



IQtronic
Solutions to control and save energy

User Guide

IQSD-GSML

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firmware version 2.0.1



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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 on DIN rail (35mm, EN50022), inside a suitable enclosure providing environmental protection.

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.

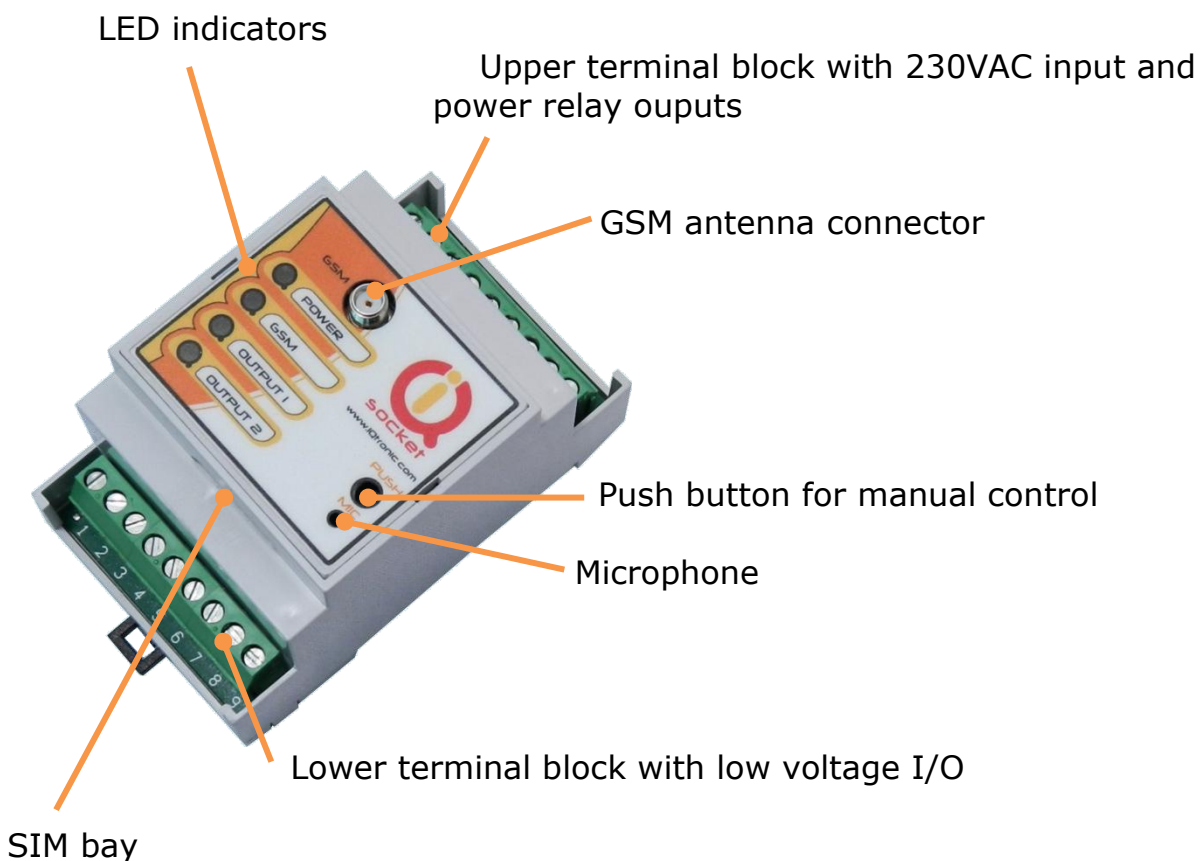
This product must be installed by a qualified person. All electrical wiring must be carried out in accordance with the appropriate regulations for the place of installation.

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

1 Introduction

IQsocket IQSD-GSML is an embeddable member of family of intelligent power sockets brought to you by IQtronic, Ltd. It comes in housing for DIN rail to be mounted inside a distribution box or to be embedded inside your product.

IQsocket IQSD-GSML 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 IQSD-GSML. It can be powered either by 230VAC mains voltage or from an external 12VDC power supply.



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

- Remote monitoring of temperature using two external temperature sensors
- 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.

