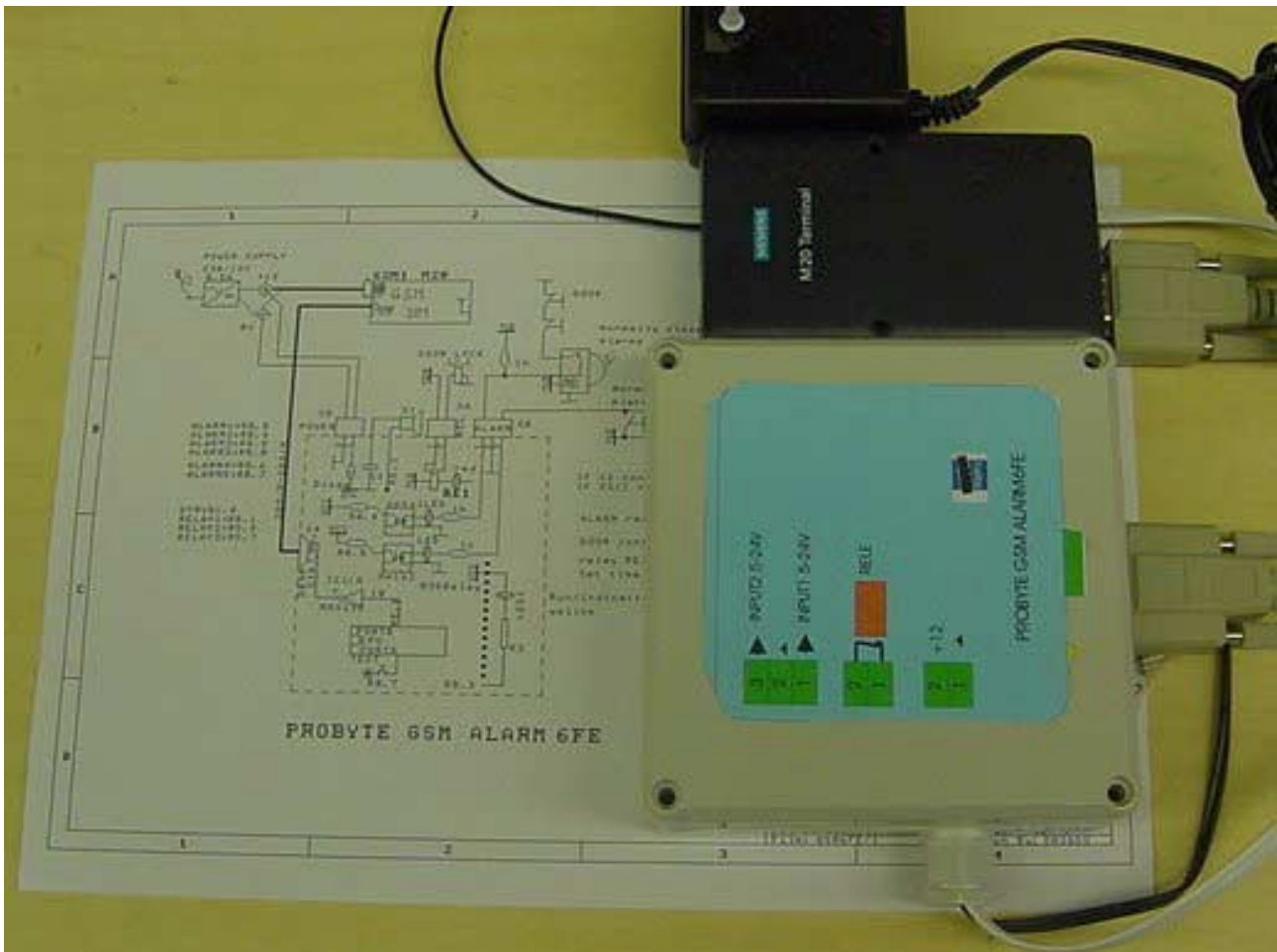


# PROBYTE GSM ALARM#6



## 1 General

PROBYTE GSM ALARM#6 works as a wireless remote control, as a data acquisition device and a remote alarm-reporting device. The device works with 12V battery and mains power supply. Alarms are given with a SMS-message and phone ring. Alarms are reset with phone ring, no connection is made and there is no communication charge. Only registered users can reset alarm or open doors, others get DTMF (1,2,3,4) information that this number is not registered.

