



# MorphoAccess® SIGMA Extreme Series

## Installation Guide

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Osny, France

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# Warning

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# Revision History

The table below contains the history of changes made to the present document.

| Version   | Date         | Reference                     | Description               |
|-----------|--------------|-------------------------------|---------------------------|
| <b>01</b> | January 2017 | 2017_2000024418 –<br>Draft V0 | Document creation - Draft |
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# Table of Content

|   |    |
|---|----|
| Warning .....   | 2  |
| Revision History .....  | 3  |
| Section 1 : Introduction .....  | 9  |
| <i>MorphoAccess® SIGMA Extreme Series Terminal</i> .....                  | 10 |
| <i>Scope of the document</i> .....  | 11 |
| <i>Safety Instructions</i> .....  | 12 |
| <i>Wiring Recommendations</i> .....                                       | 13 |
| <i>Regulatory, safety and Environmental notices</i> .....                 | 14 |
| <i>European Union (CE) regulatory notices</i> .....                       | 14 |
| <i>USA (FCC) regulatory notices</i> .....                                 | 15 |
| <i>Canada (IC) regulatory notices</i> .....                               | 16 |
| <i>Others recommendations</i> .....                                       | 16 |
| <i>Recommendations for terminal implementation</i> .....                  | 17 |
| Section 2 : General Description .....                                     | 20 |
| <i>Box opening</i> .....  | 21 |
| <i>Components of the initial package</i> .....                            | 22 |
| <i>Terminal's front view description</i> .....                            | 23 |
| <i>Terminal's rear view description</i> .....                             | 24 |
| <i>MorphoAccess® SIGMA Extreme Series Technical Characteristics</i> ..... | 25 |
| Section 3 : Installation Procedure.....                                   | 27 |
| <i>Before proceeding to the installation</i> .....                        | 28 |
| <i>Installation</i> .....   | 29 |
| <i>Required tools (not supplied)</i> .....                                | 29 |
| <i>Equipment from the initial package to use</i> .....                    | 29 |
| <i>Step by step procedure</i> .....                                       | 30 |
| Section 4 : Electrical Interface .....                                    | 34 |
| <i>Wiring overview</i> .....  | 35 |
| <i>Power Supply</i> .....   | 36 |
| <i>External Power supply</i> .....  | 36 |
| <i>POE (Power Over Ethernet)</i> .....                                    | 36 |
| <i>Output Relay</i> .....   | 37 |
| <i>Nominal characteristics of relay</i> .....                             | 37 |

|   |    |
|---|----|
| <i>Example of connection for electrical door locks</i> .....                | 37 |
| <i>Tamper Switch</i> .....  | 38 |
| <i>Operating principle for the switch</i> .....                             | 38 |
| <i>Nominal characteristics of switch block</i> .....                        | 38 |
| <i>Wiegand wiring</i> .....   | 39 |
| <i>Wiegand input</i> .....  | 39 |
| <i>Wiegand output</i> .....   | 40 |
| <i>The controller supports neither LED1 nor LED2 signals</i> .....          | 40 |
| <i>The controller supports only LED1 signal</i> .....                       | 40 |
| <i>The controller supports LED1 and LED2 signals</i> .....                  | 41 |
| <i>Serial port wiring</i> .....   | 42 |
| <i>DataClock Input</i> .....  | 42 |
| <i>DataClock Output</i> .....   | 42 |
| <i>RS485</i> .....  | 43 |
| <i>RS422</i> .....  | 43 |
| <i>GPIO wiring</i> .....  | 44 |
| <i>Single Door Access Control (SDAC) implementation</i> .....               | 44 |
| <i>Ethernet connection</i> .....  | 45 |
| <i>Default Ethernet configuration</i> .....                                 | 45 |
| <i>Recommendations for RJ45 wiring</i> .....                                | 45 |
| <i>External USB connection</i> .....  | 46 |
| <i>Wi-Fi™ dongle installation</i> .....                                     | 47 |
| <i>Micro SD connection</i> .....  | 48 |
| <i>Section 5 : User Interface</i> .....                                     | 49 |
| <i>Modes for controlling access rights</i> .....                            | 50 |
| <i>Introduction</i> .....   | 50 |
| <i>Identification mode</i> .....  | 50 |
| <i>Authentication (verification) mode</i> .....                             | 50 |
| <i>Multi-factor mode</i> .....  | 51 |
| <i>Proxy mode</i> .....   | 51 |
| <i>External database mode (also called polling mode)</i> .....              | 51 |
| <i>Configuring the terminal</i> .....                                       | 53 |
| <i>MorphoAccess® 500 or J Series legacy mode</i> .....                      | 53 |
| <i>MorphoAccess® SIGMA Extreme Series native mode</i> .....                 | 54 |
| <i>Anti-tamper / anti-pulling switches</i> .....                            | 55 |
| <i>Section 6 : Accessories, Software Licenses and PC Applications</i> ..... | 56 |

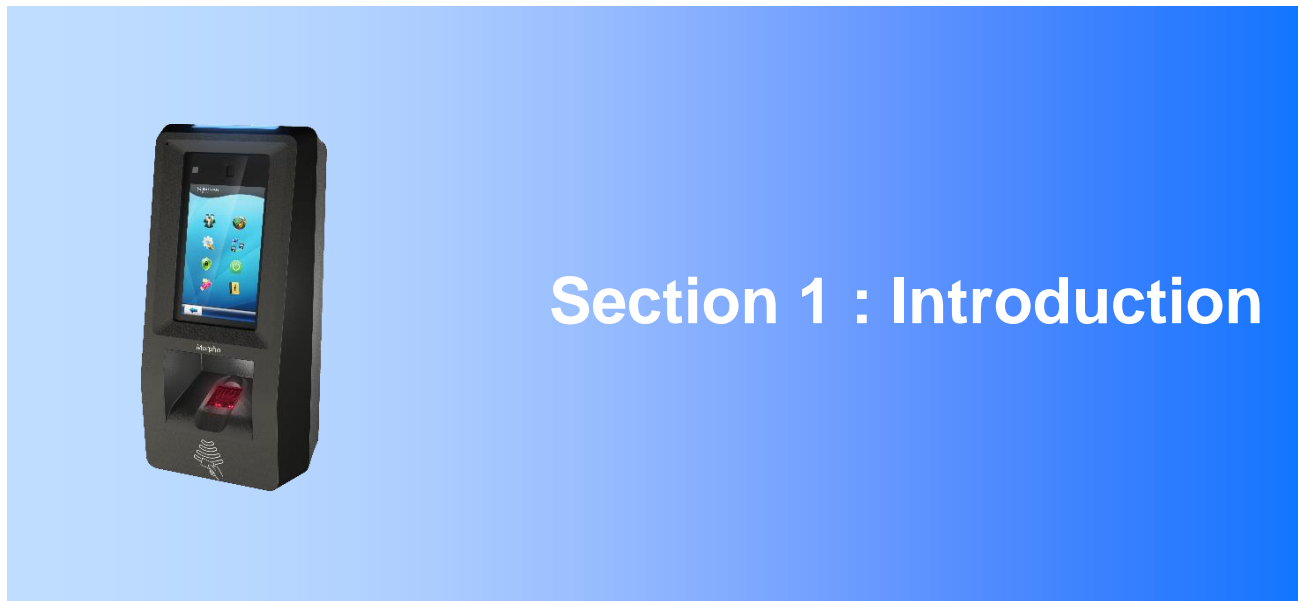
|  |    |
|--|----|
| <i>Compatible Accessories, Licenses and Software</i> .....                                       | 57 |
| <i>Compatible PC applications</i> .....  | 58 |
| Section 7 : Recommendations .....  | 59 |
| <i>Global warning</i> .....  | 60 |
| <i>General precautions</i> .....   | 60 |
| <i>Areas containing combustibles</i> .....   | 60 |
| <i>Specific precautions for terminals equipped with a contactless smartcard reader</i> .....     | 60 |
| <i>Ethernet connection</i> .....   | 60 |
| <i>Date / Time synchronization</i> .....   | 60 |
| <i>Cleaning precautions</i> .....  | 61 |
| <i>Legacy mode</i> .....   | 61 |
| <i>Micro SD card</i> .....   | 63 |
| <i>Lighting conditions for face detection</i> .....  | 63 |
| <i>Main principles</i> .....   | 65 |
| <i>Most useful areas for biometric data</i> .....  | 66 |
| <i>Position of finger</i> .....  | 67 |
| <i>Finger height</i> .....   | 67 |
| <i>Finger angle</i> .....  | 67 |
| <i>Finger inclination</i> .....  | 68 |
| <i>Finger rotation</i> .....   | 68 |
| <i>Troubleshooting</i> .....   | 69 |
| <i>How to get the latest versions of documents</i> .....   | 71 |
| <i>Documents concerning the MorphoAccess® terminal</i> .....                                     | 72 |
| <i>Documents about installing the terminal</i> .....   | 72 |
| <i>Documents about administrating / using the terminal</i> .....                                 | 72 |
| <i>Documents for the developer</i> .....   | 72 |
| <i>Release note</i> .....  | 73 |
| <i>Troubleshooting</i> .....   | 75 |
| <i>The terminal IP address is unknown or it is not possible to connect to the terminal</i> ..... | 75 |
| <i>The sensor is switched off</i> .....  | 75 |
| <i>The terminal returns erratic responses to Ping commands</i> .....                             | 75 |
| <i>Technical Support and Hotline</i> .....   | 76 |
| <i>North America</i> .....   | 76 |
| <i>South America</i> .....   | 76 |
| <i>South Africa</i> .....  | 76 |
| <i>India:</i> .....  | 76 |

|   |    |
|---|----|
| <i>Europe and rest of the world:</i> .....      | 76 |
| <i>Web site</i> .....                           | 76 |
| <br>  |    |
| Annex 1 : Finger Placement Recommendations..... | 64 |
| Annex 2 : Bibliography .....                    | 70 |
| Annex 3 : Support .....                         | 74 |

# Table of Figures

|   |    |
|---|----|
| Figure 1: Implementation Recommendations.....                         | 18 |
| Figure 2: Box Opening.....  | 21 |
| Figure 3: Box Content .....   | 22 |
| Figure 4: MorphoAccess® SIGMA Extreme Series terminal front view..... | 23 |
| Figure 5: MorphoAccess® SIGMA Extreme Series terminal rear view ..... | 24 |
| Figure 6: Removing wall frame .....                                   | 28 |
| Figure 7: Face camera viewing angle.....                              | 30 |
| Figure 8: Drilling template .....                                     | 31 |
| Figure 9: Wall plate fixing .....                                     | 32 |
| Figure 10: Cabling layout .....                                       | 35 |
| Figure 11: Power supply wiring .....                                  | 36 |
| Figure 12: Output relay wiring.....                                   | 37 |
| Figure 13: Example of electric latch connection .....                 | 37 |
| Figure 14: Tamper switch wiring .....                                 | 38 |
| Figure 15: Wiegand input wiring .....                                 | 39 |
| Figure 16: Wiegand output wiring.....                                 | 40 |
| Figure 17: Serial port wiring – DataClock Input.....                  | 42 |
| Figure 18: Serial port wiring – DataClock Output.....                 | 42 |
| Figure 19: Serial port wiring – RS485.....                            | 43 |
| Figure 20: Serial port wiring – RS422.....                            | 43 |
| Figure 21: GPIO wiring.....   | 44 |
| Figure 22: SDAC wiring.....   | 44 |
| Figure 23: RJ45 wiring.....   | 45 |
| Figure 24: External USB connection .....                              | 46 |
| Figure 25: Wi-Fi™ dongle installation .....                           | 47 |





## MorphoAccess® SIGMA Extreme Series Terminal

Congratulations for choosing a MorphoAccess® SIGMA Extreme Series Automatic Fingerprint Recognition Terminal.

MorphoAccess® SIGMA Extreme Series provides an innovative and effective solution for access control applications using Fingerprint Verification or/and Identification.

Among a range of alternative biometric technologies, the use of finger imaging has significant advantages: each finger constitutes an unalterable physical signature, developed before birth and preserved until death. Unlike DNA, a finger image is unique to each individual - even identical twins.

MorphoAccess® SIGMA Extreme Series integrates Safran Identity & Security image processing and feature matching algorithms. This technology is based on lessons learned during 25 years of experience in the field of biometric identification and the creation of literally millions of individual fingerprint identification records.

We believe you will find the MorphoAccess® SIGMA Extreme Series fast, accurate, easy to use and suitable for physical access control.

The MorphoAccess® SIGMA Extreme Series offers the following advantages:

- high quality optical sensor (IQS quality sensor) with false finger detection option,
- 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),
- intuitive man machine interface with touch panel and display, that is easy to use in both setup and operational modes,
- sturdy wall mounting with easy holding of product during cabling or maintenance,
- ruggedized design for harsh environment (IK09 and IP65).

To ensure the most effective use of your MorphoAccess® SIGMA Extreme Series terminal, we recommend that you read this Installation Guide completely.

## Scope of the document

This guide deals with the installation of MorphoAccess® SIGMA Extreme Series, which is made up of following list of products:

| MA SIGMA Extreme Series Marketing Name | Biometrics | Fake Finger Detection | Contactless smartcard reader |                      |       | Water Resistant | Regulatory Model Number (*) |
|--|------------|-----------------------|------------------------------|----------------------|-------|-----------------|-----------------------------|
|  |            |                       | iCLASS®                      | MIFARE® DESFire® NFC | Prox® |                 |                             |
| MA SIGMA Extreme iClass                | ✓          |                       | ✓                            |                      |       | ✓               | MPH-AC002B                  |
| MA SIGMA Extreme Multi                 | ✓          |                       |                              | ✓                    |       | ✓               | MPH-AC002B                  |
| MA SIGMA Extreme Prox                  | ✓          |                       |                              |                      | ✓     | ✓               | MPH-AC002A                  |
| MA SIGMA Extreme FFD iClass            | ✓          | ✓                     | ✓                            |                      |       | ✓               | MPH-AC002B                  |
| MA SIGMA Extreme FFD Multi             | ✓          | ✓                     |                              | ✓                    |       | ✓               | MPH-AC002B                  |
| MA SIGMA Extreme FFD Prox              | ✓          | ✓                     |                              |                      | ✓     | ✓               | MPH-AC002A                  |

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

NOTA : MA means MorphoAccess®

## 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 12V-24V and 1A. min (at 12V) 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 it is recommended to connect 0V to ground. Ground cable must be connected with the terminal block Power Ground.

