

MorphoAccess[®] VP MD

Quick User Guide

2019_2000041669-V1



All descriptions, illustrations, and specifications in this brochure should be considered approximate and may relate to optional equipment or feature

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Product Overview

The MorphoAccess® VP MD terminal has a simple and ergonomic man-machine interface designed for access control, with fingerprint and vein recognition, and contactless card authentication.

Embedded web server
(configuration & enrolment)

RF Card reader
(MIFARE™ DESFire™
13,56MHz)

User feedback
LED panel

Buzzer

Multimodal biometrical
sensor (optical)

USB host port
(for configuration and
settings with a USB mass
storage key, or for
installation of a Wi-Fi™
USB dongle)

(plugged under the terminal)
Power consumption shall
not exceed 500mA

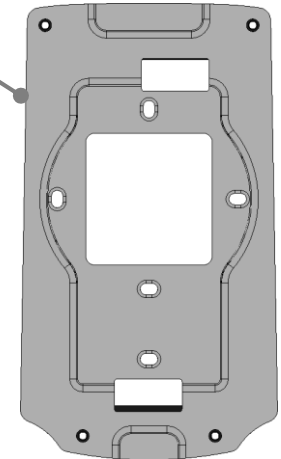
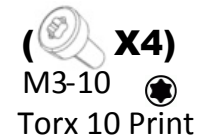
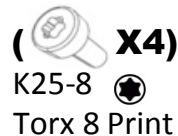
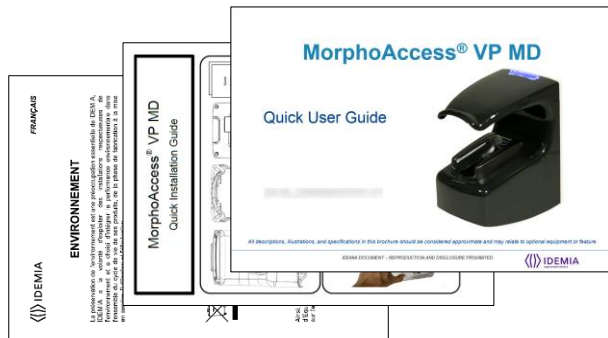


Step one : overview

MorphoAccess® VP MD Checklist

Product packaging checklist:

QTY	ITEM
1	MorphoAccess® VP MD terminal
1	Top cover fixed to the terminal
1	Bottom cover fixed to the terminal
1	Wall Mounting Plate
1	Connection cable
4	M3X10 Screws (for terminal fixing to the wall plate)
4	K25x8 Screws (Bottom cover fixing)
1	Documentation package

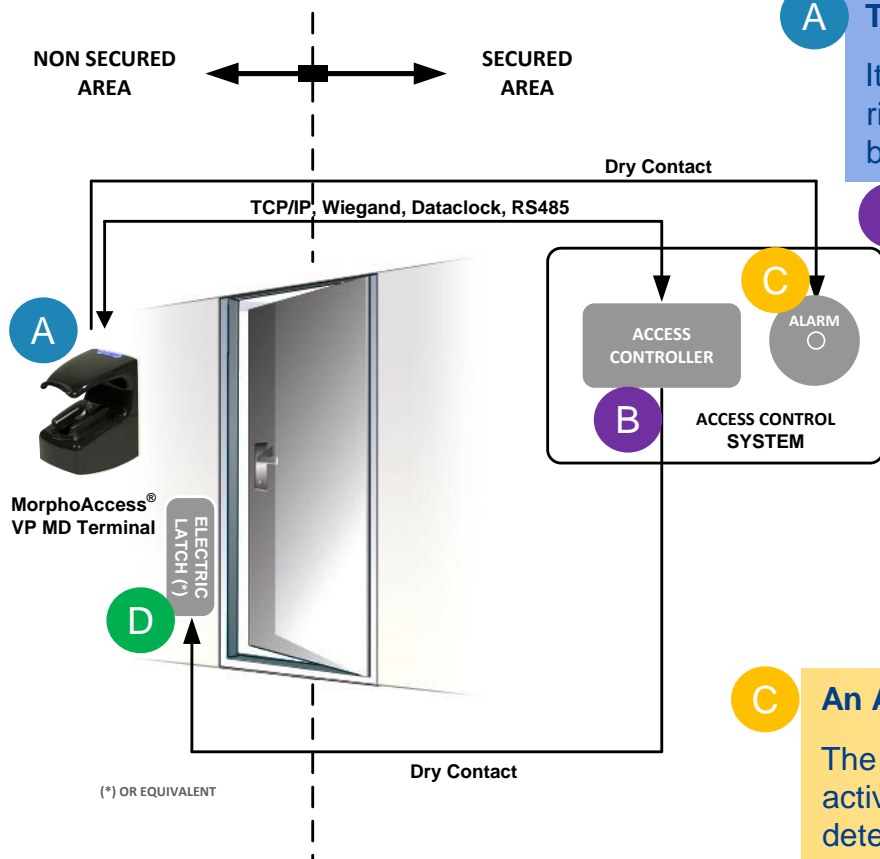


Step one : overview

Electronic documentation is provided in Adobe® Acrobat® format (PDF). Adobe® Acrobat® Reader is available at <http://www.adobe.com>.

MorphoAccess® VP MD terminal Implementation

To secure an access, IDEMIA recommends installing the MorphoAccess® VP MD terminal as a part of a typical Access Control system, which consists of the components described below.



A The MorphoAccess® VP MD terminal

Its role is to process the access request from the user. It performs access right checks using one-to-many biometric identification or one-to-one biometric verification, and/or RF card authentication.

B An Access Controller (3rd party product)

The MorphoAccess® terminal interfaces with an Access Controller (using TCP/IP, Wiegand, Data Clock or RS485 protocol):

- After access request, the MorphoAccess® terminal sends the result of user's access rights to the Access Controller (this message contains at least the User ID)
- The Access Controller performs additional checks, and returns the final decision (access granted/denied) to the MorphoAccess® terminal (which displays the result to the user), and to the door controller which opens the door (if the access has been granted).

