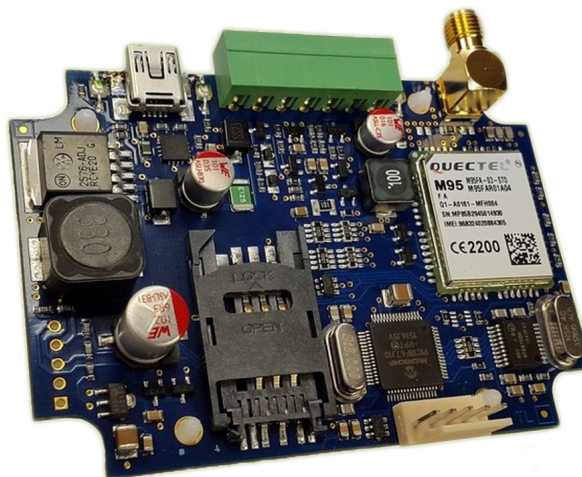




COM-G

GPRS/GSM COMMUNICATOR



INSTALLER AND USER'S GUIDE

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Introduction

The COM-G Mobile Communicator is recommended for security installations, where the reporting to Alarm Monitoring Service providers (AMS) has to be made over mobile networks. The main reporting channel is the GSM and GPRS. The device is equipped with two I/O ports (the type of the ports can be NO/NC). The outputs of the module can be controlled via SMS and phone call as monostable. In addition, the control with phone call is possible only with phone caller identification, therefore, 8 phone numbers can be set to manage the outputs.

The ports can be used also as contact driven inputs. In case of arriving signal to any of the 2 inputs, the module can send an email to one particular email address, or an SMS to one phone number, moreover, the module is capable to send a message to the monitoring station as well. Also, we can link zones to the inputs. The COM-G is able to translate the contact ID codes, which were sent by the alarm panel, to SMSs. Also, we can name up to 16 zones.

The module can be programmed by PC via USB and with SMS..

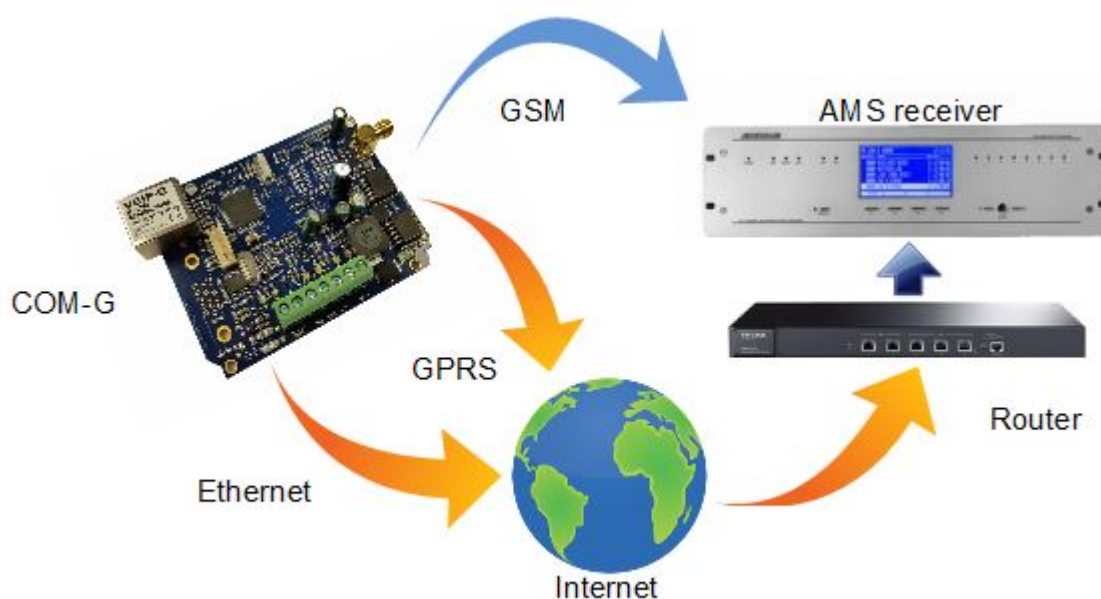
For all ways, a primary and a secondary channel can be given. The secondary channel can be used as a backup, or for parallel reporting (double reporting). The COM-G communicator provides a reliable and secure solution for event reporting over the internet, at an unbeatable price/performance ratio.

