

# GSM SMS Alarm Messenger

Version 7

|                   |  |
|-------------------|--|
| <b>SMS Basic</b>  | <b>GSM SMS alarm messenger</b>                                     |
| <b>SMS Pro</b>    | <b>GSM SMS alarm messenger</b>                                     |
| <b>SMS Pro-X</b>  | <b>GSM SMS alarm, voice &amp; data messenger</b>                   |
| <b>SMS Pro-SX</b> | <b>GSM SMS alarm messenger [Temperature &amp; Humidity Sensor]</b> |
| <b>SMS Pro-ST</b> | <b>GSM SMS alarm &amp; data messenger [2 x Temperature Sensor]</b> |

| Features               | Basic    | Pro      | Pro-X    | Pro-XQ               | Pro-SX   | Pro-ST   |
|------------------------|----------|----------|----------|----------------------|----------|----------|
| Alarm Input            | 8        | 8        | 8        | 8                    | 8        | 8        |
| Relay Output           | 1        | 3        | 3        | 3                    | 3        | 3        |
| Phone Number           | 10       | 10       | 10       | 10                   | 10       | 10       |
| Low Voltage Alert      | ✓        | ✓        | ✓        | ✓                    | ✓        | ✓        |
| Program by SMS         | ✓        | ✓        | ✓        | ✓                    | ✓        | ✓        |
| Program by PC Software | ✓        | ✓        | ✓        | ✓                    | ✓        | ✓        |
| Voice                  | ✓        | ✓        | ✓        | ✓                    | ✓        | ✓        |
| AD Channels            | -        | -        | 2        | 2                    | 1        | 0        |
| AD Hi/Lo Alert         | -        | -        | ✓        | ✓                    | ✓        | ✓        |
| Temperature Sensor     | -        | -        | -        | -                    | 1        | 2        |
| Humidity Sensor        | -        | -        | -        | -                    | 1        | -        |
| Temp Hi/Lo Alert       | -        | -        | -        | -                    | ✓        | ✓        |
| Humidity Hi/Lo Alert   | -        | -        | -        | -                    | -        | ✓        |
| GSM Band (MHz)         | 900/1800 | 900/1800 | 900/1800 | 900/1800<br>850/1900 | 900/1800 | 900/1800 |

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## 1. Overview

### a. Introduction

SMS Pro is integrated with a 16 bit MCU and reliable Siemens MC39i GSM module.

### b. Application

- ⊕ Industrial equipment monitoring
- ⊕ Data capturing
- ⊕ Rural Security
- ⊕ Car Security
- ⊕ Intelligent Home Security
- ⊕ Large scale area monitoring e.g. Power Plant

### c. Features

- ☑ Operates in GSM covering zones, phone alarm dial & SMS alarm message
- ☑ Keep the last 10 SMS alarm messages when sending SMS failed
- ☑ Resend the last 10 failed SMS when GSM network resumes normal
- ☑ Health Status report by GSM mobile phone or PC (RS232)
- ☑ Configuration setup by GSM mobile phone or PC (RS232)
- ☑ Arm/Disarm by GSM mobile phone
- ☑ 8 x Alarm Inputs triggered by N/C, N/O or State Change
- ☑ 2 x AD channels with user programmable Alert High & Alert Low level
- ☑ 3 x Relay Outputs, NC/NO activated by alarm input or SMS manually
- ☑ 8 x Mobile/Fixed Phone Number + 2 x control centre number
- ☑ Alarm Alert Modes – SMS, Phone Dial or SMS & Phone Dial
- ☑ System status reporting in Automatic, Schedule or Alarm triggered modes
- ☑ Central Station monitoring number for Server connected with GSM Modem
- ☑ Sound monitoring upon microphone connected
- ☑ Each alarm input is associated with independent SMS alarm text
- ☑ SMS alarm message text user programmable
- ☑ Independent SMS message for close & open triggered alarms
- ☑ Schedule power supply voltage level checking
- ☑ Automatic reporting on low power voltage level
- ☑ Reply message verifying the receipt of each command

### d. Safety

- Do not touch the antenna
- GSM 900MHz, 2W max.
- GSM 1800MHz, 1W max.
- Not designed for medical equipment or aerospace application

**e. Electrical Specification**

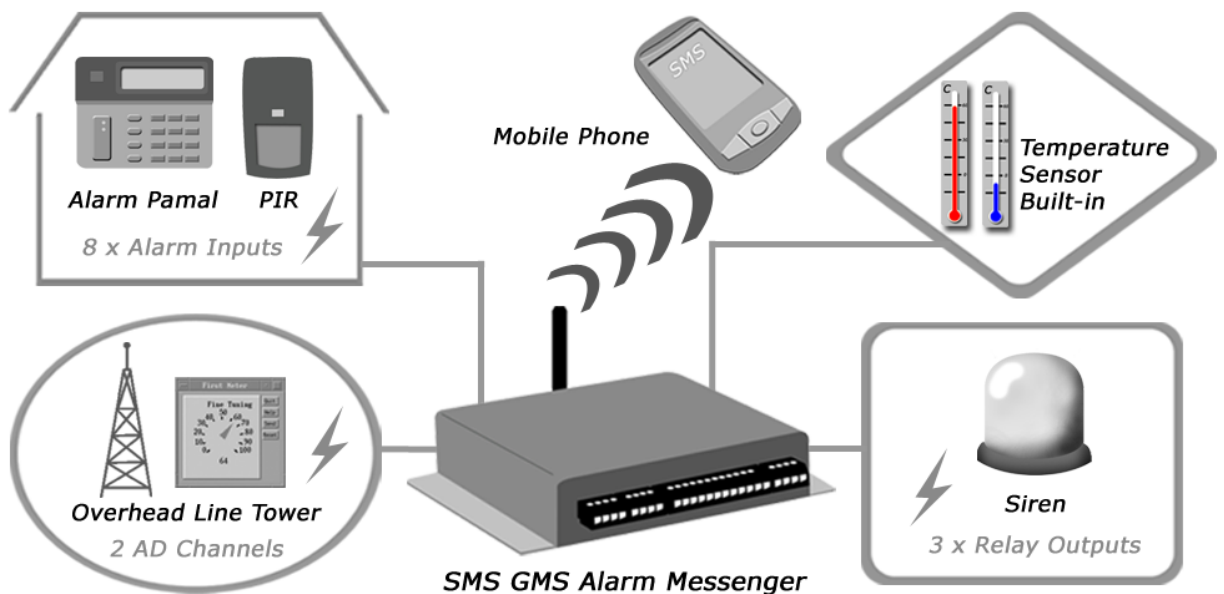
|                       |   |
|-----------------------|---|
| Operating Voltage     | DC7~15V                                       |
| Current               | 500mA (SMS Send/Receive)<br>10mA (standby)    |
| Peak Pulse Current    | < 1A  |
| Dimension             | 135 x 105 x 25 mm                             |
| Operating Temperature | -25° C ~ 55° C                                |
| Weight                | 600g  |
| RS232                 | 9600bps, 8 Data Bits, None Parity, 1 Stop Bit |

**f. Antenna Requirement**

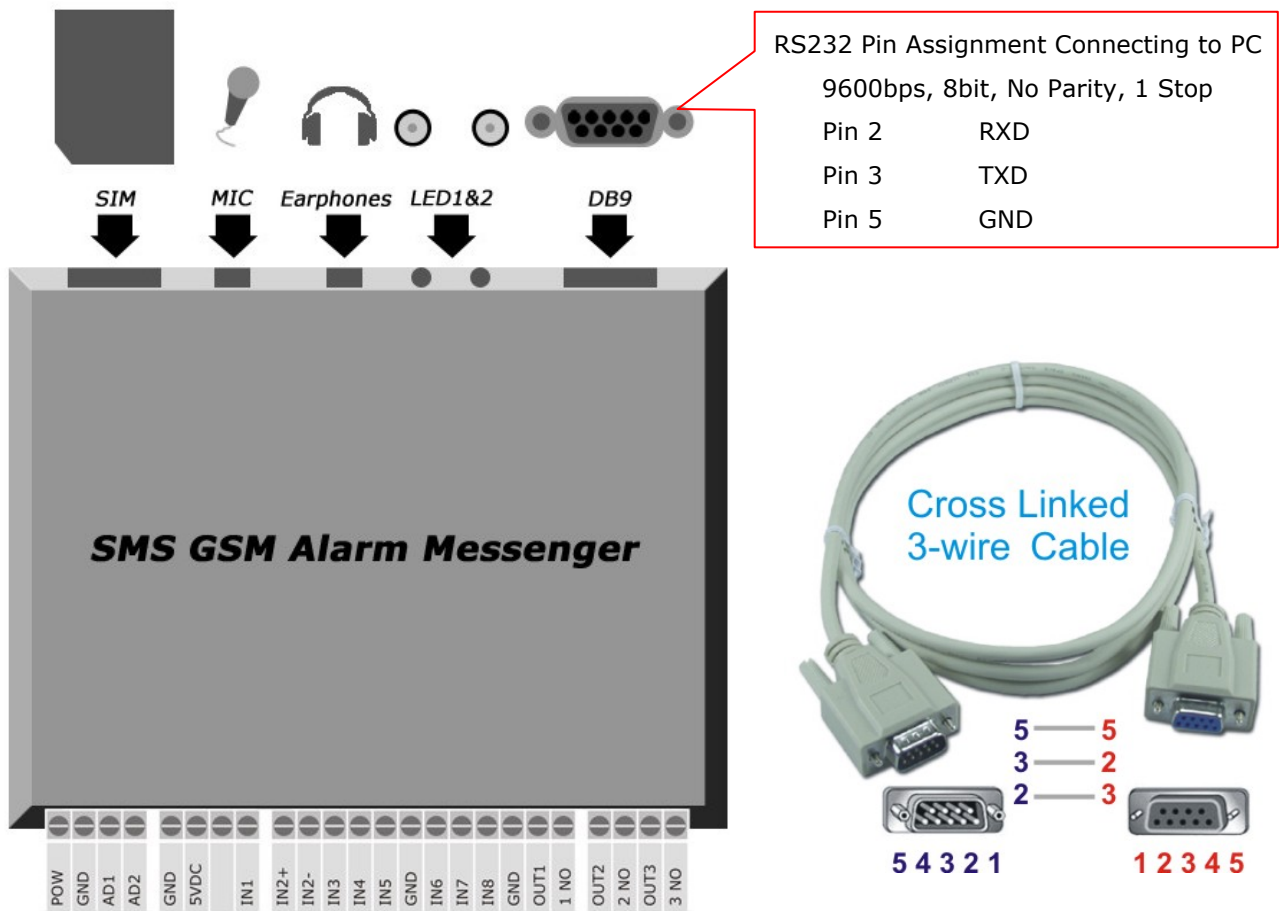
|                    | GSM 900               | GSM 1800      |
|--------------------|-----------------------|---------------|
| RF Frequency       | 925~960MHz            | 1805~1880MHz  |
| TX Frequency       | 880~912MHz            | 1710~1785MHz  |
| RF Rating          | 2W 12.5% Loop Loading | 1W 12.5% Loop |
| Loading Resistance | 50Ohm                 |               |
| Radiation S/N      | 0dBi                  |               |

