HC GSM SWITCH

HARDCODE DEVELOPMENTS - CIRCAM PCB DESIGN & PRODUCTION

OPERATION MANUAL AND DESCRIPTION

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DEVICE FEATURES AND OPERATION DESCRIPTION

HC-GSM SWITCH is a cutting edge remote control device via SMS messages from any mobile phone and network.

Main Features

- 5 Digital Inputs, with selectable ALARM and LINK functions for each input.

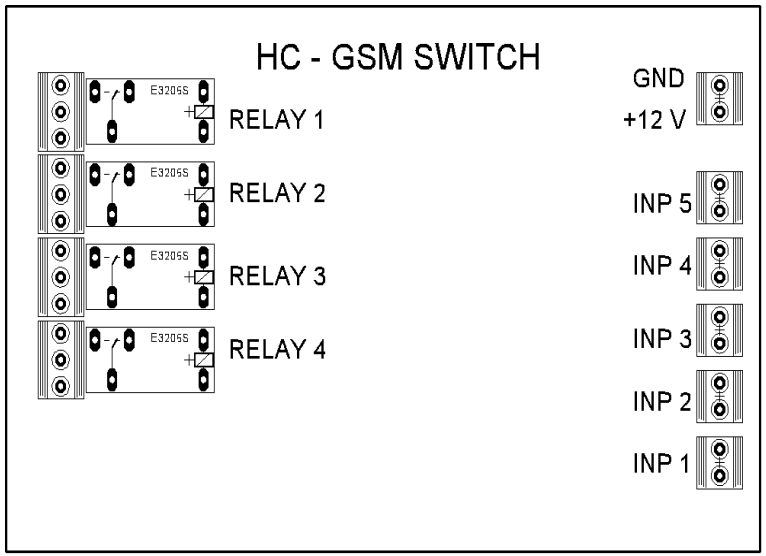
- ALARM: Transmission of sms to any selected cellphone number (applicable in all networks around the world) alarming about a state change of an input.

- LINK: Changes of the state of any selected input can affect the state of an output, based on the user's configuration.

- 4 Digital Outputs (relays), with normally open and normally closed contacts
- Output (Relay contact) characteristics for AC: 10A / 250V
- Output (Relay contact) characteristics for DC: 10A / 30V
- The outputs can be directly controlled via SMS messages.
- Creation of time scheduled events and any output activation for a selectable period of time.

- Commands via unanswered telephone calls
- The user can receive an [input – output] state report, acknowledge alarms, or change the state of an output just by ringing the device.

- Input – Output state reports
- Device reports to the user about the current state of all inputs and outputs.



Requires 12V DC power supply (not provided)

On the device front there are 5 leds. Their operation is as follows:

LED 1: Modem is in initialization state

LED 2: The device is ready to receive commands / check for alarms / execute link and events

LED 3: Reception of new SMS and execution of new commands confirmation.

LED 4: Transmission of SMS by the device's modem.

LED 5 (RED): Nominal device operation. This led should be blinking in a constant rate, in any other case the device is malfunctioning.

For the modem to be fully operational, first check that the pin security of the SIM card is deactivated. You can check your sim by noticing LED 1 on the box front which in case the card is pin protected, remains constantly on (modem initialization) while in the same time LED 2 (device ready to receive transmit commands) remains in an off state.

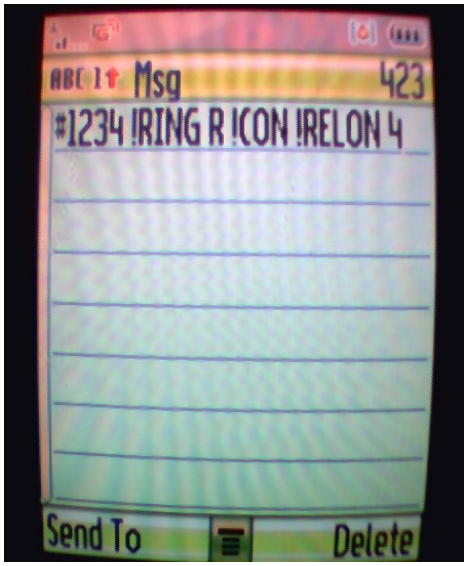
Device settings and control can be manipulated via SMS text messages.
In order for the sms to be accepted by the device we must always begin the message with the security four digit number predefined by the operator (this number has nothing to do with the sim's pin number and is defined by the user).
The security number must be written before the command like this #1234 (1234 is the default pass with which each device is shipped which the operator can then change by the appropriate command accordingly)

