

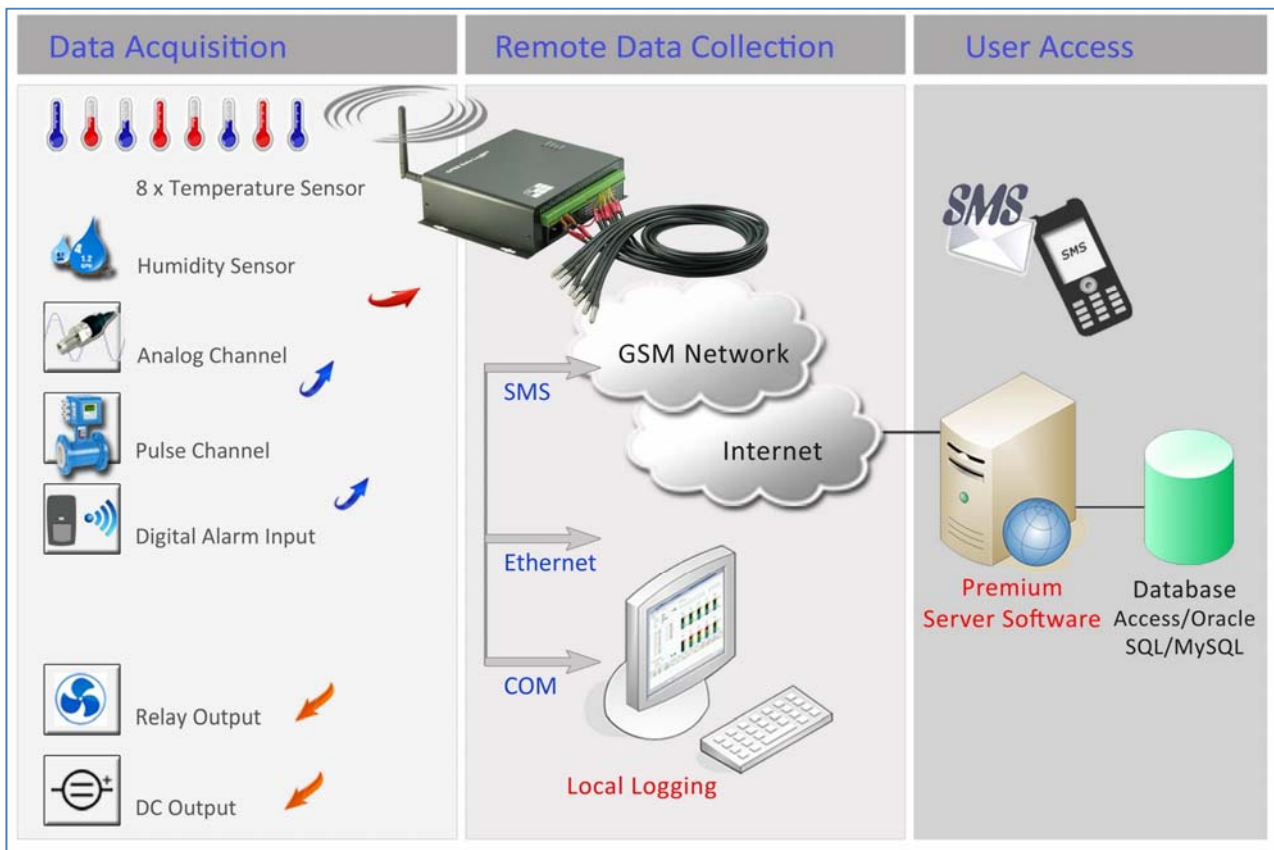
SMS Data Logger

NET Data Logger

Technical Guide
[Version 7.1]

- GSMS-THR-HV support SMS, RS232
- GSM-NET-HV support SMS, Ethernet
- NET-THR-HV support Ethernet

Multipoint Temperature Data Logger



Contents

1.	Overview	3
2.	SMS Data Logger [GSMS-THR-HV]	4
3.	NET Data Logger [NET-THR-HV]	5
4.	SMS NET Data Logger [GSM-NET-HV]	6
5.	Specification.....	7
6.	Network Module	7
7.	Panel [GSMS-THR-HV].....	8
8.	Panel [NET-THR-HV].....	9
9.	Panel [GSM-NET-HV].....	10
10.	Power Input	11
11.	Solar Power Connection [GSMS-THR-HV]	12
12.	Input Output Schematics	14
13.	Temperature & Humidity Sensors	18
14.	Sensors/Transducers Connection & Calibration	19
15.	PC Connection [GSMS-THR-HV]	21
16.	SIM Card Installation.....	21
17.	PC Connection [NET-THR-HV, GSM-NET-HV]	22
18.	Power Up	23
19.	Setup [GSMS-THR-HV]	24
20.	Setup [NET-THR-HV]	25
21.	Setup [GSM-NET-HV]	26
22.	Start Up	27
23.	Communication Protocol & Data Format	28
24.	Data over Ethernet.....	29
25.	Enquiry Command	30
26.	Setup Command	43
27.	How Data Logger response on alarm?.....	52
28.	Temperature Alarm Time Delay.....	54
29.	Capturing, Logging & Upload	55
30.	Testing Ethernet Data Upload.....	56
31.	TCP and UDP Operation	57
32.	Safety and Regulatory Notice	59
33.	Manufacturer's Disclaimer Statement.....	60