Note: GSM850/900/1800/1900MHZ is available in US or worldwide version [Pro-Q]

**g. Operation**



## 2. Connection



**LED1 green** [GSM Signal]

Flashing Off > On duration  
 \* GSM Module Normal Operation

Flashing Same On/Off duration  
 \* GSM Network Connection Problem

Reason:  
 Antenna not connected  
 No SIM Card  
 Defective SIM Card  
 GSM Module Defect

**LED2 red** [Operation Status]

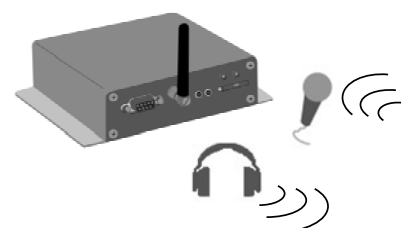
On  
 \* Normal

Flash  
 \* Searching GSM Network  
 \* Connecting GSM Network  
 \* Receiving SMS messages  
 \* Sending SMS messages  
 \* Phone dialing

### Sound Monitoring

SMS Pro automatically picks up any phone call after 8 rings. It rejects any call not from alarm phone number.

By connecting the microphone, mobile phone user can talk to the SMS Messenger.



### 3. Inserting SIM card

Press the yellow button to release the SIM card caddy as shown below.



1



2



3

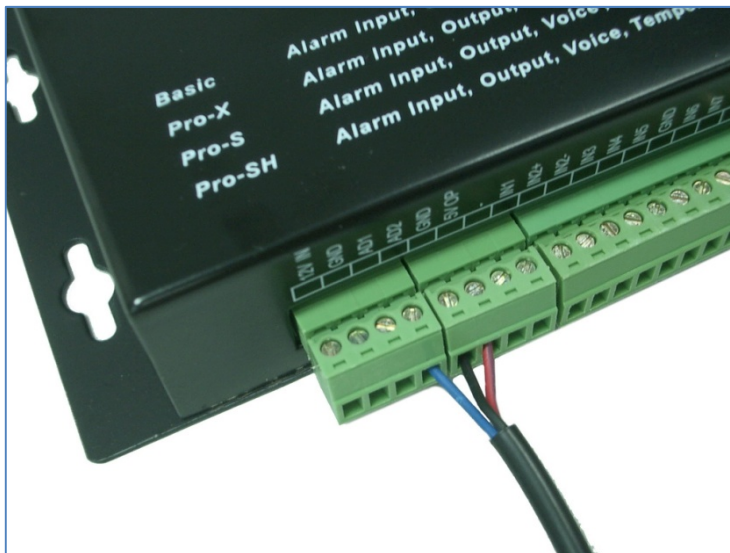


Make sure that the golden contact is facing down when inserting the SIM card caddy.

#### 4. Temperature Sensor [Pro-ST]

2 x External temperature sensors are supplied with 1m cable. Cable can be extended up to max. 100 meter.

Temperature Sensor: DS18B20  
Temperature Range: -50 ~ 125°C  
Accuracy: 0.1°C  
AD Channel: 2  
High Temperature SMS Alert  
Low Temperature SMS Alert



Cable Color Code



### 5. External Temperature & Humidity Sensor [Pro-SX]

External temperature & humidity sensor is supplied with 1m cable. Cable can be extended up to max. 100 meter.

External Temperature Sensor

Temperature Range: -50 ~ 125°C

Accuracy: 0.1°C

AD Channel: 2

High Temperature SMS Alert

Low Temperature SMS Alert



External Temperature & Humidity sensor



External Humidity Sensor

Humidity Range: 0 ~ 100%RH

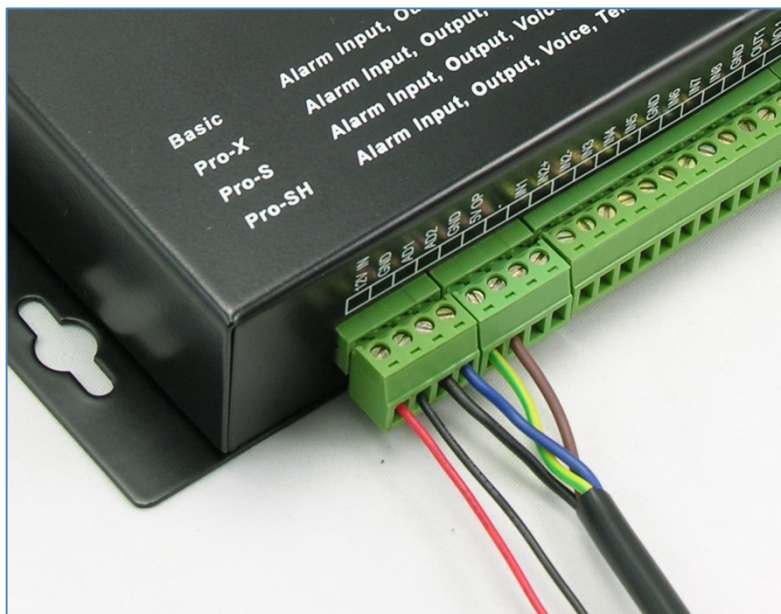
Accuracy: ± 5%RH

AD Channel: 1

High Humidity SMS Alert

Low Humidity SMS Alert

NOTE: Humidity Sensor must be installed upwards.



Cable Color Code

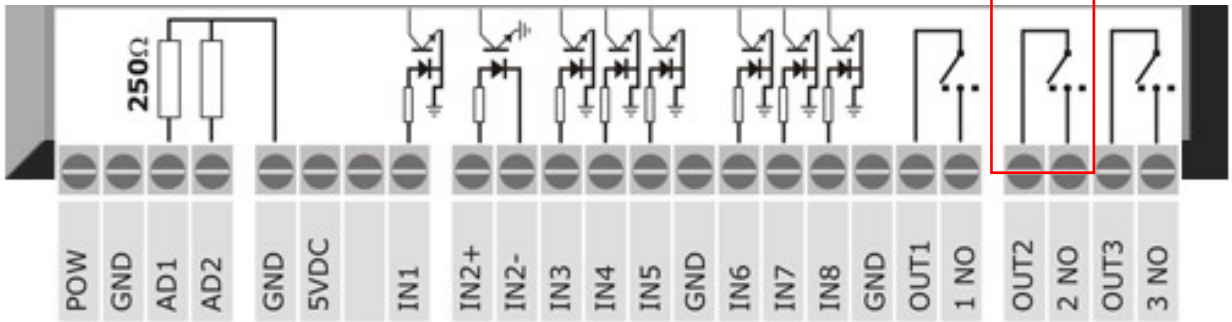




### 6. Schematic Diagram

The relay on/off start up status is determined by the jumper setting.  
 The relay will resume its start up status when power is off.

| Relay Output jumper |                       |   |
|---------------------|-----------------------|---|
| 1                   | 2                     | 3 |
| ■                   | ■                     | ■ |
| 1-2 Short           | Normal Close          |   |
| 2-3 Short           | Normal Open (Default) |   |



- POW** Power Input, DC7~12V
- GND** Power Ground
- 5VDC** Power Output, DC5V [power supply for external sensor]

1) Alarm Input

Input: 12VDC, 7 ~ 15mA, Opto-isolated Inputs (1KΩ Input Resistance)  
 24VDC, resistor 1~2.2KΩ should be used in serial

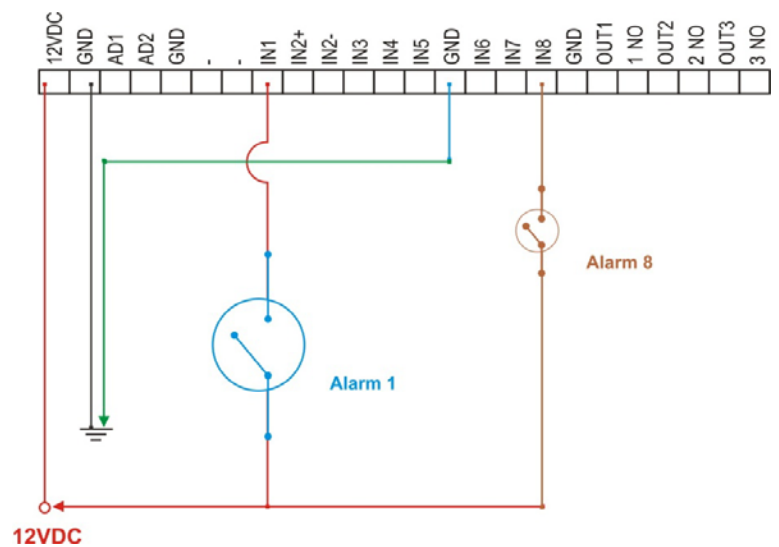
(a) IN1, IN3, IN4, IN5, IN6, IN7, IN8

Alarm Input: DC12V 7~15mA, GND: Common Ground

(b) IN2+, IN2-

IN2+: DC5~12V

IN2-: Ground [It must **NOT** be common to the GND of the board]

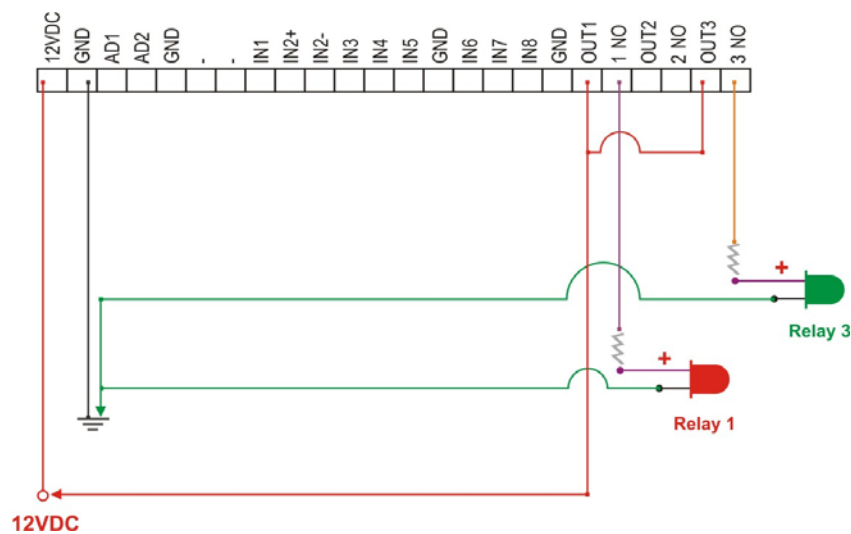


2) Relay Output

OUT1, OUT2, OUT3

Max. 1A, 24VDC, 1A, 120VAC

NC/NO (selected by jumper on board)



