Section 1 : Introduction

MorphoAccess® VP MD terminals

Congratulations for selecting the MorphoAccess® VP MD, first ever Physical Access Control terminals to integrate the state of the art multimodal technology combining finger vein and fingerprint biometrics.

This terminal brings to access control systems the strong assets of the finger vein/fingerprint multimodality:

- the capability to address those individuals who usually experience difficulties to use mono-modal biometric devices,
- an excellent FRR@FAR ratio, which allows a high security level without affecting comfort of use,
- an enhanced resistance to spoofing (by combining the protection mechanisms intrinsic to each technology and also by making the most of the new characteristics resulting from the fusion of the two biometrics),

while offering the same easiness of use which makes finger biometrics-based systems quickly adopted by end-users.

In addition, the MorphoAccess® VP MD offers the following advantages:

- high quality optical sensor (IQS quality sensor),
- supports multiple input/output interfaces used in the physical access control industry,
- Local Area Network interface for easy interaction with other host systems ; LAN and WLAN possibilities (Wi-Fi™ as an option),
- practicality at installation and connection, as illustrated by this installation guide.

We definitely believe that our MorphoAccess® VP MD will come up to the expectations of our faithful and most demanding partners, as the ultimate solution for Security, Accuracy and Performance of their equipments!

To ensure the most effective use of your MorphoAccess® VP MD terminal, we recommend that you read this Installation Guide completely and attentively.

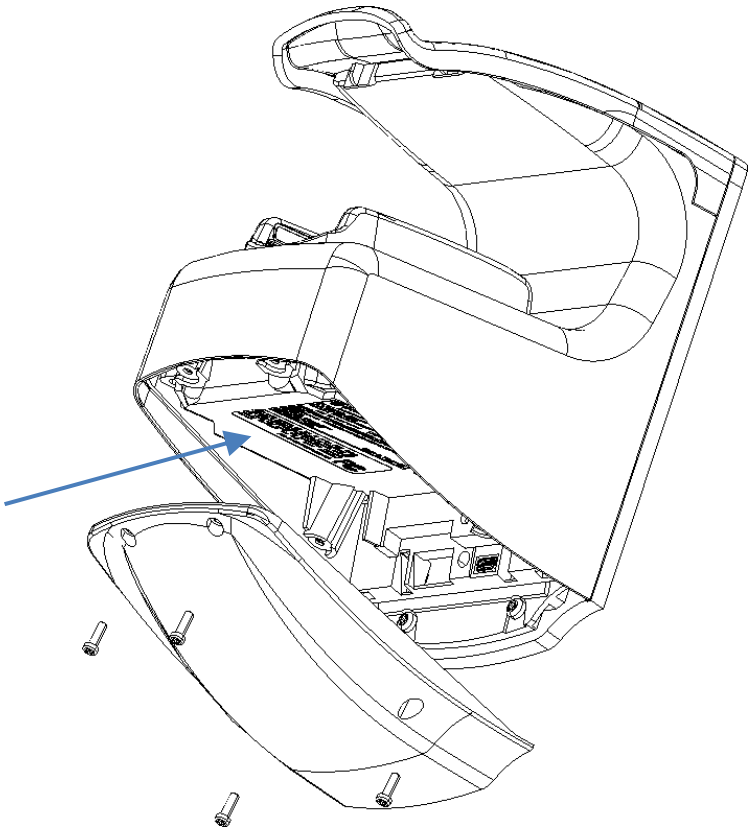
Scope of the document

This guide deals with the installation of MorphoAccess® VP MD, which is made up of following list of products:

MA VP DM Marketing Name	Multimodal finger vein/ fingerprint biometrics	MIFARE®/DESFire® Contactless smartcard readert	Water Resistant	Regulatory Model Number (*)
MorphoAccess VP MD	✓	✓	✓	MPH-AC005A

(*) The Regulatory Model Number is the main product identifier in the regulatory documentation and test reports associated to the product

The Regulatory Model Number and other product identification informations can be found on the stickers at the bottom of the product after removing bottom cover :



Safety Instructions

 means Direct Current (DC)

The installation of this product should be made by a qualified service Person and should comply with all local regulations.

