MOTORIZED ELECTRONIC LOCK
REMOTE CONTROL
99.684

GENERAL INSTRUCTIONS
This manual is intended for technically qualified and trained installers.
Mottura Serrature di Sicurezza S.p.A. thanks you for choosing this device and reminds you as follows:
- Read the instructions very carefully before installing or doing any maintenance on the device.
- All assembly and connection procedures must be done according to Rules of Good Engineering as well as in conformity to law.
- DO NOT install this device in explosive environments or atmospheres or in the presence of flammable fumes/gases.
- DO NOT install this device on a door with risk of contact with water or atmospheric agents unless the door is adequately protected.
- Always disconnect the power supply and isolate all live parts before installing or doing any maintenance on the device. Take all possible precautions to eliminate the risk of electrical shock when doing the installation and/or maintenance procedures described in this manual.
- The installer must give these instructions and all maintenance instructions to the user.
- Keep these instructions for future use and attach the sales receipt to validate the warranty.
- In case of problems, contact your authorized dealer only.
Mottura Serrature di Sicurezza S.p.A. may change the characteristics of the products described in these instructions at any time and without notice.

WARRANTY TERMS
This device has been inspected by Mottura Serrature di Sicurezza S.p.A. and is guaranteed against all manufacturing defects for the period defined by Italian law; the period begins on the date of purchase as demonstrated by the sales receipt. The warranty is effective if the sales receipt, bearing information identifying the device, is shown to the dealer or service personnel. The warranty covers the replacement or repair of parts found defective due to faulty manufacture; shipping costs to and from service centers are charged to the customer.
In case of a repeated malfunction of the same origin or a malfunction that cannot be repaired, Mottura Serrature di Sicurezza S.p.A. may decide, in its final judgment, to replace the entire device. The warranty on the replacement device will continue to the expiration of the original device. If the device must be serviced at the customer’s home, the customer is required to pay (if requested) a minimum charge to cover the transfer costs of authorized service personnel.
Transport is at the customer’s risk if the customer ships the device, and at the service personnel’s risk if the device is picked up and transported by service personnel.

LIMITS OF LIABILITY
The warranty does not cover damage deriving from:
- negligence, carelessness, or use other than as described below
- failure to protect the device before doing any procedure that may generate scrap or waste (welding, drilling of panels, drilling of structure, etc.) that prevents its correct functioning
- maintenance work not conforming to these instructions or done by unauthorized personnel
- use of accessories/components that are not original Mottura products
- shipping of the device without the necessary precautions
- any circumstances not attributable to manufacturing defects.
Operating temperature: -10°C to +55°C.
In addition, Mottura Serrature di Sicurezza S.p.A. declines all liability for any harm to persons or damage to property deriving from failure to comply with all of the instructions and warnings contained in this manual.
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1 - DEVICE LAYOUT

1 – 2  12VDC 1W optional auxiliary power supply for inputs.
  1 = NEGATIVE
  2 = POSITIVE

3 – 4  Opening input

5 – 6  Closing input

7 – 8  Open/Close input (switches lock status)

9 – 10  Wake-up input (only for reading lock status)

11 – 12  12VDC power supply for device
  11 = POSITIVE
  12 = NEGATIVE

13 – 14  12VDC relay for other Mottura devices.
  13 = POSITIVE
  14 = NEGATIVE

15 – 16 – 17 – 18  RS485 communication cable from lock
  15 = W (Wake-up)
  16 = B (comm. B)
  17 = A (comm. A)
  18 = G (GND)

19 – 20 – 21 – 22  RS485 communication cable relay for other Mottura devices.
  19 = W (Wake-up)
  20 = B (comm. B)
  21 = A (comm. A)
  22 = G (GND)

23 – 24 – 25  Bolts retract output (relay K1)
  23 = normally open (N.O.)
  24 = common (CO)
  25 = normally closed (N.C.)

The CO and N.O. contacts close when the bolts are retracted.

26 – 27 – 28  Door open output (relay K2)
  26 = normally open (N.O.)
  27 = common (CO)
  28 = normally closed (N.C.)

The CO and N.O. contacts close when the door is open (or when it is no longer ajar).

29 – 30 – 31  Latchbolt retract output (relay K3)
  29 = normally open (N.O.)
  30 = common (CO)
  31 = normally closed (N.C.)

The CO and N.O. contacts close when the latchbolt is retracted.

