# GSM SMS Alarm Messenger

## Version 6

<table>
<thead>
<tr>
<th>Plan Code</th>
<th>Plan Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS Basic</td>
<td>SMS GSM alarm messenger [Basic]</td>
</tr>
<tr>
<td>SMS Pro</td>
<td>SMS GSM alarm messenger [Advanced]</td>
</tr>
<tr>
<td>SMS Pro-X</td>
<td>SMS GSM alarm &amp; data messenger [Professional]</td>
</tr>
<tr>
<td>SMS Pro-S</td>
<td>SMS GSM alarm &amp; data messenger [Temperature Sensor]</td>
</tr>
<tr>
<td>SMS Pro-SX</td>
<td>SMS GSM alarm messenger [External Temperature &amp; Humidity Sensor]</td>
</tr>
<tr>
<td>SMS Pro-QX</td>
<td>SMS GSM alarm &amp; data messenger [Quad Band]</td>
</tr>
<tr>
<td>SMS Pro-QS</td>
<td>SMS GSM alarm &amp; data messenger [Temperature Sensor + Quad Band]</td>
</tr>
<tr>
<td>SMS Pro-QSX</td>
<td>SMS GSM alarm &amp; data messenger [External Temperature &amp; Humidity Sensor + Quad Band]</td>
</tr>
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<table>
<thead>
<tr>
<th>Features</th>
<th>Basic</th>
<th>Pro</th>
<th>Pro-X</th>
<th>Pro-QX</th>
<th>Pro-S</th>
<th>Pro-SX</th>
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<tr>
<td>Alarm Input</td>
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<td>8</td>
<td>8</td>
<td>8</td>
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<td>8</td>
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<tr>
<td>Relay Output</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<td>3</td>
</tr>
<tr>
<td>Phone Number</td>
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<td>10</td>
<td>10</td>
<td>10</td>
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<td>10</td>
</tr>
<tr>
<td>Low Voltage Alert</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Program by SMS</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Program by PC Software</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Voice</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>AD Channels</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>AD Hi/Lo Alert</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Temperature Sensor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Humidity Sensor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Temp Hi/Lo Alert</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Humidity Hi/Lo Alert</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>GSM Band (MHz)</td>
<td>900/1800</td>
<td>900/1800</td>
<td>900/1800</td>
<td>900/1800</td>
<td>850/1900</td>
<td>900/1800</td>
</tr>
</tbody>
</table>

Revision 100505 [v6.0.2]
# CONTENT

1. OVERVIEW ................................................. 3
2. CONNECTION .............................................. 5
3. INSERTING SIM CARD ....................................... 6
4. TEMPERATURE SENSOR [PRO-S] ............................ 7
5. EXTERNAL TEMPERATURE & HUMIDITY SENSOR [PRO-SX] 8
6. SCHEMATIC DIAGRAM ...................................... 9
7. PC SETUP SOFTWARE ...................................... 12
8. QUICK STARTUP .......................................... 13
9. ALARM TRIGGER RESPONSE TIME ....................... 13
10. GSM NETWORK CONNECTIVITY ......................... 13
11. COMMAND LIST .......................................... 14
12. DEAD LOOP PROBLEM ................................... 40
13. POWER LOSS & RESUME ................................ 41
14. SAFETY AND REGULATORY NOTICE ................... 42
15. MANUFACTURER’S DISCLAIMER STATEMENT ........ 43
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**: DC7~12V
- **Current**: 500mA (SMS Send/Receive), 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**

<table>
<thead>
<tr>
<th></th>
<th>GSM 900</th>
<th>GSM 1800</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF Frequency</td>
<td>925~960MHz</td>
<td>1805~1880MHz</td>
</tr>
<tr>
<td>TX Frequency</td>
<td>880~912MHz</td>
<td>1710~1785MHz</td>
</tr>
<tr>
<td>RF Rating</td>
<td>2W 12.5% Loop Loading</td>
<td>1W 12.5% Loop Loading</td>
</tr>
<tr>
<td>Loading Resistance</td>
<td>500Ohm</td>
<td></td>
</tr>
<tr>
<td>Radiation S/N</td>
<td>0dBi</td>
<td></td>
</tr>
</tbody>
</table>

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

g. **Operation**
2. Connection

Sound Monitoring
SMS Pro automatically picks up any phone call after 8 rings.