To be able to use and understand all the features of the COM-G series communicators, please, read this *Installer Manual* carefully.

SAFETY NOTICE! Please, take care of installing and using this product according to the instructions and procedures detailed in this manual to ensure proper product safety.

System overview

The COM-G communicator receives the messages from the telco interface of the security control panel, in Contact ID format, and forwards these through the wired or mobile internet network or cellular network to the Alarm Monitoring Service central.



Modulebuildup

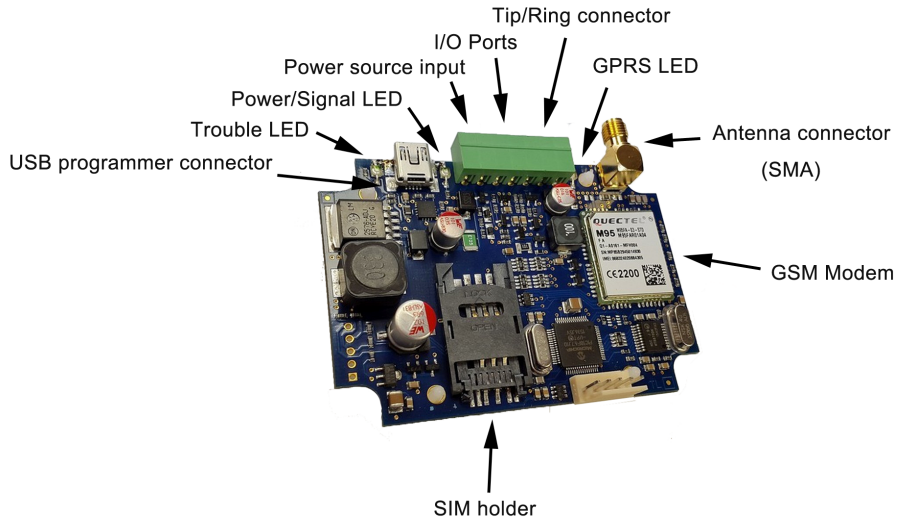


Figure 1: the buildup of the module

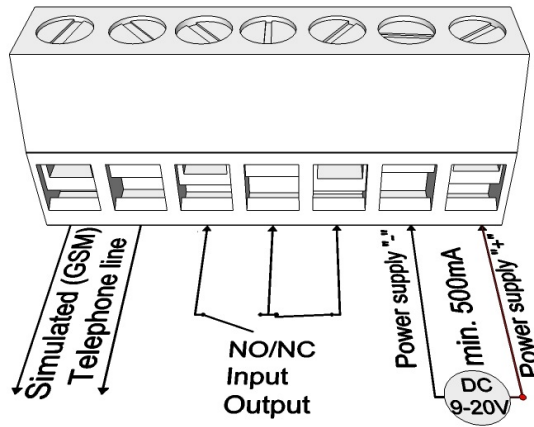


Figure 2: Series diagram wiring terminal

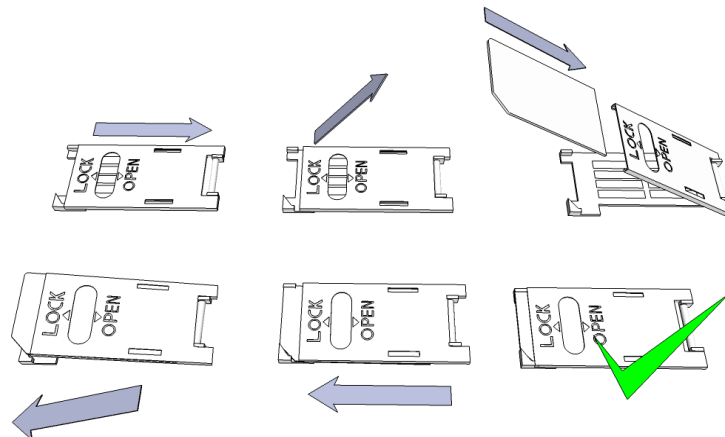


Figure 3: SIM card inserting

Installation steps

1. Carry out a signal strength check with your mobile phone. Sometimes occurs there is no sufficient signal strength at the commissioning site. In this case it is recommended to change the module position prior of installation.
Do not install the device to places where strong electromagnetic waves might occur, ex. next to electric motors or alarm transformers.
Do not install in watery places or to places with great humidity.
2. Connect the antenna that can be secured with the SMA connector. If you are reading low signal strength use antenna with higher gain. Signal strength grow can also be achieved by repositioning the antenna.
Do not position the antenna under metal cover of various appliances as those might significantly ruin the signal strength.
3. **You should opt out the voicemail and call notification functions of the SIM card.** If the protection of the SIM card is not required otherwise, it is recommended to switch the PIN code request of the SIM card off.
Sometimes new SIM cards must be activated (usually an outgoing call has to be made).
Check the validity of the card. If you have a prepaid card check its balance and its usage possibilities (ex. it can be used only for calls)
4. It is practical to check the satisfying operation of a SIM card in a cell phone prior of insertion into a module. Number identifying of caller and at call initiations has to be checked. This function at certain service providers must be enabled formerly.
5. The average mobile data usage of the IPCOM-3G communicator is estimated at 5-6 MB/month. This value can depend on the frequency of the test (keep-alive) signals. Please, use a SIM card with at least 5-10MB/month data plan. If you are not qualified ask for professional help.
6. Insert the SIM card in the SIM card slot of the module.
7. Connectors have to be connected according to the wiring diagram. If you are dealing with OC output mind the correct wiring of the relay protecting diode.
