Intelligent power sockets

IQsocket^{tm} WALL / IQSW-GSM

...makes your life more comfortable

User Guide

IQSW-GSM

firmware documentation v.1.0.6

1. Introduction

Noone doubt in recent IT world about the fact that communication technologies help us to live our lives easier. There was never such a need of data networking features at products which have had no networking features in the past. Need of data communication in companies even in homes is specially visible in this Internet age. Intelligent power socket IQsocket IQSW-GSM is a member of wide product family of intelligent sockets which helps people to proceed some tasks remotely. These IQsocket products has following main features:

- Various communication data interfaces
- Various number of output power sockets
- Different power socket types for different countries
- Different inputs / outputs

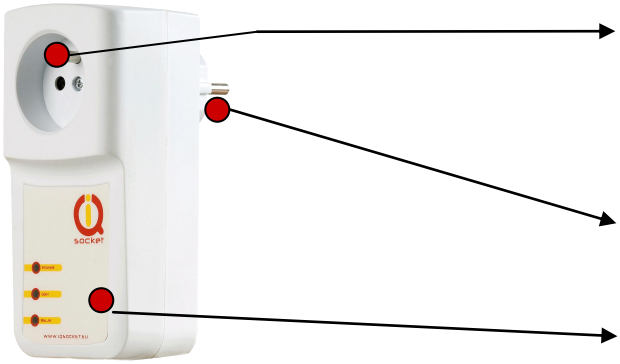
2. Product decription

Intelligent power socket IQsocket IQSW-GSM helps to control any appliance remotely over GSM network using by mobile phone. IQSW-GSM is managed by SMS messages or phone call. It can work also as a independent thermo regulator because of integrated thermometer which control appliance by turning on/off according to preconfigured temperature rules. In general, product has following communication features:

- Receiving alarm or informational SMS messages from IQSW-GSM
- Power socket and inputs/output status is provided on request
- Configured parameters are provided on request
- Sending SMS configuration messages easily to IQSW-GSM
- Output power socket and microrelay output control over SMS
- Output power socket and microrelay output control by call
- Voice transport

IQsocket IQSW-GSM provides following features to customers:

- Appliance control over SMS, by call or manually
- Remote power turnon/turnoff of 230V appliance
- Remote power turnon/turnoff of output circuit up to 48V
- Remote power turnoff for specified time
- Remote appliance restart
- Remote appliance status switch (turnon to turnoff or back)
- Remote temperature measuring
- Thermoregulating feature
- Alarm detection
  - External detector of motion, gas, fire, water; not included with product
  - External detector of opened door, window, shake detector; not included with product
  - other external detector
- Monitoring of sound

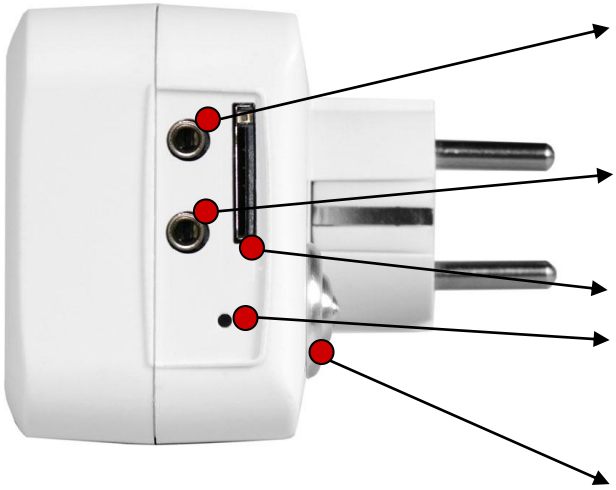


Output power socket: This power socket is intelligent, controlled remotely by phone.

Input power socket: Input of 230V power for product and also for connected appliance.

Microphone: For sound monitoring.

Output power spočet can be in load of 16A max.



Input for detectors: Used for external detectors generating alarms.

Microrelay: Switched contact by microrelay.

SIM socket: Socket for SIM card. Push-push type.

Manual button: Used to turn on/ off output power socket manually or reset product to default values.

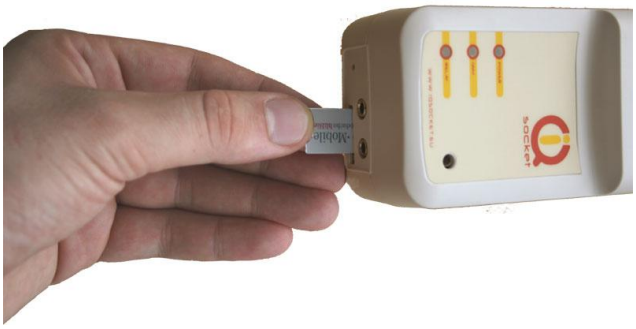
Temperature sensor: Measures temperature.

