ProCOM GSM ADAPTER

INSTALLATION AND APPLICATION MANUAL

For module version v1.00.0091 and up

Document version: 1.51 12.08.2013

Table of Contents

1 Basic functions of the ProCOM GSM Adapter

The main function of the ProCOM GSM ADAPTER is to adapt to GSM network alarm systems which are capable to communicate in Contact ID format to a monitoring station through PSTN, as well as reporting through the GSM network the state of its inputs controllable by external contacts.
The adapter makes possible the installation of alarm systems in places where landline (PSTN) is not available, but reporting to a monitoring station is required.
By means of GSM transmission, the adapter improves the reliability of alarm reporting in cases when the wired alarm transmission does not work or fails (e.g. when the phone lines are tampered or the telephone service is suspended due to technical reasons).

1.1 Functions and services

- Management of 2 independent SIM cards
- Reception of incoming calls, possibility for restriction
- Installable behind phone exchange center
- Management of different prefix numbers for PSTN and GSM calls
- Forwards incoming SMS messages to 2 phone numbers
- Converts alarm report codes to SMS messages
- Stores the last 1000 events in the event list
- Supports voice dialers
- 4 onboard contact inputs and optional 24 input expansion module
- Reports the state of 4+24 inputs to monitoring station, over voice call and SMS
- 9 recordable voice messages and a siren tone for alarm transmission
- 4 configurable relay outputs, controllable by events or by user
- Backup battery management
- On-board tamper protection

1.2 ProCOM GSM module general operation

In case of using two SIM cards, the module will treat both cards as equal. Upon initialization, the module will primarily use the card inserted into the SIM1 slot to connect to the GSM network. If unsuccessful, it switches to the card inserted into the SIM2 slot.
By default, if there is a PSTN line connected, the signals of the connected alarm control panel will be forwarded through PSTN. In case of PSTN failure the module switches to GSM reporting mode.
If the GSM and PSTN lines are both unavailable, the module will keep sending a busy signal on the simulated phone line until connection is re-established on one of the communication channels.
The module reports the events set in "*Custom events*" and "*Incoming CID events*" sections only through GSM.

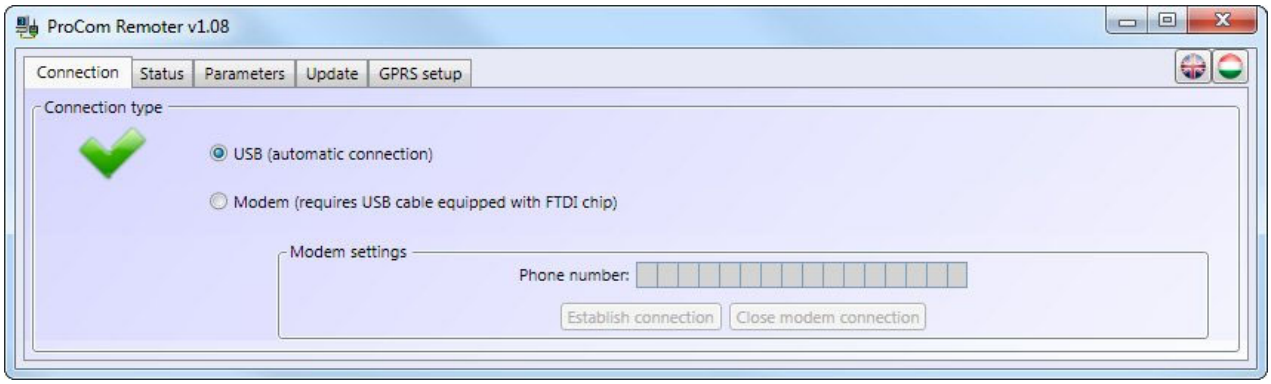
2 Programming the ProCOM

The **ProCOM GSM Adapter**'s parameters can be set using the programming software found on the enclosed CD, either by connecting it with a PC through USB port directly, or with a GSM modem remotely.

The programming software of ProCom GSM and ProCOM GPRS modules is the same. The software validates and displays the functions and setting possibilities for the given module type when you connect the given module to the software.

For remote connection a GSM modem (TELL GT64 is recommended) and a USB / RS232 adapter equipped with FTDI chip are necessary which can be purchased separately.

2.1 Configuring through USB connection



- Start the "**ProCOM_Remoter**" programming software
- Select the "USB" option on the "**Connection**" page
- Connect the module to the PC using USB cable
- The programming software recognizes the connected device automatically
- The software asks for the module's password, in case it is not set to default (1111)
- A green tick indicates when the connection is established
- Perform the desired settings, the following chapters will give a detailed description on the different functions of the ProCOM
- When finished, disconnect the module from USB

2.2 Configuring through modem connection

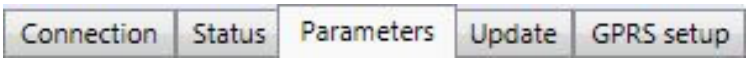
For remote connection, a GSM modem (TELL GT64 is recommended) and a USB/RS232 adapter equipped with FTDI chip are necessary. GSM data call (CSD) service must be activated on the SIM card inserted in the modem and on the one inserted in the module.

Steps for establishing modem connection:

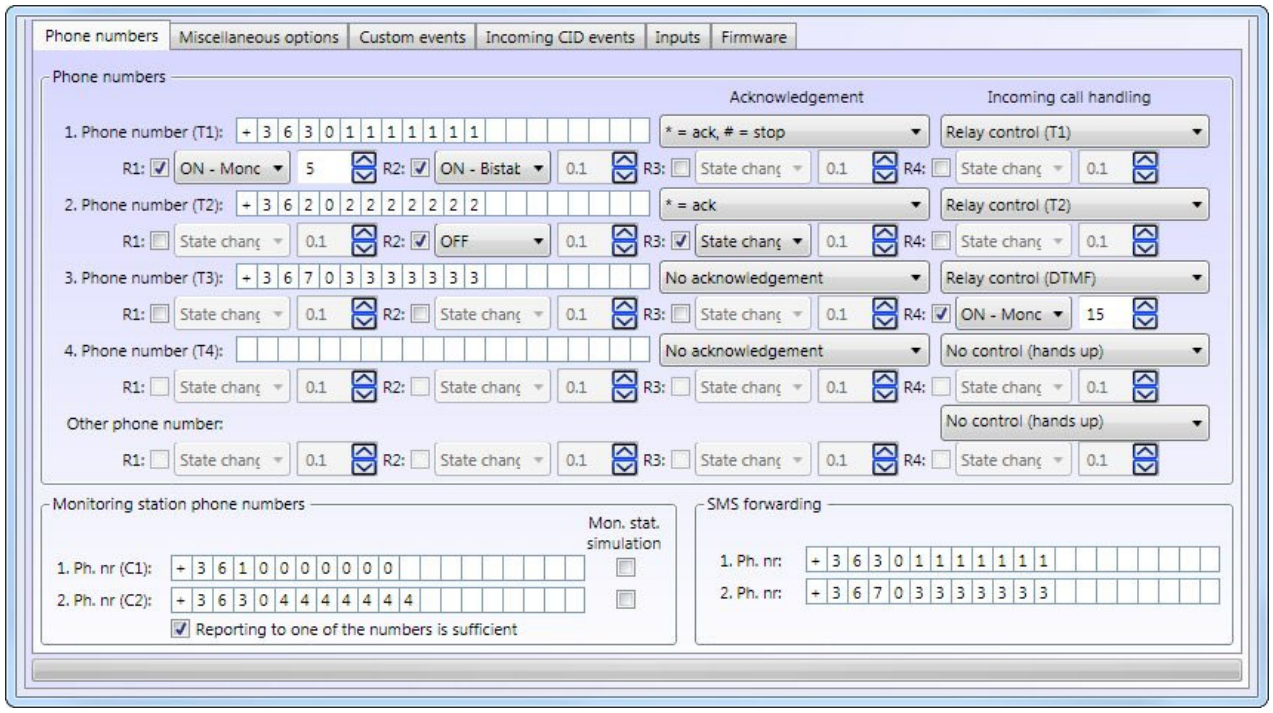
- Start the "**ProCOM_Remoter**" programming software
- Select the "Modem" option on the "**Connection**" page
- Power up the GSM modem, then connect it to the PC with a USB/RS232 cable equipped with FTDI chip
- The programming software automatically recognizes the connected device
- Enter the ProCOM module's phone number in the "Phone number" field using the country code as well
- Start dialing by pressing "**Establish connection**" button
- The software asks for the module's password, if it is not set to default (1111)
- A green tick indicates when the connection is successfully established
- Perform the desired settings, the following chapters will give a detailed description on the different functions of the ProCOM
- When finished, close the connection by pressing "**Close modem connection**" button

2.3 Parameter settings

To set parameters, select the "**Parameters**" page. The different parameters of the ProCOM are divided into several subpages.



2.3.1 Phone numbers



On the "**Phone numbers**" page the user and monitoring station phone numbers can be set. The phone numbers must be entered using the international format, with country code.

- **Phone number (T1-T4):** enter the user phone numbers here, to which reporting is required in case an event occurs (according to event settings), or from which the ProCOM should accept commands.
- **Other phone number:** it can be configured the same way as for the user phone numbers, how the ProCOM should handle incoming calls from phone numbers other than T1-T4 user phone numbers.
- **Acknowledgement:** three acknowledgement methods are available:
  - **No acknowledgement:** event acknowledgement is not required.
  - **∗ = ack:** events have to be acknowledged by pressing the phone's ∗ key
  - **∗ = ack, # = stop:** events have to be acknowledged by pressing the phone's ∗ key, furthermore by pressing the **#** key the actual event's alarm calls to the other user phone numbers can be cancelled, while also acknowledging the event. **By dialing ∗*9password*# when an alarm call is received, all events waiting to be reported are stopped (e.g. in case the password is default: ∗91111#)**

If acknowledgement request is set, the module will continuously recall the given phone number within the alarm time frame (10 minutes) until it is acknowledged.

