



CONTROLLER GV14

User Manual

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Purpose of the document

This document describes controller *GV14*, its use, features, operation and how to set operation parameters.

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Controller GV14

Controller *GV14* is a remote control device for electrotechnical equipment (opening or raising the gates, heating or ventilating the premises, watering the lawn or the greenhouse, controlling pump, boiler, transporter and other systems). Control commands are transmitted via GSM.

Upon receiving a call to the inserted SIM card number, the controller checks the user number according to the set mode, rejects the call and switches output relay contacts. It is also possible to switch controller output relay contacts using SMS message.

Features:

- 3 operation modes:
 - a) mode *All* – controller output relay contacts may be switched by any caller;
 - b) mode *Phone list* – controller output relay contacts may be switched by those, whose phone number is either on the user or the administrator list,
 - c) mode *Administrator* – controller output relay contacts may be switched by those, whose phone number is on the administrator list;
- Memory of 5 administrator and 1000 user names and their phone numbers,
- Phone number and name list export and import to, for example, MS *Excel*,
- Customisable switching period of output relay contacts,
- 2 inputs, for example, for the mounting case lock tamper or gate end position sensor,
- Sending SMS messages about input events,
- Customized description of input events,
- Sending confirmation of implemented control commands via SMS,
- Periodically sending an informative and detail test message,
- Distributing of SMS messages to the administrators according to controller event types,
- Setting all operation parameters using SMS messages,
- SMS query to get either an *Administrator* or a *User* list via SMS,
- Remote controller reset,
- Ignoring unauthorised calls and SMS messages,
- Comprehensive and clear controller operation light indication,
- Exceptionally simple to install and run.

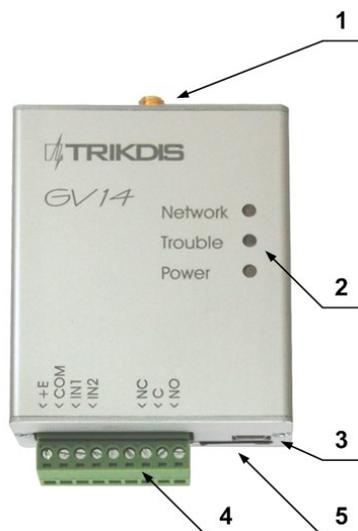
Technical parameters

GSM modem frequencies	850 / 900 / 1800 / 1900 MHz
Power supply voltage	DC – 12 ... 36 V
Current usage	Standby 50 – 100 mA While sending SMS – up to 0,5 A
Voltage commutated by the output relay	up to 30 VDC
Current commutated by the output relay	up to 1 A
Output relay control command	By phone call or SMS message
Switching of output relay contacts	<i>impulse</i> (control command commutates the output relay from 1 to 60 seconds), <i>level</i> (control command commutates the output relay until the next control command, e.g., next phone call)
Memory	Up to 5 administrator names and their phone numbers Up to 1000 user names and their phone numbers
Inputs	2 (IN1 and IN2), Set for NO (resistance $\geq 10\text{ k}\Omega$) or NC (resistance $\leq 0,5\text{ k}\Omega$) type circuits
Working environment	Temperature from -10°C to $+50^{\circ}\text{C}$ with humidity of 93% (no condensation)
Parameters setting	a) Computer software <i>TrikdisConfig</i> using USB b) Special syntax SMS messages
Controller dimensions and weight	79 x 65 x 25 mm aluminium case, 120 g

Equipment

Controller <i>GV14</i>	1 pc.
Adhesive mounting tape (7 cm)	1 pc

Controller components



1. SMA connection of GSM antenna
2. Light indicators
3. USB Mini-B connection for controller programming
4. External contacts connector
5. SIM card slot

Purpose of contacts

<i>Contact</i>	<i>Description</i>
+E	Power supply + terminal
COM	Power supply – terminal and common terminal for IN1, IN2 inputs
IN1 ir IN2	Terminals for input circuits
	2 unused terminals
NC	Output relay NC terminal
C	Output relay common C terminal
NO	Output relay NO terminal

