



USER MANUAL

Mobeye[®] CombiGuard

CM2600

Attention! Very important

This user manual contains important guidelines for the installation and usage of the Mobeye® device as described in this manual. Please read these thoroughly before you start using the Mobeye® device.

In the case of damage caused by disregarding the guidelines and the instructions for use, no liability is accepted and the warranty becomes void. The user must regularly check the proper functioning of the Mobeye® device. The manufacturer cannot be held liable for (direct and indirect) damage as a result of incorrect operation or incorrect functioning of the device, software, internet or telecom connection. The manufacturer is in no way liable for the loss of personal passwords or codes.

Safety guidelines

- The permitted ambient temperature during operation may not be exceeded (not lower than -10 °C and not higher than 50 °C).
- The device is intended for use in dry and clean places.
- Protect the device from moisture, heat and water splashing. Not intended for external use.
- The guidelines for the battery usage must be regarded.
- Do not expose the device to strong vibrations.
- Do not let it fall from height.
- Do not use in an environment where any inflammable gases, vapors or dust are present or could be present.
- Repair of the device may only be carried out by people, trained for Mobeye® repair.
- If the device must be repaired, only original replacement components may be used. The use of different parts may lead to damage of the Mobeye® device.

Use in accordance with the regulations

The purpose of this device in accordance with the regulations is sending messages and making telephone calls after an alarm situation. Other uses are not permitted and may invalidate the warranty.

Battery recycling

When disposing of this product, separate the product and the CR123 batteries from other waste streams to ensure that it can be recycled in an environmentally sound manner. For more information on collection and proper disposal, please contact your local government office or the retailer where you purchased this product.

CONTENT

| | |
|------------------------------------------------------------|-----------|
| 1. General description | 4 |
| 2. Standard behaviour | 5 |
| 2.1 Mobeye CombiGuard with Mobeye SIM and Internet Portal | 5 |
| 2.2 Mobeye CombiGuard with own SIM card | 6 |
| 3. Getting started | 8 |
| 3.1 Insert the SIM card | 8 |
| 3.2 Connect the water sensor to the left input | 9 |
| 3.3 Connect the temperature sensor to the right input | 9 |
| 3.4 Connect a (boat) battery to the input | 10 |
| 3.5 Connect a device to the output | 10 |
| 3.6 Insert the batteries | 10 |
| 3.7 Connect an external power supply (optionally) | 11 |
| 3.8 Connect a sensor to the inputs (optionally) | 11 |
| 4. Programming when using the Mobeye SIM and portal | 13 |
| 4.1 Sign up in the Mobeye Internet Portal | 13 |
| 4.2 Register the Mobeye SIM card | 13 |
| 4.3 Enter the program mode | 14 |
| 4.4 Activate the device in the portal | 14 |
| 4.5 Configuration and synchronisation | 15 |
| 4.6 Basics of the Mobeye Internet Portal | 15 |
| 4.7 Switching on/off | 17 |
| 4.8 Confirmation of the alarm message | 17 |
| 4.9 System reset | 18 |
| 5. Possible settings | 19 |
| 5.1 Alarm phone numbers | 19 |
| 5.2 Call on/off | 19 |
| 5.3 SMS on/off | 19 |
| 5.4 Input type | 20 |
| 5.5 Inactive time | 20 |
| 5.6 Alarm delay time | 20 |
| 5.7 Alarm repeat time | 20 |
| 5.8 Set a minimum and/or maximum temperature limit | 21 |
| 5.9 Unit of temperature | 21 |
| 5.10 Temperature calibration | 21 |
| 5.11 Set a threshold value for the battery voltage | 21 |
| 5.12 Power failure message | 22 |
| 5.13 Power failure delay time | 22 |
| 5.14 Automatic arming / disarming | 22 |

| | | |
|-----------|----------------------------------------------------------|-----------|
| 5.15 | Buttonlock | 23 |
| 5.16 | Low power mode | 23 |
| 5.17 | Pulse time output | 23 |
| 5.18 | Output behaviour | 24 |
| 5.19 | Test message | 24 |
| 6. | Programming when using own SIM card | 25 |
| 6.1 | Program mode | 25 |
| 6.2 | Programming the settings by SMS | 26 |
| 6.3 | Program at least one telephone number | 26 |
| 6.4 | Program the settings | 27 |
| 7. | List of SMS commands for programming with own SIM | 28 |
| 7.1 | List of SMS commands | 28 |
| 7.2 | Switching on/off | 31 |
| 7.3 | Confirmation of the alarm message | 31 |
| 7.4 | System reset | 32 |
| 7.5 | SMS reports when using own SIM card | 32 |
| 7.6 | Technical messages | 34 |
| 8. | Status feedback | 35 |

1. GENERAL DESCRIPTION

The Mobeye CombiGuard (also referred to as ShipGuard) is a battery operated monitoring device with GSM module used to send alarm notifications after in various alarm situations.

In order to activate the device, a few steps are to be followed.

First of all you'll have to choose a SIM card to place in the device. You can use the Mobeye SIM card or your own SIM card. The Mobeye SIM card provides access to the Mobeye Internet Portal. In this management environment the device is given additional functions such as online programming, status and history display, more options for forwarding messages and it will monitor test messages (keep alive). In addition, the Mobeye SIM is a cost-effective M2M roaming SIM card that can use multiple providers per country worldwide and offers more security than a provider-bound SIM card.

When using your own SIM card the most important alarm functions such as calling and/or texting after an alarm will also work.

Where the installation steps differ for both modes of use, this is indicated below. The use of the Mobeye Internet Portal with Mobeye SIM card is also referred to as Mobeye SIM/Portal.