- **Incoming call handling:** there are four different ways to handle incoming calls. These functions require caller ID (phone number) sending service enabled on the user's phone, and caller ID display service enabled on the SIM card inserted in the module:
  - **No control (hangs up):** the module rejects calls from the specific phone number
  - **Relay control (T1-T4):** the module rejects calls from the specific phone number, but executes the set relay control proto0col (with free call by phone number identification).
  - **Relay control (DTMF):** the module receives the call from the specific phone number, thereby relay control can be executed using the phone's keys.
    The controlled relay will execute the task set with the programming software.
    Relay ON commands: relay 1.: **∗01** , relay 2.: **∗02** , relay 3.: **∗03** , relay 4.: **∗04**
    Relay OFF commands: relay 1.: **#01** , relay 2.: **#02** , relay 3.: **#03** , relay 4.: **#04**
  - **Ringing:** the module will switch incoming calls from the specific phone number to the phone connected to the module's output, which will ring, and voice communication is possible by accepting the call.

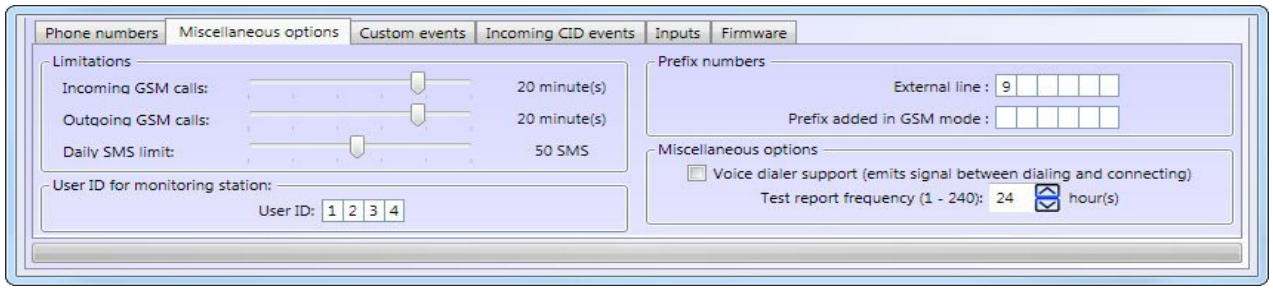
- **R1-R4:** the different relay control tasks can be set here that are triggered by incoming calls from specific phone numbers. This function is available when one of the "**Relay control (T1-T4 /DTMF)**" call handling options is selected. First, enable the relay output's checkbox you want to control, then select the desired option:
  - **State change:** as the result of the incoming call, the relay output changes its state (if it was active, it turns to inactive, if it was inactive, it turns to active state)
  - **ON – Monostable:** as the result of the incoming call, the relay output becomes active for the duration set in the timing field, then reverts back to inactive state. The duration can be set between 0.1 – 600 seconds
  - **ON – Bistable:** the incoming call activates the relay output indefinitely (the relay output stays active until a relay output off or state change control command arrives)
  - **OFF:** as the result of the incoming call, the relay output becomes inactive

- **Monitoring station phone numbers (C1-C2):** two phone numbers can be set for reporting events to monitoring stations
  - **Reporting to one of the numbers is sufficient:** if this option is enabled, then in case the module reports successfully to one the phone numbers set here, it will not start reporting to the other one. Otherwise, the module will continuously try to report until it successfully reports to both phone numbers or the alarm duration expires.
    Important! In case only one of the options of "**Mon. st. 1 2**" is enabled on the "**Custom events**" page, the module will report only to the enabled phone number, even if the "**Reporting to one of the numbers is sufficient**" option is not set.
  - **Mon. stat. simulation:** if enabled, and the alarm control panel dials the phone number entered here, the module gives out the handshake signal, receives the alarm panel's events, then performs the reports and/or activates the outputs assigned to the events added on "**Incoming CID events**" page. Use this function if reporting to monitoring station is not requested, but reporting to user phone numbers and/or output activation is necessary.

- **SMS forwarding (1-2):** the module forwards incoming SMS messages to the phone numbers set here, which is useful for receiving SIM card balance information messages, etc. (if left blank, the module will delete all incoming SMS messages).
  Important! Never set the phone number of the inserted SIM card here, because the module's first received SMS will start an infinite loop of SMS messages sent to itself, which will result in significant costs!

2.3.2 Miscellaneous options

On “**Miscellaneous options**” page, you can configure incoming and outgoing GSM call limitations, daily SMS limit, monitoring station user ID, the prefix numbers, voice dialer support and periodic test report frequency.



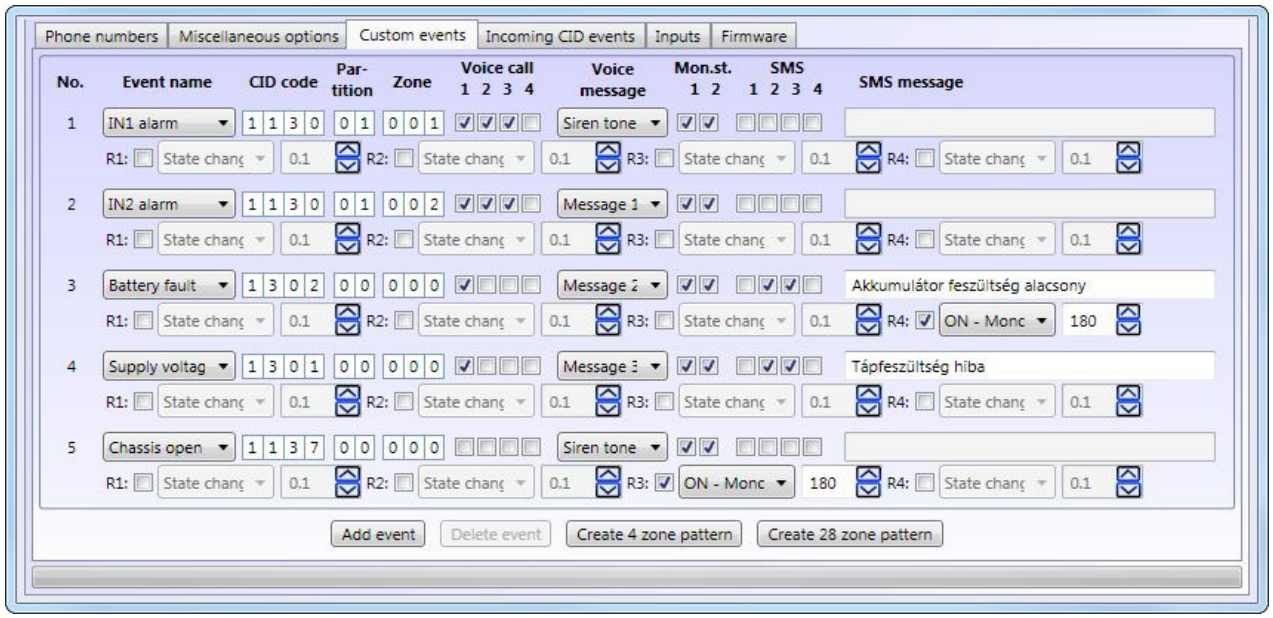
- **Limitations:**
  - **Incoming GSM calls:** you can set the maximum length of incoming GSM calls between 1 and 25 minutes using the slider. The module hangs up automatically when the set time expires. You can also set the length to “**Unlimited**” if you do not want the module to limit incoming call durations.
  - **Outgoing GSM calls:** you can set the maximum length of outgoing GSM calls between 1 and 25 minutes using the slider. The module hangs up automatically when the set time expires. You can also set the length to “**Unlimited**” if you do not want the module to limit outgoing call durations.
  - **Daily SMS limit:** you can set the maximum number of SMS messages the module can send in a 24 hour long period. If the number of SMS messages sent exceeds this limit, the module will not send any more SMS messages until the 24 hour duration expires, including alarm messages and forwarded SMS messages. You can also set the number to “**Unlimited**” if you do not want the module to limit the number of outgoing SMS messages.

- **User ID for monitoring station:** you can specify here the user ID necessary for Contact-ID reporting to monitoring stations (4 digit long, containing the following characters only: 0…9,A,B,C,D,E,F). For your user ID, please contact your monitoring station.

- **Prefix numbers:**
  - **External line:** if the module’s PSTN line input is connected to a telephone exchange center and it requires a prefix number (for example: 9) to obtain the main line, then this required prefix number has to be set here. The module will remove this number when calling through GSM, will add it only for calls made on the PSTN line.
  - **Prefix added in GSM mode:** If you set a prefix here, the module will add it for calls made in GSM mode. For example, if the connected alarm panel dials a local phone number without prefix (e.g. 999999) the module will attach the prefix set here that is required for calls initiated on GSM (e.g. +3652, thereby the called number will be: +3652999999).

- **Miscellaneous options:**
  - **Voice dialer support:** a common characteristic of voice dialers is that if a specific time passes after dialing, and they do not sense any ring tone on the line, they automatically start playing the recorded voice message. By enabling voice dialer support, the module will simulate a ring tone for the voice dialer until the true ring tone emerges on the line. This option is used to avoid situations when the voice dialer starts playing the message before the receiver actually accepts the call.
  - **Test report frequency:** The module's periodic test report sending frequency can be set between 1 and 240 hours. The module will not send test reports if the test report event is not added and configured on the "**Custom events**" page.

2.3.3 Custom events



On the "**Custom events**" page you can configure the module's own, custom events. For every custom event, you can set to which phone numbers and in what way should the event be reported, and which relay output(s) should be activated in case the event occurs.
You can create a new custom event by clicking on the "**Add event**" button. To create a full 4 or 28 zone event pattern, click on the "**Create 4 zone pattern**" or "**Create 28 zone pattern**" button.
You can delete a custom event by first selecting it, then clicking on the "**Delete event**" button. You can select and event by clicking on its index number on the left side.
The maximum possible number of "custom events" together with the "incoming CID events" is 100.