It is strongly recommended to use a class II power supply at 12VDC 1A minimum in conformity with Safety Electrical Low Voltage (SELV). The power supply cable length should not exceed 10 meters.

This system must be installed in accordance with the National Electrical Code (NFPA 70), and the local authority having jurisdiction.

This product is intended to be installed with a power supply complying with IEC60950-1, in accordance with the NEC Class 2 requirements; or supplied by a listed IEC60950-1 external Power Unit marked Class 2, Limited Power source, or LPS and rated 12VDC, 1A minimum or 24VDC, 0,5A minimum.

In case of building-to-building connection (power source in a building, and terminal in another building), it is recommended to connect the 0V of the power supply to the earthing system of the building. And the terminal block Power Ground must be connected with the earthing system of the other building.

Note that all connections of the MorphoAccess® VP MD terminal described hereafter are of SELV (Safety Electrical Low Voltage) type.

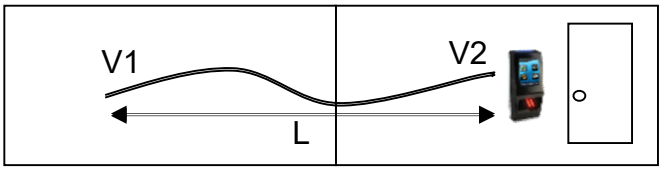
Wiring Recommendations

IDEMIA recommends using a gauge AWG20 for 12VDC power supply (when the terminal is not powered using POE feature).

The voltage must be measured on the product block connector and must be equal to 12VDC-24VDC (-15% / +10%)

For information, this table shows the maximum drop voltage observed on the terminal MorphoAccess® VP MD, depending on the length of the cable:

Gauge AWG	Diameter (mm)	Maximum drop voltage @ 1m (V)	Maximum drop voltage @ 5m (V)	Maximum drop voltage @ 10m (V)
18	1.02	0.02	0.11	0.21
20	0.81	0.03	0.17	0.33
22	0.64	0.05	0.26	0.53
24	0.51	0.08	0.42	0.84



Drop voltage = loss of power due to wire resistance and its length:

V2 = V1 – Drop voltage

Regulatory, safety and Environmental notices

European Union (CE) regulatory notices

Declaration of Conformity

CE

Products bearing the CE marking comply with one or more of the following EU Directives as may be applicable:

- EMC Directive 2014/30/EU.
- RED Directive 2014/53/EU.
- ROHS Directive 2011/65/EU.

Compliance with these directives is assessed using applicable European Harmonised Standards.

MorphoAccess® VP MD is intended to be used for professional application only (buildings, airport...).

This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce magnetic emissions to prevent interference to the reception of radio and television broadcast.

The full Declaration of Conformity is available on demand to your reseller. Please, provide him the product model name or its Regulatory Model Number (Model on the label).

Products with wireless features (EMF)

This product meets the provisions of the EU's Council recommendation 1999/519/EC on the limitation of the exposure of the general public to electromagnetic fields (0 Hz to 300 GHz).

USA (FCC) regulatory notices

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Responsible Party:

IDEMIA Identity & Security France

2, place Samuel de Champlain

92400 Courbevoie – France

NOTE: *This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:*

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded cables must be used with this unit to ensure compliance with category B FCC restrictions.

Canada (IC) regulatory notices

WARNING TO USERS IN THE CANADA / ATTENTION POUR LES UTILISATEURS AU CANADA

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada.
To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) il ne doit pas produire de brouillage, et (2) l'utilisateur du dispositif doit être prêt a accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.
Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada.
Dans le but de réduire les risques de brouillage radioélectrique à l' intention d'autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

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~~Note : UL LLC has not verified this product for compliance in respect to Canadian standards.~~

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
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Others recommendations

The MorphoAccess® VP MD incorporates a capacitive sensor for contactless finger presence detection.