2. STANDARD BEHAVIOUR

2.1 MOBEYE COMBIGUARD WITH MOBEYE SIM AND INTERNET PORTAL

The Mobeye CombiGuard, equipped with a Mobeye SIM card and registered on the Mobeye Internet Portal, has the following standard behaviour as factory settings:

- In the situation of a temperature alarm the Mobeye CombiGuard sends an alarm message to the Mobeye Internet Portal and calls the phone numbers programmed in by the user. The Portal forwards the alarm as text message and/or e-mail to the 'alarm contacts', including the measured value. As soon as the temperature gets back to a value inside the range a recovery message is sent.
- When the water leak sensor detects water for more than 30 seconds, the Mobeye WaterGuard sends an alarm message to the Mobeye Internet Portal and calls the phone numbers programmed in by the user. The Portal forwards the alarm as text message and/or e-mail to the 'alarm contacts'. As soon as the water detection has ended a recovery message is sent.
- If a (boat) battery is connected to an analogue input and its voltage is below the set threshold value, the Mobeye ShipGuard sends an alarm message to the Mobeye Internet Portal and calls the phone numbers programmed in by the user. The Portal forwards the alarm as text message and/or e-mail to the 'alarm contacts', including the measured value. As soon as the voltage recovers a recovery message is sent.
- If the second input is activated by a sensor, the Mobeye CombiGuard sends an alarm message to the Mobeye Internet Portal and calls the phone numbers programmed in by the user. The Portal forwards the alarm as text message and/or e-mail to the 'alarm contacts'.
- When the temperature or water sensor is removed, the Mobeye CombiGuard sends a message via the Mobeye Internet Portal.
- When one of the sensor inputs remain in the alarm status, the CombiGuard repeats sending the alarm message via the Mobeye Internet Portal every four hours.
- When an external power supply is used and a power failure occurs, the Mobeye CombiGuard sends a 'power failure' message to Mobeye Internet Portal, to be

forwarded to the 'alarm contacts' and it calls the phone numbers programmed in by the user. When the power is restored, the Mobeye CombiGuard sends a 'power restored' message via the portal.

- The output switches after an incoming SMS command.
- When the batteries need to be replaced, the Mobeye CombiGuard sends a 'low battery' message to the Mobeye Internet Portal. The portal forwards this to the 'service' contacts.
- The unit will send test messages to the portal as communication check (default: every 7 days). If these are not received in time, the portal sends an exception message to the 'service' contacts.

Chapter 5 describes how to influence the standard behaviour.

As described, the Mobeye CombiGuard will, in addition to calling in the event of an alarm, send various messages to the Mobeye Internet Portal. This is done via data traffic where possible. As a fallback, the alarm messages are sent to the portal via SMS. Both methods of communication are included in the flat fee of the SIM card. Messages can be forwarded from the portal to contacts such as SMS and / or free e-mail. If the SMS credits run out, the account holder automatically receives a message to upgrade them online.

2.2 MOBEYE COMBIGUARD WITH OWN SIM CARD

The Mobeye CombiGuard, equipped with your own SIM card, has the following standard behavior as factory settings:

- In the situation of a temperature alarm, the Mobeye CombiGuard sends an alarm SMS text message and calls the phone numbers programmed in by the user. The SMS message contains the text 'Temperature too high' or 'Temperature too low', followed by the measured temperature. As soon as the temperature recovers the numbers will receive an SMS text message containing the text 'Temperature OK'.
- When the water leak sensor detects water, the Mobeye WaterGuard sends an alarm SMS text message and calls the phone numbers programmed in by the user. The SMS message contains the text 'Mobeye Water alarm'. As soon as the water detection ends, the numbers will receive an SMS text message containing the text 'Water level OK'.

- When the temperature or water sensor is removed, the Mobeye CombiGuard sends a warning SMS text message to the administrator (TEL1).
- If a (boat) battery is connected to the analogue input and its voltage is below the set threshold value the Mobeye CombiGuard sends an alarm SMS text message and calls the phone numbers programmed in by the user. The SMS message contains the text 'Input 1 low' followed by the measured value. As soon as the voltage recovers the numbers will receive an SMS text message containing the text 'Input 1 OK' followed by the measured value.
- When the second input is activated by a sensor, the CombiGuard sends an alarm SMS text message and calls the phone numbers programmed in by the user.
- When one of the sensor inputs remain in the alarm status, the CombiGuard repeats sending the SMS alarm message every four hours.
- When the batteries need to be replaced, the Mobeye CombiGuard sends a 'low battery' SMS text message to the first telephone number (administrator).
- When an external power supply is used and a power failure occurs, the Mobeye CombiGuard sends a 'power failure' SMS text message to the set telephone numbers and calls them. When the power is restored, the Mobeye CombiGuard sends a 'power restored' SMS text message.

Chapter 5 describes how to influence the standard behaviour.

3. GETTING STARTED

To get started with the Mobeye CombiGuard, at least the following steps need to be taken in the following order:

1. Insert the SIM card
2. Connect the water sensor (optionally)
3. Connect the temperature sensor (optionally)
4. Connect the boat battery (optionally)
5. Connect a device to the output (optionally)
6. Insert the batteries
7. Connect an external power supply (optionally)
8. Connect a sensor to the additional input (optionally)
9. Programming when using the Mobeye SIM/Portal
 - a. Sign up in the Mobeye Internet Portal
 - b. Activate the SIM card
 - c. Enter the program mode
 - d. Activate the device in the Mobeye Internet Portal
 - e. Program the options and synchronise
10. Programming when using your own SIM card
 - a. Enter the program mode
 - b. Program the settings

Steps 1 to 8 are described in sections 3.1 up to 3.8.

Step 9 is described in chapter 4. Step 10 can be found in chapter 6.

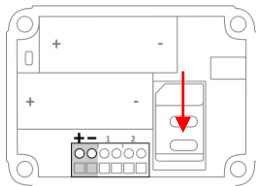
3.1 INSERT THE SIM CARD

Open the enclosure by removing the 4 screws and insert the SIM card into the module. Push the black cover slightly outward to open the holder and close it afterwards.

When using the Mobeye SIM card:

The supplied SIM card has a PIN code protection, which means that it can only be used in the Mobeye device.

Note: do not place it in another device.



When using your own SIM card:

Before installing the SIM card should have PIN code "0000", or PIN code removed. (A PIN code can be changed or removed by putting the SIM card in to any mobile phone and entering the 'security' menu.)