32 – 33 – 34  Motorized door opener 1 sec. output (relay K4)
  32 = normally open (N.O.)
  33 = common (CO)
  34 = normally closed (N.C.)

The CO and N.O. contacts close for 1 sec. after the bolts and latchbolt are opened.

REFERENCES FOR DESCRIPTION OF SETTINGS:
  A  Trimmer for setting automatic close courtesy time
  B  Trimmer for setting deadbolt holding time
  C  Mini set-up switches
  D  Authentication button
  E  Expansion card connection

REFERENCES FOR DESCRIPTION OF LEDS:
  F  Lock status (alarms / work conditions)
  G  Open input signal
  H  Close input signal
  I  Open/Close input signal
  L  Wake-up input signal
  M  Power supply on
  N  Retracted latch bolt output signal
  O  Door open output signal
  P  Retracted deadbolt output signal
  Q  1 sec. motorized door open control
2 - INTRODUCTION

The remote control opens, closes, and changes the status of the lock via a wired connection (RS485) by means of an encrypted communication with proprietary protocol. The device converts a potential-free contact signal into a sequence of encrypted codes that make it impossible to open the door by short-circuiting the connection cable. In the same manner, you read lock status shown on the potential-free contacts. For example, if the door is open the contacts of the “DOOR OPEN” CO (common) and N.O. (normally open) relay are closed.

Note: if a movement requested via on-door escutcheon or an automatic closing movement is under way, or if the lock is being programmed or if the door has just been closed, any request from the remote control will be ignored. When the lock returns to stand-by you can send the operation request via remote control. The device must be powered by a source isolated from the grid and that strictly conforms to the characteristics specified in table 7 (TECHNICAL DATA). You may order the line adapter (supplied on request: code 99.683), which has been appropriately tested, together with the remote control, in order to obtain certifications required by law regarding immunity from electrical and electromagnetic interference and emissions to the grid and to the environment. Therefore, use of the line adapter is highly recommended. Mottura serrature di sicurezza S.p.A. will not be liable for any malfunctions and/or harm/damage caused to persons/property deriving from the use of any other power supply. Note: if the lock is powered by the grid, the Mottura adapter (99.683) is pre-fit with double output terminals to power the remote control as well.

The device can be wall-mounted with anchors or hooked onto a DIN rail (EN60715) for electrical panels. When connecting the device, DO NOT remove the terminal block covers because they are pre-drilled at the right points. Remove only the covers of terminals 1 and 2 to do the set-up or the lock settings.

Before installing, we advise you to draw the layout of the system you intend to create (see “example of generic connection” and “graphs of output signals with eco mode disabled – paragraph 8 / enabled – paragraph 9”) in order to facilitate installation.

This manual guides installation via a sequence of steps: mechanical fastening of device, electrical wiring of inputs and outputs, settings and set-up, first power-on, and system authentication. After these steps, the device will be ready to use.

3 - MECHANICAL FASTENING OF DEVICE

Fastening of device and removal of terminal covers (if necessary).

3.1 - FASTENING DEVICE TO WALL

The bottom of the box has 2 openings so that the box can be hooked onto screws in the wall. Follow the drilling instructions shown on the bottom of the box.

3.2 - FASTENING DEVICE TO DIN RAIL

As an alternative, you can hook the box to a DIN rail (EN 60715) and snap it on (black hook toward bottom). To release it, just pull the black hook downward with a flat-head screwdriver and unhook the box.

3.3 - REMOVING TERMINAL COVERS

Insert a small flat-head screwdriver a few millimeters into the center trimming on the terminal cover, then gently lever it from the side opposite the box until the fastening tab is released. Then remove the screwdriver and gently slide off the terminal cover manually.
### 3.4 - MOUNTING TERMINAL COVERS

Insert the covers slightly inclined from the side opposite the box, then press the cover gently with your fingers to snap the fastening tab onto the box.

---

### 4 - ELECTRICAL WIRING OF INPUTS AND OUTPUTS

**ATTENTION:**

To eliminate risk of electrical shock, disconnect all possible 230 VAC power supplies before starting. Do this when connecting the remote control inputs, outputs, and power supply.

