GPRS ProCom F

INSTALLATION AND APPLICATION MANUAL

For module version v1.00.0106 and up

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Table of Contents

1 Basic functions of the GPRS ProCom F communicator

The main function of the GPRS ProCom F communicator is reporting the state of its inputs controllable by external contacts through the GPRS network.

1.1 Functions and services

- Management of 2 independent SIM cards
- Forwards incoming SMS messages to 2 phone numbers
- Stores the last 1000 events in the event list
- 4 onboard contact inputs and optional 24 input expansion module
- Reports the state of 4+24 inputs to monitoring station
- 2 configurable relay outputs, controllable by events or by the user directly
- Backup battery management

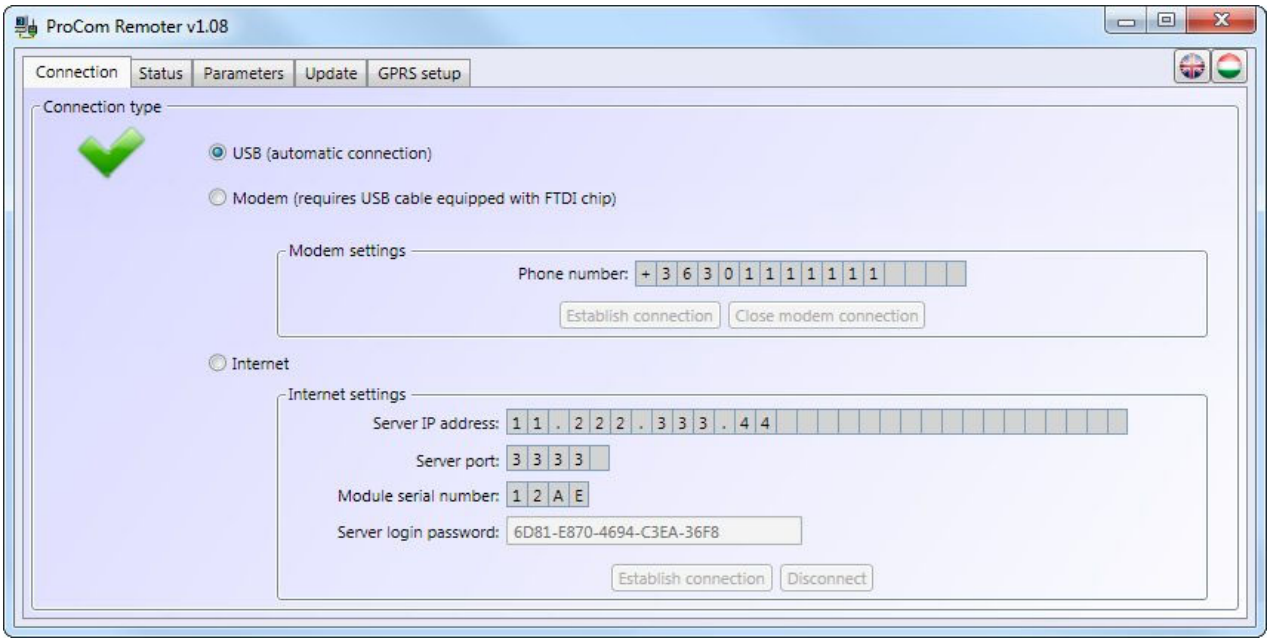
2 Programming the ProCom

- The **GPRS ProCom F** communicator'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, with a GSM modem remotely, or through the internet if the module has already connected to a TEX server.

The programming software of GPRS ProCom, GPRS ProCom F and GSM ProCom 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 GM-900 is recommended) is necessary which can be purchased separately, or other GSM modem with a USB adapter equipped with FTDI chip.

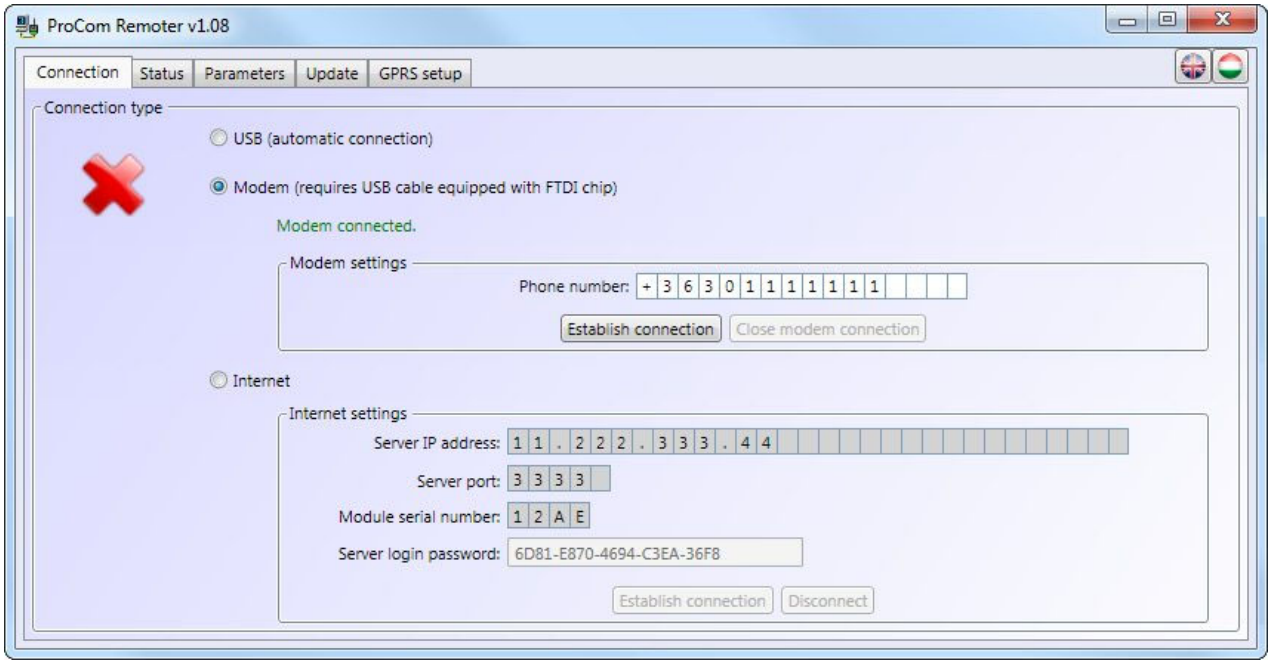
2.1 Configuring through USB connection



- 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 automatically recognizes the connected device
- 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, disconnect the module from USB

2.2 Configuring through modem connection

For remote connection a GSM modem is necessary (TELL GM-900 is recommended, or other GSM modem with a USB adapter equipped with FTDI chip). GSM data call (CSD) service must be activated on the SIM card inserted in the modem and on the one inserted in the module.