Light indication

<i>Indicator</i>	<i>Status</i>	<i>Description</i>
NETWORK (denotes communication between the controller and GSM network)	OFF	Controller G14 initialisation in progress
	Yellow flashing	Registration to GSM network in progress
	Green light (5 sec.) + N green flashes	N - relative GSM signal level. 3 flashes – minimum sufficient level (30%), 10 flashes – maximum (100%).
TROUBLE (denotes controller operation)	OFF	No faults
	Green light	Programming mode
	Red light (5 sec.) + red flashes:	
	1 flash	Insufficient power supply voltage, below 9 V
	2 flashes	No SIM card
	3 flashes	PIN code error
	4 flashes	Registration to GSM network failed for 60 seconds
	5 flashes	Operation mode setting error *
6 flashes	Threshold GSM signal level (~ 30%)**	
POWER (denotes controller power supply)	OFF	No power supply
	Green light	Normal power supply
	Yellow light	Low supply voltage, below 11,5V
	Yellow flashing	Insufficient power supply voltage, below 9 V

Notes:

* - not a single administrator phone number is entered and the user list is prohibited.

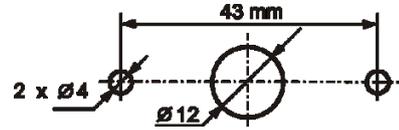
** - use a portable GSM antenna with a cable and fit it to the exterior of the case if controller is mounted into the metal case of automatics.

Controller installation

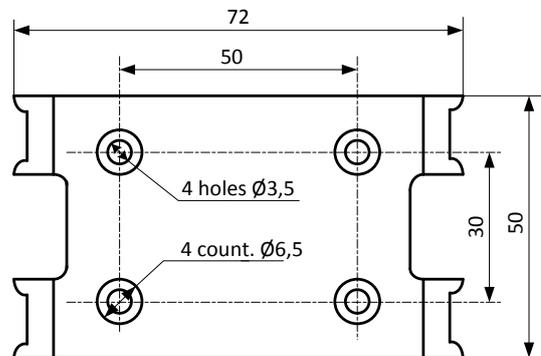
Follow this controller installation procedure in order to ensure that controller will be available for use to everyone with whom SIM card phone number is shared.

1. Purchase controller GV14. Factory settings should not be changed!
2. Insert the SIM card of the desired network provider into the controller.
 - It is not recommended to use pre-paid contract SIM cards.
 - SIM card PIN code must be disabled.
 - SIM card must be already registered in the network.
3. Embed the controller into the automatics mounting case.
 - a) Use adhesive mounting tape to mount the controller inside of the case.

b) Drill three holes in the mounting case (see picture below) and screw the controller using to screws M3x6.



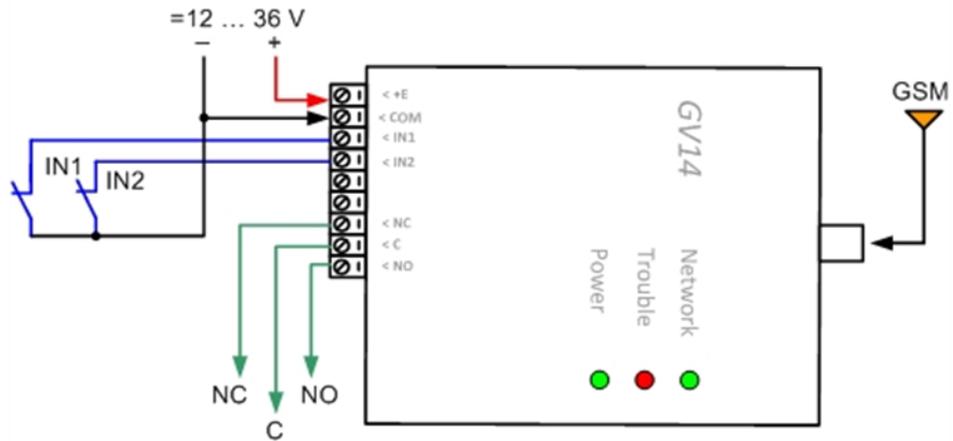
c) Insert the controller into the plastic holder PH which fitted inside the mounting case.