#### 4.1 - CHARACTERISTICS OF INPUTS

The inputs operate the lock by means of specific actions enabled by powering the relative terminals (shown in parentheses) with the voltage described below and interrupted via a normally open (N.O.) button:

- opening (terminals 3-4)
- closing (terminals 5-6)
- open/close: switches lock status (terminals 7-8)
- wake-up: shows lock status on outputs without running operation (terminals 9-10)

The inputs are connected to circuits isolated from the grid and can accept both DC and AC voltages with the following characteristics:

- **DC**: voltage: 9 ÷ 24 VDC
  - power: > 1.5W
- **AC**: voltage: 9 - 24 VAC RMS
  - power: > 1.5VA (1.5W)
  - frequency: 50 / 60 Hz

The connection cables must be less than 20 meters long, with section greater than or equal to 0.25 mm² (AWG23). For longer cables, use the normally open contact of a relay.

**ATTENTION:**

THE TERMINAL BOARD ACCEPTS WIRES WITH SECTION OF AT LEAST 0.2 mm² (AWG24).

RESPECT ELECTRICAL SAFETY LAWS AND REGULATIONS!

Example of connection diagram (connect only the inputs required for your function).
If a voltage with these characteristics is not available, the card supplies an isolated non-stabilized voltage of 12 VDC ± 20%, to be used only for this purpose (see paragraph 4.2-“AUXILIARY POWER SUPPLY FOR INPUTS”).

Example of connection diagram (connect only the inputs required for your function):

The control pulse of the inputs corresponding to closing time of the button (not supplied) must be from 0.2 to 1.5 sec.
When an input is powered, the corresponding red LED lights up (references G, H, I, L).

**4.2 - AUXILIARY POWER SUPPLY FOR INPUTS**

This voltage source (terminals 1-2) is specifically designed to supply the energy needed by the device inputs, and must not be used for any other purpose. Otherwise, it could damage the remote control or cause it to malfunction.

Characteristics of power supply: 12VDC ± 25% non-regulated; no load voltage 1.7VDC to 23 VDC; max power = 1W ; max current = 0.08 A.
The output is protected by a fuse, which resets automatically about 1 minute after tripping.

**4.3 - CHARACTERISTICS OF OUTPUTS**

The outputs (terminals 23-34) provide information on lock status.
For this purpose, it uses a relay with all of the CO (common), N.O. (normally open) and N.C. (normally closed) contacts on the output terminal board.
For example, if you want to read door status, use the DOOR OPEN output by connecting your system as shown below:
When building your system, respect the characteristics of the relay contact on the remote control:

- Max. AC: 3 A for 230 VAC (with type AC1 loads, resistive load)
  1 A for 230 VAC (with type AC15 loads, inductive load)

- Max. DC: 2 A for 30 VDC,
  1 A for 40 VDC,
  0.6 A for 60 VDC

- minimum switchable load: 5 mW
- minimum switchable current: 5 mA

The behavior of the output contacts is described in the following table. The N.C. contact is not shown because it is complementary to the N.O.:

<table>
<thead>
<tr>
<th>RELAY</th>
<th>DESCRIPTION</th>
<th>N.O. CONTACT CLOSED</th>
<th>N.O. CONTACT OPEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>(TERMINALS 23-24-25)</td>
<td>Bolts retracted</td>
<td>Bolts are completely retracted: the lock is open.</td>
</tr>
<tr>
<td>K2</td>
<td>(TERMINALS 26-27-28)</td>
<td>Door status</td>
<td>Door open</td>
</tr>
<tr>
<td>K3</td>
<td>(TERMINALS 29-30-31)</td>
<td>Latchbolt status</td>
<td>Latchbolt retracted</td>
</tr>
<tr>
<td>K4</td>
<td>(TERMINALS 32-33-34)</td>
<td>Motorized door opener control</td>
<td>Gives OK by closing for 1 sec. (*)</td>
</tr>
</tbody>
</table>

(*) see graph in paragraph MOTORIZED DOOR OPENER CONTROL (4.4).

When an output closes its CO and N.O. contact, the corresponding green LED lights up (reference N, O, P, Q).

### 4.4 - MOTORIZED DOOR OPENER CONTROL

This output controls a motorized door opener by closing a potential-free contact (K4) for 1 second after the complete opening of the latchbolts and the deadbolt. The following is an example of the behavior of the motorized door opener signal compared to the spring latch status signal when the lock is opening electronically:

**Level 1** = contact N.O. closed

**Level 0** = contact N.O. open

**Time** = expressed in milliseconds (1 mSec = 0.001 Sec.)

The times shown on the graphs are for purposes of example only, and vary according to system characteristics and conditions.