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

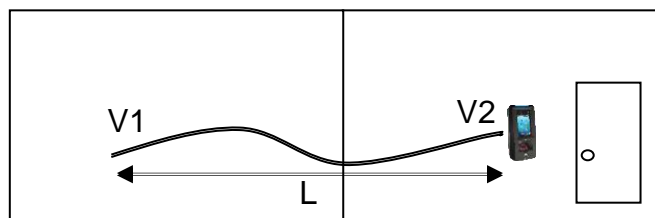
## Wiring Recommendations

Safran Identity & Security recommends using a gauge AWG20 for 12V power supply when POE supply is not used.

The voltage specified is the one measured on the product block connector: 12V-24V (-15% / +10%)

For information, this table shows the maximum drop voltage observed on the terminal MorphoAccess® SIGMA Extreme Series:

| Gauge AWG | Diameter (mm) | Maximum drop voltage @ 1m (V) | Maximum drop voltage @ 5m (V) | Maximum drop voltage @ 10m (V) |
|-----------|---------------|-------------------------------|-------------------------------|--------------------------------|
| 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:  $V2 = V1 - \text{Drop voltage}$

## Regulatory, safety and Environmental notices

### European Union (CE) regulatory notices

#### *Declaration of Conformity*



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

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC
- R&TTE Directive 1999/5/EC
- Ecodesign Directive 2009/125/EC
- RoHS Directive 2011/65/EU.

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

MorphoAccess® SIGMA Extreme Series terminals are intended to be used for professional application only (buildings, airport...).

This is an EMC Class A product according to EMC directive 2004/108/EC. 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:

**Safran Identity & Security**

**11, boulevard Gallieni**

**92130 Issy-les-Moulineaux – France**

*NOTA : 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 license-exempt RSS standard(s), and with ICES 003 standard for version(s) without RFID reader. 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.

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

## Others recommendations

### **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.



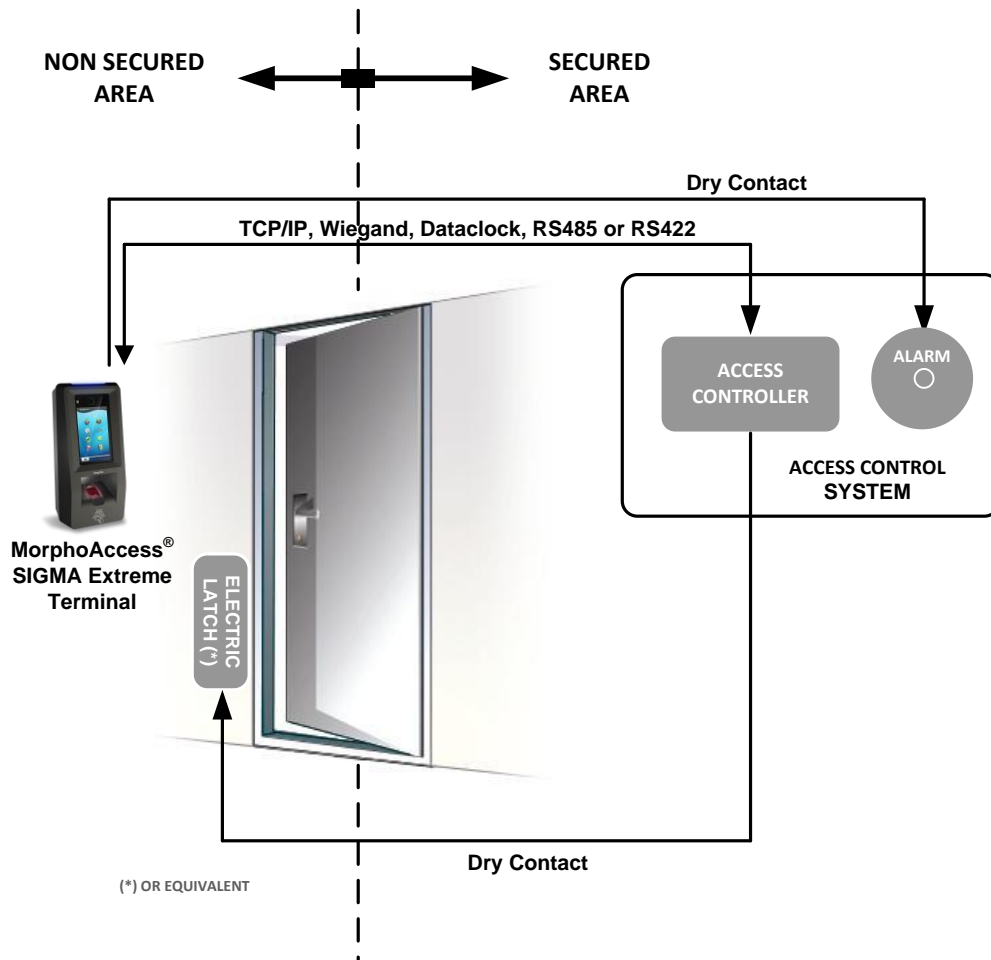
## Recommendations for terminal implementation

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.

Safran Identity & Security 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. First Boot Assistant screen is displayed, where you can perform **fundamental** configuration.

To secure properly an access, Safran Identity & Security recommends installing the MorphoAccess® SIGMA Extreme Series terminal as a part of the typical Access Control environment, described in the figure below.



**Figure 1: Implementation Recommendations**

This environment comprises:

***The MorphoAccess® SIGMA Extreme Series terminal itself***

Its role is to perform one-to-many biometric identification or one-to-one 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 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® SIGMA Extreme Series terminal and the Controller are communicating according to one of the TCP/IP, Wiegand, Dataclock or RS485 protocols:

- The MorphoAccess® SIGMA Extreme Series terminal sends User ID to the Controller
- The Controller sends its decision to the MorphoAccess® SIGMA Extreme Series terminal (which displays access granted or access denied depending on the answer)
- The MorphoAccess® SIGMA Extreme Series terminal sends an alarm signal to the Controller as soon as a malicious operation is detected (terminal pulled out from the wall or opened for maintenance operations); refer 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.

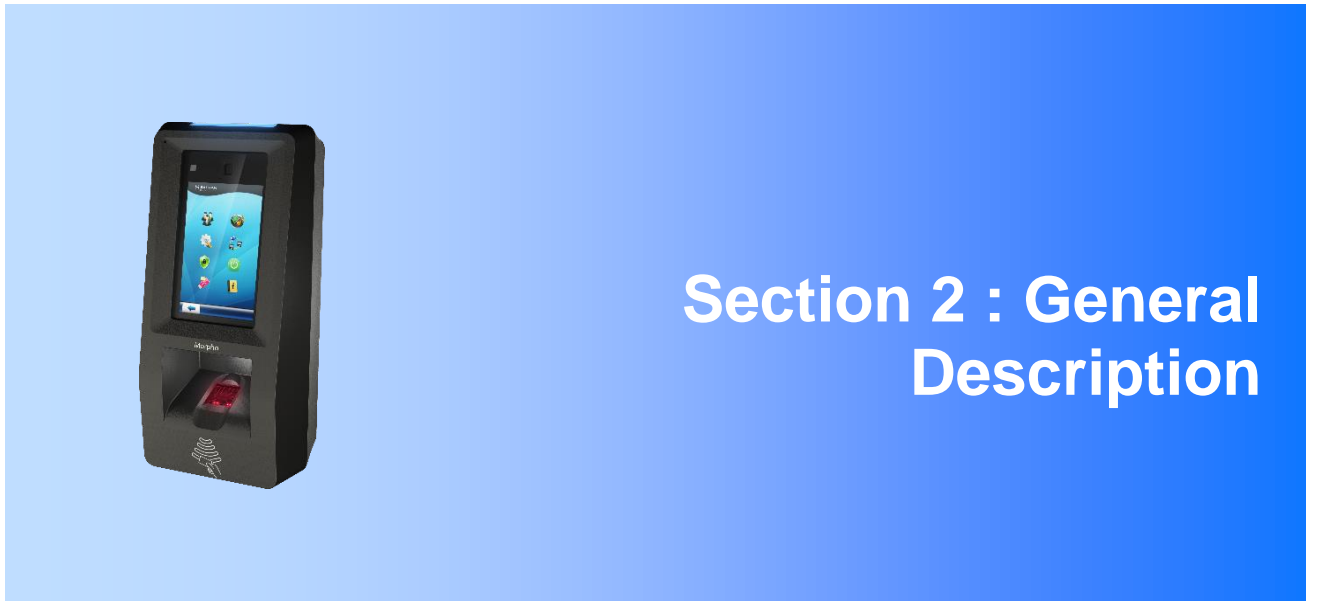
### ***An Alarm (3rd party product)***

This element is connected to the MorphoAccess® SIGMA Extreme Series terminal through a dry contact.

The MorphoAccess® SIGMA Extreme Series 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; refer the paragraph dealing with anti-pulling and anti-tamper switches for more explanations.

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

This element once activated opens the access. The Controller is the one which sends the command to activate the latch 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 wall plate (which is not screwed to the terminal) and keep it separate until the installation of the terminal is completed. The screwing of the product to the wall plate is the last stage of the installation.