The module's alarm duration (event lifetime) is 10 minutes for every event. The alarm duration is separate for all occurred custom and incoming Contact ID generated events, which means that the module will try to report all such events for 10 minutes separately on the preset communication channels.
Important! In case the module fails to report the specific event within its 10 minute interval, the module will stop the reporting procedure for that event and will not continue to send any notification about it.

The different columns on the "**Custom events**" page mean the following:

- **No.:** the index number of the event in the list
- **Event name:** you can select the desired event from the drop-down list that is ordered by event category names

  Event categories and events:

  - **Alarms:**
    IN1…IN4 alarm: alarm events generated when the module's IN1…IN4 inputs activate
    XIN1…XIN24 alarm: alarm events generated when the expansion panel's IN1…IN24 inputs activate
  - **Restores:**
    IN1…IN4 restore: restore event generated when the module's IN1…IN4 inputs restore
    XIN1…XIN24 restore: restore event generated when the expansion panel's IN1…IN24 inputs restore
  - **Sabotage:**
    Chassis open: sabotage event generated when the module's chassis is opened. The module's chassis is continuously monitored by an integrated optical sensor
    Chassis closed: restore event generated when the module's chassis is closed back
  - **Battery:**
    Battery fault: this event is generated when the battery's voltage level goes outside the following ranges: 11–14V, 22–28V
    Battery restore: battery restore event is generated when the battery's voltage level returns into the ranges mentioned above
  - **Supply voltage:**
    Supply voltage fault: this event is generated when the supply voltage level goes outside the following ranges for at least 6.5 minutes: 13.5–14.5V, 27–29V
    Supply voltage restore: supply voltage restore event is generated when the supply voltage level returns into the ranges mentioned above
  - **GSM:**
    GSM error: this event is generated when the ProCOM fails to initialize the GSM module. This can be caused by several different things: GSM network is not available, the module does not recognize the SIM card (no SIM card is inserted, or contact error), or the GSM module is malfunctioning.
    GSM restore: GSM restore event is generated when the system successfully initializes and restores online after an unsuccessful GSM module initialization
  - **PSTN:**
    PSTN error: this event is generated when the voltage level of the PSTN line connected to the PSTN terminals goes outside the range of 5–75V for at least 30 seconds
    PSTN restore: PSTN restore event is generated when the voltage level of the PSTN line connected to the PSTN terminals returns into the range mentioned above
  - **Test event:**
    Test event: if the test event is added and configured as a custom event, it will be sent periodically at the set time interval under "Test report frequency" on the "Miscellaneous options" page.

- **CID code:** the event's 4 digit Contact-ID code, where the first digit represents either a new event ("1") or event restore ("3"), while the other 3 digits are the event code itself, which can be found in the Contact ID code table.

- **Partition:** the partition's number, in which the event occurs (01…99)

- **Zone:** the zone's number, in which the event occurs (001…999)

When a new event row or pattern is created, the software automatically offers the default Contact-ID codes for the events. The default setting puts the base panel's IN1…IN4 inputs' zones 1.-4. in the 1. partition, while the expansion panel's XIN1…XIN24 inputs' zones 1.-24. in the 2. partition. In case the default setting is not suitable for your application, any parameter of the full Contact-ID code can be freely customized.

- **Voice call 1…4:** by enabling checkboxes 1…4, you can select which user phone numbers (1…4) should be notified through GSM voice call when the specific event occurs.

- **Voice message:** from the drop down list you can select which user recorded message ("**Message 1…9**") or the default "**Siren tone**" shall be played when the specific event occurs and the enabled user phone number is called. For details on how to record a voice message, please see chapter "**Record voice messages**".

- **Mon. st. 1…2:** by enabling checkboxes 1…2, you can select which monitoring station phone numbers should be notified through reserve GSM call in Contact-ID format when the specific event occurs.
  Important! If the "**Reporting to one of the numbers is sufficient**" option is enabled on the "**Phone numbers**" page, the module will send report to only one of the numbers (the first it successfully reports to), even if both checkboxes are enabled under the "**Mon. st. 1 2**" option.

- **SMS 1…4:** by enabling checkboxes 1…4, you can set to which user phone numbers the module shall send an SMS notification of the specific event.

- **SMS message:** the customizable SMS text message that will be sent to the selected user phone numbers (1…4) when the specific event occurs. The maximum possible length of the text is 80 characters.

- **R1-R4:** the different relay controls for all 4 relays can be set here that shall be executed when the specific event occurs. To control a relay output, enable the corresponding R1-R4 checkbox and select the desired option:
  - **State change:** as the result of the event, the relay output changes its state (if it was active, it turns to inactive, if it was inactive, it turns to active state)
  - **ON – Monostable:** as the result of the event, the relay output becomes active for the duration set in the timing field, then reverts back to inactive state. The duration can be set between 0.1 – 600 seconds
  - **ON – Bistable:** the event activates the relay output indefinitely (the relay output stays active until a relay output off or state change control command arrives)
  - **OFF:** as the result of the event, the relay output becomes inactive

2.3.4 Incoming CID events

On the "**Incoming CID events**" page, you can set whether the module shall send customizable SMS messages and/or voice calls, and/or control the relay outputs according to the settings, as a result of the event codes arriving from the alarm control panel and forwarded to the monitoring station through GSM or PSTN line. These SMS messages and voice calls are sent to the selected user phone numbers (Contact-ID based SMS and/or voice message generation and reporting).
If you do not want to forward the alarm panel's signals to a monitoring station, you still have the option to forward the events received from the alarm control panel as GSM voice calls and/or SMS messages, or control the relay outputs. For this, set in the alarm panel **123456789** as the monitoring station's phone number, or set the phone number dialed by the alarm panel at "**Monitoring station phone numbers**" section on "**Phone numbers**" page and enable "**Mon. stat. simulation**" option for this number. The alarm panel will dial this number when it has to send an event. The module will recognize this number and will simulate a monitoring station receiver, gives out the handshake signal, acknowledges and receives the Contact-ID signals, then forwards them as GSM voice call and/or SMS and/or activates the specific outputs according to the settings.
Important! In case an event of the same type is received while the module is already reporting an event of such type, the new event will not be reported, the module will not report multiple instances of the same event type. As a new event comes in during a relay is being activated by the same type of incoming event, the new event will reactivate the given relay(s) according to the settings.

You can create a new event row by clicking on the "**Add CID event**" button. You can delete an existing CID event by first selecting it, then clicking on the "**Delete CID event**" button. You can select and event by clicking on its index number on the left side.
The maximum possible number of "custom events" together with the "incoming CID events" is 100.

The module's alarm duration (event lifetime) is 10 minutes for every event. The alarm duration is separate for all occurred custom and incoming Contact ID generated events, which means that the module will try to report all such events for 10 minutes on the preset communication channels. In case the module fails to report the specific event within its 10 minute interval, the module will stop the reporting procedure and will not continue to send any notification about it.

The different columns on the "**Incoming CID events**" page mean the following:

- **No.:** the index number of the event in the list
- **CID code:** the event's 4 digit Contact-ID code, where the first digit represents either a new event ("1") or an event restore ("3"), while the other 3 digits are the event code itself, which can be found in the Contact ID code table.
- **Partition:** the partition's number, in which the event occurs (01…99)
- **Zone:** the zone's number, in which the event occurs (001…999)

In the default setting, the Contact-ID code is filled with star ∗ characters, which means that for any incoming Contact-ID event the module will generate a voice call and/or SMS and sends it to the selected user phone numbers, and/or will activate the selected relay(s), according to the setting.

Event filtering is possible by setting specific event code/partition/zone parameters.
(For example: In case of the following setting "CID code: *1130* , Partition: *01 ,* Zone: *004*, SMS: 1,2 enabled, SMS text: *Alarm in Zone 4 – living room*" the module will send this SMS message to user phone numbers 1 and 2 if the Contact-ID code received from the alarm control panel is identical with the set parameters, meaning that a burglar alarm happens in partition 1 in zone 4).

It is also possible to define event groups using the star ∗ character. The star ∗ character behaves as a joker character and substitutes any number on the specific digit of the event code, partition or zone number. (For example: for event codes, the 13∗∗ represents all event codes that start with 13).

- **Voice call 1…4:** by enabling checkboxes 1…4, you can select which user phone numbers (1…4) should be notified through GSM voice call when the specific event occurs.

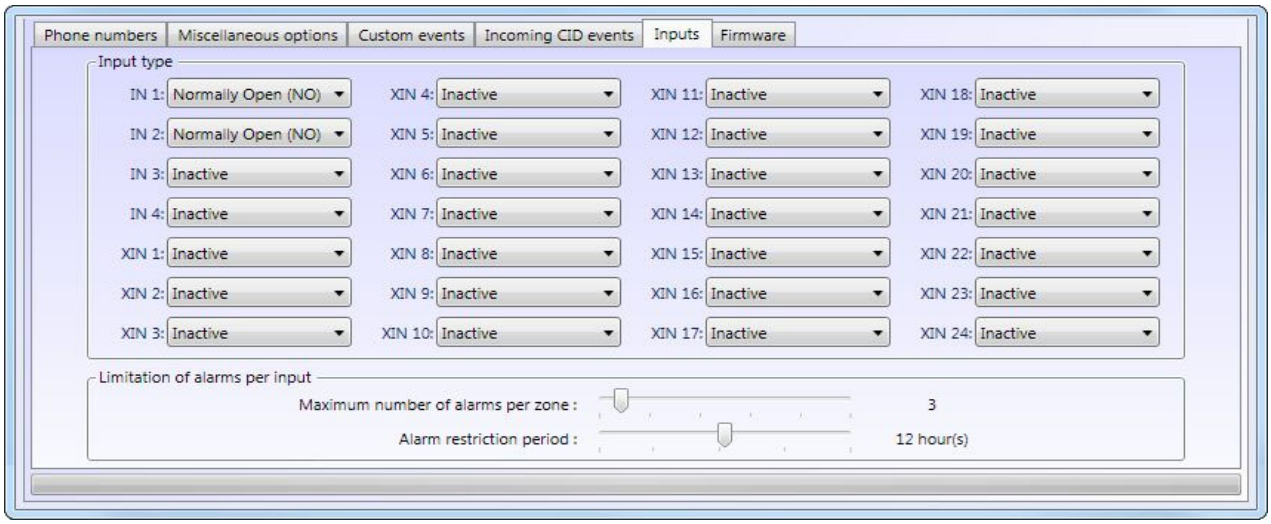
- **Voice message:** from the drop down list you can select which user recorded message ("**Message 1…9**") or the default "**Siren tone**" shall be played when the specific event occurs and the enabled user phone number is called. For details on how to record a voice message, please see chapter "**Record voice messages**".