8. Check if the power supply performance will be sufficient for the module. Mind the polarity. If wiring is reversed the module will not operate or might get damaged.
9. Now the device can be powered.

Module can acquire the power needed for programming also from the USB adapter.

In all operating modes, the number of reporting trials on GPRS and GSM channels is limited, to keep data traffic at a reasonable rate. After 4 unsuccessful communication trials the reporting will be suspended on the given channel until another event is to be reported, or the next channel test is due.

If there is a failure in the operation of the communicator, the „Debug” mode can be used to identify the cause of the problems. More information at „Troubleshooting”.

LED Indicators

Signals give essential information of the module, of GSM signal strength and the actual error codes. By blinking we mean flashes between two longer pause.

- **LED-1 Power/Signal LED:** In case of proper power supply, the LED-1 lights continuously, and indicates mobile network signal strength by slow flashes in every 10 seconds:

Flashes	Meaning
0-1	No / weak signal level
2-3	Medium / good signal level
Fast flash	Power supply falls – under 10 V DC
Slowly flashes	During programming

- **LED-2 Trouble LED:** Provides general fault signal

Flashes	Meaning
<i>No light</i>	No trouble condition, proper operation
<i>Continuous light</i>	The configured reporting channel has physical problem (e.g. no SIM card)
<i>Flash</i>	Unsuccessful reporting attempt on one or all reporting channel

- If LED-1 and LED-2 flash promptly alternating, it indicates that these is no reporting channel has been properly programmed. During firmware upgrade of the unit the two LEDs flash alternating slowly.

Flashes	Meaning
<i>Light</i>	Input or output active
<i>No light</i>	Input or output inactive

- LED-3 Indicates the status of the GPRS / GSM connection

Flashes	Meaning
<i>Light</i>	GPRS / GSM connection is OK
<i>No light</i>	Initiating GPRS/GSM connection, or no SIM card, or no GPRS / GSM channel is programmed.
<i>Flash</i>	Some or all GPRS / GSM channels have failed to report properly to the AMS centra

General recommendations

The COM-G communicators can report to AMS servers via GPRS and GSM network. A primary and secondary reporting channel for all communication media. Furthermore, email and SMS sending is available for notification purposes.

The COM-G communicator uses a special DTMF format for GSM reporting which guarantees problem-free transmission over the GSM audio line. However, due to that, GSM reporting can only be used with a compatible **ENIGMA II receiver** only!