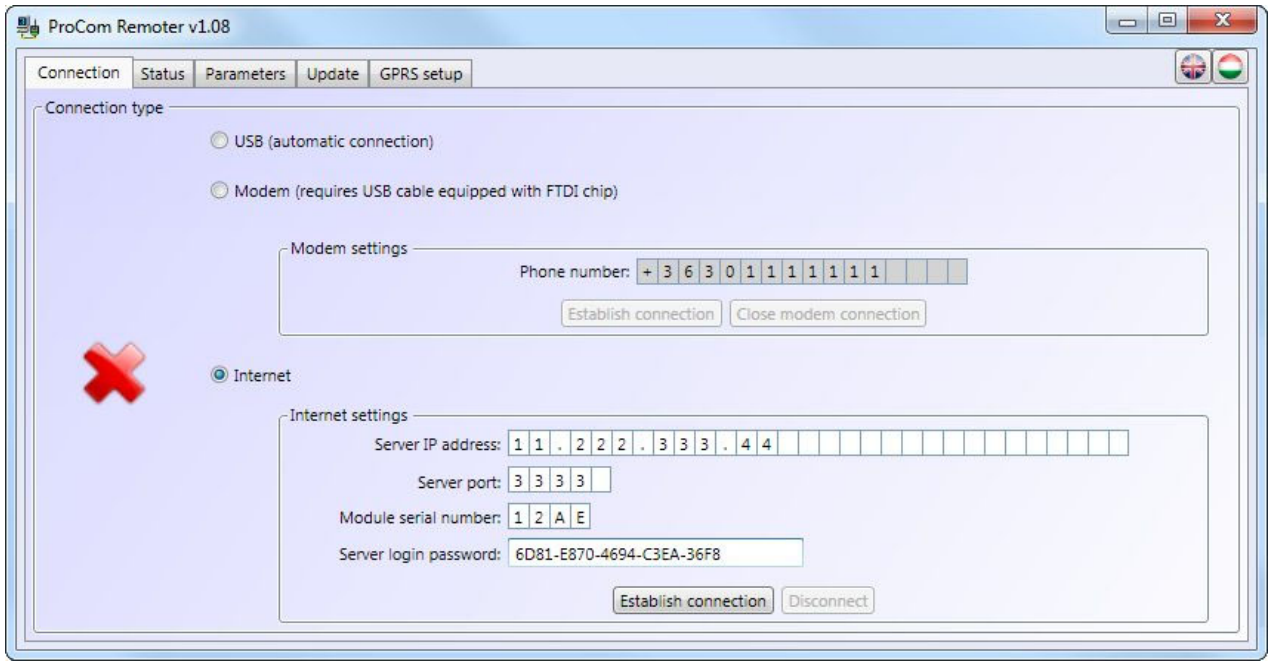


Steps for establishing modem connection:

- 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 Configuring through internet connection

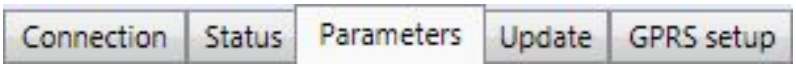
Internet connection can only be established when the module has already connected to the server.



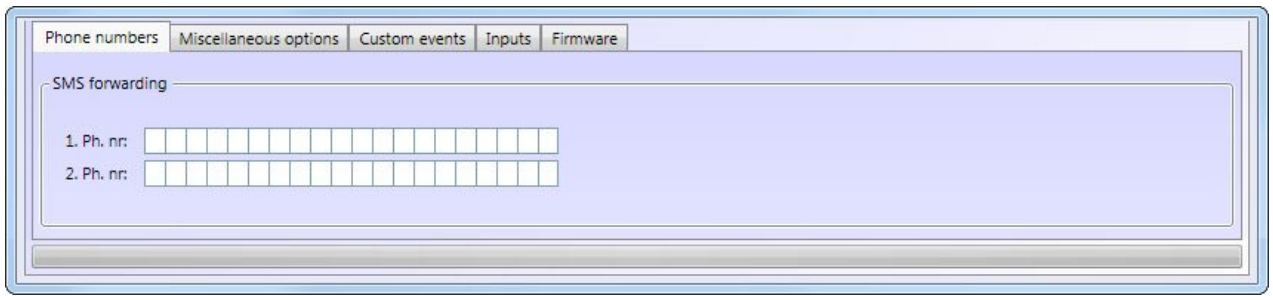
- Start the "**ProCom_Remoter**" programming software
- Select the "Internet" option on the "**Connection**" page
- In the "**Server IP address**" field type the TEX server's IP address the module has connected to
- Type the communication port's number (default: 3333) in the "**Server port**" field
- Type the serial number of the module you want to configure in the "**Module serial number**" field
- Type the TEX server's 20 character long login password (5x4 characters divided by dashes) in the "**Server login password**" field
- Click on "**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 "**Disconnect**" button

2.4 Parameter settings

To configure the module, select the "**Parameters**" page. The different parameters of the ProCom can be configured on the subpages.



2.4.1 Phone numbers

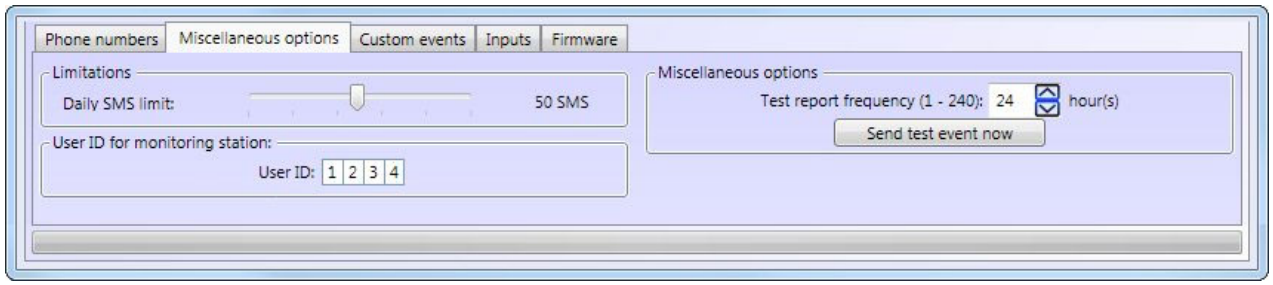


On the "**Phone numbers**" page the user phone numbers for SMS forwarding can be set. The phone numbers for SMS forwarding must be entered using the international format, including country code:

- **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!

2.4.2 Miscellaneous options

On the "**Miscellaneous options**" page, you can set the daily SMS limit, monitoring station user ID, the prefix numbers and the periodic test report frequency.

