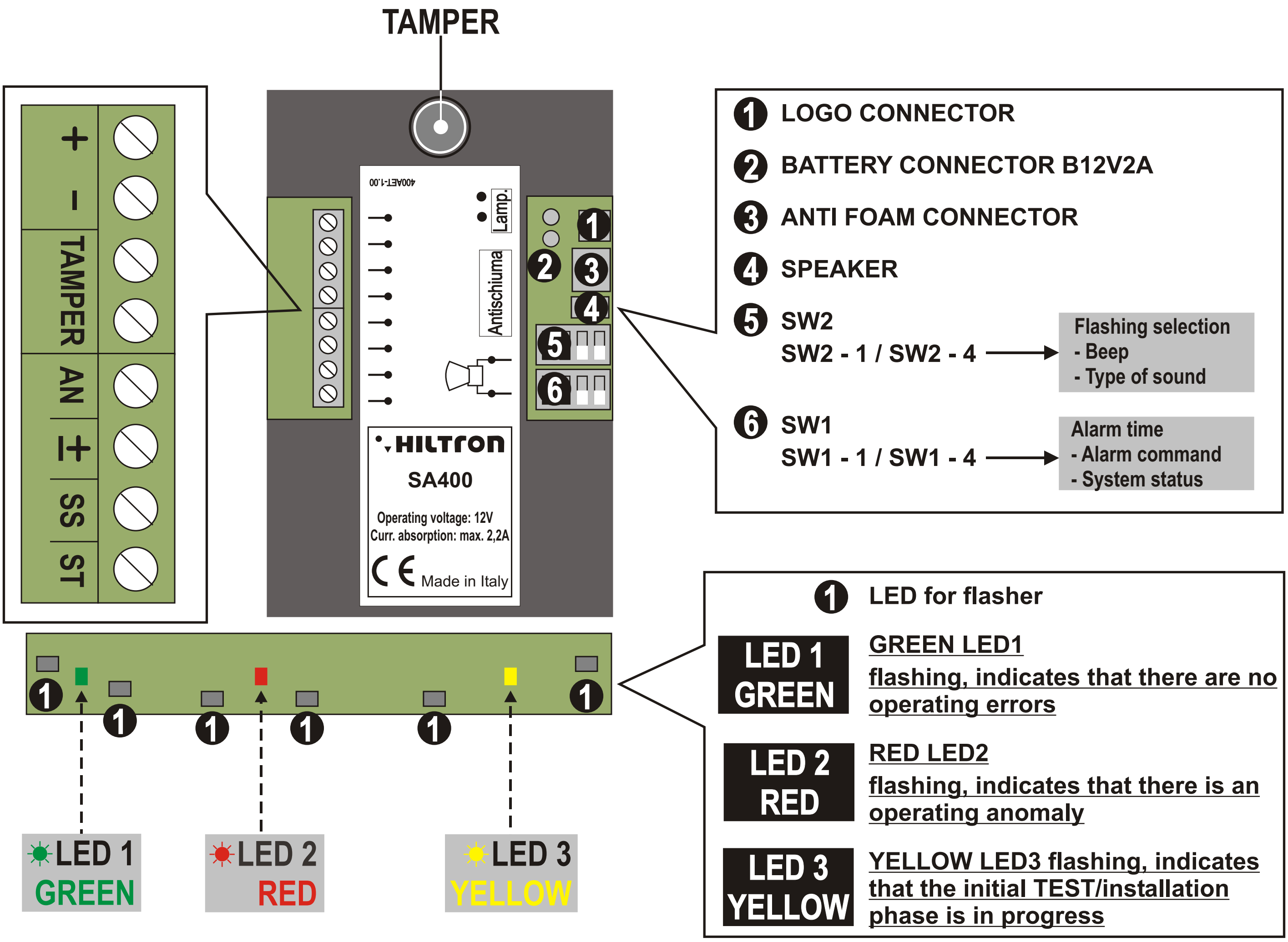
HILTRON
security

SICURA

FEATURES

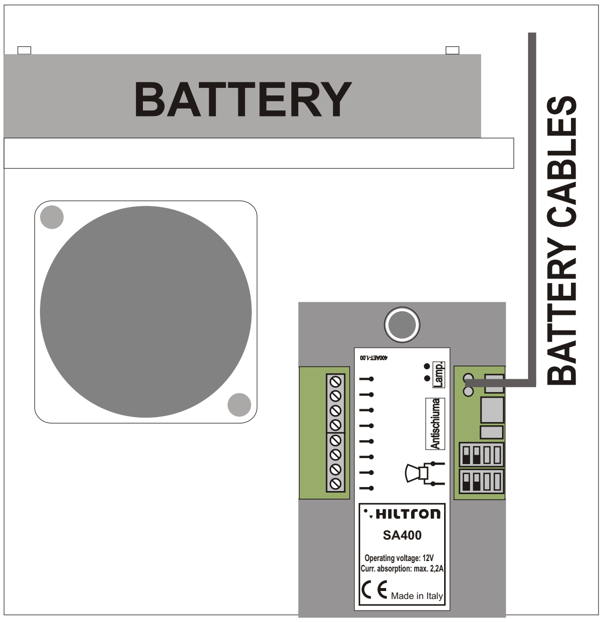
- Complies with EN50131 standard
- Advanced periodic self-diagnosis technology, with ANOMALY output signal
- Internal container entirely made of metal, for high resistance to break-in attempts
- External ABS container with polycarbonate
- LED flasher with high luminous efficiency and low consumption
- Excludable HILTRON logo lighting (SA400SL)
- Tensione nominale di alimentazione: 14Vdc
- Nominal supply voltage: 14Vdc
- Maximum absorption: 2.2A
- Advanced battery status control and periodic battery efficiency test
- High programming flexibility via 8 dip switches
- Anti-foam sensor (SA400S)
- Vibration sensor
- Input signals on the terminal block: ALARM, STOP SOUND, SYSTEM STATUS
- Output signals on the terminal block: TAMPER, FAULT
- Ambiental class4 : 4
- Color: white
- Battery compartment: B12V2A
- Degree of protection: IP44
- Dimensions (WxHxP): 200x265x78mm

SIREN CIRCUIT



1 BATTERY CONNECTION

On the right side of the internal container, it is possible to pass the connection cables for the battery.