By connecting the microphone, mobile phone user can hear the sound from the SMS Messenger.

LED1 green [GSM Signal]
Flash Off > On duration
* GSM Module Normal Operation
Flash 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

RS232 Pin Assignment Connecting to PC
9600bps, 8bit, No Parity, 1 Stop
Pin 2 RXD
Pin 3 TXD
Pin 5 GND

Cross Linked 3-wire Cable

[Diagram of LED connections and pin assignments]
3. Inserting SIM card

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

Make sure that the golden contact is facing down when inserting the SIM card caddy.
4. **Temperature Sensor [Pro-S]**

A) Internal Version

An internal temperature sensor is integrated inside the SMS alarm metal case detecting the surrounding temperature.

- **Temperature Sensor:** LM35DZ
- **Temperature Range:** 0 ~ 100°C
- **Accuracy:** 0.1°C
- **AD Channel:** 2
- **High Temperature SMS Alert**
- **Low Temperature SMS Alert**

B) External Version [default]

An external temperature sensor is integrated inside the SMS alarm metal case detecting the surrounding temperature.

- **Temperature Sensor:** DS18B20
- **Temperature Range:** -50 ~ 125°C
- **Accuracy:** 0.1°C
- **AD Channel:** 2
- **High Temperature SMS Alert**
- **Low Temperature SMS Alert**
5. **External Temperature & Humidity Sensor [Pro-SX]**

External temperature & humidity sensor is supplied with 0.5m cable. Accuracy will be lower if cable is longer.

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

**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.
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

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
</tbody>
</table>

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-S**
   - AD2 is used for temperature sensor
   - AD1 is available

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

(A) Programmed by SMS command via mobile

(B) Programmed by PC Software via 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
1. NEW PASSWORD SETUP 15
2. MANUAL HEALTH REPORTING 15
3. SERIAL NUMBER SETUP 16
4. CONTROL CENTRE NUMBER & HEALTH REPORTING SCHEDULE SETUP 16
5. POWER UP MESSAGE 17
6. SYSTEM CLOCK SETUP 18
7. PHONE NUMBER SETUP 18

Alarm Setup
8. ALARM INPUT LEVEL & ALERT SETUP 19
9. SMS ALARM MESSAGE SETUP 21
10. READ THE SMS MESSAGE CONTENT 22
11. USING SMS ALARM MESSENGER TO SEND SMS MESSAGE 23
12. RELAY OUTPUT CONTROL 25
13. RELAY OUTPUT DELAY TIME 25
14. OPERATING VOLTAGE LOW LEVEL ALARM SMS 25
15. INPUT VOLTAGE LOW LEVEL ALARM 26
16. INPUT VOLTAGE THRESHOLD LEVEL SETUP 27
17. ARM/DISARM SETUP 27

Device Information Report
18. DEFAULT SETTING 28
19. SYSTEM PARAMETERS RESET 27
20. SYSTEM VERSION CHECK 27
21. RETURN MESSAGE 28
22. SYSTEM PARAMETERS REPORT 29

AD Channel Setup
23. AD PARAMETERS SETUP 32
24. AD CHANNEL ALARM SETUP 33
25. SYSTEM PARAMETERS REPORT (ABOUT AD CHANNELS) 34

Temperature Sensor Setup
26. MANUAL TEMPERATURE CHECK 36
27. TEMPERATURE ALARM SETUP 36
28. FINE TUNING OF MEASURING TEMPERATURE 37