All the settings and commands can be modified by SMS-messages. The relay #1 can operate with a telephone ring without communication charge. E.g. door lock can be operated for 1s .. 18 hours with phone call (registered users only). Different alarm sensors and control devices can connect to make remote report of alarm.

A SIM-card is used to record registered users. Use your own GSM phone to add or remove users. You can use also PC or send SMS-messages to add or remove users.

## 2 Fast installation guide

- Prepare a new SIM card with your own phone before inserting it to GSM-modem.
- Remove PIN-code from the SIM-card. Your phone should start without any PIN code asking.
- Remove all the old numbers from SIM-card. This is important to get new numbers in the right sequence.
- Remove all the messages stored to you SIM card
- Add phone numbers with name H1, H2, H3, H4, H5, H6 in this order. Use national format like 040123312. Do not use country codes. These names and numbers correspond to alarm inputs 1 to 6. Additional user for e.g. “ring to door” -users can be anything starting with H-letter like H15, H100, H100, H100, H20, H1000000. Same names are accepted. In clubs you can use club member numbers. Use zeros for small club numbers so they do not mix to alarms numbers H1 –H6 (H0001 or H9990001). If your GSM alarm has only one input, you need only one phone number H1 (phone number e.g. 04000000 and name “H1”). The alarm number for input 1 is searched by name H1.
- Move SIM-card to GSM modem. Use a good light to insert small SIM-card socket to GSM-phone right position. Do not use force.
- Connect power supply on and check that GSM modem gets connection; a small green led in GSM modem stops blinking and lights steadily. A yellow led in GSM-alarm unit blinks 45 seconds (exit delay) and then alarm inputs are armed.
- Make a phone call to GSM-modem number. Control relay is connected on 60-second factory default time).
- Connect 12V to alarm input 1 and ground to input 2 ( isolated input). Look yellow led operation. Wait for SMS message and phone call to phone number, which has a name H1.
- Make a phone call to reset the alarm.
- Push a red test button inside the unit. You get 2 SMS-messages: Alarm user list and unit status message :
- Button #1:"0445661885" #2:"0445661885" #3: #4: #5: #6:"032661885" #7: #8: #9: #10: #11: #12: #13:
- Button S=1 V=2 T1 0s->3600s V=11.6,L=34,M=32,H=0,T0=- ,T1=- ,T2=- ,R1=0,R2=0,R3=0,I1=0,I2=0,I3=0,I4=0,I5=0,I6=0,A1=0,A2=0,A3=0,A4=0,A5=0,A6=0,T0=0 A=0,T1= 0

### 3 Options

#### Option 1

**A remote alarm messenger. One input 12V, one output relay**

This device has one alarm input. Several sensors can be connected to one input to give 12V. Alarm is generated with a SMS-message to number #1 (name =H1) and the device phones 2 minutes to phone number H1. One relay can be controlled by a SMS-message to OFF or ON state. A phone ring connects the relay on for predefined time. The relay on time can be controlled with a SMS-message

### **Option 1A**

#### **A remote alarm messenger. Two inputs 12V, one output relay**

This device has two alarm inputs. Two sets of alarm sensors can be connected to each input. Alarm is sent with a SMS-message to number #1 and 2 (names =H1, H2) and the device phones 2 minutes to phone number H1 or H2. One relay can be controlled by a SMS-message OFF or ON state. A phone ring connects the relay on for predefined time. The relay on time can be controlled by a SMS-message.