Detail of temperature sensor
Temperature sensor measure environmental temperature and provide it over SMS on request. Output power socket can be also controlled by this sensor in thermoregulating mode.

3. Installation

There are few connectors, SIM socket and manual button on the bottom of power socket.

Enter SIM card into SIM sicket and push until its fixed



NOTE: Before SIM is finally used, please turn off PIN authorization.

Authorisation can be turned off using by mobile phone by inserting SIM card into mobile phone and disabling PIN usage by phone software. After this step you can pull out SIM card from phone.

- Insert SIM card with inactive PIN usage into power socket's SIM socket
- In case of active PIN usage, GSM indicator starts blinking fast
- Plug you power socket into wall socket 230V
- Indicators will start blinking in few seconds, then basic test is started for 10 seconds
  zariadenia.
- If all is OK, red POWER indicator is turned on
- GSM indicator is blinking periodically (green light) – while searching GSM networks; after it's logged - blinking every 3 seconds.
- RELAY indicator should light on/off if output power socket in turned on/off
- Product is ready now for your use.

4. Managing outputs - basics

4.1 Managing outputs by SMS

Commands are send in form of SMS messages to SIM card call number which is in intelligent socket slot. Messages has following syntax:

pinCOMMAND (e.g. 3366STATUS)

- With pre-configured security password by command SMSPIN=3366

COMMAND (e.g. STATUS)
- with uncofigured security password/SMSPIN

Command	Description	Response
TURNOFF	Output power socket and microrelay are turned off	TurnedOFF
TURNON	Output power socket and microrelay are turned on	TurnedON
TURNOFF1	Output power socket is turned off	TurnedOFF1
TURNON1	Output power socket is turned on	TurnedON1
TURNOFF2	Microrelay is turned off	TurnedOFF2
TURNON2	Microrelay is turned on	TurnedON2
TURNOFF=123	Output power socket is turned off for 123 minutes. Maximal acceptable value is 180.	TurnedOFF 123 min
TURNON=123	Output power socket is turned on for 123 minutes. Maximal acceptable value is 180.	TurnedON 123 min
RESET	Changes status of output power socket and microrelay (negation, microrelay only if ALARMSWITCH=0) to preconfiguired time by command RESETTIME.	Restarted
STATUS	Information message: Request for power socket status: output power socket status, temperature, GSM signal	TurnedOFF, TEMP: 25C, Signal: 35 %, ALARM: ACT
CREDIT*XX#	Check credit value on SIM card	YOUR CREDIT IS xxx

4.2 Managing output power socket by phone call

Output power socket can be managed also by call using by mobile phone or fixed phone. In such a case – power socket runs some action immediately. Action can be output power interruption (appliance reboot), negating output power socket status or other action. Action must configured in advance.

NOTE: Configuration commands are accepted only within first 10 minutes after intelligent power socket is turned on. It is from security reasons. Configuration SMS messages are typed by Bold.

Message	Description	Response
RING=SWITCH	If this parameter is configured, status of output power socket is changed (negated) by phonecall.	RING=SWITCH – OK
RING=RESET	If this parameter is configured, output power socket is turned on for time configured by RESETTIME parameter.	RING=RESET – OK
RING=NOACTION	No action is performed on phone call	RING=NOACTION – OK
RING=MIC	Remote tapping form power socket is allowed on phone call	RING=MIC – OK
RING?	Information message: Request for ring action configuration	RING=(NOACTION),RESET,SWITCH, MIC
RESETTIME=XX	Configures time in seconds for RESET action. Maximal number is 180.	RESETTIME=XX – OK
RESETTIME?	Information message: Request for	RESETTIME=30 seconds

	RESETTIME configuration parameter	

4.3 Cotrolling output power socket manually

Output power socket can be managed also manually by hidden button on bottom side near the SIM slot. Button can be activated by suitable thin tooll. Pressing this button cause switching output power socket to negative value.

5. Security features

Product can be configured for advanced security to disable controlling the power socket by unauthorized persons. Power socket uses two security methods:

- Allowing only authorized phone numbers
- Authentication by password/SMSPIN number

In case of first option – device will ignore all SMS and calls from unauthorized phone numbers. If security is not configured, anyone who knows SIM card calling number can control power socket remotely. Power socket uses security lists for this purpose. This list supports 7 phone numbers max.