1. Overview

GSMS-THR-HV SMS Data Logger and NET-THR-HV NET Data Logger are standalone RTU integrated with a 16 bit ARM MCU and low power consumption design. It's built in digital processor, external interface, hardware watchdog, digital input, digital output, analog input and GSM communication module. Wide operating temperature, electromagnetic resistant, anti-vibrant and numerous interface protocols provide a highly reliable design for industrial application.

- GSMS-THR-HV/GSM-NET-HV/NET-THR-HV is powered by 110/220VAC or 12VDC, and backup by internal rechargeable battery. Internal rechargeable battery maintains data and continuous operation when power loss.
- It is integrated with 8 x temperature sensors and 1 x humidity sensor bundled, and dedicatedly designed for temperature & humidity measurement.

1. GSMS-THR-HV supports SMS data upload.
2. NET-THR-HV supports Ethernet data upload.
3. GSM-NET-HV supports SMS and Ethernet data upload.

GSMS-THR-HV / GSM-NET-HV



NET-THR-HV



2. SMS Data Logger [GSMS-THR-HV]

GSMS-THR-HV

- 8 x Temperature Channels [bundled 8 x submersible sensors]
- 1 x Humidity Channel
- 6 x High Precision A/D Channels
- 6 x Digital Inputs (4 x Alarm)
- 4 x DO [Digital Output] Channels
- Power loss alert
- Programmable Upload Interval (5 seconds ~ one day)
- Programmable Logging Interval (1 minute ~ 60 minutes)
- Supports data upload via SMS on schedule
- Supports data upload via SMS triggered by alarm, or manual check
- Real Time Alarm Report via GSM SMS Data
- Device setup, parameter check and status report via GSM SMS Data
- Support local and remote setup via SMS
- Programmable data capturing type, range, start point, threshold hi/low
- 1 x RS232 Port for local setup or data transmission
- 4MB Non-volatile Memory storing data logged and setup parameters on power loss
- 35000 data records logged - max. 120 days data with records every 5 minutes

3. NET Data Logger [NET-THR-HV]

NET-THR-HV

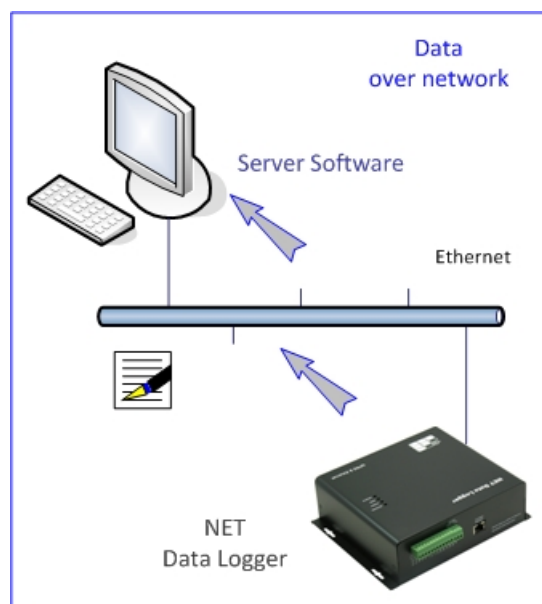
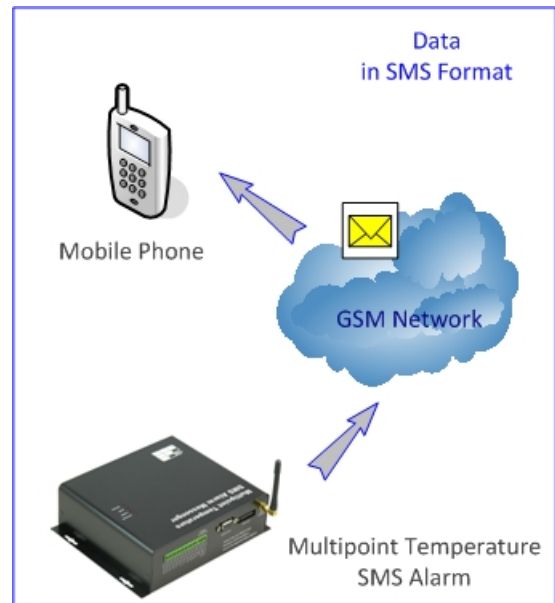
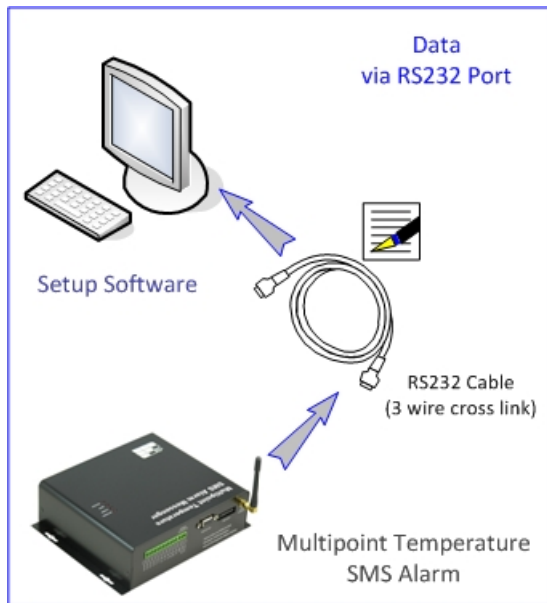
- 8 x Temperature Channels [bundled 8 x submersible sensors]
- 1 x Humidity Channel
- 6 x High Precision A/D Channels
- 6 x Digital Inputs (4 x Alarm)
- 4 x DO [Digital Output] Channels
- Power loss alert
- Programmable Upload Interval (5 seconds ~ one day)
- Programmable Logging Interval (1 minute ~ 60 minutes)
- Supports data upload via Ethernet on schedule
- Supports data upload via Ethernet triggered by alarm, or manual check
- Real Time Alarm Report via Ethernet
- Device setup, parameter check and status report via Ethernet
- Support local and remote setup over LAN or Internet
- Programmable data capturing type, range, start point, threshold hi/low and pulse level
- **1 x 10/100Mbps Ethernet Port for network setup and/or data transmission**
- Support Dynamic Domain Name or Fixed IP over network
- Support UDP protocol data transmission
- 4MB Non-volatile Memory storing data logged and setup parameters on power loss
- 35000 data records logged - max. 120 days data with records every 5 minutes