In the presence of electromagnetic disturbances, this function can be activated inadvertently. This behavior remains normal (the electromagnetic field modifies the capacity of the sensor) and has no impact for the user (the access control remains functional) outside the light signal. To avoid the light signal, Idemia recommends the use of an EMI filter on the power lines and recommends, as far as possible, to install the MorphoAccess® VP MD at a sufficient distance from the antennas of potential RF transmitters.

Potential safety conditions notice

If you notice any of the following conditions (or if you have other safety concerns), do not use the product: crackling, hissing, or popping sound, or a strong odor or smoke coming from the product. It is normal for these conditions to appear when an internal electronic component fails in a safe and controlled manner. However, these conditions may also indicate a potential safety issue. Do not assume it is a safe failure. Turn off the product, disconnect it from its power source, and contact technical support for assistance.

Disposal of waste equipment by users

This symbol means do not dispose of your product with your other household waste. Instead, you should protect human health and the environment by handing over your waste equipment to a designated collection point for the recycling of waste electrical and electronic equipment.

Recommendations for terminal implementation

Every installation is unique. Sometimes the issues are well defined and can be handled in a standard fashion; sometimes the issues are very specific and may not be immediately recognizable.

IDEMIA recommends following these steps for a successful installation:

- **Plan the installation** - Choose the type of hardware required, decide if a network is required, and decide on the location and number of required terminals.
- **Unpack all items** - Unpack all items and check against the packing list.
- **Install network hardware components** - Install the cabling and components needed to run the system.
- **Install software** - Install the software needed to set up the terminals.
- **Pre-configure device** - Connect the terminals to the Ethernet, supply power to the terminals, and pre-configure the terminals.
- **Mount devices** - Mount the terminals in their final locations
- **Power distribution and device hook up** - Connect the terminals wiring via the back panel.
- **Power-up procedure** - Check the power connections, and then start the system safely.

To secure properly an access, IDEMIA recommends installing the MorphoAccess® VP MD terminal as a part of the typical Access Control environment, as the one described in the figure below.