3) Analog to Digital Channel

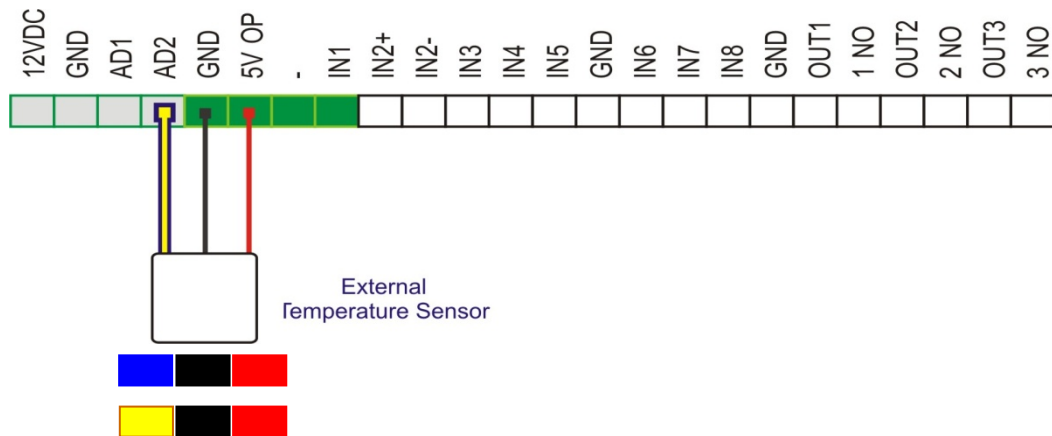
AD1 Analog Digital Channel 1, DC 7-15V Current 4~20mA

AD2 Analog Digital Channel 1, DC 7-15V Current 4~20mA

**Models**

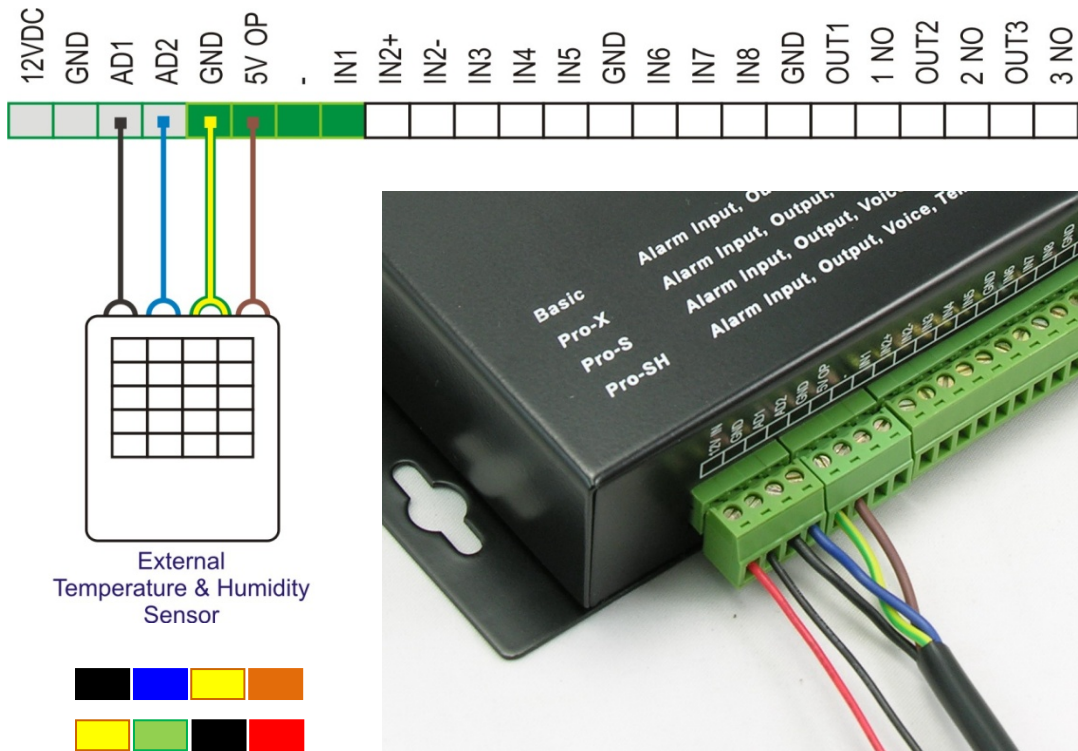
1) Pro-X AD1 & 2 are available

2) Pro-ST AD1 & 2 are used for temperature sensors



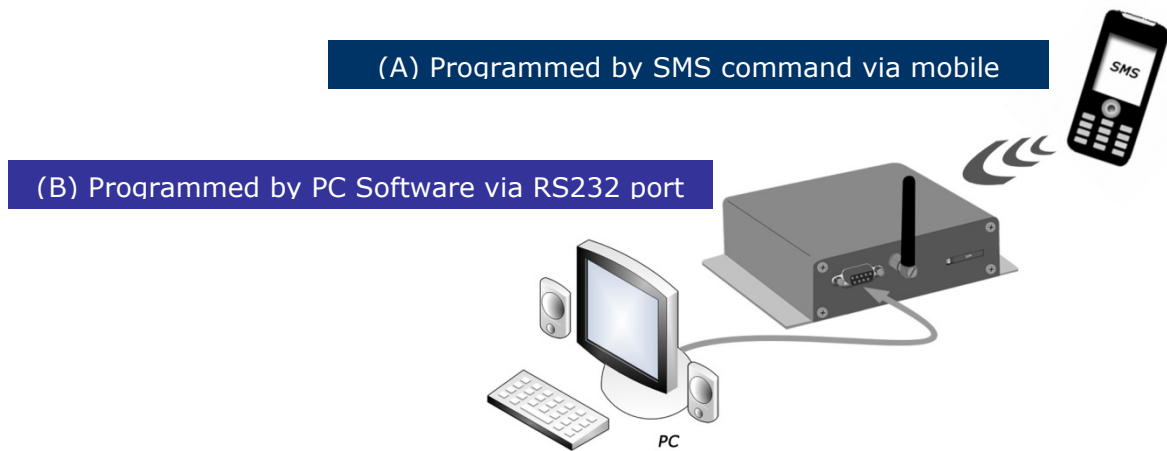
3) Pro-SX AD2 is used for temperature sensor

AD1 is used for humidity sensor

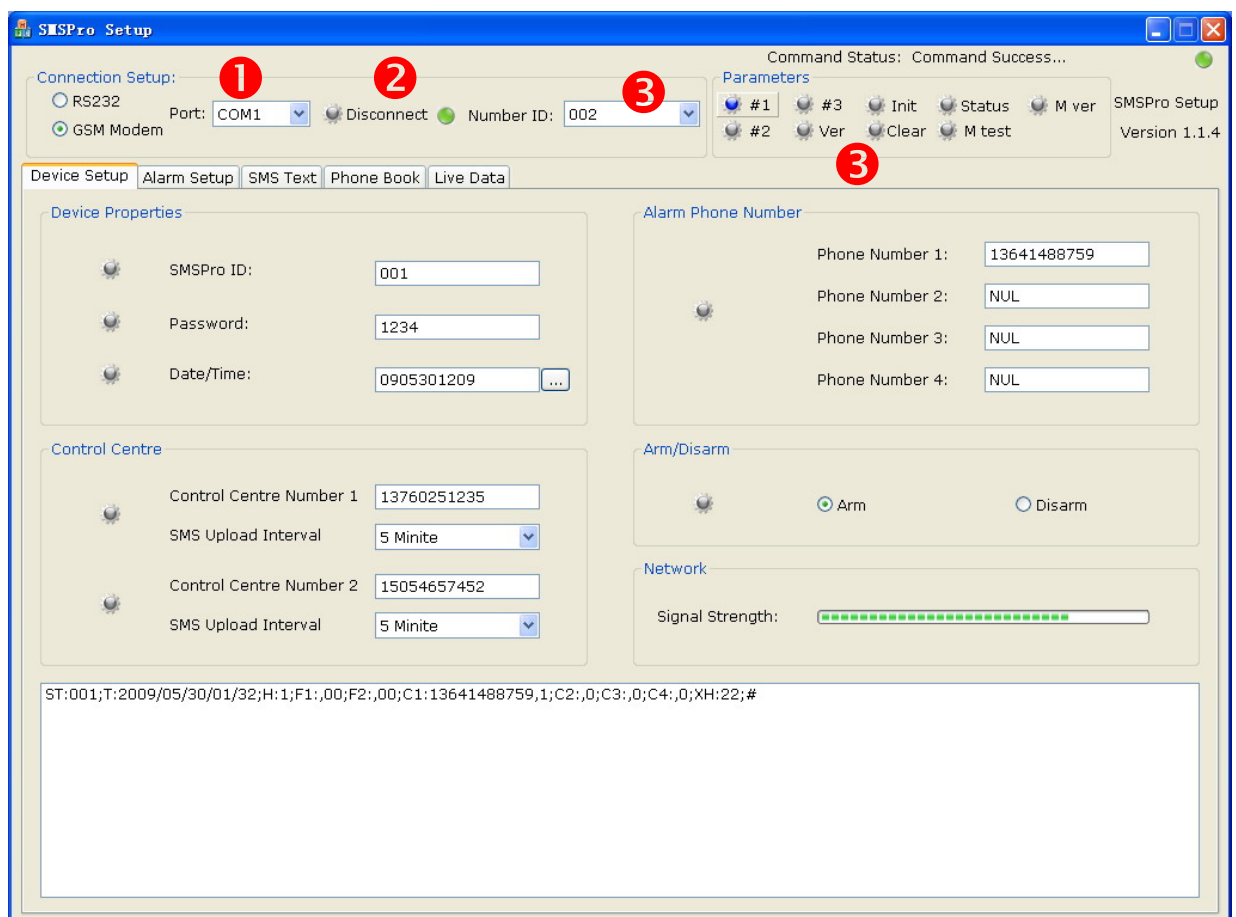


## 7. PC Setup Software

- The unit can be programmed by:
- (A) SMS command via mobile phone
  - (B) Software via its built-in RS232 port



1. Select the **COM** port of PC connecting to the device.
2. Click [**Connect**] button to activate the connection between PC and SMS alarm unit.
3. Add a device ID in Phone Book.
4. Select Device ID, Click [**Init**] to reset or [**Ver**] to get the version of the device



Please refer to the manual of "SMSPro\_Setup" software.