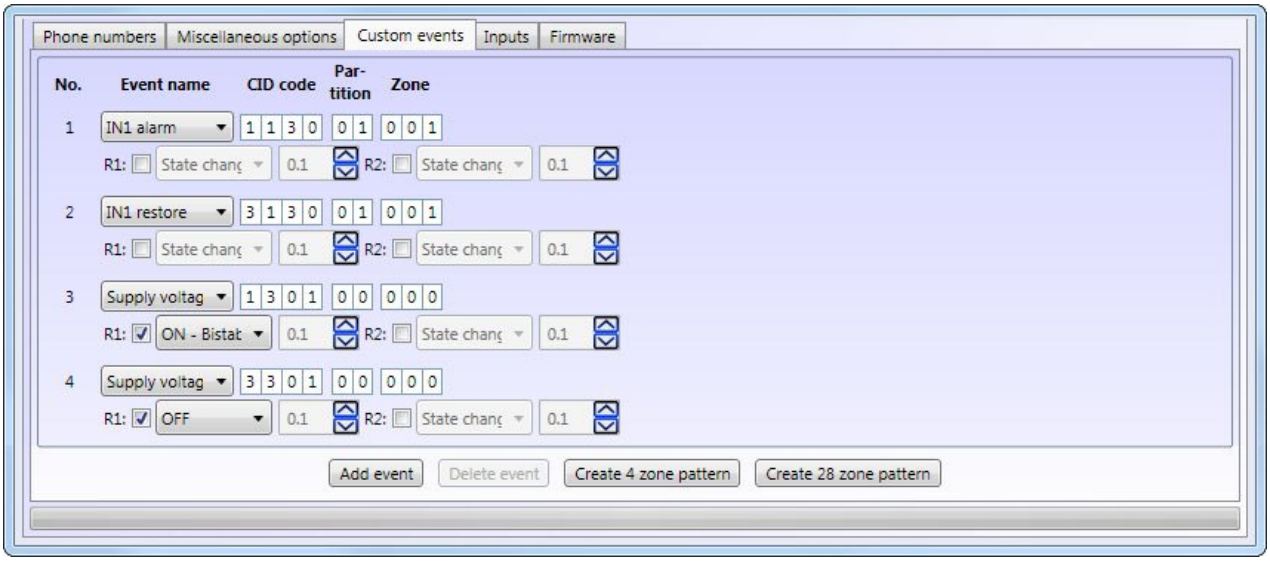


- **Limitations:**
  - **Daily SMS limit:** you can set the maximum number of SMS messages the module can send in a 24-hour long period. If the number of SMS messages sent exceeds this limit, the module will not send any more SMS messages until the 24-hour duration expires. You can also set the number 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.

- **Miscellaneous options:**
  - **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.
  - **Send test event now:** you can set the test report sending time of day by pressing this button. When pressed, the module sends a test report, then the further test reports are send with the configured frequency.

2.4.3 Custom events



You can set the module's own custom events on the "**Custom events**" page. The events added to the list are reported automatically through GPRS. Here you can customize the Contact ID event codes and the relay output(s) to be controlled when an 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" is 100.

The module's alarm duration (event lifetime) is 10 minutes for every event. The alarm duration is separate for all occurred custom events, which means that the module will try to report each of the occurred events separately for 10 minutes through GPRS.
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

- **Battery:**
  Battery fault: this event is generated when the battery's voltage level goes outside the following ranges for at least 6.5 minutes: 11.9–14V, 23.8–28V
  Battery restore: battery restore event is generated when the battery's voltage level returns in the ranges mentioned above for at least 6.5 minutes
- **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: 13–14.5V, 26–29V
  Supply voltage restore: supply voltage restore event is generated when the supply voltage level returns in the ranges mentioned above for at least 6.5 minutes
- **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
- **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.

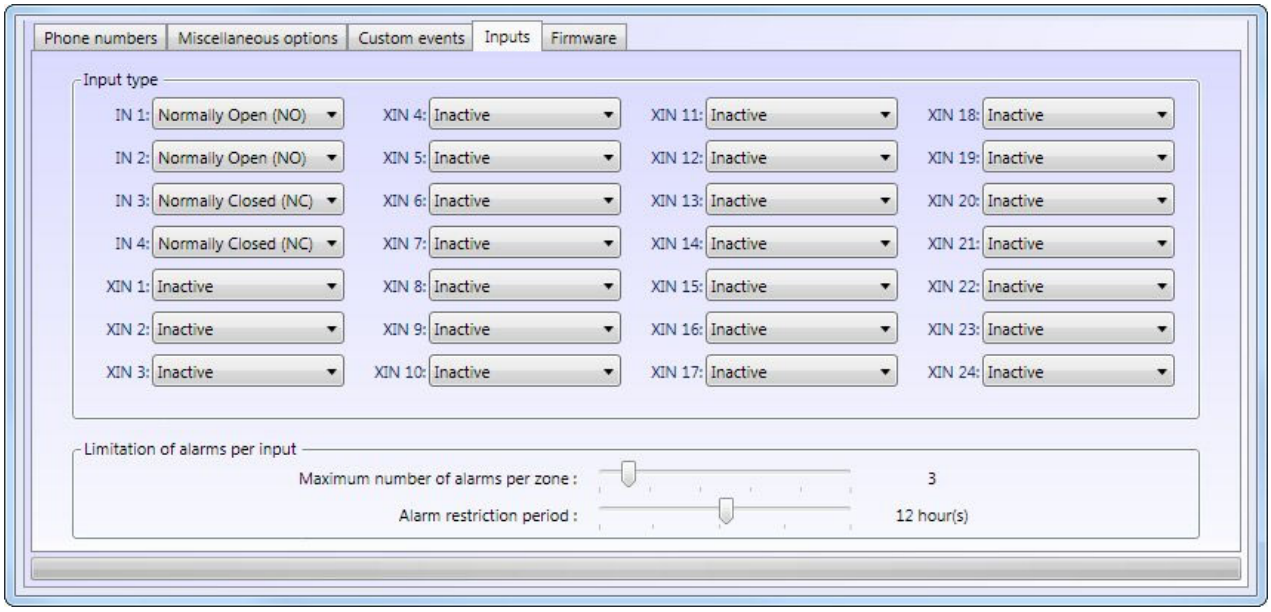
- **Partition:** the partition's number, in which the event occurs (01…99)

- **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.