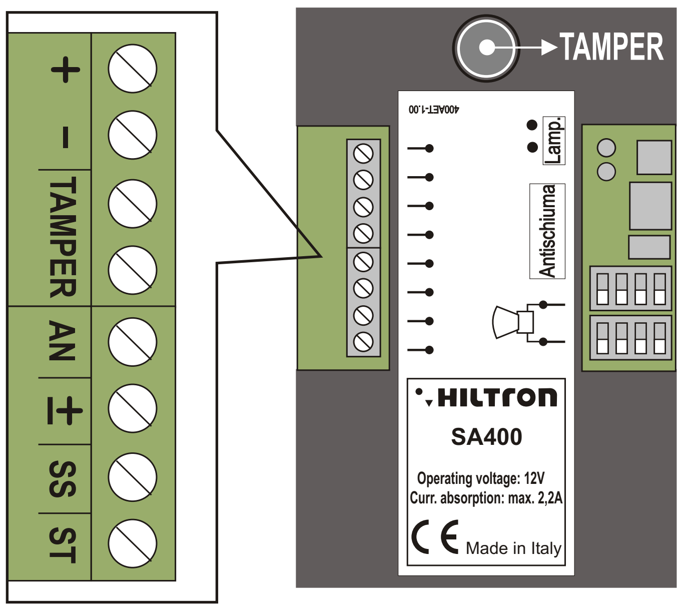


1.1 DESCRIPTION OF CONNECTION SIGNALS

On the terminal block of the SA400 siren, the following signals are available:

SIREN TERMINAL BLOCK DESCRIPTION

SIREN POWER SUPPLY	+ 1 (+)
SIREN POWER SUPPLY	- 2 (-)
TAMPER OUTPUT_ A NC	(TAMP_A)
TAMPER OUTPUT_ B NC	(TAMP_B)
FAULT OUTPUT	5 (AN)
ALARM INPUT	6 (+ / -)
STOP SOUND INPUT	7 (SS)
SYSTEM STATUS INPUT	8 (ST)



DESCRIPTION OF CONNECTION SIGNALS ON THE TERMINAL BLOCK

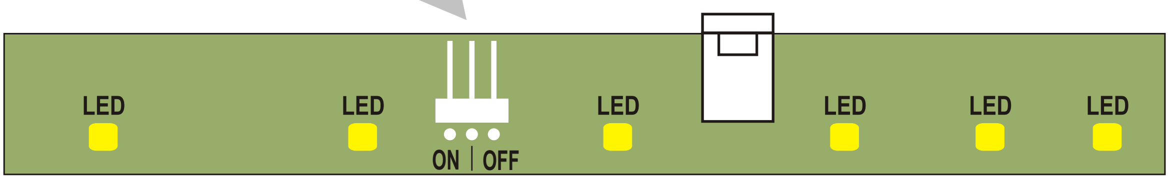
CLAMP POSITION	SIGNAL	DESCRIPTION
1	POWER SUPPLY SIREN +	SIREN power supply POSITIVE pole (V_nominal = 14Vdc)
2	POWER SUPPLY SIREN +	Siren power supply NEGATIVO and GND INPUT / EXIT signal
3	EXIT TAMPER_A	TAMPER / 24H circuit connection **Mandatory connection, for EN50131 compliance**
4	EXIT TAMPER_N	TAMPER / 24H circuit connection **Mandatory connection, for EN50131 compliance**
5	EXIT ANOMALY	FAULT output signal (output type: OPEN COLLECTOR) - 0 V - GND = NO FAULT (CLOSED ZONE) - OPEN = ANOMALY PRESENT (OPEN ZONE) In the event of ANOMALY PRESENT, the flash unit flashes short ignition, every 30 seconds. For the description of the type of FAULT, see: - Table 3 – ANOMALY / ERROR **Mandatory connection, for EN50131 compliance**
6	COMMAND INPUT ALARM	Input signal for ALARM activation. For the operating polarity, refer to the paragraph: 2 DIP SWITCH configuration, switches: SW1 – 3. **Mandatory 5-wire connection, for EN50131 compliance**
7	INPUT STOP SOUND	Input signal for STOP SOUND (for maintenance use) - POSITIVE = STOP SOUND (the sound signal is INHIBITED) - NEGATIVE / OPEN = NORMAL OPERATION **Mandatory connection, for EN50131 compliance**
8	INPUT SYSTEM STATUS	Input signal for SYSTEM STATUS For the operating polarity, refer to the paragraph: 2 DIP SWITCH configuration, switches: SW1 – 4.

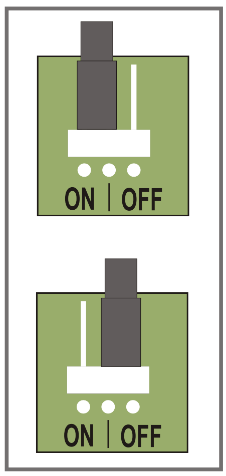
2 LOGO LIGHTING (SA400SL only)

It is possible to permanently turn the HILTRON logo on or off, using a specially designed JUMPER.

