

SAGEM SA

MorphoAccess™ 200E/300E



Installation Guide



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Welcome to SAGEM SA MorphoAccess™ 200E / 300E

Congratulations for choosing the SAGEM SA MorphoAccess™ Automatic Fingerprint Recognition Terminal. The MorphoAccess provides an innovative and effective solution for access control or time and attendance applications using fingerprint verification and/or identification.

The MorphoAccess terminal integrates SAGEM image processing and feature matching algorithms (MorphoSoft™ and MorphoImaging™). This technology is based on lessons learned during 18 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 SAGEM SA MorphoAccess fast, accurate, easy to use, and suitable for physical access control or time and attendance.

The SAGEM SA MorphoAccess offers the following advantages:

- Has been designed for use in outdoor environments, is protected against water jets and is dust tight
- Has a high quality optical scanner
- Supports multiple input/output interfaces used in the physical access control industry
- Has a local area network interface for easy interaction with other host systems
- Is easily installed and integrated into your available office space
- Has an interface that is easy to use in both setup and operational modes
- Has extensive, flexible flash memory for data storage (user data, biometric templates, etc.)

To ensure proper installation of your SAGEM SA MorphoAccess, we recommend that you read this Installation Guide in its entirety.

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Safety instructions - Please Read Before Installation

WARNING: INSTALLATION TO BE PERFORMED BY PROFESSIONAL INSTALLERS ONLY

Note: These instructions for the installation of the MorphoAccess assume the installer is properly qualified as a professional, familiar with applicable industry standards, local building/zoning codes, and proper installation practices. Installation should not be attempted by non-professionals.

You are required to use a National Electric Code Class 2 power supply at 12 V DC \pm 5% and 2.5A minimum. This product is intended to be installed in accordance with the NEC Class 2 requirements.

Europe: SAGEM SA hereby declares that the SAGEM SA MorphoAccess™ has been tested and found compliant with the below listed standards as required by the EMC Directive 89/336/EEC: EN55022 (1994) / EN55024 (1998) and by the low voltage Directive 73/23/EEC amended by 93/68/EEC: EN60950 (2000).

USA: 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.

If this equipment interferes with radio or television reception (which can be determined by disconnecting and re-connecting the unit), the user is encouraged to try to correct the interference by one or more 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 for help.

CAUTION
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN
INCORRECT TYPE.
REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE
RECOMMENDED BY THE MANUFACTURER.
MUST BE DISPOSED OF PROPERLY.

ATTENTION
IL Y A DANGER D'EXPLOSION S'IL Y A REMPLACEMENT
INCORRECT DE LA BATTERIE.
REEMPLACER UNIQUEMENT AVEC UNE BATTERIE DU
MÊME TYPE OU D'UN TYPE ÉQUIVALENT RECOMMANDÉ
PAR LE CONSTRUCTEUR.
ELIMINER DE FAÇON APPROPRIÉE.

WARNING: Failure to properly seal the MorphoAccess against the mounting surface may result in accident or injury. Due to the many types of building materials that exist, ensuring adequate sealing against the mounting surface is the sole responsibility of the installer. The mounting gasket provided with the MorphoAccess is only for the convenience of the installer. For some applications with rough mounting surfaces, a bead of silicone sealant can be placed around the entire perimeter of the gasket before placing the MorphoAccess against the mounting surface.

WARNING: As an additional precaution, take all steps necessary (in accordance with the National Electric Code) to ensure that if water leaks into the mounting surface, that no high voltage or other potentially dangerous wiring, power sources, transformers, or electronics will become wet. This may include installing high voltage wiring or electronics above the hole in which MorphoAccess is mounted and waterproofing connections as needed. Providing for safety outside the MorphoAccess packaging is the sole responsibility of the installer.

General description

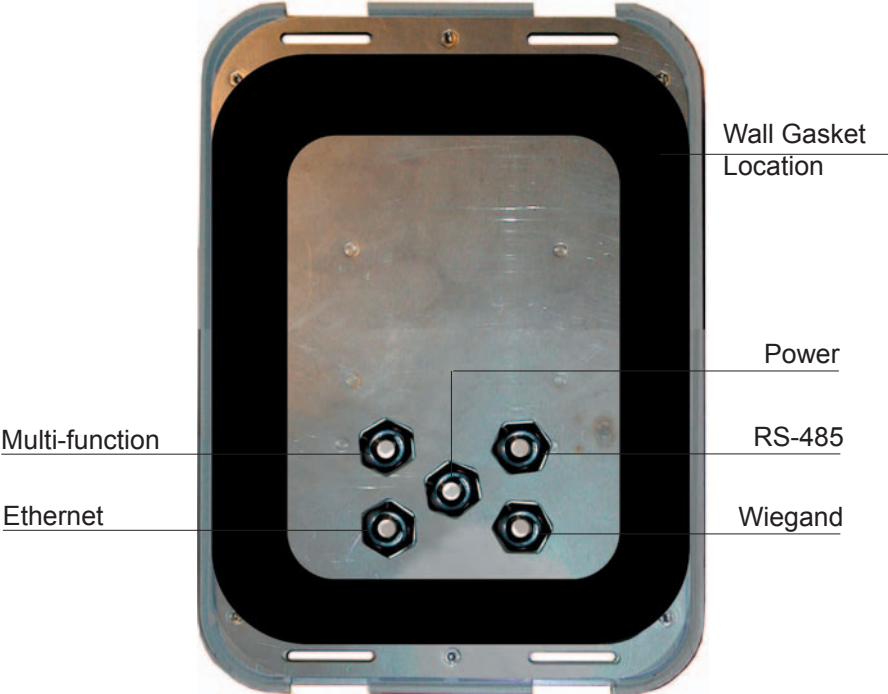
3D View



Front View



Rear View



Installation instructions

The installation instructions are divided into three segments - The Pre-Installation Checklist, The Initial Installation Procedure, and the Final Installation Procedure. Each segment lists the procedures you will perform, followed by the detailed instructions for each procedure.

Pre-Installation Checklist

1. Installation should be performed by a trained and qualified installer. Make sure to adhere to all applicable local building codes. A National Electric Code (NEC) Class 2 power supply must be used for the MorphoAccess.
2. Prepare for the MorphoAccess installation by selecting a mounting location that reduces exposure to the environment as much as possible within easy reach of the door that is being controlled by the MorphoAccess.
3. Verify that a standard junction box, at least the size of a dual-gang box, has been installed at the correct height necessary for the MorphoAccess to meet any local or Federal requirements for ADA compliance.
4. Verify that there is enough free wall space surrounding the junction box to accommodate the placement of the MorphoAccess.
5. Verify that the main power and functional interface cables are properly wired within the building, per applicable local building codes, and that wire stubs are accessible within the junction box where the MorphoAccess will be installed.
6. Turn off the main power to the junction box until the installation of the MorphoAccess is complete.

Note: Once steps 1 through 6 are complete, the MorphoAccess is ready for installation.

Initial Installation Procedure

The Initial Installation Procedure consists of two stages: (1) Preparing the MorphoAccess cables/wires for installation, and (2) Positioning and preparing the MorphoAccess for final installation against the mounting surface.

Stage 1: Preparing the MorphoAccess cables/wires for installation

1. Identify the MorphoAccess cables that will be wired for your particular installation requirements, for example, power, Wiegand, or RS-485.

Note: *The Ethernet cable comes prewired for 568B with a standard RJ45 socket installed. The interface cables have a protective cover placed over the end of each cable. If the interface cables are used for an installation, remove the protective cover in order to perform the necessary wiring.*

2. Familiarize yourself with the cable wire diagrams located in Appendix 1 of this installation guide.
3. Prepare the MorphoAccess cables for connection to the building cables as follows:
 - a. Shorten the MorphoAccess cable stubs as necessary for each installation.
 - b. Strip one inch of the cable insulation from the end of each cable you will be using.

Note: *Be careful not to cut the individual wires within the cables.*

- c. Strip $\frac{1}{4}$ - $\frac{1}{2}$ inch of insulation from the end of each individual wire you will be connecting.

Note: *If you are using self-tapping wire connectors, this step may not be necessary.*

4. Prepare the building cables for installation in the same manner as described above for the MorphoAccess cables.

Stage 2: Positioning and preparing the MorphoAccess for final installation against the mounting surface

1. If you haven't already done so, use the included hex wrench to unscrew the four screws securing the MorphoAccess visor and remove the visor. Place the visor out of the way until needed at the end of the installation procedure.
2. Lift the MorphoAccess into position near the junction box and place the wire stubs inside the junction box in order to temporarily position the device against the mounting surface.
3. Orient the MorphoAccess against the mounting surface in the position that it will be permanently mounted with the cable stub seals centered within the junction box without any excessive stress applied to the cables.
4. Once you are satisfied with the location of the device against the mounting surface, remove the backing from the gasket material and position the sticky side of the gasket against the backside of the MorphoAccess ensuring that the gasket material does not cover the mounting holes.
5. Once the MorphoAccess is properly positioned against the mounting surface, mark the location of the four fasteners at the center of the four oval slots, cut out in the flange, that surrounds the MorphoAccess. (See diagram on Page 5)
6. Once the four fastener locations are marked, remove the MorphoAccess from against the mounting surface and place in a safe location, out of the way from your work area.
7. Drill and prepare the holes for the four fasteners.

Note: The MorphoAccess comes with four Alligator™ anchors. These anchors can be used to mount the device to any surface, of any thickness above 1/4" (6mm). For complete technical specifications for the Alligator anchor please visit: <http://www.toggler.com/pdf/alligator.pdf>

For other types of surfaces you should select an appropriate anchor that is rated to support a minimum of 5 lb (2.25 kg).

See Appendix 2, p. 26 for generic bolt specifications.

Note: *A variety of fasteners can be used to mount the MorphoAccess to different types of material. The mounting holes must be prepared according to the type of fastener being used for an installation and the type of material the MorphoAccess is being mounted against. Use "best practices" installation procedures for the type of fastener being used.*

8. Once the fastener locations are properly prepared for accepting the fasteners, temporarily mount the MorphoAccess to the mounting surface to check for proper alignment of the fasteners and placement.
9. To temporarily mount the MorphoAccess, lift the device into position near the junction box and place the wire stubs inside the junction box in order to position it against the mounting surface.
10. Fasten the device to the mounting surface with the four fasteners.
11. If you are satisfied with the mounting, remove the device from the wall and place it in a safe location, away from your work area. If you need to make an adjustment, remove the MorphoAccess from the wall and make the adjustment accordingly.

You are now ready for the final installation procedure.

Final Installation Procedure

The Final Installation Procedure includes four stages: (1) Wiring MorphoAccess to the building, (2) Fastening MorphoAccess to the building, (3) Installing the MorphoAccess protective visor, and (4) Testing MorphoAccess functionality.

Stage 1: Wiring MorphoAccess to the building

1. Position MorphoAccess in such a way that the wire stubs are conveniently placed within reach of the building wire stubs.

Note: *To accomplish this may require placing the MorphoAccess on a stool or other secure work surface in order to position it at a height that allows the installer to conveniently connect the wires to the building wires without needing to physically hold the device in position.*

2. Refer to the cable wire diagram provided in Appendix 1 of this installation guide for the color coding of each individual wire that will be connected for your installation.

Note: *Wiring the MorphoAccess includes connecting the interface wires first, then connecting the power wires. Once all wires have been properly connected and sealed against the elements, MorphoAccess will be ready to be secured to the mounting surface.*

4. Connect each MorphoAccess wire to the corresponding wire in the building cables. Take care when connecting the wires in order not to damage the individual wires and to ensure a positive connection. Each wire should be properly wrapped or sealed in order to ensure uninterrupted service to the device. Follow NEC installation requirements when wiring this device.

Stage 2. Fastening MorphoAccess to the building

1. To complete permanent mounting of the MorphoAccess, neatly wind and place the cable harness inside the junction box without any excessive stress applied to the harness. This will facilitate the mounting of the device tight against the mounting surface.
2. Once the wire harness is in place in the junction box, place the device against the mounting surface and align the slots in the flange with the holes in the mounting surface.

Note: *The mounting holes should have been pre-drilled and prepared for installation as outlined earlier in the Initial Installation Procedure.*

3. Once the device is properly placed against the mounting surface, ensure that it makes a positive sealed connection between the mounting surface and the gasket on the back of the device.