## 8. Quick Startup

1. Insert SIM Card into the alarm unit
2. Connect 12VDC power input
3. Wait until the **RED LED** is off after 15~30 seconds, and **GREEN LED** flashes every few seconds
4. Use another mobile phone, write a SMS message as below:

**PWD:1234,STATUS%**

5. Send the message to the phone number of SIM card in the alarm unit
6. Within 30 seconds, your mobile phone will receive a reply SMS message from the alarm unit about its health status.
7. The unit is working normal now. Go to the next pages for other operations.

**Note:** Caller ID service must be activated

## 9. Alarm Trigger Response Time

After power on, the unit will take about 30 seconds for GSM module initialization and accessing the GSM network.

Upon alarm triggered, the unit will send the SMS alert message to Control Centre, and then other 4 programmable phone numbers. Control Centre can be disabled in order to make the users phone number receiving the alarm sooner.

## 10. GSM Network Connectivity

1. When GSM network is inaccessible or disconnected on sending SMS, the SMS will be lost.
2. When GSM network is inaccessible or disconnected before sending SMS, the unit will keep searching for the network and send the SMS until the GSM network resumes.
3. When sending the SMS alarm message fails, the SMS unit will keep the last 10 SMS alarm message and resend when the unit succeeds in accessing the GSM network again.

**11. Command List**

## System Setup

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## Alarm Setup

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### Command Description

Configure the SMS Alarm Messenger Unit by sending the command text through the GSM Mobile Phone.

Upon command received and processed, the unit will send a confirmation SMS message back to the mobile phone.

If command is incorrect, the unit will reply "SMS format is error!" to the mobile phone.

#### 11.1) New Password Setup

**Command:** PWD:XXXX,NEWPWD:YYYY%

XXXX Current Password

YYYY New Password (4 digits)

Example: PWD:1234,NEWPWD:2222%

Default Password: 1234

New Password: 2222

#### 11.2) Manual Health Reporting

**Command:** PWD:XXXX,STATUS%

[SMS Message received]

ST:XXX;T:2005/01/28/13:00;V:XXXX;AI1:0000;AI2:0000;K1:X;K2:X;K3:X;K4:X;K5:X;K6:X;K7:X;K8:X;OUT1:Y;OUT2:Y;OUT3:Y;#.

Example

ST:002;2005/01/28/13:00;V:8.15;AI1:0000;AI2:0000;K1:1;K2:0;K3:0;K4:1;K5:1;K6:0;K7:0;K8:1;OUT1:1;OUT2:1;OUT3:1;#.

|      |                       |        |                     |
|------|-----------------------|--------|---------------------|
| ST   | Unit Serial Number    | XXX    | ASCII code          |
| T    | Unit Internal Clock   | XXXX   | year/month/day/time |
| V    | Operating Voltage     | XXXX   |                     |
| AI1  | A/D Channel 1         | X      | hex digits          |
| AI2  | A/D Channel 2         | X      | hex digits          |
| K1   | Alarm Channel 1       | K2~8   | Alarm Channel 2~8   |
|      | K1:0 means "Open"     |        |                     |
|      | K1:1 means "Closed"   |        |                     |
| OUT1 | Relay Output 1        | OUT2~3 | Relay Output 2~3    |
|      | OUT1:0 means "Open"   |        |                     |
|      | OUT1:1 means "Closed" |        |                     |

**11.3) Serial Number Setup****Command:** PWD:XXXX,SN:YYY%

XXXX Password

YYY Serial Number (0-999)

Example: PWD:1234,SN:268%

|                                  |      |                |
|----------------------------------|------|----------------|
| Password:                        | 1234 | (default)      |
| Serial Number Set into the unit: | 268  | (default: 000) |

**11.4) Control Centre Number & Health Reporting Schedule Setup**

Two values are configured by one single command.

(1) **Control Centre Number** is the phone number receiving the periodic report and regular report. Besides the periodic report on schedule (Command 5), report of any command will be sent to this number in addition to the mobile phone number sending the command. Max. 2 control centre can be defined.

**Command:** PWD:XXXX,CTRZ:YYYYYYYYYY,MM#%

XXXX Password

Z Control Centre Number (Max. 2 centres)

1 means the first centre number

2 means the second centre number

YYYYYYYYY Phone number in control centre

MM Period Code of Automatic Scheduled Health Report

Example: PWD:1234,CTR1:123456789,05#%

Password: 1234

Report Health Status every 1 hour (refer Table #1)

(2) **Periodic health** status and any command from other mobile phone will be reported to the first control centre with number 123456789.

Table #1 Reference Table for the Automatic Periodic Health Status Report

|    |                     |    |   |
|----|---------------------|----|---|
| 00 | No automatic report | 07 | Every 6 hours   |
| 01 | Every 5 minutes     | 08 | Every 12 hours  |
| 02 | Every 15 minutes    | 09 | Every 1 day (8:00am)  |
| 03 | Every 30 minutes    | 10 | Every odd day (8:00am)  |
| 04 | Every 1 hour        | 11 | 1 <sup>st</sup> , 7 <sup>th</sup> , 14 <sup>th</sup> , 21 <sup>st</sup> , 28 <sup>th</sup> Day (8:00am) |
| 05 | Every 2 hours       | 12 | 1 <sup>st</sup> , 15 <sup>th</sup> Day (8:00am)   |
| 06 | Every 3 hours       | 13 | 1 <sup>st</sup> Day of Each Month (8:00am)  |



SMS Pro automatically reports the unit health status on pre-defined schedule via SMS message.

[SMS Message received]

ST:XXX;T:2006/10/08/06:15;V:XXXX;AI1:0000;AI2:0000;K1:X;K2:X;K3:X;K4:X;K5:X;K6:X;K7:X;K8:X;OUT1:1;OUT2:1;OUT3:1;#.

|      |                       |        |                     |
|------|-----------------------|--------|---------------------|
| ST   | Unit Serial Number    | XXX    | ASCII code          |
| T    | Unit Internal Clock   | XXXX   | year/month/day/time |
| V    | Operating Voltage     | XXXX   |                     |
| AI1  | A/D Channel 1         | X      | hex digits          |
| AI2  | A/D Channel 2         | X      | hex digits          |
| K1   | Alarm Channel 1       | K2~8   | Alarm Channel 2~8   |
|      | K1:0 means "Open"     |        |                     |
|      | K1:1 means "Closed"   |        |                     |
| OUT1 | Relay Output 1        | OUT2~3 | Relay Output 2~3    |
|      | OUT1:0 means "Open"   |        |                     |
|      | OUT1:1 means "Closed" |        |                     |

Example [SMS Message received]:

ST:001;2005/01/27/12:00;V:8.14;AI1:2312;AI2:2131;K1:1;K2:0;K3:0;K4:1;O:1

*SMS Unit Current Status*

|      |                     |                   |             |
|------|---------------------|-------------------|-------------|
| ST   | Unit Serial Number  | 001               |             |
| TIME | Unit Internal Clock | Date: 27 Jan 2005 | Time: 12:00 |
| V    | Operating Voltage   | 8.14VDC           |             |
| AI1  | A/D Channel 1       | 2132              |             |
| AI2  | A/D Channel 2       | X2131             |             |
| K1   | Alarm Channel 1     | 1                 | Closed      |
| K2   | Alarm Channel 2     | 0                 | Open        |
| K3   | Alarm Channel 3     | 0                 | Open        |
| K4   | Alarm Channel 4     | 1                 | Closed      |
| O    | Output Relay 1      | 1                 | ON          |

### 11.5) Power Up Message

Whenever the unit is power up, the unit will automatically send the message "RESTART" to control centre configured in **command 4**.

**RESTART!**

### 11.6) System Clock Setup

**Command:** PWD:XXXX,TIME:AABBCCDDEE%

XXXX Password

AABBCCDDEE Year/Month/Day/Hour/Minute

Example: PWD:1234,TIME:0602031327%

Password: 1234

Clock Set: 3 Feb 2006, 13:27

### 11.7) Phone Number Setup

8 Mobile Phone Numbers can be preprogrammed to receive the alarm phone dialing or alarm SMS.

**Command:** PWD:XXXX,ALMNU1:ZZZZZZZZZZZ,2:ZZZZZZZZZZZ,  
3:ZZZZZZZZZZZ,4:ZZZZZZZZZZZ,5:ZZZZZZZZZZZ,6:ZZZZZZZZZZZ,  
7:ZZZZZZZZZZZ,8:ZZZZZZZZZZZ#%

XXXX Password

ZZZZZZZZZZZ Phone Number

Example 1:

PWD:1234,ALMNU1:12345678,2:36925814712,3:159357456,4:951753621#%

Password: 1234

Upon Alarm is triggered, call or SMS is made to following numbers.

Number 1 12345678

Number 2 36925814712

Number 3 159357456

Number 4 951753621

Example 2:

PWD:1234,ALMNU1:NUL,3:NUL#%

Password: 1234

Upon first example setup, call to following numbers is cancelled.