TO TURN ON THE HILTRON LOGO PERMANENTLY: POSITION JP1 TO ON

TO PERMANENTLY TURN OFF THE HILTRON LOGO: POSITION JP1 TO OFF





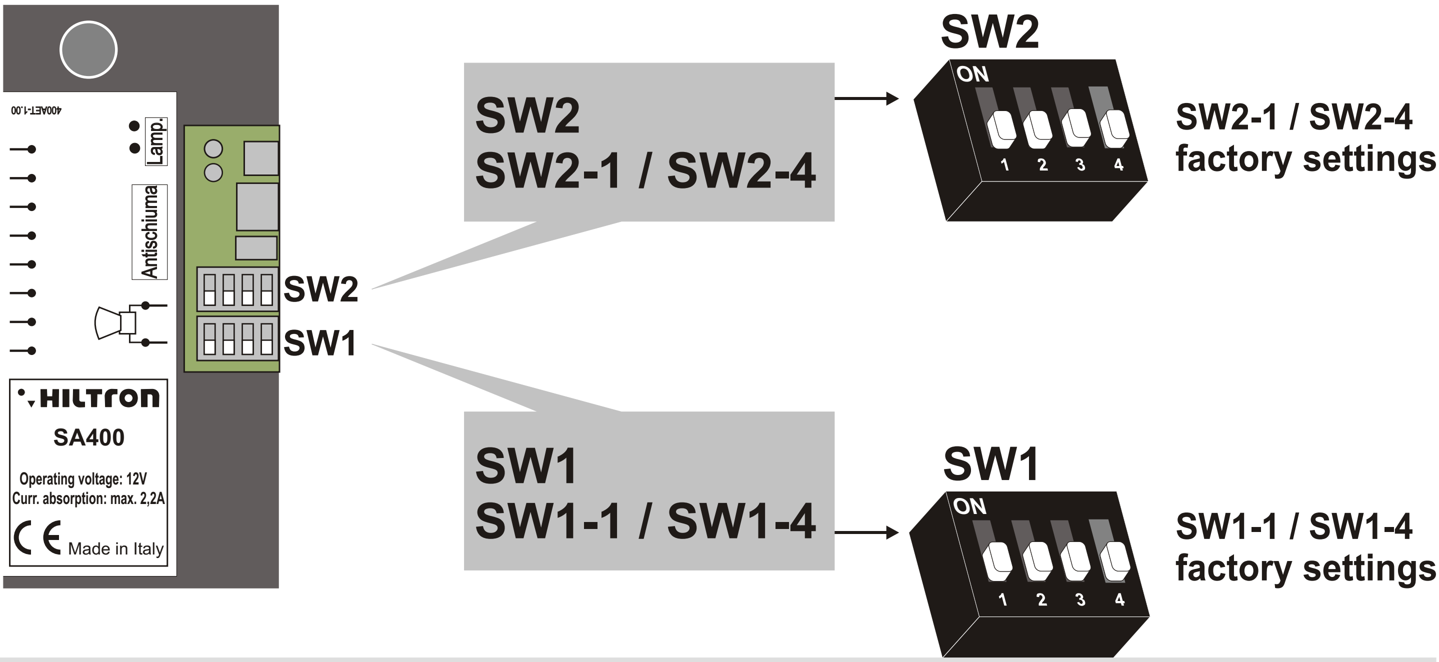
LOGO LIGHTING CIRCUIT

3 DIP SWITCH CONFIGURATION

The dip switches are read periodically by the siren, except when the alarm cycle is active;
in fact, during the alarm cycle, the reading of the dip switches is inhibited.
As a consequence of what has been described above, if an alarm cycle is not active and a dip switch configuration change occurs, this new configuration is immediately made operational.
If, however, an alarm cycle is active, and at the same time a change occurs on the dip switches, the new configuration is made operational only at the end of the current alarm cycle.

The SA400 siren is equipped with 8 dip switches, organized in two blocks of 4, as indicated in Figure 3:

Figure 3 – DIP SWITCH factory settings

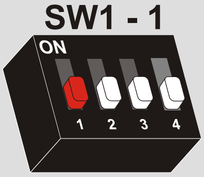
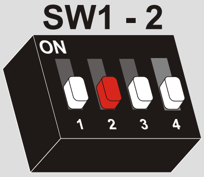


SW1 DIP SWITCH DESCRIPTION

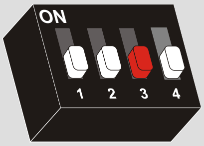
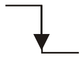
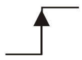
The switches of the SW1 block are identified individually as:

SW1–1 / SW1–4

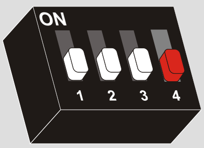
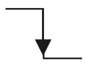
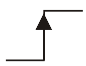
Detailed description follows:

SW1 - 1 	SW1 - 2 	ALARM CYCLE DURATION TIME
OFF	OFF	3 MINUTES
ON	OFF	8 MINUTES
OFF	ON	15 MINUTES
ON	ON	INFINITE (1) (not compliant with EN50131)

NOTE1: The configuration with INFINITE alarm cycle duration does not comply with the EN50131 standard. This configuration requires that the duration of the alarm cycle is controlled by the burglar alarm control unit.

SW1 - 3 	**ALARM COMMAND POLARITY SELECTION(2)**
OFF	ALARM command active on MISSING POSITIVE edge  front from NEGATIVE to POSITIVE: NO ALARM or front from OPEN to POSITIVE: NO ALARM front from POSITIVE to NEGATIVE: ALARM
ON	ALARM command active on NO NEGATIVE edge  front from POSITIVE to NEGATIVE: NO ALARM or front from OPEN to NEGATIVE: NO ALARM front from NEGATIVE to POSITIVE: ALARM or front from NEGATIVE to OPEN: ALARM

Note2: The ALARM command input acts on the variation of the signal and not on the signal level.

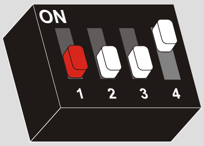
SW1 - 4 	**SYSTEM STATUS POLARITY SELECTION (3)**
OFF	SYSTEM inserted on NEGATIVE front  front from POSITIVE to NEGATIVE: SYSTEM INSERTED or front from OPEN to NEGATIVE: SYSTEM INSERTED front from NEGATIVE to POSITIVE: SYSTEM DISABLED or front from NEGATIVE to OPEN: SYSTEM DISABLED
ON	SYSTEM inserted on the front POSITIVE COMMAND  front from NEGATIVE to POSITIVE: SYSTEM INSERTED or front from OPEN to POSITIVE: SYSTEM ARMED front from POSITIVE to NEGATIVE: SYSTEM DISABLED or front from POSITIVE to OPEN: SYSTEM DISABLED

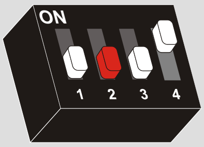
Note3: The SYSTEM STATUS input acts on the variation of the signal and not on the signal level.