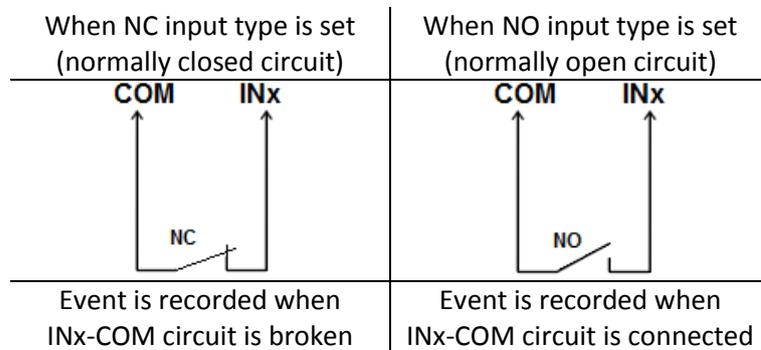
4. Screw the GSM antenna on.
5. Connect controller power supply and automatics control circuits to the controller contacts according to the schemes laid out below.
6. Turn on the power supply of the system.
7. Wait until the controller starts, LED *Network* lights up for 5 seconds and flashes at least 3 times, LED *Trouble* does not light up and LED *Power* lights up in green without interruption. If these indications are not as such, see section “**Light indication**”.
8. Check if the automatics can be controlled using a phone call – call the SIM card number of the controller.
9. Send these two SMS messages in the following order to the controller SIM card number in order to gain the *administrator* status:
 - 1) **123456 SETAP APNR1:+370xxxxxx** (+370... setting the phone number as administrator phone number)
 - 2) **123456 PSW 654321** (example of a SMS message setting a new password. 654321 refers to your new password)

If you wish your system to be controlled only by authorised persons, controller will need to be configured using SMS messages or computer software *TrikdisConfig* via USB. For more information see sections “**Configuration using software *TrikdisConfig***” and “**Configuration and control using SMS messages**”.

Wiring diagrams



Inputs connection

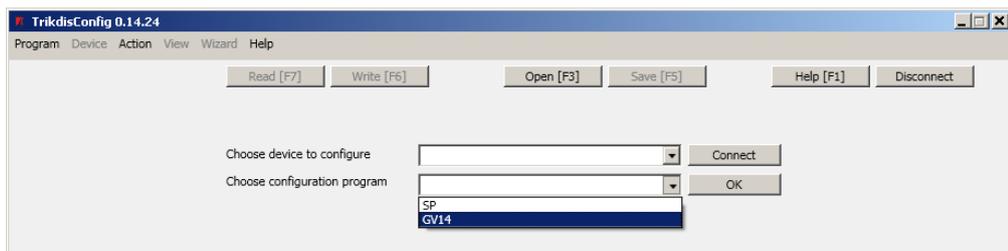


Configuration using software *TrikdisConfig*

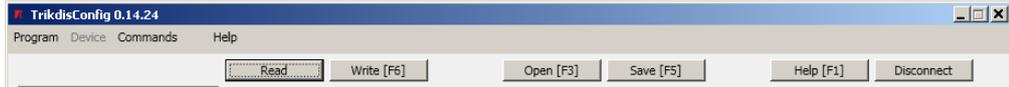
All controller *GV14* operation parameters are set using computer software *TrikdisConfig*. Software may be found on www.trikdis.lt.

Connecting to a computer

1. Connect the controller to the computer USB slot using a USB cable (e.g., USB type A to Mini-B 5-pin cable). 5 V power supply from the computer via USB is sufficient for controller programming.
2. Run *TrikdisConfig*.
3. Software will determine the connected device type in several seconds and will open a new window for programming. Device may be located manually, if it cannot be found automatically.



4. Click **Read [F7]**.



Function of the keys:

Read	Read current controller operation parameters
Write	Record new controller operation parameters
Open	Open an operation parameters file stored on a computer
Save	Save an operation parameters file on computer
Help	Open the controller manual
Disconnect	Disconnect the controlled from software <i>TrikdisConfig</i>