After the security number come the commands that the operator wants to transmit to the device. Before each command the << * >> or << ! >> symbol must be typed followed by the command without any spaces, however a space is required between different commands contained in the same sms message. For example:

***REP *PULP 1 !CON**

(There is no difference between << ***** >> or << **!** >> the choice of each symbol before each command depends on the operator)

Commands can be either inserted in lower case or capital letters. It is preferable that on command transmission, the operator doesn't exceed the character number limit of one sms as in case the sms is divided into two separate ones there is the possibility the device accepting the first and ignoring the second one.



Command Input Example

LIST OF COMMANDS

RESET	Reset the device in its initial configuration.
CON	Command execution report send by the device.
PIN	Device's security number modification.
TEL	Modify operator's phone no. recognized by the device.
INPNO	Modify Input as normally open.
INPNC	Modify Input as normally closed.
ALON	Input alarm activation.
ALOFF	Deactivate input alarm.
INT	Interval between repeated alarm transmission.
ACK	Alarm acknowledgement.
NAME	Name alarms.
RELON	Relay latches.
RELOFF	Relay unlatches.
PULP	Pulse in the specified output.
PULN	Negative pulse in the specified output.
TRON	Timed relay latch.
TROFF	Timed relay unlatch.
REP	Input - Output report.
RTC	Set modem's real time clock.
LINK	Combine an input with an output (link creation).
SETUP	Modify device configuration.
EV	Event creation for a specified output.
CLEV	Delete all events.
RING	Configuration of unanswered call commands execution.
AON	Acivate device's alarm transmission fuction.
AOFF	Deactivate device's alarm transmission fuction.

COMMAND DESCRIPTION

RESET: This command resets the device in it's initial configuration by erasing all user defined links, events and so on (except for the security number and operator's phone number).

#1234 *RESET

CON: By adding this command the device replies with a report confirming that the commands have been accepted and executed or they were rejected due to typing or parameter errors. The sms sent by the device contains a list of the received commands with an <<OK>> or an <<X>> next to them defining which command was accepted or rejected accordingly.

#1234 *CON

PIN: Modifies the device's four digit security number. (ATTENTION: This security number has nothing to do with the sim's pin number and is solely for the protection of the device from third party interference – Each device is shipped with 1234 as the default security no.)

#1234 *PIN 7629

TEL: Modifies operator's telephone number recognized by the device. Its use secures the unanswered call function. The device executes such a command after confirming that the incoming call number coincides with the operator's number. However sms commands can be sent by any phone number as long as the correct four digit security number precedes the command.
The number can be either inserted in it's international form +30XXXXXXXXX or without the national prefix (However in case we want to regularly use the unanswered call function the number must be inserted in it's international form i.e. +30XXXXXXXX). This command must be ended with a fullstop or a space following the telephone number in order to be accepted by the device.

#1234 *TEL +306937444183.

INPNO – INPNC: These commands allow the user to select and configure an output to operate as normally open or normally closed. Normally open means that when the output contacts are not shorted with each other the device reads the state as a logic 0 while there is a logic 1 in the opposite case. Normally closed on the other hand means that the device reads the two states in a reversed manner (logic 0 for when the output contacts are shorted – logic 1 for the opposite).
This logic state manipulation affects the configuration of the alarm and link settings as will be clearly shown later on.

#1234 *INPNO 1 *INPNC 2

ALON – ALOFF: Activate – Deactivate the alarm for a specific input. If the state of an input changes from a logic 0 to 1 or vice versa, then there is an alarm and the device initiates the transmition of an sms to the operator number to inform him of this event.