Number 1 12345678 Call not made

Number 2 36925814712 Call Retained

Number 3 159357456 Call not made

Number 4 951753621 Call Retained

**NUL** means no phone number will be set

**11.8) Alarm Input Level & Alert Setup**

**Command: PWD:XXXX,ALMLEVELR:X,YY,ZZZZBBBB,NNN%**

|          |   |                               |                              |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|----------|---|-------------------------------|------------------------------|--|--|--|-------------------------------|--|------------------------------|-------------------------------|--|--|-------------------------------|--|--|--|------------------------------|--|--|--|------------------------------|--|--|--|--|--|--|--|------------------------------|--|--|--|------------------------------|--|--|--|------------------------------|--|--|--|------------------------------|
| XXXX     | Password  |                               |                              |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
| R        | Alarm Channel Number  |                               |                              |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
| X        | 0 means "Disabled"<br>1 means "Close" triggered alarm<br>2 means "Open" triggered alarm<br>3 means both "Close" or "Open" triggered alarm   |                               |                              |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
| YY       | 00 means alarm not report to Control Centre<br>10 means alarm report to Control Centre 1<br>01 means alarm report to Control Centre 2<br>11 means alarm report to Control Centre 1 and 2  |                               |                              |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
| ZZZZBBBB | Selection of alarm phone dial and alarm SMS<br>0 means no alarm report<br>1 means "SMS" only<br>2 means "phone dial" only<br>3 means "SMS" first, and then "phone dial"<br><br>Z Z Z Z<br><table> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td></td><td></td><td></td><td>4<sup>th</sup> phone number</td></tr> <tr><td></td><td></td><td></td><td>3<sup>rd</sup> phone number</td></tr> <tr><td></td><td></td><td></td><td>2<sup>nd</sup> phone number</td></tr> <tr><td></td><td></td><td></td><td>1<sup>st</sup> phone number</td></tr> </table><br>B B B B<br><table> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td></td><td></td><td></td><td>8<sup>th</sup> phone number</td></tr> <tr><td></td><td></td><td></td><td>7<sup>th</sup> phone number</td></tr> <tr><td></td><td></td><td></td><td>6<sup>th</sup> phone number</td></tr> <tr><td></td><td></td><td></td><td>5<sup>th</sup> phone number</td></tr> </table> |                               |                              |  |  |  |                               |  | 4 <sup>th</sup> phone number |                               |  |  | 3 <sup>rd</sup> phone number  |  |  |  | 2 <sup>nd</sup> phone number |  |  |  | 1 <sup>st</sup> phone number |  |  |  |  |  |  |  | 8 <sup>th</sup> phone number |  |  |  | 7 <sup>th</sup> phone number |  |  |  | 6 <sup>th</sup> phone number |  |  |  | 5 <sup>th</sup> phone number |
|          |   |                               |                              |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   |                               | 4 <sup>th</sup> phone number |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   |                               | 3 <sup>rd</sup> phone number |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   |                               | 2 <sup>nd</sup> phone number |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   |                               | 1 <sup>st</sup> phone number |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   |                               |                              |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   |                               | 8 <sup>th</sup> phone number |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   |                               | 7 <sup>th</sup> phone number |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   |                               | 6 <sup>th</sup> phone number |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   |                               | 5 <sup>th</sup> phone number |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
| NNN      | Relay Output Control<br>0 means no relay output control<br>1 means relay output triggered by alarm<br><br>N N N<br><table> <tr><td> </td><td> </td><td> </td></tr> <tr><td></td><td></td><td>3<sup>rd</sup> Relay Control</td></tr> <tr><td></td><td></td><td>2<sup>nd</sup> Relay Control</td></tr> <tr><td></td><td></td><td>1<sup>st</sup> Relay Control</td></tr> </table>  |                               |                              |  |  |  | 3 <sup>rd</sup> Relay Control |  |                              | 2 <sup>nd</sup> Relay Control |  |  | 1 <sup>st</sup> Relay Control |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   |                               |                              |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   | 3 <sup>rd</sup> Relay Control |                              |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   | 2 <sup>nd</sup> Relay Control |                              |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |
|          |   | 1 <sup>st</sup> Relay Control |                              |  |  |  |                               |  |                              |                               |  |  |                               |  |  |  |                              |  |  |  |                              |  |  |  |  |  |  |  |                              |  |  |  |                              |  |  |  |                              |  |  |  |                              |

Example 1:

PWD:1234,ALMLEVEL2:1,01,10300000,010%

Password: 1234

Alarm Channel 2: Once input is closed, alarm is triggered.

Control Centre 2 will be reported by SMS.

Phone Number 1 SMS alert

Phone Number 2 no report

Phone Number 3 SMS alert, then phone dial

Phone Number 4-8 no report

Relay Output 1 no control

Relay Output 2 triggered "CLOSE" by alarm

Relay Output 3 no control

Example 2:

PWD:1234,ALMLEVEL1:1,11,12300001,100%

Password: 1234

Alarm Channel 1: Once input is closed, alarm is triggered.

Control Centre 1 & 2 will be reported by SMS.

Phone Number 1 SMS alert

Phone Number 2 alarm phone dial

Phone Number 3 SMS alert , then phone dial

Phone Number 4-7 no report

Phone Number 8 SMS alert

Relay Output 1 - triggered "CLOSE" by alarm

Relay Output 2 - no control

Relay Output 3 - no control

Example 3:

How to make the "Relay Output 3" triggered by alarm channels 2 & 5?

Once set, the relay output 3 will no longer be controlled by command 10 "COUT3:1".

## Method 1

Enable the control 3 triggered by alarm channels 2 & 5

PWD:1234,ALMLEVEL2:1,11,11110000,001%

PWD:1234,ALMLEVEL5:1,11,11110000,001%

## Method 3

Programmed by PC Software "SMDPro" via RS232

**Note:** Microphone should be connected if "alarm phone dial" is selected.

**11.9) SMS Alarm Message Setup****Alarm Channel 1 ~ 8****Command: PWD:XXXX,ALMYTEXT:□□□□□□□□□□#%**

|      |                            |
|------|----------------------------|
| XXXX | Password                   |
| Y    | Alarm Channel Number (1~8) |
| E    | 0 Close Triggered Alarm    |
|      | 1 Open Triggered Alarm     |

□□□□□□□ SMS Message (max. 130 characters)

**Example:****PWD:1234,ALM4T1XT:Main Door is Open#%**

Alarm Channel 4 is triggered by "Open Contact", SMS Message "Main Door is Open" is sent to the pre-defined mobile phone numbers.

**PWD:1234,ALM4T0XT:Main Door is Closed#%**

Alarm Channel 4 is triggered by "Close Contact", SMS Message "Main Door is Closed" is sent to the pre-defined mobile phone numbers.

**Power Low Level, AD Channel 1 ~ 2****[Low Level Alert Message]****Command: PWD:XXXX,ACL2TEXT:□□□□□□□□□□□#%**

XXXX Password  
 Y AD Channel Number (0~2)  
 0: Low Power Input Voltage Level Alarm  
 1: AD Channel 1 Alarm  
 2: AD Channel 2 Alarm  
 □□□□□□□□ SMS Message (max. 100 characters)

**Example:****PWD:1234,ACL2TEXT:Too Cold Alert#%****Alert Low: 5.250****AD value: 5.123****Password: 1234****Date: 2007-06-12****Time: 19:23**

AD value captured is lower than threshold low, so alert SMS is sent with the following message content.

**Too Cold Alert >ST:001;TM:28/01/2008,15:45;INPU AD2 ALARM!;A2:5.123.****[High Level Alert Message]****Command: PWD:XXXX,ACH2TEXT:□□□□□□□□□□□#%**

XXXX Password  
 Y AD Channel Number (1~2)  
 1: AD Channel 1 Alarm  
 2: AD Channel 2 Alarm  
 □□□□□□□□ SMS Message (max. 100 characters)

**11.10) Read the SMS Message Content**

Previous command is used to program the alarm message content into the SMS Alarm Unit.

This command is used to read the message content for verification.

**Alarm Channel 1 ~ 8**

**Command: PWD:XXXX,READYTEXT%**

XXXX Password  
Y Alarm Channel Number (1~8)

Alarm Message NP: Message for "Close Triggered" alarm  
NC: Message for "Open Triggered" alarm

Reply Message: ST001;T:2008/01/22/15/45;NP:□□□□□□□  
ST001;T:2008/01/22/15/45;NC:□□□□□□□

This command is used to read the message content for verification.

**AD Channel 0 ~ 2**

**Command: PWD:XXXX,RDACHYTEXT%**

XXXX Password  
Y AD Channel Number (0~2)  
0: Low Power Input Voltage Level Alarm  
1: AD Channel 1 Alarm  
2: AD Channel 2 Alarm

Command: PWD:XXXX,RDACH2TEXT%

Reply Message: □□□□□>ST001;T:2008/01/22/15/45;INPU AD2 ALARM!;A2:4.200  
■■■■■■■ >ST001;T:2008/01/22/15/45;INPU AD2 ALARM!;A2:1.300  
□□□□□ = alert high alarm message  
■■■■■■■ = alert low alarm message

Example:

PWD:1234,ACL2TEXT:Alert Low#%

PWD:1234,ACH2TEXT:Alert High#%

Alert High>ST:000;T:08/01/2010,09:29;INPU AD2 ALARM!;A2:00000

Alert Low>ST:000;T:08/01/2010,09:29;INPU AD2 ALARM!;A2:00000

SMS Alarm Unit will reply to the mobile phone with the message content for that alarm channel.

**11.11) Using SMS Alarm Messenger to send SMS Message**

This command is used to make the SMS Alarm Unit to send the SMS for testing purpose.

**Command:** **PWD:XXXX,SENDMSA:XB%**

|      |   |
|------|---|
| XXXX | Password  |
| A    | Phone Number (1~8)                                |
| XB   | SMS message selection                             |
|      | 00: schedule health check status                  |
|      | 01: Closed Triggered Alarm Channel 1, SMS message |
|      | 02: Closed Triggered Alarm Channel 2, SMS message |
|      | 03: Closed Triggered Alarm Channel 3, SMS message |
|      | 04: Closed Triggered Alarm Channel 4, SMS message |
|      | 05: Closed Triggered Alarm Channel 5, SMS message |
|      | 06: Closed Triggered Alarm Channel 6, SMS message |
|      | 07: Closed Triggered Alarm Channel 7, SMS message |
|      | 08: Closed Triggered Alarm Channel 8, SMS message |
|      | 09: manual input message                          |
|      | 10: High Voltage Alarm Message [not available]    |
|      | 11: AD Channel 1, Alert High SMS message          |
|      | 12: AD Channel 2, Alert High SMS message          |
|      | 13: Open Triggered Alarm Channel 1, SMS message   |
|      | 14: Open Triggered Alarm Channel 2, SMS message   |
|      | 15: Open Triggered Alarm Channel 3, SMS message   |
|      | 16: Open Triggered Alarm Channel 4, SMS message   |
|      | 17: Open Triggered Alarm Channel 5, SMS message   |
|      | 18: Open Triggered Alarm Channel 6, SMS message   |
|      | 19: Open Triggered Alarm Channel 7, SMS message   |
|      | 20: Open Triggered Alarm Channel 8, SMS message   |
|      | 21: Low Voltage Alarm Message                     |
|      | 22: AD Channel 1, Alert Low SMS message           |
|      | 23: AD Channel 2, Alert Low SMS message           |

For example: **PWD:1234,SENDMS4:09,Good Morning%**

SMS message "Good Morning" will be sent to the phone number 4.

