios for performing mixed payments, especially with applications like EMV card.

The EPS recommends limiting functionality to cash payment, electronic payment and revalue electronic purse, otherwise the consumer will have big difficulty to understand how to use the machine.

12.1.1 SCENARIO 1: Machine is not compliant with MD4.2.

Pressing the start button to start the electronic transaction.

- a) When a consumer introduces cash, the electronic payment terminal is not advised that cash is introduced

If consumer decides to purchase a product using the standard method of inserting payment first, a standard cash payment is processed.

If consumer presses the start button at this time with cash credit introduced, the electronic payment terminal follows its own process and sends a "begin session".

The Vending Machine Controller (VMC) then has two choices:

1. If revalue is authorised a Revalue process is initiated by sending a "Revalue Request" to the electronic payment terminal
 2. If revalue is not authorised the consumer action is stopped by sending to the electronic payment terminal a "session complete" to abort the process.
- b) When the consumer depresses the start button on the Electronic payment terminal a standard electronic payment is initiated and the cash acceptance is inhibited.



12.1.2 SCENARIO 2: Machine is compliant with MD4.2.

Select a product first or to press start button to start the electronic transaction.

- a) When consumer starts introducing cash, the Electronic payment terminal is not advised that cash is introduced

If consumer decides to purchase a product using cash, a cash payment is processed.

If consumer presses the start button at this time with cash credit introduced the electronic payment terminal follows its own process, and sends a "begin session".

The VMC then has two choices:

- 1) If revalue is authorised a Revalue process is initiated by sending a "Revalue Request" to the electronic payment terminal
- 2) If revalue is not authorised the consumer action is stopped by sending to the Electronic payment terminal a "session complete" to abort the process.

- b) When the consumer depresses the start button on the Electronic payment terminal a standard electronic payment is initiated and the cash acceptance is inhibited.

- c) When a consumer select first the item to be delivered, to the electronic payment terminal is advised by a "vend request".

The consumer then has two choices:

If he wishes to process an electronic payment, he follows the indication on the electronic payment terminal.

If he wishes to pay by cash, he introduces currency and the electronic payment terminal purchase session is aborted by the VCM sending a "session complete" and a cash process is started.

12.2 REVALUE

Revalue is the ability to put money back on the inserted card or Electronic Payment media. The source for the money may be coins, notes, a debit/credit card or a credit coming from a deposit on drinks packaging.

Note that VMs have to be set up to support revaluation. The card scheme capability impacts upon the scenarios described below:

12.2.1 SCENARIO 1: The card scheme accepted by the electronic payment terminal allows revaluation and the terminal does not accept contactless EMV Payment cards.

The card allows **full revaluation** to any amount subject to card scheme specific maximum limitation. Typically, this is the case for close loop schemes. When the consumer inserts both cash and a card (in either order) the credit displayed by the machine is the sum of cash plus the balance of the card. The machine transfers the cash credit to the card balance.

Once transferred, the cardholder may purchase a product or remove their card. The vend price is taken from the card. Once removed the credit displayed by, and available on, the machine is zeroed.

12.2.2 SCENARIO 2: The card scheme allows revaluation and the terminal accept contactless EMV Payment cards.

If the terminal works with close loop e-purse contact less and public EMV contactless payment cards, in this case the terminal must follow EMV specifications. The electromagnetic field is off during idle mode and the terminal cannot detect the card to be revalued. EPS recommends to use the following process based on "START" Button.

Step	Machine	Consumer	Payment Terminal	Display
1	In use	Non present	Idle state	Make your choice
2	In use	Insert cash	Idle state	Make your choice
3	Display Cash amount	Press "START" button	Send a begin session with revalue authorized.	Make your choice
4	Send a Revalue request	Wait	Acknowledge	Credit XX,XX € Present your card
5	Wait	Present is card	Process the revalue	Wait transaction in progress
6	Wait	Wait	Send Revalue approved	Credit YY.YY € Remove your card
7	Take the cash credit	Remove is card	End session	Make your choice

If the revalue operation is not successful (reached credit limit or non-reloadable card) Revalue is denied and the cash credit stays in the VMC.

Example issued messages are shown in the table above. They indicate the specific actions that consumers should take or the type of information's which must be provided.

If payment scheme imposes specific messages for the consumers they must be prioritised.

12.2.3 SCENARIO 3: The card scheme does not allow revaluation.

The card scheme allows **no revaluation**. Typically, this applies for public Electronic Payment card schemes. EVA recommends to not accepting card and cash at the same time (see previous paragraph)



12.3 REFUND

Refund (or cancellation) means the ability to credit money back on the inserted card or payment media up to the value of the last transaction. The source for the credit may be a failed vend.