The priority of the communication channels corresponds to their number – so reporting on the lower number channel is in priority over reporting on higher numbered channels. The communication channels are as follows:

Channel	Channel type
CH3 and CH4	GPRS channels
CH6 and CH56	GSM channels
CH7	E-mail notification
CH8	SMS notification

Programming

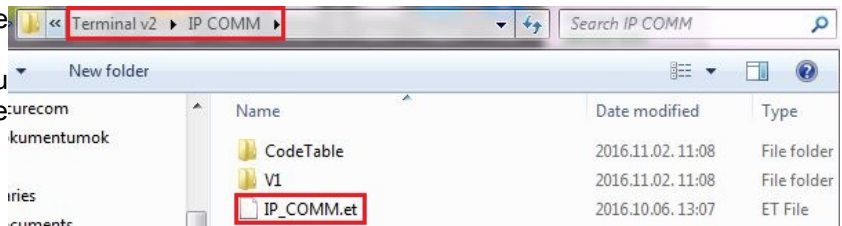
Programming with PC

The COM-G communicators can be programmed via the USB connector (virtual serial port). For programming, please, use the *Terminal* software. The COM-G communicators are supported from *Terminal* version 2.35. It is always recommended to check the latest available software version before programming. The latest version of the *Terminal* software can be downloaded from the following link:

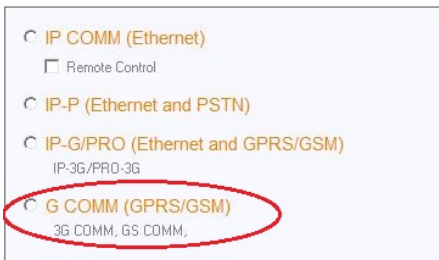
<http://download.tellsystem.eu/software/terminal.exe>

The programming steps are as follow:

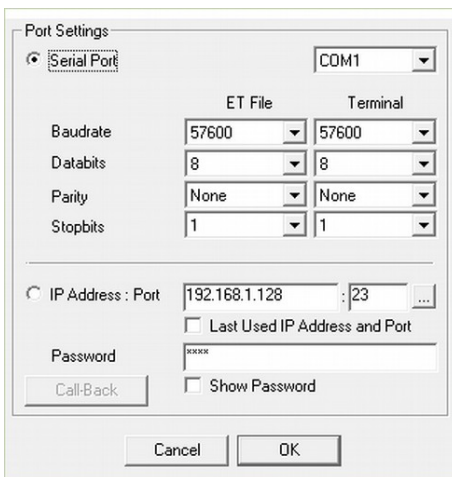
1. Connect the COM-G communicator to the PC with a mini-USB cable.
2. Run the *Terminal*, then in the file menu with the „open” button search and choose the IPCOMM.et device fájl.



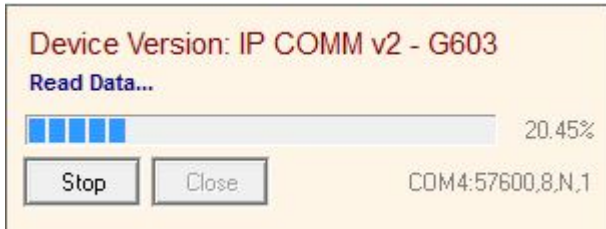
3. After that, select the product type: G-COMM (GPRS/GSM)



4. Set the COM port for programming in the *Communication / Port Settings* menu. The password for programming is „1234” by default.



5. Read out the current settings from the device, by clicking on *Communication / Read* button.



The firmware version of the device can be interpreted as follows:

- G – 16 (year – 2016, alphanumeric)
- 6 – 6 (month – June, hexadecimal)
- 03 – 3 (day – the third)

6. Set the parameters in *Terminal*, as needed. In case you have used IPCOM communicator before, then you might realize, that the options are similar, but only channels 3,4,5, and 6 can be accessed.



7. When all the required options and parameters have been set, these can be downloaded to the device by clicking on *Communication / Write*.

8. The commonly used settings may be worth to save on the PC as a template for programming communicators. This can be done at *File / Save* menu. The previously saved settings can be reloaded later by using *File / Open* menu.

The short description of the options, that can be set in *Terminal*, can be found by right-clicking on them in the UI.

Communication

In the communication settings the different settings can be configured includes as operation modes, global test, AES encryption, automatic reset and time zone.

The operating mode of the communicator determines, how the available communication channels will be actually used for event reporting, so which channels are used as primary and for backup. The available options are as follows:

3-4-5-6 mode (default)

In this mode, the communicator sends the event to the first available server, according to the priority of the available channels. Upon success, no further reports will be made.