### **Option 2**

#### **The remote alarm messenger. Six inputs 12V... 230VAD/DC, one output relay**

This device has six high voltage optoisolated alarm inputs. This device is intended for old devices which have no special alarm inputs but only 230V alarm lamps e.g. grain dryer. Alarms are sent with a SMS-message to number #1.. #6 (names =H1..H2) and the device phones 2 minutes to corresponding alarm number H1 --H2. One relay can be controlled by a SMS-message OFF or ON state. A phone ring connects the relay on for predefined time. The relay on time can be controlled with a SMS-message. A phone ring connects the relay on for predefined time. The relay on-time can be controlled with a SMS-message.

### **Option 3**

#### **Remote temperature data logger**

- 1 – 3 temperature sensors with 5m cables. Measuring range is -40.. +99C.
- Timing interval between 0-255 minutes. After 12 intervals a SMS-message is sent to user H1.
- Normally interval is 120 minutes and user gets a SMS-message once a day (24h). The message shows 0,1,2,4,6,8,10,12,14,16,18,20,22 (hours) and the three temperatures. Battery voltage (e.g. V=13.2) and the timing interval (L=120) are also shown.

- The current temperature data can be asked by a SMS- message to numbers H1-H6.
- Farms have many critical temperatures (meat, fish potatoes etc.). This device can be set to send alarm (1-99C), if the temperature goes below this critical temperature.

### **Option 4**

#### **The Battery operation**

- With 12 volt 6 Ah battery the device can operate 7 days. A normal car battery 12V 100Ah lasts four months without charging. The real battery voltage is seen from SMS-messages. Low voltage is 9 V. The current is 30 mA, without a GSM modem and 70 mA with GSM modem operation. Relays add 20mA/relay current.

### **Option 5**

#### **The remote alarm messenger. Six inputs 12V... 230VAD/DC, four output relays**

### **4 Relay remote operation and relay 1 operation with a phone ring**

- The remote control can be done sending a SMS-message: "ATREL11", "ATREL10" to device. The relay states are same as before power interruption.
- Making a phone ring, the relay 1 connects on for 1 second – 18 hours (65535 seconds). If user is not in SIM list, the relay does not operate but gives DTMF sounds for 10 second. A SMS-message AT(3600)w modifies the timing to 3600 second. A w-character starts also the relays timing. Read more details later.

### **5 Relay remote operation in option 5**

- The remote control can be done sending a SMS-message: "ATREL11", "ATREL21", "ATREL31", "ATREL41" to device.
- OFF –commands "ATREL10", "ATREL20", "ATREL30", "ATREL40"

## 6 Remote control of user list

- Users can be added or removed remotely.
- Send a SMS message (according a GSM standards)  
AT+CPBW=1,"0401234567",129,"H1"&. This command replaces the user #1. Note that H1 and CPBW=1 are the same. If only ring operated user are added, please keep a separate user lists (e.g. Excel table) the user numbers, names and dates. Like
- AT+CPBW=25,"0401234567",129,"H25"& Mr Nobody
- AT+CPBW=26,"0401234565",129,"H26"& Mr Anybody

A &-character at the end of command means a <CR> (Carriage Return) character. This is required by a GSM modem.

Remember first 6 number are reserved for alarms 1-6. Numbers 7-14 are reserved for other options. So start your own ring user numbers from 15. Ring user names can be anything, which starts letter H, even same names, but they must be in different memory places. AT+CPBW=15 means memory place 15 in SIM card. The maximum number of ring users depends of SIM-card of the operator. Normally it is 150. These numbers can be added by your normal GSM phone, if 6 first places H1 to H6 are added first, so that they go to the right memory place in SIM card. Using a PC and terminal program these are also easily done using AT-command.