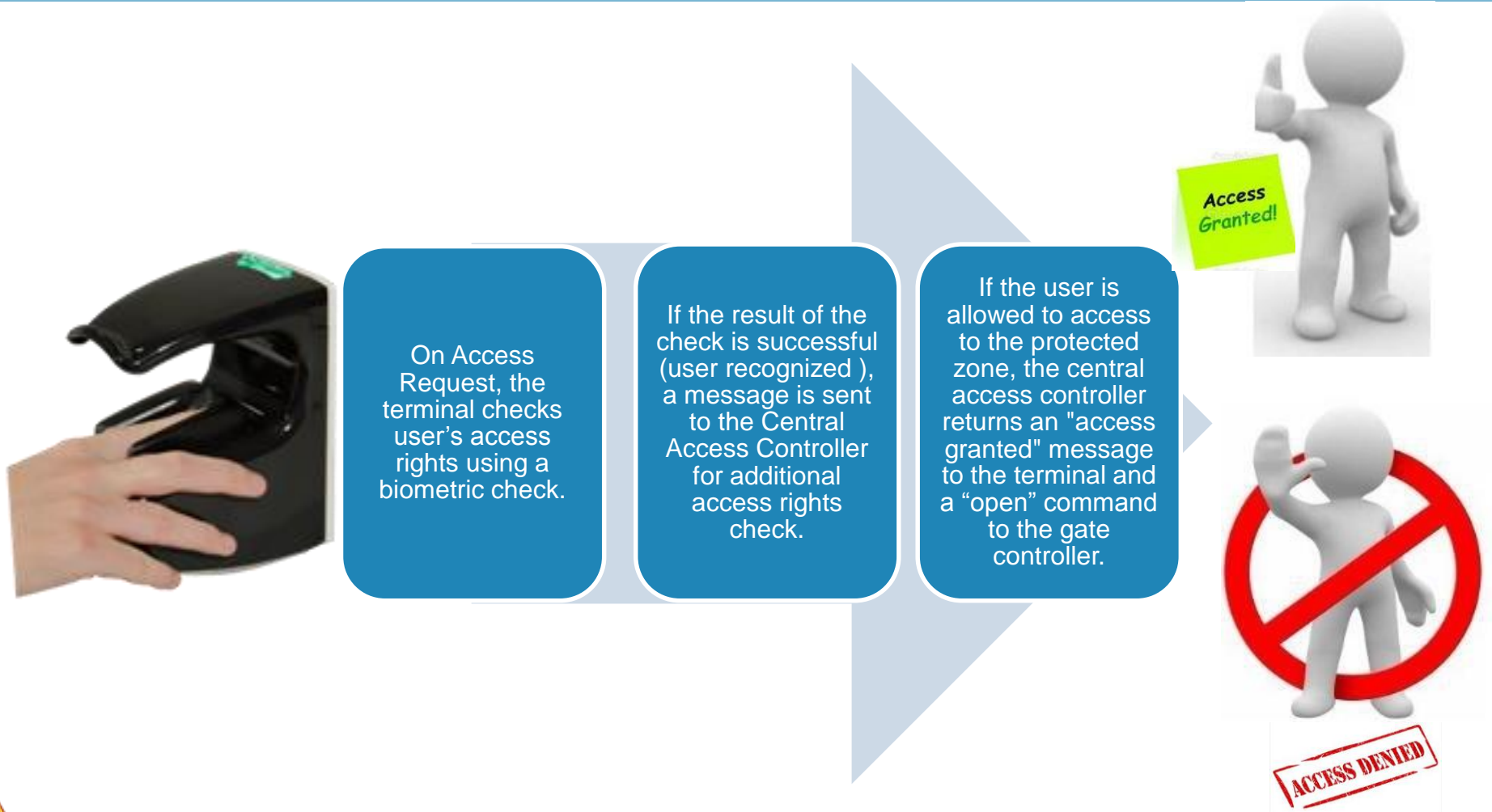
C An Alarm (3rd party product)

The MorphoAccess® terminal sends a message to the Access Controller, to activate the Alarm as soon as a malicious activity, such as tamper or pulling, is detected

D A Door Electric Latch or equivalent (3rd party product)

The Access Controller sends a command to activate the latch if the access is granted (i.e. if the individual's User ID is listed in the Controller authorized user List). Control of the latch is made through a dry contact..

Typical Access Control Process



User's fingerprints and veins must be stored in the terminal database or in contactless card, to enable biometric check.

MorphoAccess® VP MD Access Control Modes

The terminal can be configured in one of the modes described in the table below

	Identification	Authentication	Multifactor	Proxy
Access control application	Application that runs on the terminal when it starts.	Application that runs on the terminal when it starts.	Application that runs on the terminal when it starts.	Remote application that controls the terminal through network commands
Access control triggering event	A user places a finger on the biometric sensor.	A user places a contactless card in front of the reader. (*)	Both Identification and Authentication triggers are enabled.	Triggering events are selected by the remote application
Biometric check (if enabled)	The user's captured fingerprint/vein is matched against all fingerprints in the terminal database.	The user's captured fingerprint is matched against their reference fingerprint/vein. (**)	As per Identification or Authentication, depending on the triggering event	Selected by the remote application
Decision to display result signal to user	By Identification standalone application	By Authentication standalone application	By running standalone application	By remote application

(*) or a Wiegand frame is received from an external device

(**) stored on the contactless card or in the user record in the terminal's local database

Deployment Environments

Operating temperature	-10° to + 50 ° C (14° to 122° F)
Operating humidity	10 % < RH < 80 % (non condensing)
Storage temperature	-20° to + 70 ° C (-4° to 158° F)
Storage humidity	5% < RH < 95 %

General precautions

- Do not expose the terminal to extreme temperatures.
- When the environment is very dry, avoid synthetic carpeting near the MorphoAccess® VP MD terminal, to reduce the risk of unwanted electrostatic discharge.