In case of SMSPIN use - individually or along with security lists, it is important to put SMSPIN command right before SMS command without any space or special character as shown here:

pinCOMMAND (e.g.. 3366STATUS)
- With preconfigured password/SMSPIN ; SMSPIN=3366

NOTE: password (SMSPIN), which is use dis different than traditional PIN code, which is usually assigned by GSM operator or assigned by user on SIM card. It is kind of IQsocket password called SMSPIN and is used for SMS message authentication and has the same structure as standard PIN = 4 numbers.

5.1 Basic security settings

Security can be configured and viewed simply by following messages.

Command	Description	Response
SECNUMBER=OFF	Security phone lists are turned off/inactive.	SECNUMBER=(OFF),ON,LIST
SECNUMBER=ON	Security phone lists are turned on/active for configured phone numbers.	SECNUMBER=OFF,(ON),LIST
SECNUMBER=LIST	Informational message: Request for full list of secured numbers.	LIST 421903123456,421903111222,421235678235 LIST - NO NUMBER!
SMSPIN=xxxx	Configuration of SMS password/SMSPIN.	SMSPIN=xxxx – OK
SMSPIN=NOPIN	Using of password/SMSPIN is deactivated.	SMSPIN=NOPIN – OK
SMSPIN?	Informational message: Request for	SMSPIN=(NOPIN), 1234

	SMSPIN configuration.	
SMSWWW=ON	Controlling by SMS from Internet is allowed.	SMSWWW=ON – OK
SMSWWW=OFF	Controlling by SMS from Internet is denied.	SMSWWW=OFF - OK
SMSWWW?	Information message: Request for SMSWWW configuration	SMSWWW=(OFF),ON

5.2 Security list

Security list allow to configure up to 7 numbers and up to 15 digits for one phone number.

Command	Description	Response
SECNUMBER+421233355777	Add new number to security list.	SECNUMBER-421233355777 - OK
SECNUMBER-421233355777	Delete specific number from security list.	SECNUMBER-421233355777 - OK
SECNUMBER-ALL	Delete all numbers from security list	SECNUMBER-ALL - OK
SECNUMBER?	Informational message: Request for security list configuration.	SECNUMBER=(OFF),ON,LIST

- Security lists accept only numbers in international syntax:

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

6. Command confirmation settings

It is important to make you sure if command was executed successfully when communicating with power socket. For this purpose we implemented notifications of each executed command. If you activate this notification, you will be informed about each command execution. In case of SMS commands, you will be notified by back SMS. In case of managing by phone call, your command will be confirmed by back phone call to your mobile phone.

6.1 Confirmation settings for SMS commands

Command	Description	Response
SMSCONFIRM=ON	SMS confirmation is turned on for all SMS commands	SMSCONFIRM=ON - OK
SMSCONFIRM=OFF	SMS confirmation is turned off for all SMS commands	SMSCONFIRM=OFF - OK
SMSCONFIRM?	Information message: Request for SMS confirmation settings	SMSCONFIRM=OFF,(ON)

6.2 Confirmation settings for phone calls

Command	Description	Response
RINGCONFIRM=ON	Phone call confirmation is turned on for all commands. Hang off after 10 seconds	RINGCONFIRM=ON – OK
RINGCONFIRM=OFF	Phone call confirmation is turned off for all commands	RINGCONFIRM=ON – OK

RINGCONFIRM?	Information message: Request for call confirmation settings	RINGCONFIRM=OFF,(ON)

7. Measuring temperature

GSM power socket has built in thermometer. This thermometer enable to measure temperature of environment and provide it over SMS. It also enables to act as a thermoregulator to control output power socket or output microrelay circuit. Device enables to configure two temperature thresholds which control output power socket. This is just supplemental feature of power socket with accuracy ± 2 °C due to using inexpensive thermometer instead of using expensive precise external thermometer. This feature cannot replace professional thermoregulator feature.

Command	Description	Response
STATUS	Information message: Request for basic status: output power socket status, temperature and GSM signal	TurnedOFF, TEMP: 25C, Signal: 35 %
TEMPCONTROL=ON	Activates temperature monitoring	TEMPCONTROL=ON – OK
TEMPCONTROL=OFF	Deactivates temperature monitoring	TEMPCONTROL=OFF – OK
TEMPON=XX	Temperature limit for turning on of output power socket – if temperature threshold is reached or passed	TEMPON=XX – OK
TEMPOFF=XX	Temperature limit for turning off of output power socket – if temperature threshold is reached or passed	TEMPOFF=XX – OK
TEMPCONTROL?	Information message: Request for temperature configuration	TEMPCONTROL=OFF,(ON) ON=25 OFF=27

7.1 Thermoregulator

This feature can be attractive if you wish to ensure activating or deactivating appliance when temperature threshold is reached.