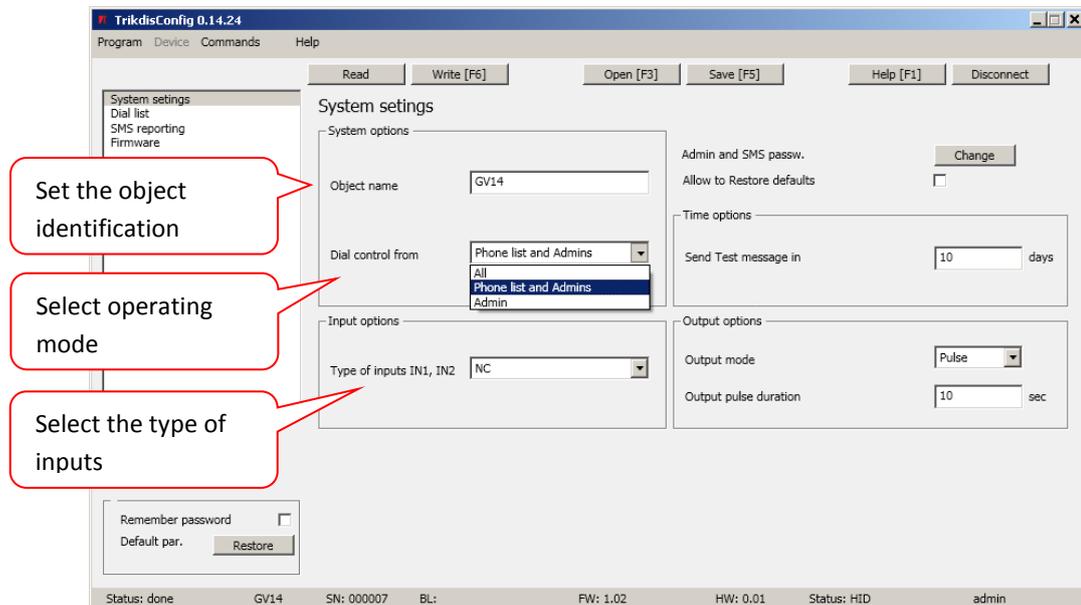
Information about the connected device

In the program status bar will be displayed where:

Status	<i>Done</i> is displayed after every successful reading or saving action
GV14	Product name
SN:	Controller serial number
BL:	Controller firmware boot loader version
FW:	Controller firmware version
HW:	Controller hardware version
Status:	Port number or name via which controller is connected to software <i>TrikdisConfig</i>
admin	User access level

Configuration of controller operation

Set the main operation settings in the menu In the main menu **System settings** set the main operation settings:



Parameter	Description
Object name	Controller identification name that will be featured in every controller SMS message
Dial control from	<p>a) <u>All</u> – controlled by anyone calling the controller SIM card number.</p> <p>b) <u>From the phone numbers list and administrators</u> – controlled by anyone calling the controller SIM card number and having their phone number on <i>User</i> and <i>Administrator</i> lists. All other calls will be ignored. <i>Administrators</i> will be able to send control and configuration SMS messages. Also, only they will receive SMS confirmations of sent command and other controller SMS messages.</p> <p>c) <u>Administrators</u> – controlled by anyone calling the controlled SIM card number and having their phone number on the <i>Administrator</i> list. All other calls will be ignored. <i>Administrators</i> will be able to send control and configuration SMS messages. Also, only they will receive SMS confirmations of sent command and other controller SMS messages.</p>
Type of inputs IN1, IN2	Choosing of input circuit type either NC or NO
Send Test message in	Setting period of the sending of controller test messages
Output mode Output pulse duration	<p>Output relay operation mode:</p> <p>a) <i>Level</i> – relay contacts status is switched to other command status, e.g. other phone call, once controller receives a control command</p> <p>b) <i>Impulse</i> – relay contacts status is switched to the opposite to set impulse length, once controller receives control command, e.g. a phone call</p>
Admi and SMS password	<p>Six-digit password for configuration and control using SMS messages. Default - 123456.</p> <p>Click <i>Change</i> to change the password to a desired one.</p> <p>Tick <i>Allow to change</i> to allow everyone who connects controller to a computer to reset to factory settings. When unticked, the <i>administrator</i> password must be entered in order to reset to factory settings.</p>
Allow to restore defaults	<p>Changing the current controller configuration to the initial default factory configuration.</p> <p>Tick <i>Remember the password</i> for computer to remember the new <i>Admi and SMS</i> password.</p>