Humidity Sensor Setup
29. MANUAL HUMIDITY CHECK 38
30. HUMIDITY ALARM SETUP 38
**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
- T: Unit Internal Clock
- V: Operating Voltage
- AI1: A/D Channel 1
- AI2: A/D Channel 2
- K1: Alarm Channel 1
- OUT1: Relay Output 1

K1:0 means “Open”
K1:1 means “Closed”

- OUT2: Relay Output 2
- OUT3: Relay Output 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:**

```
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
- **YYYYYYYY** Phone number in control centre
- **MM** Period Code of Automatic Scheduled Health Report

**Example:**

```
Password: 1234
CTR1:123456789,05#
```

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**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>No automatic report</td>
</tr>
<tr>
<td>01</td>
<td>Every 5 minutes</td>
</tr>
<tr>
<td>02</td>
<td>Every 15 minutes</td>
</tr>
<tr>
<td>03</td>
<td>Every 30 minutes</td>
</tr>
<tr>
<td>04</td>
<td>Every 1 hour</td>
</tr>
<tr>
<td>05</td>
<td>Every 2 hours</td>
</tr>
<tr>
<td>06</td>
<td>Every 3 hours</td>
</tr>
<tr>
<td>07</td>
<td>Every 6 hours</td>
</tr>
<tr>
<td>08</td>
<td>Every 12 hours</td>
</tr>
<tr>
<td>09</td>
<td>Every 1 day (8:00am)</td>
</tr>
<tr>
<td>10</td>
<td>Every odd day (8:00am)</td>
</tr>
<tr>
<td>11</td>
<td>1st, 7th, 14th, 21st, 28th Day (8:00am)</td>
</tr>
<tr>
<td>12</td>
<td>1st, 15th Day (8:00am)</td>
</tr>
<tr>
<td>13</td>
<td>1st Day of Each Month (8:00am)</td>
</tr>
</tbody>
</table>
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;#.
```

<table>
<thead>
<tr>
<th>ST</th>
<th>Unit Serial Number</th>
<th>XXX</th>
<th>ASCII code</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>Unit Internal Clock</td>
<td>XXXX</td>
<td>year/month/day/time</td>
</tr>
<tr>
<td>V</td>
<td>Operating Voltage</td>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td>AI1</td>
<td>A/D Channel 1</td>
<td>X</td>
<td>hex digits</td>
</tr>
<tr>
<td>AI2</td>
<td>A/D Channel 2</td>
<td>X</td>
<td>hex digits</td>
</tr>
<tr>
<td>K1</td>
<td>Alarm Channel 1</td>
<td>K2~8</td>
<td>Alarm Channel 2~8</td>
</tr>
<tr>
<td></td>
<td>K1:0 means “Open”</td>
<td>K1:1 means “Closed”</td>
<td></td>
</tr>
<tr>
<td>OUT1</td>
<td>Relay Output 1</td>
<td>OUT2~3</td>
<td>Relay Output 2~3</td>
</tr>
<tr>
<td></td>
<td>OUT1:0 means “Open”</td>
<td>OUT1:1 means “Closed”</td>
<td></td>
</tr>
</tbody>
</table>

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**

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

### 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
AABBCDDDEE 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: ZZZZZZZZZZZZ, 2: ZZZZZZZZZZZ, 3: ZZZZZZZZZZZZ, 4: ZZZZZZZZZZZ, 5: ZZZZZZZZZZZZ, 6: ZZZZZZZZZZZ, 7: ZZZZZZZZZZZ, 8: ZZZZZZZZZZZZ, #%

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”
       1 means “Close” triggered alarm
       2 means “Open” triggered alarm
       3 means both “Close” or “Open” triggered alarm
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
       1st phone number
       2nd phone number
       3rd phone number
       4th phone number
BBB B B B
       5th phone number
       6th phone number
       7th phone number
       8th phone number
NNN     Relay Output Control
       0 means no relay output control
       1 means relay output triggered by alarm
N N N
       1st Relay Control
       2nd Relay Control
       3rd 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**: Close Triggered Alarm
  - 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.