Note: *To ensure a watertight seal on rough mounting surfaces, a bead of silicone sealant can be placed around the entire perimeter of the gasket before placing MorphoAccess against the mounting surface.*

4. Install the four screws through the slots in the flange into the four prepared mounting holes. Tighten the mounting screws.

Note: *Be careful not to overtighten the screws or the front housing will bend visibly under the bolt heads.*

Note: *If you use mounting screws that pass through the mounting surface (such as a thin wall or an electrical mounting box), be sure to seal the mounting screw holes per the NEC for outdoor installations.*

Stage 3. Installing the MorphoAccess protective visor



Warning: *The protective visor must be installed in order to protect the finger imaging scanner and the LCD display from direct sunlight and dripping water.*

1. Place the protective visor over the MorphoAccess and align the four mounting holes on the visor with the four mounting holes on the flange.
2. Re-attach the visor to the flange with the included four screws and washers using the included hex wrench. Firmly tighten each screw to 8 in-lb (0.90 N-m).
3. Place the provided screw caps over each screw to complete a finished look.
4. Remove the protective film covering the LCD window.

Stage 4: Testing MorphoAccess functionality

1. Once the installation is complete, turn on the main power to the MorphoAccess.
2. Inspect the MorphoAccess and verify that it powers up and proceeds to the main screen.
3. Inspect the LCD and verify that the contrast and brightness settings make the screen readable. If the LCD is not readable, see the setup menu in the Software Guide for how to adjust the contrast and brightness of the LCD screen.
4. Inspect the scanner and verify that the scanner is glowing red.
5. Have the Administrator perform an enrollment and verify that the enrollment is successful.

Note: *This step depends on the type of system configuration and may not be appropriate for all installations.*

6. Perform an identification and verify that the door opens correctly.

Note: *This step depends on the type of system configuration and may not be appropriate or available for all installations.*

Note: *If any unexplained problems occur, please contact the company where you purchased the MorphoAccess for troubleshooting instructions.*

Installation of MorphoAccess is now complete.

How to upgrade MorphoAccess™ 200E to 300E

Pre-Installation checklist

This is a memory upgrade which, when installed, provides the capability to manage 16 biometric databases of 3,000 records each for a total of 48,000 people.



Note: This memory upgrade must be performed by authorized personnel only. Any work carried out by non-authorized personnel will invalidate your warranty.

Warning: *Make sure the existing database residing on the MorphoAccess 200 has been backed up before continuing with this upgrade. All existing database information in the MorphoAccess 200 will be lost during this procedure. If transferring a memory module from one MorphoAccess 300 to another, all database information contained on the module will be lost.*

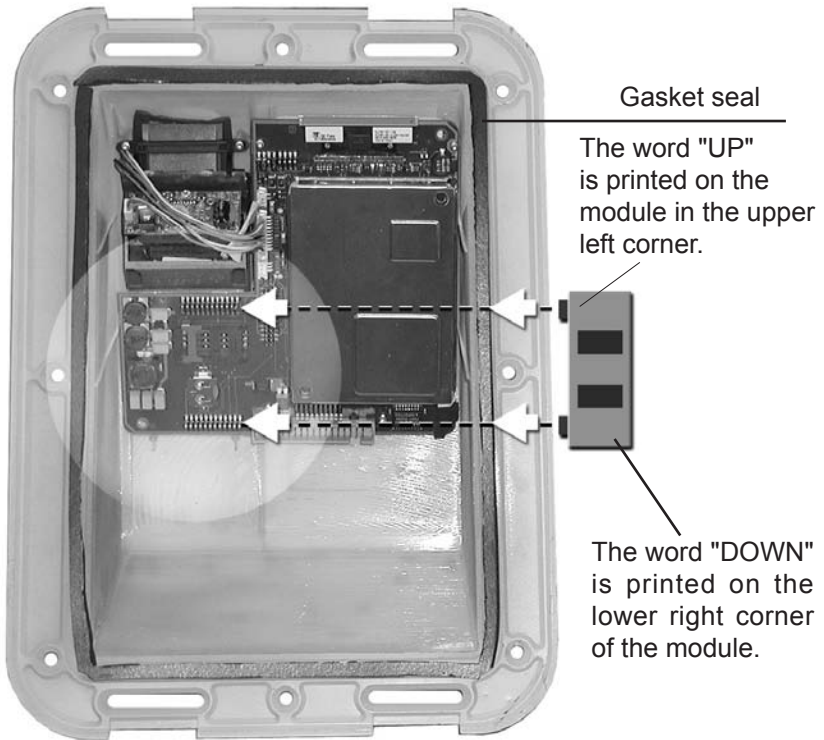
Performing the upgrade

1. Remove the MorphoAccess visor screw caps, with a small straight blade screwdriver, and then remove the four visor screws, using the included hex wrench, and disconnect the MorphoAccess from the mounting surface and make sure the main power to the device is turned off.
2. Unscrew the front housing from the back housing by removing the four screws securing the two halves together using the included hex wrench.
3. Carefully separate the front and rear housing.

Note: *Carefully disconnect the cables between the front and rear housing before completely separating the two halves.*

4. Turn the front housing upside down in order to look inside. Identify the location of the memory module by looking at the picture on the next page.

Memory module upgrade



5. Use approved static discharge protection. Remove the memory module from its protective ESD packaging.
6. Orient the memory module correctly by rotating the module so that the word "DOWN" is located in the bottom right corner of the module.
7. Place the memory module in position over the two 24-pin connectors and press the module into place. Use firm, even pressure on both connectors at the same time to seat the module in place.

Note: *The module should press into place firmly without much resistance. If it appears that excessive force is required to seat the module, remove the module and visually inspect the pins on the MorphoAccess circuit board to ensure that the pins are not bent out of alignment.*

8. Visually inspect the gasket which provides a positive seal between the two halves of the housing. Ensure that the gasket is properly seated within the frame on the front half of the housing.

Note: *If the gasket appears to be damaged, contact your MorphoAccess vendor to order a replacement gasket before proceeding.*

9. Carefully reconnect the ribbon cables between the two halves of the housing.
10. Place the two halves of the MorphoAccess housing together, making sure that the gasket maintains its position within the gasket frame.
11. Screw the two halves together with the four screws and washers which were removed earlier.

Note: *Carefully tighten the four screws to 8 in-lb (0.90 N-m). Do not overtighten.*

12. Screw the visor back onto the housing. Tighten the four screws to 8 in-lb (0.90 N-m). Place the screw caps into place over the four screws.

The MorphoAccess is now upgraded.

Configuring Wiegand vs. Dataclock

MorphoAccess is configured during manufacturing to support the Wiegand protocol. If your installation requires supporting the Dataclock protocol, you will need to perform the following procedure in order to configure the device to support Dataclock. You will be taking the housing sections apart and then putting them back together again in order to perform the configuration.

Note: *MorphoAccess can support either Wiegand or Dataclock. MorphoAccess does NOT support both protocols simultaneously.*

Note: *This installation requires the device to be disconnected from the mounting surface with the main power to the device turned off.*

Performing the Configuration

1. Remove the four visor screw caps and the four screws securing the visor and remove the visor.
2. Unscrew the front housing from the back housing by removing the four screws securing the two halves together.
3. Carefully separate the front and rear housing.

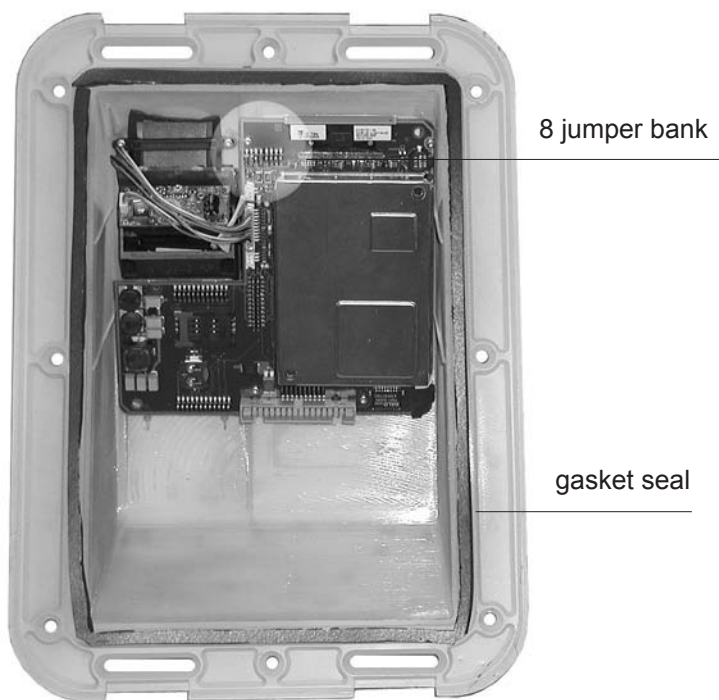
Note: *Carefully disconnect the cables between the front and rear housing before completely separating the two halves.*

4. Turn the front housing upside down in order to look inside. Identify the location of the bank of eight vertical jumpers on the motherboard by looking at the picture on the next page.

5. Once you have identified the location of the vertical jumper bank, (numbered 1 - 8 from left to right), configure the jumpers for Dataclock as follows:

Install jumpers on positions 1 and 2. Move jumper from position 7 to position 8. When completed, positions 1, 2, 4, and 8 will have jumpers installed.

Note: Use jumpers spaced at 2 mm on center. If needed, jumpers are available from your MorphoAccess supplier.



Note: *Once you have attached the jumpers as described, the configuration is complete.*

Putting the device back together

1. Visually inspect the gasket, which provides a positive seal between the two halves of the housing. Ensure that the gasket is properly seated within the frame on the front half of the housing.

Note: *If the gasket appears to be damaged, contact your MorphoAccess vendor to order a replacement gasket before proceeding.*

2. Carefully reconnect the cables between the two halves of the housing.
3. Place the two halves of the housing together making sure that the gasket maintains its position within the gasket frame.
5. Screw the two halves together with the four screws that were removed earlier.

Note: *Carefully tighten the four screws to 8 in-lb (0.90 N-m). Do not over tighten.*

6. Screw the visor back onto the housing. Tighten the four screws to 8 in-lb (0.90 N-m). Place the screw caps into place over the four screws.

The MorphoAccess is now configured for Dataclock.

MorphoAccess Technical Characteristics

Display

- Backlit LCD 136 x 34 pixels

Keyboard

- 12 numeric keys
- 4 function keys

Fuse

- 2.5 amp quick blow

Memory

- 8 megabytes RAM
- 4 megabytes memory for Operating System, Biometric Libraries, and Applications
- Optional 32-Mbyte memory for data storage.

Peripheral interfaces

- RS-485 / RS-422
- Ethernet 10 Base T
- Wiegand or Dataclock output
- Wiegand or Dataclock input
- Relay
- Tamper switch

Power supply

- NEC Class 2, at 12 V DC $\pm 5\%$; 2.5A minimum

Note: Cable cross section depends on the length:
0.75 mm² recommended.

Size and weight

This product is designed to be installed outdoors.

- 8.6 inches wide x 11.4 inches high x 3.9 inches deep
- Approximately 4.5 pounds

Environmental conditions

- Operating temperature -10°C to + 45°C
- Humidity 0% to 90%, non-condensing
- Fluid ingress and dust protection Rated for IP 65

Storage conditions

- Temperature - 40°C to + 70°C
- Humidity 0 % to 95 % , i n c l u d i n g
condensation

Recommendations

Areas containing combustibles

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

General precautions

- Do not attempt to repair your MorphoAccess 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 MorphoAccess to temperatures outside its specified operation and storage ranges.
- Use your MorphoAccess with original accessories. Attempts to integrate the MorphoAccess with unapproved accessories will void your warranty.
- Due to electrostatic discharge, and depending on the environment, synthetic carpet should be avoided in areas where the device has been installed.

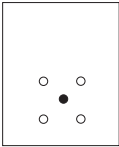


Warning: The manufacturer cannot be held responsible if the above recommendations are not followed or if the MorphoAccess is used incorrectly.

Appendix 1 - Cable configuration table

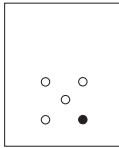
This table lists the cables and the function of each wire in each cable. It is to be used as a reference to wire the Outdoor MorphoAccess for power and interface functionality. (See diagram on Page 26 for location of the different cables.)