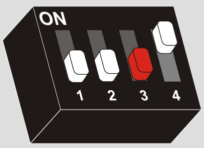
SW2 DIP SWITCH DESCRIPTION

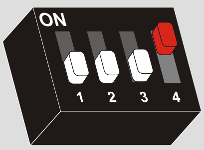
The switches of the SW2 block are identified individually as:
SW2–1 / SW2–4

Detailed description follows:

SW2 - 1 	SELECTION OF FLASHES ON ARMING / DISARMING
OFF	NO Flashes on ARMING event / DISARMING event
ON	2 flashes on system ARMING event 3 flashes on system DISARMING event

SW2 - 1 	SOUND BEEP SELECTION ON ARMING/DISARMING
OFF	NO beep on ARM/DISARM event
ON	3 BEEP on system ARMING event 3 BEEP on system DISARMING event

SW2 - 3 	PERIODIC SELF-DIAGNOSIS MODE SELECTION
OFF	Periodic self-diagnosis TEST: INCLUDED (compliant with EN50131)
ON	Periodic self-diagnosis TEST: EXCLUDED (not compliant with EN50131)

SW2 - 4 	SOUND MODULATION TYPE
OFF	TYPE 1 sound modulation
ON	HILTRON TYPE sound modulation

4 INSTALLATION PROCEDURE

ATTENTION: During the TEST / INSTALLATION procedure, the alarm cycle is inhibited.
For quick installation we recommend operating as follows:

1) Check the following conditions:

- Turn off the burglar alarm control unit
- Disconnect all batteries from the anti-theft system
- Turn off the anti-theft power supplies
- Disconnect the siren battery

2) Remove the siren's plastic cover

3) From the siren, dismantle the burglar-proof metal panel and remove it completely

4) To fix the siren base, find a position with a large and perfectly flat surface

5) Fix the base of the siren with the relative plugs

6) Check that the base of the siren is firmly fixed to the wall and that it is not subject to continuous vibrations of the wall (for example: vibrations of the wall, caused by the passage of heavy vehicles on the road).
Please remember that in the event of the presence of unwanted vibrations, false alarm states can be generated (TAMPER opening for detection of the anti-vibration sensor).

7) Set the dip switches SW1-1 / SW1-4, SW2-1 / SW2-4 according to the desired configuration
(See paragraph: 2 DIP SWITCH configuration)

8) Connect the NEGATIVE POWER wire to the siren, terminal number: 2

9) Connect the wires in sequence:

- TAMPER circuit, terminal number: 3, 4 (signal from the siren to the control panel).
- FAULT circuit, terminal number: 5. Mandatory connection for a system compliant with EN50131. This signal must be connected to the control panel, on the zone input terminal: SIREN FAULT (signal from the siren to the control panel - OPTIONAL connection, if not EN50131)
- ALARM COMMAND circuit, terminal number: 6. For the 4-wire connection detail, see paragraph 7.
- For the 5-wire connection detail, see paragraph 9 (signal from the control panel to the siren).

ATTENTION: The 5-wire connection does not comply with EN50131.
In order for the system to comply with EN50131, the 5-wire connection must be used.

- STOP SOUND circuit, terminal number: 7.
- Mandatory for systems compliant with EN50131.
  This signal must be connected to the control panel, on the output terminal: MAINTENANCE (signal from the control panel to the siren - OPTIONAL connection if not EN50131).

- SYSTEM STATUS circuit, terminal number: 8 (signal from the control panel to the siren - OPTIONAL connection, courtesy for the user).
- By connecting this signal and appropriately configuring SW2-1 and SW2-2, the user can check when the system is armed / disarmed, by means of appropriate flashes / beeps emitted by the siren.

10) Connect the POSITIVE POWER SUPPLY wire to the siren, terminal number: 1

11) Turn on the anti-theft power system

12) The siren turns on and immediately flashes the 3 LEDs multiple times
LED1-GREEN, LED2-RED, LED3-YELLOW (the arrangement of the LEDs is indicated on page 1). After this short flash, proceed to connect the siren battery

13) Start the test procedure after a POWER ON.

The SIREN is in the TEST / INSTALLATION phase; this condition is reported by:

LED3-YELLOW: FLASHING (TEST status)

During the TEST phase, checks are carried out on the electronic functioning of the siren.

If there are no anomalies, you will be able to observe:

ERRORS ABSENT **ANOMALIES ABSENT**	**LED 1 GREEN: FIXED OFF**
	LED 2 RED: FIXED OFF
	LED 3 YELLOW: FLASHES: 1 second on + 1 second off

Se sono presenti delle anomalie, si potrà osservare:

ERRORS PRESENT **ANOMALIES PRESENT**	**LED 1 GREEN: FIXED OFF**
	LED 2 RED: FLASHING
	LED 3 YELLOW: FLASHES: 1 second on + 1 second off

14) In the event of NO ANOMALIES, proceed quickly to the following operations;

- Check that there are no obstructions on the antifoam sensor (SA400S/SA400SL only) and then subsequently press the TAMPER button
- LED1-GREEN starts flashing quickly for about 25 seconds; during this flashing, the anti-foam sensor test is performed.
- Once the anti-foam test is completed, we continue with the test of the speaker cone and the flashing light; the following must be observed:
- **4 flashes + 4 beeps on speaker = TEST END with outcome: NO ANOMALIES**

  or

- **7 flashes + 7 beeps on speaker = TEST END with result: ANOMALIES PRESENT**

To resolve ANOMALIES / ERRORS, consult the paragraph: 5 Procedure for resolving ERRORS.

If the flashes are observed without hearing the beeps, then a problem is present on the speaker cone circuit, and in this case, consult paragraph 5 Procedure for resolving ERRORS.

15) In case of ABSENT ANOMALIES, PHASE 1 of TEST / INSTALLATION is finished.

PHASE 2 of TEST / INSTALLATION begins

- PHASE 2 installation (max duration 5 minutes):
  In PHASE 2 of installation, the siren is completely closed within a maximum time of 5 minutes

16) Immediately continue the installation by assembling the metal panel and the relative fixing screws

- 17) Complete the installation by connecting the other required wires (TAMPER circuit, alarm control, etc.).
  Finally, mount the metal panel and secure it with the relevant screws.

LED1 - GREEN: turns ON for 1 second, then turns off

18) Fit the plastic cover and the relative fixing screws.
When the plastic cover is placed, the TAMPER circuit closes.
Pay attention to the following situation:
If the 24H connection of the siren has been carried out correctly, and the 24H circuit is active on the control panel, while fixing the plastic panel of the siren, a 24H ALARM cycle could be accidentally triggered.
This accidental condition is due to the fact that the siren's TAMPER, during fixing of the plastic panel, could open/close several times, until the panel is finally fixed.
When the plastic panel has been definitively fixed, the TAMPER is perfectly closed

19) END OF THE TEST / INSTALLATION PROCEDURE

20) From this moment the siren is operational.