- Remote monitoring of status of analogue input, tailored to connect with external sensor having voltage output.
- Sending alarm alerts based on status of inputs; levels of temperature; power supply loss.
- Embedded 7 resettable counters, counting number of changes of outputs, inputs, push buttons, power supply lost and GSM signal lost events.
- 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)

1.1 Product features

In general, IQsocket IQSD-GSML has following features:

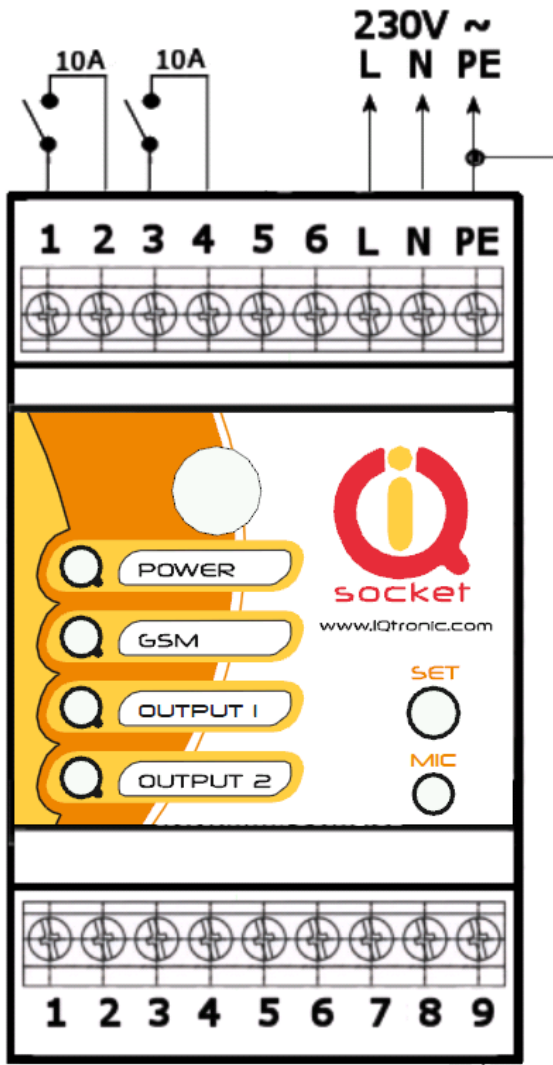
- Controlling (turn on, turn off; turn on/off for a specified time; restart by cutting power for short time) of any electric appliances connected to the two independent switched power relay outputs by SMS; by call; or manually by pressing push button located on IQSD-GSML housing.
- Sending SMS alarm alerts to user, based on temperature levels, state of inputs, power lost and restored events.
- 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, power supply lost and GSM signal lost events
- Sending current values of user-configured IQSD-GSML parameters upon SMS request
- Configuring IQSD-GSML parameters simply by sending SMS commands
- 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 Installation

Before starting installation, please read this manual and take into account Important information section at beginning of this manual.

2.1 Wiring the IQSD-GSML

Wire connections per following schematic diagram.



Upper Terminal block

- 1, 2 – switched output 1
- 3, 4 – switched output 1
- 5, 6 – not connected
- L – phase (live) of mains connection
- N – neutral wire of mains connection
- PE – Protection earth (ground), connected internally with pin 9

Lower Terminal Block

- 1 – not connected
- 2 – Input 1, digital two state, 0–30 VDC, optoisolated
- 3 – Input 2, digital two state, 0–30 VDC, optoisolated
- 4 – Analog input, 0–30 VDC
- 5 – Voltage output 5 VDC, no-backup, stabilized, 50mA fuse
- 6 – Temperature sensor 1, (DS18B20)
- 7 – Temperature sensor 2, (DS18B20)
- 8 – Voltage output 12 VDC no backup, stabilized, 750 mA fuse, can be used also as input for external DC power supply
- 9 – GND, connected with PE mains wire

Note all signals at the bottom terminal block are referenced to the GND pin 9. Be careful when using any from provided voltage outputs, it is not recommended to take significant current from these pin.

Please place supplied GSM antenna outside of metal enclosure and keep it away from metal structures which can shield GSM signal. Avoid to operate IQSD-GSML without antenna connected.

WARNING!