4. SMS NET Data Logger [GSM-NET-HV]

GSM-NET-HV

- Combination of GSMS-THR-HV and NET-THR-HV
- All features of GSMS-THR-HV and NET-THR-HV
- Supports SMS and Ethernet

Schematics



5. Specification

AC Power Input:	Auto 90~260VAC
Internal Backup:	Rechargeable Battery DC7.4V, 2Ah
DC Power Source:	10 ~ 15VDC, max. 3A
Enclosure:	Metal Casing, 172 x 155 x 54 mm
Current	500mA (SMS Send/Receive) 20~50mA (standby)
Peak Pulse Current	< 1A
Internal 5V DC Output:	max. 0.1A
Operating Temp:	-50°C ~ +70°C
Standby Temp:	-50°C ~ +80°C

Safety:

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

6. Network Module

SMS Data Logger

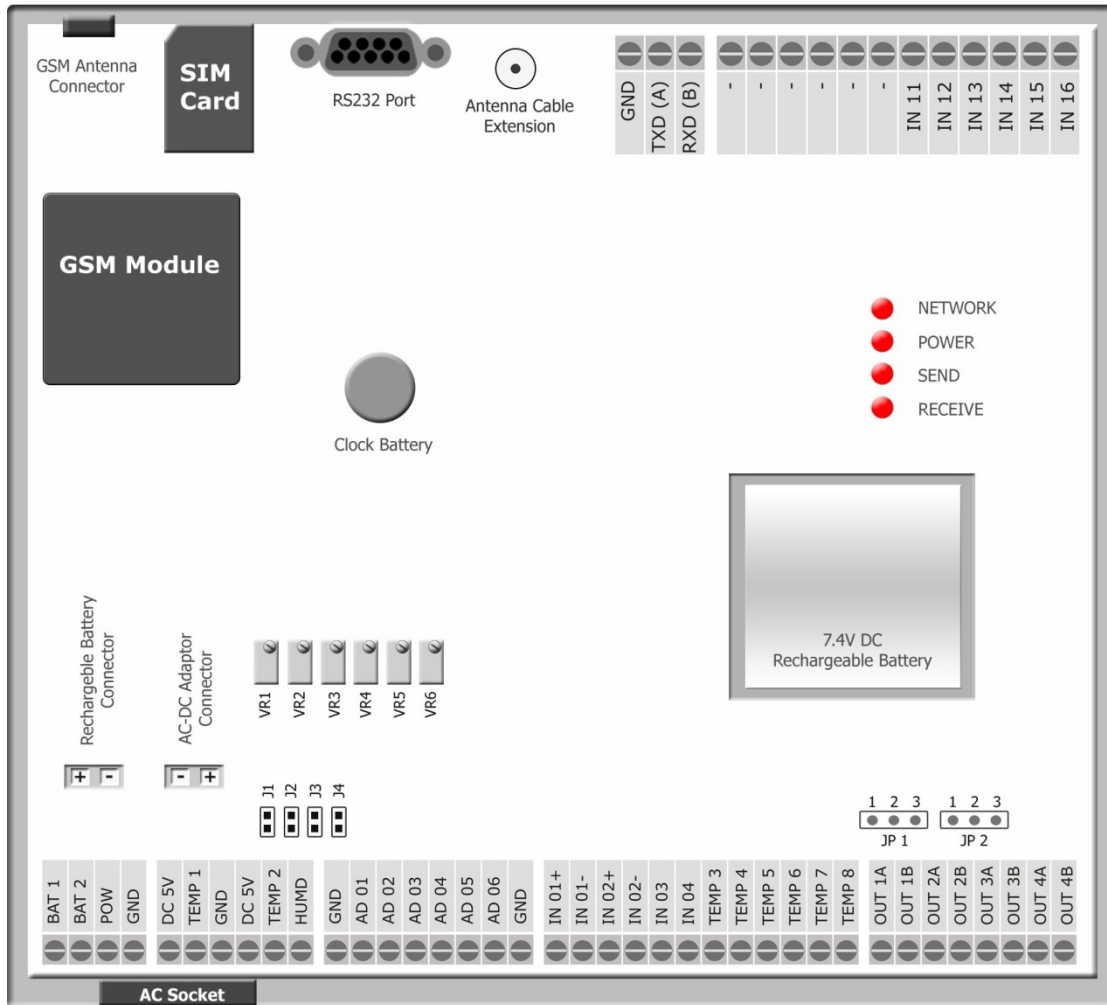
▪ Wireless:	It supports GSM and GPRS class 10.			
	GSM 850	E-GSM 900	DCS 1800	PCS1900
Rx band (MHz)	869~894	925~960	1805~1880	1930~1990
Tx band (MHz)	824~849	880~915	1710~1785	1850~1910
Rx Sensitivity	-109 dBm	-109 dBm	-108 dBm	-108 dBm
Tx Sensitivity	33 dB	33 dB	30 dB	30dB
RF Rating	2W	2W	1W	1W
Loading Resistance	50 Ohm			
GSM Quad:	Cinterion MC55i Quad Band [850/900/1800/1900]			

