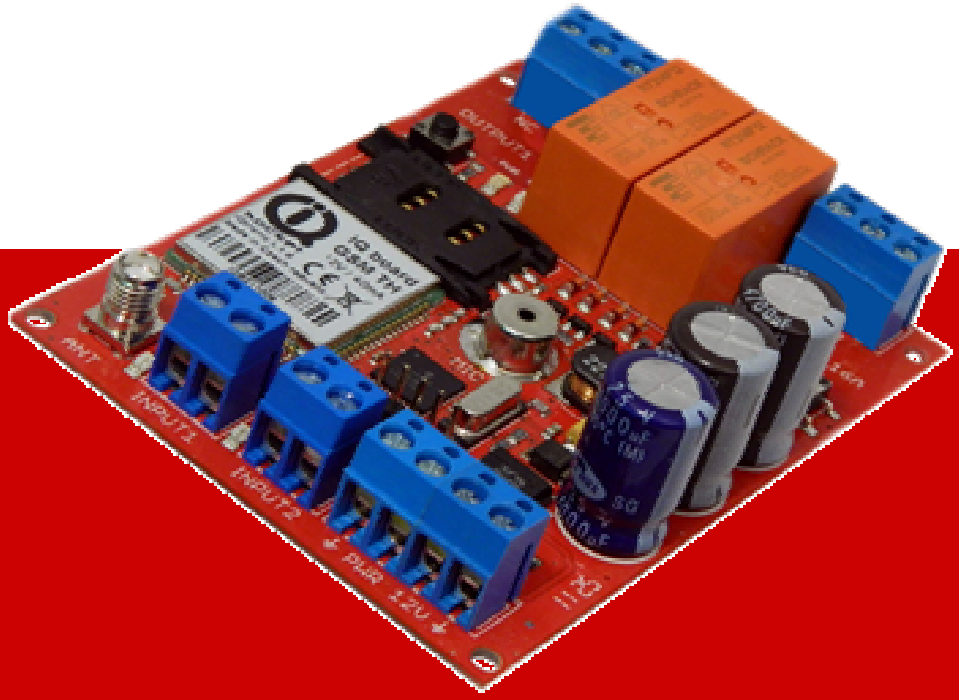
IQtronic
Solutions to control and save energy



User Guide

IQSocket IQSB-GSM900

Version v1.0 rev6, firmware v.2.0.2

1.1 Important information

Every effort has been taken to ensure the accuracy of this document, however we do not accept responsibility for damage, injury, loss or expense resulting from errors and omissions, and we reserve the right of amendment without further notice.

WARNING: This product is not designed for use in, and should not be used for, medical applications.

Product must be mounted inside a suitable enclosure providing environmental protection.

The product doesn’t guarantee safe power source disconnection, only functional switching of power is performed.

The product contains no serviceable parts, or internal adjustments. No attempt must be made to repair this product. Faulty units must be returned to supplier for repair. Improper use, disassembling or product modification causes warranty loss.

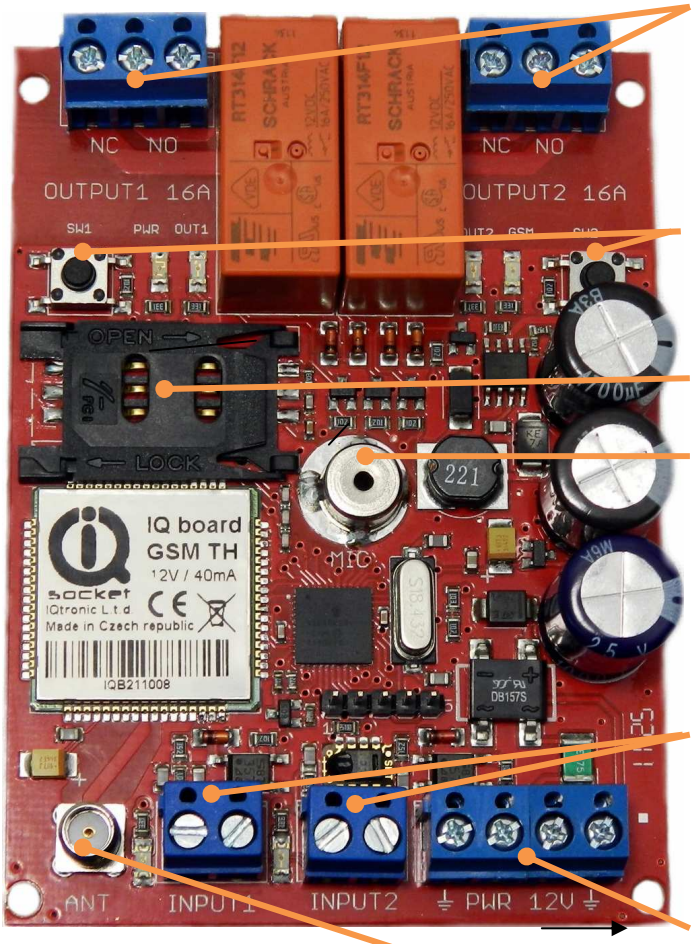
This product must be installed by a qualified person. All electrical wiring must be carried out in accordance with the appropriate regulations for the place of installation.

Before attempting any electrical connection work, please ensure all supplies are switched off.

2 Introduction

IQsocket IQSB-GSM900 is an embeddable member of family of intelligent power sockets brought to you by IQtronic, Ltd. It comes in form of PC board for both standalone use or embedded inside your product.

IQsocket IQSB-GSM900 allows you to control any electric appliances connected to the device's two power relays remotely over GSM network. You can use for this purpose any mobile phone or even fixed-line telephone, simply by calling to, or by sending SMS to the number of SIM card inserted of your IQsocket IQSB-GSM900. Own power consumption is very low (less than 20mA at 12V) thanks to use of latching (bistable) relays.



Power Relay Output1/Output2: Connect your appliances here. Two independent Single Pole Double Throw relays, rated 16A/250VAC for resistive loads.

Push buttons SW1/SW2: For manual control of particular relay output.

SIM socket: Socket for SIM card.

Microphone: For listening of sound from surrounding environment.

Input1 and Input2: Two inputs for external sensors, states can be read remotely by SMS and used to generate alarm alerts.

Power supply: For connecting external power supply.