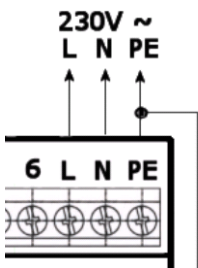


Please respect maximum current rating of outputs - 10A for resistive load. Do not overload your IQSD-GSML, as this may damage or shorten life span of the internal switching relays, which is not covered by warranty. It is recommended to use external contactors in case of higher current is required and/or capacitive/inductive load will be used.

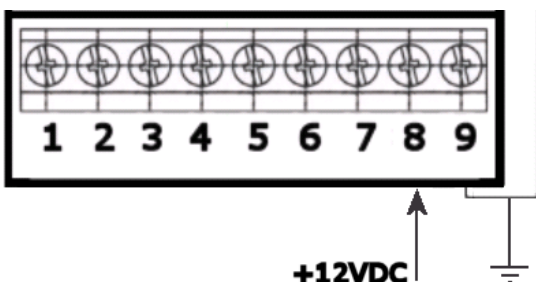
2.1.1 Power supply wiring

IQSD-GSML is normally powered from 230V AC mains, but it is possible to power it also from external 12VDC power supply, e.g. a battery.

AC power wiring



DC power wiring



_Allowed input voltage range is 12-14VDC, current consumption is about 40 mA.

Avoid simultaneous connection of AC mains voltage!

**WARNING!**

Avoid simultaneous connection of AC mains and external 12VDC power supply!

Wiring of inputs is described in chapters related to relevant configuration commands.

2.2 Inserting SIM Card

**WARNING!**

PIN authorization should be turned off before the SIM card is used in IQsocket IQSD-GSML

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 IQSD-GSML.

- Insert SIM card with inactive PIN code authorization into the SIM socket bay, accessible from lower side of IQSD-GSML housing.
- Push the card into the bay until you feel a click so card is locked inside.
- To remove the card from IQSD-GSML, gently push the card further into the bay until a click is felt, then card is unlocked and can be pulled out.

**Note...**

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

2.3 Powering IQSD-GSML On

Once the SIM card has been inserted, you can switch on 230VAC mains (or external 12VDC power supply) to power the IQSD-GSML on. Verify device is operating by observing status of the LEDs.

- Once AC power is connected, all three LED indicators will blink shortly and if everything is ok, the Power LED will turn to solid Red.
- In case of active PIN authorization on the SIM card, GSM LED starts blinking fast (approx. three times per second).
- GSM LED start to blink slowly (approx. every three seconds) Green, once device was successfully logged into a GSM network. If the LED blinks about every second, searching of GSM network is in progress.
- The Output1/2 LEDs indicate state of switched outputs.

Your IQSD-GSML is now ready to use.

3 Managing IQSD-GSML

This chapter guides you through management commands and features of IQSD-GSML.

3.1 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 IQSD-GSML 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 IQSD-GSML 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 **Error! Reference source not found.** and **Error! Reference source not found.** 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, IQSD-GSML will respond with error message to the sender. Sending response and error SMS messages can be disabled. See also chapters **Error! Reference source not found.** and **Error! Reference source not found.** 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	Restarted1	Ctrl

	for time preconfigured by command RESTARTTIME.		
RESTART2	Change (negate) state of the Output2 for time preconfigured by command RESTARTTIME.	Restarted2	Ctrl
RINGON	A call-back to the sender's number will be made. Useful to keep-alive of credit in prepaid SIM cards.		Ctrl
STATUS	Get status of IQsocket IQSD-GSML: Outputs and inputs state, temperature reading, input voltage, time and GSM signal	Output:OFF/OFF, Temp: 25 °C/25 °C, Input ON/ON, Voltage 0 VDC, Time:YY/MM/DD,hh:mm:ss, Signal:76%	Ctrl

3.2 Managing by phone call

Outputs of IQSD-GSML can be also controlled by dialing the number of its SIM card. Call is for most commands rejected by IQSD-GSML so its use is free of charge, with exception for listening sounds using embedded Microphone.

Behavior of IQSD-GSML 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?	Get current configuration of RING action, active setting is in () parentheses.	RING=(NOACTION), RESTART, SWITCH, MIC	Cfg

3.3 Manual Control

IQSD-GSML can be controlled manually using push button located in the bottom right corner of front panel, see drawing in section 1. Operate button using a suitable narrow tool, e.g. a pen.