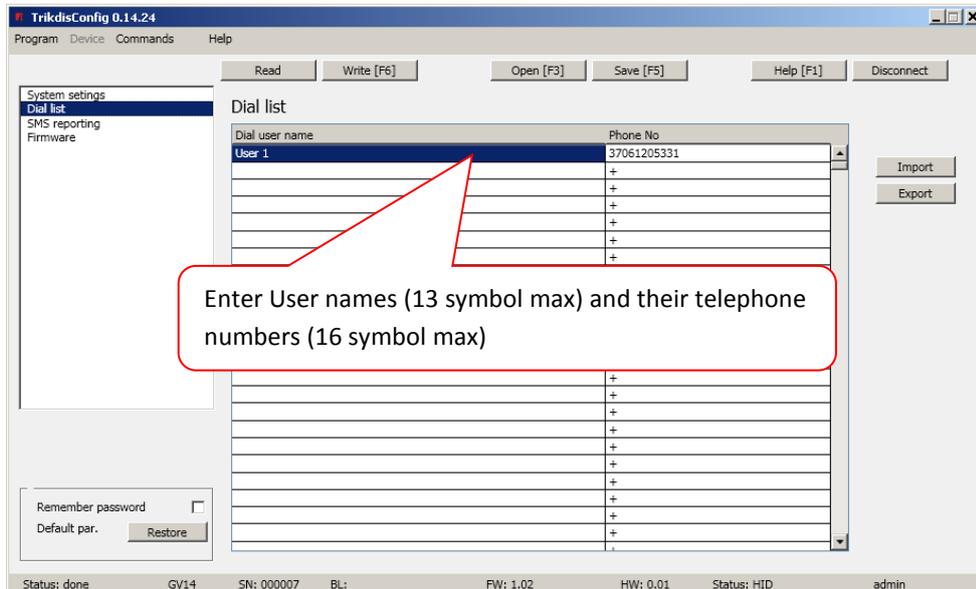
User list

The list of users, which are allowed to control the equipment by phone call is made in the menu **User list**.

1. Enter the user names and their phone numbers in the fields of the user list in program *TrikdisConfig*. Alternatively, create the list of user names and their phone numbers in MS Excel and click **Upload** to upload the list to the program.
2. Click **Save** (F5) to save the list in the controller memory.

Note:

Numbers must be entered in international format using prefix +.