Power Cable		
Color		Function
White		+ 12V
Black		Ground



A diagram of a 4-pin connector. The top two pins are connected (indicated by solid black dots), and the bottom two pins are not connected (indicated by open circles).

Wiegand Cable		
Color		Function
Green	Wiegand Out	D 0
White	Wiegand Out	D 1
Brown	Wiegand Out	LED
Black	Wiegand Out	GND
Purple	Wiegand In	GND
Red	Wiegand In	+ 12V
Orange	Wiegand In	LED
Yellow	Wiegand In	D 1
Blue	Wiegand In	D 0
Shield (drain)		Not Connected

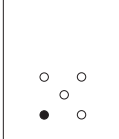


A diagram of a 10-pin connector. The top four pins are connected (indicated by solid black dots), and the bottom six pins are not connected (indicated by open circles).

NOTE: The Wiegand electrical interface conforms to the Security Industry Association Wiegand standard (March 1995). MorphoAccess outputs 26-bit Wiegand reverse.

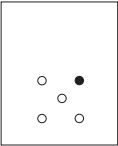
NOTE: To wire MorphoAccess for Dataclock out interface use the Wiegand cable as follows. Green = Data Out; White = Clock Out; Black = Ground. To configure MorphoAccess to output Dataclock (refer to pages 18-20).

NOTE: MorphoAccess Ethernet wiring follows the T568B standard. Use a straight-through cable between MorphoAccess and a hub. Use a crossover cable between MorphoAccess and a PC.



A diagram of a 4-pin connector. The top two pins are connected (indicated by solid black dots), and the bottom two pins are not connected (indicated by open circles).

RS-485 Cable	
Color/stripe	Function
Green/White	RX+
White/Green	RX-
Orange/White	TX+
White/Orange	TX-
Red/Orange	GND



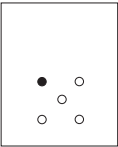
Deister Card Reader Interface:

To Interface the optional Deister contactless card reader, connect the Deister AB wires to the RS-485 cable Tx port as follows:

Wire A to Tx+

Wire B to Tx-

Multi-Function Cable	
Color	Function
Black	GND
White	Tamper Switch
Green	Tamper Switch
Brown	Relay 2, Common
Blue	Relay 2, Normally Closed
Gray	Relay 2, Normally Open



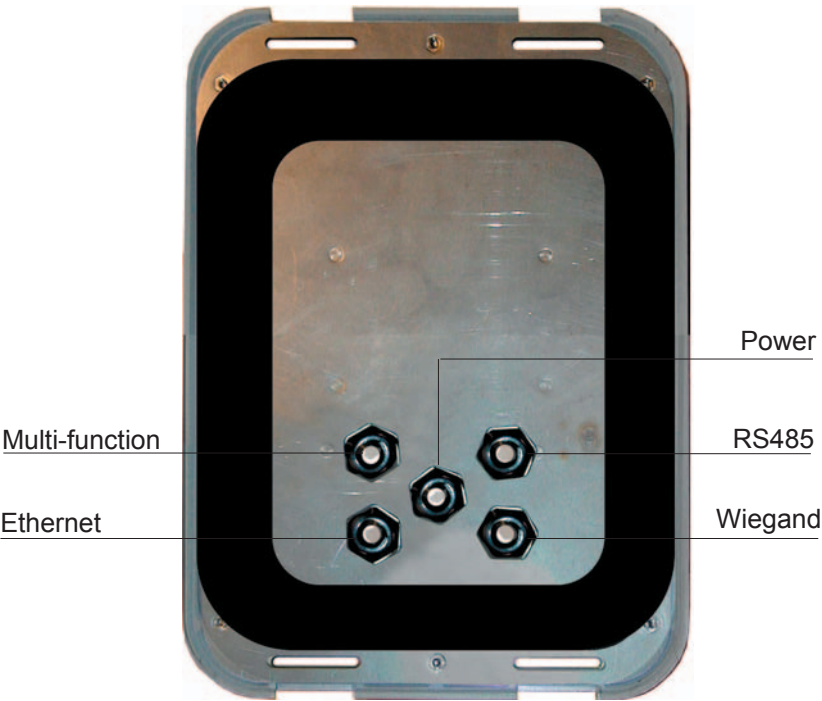
NOTE: The tamper switch is opened when the Morpho-Access is opened, thereby disabling the MorphoAccess.

Relay Ratings:

1 A at 30 VDC according to the extra low voltage safety requirements (42.4 VAC max, 60 VDC max) independent of the power supply.

Rear View

Location of Cables



Appendix 2 - Wall fastener specs

If the mounting bolts provided with the MorphoAccess do not meet your specific needs for a particular installation, the following specification provides information necessary to select a bolt that will properly support the MorphoAccess.

Maximum bolt	UNC #10
Minimum length of threads	1-7/8 inches
Minimum shear strength of bolt	5 lb or more

MORPHO® BRAND BIOMETRIC PRODUCT

WARRANTY, LIMITATIONS, AND SOFTWARE LICENSE

1. LIMITED WARRANTY AND MAINTENANCE. Subject to the Disclaimers and Limitations of Warranty set forth below, SAGEM MORPHO, Inc., (hereinafter “SMI,” or its licensed reseller, as may be applicable) provide the following limited warranty, for the benefit of original Customer only, that all hardware components of the Morpho® brand biometric product with which this information is associated will conform to the applicable hardware product specifications as published by SMI and will be in good working order and free from material defects in materials or workmanship, given Customer’s normal use and service (the “Hardware Limited Warranty”). It is further warranted that the Morpho® brand biometric software provided with, and/or loaded into and resident in the biometric product will conform to the applicable software specifications or SMI documentation published by SMI, given Customer’s normal use and operation (the “Software Limited Warranty”). Any and all third party software programs supplied with the biometric product are subject to their respective manufacturer’s warranty and license terms only, and SMI assumes no responsibility for such software.

The Hardware Limited Warranty extends for one (1) year from the date of Customer’s receipt of delivery of the biometric product. The Software Limited Warranty extends for ninety (90) days from the date of Customer’s receipt of delivery of the biometric product. During the duration of the Hardware and Software Limited Warranties, the first level of support shall be provided by telephone “Help Desk” support (the applicable Help Desk telephone number is included with the packaged biometric product). Hardware repairs which cannot be remedied through Help Desk consultation shall be made by returning the hardware component to an authorized SMI service depot, in accordance with instructions issued by the service depot, at Customer’s expense. Return delivery of the repaired or replaced component shall be at SMI’s expense. SMI shall repair or replace any nonconforming hardware component at its sole election. Software problems not remedied through Help Desk consultation may be corrected through software patches or updates issued by SMI or by replacement of the unit in which the software is resident, at SMI’s sole election. The Limited Software Warranty does not entitle the customer to automatically receive patches, updates or other notification of software correction or revision during the duration of the warranty. The original warranty periods shall not be renewed or extended by subsequent repair or replacement.

Biometric product maintenance after expiration of the one (1) year warranty may be available pursuant to the terms and conditions of a separate Maintenance Agreement – please contact the location from which the biometric product was purchased for further details.

2. LIMITATIONS AND DISCLAIMERS OF WARRANTY.

SMI does not warrant that operation of the biometric product will be uninterrupted or error-free; further, no biometric product or system can be guaranteed to be 100% accurate, or to properly enroll, identify, or authenticate every individual. SMI shall have no responsibility for repairing or otherwise remedying any defect or

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MorphoAccess™ Terminal

Installation Guide Update

M142-005C
September 2003

SAGEM MORPHO, Inc.
Tacoma, Washington 98402

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MorphoAccess™ Terminal Installation Guide Update, Document M142-005C

SAGEM MORPHO, Inc., 1145 Broadway Plaza, Tacoma, WA 98402 USA
September 2003

FCC Compliance of MorphoAccess™ 200, 220, 300, 200E, 220E, and 300E

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.

This FCC compliance is for MorphoAccess™ products as delivered to you, the customer. Any changes or modifications not expressly approved by SAGEM MORPHO, Inc. could void your authority to operate MorphoAccess™ products.

Installing Ferrite Beads on Interface Cables for MorphoAccess™ 200 and 300

This document provides an overview of ferrite beads and explains how to install them on the power, Wiegand, RS-422, and Ethernet cables that you connect to the MorphoAccess™ 200 or 300. To meet FCC requirements for Class B computing devices, a ferrite bead must be installed on every cable connected to the MorphoAccess 200 or 300 — only if the MorphoAccess serial number starts with 01 or 02.

What is a Ferrite Bead?

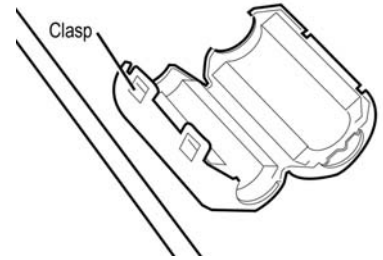
Ferrite beads are radio frequency (RF) absorbers. To see an example of a ferrite bead, look at a monitor video cable or a laptop computer power cable that is connected to your computer. The walnut-sized protrusion that is molded near one end of the cable is a ferrite bead. The size and shape of the ferrite bead determines the amount of RF that is absorbed. The amount of RF that a device emits determines the type of ferrite bead that is required to provide the proper absorption.

The ferrite beads supplied with your MorphoAccess 200 or 300 terminal have been properly sized to absorb the correct amount of RF to comply with FCC requirements.

Installing a Ferrite Bead

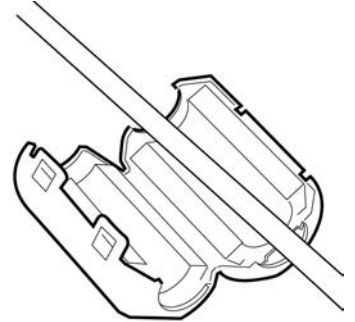
Check the serial number on the back of the MorphoAccess. If the serial number starts with 01 or 02, install one ferrite bead on each cable before you install the MorphoAccess 200 or 300 terminal.

1. Select the interface cable that you want to work with and open a ferrite bead by releasing the clasps on the side.



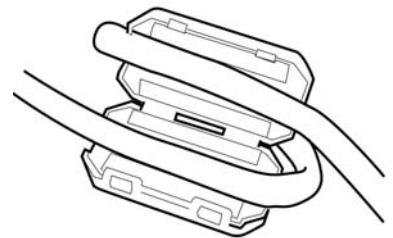
2. Position the ferrite bead on the cable as close as possible to (but not inside) the MorphoAccess.

Lay the cable inside the groove.

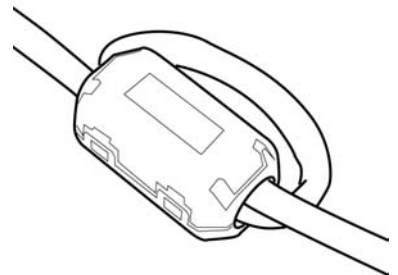


3. Bend the cable around the ferrite bead to form a loop and lay it again inside the ferrite bead.

Make sure the cable circles the ferrite bead so that it passes through the ferrite bead twice.



4. Close the two halves of the ferrite bead and securely fasten the clasps without pinching the cables.



Ordering Ferrite Beads

To order more ferrite beads (Ferrico F5-NF-80B) for your MorphoAccess 200 or 300 interface cable, contact SAGEM MORPHO, Inc. at 1-800-526-2674. Ask for part number 1205-294001-0.

Installing Ferrite Beads on Interface Cables for MorphoAccess™ 220

This document provides an overview of ferrite beads and explains how to install them on the power, Wiegand, RS-422, and Ethernet cables that you connect to the MorphoAccess™ 220. To meet FCC requirements for Class B computing devices, a ferrite bead must be installed on all cables connected to the MorphoAccess.

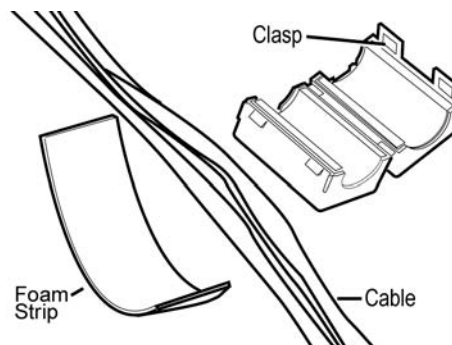
What is a Ferrite Bead?