**AD Channel 1 ~ 2**

Command: `PWD:XXXX,ACHYTEXT:□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□#%`

- **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,ACH2TEXT:High Temperature Alert#%
```

Threshold High: 4.250

```
AD value: 5.123
Password: 1234
Date: 2007-06-12
Time: 19:23
```

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

```
High Temperature Alert >ST:001;TM:28/01/2008,15:45;INPU AD2 ALARM!;A2:5.123.
```
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%`

<table>
<thead>
<tr>
<th>XXXX</th>
<th>Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Alarm Channel Number (1~8)</td>
</tr>
</tbody>
</table>

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,RDACHTYTEXT%`

<table>
<thead>
<tr>
<th>XXXX</th>
<th>Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>AD Channel Number (0~2)</td>
</tr>
<tr>
<td></td>
<td>0: Low Power Input Voltage Level Alarm</td>
</tr>
<tr>
<td></td>
<td>1: AD Channel 1 Alarm</td>
</tr>
<tr>
<td></td>
<td>2: AD Channel 2 Alarm</td>
</tr>
</tbody>
</table>

Command:
- `PWD:XXXX,RDACHT0TEXT%`

Reply Message:
- `ST001;T:2008/01/22,15:45;V:12.3; □□□□□□□□`

Command:
- `PWD:XXXX,RDACHT2TEXT%`

Reply Message:
- □□□□□□□□>ST001;T:2008/01/22/15/45;INPU AD1 ALARM!;A2:0.000

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%

<table>
<thead>
<tr>
<th>XXXX</th>
<th>Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Phone Number (1~8)</td>
</tr>
<tr>
<td>XB</td>
<td>SMS message selection</td>
</tr>
<tr>
<td>00:</td>
<td>schedule health check status</td>
</tr>
<tr>
<td>01:</td>
<td>Closed Triggered Alarm Channel 1, SMS message</td>
</tr>
<tr>
<td>02:</td>
<td>Closed Triggered Alarm Channel 2, SMS message</td>
</tr>
<tr>
<td>03:</td>
<td>Closed Triggered Alarm Channel 3, SMS message</td>
</tr>
<tr>
<td>04:</td>
<td>Closed Triggered Alarm Channel 4, SMS message</td>
</tr>
<tr>
<td>05:</td>
<td>Closed Triggered Alarm Channel 5, SMS message</td>
</tr>
<tr>
<td>06:</td>
<td>Closed Triggered Alarm Channel 6, SMS message</td>
</tr>
<tr>
<td>07:</td>
<td>Closed Triggered Alarm Channel 7, SMS message</td>
</tr>
<tr>
<td>08:</td>
<td>Closed Triggered Alarm Channel 8, SMS message</td>
</tr>
<tr>
<td>09:</td>
<td>manual input message</td>
</tr>
<tr>
<td>10:</td>
<td>Low Voltage Alarm Message</td>
</tr>
<tr>
<td>11:</td>
<td>AD Channel 1, SMS message</td>
</tr>
<tr>
<td>12:</td>
<td>AD Channel 2, SMS message</td>
</tr>
<tr>
<td>13:</td>
<td>Open Triggered Alarm Channel 1, SMS message</td>
</tr>
<tr>
<td>14:</td>
<td>Open Triggered Alarm Channel 2, SMS message</td>
</tr>
<tr>
<td>15:</td>
<td>Open Triggered Alarm Channel 3, SMS message</td>
</tr>
<tr>
<td>16:</td>
<td>Open Triggered Alarm Channel 4, SMS message</td>
</tr>
<tr>
<td>17:</td>
<td>Open Triggered Alarm Channel 5, SMS message</td>
</tr>
<tr>
<td>18:</td>
<td>Open Triggered Alarm Channel 6, SMS message</td>
</tr>
<tr>
<td>19:</td>
<td>Open Triggered Alarm Channel 7, SMS message</td>
</tr>
<tr>
<td>20:</td>
<td>Open Triggered Alarm Channel 8, SMS message</td>
</tr>
</tbody>
</table>

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:

- Select alarm phone number 1, please make sure that this alarm phone number must be preset in device properties first
- Type the message e.g. “this is a test” in Manual Input box
- Click button
- 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) |
| YYYY | 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:**  \texttt{PWD:XXXX,ADCOUT0:YY,ZZZBBBB,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

- **ZZZBBBB**  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”

  
<table>
<thead>
<tr>
<th>Z Z Z Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th phone number</td>