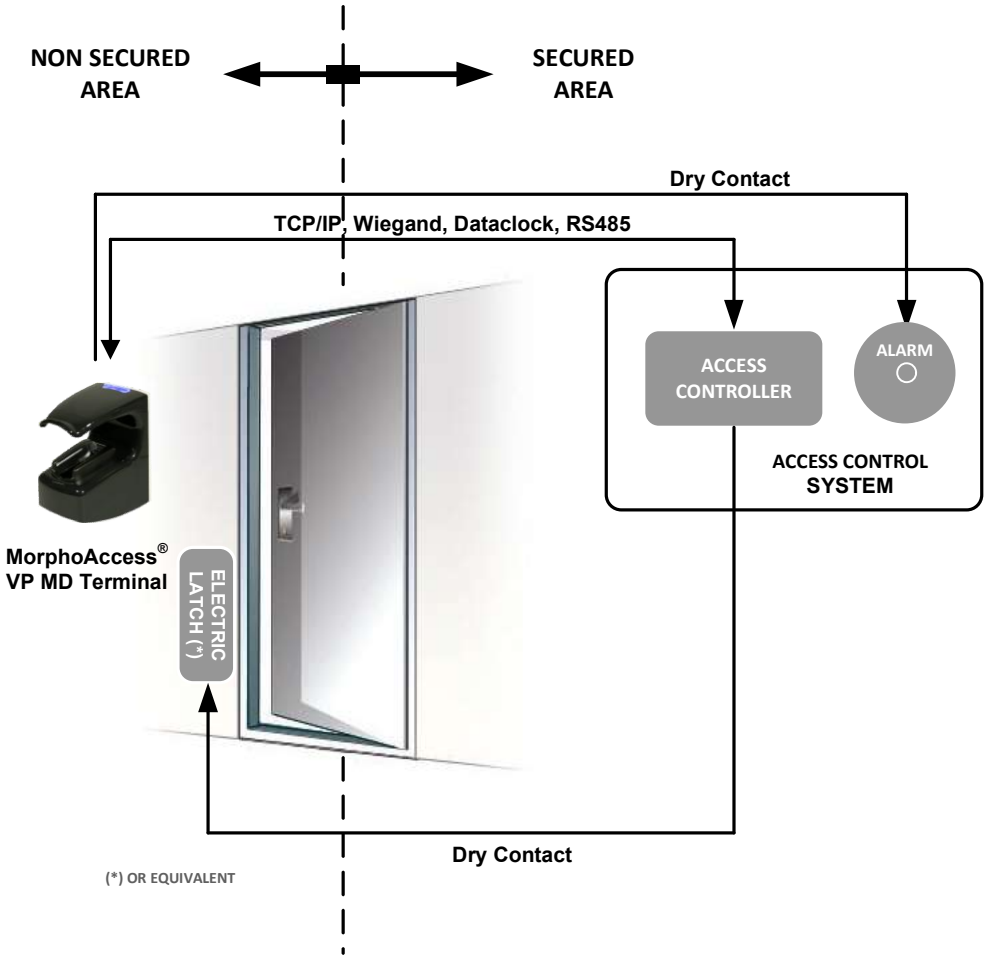

Figure 1: Implementation Recommandations

This environment comprises:

The MorphoAccess® VP MD terminal itself

Its role is to perform one-to-many multimodal biometric identification or one-to-one multimodal biometric verification, i.e. to identify the individual who is presenting his finger on the terminal sensor by comparing his biometric data with the references previously stored in the terminal database (in the form of multimodal biometric templates) or to verify his identity using the reference stored in a contactless card presented to the terminal.

An Access Controller (3rd party product)

The Controller is the element which controls the access rights of the individuals to the secured area. For that reason, it must be located in the secured area.

The individuals who are authorized to access the secured area have their User ID listed in a so-called "authorized user List" (in contrast with a banned card list).

The MorphoAccess® VP MD terminal and the Controller are communicating using one of the available protocol (TCP/IP, Wiegand, Dataclock, or RS485). The typical process is described below:

- After access request, and local checks, the MorphoAccess® VP MD terminal sends the User ID, and the result of local checks, to the Controller
- The Controller performs additional checks, and sends its decision to the MorphoAccess® VP MD terminal (which displays GREEN light if access is granted or RED light if denied), and to the electric latch of the door (though a door controller) if access is granted to the user
- The MorphoAccess® VP MD terminal sends an alarm signal to the Controller as soon as a malicious operation is detected (terminal pulled out from the wall or opened); please refer to the paragraph dealing with anti-pulling and anti-tamper switches for more explanations.

The Controller is part of the global Access Control System of the secured area, which can provide useful features such as manage:

- authorized user lists (i.e. for VIP),
- banned card lists (i.e. for lost user cards),
- an access request log (who and when, access granted or denied,..),
- an event log (i.e. tamper detection, access control for evacuation of the building,...).

The MorphoAccess® terminal is able to work alone, without Controller, but the protection level of the secured area is lower.

An Alarm (3rd party product)

This element is connected to the MorphoAccess® VP MD terminal through a dry contact.

The MorphoAccess® VP MD terminal sends the command to activate the Alarm as soon as a malicious operation (terminal pulled out from the wall or having its bottom cover opened out of maintenance operations) is detected; please refer to the paragraph dealing with anti-pulling and anti-tamper switches for more explanations.

A Electric door strike or equivalent (3rd party product)

The activation of this element, open the door or the gate, to provide the physical access to the protected area. The Controller is the one which sends the command to activate the strike if access is granted (i.e. if the individual's User ID is listed in the Controller authorized user List). Connection between these two elements is done through a dry contact.