Ferrite beads are radio frequency (RF) absorbers. To see an example of a ferrite bead, look at a monitor video cable or a laptop computer power cable that is connected to your computer. The walnut-sized protrusion that is molded near one end of the cable is a ferrite bead. The size and shape of the ferrite bead determines the amount of RF that is absorbed. The amount of RF that a device emits determines the type of ferrite bead that is required to provide the proper absorption.

The ferrite beads supplied with your MorphoAccess 220 terminal have been properly sized to absorb the correct amount of RF to comply with FCC requirements.

Installing a Ferrite Bead

After all the cables have been routed through the wall, place a single ferrite bead around all of them before you install the MorphoAccess 220 terminal. See instructions below. The foam strip will be compressed in the ferrite bead to prevent the ferrite bead from slipping down the cable.

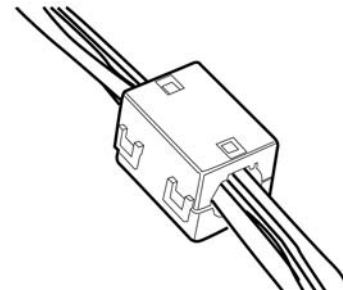
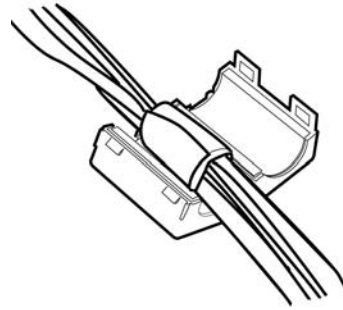


1. Open a ferrite bead by releasing the clasp on the side.
2. Determine where the ferrite bead will be positioned on the cables. It should be positioned as close as possible (but not inside) to the MorphoAccess terminal.

Ensure that sufficient cable slack will be available to route the cables inside the MorphoAccess and to attach the wires to the terminal block.

3. Wrap the foam tightly around all the cables at the position where the ferrite bead will be placed.
4. Lay the foam-wrapped cable inside the groove of the ferrite bead.
5. Close the two halves of the ferrite bead and securely fasten the clasps.

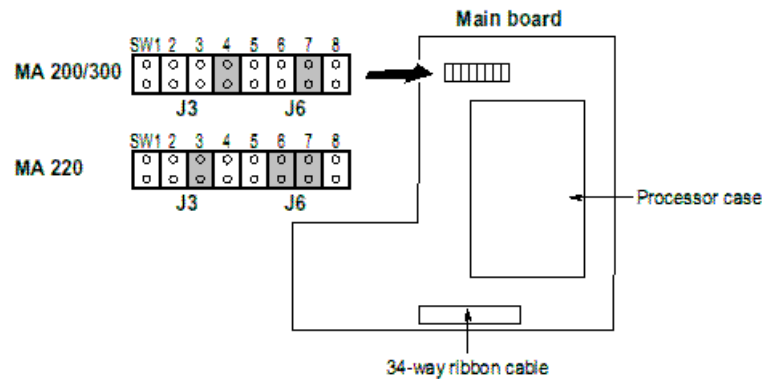
If the ferrite bead does not close easily, trim the foam slightly, but not so much that the ferrite bead will slide away from the terminal.



Ordering Ferrite Beads or Foam Cable Wrap for Ferrites

To order more ferrite beads (Fair-Rite 04441 73551) for your MorphoAccess 220 interface cables, contact SAGEM MORPHO, Inc. at 1-800-526-2674. Ask for part number 1205-364001-0. To order more foam cable wrap for ferrites, ask for part number 0999-900019-0.

MorphoAccess™ Motherboard Jumper Configuration



SW1: Wiegand input

Open	=	Wiegand Mode (default)
Closed	=	Dataclock Mode

SW2: Wiegand output

Open	=	Wiegand Mode (default)
Closed	=	Dataclock Mode

SW3-6: Reserved (MA200/300)

SW3 must be open	=	
SW4 must be closed	=	
SW5 must be open	=	
SW6 must be open	=	

SW3-6: Reserved (MA220)

SW3 must be closed	
SW4 must be open	
SW5 must be open	
SW6 must be closed	

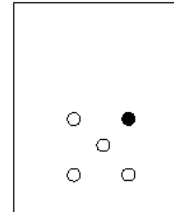
SW7-8: Wiegand Input (Interrupts)

Open Open	=	Not allowed
Closed Open	=	Wiegand Mode (default)
Open Closed	=	Dataclock Mode
Closed Closed	=	Not allowed

MorphoAccess™ Serial Port is RS-422 Only

The COM1 serial port supported in all MorphoAccess™ products is RS-422 only, not RS-485 as shown in the installation guides. Below is the correct RS-422 wiring diagram for MorphoAccess™ 200E, 220E, and 300E (outdoor units).

RS-422 Cable	
Color/stripe	Function
White/Green	RX+
Green/White	RX-
White/Orange	TX+
Orange/White	TX-
Blue/White	GND



Ethernet Connections to MorphoAccess™

It is recommended to use shielded category 5 (Cat 5) Ethernet cable (120 ohm impedance). It is also strongly recommended to install a repeater unit every 300 ft (90 m). Extreme care must be taken when connecting the Ethernet wires to the terminal block board during installation, since low quality connections may degrade the Ethernet signal sensitivity. The receive wires Rx+ and Rx- should be connected from the same twisted pair of wires, and the transmit wires Tx+ and Tx- should also be connected from the same twisted pair of wires.

MorphoAccess™ 300 Memory Extension Board

Under certain very harsh shipping conditions, the memory extension board of the MorphoAccess™ 300 (indoor MorphoAccess only) might become disconnected. You should check that the memory board is properly attached before connecting power to the MorphoAccess 300. When you disassemble the MorphoAccess 300 to mount it on a wall, make sure the memory board is properly aligned with the pins (see page 9 of the Installation Guide). There are two sets of 26 connector pins, but each connector on the memory extension board has only 24 socket holes. Align the memory extension board such that it uses the sets of 24 pins closest to the large silver shield. Push on the memory extension board to make sure it is firmly seated on the connector pins.

MorphoAccess™ Power Supply Selection Outside the United States

When any model MorphoAccess™ is installed, it is the responsibility of the installer to provide an IEC 60950-certified power supply that is marked Limited Power Source (or "LPS") and rated at 12 VDC, 2.5 A minimum. This applies to indoor units (MA200, 220, and 300) as well as outdoor units (MA200E, 220E, and 300E).

SAGEM SA **MorphoAccess™ 200/200E** **and 300/300E**



This guide is for the
MorphoAccess family
of products



Software Guide

Software Revision 4.42



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Introduction

Thanks for choosing the MorphoAccess™ Automatic Fingerprint Recognition Terminal. MorphoAccess provides an innovative and effective solution for access control or time and attendance applications using fingerprint verification and/or identification.

The MorphoAccess terminal integrates SAGEM image processing and feature matching algorithms (MorphoSoft™ and MorphoImaging™). This technology is based on lessons learned during 18 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 fast, accurate, easy to use and suitable for physical access control or time and attendance.

The MorphoAccess offers the following advantages:

- Has a high quality optical scanner.
- Supports multiple input/output interfaces used in the physical access control industry.
- Has a local area network interface for easy interaction with other host systems.
- Is compact in size for easy installation and integration into your available office space.
- Has an Intuitive interface that is easy to use in both setup and operational modes.
- Has extensive, flexible flash memory for data storage, including user data and biometric templates.

This guide allows you to configure the software parameters to meet your installation requirements. The following lists some of the configurable parameters:

- Administrator mode versus User mode
- Identification versus Authentication
- Standalone versus Client/Server
- Database management functions – enroll or delete
- Configure network parameters
- Configure juvenile processing
- Set matching threshold
- Set language preference – English, French, or Spanish
- Configure Welcome message
- Setup Wiegand and Data clock codes/parameters
- Configure COM port
- Configure relays
- Adjust contrast and brightness
- Set clock

To ensure the most effective use of your MorphoAccess, we recommend that you read this Software Guide in its entirety.



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MORPHOACCESS™ SOFTWARE USER INTERFACE

The SAGEM SA MorphoAccess™ terminal can operate in three modes: access control by identification, access control by authentication and proxy mode. Those modes are set in the Maccess/Admin/Mode configuration key.

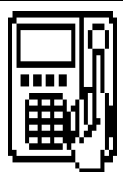
The MorphoAccess™ 200 manages one base of 800⁽¹⁾ persons, locally or remotely. MorphoAccess™ 300 manages 16 bases of 3000 persons, remotely⁽²⁾.

Access control by identification (MorphoAccess™ 200)

To configure MorphoAccess™ terminal in this mode, use the system and edit /cfg/Maccess/Admin/mode, then enter 0.

After starting the MorphoAccess™ terminal, waits for fingerprint detection in identification mode.

**Place your finger
for identification
Please**



⁽¹⁾ In stand alone mode, the local base is sized for 800 persons, 2 fingers.
In MMS mode, it is possible to manage up to 1000 persons in a base, 2 fingers.
⁽²⁾ For more information, see MorphoAccess™ Host System Interface Specification
Ref.: 3000005996.

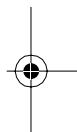
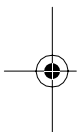


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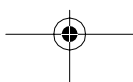
If the identification is successful, the terminal triggers the access or returns the corresponding ID to central security controller⁽³⁾.



Once the person's identification is done, the terminal automatically loops back and waits for a new finger. This display remains for about 4 seconds.



⁽³⁾ Port used to exchange ID is either Weigand/Dataclock or COM1/COM2. The ID format send to COM port is described on Communication protocol section.





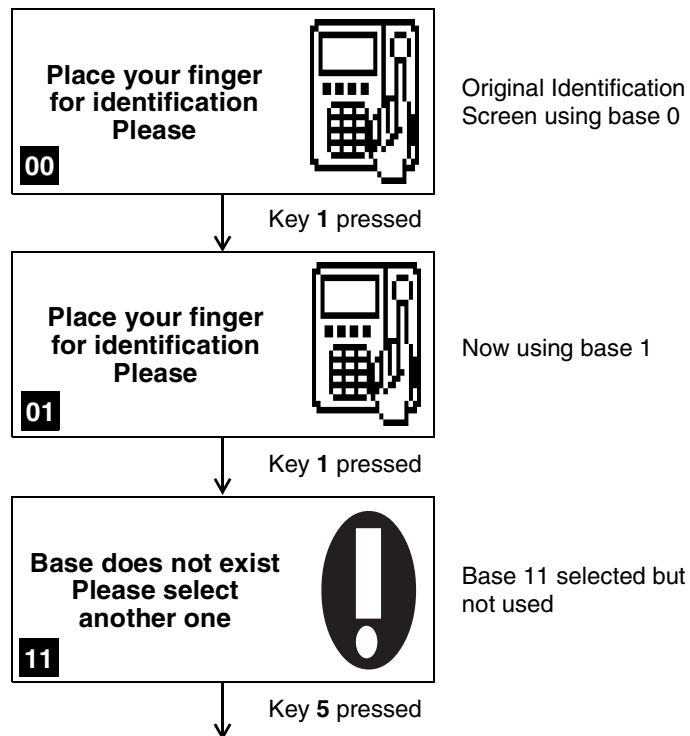
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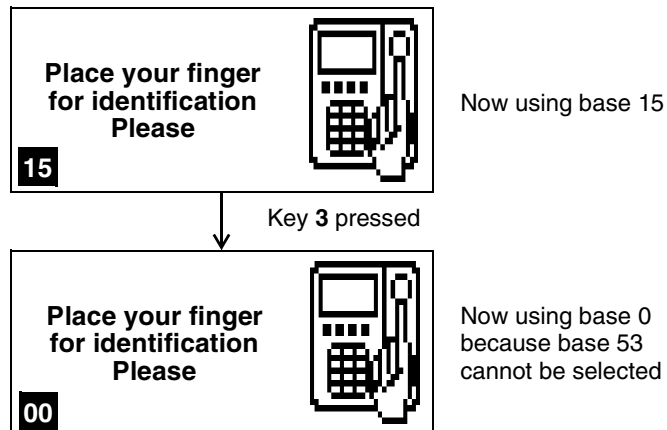
Access control by identification (MorphoAccess™ 300)

To configure the MorphoAccess™ in this mode, use Asystem and edit /cfg/Maccess/Admin/mode, then enter **0**.