- **R1-R2:** the different relay controls for the 2 relay outputs can be set here that shall be executed when the specific event occurs. To control a relay output, enable the corresponding R1-R2 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

2.4.4 Inputs



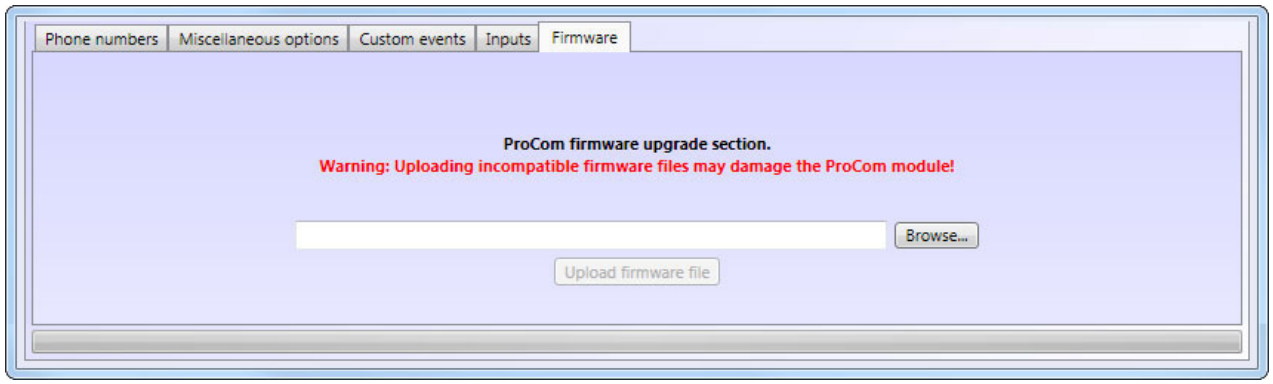
The module's and the zone expansion panel's inputs and alarm restrictions can be configured on the "**Inputs**" page.

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.

2.4.5 Firmware



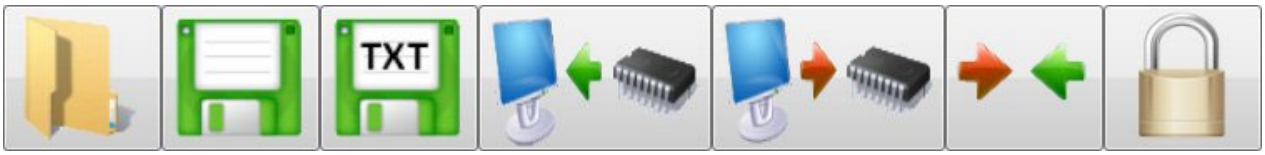
The module's software can be updated on the "**Firmware**" page, if it is reasonable and necessary. The firmware (the module's software) defines the module's operation and functions. Uploading inappropriate or defective firmware to the ProCom module will result in malfunction and damages the module!

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

2.5 Settings management

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

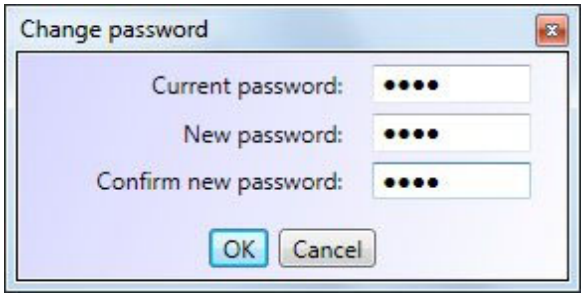


The functions of the seven buttons from left to right: **Read parameters from file**, **Save parameters to file**, **Save parameters to file in printable format**, **Read parameters from module**, **Upload parameters to module, Compare parameters with the module** and **Change module password**.

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.

2.6 Changing the module password

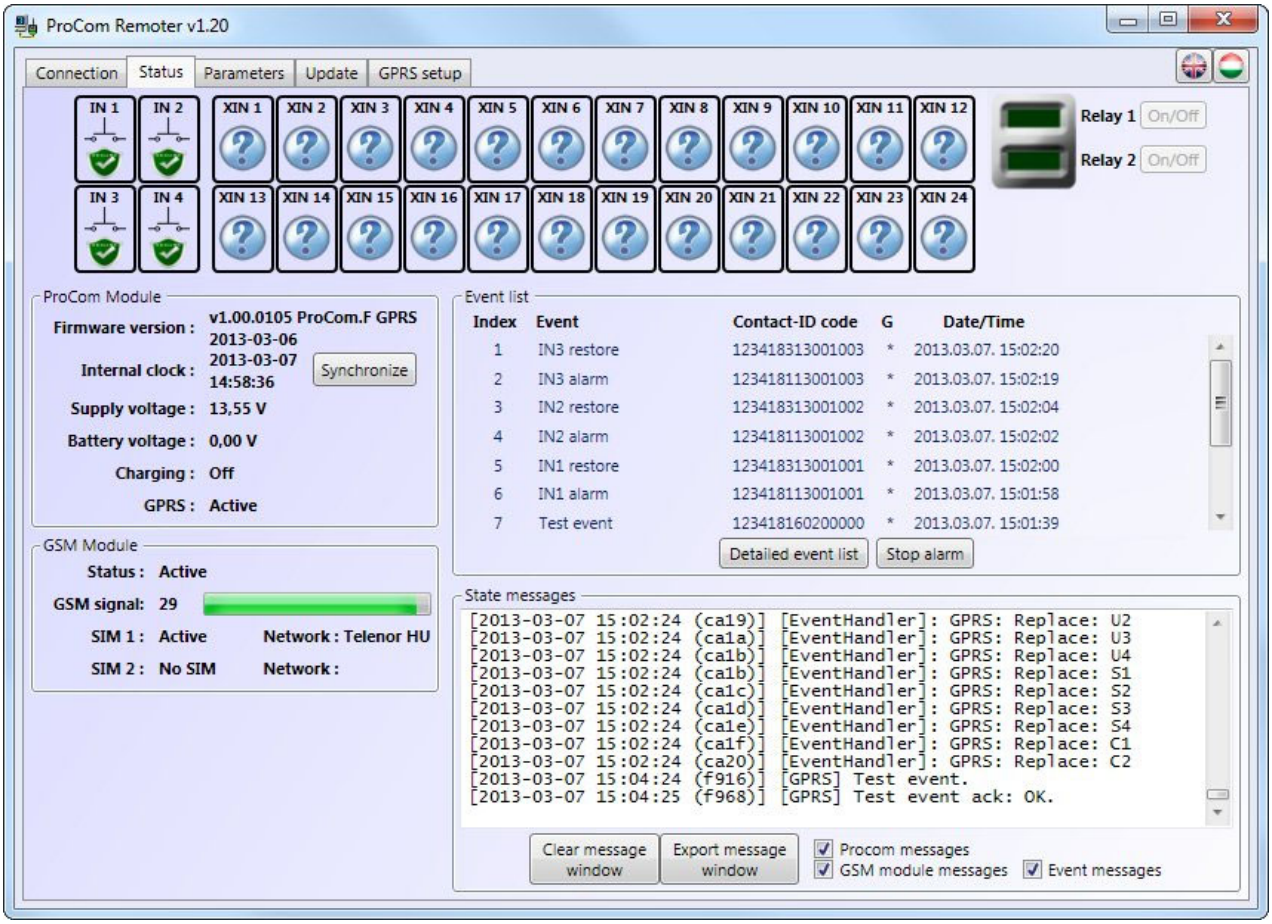
To change the module password, first click on the "lock"  button, then fill in the text fields and click on the **OK** button. In case you forgot the password, you cannot change it, therefore you have to reset the module to its default state, which will also reset the password to the default 1111. On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