If an alarm cycle occurs, the siren does what is requested

5 DESCRIPTION OF CIRCUIT OPERATION FAULT

The SA400 siren has been designed to comply with the EN50131 standard.
The siren integrates a sophisticated periodic self-diagnosis technology that allows it to verify correct functioning.

In the event of a fault, the software classifies the type of fault and applies possible solutions. In all cases of siren failure, the control panel is alerted via the ANOMALIE circuit which changes the output status as described below:

Table 2 FAULT output status

ANOMALY STATUS	FAULT OUTPUT [4]
ANOMALY PRESENT	**OPEN (OPEN ZONE)** When there is a FAULT, the flasher performs a short flash every 30 seconds
NO ANOMALY	**0 V - GND (CLOSED ZONE)**

Note 4: The output stage of the ANOMALY signal is of the type: OPEN COLLECTOR

In addition to the control panel being alerted via the ANOMALIA circuit, the siren itself also indicates the presence of ANOMALY by performing a short flash of the flashing light every 30 seconds.
For the description of the possible ANOMALIES, see: Table 3 – ANOMALY / ERROR codes.

There are ANOMALIES that cause a forced reset of the siren.
The forced reset procedure is applied to attempt to recover from the error.

There are ANOMALIES that block the alarm cycle.
To return to normal operation, the cause of the error must be removed.
If the cause of the error disappears spontaneously, the siren resumes its normal functioning, the ANOMALY signal is canceled and therefore the situation returns to the ABSENT ANOMALY situation.

There are ANOMALIES that still allow normal operation of the siren to continue.
In all the cases reported above, if an ANOMALY is present, a diagnostic intervention is necessary and maintenance with qualified technical personnel, so as to resolve the problem detected.

6 ERROR RESOLUTION PROCEDURE

The siren, during its operation, carries out a series of periodic tests to check that the electronic circuits are in perfect working order, without any type of error / anomaly / fault.

If no errors are detected, LED2-RED in Figure 1 (ERROR LED) is permanently off.

If errors are detected, LED2-RED in Figure 1 (ERROR LED) starts to flash.

When LED2-RED flashes, it performs a series of consecutive flashes, followed by a long pause with the LED off.

Starting from the long pause with the LED off, count the number of flashes performed by the RED LED2.
The number of flashes counted indicates the type of error detected, according to the table below:

Table 3 – FAULT / ERROR codes

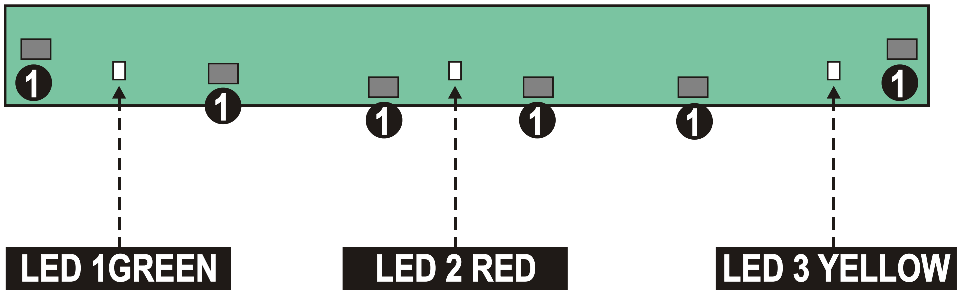
NUMERO FLASH	TIPO DI ERRORE / ANOMALIA
1	Power supply voltage: MAX MAINS POWER SUPPLY VOLTAGE
2	Lhe siren is in: ALARM CYCLE BLOCK STATE The ALARM CYCLE BLOCK state occurs when: SIREN power is absent and the battery is flat
3	NO SIREN power. Power supply voltage: MINIMUM THRESHOLD FOR MAINS POWER SUPPLY PRESENT
4	ANTIFOAM sensor functioning error
5	Error due to disconnected SPEAKER cone
6	SPEAKER cone DRIVER TRANSISTOR circuit error
7	SPEAKER cone DRIVER TRANSISTOR circuit error
8	ANTIFOAM sensor alarm condition detected
9	Battery DISCONNECTED, INVERTED or FAULTY
10	Battery FAULT due to failure to CHARGE
11	FAILURE BATTERY SHORT: excessive charging current
12	Battery FAULT due to failure to DISCHARGE
13	Low battery. Battery voltage: MINIMUM USABLE BATTERY VOLTAGE
14	Power supply voltage: MIN MAINS POWER SUPPLY VOLTAGE
15	Processor Analog to Digital converter operation error.
16	SPEAKER cone circuit control software error

Voltage references used in the table above
MAX MAINS POWER SUPPLY VOLTAGE: 15.5 V± 0.15 V
MIN MAINS POWER SUPPLY VOLTAGE: 13.2 V± 0.15 V
MINIMUM THRESHOLD FOR MAINS POWER SUPPLY PRESENT: 10.3 V± 0.15 V
MINIMUM USABLE BATTERY VOLTAGE: 9.5 V± 0.15 V

Only for some types of ANOMALIES / ERRORS is technical assistance required directly at the factory (hardware failures of the electronic board).
For the remaining ANOMALIES, only the intervention of the installer is required.