- **SMS 1…4:** by enabling checkboxes 1…4, you can set to which user phone numbers the module shall send an SMS notification of the specific event.

- **SMS message:** the customizable SMS text message that will be sent to the selected user phone numbers (1…4) when the specific event occurs. The maximum possible length of the text is 80 characters.

- **R1-R4:** the different relay controls for all 4 relays can be set here that shall be executed when the specific event occurs. To control a relay output, enable the corresponding R1-R4 checkbox and select the desired option:
    - **State change:** as the result of the event, the relay output changes its state (if it was active, it turns to inactive, if it was inactive, it turns to active state)
    - **ON – Monostable:** as the result of the event, the relay output becomes active for the duration set in the timing field, then reverts back to inactive state. The duration can be set between 0.1 – 600 seconds
    - **ON – Bistable:** the event activates the relay output indefinitely (the relay output stays active until a relay output off or state change control command arrives)
    - **OFF:** as the result of the event, the relay output becomes inactive

2.3.5 Inputs



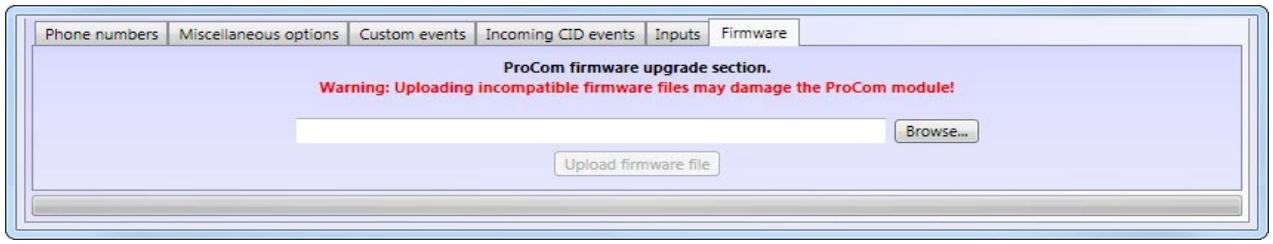
The module's and the zone expansion panel's inputs and alarm restrictions can be configured on the "**Inputs**" page.

IN1…IN4: the module's 4 contact inputs
XIN1…XIN24: the expansion panel's 24 contact inputs

- **Input type:** three different options can be selected from the drop down list separately for each input:
  - **Inactive:** the input is not in use, the module does not monitor the specific input
  - **Normally open (NO):** the input is normally open, closing the specific input to the COM common terminal will generate a new event, while opening it will generate a restore
  - **Normally closed (NC):** the input is normally closed, which means that the specific input is originally closed to the COM common point, opening it will generate a new event, while closing back generates a restore

- **Limitation of alarms per input:**
  - **Maximum number of alarms per zone**: using the slider, you can set the maximum number of alarms the module shall process. This is a global setting which affects all inputs. With this you can avoid that a faulty sensor continuously generates alarm signals that the module processes. After the restriction period expires, the specific input is enabled again, meaning that it can generate alarms, but again only up to the maximum number set in this option. If you select the "**Unlimited**" option (right side of the slider), the module will not limit the number of signals generated by the inputs.
  - **Alarm restriction period**: you can define between 1 and 24 hours for how long the module shall ignore signals from inputs that have already reached the maximum number of alarm signals set under the "**Maximum number of alarms per zone**" option. When the duration set here expires, the alarm counter is automatically reset and the specific zone becomes enabled again.

2.3.6 Firmware



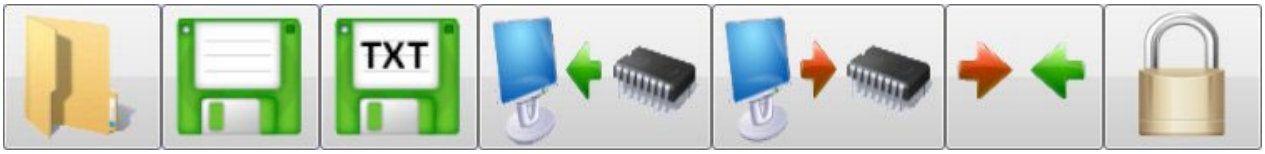
The module's software can be updated on the "**Firmware**" page, if it is reasonable and necessary. The firmware (the module's software) defines the module's operation and functions. Uploading inappropriate or defective firmware to the ProCOM module will result in malfunction and damages the module!

Steps for updating the firmware:

- power up the ProCOM module
- establish connection between the programming software and the ProCOM module
- select the appropriate firmware file after clicking on the "**Browse…**" button
- click on the "**Upload firmware file**" button to start the upload
- the progress bar at the bottom shows the upload procedure's current progress
- after the upload is finished, the module will automatically restart, after which you can upload the necessary settings and verify the correct functioning

2.4 Settings management

You can easily manage and archive your settings using the seven buttons found on the upper section of the "**Parameters**" page.

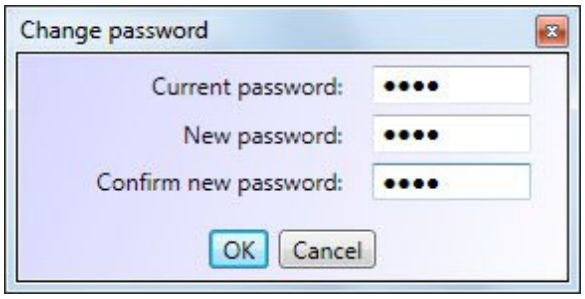


The functions of the seven buttons from left to right: **Read parameters from file**, **Save parameters to file**, **Save parameters to file in printable format**, **Read parameters from module**, **Upload parameters to module, Compare parameters with the module** and **Change module password**.

After you finished configuring the settings, upload them to the module using the upload button. The upload/download progress is shown on the progress bar found at the bottom of the software window. The new settings are activated only after the upload has successfully finished.

2.5 Changing the module password

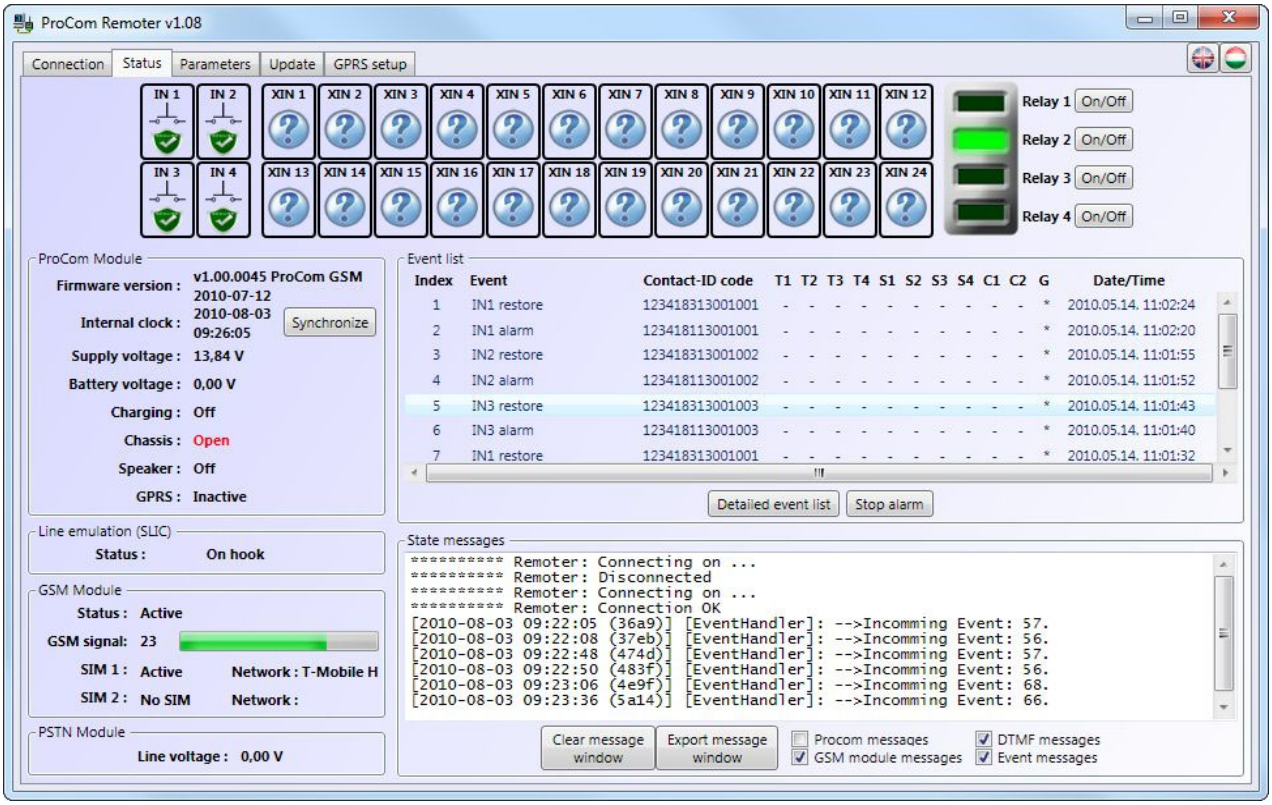
To change the module password, first click on the "lock"  button, then fill in the text fields and click on the **OK** button. In case you forgot the password, you cannot change it, therefore you have to reset the module to its default state, which will also reset the password to the default 1111. On how to reset the module to default, please see chapter "*Pushbutton*".