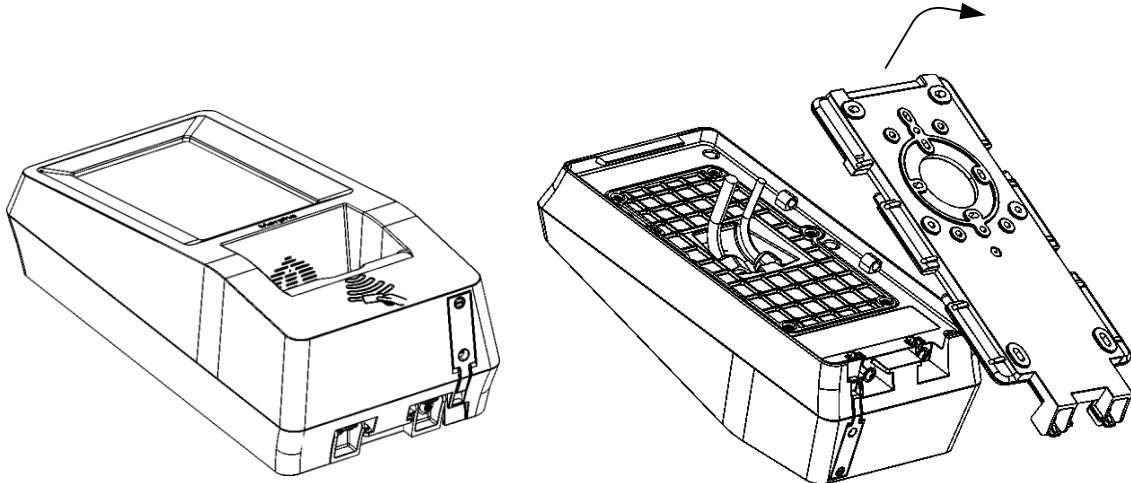


Figure 2: Box Opening

## Components of the initial package

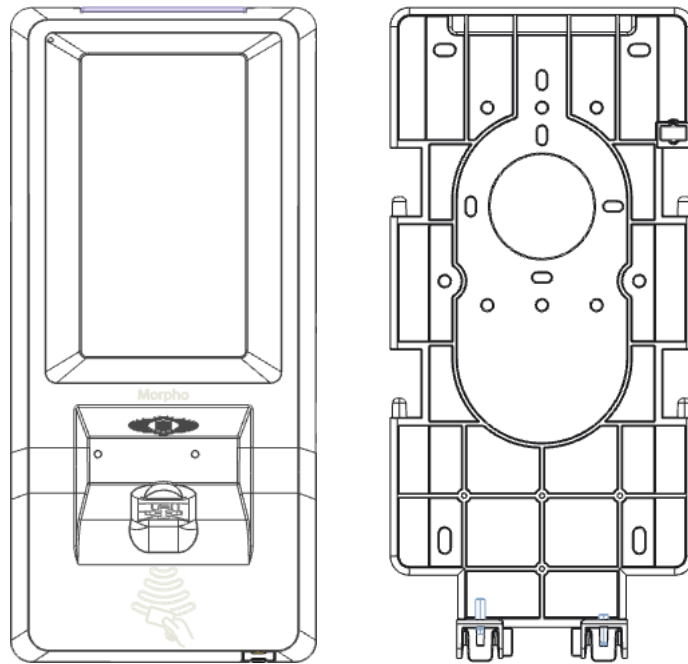


Figure 3: Box Content

1. One (1) Terminal's body
2. One (1) Wall frame

## Terminal's front view description



Figure 4: MorphoAccess® SIGMA Extreme Series terminal front view

## Terminal's rear view description

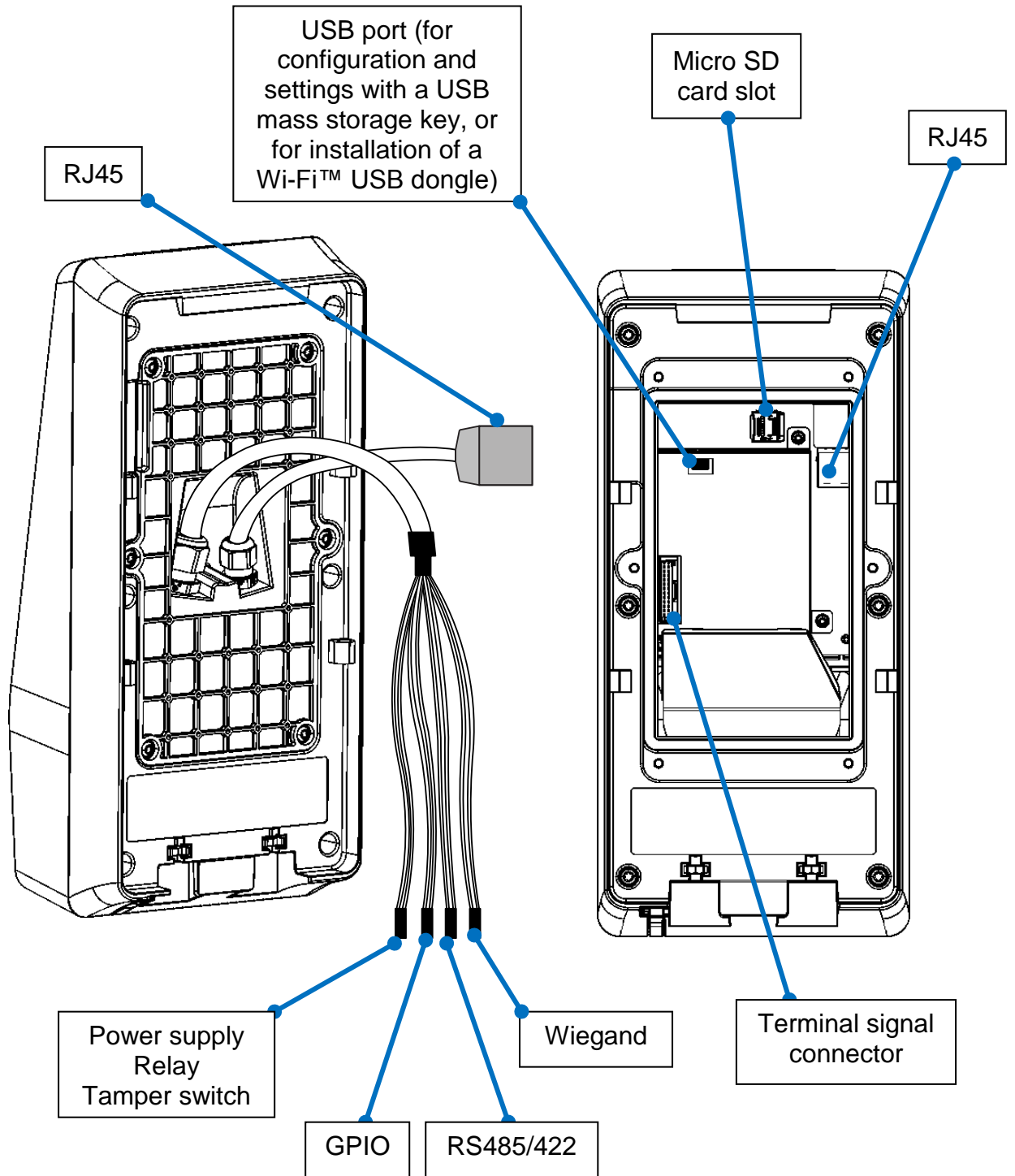


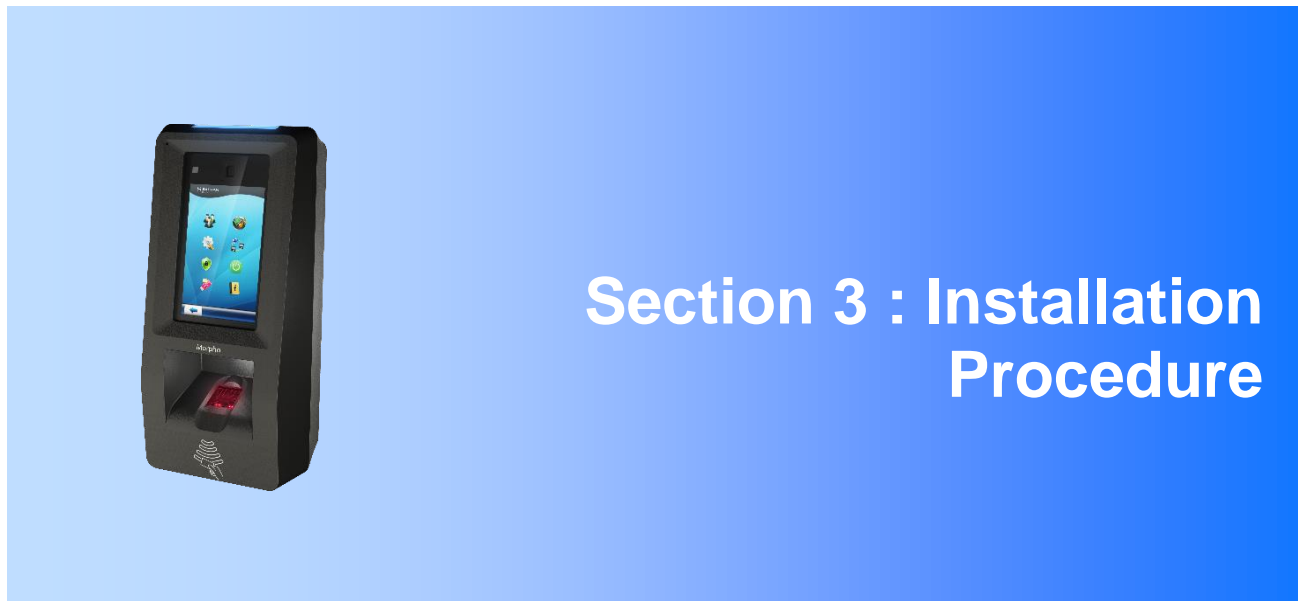
Figure 5: MorphoAccess® SIGMA Extreme Series terminal rear view



## MorphoAccess® SIGMA Extreme Series Technical Characteristics

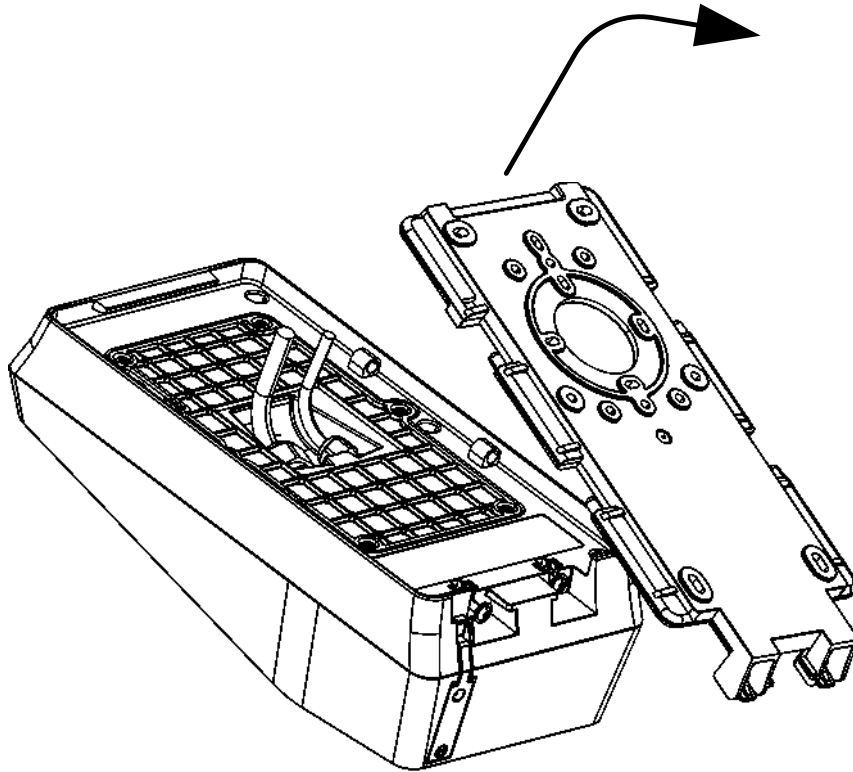
| Item                                      | Description  |
|---|--|
| Access control modes                      | Identification (search for fingerprint in a local database)  |
|   | Authentication with contactless smartcard, with or without fingerprint check (only if terminal is equipped with a contactless smartcard reader)  |
|   | Multi-factor: identification or authentication (only if terminal is equipped with a contactless smartcard reader)  |
|   | Proxy: the access control check is fully driven by a remote system   |
| Man Machine Interface                     | 5" WVGA color capacitive Touchscreen   |
|   | VGA camera for face image capture and videophone   |
|   | Powerful Loudspeaker & Microphone  |
| tBiometrics                               | MorphoSmart Optic Biometric Module inside:<br>23*23mm<br>500dpi, 256 gray levels optical sensor<br>FBI PIV IQS quality sensor  |
|   | False Acceptance Rate (FAR) adjustable from 1% down to 10-7%   |
|   | Database capacity: 5,000 users (standard) and up to 100 000 users (with specific license)  |
| Log capacity                              | 1 000 000<br>100 000 if face picture logged  |
| LAN/WLAN connection                       | For terminal configuration and data transfer:<br>Ethernet 10/100 Base T (MDI, MDI-X)<br>Or Wi-Fi™ Wireless LAN (option), WEP, WPA (PSK) and WPA2 (PSK) encryption available<br>Either TCP, SSL or TLS protocol |
| RFID cards (depending on product version) | MIFARE Classic 1KB & 4KB (4b and 7b UID)<br>MIFARE Plus SL1 cards  |
|   | DESFire 3DES legacy 2K, 4K and 8K (EVO & EV1)<br>DESFire AES 2k, 4k, 8k (EV1)  |
|   | All HID iClass cards (incl. iClass legacy, iClass SR and iClass SE), except 2K2  |
|   | HID Prox 125 kHz whatever the format (26, 37 ....)   |
| Serial port                               | The serial port supports WIEGAND, DATACLOCK (ISO2), RS422 and RS485 protocols  |
| GPIO                                      | 3 GPI, 3 GPO   |

|                          |  |
|--------------------------|--|
| Output relay switches    | Access granted: 1 switch two outputs (normally “open” and normally “closed”)<br>30V – 1A max (Resistive loads)   |
| USB host port            | External port for terminal configuration through a USB mass storage key<br>Internal port to connect an external Wi-Fi™ USB dongle using an adapter cable                                       |
| Input signals            | LED1/LED2 to activate the access granted relay   |
| Power supply             | 12 to 24 V DC power supply (1A min @12V)<br>Or by Power Over Ethernet through RJ-45 connector<br>Note for UL 294 Compliance power supply shall be UL 294 and UL 294B with power limited output |
| Security of the terminal | Anti-tamper-pulling switches<br>Tamper-pulling detection: one switch closed when product wall mounted, open when pulled out  |
| Size and weight          | W x H x D: 130mm x 300mm x 95mm<br>(5,12” x 11,82” x 3,74”)<br>Weight : ~1,5kg   |
| Environmental conditions | Operating temperature -20 °C to + 60 °C (-4°F to 140°F)  |
|                          | Operating humidity 10 % < RH < 95 % (non condensing)   |
|                          | Storage temperature -25 °C to + 70 °C (-13°F to 158°F)   |
|                          | Storage humidity 5% < RH < 95 %  |
|                          | IP65 rated<br>For UL 294 compliance, the products are rated for indoor use. IP65 was not verified by UL  |
|                          | The terminal should be installed in controlled lighting conditions<br>Avoid direct exposure to sunlight or to UV lights  |
| Certification planned    | CE, IEC 60950-1, FCC Part 15, RSS210 - Issue 8 : 2010, RSS-102 - Issue 5 : 2015, RSS-Gen – Issue : 2014, RoHS, REACH, WEEE   |



## Before proceeding to the installation

- Make sure that you have all the components described in “Components of the initial package” section at your disposal.
- Remove the wall plate. Keep this element at hand.



**Figure 6: Removing wall frame**

It is then possible to fix the terminal on the wall.

The recommended height for fixing of the terminal is 1.30m (camera height).



**For an optimal use the terminal must be installed in an area where the lighting conditions are controlled. Avoid direct exposure of the sensor to the sun light and ensure good ambient lighting for face detection if used.**

## Installation

### Required tools (not supplied)

- Six (6) raw plugs + six (6) screws  $\varnothing$ 4mm max and length adapted to the wall material.
- One (1) screwdriver adapted to screws above.
- One (1) Drill (with a drill bit diameter adapted to raw plugs above).
- One (1) hole saw (depending on installation case).
- A (1) Torx T20 screwdriver
  
- Deadbolt/door strike
- Snubber diode required to protect regulated DC power supply from inductive kickback (1N4007 diode or equivalent recommended)
- Separate power supply for the deadbolt/door strike based on supplier's recommendations.
- External relay (if required)
- Networking cable

For UL-294 compliance, an earthed screen in the wire or around all wires to/from product is only required when the wires share space/compartment/tube with high voltage cables.

### Equipment from the initial package to use

- One (1) Terminal's body.
- One (1) wall plate.

## Step by step procedure

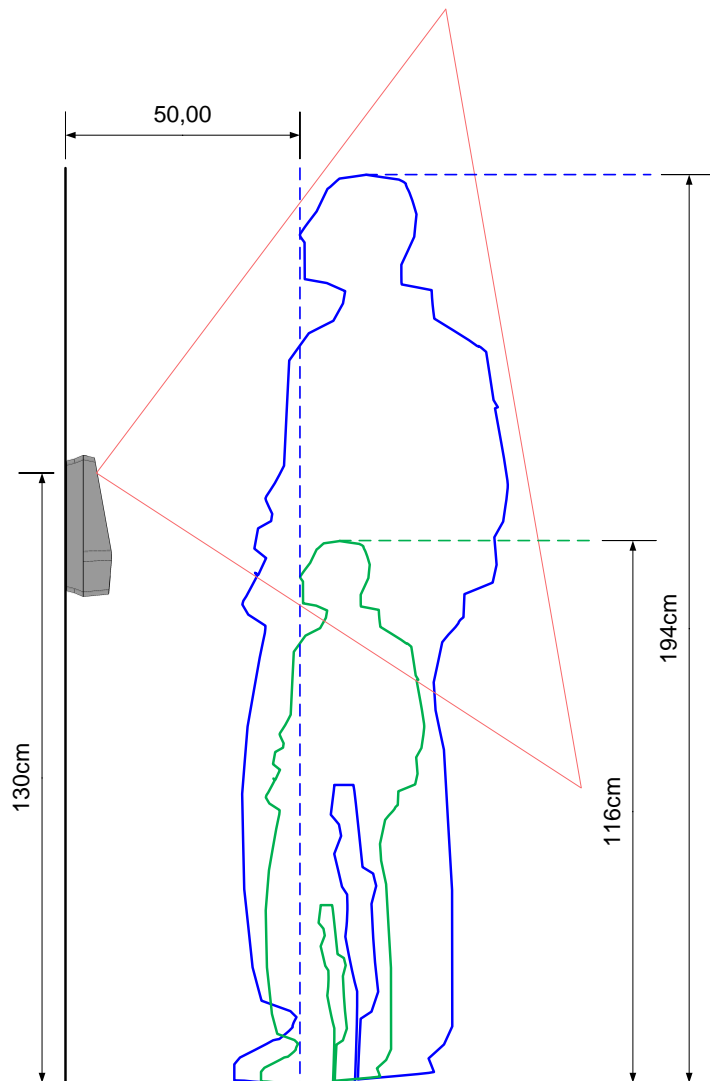


Figure 7: Face camera viewing angle

The recommended height for fixing of the terminal is 1.30m (camera height).