- Main Switched output: Short pressing (about 1 sec) of the push button will cyclically switch state of switched outputs:
 1st pressing: Turn On Output1;
 2nd pressing: Turn On Output2,
 3rd pressing: Turn Off Output1,
 4th pressing: Turn Off Output2,
 5th pressing like 1st pressing – loop cycle...
- Reset to default settings: By pressing of the push button for longer than 2 seconds but shorter than 5 seconds, all LED indicators start blinking, when the push button is pressed again during LED blinking, IQSD-GSML configuration will be set back to factory default values.

3.4 Timing setup

Following table summarizes settings of time interval of *RESTART* command and ringing period used by *RINGON* command and by alerts by dialing a number under an alarm condition.

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
RINGONTIME=XX	Configures how long will IQSD-GSML keep ringing during a call, initiated by RINGON command or sending alarm alert. Range is 20 to 60 seconds.	RINGONTIME=XX - OK	Cfg
RINGONTIME?	Get current configuration of RINGONTIME parameter.	RINGONTIME=30 seconds	Cfg

3.5 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 IQSD-GSML startup.

3.6 Security features

IQSD-GSML 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.

IQSD-GSML allows to define up to 50 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 IQSD-GSML 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+421233355777	Add new number to security list.	SECNUMBER+421233355777 - OK	Cfg
SECNUMBER-421233355777	Delete specific number from permitted phone numbers list.	SECNUMBER-421233355777 - 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 421903123456,421903111222,421235678235 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 only numbers in international format:

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.

3.7 Response messages settings

When you communicate with your IQsocket IQSD-GSML, 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 IQSD-GSML 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
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.

3.8 Scheduler feature

Your IQsocket IQSD-GSML 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 **Error! Reference source not found.**)

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 3.10.1 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.

3.9 Counters

Six independent counters increments their status upon change on IQSD-GSML 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	COUNTER5=0	Ctrl
COUNTER6?	Get status of Counter6, increments on each power lost event	COUNTER6=0	Ctrl
COUNTER7?	Get status of Counter7, increments on losing registration into GSM network	COUNTER7=0	Ctrl
COUNTERX?	Get status of all counters	COUNTER=0,0,0,0,0,0,0	Ctrl
CLEARCOUNTER1	Clear status of counter 1 (2-7)	CLEARCOUNTER1- OK	Ctrl
CLEARCOUNTERALL	Clear status of all counters	CLEARCOUNTERALL- OK	Ctrl

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

3.10 Alarms

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

- Power supply lost alarm (highest priority)
- Power restored alarm
- Alarm invoked by two state digital Input1
- Alarm invoked by two state digital Input2
- Temperature alarm 1
- Temperature alarm 2
- Alarm invoked by the Analogue input
- INF action of the *SCHEDULER* command (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 **Error! Reference source not found.** for more information.*

3.10.1 Defining phone numbers for SMS and ringing up alerts

Phone numbers must be entered in international format, see following table. Up to 5 (five) numbers can be define.

SMS Command	Description	SMS Response	Type
ALARMNUMBER+421265440655	Add a new number into list for alarm alerts using SMS message and call back.	ALARMNUMBER+421265440655- OK	Cfg
ALARMNUMBER-421265440655	Remove a number from list for alarm alerts using SMS message and call back.	ALARMNUMBER-421265440655- OK	Cfg
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 421265440655	Cfg

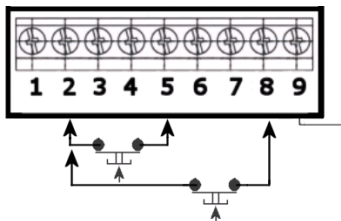
When generating alerts, numbers in list are processed per their order – first number as first, the last number as last.

3.10.2 Alarm invoked by Inputs

Input1 and Input2 are optically isolated, maximum allowed voltage present at the input pins is 30VDC. Input can have one of two states – Log.1 (active, high, true) and Log.0 (inactive, low, false).

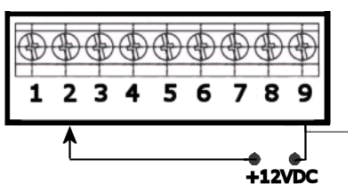
State is recognized by DC voltage level against GND potential, with threshold 2V. Each input is pulled-down by internal resistor, so resistance lower than 5kohm connected between an input and GND will also invoke change of state.