NET Data Logger

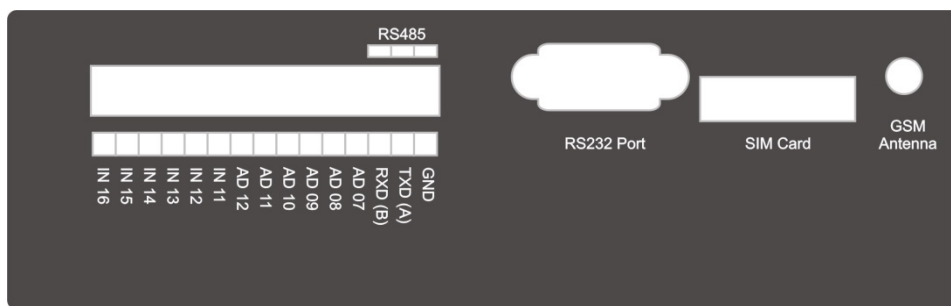
- Ethernet: 10/100Mbps Ethernet
RJ45 Port

7. Panel [GSMS-THR-HV]

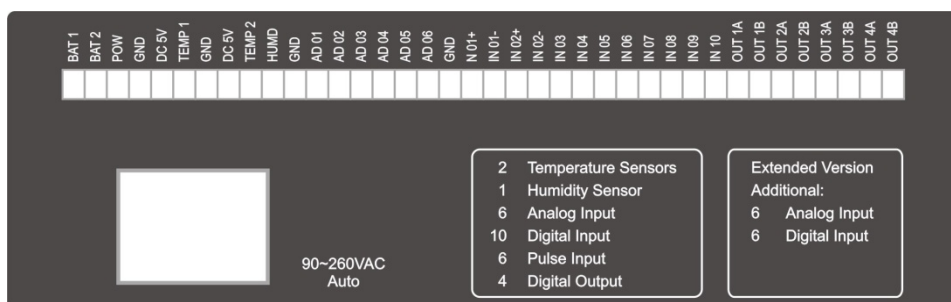
Internal Layout [GSMS-THR-HV]