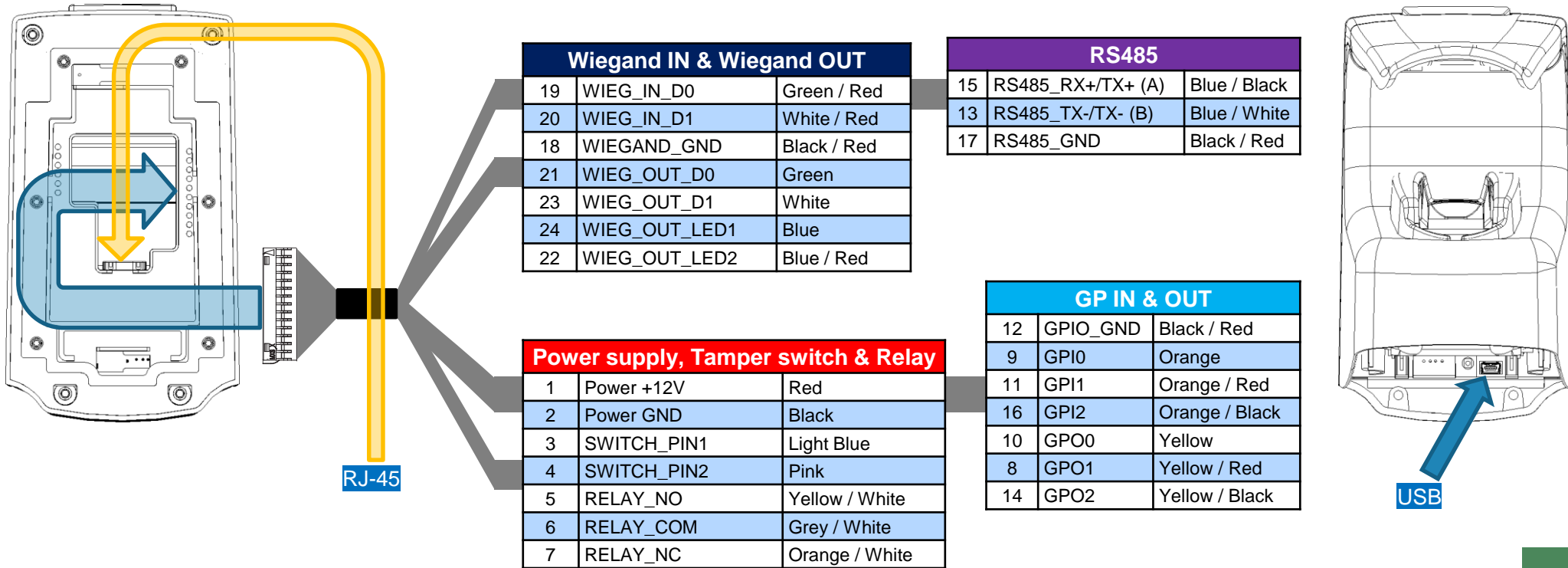
Areas containing combustibles

- Do not install the terminal in the vicinity of gas stations or any other installation containing flammable or combustible gases or materials. The terminal is not designed to be intrinsically safe.

The terminal should be installed in controlled lighting conditions

- Avoid biometric sensor exposure to a blinking light
- Avoid direct exposure of the biometric sensor to sunlight or to UV lights.

Wiring Overview



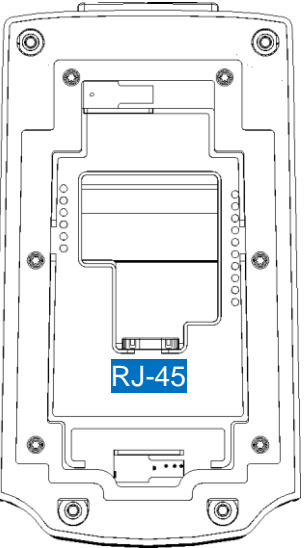
All connections of the terminal are of SELV (Safety Electrical Low Voltage) type.

Power supply from electrical source shall be switched off before starting the installation.

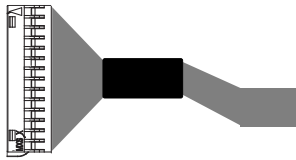
Before proceeding, make sure that the person in charge of installation and connections, is properly connected to earth, in order to prevent Electrostatic Discharges (ESD).

Backup of the Date/Time of the terminal: the volatile settings (such as date/time) of the terminal are protected against power failure, by a dedicated component during a least 24 hours (at 25°C) without external power supply.

Power Wiring



Power Over Ethernet (POE): power can be provided through RJ-45 connector using a PSE (Power Sourcing Equipment) **IEEE 802.3af or IEEE802.3at type 1** compliant. The terminal is a Class 0 (15.4W) PD (Powered Device).



Power supply, Tamper switch & Relay		
1	Power +12V	Red
2	Power GND	Black

PoE Injector Specs

- Output Voltage: 48VDC
- Output Current: 0.32A
- Power: 15.36W

External Power Supply: 12-24 Volts (regulated and filtered) 1 Amp min @12V, CEE/EEC EN60950 standard compliant. A12 Volts power supply compliant with SIA's Wiegand standard will also be suitable. If sharing power between devices, each unit must receive 1A (e.g. two units would require a 12vDC, 2A supply).

A battery backup or uninterruptured power supply (UPS) with built-in surge protection is recommended.

IDEMIA recommends using a gauge AWG20 for 12V power supply.

The voltage measured on the product block connector of the terminal must be equal to 12V-24V (-15% / +10%).

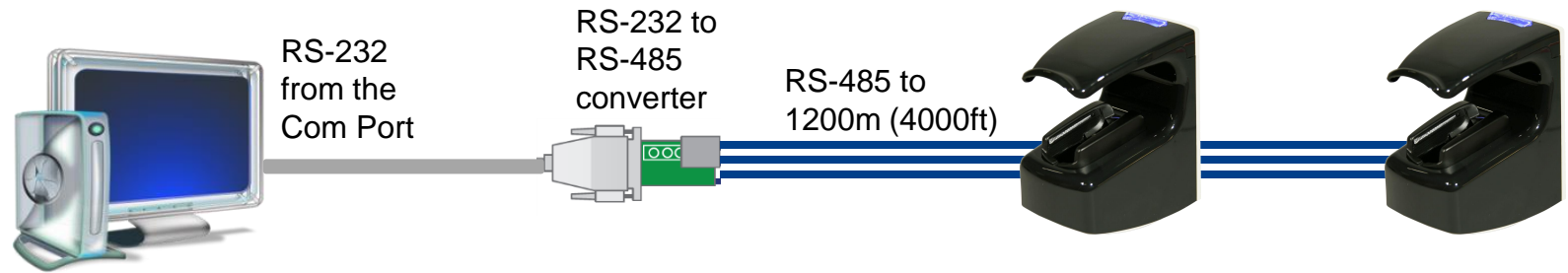
The table at the right, shows the maximum voltage drop between the power source and the terminal, depending on the length of the cable.

Gauge AWG	Diameter (mm)	Maximum drop voltage (V)		
		at 1m	at 5m	at 10m
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



WARNING: Under powering may cause memory and data corruption; over powering may cause hardware damage. Both of these situations will void the warranty

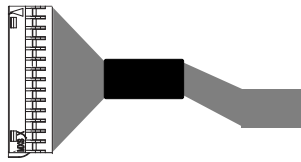
RS-485 Communication



For RS-485 installations, the cable should be run in a daisy-chain configuration (i.e. converter > position 1 > position 2 > position 3, etc.).