Graph of K2 spring latch status relay

Graph of K4 motorized door opener relay K4

**ATTENTION:**

THE TERMINAL BOARD ACCEPTS WIRES WITH SECTION FROM 0.2 mm² (AWG24) TO 2.5 mm² (AWG 13).

INSTALL THE NECESSARY OVERLOAD PROTECTIONS AND USE WIRES WITH SECTION ADEQUATE FOR THE CURRENT ABSORBED BY YOUR SYSTEM. RESPECT THE LIMITS DESCRIBED IN THIS MANUAL AS WELL AS ALL ELECTRICAL SAFETY RULES.

The deadbolt will return to extracted position as soon as the door is open or, if not, after the spring latch hold courtesy time (factory setting on lock: 10 sec.), which can be changed as described in the paragraph SETTING COURTESY TIMES (5.2).
4.5 - CONNECTING THE RS485 COMMUNICATION CABLE

The device communicates by means of the following electrical signals:
A = direct communication wire
B = reverse communication wire
W = wake-up wire (WAKE_UP)
G = ground wire (GND)

The 4-meter cable supplied (code 99.702) has 4 colored wires lugged on one end with a 6-way connector (toward the lock) and cut on the other end (toward the remote control). The wires are to be connected as shown below:

If your cable has wires with different colors, make the connection by noting the corresponding colors-positions of the wires on the connector. The positions on the connector are numbered as shown in the figure.

Connect the wires to the remote control as follows:

<table>
<thead>
<tr>
<th>REMOTE CONTROL SIDE (WIRES STRIPPED)</th>
<th>LOCK SIDE (CONNECTOR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TERM. 15 (W)</td>
<td>Color of lugged wire in position 5</td>
</tr>
<tr>
<td>TERM. 16 (B)</td>
<td>Color of lugged wire in position 3</td>
</tr>
<tr>
<td>TERM. 17 (A)</td>
<td>Color of lugged wire in position 4</td>
</tr>
<tr>
<td>TERM. 18 (G)</td>
<td>Color of lugged wire in position 6</td>
</tr>
</tbody>
</table>

The lock/remote control connection cable must always be shorter than 20 meters (obtainable by adding to the supplied cable an unshielded UTP cable with twisted pairs for EIA RS485 electronic devices (not supplied) with section of at least 0.3 mm² (22AWG) by connecting signals A and B with one pair and signals G and W with the other pair, as show in the following figure.
4.6 - CONNECTING THE RS485 COMMUNICATION RELAY CABLE

To make the connection, use a UTP cable for EIA RS485 electronic devices consisting of 4 unshielded wires with twisted pairs with section of at least 0.3 mm² (22AWG) and less than 20 meters long. Connect signals A and B with one pair of wires and signals G and W with the other pair on the terminal boards of each card, as shown in the following figure.

4.7 - CARD POWER SUPPLY

Use only the Mottura line adapter (code 99.683), bringing the positive cable to terminal 11 and the negative cable to terminal 12. When the power supply is on, the blue ON Led (ref. M) will light up.

The cables must be less than 20 meters long, with section greater than or equal to 0.8 mm² (AWG18).

Characteristics of power supply: 12VDC ± 10%; Max. power = 4.5W; Max. current = 0.375 A.

4.8 - CARD POWER SUPPLY RELAY

Terminals 13 and 14 are a relay of the card power supply (terminals 11 and 12), and are used only to power other future Mottura devices.

ATTENTION:
The relay terminal board is used only if you will have to connect other “Mottura serrature di sicurezza s.p.a.” devices to the communication line; if not, ignore this paragraph.

Do not use the power supply relay for devices other than those provided by Mottura serrature di sicurezza s.p.a.: the unit may be damaged, malfunction, or damage other connected devices.
5 - SETTINGS AND SET-UP

Terminate the communication line according to the instructions in the paragraph TERMINATING THE RS485 COMMUNICATION LINE (5.4). If you want to set the work mode, lock courtesy times, or the wake-up in eco output mode, see the specific paragraphs. To start, use a small flat-head screwdriver and remove the covers from terminals 1 and 2. Replace the covers when all work is done.

5.1 - SETTING LOCK MODE

Mini-switches 1, 2, 3 of S1 (ref. C) can set the lock work mode as shown in the following table.