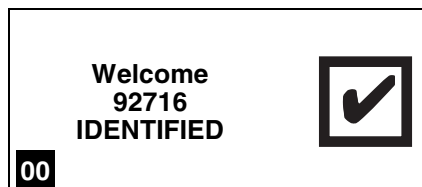
After starting the MorphoAccess™ terminal, waits for fingerprint detection in identification mode.

To select a user database, just press a key number to toggle the base number. Only bases 0 to 15 can be selected and used.




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If the identification is successful, the terminal triggers the access or returns the corresponding ID to central security controller.



Once the person's identification is done, the terminal automatically loops back, selects base 0 and waits for a new finger. This display remains for about 4 seconds.

Access control by authentication (MorphoAccess™ 200 and 300)

To configure the MorphoAccess™ in this mode, use Asystem and edit /cfg/Maccess/Admin/mode, then enter 1.

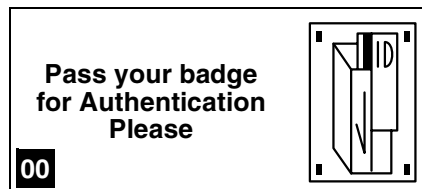
This mode requires a peripheral equipment which will send the ID of the person to authenticate to the MorphoAccess™ Wiegand or Dataclock input.



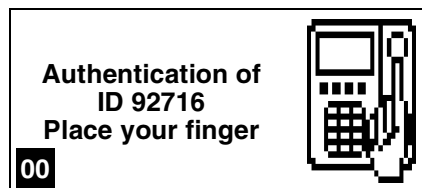
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To trigger authentication:

- if using a MorphoAccess™ 300, select a valid user database as described in paragraph "Access control by identification".
- pass the user badge so the external reader sends the user ID on MorphoAccess™ Wiegand or Dataclock input.



If the ID exists in the selected database, the MorphoAccess™ performs an authentication using the biometric templates associated to this ID.



If the authentication is successful, the terminal triggers the access or returns the user ID to central security controller.



Once the person's authentication is done, the terminal automatically loops back, selects base 0 and waits for a new input ID. This display remains for about 4 seconds.

When using this feature, ID should be a value between 0 and 65535.

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Access control by contactless authentication: ID and templates on a MIFARE card (MorphoAccess™ 220)

To configure the MorphoAccess in this mode, use Asystem and edit /cfg/Maccess/Admin/mode, then enter **3**.

To trigger authentication, users should present their MIFARE card to the terminal. MorphoAccess™ will read the ID, the user's name and two biometric templates stored on the card.

**Please present
Contactless
Smart Card**



Read templates are used for a 1:1 matching.

**Authentication of
John Smith
Place your finger**



If the authentication is successful, the terminal triggers the access or returns the user ID to central security controller.

**Welcome
John SMITH
AUTHENTICATED**





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Access control by contactless authentication: ID on a MIFARE card, local templates (MorphoAccess™ 220)

To configure the MorphoAccess in this mode, use Asystem and edit /cfg/Maccess/Admin/mode, then enter 4.

To trigger authentication, users should present their MIFARE card to the terminal. MorphoAccess™ will read the ID stored on the card.

**Please present
Contactless
Smart Card**



If the ID exists in the selected database, the MorphoAccess™ performs an authentication using the biometric templates associated to this ID.

**Authentication of
ID 92716
Place your finger**



If the authentication is successful, the terminal triggers the access or returns the user ID to central security controller.

**Welcome
92716
AUTHENTICATED**





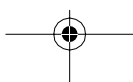
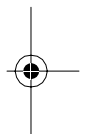
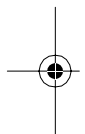
SAGEM SA

Proxy mode

This mode allows to control the MorphoAccess™ remotely using a set of biometric and database management function interface access commands.

For more information, please contact SAGEM SA or refer to document 3000005996 MorphoAccess™ Host System Interface Specification.

To configure the MorphoAccess™ in this mode, use Asystem and edit /cfg/Maccess/Admin/mode, then enter **2**.





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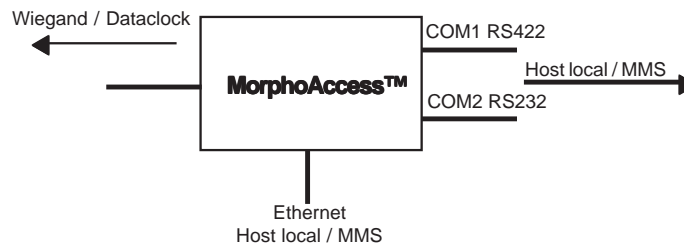
MORPHOACCESS™ SOFTWARE ADMINISTRATOR INTERFACE

Application of the SAGEM SA MorphoAccess™ terminal allows:

1. Biometric management operations
 - Transfer of biometric data between the MorphoAccess™ terminal and MorphoAccess™ Management System (MMS).
 - In stand alone without the MorphoAccess™ management system (manages the biometric data in a local database on the MorphoAccess™) (MorphoAccess™ 200 only).
 - The MorphoAccess™ shall be configured in one of either of these modes (see this chapter).
2. Access to the set up functions of the system (request Administrator mode).

Note 1

The MMS handles the MorphoAccess™ through a set of command exchanges (two-way commands to and from the MMS server and the MorphoAccess™ terminal). If you wish to know more about this protocol and the command set, please contact SAGEM SA.



System overview

Note 2

For further information about the application protocol between MorphoAccess™. and MMS, please contact SAGEM SA. The specification document has the following reference: MorphoAccess™ Host System Interface Specification Ref.: 3000005996.

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Biometric management operations

Biometric Management between terminal and MorphoAccess™ Management System (MMS)⁽⁴⁾

MorphoAccess™ terminal includes an interface layer to communicate with the access control system or the MMS through Ethernet, RS422 and RS232 (For more information, see section Setting up Network Parameters).

The biometric management operations are:

- Insert template/ID in database: The terminal inserts a new record in the database.
- Remove template/ID from database: The terminal removes the record identified by the ID in the database.
- Update template/ID in database: The terminal changes the template identified by the ID in the database.
- Download database: The terminal reads the new database and installs it in a local database according to the database identifier.

If the MorphoAccess™ application receives the commands from MMS it will switch to base management mode. The operations sent by MMS are automatically registered in the database of the MorphoAccess™ terminal.

Managing a base locally is not possible. All biometric data is stored on the MMS and the terminal will act as a capture and send device only.

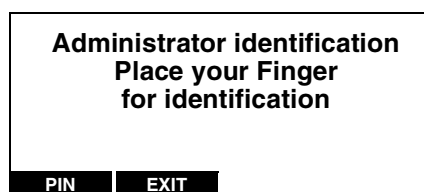
To access the Administrator menu with a MorphoAccess™ 300, first select the base in which the Administrator is enrolled then hit the following keys in sequence <#>, <*> and <#>. With a MorphoAccess™ 200 simply hit the following keys in sequence <#>, <*> and <#>.

⁽⁴⁾ For more information about MMS, please contact SAGEM SA.



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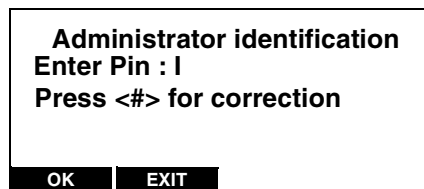
The next screen is the Administrator screen. The blinking red led indicates that you are in administrator mode.



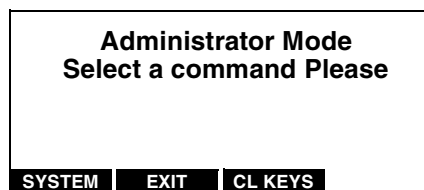
Biometric login is enabled if configuration key /cfg/Maccess/admin/admin ident is set to 1.

This operation creates a database with ID 0. This database can contain 800 records with two biometric data fields, an ID field and an Administrator field.

In order to access the Control menu, the Administrator's fingerprint template or pin must be entered (the default PIN is 12345). To enter the pin code⁽⁵⁾ select the **PIN** menu.



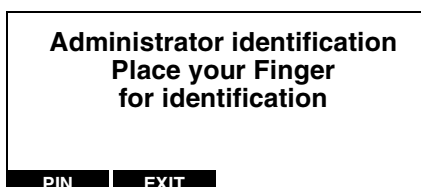
You can use the correction key # to delete the last number hit. After a valid pin code or an Administrator identification, you will see the following screen:



⁽⁵⁾ To change the pin code, see section Use Application System.

**SAGEM SA****Biometric management in stand alone⁽⁶⁾ (MorphoAccess™ 200 only)**

In stand alone mode, the MorphoAccess™ manages its own local database. This can be setup through the Administrator menus. On the keypad, hit the following keys in sequences <#>, <*> and <#>. The resulting screen is the Administrator menu.

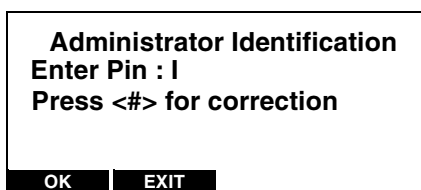


Biometric login is enabled if configuration key /cfg/Maccess/admin/admin ident is set to 1.

This operation creates a database with ID 0. This database can contain 800 records with two biometric data fields, an ID field and an Administrator field.

In order to access the Control menu, the Administrator's fingerprint template or pin code must be entered. To enter the pin code⁽⁷⁾, select the Pin menu.

You can use the correction key # to delete the last number hit.



⁽⁶⁾ To change the Biometric management mode, see section Use Application System.
⁽⁷⁾ To change the pin code, see section Use Application System.



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If the identification is successful, the application allows access to the biometric management functions. The biometric management operations are:

- Insert template/ID in database (enrollment): The terminal inserts a new record in the database.
- Remove template/ID from database (deletion): The terminal removes the record identified by the ID in the database.

**Administrator Mode
Select a command Please**

ENROLL | DEL | ERASE | EXIT

Insert template/ID in database (MorphoAccess™ 200 only)

To insert template/ID in local database, select the **ENROLL** menu. You have to enter the ID of the person and validate it. The primary and secondary fingers are requested and their corresponding biometric templates are processed. If the process is successful, then the person is registered in the local database.

**Enrollment Mode
Enter Person ID : |
Press <#> for correction**

OK | CANCEL

You can use the correction key # to delete the last digit entered. In the next screen you enroll your finger. Here You choose the user type Administrator or User.

**SAGEM SA****Remove template/ID from database (MorphoAccess™ 200 only)**

To remove a single template/ID record from the database, select the **DEL** menu. You will then have to enter the ID of the person and validate it. If the ID number does not exist in the local database, an error message appears.

Deletion Mode
Enter Person ID : I
Press <#> for correction

OK | **CANCEL**

You can use the correction key # to delete the last digit entered.

Remove all template/ID from database (MorphoAccess™ 200 only)

To remove all records from the local MorphoAccess™ database, select the **ERASE** menu option. A screen appears to confirm your command.

**Do you really
want to ERASE
the Database**

NO | **YES**



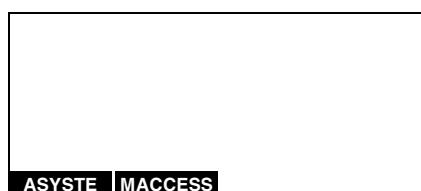


SAGEM SA

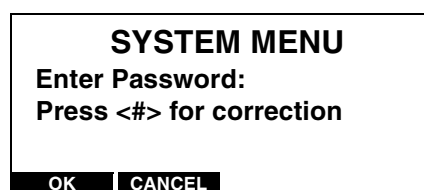
Access the set up functions of the system

To access the System Menu, you must leave the main application of the MorphoAccess™. You must access the Administrator Menus (see the section Biometric Management in Standalone) if you are in fingerprint detection mode.

You must select the System Menu.



Then, select the ASYST menu to enter in the system application.



Enter the password to access to SYSTEM MENU (default value: 12345).

You can use the correction key # to delete the last digit entered. The password can be changed in the configuration file "/cfg/system" (see the section Setting up Administrator System Pin). The System Menu will appear when the password is correct.

**SAGEM SA**

SYSTEM MENU

CONFIG | VERSION | SER NB | MORE

The **CONFIG** menu allows you to set up network and third-party applications and specify additional parameters.

The **VERSION** item allows you to browse for software modules present in your SAGEM MorphoAccess™ and see their revision number(s).