Front Panel

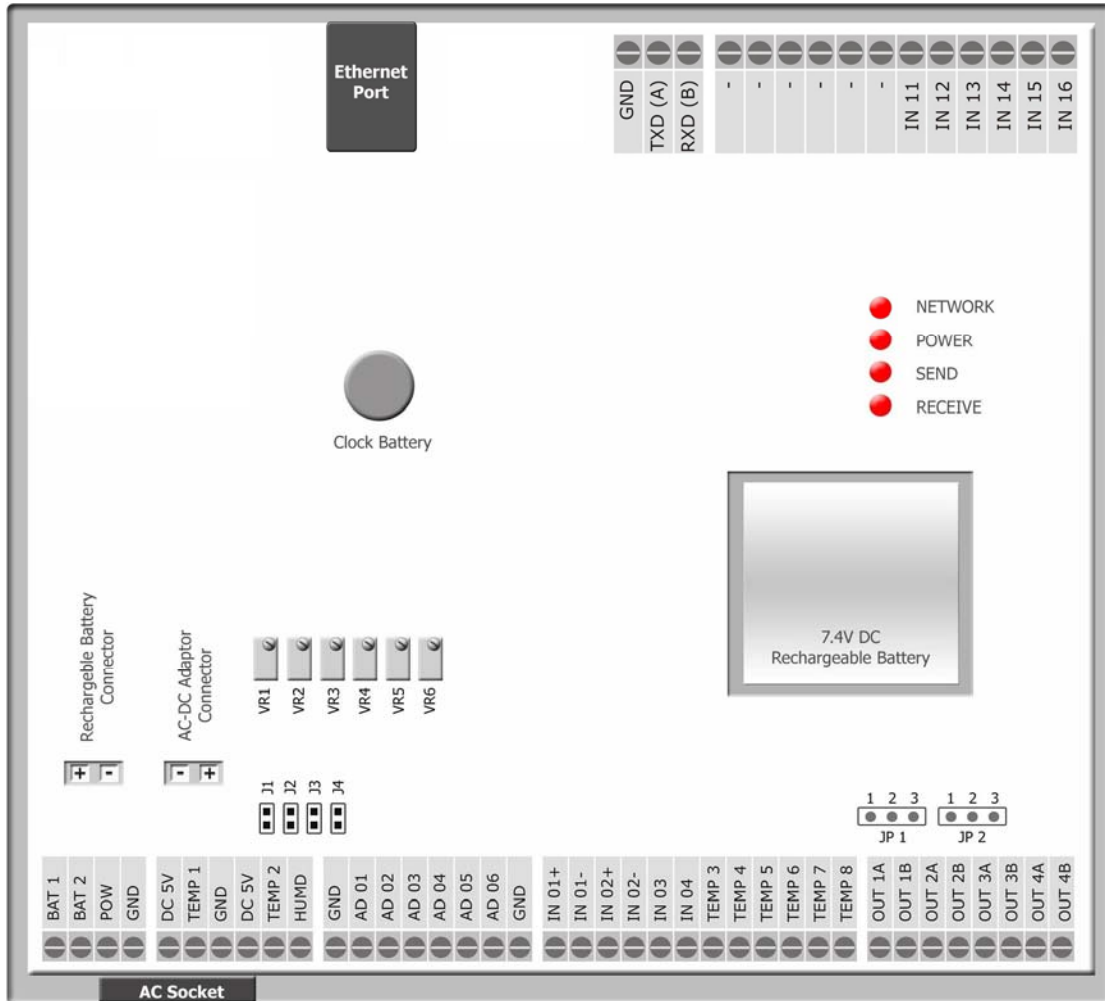


Back Panel



8. Panel [NET-THR-HV]

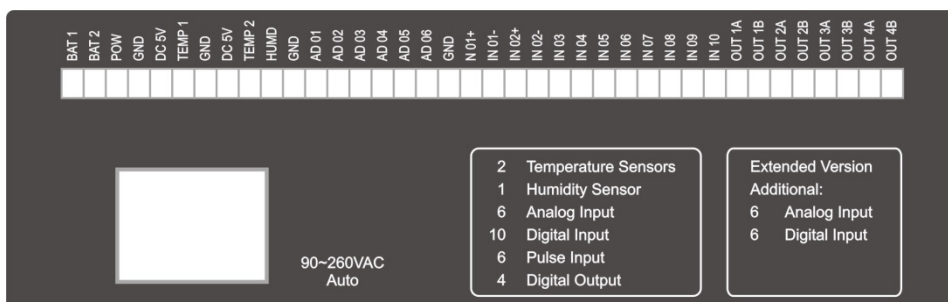
Internal Layout [NET-THR-HV]