Typical example is heating activation when temperature is below 20 °C and deactivating when temperature is over 25 °C.
(TEMPCONTROL=YES, TEMPON=20, TEMPOFF=25)

Other example is airconditioning activation over 28 °C and deactivation on 24 °C
(TEMPCONTROL=YES, TEMPON=28, TEMPOFF=24)

8.Other commands

Command	Description	Response
ERRORREPLY=ON	Activates sending of information SMS for each received SMS command, which was not executed due to any error.	ERRORREPLY=ON – OK
ERRORREPLY=OFF	Deactivates sending of information SMS for each received	ERRORREPLY=OFF – OK

	SMS command, which was not executed due to any error.	
ERRORREPLY?	Information message: Request for ERRORREPLY settings	ERRORREPLY=(OFF),ON
OUTPUT=REM	Output power socket remember it's status after it's unplugged or central power is interrupted	OUTPUT=REM – OK
OUTPUT=NC	Output power and microrelay will be turned on after it's unplugged or central power is interrupted	OUTPUT=NC – OK
OUTPUT=NO	Output power and microrelay will be turned off after it's unplugged or central power is interrupted	OUTPUT=NO - OK
OUTPUT?	Information message: Request for initial mode configuration of output power socket and microrelay	OUTPUT=(REM), NC, NO
INPUT=NC	Alarm input mode. In normal closed mode is logical 1 on input interface.	INPUT=NC - OK
INPUT=NO	Alarm input mode. In normal opened mode is logical 0 on input interface.	INPUT=NO - OK
INPUT?	Information message: Request for input mode configuration	INPUT=NC, (NO)
VERSION	Request for firmware version	Ver. 1.0.6 (c) 2008
RINGON	Back call is realized to the number of the incoming SMS. Usefull feature when using prepaid cards to keep card active.	/no confirmation

- If bad command is received, power socket replies with „message – ERROR!" message
- Big and small letters are not recognized in commands
- SMS messages longer than 20 characters are automatically ignored

9. Original settings

Each new device is preconfigured with factory default values. Device can be anytime returned back to these default values during it's lifecycle. This can be realized by reset to factory default procedure.

9.1 Reset to factory default procedure

Reset button is available on the bottom cover near the SIM slot, details can be found in first pages of this document.

Please push this reset button at least 5 seconds, then release. All LED indicators should start blinking for next 10 seconds. Please press the button again within these 10 seconds to confirm reset to factory default procedure. After this step is your device in original factory configuration.

BE CAREFULL! This step will erase all your IQsocket configuration.

9.2. Default faktory settings

Parameter	Status
Output power socket	OFF
Mikrorelay/output2	OFF
RESETTIME	10
RING	NOACTION
SECNUMBER	OFF
SMSWWW	OFF
SMSCONFIRM	ON
RINGCONFIRM	OFF
TEMPCONTROL	OFF
TEMPON	25
TEMPOFF	20
SMSPIN	NOPIN
OUTPUT	REM
INPUT	NC
ERRORREPLY	ON
ALARMSWITCH	10

NOTE: ON = Turned ON, OFF = Turned OFF

10. Firmware upgrade

Firmware upgrades of IQsocket products can be realised in case of need only by authorised trained person or in authorised service center.

11. External detectors and external low voltage circuit switching

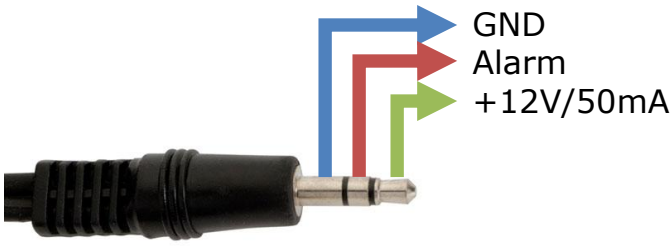
11.1 Input for external detectors

Príkaz	Popis	Odpoved'
ALARMON	Activated is alarm detection by external detectors.	AlarmOn = OK Alarm – NO sensor
ALARMOFF	Deactivated is alarm detection by external detectors.	AlarmOff = OK
ALARM+420123456789	When alarm is activated, power socket is making a call to preconfigured number. When external detector is unplugged, alarm is activated too and is repeated each 60 seconds.	Alarm+421903801254 – OK Alarm – NO sensor Alarm – NO number!
ALARMSWITCH=10	Activates switched contact/microrelay on alarm. Can be used for sirene or anything else.	Alarmswitch=10 - OK

ALARMSWITCH?	Information message: Request for ALARMSWITCH setting	Alarmswitch= 15 seconds

External detectors can be used for various alarm detections, for example motion, fire, gas, water, opened door/window detection and so on. Detectors are connected over 3.5 mm jack. It is possible to use more different detectors divide by jack divider, total current shouldn't be more than 50mA. Only first alarm within 60 seconds is indicated.