NB: Make sure the SIM card is inserted before the batteries. If you replace a SIM card, first remove the batteries (and remove any other external power supply). The settings are stored in the device memory. The SIM card shall have the "normal" size and be suitable for 2G. It is advised to use an M2M SIM card.

3.2 CONNECT THE WATER SENSOR TO THE LEFT INPUT

Plug the external water sensor into the left socket and press it firmly.

Mount the sensor to a fixed place in vertical position at the height where the presence of water should be detected. If necessary, use a metal strip for attaching the sensor.



In case the sensor should detect the absence of water, the input type needs to be changed to NC (please refer to paragraph 5.9).

3.3 CONNECT THE TEMPERATURE SENSOR TO THE RIGHT INPUT

Plug the external temperature sensor into the right socket and press it firmly.

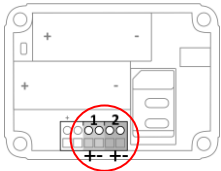


3.4 CONNECT A (BOAT) BATTERY TO THE INPUT

The battery voltage can be measured via input 2. Be aware that the maximum battery voltage should be 48 Volt (peaks up to 60 V).

Connect the wires at the '+' side to the '+' of input 2, the '-' side to the '-' (see picture).

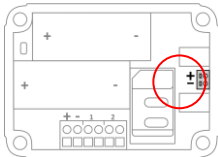
A second battery can be connected to input 1, as long as the input type is set to "AN" (refer to 5.4).



Be aware: connecting the wires wrongly can lead to a defective device!

3.5 CONNECT A DEVICE TO THE OUTPUT

The Mobeye CombiGuard features an open collector output. The output can switch automatically after an alarm or after receiving the SMS text message CODE O1ON and CODE O1OFF (e.g. 1111 O1ON). It is possible to make this switch only during a pulse time, after which it automatically switches back. (see 5.17 and 5.18).



The output provides a maximum current of 200 mA. To switch a heavier device, a relay should be placed behind the output with input current 12 VDC.

The required switching voltage of the relay depends on the device that is connected.

NOTE: The output does function when the Mobeye ShipGuard is battery-operated.

3.6 INSERT THE BATTERIES

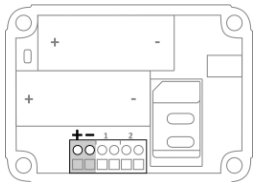
Insert the two batteries (CR123) in the module. Use the +/- indication for the correct placement. If you replace the batteries the settings will not be deleted, since they are stored in the device memory.

3.7 CONNECT AN EXTERNAL POWER SUPPLY (OPTIONALLY)

Although the Mobeye CombiGuard is designed to run on batteries, it is possible to use an external power supply. In this mode the module is always connected with the GSM network and therefore always in program mode. When the power fails, the batteries take over and a power failure alarm message is sent. The module continues operating albeit in the low power mode. This means the GSM module switches off and only establishes network connection when it needs to send an alarm notification, test message or low battery alert.

Connect the external power adapter (or any other regulated 12VDC power supply) to the power input of the connector (press on the green pins to connect the wires):

- V+ (black lead with white stripe) to “+”
- Ground (black lead) to “-“



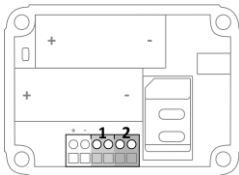
3.8 CONNECT A SENSOR TO THE INPUTS (OPTIONALLY)

Input 1 is available to connect an external (NO/NC) sensor. A triggered input will lead to alarm notifications.

Insert the 2 wires of the external sensor through the hole in the enclosure and insert them in the two connectors of input 1 (press on the green pins for connecting the wires). It does not matter which wire is connected to which connector.

It is possible to connect a second battery to input 1 (see 3.4).

As default input 1 is programmed as Normally Open (NO) contact. This means it is triggered if the input is closed for at least 1 second. In case the contact is Normally Closed (NC) or a battery



(AN), please refer to paragraph 5.4. If you require the sensor to be activated for a shorter or longer period before triggering an alarm, refer to 5.6.

Input 2 can also be set to NO or NC.

4. PROGRAMMING WHEN USING THE MOBEYE SIM AND PORTAL

4.1 SIGN UP IN THE MOBEYE INTERNET PORTAL

Go to www.mymobeye.com and sign up for a new account. Follow the instructions on the screen.



You will receive an e-mail to confirm the new account. After confirmation login on the portal.

If you do not receive this e-mail, please check your spam box or ask Mobeye (info@mobeye.com).

4.2 REGISTER THE MOBEYE SIM CARD

To activate the Mobeye SIM card in the Mobeye Internet Portal, choose 'activate SIM card' on the 'Add Device' screen.



Add Device

Fill in the SIM card number. This is the number written on the plastic SIM card below the barcode. You can take the entire number or only the last 8 digits.



Activate SIM card

The screen leads you through several pop-ups. If asked, choose the device type (search for "CM2600") and select the type of contract ("CM2600 SIM + Portal Monitoring").

At the moment you accept the price and terms, you confirm the subscription. You will receive an invoice for the mentioned amount.

Before activating the device in the Mobeye Internet Portal, first prepare the unit. See next paragraphs to learn how to do this.

4.3 ENTER THE PROGRAM MODE

To activate the unit in the portal, the GSM module needs to be open and connected to the network.

In the situation that the CombiGuard is connected to an external power supply, the unit is always in program mode.

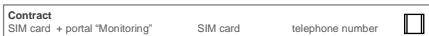
A battery-operated Mobeye CombiGuard switches to the program mode after pressing the on/off button for 5 seconds until the LED starts flashing. Alternatively the batteries are re-inserted.

While searching for the GSM network connection the outside LED flashes green and red, followed by blinking fast shortly. This process normally takes 10-30 seconds. As soon as the network has been established and the program mode has been reached the LED flashes 1 sec. on/1 sec. off (or stays on continuously in case the unit has been configured yet).