Error message about setting A:

**Number Choice Miss**            A is not within 1~8

**Number Non Exist**            No phone number is preset in that location

Error message about setting B:

**Did not specify SMS contents**    B is not within 00~20




Reply confirmation message:

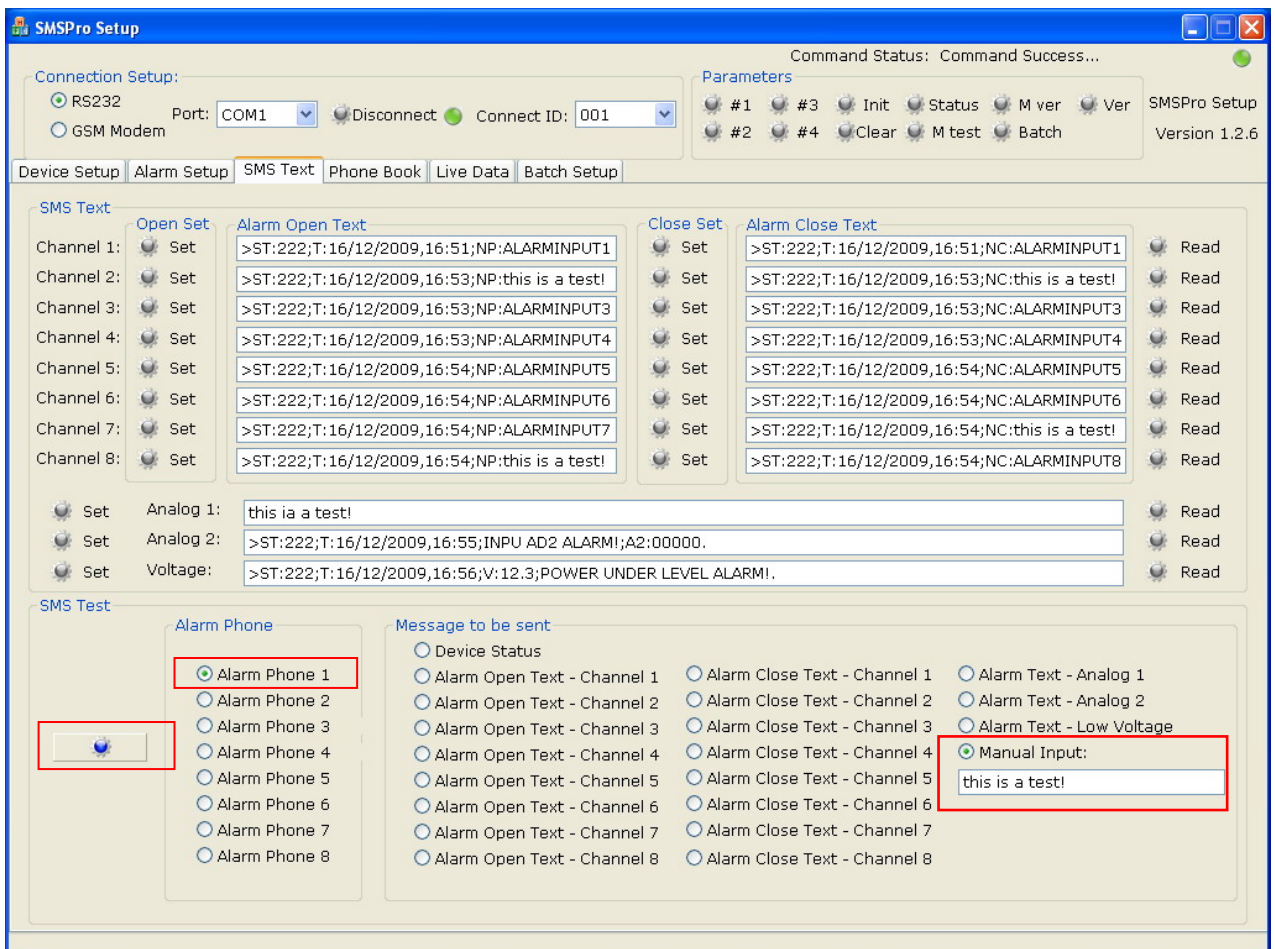
**Success!** SMS Alarm unit succeeds in sending out the message

**Failed!** Operation failed but phone number exists

When using SMSPro\_Setup Software, SMS Alarm Messenger can be used as a GSM Modem sending SMS message to a user alarm mobile phone number.

Please select the following:

- o Select alarm phone number 1, please make sure that this alarm phone number must be preset in device properties first
- o Type the message e.g. "this is a test" in Manual Input box
- o Click  button
- o Message "sms alarm" will be sent to the alarm phone 1 as below



**11.12) Relay Output Control****Command: PWD:XXXX,COUTN:Y%**

|      |                              |
|------|------------------------------|
| XXXX | Password                     |
| N    | Relay Output Channel (1 ~ 3) |
| Y    | 1 Turn On (Close) the output |
|      | 0 Turn Off (Open) the output |

Relay Output is Normally Open by default. The default can be changed by the jumper on the board.

- Command "COUTN:1" is NOT valid when the relay output is triggered by alarm. Reply message will be "ST:XXX" in this case.
- In the above case, command "COUTN:0" is used to reset the relay output after the alarm is triggered.

**11.13) Relay Output Delay Time****Command: PWD:XXXX,OUTNDLAY:YYYY%**

|       |   |
|-------|---|
| XXXX  | Password  |
| N     | Relay Output Channel (1 ~ 3)                              |
| YYYYY | 0000 – 9999 seconds                                       |
|       | 0000 Turn On or Off the output (default)                  |
|       | 0005 Turn On the output for 5 seconds, and then Off again |
|       | Turn Off the output for 5 seconds, and then On again      |

Relay output delay time is good for controlling the device e.g. electric door lock/unlock. Only a time lapse on/off is necessary.

**11.14) Operating Voltage Low Level Alarm SMS**

When the power supply voltage level is below the min. level at 5.34VDC, alert SMS is sent.

Date: 2007-06-15

Time: 13:25

ST:001;TM:200706151325;V:5.34#

**11.15) Input Voltage Low Level Alarm**

This command is to set the action to be done once the operating voltage drops below the preset value. Value of current operating voltage can be retrieved by the command 2.

**Command:** PWD:XXXX,ADCOUT:YY,ZZZZBBBB,NNN%

XXXX Password

YY 00 means alarm not report to Control Centre  
 10 means alarm report to Control Centre 1  
 01 means alarm report to Control Centre 2  
 11 means alarm report to Control Centre 1 and 2

ZZZZBBBB Selection of alarm phone dial and alarm SMS

0 means no alarm report  
 1 means "SMS" only  
 2 means "phone dial" only  
 3 means "SMS" first, and then "phone dial"

Z Z Z Z

4<sup>th</sup> phone number  
 3<sup>rd</sup> phone number  
 2<sup>nd</sup> phone number  
 1<sup>st</sup> phone number

B B B B

8<sup>th</sup> phone number  
 7<sup>th</sup> phone number  
 6<sup>th</sup> phone number  
 5<sup>th</sup> phone number

NNN Relay Output Control

0 means no relay output control  
 1 means relay output triggered by alarm

N N N

3<sup>rd</sup> Relay Control  
 2<sup>nd</sup> Relay Control  
 1<sup>st</sup> Relay Control

**11.16) Input Voltage Alert Level Setup****Command:** PWD:XXXX,POWVL:mmmm%

XXXX Password

Mmmm when power input is lower than this value, alarm is triggered

Example: PWD:1234,POWVL:8.25%

Password: 1234

When the battery voltage is lower than 8.25VDC, alarm is triggered.

The reactive will be setup by the command above.

**11.17) Arm/Disarm Setup****Command:** PWD:XXXX,ARM%

XXXX Password

Example: PWD:1234,ARM%

Password: 1234

Unit is armed, and in alert status

**Command:** PWD:XXXX,DISARM%

XXXX Password

Example: PWD:1234,DISARM%

Password: 1234

Unit is disarmed, and no alarm is reported

**11.18) System Parameters RESET****PWD:XXXX,PARAMETER&%**

This is to reset the parameters and password into default setting.

[SMS Message received]

Parameter initialize success!

**11.19) System Version Check****PWD:XXXX,CHECKVR%**

[SMS Message received]

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**11.20) Return Message**

Command succeeds

SMS Message: Function Code & Setting Parameters Set in the command

Command fails

SMS Message: SMS format is error!

**11.21) Default Setting**

PWD:1234,PARAMETER1%

ST:000;T:2006/10/01/01:01;H:1;F1:,00;F2:,00;XH:31#

PWD:1234,PARAMETER2%

ST:000:VL:7.00,O:00,0000,000;A1M:5.000,0.000,1.000,0,5.000,0.500,O:00,00000000,000;A2M:5.000,0.000,1.000,0,5.000,0.000,O:00,00000000,000#

PWD:1234,PARAMETER3%

ST:000;K1:1,O:00,00000000,000;K2:1,O:00,00000000,000;K3:1,O:00,00000000,000;K4:1,O:00,00000000,000;K5:1,O:00,00000000,000;K6:1,O:00,00000000,000;K7:1,O:00,00000000,000;K8:1,O:00,00000000,000;OTY:0000,0000,000;#

PWD:1234,PARAMETER4%

ST:000; C1:,1;C2:,1;C3:,1;C4:,1; C5:,1; C6:,1; C7:,1; C8:,1;#

**11.22) System Parameters Report**

[SMS Message received]

ST:XXX;T:2006/10/08/08:00;H:X;F1:XXXXXXXXXX,YY;F2:XXXXXXXXXX,YY;  
XH:RR;ER:xyz#

|         |   |   |
|---------|---|---|
| ST:     | XXX   | Unit Serial Number                                |
| T:      | 2006/10/08/08:00                                    | Date/Time   |
| H:      | X   | 1 Arm<br>0 Disarm                                 |
| F1:     | 1 <sup>st</sup> Control Centre Number<br>XXXXXXXXXX | Control Centre Phone Number                       |
|         | YY  | Automatic Health Report Schedule                  |
| F1:     | 2 <sup>nd</sup> Control Centre Number               |   |
| C1      | 1 <sup>st</sup> Alarm Phone Number<br>XXXXXXXXXX    | Alarm Phone Number                                |
|         | Y   | 1 Alarm Report enabled<br>0 Alarm Report disabled |
| XH:RR   | GSM Network Signal Strength (1 ~ 40)                |   |
| ER: xyz |   | Normal Defect                                     |
|         | GSM Module  | x: 0 1  |
|         | SIM Card/Service                                    | y: 0 1  |
|         | GSM Network Coverage                                | z: 0 1  |