<table>
<thead>
<tr>
<th>S1-1</th>
<th>S1-2</th>
<th>S1-3</th>
<th>Diagram of mini-switch</th>
<th>MODE</th>
<th>Device behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ON OFF</td>
<td>Mode setting disabled</td>
<td>Does not transmit mode change to lock</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>ON OFF</td>
<td>Day stop</td>
<td>Transmits mode change with each command</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON OFF</td>
<td>Automatic</td>
<td>Transmits mode change with each command</td>
</tr>
<tr>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
<td>ON OFF</td>
<td>Open / close</td>
<td>Transmits mode change with each command</td>
</tr>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>ON OFF</td>
<td>Latchbolts only</td>
<td>Transmits mode change with each command</td>
</tr>
</tbody>
</table>

Run at least one command from the remote control and check if the new mode has been acquired. When the procedure is done, disable the mode setting by setting mini-switches S1-1, S1-2, S1-3 to OFF so that you can activate the lock work mode with the internal escutcheon (if present) as well.

5.2 - SETTING COURTESY TIMES

You can set the courtesy time for holding the spring latch (time the spring latch remains retracted after the lock is released and before the door is opened) and the courtesy time for automatic closing (delay from door closing to start of automatic operation for extension of the latchbolts) after you have enabled the function with mini-switches S1-4 (ref. C) as described below.

<table>
<thead>
<tr>
<th>S1-4</th>
<th>Diagram of mini-switch</th>
<th>Time setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>ON OFF</td>
<td>Enabled: times settable with trimmers change the ones motorized in the lock.</td>
</tr>
<tr>
<td>OFF</td>
<td>ON OFF</td>
<td>Disabled: times set on lock are not changed.</td>
</tr>
</tbody>
</table>

**ATTENTION:** at the first operation done via remote control after the function is enabled, the factory settings are changed to the ones on the 2 trimmers even if you wanted to change only one of the two times. Turn the trimmer screw clockwise to increase the time.

The courtesy time at automatic closing (valid only with the lock in AUTOMATIC closing mode) is set with the “Courtesy” trimmer (ref. A), which lets you set it from 1 to 120 sec. with precision of ±20% (factory setting = 1 sec).
5.3 - ECO OUTPUT MODE (optional function)

This function is optional: the device is supplied with "ECO output mode" disabled. In order to save energy, this function lets you cut power to the output relays (putting them all in rest position N.C.) and to the status LEDs (switching them off) when the system goes into stand-by.

Enabling the eco function is recommended in the following situations:
- when the outputs are not used
- when only the K4 relay (motorized door opener) is used

Activate ECO mode as follows:

<table>
<thead>
<tr>
<th>S1-5</th>
<th>Diagram of mini-switch</th>
<th>ECO mode setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>[Diagram]</td>
<td>Enabled</td>
</tr>
<tr>
<td>OFF</td>
<td>[Diagram]</td>
<td>Disabled</td>
</tr>
</tbody>
</table>

**LEGEND:**
- = mini-switch lever
× = Lever position irrelevant
(•) = factory setting

5.4 - TERMINATING THE RS485 COMMUNICATION LINE

The standard for the RS485 communication line calls for a starting device (the lock) and a terminating device (for example, the remote control). Other connected devices may be in between.

For technical reasons, the first and last device on the line must both terminate it.

If the remote control is the last device on the transmission line or if it is the only one connected to the lock, it must necessarily terminate it (see figure below).

To terminate the line, set mini-switch 6 of S1 as described below:

<table>
<thead>
<tr>
<th>S1-6</th>
<th>Diagram of mini-switch</th>
<th>RS485 line termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>[Diagram]</td>
<td>Terminated: remote control is last device on line, no wire comes from its RS485 communication relay connector (see device 3 in figure).</td>
</tr>
<tr>
<td>OFF</td>
<td>[Diagram]</td>
<td>Not terminated: after remote control there are other devices connected to its RS485 communication relay connector (see device 2 in figure).</td>
</tr>
</tbody>
</table>

**LEGEND:**
- = mini-switch lever
× = Lever position irrelevant
(•) = factory setting
6 - FIRST POWER-ON AND SYSTEM AUTHENTICATION

The remote control is now completely connected to your system. Before continuing, check that there are no wiring errors. If all connections are correct, open the lock and the door mechanically, making sure that they cannot accidentally close, then switch on power to the system. If the system works correctly, only the ON (ref. M) and Door Open (ref. O) LEDs should light up. Now go to point 6.1 AUTHENTICATION BUTTON.