7 SUMMARY OF OPERATION STATUS OF THE LEDS AND FLASHING LAMP

Figure 4 – LED and FLASHING LIGHT arrangement



1 6 LED for FLASHING LIGHT

Table 4 – LED and FLASHING LIGHT status summary

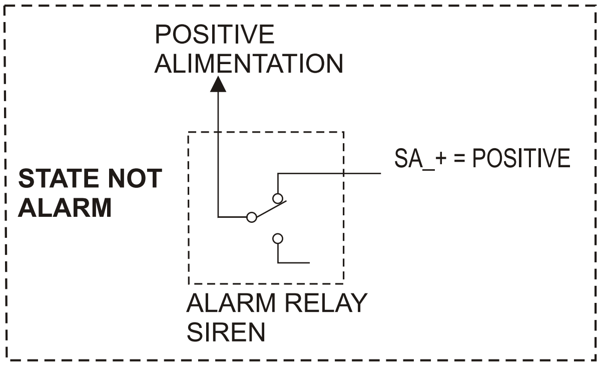
LED	FAULT OUTPUT(4)
LED 1 GREEN	During the installation phase, it flashes if the following procedure is active: anti-foam sensor test/calibration. During the installation phase, if the anti-foam sensor test/calibration procedure is not active, this GREEN LED1 is off. Once the installation phase is completed, i.e. during normal operation, if there are no FAULTS / ANOMALIES, it flashes briefly, every 30 seconds, to indicate that the siren is working normally. During normal operation, if there are FAULTS / ANOMALIES present, this GREEN LED1 is off
LED 2 RED	Flashes when there is a FAULT / ANOMALY. In the absence of FAULTS / ANOMALIES, it is permanently off. For a detailed description of the type of FAULT / ANOMALY, consult the paragraph: 5 Procedure for resolving ERRORS
LED 3 YELLOW	Flashes when the installation phase is active. During normal operation it is always off
FLASHING LIGHT (6 LEDS)	The FLASHING LIGHT leds are mainly used to indicate the alarm state: ALARM ACTIVE: FLASHING LIGHT RUNNING ON/OFF ALARM DISACTIVE: FLASHING LIGHT OFF In some cases the FLASHING LIGHT LEDs are used for: - Indicate the immediate ARMING status - Indicate the immediate DISARMING status - The presence of ANOMALY - The outcome of the test, at the end of the INSTALLATION procedure

8 4 WIRE CONNECTION DIAGRAM (2 for TAMPER) (NOT COMPLIANT WITH EN50131)

This type of connection is strongly discouraged.
Where possible, use the 5-wire connection.
The connection diagram of the 4-wire ALARM COMMAND circuit requires the control unit to have an output for the siren of the type:

CENTRAL UNIT – SELF-POWERED SIREN OUTPUT

Clamp : SA+
Clamp : SA_GND ALIMENTATION



The SA_+ signal works as described in the following way (See diagram Figure 5):