2.7 Module status monitoring

The ProCom module's actual status (inputs, relay outputs, GSM module status 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…Relay2:** displays the state of the main panel's 2 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
  - **GPRS:** **- /Active/Inactive**: shows the current state of the connection to the server

- **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)

- **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
  - **G:** reporting to monitoring station through GPRS
  - **Date/Time:** the date and time of the event's occurrence

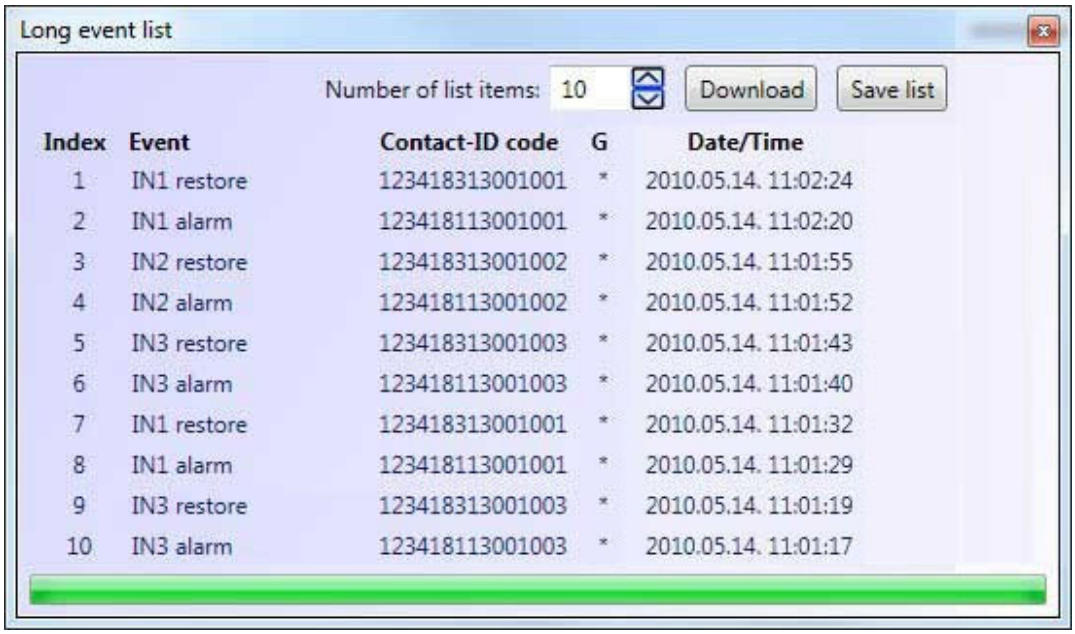
- **The different signs and meanings of column "G":**
  - **?** - event processing/reporting is currently in progress
  - ***** - reporting successful
  - **!** - reporting was unsuccessful
  - **S** - alarm has been stopped, it is unnecessary to send notification here
  - **T** - time limit expired, 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**" 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.

2.7.1 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.



- **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
  - **G:** reporting to monitoring station through GPRS connection
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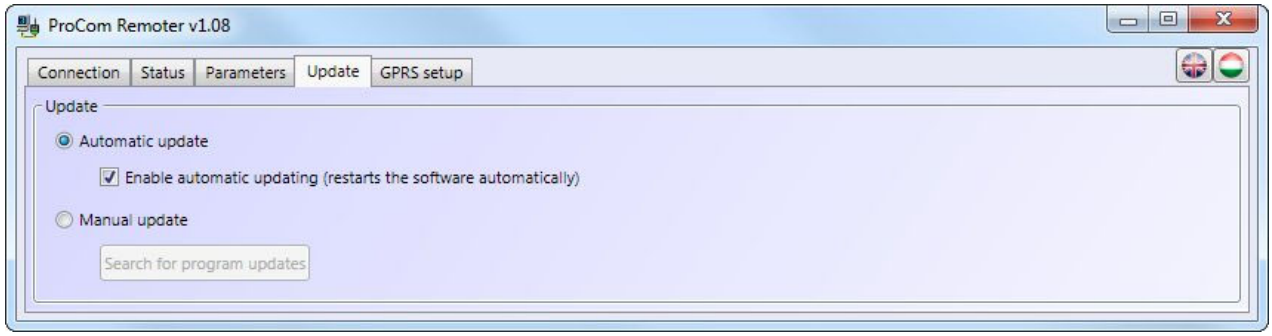
2.8 Updating the software