3-4; 5-6 Special mode

Using this mode, the events will be reported on available GPRS and GSM channels as well, even if reporting to any of these has been successful.

3-4 Pass-Through mode

This mode is very similar to the first one, but with an important difference. In this mode, the event received over telco interface will be acknowledged to the control panel after the event has been successfully reported to and acknowledged by the server. This method is slower, but provides in most cases more reliable reporting. The GSM channels (CH5 and CH6) cannot be used in this mode.

3-5; 4-6 mode

This mode can be used, when the events has to be reported to two independent AMS. An IP, GPRS and GSM channel can be used for each AMS server.

AES Encryption

We can use 128 bit AES encryption for the message sending, which ensures higher security level.

Global AES Key for Encryption	Enable
Global AES Key (Text)	
Global AES Key (Hex)	000000000000000000000000...

GPRS (channel 3-4)

The device can send messages via GPRS. Here we need to give the IP adress or domain of the receiver along with a port. Also we have to give an account number, in addition to choosing the internet protocol (TCP/UDP) and the transmission protocol (SIA DC-09, E2, Normal contact ID).

Ch 3 - GPRS #1

Receiver IP Address (Domain)	tellsystem.hopto.org
Receiver IP Port	5555
Account Code	3333
UDP or TCP Reporting	TCP
IP Report Protocol Format	SIA DC-09

EMAIL report (channel 7)

The module is capable to send messages via email about input changes, messages from the alarm panel to one particular email adress. Beside of giving our email adress, we have to determine an account code, which will be attached in the email report. Also an email subject is required to set. The email contains information regarding the event includes the event code (603), the test period (060), and the zone number (001) in case of alarm. To use the Email sending function a sunscription is required at an email provider.

Ch 7 - E-mail

E-mail	example@gmail.com
Account Code	8888
GPRS E-mail	Enable
E-mail Subject	Status Report

Lifetest SMS: E603-99 060 Test
 Alarm SMS: E130-99 001 Burglary

SMS report (channel 8)

It is possible to send SMSs about the input changes, incoming messages from the alarm panel to one particlar phone number. The SMS message contains information regarding the event includes the event code (603), the test period (060), and the zone number (001) in case of alarm.

Ch 8 - SMS

Phone No.	36301234567
Account Code	9999

Lifetest SMS: E603-99 060 Test
 Alarm SMS: E130-99 001 Burglary

SMS forwarding

We can assign one phone number to forward the incoming SMSs. The module redirects every SMS which is sent in a wrong way, or by the provider.

SMS Forward

SMS Forward	Enable
Phone No.	36301234567

GPRS settings

GPRS Parameters

APN		To be able to use the GPRS channel we need to provide the APN of the provider of the SIM card. The average mobile data usage of the COM-G communicator is estimated at 5-6 MB/month. This value can depend on the frequency of the test (keep-alive) signals. Please, use a SIM card with at least 5-10MB/month data plan.
User Name		
APN Password		
PIN		
GSM Signal Level Report	Enable	
GSM Signal Level Event Code	1357	

Event filter

The module has the possibility to set an event filter. In this way only those events will be sent which are enabled here.

Event Filter (Ch5 - Ch8)

Alarm (CID 100)	Send events
Supervisory (CID 200)	Send events
Trouble (CID 300)	Send events
Open/Close (CID 400)	Send events
Bypass (CID 500)	Send events
Test (CID 600)	Send events

I/O settings

Input settings

The COM-G has two I/O ports. In case we use it as an input, we can give the type of the input (NO/NC), the event code, and the restore code. Moreover, the input sensitivity can be modified between 10ms and 2550 ms. What is more, it allows us to link a zone number to the input along with changing the maximum number of event repeating.

I/O 1 Parameters (onboard)

I/O 1 Operation Mode	Input
Input 1 - Loop Type	NC
Input 1 - Event Code	1130
Input 1 - Restore Code (Optional)	
Input 1 - Restoral	Enable
Input 1 - Sensitivity	500 ms
Zone No.	0
Max. Event Repeat / Hour (0 - Disable)	0

Output settings

The module is equipped with an open-collector output, therefore, the output switch to the ground in case of control. The outputs can be managed by call or SMS. In addition, automatic output control is possible as well includes power fail, channel fault, low signal level, general fault or sufficient power Level. By default the type of the output is normally close. Also it is not changeable. The outputs are working in monostable mode, which control time can be from 1 sec. to 65535 sec.