ANT SMA connector: Connect GSM antenna here (included in package)

Besides controlling power, IQsocket IQSB-GSM900 is equipped with a choice of useful functions, including:

- Remote monitoring of status of two digital inputs, tailored to connect with external sensors such as PIR motion detectors, door contacts, water level sensors and so on.
- Sending alarm alerts based on status of two digital inputs; change of GSM BTS and decrease of input voltage below defined threshold.
- Embedded 7 resettable counters, counting number of changes of outputs, inputs, push buttons and GSM signal losses
- Time scheduler function, allowing switching on/off/restart of your appliance and sending status SMS message based on day of week and time.
- Listening of sound from surrounding environment using integrated microphone by call (tapping)

2.1 Product features

In general, IQsocket IQSB-GSM900 has following features:

- Controlling (turn on, turn off; turn on/off for a specified time; restart by cutting power for short time) of any electric appliances connected to the two independent switched outputs by SMS; by call – directly or using DTMF; or manually by pressing push buttons on IQSB-GSM900 board.
- Sending alarm SMS alerts to user, based on state of inputs, change of input voltage below preset threshold or change of GSM cell
- Sending informational status SMS messages to user
- Providing status of switched outputs by SMS upon SMS request
- Sending status of embedded 7 resettable counters, counting number of changes of outputs, inputs, push buttons and GSM signal losses
- Sending current values of user-configured IQSB-GSM900 parameters upon SMS request
- Configuring IQSB-GSM900 parameters simply by sending SMS commands
- Listening of sound from surrounding environment using integrated microphone by call (tapping)

3 Installation

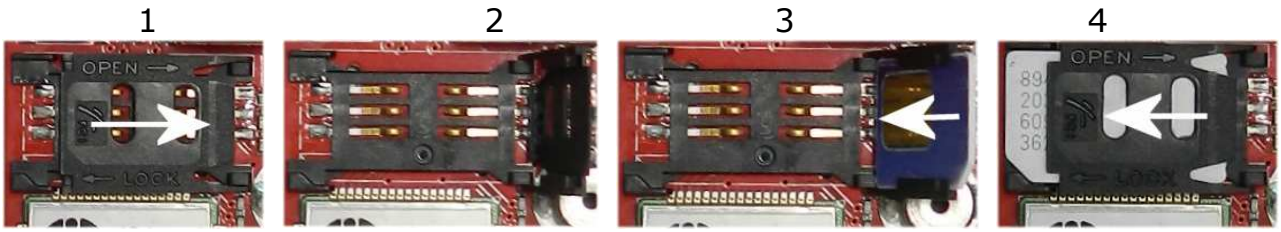
Before proceeding with installation, please read this manual thoroughly, paying special attention to the Important information section at the beginning.

Then determine which features will be used in your application including any external sensors, identify which appliances and/or circuits will be controlled by the device, prepare device housing, and identify where the device will be mounted. In more complicated situations, it is recommended that you create a temporary test bench to verify your setup before commencing final installation.

3.1 Inserting SIM Card

Prepare a standard size SIM card from your preffered GSM operator and insert it into SIM bay of your IQsocket IQSB-GSM900:

- Unlock SIM bay by sliding the retention latch to the right (1)
- Open the retention latch (2)
- Place the SIM card inside, observing proper orientation (3)
- Close the retention latch and then lock by gently sliding to the left (4)



To remove SIM from your IQsocket IQSB-GSM900, repeat the same steps.

WARNING!

PIN authorization should be turned off before the SIM card is used in IQsocket IQSB-GSM900

Authorization can be turned off by inserting the SIM card into a GSM phone and disabling SIM PIN usage using appropriate command usually located in

'Settings' phone menu. Now you can remove the SIM card from phone and insert it into your IQsocket IQSB-GSM900.

Note...

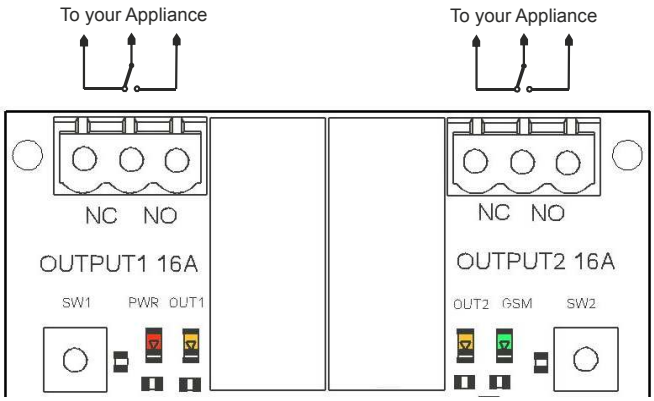
It is highly recommended to delete all received SMS messages, stored on the SIM card before using it in IQsocket IQSB-GSM900

3.2 Wiring the IQsocket IQSB-GSM900

This section describes wiring of the IQsocket IQSB-GSM900.

3.2.1 Outputs wiring

Each output terminal block has three pins (SPDT/form C relay switch). Turned On state means pins labeled as "NO" are connected; this is indicated by yellow LED indicator labeled OUT1 for Output1 and OUT2 for Output2. Turned Off state then means "NC" pins are connected and particular LED indicator is off.



(switch positions drawn on the picture are in Turned Off state)

WARNING!

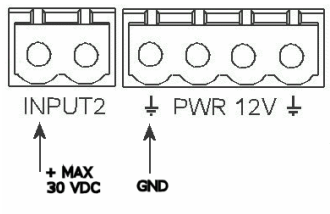
Please respect maximum current rating of outputs - 16A for resistive load. Do not overload your IQSB-GSM900, as this may damage or shorten life span of the internal switching relays, which is not covered by warranty. It is recommended to use external contactors in case of higher current is required and/or capacitive/inductive load will be used.

3.2.2 Inputs wiring

Input1 and Input2 each have two pin terminal block for connection of external sensors. Inputs are optically isolated. Input can have one of two states – Log.1 (active, high, true) and Log.0 (inactive, low, false).

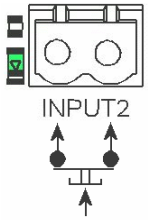
State is recognized by DC voltage level against GND potential, with threshold 2V, or by impedance in range 0Ohm-5kOhm between the two input pins, where the left pin is a pulled-down Input and the right pin is VCC.

Voltage sensing



Connect input voltage (max. +30VDC) to the left-most Input pin, GND is located at both sides of the Power terminal block (PWR).

Impedance sensing



Connect any switch-based sensor such as relay contact, switch, magnetic door contact, PIR sensor, etc to the Input pins. Resistance up to 5 kOhm can be used to invoke a state change.

The detected state of each Input is indicated by a green LED located to the left of each Input terminal block.

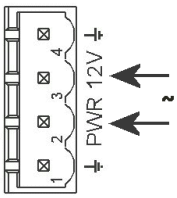
WARNING!

Please respect the maximum voltage rating of input pins - 30VDC. Overvoltage may cause damage to device, which is not covered by warranty.