The **SER NB** item displays the terminal serial number, MicroBoot revision and Ethernet physical address of your machine.

The **MORE** key displays the rest of the system options.

SYSTEM MENU

SETTING | EXIT | MORE

The **SETTING** menu allows you to set the LCD contrast and the time and date.



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The CONFIG menu

Unreferenced configuration keys are reserved by the application and must not be changed⁽⁸⁾.

Setting up Network Parameters

From the System Menu, press the **CONFIG** key to access the configuration files. Press the **NEXT** key until the file menu shows "/cfg/net".

FILE: cfg/net

PREV **NEXT** **EXIT** **EDIT**

– Press the **EDIT** key. The section menu will show "ip".

FILE: cfg/net
SECTION: ip

PREV **NEXT** **EXIT** **EDIT**

– Press the **NEXT** key until the address menu shows "address", then press the **EDIT** key.

FILE: cfg/net
SECTION: ip
address: 134.1.32.214

PREV **NEXT** **EXIT** **EDIT**

You can now edit the IP address of your SAGEM SA MorphoAccess™.

The **LEFT** and **RIGHT** keys move the cursor. The alphanumeric keys enter digits as necessary. The # key deletes the digit immediately to the left of the cursor. The **EXIT** key aborts editing and restores the previous address value.

⁽⁸⁾ For default values, see appendix 4.

**SAGEM SA**

When finished editing, press the **OK** key to update the address field and return to the previous screen.

cfg/net	ip		
address	134.1.32.214		
LEFT	RIGHT	CANCEL	OK

The IP subnet mask and IP default gateway are set up in the same way. Contact your network Administrator for these values.

Setting up the System Administrator Pin

From the Set up menu, press the **CONFIG** key to access the configuration files. Press the **NEXT** key until the file menu shows "/cfg/ system".

FILE: cfg/system			
SECTION: System			
Pwd : 12345			
PREV	NEXT	EXIT	EDIT

Press the **EDIT** key. The section menu will show "System". Press the **EDIT** key again to show "Pwd". You can now edit the password key to get access to system menu. The default value is "12345".

The **LEFT** and **RIGHT** keys move the cursor and the # key deletes the digit immediately to the left of the cursor. The **CANCEL** key aborts editing and restores the previous password value.



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Setting up the MorphoAccess™ Administrator Pin

From the Set up menu, press the **CONFIG** key to access the configuration files. Press the **NEXT** key until the file menu shows "/cfg/ Maccess".

FILE: cfg/Maccess
SECTION: Admin
PwdAdmin : 12345

PREV | **NEXT** | **EXIT** | **EDIT**

Press the **EDIT** key. The section menu will show "Admin". Press the **EDIT** key again to show "PwdAdmin". You can now edit the password key to get access to system menu. The default value is "12345".

The **PREV** and **NEXT** keys move the cursor and the # key deletes the digit immediately to the left of the cursor. The **CANCEL** key aborts editing and restores the previous password value.

Setting up Host Communication⁽⁹⁾

This mode allows management of a local database within the MorphoAccess™. The default value of **Host Com** key is 3 (MMS).

In this case, the biometric management is between terminal and MorphoAccess™ Management System (MMS). To configure the MorphoAccess™ terminal to manage the local database, this default value must be changed to 0.

From the System Menu, press the **CONFIG** key to access the configuration files.

⁽⁹⁾ With MorphoAccess™ 300, the stand alone mode is disabled. Nevertheless, the key value must be set to 0 to enable MMS connection.


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Press **NEXT** key until the file shows "/cfg/Maccess". Press the **EDIT** key to select "Admin" section.

FILE: cfg/Maccess SECTION: Admin
<div> <div>PREV</div> <div>NEXT</div> <div>EXIT</div> <div>EDIT</div> </div>

Press **EDIT** key and **NEXT** key to select the "Host Com" value.

FILE: cfg/Maccess SECTION: Admin Host Com : 1
<div> <div>PREV</div> <div>NEXT</div> <div>EXIT</div> <div>EDIT</div> </div>

You can now edit the value. The **LEFT** and **RIGHT** keys move the cursor. The numeric keys enter digits as necessary. The alphanumeric # key deletes the digit immediately to the left of the cursor. The **EXIT** key aborts editing and restores the previous value.

The allowed values are:

Parameters	Value	Comment
Host Com	0	Stand alone
	1	Connected through COM1
	2	Connected through COM2
	3 (default value)	Connected through ETH-ERNET

You cannot use the stand alone mode to manage your local database if the MorphoAccess™ biometric data is managed by the MMS.

The MorphoAccess™ shall be used either in stand alone mode or in connected mode (with MMS) but never in both modes.



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Configuring the key to 0 will disable MMS connection.

Setting up juvenile recognition

Since software release 2.0, the MorphoAccess™ is able to manage both juvenile and adult finger images.

From the System Menu, press the **CONFIG** key to access the configuration files. Press the **NEXT** key until the file menu shows "/cfg/ Maccess".

FILE: cfg/Maccess
SECTION:

PREV | NEXT | EXIT | EDIT

Press the **EDIT** key. Press the **NEXT** key until the section menu shows "bio".

FILE: cfg/Maccess
SECTION: bio

PREV | NEXT | EXIT | EDIT

Press the **EDIT** key. You can edit the juvenile parameters to activate juvenile recognition.

FILE: cfg/Maccess
SECTION: bio
juvenile : 0

PREV | NEXT | EXIT | EDIT

**SAGEM SA**

This provides a solution with reliable performance to the automatic processing of finger images with small to normal ridges, extending the capability of the terminal by providing access control to a wider range of population.

Since the encoding time is a little bit longer when the juvenile option is turned on, we offer the possibility to the user set up the terminal either in "Juvenile" mode or in standard mode.

When the juvenile mode is turned on, key set to 1, young children can easily be enrolled in the MorphoAccess™.

Setting up anti-latency

The anti-latency processing consists to detect marks left on the sensor. In some extreme conditions it is possible that a mark left on the sensor triggers an identification or verification.

From the 4.4 release of MorphoAccess firmware it is now possible to detect marks left on the sensor.

When the MorphoAccess detects a mark the identification is stopped and the application loops back and look for a new fingerprint.

With regards to the previous releases of the MA application the main change is that a fingerprint placed two consecutive times on the sensor in the the same position will be rejected from the second attempt.

From the System Menu, press the CONFIG key to access the configuration files. Press the NEXT key until the file menu shows "/cfg/Maccess".

FILE: cfg/Maccess
SECTION:

PREV | NEXT | EXIT | EDIT



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Press the **EDIT** key. Press the **NEXT** key until the section menu shows "bio".

FILE: cfg/Maccess
SECTION: bio

PREV NEXT EXIT EDIT

Press the **EDIT** key. You can edit the anti-latency parameters to activate the mode.

FILE: cfg/Maccess
SECTION: bio
Anti latency : 0

PREV NEXT EXIT EDIT

When the anti-latency mode is turned on, key set to **1**, no latent fingerprint marks may be detected by the MorphoAccess™.

Setting up matching threshold

The performances of a biometric system are characterized by two quantities, the False Non Match Rate - FNMR - (Also called False Reject Rate) and the False Match Rate - FMR - (Also called False Acceptance Rate). Different trade-off are possible between FNMR and FMR depending on the security level targeted by the access control system. When convenience is the most important factor the FNMR must be low and conversly if security is more important then the FMR has to be minimized.

Different tuning are proposed in the MorphoAccess terminal depending on the security level targeted by the system. The table below details the different possibilities.

From the System Menu, press the **CONFIG** key to access the configuration files. Press the **NEXT** key until the file menu shows "/cfg/ bio".

**SAGEM SA****FILE: cfg/bio**
SECTION:**PREV | NEXT | EXIT | EDIT**

Press the **EDIT** key. Press the **NEXT** key until the section menu shows "matching threshold".

FILE: cfg/bio
SECTION: matching thresh**PREV | NEXT | EXIT | EDIT**

Press the **EDIT** key. You can edit the matching threshold level parameters for identification and authentication using **NEXT** and **EDIT** keys.

FILE: cfg/bio
SECTION: matching threshold
identify : 5**PREV | NEXT | EXIT | EDIT****FILE: cfg/bio**
SECTION: matching threshold
authenticate : 5**PREV | NEXT | EXIT | EDIT**



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You can now edit the format of the value. The **LEFT** and **RIGHT** keys move the cursor. The numeric keys enter digits as necessary. The alphanumeric **#** key deletes the digit immediately to the left of the cursor. The **EXIT** key aborts editing and restores the previous value.

This parameter can be set to values from 0 to 10. This parameter specifies how tight the matching threshold is. Threshold scoring values are identified below.

For example:

0	Low threshold for test purpose only	There are few rejections, but many recognitions
1	Very few persons rejected	FAR < 1%
2		FAR < 0.3%
3		FAR < 0.1%
4		FAR < 0.03%
5	Intermediate threshold (default value)	FAR < 0.01%
6		FAR < 0.001%
7		FAR < 0.0001%
8		FAR < 0.00001%
9		FAR < 0.0000001%
10	High threshold for test purpose only	There are very few recognitions, and many rejections


SAGEM SA

Setting up multilingual application

The MorphoAccess™ can operate using other language than English. It can also operate in Spanish and French. It is possible to download a user defined string table. For more information about this feature, refer to the MorphoAccess™ Host System Interface Specification, Ref.: 3000005996.

The default language of the MorphoAccess™ is defined in the /cfg/Maccess/Language/default.

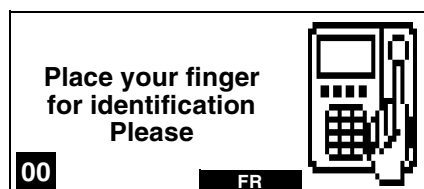
The allowed values are:

Parameters	Value	Comment
Default	0 (default value)	English
	1	Spanish
	2	French
	3	User defined language

Setting up user interface

Language

A user may choose his language by pressing a button. The language choice is circular. This feature can be enabled and disabled with key /cfg/Maccess/Language/change.



Those configuration keys can be defined from the **CONFIG** menu in file /cfg/Maccess, in section Language.



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Parameters	Value	Comment
Change	0 (default value)	The change language button is disabled. Users cannot change their language.
	1	Users can choose their language using the change language button.

Identification information

On a positive identification, it is possible to display an information about the identified user. This information should be present in the additional fields of its record.

Those configuration keys can be defined from the **CONFIG** menu in file /cfg/Maccess, in section GVI.

The allowed values are:

Parameters	Value	Comment
Welcome field 1/2	0 (default value)	System displays ID of identified person.
	X	System displays data present in additional field number X of identified person.

Example: First and second additional field have been selected. They contain first and family name of all records present in the database. On identification, system will display the following screen:

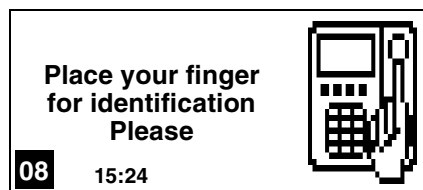


This feature needs a database containing the appropriate additional fields.


SAGEM SA

Clock

When using time mask feature, users may find useful to synchronise with their MorphoAccess™. A clock can be displayed.



Time is displayed in the 24 hours format.

Related configuration key can be defined from the **CONFIG** menu in file /cfg/GUI, in section Display hour.

The allowed values are:

Parameters	Value	Comment
Display hour	0 (default value)	Clock is not displayed.
	1	Clock is displayed and refreshes every minute.

Idle mode

In identification mode it is possible to switch the MorphoAccess™ in idle mode in order to shut down sensor red light and green screen back light. Pressing a key wakes the MorphoAccess™ up.

Related configuration key can be defined from the **CONFIG** menu in file /cfg/GUI, in section Idle time in min.

The allowed values are:

Parameters	Value	Comment
Idle time in min.	0 (default value)	MorphoAccess™ never enters idle mode.
	n	MorphoAccess™ enters idle mode after n minutes.



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Setting up contactless reader parameters (MorphoAccess™ 220 only)

A MIFARE card is defined by a unique serial number. The card is divided in 16 sectors. Each sector is divided in 4 blocks. Each block contains 16 bytes of data. Data are encoded with two sets of key. To be able to read a card, the reader should use the same key set. Fourth blocks cannot be read, they are used to store key sets.