I/O 1 Parameters (onboard)

I/O 1 Operation Mode	Output
Output 1 - Operation	Gate control (phone call)
Output 1 - Time	0 sec

Control phone numbers

The outputs can be controlled from 8 phone numbers with caller identification. It cannot be managed from unauthorized phone numbers.

Remote Phones

Phone No. #1	36201234567
Phone No. #2	36301111112
Phone No. #3	
Phone No. #4	
Phone No. #5	
Phone No. #6	
Phone No. #7	
Phone No. #8	

Unique zone name settings

In the Zone names setting we can name the zones, therefore, when a message arrives from the alarm panel from the first zone for instance, instead of 001 the email or SMS message will contain the name what we had given to the zone 001. We can name 16 zones.

Zone Names

General zone name	ROOM
General user name	TellSystem
Zone #1	ROOM1
Zone #2	ROOM2
Zone #3	ROOM3
Zone #4	ROOM4

Connecting the module to the alarm panel

In the *Telco special parameters* we can set the details of the communication between the COM-G and the alarm panel. We must give a number here that the alarm center will dial recommended 99999999.

Telco Special Parameters

Communicator Phone Number	99999999
Receive All Calls	Enable
Dial Tone	Enable
Dial Timeout	500 ms
Time Between Handshakes	3 sec
Alarm Control Panel Trials	3
Handshake Method	Fix
1400 Hz Freq. Value	0
2300 Hz Freq. Value	0
Handshake Length	1000 ms
Dual Handshake Length	100 ms
Billing Delay	1 sec
DTMF Timeout	200 ms

The COM-G communicators are connected in most cases to the telco interface (TIP and RING terminals) of the security control panel. When connected to the telco interface of a security control panel, the following might be considered:

Telephone communication should be enabled for the security control panel:

- DTMF (Tone) dialing must be set
- A telephone number must be set for reporting
- A user account must be set for reporting (do not use '0' digit, if possible)
- It might be necessary to turn off Telephone line monitoring (TLM) option
- It might be necessary to turn off dial tone detection
- For some control panels, the „Force Dialing” option must be set.

The communicator receives the reports over its telco interface, and forwards the messages to the AMS central.

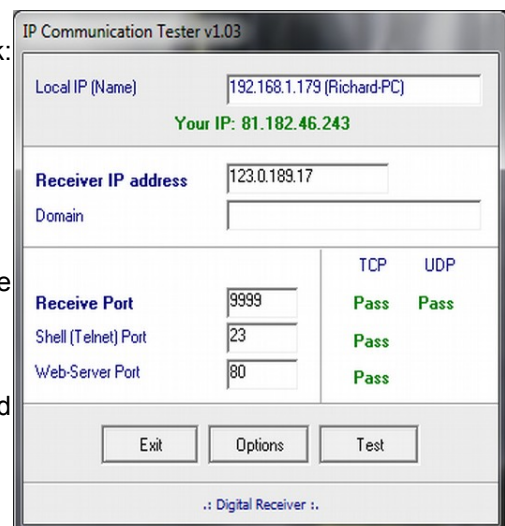
If the events cannot be reported on any of the programmed channels, the communicator will suspend receiving further events on the telco interface until the communication with the servers has been restored.

Testing AMS server connection

In case of eventual communication failures, when it is suspected, that the communicator cannot access the server of the AMS central, it can be useful to check server availability on the public internet network. For testing the software iptest.exe can be used

The iptest can be downloaded from the following link: <http://download.tellsystem.eu/software/iptest.exe>

1. The IP address or domain name of the AMS server must be set
2. The ports for accessing the AMS server must be set as follows:
 Receive port – for event reception, Telnet port – for remote programming, Web-server port – for browser-access
3. Clicking on Test button, the software checks the available ports, and indicates Pass or Fail status.