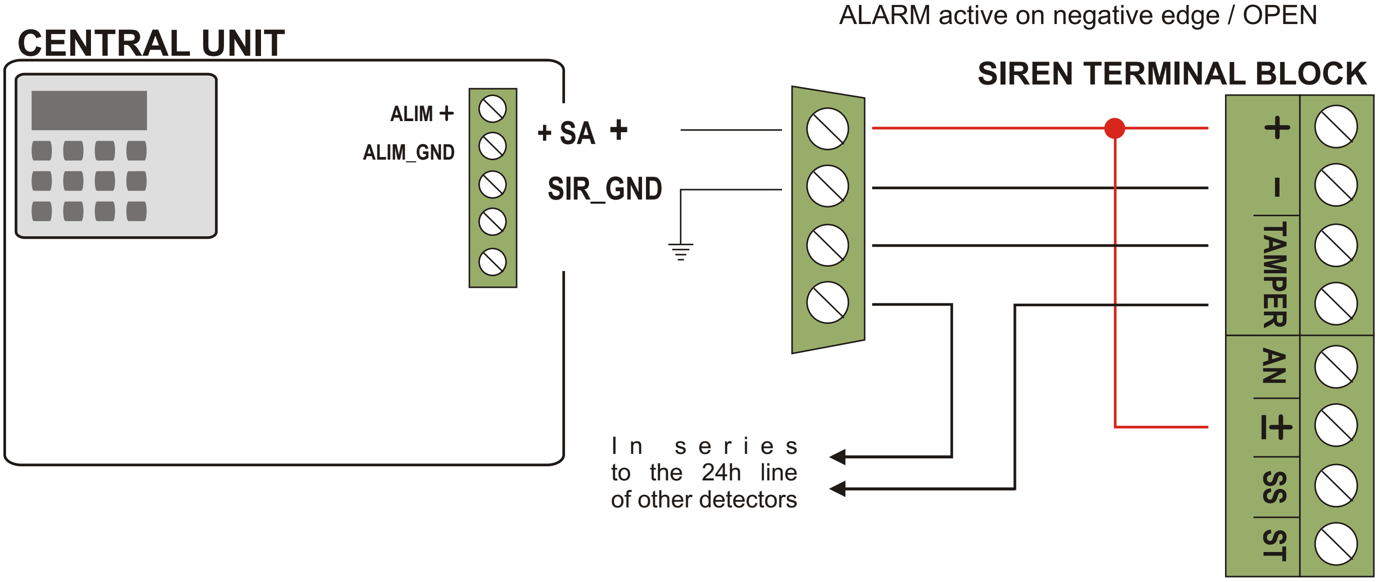
SA_+ = POSITIVE: NO ALARM IN PROGRESS

SA_+ = OPEN or NEGATIVE: ALARM IN PROGRESS

Figure 5 – Central operation with SELF-POWERED siren

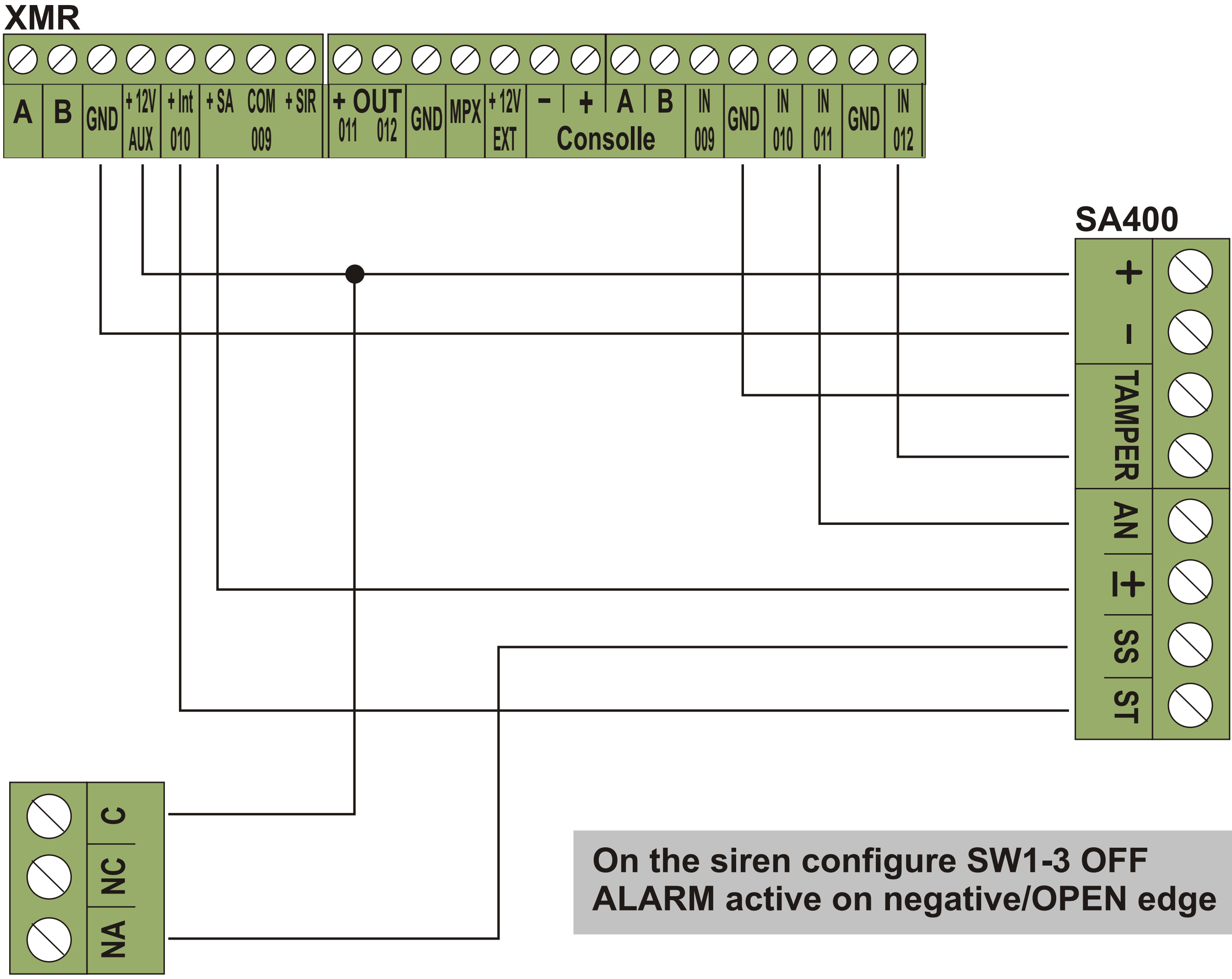
Quando la centrale funziona come sopra descritto, si può usare lo schema di collegamento a 4 fili come illustrato qui di seguito:

On the siren, configure: **SW1-3 = OFF**
ALARM active on negative edge / OPEN



When using the connection described above, the siren performs the alarm cycle using the energy coming from the internal battery.
<u>If the internal battery is not efficient, the siren is not able to perform the alarm cycle correctly.</u>
Please remember that even if the control unit works as described in Figure 5, it is still possible to make the 5-wire connection as described in paragraph 9 5-wire connection diagram (mandatory for En50131).

9 CONNECTION DIAGRAM WITH XMR CONTROL UNITS



On the siren configure SW1-3 OFF
ALARM active on negative/OPEN edge

10 5 WIRE CONNECTION DIAGRAM (MANDATORY FOR EN50131)

The connection diagram of the 5-wire ALARM CONTROL circuit is described in the following paragraph. This type of connection complies with the EN50131 standard.
This type of connection uses the energy supplied by the power supply to carry out the alarm cycle; the battery is used in back-up mode, i.e. it supplies energy only when the mains supply is absent; in this way, when mains power is present, the execution of the alarm cycle is always guaranteed, regardless of the state of efficiency of the internal battery.

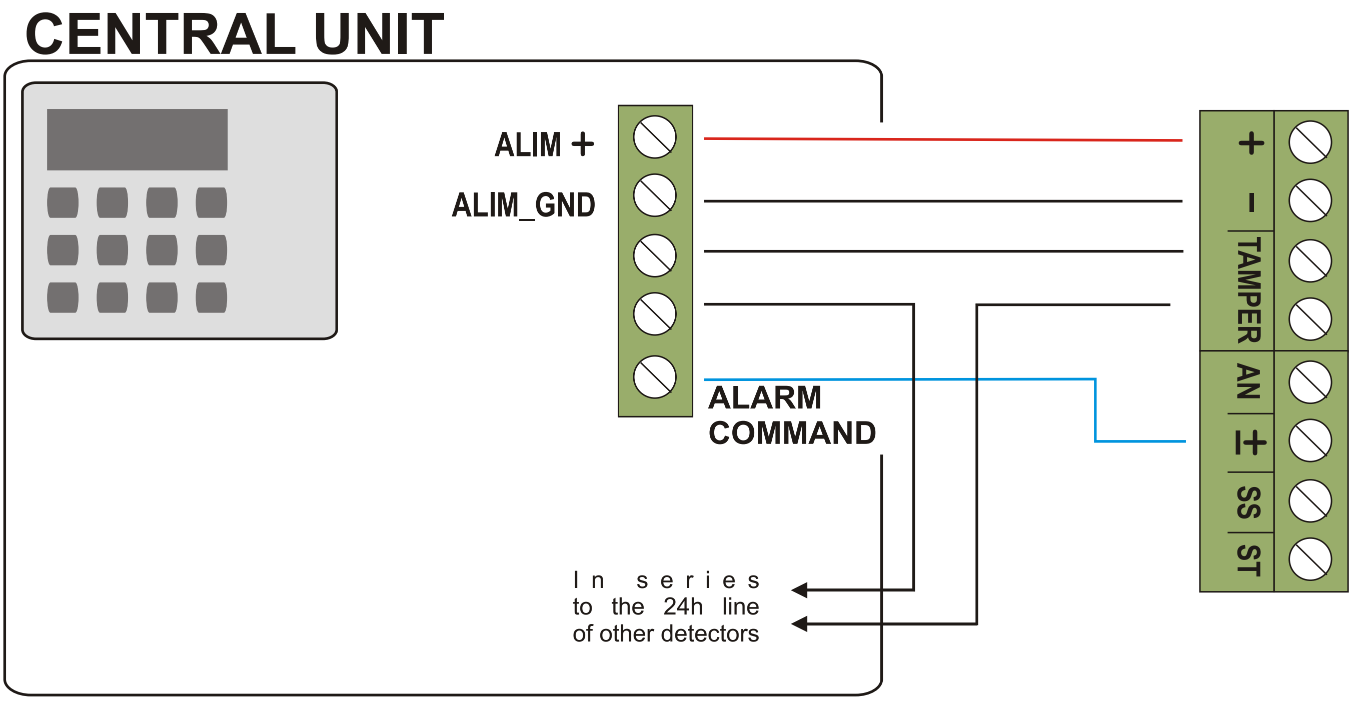
The control unit has a dedicated terminal for ALARM output (it makes no difference whether the ALARM command is active on a POSITIVE edge or on a NEGATIVE edge, since on the siren the ALARM COMMAND activation edge is programmable via dip switches SW1-3).