**For an optimal use the terminal must be installed in an area where the lighting conditions are controlled. Avoid direct exposure of the sensor to the sun light and ensure good ambient lighting for face detection if used. For face detection, the user has to face the product.**



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



**The strength of the attachment depends on the solidity of the wall on which the terminal is mounted.**

### Drilling the mounting holes



Be sure that the wall behind the wall plate has a good flatness.

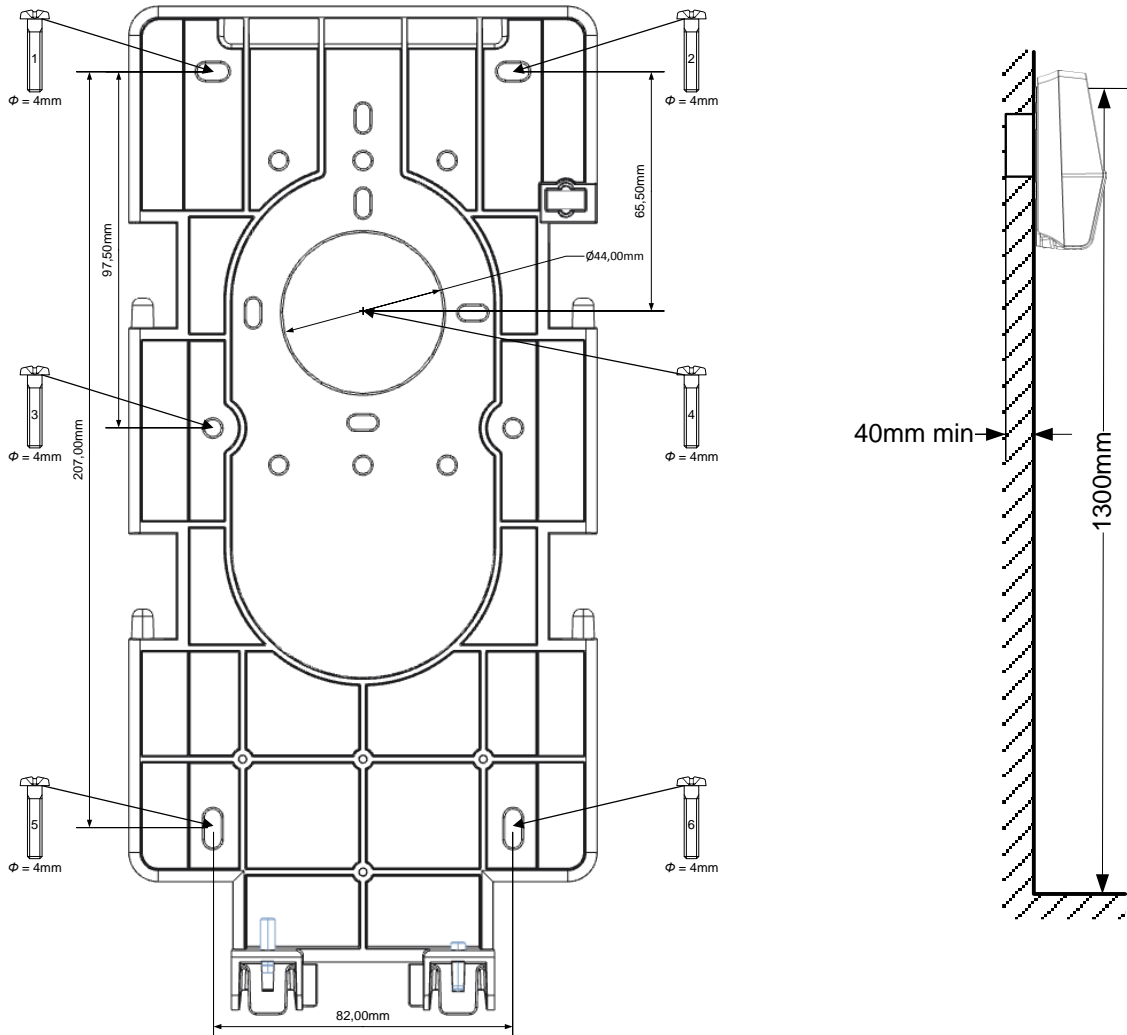


Figure 8: Drilling template

If not present, drill in the wall a hole with a diameter adapted to the width of the terminal and the cable to be hosted in (see Figure 8: Drilling template. This template can be found in the Quick Installation Guide).

Confirm the presence inside the hole of all the cables needed for the electrical installation (see Electrical Interface)

Drill in the wall 6 holes with a diameter adapted to screws and fit them with the raw plugs (see Figure 8: Drilling template).

## Fixing



Be sure that a sufficient space is reserved in the wall for the passage of cables, in particular for Ethernet.

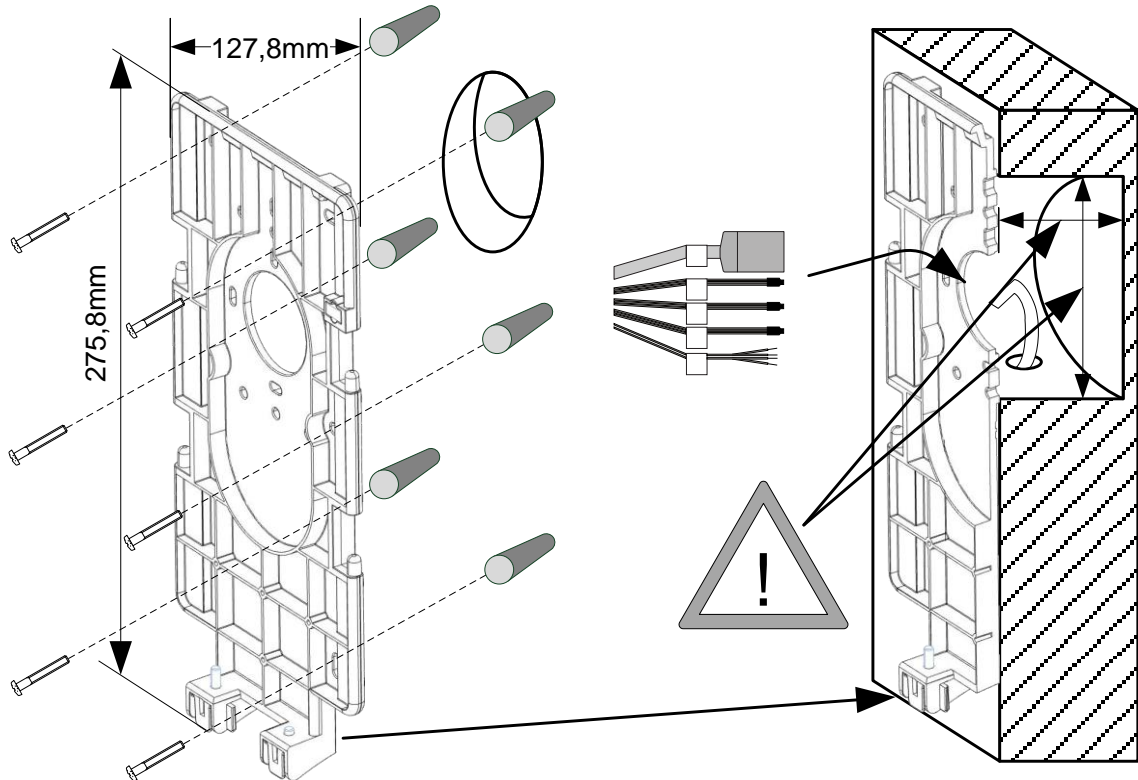


Figure 9: Wall plate fixing

Place the wall plate against the wall, opposite the six holes pierced in the wall (see Figure 9: Wall plate fixing).

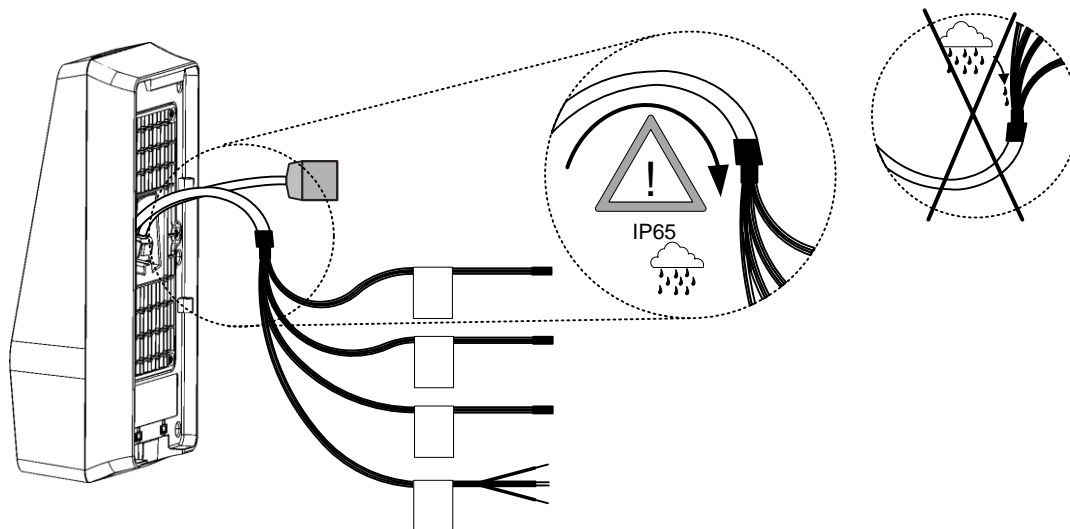


## Cabling



To ensure water tightness, be sure to bend the cable downward.

Cable for wiring shall be AWG 20 to 24, length shall be adapted to the size of the hole in the wall, to terminal connections, and to the distant between the electric source and the terminal itself.



## Closing

Power has to be set up just after closing it. If product has to be stored for a long time (more than 48 hours), don't forget to restore its configuration before use.

Finally, lock the product with the screws at the bottom of the terminal.



## Section 4 : Electrical Interface

## Wiring overview



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).



Power supply ground shall not be used for peripheral ground. All other grounds can be used indifferently.

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

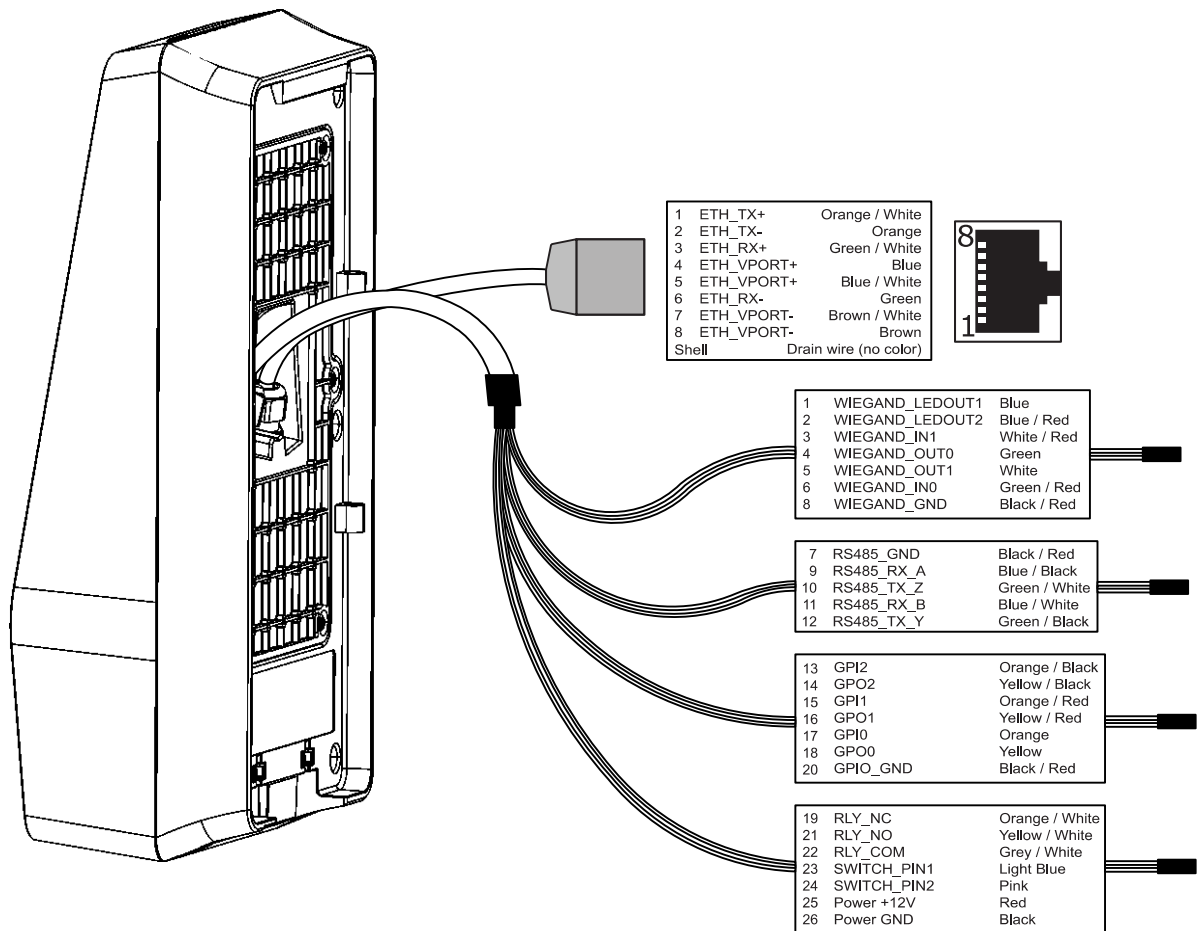


Figure 10: Cabling layout

## Power Supply

POE and external power supply are not used at the same time: if both power supplies are used, priority is given to external power supply. If external power supply is shut down, switch to POE without reboot is not guarantee.

### External Power supply

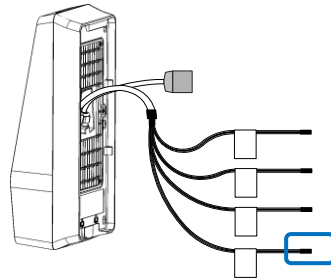


Figure 11: Power supply wiring

|    |       |                        |    |                                    |
|----|-------|------------------------|----|------------------------------------|
| 25 | Red   | Power Supply 12-24V DC | In | Positive 12-24 Volts, power supply |
| 26 | Black | Power ground           | In | Ground power supply                |

### External power supply

- Must comply with IEC 60950-1 standard.
- 12V to 24V Dc (regulated and filtered) 1 Amp min at 12V.
- Could be provided by a 12 Volts Wiegand power supply, which complies with the Security Industry Association's Wiegand standard March 1995.
- If sharing power between devices, each unit must receive 1A (e.g. two units would require a 12vDC, 2A supply).