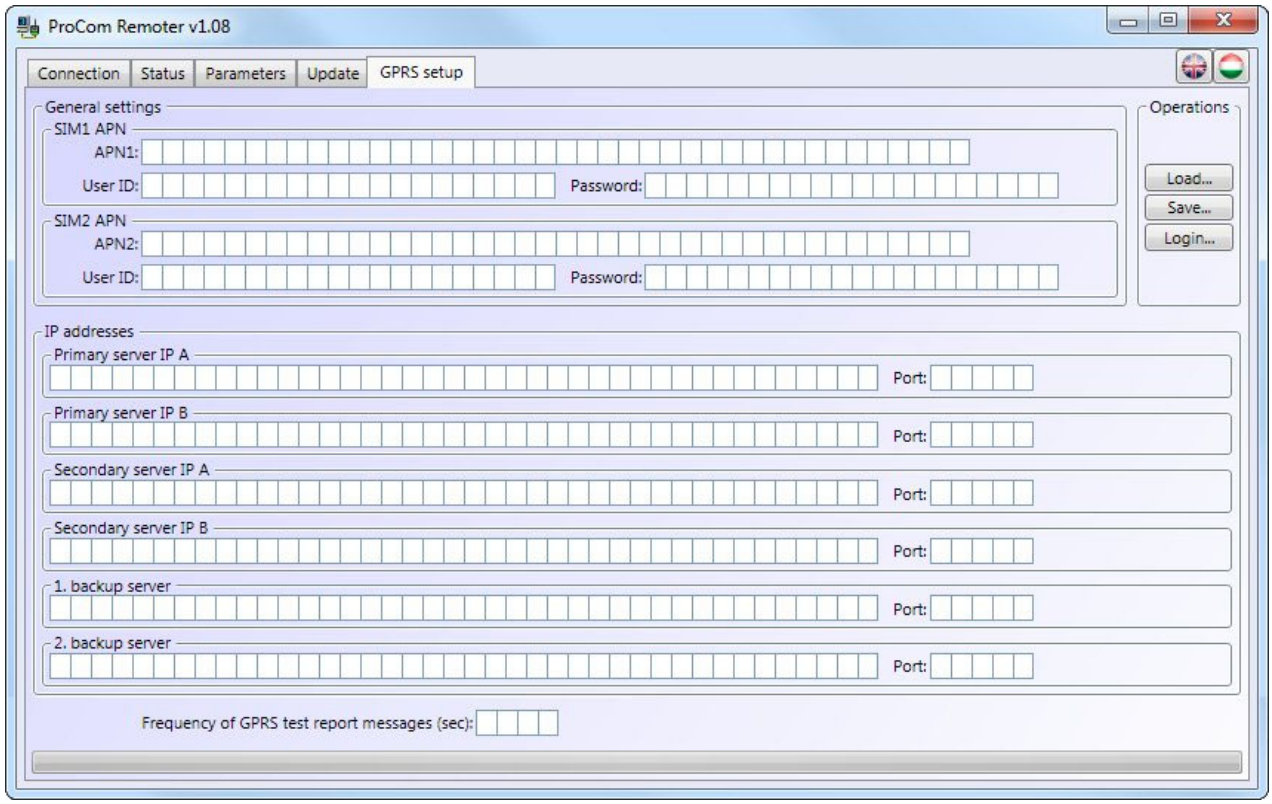
On the "***Update***" page, you can specify how the programming software should be updated.

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.

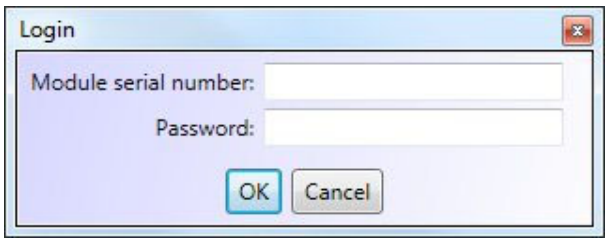
2.9 GPRS settings



You can set the GPRS connection parameters on the "***GPRS setup***" page.

- The settings can be saved to file by clicking on the "***Save***" button, or loaded from file by clicking on the "***Load***" button
- To access the module's GPRS settings, a separate login verification is necessary, which can be done after you click the "***Login***" button

To access the GPRS parameters, please type the module's serial number and password:



After a successful login, new buttons for reading/writing module settings will appear in the Operations section on the "***GPRS settings***" page:

- If you want to modify the current GPRS settings, first read them from the module by clicking on the "***Read settings from module***" button, or load them from file by clicking on the "***Load***" button, then carry out the necessary modifications.
- Verify that the parameters are correct, then load them up to the module by clicking on the "***Write settings to module***" button.
- All read/write process statuses are displayed on the progress bar visible at the bottom of the software window.

Settings:

- **SIM1 APN**: type the name of the APN assigned to the SIM card inserted into the SIM1 socket (for example in case of public T-Mobile APN: "internet", else the GSM service provider can provide details)
- **SIM2 APN**: type the name of the APN assigned to the SIM card inserted into the SIM2 socket
- **User ID** and **password** are only necessary only when the SIM card connects to a dedicated (private) APN
- **IP addresses**: (server IP addresses have to be fix IP addresses provided by the internet service provider)
  - **Primary server IP A** :
    - Type the primary TEX server's IP address here
    - **Port**: default setting: **3333**
  - In case there are further available primary or secondary servers in the system, then set their connection parameters in the "**Primary server IP B**", "**Secondary server IP A**", and "**Secondary server IP B**" fields.
  - **1. backup server IP**:
    - Type the backup TEX server's IP address here
    - **Port**: default setting: **3333**
  - In case there is another available backup server in the system, then set its connection parameters in the "**2. backup server IP**" field.

- **Frequency of GPRS test report messages**: This setting is used to continuously test the existence of the GPRS connection. You can set frequency (in seconds) of test reports the module will send through GPRS connection (default setting: 180 seconds).
  Important! This setting significantly influences the amount of data traffic. The lower this value, the bigger the amount of data traffic will be. Settings a too high value will result in decreased security. The higher the value, the later the GPRS connection problems will be notified.

2.10 GPRS ProCom F module operation, switching connections

- **General operation**

In case there are two SIM cards used, the module treats them as equal. Upon initialization, the module will try to use the SIM card inserted into the SIM1 socket to connect to GPRS, if the APN1 parameter is set. If unsuccessful, it switches to the SIM card inserted into the SIM2 socket. If the module is unable to establish the connection with any of the configured IP addresses, it automatically switches to the other SIM card and continues connecting through that.

- **Server IP address priority**

In case all six available IP addresses are set, the module will try to connect to the preset IP addresses after successfully registering itself on the GPRS network in the following manner:

Server IP address	Number of connection attempts
Primary server IP A	2
Primary server IP B	1
Secondary server IP A	1
Secondary server IP B	1
Backup server IP 1	1
Backup server IP 2	1

It starts from the beginning after it reached the end of the list.
The module switches between two IP addresses in 45 seconds on the average.

Switching back to the “primary IP A” (and “secondary IP A”) address:

The GPRS devices maintain connection mainly with the “primary server IP A” or the “secondary server IP A” IP address.

If the devices connect to the other server due to a connection loss, they try to switch back to the “primary server IP A” address after a certain time.

The module counts the time beginning from the event of successful connection, or the last Contact ID signal, or the interruption of the remote PC connection. If this time reaches 10 minutes, the device tries to switch back to the “primary server IP A” address. (10 minutes < switch back time < 10 minutes + GPRS test report frequency). The higher the time set for GPRS test report frequency, the later the module can switch back to the primary IP address. The above mentioned 10 minutes is true only when there is no event, but if an event arrives in the meantime, the 10 minute counter will start again.