**PWD:XXXX,PARAMETER4%**

ST:XXX;C1:XXXXXXXXXX,Y;C2:XXXXXXXXXX,Y;C3:XXXXXXXXXX,Y;C4:XXXXXX  
XXXX,Y;C5:XXXXXXXXXX,Y;C6:XXXXXXXXXX,Y;C7:XXXXXXXXXX,Y;  
C8:XXXXXXXXXX,Y;#

C2 ~ C8                      2<sup>nd</sup> ~ 8<sup>th</sup> Alarm Phone Number

**PWD:XXXX,PARAMETER2%**

[SMS Message received]

**ST:XXX;VL:XXXX,O:AX,BBBBBBBB,CCC;A1M:XXXXX,UUUUU,YYYYY,R,HHHHH,PPPPP,O:AX,BBBBBBBB,CCC;A2M:XXXXX,UUUUU,YYYYY,R,HHHHH,PPPPP,O:AX,BBBBBBBB,CCC;#**

|          |  |   |
|----------|--|---|
| VL       | Min. Operating Voltage, below this level will trigger alarm<br>7VDC by default |   |
| A        | alarm report to Control Centre 1   | 0 means no report<br>1 means report   |
| X        | alarm report to Control Centre 2   | 0 means no report<br>1 means report   |
| BBBBBBBB | report status for 8 phone numbers  | 0 means no report<br>1 means "SMS" but no "phone dialing"<br>2 means "phone dialing" but no "SMS"<br>3 means "SMS" and then "phone dialing" |
| CCC      | relay output control   | 0 means relay is not controlled by low voltage alarm<br>1 means relay is turned on by low voltage alarm                                     |

**PWD:XXXX,PARAMETER3%**

**ST:XXX;K1:N,O:AX,BBBBBBBB,CCC;K2:N,O:AX,BBBBBBBB,CCC;K3:N,O:AX,BBBBBBBB,CCC;K4:N,O:AX,BBBBBBBB,CCC;K5:N,O:AX,BBBBBBBB,CCC;K6:N,O:AX,BBBBBBBB,CCC;K7:N,O:AX,BBBBBBBB,CCC;K8:N,O:AX,BBBBBBBB,CCC;OTY:0000,0000,0000;#**

Message is longer than 160 bytes.

By SMS, two separate messages will be sent via GSM.

By RS232 port, one message will be uploaded to PC.

#### Alarm 1 ~ 8 Status Report

|          |  |                                     |
|----------|--|-------------------------------------|
| K1       | Alarm Channel 1                                |                                     |
| N        | 0 means "Disabled"                             |                                     |
|          | 1 means "Close" triggered alarm                |                                     |
|          | 2 means "Open" triggered alarm                 |                                     |
|          | 3 means both "Close" or "Open" triggered alarm |                                     |
| O        | Control Centre Report Setting                  |                                     |
| A        | alarm report to Control Centre 1               | 0 means no report<br>1 means report |
| X        | alarm report to Control Centre 2               | 0 means no report<br>1 means report |
| BBBBBBBB | report status for 8 phone numbers              |                                     |
|          | 0 means no report                              |                                     |
|          | 1 means "SMS" but no "phone dialing"           |                                     |
|          | 2 means "phone dialing" but no "SMS"           |                                     |
|          | 3 means "SMS" and then "phone dialing"         |                                     |
| CCC      | relay output control                           |                                     |
|          | 0 means control not triggered by alarm         |                                     |
|          | 1 means alarm triggered control                |                                     |
| OTY      | 0000   | 1 <sup>st</sup> relay time lapse    |
|          | 0000   | 2 <sup>nd</sup> relay time lapse    |
|          | 0000   | 3 <sup>rd</sup> relay time lapse    |



**COMMAND (Analog to Digital Channel)****11.23) AD Parameters Setup**

**PWD:XXXX,ADVALEB:UUUUU,XXXXX,NNNNN,Y,ZZZZZ,WWWWW%**

|       |  |
|-------|--|
| B     | Channel 1 or 2   |
| UUUUU | Measuring Range Upper Limit  |
| XXXXX | Measuring Range Lower Limit  |
| NNNNN | Start Value  |
| Y     | 0: AD Alarm disabled   |
|       | 1: AD Alarm enabled, Relay On Time Lapse   |
|       | 2: AD alarm enabled, Relay On when AD is higher than Alert High<br>Relay Off when AD resumes normal              |
|       | 3: AD alarm enabled, Relay On when AD is lower than Alert Low<br>Relay Off when AD resumes normal                |
|       | 4: AD alarm enabled, Relay On when AD is beyond Alert High & Low<br>Relay Off when AD is within Alert High & Low |
| ZZZZZ | Alert High Value Setup   |
| WWWWW | Alert Low Value Setup  |

Operation in case Y=1:

- When the captured analog value is higher or lower than the alert values, alarm is triggered.
- SMS or Dial Phone etc corresponding actions described on next page will be taken.
- Relay is turn on, and off after preset time lapse.
- Alarm will only be re-triggered when the captured analog value returns to normal range and then reaches beyond the alert values again.

Operation in case Y=4:

- When the captured analog value is higher or lower than the alert values, alarm is triggered.
- SMS or Dial Phone etc corresponding actions described on next page will be taken.
- Relay is turn on, and only off when analog value is back within Alert Range.
- Alarm will only be re-triggered when the captured analog value returns to normal range and then goes beyond the alert values again.

Application:

- When temperature is high, ventilation fan is turn on to cool down.
- When temperature is normal again, ventilation fan is turn off to save power.

**11.24) AD Channel Alarm Setup**

**PWD:XXXX,ADCOUTB: YY,ZZZZBBBB,NNN%**

|          |  |
|----------|--|
| XXXX     | Password   |
| B        | 0: Low Voltage Alarm<br>1: AD Channel 1 Alarm<br>2: AD Channel 2 Alarm   |
| YY       | 00 means alarm not report to Control Centre<br>10 means alarm report to Control Centre 1<br>01 means alarm report to Control Centre 2<br>11 means alarm report to Control Centre 1 and 2 |
| ZZZZBBBB | Selection of alarm phone dial and alarm SMS<br>0 means no alarm report<br>1 means "SMS" only<br>2 means "phone dial" only<br>3 means "SMS" first, and then "phone dial"                  |
|          | Z Z Z Z<br>       <br>      4 <sup>th</sup> phone number<br>    3 <sup>rd</sup> phone number<br>  2 <sup>nd</sup> phone number<br>1 <sup>st</sup> phone number                           |
|          | B B B B<br>       <br>      8 <sup>th</sup> phone number<br>    7 <sup>th</sup> phone number<br>  6 <sup>th</sup> phone number<br>5 <sup>th</sup> phone number                           |
| NNN      | Relay Output Control<br>0 means no relay output control<br>1 means relay output triggered by alarm   |
|          | N N N<br>     <br>    3 <sup>rd</sup> Relay Control<br>  2 <sup>nd</sup> Relay Control<br>1 <sup>st</sup> Relay Control  |

**11.25) System Parameters Report (about AD channels)****PWD:XXXX,PARAMETER2%**

[SMS Message received]

ST:XXX;VL:XXXXX,O:AX,BBBB,CCC;A1M:XXXXX,UUUUU,YYYYY,R,HHHHH,PPPPP,O:AX,  
BBBBBBBB,CCC;A2M:XXXXX,UUUUU,YYYYY,R,HHHHH,PPPPP,O:AX,BBBBBBBB,CCC;#

|          |  |
|----------|--|
| A1       | AD Channel 1                             |
| M:       | XXXXX Range Upper Limit                  |
|          | UUUUU Range Lower Limit                  |
|          | YYYYY Start Value                        |
| R        | 1 AD Channel Alarm enabled               |
|          | 0 AD Channel Alarm disabled              |
| HHHHH    | Alarm Triggered Alert High Value         |
| PPPPP    | Alarm Triggered Alert Low Value          |
| O:       | A alarm report to Control Centre 1       |
|          | 0 means no report                        |
|          | 1 means report                           |
|          | X alarm report to Control Centre 2       |
|          | 0 means no report                        |
|          | 1 means report                           |
| BBBBBBBB | report status for 8 phone numbers        |
|          | 0 means no report                        |
|          | 1 means "SMS" but no "phone dialing"     |
|          | 2 means "phone dialing" but no "SMS"     |
|          | 3 means "SMS" and then "phone dialing"   |
| CCC      | relay output control                     |
|          | 0 means relay is not controlled by alarm |
|          | 1 means relay is turned on by alarm      |
| A2M...   | AD Channel 2                             |

Note: AI1 and AI2 values are reported by COMMAND [PWD:XXXX,STATUS%]

Example:

A1M:0.600,0.000,1.000,1,0.500,0.100

|       |                                       |
|-------|---------------------------------------|
| 0.600 | range upper limit                     |
| 0.000 | range lower limit                     |
| 1.000 | Start Value is "1.000" (4mA * 250Ω=1) |
| 1     | Alarm Enabled                         |
| 0.500 | Threshold High                        |
| 0.100 | Threshold Low                         |

Standard range of data captured in AD Channel 1 is 4~20mA.

AI1 value depends on user setting of "Range", "Start Value" and the input current "c".

Start Value = 4mA x 250Ω = 1

AD Range = 0.600 - 0.000 usually specified by the current type transducer

$$AI1 = \frac{(c \times 250 - \text{Start Value})}{(0.02 \times 250 - \text{Start Value})} \times \text{Range}$$

AI1 reported value will be = Range x (0.012 x 250 - Start Value) / (5 - Start Value)

When current input is 12mA, AI1 = 0.6 x (0.012 x 250 - 1) / (5 - 1) = 0.3

When user requires:

High level alarm at 0.018mA

Low level alarm at 0.008mA

H = (0.018 x 250 - 1) x 0.6 / (0.02 x 250 - 1) = 0.525

L = (0.008 x 250 - 1) x 0.6 / (0.02 x 250 - 1) = 0.15

When AI1 value is over 0.525 or below 0.150, alarm will be triggered – SMS alert message will be sent out to phone number 1 and relay 1 is turned on.