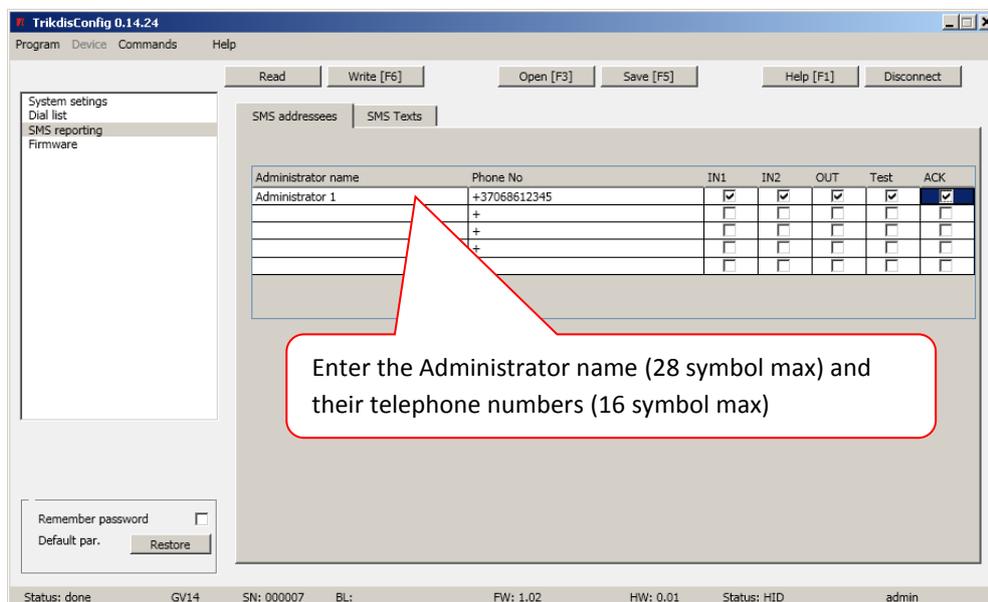


Administrator list

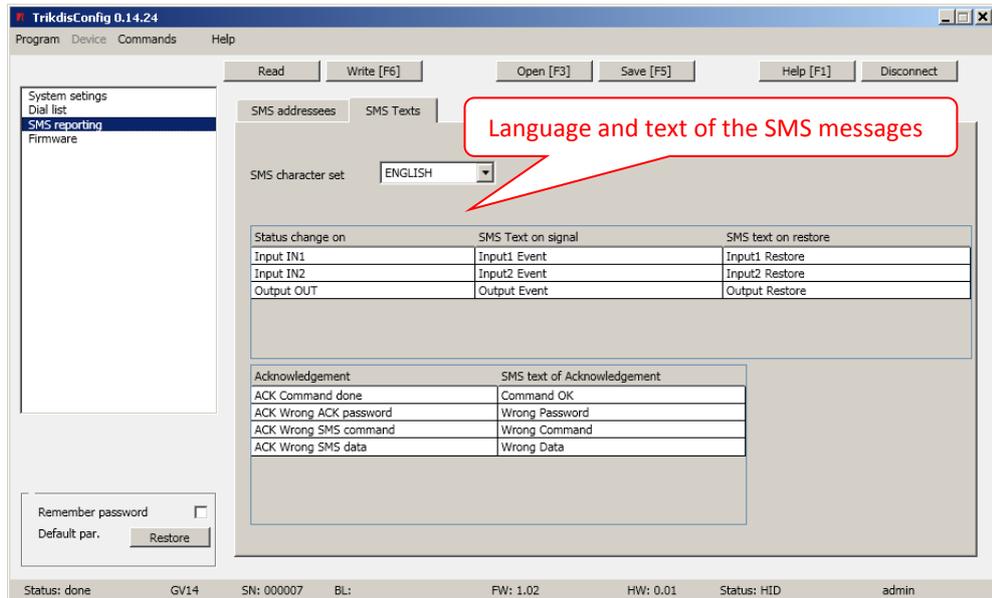
Enter at least one administrator name and their phone number in the tab **SMS addressees** in the menu **SMS messages**. Controller will follow the commands received from these numbers and will send them SMS messages.

Notes:

- If those on this list want to send control SMS messages, they must know the six-digit control password.
- Phone number of the first *administrator* may only be edited and cannot be deleted.
- Controller will not work if not a single *administrator* phone number is entered and control for the users will be denied.



Select the encoding language for sent SMS message texts in tab **SMS texts**. Enter desired confirmation texts for SMS texts and commands. In case of an event, controller will send the appropriate message with the customised text.



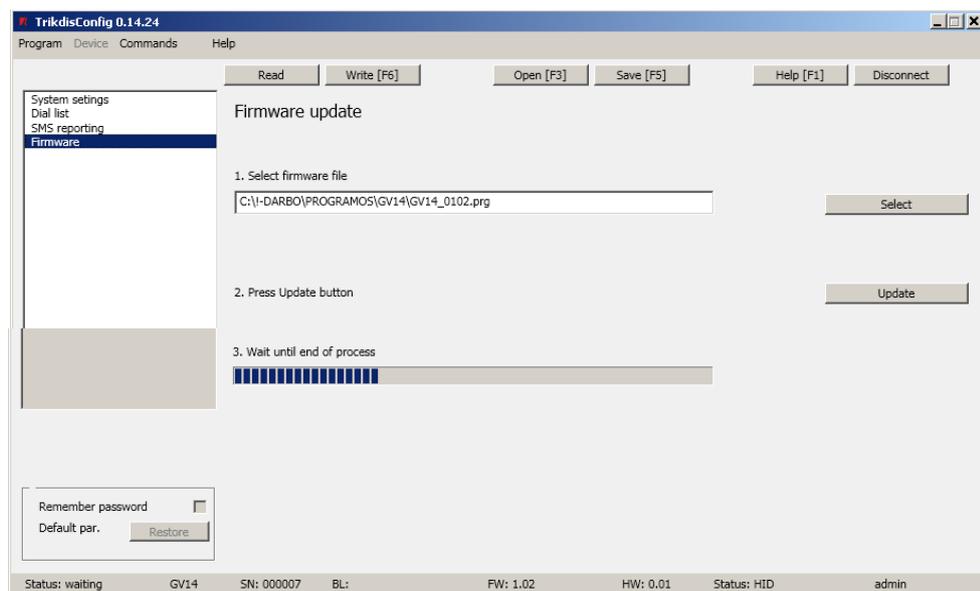
Recording and saving the configuration

1. Click **Record [F6]** to record your configuration into the controller memory.
2. Controller configuration may be saved on the computer. Click **Save [F5]** and create a file for controller configuration. Click **Open [F3]** to access it when needed.
3. Click **Disconnect** to disconnect the programmed device.

Updating the controller firmware

Manufacturer may improve the operation of controller GV14 and release a new controller firmware version. Every user has an opportunity to update operation of their controller.

1. Connect the controller to a computer using USB cable.
2. Run *TrikdisConfig*.
3. Select **Firmware** in the menu.
4. Click **Find** and select the desired firmware file.