As with revaluation, an electronic Payment system may or may not allow refunds. Where permitted, a reader will refund up to and including the value of the last card transaction. Where refunds are not permitted, either the reader and/or the UPOS must display this clearly to the user before any selection is made.

Note that some UPOS may not report a failed vend; i.e. they are unable to detect if a selected product has been delivered. In these instances, the UPOS *must* display that it cannot provide card refunds; i.e. the machine is responsible and duty of care is observed.

Where the card payment scheme does not permit refunds then the reader *must* display that it cannot provide refunds, either using its own alpha numeric display or by sending such an appropriate message to the machine to display.

After refunding the card the cardholder will be asked to remove his card.



13 REFERENCES

1. Rev 6.0 EVA – DTS Data Transfer Standard
2. Rev 4.2 NAMA – MDB Multi-Drop Bus Vending Communication Protocol
3. Rev 1.4 EVA – EPS Electronic Payment Vending Specification
4. TBANAMA MDB Implementation Best Practice
5. Rev 2 EPASorg Sale to POI Protocol Specifications.

14 Registration process

This registration process allows the EVA to keep track of reader equipment suppliers and machine manufacturers who comply with the EVA EPS. The registrants list is maintained by the EVA and is available to anyone upon request. The registration process applies to payment system.

For UPOS manufacturers no registration is needed but the EVA recommends that they clearly declare the following information within their commercial literature and their technical documentation:

Type of protocol implemented.

Version of protocol used.

Type of peripherals managed on MDB bus.

Power supply provided: voltage, power

The type and the quantity of payment systems mountable in the Machine (SDM, CDM, IM)

As the process is self-certification, the EVA bears no responsibility regarding compliance of registrants. Furthermore, certifying with the EPS does not imply compliance with any Electronic Payment scheme specific rules, or with any statutory obligations; e.g. EC directives legally implemented by EU states. The process is as follows:

1. The applicant fills in a *Statement of Self Certification* (see Appendix B) and sends this to the EVA.
2. The EVA gives a registration number to the applicant and circulates the application to members of the EVA Electronic Payment Committee for review.
3. The EVA keeps the list updated and makes it available on the web site.
4. The applicant can refer to this compliance in any commercial and technical marketing literature.

The EVA EPC may request further product data and an example of a working device before approving the applicant's request.

When a significant new version is published, the EVA must inform all registrants that they may have to review their compliance. (There must be a declared window within which existing devices must become compliant)

The EVA may withdraw a registration if a product is subsequently found not to conform or has undergone major changes since registration. Also, some requirements may become mandatory on certain dates, after which time new products must conform.





Appendix A: TERMS & DEFINITIONS

Term	Definition
Biometric	A parameter (or method) for identifying a consumer based upon their physiology; e.g. finger-print
BDTA	Federal Association of German Tobacco Product Wholesalers and Vending Machine Operators
Contactless/Proximity	Smart card/tag technology in which there need be no physical contact between the card/tag and the installed reader. The card/tag has an embedded chip & loop antenna; the reader features a transceiver connected to a similar antenna. When activated, not only does the transceiver energise (i.e. power) the card/tag chip, but it exchanges data with the chip. The 'connection' is short range with a pick-up/detection distance between 0 and 100mm.
CVM	Cardholder Verification Method used with EMV card when terminal process transaction. Pin Code or Biometric ID.
EPS	Electronic Payment Vending Specification – this document.
Cut-out	In this document this refers to an aperture (hole) in a machine door/fascia. Normally, this is filled with a (cut-out) panel which can be removed to make way for a reader door module (Standard and Compact).
Credit First	This term, which relates to the payment process, is very similar to coin vending where the Electronic Payment credit available is sent to the machine <i>before</i> any selection (request) is made. By implication, the card/key/tag associated with the credit is either inserted in, or presented to the reader before a selection is requested. See also <i>Selection First</i> definition below.
DTS	Data Transfer Standard. An EVA maintained protocol which specifies a common set of audit and configuration parameters and how these can be transferred between peripheral devices and Operator terminals; e.g. PDA or other hand-held devices..
EMV	Europay Mastercard Visa association who define payment interface specifications www.emvco.com
EVA	European Vending Association
Footprint	Is the <i>area</i> that is occupied by a reader module's fascia.
IR	Infra-Red – a specified DTS physical interface.
LED	Light Emitting Diode – A visual indicator/lamp – red, yellow, green.