Choose one twisted pair of conductors to use for RS-485 TDA (Blue / White Black - Pin 15) and RS-485 TDB (Blue / White wire - Pin 13).

Another conductor should be used for Signal Ground (Black / Red wire - Pin 17).



RS485			
15	RS485_RX+/TX+ (A)	Blue / Black	
13	RS485_TX-/TX- (B)	Blue / White	
17	RS485_GND	Black / Red	

Use CAT-5 UTP (or better) cable (shielded recommended) with a characteristic impedance of 120 ohms. AWG 24 should be the minimum wire gauge used.

Choose a RS-232 to RS-485 converter that supports Sense Data to switch from Send to Receive mode.



- A maximum of 31 devices may be installed on the same line.
- The maximum total cable length is 4000 ft. (1200m).
- The cable must be dedicated to this installation and not used for any other purpose

Ethernet and Wireless LAN

RJ-45 Ethernet connection

- Ethernet connection to the terminal is made through a standard RJ-45 connector on the back of the terminal.
- Use a category 5 shielding cable (120 Ohms) or better. It is strongly recommended to insert a repeater unit every 90m.
- By default, MorphoAccess® VP MD terminal is configured in Static IP mode.

WLAN option

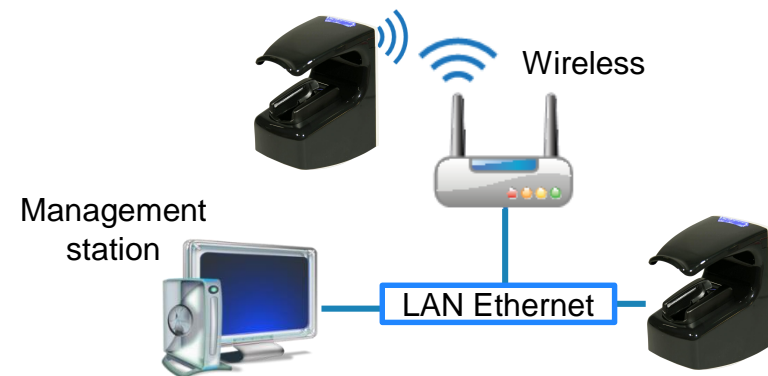
This option is available only with Wi-Fi™ dongle (and adaptation cable) delivered by IDEMIA (kit reference 293658530), **and requires the terminal be powered by an external AC/DC 12V to 24V power supply (the POE feature doesn't provide enough power for the terminal and the dongle).**

Morpho Wi-Fi™ dongle supports 802.11b and 802.11g standards, WEP Open, WPA and WPA2.

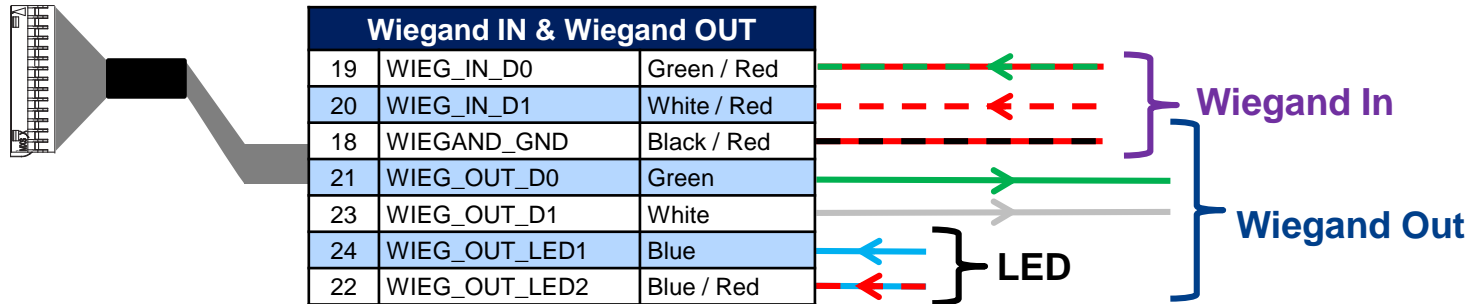


The Wi-Fi™ dongle shall not be exposed to temperatures exceeding 50°C (don't forget to include the thermal dissipation of the product and of the Wi-Fi™ dongle).

IP address Mode	Parameter	Factory value
Static	Terminal IP address	192.168.1.10
	Gateway IP address	192.168.1.254
	Sub network mask	255.255.254.0
	Host name	MA-VP



Wiegand Communication



Three-conductor wire (shielded recommended) is required for Data 0, Data 1, and WGND.

Use 18-22 AWG cable in a homerun configuration from each unit to the Access Control Panel (ACP).

- Connect WIEGAND_OUT0 (Green Wire - pin 21) to ACP Data 0,
- Connect WIEGAND_OUT1 (White Wire - pin 23) to ACP Data 1,
- Connect WIEGAND_GND (BLACK / Red Wire - pin 18) to ACP reader common (0vDC).

For 18 AWG, the maximum cable distance is 500 ft. (150m); for 20 AWG, the maximum is 300 ft. (90m); for 22 AWG, the maximum is 200 ft. (60m).

All controller output shall be open drain or 5V+/-5%

Wiegand Communication (continued)

Important

By default, the Wiegand output format is not enabled. Wiegand output must be configured before connecting to the ACP.

Note

On installation, the system administrator will be prompted to select either a pre-existing Wiegand frame format or create a custom format, and upload it to the unit before the first use.

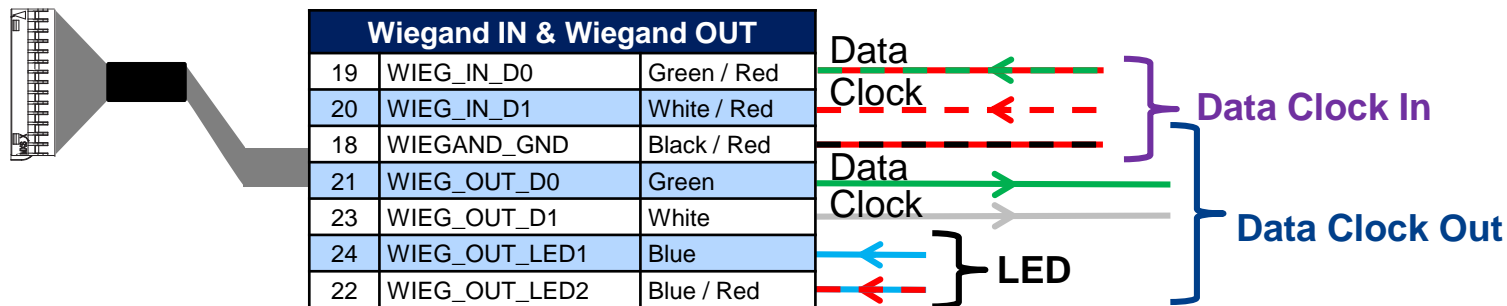
Data Clock

The Wiegand port also supports the Clock & Data protocol. The wiring is described below.