5. Click **Update**.

6. Wait until the prompt appears.



7. Click **OK**. All operation settings will remain the same after the update.

Configuration and control using SMS messages

Controller GV14 parameters may be set and changed by sending SMS messages from a phone number, which is on the *administrator* list. In case there are not any entered *administrator* phone numbers, become an administrator by sending the following SMS message to the controlled SIM card number: **123456 SETAP APNR1:+370xxxxxxx**.

Structure of the command SMS message:

PASSWORD SPACE **COMMAND** SPACE **PARAMETERS**

Example: 123456 SPACE SETAP SPACE APNR1:+37068700000

Here:	123456	password
	SETAP	command
	APNR1:37068700000	parameters

Commands sent in SMS messages:

No.	Command	Contents	Description
1	RESET		Resetting controller GV14: E.g.: 123456 RESET
2	INFO		Inquiring about the controller status: E.g.: 123456 INFO
3	PSW	New password	Changing the controller GV14 password: E.g.: 123456 PSW 654321
4	SETC	ALL LIST DISABLE	Permission to control by phone call: All callers (default); Only those on User and Administrator lists; Only those on the Administrator list . E.g.: 123456 SETC LIST
5	SETI	NC NO	Setting input IN1, IN2 types: Normally Closed (NC); Normally Open (NO); E.g.: 123456 SETI NO
6	SETO	00 05	Output OUT operation: Switching level mode; Specified length (seconds) impulse; E.g.: 123456 SETO 05
7	SETT	00 30	Sending period of test messages: Do not send; Send during the specified hours; E.g.: 123456 SETT 30

8	SETH	00 10	GV14 answers to the call : Rejects the call without picking up the hook (default); Picks up the hook and holds connection for the set period of time; E.g.: 123456 SETH 05
9	SETL	ENG LIT RUS	Setting the communication language: English (default); Lithuanian; Russian; E.g.: 123456 ENG
10	SETAP	APNR1:+370xxxxxx APNR2:+370xxxxxx APNR3:+370xxxxxx APNR4:+370xxxxxx APNR5:+370xxxxxx	Entering of administrator phone number (16 symbols max): 1st phone number; 2nd phone number; 3rd phone number; 4th phone number; 5th phone number; E.g.: 123456 SETAP APNR1:+370xxxxxx
		APNR1:DEL APNR2:DEL APNR3:DEL APNR4:DEL APNR5:DEL	Deleting administrator phone numbers: 1st phone number; 2nd phone number; 3rd phone number; 4th phone number; 5th phone number; E.g.: 123456 SETAP APNR2:DEL
11	SETAE	IN1 IN2 OUT TEST ACK	Allocation of messages to administrators: Sending IN1 input events; Sending IN2 input events; Sending control events; Sending test messages; Sending responses to command SMS E.g.: 123456 SETAE APNR1:IN1-ON,IN2-ON,OUT-ON,TEST-OFF,ACK-ON
12	SETAN	APNR1:Name APNR2:Name APNR3:Name APNR4:Name APNR5:Name	Entering of administrator name (28 symbols max): Entering the name of the 1st administrator; Entering the name of the 2nd administrator; Entering the name of the 3rd administrator; Entering the name of the 4th administrator; Entering the name of the 5th administrator; E.g.: 123456 SETAN APNR2:Name
		APNR1: APNR2: APNR3: APNR4: APNR5:	Deleting an administrator name: Deleting the name of the 1st administrator; Deleting the name of the 2nd administrator; Deleting the name of the 3rd administrator; Deleting the name of the 4th administrator; Deleting the name of the 5th administrator; E.g.: 123456 SETAN APNR2:
13	TXTA	<Object name>	Entering an object name: E.g.: 123456 TXTA object name
14	TXTE	IN1:<Text> IN2:<Text> OUT:<Text>	Entering an event message text: IN1 input event; IN2 input event; OUT output event; E.g.: 123456 TXTE IN1:1-ojo input event
15	TXTR	IN1:<Text>	Entering a restoration event message text: IN1 input restoration;