Warning! In case you reset the module to its default state, all previously set parameters also revert back to their default, which means that the module's settings are erased.

2.6 Module status monitoring

The ProCOM module's actual status (PSTN line, inputs, relay outputs, GSM line and signal strength, voltage levels, event list and module messages) is shown on the "**Status**" page.



Input status icons:

Icon	Meaning
	Input not configured – not in use
	The input is in normal state
	The input is in active state – alarm
	Normally open (NO) – normal state
	Closed contact – normally open input activated
	Normally closed (NC) – normal state
	Open contact – normally closed input activated

Elements and available functions on the software window:

- **Inputs:**
  - **IN 1…IN 4:** displays the state of the main panel's 4 inputs
  - **XIN 1…XIN 24:** displays the state of the expansion panel's 24 inputs
- **Relay outputs:**
  - **Relay1…Relay4:** displays the state of the main panel's 4 relay outputs. Active relays are indicated by a green light.
  - **"On/Off" button:** the On/Off buttons are used to activate/deactivate the selected relay output while the module and the software are connected.
- **ProCOM module window:**
  - **Firmware version:** the connected module's firmware version and date
  - **Internal clock:** the connected module's internal clock
  - **"Synchronize" button:** this button is used to synchronize the connected module's internal clock with the computer's clock
  - **Supply voltage:** the input supply voltage level of the module
  - **Battery voltage:** the voltage level of the battery connected to the module
  - **Charging:** **Yes**: the battery is currently charging
    No: the battery is not charging or no battery is connected
  - **Chassis:** **Open/Closed**: shows the current state signaled by the optical sabotage sensor
  - **Speaker:** **On/Off:** shows the state of the built-in speaker
- **Line emulation (SLIC) window:**
  - **Status:** shows the state of the simulated GSM line:

    On hook/Off hook: the state of the line

    Line error (voltage): the module is unable to set the line voltage because the line is overloaded (short circuit on the line)

    Line error (no answer): hardware error

    Line error (DC): the line generator is unable to set the supply voltage, which can be caused by low voltage levels on the module's input or the supply current is too low for proper operation

    Line error (current): the current is too high on the line

    Unknown: other unknown error has occurred on the line
- **GSM module window:**
  - **Status:** displays the GSM module's state:
    Registration in progress: registering on the GSM network is currently in progress
    Active: the GSM module is registered on the network and is ready
    Inactive: the GSM module failed to register on the GSM network
  - **GSM signal:** displays the current GSM signal strength on a scale of 0-31
  - **SIM1-2:** displays whether a SIM card is present in the specific SIM socket, and which SIM card is currently active
  - **Network:** displays the currently active SIM card's network (GSM service provider)
- **PSTN module window:**
  - **Line voltage:** displays the voltage level of the phone line connected to the PSTN input

- **Event list window:**

The event list shows the module's events, ordered by their time of occurrence. The list is automatically refreshed every second.

- **Index:** the index number of the event
- **Event:** the name of the event
- **Contact-ID code:** the 16 digit long Contact-ID code of the event
- **T1 … T4:** reporting through voice call to user phone numbers 1…4
- **S1 … S4:** reporting in SMS to user phone numbers 1…4
- **C1 … C2:** reporting to monitoring station phone numbers 1…2
- **Date/Time:** the date and time of the event's occurrence

- **The different signs and meanings of columns C1-C2 and G:**

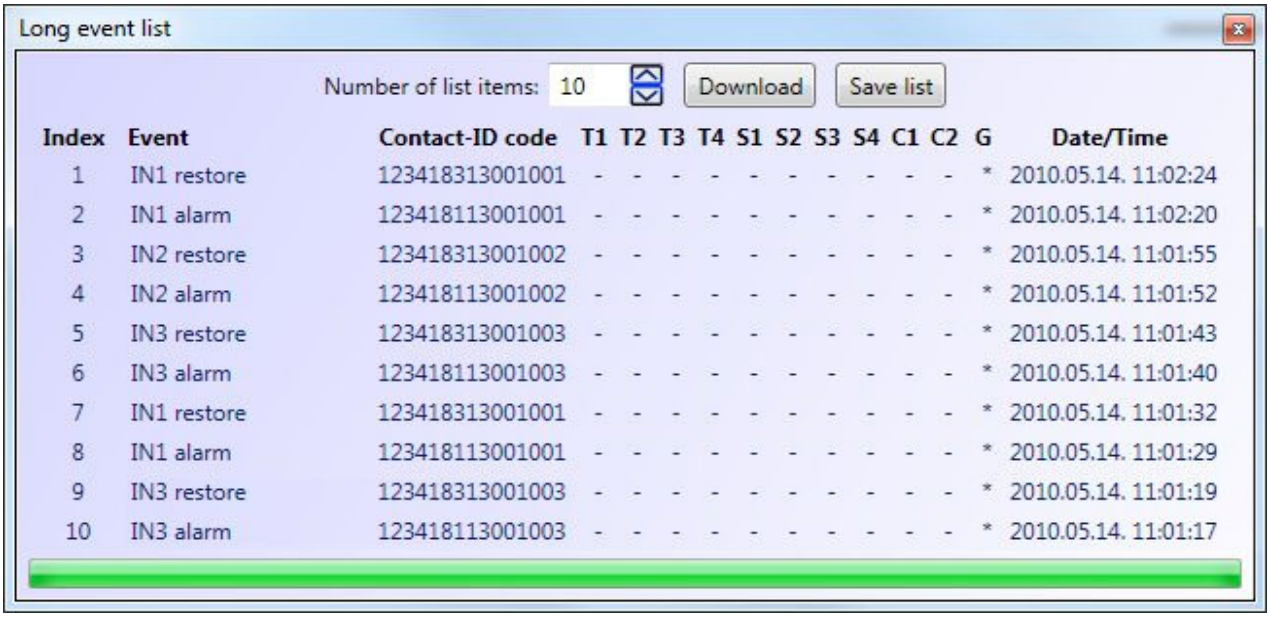
- **?** - event processing/reporting is currently in progress
- ***** - reporting successful
- **R** - reporting already successful through another way, therefore it is unnecessary to send notification here
- **!** - reporting was unsuccessful
- **S** - alarm has been stopped, it is unnecessary to send notification here
- **T** - time limit expired, reporting was unsuccessful within the alarm duration interval

- **State messages window:**

The module's latest messages with timestamps are displayed here.
These messages can be filtered by selecting the appropriate checkboxes of "**Procom messages**", "**GSM module messages**", "**DTMF messages**" and "**Event messages**".
The message window's content can be exported to file by clicking on the "**Export message window**" button, or cleared by clicking on the "**Clear message window**" button.

2.6.1 Downloading the event list

To download the detailed event list, click on the "**Detailed event list**" button found on the "**Status**" page. The module stores the last 1000 events in memory.



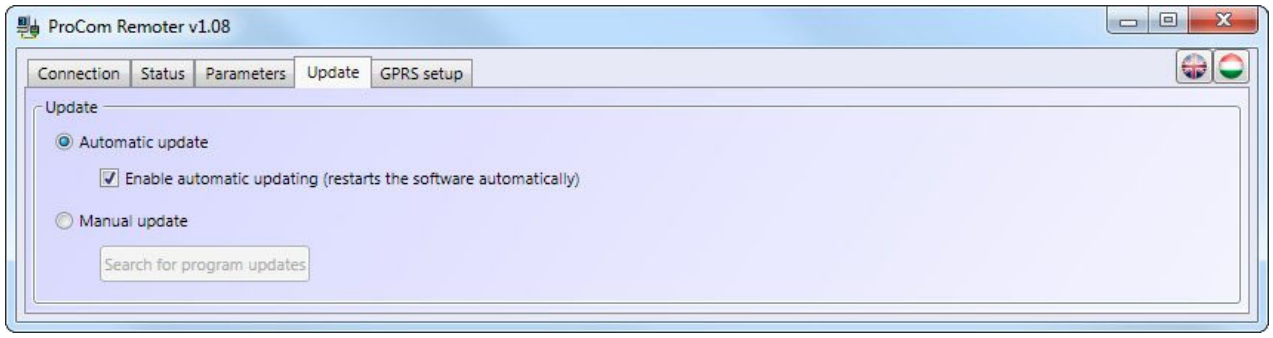
Index	Event	Contact-ID code	T1	T2	T3	T4	S1	S2	S3	S4	C1	C2	G	Date/Time
1	IN1 restore	123418313001001	-	-	-	-	-	-	-	-	-	-	*	2010.05.14. 11:02:24
2	IN1 alarm	123418113001001	-	-	-	-	-	-	-	-	-	-	*	2010.05.14. 11:02:20
3	IN2 restore	123418313001002	-	-	-	-	-	-	-	-	-	-	*	2010.05.14. 11:01:55
4	IN2 alarm	123418113001002	-	-	-	-	-	-	-	-	-	-	*	2010.05.14. 11:01:52
5	IN3 restore	123418313001003	-	-	-	-	-	-	-	-	-	-	*	2010.05.14. 11:01:43
6	IN3 alarm	123418113001003	-	-	-	-	-	-	-	-	-	-	*	2010.05.14. 11:01:40
7	IN1 restore	123418313001001	-	-	-	-	-	-	-	-	-	-	*	2010.05.14. 11:01:32
8	IN1 alarm	123418113001001	-	-	-	-	-	-	-	-	-	-	*	2010.05.14. 11:01:29
9	IN3 restore	123418313001003	-	-	-	-	-	-	-	-	-	-	*	2010.05.14. 11:01:19
10	IN3 alarm	123418113001003	-	-	-	-	-	-	-	-	-	-	*	2010.05.14. 11:01:17