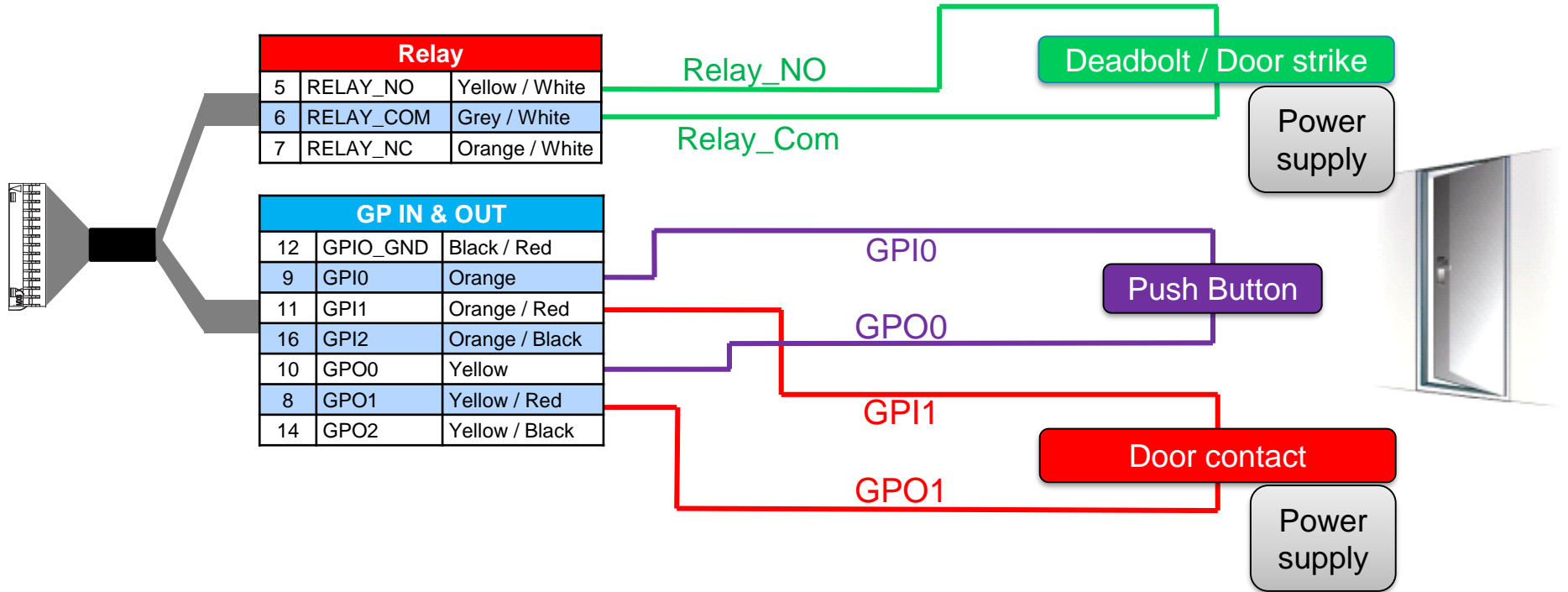
Example Format Information

Type: **Standard 26-bit**

- Alt Site Code and Fail Site Code Range: **0-255**
- Template ID Number Range: **1-65535**
- Extended ID Number Range: **N/A**
- ID Start Bit: 9
- Length of ID: 16
- Site Code Start bit: 1
- Length of Site Code: 8
- Start Bit length : 0



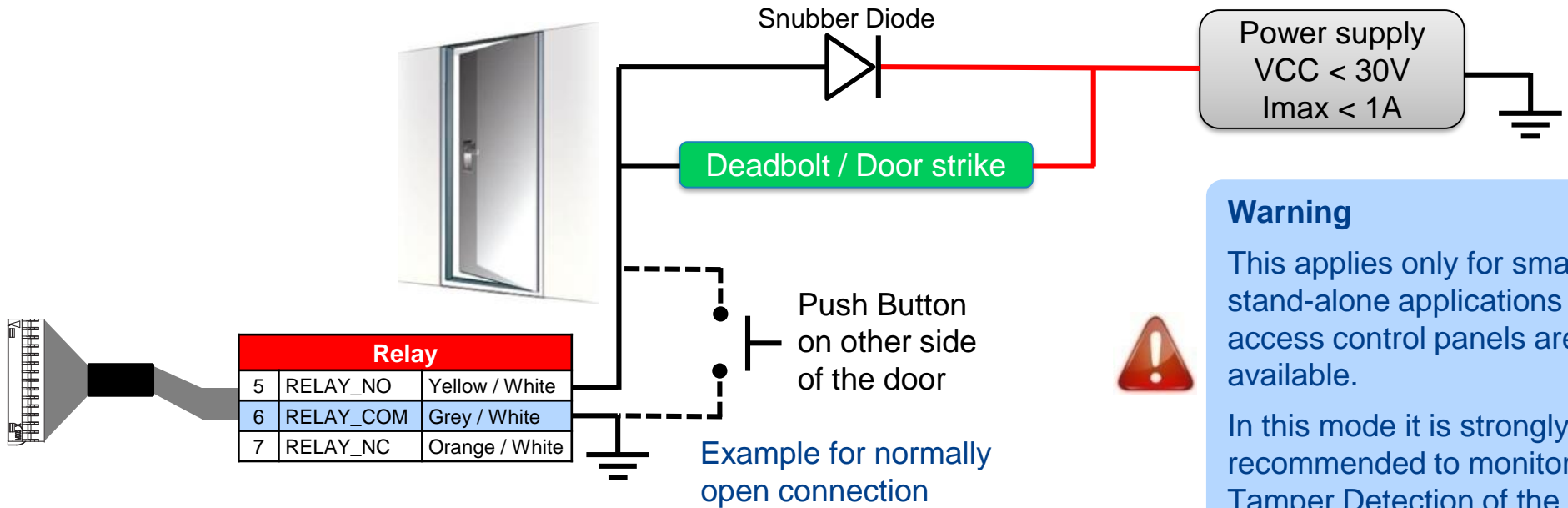
Single Door Access Control (SDAC)



Warning

- Please check next page for important information about internal relay rating
- If door contact is not used, GPI1 (Orange / Red wire) and GPO1 (Yellow / Red wire) shall be connected together
- Power supply from electrical source shall be switched off before starting the installation.