CONTROL PANEL – ALARM OUTPUT
Terminal: ALARM

If the control panel has the ALARM OUTPUT signal active on POSITIVE / OPEN, select: SW1-3: ON

If the control panel has the ALARM OUTPUT signal active on NEGATIVE / OPEN, select: SW1-3: OFF

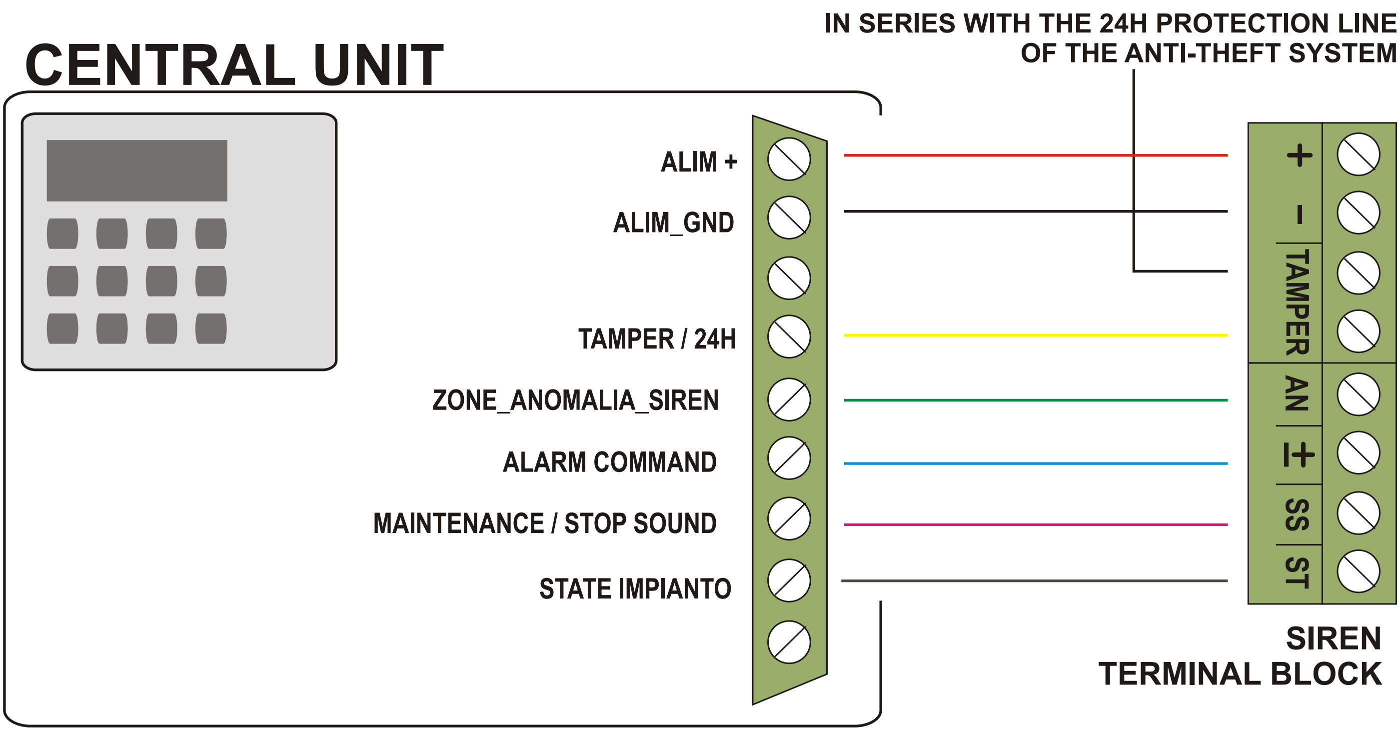
Figure 7 – 5-wire connection diagram



11 CONNECTION DIAGRAM FOR FULL EN50131 COMPLIANCE

The connection diagram to obtain full compliance with the EN50131 standard is described in the following paragraph.

Figure 8 – Connection diagram fully compliant with EN50131



The FAULT signal must be connected to a ZONE of the control panel dedicated to the SIREN.

The STOP SOUND signal must be connected to the MAINTENANCE_OUTPUT signal of the central.

12 QUICK INSTALLATION

INSTALLATION PROCEDURE

- Carry out the fixing of the container as described in paragraph 3
  (see, operations described from point 1 to point 6)
- Set the dip switches according to the desired configuration
- Verify that power sources are all disconnected (power supplies and batteries)
- Carry out the electrical connection, depending on the desired configuration
- Turn on the siren's power
- Check that the LEDs: **LED 1 GREEN** **LED 2 RED** **LED 3 YELLOW**
- LED 1. GREEN / LED 2. RED / LED 3. YELLOW flashes
- The TEST procedure follows after a POWER ON, PHASE 1. See description in paragraph 3, point 13

TEST RESULT

TEST OK

Press the TAMPER and wait for the anti-foam sensor, speaker and flasher test.
See description in paragraph 3, point 14

FAILED TEST

Consult the paragraph:
5 Procedure for resolving ERRORS

TEST OK

4 flashes + 4 beeps

Complete assembly. See description in paragraph 3, from point 15 to point 20

FAILED TEST

Consult the paragraph:
5 Procedure for resolving ERRORS

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