3.2.3 Power supply wiring

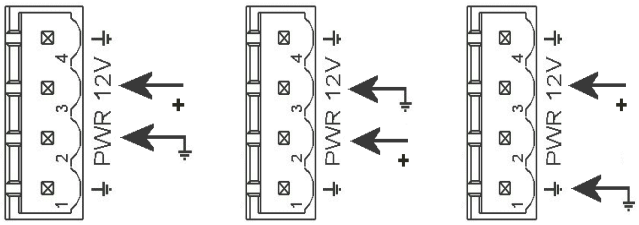
The IQSB-GSM900 supports power supply 8-24VDC or 6-16VAC. A 12VDC AC adapter is included in the product package. Current consumption is max. 40mA, typical average value is 20mA @ 12VDC.

AC voltage power supply



AC voltage should be always connected only to the middle pins.

DC voltage power supply



Preferred connection of DC voltage is via the middle pins, with any polarity.

Note...

Power supply connection is protected by an onboard resettable fuse.

WARNING!

Please respect maximum voltage rating of the external power supply voltage 24VDC/16VAC. Damage caused by overvoltage is not covered by warranty.

WARNING!

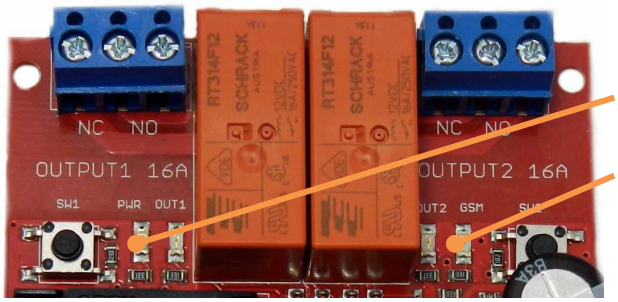
Ensure power supply voltage is not lower than minimum voltage 8VDC/6VAC. Doing so can cause erratic behavior.

3.3 Powering IQSB-GSM900 On

Upon completion of wiring and installation, apply power via an external power supply. If using the supplied AC adapter, simply plug it into a live electrical socket.

You can verify operation by observing the LED indicators:

- When power is applied, all LED indicators will blink three times as internal diagnostics are performed. If diagnostic tests are successful, the PWR LED, located near Output1 terminal block, will turn solid Red.
- While searching for a GSM network, the GSM LED will blink green approximately once per second. When the device has successfully connected to a GSM network, the GSM LED will blink slowly, approximately once every three seconds.
- If the SIM card has PIN Authorization still active, the GSM LED will blink quickly, approximately three times per second.



PWR LED indicator: Red.

GSM LED indicator: Green.

Please see chapter 5 for more information on LED indicators.

Your IQSB-GSM900 is now ready for use.

4 Managing IQSB-GSM900

This chapter guides you through management commands and features of IQSB-GSM900.

4.1 Managing by SMS

Commands are send in form of SMS messages to call number of SIM card inserted into your device. Messages have following syntax:

pinCOMMAND (e.g. *3366STATUS*)
- With pre-configured security password by command *SMSPIN=3366*

COMMAND (e.g. *STATUS*)
- with un-configured security password/SMSPIN

There are two kinds of commands:

Control commands (labeled as Ctrl in tables)
- Used to control of the IQSB-GSM900 and can be used at any time. Security settings, such as SMSPIN, permitted callers list, **DO** apply.

Configuration commands (labeled as Cfg in tables)
- Allows to configure the IQSB-GSM900 parameters and functions. Security settings, such as SMSPIN, permitted callers list, **DO NOT** apply – instead, as a security measure, configuration commands are accepted only in configuration mode.
- Configuration mode can be activated by using *CONFIG* command. Notice CONFIG is a Ctrl-class command hence protected by your security settings. Configuration mode is automatically deactivated after 10 minutes since last configuration command has been received.
- When a configuration command has been issued while configuration mode is not active/already expired, error message “Timed Out!” will be replied to the sender. See also chapters 4.7 and 0 for more information about error messages.

Each command is normally confirmed by a response SMS sent back to the command sender number. In case of an error is detected in a command, IQSB-GSM900 will respond with error message to the sender. Sending response and error SMS messages can be disabled. See also chapters 4.7 and 0 for more information about error messages.

Case of commands is ignored; STATUS or sTaTUS is the same command.

All incoming SMS messages longer than 30 characters or messages containing space and dot characters are being deleted without any error response.

SMS Command	Description	SMS Response	Type
TURNOFF	Turn both Output1 and Output2 off	TurnedOff	Ctrl
TURNON	Turn both Output1 and Output2 on	TurnedOn	Ctrl
TURNOFF=123	Turn both Output1 and Output2 off for 123 minutes. Maximum acceptable value is 180 minutes.	TurnedOff 123 min	Ctrl
TURNON=123	Turn both Output1 and Output2 on for 123 minutes. Maximum acceptable value is 180 minutes.	TurnedOn 123 min	Ctrl
TURNOFF1	Turn the Output1 off	TurnedOff1	Ctrl
TURNON1	Turn the Output1 on	TurnedOn1	Ctrl
TURNOFF1=123	Turn the Output1 off for 123 minutes. Maximum acceptable value is 180 minutes.	TurnedOff 1 123 min	Ctrl
TURNON1=123	Turn the Output1 on for 123 minutes. Maximum acceptable value is 180 minutes.	TurnedOn1 123 min	Ctrl
TURNOFF2	Turn the Output2 off	TurnedOff2	Ctrl
TURNON2	Turn the Output2 on	TurnedOn2	Ctrl
TURNOFF2=123	Turn the Output2 off for 123 minutes. Maximum acceptable value is 180 minutes.	TurnedOff 2 123 min	Ctrl
TURNON2=123	Turn the Output2 on for 123 minutes. Maximum acceptable value is 180 minutes.	TurnedOn2 123 min	Ctrl
RESTART	Change (negate) state of both Output1 and Output2 for time preconfigured by command RESTARTTIME.	Restarted	Ctrl
RESTART1	Change (negate) state of the Output1 for time preconfigured by command RESTARTTIME.	Restarted1	Ctrl
RESTART2	Change (negate) state of the Output2 for time preconfigured by command RESTARTTIME.	Restarted2	Ctrl
STATUS	Get status of IQsocket IQSB-GSM900: Outputs and inputs state, input voltage, time and GSM signal	Output:OFF/OFF, Input ON/ON, Voltage 12 V, Time:12/01/21,12:01:25, Signal:76%	Ctrl

If a power failure occurs during *TURNON=123*/ *TURNOFF=123* commands, time of power failure is not included in the countdown, so e.g. you need to run an appliance for a hour issuing *TURNON1=60* command, but power is lost after 30minutes and restored back say after 2hours, appliance will be running for half an hour after power is restored back.