- **Connection switching timers**

Event	Duration
Connecting to the primary IP address after restart or power up	≈ 35 sec
Switching time between IP addresses (starting from the notification of the connection loss)	≈ 45 sec
Switching from backup server to primary server (without event, or with event counting from the last event’s time of occurrence). The counter resets if a new event occurs (either custom or incoming).	10 minutes + GPRS test report frequency

2.11 Controlling the relay outputs by SMS

It is possible to control the module's outputs 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)** Substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R2=ON, PWD=**yyyy**, CRQ#**	**Relay2 ON (bistable mode)** Substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R1=OFF, PWD=**yyyy**, CRQ#**	**Relay1 OFF** Substitute "yyyy" with the module password, see explanation at the table's bottom
∗**R2=OFF, PWD=**yyyy**, CRQ#**	**Relay2 OFF** 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 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 Substitute "yyyy" with the module password, see explanation at the table's bottom

yyyy = module password (default: 1111). The module will not execute the SMS command if it does not contain the module password.

CRQ = request answer SMS from the module about task completion (optional parameter, necessary only when an answer SMS is required about task completion).
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.

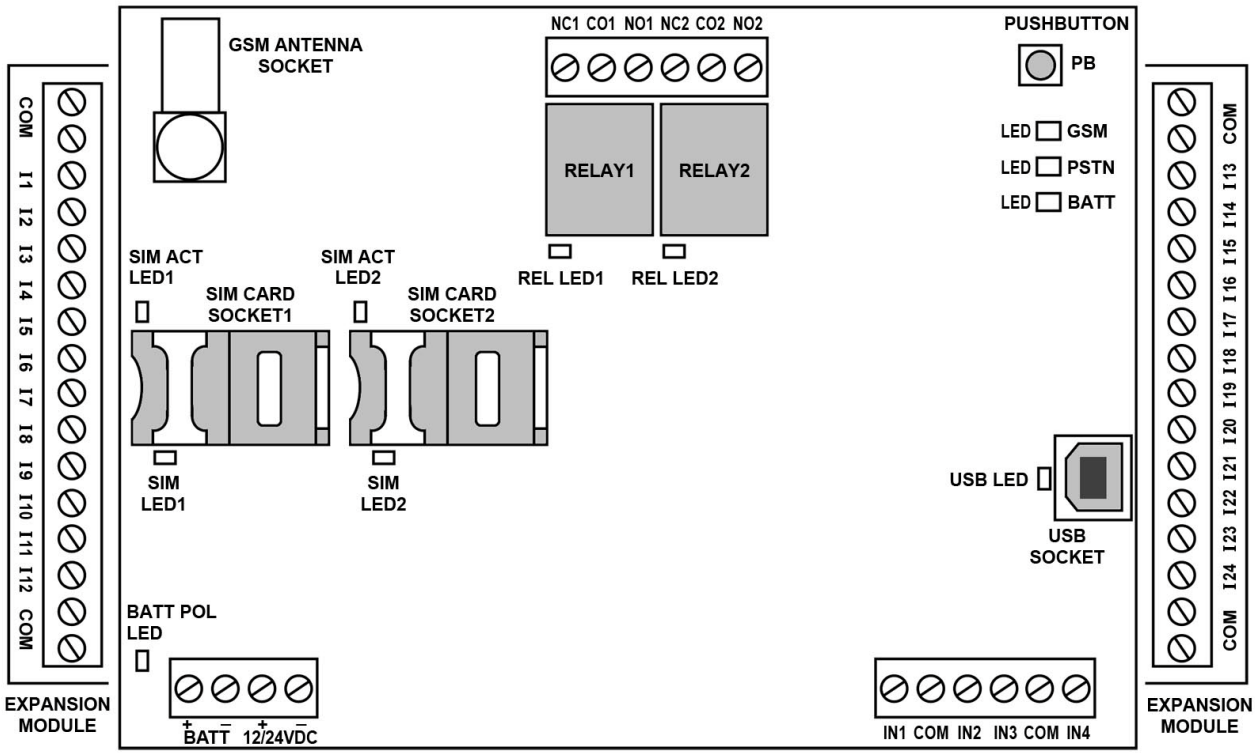
- **SMS answers from the module (in case the CRQ parameter is used):**

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

- **Examples for SMS commands:**
  - **Activating Relay1 indefinitely (bistable mode):**
    - If an answer SMS is not required, the SMS command looks as the following: **∗R1=ON, PWD=1111#** (if the module password is 1111)
    - If an answer SMS is required, the SMS command looks as the following: **∗R1=ON, PWD=1111, CRQ#** (if the module password is 1111)

3 The ProCom F module peripherals

3.1 Panel overview



3.2 SIM card sockets

There are two SIM card sockets on the panel (SIM1 and SIM2). You can insert the SIM card(s) here. The two SIM sockets are functionally equal. In case of using only one SIM card, insert it into socket SIM1. The SIM cards required for the ProCom to operate 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.
- **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 sockets (SIM card sensor switches) simultaneously to reset the default settings and restart the module.

3.4 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.

3.5 Antenna connection

The GSM antenna can be connected to the FME (spike) connector. 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.

3.6 LED signals

GSM LED 	**Continuous red:** the GSM module cannot be initialized. The reason can be that the module does not detect a SIM card in the socket, 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:** an incoming 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 	The GPRS ProCom F variant does not manage PSTN line, therefore this LED is not in use.
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 socket.
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 LED1-2	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.

3.7 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 F panel	
BATT+	External battery connector, positive polarity: 12/24VDC
BATT-	External battery connector, negative polarity
12/24VDC+	Power supply positive polarity: 13V – 14.5V DC; 26V – 29V DC
12/24VDC-	Power supply negative polarity
IN1…IN4	1…4 contact inputs
COM	1…4 common point of the contact inputs
NC1…NC2	1…2 normally closed relay outputs (opens on activation)
CO1…CO2	1…2 common points of the relay contacts
NO1…NO2	1…2 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 outputs:** potential independent closing and opening relay contact outputs, the maximum load capacity is 5A/12VDC per relay.

  Contact outputs on the terminal connector:

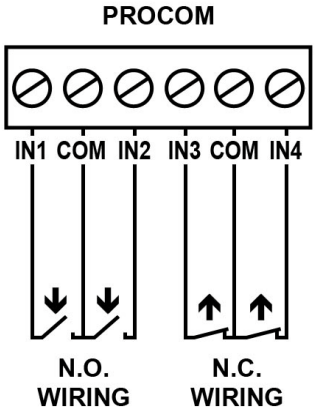
  Relay1: NC1, CO1, NO1
  Relay2: NC2, CO2, NO2