Internal Relay Wiring



Warning

This applies only for small or stand-alone applications where access control panels are not available.

In this mode it is strongly recommended to monitor the Tamper Detection of the device

Relay mode can be changed to “normally close” instead of “normally closed” (default)

Inductive load management requires a parallel diode for a better contact lifetime.

Warning

- The internal relay is limited to a maximum current of 1A @ 30V. If the deadbolt / door strike draws more than 1A, damage to the device may occur. If the deadbolt / door strike load exceeds 1A, an external relay must be used.
- The internal relay is designed for 100.000 cycles. If more cycles are needed, an external relay driven by GPO must be used.

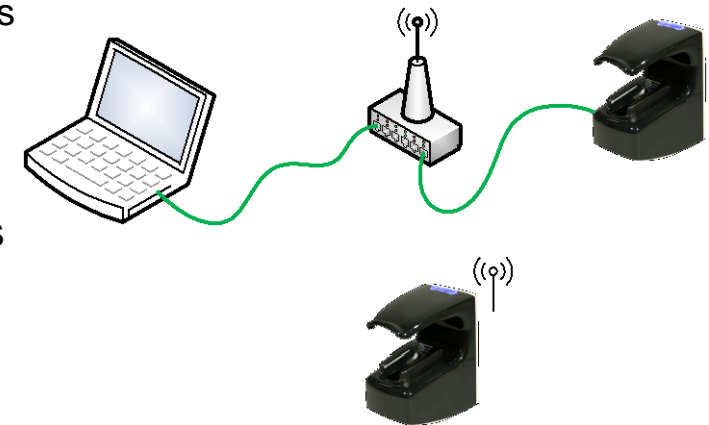
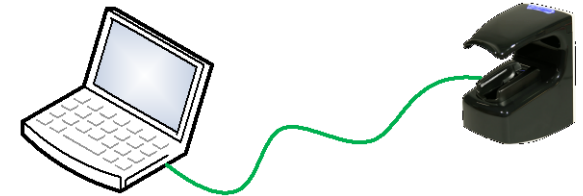
First communication with terminal (1/2)

→ First configuration requires a network link

- The MorphoAccess® VP MD terminal is designed to be able to run in standalone mode, but at least point to point connection between PC and terminal is necessary for the first configuration. It could also be necessary for database management, terminal maintenance, ...

→ Network connection methods

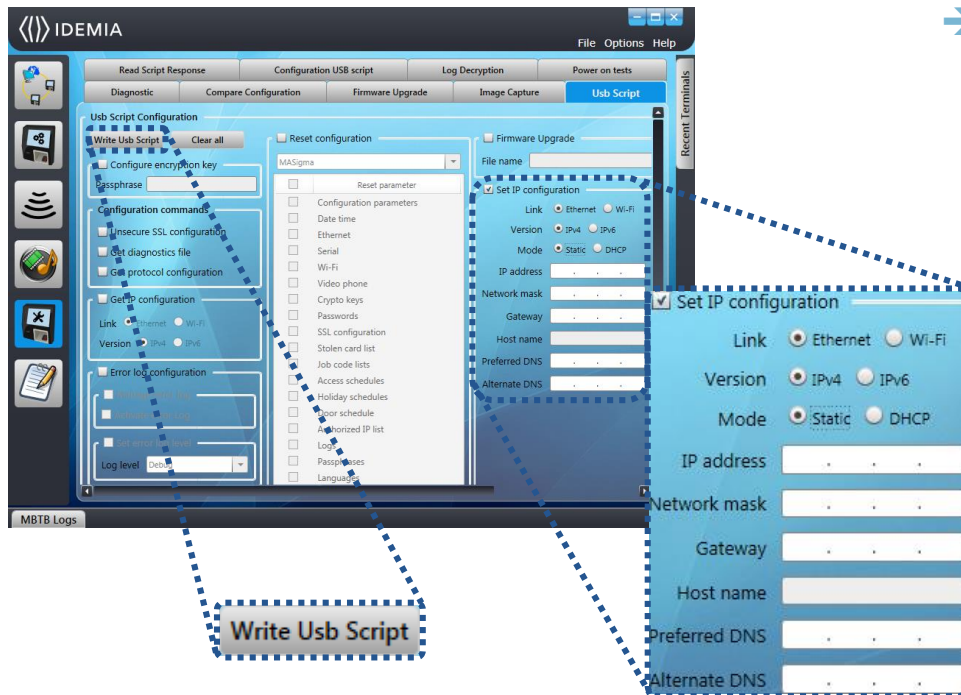
- Point to point Ethernet connection
 - This method requires a static IP configuration (except if DHCP server is installed on PC)
 - Use MorphoBioToolBox to configure network parameters (see next page)
- Connection through a LAN (Local Area Network)
 - If DHCP server is available on the network, network parameters will be automatically affected to terminals (contact your network administrator).
 - If no DHCP server is available, it is necessary to configure a static IP on each terminal and PC.
 - Use MorphoBioToolBox to configure network parameters (see next page)



First communication with terminal (2/2)

→ General remark for network configuration

- If terminal is connected to local network without DHCP server, be sure to configure the following parameters :
 - Administration PC and all terminals shall have a different IP address (Host PC IP address with any IP address within 192.168.x.x range excluding 192.168.1.10).
 - Administration PC and all terminals shall have the same network mask (ex : 255.255.255.0 if the 3 first bytes of IP address are the same for all terminals and PC).



→ Configuration using MorphoBioToolbox

- Fill IP address and Network mask following previous paragraph recommendations.
- Even if not used, fill Gateway, Preferred and Alternate DNS values (using 1.1.1.1 for example).
- Click on “Write Usb Script” button and save it on USB key.
- Plug USB key to the terminal using the adaptor.
 - A high pitched beep, followed by purple led panel blinking and high pitched beeps and green led panel will indicate configuration is finished

Administration with Embedded Web Server

The terminal's embedded Web server enables easy configuration of the devices as well as user enrolment using a web browser on a Desktop PC, Laptop, Tablet or smart phone.