Command: PWD:1234,ADVALE1:0.600,0.000,1.000,1,0.525,0.150%

Command: PWD:1234,ADCOUT1:10,10000000,100%

## Temperature Sensor Operation

### [Pro-ST]

- Temperature Sensor is bundled with measuring range -55 ~ 125°C.
- AD Channel 1, 2 are used for temperature measuring

#### 11.26) Manual Temperature Check

**Command:** PWD:XXXX,STATUS%

[SMS Message received]

ST:XXX;T:2005/01/28/13:00;V:XXXX;AI1:0000;AI2:0000;K1:X;K2:X;K3:X;K4:X;K5:X;  
K6:X;K7:X;K8:X;OUT1:Y;OUT2:Y;OUT3:Y;#.

|     |                     |
|-----|---------------------|
| AI2 | Current Temperature |
|-----|---------------------|

#### 11.27) Temperature Alarm Setup

**PWD:XXXX,ADVALE2:UUUUU,XXXXX,NNNNN,Y,ZZZZZ,WWWWW%**

|       |   |       |         |
|-------|---|-------|---------|
| 2     | AD Channel 2  |       |         |
| UUUUU | Range Upper Limit   | 0.000 | Default |
| XXXXX | Range Lower Limit   | 250.0 | Default |
| NNNNN | Start Value   | 000.0 | Default |
| Y     | 1: Triggered Alarm enabled<br>0: Triggered Alarm disabled |       |         |
| ZZZZZ | Alert High Temperature Setup                              |       |         |
| WWWWW | Alert Low Temperature Setup                               |       |         |

#### Example:

When temperature is above 70° or below 15°, SMS alarm message will be sent to phone number 3 and relay output 1 will be triggered.

|                              |       |
|------------------------------|-------|
| AD Channel                   | 2     |
| Measuring Range              | 250.0 |
| Start Value                  | 000.0 |
| Triggered Alarm enabled      | 1     |
| Alert High Temperature Setup | 070.0 |
| Alert Low Temperature Setup  | 015.0 |

PWD:1234,ADVALE2:250.0,0.000,000.0,1,070.0,015.0%

PWD:1234,ADCOU2:00,00100000,100%

## Temperature & Humidity Sensor Operation

### [Pro-SX]

- Humidity Sensor is built-in with measuring range 0 ~ 100%RH
- AD Channel 2 is used for temperature measuring
- AD Channel 1 is used for humidity measuring

#### 11.28) Manual Humidity Check

**Command:** PWD:XXXX,STATUS%

[SMS Message received]

ST:XXX;T:2005/01/28/13:00;V:XXXX;AI1:0000;AI2:0000;K1:X;K2:X;K3:X;K4:X;K5:X;  
K6:X;K7:X;K8:X;OUT1:Y;OUT2:Y;OUT3:Y;#.

|     |                     |
|-----|---------------------|
| AI1 | Current Humidity    |
| AI2 | Current Temperature |

#### 11.29) Humidity Alarm Setup

**PWD:XXXX,ADVALE1:UUUUU,XXXXX,NNNNN,Y,ZZZZZ,WWWWW%**

|       |                             |       |         |
|-------|-----------------------------|-------|---------|
| 1     | AD Channel 1                |       |         |
| UUUUU | Range Upper Limit           | 140.0 |         |
| XXXXX | Range Lower Limit           | 0.000 |         |
| NNNNN | Start Value                 | 000.0 | Default |
| Y     | 1: Triggered Alarm enabled  |       |         |
|       | 0: Triggered Alarm disabled |       |         |
| ZZZZZ | Alert High Humidity Setup   |       |         |
| WWWWW | Alert Low Humidity Setup    |       |         |

#### Example:

When humidity is above 70%RH or below 15%RH, SMS alarm message will be sent to phone number 2 and relay output 3 will be triggered.

|                               |               |
|-------------------------------|---------------|
| AD Channel                    | 1             |
| Measuring Range               | 140.0 – 0.000 |
| Start Value                   | 000.0         |
| Triggered Alarm enabled       | 1             |
| Threshold High Humidity Setup | 070.0         |
| Threshold Low Humidity Setup  | 015.0         |

PWD:1234,ADVALE2:140.0,000.0,1,070.0,015.0%

PWD:1234,ADCOU1:00,01000000,001%

**External Temperature Sensor Specification:**

Model: DS18B20  
 Power Input: 5VDC  
 Measuring Range: -55 ~ 125°C  
 Output Signal: Digital Signal

|                   |              |       |         |
|-------------------|--------------|-------|---------|
| AD2 Channel Setup | Start Value: | 000.0 | Default |
|                   | Range:       | 250.0 | Default |

**External Humidity Sensor Specification:**

Model: CHM-01A (Resistance Type Humidity Sensor)  
 Power Input: 5V±5%  
 Power Rating: 5mA max.(2mA avg.)  
 Operating Range: Temperature 0~60°C  
 Humidity 10% -- 95%RH  
 Measuring Range: 0~100%RH  
 Temperature Factor: 0.4%RH/°C  
 30~80%RH @5V Operating Voltage  
 Temperature Range=10~40°C (reference point: 25°C)  
 Accuracy: ±5%RH (at 25, Input 5V)

**11.30) Fine Tuning of Measuring Temperature**


Temperature sensor is digital type. No tuning or calibration is needed.

Humidity sensor needs calibration.

Output Signal: 0~3 DCV  
 0VDC = 0RH  
 3VDC = 100RH

|                   |              |       |         |
|-------------------|--------------|-------|---------|
| AD1 Channel Setup | Start Value: | 000.0 | Default |
|                   | Range:       | 140.0 | Default |

Adjust the Range of AD1 Channel Setup from 100 ~ 150 for calibration.

-  "SMSPro\_Setup" Software provides a one-click button operation of calibration. Please refer to the manual of Setup Software.

## 12. Dead Loop Problem

Please find below the possible cause of the "dead loop" problem which creates thousands of SMS delivery. User must pay attention to the setup of phone numbers.



**A**

SMS Alarm Messenger – Unit A

SIM Card Phone Number: 12345678



Either "One of alarm phone number" or "Control Centre Phone Number": 33333333



**B**

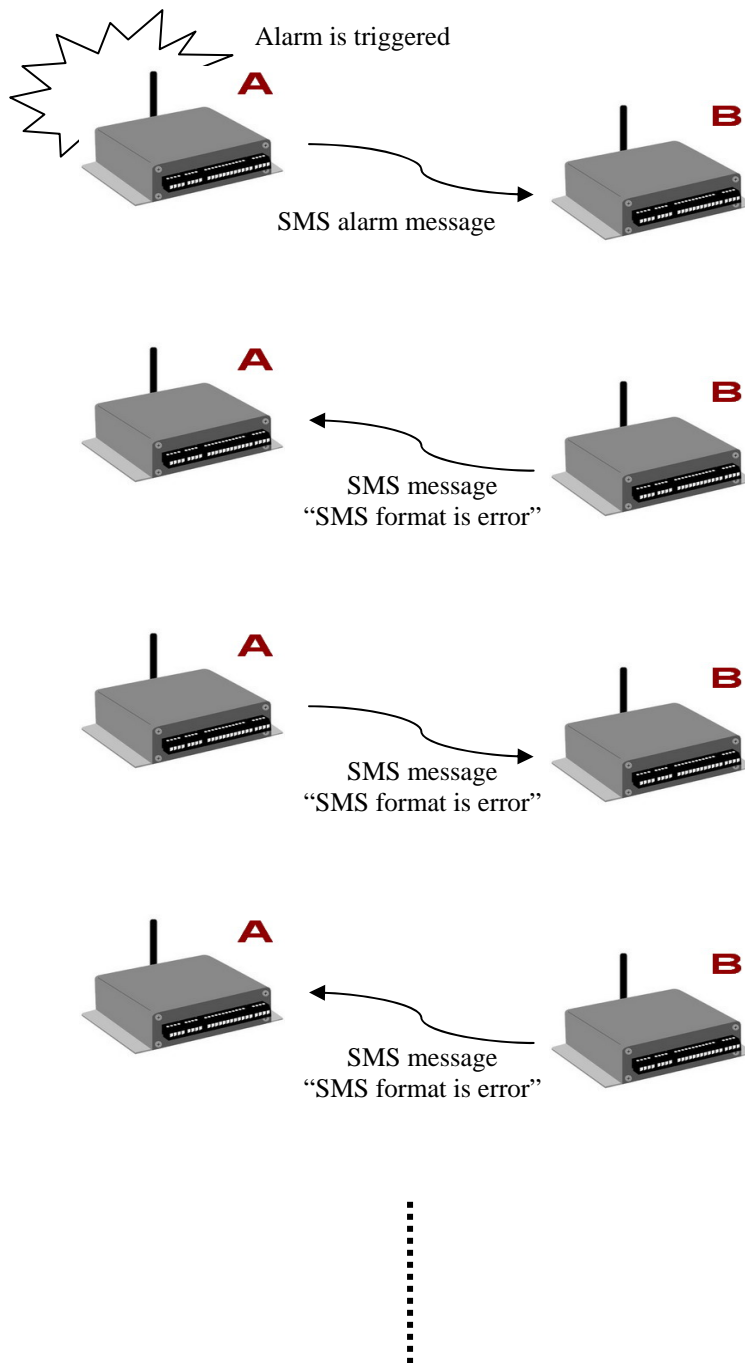
SMS Alarm Messenger – Unit B

SIM Card Phone Number: 33333333

1. When [Unit A] alarm is triggered, it will send alarm message to alarm phone number or control centre phone number.
2. When "alarm phone number" or "control centre phone number" is set to the phone number of another SMS Alarm Unit [Unit B], "Dead Loop" problem happens.
3. [Unit B] receives the alarm message from [Unit A]. Since it will consider this incoming text as a wrong command message, [Unit B] will reply to [Unit A] a message "SMS format is error!".
4. Then, [Unit A] receives the message "SMS format is error!" from [Unit B], it also considers this incoming text as a wrong command message. Therefore, [Unit A] will reply to [Unit B] a message "SMS format is error!".
5. Again, [Unit B] receives the same message from [Unit A]. Since it will also consider this incoming text as a wrong command message, [Unit B] will reply to [Unit A] a message "SMS format is error!".
6. Such case will cause a serious "Dead Loop" problem.



## Schematics of "Dead Loop" Problem

**13. Power Loss & Resume**

1) PWD:1234,ARM%

Above command is followed by another command e.g. PWD:XXXX,SN:YYY%  
ARM status will be kept when power is lost and resumed.

2) PWD:1234,ARM%

No other command is followed

DISARM status will be as default when power is lost and resumed.

#### 14. Safety and Regulatory Notice

All applicable regulatory compliance statements, product certification markings, and safety and electromagnetic compatibility (EMC) standards and regulations the Data Logger is compliant with.

European Union Declaration of Conformity  
Statement

We declare under our sole responsibility that the product GS828 GPRS Data Logger is in conformity with all applicable essential requirements necessary for CE marking, following the provisions of the European Council Directives 2004/108/EC (EMC Directive) and 2006/95/EC (Low Voltage Directive).



The product is properly CE marked demonstrating this conformity and is for distribution within all member states of the EU with no restrictions.

This product follows the provisions of the European Directives 2004/108/EC and 2006/95/EC.

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