During 3 minutes the GSM module remains active, ready to be activated in the portal. In a battery-operated unit a time-out occurs after 3 minutes and the GSM module switches off in order to save the batteries. In this low power mode the LED flashes once per 3 seconds.

4.4 ACTIVATE THE DEVICE IN THE PORTAL

If the LED on the outside flashes once per second, you activate the device in the Mobeye Internet Portal by clicking 'Activate device', which is written behind the registered SIM card.



On the pop-up screen, enter the security code "1111" (factory code). The unit will receive a message from the portal and the data exchange is started. The next screen asks for a name and location for your device. These fields can be changed later.

Once the activation is completed, the new device is visible on the dashboard.



By clicking the name, the detail page will be opened.

4.5 CONFIGURATION AND SYNCHRONISATION

The device settings can be programmed in the Mobeye Internet Portal. In this way you prepare the settings, to be picked up by the device. Since the Mobeye device is leading in the communication between the portal and the device, the data synchronisation is done after:

- 1) any message to the portal (e.g. the regular test message, alarm, low batteries).
- 2) reconnecting power and reinserting batteries.
- 3) pressing the on/off button for 5 seconds.
- 4) in program mode: receiving the SMS command CODE SYNC (e.g. 1111 SYNC).

Once the device exchanges data with the portal, the LED quickly flashes green. A battery-operated unit will first blink red-green until it connects to the network.

4.6 BASICS OF THE MOBEYE INTERNET PORTAL

Dashboard

With multiple devices, the dashboard shows all devices, with the (alarm) messages in the last 24 hours, (missed) test messages and low battery status.

Select a device to go to the details of a specific device.

Status & History

The status block shows values that provide information about the status of the unit.

If the "Synchronized" status is set to "No", there are new settings or alarm numbers that still need to be transferred to the device.

The GSM status shows the network strength at the last communication session. If the value is lower than -95dB, consider another location for the device.

Click on the position icon to see the geographical location during the last report.

Note: this is an indication based on "cell-id".

The history displays all historical events. Click on "all events" to see the overview.

Device Settings


The device settings can be changed via the Mobeye Internet Portal. To do this, click on the "edit" icon and type in the security code (factory setting is "1111"). See chapter 5 for the description per setting.

After saving the new settings, they must be retrieved by the device (synchronized). See 4.5 for more information about synchronizing.

The device data contain the name and location of the device and can be changed here. These texts are mentioned in every text message and e-mail message to indicate the device. A free text is available as an internal comment field. This is not included in reports.

Alarm dispatch

In the block "Contacts for text and e-mail messages" you link the contact persons who receive alarm and service messages via text message and / or e-mail. Service messages can be warnings about missed test messages and low battery voltage.

To add a contact person, first create it as a contact. This can be done via the  or in the main menu under the blue Contacts tab.

in the block "Alarm calls from device" the (max. 5) alarm numbers that are called directly from the unit are set. After saving, the alarm numbers must be retrieved by the device, i.e. synchronized. See 4.5 for more information about synchronizing.

Tips:

- Always insert a contact to receive service messages by e-mail.
- Allow text messages only after the test phase in order to save the SMS credits.

Message texts

The message texts are the event texts which are, in addition to the name and location, included in the SMS text messages and e-mails. These texts can be customized.

4.7 SWITCHING ON/OFF

After the previous steps the Mobeye CombiGuard is ready for use. It is armed (switched on) automatically.

In order to switch off (disarm) the Mobeye CombiGuard:

- Press the on/ off button at the upper side for 1 second. The green LED switches off to indicate the disarmed status.

In the disarmed status the Mobeye CombiGuard will not send alarm notifications. The functions automatic arming, sending test messages and sending a 'low battery' message, are still active.

In order to switch on (arm) the Mobeye CombiGuard:

- Press the on/ off button at the upper side for 1 second. The green LED blinks once every 3 seconds (battery-powered) or stays 'on' continuously (in case of an external power supply).

If powered externally (GSM is open), switching can be done via SMS commands:

| | |
|----------------------------|-------------|
| SMS command to switch on: | CODE ARM |
| SMS command to switch off: | CODE DISARM |
| example: | 1111 ARM |

The status can be requested via SMS command CODE STATUS?.

4.8 CONFIRMATION OF THE ALARM MESSAGE

When the system is triggered it will send alarm notifications. First a message is sent to the portal (and forwarded from there), followed by a phone call. When you pick up the phone, you will hear beeps. It is possible to acknowledge the phone call by answering the phone and pressing any key. The other alarm numbers will not be called afterwards. This works for most telephones.

4.9 SYSTEM RESET

To reset a Mobeye CombiGuard two steps are necessary, in following sequence:

1. Delete the Mobeye CombiGuard from the Mobeye Internet Portal
2. Reset the Mobeye CombiGuard

1. To delete the Mobeye CombiGuard from the Mobeye Internet Portal

Go to "Device Settings" and click on the delete icon in the "Device" block. Then confirm your choice.

2. To reset the Mobeye CombiGuard to its factory settings

1. Remove the batteries (and external power supply).
2. Press the outside button while reinserting the batteries. Keep it pressed for (about) another 5 seconds.
3. Release the button immediately after the LED starts to flash.
4. If relevant, connect the external power supply.

After a successful reset, the status LED will blink green to indicate that the module is not configured. The security code is back to factory settings as well.

The SIM card is now disconnected and is visible on the "Add device" screen. The SIM card can be used again in another (or the same) Mobeye device in combination with the portal.

5. POSSIBLE SETTINGS

The Mobeye CombiGuard has many setting options that influence the behaviour of the module. If connected on the Mobeye Internet Portal, the settings are prepared in the portal (see chapter 4). If your own SIM card is used, programming is done via SMS commands (see chapter 10).

5.1 ALARM PHONE NUMBERS

In the event of an alarm, the Mobeye CombiGuard can call 5 telephone numbers (TEL1... TEL5). It is possible to confirm a call by picking up the telephone and pressing any key. The following numbers will not be called.