</tr>
<tr>
<td>3rd phone number</td>
</tr>
<tr>
<td>2nd phone number</td>
</tr>
<tr>
<td>1st phone number</td>
</tr>
</tbody>
</table>

  
<table>
<thead>
<tr>
<th>B B B B</th>
</tr>
</thead>
<tbody>
<tr>
<td>8th phone number</td>
</tr>
<tr>
<td>7th phone number</td>
</tr>
<tr>
<td>6th phone number</td>
</tr>
<tr>
<td>5th phone number</td>
</tr>
</tbody>
</table>

- **NNN**  Relay Output Control
  - 0 means no relay output control
  - 1 means relay output triggered by alarm

  
<table>
<thead>
<tr>
<th>N N N N</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd Relay Control</td>
</tr>
<tr>
<td>2nd Relay Control</td>
</tr>
<tr>
<td>1st Relay Control</td>
</tr>
</tbody>
</table>
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, CHEACKV

[SMS Message received]

SD41 V5.1_3_B 2008/01/28
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:00,000000000,000;K2:1,O:00,000000000,000;K3:1,O:00,000000000,000;K4:1,O:00,000000000,000;K5:1,O:00,000000000,000;K6:1,O:00,000000000,000;K7:1,O:00,000000000,000;K8:1,O:00,000000000,000;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

**PWD:XXXX,PARAMETER1%**

[SMS Message received]

<table>
<thead>
<tr>
<th>ST:</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXX</td>
<td>XXXX</td>
<td>Unit Serial Number</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>T:</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006/10/08/08:00</td>
<td>Date/Time</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H:</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>1</td>
<td>Arm</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Disarm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F1:</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>XXXXXXXXXX</td>
<td>Control Centre Phone Number</td>
</tr>
<tr>
<td></td>
<td>YY</td>
<td>Automatic Health Report Schedule</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C1</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXXX</td>
<td>Alarm Phone Number</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Y</td>
<td>1 Alarm Report enabled</td>
</tr>
<tr>
<td></td>
<td>0 Alarm Report disabled</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XH:RR</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RR</td>
<td>GSM Network Signal Strength (1 ~ 40)</td>
</tr>
</tbody>
</table>

**PWD:XXXX,PARAMETER4%**

<table>
<thead>
<tr>
<th>ST:</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXX</td>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td>C2</td>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td>C3</td>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td>C4</td>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td>C5</td>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td>C6</td>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td>C7</td>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td>C8</td>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>#</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C2 ~ C8</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2nd ~ 8th Alarm Phone Number</td>
<td></td>
</tr>
</tbody>
</table>
PWD: XXXX, PARAMETER 2%

[SMS Message received]

ST: XXX; VL: XXXX, O: AX, BBBB BBBB, CCC; A1M: XXXX, UUUU, YYYY, R, HHHH, PPPP, O: AX, BBBB BBBB, CCC; A2M: XXXX, UUUU, YYYY, R, HHHH, PPPP, O: AX, BBBB BBBB, CCC; #

<table>
<thead>
<tr>
<th>VL</th>
<th>Min. Operating Voltage, below this level will trigger alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>alarm report to Control Centre 1</td>
</tr>
<tr>
<td>X</td>
<td>alarm report to Control Centre 2</td>
</tr>
<tr>
<td>BBBB BBBB</td>