### POE (Power Over Ethernet)

MorphoAccess® SIGMA Extreme Series terminal's power supply can also be provided by the Ethernet using RJ45 connection (Power Over Ethernet mode - IEEE802.3af or IEEE802.3at type 1 compliant).

The terminal maybe alternatively be powered via a UL 294B PSE PoE Limited power source with a range of 48VDC (-10% /+15%). UL 294 compliance was verified with POE (PSE-Power Sourcing Equipment model Pihong part number PSA16u-480).

## Output Relay

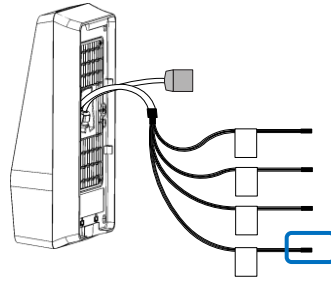


Figure 12: Output relay wiring

|    |                |           |  |                                 |
|----|----------------|-----------|--|---------------------------------|
| 21 | Yellow / White | Relay NO  |  | Contact relay (normally open)   |
| 22 | Grey / White   | Relay COM |  | Contact relay common            |
| 19 | Orange / White | Relay NC  |  | Contact relay (normally closed) |

### Nominal characteristics of relay

Load characteristics:

- 1 A max @ 30 VDC (according to the safety extra low voltage requirements independently of the power supply),
- Resistive load or inductive load; see warning information hereafter for inductive load,
- The internal relay is designed for at least 100 000 cycles (resistive load).



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

### Example of connection for electrical door locks

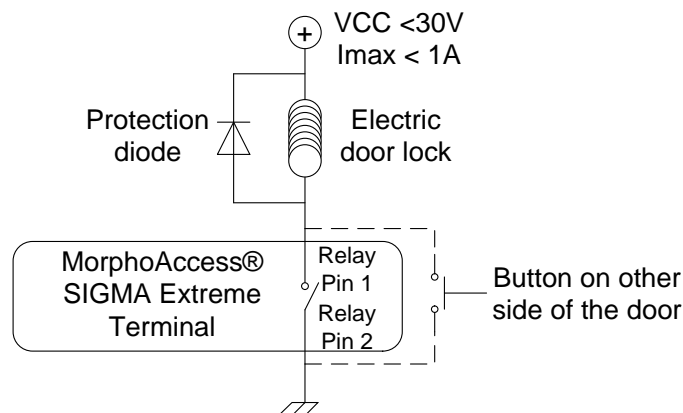


Figure 13: Example of electric latch connection

## Tamper Switch

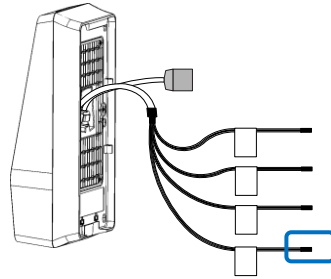


Figure 14: Tamper switch wiring

|    |            |          |  |                        |
|----|------------|----------|--|------------------------|
| 23 | Light Blue | Switch 1 |  | Tamper switch contact  |
| 24 | Pink       | Switch 2 |  | Strip on tamper switch |

### Operating principle for the switch

- Product installed on the wall plate: switch enabled (contact closed).
- Product opened (rear connectors accessible): switch disabled (contact open).

### Nominal characteristics of switch block

100 mA at 30 VDC max (Resistive load) according to the safety extra low voltage standard.



**This MorphoAccess® SIGMA Extreme Series terminal is part of security system; it is customer’s responsibility to connect the tamper switch (contact) to physical access controller, in order to prevent the access to the connector blocks.**

## Wiegand wiring

### Wiegand input

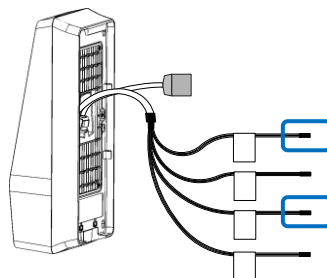


Figure 15: Wiegand input wiring

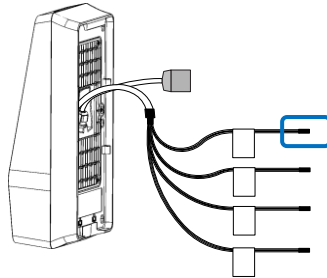
|    |             |                         |     |  |
|----|-------------|-------------------------|-----|--|
| 6  | Green / Red | WIEGAND_IN0             | In  | Wiegand IN D0<br>(Output type required: Open drain or 5V+/-5%) |
| 3  | White / Red | WIEGAND_IN1             | In  | Wiegand IN D1<br>(Output type required: Open drain or 5V+/-5%) |
| 18 | Yellow      | GPOO<br>(WIEGAND_LEDIN) | Out | Wiegand LEDIN (typical = 5VDC)<br>(option)                     |
| 8  | Black / Red | WIEGAND_GND             |     | Ground for Wiegand   |



**If pull-up's to 12V have been added on Wiegand IN D0 and Wiegand IN D1 inputs on a previous installation with a MorphoAccess® 500 Series terminal, these resistors must be removed to avoid any damage to the MorphoAccess® SIGMA Extreme Series terminal.**

## Wiegand output

The following figure shows how to cable the wires of the serial port of the terminal for the Wiegand protocol



**Figure 16: Wiegand output wiring**

|   |             |                 |     |  |
|---|-------------|-----------------|-----|--|
| 4 | Green       | WIEGAND_OUT0    | Out | Wiegand OUT D0 (5V TTL)  |
| 5 | White       | WIEGAND_OUT1    | Out | Wiegand OUT D1 (5V TTL)  |
| 1 | Blue        | WIEGAND_LEDOUT1 | In  | Wiegand LED IN 1 (option): panel feedback<br>(Output type required: Open drain or 5V+/-5%) |
| 2 | Blue / Red  | WIEGAND_LEDOUT2 | In  | Wiegand LED IN 2 (option): panel feedback<br>(Output type required: Open drain or 5V+/-5%) |
| 8 | Black / Red | WIEGAND_GND     |     | Ground for Wiegand   |

The use of LED1 and LED2 wires is described in the paragraphs below.

### The controller supports neither LED1 nor LED2 signals

When the access controller has no relay contact to provide an answer to the MorphoAccess® terminal, then the decision to emit either the “access granted” signal or the “access denied” signal is taken by another way. It is either the MorphoAccess® terminal itself that decide, or it waits for the access controller answer through the local area network (TCP), or on the serial port in (RS485 or RS422).

It is strongly recommended to disable the LED IN feature, to avoid any interference on MorphoAccess terminal behavior.

### The controller supports only LED1 signal

When the access controller has only one relay contact which is dedicated to the “access granted” answer, this one must be connected between the LED1 and GND



wires. The LED1 wire is set to the low level by closing the contact between the LED1 and the GND wires, and it means "access granted".

The MorphoAccess® terminal uses the timeout of the wait for a low level on the on LED1 wire or LED2 wire as "access denied" answer.

To minimize at most the waiting time of the user, the MorphoAccess® SIGMA Extreme Series terminal timeout value, must be adjusted to a value a little bit higher than the maximal value of the controller response time.

**Warning: if the LED2 wire is connected, it must be constantly maintained in the high state.**

## The controller supports LED1 and LED2 signals

When the controller supports one relay contact for each of the possible answers then:

- The « access granted » contact must be connected between the LED1 and the GND wires of the terminal
- The « access denied » contact must be connected between the LED2 and the GND wires of the terminal.

The MorphoAccess® terminal considers that:

- The answer of the controller is "access granted", when the controller puts the LED1 wire to the low state (by closing a contact between the LED1 and the GND wires), **and leaves the LED2 wire to the high state.**
- The answer of the controller is "access denied", when the controller puts the LED2 wire to the low state (by closing a contact between the LED2 and the GND wires), **whatever is the state of the LED1 wire.**

The MorphoAccess® terminal also considers that the answer of the controller is "access denied" in case of time-out while expecting for a closure between LED1 and GND wires, or between LED2 and GND wires.

## Serial port wiring

### DataClock Input

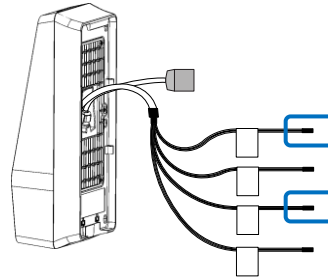


Figure 17: Serial port wiring – DataClock Input

|    |             |                         |     |  |
|----|-------------|-------------------------|-----|--|
| 6  | Green / Red | WIEGAND_IN0             | In  | Data (Output type required: Open drain only)                               |
| 3  | White / Red | WIEGAND_IN1             | In  | Clock (Output type required: Open drain only)                              |
| 18 | Yellow      | GPOO<br>(WIEGAND_LEDIN) | Out | Card present signal (if configured, only one selectable for Morpho Legacy) |
| 8  | Black / Red | WIEGAND_GND             |     | Ground for Wiegand   |

### DataClock Output

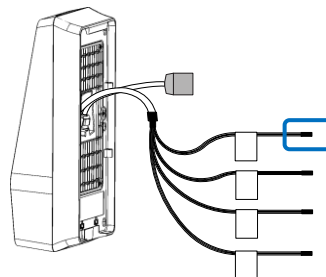


Figure 18: Serial port wiring – DataClock Output

|   |             |                 |     |  |
|---|-------------|-----------------|-----|--|
| 4 | Green       | WIEGAND_OUT0    | Out | Data ( 5V TTL )  |
| 5 | White       | WIEGAND_OUT1    | Out | Clock ( 5V TTL )   |
| 1 | Blue        | WIEGAND_LEDOUT1 | In  | LED IN 1 (option): panel feedback<br>(Output type required: Open drain or 5V+/-5%) |
| 2 | Blue / Red  | WIEGAND_LEDOUT2 | In  | LED IN 2 (option): panel feedback<br>(Output type required: Open drain or 5V+/-5%) |
| 8 | Black / Red | WIEGAND_GND     |     | Ground for Wiegand   |

## RS485

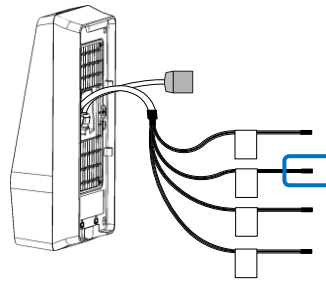


Figure 19: Serial port wiring – RS485

|    |              |             |        |                                  |
|----|--------------|-------------|--------|----------------------------------|
| 9  | Blue / Black | RS485_RXTX+ | In/Out | RS485 Rx/Tx non inverting signal |
| 11 | Blue / White | RS485_RXTX- | In/Out | RS485 Rx/Tx inverting signal     |
| 7  | Black / Red  | RS485_GND   |        | Ground                           |

RS485 implementation is limited to half-duplex communication. So only Tx+, Tx- and ground reference signals are necessary.

Depending on the RS485 network, an impedance adaptation may be required.

For farthest terminal, a 120-Ohms resistor termination may be added outside the terminal between TX+ and TX-.

## RS422

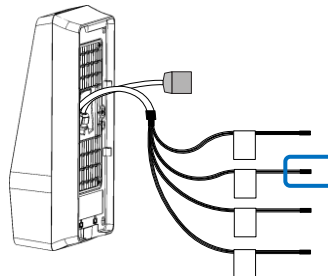


Figure 20: Serial port wiring – RS422

|    |               |           |     |                              |
|----|---------------|-----------|-----|------------------------------|
| 9  | Blue / Black  | RS422_RX+ | In  | RS422 non inverting Receive  |
| 11 | Blue / White  | RS422_RX- | In  | RS422 inverting Receive      |
| 12 | Green / Black | RS422_TX+ | Out | RS422 non inverting Transmit |
| 10 | Green / White | RS422_TX- | Out | RS422 inverting Transmit     |
| 7  | Black / Red   | RS485_GND |     | Ground                       |

RS422 interface is a full duplex communication.

## GPIO wiring

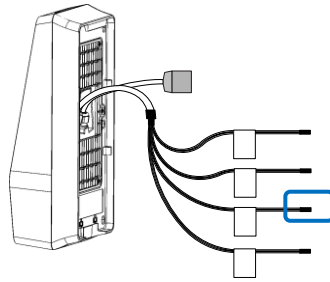


Figure 21: GPIO wiring

|    |                |          |     |                               |
|----|----------------|----------|-----|-------------------------------|
| 13 | Orange / Black | GPI_2    | In  | Digital Input (1,8V to 5V)    |
| 14 | Yellow / Black | GPO_2    | Out | Digital Output (5V – 5mA max) |
| 15 | Orange / Red   | GPI_1    | In  | Digital Input (1,8V to 5V)    |
| 16 | Yellow / Red   | GPO_1    | Out | Digital Output (5V – 5mA max) |
| 17 | Orange         | GPI_0    | In  | Digital Input (1,8V to 5V)    |
| 18 | Yellow         | GPO_0    | Out | Digital Output (5V – 5mA max) |
| 20 | Black / Red    | GPIO_GND |     | Ground                        |

## Single Door Access Control (SDAC) implementation

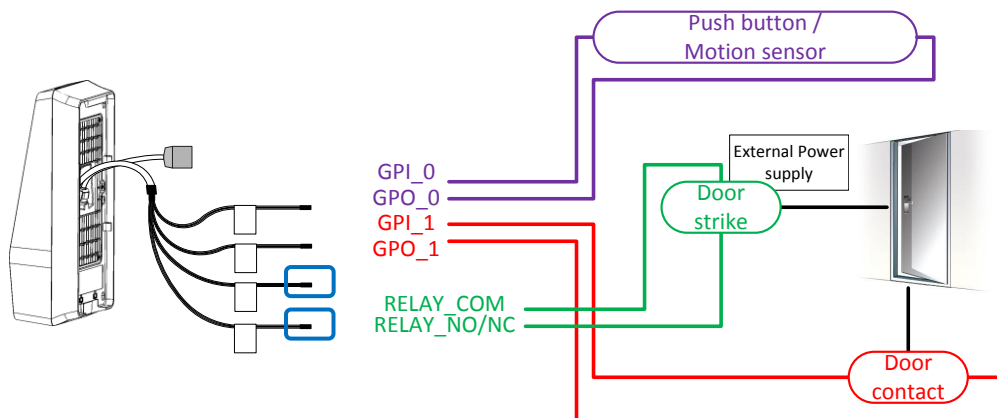


Figure 22: SDAC wiring



**If door contact is not used, GPI1 and GPO1 shall be connected together**

## Ethernet connection

Ethernet interface can be used to power the MorphoAccess® SIGMA Extreme Series terminal through POE (Power Over Ethernet - IEEE802.3af or IEEE802.3at type 1 mode). According to the POE standard two modes are available: power on data pins and power on dedicated pins.