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

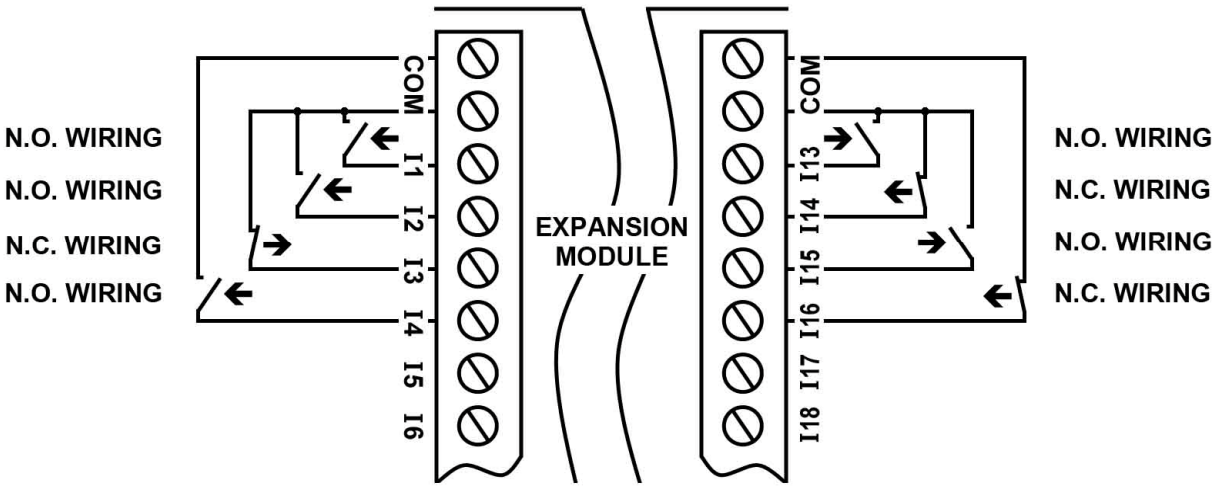
  Contact inputs on the expansion module's terminal connectors:

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**

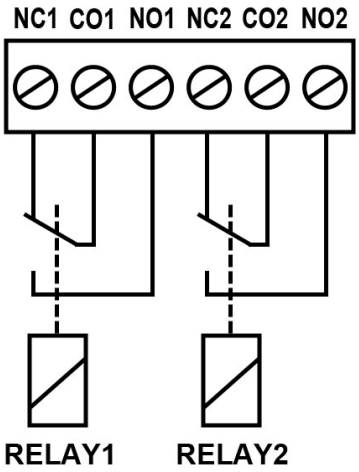
3.7.1 Input wiring



3.7.2 Expansion module inputs wiring

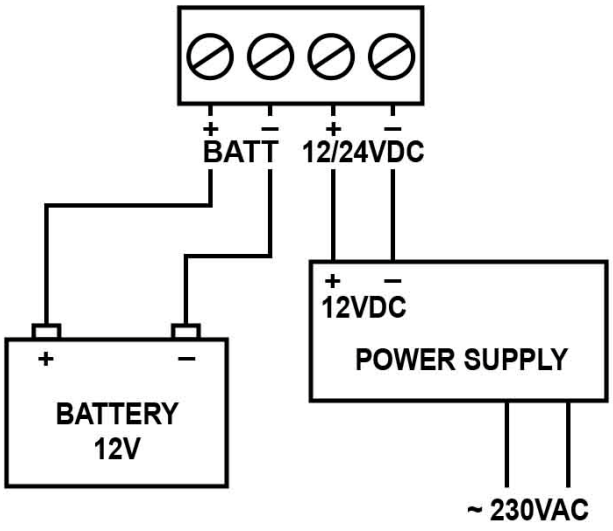


3.7.3 Relay outputs wiring



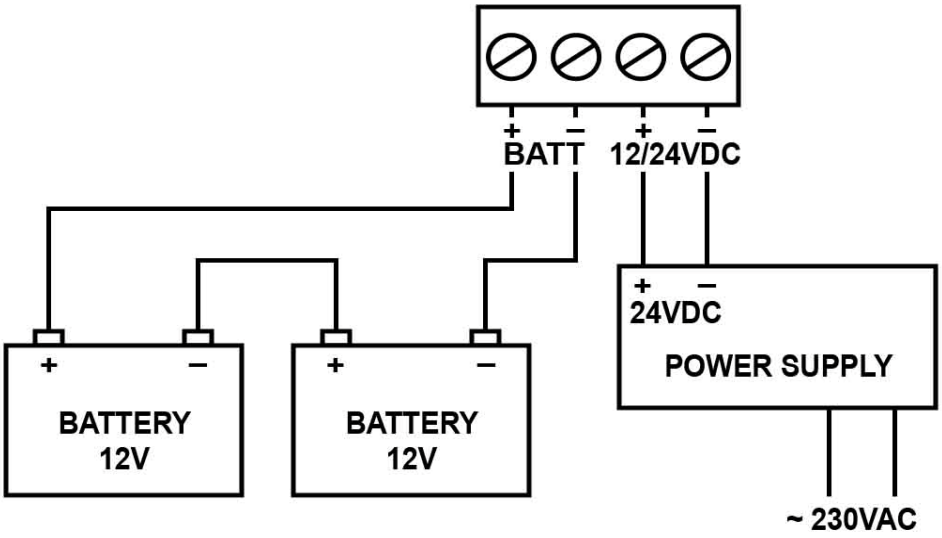
SCHEME OF RELAY OUTPUTS

3.7.4 12V power supply and battery wiring



12V POWERING

3.7.5 24V power supply and battery wiring



24V POWERING

4 Installation guide

4.1 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. 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!**

4.2 Putting into operation

- Disable PIN-code request and voice mail service on the SIM cards you want to use in the module
- Make sure that the SIM card is placed into its socket 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 F, make sure that the power supply is sufficient for the operation of the module.
  The quiescent current of the module is 120mA, however it can reach up to 500mA during communication.
- **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: 13V – 14.5V DC**
  - 24V battery: 26V – 29V 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!

5 Technical details

5.1 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:	13V – 14.5V DC or 26V – 29V DC
Nominal consumption:	120mA /12VDC
Maximum consumption:	500mA /12VDC
Operating temperature:	-20ºC – +70ºC
Transmission frequency:	GSM 900/1800 MHz
GSM phone type:	Simcom SIM900
Connectable battery:	12V-type: for 13V – 14.5V DC power supply 24V-type: for 26V – 29V 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)

5.2 Package contents

Boxed variant with zone expansion module:

- GPRS ProCom F
- EXT24 expansion module
- GSM 900MHz /1800MHz antenna
- Metal box
- Power supply 230VAC/12VDC 1,3A
- CD, user's manual, warranty card

Boxed variant without zone expansion module:

- GPRS ProCom F
- GSM 900MHz /1800MHz antenna
- Metal box
- Power supply 230VAC/12VDC 1,3A
- CD, user's manual, warranty card

Panel variant:

- GPRS ProCom F
- GSM 900MHz /1800MHz antenna
- CD, user's manual, warranty card

5.3 Manufacturer's contact information

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