4.2 Managing by phone call

The output socket of IQSB-GSM900 can be also controlled by dialing/ringing up the number of its SIM card. Call is for most commands rejected by IQSB-GSM900 so its use is free of charge, with exception for listening sounds using embedded Microphone.

Behavior of IQSB-GSM900 to incoming calls must be configured in advance using RING command per following table.

SMS Command	Description	SMS Response	Type
RING=NOACTION	No action is performed, call is rejected	RING=NOACTION – OK	Cfg
RING=RESTART	Change (negate) state of both Output1 and Output2 for time preconfigured by command RESTARTTIME, call is rejected.	RING=RESTART – OK	Cfg
RING=RESTART1	Change (negate) state of the Output1 for time preconfigured by command RESTARTTIME, call is rejected.	RING=RESTART1 – OK	Cfg
RING=RESTART2	Change (negate) state of the Output2 for time preconfigured by command RESTARTTIME, call is rejected.	RING=RESTART2 – OK	Cfg
RING=SWITCH	Change (negate) state of both Output1 and Output2, call is rejected.	RING=SWITCH – OK	Cfg
RING=SWITCH1	Change (negate) state of the Output1, call is rejected.	RING=SWITCH1 – OK	Cfg
RING=SWITCH2	Change (negate) state of the Output2, call is rejected.	RING=SWITCH2 – OK	Cfg
RING=MIC	Listening of sound in surrounding environment via integrated microphone, call is answered. Call terminated after 1 minute.	RING=MIC – OK	Cfg
RING=DTMF	Enable DTMF control, see chapter 4.2.1	RING=DTMF – OK	Cfg
RING?	Get current configuration of RING action, active setting is in () parentheses.	RING=(NOACTION), RESTART, SWITCH, MIC	Cfg

4.2.1 Control using DTMF

IQSB-GSM900 can be controlled via DTMF tones by pressing buttons on your phone after making call to number of its SIM card. DTMF offers increased security and flexibility comparing with control using ringing it up.

In order to use DTMF control, it is necessary to enable it using *RING=DTMF* command, as is described in previous chapter.

Then you can make call to your IQSB-GSM900. Call will be answered and you will hear a short (1s) high tone (like if key 9 pressed) indicating DTMF control is ready. Now, enter the PIN code, which you configured using command *SMSPIN* (see chapter 4.6), and confirm it by pressing # key.

In case you entered a wrong PIN, you will hear three times low tone beep (like if key * pressed) and call will be ended.

When a valid PIN has been entered, you will hear the short (1s) high tone (like if key 9 pressed) again, indicating PIN has been accepted.

Now, you can enter your command manually using keypad on your phone or command pre-configured by *DTMFCONTROL* will be immediately executed and you can terminate the call.

Supported manual DTMF commands

10# - Output 1 state 0 – to turn Output1 to OFF state
11# - Output 1 state 1 – to turn Output1 to ON state
20# - Output 2 state 0 – to turn Output2 to OFF state
21# - Output 2 state 1 – to turn Output2 to ON state
30# - Turn on microphone for tapping
31# - Turn off microphone for tapping

After you enter particular command code, e.g.10 and confirm it by pressing #, you will hear either short high beep in case of success, or three times low beep when you entered a wrong/invalid command. Now you can terminate the call.

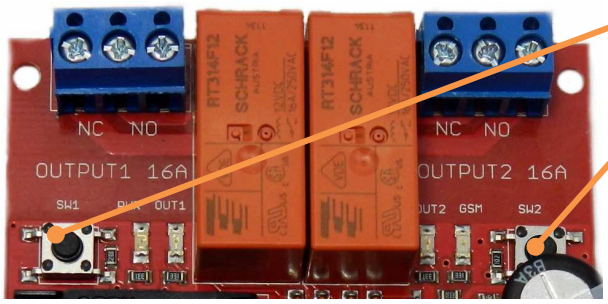
Pre-configured DTMF commands

SMS Command	Description	SMS Response	Type
DTMFCONTROL= MANUAL	Waiting for manual command entered through phone keypad	DTMFCONTROL= MANUAL – OK	Cfg
DTMFCONTROL =RESTART	Change (negate) state of both Output1 and Output2 for time preconfigured by command RESTARTTIME	DTMFCONTROL =RESTART – OK	Cfg
DTMFCONTROL =RESTART1	Change (negate) state of the Output1 for time preconfigured by command RESTARTTIME	DTMFCONTROL =RESTART1 – OK	Cfg
DTMFCONTROL =RESTART2	Change (negate) state of the Output2 for time preconfigured by command RESTARTTIME	DTMFCONTROL =RESTART2 – OK	Cfg
DTMFCONTROL =SWITCH	Change (negate) state of both Output1 and Output2	DTMFCONTROL =SWITCH – OK	Cfg
DTMFCONTROL =SWITCH1	Change (negate) state of the Output1	DTMFCONTROL =SWITCH1 – OK	Cfg
DTMFCONTROL	Change (negate) state of the Output2	DTMFCONTROL	Cfg

=SWITCH2		=SWITCH2 – OK	
DTMFCONTROL =MIC	Listening of sound in surrounding environment via integrated microphone	DTMFCONTROL =MIC – OK	Cfg
DTMFCONTROL?	Get current configuration of DTMFCONTROL, active setting is in () parentheses.	DTMFCONTROL =(MANUAL), RESTART, RESTART1, RESTART2, SWITCH, SWITCH1, SWITCH2, MIC	Cfg

4.3 Manual Control

IQSB-GSM900 can be also controlled manually using push buttons located near to the Output terminal blocks.



SW1 Push Button: Use for manual control of the Output1 relay.

SW2 Push Button: Use for manual control of the Output1 relay.

Usage of push buttons:

- Control of outputs: Short pressing (about 1 one second) of the push button will change (negate) state of the particular output relay.
- Reset to default settings, please see chapter 6.1 for more information

Note...

Manual control by pressing of the push button become active after 30 seconds since IQsocket IQSB-GSM900 is powered on. A SIM card must be inserted in the SIM bay.

4.4 Timing setup

Some of the IQSB-GSM900 features use a predefined time intervals, which can be changed by SMS configuration commands.

4.4.1 RESTARTTTIME

Following table summarizes settings of time interval of *RESTART* command:

SMS Command	Description	SMS Response	Type
RESTARTTIME=XX	Configures time of RESTART command. Range is 1 to 180 seconds.	RESTARTTIME=XX – OK	Cfg
RESTARTTIME?	Get current configuration of RESTARTTIME parameter.	RESTARTTIME=10 seconds	Cfg

4.4.2 RINGONTIME

Following table summarizes settings of time interval how long will be device keeping ringing up the target telephone number (defined by *ALARMNUMBER*) in case of generating alarm alert or invoked by *RINGON* command:

SMS Command	Description	SMS Response	Type
RINGONTIME=XX	Configures time of RESTART command. Range is 1 to 180 seconds.	RINGONTIME=XX – OK	Cfg
RINGONTIME?	Get current configuration of RESTARTTIME parameter.	RINGONTIME=10 seconds	Cfg

Note...