When using your own SIM card, it is mandatory to set at least one number (on TEL1). The TEL1 ... TEL5 are then used for telephone calls and / or text messages from the unit.

This is not mandatory when using the Mobeye Internet Portal. If no telephone numbers have been entered, the notifications will only be sent to the portal and forwarded by SMS and / or e-mail from there.

Note: the (unlimited number of) contacts who receive SMS / e-mail may be different from the numbers programmed on TEL1 ... TEL5.

5.2 CALL ON/OFF

Even if the alarm telephone numbers are set in the options, the calling process can be suppressed. By turning off the CALL, the unit will only send the notification via textual messages. The default value is set to "ON".

5.3 SMS ON/OFF

This setting is only relevant when using your own SIM card: the Mobeye CombiGuard alerts after an alarm on the inputs with a call and an SMS. It is possible to turn off the SMS (OFF). As a factory setting, the SMS is set to "ON".

5.4 INPUT TYPE

The input type defines the character of input IN1 and IN2. This can be Normally Open (NO), Normally Closed (NC) or Analogue (AN). If an input is set to "NO", the alarm will be triggered as soon as the terminals of the input are closed. If the input is set to "NC", the alarm is triggered when the connection between the input terminals is broken. With "AN", the input measures the input voltage and alerts if it falls below the set value. The default input type 1 is set to "NO" and input type 2 to "AN".

5.5 INACTIVE TIME

The "inactive time" defines the time an input is not active after an activation. During the inactive time no new alarm message will be sent. Only when the input returned to the non-alarm status, gets activated again and remains active, an alarm will be sent yet after the inactive time. If the time is set to "0" (minutes), the input will be active again immediately after returning to the non-alarm status. The time can be set between 0 and 60 minutes. As default, the inactive time is set to "0".

5.6 ALARM DELAY TIME

The delay time defines the time a sensor input is triggered before an alarm is initiated. If the input returns to the non-alarm status within the delay time, no alarm is sent. The time can be set between 0 and 999 seconds. For input 1 and 2 the delay time is set to "1", for the water sensor to "30". The delay times for the temperature can be set in minutes, factory default is "0".

5.7 ALARM REPEAT TIME

In order to emphasize the urgency of any alarm message, all alarms can be repeated. As long as the temperature or inputs have not returned to the inactive status, the textual messages (no phone calls) will be repeated after the 'alarm repeat time'. A repeated temperature alarm includes the actual temperature. The repeat interval can be set between 0 (no repeat) and 24 hours. As default the alarm repeat time is set to 4 hours.

5.8 SET A MINIMUM AND/OR MAXIMUM TEMPERATURE LIMIT

A separate high and/or low limit for the temperature can be set. The limits can be set between -35 and +70 °C, with one decimal. Negative values are set by a "-" before the value.

5.9 UNIT OF TEMPERATURE

The temperature can be programmed and displayed in degrees Celsius (C) or Fahrenheit (F). As default this unit is set to C.

5.10 TEMPERATURE CALIBRATION

The high quality digital temperature sensor is calibrated in the factory. For special applications it is possible to calibrate the sensor and program a correction. The adjusted temperature will be used in the measurement and reports. Example: the Mobeye CombiGuard measures 13 °C. Actual ambient temperature is measured as 13,5 °C. To adjust this difference, +0,5 degrees shall be programmed.

5.11 SET A THRESHOLD VALUE FOR THE BATTERY VOLTAGE

In order to monitor the battery voltage, the lower limit needs to be programmed. It is advised to set a value where the battery voltage is too low, but the battery itself will not yet get defected (response to an alarm then makes sense). A value between 0 and 48 V can be entered, with one decimal (e.g. 10 or 10,2).

5.12 POWER FAILURE MESSAGE

If the Mobeye CombiGuard is powered externally and the power fails, it is able to make phone calls and/or send textual messages. There are three configuration options: Alert, Alarm, Off.

| | Mobeye SIM/Portal | Own SIM |
|--------------|--------------------------------------------|---------------------------|
| Alert | Message via portal | SMS to TEL1 |
| Alarm | Call to TEL1...TEL5 and message via portal | SMS + call to TEL1...TEL5 |
| Off | No message | No message |

The default setting for the 'power failure message' is set to "ALARM".

5.13 POWER FAILURE DELAY TIME

If the Mobeye CombiGuard is powered externally and the power fails it can notify the contact person(s). The power failure delay time defines the time between the initial power failure and the alarm notification. If the power is restored within the delay time, no alarm is sent. The time can be set between 0 and 999 minutes. As default, the delay time is set to "0".

5.14 AUTOMATIC ARMING / DISARMING

The Mobeye CombiGuard only works if the unit is armed, which is done via the on/off button. It is possible to automatically arm and disarm the unit, based on an arming and/or disarming time scheme. Two schemes can be entered, which can be assigned to the days in the week (e.g. to have a different weekend scheme).

As default the automatic (dis) arming times are valid for all days. It is possible to assign them to only a few days in the week. In this way it is possible to have two different schemes, which are valid on different days.

As value the weekdays can be entered. Monday is 1, Tuesday is 2, etc. If the scheme is valid for several days, the days can be entered in one command (e.g. 12345 means Monday till Friday).

Example: to arm the system only during weekdays, from 6AM to 7PM, set the TIMEARM1 to 06:00, TIMEDISARM1 to 19:00 and DAYS1 to 12345.

(Only) when using your own SIM card, the DATE and TIME must also be set manually. The portal synchronizes this automatically.

5.15 BUTTONLOCK

It can be useful to lock the on/off button to prevent the unit from being switched off unintentionally. As default the buttonlock is unlocked (so, the button is enabled). To disable the button, the buttonlock needs to be switched to "ON".

5.16 LOW POWER MODE

A battery-powered Mobeye CombiGuard has the GSM module switched off in stand-by mode. It only switches on if it has to send a message. An externally powered unit always keeps the GSM module open (as factory default). When using the "low power mode" an externally powered unit will also keep the GSM module closed as much as possible, to minimize the power consumption. To achieve this, the LOWPOWER shall be set to "ON". In the low power mode, the presence of the external power source will still be monitored.