The connection to the embedded Webserver, through LAN or WLAN, requires terminals IP address and terminals password.

Deactivate Webserver if not used.

Terminal administration & User enrolment with a standard web browser

The screenshot shows the IDEMIA web interface for terminal administration. The top navigation bar includes the IDEMIA logo, a menu icon, and a user greeting 'Welcome Admin'. The left sidebar contains navigation options: MorphoAccess VP MD, User Management, Transaction Logs, Terminal Info, Terminal Settings, Schedules, Control Configuration, Reset Default, and Complete Configuration. The main content area is titled 'Terminal Information' and displays the following data:

Terminal	
Commercial Name	MorphoAccess VP MD
Descriptive Name	MORPHOACCESS
Serial Number	
Packaged Part Number	293729975
License Name	MA_PAC; MA_WIFI; MA_1M_LOGS;
License Identifier	
Firmware Version	MA4.7.1.A2
Sensor Part Number	293633145
Sensor Serial Number	
Product Specific Part Number	293729975

Below the terminal information, there are three sections:

- MAC Address:** Ethernet (), Wi-Fi ().
- User's Information:**

All Users / Maximum Capacity	3 / 250000
Total Users Enrolled / DataBase user Capacity	3 / 5000
VIP Users / Maximum Capacity	0 / 100
Authorized Users / Maximum Capacity	3 / 250000
- Transaction Log Information:**

Current Count / Maximum Capacity	8 / 1000000
----------------------------------	-------------

On the right side, there is a 'Peripherals Availability' section:

Contactless Card Reader - MIFARE DESFire®	✓
Wi-Fi	✗
LED	✓
Buzzer	✓
FVP Sensor	✓

Administration with MorphoBioToolBox application

Another way to configure the MorphoAccess® VP MD terminal is to use a dedicated application: MorphoBioToolBox (for Windows). Please note that this application has an embedded User Guide (Help menu).

North and South America:
E-mail

support.bioterminals@idemia.com

with your name, phone number, serial number of your MorphoAccess® and **“Please Send Link for MBTB”** in the subject of your e-mail. A link to download the software will be e-mailed to you.

Other countries: please contact your sales representative.



Terminal administration with MorphoBioToolBox application

The screenshot displays the MorphoBioToolBox application window. The title bar reads "IDEMIA" and "File Options Help". The main window has a "Connection" tab selected, with sub-tabs for "Authorized IP Address", "Communication Configuration", and "Password". The "Terminal Type" is set to "MA Sigma Family". Under "Connection information", "TCP/IP" is selected, and "Sr. No" is "1848SML0006804". "Address type" is set to "IP4". The "Address" field is empty, "Port" is "11010", and "Timeout" is "30 Seconds [5-30]". There are "Browse" buttons for "Terminal CA certificate path", "Client certificate path", and a text field for "Client certificate password". A "Connection" button is at the bottom. A log window at the bottom shows "MBTB Logs" with several "INFO - Load successful" messages. A vertical sidebar on the right is labeled "Recent Terminals".

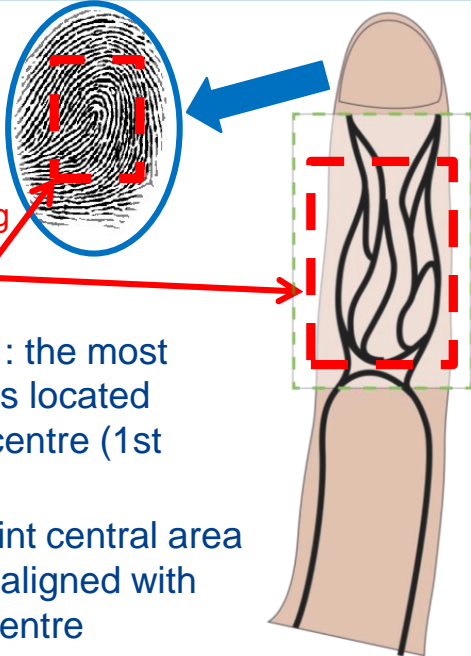

Step five: Administration

Software for Terminal Remote Administration

→ **MorphoAccess® VP MD terminals are fully compatible with:**

- MorphoManager (version 13.1.9 or higher),
- Morpho Integrator's Kit (MIK) software development kit (version 6 or later),
- MorphoBioToolBox (version 4.1.2 or later).

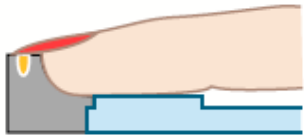
Fingerprint and Vein Capture Basics 1/3

Region of Interest	Recommended Fingers	Acquisition troubleshooting
 <p>Fingerprint : the most useful area is located around the centre (1st phalanx)</p> <ul style="list-style-type: none"> ➤ Fingerprint central area must be aligned with sensor centre <p>Finger Vein (blood vessel pattern): the area of interest is usually located between the 1st and the 3rd phalanxes</p> <ul style="list-style-type: none"> ➤ The finger tip must be placed in full contact with the round shape guide (please refer to next pages) 	 <p>Our devices have been designed for the use of fore, middle and ring fingers. Among these, we advise people to use preferably the middle finger, which is usually the most suitable, or the fore finger as a second option. The ring finger indeed is not recommended for those who have short fingers</p>	<p>General recommendations</p> <ul style="list-style-type: none"> ➤ Remove bandages or adhesive tapes from the fingerprint area, and from the 2nd phalanx of the finger ➤ Do not press or tense finger to avoid blood vessels constriction. <p>Fingerprint image too dark : the finger is probably too moist and/or too dusty</p> <ul style="list-style-type: none"> ➤ too moist : <i>dry the finger</i> ➤ too dusty: <i>clean up the finger</i> <p>Fingerprint image too light : the finger is probably too cold and/or too dry</p> <ul style="list-style-type: none"> ➤ too cold : <i>warm up the finger</i> ➤ too dry : <i>moisten the finger (i.e. with moistening pad) and /or warm it up.</i>

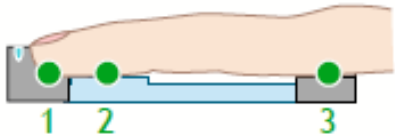
For handling large scale enrollments please contact your IDEMIA representative for training and services options