Section 2 : General Description

Box opening

At the box opening, components shall be extracted from the protection casing as depicted in the pictures below.

Extract the bottom cover and the wall plate (which are not screwed to the terminal) and keep them separate until the installation of the terminal is completed. The screwing of the bottom cover is the last stage of the installation.

Do not forget to withdraw the sachet of screws, bolts and connectors from the white protection casing.

Figure 2: Box Opening

Components of the initial package

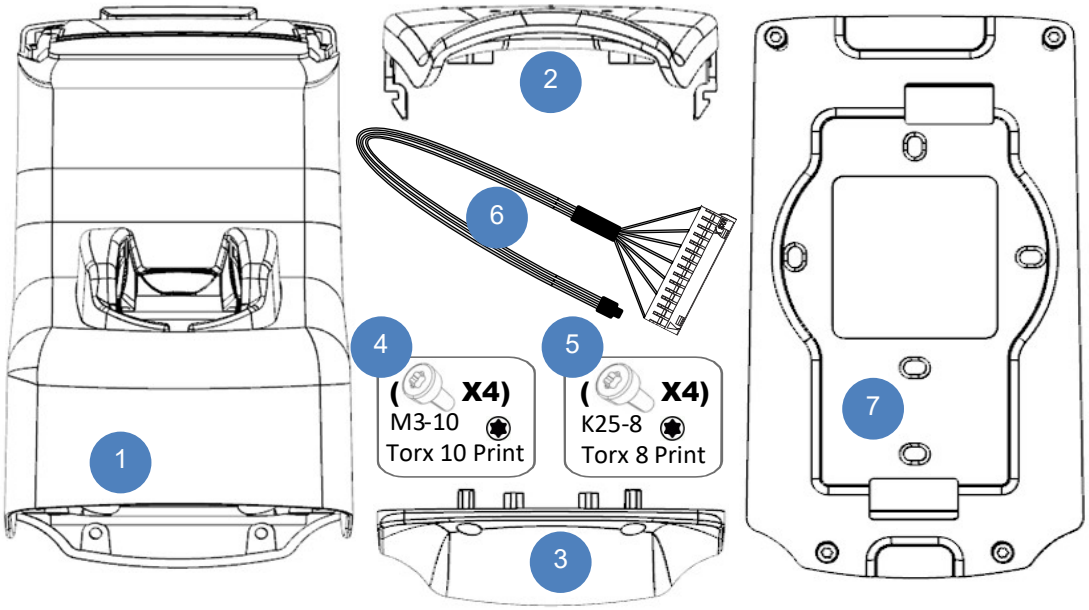

Figure 3: Box Content

1. One (1) Terminal's body
2. One (1) top cover fixed at the body of the terminal
3. One (1) bottom cover
4. Four (4) M3X10 Screws (for terminal fixing to the wall plate) – T10 Torx and 4mm flat print
5. Four (4) K25x8 Screws (Bottom cover fixing) – T8 Torx Print
6. One (1) Connection cable
7. One (1) Wall frame