## 7 Remote Interval setting for data logger

- The phone number 8 determines the data logger interval in minutes. E.g. AT+PPBW=8,"120",129,"Interval"&. This command set interval to 120 minutes
- If this number is not used or its value is 0, no measurement is done and no data logger messages are sent. If the number is 255 the measurement interval is 4 hours, but no messages is sent without a separate asking command (AT?1).

## 8 Remote setting of the temperature limit

The phone number 9 is the limit of the temperature alarm. If there is no number the setting is 0C and there is no temperature alarm. The limit can be between 1.99C. If any of three temperatures got below the limit, the alarm is made to number H1.

## **9 The remote setting of the ring operated relay #1**

The ring operated relay #1 timing can be set by a SMS-message between 1second ...65535seconds. SMS-message AT(3600) sets the timing to 3600 seconds i.e. one hour. If the letter w is added to any SMS-message starting with modem command AT, the relay 1 makes a test operation. E.g. AT(10)w, sets timing to 10 second and start the relay (for 10 seconds). A phone ring starts the relay and there is no communication charge because there is no connection. The device rejects the phone call after first ring and the user hears a busy sound. If the phone number is not in SIM-card, the user hears DTMF sounds 1,2,3,5 ten seconds and the phone is then disconnected. The 10-second phone charge is then made.

## **10 The exit delay, alarm and reset phone call**

The exit delay is 45 seconds. The yellow operation LED blinks once a second After 45 second the led blinks 50ms in each 4 second. Now the alarms are armed. If the alarm input gets 12V for 3 second the alarm starts. A SMS-message is send to phone number H1 "Alarm#1" etc.

The device rings then to number H1 for 2 minutes. The user sees e.g. "Warehouse alarm" from his GSM phone. The user can disconnect the phone or leave it ring.

When the alarm is on, the new alarm from the same source doesn't happen before the user resets the alarm and the alarm input is in normal state for 30 seconds. This prevents getting hundreds of alarms from same place in one night.

The resetting the alarm is done making a phone call to device. The device makes a line busy after first ring. The other way is to turn power off for 1 second.

Alarm states, input states, relay states can be checked by a SMS-message AT!1. The SMS-message is sent to phone number H1. AT!2 sends the message to number H2 etc.

## 11 The Battery operation

The device works with a 12V DC. The power supply can be a power plug 12V 0.5A, a car cigarette lighter or a separate alarm battery. If the utility power supply is important for operation, add a separate power-monitoring relay isolated a diode from battery. When the power supply fails this relay makes an alarm before the battery is dead.

## 12 The operation

1. Connect alarm inputs (if needed), temperature sensors (if needed) and power supply
2. Wait exit delay. The yellow led blinks 45 seconds.
3. Normal operation LED blinks briefly once in 4 second.
4. The alarm input is on (+12V) more than 3s. LED on for 10 seconds. A SMS message is send and a phone alarm is made. The led blinks fast.
5. The reset: make a phone call. Leave phone ring until the device disconnects it or go to alarm place and turn power off for 1 second.
6. The alarm situation must go to normal before a new alarm can be send.
7. The control of relay #1. Send an SMS-message "ATREL1" or "ATREL10!1". If the message contains a !-character and number 1-6, the device send a status message to alarm number H1-H6. The message "ATREL11 REL21 REL31" sets the relays 1-3 on with one message.
8. The temperature message is asked by a SMS-message "AT?1" number H1 and AT?2 respectively to number H2
9. The status message AT!1 sends the status to number H1. The message AT!6 send status SMS-message to number H6
10. The used alarm phone numbers can be asked by a command ATp3 to phone number 3.