Front Panel

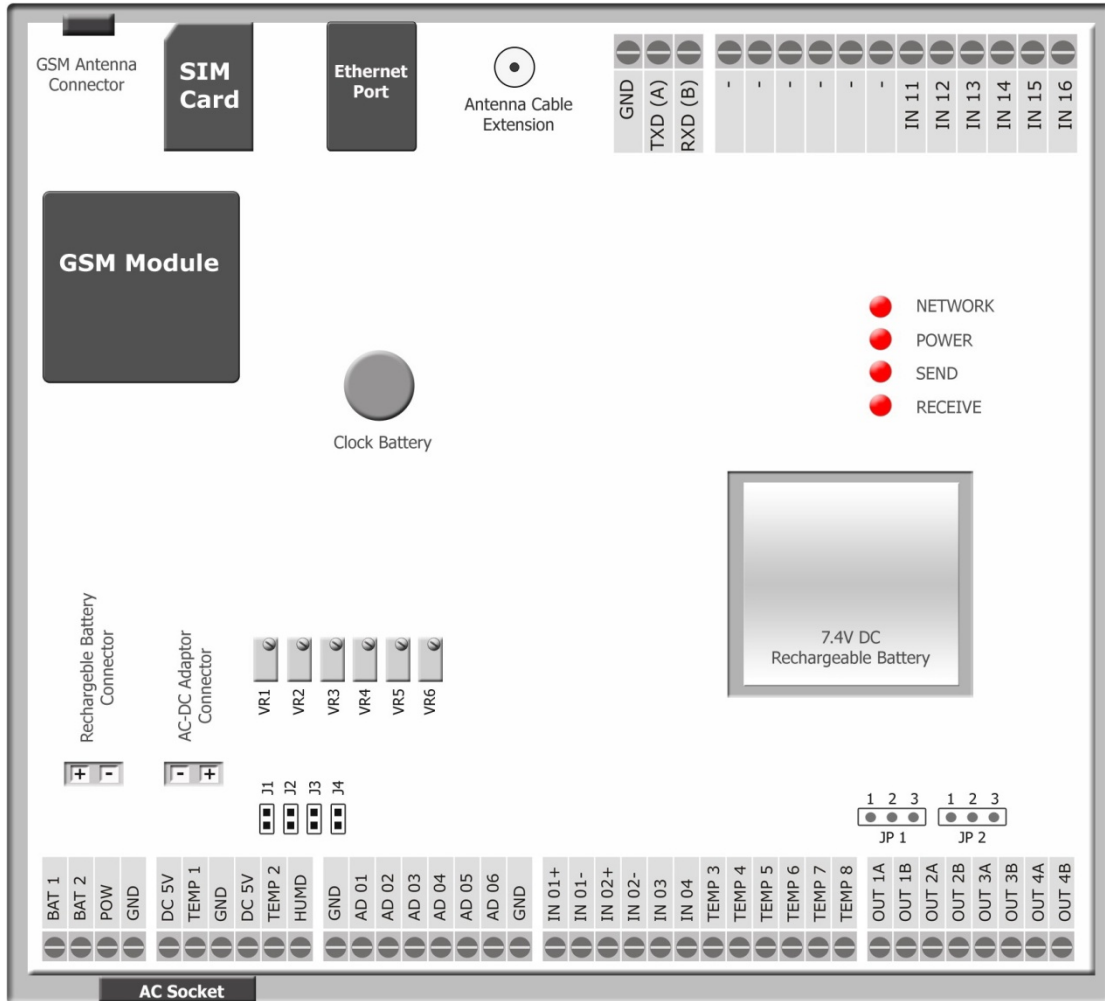


Back Panel



9. Panel [GSM-NET-HV]

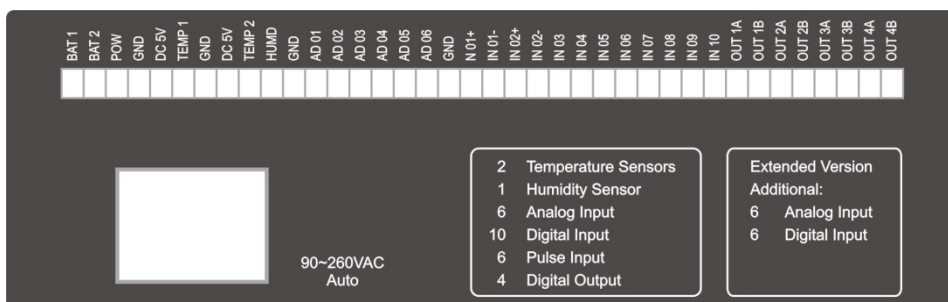
Internal Layout [GSM-NET-HV]



Front Panel



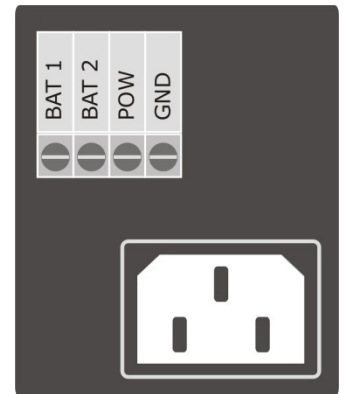
Back Panel



10. Power Input

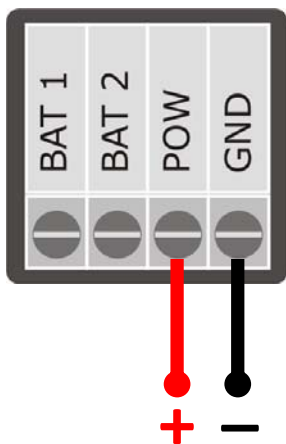
10.1 AC Power Input

90~260V AC input can be connected to power socket as power source.



10.2 DC Power Input

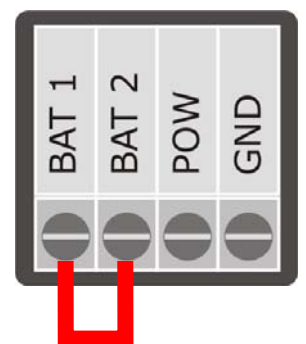
Voltage Input 9~15V DC can be connected to POW and GND as power source.



i AC Input and DC Input should NOT be connected at the same time.