A call initiated by the IQSB-GSM900, such as alarm alert can be either ignored (ringing will end after passing of RINGONTIME*), rejected, or answered to activate tapping function using on-board microphone.*

4.5 Date/Time setup

There are three ways of date/time setup:

- Automatic setup of time from the GSM network, when particular operator and SIM card support such feature.
- Manual setup based on time stamp of incoming SMS message
- Manual setup using *DATE=* command. Enter target time in following format: *DATE=yy/mm/dd,hh:mm:ss+zz*
  where zz is Time zone, with either + or - sign.

SMS Command	Description	SMS Response	Type
DATE	Date/time is set from timestamp of incoming SMS message.	DATE yy/mm/dd,hh:mm:ss+zz – OK	Cfg
DATE=yy/mm/dd,hh:mm:ss+zz	Set Date/time manually.	DATE=yy/mm/dd,hh:mm:ss+zz – OK	Cfg
DATE?	Get current settings of Date/time.	DATE yy/mm/dd,hh:mm:ss+zz – OK	Cfg

Note...

If your GSM network and SIM card supports obtaining of current time from the network, it is not necessary to take any action in order to setup time – it will be done automatically during each IQSB-GSM900 startup.

4.6 Security features

IQsocket IQSB-GSM900 is equipped with advanced authorization features to avoid controlling by unauthorized users. The security features include:

- Allowing control only from authorized phone numbers
- Authentication of each SMS command by PIN code (SMSPIN)

Both features can be used simultaneously.

In case of using authorized numbers list, device will ignore all SMS messages and calls received from numbers not included in the permitted phone numbers list. If this security feature is not enabled, device can be controlled by anyone

who knows number associated with inserted SIM card (and SMS pin in case PIN code protection is also active).

IQsocket IQSB-GSM900 allows to define up to 20 permitted phone numbers, each containing up to 15 numerals.

In case of using SMSPIN, right before each SMS command is placed PIN code without any space or special character, as shown here:

pinCOMMAND (e.g. *3366STATUS*)

Command will be accepted only when entered PIN code matches with the code predefined by *SMSPIN* command.

Note...

Pin code (SMSPIN) is having no relation with SIM card PIN code. It is just a password called SMSPIN and used by IQsocket IQSB-GSM900 for SMS message authentication, having the same structure as standard PIN = 4 numerals.

Security settings can be configured and viewed simply by following commands.

SMS Command	Description	SMS Response	Type
SECNUMBER=NO	Security using permitted phone numbers list is turned off/inactive.	SECNUMBER=NO - OK	Cfg
SECNUMBER=YES	Security using permitted phone numbers list is turned on/active.	SECNUMBER=YES - OK	Cfg
SECNUMBER?	Get current configuration of SECNUMBER parameter.	SECNUMBER=(NO),YES	Cfg
SECNUMBER+ 420123456788	Add new number to security list.	SECNUMBER+420123456 788- OK	Cfg
SECNUMBER- 420123456788	Delete specific number from permitted phone numbers list.	SECNUMBER- 420123456788- OK	Cfg
SECNUMBER-ALL	Delete all numbers from permitted phone numbers list.	SECNUMBER-ALL - OK	Cfg
SECNUMBER=LIST	Get dump of permitted phone numbers list.	LIST 420123456788,42190311 1222,421235678235 Or LIST - NO NUMBER!	Cfg
SMSPIN=1234	Configuration of SMS password/SMSPIN.	SMSPIN=1234 – OK	Cfg
SMSPIN=NOPIN	Using of password/SMSPIN is deactivated.	SMSPIN=NOPIN – OK	Cfg
SMSPIN?	Get configuration of SMSPIN parameter.	SMSPIN=(NOPIN), 1234	Cfg

Permitted phone numbers list accept up to 20 numbers, must contain only numbers in international format, without spaces or other characters, max. 15 numerals long:

Example: *SECNUMBER+421265440655* means add number +421-2-65440655
Example: *SECNUMBER-421265440655* means delete number +421-2-65440655. 421 is country code in this example and 2 is area code.

4.7 Response messages settings

When you communicate with your IQsocket IQSB-GSM900, it is important to make you sure if command was understood and executed successfully. For this purpose we implemented response messages, confirming each command or informing you when an error is detected. In case of SMS commands, you will be notified by back SMS response message. If you manage your IQsocket IQSB-GSM900 by phone call, your command will be confirmed by back phone call to your phone number. Note it is not supposed you will answer such back call, you can simply reject it.

Configuration commands of response messages settings are summarized in following table:

SMS Command	Description	SMS Response	Type
SMSCONFIRM=YES	SMS confirmation is enabled/active for all SMS commands	SMSCONFIRM=YES - OK	Cfg
SMSCONFIRM=NO	SMS confirmation is disabled/inactive for all SMS commands	SMSCONFIRM=NO - OK	Cfg
SMSCONFIRM?	Get configuration of SMSCONFIRM parameter, active setting is in () parentheses.	SMSCONFIRM=NO,(YES)	Cfg
SMSCONFIRMUNAUTH=YES	SMS confirmation for SMS control commands is active also for unauthorized numbers.	SMSCONFIRMUNAUTH=YES - OK	Cfg
SMSCONFIRMUNAUTH=NO	SMS confirmation for SMS control commands is not active for unauthorized numbers	SMSCONFIRMUNAUTH=NO - OK	Cfg
RINGCONFIRM=YES	Phone call confirmation is turned on for all commands. Hang off after 10 seconds	RINGCONFIRM=YES – OK	Cfg
RINGCONFIRM=NO	Phone call confirmation is turned off for all commands	RINGCONFIRM=NO – OK	Cfg
RINGCONFIRM?	Get configuration of RINGCONFIRM parameter, active setting is in () parentheses.	RINGCONFIRM=(OFF),ON	Cfg
ERRORREPLY=YES	Sending error SMS messages is enabled/active	ERRORREPLY=YES- OK	Cfg
ERRORREPLY=NO	Sending error SMS messages is disabled/inactive	ERRORREPLY=NO- OK	Cfg

ERRORREPLY?	Get configuration of ERRORREPLY parameter, active setting is in () parentheses.	ERRORREPLY=NO,(YES)	Cfg

Note...

When RINGCONFIRM=YES command is used, confirmation back calls are only realized for SIM cards with active CLIP service.

4.8 Scheduler feature

Your IQsocket IQSB-GSM900 is equipped with a scheduler, allowing to control outputs and to get status message, based on time and day of week. Up to 20 scheduled tasks are supported.