## 16 The phone numbers in SIM card controls the operation of GSMALARM

Number in SIM	Name	Meaning		e.g.
1	H1	First alarm		0401234568
2	H2	2. alarm		0401234569
3	H3	3. alarm		0401234561
4	H4	4. alarm		0401234562
5	H5	5. alarm		0401234563
6	H6	6. alarm		0401234564
7		No used		
8	INTERVAL	Minutes	0= no op	120
9	TEMP	Temperature	Alarm	5
10		No used		
11	CAL1	Calibration 1		0
12	CAL2	Calibration 2		0
13	CAL3	Calibration 3		0
14		No used		
15	H15	“RING user”		0401111163
16	H16	“RING user”		0401111162
150	H150	”RING user”		0401111161

Open the SIM card cage in the GSM-modem. Push a small yellow button by a pencil. Put a SIM-card carefully into the place. Use a flashlight or good light when you put the SIM card back. Do not push it by force. Note the orientation of the card when you open the lid.

## 17 The test

Make the first test by a push button inside the unit. Look the yellow led operation. You get the SMS-message

**Button** T1 0-> 3600s V=12.1,L=0,M=0,H=0,T0=-,T1=-,T2=-

T1 (relay 1 operation timer) is not in operation (0->3600s) and the timing is 3600 seconds. The battery voltage (battery option) is 12.1V, the temperature timing (L=0) is 0 i.e. it is not in operation. No measurements is done (M=0), the temperature alarm is 0C(H=0C). No temperature sensors are used.

Used alarm phones:

### ***Button***

**#1 "041111111"**

**#2 "041111144"**

**#3 "044444411"**

**#4 "044444314"**

**#5 "044444334"**

**#6 "044444455"**

## **18 The alarm sensors**

When the input LED lit (the input gets 5 to 24V DC voltage 1 mA), the alarm is on. If you use normally closed contact -alarm devices, connect a 1-kilo ohm resistor from +12 V to alarm input and short circuit the input by sensor contact to the ground. Not the input is optoisolated, remember to connect a negative input to power supply ground. Look connection diagram.

### **ALARM #2**

R1=1,R2=0,R3=0,I1=1,I2=1,I3=0,I4=0,I5=0,I6=0,A1=1,A2=1,A3=0,A4=0,A5=0,A6=0 S=11 V=5 T1 3495s->3600s

The alarm message show the relay status (R1=1 other relays off), Input 1 (I1=1) is on still on (in alarm state). The alarm 1 and 2 (A1=1 A2=1) on, the messages send 11 times (S=11) received 5 messages (V=5). Relay 1 in on. Relay1 has been on 3495 seconds left ( 3495s>3600s), the relay timing is 3600 seconds

## **19 Changing the numbers by a PC**

Changing numbers can be done with a PC or remotely by SMS-messages Using PC requires experienced PC users with understanding serial communications principles.

Connect a direct 9pin Female/Male cable from GSM-modem to PC. Start a terminal program (e.g. Probyte TERM2004.exe ([www.kolumbus.fi/probyte/term2004.htm](http://www.kolumbus.fi/probyte/term2004.htm))). Set speed to 19200 baud. Set DTR and RTS on.

Test the connection

**AT** <CR>

The modem sends

**OK**<CR>

Make a new phone number to memory place 1 for name H1

**AT+CPBW=1,"04412345",129,"H1" <CR>**

<CR> is Carriage return or ENTER in PC. 129 mean that the number is set in national mode without international country code.

**AT+CPBW=2,"044222345",129,"H2" <CR>** makes second number to memory place 2 for name H2 etc.

You can check

**AT+CPBR=1<CR>**

Remove user number 3

**AT+CPBW=3<CR>**

Check

**AT+CPBR=3<CR>**

## **20 Change the temperature alarm limit and measuring interval**

**Set the temperature alarm to +2 Centigrade (freezing alarm)**

**AT+CPBW=9,"002",129,"TEMP" <CR>**

**Set the timing interval to 120 minutes.**

**AT+CPBW=8,"120",129,"INTERVAL" <CR>**

## **21 SMS remote settings**

Use the command similar to PC commands with SMS-messages.

The Enter-button cannot use in SMS messages. This is replaced by a special character (&).

All the messages starts with AT

**AT@** makes remote test alarms to H1-H2 numbers. Test alarms do not needed to reset. @-Character can be added to any SMS-message to test alarm numbers after modifications. Test alarms start "Ask" text.