MDB/ICP	Multi-Drop Bus/Internal Communications Protocol. A NAMA maintained protocol (endorsed by EVA) which specifies how commands/data is to be exchanged between UPOS controllers and peripheral electronic devices, especially payment devices.
MPS	Mobile Payment Specification (for vending). This specification has the same scope as does the EPS excepting that it applies to Electronic Payment payments initiated using a mobile telephone handset.
MPM	Mobile Payment Module. An electronic machine peripheral device that can interface to a mobile telephone and a mobile service provider's infrastructure to initiate (and pay for) a vend.
NAMA	North American Merchandising Association – the US vending trade association.
HHD	Hand-held device; e.g. a mobile telephone or PDA etc.
SAM	Security Access Module. A GSM SIM profile electronic memory module used by Electronic Payment terminals to store configuration and audit data. Primarily, SAMs are used to secure transactions.
Selection First	<i>Selection First</i> is less intuitive to vending, but more similar to retail purchases made at attended (check-out) terminals. With this payment process, the products to be purchased are selected <i>before</i> the Electronic Payment credit is sent to the machine; i.e. before a card/key/tag associated with the credit is inserted in or presented to the reader. Once the selection is made, <i>then</i> the card is inserted/presented for payment. See also <i>Credit First</i> definition above.
SEPA	Single European Payment Area
SIM	Subscriber Identity Module
Space	Is used in this specification to denote <i>volume</i> .
UPOS	Unattended Point Of Sale is the opposite of the acronym "POS" that represents face to face transaction. This term qualifies all machines able to deliver product or service in unattended mode.





APPENDIX B: EVA-EPS Statement of Self Certification

Word Version available on EVA web site

Company

Name:			
Address:			
Phone:		Fax:	
Web-site:			

Company Representative

Name:		Position:	
Phone:		Fax:	
E-mail:			

Equipment

Part (Model) Number:	
Description:	
Soft/Firmware Version:	
Configuration/Other:	

Declaration

This product meets or exceeds the standards as specified in the EVA-EPS & summarised in the attached checklist.

Authorising Signature:	Date:
EVA Signature:	
EVA Contact Name:	Date:
EVA Certificate No:	





Self-Certification Checklist

If additional space is required for comments, attach extra sheets.

1. Product Description

--

2. Payment type

	Yes/No/option	Value or Type or comment
2.1 EMV Compliance		
2.2 Magnetic Card		
2.3 Chip Card		
2.4 Contactless		
2.5 Smartphone		
2.6 Other		

3. Mechanical

	Yes/No	Deviation from the standard
3.1 IM		
3.2 SDM		
3.3 CDM rear mounting		
3.4 CDM front mounting		
3.5 Other 1		
3.6 Other 2		

4. Consumer interface

	Yes/No/option	Value or Type or comment
4.1 Traffic light		
4.2 Alphanumeric display		
4.3 Graphic display		
4.4 Other visual interface		
4.5 Sound interface		
4.6 Button start		
4.7 Button stop		
4.8 Other 1		
4.9 Other 2		





5. Electrical characteristics

	Value	Comment
5.1 Voltage input range		
5.2 Nominal consumption		
5.3 Standby consumption		
5.4 Other information		

6. Communication interfaces

	Type	Comment
6.1 MDB Bus		
6.2 Serial link		
6.3 USB slave		
6.4 USB host		
6.5 Ethernet		
6.6 Wi-Fi		
6.7 Bluetooth		
6.8 Infra-red		
6.9 Wireless		
6.10 Other		

7. Protocols

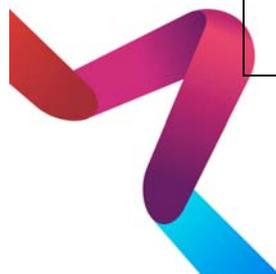
	Level	Comment
7.1 MDB		
7.2 EPAS Retailer		
7.3 EVA DTS		
7.4 DEX UCS		
7.5 Other 1		
7.6 Other 2		

8. Product pictures

Picture 1	Picture 2	
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9. Miscellaneous

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APPENDIX C: Mechanical Space available and mounting cut out

Appendix C: Fig. 1: Compact Door Module:

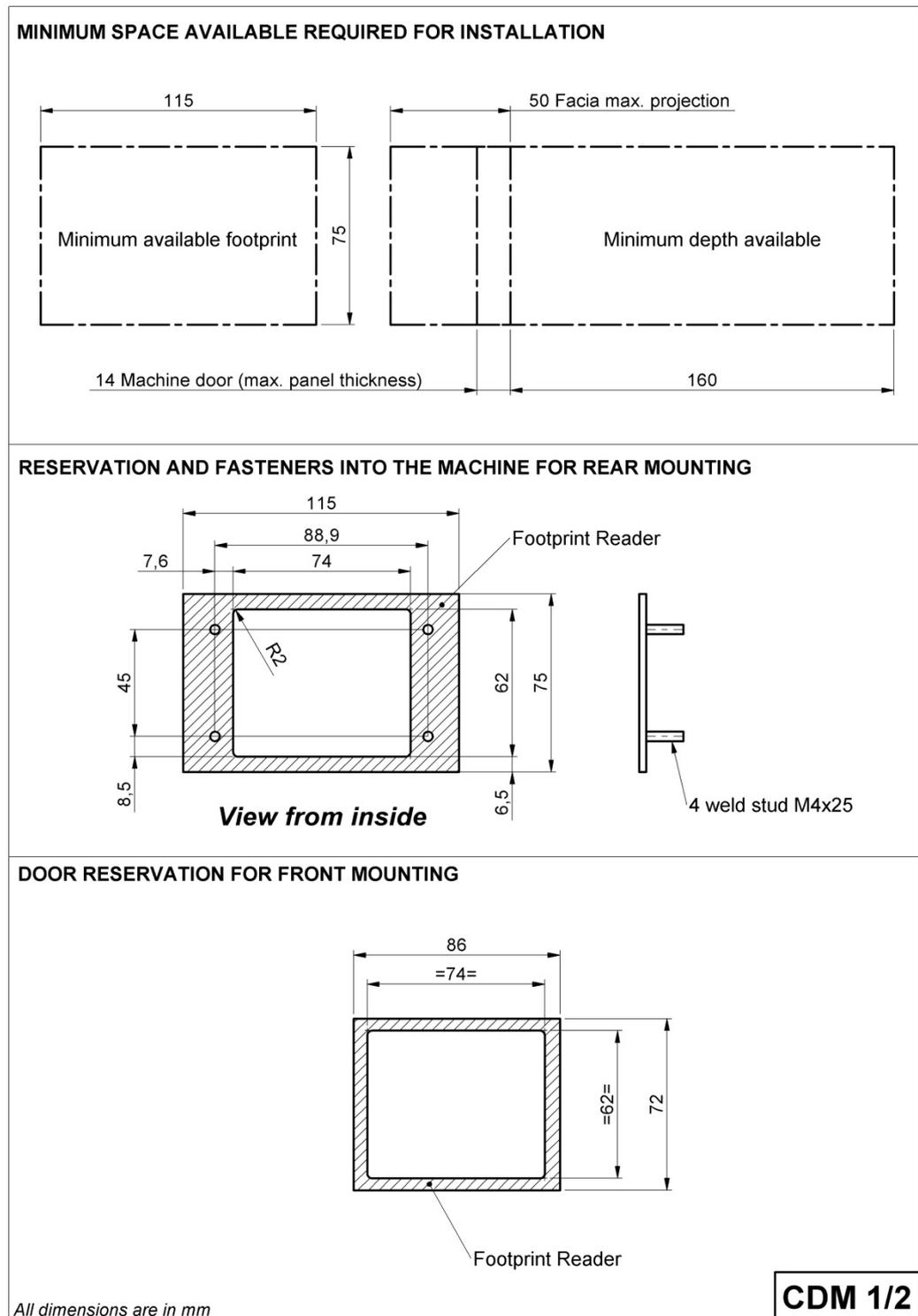




Fig. 1 bis: Compact Door Module:

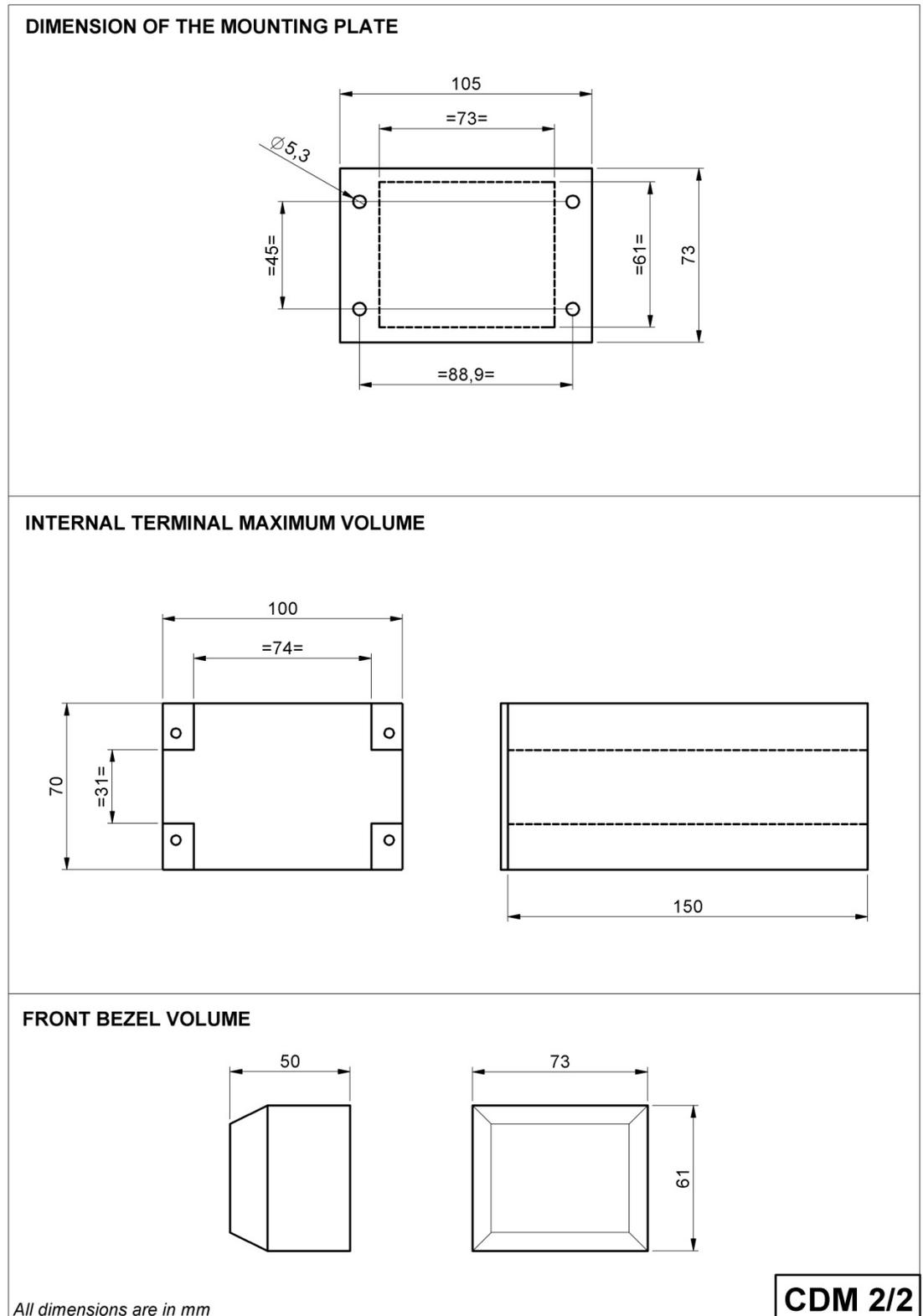
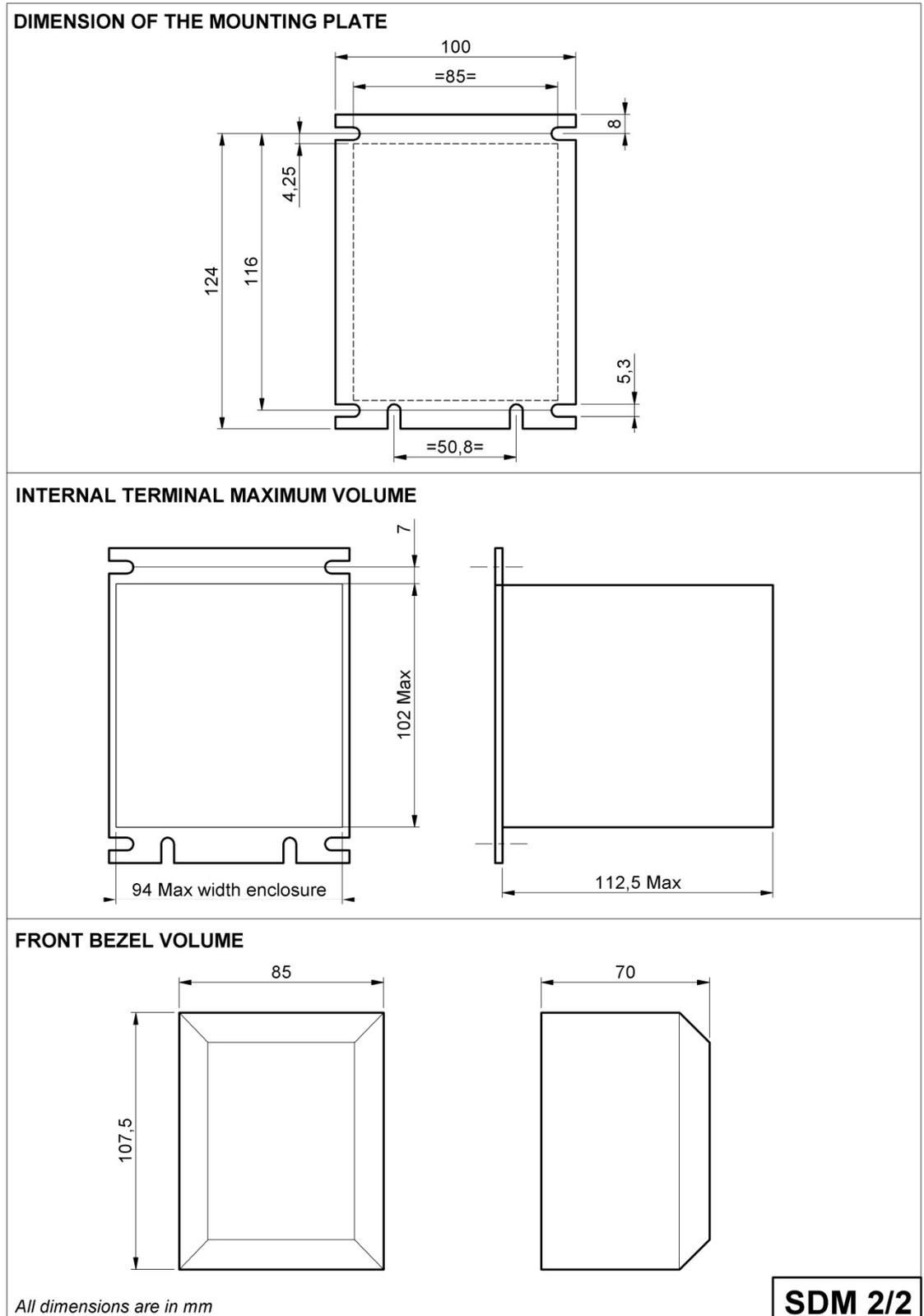