Following table summarizes usage of *SCHEDULER* command.

SMS Command	Description	SMS Response	Type
SCHEDULER+hh:mm ,DOW,ACTION	Insert scheduler record to execute particular ACTION at time hh:mm every day of week DOW.	SCHEDULER+hh:mm, DOW,ACTION - OK	Ctrl
SCHEDULER-hh:mm	Remove scheduler record for particular time hh:mm	SCHEDULER-hh:mm - OK	Ctrl
SCHEDULER?	Get list of all scheduler records.	hh:mm,DOW,ACTION	Ctrl

Where:
hh:mm denotes hour and minute of time in 24h format.

DOW denotes day of week.

Days of week numbers are recognized as follows:
1- Monday, 2-Tuesday, 3-Wednesday, 4 Thursday, 5-Friday, 6-Saturday, 7- Sunday

If "*****" symbol is inserted, action will be executed daily. If number of day within week is inserted, action will be executed only in the particular day of week.

Possible **actions** are:

- **ON1** for turning the Output1 on (same as TURNON1 command)
- **ON2** for turning the Output1 on (same as TURNON2 command)
- **OFF1** for turning the Output1 off (same as TURNOFF1 command)
- **OFF2** for turning the Output2 off (same as TURNOFF2 command)
- **RES1** for restarting the Output1 (same as RESTART1 command)
- **RES2** for restarting the Output2 (same as RESTART2 command)

- **INF**, to send *STATUS* message by SMS to number preconfigured by the *ALARMNUMBER* command (e.g. *ALARMNUMBER+421903123456*, see chapter 4.10.1)

Example of SCHEDULER? command output (four actions were recorded):

- 11:00,*,ON1 Turn on Output1 every day at 11:00
- 14:30,*,OFF1 Turn off Output1 every day at 14:30
- 01:30,1,RES1 Restart Output1 every Monday at 01:30
- 19:00,5,INF Send Status SMS every Friday at 19:00

Note...

In order to use INF action – sending status message, it is necessary to configure target numbers first using ALARMNUMBER command, see chapter 4.10.1 for more information.

Note...

Actions of SCHEDULER command are executed only on particular time, it is still possible to control of outputs by SMS or manually in other time intervals.

4.9 Counters

Seven independent counters increments their status upon change on IQSB-GSM900 inputs and outputs.

SMS Command	Description	SMS Response	Type
COUNTER1?	Get status of Counter1, increments on change of Output1	COUNTER1=0	Ctrl
COUNTER2?	Get status of Counter2, increments on change of Output2	COUNTER2=0	Ctrl
COUNTER3?	Get status of Counter3, increments on change of Input1	COUNTER3=0	Ctrl
COUNTER4?	Get status of Counter4, increments on change of Input2	COUNTER4=0	Ctrl
COUNTER5?	Get status of Counter5, increments on pressing of Push Button SW1	COUNTER5=0	Ctrl
COUNTER6?	Get status of Counter6, increments on pressing of Push Button SW2	COUNTER6=0	Ctrl
COUNTER7?	Get status of Counter7, increments on loosing registration into GSM network	COUNTER7=0	Ctrl

COUNTERX?	Get status of all counters	COUNTER=0,0,0,0,0,0	Ctrl
CLEARCOUNTER1	Clear status of counter 1 (2-7)	CLEARCOUNTER1- OK	Ctrl
CLEARCOUNTERALL	Clear status of all counters	CLEARCOUNTERALL- OK	Ctrl

Counter1 and Counter2 is incremented by 1 after commands *RESTART*, *TURNOFF*, *TURNON.* Highest possible status of a counter is 65535.

4.10 Alarms

IQSB-GSM900 supports following independent alarm sources, sorted by priority:

- Alarm invoked by Input1 (highest priority)
- Alarm invoked by Input2
- Power supply voltage drop alarm
- INF action of the *SCHEDULER* command
- Change of GSM BTS alarm (lowest priority)

An alarm can generate alert by sending SMS to or by calling of (only in case alarms invoked by inputs) up to five (5) predefined phone numbers.

Note...

In order to use SMS alarm alerts, it is necessary to configure target numbers by ALARMNUMBER command, see chapter 4.10.1 for more information.

4.10.1 Defining phone numbers for SMS and ringing up alerts

Phone numbers must be entered in international format, see following table.

SMS Command	Description	SMS Response	Type
ALARMNUMBER+ 420123456789	Add a new number into list for alarm alerts using SMS message and call back.	ALARMNUMBER+4201234 56789 - OK	Cfg
ALARMNUMBER- 420123456789	Remove a number from list for alarm alerts using SMS message	ALARMNUMBER- 420123456789 - OK	Cfg

	and call back.		
ALARMNUMBER-ALL	Remove all numbers from list for alarm alerts using SMS message and call back.	ALARMNUMBER-ALL- OK	Cfg
ALARMNUMBER=LIST	Get list of phone numbers for alarm alerts using SMS message and call back.	LIST 420123456789	Cfg

When generating alerts, numbers in list are processed per their order – the first number first, the last number as last.

4.10.2 Alarm invoked by Inputs

Alarm invoked by Inputs is having highest processing priority. See chapter 3.2.2 for information on wiring and recognizing of input states.

For increased flexibility, evaluation of input alarm depends on user-defined trigger time:
Following table summarizes settings of trigger time interval for evaluation of input state used by *ALARM* command:

SMS Command	Description	SMS Response	Type
TRIGGERTIME1=XX	Configures trigger time in milliseconds for evaluation of Input1 state. Range is 300 to 60 000 milliseconds.	TRIGGERTIME1=XX – OK	Cfg
TRIGGERTIME1?	Get current configuration of TRIGGERTIME1 parameter.	TRIGGERTIME1=300 miliseconds	Cfg
TRIGGERTIME2=XX	Configures trigger time in milliseconds for evaluation of Input1 state. Range is 300 to 60 000 milliseconds.	TRIGGERTIME2=XX – OK	Cfg
TRIGGERTIME2?	Get current configuration of TRIGGERTIME1 parameter.	TRIGGERTIME2=300 miliseconds	Cfg

Input alarm can be activated by:

- change of the input state, or
- by existence of one from possible states Log.0 (inactive, false, L-low, no voltage appears at the left input pin, left and right pin not connected) or Log.1 (active, true, H-high, voltage higher than threshold appears at the left input pin, left and right input pins short connected).