#1234 *ALON 4 *ALOFF 2

INT: In case of a continuous alarm in any input, the device can resend an alarm message in predefined time intervals ranging from 1 up to 99 minutes (until the alarm shuts off). This function, while in operation, can be deactivated by the user by replying to the device with a confirmation message.
By typing INT 0 this function is completely deactivated (the number following INT corresponds to minutes)

#1234 *INT 25

ACK: This command informs the device that the operator acknowledges all it's alarm messages and deactivates their transmission. In case of a new alarm the device sends new alarm messages and a reconfirmation by using the same command, is needed.

NAME: By this command a sentence is assigned to the alarm sms message for each of the 5 inputs.(Latin alphabet letters only- 49 characters maximum length)

#1234 *NAME1 DEVICE 1 IS MALFUNCTIONING.

The input, that the operator wishes to edit it's alarm text, is specified by the appropriate number next to the NAME command (no space required).
This command will only be accepted by the device if it is ended with a fullstop and a space separates the NAME(input No.) from the text main body.

RELON – RELOFF: These commands change the status of the device's relays. The command is followed by the number of the relay the operator wishes to latch or unlatch.

#1234 *RELON 1 *RELOFF 2 *RELOFF *RELON 4

PULP – PULN: If one of this pair of commands is transmitted to the device, it automatically produces an one second pulse to a specified relay. PULP (positive pulse) tells the device to latch the relay and unlatch it after one second, while PULN (negative pulse) tells the device to unlatch the relay for a second and then latch it again. The commands are followed by the designated relay number (including no space).

#1234 *PULP 1 *PULN 2

TRON – TROFF: Using these commands a relay can be armed or disarmed for a specified time period (from 1 up to 99 minutes).

The command is followed by the corresponding relay number, a space and the time interval that the user wants the relay to remain to the designated status.

#1234 *TRON1 25
Relay 1 latches for 25 minutes and then unlatches

#1234 *TROFF1 12
Relay 1 unlatches for 12 minutes and then latches again.

REP: On receiving this command the device replies with a report sms containing the status of every input and output.

#1234 *REP

RTC: Modem clock can be set by the RTC command. The command is followed by a space and a ten digit number which corresponds to:

YYMMDDHHLL

where

YY = Year
MM = Month
DD = Day
HH = Hour (24H format)
LL = Minutes

Each parameter should be a double digit number.

For example February the 6th 2007, 15:45 can be entered as follows

#1234 *RTC 0702061545

LINK: The operator can link a device input to any output. Any change to the status of the input (from 0 to 1 and vice versa) changes the corresponding linked output status according to LINK commands.
On each input can correspond up to two LINK commands (A and B) resulting in a maximum of 10 links.
The syntax of this command is as follows:

LINK [input number], [link A or B], [activation on H or L], [output number], [command to be executed]

[input number] = Assign an input to be linked.
[Link A or B] = Assign the first or the second available link of the input.
[Activate on H or L] = This informs the device in what manner it should link the input to the output. H means that the link is activated when the input changes from <<0>> to <<1>> while L means link activation on input status change from «1» to «0».
[output number] = Assign corresponding output to be linked
[command] = Assign a task to the output. The options available are as follows:

LP = Latch positive, latch relay
LN = Latch negative, unlatch relay
PP = Pulse positive, positive pulse with one second duration
PN= Pulse negative, negative pulse with one second duration
T = Toggle, reverse output status
In the following two commands, [activation on H or L] is ignored by the device (however it must be entered for the syntax of the command to be correct).
FP = Follow positive, linked output assumes the status of the input.
FN = Follow negative, linked output assumes the reverse status of that of the input .

Following the LINK command are the input number to be linked, link A or B (available links) and activation on H or L (no space between all of them), next to these and separated by space are the output number while the overall command ends with a final space and the task to be performed.
For example:

LINK1AH 2 LP
LINK1BL 3 PN
LINK4AH 1 FP or **LINK4AL 1 FP** (this is the same command as the H and L in each case are ignored by the device as they do not affect the task to be executed).