**AT!1 send a relay status**, a battery voltage (battery option), and measuring interval. The message is send to number H1. AT to H2 etc.

**AT?1** send a temperature message H1.

**ATz** resets temperature settings and start a new sequence.

**ATw** starts a delayed relay 1 operation.

AT(3600) sets delay timing for relays 3600 seconds. AT(65535) is maximum time i.e. 18 hours.

**ATp1** send used phone numbers in 1-13 to number H1. Many commands can put in one, 70 characters in on one message is maximum. E.g. use AT(1800)w to set time and start timing relay in one command.

## 22 SMS-examples

Add a new ring user #35 to door control and ask alarm list to the phone H1 (master phone)

**AT+CPBW=35,"0443132345",129,"H35"& p1**

Note the & character after a new phone number commands.

AT@ command makes a test alarms to all the receivers H1-H6. No need to reset test alarms.

**Set relay 1 on**

**ATREL11**

Set Relays1 off and ask a status message

**ATRELE10!1**

**Other messages e.g.**

**ATRELE21, ATRELE20, ATRELE31, ATRELE30.**

Add users to "Ring" list

AT+CPBW=45,"0443132341",129,"H45" &\*

AT+CPBW=46,"0443132342",129,"H46"&

There are 60 characters in this message. A \* character is 1 second delay

## **Ask input, alarm and relay status to phone H2**

**AT!2**

ASK S=2 V=2 T1 0s->3600s V=11.3,L=120,M=11,H=2,T0=23 ,T1=23, T2=23,  
R1=0, R2=0, R3=0, I1=0,I2=0, I3=0,I4=0, I5=0,I6=0, A1=0, A2=1, A3=0, A4=0,  
A5=0, A6=0

Ask temperature logger message AT?1 to number -H1.

Ask1

V=13.0,L=120,M=6,H=18, // battery voltage is 12.0V, logger interval 120 minutes

T0=25,T1=24,T2=24, // temperatures 25,24,24

R1=0,R2=0,R3=1, //relay 1 and 2 off, relay 3 = on

I1=1,I2=0,I3=0,I4=0,I5=0,I6=0, //Input 1 in alarm state, others off

A1=1,A2=0,A3=0,A4=0,A5=0,A6=0 // Alarm in 1, others off

In message :

S=2 sent SMS-messages 2 pcs

V=2 received 2 pcs messages

T1 0s->3600s timer T1 (relay 1 on) left 0 seconds, the setting 3600s

V=11.3 the battery voltage is 11.3 V (battery option)

A=120 interval for logger is 120 minutes

M=11 (11 \* 120 minutes) logged data. The message is sent when 12 data available

H=2 Freezing limit is 2 C

T0=23, T1=23, T2=23 Latest measured temperatures from sensors T0-T3

The inputs (I1-I6) are off and similarly all the alarms A=0 etc.

## **23 A connection diagram**

Look a separate connection diagram delivered with the device.

## **25 Delivery**

**GSM ALARM6** no options

A remote alarm massager CPU, a GSM modem, a power supply, a connection diagram and user manual. One input one control relay.

Option1 1 pc 5-24V alarms input. 1 pc relay 10A contact

Optio1A 2 pc 5-24V alarms inputs. 1 pc relay 10A contact

**Option 2** 3 pc 12V-230V ACDC alarm inputs. 1 pc relay 10A contact

Option 3-1 Temperature logger, one temperature sensor 5 m cables

Option 3-2 **Temperature logger, 2 temperature sensors 5 m cables**

Option 3-3 Temperature logger, 3 temperature sensors 5 m cables

**Option 4 Battery operations and a 12VB 7AH NiCD battery a power adapter and charger for 230VAC.**

**Option 5.** 6 pc 12V-230V ACDC alarm inputs. 3 pc relay 10A contact

Delivery and guarantee according NL92.

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