Use either one of these modes depending on POE implementation on your local Ethernet network.



**Wi-Fi™ dongle must not be used with POE power supply. The POE doesn't provide enough power for both the terminal and the Wi-Fi USB dongle.**



**Ethernet cable shall be shielded**

### Default Ethernet configuration

By default, MorphoAccess® SIGMA Extreme Series terminal is configured in STATIC mode with the following configuration : IP Address : 192.168.1.10; Gateway Adress : 192.168.1.254; Subnet Mask : 255.255.254.0

### Recommendations for RJ45 wiring

| Pin                    | 1            | 2           | 3           | 4                        | 5                        | 6           | 7                         | 8                        |
|------------------------|--------------|-------------|-------------|--------------------------|--------------------------|-------------|---------------------------|--------------------------|
| Signals                | Data pair 1  | Data pair 1 | Data pair 2 | NC/POE pin dedicated (+) | NC/POE pin dedicated (+) | Data pair 2 | Ground/ pin dedicated (-) | NC/POE pin dedicated (-) |
| EIA / TIA T568B Colors | White orange | Orange      | White green | Blue                     | White blue               | Green       | White brown               | Brown                    |
| EIA / TIA T568A Colors | White green  | White green | White green | White green              | White green              | White green | White green               | White green              |
| Corel L120 Colors      | Grey         | White       | Pink        | Orange                   | Yellow                   | Blue        | Purple                    | Brown                    |

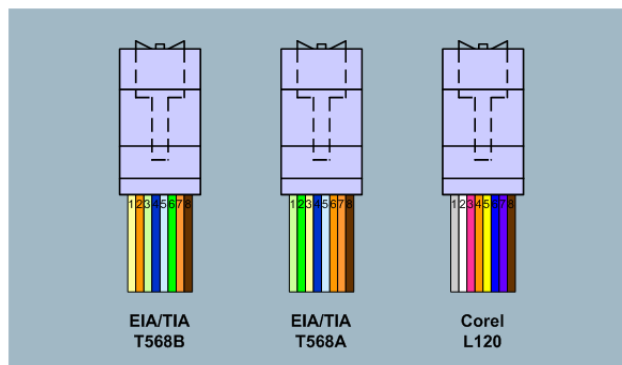


Figure 23: RJ45 wiring

RJ45 plug pinout is compliant with 10/100 base T, IEEE802.3 Specification. Product is compliant also with MDI or MDI-X.

## External USB connection

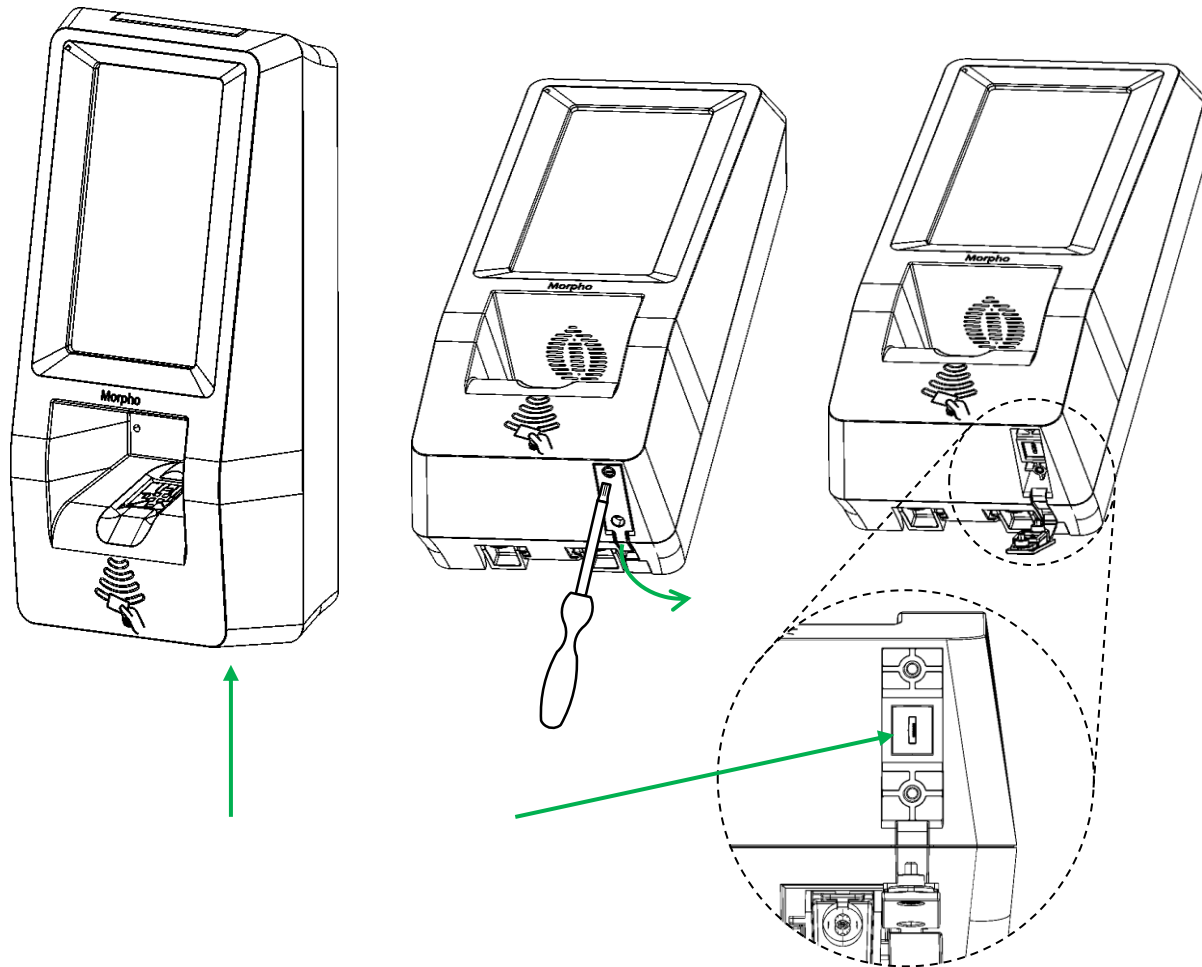


Figure 24: External USB connection

The external Micro USB can be used for administration only to connect a mass storage USB key (with a standard Micro USB-type A / USB-type A female adapter).

This cable can be found in Safran Identity & Security catalogue with ref 293658551.

Please refer to MorphoAccess® SIGMA Extreme Series Administration Guide for more information.



**USB connection is limited to USB key connection (power consumption shall not exceed 200mA)**

## Wi-Fi™ dongle installation

Wi-Fi™ dongle shall be installed inside the product and connected to the internal USB Mini B (at the rear of the terminal) using Safran Identity & Security cable provided in the kit.

Product integrating Wi-Fi™ dongle shall not be exposed to temperature exceeding 35°C and shall not be exposed to direct sun.

Wi-Fi™ feature requires the product to be powered from an external DC 12V to 24V power supply (the POE doesn't provides enough power for both the terminal and the Wi-Fi™ dongle).

Only Wi-Fi™ USB dongle delivered by Safran Identity & Security (kit reference 293686787) may be installed with the terminal for WLAN (Wireless Local Area Network) operation.

Cable has to be plugged on the upward USB connector of the rear panel, as on the following image:

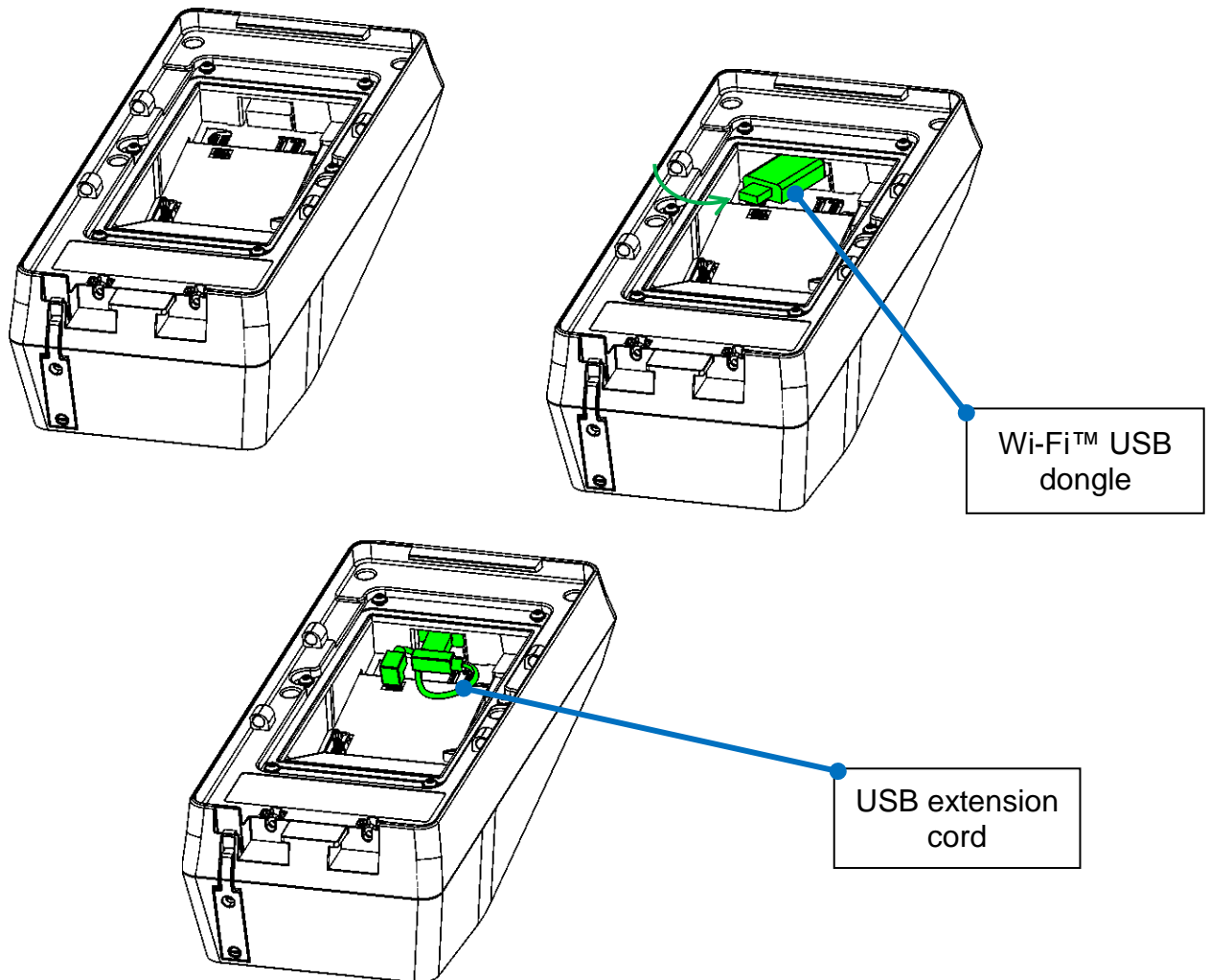


Figure 25: Wi-Fi™ dongle installation

## Micro SD connection

Micro SD card shall be used for the following features:

- Database extension (license is necessary)
- Logs extension (license is necessary)
- Picture logs (photo taking or face detection)
- Dynamic messages



**Micro SD card class shall be 10, lower class may reduce performances.**

**Micro SD card size shall be from 8GB to 32GB.**

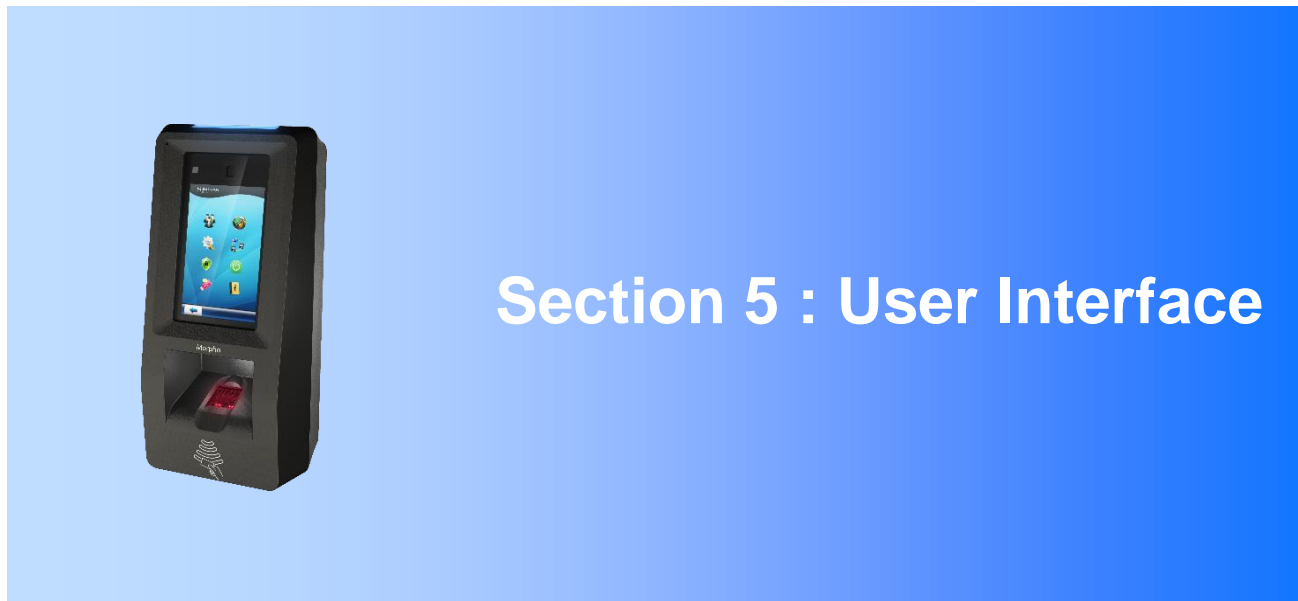


**Micro SD card shall never be used on a Windows PC (it may damage the content of the card and make it inoperative). The product will format it with the right format.**



**Use Brand Name Micro SD card. No name card may reduce performances or have shorter life time.**





# Modes for controlling access rights

## Introduction

The MorphoAccess® SIGMA Extreme Series terminal offers several methods for controlling access rights: it needs to be configured in one of the following four modes:

- Identification mode,
- Authentication mode (requires a contactless smartcard reader in the terminal),
- Multi-factor mode (requires a contactless smartcard reader in the terminal),
- Proxy mode

Refer to MorphoAccess® SIGMA Extreme Series Administration Guide for more information on Access Control.