<td>report status for 8 phone numbers</td>
</tr>
<tr>
<td>CCC</td>
<td>relay output control</td>
</tr>
</tbody>
</table>

7 VDC by default

0 means no report
1 means report

0 means no report
1 means report

0 means “SMS” but no “phone dialing”
1 means “SMS” but no “phone dialing”
2 means “phone dialing” but no “SMS”
3 means “SMS” and then “phone dialing”

0 means relay is not controlled by low voltage alarm
1 means relay is turned on by low voltage alarm
PWD:XXXX,PARAMETER3%

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
       1 means report
   X  alarm report to Control Centre 2
       0 means no report
       1 means report

BBBBBBBBB  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  1st relay time lapse
     0000  2nd relay time lapse
     0000  3rd relay time lapse
11.23) AD Parameters Setup

PWRD:XXXX,ADVARE1:UUUUS,XXXXX,NNNNN,Y,ZZZZZ,WWWWW%

- 1: Channel 1
- UUUU: Measuring Range Upper Limit
- XXXXX: Measuring Range Lower Limit
- NNNNN: Start Value
- Y: 1: Triggered Alarm enabled
  0: Triggered Alarm disabled
- ZZZZZ: Alert High Value Setup
- WWWW: Alert Low Value Setup

Operation:

a) When the captured analog value is higher or lower than the alert values, alarm is triggered within 0.5 second.

b) SMS, Relay On/Off, Dial Phone etc corresponding actions described on next page will be taken.

c) Alarm will only be re-triggered when the captured analog value returns to normal range and then reaches beyond the alert values again.
11.24) AD Channel Alarm Setup

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

**XXXX** Password

**B**
0: Low Voltage Alarm  
1: AD Channel 1 Alarm  
2: AD Channel 2 Alarm

**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”

<table>
<thead>
<tr>
<th>Z Z Z Z</th>
<th>1st phone number</th>
<th>2nd phone number</th>
<th>3rd phone number</th>
<th>4th phone number</th>
</tr>
</thead>
<tbody>
<tr>
<td>B B B B</td>
<td>5th phone number</td>
<td>6th phone number</td>
<td>7th phone number</td>
<td>8th phone number</td>
</tr>
</tbody>
</table>

**NNN** Relay Output Control
0 means no relay output control  
1 means relay output triggered by alarm

<table>
<thead>
<tr>
<th>N N N</th>
<th>1st Relay Control</th>
<th>2nd Relay Control</th>
<th>3rd Relay Control</th>
<th>4th Relay Control</th>
</tr>
</thead>
</table>
11.25) System Parameters Report (about AD channels)

**PWD:XXXX,PARAMETER 2%**

[**SMS Message received**]


<table>
<thead>
<tr>
<th></th>
<th>AD Channel 1</th>
<th>AD Channel 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>M:</strong></td>
<td>XXXXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UUUUU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>YYYYY</td>
<td></td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>HHHHH</strong></td>
<td>Alarm Triggered Alert High Value</td>
<td></td>
</tr>
<tr>
<td><strong>PPPPP</strong></td>
<td>Alarm Triggered Alert Low Value</td>
<td></td>
</tr>
<tr>
<td><strong>O:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>BBBBBBBB</strong></td>
<td>report status for 8 phone numbers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 means no report</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 means “SMS” but no “phone dialing”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 means “phone dialing” but no “SMS”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 means “SMS” and then “phone dialing”</td>
<td></td>
</tr>
<tr>
<td><strong>CCC</strong></td>
<td>relay output control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 means relay is not controlled by alarm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 means relay is turned on by alarm</td>
<td></td>
</tr>
</tbody>