In order to delete a link we write LINK [input number], [link A or B] followed by an <<X>> (no spaces).

LINK1AX = Input's 1 A link is deleted
LINK2BX = Input's 2 B link is deleted

SETUP: If the user wants a report of the configuration of each input, a SETUP command can be send to the device which then automatically replies with a message containing all the parameters of each input.
For example
TIMER: 20 = Alarm transmission repetition timer set on 20 minutes.
INP1 ON NO = Alarm on, normally open
LA OFF = Link A deactivated
LB OFF = Link B deactivated
INP2 OFF NC = Alarm off, normally closed
LA H PP 1 = Link A, activation in case input status changes from <<0>> to <<1>> if so positive pulse on output 1 and so on.

EV: (stands for event). This command assigns a task to be performed in a specific date and time such as a pulse on relay 4 on the 5th of March 2007 at 9:00 am. The device can store up to 30 events in total on any output (i.e. all 30 events may be assigned on only one of the outputs)
Date and time parameters used to define an event are as follows:
Y= Year
M= Month
D= Date
H= Hour
L= Minutes

The user can program an event without entering all 5 parameters say just specify hour and minutes or just month and minutes. The event will take place the moment the device identifies all parameters to be valid, for example if the operator has entered Y=2007 and H=7 then each day of the year 2007 at 7:00 am the device will execute the same task.
Since we can define which event will not be deleted after it's conclusion [lock event] we can program the device to perform a task repeatedly every month, every day, every hour and so on.

The correct syntax of this command is described below:

EV[output number][output command][lock event] [time parameters].

[output number] = Output on which the event will take place (relay no. 1-4)
[output command] = Defines the task to be performed by the output on an event. There are the following options for this part of the command:

PP = Positive pulse
PN = Negative pulse
LP = Latch relay

LN = Unlatch relay
T = Toggle relay status

[lock event] = If the operator wishes the event to take place continuously on intervals defined by the time parameters then at that point an <<L>> must be inserted.
[time parameters] = Specify the moment each event will take place (year,month,day,hour,minutes). The operator can use any parameter seem fit in any order is preferable.
The time parameters are always two digit numbers while the hour value should be between 0 to 23 (24H format).

Examples:

EV1PP Y07M10D23H10L23.
Output 1, positive pulse, execute on 23/10/07, 10:23

EV2LPL L10M05.
Output 2, relay latch, lock event, execute May every hour at ten past the hour.
Hence the relay will be latched each day of May every hour at ten past the hour.

If the user needs the status of output 3 to be toggled at 10:30 each morning then the correct command should be:

EV3TL H10L30.

The command must always end with a fullstop otherwise it will be rejected by the device.

CLEV: Although there is no command to delete a specific event, all events can be erased by transmiting the CLEV command.

#1234 *CLEV

RING: The device allows the activation of specific commands via unanswered calls. By using the RING command the operator can define the commands to be executed each time the modem receives such a call. (For each command to be executed the user must call the device and wait until the modem hangs up, if the user terminates the call earlier, the command will not be executed)

Correct syntax:

RING [command] [output number]

[commands available] =>
X = Deactivate commands execution via unanswered calls
R = The device replies with a report of all inputs and outputs status.
A = Alarm confirmation
S = Activate / Deactivate alarm function

(An output number is not required when using the above commands)
#1234 *RING R
#1234 *RING A
#1234 *RING S

LP = Latch relay
LN = Unlatch relay
T = Toggle output status

(An output number is required when using the above commands)
#1234 *RING LP 4
#1234 *RING T 2

For syntax to be correct there should always be a space between the command and the output number.

AON – AOFF: Activates – deactivates the alarm function of the device. The device will transmit general alarm messages to the user only if he has previously activated this function by sending the AON command.