This behavior is configured by command *INPUTTYPE,* settings do apply for both Input1 and Input2:

SMS Command	Description	SMS Response	Type
INPUTTYPE=CHANGE	Alarm is activated at every change of input state	INPUTTYPE=CHANGE - OK	Cfg

INPUTTYPE=HIGH	Send alert SMS every time when remaining battery charge falls below defined threshold 50%.	INPUTTYPE=HIGH- OK	Cfg
INPUTTYPE=LOW	Disable sending remaining battery charge alerts	INPUTTYPE=LOW- OK	Cfg
INPUTTYPE?	Get configuration of INPUTTYPE, active setting is in () parentheses.	INPUTTYPE =(CHANGE), HIGH, LOW	Cfg

It is also possible to define time delay between consecutive alarm activations by using *NEXTTESTTIME* command:

SMS Command	Description	SMS Response	Type
NEXTTESTTIME1=10	Next activation of Input1 alarm is possible after 10minutes.	NEXTTESTTIME1=10 - OK	Cfg
NEXTTESTTIME1?	Get current settings of Input1 time delay	NEXTTESTTIME1=10 minutes	Cfg
NEXTTESTTIME2=10	Next activation of Input2 alarm is possible after 10minutes.	NEXTTESTTIME2=10 - OK	Cfg
NEXTTESTTIME2?	Get current settings of Input2 time delay	NEXTTESTTIME2=10 minutes	Cfg

If an input alarm state occurs sooner than is *NEXTTESTTIME* value, alarm will be activated after expiring of *NEXTTESTTIME* time. Setting *NEXTTESTTIME to* zero (0) value deactivated this option.

Alarm detection at Input1 and Input2 can be activated by the *INPUTALARM* command:

SMS Command	Description	SMS Response	Type
INPUTALARM=NOALARM	No input alarm is active	INPUTALARM=NOALARM-OK	Cfg
INPUTALARM=ACTIVE1	Input1 alarm is active	INPUTALARM=ACTIVE1-OK	Cfg
INPUTALARM=ACTIVE2	Input2 alarm is active	INPUTALARM=ACTIVE2-OK	Cfg
INPUTALARM=ACTIVEBOTH	Both Input1 and Input2 alarm are active	INPUTALARM=ACTIVEBOTH- OK	Cfg
INPUTALARM?	Get configuration of INPUTALARM, active setting is in () parentheses.	INPUTALARM=(NOALARM, ACTIVE1, ACTIVE2, ACTIVEBOTH	Cfg

Selecting type of input alarm alert:

SMS Command	Description	SMS Response	Type
ALARM=RING	Type of alarm alert is ringing up defined telephone number(s)	ALARM=RING- OK	Cfg
ALARM=SMS	Type of alarm alert is sending SMS to defined telephone number(s)	ALARM=SMS- OK	Cfg
ALARM?	Get configuration of ALARM, active setting is in ()	ALARM =(SMS), RING	Cfg

	parentheses.		

Note...

Alert by ringing up/calling target telephone numbers is supported only for alarms invoked by inputs.

Defining custom text in alert SMS – each text can be up to 20characters long:

SMS Command	Description	SMS Response	Type
ALIASINPUT1=disconnected,connected	Alert text sent in case of Input1 Alarm is: disconnected, resp. connected	ALIASINPUT1=disconnected,connected - OK	Cfg
ALIASINPUT1?	Get current settings of Input1 alert alias	ALIASINPUT1=low,high	Cfg
ALIASINPUT2=disconnected,connected	Alert text sent in case of Input2 Alarm is: disconnected, resp. connected	ALIASINPUT2=disconnected,connected - OK	Cfg
ALIASINPUT2?	Get current settings of Input2 alert alias	ALIASINPUT2=low,high	Cfg

4.10.3 Power supply voltage drop alarm

IQSB-GSM900 can send you an SMS alert to inform you when there is a drop of power supply voltage bellow the defined threshold. Hysteresis is set to 2V.

If power supply voltage drops below the defined threshold, an SMS alert with text "Alarm voltage XX V" is sent to numbers defined by *ALARMNUMBER* command.

SMS Command	Description	SMS Response	Type
PWRALARM=0	Disable power supply voltage drop alarm.	PWRALARM=0- OK	Cfg
PWRALARM=16	Activate power supply voltage drop alarm with given threshold (max. supported threshold value is 16V).	PWRALARM=16- OK	Cfg
PWRALARM?	Get current settings of PWRALARM	PWRALARM =16	Cfg

4.10.4 Change of GSM BTS alarm

IQSB-GSM900 can send you an SMS alert to inform you when there is a change of GSM BTS cell, to which it is connected:

SMS Command	Description	SMS Response	Type
ALARMCELLON	Activate GSM BTS change alarm.	ALARMCELLON- OK	Ctrl
ALARMCELLOFF	Disable GSM BTS change alarm.	ALARMCELLOFF- OK	Ctrl

4.10.5 Disabling all alarms

In case you need to quickly disable all alarms e.g. in case of emergency or misconfiguration, you can do it by issuing single command *ALLALARMSOFF.* Please note all alarms will be disabled permanently, you need to enable each wanted alarm again one by one.

SMS Command	Description	SMS Response	Type
ALLALARMSOFF	All alarms are permanently disabled	ALLALARMSOFF- OK	Ctrl

4.11 Using microphone

Your IQSB-GSM900 is equipped with a highly sensitive microphone, which can be used to monitor sound through any phone. Sensitivity is typically sufficient to recognize voices within even larger room where is IQSB-GSM900 installed; it depends on device orientation and placement and also on background noise.

Microphone is activated by either answering a call from your IQSB-GSM900, such as when an input alarm has been detected, while alarm alert is set to ring using *ALARM=RING* command (see chapter 4.10); or by calling the number of your IQSB-GSM900, while *RING=MIC* setting is preconfigured (see chapter 4.2) or *DTMFCONTROL* is set to *MIC (see chapter 4.2.1)*

WARNING!

Please respect privacy and local law regarding to tapping, especially when monitored subjects are not informed about it. It is your sole responsibility how you will use it.

4.12 Various other settings

SMS Command	Description	SMS Response	Type
CONFIG	Activate configuration mode. Automatically deactivated 10minutes after last configuration command that have been received.	CONFIG, OK	Ctrl
OUTPUT=REMEMBER	When powered on/power restored, state of both Output1 and Output2 will be returned to the same state as it was at time of disconnecting power /power lost.	OUTPUT=REMEMBER- OK	Cfg
OUTPUT=NO	When powered on/power restored, state of both Output1 and Output2 be set to have connected NO pins, regardless of state that was at time of disconnecting power /power lost.	OUTPUT=NO- OK	Cfg
OUTPUT=NC	When powered on/power restored, state of both Output1 and Output2 be set to have connected NC pins, regardless of state that was at time of disconnecting power /power lost.	OUTPUT=NC- OK	Cfg
OUTPUT?	Get configuration of OUTPUT parameter, active setting is in () parentheses.	OUTPUT =(REMEMBER),NC,NO	Cfg
RINGON	A call-back to the sender's number will be made. Useful to keep-alive of credit in prepaid SIM cards.		Ctrl
HELP	Get list of all commands as help		Ctrl
LANG=EN	Switch language version	LANG=EN- OK	Cfg
LANG?	Get current language version, active setting is in () parentheses.	LANG=(EN), CZ	Cfg
VERSION	Get firmware version	Ver. 2.0.1 (c)2011 IQtronic Ltd.	Ctrl

Note...