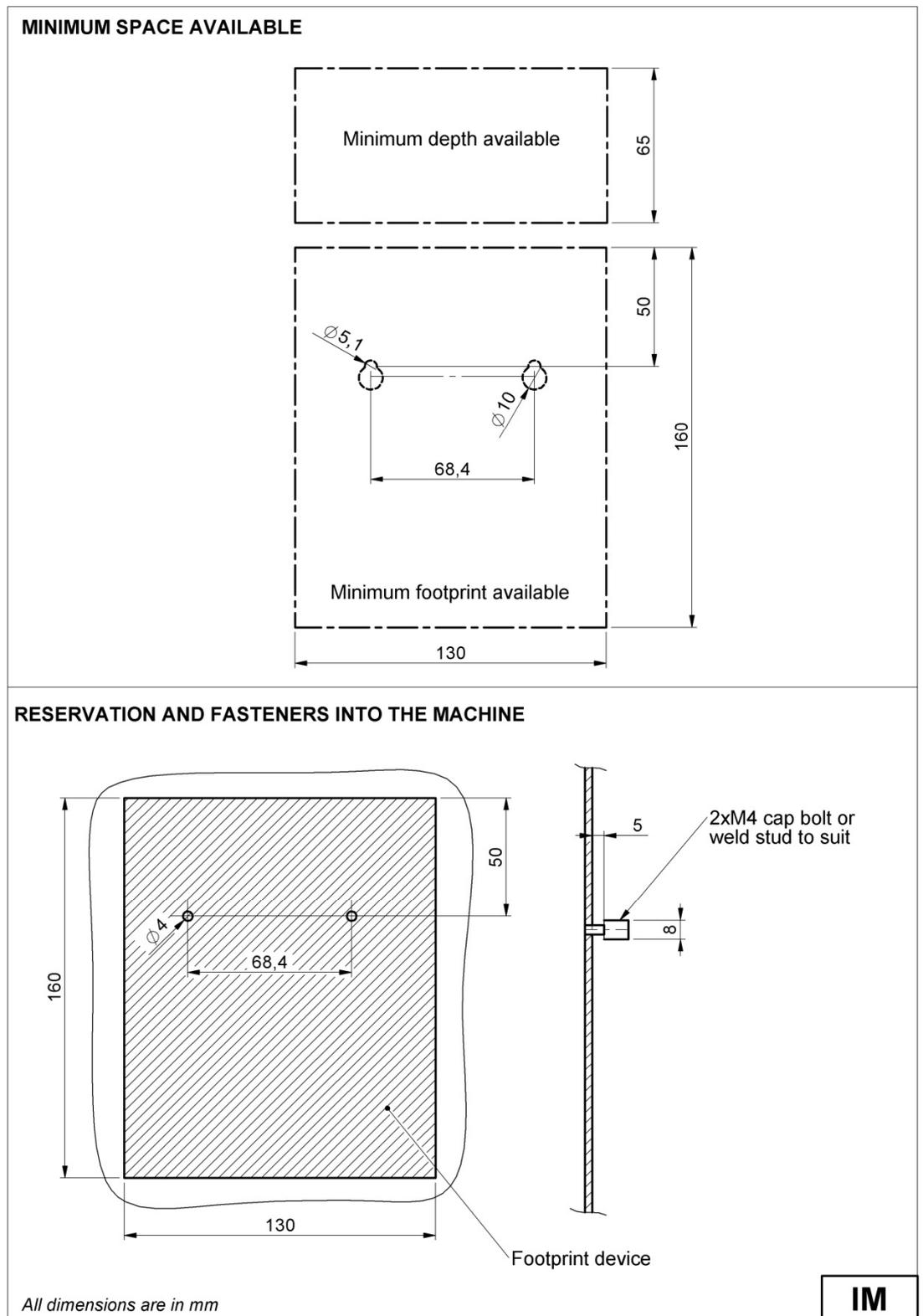


Fig. 2 bis: Standard Door Module:





Appendix C: Fig. 3: Internal Module:





APPENDIX D: COLOR VISUAL INTERFACE

Color sequence

When the terminal is able to provide a colorful visual interface as a traffic light, a three color LED or any other means, at least to display green and red light (yellow recommended option). The colors displayed will meet the following sequence (if yellow is not present the corresponding sequences are removed):

Status	Indicator	State		Description
1	GREEN	Static		Idle state, ready for use
2	RED	Static		Out of order
3	YELLOW	Flashing		Make your Choice and/or present your card for payment or revalue.
4	YELLOW	Static		Transaction in progress
5	GREEN	Flashing		Transaction successful, vend in progress or revalue approved
6	RED	Flashing		Transaction denied follow display indication

Traffic light indicator relative position

When the indicator is vertically positioned: up is red, middle is yellow and is green.

When the indicator is horizontally positioned: left is red, middle is yellow and right is green.





APPENDIX E: Frequently Asked Questions

Is the EVA-EPS important for customers?

Yes!

Self-service industry and their customers want machines and Electronic Payment terminals that are:

- Easy to install – plug and play.
- Reliable – always available to generate revenue.
- Low cost – both to purchase and to operate; i.e. *whole life* cost.

The EPS is a critical document to achieving these objectives.

Read it!

Is the EVA-EPS important for consumers?

Yes!

Consumers wish to easily use a self-service machine without spending time to understand "*how this damn machine works!*"

For this we need to standardise the human interface and the payment process.

The EPS is a critical document to achieve this objective.

Read it!

What do we mean by the terms *Electronic Payment, closed-site, open systems and electronic cash*?

By *Electronic Payment systems*, we mean the systems that are based on *non-cash* payment; i.e. keys, cards or any other identification devices including biometric sensors and identifiers.

By *closed-site* we mean systems that are used by specific card holder groups e.g. company employees, workplace, university, club etc. The payment media is only issued to this group and can only be used in points of sale which are operated for that closed-site.

By *open-systems* and *public-domain*, we mean smart card systems that are used widely by the general public both nationally and internationally; where card holders and merchants may have little in common other than the Electronic Payment scheme itself. Bank credit/debit card systems are a prime example of public systems, as are national stored value purse systems such as *GIROGO*, and *prepaid MasterCard* or *visa card*.

The EVA-EPS addresses both closed and open Electronic Payment systems. It is largely based on chip card technology (Contact, contactless or Mobile phone SIM) but can be applied to all payment systems.

Electronic cash is non-paper/coin based credit, which is stored as a digital (binary) number in some electronic media; e.g. RAM, EEPROM, magnetic/optical disk storage etc. Where electronic cash is stored on users' cards such that the credit may be lost if the card is mislaid, then this is often referred to as *stored value purse (SVP)* or *e-purse* credit. *GeldKarte* is a good example of an SVP system.



The EVA Position Paper on Electronic Payment vending requirements, which should be read in parallel with the EVA-EPS, sets out the vending industry's prerequisites that electronic cash schemes should take into consideration to ensure interoperability and compatibility with vending.

How does the EVA address the retrofit in current machines?

When originally drafted, the EVA Electronic Payment Committee resolved to make a standard (EPS) for the future machines and readers. Obviously, this is not always reconcilable with the existing field base, both with regard to dimension and function.

Many machines may not have sufficient space to fit an Electronic Terminal of the dimensions proposed in this EPS. The EVA sought to address the dimensions by proposing 2 possible solutions, one of them aimed to target smaller (i.e. table-top) machines, with the other being based on an existing vending standard for bill / note validators.

The EVA is a strong supporter of MDB/ICP as the default communications interface between the vending machine controller and Electronic Payment terminals. To comply, both suppliers (machines and readers) must provide equipment compliant with the MDB/ICP protocol (see reference 2). Older equipment *may* comply, by providing adaptors that can be supplied to support translation to the MDB/ICP protocol.

Why have a *traffic-light* display interface?