- **Number of event list items**: the number of events the software will display in the list, starting from the most recent event

- **Download**: the event list downloading can be started with this button
- **Save list**: the list content can be saved to an Excel file with this button
- **Event list columns**:
  - **Index:** the index number of the event
  - **Event:** the name of the event
  - **Contact-ID code:** the 16 digit long Contact-ID code of the event
  - **T1 … T4:** reporting through voice call to user phone numbers 1…4
  - **S1 … S4:** reporting in SMS to user phone numbers 1…4
  - **C1 … C2:** reporting to monitoring station phone numbers 1…2
  - **Date/Time:** the date and time of the event's occurrence

- **The different signs and meanings of columns C1-C2 and G:**
  - **?** - event processing/reporting is currently in progress
  - ***** - reporting successful
  - **R** - reporting already successful through another way, therefore it is unnecessary to send notification here
  - **!** - reporting was unsuccessful
  - **S** - alarm has been stopped, it is unnecessary to send notification here
  - **T** - time limit expired, reporting was unsuccessful within the alarm duration interval

2.7 Updating the software



On the "***Update***" page, you can specify how the programming software should be updated.
Update: if automatic update is selected, the software will check for updates every 20 minutes. In case of manual mode, the software will check for updates when the "***Search for program updates***" button is clicked.
Enable automatic updating: if this option is enabled, the software will automatically download updates without user intervention, then automatically restarts itself upon a successful download. If not enabled, the software will ask for confirmation before it starts the software update procedure.
Search for program updates: by clicking this button, the software starts the update procedure.

2.8 Record voice messages

The ProCOM module is capable of storing 9 separate (maximum 5 seconds long each) voice messages, and play them back during GSM voice call notifications as configured.

You can record voice messages using a telephone device.
To record or play back a voice message, connect the telephone device to the module's "**LINE**" input, then pick up the receiver and dial 000000000 (9 zeros). The module will send a 1 second long beep through the telephone, after which you can issue commands using the phone's keys as following:

Command	Operation
∗01	Start recording voice message no. 1.
∗02	Start recording voice message no. 2.
∗03	Start recording voice message no. 3.
∗04	Start recording voice message no. 4.
∗05	Start recording voice message no. 5.
∗06	Start recording voice message no. 6.
∗07	Start recording voice message no. 7.
∗08	Start recording voice message no. 8.
∗09	Start recording voice message no. 9.
#01	Play back voice message no. 1.
#02	Play back voice message no. 2.
#03	Play back voice message no. 3.
#04	Play back voice message no. 4.
#05	Play back voice message no. 5.
#06	Play back voice message no. 6.
#07	Play back voice message no. 7.
#08	Play back voice message no. 8.
#09	Play back voice message no. 9.

After issuing a command, the start of the voice recording is indicated by a short beep. After this you can say the message to be recorded. For the sake of good quality, say your message loud and near the receiver.

When the recording or playback is finished, a long beep will indicate that the module is ready to accept the next command. The module automatically quits voice recording mode if the caller hangs up or an error occurs on the line.

2.9 Relay control and sabotage monitoring deactivation with SMS messages

It is possible to control the module's outputs and deactivate sabotage monitoring by sending the appropriate command in SMS to the module's phone number as following:

SMS command	Operation
∗**R1=ON, PWD=**yyyy**, CRQ#**	**Relay1 ON (bistable mode)** If required, substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R2=ON, PWD=**yyyy**, CRQ#**	**Relay2 ON (bistable mode)** If required, substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R3=ON, PWD=**yyyy**, CRQ#**	**Relay3 ON (bistable mode)** If required, substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R4=ON, PWD=**yyyy**, CRQ#**	**Relay4 ON (bistable mode)** If required, substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R1=OFF, PWD=**yyyy**, CRQ#**	**Relay1 OFF** If required, substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R2=OFF, PWD=**yyyy**, CRQ#**	**Relay2 OFF** If required, substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R3=OFF, PWD=**yyyy**, CRQ#**	**Relay3 OFF** If required, substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R4=OFF, PWD=**yyyy**, CRQ#**	**Relay4 OFF** If required, substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R1=ON**x**, PWD=**yyyy**, CRQ#**	**Relay1 ON for "x" (1-254) seconds (monostable mode)** Substitute "x" with the desired time duration "x" can be between 1 – 254 seconds If required, substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R2=ON**x**, PWD=**yyyy**, CRQ#**	**Relay2 ON for "x" (1-254) seconds (monostable mode)** Substitute "x" with the desired time duration "x" can be between 1 – 254 seconds If required, substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R3=ON**x**, PWD=**yyyy**, CRQ#**	**Relay3 ON for "x" (1-254) seconds (monostable mode)** Substitute "x" with the desired time duration "x" can be between 1 – 254 seconds If required, substitute "yyyy" with the module password, see explanation at the table's bottom

∗**R4=ON**x**, PWD=**yyyy**, CRQ#**	**Relay4 ON for "x" (1-254) seconds (monostable mode)** Substitute "x" with the desired time duration "x" can be between 1 – 254 seconds If required, substitute "yyyy" with the module password, see explanation at the table's bottom
∗**TAMPEROFF=**z**, PWD=**yyyy**, CRQ#**	**Sabotage monitoring OFF (for 1-60 minutes)** Substitute "z" with the desired time duration "z" can be between 1 – 60 minutes If required, substitute "yyyy" with the module password, see explanation at the table's bottom

yyyy = module password (default: 1111, optional parameter, necessary only from those phone numbers which are not configured in the module, because these are considered unauthorized by default, thereby they have to be authenticated by this password). The module will reject all SMS commands arriving from unauthorized phone numbers if they do not contain the module password.

CRQ = request answer SMS from the module about task completion (optional parameter, necessary only when an answer SMS from the module about task completion is required).
All commands must start with a star "**∗**" character, and end with a hashmark "**#**" character. Multiple commands can be issued in one SMS, but the maximum length is 160 characters total. If the SMS exceeds 160 characters, the module will process the first 160 characters only.

- **SMS answers from the module (in case the CRQ parameter is used):**

Example:

Rel1 ON = Relay1 turned ON
Rel2 OFF = Relay2 turned OFF

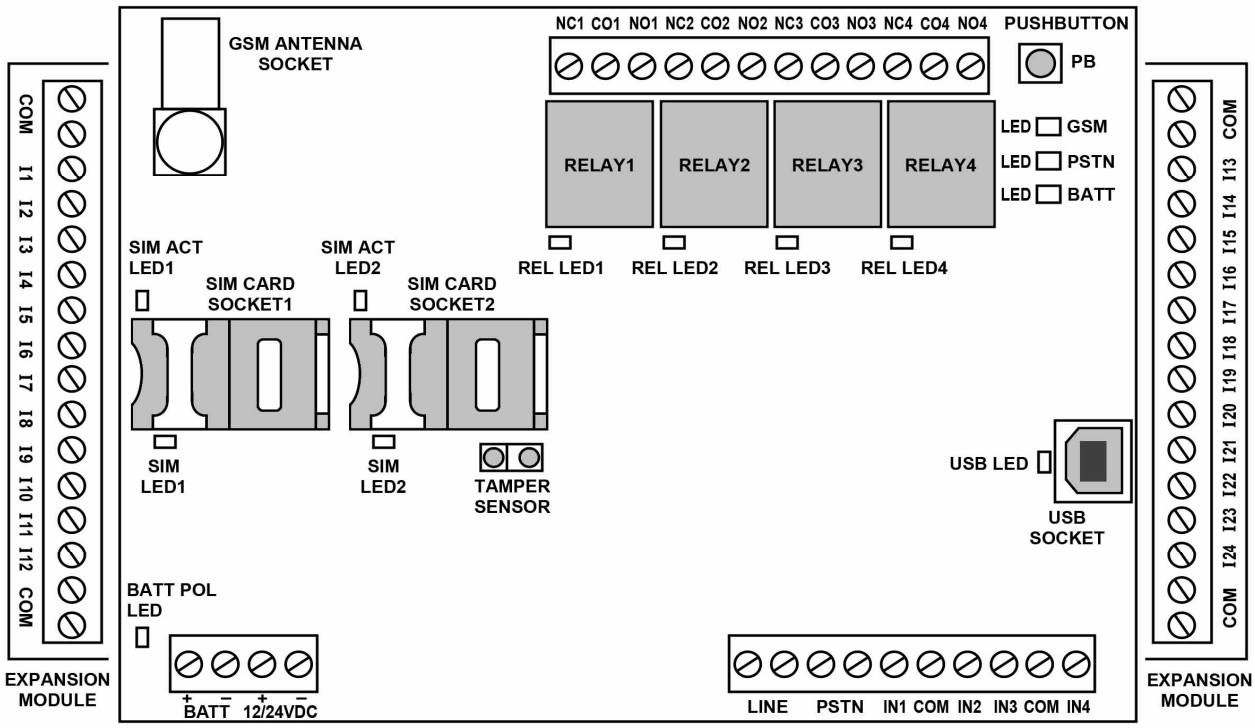
- **Examples for SMS commands:**
  - **Activating Relay1 indefinitely (bistable mode):**
    - In case the command is sent from a phone number set in the module as a user phone number, and no SMS answer is required, the SMS command looks as the following:
      ∗R1=ON#
    - In case the command is sent from a phone number set in the module as a user phone number, and SMS answer is required, the SMS command looks as the following:
      ∗R1=ON, CRQ#
    - In case the command is sent from a phone number not set in the module as a user phone number, the module password becomes necessary, and the SMS command looks as the following:
      ∗R1=ON, PWD=1111# (in case the module password is 1111)
    - In case the command is sent from a phone number not set in the module as a user phone number, and SMS answer is required, the SMS command looks as the following:
      ∗R1=ON, PWD=1111, CRQ# (in case the module password is 1111)

- **Turning off sabotage monitoring for 20 minutes:**

  - In case the command is sent from a phone number set in the module as a user phone number, and no SMS answer is required, the SMS command looks as the following:
    ∗TAMPEROFF=20#
  - In case the command is sent from a phone number set in the module as a user phone number, and SMS answer is required, the SMS command looks as the following:
    ∗TAMPEROFF=20, PWD=1111, CRQ# (in case the module password is 1111)

3 The ProCOM module peripherals

3.1 Panel overview



3.2 SIM card slot

There are two SIM card slots on the panel (SIM1 and SIM2). You can insert the SIM card(s) here. The two SIM slots are functionally equal. SIM cards required for the ProCOM to function can be acquired at any GSM service provider. **The ProCOM accepts all network providers' SIM cards.**

3.3 Pushbutton

The pushbutton's (marked as "**PB**" on the panel) functions:

- **GSM signal strength display**
  Push the button for a short time (<1 sec) and the module's GSM LED (green) indicates by flashing the current GSM signal strength, according to a 10-point scale.