4. More settings can be done at the *Options* menu:

- *Enable TCP Test Report* = TCP connection testing
- *Enable UDP Test Report* = UDP connection testing
- *Invisible TCP/UDP Test* = The test event used for checking connection will not be displayed on the receiver
- *Enable AES Crypted Test Report / AES Key* = AES encryption testing

Firmware upgrade

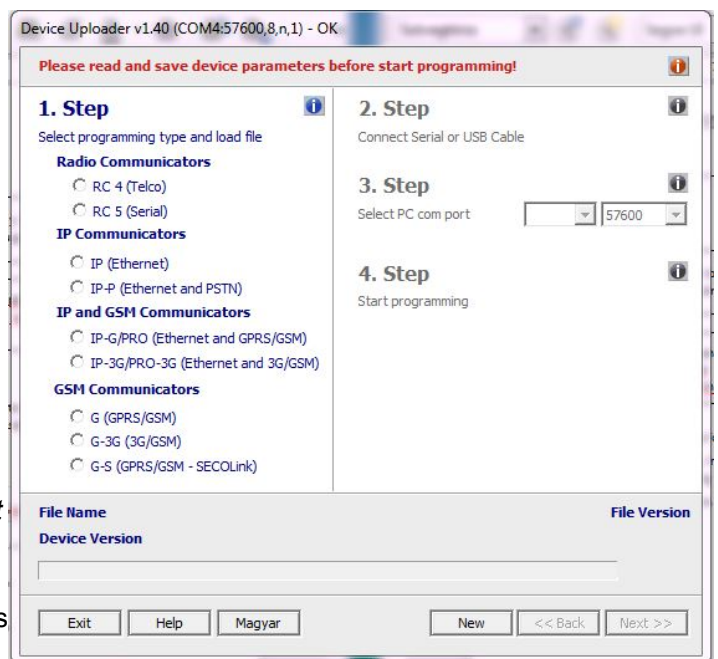
It is recommended to upgrade regularly latest device firmware to use new functions and eliminate possible bugs.

Firmware upgrade can be done by the Device Uploader , this is free you could download from the following link:
<http://download.tellsystem.eu/software/duploader.exe>

The software always contains the latest firmwares.

The firmware upgrade steps are the following:

1. Please save the actual settings from the communicator with *Terminal* software before firmware upgrade (check *System programming with PC software* chapter).
2. Start *Device Uploader* program for firmware upgrade.
3. Choose your unit type (Step 1. - G), then press Next.
4. Choose the new firmware file for the upgrade (Step 2.), then press Next.
5. Choose the COM port, where the communicator is connected (Step 3.), then *Next*.
6. The upgrade process can be started by pressing the *Start* button. The program verifies the current firmware version, then waits for the user to confirm the upgrade:
7. Selecting „Yes” will start the upgrade. The whole process takes about 1 minute. If you select „No”, then no change in the firmware will be done.
8. As the upgrade is completed, load back the program data with the *Terminal* software. (see section 6. *Programming the communicator with PC*).



Troubleshooting

If there is any problem with the communicators it is always recommended to upgrade their firmware to the latest available version, as this could solve most of the problems.

SYMPTOM: No connection between the COM-G and the PC during programming

SOLUTION: Check the USB cable connection at the PC. Check the Device Manager in Windows, if the driver for the USB serial port is properly installed, and the virtual serial port (COM) appears in the device list. Check, if the Terminal software is set to the same COM port.

SYMPTOM: the settings of COM-G seem to be ok, but no communication goes through to the AMS central.

SOLUTION: Check the IP address and port settings for the AMS server. Check the APN settings. Turn off PIN request at the SIM card, using a mobile phone. Check if there is proper cellular signal level. Check, if the mobile internet service is available for the SIM card – use it with a mobile phone, and verify internet connection.

SYMPTOM: The control panel cannot send messages to the COM-G communicator.

SOLUTION: Check, if the control panel is programmed properly – reporting is enabled, set to tone dialing, a proper account code and phone number is set, and Contact ID is selected as reporting format.