5.17 PULSE TIME OUTPUT

The pulse time (switching time) of the output is adjustable between 1 and 9999 seconds. The pulse time indicates how long the output remains switched after the unit receives the SMS text message CODE O1ON (e.g. 1111 O1ON), before it switches back again. If the switching time is set to 0 seconds, the output will not switch back automatically, but only after receiving the SMS command CODE O1OFF (e.g. 1111 O1OFF). By default, the pulse time is set to "5" seconds.

5.18 OUTPUT BEHAVIOUR

The output can switch automatically -if the unit is externally powered- after an alarm situation (ALARM). With a pulse time of 0, the output remains on as long as one of the sensors (inputs) is in alarm status. For controlling the output via sms command, the output behavior must be set to "SMS". To have the output also switch by calling the unit (from any telephone number), the output behavior must be set to "SMSCALL". The pulse time defines the duration of the switching (see 5.17). By default this value is set to "OFF".

5.19 TEST MESSAGE

When using the Mobeye Internet Portal: The Mobeye CombiGuard can send regular test messages (*keep alive*) to the Mobeye Internet Portal, to ensure the proper functioning of the unit. The message will update the temperature and voltage in the status block. The test message will also be sent if the unit is disarmed. The Mobeye Internet Portal expects the test message and checks the timely receipt. The monitoring of the test messages follows the 'management by exception' rule: only if the message was not received, the 'service' contacts will receive a notification.

The timing of the test message can be programmed. Since new settings (options) will be synchronised after the test message, setting a specific time of the test message can help the process of remote programming. Example: if you force a daily test message at 17.30 hrs, you can prepare new settings and be sure they are loaded into the device before the evening.

The interval between the test messages can be set between 0 days (no message) and 30 days. The default test interval is set to "7" (weekly test message).

When using your own SIM card: The Mobeye CombiGuard can send regular test SMS messages (*keep alive*) to the first phone number (TEL1), to ensure the proper functioning of the unit. It will include the actual temperature. The test message function is only active if the unit is armed. The timing of the test message is determined by the time of programming. The test time can also be programmed. The interval between the test messages can be set between 0 days (no test message) and 30 days. The default test interval is set to "0" (no test message).

6. PROGRAMMING WHEN USING OWN SIM CARD

If your own SIM card is used, programming proceeds via SMS commands. The GSM module requires network connection during programming. If the Mobeye CombiGuard runs entirely on batteries, it must first be put into programming mode.

6.1 PROGRAM MODE

To program the unit with SMS commands, the GSM module needs to be open and connected to the network.

In the situation that the CombiGuard is connected to an external power supply, it has continuous network connection and the unit is permanently in program mode.

A battery-operated Mobeye CombiGuard switches to the program mode after pressing the on/off button for 5 seconds until the LED starts flashing. Alternatively the batteries are re-inserted.

While searching for the GSM network connection the outside LED flashes green and red, followed by blinking fast shortly. This process normally takes 10-30 seconds. As soon as the network has been established and the program mode has been reached the LED flashes 1 sec. on/1 sec. off (or stays on continuously in case the unit has been configured yet).

During 3 minutes the GSM module remains active, ready to receive SMS commands. In a battery-operated unit a time-out occurs if no correct command is received for 3 minutes, the GSM module switches off in order to save the batteries. In this low power mode the LED flashes once per 3 seconds.

6.2 PROGRAMMING THE SETTINGS BY SMS

Using your own SIM card, all settings are programmed in by SMS text messages:

1. Make sure the CombiGuard is in program mode (please refer to 6.1).
2. Send an SMS text message with the (security) code and the command.
3. The green LED blinks 3 times to indicate the successful configuration. In case of an incorrect command, the red LED flashes 5 times.

SMS messages have the following content: **CODE COMMAND:OPTION**

Example: **1111 TEL1:+44772345678**

- CODE stands for the security code, factory setting is 1111.
- Do not forget the space character between (security) code and command.
- The commands are case insensitive.
- Several commands may be combined in one SMS message (with a maximum of 160 characters) by placing a # between the commands.

CODE COMMAND:OPTION#COMMAND:OPTION#COMMAND:OPTION

- All settings are saved and remain saved, even when the unit has no power or the batteries are removed.

In chapter 5 the options are explained.

In chapter 7.1 all possible SMS commands are listed.

6.3 PROGRAM AT LEAST ONE TELEPHONE NUMBER

The Mobeye CombiGuard is able to send messages up to 5 telephone numbers. The first telephone number (TEL1) belongs to the administrator. Technical messages (such as *battery low*) are sent to the administrator only. Without the administrator's phone number, the Mobeye CombiGuard cannot function.

When the CombiGuard is in initial (factory) status and the batteries are inserted (so the LED is flashing), the administrator's number is programmed by calling the telephone number of the Mobeye CombiGuard using the administrator's phone. The

unit will recognize this number and store it as administrator (TEL1). The administrator will receive a confirmation SMS text message including the security code. This code is needed to program the other settings in the unit.

NB: For this way of programming the number recognition in the administrator's phone must be 'on'. To program or change the administrator's number by SMS command, please refer to the next section.

6.4 PROGRAM THE SETTINGS

Various settings ensure correct alarms of the device. Chapter 5 describes the possible settings. The SMS commands that make programming possible are listed in the table in paragraph 7.1.