10.3 Internal Rechargeable Battery

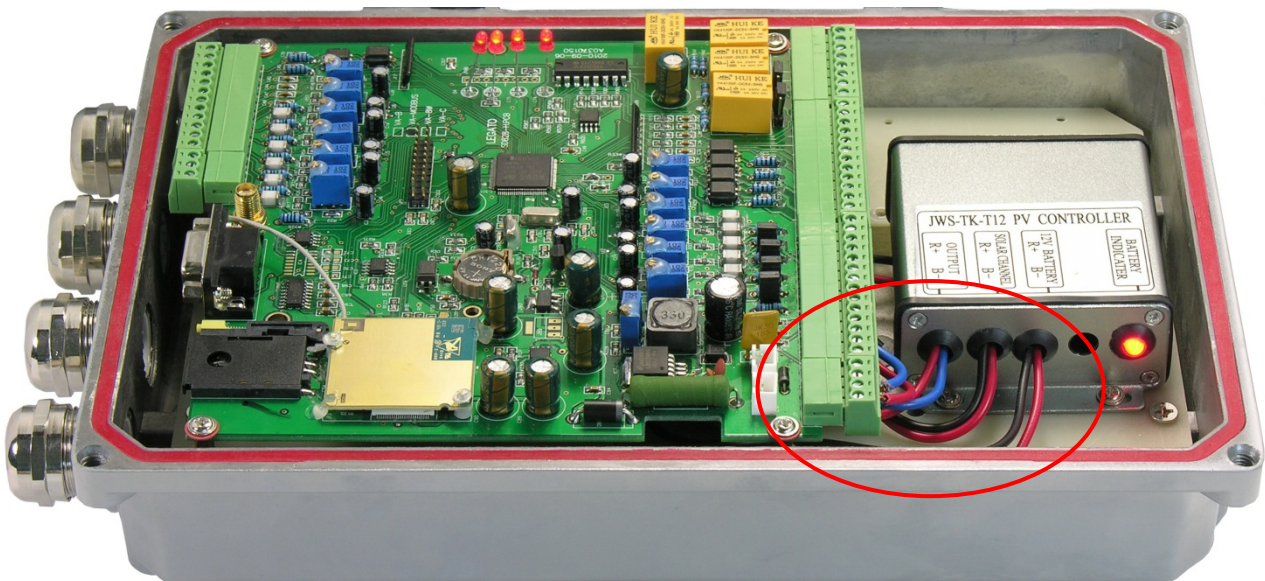
- Short the pins BAT-1 and BAT-2 to turn on the rechargeable battery
- When device is not in use, open the pins connection to save the power of rechargeable battery
- When AC power is plugged and BAT pins are shorted, device is powered by AC and internal battery is being charged.
- Charging will be automatically stopped when battery is full.
- When both AC and DC input are lost, device will be powered by internal battery.



11. Solar Power Connection [GSMS-THR-HV]

11.1 Solar Panel Controller

- Solar Panel is connected to the controller as power source
- When solar power is available, it powers device and recharges the 12V battery
- When solar power is not available, battery will power Device