SYMPTOM: The control panel shows Comm Fault

SOLUTION: For some control panels it may required to disable TLM and/or dial tone detection. In some cases, the COM-G communicator can provide the following error messages (examples):

- 1354 012 99 = Ethernet cable is not connected
- 1354 034 99 = SIM card not present
- 1354 999 99 = Comm Trouble between the COM-G and the control panel
- 1354 001 99 = Comm Failure on channel IP #1 (Ethernet)
- 1354 003 99 = Comm Failure on channel GPRS #1
- 1354 006 99 = Comm Failure on channel GSM #2
- 1354 000 99 = Comm Failure for all channels in 3-4-5-6 mode.
- 1354 020 99 = Comm Failure for channels 3 and 4 in 3-4; 5-6 mode.
- 1354 100 99 = Comm Failure for channels 3 and 5 in 3-5; 4-6 mode.
- 1354 200 99 = Comm Failure for channels 4 and 6 in 3-5; 4-6 mode.

SMS programming

In case it is needed (and the SIM card used in the unit is capable to send and receive SMS messages), the most important features and parameters can be configured using SMS messages.

An SMS message can contain multiple commands, separated by spaces. The proper execution of the commands is verified by answering an „OK” messages. If there is any problem with the commands, an „ERROR” reply message is generated. After some specific control commands, the device will perform a reboot.

A security code is necessary for the SMS programming. It can be set in the Terminal, the default value is 1234. Furthermore, the security code starts with a hash-tag(#), and it is closed with an asterisk(*). Then the command has to be written with a space.

SMS command list

Description	SMS command	x value	value after = sign	Example
The communicator will be reset within 30 seconds.	reset		Command	#1234* reset
The communicator reports the status of its inputs and its firmware version.	?		Command	#1234* ?
Sets the APN for the SIM card	apn		= apn apn,apn-user,apn-psw	#1234* apn=online #1234* apn=my.apn,id,pw

Sets the account-id of the communicator globally, or by individual channels. The device will restart within 30 seconds.	a	x	The number of the channel	=	Account-id	#1234* a=1234 #1234* a3=5678
This command sets the server parameters for channels 3 and 4, and the CMS phone number for channels 5 and 6. The protocol setting (tcp or udp) is optional, and the phone number has to be given in international format, without the preceeding + or 00 prefix. Setting s=0 will disable reporting on all channels, s4=0 will disable reporting on channel 4. The device will restart within 30 seconds.	s	x	The number of the channel	=	ip:port:tcp/udp phone-nr	#1234* s4=my.ams.com:987:tcp #1234* s5=36301234567
Sets the test period in minutes, for the given channel. The period value can be between 0 and 65535, setting 0 will disable test reports. The device will restart within 30 seconds.	t	x	The number of the channel	=	test-period	#1234* t4=10
Sets the test code globally, or by individual channels. Please, take care to program a valid Contact-ID code. The device will restart within 30 seconds.	tc	x	The number of the channel	=	test-code	#1234* tc=1603
Can be used to control the on-board outputs of the commnunicator. Value of<n> can be 1 or 2. The corresponding I/O of the device should be programmed as an output, and the operation of the output follows the preprogrammed scheme. The output can be activated with the „on“, or „1“ values, and deactivated with „off“ or „0“.	o	x	The number of output		on/off	#1234* o1=on
Can be used to control the outputs of the IO-84 module(s), connected to the communicator. Value of<n> can be 1 to 8. The operation of the corresponding output of the IO-84 will follow its preprogrammed scheme. The output can be activated with the „on“, or „1“ values, and deactivated with „off“ or „0“. When no IO-84 module(s) are connected to the communicator, the command will be acknowledged, but ignored.	o	x	The number of output	=	on/off	#1234* o1=on
The command can be used to set the telephone numbers, which can activate the gate-control function. Value of <n> can be between 1 and 8. To use the gate-control function, some of the outputs of the communicator (or a connected IO-84 module) must be enabled and set to „gate-control“ mode. In this mode, any calls received from the given telephone numbers will activate the corresponding output.	p	x	The number of the phone number	=	phone-number	#1234* p5=3630123456

Technical data

	COM-G
Power Supply	10,5 – 28,0 Vdc
Standby Current	80 mA
Maximal Current	600 mA
Inputs / Outputs	2, programmable
Output type / rating	OC / max. 50 mA
Ethernet connection	10 Base-T
Mobile modem	COM-G: M95 Quad Band 850/900/1800/1900MHz GPRS Class B, Multislot Class 12, GSM Class 4/Class 1
Antenna	SMA
Event buffer	Up to 64 events
Operating temperature	-10 °C / 50 °C
Size (W / L / H)	60 x 105 x 12 mm
Weight	70 g