7. LIST OF SMS COMMANDS FOR PROGRAMMING WITH OWN SIM

7.1 LIST OF SMS COMMANDS

When using your own SIM card, the settings are programmed via SMS commands. See chapter 6 for the programming method and chapter 5 for an explanation per setting. The commands are case insensitive.

| Setting | SMS Command | Options | Default value |
|-----------------------------------------|-----------------------|------------------|---------------|
| Change security code | INSTCODE: | 0000...9999 | 1111 |
| Set telephone number for alarm messages | TEL1: ... TEL5: | | Empty |
| Delete telephone number | DEL1 ... DEL5 | | |
| Identification text | NAME: | 20 characters | Mobeye |
| Call on/off | CALL: | ON, OFF | ON |
| SMS on/off | SMS: | ON, OFF | ON |
| Lower limit temperature | LTL: | -35... 70 (°C) | OFF |
| Upper limit temperature | HTL: | -35... 70 (°C) | OFF |
| Delay temperature sensor | DELAYTEMP: | 0...999 (sec) | 0 |
| Temperature calibration | TOFFSET1: | -5,0... 5,0 (°C) | 0 |
| Unit of temperature | TEMPUNIT: | C, F | C |
| Lower limit voltage input 1 | AN1LOW: | 0...48,0 | Empty |
| Lower limit voltage input 2 | AN2LOW: | 0...48,0 | Empty |
| Input type input 1 | TYPEIN1: | NO, NC, AN | NO |
| Input type input 2 | TYPEIN2: | NO, NC, AN | AN |
| Delay on input 1 | DELAY1: | 0...999 (sec) | 1 |
| Delay on input 2 | DELAY2: | 0...999 (sec) | 1 |
| Delay on water sensor | DELAY3: | 0...999 (sec) | 30 |
| Inactive time input 1 | INACTIVEIN1: | 0...60 (min) | 0 |
| Inactive time input 2 | INACTIVEIN2: | 0...60 (min) | 0 |
| Inactive time water sensor | INACTIVEIN3: | 0...60 (min) | 0 |

| Setting | SMS Command | Options | Default value |
|-------------------------------------|--------------|--------------------------------------|-----------------------|
| Alarm repeat time | REPEAT: | 0...24 (hrs) | 4 |
| Text at too low temperature sensor | TEXT1: | 20 characters | Temperature too low: |
| Text at too high temperature sensor | TEXT2: | 20 characters | Temperature too high: |
| Text temperature restoration | TEXT3: | 20 characters | Temperature OK: |
| Alarm text NO/NC input 1 | TEXT4: | 20 characters | Alarm 1 |
| Alarm text NO/NC input 2 | TEXT5: | 20 characters | Alarm 2 |
| Alarm text AN input 1 | TEXT6: | 20 characters | Input 1 low |
| Text input 1 restoration | TEXT7: | 20 characters | Input 1 OK |
| Alarm text AN input 2 | TEXT8: | 20 characters | Input 2 low |
| Text input 2 restoration | TEXT9: | 20 characters | Input 2 OK |
| Alarm text water alarm | TEXT10: | 20 characters | Water alarm |
| Text water level restore | TEXT11: | 20 characters | Water level OK |
| Alarm text power failure | TEXT12: | 20 characters | Power failure |
| Alarm text power restore | TEXT13: | 20 characters | Power restored |
| Power failure delay time | DELAYPOW: | 0...999 (min) | 0 |
| Power message | POWERMESSAG: | OFF,ALERT,ALARM | ALARM |
| Actual time | TIME: | hhmm | Empty |
| Actual date | DATE: | yyyymmdd | Empty |
| Arming time | TIMEARM1: | hhmm | Empty |
| Disarming time | TIMEDISARM1: | hhmm | Empty |
| 2 nd arming time | TIMEARM2: | hhmm | Empty |
| 2 nd disarming time | TIMEDISARM2: | hhmm | Empty |
| Assigning times 1 | DAYS1: | 1234567 | Empty |
| Assigning times 2 | DAYS2: | 1234567 | Empty |
| Use of on/off button | BUTTONLOCK: | ON (button locked) OFF (unlocked) | OFF |
| Low power status | LOWPOWER: | ON, OFF | OFF |
| Output behaviour | OUTPUT: | OFF, ALARM, | OFF |

| Setting | SMS Command | Options | Default value |
|---------------------|-------------|----------------|---------------|
| | | SMS, SMSCALL | |
| Pulse time output | TO1: | 0...9999 (sec) | 5 |
| Interval 'test SMS' | TEST: | 0...30 (days) | 0 |
| Time test message | TESTTIME: | hhmm | |

Examples:

Set phone number 1: 1111 TEL1:0712345678

Delete phone number 1: 1111 del1

Be aware of the space between "1111" and the command.

7.2 SWITCHING ON/OFF

After the previous steps the Mobeye CombiGuard is ready for use. It is armed (switched on) automatically.

In order to switch off (disarm) the Mobeye CombiGuard:

- Press the on/ off button at the upper side for 1 second. The green LED switches off to indicate the disarmed status.

In the disarmed status the Mobeye CombiGuard will not send alarm notifications. The functions automatic arming and sending a 'low battery' message, are still active.

In order to switch on (arm) the Mobeye CombiGuard:

- Press the on/ off button at the upper side for 1 second. The green LED blinks once every 3 seconds (battery-powered) or stays 'on' continuously (in case of an external power supply).

If powered externally (GSM is open), switching can be done via SMS commands:

| | |
|----------------------------|-------------|
| SMS command to switch on: | CODE ARM |
| SMS command to switch off: | CODE DISARM |
| example: | 1111 ARM |

The status can be requested via SMS command CODE STATUS? (1111 CODE?).

7.3 CONFIRMATION OF THE ALARM MESSAGE

When the system is triggered it will send alarm notifications. First an SMS text message is sent to all programmed alarm numbers, followed by a phone call. When you pick up the phone, you will hear beeps. It is possible to acknowledge the phone call by answering the phone and pressing any key. The other alarm numbers will not be called afterwards. This works for most telephones.

By switching off the SMS function the system will only call. This prevents the other numbers being notified by SMS.

7.4 SYSTEM RESET

To reset the Mobeye CombiGuard to its factory settings:

1. Remove the batteries (and external power supply).
2. Press the outside button while reinserting the batteries. Keep it pressed for (about) another 5 seconds.
3. Release the button immediately after the LED starts to flash.
4. If relevant, connect the external power supply.

After a successful reset, the status LED on the keypad will blink green to indicate that the module is not configured. The security code is back to factory settings as well.