Fingerprint and Vein Capture Basics 2/3

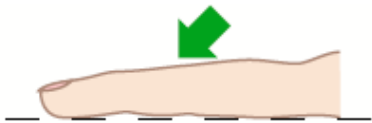
Good Finger Position



- Place finger tip on the round shape guide by the LED indicator.
- In case of long nail, place nail above the LED indicator with finger tip touching the round shape guide



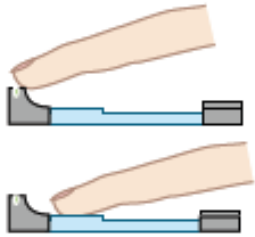
- Keep finger tip in contact with the round shape guide (1).
- Make sure that fingerprint is in contact with the optical transparent surface (2).
- Place finger root on its positioning guide (3).
- Let rest hand palm on the shell of the terminal



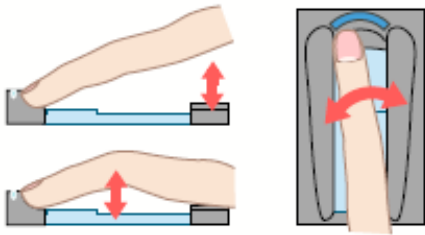
- Keep finger straight.

Fingerprint and Vein Capture Basics 3/3

Bad Finger Position



- Do not place finger tip on top of the LED indicator.
- Do not place the finger tip on the sensor surface : it must be in contact with the round shape guide.



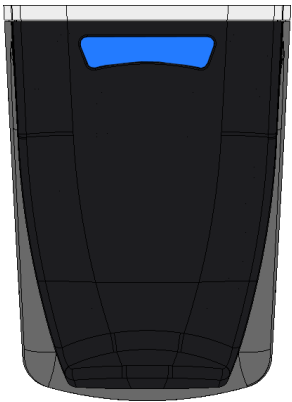
- Do not lift finger.
- Do not bend finger.
- Finger must be parallel to the guide walls.



- Do not roll the finger.
- Do not bend finger.
- Do not arch finger backwards
- Do not tense finger and do not press strongly so as to avoid blood vessels constriction.

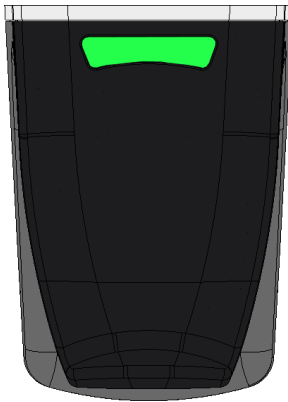
MorphoAccess® VP MD basic MMI

Fix
blue



Waiting
for card

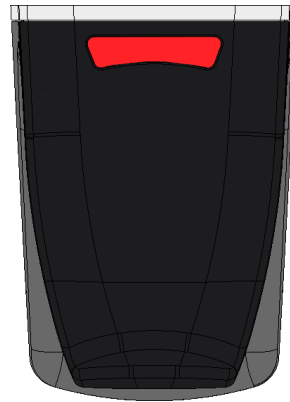
Fix
green



Access
granted

USB script
finished

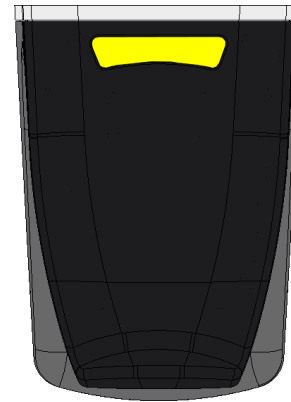
Fix
red



Access
denied

USB script
failed

Yellow
blinking

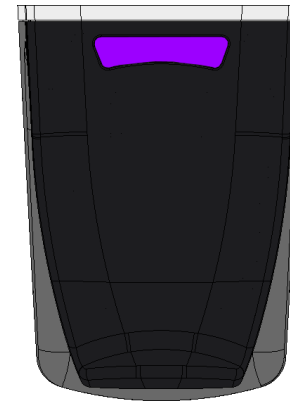


Place finger

Move finger

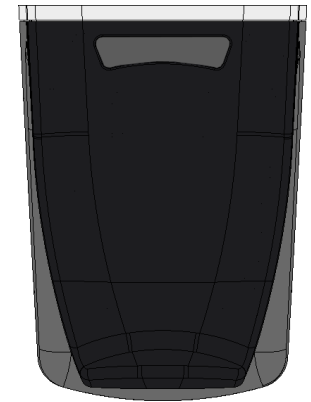
Database
empty /
waiting finger

Purple
blinking



USB script in
progress

Off



Not waiting
card

Database
empty / not
waiting finger

Step seven: capture basics

Contactless Card Position

Authentication of the user is initiated by the detection of a user card by the (optional) contactless card reader.

The terminal reads the user data stored in the card (at least the User ID), and starts authentication process, as required by terminal settings

Place RF card in front of contactless card reader



Recommendations

Global warning

- The manufacturer cannot be held responsible in case of non-compliance with the following recommendations or incorrect use of the terminal.

General precautions

- Do not attempt to repair your terminal yourself. The manufacturer cannot be held responsible for any damage/accident that may result from attempts to repair components. Any work carried out by non-authorized personnel will void your warranty.
- Only use the terminal with its original accessories. Attempts to use unapproved accessories with your terminal will void your warranty.

Terminals not connected to network

- For terminals used in standalone mode, it is strongly recommended to backup the local database regularly, and at least after significant changes in the database (add, remove or modification of user's records).

Date / Time synchronization

- If you want to use your terminal for applications requiring high time precision, we recommend regularly synchronizing terminal time with an external clock.
- The terminal clock has a +/- 10 ppm typical time deviation at +25°C (roughly +/- 6sec per 48hrs).
- At lower and higher temperature, deviation may be greater (in worst case 7 seconds per day).

Cleaning precautions

- A dry cloth should be used to clean the terminal, especially the biometric sensor.
- The use of acid liquids, alcohol or abrasive materials is prohibited.

Documentation

Bibliography

Ref. 2016_2000022505 - MorphoAccess® 5G Series Bibliography

This document gives document's references for MorphoAccess® 5G Series terminals. This document is in English.

Release note : for each firmware version, a release note is published describing the new features, the supported products, the potential known issues, the upgrade / downgrade limitations, the recommendations, the potential restrictions...

North and South America: you may obtain these document by e-mailing support.bioterminals@idemia.com with your name, phone number, MorphoAccess® serial number and "Send Links For MA SIGMA Documents" in the subject line.

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