The EPC accepts that this system is a second-best option, which is available for machines without an alpha-numeric display. Whilst the EPC believes that systems with displays are preferable, especially to help card-holders with Electronic Payment as a new form of payment, it also appreciates that a RG or RYG LED display can provide *go/no-go* indication especially for 2-part readers.

What is the basis for the dimensions in the drawings?

The drawings in Appendix C specify the *minimum clearances* (i.e. a *minimum space envelope*) that vending machine manufacturers have to allow for installing Electronic Payment terminals. By implication, these clearances are the *absolute maximum* dimensions to which readers may be manufactured, notwithstanding making allowances for cable and SAM clearances.

The mechanical specification for a *Standard Door Module* is based upon:

- The aperture required for a US bill / note validator aperture.
- The necessity is to keep sufficient space around the terminal for connection.

The mechanical specification for *Compact Door Module* is based upon:

- The need to provide a practical installation solution for small compact vending machines (e.g. table-top vending machines) with these is restricted space available on machine doors.
- The necessity to include in this paper the de facto standard used by the whole community of the payment to design secure reader.





What is the thinking behind the mounting arrangements specified?

This document specifies mounting arrangements for the 3 basic modules. The Standard Door Module mounting is the arrangement specified in CVS 1.2. This is based on the mounting and dimensions of US bill note aperture, which has been an industry standard for many years.

Does this mean that my current maxi or mini reader is no longer mechanically compliant?

No. Both earlier maxi and mini profile readers remain compliant as *single-part Define* readers.

If my single part reader is small enough, can it be registered as a single and Two-part reader?

The standard specifies no minimum dimensions for either reader profile. Consequently, a small, compact single part reader with dimensions within the clearances specified for a 2-part reader door module would be single part and 2-part compliant.

Why are Electronic Payment terminal displayed messages not specified?

The EVA-EPS is aimed to a wide, international, public. There are two main reasons why the EPC decided not to specify the messages. Firstly, we would need to specify the messages in many different languages. Secondly, each scheme has its own message set specified to the Electronic Payment scheme supported; there would be too many variations to maintain.

What is the difference between refund and revaluation?

The term *revalue*, as opposed to *refund* defines an ability to revalue the card with any amount; i.e. up to a scheme specific limit. The term *refund* is a revaluation which only allows cards to be credited to the value of the last transaction undertaken; as with a failed vend or void transaction.

Why does the EVA specify MDB/ICP and the DTS protocols?

These are standard ways to connect to the vending machine and to communicate from external devices. This allows for seamless integration and easy use with available and future vending machine controllers and peripherals.

How have the electronic purse schemes respond to the EVA-EPS?

The public domain Electronic Payment schemes, represented by MasterCard, Visa, and GIROGO, were involved in the drafting process from its very beginning. They supported the final result and even requested that the EPS be promoted in other automatic payment industries. Some schemes have already integrated the EPS in their own specification.

There are still issues between schemes and the EPS, for example transaction time, which the EPS insists should be less than 3 seconds (version 1.3) and for security reasons this remains challenging with current technology. The position paper contains a number of similar issues.





APPENDIX F: Contacts

For any queries or comments contact EVA or NAMA

EVA

Rue Van Eyck 44
1000 Brussels
Belgium
Tel: +32 2 512 00 75
Fax: +32 2 502 23 42
e-mail: vending@vending-europe.eu

NAMA

20 North Wacker Drive
Chicago, IL 60606
Tel: +1 312 346-0370
Fax: +1 312 704-4140
e-mail: tech@vending.org

EVA Electronic Payment Committee Representatives able to support EPS in Europe.

Alain Huc EVA EPS WG member and writer

Ingenico
Avenue de la gare 9
Rovaltain TGV
BP 25156
F – 26958 Valence cedex 9
Tel: +33 4 75 84 21 22
e-mail: alain.huc@ingenico.com



Stefano Bertoldo EVA EPS WG member

Coges S.p.a.
Via Luigi Dalla Via 10
36015 Schio VI
ITALY
Tel: +39 0445 502811
e-mail: stefano.bertoldo@coges.eu



Neil Harrington EVA EPS WG member

24vend Ltd
10 Whitney Road
Basingstoke
Hampshire
RG24 8NS
UK
Tel: +44 7545786791
e-mail: neil.harrington@24vend.com



Jürgen Göbel EVA EPS WG member

Deutsche Telekom – BU Payment – POS Solutions
Deutsche Telekom AG Niederlassung Fulda
Eigilstraße 2
D-36043 Fulda
Tel: +49 661 48044171
e-mail: Juergen.Goebel@clickandbuy.com





European Vending Association aisbl

44 rue Van Eyck, 1000 Brussels, Belgium

Tel: +32 (0)2 512 00 75 - Fax: + 32 (0)2 502 23 42

vending@vending-europe.eu - www.vending-europe.eu