Example – change of state invoked by resistance:



So state of input will be change either by connecting pins 2 and 5, or connecting pins 2 and 8. Note the input pin is internally pulled down by a resistor.

Example – change of state invoked by voltage:



In this case, input state will be changed to active/high by connecting a positive voltage potential against the GND pin.

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	TRIGGERTIME1=XX - OK	Cfg

	milliseconds.		
TRIGGERTIME1?	Get current configuration of TRIGGERTIME1 parameter.	TRIGGERTIME1=300 milliseconds	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 milliseconds	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 () parentheses.	ALARM =(SMS), RING	Cfg



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

Note aliases are not cleared by reset to factory default

3.10.3 Temperature alarm

IQSB-GSML allows watching user-defined temperature interval in range from -40 to 120°C using two external temperature sensors. It is possible to define when will be alarm generated: when temperature is reaching minimum, maximum or both defined minimum and maximum levels.

SMS Command	Description	SMS Response	Type
TEMPMIN1=20.0	Lower temperature limit for temperature1 input in °C	TEMPMIN1=20.0- OK	Ctrl
TEMPMAX1=30.0	Upper temperature limit for temperature1 input in °C	TEMPMAX1=30.0- OK	Ctrl
TEMPMIN1?	Get current configuration of TEMPMIN1 parameter.	TEMPMIN1=20.0C	Ctrl
TEMPMAX1?	Get current configuration of TEMPMAX1 parameter.	TEMPMAX1=30.0C	Ctrl
TEMPALARM1=NOALARM	Temperature alarm of temperature1 input is disabled	TEMPALARM1=NOALARM-OK	Cfg
TEMPALARM1=MIN	Temperature alarm of temperature1 input is active for lower limit	TEMPALARM1=MIN- OK	Cfg
TEMPALARM1=MAX	Temperature alarm of temperature1 input is active for upper limit	TEMPALARM1=MAX- OK	Cfg
TEMPALARM1=MIX	Temperature alarm of temperature1 input is active for both lower and upper limit	TEMPALARM1=MIX- OK	Cfg
TEMPALARM1?	Get configuration of TEMPALARM for temperature1 input, active setting is in () parentheses.	TEMPALARM1=(MIX), MIN, MAX	Cfg
TEMPMIN2=25.0	Lower temperature limit for temperature2 input in °C	TEMPMIN2=25.0- OK	Ctrl
TEMPMAX2=35.0	Upper temperature limit for temperature2 input in °C	TEMPMAX2=35.0- OK	Ctrl
TEMPMIN2?	Get current configuration of TEMPMIN2 parameter.	TEMPMIN2=25.0C	Ctrl
TEMPMAX2?	Get current configuration of TEMPMAX2 parameter.	TEMPMAX2=35.0C	Ctrl
TEMPALARM2=NOALARM	Temperature alarm of temperature2 input is disabled	TEMPALARM2=NOALARM-OK	Cfg
TEMPALARM2=MIN	Temperature alarm of temperature2 input is active for lower limit	TEMPALARM2=MIN- OK	Cfg
TEMPALARM2=MAX	Temperature alarm of temperature2 input is active for upper limit	TEMPALARM2=MAX- OK	Cfg
TEMPALARM2=MIX	Temperature alarm of temperature2 input is active for both lower and upper limit	TEMPALARM2=MIX- OK	Cfg
TEMPALARM2?	Get configuration of TEMPALARM for temperature2 input, active setting is in ()	TEMPALARM2=(MIX), MIN, MAX	Cfg

	parentheses.		
--	--------------	--	--



Note...

Temperature values must be entered always as number with one decimal place, e.g. 20.0

3.10.4 Analogue voltage input alarm

Analogue input (pin4 on the lower terminal block) allows to monitor voltage level in range 0-30VDC using internal A/D converter. Type of voltage (DC, AC) is also recognized and displayed in the *STATUS* message