#1234 *AON
#1234 *AOFF

OPENING THE DEVICE COVER, GAINING ACCESS TO POWER SUPPLY & INPUT – OUTPUT CONNECTION TERMINALS
SIM CARD INSTALLATION

Figure 1

- Insert a flat screwdriver in the two openings on both sides of the device's cover and press inwards. ***(Figure 1)***

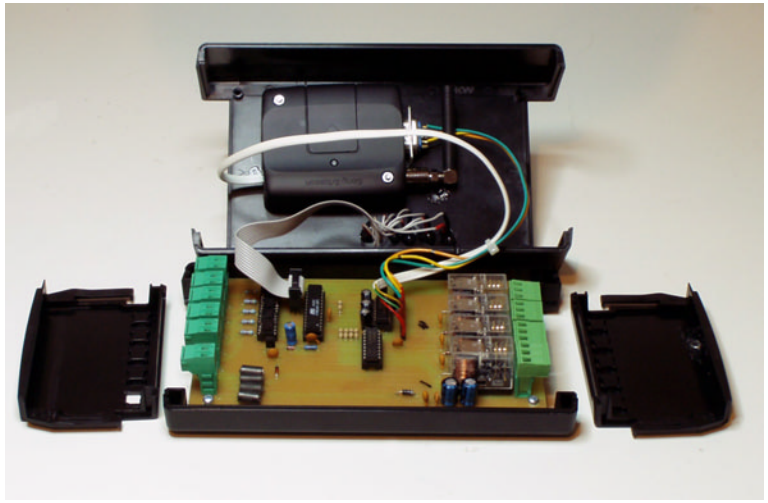


Figure 2

- Remove side pieces by hand. The output terminals are located on your right hand side, the input and the power supply (first from the bottom) terminals are on your left hand side while the modem is situated underneath the top cover. ***(Figure 2)***

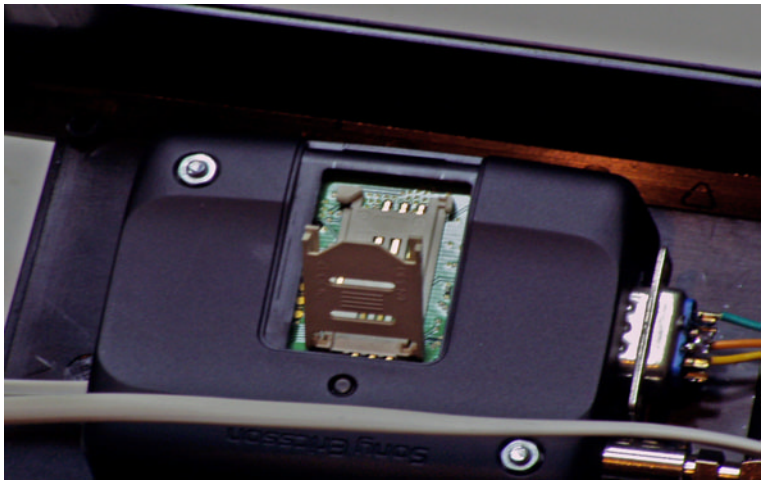


Figure 3

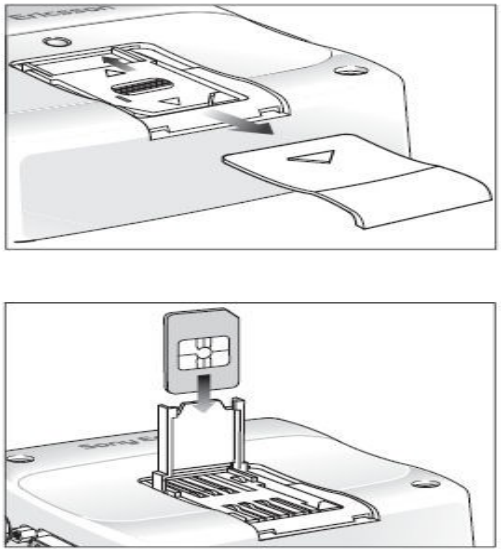


Figure 4

- Remove sim holder cover situated on modem's bottom side & insert sim card, reinstall cover ***(Figures 3 & 4)***

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