Data can be accessed by blocks as follows:

	Block 0	Block 1	Block 2	Block 3
Sector 0	Block 1	Block 2	Block 3	
Sector 1	Block 4	Block 5	Block 6	
...				
Sector 15	Block 46	Block 47	Block 48	

Blocks are numbered in an absolute way, 1 for block 0 sector 0, then 3 blocks for each sector.

SAGEM SA biometric data (ID, name and templates) are located on the card thanks to a BNC address where:

 is the first block number to read,

<N> is the number of blocks to read,

<C> selects a security key.

For more information about SAGEM SA biometric data, please contact SAGEM SA or refer to document 3000005996 MorphoAccess™ Host System Interface Specification.

With a MorphoAccess™ 220, contactless parameters can be defined from the CONFIG menu in file /cfg/Maccess, in section Contactless.


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The allowed values are:

Parameters	Value	Comment
Reader Type	0	No MIFARE reader is used.
	1	External MIFARE Deister reader is used.
	2 (default value)	Internal MIFARE reader is used.
B	4 (default value) to 13	First block number to read.
N	2 or 25	Number of blocks to read. 2 when an ID is stored. 25 when templates are stored.
C	2 (default value)	MIFARE security key A is selected. MIFARE security key B is selected.

Setting up log file

The MorphoAccess™ can log its biometric activities. It stores the result of the command, the date and time, the matching mark, the execution time, and the ID of the user.

Those configuration keys can be defined from the **CONFIG** menu in file /cfg/Maccess, in section Admin.



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The allowed values are:

Parameters	Value	Comment
Log File	0 (default value)	MorphoAccess™ is not logging its activities.
	1	MorphoAccess™ is logging its activities.

It is possible to upload the log file. For more information about this feature, refer to the MorphoAccess™ Host System Interface Specification, Ref.: 3000005996.

Setting up time mask

When using MMS commands, a time mask feature is available. This mode enables the access according to its time mask. Time mask is defined by slots of 15 minutes over a week. For more information, see MorphoAccess™ Host System Interface Specification Ref.: 3000005996.

Those configuration keys can be defined from the **CONFIG** menu in file /cfg/Maccess, in section Admin.

The allowed values are:

Parameters	Value	Comment
Time mask	0 (default value)	Time mask feature is disabled.
	1	Time mask feature is enabled. Users must be on time to have their access granted.


SAGEM SA

Setting up download agent

In order to upgrade the MorphoAccess™ terminal to future versions, a download agent is running. This agent allows connecting to the terminal and proceeding maintenance operations. For more information about the protocol used to communicate with this agent, please contact your SAGEM SA sales representative.

Those configuration keys can be defined from the **CONFIG** menu in file /cfg/sdl, in section download.

The allowed values are:

Parameters	Value	Comment
Active	0	Agent is disabled.
	1 (default value)	Agent is enabled.
Ratif	3 (default value)	Number of failed attempts before deactivating the agent.
Password	12345678 (default value)	Password to present in order to connect the agent.

Setting up Wiegand/Dataclock output

You can use the output Wiegand⁽¹⁰⁾ or Dataclock to send the corresponding ID to the central security controller. Wiegand ports are configured in 26-bit format and output port Dataclock is compatible with ISO track 2 data formats.

Using Wiegand, ID is sent in binary format. Using Dataclock, Id is sent in BCD⁽¹¹⁾ format⁽¹²⁾.

From the System Menu, press the **CONFIG** key to access the configuration files. Press the **NEXT** key until the file menu shows "/cfg/Maccess".

⁽¹⁰⁾Refer to the previous chapter to configure the terminal with desired output.

⁽¹¹⁾BCD: Binary Code Decimal.

⁽¹²⁾For more information, see appendices 2 and 3.



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FILE: cfg/Maccess
SECTION:

PREV | NEXT | EXIT | EDIT

Press the **EDIT** key. Press the **NEXT** key until the section menu shows "Wiegand/Dataclock".

FILE: cfg/Maccess
SECTION: Wiegand/Dataclock

PREV | NEXT | EXIT | EDIT

Press the **EDIT** key. You can edit the Wiegand/Dataclock parameters using **NEXT** and **EDIT** keys. To configure the facility code in Wiegand⁽¹³⁾ mode, you must select the facility code key in section Wiegand/Dataclock.

FILE: cfg/Maccess
SECTION: Wiegand/Dataclock
Facility code : 7

PREV | NEXT | EXIT | EDIT

You can now edit the value. The **LEFT** and **RIGHT** keys move the cursor. The numeric keys enter digits as necessary. The alphanumeric **#** key deletes the digit immediately to the left of the cursor. The **EXIT** key aborts editing and restores the previous value.

To configure the Data and Strobe levels in **Dataclock**⁽¹⁴⁾ mode, you must select the Dataclock level key in section Wiegand/Dataclock.

⁽¹³⁾For more information, see appendix 2

⁽¹⁴⁾Idem.


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FILE: cfg/Maccess
SECTION: Wiegand/Dataclock
Dataclock level : 0

PREV | NEXT | EXIT | EDIT

You can now edit the value. The **LEFT** and **RIGHT** keys move the cursor.

The numeric keys enter digits as necessary. The alphanumeric **#** key deletes the digit immediately to the left of the cursor. The **EXIT** key aborts editing and restores the previous value.

Parameters	Value	Comment
Dataclock level	0 (default value)	Data and strobe are not inverted.
	1	Strobe is inverted.
	2	Data is inverted.
	3	Data and strobe are inverted.

When finished editing, press **OK** key to update the format value and return to the previous screen.

To activate/deactivate the output port, you must select the **SEND** key in section Wiegand/Dataclock.

FILE: cfg/Maccess
SECTION: Wiegand/Dataclock
Send : 0

PREV | NEXT | EXIT | EDIT

You can now edit the value. The **LEFT** and **RIGHT** keys move the cursor.

The numeric keys enter digits as necessary. The alphanumeric **#** key deletes the digit immediately to the left of the cursor. The **EXIT** key aborts editing and restores the previous value.



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The allowed values are:

Parameters	Value	Comment
Send	0	The output is not activated.
	1 (default value)	The output is activated.

When finished editing, press OK key to update the value and return to the previous screen.

To configure the behaviour of LED IN and LED OUT signals, go to the **CONFIG** menu in file /cfg/Maccess, in section Wiegand/Dataclock.

FILE: cfg/Maccess
SECTION: Wiegand/Dataclock
led out/card present : 0

PREV | NEXT | EXIT | EDIT

You can now edit the value. The LEFT and RIGHT keys move the cursor.

The numeric keys enter digits as necessary. The alphanumeric # key deletes the digit immediately to the left of the cursor. The EXIT key aborts editing and restores the previous value.

The allowed values are:

Parameters	Value	Comment
Level out/Card present	0 (default value)	Autodetect The led out signal can behave as a card present signal depending on the hardware configuration of the system: – DataClock IN/ DataClock OUT: Card present


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Parameters	Value	Comment
		<ul style="list-style-type: none"> – Wiegand IN/ DataClock OUT: card present (priority goes to dataclock out) – Wiegand IN/ Wiegand OUT: led out – DataClock IN/ Wiegand OUT: inactive
Led out/Card present (con't)	1	Force Led out The led out signal only behaves as a led out signal.
Led in	0 (default value) 1	Active The led in signal is ignored. Inactive The MorphoAccess™ led is driven by the led in signal: led in = 0 => led is green led in = 1 => led is off

Setting up Ethernet Link parameters

You can use the Ethernet port to send the corresponding ID to the central security controller. Connection should be made using port 11020.

Those configuration keys can be defined from the **CONFIG** menu in file /cfg/Maccess, in section Ethernet.



SAGEM SA

The allowed values are:

Parameters	Value	Comment
Send	0 (default value)	ID is not sent.
	1	ID is sent through the Ethernet port.
IP	aaa.bbb.ccc.ddd	IP of the central security controller.

Setting up Serial Link Parameters

You can use the serial port⁽¹⁵⁾ to send the corresponding ID to the central security controller. You can use COM1 or COM2 or both.

Setting up COM1 port

From the System Menu, press the **CONFIG** key to access the configuration files. Press the **NEXT** key until the file menu shows "/cfg/ Maccess".

FILE: cfg/Maccess

PREV
NEXT
EXIT
EDIT

Press the **EDIT** key. Press the **NEXT** key until the COM1 menu shows "COM1".

⁽¹⁵⁾One RS422 port (full duplex, four wires) or one RS232 port.


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FILE: cfg/Maccess
SECTION: COM1

PREV | NEXT | EXIT | EDIT

Press the **EDIT** key. You can now edit the format parameters to select the output format of the ID.

FILE: cfg/Maccess
SECTION: COM1
Format : 0

PREV | NEXT | EXIT | EDIT

You can now edit the format of the ID. The **LEFT** and **RIGHT** keys move the cursor. The numeric keys enter digits as necessary. The alphanumeric **#** key deletes the digit immediately to the left of the cursor.

The **EXIT** key aborts editing and restores the previous value.

The allowed values are:

Parameters	Value	Comment
Format	0 (default value)	The ID is sent in ASCII format.
	1	The ID is sent in Hexa format.
	2	The ID is sent in BCD ⁽¹³⁾ format.

When finished editing, press **OK** key to update the format of the ID and return to the previous screen.



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/cfg/Maccess/COM1

Send

0

LEFT RIGHT CANCEL OK

To activate or deactivate the COM1 port, you must select the **SEND** key in section COM1.

The allowed values are:

Parameters	Value	Comment
Send	0 (default value)	The COM1 output is not activated.
	1	The output COM1 is activated.

ID transmission on port COM1 is disabled when ILV communication is activated with key /cfg/Maccess/Admin/Host Com set to 1.

To configure the COM1 serial link, press the **CONFIG** key from the System Menu. Press the **NEXT** key until the file menu shows "/cfg/ser0" and select parameters section.

FILE: /cfg/ser0

PREV NEXT EXIT EDIT


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Press the **EDIT** key. The section menu will show "parameters".

```
FILE:  cfg/ser0
SECTION: parameters
```

PREV | NEXT | EXIT | EDIT

Press the **EDIT** key. You can edit the baudrate value to select the transmission speed.

```
FILE:  cfg/ser0
SECTION: parameters
baudrate : 3
```

PREV | NEXT | EXIT | EDIT

You can now modify the baudrate value of COM1 port. The **LEFT** and **RIGHT** keys move the cursor. The numeric keys enter digits as necessary. The alphanumeric # key deletes the digit immediately to the left of the cursor. The **EXIT** key aborts editing and restores the previous baudrate value.

Parameters	Value	Comment
Baudrate (bits/second)	0	1200
	1	2400
	2	4800
	3 (default value)	9600
	4	19200
	5	28800
	6	38400
	7	57600
	8	115200



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When finished editing, press **OK** key to update the baudrate field and return to the previous screen.

To configure the next parameters (databits, parity and control flow), select the **NEXT** key to select the other value and follow the previous descriptions to modify the values.

FILE: cfg/ser0
SECTION: parameters
databits : 7

PREV NEXT EXIT EDIT

You can edit the databits parameters. The different values are:

Parameters	Value	Comment
Databits	5	5
	6	6
	7 (default value)	7
	8	8

FILE: cfg/ser0
SECTION: parameters
stopbits : 2

PREV NEXT EXIT EDIT


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You can edit the stopbits parameter, the allowed values are:

Parameters	Value	Comment
Stopbits	1	1
	2 (default value)	2

```
FILE:  cfg/ser0
SECTION: parameters
Parity : 2
```

PREV NEXT EXIT EDIT

You can edit the parity parameter.

The allowed values are:

Parameters	Value	Comment
Parity	0	No
	1	Odd
	2 (default value)	Even

You can edit the control flow parameter.

```
FILE:  cfg/ser0
SECTION: parameters
flow ctrl : 0
```

PREV NEXT EXIT EDIT

The allowed values are:

Parameters	Value	Comment
Flow Ctrl Type	0 (default value)	No
	2	Xon/Xoff



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When using the Deister contactless card reader, COM1 parameters should be:

Baudrate	3 (9600)
Databits	8
Stopbits	1
Parity	0
Flow ctrl	0

Setting up COM2 port

To activate this port, press the **CONFIG** key to access the configuration files. Press the **NEXT** key until the file menu shows "/cfg/Maccess". Press the **EDIT** key, and select the RS232 section.