		IN2:<Text> OUT:<Text>	IN2 input restoration; OUT output restoration. E.g.: 123456 TXTR IN2:2-o input restoration
16	SETP	+370xxxxxx +370xxxxxx,<Name>	Entering of user name and their phone number: User phone number (16 symbols max); User phone number + name (13 symbols max). E.g.: 123456 SETP +31xxxxxx E.g.: 123456 SETP +31xxxxxx,Name
17	DELP	+370xxxxxx <Name>	Deleting a user phone number: User phone number; User name E.g.: 123456 DELP +370xxxxxx E.g.: 123456 DELP Name
18	OUT	ON OFF	Changing the outputstatus: Changing output status to ON; Changing output status to OFF. E.g.: 123456 OUT OFF
19	LISTA		An SMS query for an Administrator list in SMS to be sent. SMS message containing of an Administrator list will be sent. E.g.: 123456 LISTA
20	LISTU		An SMS query for a User list in SMS to be sent. SMS message containing of a User list will be sent. E.g.: 123456 LISTU

Automatics control

Phone call

1. Call to the controller GV14 using a SIM card number.
2. Control command will be implemented immediately after the controller rejects the call.

SMS message

Note: Phone number must be on the controller's *administrator* list.

1. Send SMS message:
Example: **123456 OUT OFF** to turn the output relay to the state *off*;
Example: **123456 OUT ON** to turn the output relay to the state *on*;
2. Wait until you receive the confirmation of command implementation (if specified during the configuration):

Command OK	command implemented;
Wrong Password	wrong password;
Wrong Command	wrong command;
Wrong Data	wrong parameters;
Fatal Error	controller error (this response cannot be described by the user)

Controller SMS messages

Controller will send SMS messages to the *administrators* once a controller event takes place or controller receives a control message via SMS.

Every time 12 V power supply voltage is turned on, *administrators* are send a SMS message:

<i>SMS text</i>	<i>Description</i>
Dev: GV14	Device name
IMEI: 863071014319393	IMEI code of the GSM modem
SN: 000002	Serial number of the controller
FW: 0.02	Controller firmware version
LITHUANIAN	SMS text encoding k

Administrators are send a test SMS message in a time period specified during the configuration:

<i>Text</i>	<i>Meaning</i>	<i>Description</i>
Power:	GV14	Object name entered in the field Object name
Signal:	24,5V	Power supply in voltage
IN1:	90%	Signal level in percent
	OK	IN1 input status:
	False	<ul style="list-style-type: none"> • circuit intact • circuit is broken
IN2:	OK	IN2 input status:
	False	<ul style="list-style-type: none"> • circuit intact • circuit is broken
OUT:	ON	Output relay status:
	OFF	<ul style="list-style-type: none"> • ON • OFF
Used Phone:		
Admin:	x/5	x phone numbers out of 5 possible entered
User:	x/1000	x phone numbers out of 1000 possible entered
	Fatal ERROR!!!	Controller is ignoring the phone numbers list due to errors

Example of a SMS message response to the SMS inquiry:

<i>Text</i>	<i>Meaning</i>	<i>Description</i>
GV14	Object name	Object name specified during the configuration is displayed in the message
Input1 Event	Event in input IN1 circuit	Controller event SMS text specified during the configuration is displayed in the message

Safety requirements

Be sure to familiarise yourself with this manual before using the controller.

Controller may only be set up and maintained by trained specialists, who possess knowledge about operation of GSM devices and their safety requirements. External power supply must be turned off when controlled is being set up!

Controller must be set up in limited access areas and in safe distance from sensitive electronic equipment in the premises. Controller is not resistant to vibration, other mechanical effects, humidity and aggressive chemical environment.



Cases, transformers and other used devices must comply with LST EN60950 standard safety requirements.

Controller is powered by 12-36 V DC power.

A bipolar automatic fuse must be set up to protect from a too high electric current supply in the circuit. Separation gap between the contacts must not be smaller than 3 mm. The fuse must be set up in a place known to the maintenance specialists. Device is disconnected from the electrical network by turning off the automatic fuse.

Warranty and limitation of liability

The manufacturer provides a 24 month warranty. Warranty coverage begins on the day of the product purchase-sale agreement or on the issue date of an invoice or a fiscal check.

- The manufacturer is not liable for product malfunction, if the product is set up or used not in accordance to the product user manual.
- The manufacturer is not liable for product malfunctions, if they have occurred due to the loss of GSM/GPRS/Internet connection or due to failure in the networks of the connection service provider.
- The manufacturer is not liable for the interruption or restriction of GSM/GPRS/Internet connection service to the product buyer or the user of the product and shall not reimburse the resulting property or non-pecuniary damages.
- The manufacturer is not liable for the interruption or restriction of the electricity supply to the product buyer or the user of the product and shall not reimburse the resulting property or non-pecuniary damages.