## Identification mode

The Identification process of the MorphoAccess® SIGMA Extreme Series terminal proceeds by comparison of the biometric data of the finger placed on the biometric sensor, with all the biometric data stored in the database.

It means that the biometric data of the allowed users must be stored in the internal database before they can request the access on the terminal. This biometric data is acquired either directly on the terminal (using the embedded), or on an enrolment system using the same type of biometric sensor.

The access control by identification process is started when a finger is detected on the biometric sensor

When the user requests the access, his identity is unknown, and it is the terminal that searches for his identity. The terminal grants the access if a match is found (the user is identified); otherwise the access is denied (the user remains unknown).

For further information, please see the "Identification mode" section in the MorphoAccess® SIGMA Extreme Series Administration Guide.

## Authentication (verification) mode

Unlike the "identification" mode, the user identity must be known in order to execute the authentication process.

Indeed, authentication is an identity verification process: the user provides his identity and the terminal checks it with the relevant process.

This mode doesn't compare the user's data to the data of several users: it compares the data provided by the user with the reference data provided by the same user during enrollment phase. The data can be on a card presented to the terminal or in a database and ID is provided by the user.

Access is authorized if the terminal finds a correspondence.

For further information, please see the "Authentication mode" section in the MorphoAccess® SIGMA Extreme Series Administration Guide.

## Multi-factor mode

In this mode, the "identification" and "authentication" modes are available simultaneously; the user decides which control method will be used:

- by placing his finger on the sensor, thereby triggering the identification process,
- by placing his contactless card on the reader, thereby triggering the authentication process,

This is the default mode for terminals fitted with a contactless smartcard reader.

For further information, please see the "Multi-factors method" section in the MorphoAccess® SIGMA Extreme Series Administration Guide.

## Proxy mode

The Proxy mode is an operating mode where the access control main application is located in a distant system. This is not a standalone mode like Identification and Authentication modes.

It means that the terminal becomes a slave of the host system application. The access control application is running on the host system and uses MorphoAccess® SIGMA Extreme Series terminal high level functions:

- Identification function
- Authentication function
- Read data on a contactless card
- Access control result signal command

The MorphoAccess® SIGMA Extreme Series terminal is driven through an Ethernet (or Wi-Fi™) link using TCP, SSL or TLS protocol.

The MorphoAccess® SIGMA Extreme Series terminal acts as a server: it is either waiting for a command or executing a command.

The commands allowed by the MorphoAccess® SIGMA Extreme Series terminal are described in the MorphoAccess® SIGMA Extreme Series Host System Interface Specification document.

For further details about SSL or TLS on the MorphoAccess® SIGMA Extreme Series terminal, please refer to the MorphoAccess® SIGMA Extreme Series Administration Guide.

## External database mode (also called polling mode)

When external database mode is activated, the MorphoAccess® SIGMA Extreme Series terminal does not verify user template in its local database. This mode is useful when the user templates are stored in external database.

When authentication is initiated on the terminal, the terminal will poll the user ID to external controller. On polling out the ID, the corresponding template (if exists) is fetched from the external database and is authenticated against user's biometric on the terminal. Once the template request is posted to the external database, the terminal shall wait for the finger template from the external database to start authentication. Further process shall be same as authentication.

**Polling Process using buffer:**

- The user's input ID will be queued in the terminal's queue, which is polled by external application.
- External application waits for the User ID by polling the buffer. After getting an ID, it will search the template in database and send template to terminal for further authentication.
- The user is authenticated by the external device and granted access accordingly.

MorphoAccess® SIGMA Extreme Series terminal also has distant commands to retrieve polling buffer status and polling buffer data. Refer to the MorphoAccess® SIGMA Extreme Series Host System Interface Specification document.

**How to Activate?**

External database mode can be activated through Webserver > Complete Configuration, by setting "ucc.enable\_external\_database" parameter to 1. Only an admin user can activate polling mode. You can refer to the MorphoAccess® SIGMA Extreme Series Host System Interface Specification document to know how to set this parameter.

## Configuring the terminal

MorphoAccess® SIGMA Extreme Series terminals are standalone biometric systems which offers advance features for access control. MorphoAccess® SIGMA Extreme Series terminals are equipped with a facility to support the MorphoAccess® and Bioscrypt legacy systems.

When MorphoAccess® SIGMA Extreme Series terminal is set in any of the legacy modes, it supports the database structures and configurations of the selected legacy system. When the terminal is booted for the first time, user can select any of the following modes:

### MorphoAccess® 500 or J Series legacy mode

MorphoAccess® SIGMA Extreme Series terminal can be operated in MorphoAccess® 500 or J series mode (also referred as Legacy Morpho). In this mode, the terminal will support configurations and operations of MorphoAccess® 500 series terminals. Terminal can authenticate users enrolled in the MorphoAccess® 500 series terminal, using biometric check as well as contactless card. New users can also be enrolled in MorphoAccess® 500 series mode.

Once the product is configured in Legacy Morpho mode, the following methods can be used to configure the terminal:

- through the Ethernet interface (remote management)
- through a Wi-Fi™ connection (license and dongle required)

Configuration procedures are described inside the MorphoAccess® SIGMA Extreme Series Administration Guide as follows:

- Section 4: Terminal Configuration And Administration

## MorphoAccess® SIGMA Extreme Series native mode

MorphoAccess® SIGMA Extreme Series terminal is by default in native mode, that is named MA5G. It will support the new features and configurations only in the native mode. The terminal can be configured using an internet browser connected to the embedded Webserver application.

**NOTA :** *When terminal mode is switched from MA5G to Morpho legacy mode, the entire configuration (excepted communication links) and all databases are erased*

**NOTA :** *The terminal is rebooted on mode change and factory settings are applicable.*

Once the product is configured in native mode, the following methods can be used to configure the terminal:

- through the Ethernet interface (remote management)
- through a Wi-Fi™ connection (license and dongle required)

Configuration procedures are described inside the MorphoAccess® SIGMA Extreme Series Administration Guide as follows:

- Section 4: Terminal Configuration And Administration

## Anti-tamper / anti-pulling switches

Please refer also to “Tamper Switch” section.

These switches are activated as soon as there is enough pressure applied on the terminal against the wall. They are deactivated as soon as this pressure is not big enough, e.g. when the terminal is pulled out of the wall.

When the switches are deactivated, the MorphoAccess® SIGMA Extreme Series terminal acts as required by the related configuration key (see MorphoAccess® SIGMA Extreme Series Administrator / User Guide for key configuration description):

- Ignore the event (default): useful during normal maintenance operations.
- Send an alarm message to the Central Access Controller, through the usual channel of the access control result messages (Wiegand, DataClock, RS485, Ethernet or Wi-Fi™). An alarm switch (relay contact) is directly available on block terminal «tamper switch pins». Please refer to “Wiring overview” and to “Tamper Switch” sections.
- Generate an audible alarm signal with the speaker and an alert message on the screen.



## Section 6 : Accessories, Software Licenses and PC Applications



## Compatible Accessories, Licenses and Software

The following items can be ordered directly to Safran Identity & Security or to an official distributor, so as to enjoy all the features of your MorphoAccess® SIGMA Extreme Series terminal:

- **Power supply units,**
- **Contactless smartcards:** MIFARE® 1k, 4k; DESFire® 2k, 4k, 8k,
- **MA WI-FI PACK:** containing a Wi-Fi™ USB dongle and a Wi-Fi™ license to activate Wi-Fi™ capability on your terminal,
- **User database size licenses (MA\_10K\_USERS, MA\_50K\_USERS, MA\_100K\_USERS):** enabling database size upgrade from 3,000 to 10,000, 50,000 or 100,000 users capacity (max 3 fingers per record) at creation of the database. Requires Micro SD card in the terminal.

## Compatible PC applications

MorphoAccess® SIGMA Extreme Series terminals are fully compatible with:

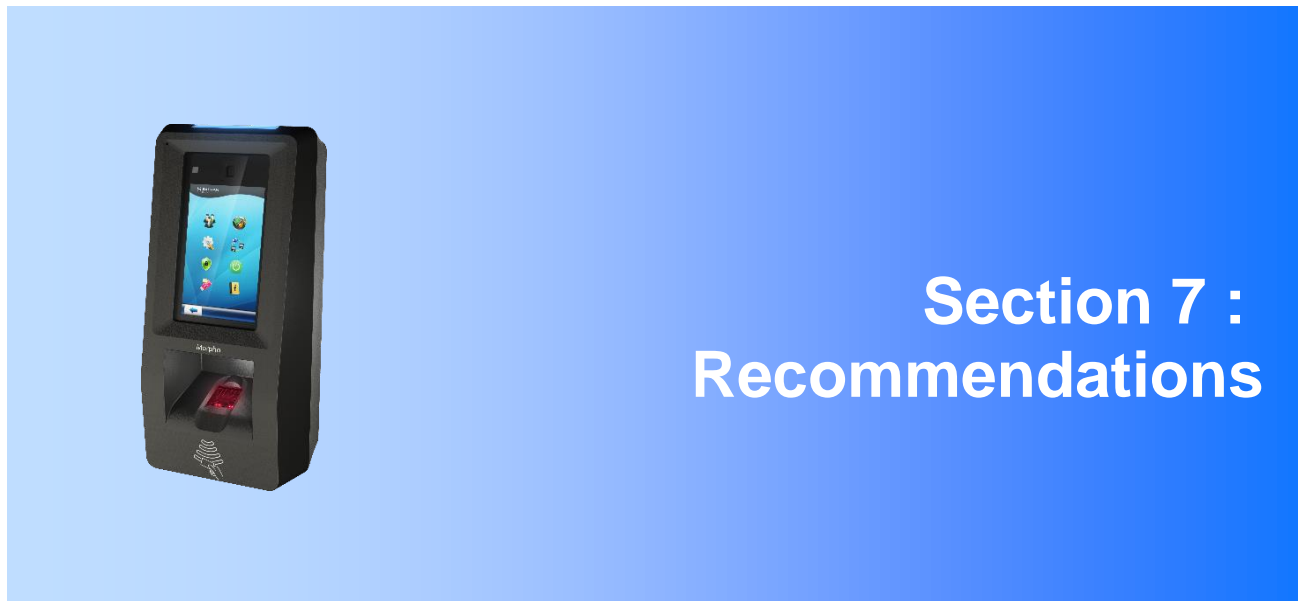
- MorphoManager (version 10.3.4 or higher)
- Morpho Integrator's Kit (MIK) software development kit (version 6 or higher).
- MorphoBioToolBox (version 3.4.3 or higher)

Using Legacy Morpho mode, MorphoAccess® SIGMA Extreme Series is also compatible with:

- MEMS (version 7.3.1 or higher),
- MIK (version 5.4 or higher),

The limitations in Morpho Legacy mode are described in the following document:

MorphoAccess® SIGMA Extreme Series Release Note - Legacy Morpho limitations



## 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 invalidate your warranty.
- Do not expose your terminal to extreme temperatures.
- Use your terminal with original accessories. Attempts to integrate unapproved accessories to the terminal will void your warranty.
- Due to electrostatic discharge, and depending on the environment, synthetic carpet should be avoided in areas where the terminal has been installed.

## Areas containing combustibles

It is strongly recommended that you do not install your terminal in the vicinity of gas stations, petroleum processing facilities or any other facility containing flammable or combustible gasses or materials.

## Specific precautions for terminals equipped with a contactless smartcard reader

It is recommended to install terminals equipped with a contactless smartcard reader at a certain distance (> 30cm) from metallic elements such as iron fixations or lift gates or radio product (such as contactless smartcard reader). Performances in terms of contactless badge reading distance will decrease when metallic elements are closer.

## Ethernet connection

It is recommended to use a category 5 shielding cable (120 Ohms). It is also strongly recommended to insert a repeater unit every 90m.

Extreme care must be taken while connecting Ethernet wire to the terminal block board since low quality connection may strongly impact Ethernet signal sensibility.

It is recommended to connect Rx+ and Rx- with the same twisted-pair wire (and to do the same with Tx+/Tx- and the other twisted-pair wire).

## Date / Time synchronization

The terminal clock has a +/-10 ppm typical time deviation at +25°C (roughly around +/- 6 sec per 48 hours). At lower and higher temperature (but within normal

operating temperatures), deviation may be more important (worst case: - 14 seconds per 48 hours).

If the terminal is used in an application requiring high time precision, we recommend synchronizing regularly your terminal time with an external clock (using NTP). Every 24 hours is usually enough for most applications.

Please note that the date/time of the terminal is protected from power failure during at least 24 hours. If the duration of the power failure or power down is longer, the date/time of the terminal will be lost.

## Cleaning precautions

The use of a dry cloth is recommended to clean the terminal, especially the biometric sensor. Acid liquids, alcohol or abrasive materials are prohibited.

## Legacy mode

When terminal mode is switched from MA5G to Morpho legacy mode, the entire configuration (except communication links) and all databases are erased.

The terminal is rebooted on mode change and factory settings are applicable.

Firmware legacy limitations are described in the MorphoAccess® SIGMA Extreme Series Release Note.