FILE: cfg/Maccess
SECTION: COM2

PREV **NEXT** **EXIT** **EDIT**

The values are:

Parameters	Value	Comment
Send	0 (default value)	The RS232 output is not activated.
	1	The RS232 output is activated.
Format	0 (default value)	The ID is sent in ASCII format.
	1	The ID is sent in Hexa format.
	2	The ID is sent is BCD ⁽¹⁾ format.

⁽¹⁾ BCD: Binary Code Decimal


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The following table describes the parameters for the serial link configuration. Press the **CONFIG** key to access the configuration files. Press the **NEXT** key until the file menu shows "/cfg/ser1" and select parameters section.

FILE: cfg/ser1
SECTION: parameters

PREV | NEXT | EXIT | EDIT

ID transmission on port COM2 is disabled when ILV communication is activated with the key /cfg/Maccess/Admin/Host Com set to 2.

The values are described below:

Parameters	Value	Comment
Baudrate	0	1200 bit/second
	1	2400 bit/second
	2	4800 bit/second
	3 (default value)	9600 bit/second
	4	19200 bit/second
	5	28800 bit/second
	6	38400 bit/second
	7	57600 bit/second
	8	115200 bit/second
Data bits	5	5
	6	6
	7 (default value)	7
	8	8
Stop bits	1	1
	2	2



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Parameters	Value	Comment
Parity	0	No
	1	Odd
	2 (default value)	Even
Flow control type	0 (default value)	No
	1	Hardware (CTS/RTS)
	2	Software (XON/XOFF)

Setting up Relay Parameters

It is possible to configure the release time of the relay. For this, from the System Menu, press the **CONFIG** key to access the configuration files. Press the **NEXT** key until the file menu shows "/cfg/Maccess".

Press the **EDIT** key, and press **NEXT** key to select the Relay section.

FILE: cfg/Maccess
SECTION: Relay

PREV | **NEXT** | **EXIT** | **EDIT**

Press the **EDIT** key. You can edit the release time value by 100 ms steps.

FILE: cfg/Maccess
SECTION: Relay
Time in 100 ms : 30

PREV | **NEXT** | **EXIT** | **EDIT**

You can now modify the release time value by pressing the **EDIT** key.

The **LEFT** and **RIGHT** keys move the cursor. The numeric keys enter digits as necessary. The alphanumeric **#** key deletes the digit immediately to the left of the cursor. The **EXIT** key aborts editing and restores the previous value.

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When finished editing, press the **OK** key to update the release time field and return to the previous screen.

To configure the next parameter, select the **NEXT** key. You can edit the "active" value.

FILE: cfg/Maccess
SECTION: Relay
Active : 0

PREV | NEXT | EXIT | EDIT

The different values are:

Parameters	Value	Comment
Active	0 (default value)	Relay not active.
	2	Relay active.



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The VERSION menu

Information Display

From the System Menu, press the **VERSION** key to access the information file.

This display contains information that may be necessary if the SAGEM SA MorphoAccess™ requires technical support. It should not normally be necessary to access this display unless requested by SAGEM SA technical support personnel.

Kernel	Rev: 3.1
P/N:233082036	Σ:0125B463
May 1 2002 13:21:05	ID:0001
PREV	NEXT EXIT

Kernel is the name of the module being displayed.

Rev is the revision of the module.

P/N is the part number for the module.

Σ is the checksum for the module.

The next line shows the date of the module's creation.

ID is the ID for the module in the system.

The **PREV** and **NEXT** buttons allow you to browse for all modules present in your SAGEM SA MorphoAccess™.

EXIT returns to main menu.



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The SERIAL NUMBER menu

Serial Number Display

From the System Menu, press the **SER NB** key to display the serial number.

Serial # : 993000001
Micro Boot revision : 2.4
ETH : 00:90:27:9A:F2:53

OK

Serial # is your SAGEM SA MorphoAccess™'s serial number.

MicroBoot revision is the revision number of your SAGEM SA MorphoAccess™'s MicroBoot. This revision number may be needed when requesting technical support.

ETH is the physical Ethernet address, also known as the MAC address. This address may be required by your network Administrator.

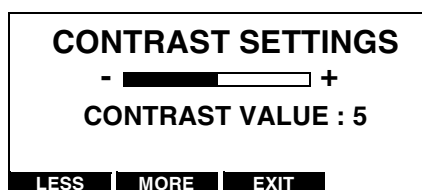
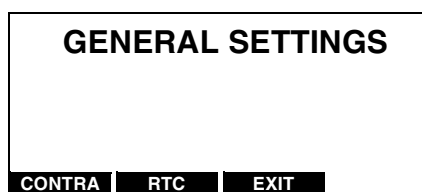


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The SETTING menu

Parameters Setting

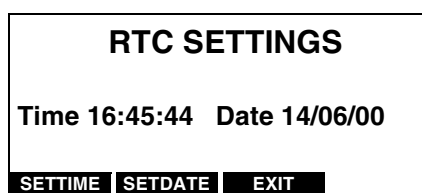
From the System Menu, press the **SETTING** key to access the parameter settings.



The **CONTRA** selection allows you to adjust the contrast of the LCD display.

The **MORE** key increases the contrast, the **LESS** key decreases the contrast.

The **RTC** menu allows you to set the current date and time.



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The **SETTIME** key allows you to set the time. Enter the time in the following format: HHMMSS. The **VALID** key records your setting. The **CANCEL** key aborts editing and returns to the previous menu.

<p>TIME SETTINGS</p> <p>TIME (HHMMSS) : 120000</p> <p>VALID CANCEL</p>

The **SETDATE** key allows you to set the current date. Enter the date in the following format: DDMMYY. The **VALID** key records your setting.

The **CANCEL** key aborts editing and returns to the previous menu.

<p>DATE SETTINGS</p> <p>DATE (DDMMYY) : 100600</p> <p>VALID CANCEL</p>

Note : You can use the correction key # to delete the last characters entered.



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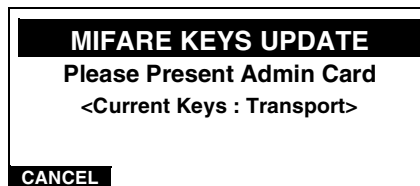
Access the MIFARE keys update menu (MorphoAccess™ 220)

Each data sector on a MIFARE card is protected in reading and writing by 2 keys of 6 bytes each. These keys are noted A and B. Since the card is composed of 16 sectors, there are actually 32 keys.

When you present a MIFARE card to the MorphoAccess for an authentication, data can be read only if the keys which protect it are the same as the keys initialized into the reader. By default both keys A and B are set to 0xFFFFF for the 16 sectors in the MIFARE module of the MorphoAccess. These default values are called *Transport keys*.

You can change the value of the keys thanks to the hotkey **CL KEYS** in the Administrator menu⁽¹⁶⁾. You will need for that an administrator card containing the new keys to initialize. Please check the Enrollment Station documentation to know how to create an administrator card.

While you are in the administrator menu, press the key **CL KEYS**. The **MIFARE KEYS UPDATE** screen appears.



Present the administrator card to start the update.

⁽¹⁶⁾If you perform this operation, the old user cards won't be readable anymore, since the keys won't be compliant anymore.

**SAGEM SA****MIFARE KEYS UPDATE**

Updating Key A3 & B3

<Current Keys : UPDATING>

CANCEL

When the MorphoAccess™ finishes to update the keys for the 16 sectors, a successful message appears. The keys status indicates now "user" keys, meaning keys different from 0xFFFFF have been loaded into the reader. Then the MorphoAccess™ comes back to the administrator menu after 2 seconds.

MIFARE KEYS UPDATE

Keys have been updated !

<Current Keys : USER>

CANCEL

If for some reasons the update is not successful (power shutdown before the end of the operation for instance), a new hotkey will be available the next time you will enter in the **CL KEYS** menu. The keys status will indicate "INVALID" keys.

MIFARE KEYS UPDATE

Please Present Admin Card

<Current Keys : INVALID>

PREV**LOAD DFLT KEYS**

Pressing the **LOAD DFLT KEYS** hotkey will allow you to re-update the 32 keys with the default value 0xFFFFF.

Communication protocol

The communication protocol available allows the terminal to send commands to a host through the communication COM1/RS485.

All the commands will be formatted with an "Identifier Length Value" structure as described below:

Identifier	Length	Value
------------	--------	-------

Identifier called **I** This is the identifier of the command.

Length called **L** This is the length of the Value field in bytes.

Value called **V** The parameters or data.

The commands will be encapsulated in a packet structure described on the next figure.

STX	ID	RC	ILV	CRC	DLE	ETX
-----	----	----	-----	------------	-----	-----

CRC : Compliance CRC16 V41

Fields name	Definition	Value
<STX>	Start Text	0x02
<ID>	Packet Identifier	0xE1
<RC>	Request Counter	Unused byte
<ILV>	Identifier Length Data (DLE data bytes are stuffed)	I: 0x00 for ASCII 0x01 for Hexa 0x02 for BCD L: 2 bytes V: Value of identifier
<CRC>	Transmission error control	Depends on the frame
<DLE>		0x1B
<ETX>	End Text	0x03

Appendix 1 - Wiegand data format

The 26 bits of transmission consists of two parity bits and 24 code bits. The eight first code bits are encoding the facility code. This code identifies each Morphoccess in a network. The 16 other bits are data bits. The first bit transmitted is the first parity bit. It is even parity calculated over the first 12 bits. The last bit transmitted is the second parity bit. It is odd parity bit calculated over the last 12 code bits.

Even parity (1 bit)	Facility code (8 bits)	Data (16 bits)	Odd parity (1 bit)
---------------------	------------------------	----------------	--------------------

Compliant with access control 26-Bit - Wiegand reader interface standard 03/1995.

Appendix 2 - ISO 7811/2-1995 - Track 2 Data clock format

Compliant with ISO7811/2-1995 - Track 2.

Data encoding table

Value	Bit pattern	Meaning
0	0 0 0 0-1	"0"
1	1 0 0 0-0	"1"
2	0 1 0 0-0	"2"
3	1 1 0 0-1	"3"
4	0 0 1 0-0	"4"
5	1 0 1 0-1	"5"
6	0 1 1 0-1	"6"
7	1 1 1 0-0	"7"
8	0 0 0 1-0	"8"
9	1 0 0 1-1	"9"
10 (A _{hex})	0 1 0 1-1	unused character
11 (B _{hex})	1 1 0 1-0	start sentinel (start character)
12 (C _{hex})	0 0 1 1-1	unused character
13 (D _{hex})	1 0 1 1-0	field separator
14 (E _{hex})	0 1 1 1-0	unused character
15 (F _{hex})	1 1 1 1-1	end sentinel (stop character)

The least significant bit of every digit is sent first; the fifth bit is an odd parity bit for each group of four data bits.

The complete message always looks as follows:

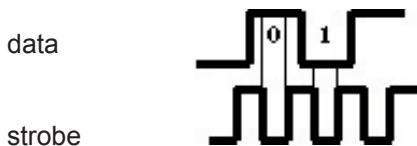
left edge	start	data characters	end	LRC	right edge
-----------	-------	-----------------	-----	-----	------------

The LRC is calculated by the following procedure: each of the 4 bits in the LRC character is an even parity bit of the equivalent bits in the telegram including start and stop sentinel.

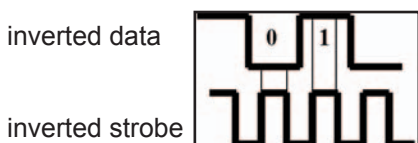
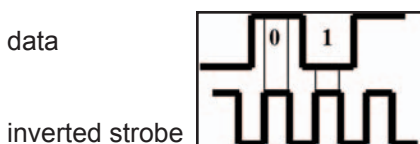
The fifth bit is the odd parity of the four LRC bits (it is not calculated over all the parity bits).

Data clock levels

In normal operation mode (default) in and out signals are defined as:



Other modes are (only for output):



Appendix 3 - Reserved configuration values

These values are for internal use only.

For proper operation, these settings should not be changed.

/cfg/lcd0/display/type : 1

/cfg/lcd0/contrast/value : 0

/cfg/ser0/mode/connection: EXT

/cfg/ser0/mode/mode: 450

db/seq flash/start: 0

/cfg/bio/video/channel: 0

/cfg/bio/video/rotation: 0

/cfg/lic/licences/*

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