If there are any messages or problems, see point 6.2 TROUBLESHOOTING and point 6.3 DEVICE STATUS SIGNAL.

6.1 - AUTHENTICATION BUTTON

The remote control has to be authenticated when you connect it to the lock the first time, otherwise the lock will refuse the open/close commands. The same procedure is necessary if you replace the remote control or the lock.

Start by opening the lock and the door, making sure that it cannot accidentally close.
Press button PS1 (Ref. D) on the remote control.
Successful authentication is confirmed by a triple acoustic signal and steady lighting of the white status LED.
A long sound indicates that the operation has failed. Check the color of the status LED (ref. F):
- if red, check that the lock and the door are open, wait 10 sec. and then try again.
- if yellow, check that the electrical connections between the two devices are correct.

After authentication, perform a test: keeping the mechanical keys on hand to open the lock in case of problems, close the door from the inside and then use the remote control. Sometimes the first attempt may fail because the rolling code has to be aligned. Wait 10 sec. and then try again. The system will now be aligned and ready to use.

6.2 - TROUBLESHOOTING

These procedures are to be performed only by technically trained personnel. Take all possible precautions to prevent electrical shock.

Some of the main causes of malfunctions are described below:

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>REMEDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply LED does not light (ref. M)</td>
<td>No power to terminals 11-12.</td>
<td>Check that there is 12 VDC ± 1.5 VDC power to the terminals.</td>
</tr>
<tr>
<td></td>
<td>Inverted polarity on terminals 11-12.</td>
<td>Check polarity (paragraph 4.7) and invert connection of terminals if necessary.</td>
</tr>
<tr>
<td>Input LED is always on (ref. G, H, I, L)</td>
<td>Button connected to input is normally closed.</td>
<td>Replace with a normally open one.</td>
</tr>
<tr>
<td></td>
<td>Input is always powered: probable wiring error.</td>
<td>See paragraph 4.1) CHARACTERISTICS OF INPUTS</td>
</tr>
<tr>
<td></td>
<td>System command is always on.</td>
<td>Find the reason.</td>
</tr>
<tr>
<td>Input LED is always off or lights weakly when button connected to it is pushed (ref. G, H, I, L)</td>
<td>Insufficient control voltage or power.</td>
<td>Check that power on input terminals when button is pushed conforms to data in paragraph 4.1) CHARACTERISTICS OF INPUTS</td>
</tr>
<tr>
<td></td>
<td>Input is not powered: probable wiring error.</td>
<td>Check that power on terminals 1 and 2 when button is pushed conforms to data in paragraph 4.2) AUXILIARY POWER SUPPLY FOR INPUTS</td>
</tr>
<tr>
<td>After giving an input command, the status LED lights yellow and the lock does not perform any operation (ref. F)</td>
<td>Communication not made.</td>
<td>Check that communication cable is correctly connected. See paragraph 4.5) CONNECTING THE RS485 COMMUNICATION CABLE</td>
</tr>
<tr>
<td></td>
<td>Communication line not terminated.</td>
<td>See paragraph 5.4) TERMINATING THE RS485 COMMUNICATION LINE</td>
</tr>
<tr>
<td></td>
<td>Communication refused due to failed authentication by remote control.</td>
<td>Run authentication procedure. See paragraph 6.1) AUTHENTICATION BUTTON.</td>
</tr>
</tbody>
</table>
### 6.3 - DEVICE STATUS SIGNALS

The status LED (ref. F) provides information based on color:

<table>
<thead>
<tr>
<th>COLOR</th>
<th>SITUATION</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>- Device has been authenticated by lock</td>
<td>- *</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Repeat paragraph “AUTHENTICATION BUTTON”</td>
</tr>
<tr>
<td>Red</td>
<td>- Mechanical sticking</td>
<td>- *</td>
</tr>
<tr>
<td></td>
<td>- Motor overload/short circuit</td>
<td>- *</td>
</tr>
<tr>
<td></td>
<td>- Authentication failed</td>
<td>- Same as above</td>
</tr>
<tr>
<td>Green</td>
<td>- Indefinite position of latchbolts and spring latch</td>
<td>- *</td>
</tr>
<tr>
<td></td>
<td>- Max. motor movement time exceeded for operation.</td>
<td></td>
</tr>
<tr>
<td>Yellow</td>
<td>- Communication error</td>
<td>- Check electrical connections and repeat procedure described in “AUTHENTICATION BUTTON”</td>
</tr>
<tr>
<td></td>
<td>- Rolling codes error</td>
<td>- Same as above</td>
</tr>
<tr>
<td>Blue</td>
<td>- Operation blocked by door status sensor (door not closed)</td>
<td>- *</td>
</tr>
<tr>
<td></td>
<td>- Spring latch out of position.</td>
<td>- *</td>
</tr>
<tr>
<td>Purple</td>
<td>- A command has arrived at inputs during a communication from the lock;</td>
<td>- Wait 10 sec. and give command again. If necessary, check that spring latch extends freely and completely.</td>
</tr>
<tr>
<td></td>
<td>device rejects it</td>
<td></td>
</tr>
<tr>
<td>Cyan</td>
<td>- A command not permitted by the current configuration has arrived at input.</td>
<td>- None</td>
</tr>
</tbody>
</table>

(*) Refer to the lock manual for the resolution of problems.
### 7 - TECHNICAL DATA

<table>
<thead>
<tr>
<th>INPUT POWER SUPPLY</th>
<th>VOLTAGE / FREQUENCY</th>
<th>12 VDC ±10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX DRAW</td>
<td>&lt; 0,375 A</td>
<td></td>
</tr>
<tr>
<td>MAX POWER</td>
<td>4,5 W</td>
<td></td>
</tr>
<tr>
<td>PROTECTION INDEX</td>
<td>IP10 (with terminal covers on)</td>
<td></td>
</tr>
<tr>
<td>WORKING TEMPERATURE</td>
<td>Min -10 °C ÷ Max.+40 °C</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MECHANICAL</th>
<th>WEIGHT</th>
<th>0,35 Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIMENSIONS</td>
<td>142 x 110 x 62 mm</td>
<td></td>
</tr>
<tr>
<td>MATERIAL</td>
<td>Blend PC/ABS self-extinguishing UL94-V0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INPUTS</th>
<th>VOLTAGE</th>
<th>9÷24 VDC/VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINIMUM REQUIRED POWER</td>
<td>1,5 W</td>
<td></td>
</tr>
<tr>
<td>FREQUENCY (AC only)</td>
<td>50 – 60 Hz</td>
<td></td>
</tr>
<tr>
<td>MAX DRAW</td>
<td>&lt; 0,06 A rms</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTPUTS</th>
<th>AC VOLTAGE / CURRENT</th>
<th>230 VAC / 3 A (load AC1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>230 VAC / 1 A (load AC15)</td>
</tr>
<tr>
<td></td>
<td>DC VOLTAGE / CURRENT</td>
<td>60 VDC / 0,6 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40 VDC / 1 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 VDC / 2 A</td>
</tr>
<tr>
<td></td>
<td>MINIMUM SWITCHABLE LOAD</td>
<td>5 mW</td>
</tr>
<tr>
<td></td>
<td>MINIMUM SWITCHABLE CURRENT</td>
<td>5 mA</td>
</tr>
</tbody>
</table>
8 - OUTPUT SIGNAL GRAPHS WITH ECO MODE DISABLED

In this mode, the output signals (CO and N.O.) also remain in the status reached during lock stand-by (on X axis corresponding to a time greater than or equal to 10,000 msec). The times shown on the graphs are for purposes of example only, and vary according to system characteristics and conditions.

Example of output sequence after an OPENING command with ECO disabled.
Example of output sequence after a CLOSING command with ECO disabled.
In this mode, the output signals (CO and N.O.) go to zero during lock stand-by (on X axis corresponding to a time greater than or equal to 10,000 msec). The times shown on the graphs are for purposes of example only, and vary according to system characteristics and conditions.

Example of output sequence after an OPENING command with ECO enabled.
Example of output sequence after a CLOSING command with ECO enabled.
10 - EXAMPLE OF GENERIC CONNECTION

- **OPEN BUTTON**
- **CLOSE BUTTON**

- **REMOTE CONTROL 99.684**
- **LINE ADAPTER 99.683**
- **230VAC**
- **230VAC**

- **MOTORIZED DOOR OPENER**
- **RETRACTED SPRING LATCH INDICATOR**
- **DOOR OPEN INDICATOR**
- **LOCK OPEN INDICATOR**