Hardware legacy differences are described below:

### Power supply

|                             | OMA500 family   | MA SIGMA Extreme family      |
|-----------------------------|---|------------------------------|
| DC power supply             | 12V<br>(-15% / +30%)  | 12V – 24V<br>(-15% / +10%)   |
| DC power supply connection  | Wires   | Wires                        |
| Power supply by POE         | Terminal are compatible with Power Supply Equipment compliants with IEEE802.3af | IEEE802.3at type 1 compliant |
| POE power supply connection | Block connector and RJ45 connector  | Only RJ45 connector          |

**Ethernet communication**

| OMA500 family                      | MA SIGMA Extreme family |
|------------------------------------|-------------------------|
| Block connector and RJ45 connector | Only RJ45 connector     |

**Serial communications**

|           | OMA500 family  | MA SIGMA Extreme family                                      |
|-----------|--|--|
| Wiegand   | Data In - 2<br>Data Out - 2<br>LED In - 1<br>LED Out - 2 | Data In - 2<br>Data Out - 2<br>LED OUT port<br>LED IN by GPO |
| Dataclock | Yes  | Yes  |
| RS485     | Half duplex  | Half duplex  |
| RS422     | Full duplex<br>(slave and master mode)                   | Full duplex<br>(slave and master mode)                       |

**GPI/GPO**

|                        | OMA500 family | MA SIGMA Extreme family      |
|------------------------|---------------|------------------------------|
| GPI                    | No            | 3 GPI                        |
| GPO                    | No            | 3 GPO<br>(≈ 3 TTLOUT_H only) |
| GPO current limitation | -             | 5mA@5V                       |

**RELAY**

|                      | OMA500 family                   | MA SIGMA Extreme family         |
|----------------------|---------------------------------|---------------------------------|
| Relay pins available | NO / NC / COM                   | NO / COM only                   |
| Driver capability    | 2 A @30V DC<br>(Resistive load) | 2 A @30V DC<br>(Resistive load) |

\*: NO: Normally open  
 NC: Normally closed  
 COM: Common

**Anti-theft/ Tamper switches**

|   | OMA500 family | MA SIGMA Extreme family |
|---|---------------|-------------------------|
| Anti-theft switch                               | Yes           | Yes                     |
| Tamper switch                                   | Yes           | Yes                     |
| Warning to a host if the product isn't supplied | Yes           | Yes                     |

**Micro SD card**

If Micro SD card is necessary for the features enabled, the following recommendations shall be applied.

- Micro SD card class shall be 10, lower class may reduce performances.
- Micro SD card size shall be from 8GB to 32GB.
- Micro SD card shall never be used on a Windows PC (it may damage the content of the card and make it inoperative). The product will format it with the right format.
- Use Brand Name Micro SD card. No name card may reduce performances or have shorter life time.

**Lighting conditions for face detection**

In order to get good performance of the face detection, the following recommendations shall be respected:

- The user shall not be against the light.
- The light in front of the user shall be at least 500 Lux.
- The background of the user shall be as neutral as possible (avoid images which could be mixed up with face).



# Annex 1 : Finger Placement Recommendations



## Main principles

Acquisition needs to be done with extreme care, in order to:

- get the best image quality
- increase recognition performance
- reduce recognition time

Then, it is highly recommended to:

- Maximize the contact between the fingerprint and the sensor
- Exert firm, but not excessive, finger pressure on the surface of the sensor
- Do not press too hard
- Do not slide nor roll the finger across the sensor
- Do not move the finger during acquisition
- Wait for the extinction of sensor backlight before removing the finger

## Most useful areas for biometric data

Fingerprint central area must be aligned with sensor center

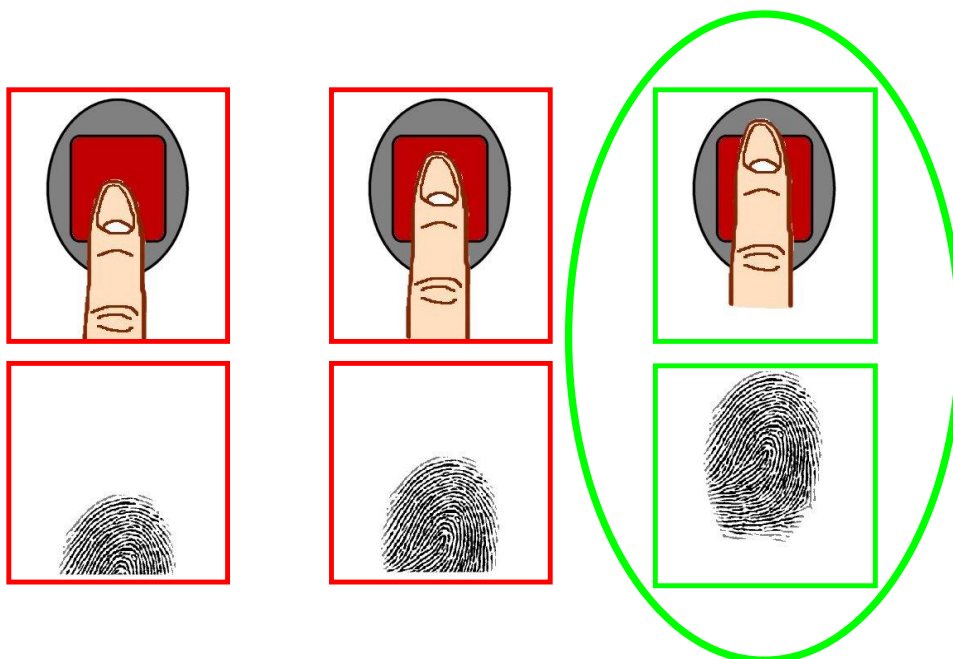
Area containing  
the maximum  
information



## Position of finger

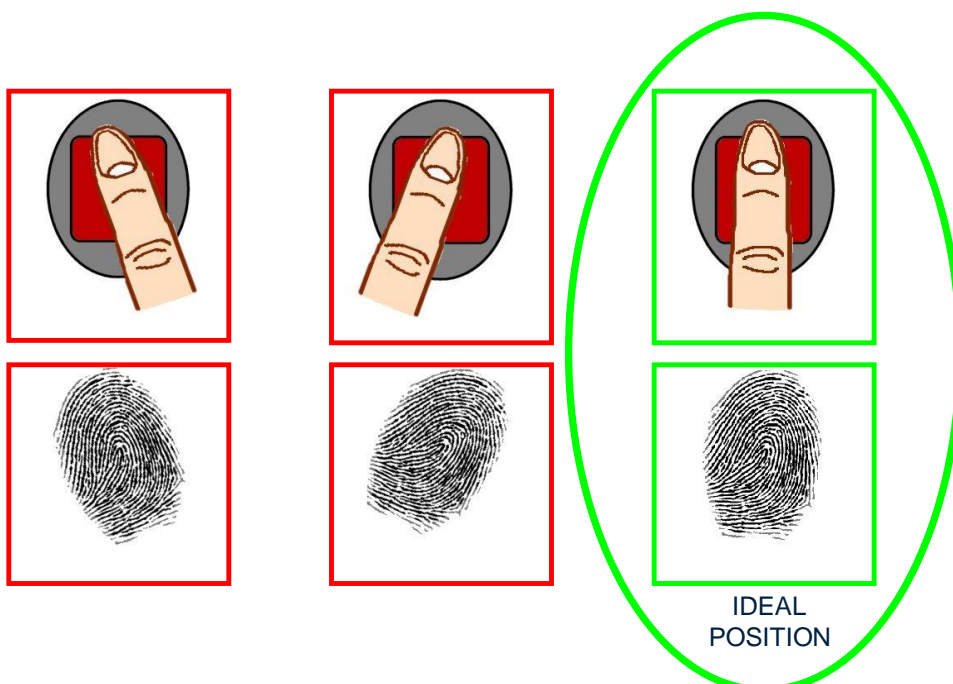
### Finger height

Align center of 1<sup>st</sup> phalanx with sensor center



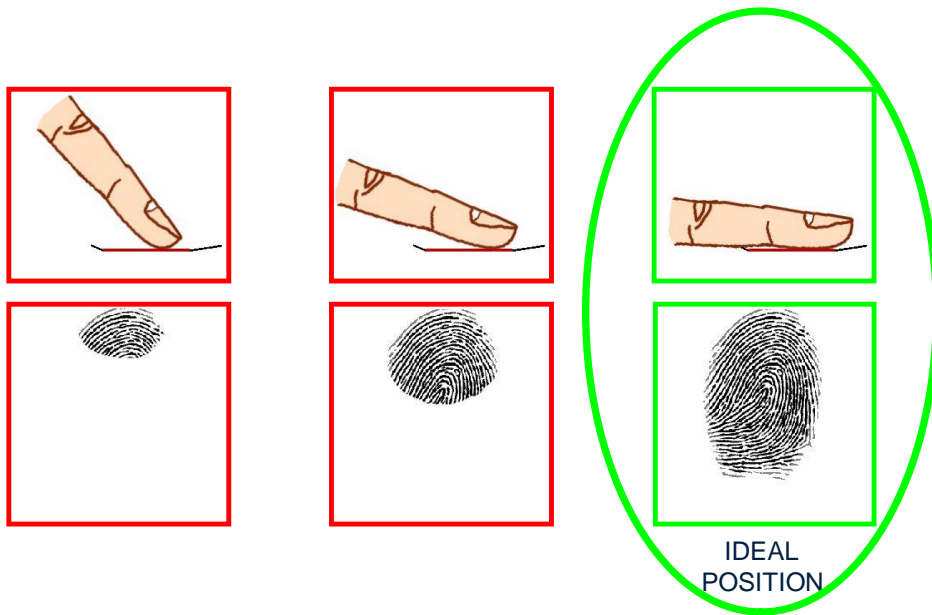
### Finger angle

The finger must be parallel to sensor sides



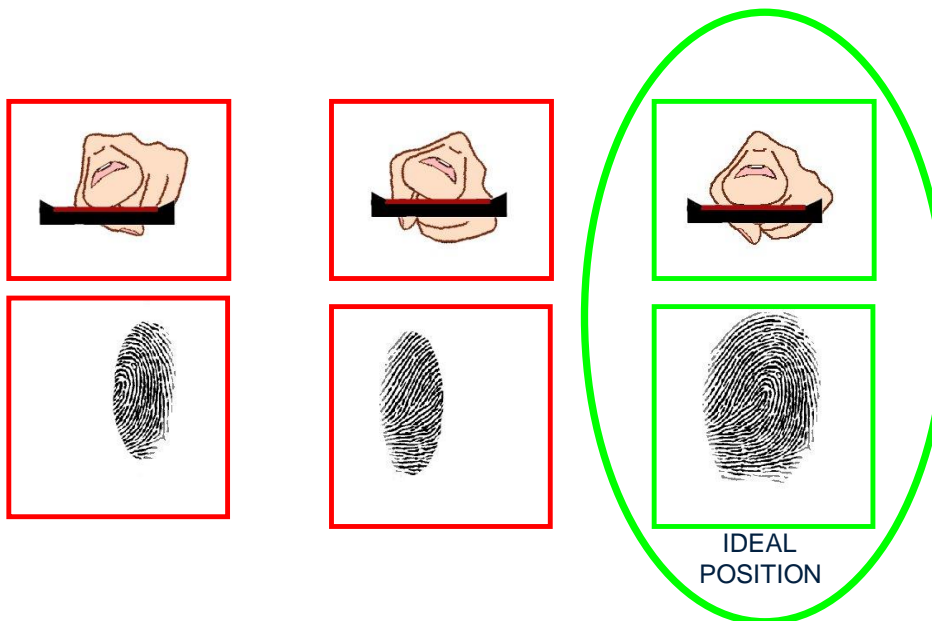
## Finger inclination

Finger must be parallel to the sensor surface



## Finger rotation

Finger must be parallel to the sensor surface



## Troubleshooting

When finger biometric data acquisition is difficult, please follow the recommendations listed below:

- The finger is cold
  - Solution : warm up the finger
- The finger is wet
  - Solution : wipe the finger
- The finger is dry
  - Solution : warm up the finger and/or add a little bit of humidity
- The finger is dirty
  - Solution: wash hands
- 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



## Annex 2 : Bibliography

## How to get the latest versions of documents

The last version of the documents can be downloaded from our web site at the address below:

[www.biometric-terminals.com](http://www.biometric-terminals.com)

(Login and password required).

To request a login, please send us an email to the address below:

[hotline.biometrics@safrangroup.com](mailto:hotline.biometrics@safrangroup.com)

## Documents concerning the MorphoAccess® terminal

### Documents about installing the terminal

MorphoAccess® SIGMA Extreme Series Installation Guide,

Ref. 2017\_2000024418

This document describes terminal physical mounting procedure, electrical interfaces and connection procedures. This document is in English.

### Documents about administrating / using the terminal

MorphoAccess® SIGMA Extreme Series Quick User Guide,

Ref. 2017\_2000024419

This document gives a quick overview of the product and the basics of configuration and use. This document is in English.

MorphoAccess® SIGMA Extreme Series Administrator Guide,

Ref. 2017\_000000XXXX (Not yet available)

This document describes the different functions available on the terminal and procedures for configuring the terminal. It also contains the full description of all the configuration parameters for the terminal. This document is in English.

MorphoAccess® SIGMA Extreme Series Parameters Guide,

Ref. 2016\_2000022621

This document contains the full description of all the terminal configuration parameters. This document is in English.

### Documents for the developer

MorphoAccess® SIGMA Extreme Series Host System Interface Specification,

Ref. 2016\_2000022602

This document describes the commands supported by the MorphoAccess® terminal. This document is in English.

MorphoAccess® SIGMA Extreme Series Remote Message Specification,

Ref. 2016\_2000022373

This document describes the format of messages sent by the terminal to a distant system. 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...



# Annex 3 : Support

## Troubleshooting

### **The terminal IP address is unknown or it is not possible to connect to the terminal**

Use terminal interface to configure a valid set of network parameters in your terminal.

### **The sensor is switched off**

Check that the database contains at least one record.

Check that the identification mode is enabled.

### **The terminal returns erratic responses to Ping commands**

Check the subnet mask.

Ask the network administrator for the correct value.

Check that each device connected to the network has a different IP address.

## Technical Support and Hotline

### North America

Mail: [cscenter@safrangroup.com](mailto:cscenter@safrangroup.com)

Tel: +1 888 940 7477

### South America

Mail: [cscenter@safrangroup.com](mailto:cscenter@safrangroup.com)

Tel: +1 714 575 2973

### South Africa

Mail: [sec.san.bio.support@morpho.com](mailto:sec.san.bio.support@morpho.com)

Tel: + 27 11 286 5855

### India:

Mail: [support.morphoindia@safrangroup.com](mailto:support.morphoindia@safrangroup.com)

Tel: 0120-4699900

### Europe and rest of the world:

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Tel: +33 1 30 20 30 40

(9H00am to 5H30pm French Time, Monday to Friday)

### Web site

For the latest firmware, software, document releases, and news, please check our websites :

- **North and South America** : e-mailing [cscenter@safrangroup.com](mailto:cscenter@safrangroup.com) with your name, phone number, MA SIGMA serial number and "Send Links For MA SIGMA Extreme Documents" in the subject line
- **Other countries** : please visit our web site [www.biometric-terminals.com](http://www.biometric-terminals.com) (To get your log in and password please contact your sales representative).

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