SMS Command	Description	SMS Response	Type
VMIN=10	Lower threshold value of voltage	VMIN=10 - OK	Ctrl
VMIN?	Get current settings of Input1 alert alias	VMIN=10	Ctrl
VMAX=30	Upper threshold value of voltage	VMAX=30 - OK	Ctrl
VMAX?	Get current settings of VMAX	VMAX=30	Ctrl
VOLTALARM=NOALARM	Analogue voltage input alarm is disabled	VOLTALARM=NOALARM - OK	Cfg
VOLTALARM=MIN	Analogue voltage input alarm is active for lower limit	VOLTALARM=MIN - OK	Cfg
VOLTALARM=MAX	Analogue voltage input alarm is active for upper limit	VOLTALARM=MAX - OK	Cfg
VOLTALARM=MIX	Analogue voltage input alarm is active for both lower and upper limit	VOLTALARM=MIX - OK	Cfg
VOLTALARM?	Get current settings of VOLTALARM parameter, active setting is in () parentheses.	VOLTALARM=(NOALARM), MIN, MAX, MIN	Cfg

3.10.5 Power lost alarm

The IQsocket IQSD-GSML is equipped with Power lost alarm feature, which can send an SMS alert to preconfigured number in case of mains power is lost and restored back.

Following table summarizes commands relevant to this feature:

SMS Command	Description	SMS Response	Type
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PWRALARM=NOALARM	Power alarm on power lost event is not active.	PWRALARM =NOALARM - OK	Cfg
PWRALARM=LASTNUMBER	On power lost event, sends SMS alert to the number detected from the last incoming SMS.	PWRALARM = LASTNUMBER - OK	Cfg
PWRALARM=USERDEFINED	On power lost event, sends SMS alert to the number preconfigured by PWRALARMNUMBER.	PWRALARM = USERDEFINED - OK	Cfg
PWRALARM?	Get configuration of PWRALARM, active setting is in () parentheses.	PWRALARM =(NOALARM), LASTNUMBER, USERDEFINED	Cfg

SMS Command	Description	SMS Response	Type
PWRRESTOREALARM=NO	Power alarm on power restored event is not active.	PWRRESTOREALARM =NO - OK	Cfg
PWRRESTOREALARM=YES	Power alarm on power restore is active.	PWRRESTOREALARM = YES - OK	Cfg
PWRRESTOREALARM?	Get configuration of PWRRESTOREALARM, active setting is in () parentheses.	PWRRESTOREALARM =(NO),YES	Cfg

3.10.6 Defining phone number where to send alarm alerts

Command *PWRALARMNUMBER* allows to specify the phone number, where will be sent alerts in case of a Power lost alarm occurs.

Following table summarizes its usage:

SMS Command	Description	SMS Response	Type
PWRALARMNUMBER +420123456789	Define number for sending Power lost alarm SMS alerts.	PWRALARMNUMBER +420123456789- OK	Cfg
PWRALARMNUMBER?	Get current value of PWRALARMNUMBER.	PWRALARMNUMBER =420123456789	Cfg

3.10.7 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

3.11 Using microphone

Your IQSD-GSML 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 IQSD-GSML installed; it depends on device orientation and placement and also on background noise.

Microphone is activated by either answering a call from your IQSD-GSML, such as when an input alarm has been detected, while alarm alert is set to ring using *ALARM=RING* command (see chapter **Error! Reference source not found.**); or by calling the number of your IQSD-GSML, while *RING=MIC* setting is preconfigured (see chapter **Error! Reference source not found.**).



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.

3.12 Various 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 output pins "normally open" – not connected, 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 output pins "normally closed" – connected, 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
TEMPUNIT=F	Changes temperature units to Fahrenheit	TEMPUNIT=F- OK	Cfg
TEMPUNIT?	Get current temperature unit, active setting is in () parentheses.	TEMPUNIT=(C),F	Cfg
DEVICENAME=myname	Name of the IQSD-GSML, this text is sent with each alarm alert SMS for easier identification of alarm source. Max. length is 15 characters.	DEVICENAME=myname - OK	Cfg
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

Please note firmware can be currently upgraded only by sending unit back to the factory or to an authorized service center.

3.13 Error messages

Error messages are being sent only when sending response messages is permitted (see *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 <i>CONFIG</i> command again.
Full memory!	Memory for storing permitted phone numbers is full.
No number	When trying to get permitted phone number list but the list is empty.
No record	When trying to delete non-existing items or records, scheduled tasks or program rows.

4 Indicators

PWR

LIGHTS RED
BLINKS RED 2 x PER SECOND

Input power is OK; normal operation
SIM is not correctly inserted or missing or is bad

GSM

BLINKS GREEN, EACH 3 SECONDS
BLINKING GREEN EACH SECOND
LIGHTS GREEN 2 x PER SECOND

Logged to GSM network, normal operation
Not logged to GSM network yet, searching
SIM card have active PIN protection, use a GSM
phone to disable it.