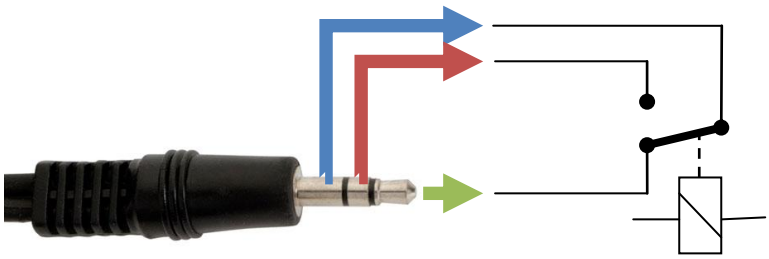
11.2 External detectors – scheme



Dividing connector

Connectors are not supplied with product

11.3 Microrelay – scheme



12. LED indicators

POWER

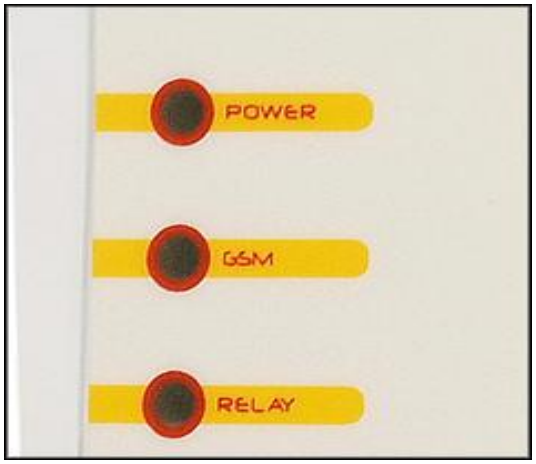
LIGHTS RED	Input power is OK
BLINKS RED 2 x WITHIN SECOND	SIM card is missing
LIGHTS YELLOW	Output power is turned on

GSM

GREEN BLINKING SHORT	Logged to GSM network
GREEN PERIODICALLY GREEN	Not logged to GSM network yet, searching
BLINKING RED FAST5 x IN SECOND	Not turned off PIN usage on card

RELAY

BLINKS YELLOW	Hardware error



POWER
Indication of input power

GSM
Indication of GSM login status

RELÉ
Indication of output power status

13. Technical specification

Model	IQSW-GSM-F, IQSW-GSM-E
Input power socket	230V / 50Hz
Output power socket	230V , CEE 7/4 German "Schuko" earthed 230V, CEE 7/4 French type
Data interfaces	GSM SIM socket
Switching	Output 1: Relay, 230V/16A (2s), 10 A long-term Output 2 : microrelay, max. 50V / 0,5 A
Management	SMS configuration SMS parameters monitoring
Indicators	POWER: two-color LED GSM: green LED RELAY: yellow LED
Detectors	Inbuilt thermometer Alarm input for external detectors (motion, gas, water, fire, door/Windows, and more.)
GSM	900 / 1800 /1900 MHz SIM card Plug-in 3V Integrated tape microstrip antenna
GPRS	Not supported
Software features	Appliance control over SMS, by call or manually Remote power turnon/turnoff of 230V appliance Remote power turnon/turnoff of output circuit up to 48V Remote power turnoff for specified time Remote appliance restart Remote appliance status switch (turnon to turnoff or back) Remote temperature measuring Thermoregulating feature

	Alarm detection Monitoring of sound
Power	230V , CEE 7/7
Weight Netto / Brutto	350g / 420g
Operating temperature	-10 to +50 °C

14. Care and security recommendations

Product was designed for indoor use for example houses, flats or offices. Don't use it in wet or chemically aggressive environment. It is also not designed for industry operation with aggressive environmental conditions. Don't let the product to get in shaking or fall downs, otherwise it can be damaged. 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.
Improper use or disassembling or modifying of product is automatically broken warranty. Product doesn't guarantee safe power source interruption, only functional switching is realized.

15. Ordering

IQsocket WALL product family uses following ordering code system:

IQS**x-y-z**

Example: IQSW-GSM-E

Product family: **W=WALL** | R=RACK
Product model: **GSM** | IP | RS232 | HDO | IPGSM
Output Socket type: F=Schuko | E=French