- **Speaker ON/OFF**
  Keep the button pressed continuously for at least 2, but maximum 5 seconds then release it to turn on the module's speaker, which is used for diagnostic tasks (to hear the current communication on the line). The speaker stays on for 3 minutes, then turns off automatically.

- **Switch to GSM**
  Keep the button pressed continuously for at least 5 seconds, then release it in order to make the module switch to simulated GSM line for at least 30 seconds, regardless of the PSTN line's state. It automatically reverts back to normal line management after the time period expires. This state is indicated by the alternating flashes of the GSM LED (green) and PSTN LED (red).

- **Reset (restore default settings)**
  Remove all SIM cards from their sockets. Keep the button pressed continuously for at least 5 seconds, then release. This state is indicated by the GSM LED's alternating red and green flashes. Push both concealed buttons of the SIM slots (SIM card sensor switches) simultaneously to reset the default settings and restart the module.

3.4 Tamper protection

The ProCOM module is equipped with optical approach-sensor tamper protection. The optical sensor is integrated on the panel, next to the SIM2 card slot. It's operation is based on light-reflection, it senses the surface in front of the panel (for example the door of the metal box). It generates a tamper event when the surface is removed, and a restore event when replaced.

For proper operation, the surface in front of the panel should be light colored and matte. In case the module is installed into a box that's surface in front of the panel is dark colored or shiny, reflective, then stick a white paper or decal on the surface opposite to the panel. By default (when the box is closed) the distance between the panel and the surface in front of it should not exceed 50mm. Any greater space can cause improper functioning of the optical sensor, which may result in fake alarms.

If you do not want to use the tamper protection function, you can disregard the instructions mentioned above.

3.5 USB connector

The USB connector on the panel is used to establish direct USB connection between the ProCOM module and a computer through a USB cable. With this, you can easily connect the module to the programming software found on the product's install CD.
To establish connection, a USB A-B cable is required.

3.6 Antenna connection

The GSM antenna can be connected to the FME (spike) connector slot. The antenna found in the product package assures good transmission in normal environments. In case of signal strength problems and/or wave interferences (fading) use another antenna with better gain, or find a more favorable place for the module.

3.7 LED signals

GSM LED 	**Continuous red:** the GSM module cannot be initialized. The reason can be that the module does not sense a SIM card in the slot, or some other hardware error has arisen. **Slow flashing red:** the GSM module is initializing. **Fast flashing red:** the GSM module has initialized, registering on the GSM network is currently in progress. **Continuous green:** the GSM module has registered on the GSM network, and is ready for use. **Flashing green:** a call is currently in progress on the GSM module, or it is displaying the actual signal strength after the pushbutton has been released. **Alternately flashing red and green:** the pushbutton was pushed for more than 5 seconds and the module is ready for reverting back to default settings (reset).
PSTN LED 	**Continuous red:** no PSTN line, or currently inaccessible. **Continuous green:** PSTN line present, and ready. **Flashing green:** off hook detected on the PSTN line. **Alternately flashing red and green:** the pushbutton was pressed for long, therefore a simulated GSM line has been activated on the LINE connector, regardless of the PSTN line's state.
BATT LED 	**Continuous red:** the supply or battery voltage is low. **Flashing red:** the supply voltage is low, but the battery voltage is sufficient, thereby the module is working from battery. **Continuous green:** the supply and battery voltages are sufficient. **Flashing green:** the supply voltage is sufficient, but the battery voltage is low and the battery is currently charging
SIM LED1-2	Active when a SIM card is inserted into the specific slot.
SIM ACT LED1-2	The active led represents the SIM card currently used by the module. If the led is flashing, the GSM module is searching for a usable SIM card.
REL LED1-4	Active when the specific relay is in activated state.
BATT POL LED	Active when the battery has been connected improperly to the module (switched polarity). The LED is continuously on while this state is active.
USB LED	Active when the module is connected to a PC through USB cable.

3.8 Module wiring

Attention! The module requires a 12V battery for 12V power supply, and a 24V battery for 24V power supply! The charge controller automatically recognizes the connected battery type and adjusts the necessary charging voltage level. Battery charging turns on automatically if the battery voltage drops below 13V (respectively 26V).
Due to security reasons, the charge controller does not enable charging when:

- **In case of a 12V battery, its voltage is under 10V or over 14V**
- **In case of a 24V battery, its voltage is under 20V or over 28V**

Connectors of the ProCOM panel	
BATT+	External battery connector, positive polarity: 12/24VDC
BATT-	External battery connector, negative polarity
12/24VDC+	Power supply positive polarity: 13.5V – 14V DC; 27V – 28V DC
12/24VDC-	Power supply negative polarity
LINE	Simulated line output from the GSM network (should be connected to the alarm control panel's RING-TIP inputs)
PSTN	PSTN line input
IN1…IN4	1…4 contact inputs
COM	1…4 common point of the contact inputs
NC1…NC4	1…4 normally closed relay outputs (opens on activation)
CO1…CO4	1…4 common points of the relay contacts
NO1…NO4	1…4 normally open relay outputs (closes on activation)

Connectors of the ProCOM expansion panel	
I1…I24	1…24 contact inputs
COM	1…24 common point of the contact inputs

- **Contact (zone) inputs:** the contact shall be interpreted as a simple short circuit NO/NC type.

  Contact inputs on the terminal connector:

  1. input: IN1
  2. input: IN2
  3. input: IN3
  4. input: IN4

- **Relay output:** potential independent closing and opening relay contact outputs, the maximum load capacity is 5A/12VDC per relay.

  Contact outputs on the terminal connector:

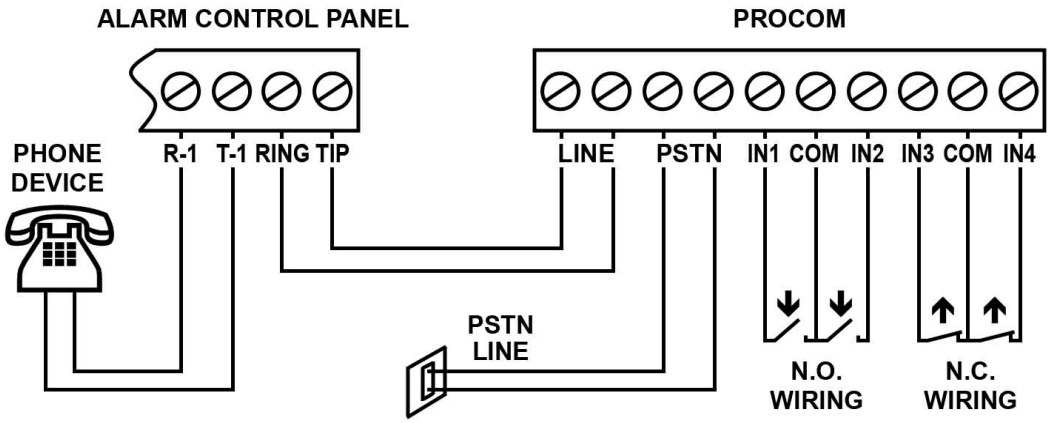
  Relay1: NC1, CO1, NO1
  Relay2: NC2, CO2, NO2
  Relay3: NC3, CO3, NO3
  Relay4: NC4, CO4, NO4

- **Extension module contact (zone) inputs:** the contact shall be interpreted as a simple short circuit NO/NC type.

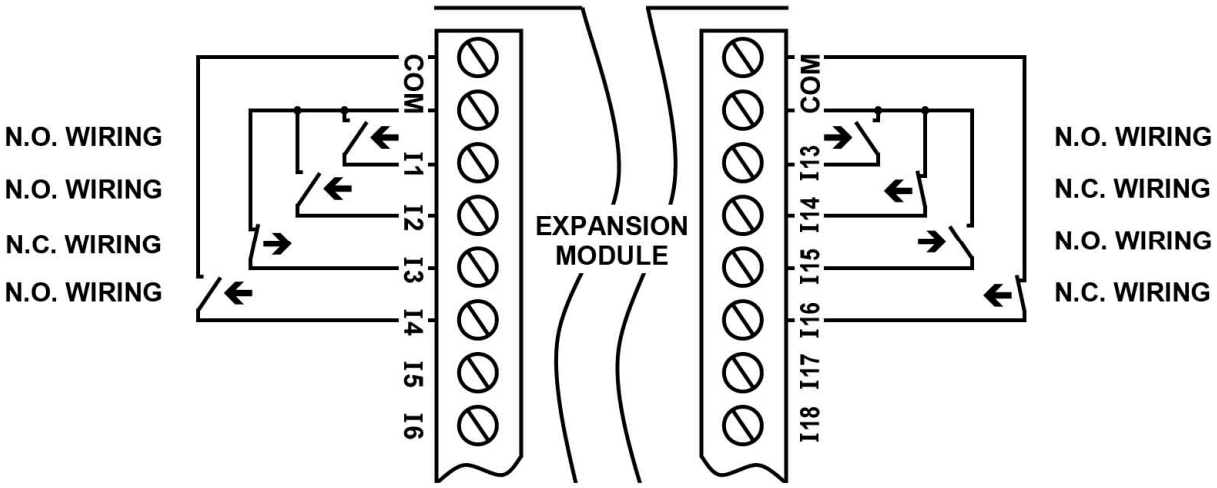
  Contact inputs on the expansion module's terminal connectors:

1. input:	**I1**	**13. input:**	**I13**
2. input:	**I2**	**14. input:**	**I14**
3. input:	**I3**	**15. input:**	**I15**
4. input:	**I4**	**16. input:**	**I16**
5. input:	**I5**	**17. input:**	**I17**
6. input:	**I6**	**18. input:**	**I18**
7. input:	**I7**	**19. input:**	**I19**
8. input:	**I8**	**20. input:**	**I20**
9. input:	**I9**	**21. input:**	**I21**
10. input:	**I10**	**22. input:**	**I22**
11. input:	**I11**	**23. input:**	**I23**
12. input:	**I12**	**24. input:**	**I24**

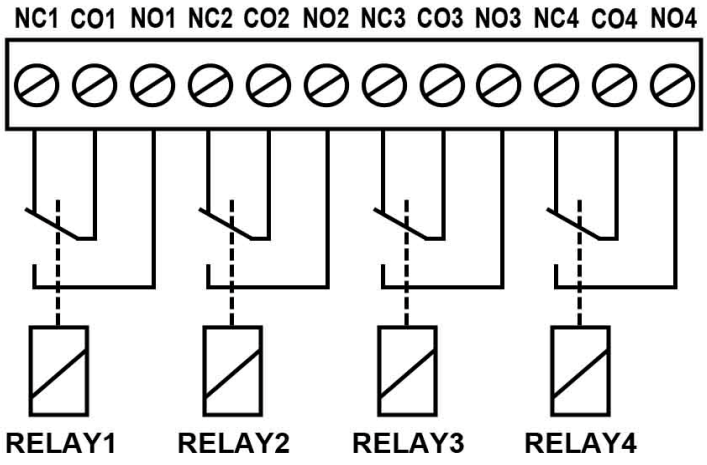
3.8.1 Inputs and phone line wiring



3.8.2 Expansion module inputs wiring

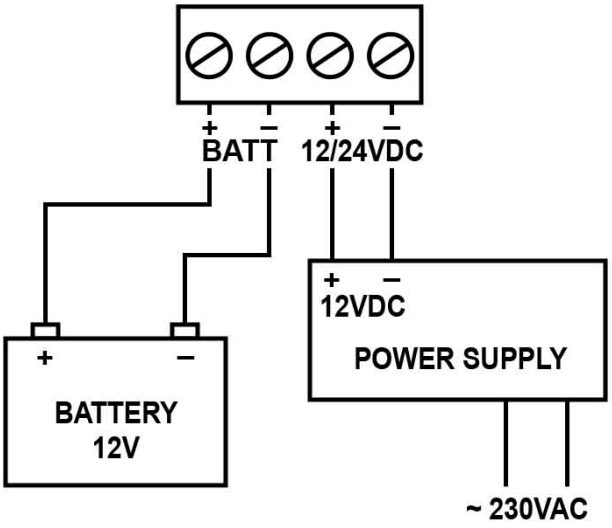


3.8.3 Relay outputs wiring



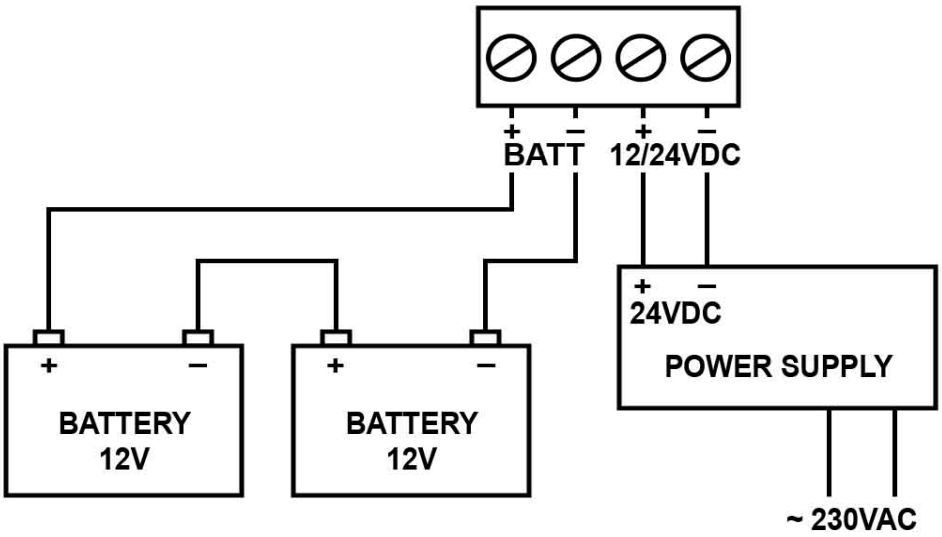
SCHEME OF RELAY OUTPUTS

3.8.4 12V power supply and battery wiring



12V POWERING

3.8.5 24V power supply and battery wiring



24V POWERING

4 Alarm panel preparation

Please verify the following on the alarm control panel for which you install the ProCOM module:

- Reporting format has to be set to either CONTACT ID or ADEMCO Express format.
- The monitoring station's phone numbers must be set with area codes, in order to be accessible for the SIM card over the GSM network.
- Dial method has to be set to TONE mode.

4.1 Other notes

If the module is used as a line adapter, the ProCOM will not know in advance the length of the phone number it has to dial, therefore do not wait too much between the digits during dialing, because the module may take it as the dial procedure has ended. (To be exact, the module will wait 60 seconds for the dial to start after hook off. It starts calling numbers with less than 7 digits after a pause of 5 seconds, while it starts calling numbers with 7 or more digits after a pause of 2 seconds. After the pause mentioned above has expired, or the number of digits reached 32, the module will immediately start the calling procedure). In case of alarm control panels this does not cause a problem because of the fast dialing sequence, but you have take this into consideration for manual dialing.

5 Installation guide

5.1 Mounting

- Measure the GSM signal strength with your mobile phone. It is possible, that the desired place for installation has unsatisfactory levels of signal strength. With this simple measurement, you can modify the place of the module before mounting it.
- Do not install the module where electro-magnetic disturbances can happen, for example near electrical motors.
- Do not install in moist, humid places.
- Antenna connection: the GSM antenna can be connected to the FME (spike) connector slot. The antenna found in the product package assures good transmission in normal environments. In case of signal strength problems and/or wave interferences (fading) use another antenna with better gain, or find a more favorable place for the module.
- **When installing the boxed module variant, it is mandatory to connect the protective ground to the GND point of the metal box!**

5.2 Putting into operation

- Disable PIN-code request and voice mail service on the SIM cards you want to use in the module
- **Enable caller identification and caller ID sending services at the GSM service provider of the SIM card** (for some card types this is not enabled by default).
- Make sure that the SIM card is placed into its slot properly.
- Make sure that the antenna is connected to the module properly.
- Make sure that the wiring is done according to the way it was mentioned earlier.
- Power up the module. If you use the panel-variant ProCOM for alarm control panel, make sure that the power supply is enough for the load of the alarm panel and the module together.
  The quiescent current of the module is 120mA, however it can reach up to 500mA during communication and relay handling procedures.
- **In case you want to use another power supply instead of the one supplied with the module, make sure that the voltage level is inside the interval necessary for battery charging: - 12V battery: 13.5V – 14V DC**
  - 24V battery: 27V – 28V DC.
  Important! In case of using power supplies with voltage levels outside the ranges mentioned above, the module will NOT charge the connected battery due to safety and security reasons!

6 Technical details

6.1 Technical specification

Power supply voltage:	9V – 30V DC (for the panel-type variant)
Power supply voltage:	230VAC (for the factory boxed variant)
Power supply voltage level necessary for battery charging:	13.5V – 14V DC or 27V – 28V DC
Nominal consumption:	120mA /12VDC
Maximum consumption:	500mA /12VDC
Operating temperature:	-20ºC – +70ºC
Transmission frequency:	GSM 900/1800 MHz, 850/1900 MHz
GSM phone type:	Simcom SIM900
Connectable battery:	12V-type: for 13.5V – 14V DC power supply 24V-type: for 27V – 28V DC power supply
Dimensions:	150 x 110 x 19 mm (panel) 180 x 110 x 34 mm (panel + expansion module) 227 x 286 x 79 mm (metal box + GSM antenna)
Net weight:	200g (panel) 100g (expansion module) 2kg (boxed variant, with expansion, no battery)
Gross weight (packed):	2.1kg (boxed variant)

6.2 Generated phone line specification

Line voltage:	48 V
Line current:	20 mA
Line impedance:	600 Ohm
Ring voltage:	±50V (20 Hz)
Tone:	425 Hz

6.3 Package contents

Boxed type with zone expansion:

- ProCOM GSM Adapter
- EXT24 expansion module
- GSM 900MHz /1800MHz antenna
- Metal box
- Power supply 230VAC/12VDC 1.3A
- CD, user's manual, warranty card

Boxed type without zone expansion:

- ProCOM GSM Adapter
- GSM 900MHz /1800MHz antenna
- Metal box
- Power supply 230VAC/12VDC 1.3A
- CD, user's manual, warranty card

Panel type:

- ProCOM GSM Adapter
- GSM 900MHz /1800MHz antenna
- CD, user's manual, warranty card

6.4 Manufacturer's contact information

T.E.L.L. Software Hungária Kft
4034 Debrecen, Vágóhíd u. 2.
Hungary
Tel.: (52)-530-130
Fax.: (52)-530-131
Web: www.tell.hu