</table>

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” \((4\text{mA} \times 250\Omega=1)\)
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 = \(4\text{mA} \times 250\Omega = 1\)

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 \((0.012 \times 250 – \text{Start Value}) / (5 – \text{Start Value})\)

When current input is 12mA, \(AI1 = 0.6 \times (0.012 \times 250 – 1) / (5 – 1) = 0.3\)

When user requires:
High level alarm at 0.018mA
Low level alarm at 0.008mA

\[
H = (0.018 \times 250 – 1) \times 0.6 / (0.02 \times 250 – 1) = 0.525
\]
\[
L = (0.008 \times 250 – 1) \times 0.6 / (0.02 \times 250 – 1) = 0.15
\]

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%
Built-in Temperature Sensor Operation

[Pro-S]

- Temperature Sensor is bundled with measuring range -50 ~ 125°C.
- AD Channel 2 is used for temperature measuring
- AD Channel 1 is available

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%

<table>
<thead>
<tr>
<th></th>
<th>AD Channel 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>UUUUU</td>
<td>Range Upper Limit</td>
</tr>
<tr>
<td>XXXXX</td>
<td>Range Lower Limit</td>
</tr>
<tr>
<td>NNNNN</td>
<td>Start Value</td>
</tr>
<tr>
<td>Y</td>
<td>1: Triggered Alarm enabled</td>
</tr>
<tr>
<td></td>
<td>0: Triggered Alarm disabled</td>
</tr>
<tr>
<td>ZZZZZ</td>
<td>Alert High Temperature Setup</td>
</tr>
<tr>
<td>WWWWW</td>
<td>Alert Low Temperature Setup</td>
</tr>
</tbody>
</table>

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,ADCOUT2:00,00100000,100%
**11.28) Fine Tuning of Measuring Temperature**

Comparing the measuring value of an accurate thermometer, the built-in temperature sensor can be fine tuned with tolerance 0~4°C.

**Case 1  When sensor reports a value lower than the actual, start value adjustment will be 0 ~ 4.**

- Actual Temperature: 25°C
- Sensor Report: 23.45°C
- Necessary Adjustment: 25°C - 23.45°C = 01.55°C
- AD Channel: 2
- Measuring Range: 250.0
- Start Value: 01.55
- Triggered Alarm enabled: 1
- Threshold High Temperature Setup: 070.0
- Threshold Low Temperature Setup: 015.0

*PWD:1234,ADVALE2:250.0,0.000,01.55,1,070.0,015.0%*

**Case 2  When sensor reports a value higher than the actual, start value adjustment will be 10 ~ 14.**

- Actual Temperature: 25°C
- Sensor Report: 27.45°C
- Necessary Adjustment: 25°C - 27.45°C = -02.45°C
- AD Channel: 2
- Measuring Range: 250.0
- Start Value: 12.45
- Triggered Alarm enabled: 1
- Threshold High Temperature Setup: 070.0
- Threshold Low Temperature Setup: 015.0

*PWD:1234,ADVALE2:250.0,0.000,12.45,1,070.0,015.0%*

**External Temperature Sensor:**

- Model: DS18B20
- Power Input: 5VDC
- Measuring Range: -50 ~ 125°C
- Output Signal: 0~1 VDC
  - 0VDC = 0°C
  - 1VDC = 100°C

**AD2 Channel Setup**

- Start Value: 000.0 Default
- Range: 250.0 Default
External 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

11.29) Manual Humidity Check

Command: PWD:XXXX,STATUS%

[SMSC 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

11.30) 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,ADCOUT1:00,01000000,001%
External Temperature Sensor:

- **Model:** DS18B20
- **Power Input:** 5VDC
- **Measuring Range:** -50 ~ 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)
- **Output Signal:** 0~3 DCV
  - 0VDC = 0RH
  - 3VDC = 100RH

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

Fine Tuning of Measuring Humidity

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

ℹ️ “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.

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.
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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