Please note firmware of IQsocket IQSB-GSM900 can be upgraded only by sending unit back to the factory or to an authorized service center.

Note...

In case you unintentionally changed language to CZ, you can switch it back to EN using commands KONFIG and LANG=EN

4.13 Error messages

Error messages are being sent only when sending response messages is permitted (see also *ERRORREPLY* command).

SMS response	**Description**
Error!	Incorrect control or configuration command; or wrong SMSPIN.
Not allowed!	In case of permitted phone numbers list is active but used number is not included in it.
Timeout!	10 minutes interval of configuration mode has expired. In order to continue using configuration commands, please enter *CONFIG* command again.
Full memory!	Memory for storing permitted phone numbers is full.
No record	When trying to delete non-existing records, e.g. scheduled tasks

5 Indicators

The IQsocket IQSB-GSM900 is equipped with six LED indicators:

PWR

LIGHTS RED	Input power is OK; normal operation
BLINKS RED 2 x PER SECOND	SIM is not correctly inserted or missing or is bad

GSM

BLINKS GREEN, EACH 3 SECONDS	Logged to GSM network, normal operation
BLINKING GREEN EACH SECOND	Not logged to GSM network yet, searching
LIGHTS GREEN 2 x PER SECOND	SIM card have active PIN protection, use a GSM phone to disable it.

OUT1, OUT2

NOT ACTIVE	Particular output has connected NC pins
LIGHTS YELLOW	Particular output has connected NO pins
BLINKS YELLOW	Hardware error/failure

Input1, Input2

NOT ACTIVE	Particular input is in Log.0/low/inactive state
LIGHTS GREEEN	Particular input is in Log.1/high/active state

6 Factory default settings

Each device come from factory preconfigured with factory default values. Device can be anytime returned back to these default values by using reset to factory defaults procedure.

6.1 Reset to factory default procedure

Reset is done by pushing both pushbuttons SW1, SW2 located near outputs terminal blocks.

In order to restore factory default configuration, push both SW1 and SW2 for at least 5 seconds and then release. All LED indicators should start blinking for next 10 seconds. Please press shortly both push buttons once again within these 10 seconds to confirm reset to factory default procedure. After this step is your device in original factory configuration.

WARNING!

Please BE CAREFULL! This step will erase all settings of your IQsocket IQSB-GSM900 except language settings.

6.2 Factory default settings

Parameter	Default setting
SMSPIN	NOPIN
RESTARTTIME	10
RING	NOACTION
SECNUMBER	NO
SMSCONFIRM	YES
RINGCONFIRM	NO
ERRORREPLY	YES
SMSCONFIRMUNAUTH	YES
TRIGGERTIME1	300
TRIGGERTIME1	300

Parameter	Default setting
INPUTALARM	NOALARM
ALARM	SMS
ALIASINPUT1	LOG0,LOG1
ALIASINPUT2	LOG0,LOG1
PWRALARM	0
RINGONTIME	30
OUTPUT	REMEMBER
DTMFCONTROL	MANUAL
INPUTTYPE	CHANGE
NEXTTESTTIME1	0
NEXTTESTTIME2	0

7 Technical specification

Model	
Power supply	8-24VDC, 6-16VAC Consumption 40mA @ 12VDC
Output switch	2x Bistable relay SPDT/FormC, 230VAC, 16A max (resistive load)
Inputs	2x binary, optically isolated inputs, 30VDC max 2V detection threshold, pulled down
Onboard sensors	No sensors
Management	Via SMS messages
Security	PIN code protected commands Permitted phone numbers list
GSM	EGSM900, GSM850 Class4 (2W) DCS1800, PCS1900 Class1 (1W) SIM card Plug-in 3V External 2dBi antenna via SMA-F connector, included in package
Indicators	6x LED indicator
Features	Appliance control over SMS, by call or manually Remote restart of appliances Scheduler Alarms Counters Monitoring of sound using integrated microphone
Dimensions	100x70x30mm
Weight	0.1kg netto
Operating temperature	0 to +50 °C
Operating humidity	Max. 80%, non-condensing
Compliance	CE, FCC

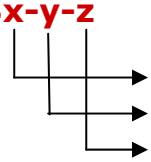
7.1 Operation, maintenance and safety recommendations

- Do not modify product in any way and do not operate product modified any way. Warranty is void when product was disassembled or modified in any way.
- Product can be operated only indoor office/house environment. Do not expose it to humid, wet nor chemically aggressive environment.
- Product is not designed for industrial operation with aggressive environment.
- Before use, please check, if mobile phones can be used in the area. In not, please don't put product into operation, it can have negative influence to other electronic systems.
- Don't expose product to vibrations, shaking or fall downs to avoid product damage.
- When use sound monitoring for taping purposes, ensure you have prior permission to do it from affected people.
- Load current 16A is valid for resistive load. If you need to switch an non-resistive or higher current load, use an external contactor rated for target load among the product. Switching a non-resistive load or higher than nominal rating currents can cause permanent damage of switching elements, which is not covered by warranty.
- Before using a SIM card, ensure all received SMS messages stored on the card are deleted.
- Product is not a toy for children, SIM card represents a small part that can be easily ingested.
- WARNING: This product is not designed for use in, and should not be used for, medical applications.

8 Ordering and accessories

IQsocket product family uses following ordering code system:

IQS**x-y-z** Example: IQSB-GSM900



Product family: **W=WALL** | R=RACK | D=DIN | B=Board
Product model: GSM | **GSML** | GSMRF | IP | RS232 | HDO | IPGSM
Electric standard of plug/socket: **F=Schuko** | E=French, B=British, N=USA

Ordering code

Code	Description
IQSB-GSM900-TH	with on board temperature and humidity sensors
IQSB-GSM900	cost-down version without temp/humidity sensors

Optional accessories

Code	Description
ADAPT-12V-EU	AC power supply adapter, 12V/500mA, EU version
ADAPT-12V-US	AC power supply adapter, 12V/500mA, US version
ADAPT-12V-UK	AC power supply adapter, 12V/500mA, UK version
ANTGSM	External 2dBi GSM antenna, SMA (included in std. package)
ANTGSM-2M	External 2dBi GSM antenna, 2m cable, SMA