7.5 SMS REPORTS WHEN USING OWN SIM CARD

Several lists and status reports can be retrieved by sending an SMS text message to the Mobeye CombiGuard, from any telephone number. Before sending the request, make sure the unit is in the program mode (please refer to 6.1).

Upon sending the command, the Mobeye CombiGuard returns an SMS text message to the originator of the request. The commands are case insensitive.

ACTUAL TEMPERATURE

The actual temperature values as measured by the Mobeye CombiGuard can be requested by sending an SMS text message with the content (without code):

?

STATUS REQUEST

The status can be requested by sending following SMS text message. The status includes the armed/disarmed status, status of the inputs, power and batteries.

SMS command status request:

example:

STATUS?

1111 STATUS?

LIST OF SETTINGS

The settings can be requested by sending following SMS text message:

| | |
|-------------------------------------|--------------|
| SMS command list basic settings: | SET? |
| SMS command list advanced settings: | SETA? |
| SMS command list of texts: | TEXT? |
| example: | 1111 SET? |

LIST OF PHONE NUMBERS

The list of telephone numbers can be requested by sending following SMS text message:

| | |
|------------------------------------|--------------|
| SMS command list of phone numbers: | CALL? |
| example: | 1111 CALL? |

GSM SIGNAL STRENGTH

The signal strength of the used mobile network can be requested. If the network is weak, it is advised to use a SIM card of another network provider or an external GSM antenna (a Mobeye accessory). The GSM signal strength can be requested by sending following SMS text message:

| | |
|---------------------------------|-----------------|
| SMS command request GSM signal: | NETWORK? |
| example: | 1111 NETWORK? |

7.6 TECHNICAL MESSAGES

In the event of technical issues the administrator receives an SMS message. Possible technical messages are:

| Message | Reason |
|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Low batteries, external power supply OK | Power is available, batteries need to be replaced. |
| No external power supply, batteries OK | No external power supply, batteries are able to take over operation in low power mode. |
| Low batteries, no external power supply | No external power supply, batteries need to be replaced. |
| External power supply OK, batteries OK | The external power is restored (or the adapter is plugged in a socket), batteries do not need to be replaced. |
| (delayed message) | If (delayed message) is added to the SMS text messages, the message couldn't be sent earlier, due to a SIM card failure or GSM network failure. |
| Batteries too low. Module shutting down. | The module has shut down due to low voltage. Replace the batteries or connect the power supply to restart the unit. |
| Module restarted. Power supply [status]. Batteries [status]. | The module has been able to restart after a shutdown. |

When receiving one of the above mentioned technical messages, please take appropriate action as soon as possible. During the battery replacement, the SIM card does not have to be removed.

8. STATUS FEEDBACK

| LED pattern | Status | Required action |
|--------------------------------------------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Blinking green, 1 second on / 1 second off | Module not configured | Configure at least one telephone number. |
| 1 green flash every 3 seconds | Module is switched on, powered by batteries | No action required. |
| Green LED stays on continuously | Module is switched on, powered by an external source | No action required. |
| Flashing red/ green every second | Module establishes network connection | Wait until the network connection is established. |
| 2 flashes red, every 3 seconds | No GSM connection | Try the SIM card in any mobile telephone; replace SIM card using other telecom provider; try the module at another location. |
| 3 flashes red, every 3 seconds | No valid SIM card or wrong PIN | Try the SIM card in any mobile telephone; remove PIN code; check credit; replace SIM card. |
| Blinking 3 times green | Successful programming action | No action required. |
| Blinking 5 times red | Faulty programming action | Check SMS command. |
| 4 red flashes every 3 seconds | Low batteries | Replace both batteries. |

Technical specifications

| | |
|-------------------------------|----------------------------------------------------------------------------------------------------------------|
| GSM | : Quad band EGSM, 850/900/1800/1900 MHz |
| Batteries | : 2* CR123 (lithium) recommended: Varta, Panasonic and Energizer (please do not use Duracell or Philips) |
| Battery life in normal mode | : > 1 year (battery operated) |
| | : > 3 years (external power supply) |
| Ext. power connection | : 12 VDC (+/- 2 VDC) / min. 500 mA (optional) |
| Power consumption low power | : ca. 50 μ A stand-by / max. ca. 500 mA |
| Power consumption 12V | : ca. 50 mA stand-by / max. ca. 500 mA |
| Dimensions | : 80 x 60 x 40 mm |
| Ambient temperature base unit | : -10 °C until +50 °C |
| Temperature sensor head | : -35 °C until +70 °C |
| Max. voltage on inputs | : 48 V with short peaks up to 60 V |

This manual is published by Mobeye®.

All rights, the translation included are reserved. Any reproduction, either photocopy, microfilm or saved in an automated data dictionary, only after written approval of the Publisher. Reprinting, even in summary, is prohibited. This user manual meets the technical requirements at the moment of printing. Changes in technology and equipment are reserved.

© Copyright 2019 by Mobeye, version CM2600C-EN191111



Declaration of Conformity

Herewith we, Mobeye, declare that the

Mobeye CM21 telemetry module

And the derived products

CM2000, CM2100, CM2200, CM2300, CM2300-FS, CM2410, CM2500, CM2600,
CML2015, CML2025, CML2055, CML2255, CML2275, CML2285, CMVXL-R

are in compliance with the essential requirements of the following European standards / EU Directives:

Directive 73/23/EEC (low voltage directive)

Directive IEC/EN 50130 (Electromagnetic compatibility)

Directive 2014/53/EU (RED)

The conformity with the essential requirements set out in Art.3 of the 2014/53/EU has been demonstrated against the following harmonized standards:

EN 60950-1: 2006 + A11 : 2009 + A1: 2010 + A12: 2011 - A2: 2013
EN 62311 :2008
EN 301 489-1 V2.1.1, Draft EN 301 489-52 V1.1.0
EN 301 511 V12.5.1

Mobeye
Poeldonkweg 5
5216 JX 's-Hertogenbosch
The Netherlands

Name: Jack van de Vijver
Position: General Manager
Signature: 

Date: 12 July 2017