BLINKING FAST

Active alarm, data transmission, call in progress

OUTPUT1, OUTPUT2

NOT ACTIVE
LIGHTS YELLOW
BLINKS YELLOW

Particular output has connected NC pins
Particular output has connected NO pins
Hardware error/failure

Input1, Input2

NOT ACTIVE
LIGHTS GREEN

Particular input is in Log.0/low/inactive state
Particular input is in Log.1/high/active state

5 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.

5.1 Reset to factory default procedure

Reset is done by pushing pushbutton located on bottom right corner of the front panel.

In order to restore factory default configuration, push the button 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-GSML except language settings an.

5.2 Factory default settings

Parameter	Default setting
OUTPUT1	NC
OUTPUT2	NC
SMSPIN	NOPIN
RESTARTTIME	10
RING	NOACTION
SECNUMBER	NO
SMSCONFIRM	YES
RINGCONFIRM	NO
ERRORREPLY	YES
SMSCONFIRMUNAUTH	YES
TRIGGERTIME1	300
TRIGGERTIME1	300
INPUTTYPE	CHANGE
NEXTTESTTIME1	0
NEXTTESTTIME2	0
DEVICENAME	IQSocket

Parameter	Default setting
INPUTALARM	NOALARM
ALARM	SMS
ALIASINPUT1	LOG0,LOG1
ALIASINPUT2	LOG0,LOG1
TEMPMIN1	20.0
TEMPMAX1	30.0
TEMPALARM1	NOALARM
TEMPMIN2	20.0
TEMPMAX2	30.0
TEMPALARM2	NOALARM
RINGONTIME	30
OUTPUT	REMEMBER
TEMPUNIT	C
VMIN	10
VMAX	20
VOLTALARM	NOALARM

6 Technical specification

Model	IQsocket IQSD-GSML
Mains power	110-230VAC / 50-60Hz, 15mA@230VAC
Switched Outputs	2x 230V, 10A max (resistive load)
Inputs	2x Digital, optic-isolated, max. 30V input, detection threshold 2V 1x Analog voltage sensing 0-30VDC/0-24VAC. Resolution 1V 2x Temperature sensor inputs, 1-Wire, for Dallas DS18B20 sensor
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 connector
Indicators	POWER: red LED GSM: green LED RELAY: yellow LED
Features	Appliance control over SMS, by call or manually Remote restart of appliances Temperature monitoring Digital sensors monitoring Analogue sensor monitoring Alarm detection Monitoring of sound using integrated microphone
Dimensions	90x53x58mm
Weight	0.1kg netto
Operating temperature	0 to +50 °C
Humidity	Max. 80%, non-condensing
Operating temperature	0 to +50 °C
Mounting	DIN rail (35mm, EN50022), 3 modules wide
Compliance	CE

6.1 Operation, maintenance and safety recommendations

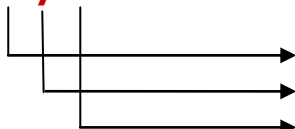
- Do not modify product in any way and do not operate product modified any way. Warranty is void when product was disassembled or modified in any way.

- Product is not fused; ensure it is installed in fused electric installation only.
- Product is not intended as security device, alarm functions are just auxiliary.
- 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 10Ais 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.

7 Ordering and accessories

IQsocket product family uses following ordering code system:

IQSx-y-z

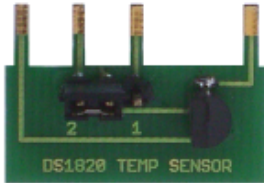


Example: IQSD-GSML

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

Optional accessories

Code	Description
SR-TMP-01	PCB with temperature sensor
ST-TMP-02	Temperature sensor with metal housing, 1m cable



SR-TMP-01



Detail of installation



SR-TMP-02

SR-TMP-02 wiring:

Yellow wire (orange pin sleeve):	GND, connect to IQSD-GSML pin 9
White wire (green pin sleeve):	OUT, connect to IQSD-GSML pin 7 or 6
Green wire (green pin sleeve):	VCC, connect to IQSD-GSML pin 5