Terminal's front view description

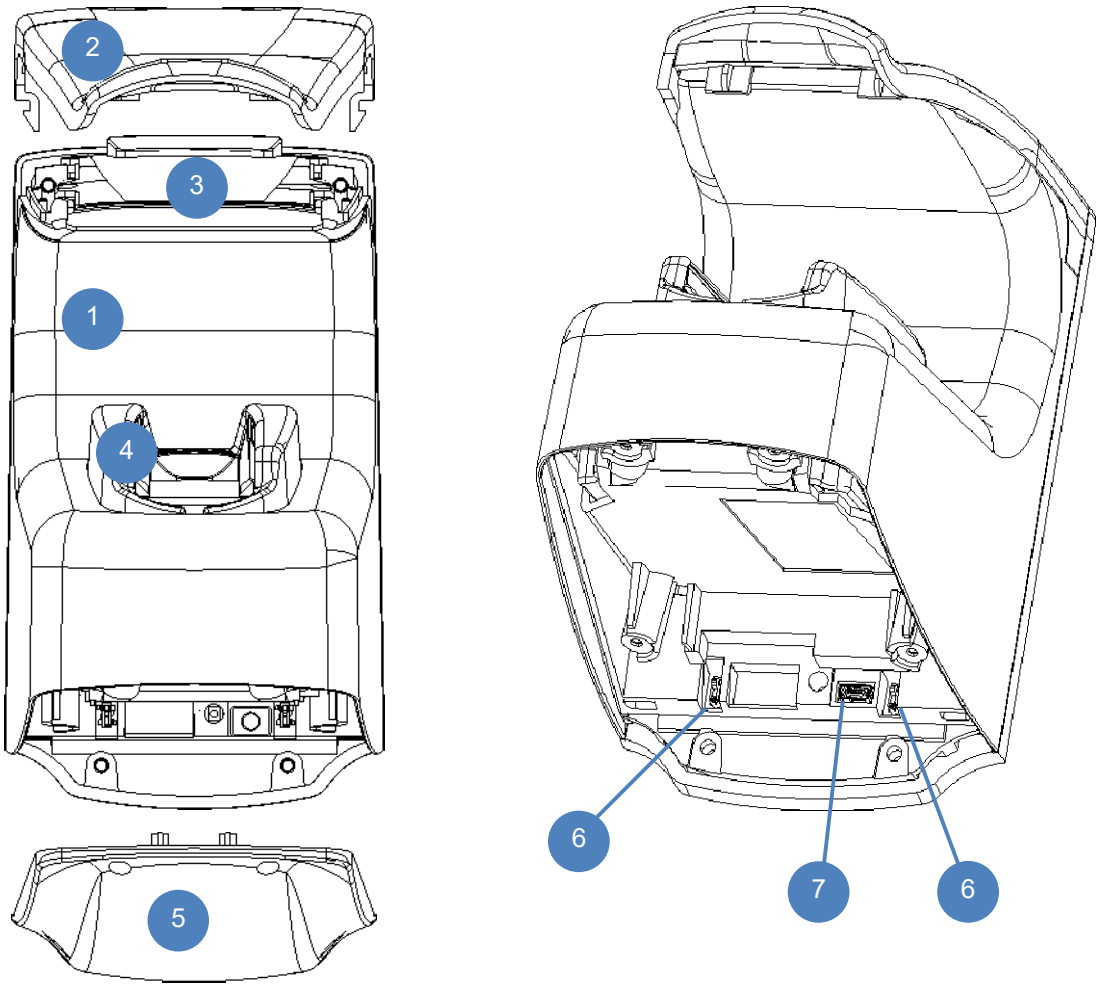

Figure 4: MorphoAccess® VP MD terminal front view

1. Terminal's body
2. Top cover
3. Contactless card reader
4. Multimodal biometric sensor (optical)
5. Bottom cover
6. Anti-tamper switches
7. USB port (for configuration and settings with a USB mass storage key, or for installation of a Wi-Fi™ USB dongle)

Terminal's rear view description

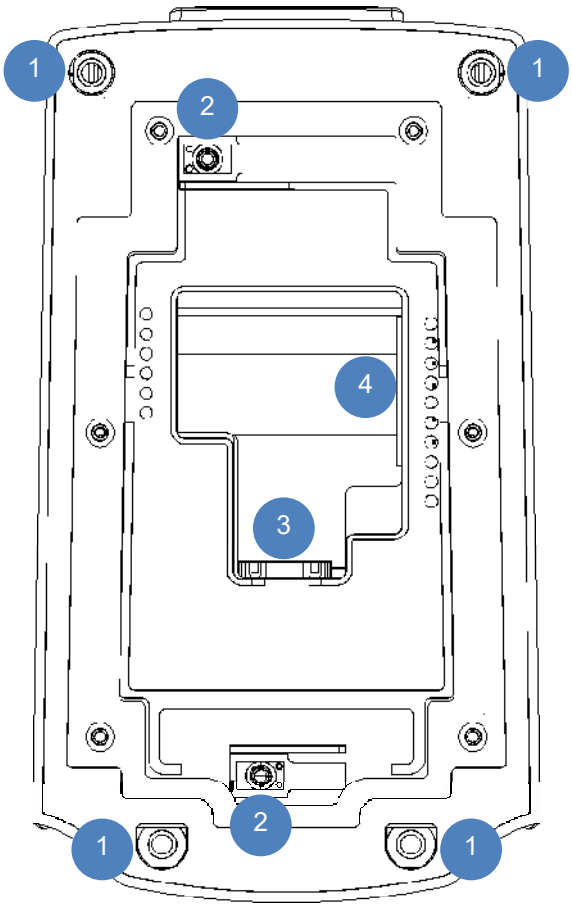

Figure 5: MorphoAccess® VP MD terminal rear view

1. Mounting holes (4)
2. Anti-pulling switches (2)
3. RJ45 (Ethernet and Power Over Ethernet)
4. Terminal blocks

MorphoAccess® VP MD Technical Characteristics

Item	Description
Access control modes	Identification (search for multimodal biometric data in a local database)
	Authentication with contactless card, with or without multimodal biometric data check (only if terminal equipped with a smartcard reader)
	Multi-factor: identification or authentication
	Proxy: the access control check is fully driven by a remote system
Man Machine Interface	Multi color LED
	Multi tone Buzzer
Biometrics	MorphoSmart™ FINGER VP Biometric module inside for multimodal biometric comparison. With 500dpi, 256 gray levels optical sensor, PIV IQS certified by the FBI
	False Acceptance Rate (FAR) adjustable from 10^{-2} down to 10^{-8}
	Database capacity: 5000 users (standard) or 10 000 users (with specific license).
Log capacity	100 000 records (standard) and up to 1 000 000 (with specific license)
LAN/WLAN connection	For terminal configuration and data transfer: Ethernet 10/100 Base T (MDI, MDI-X) Or Wi-Fi™ Wireless LAN (option), WEP, WPA (PSK) and WPA2 (PSK) encryption available Either TCP, TLS or SSL protocol
RFID cards (depending on product version)	MIFARE® 1k, 4k MIFARE® PLUS S (SL1, SL3) 2k, 4k
	DESFire® 2k, 4k, 8k
Serial port	The serial port supports WIEGAND, DATACLOCK (ISO2) and RS485 protocols

Output relay switches	Access granted: 1 switch two outputs (normally “open” and normally “closed”) 30V DC – 1A max (Resistive/inductive loads)
USB host port	Front port for terminal configuration through a USB mass storage key or for Wi-Fi™ USB dongle.
Input signals	LED1/LED2 to activate the access granted relay
Power supply	12 to 24 V DC power supply (1A min @12V) Or by Power Over Ethernet through RJ-45 connector
Security of the terminal	Anti-tamper-pulling switches. Tamper-pulling detection: one relay switch.
Size and weight	W x H x D: 90 mm x 160 mm x 125 mm (3.54” x 6,3” x 4,92”) 675g with wall plate 515g without wall plate
Environmental conditions	Operating temperature -10 °C to + 50 °C (14°F to 122°F)
	Operating humidity 10 % < RH < 80 % (non condensing)
	Storage temperature -20 °C to + 70 °C (-4°F to 158°F)
	Storage humidity 5% < RH < 95 %
	IP55 rated for outdoor use (once wall-mounted)
	The terminal should be installed in controlled lighting conditions. Avoid direct exposure to sunlight or to UV lights.
Certifications	CE, IEC 60950-1, FCC Part 15, RSS210 - Issue 8 : 2010, RSS-102 - Issue 5 : 2015, RSS-Gen – Issue : 2014, RoHS, WEEE