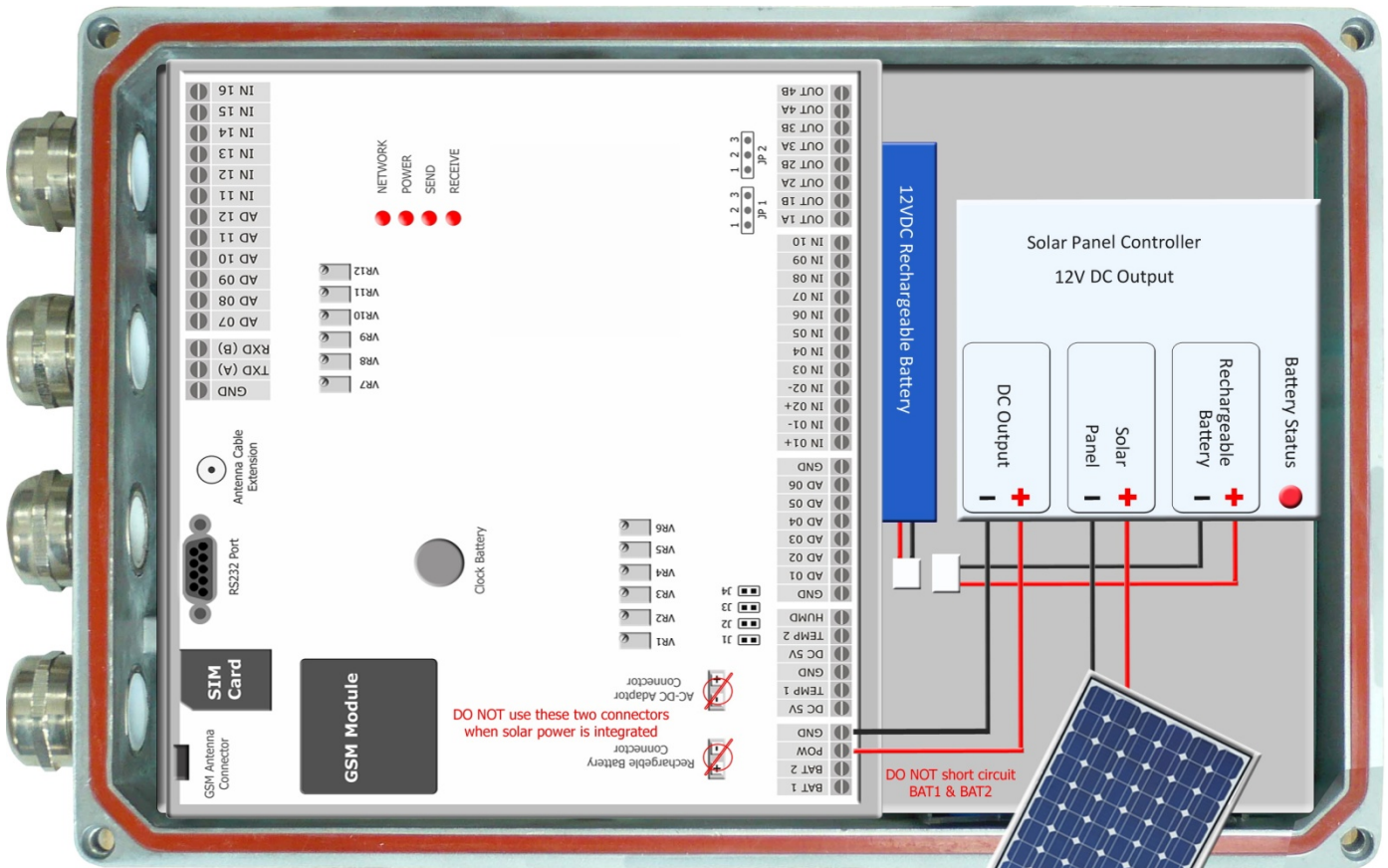


Solar Panel Controller Operation:

-
- Under sunlight, battery will be recharged by solar power.
 - Device is powered by battery at the same time.
-
- Without sunlight, device is powered by battery.
-
- Device stops operation without power, when battery is exhausted without sunlight.
 - When sunlight resumes, battery will be recharged.
 - During solar recharging, device will not turn on when battery is under 11VDC.
 - Device will be power on again only when battery is recharged to above 11VDC.

11.2 Wiring Connection

- Connect the controller power output to device
- Make sure that BAT 1 & BAT 2 are open [not short circuit]



Battery:

- 12VDC Li-ion rechargeable battery is recommended.

Solar Panel Rating:

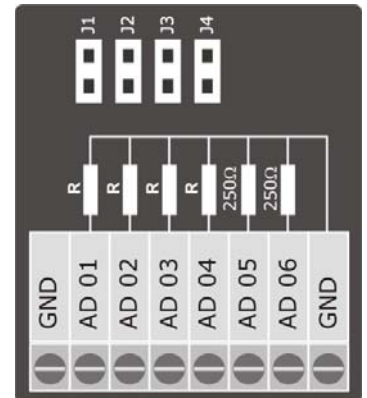
- Max. Voltage at max. Power: 17.28V
- Open Circuit Voltage (Voc): 21.6V
- 80W recommended

12. Input Output Schematics

12.1 Analog Input

AD01 - 06

Analog Channel	AD01 ~ 04		AD05 ~ 06
Jumper	J1 ~ J4		No Jumper
	Short	Open	--
Input Type	Current	Voltage	Current
Range	DC 4~20mA	DC 0 ~ 5V	DC 4~20mA
Input Impedance R	250 Ω	20K Ω	250 Ω

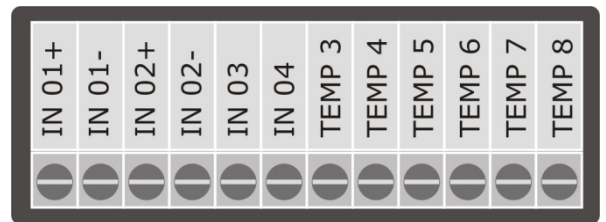


12.2 Digital Input

IN01 – 03 [Programmable On/Off Alarm or Pulse Channel]

On/Off Channel

- Triggered Level > 20ms
- Input Resistance 1KΩ, 1/4W
- DC5~24V voltage or DC5~24mA current



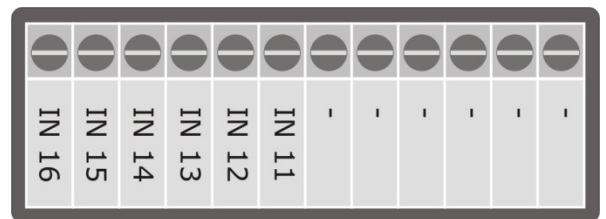
IN04 [Programmable On/Off Alarm]

- On/Off Channel
- Power Type DC5~24V voltage

12.3 Extended Input Channels

IN11 – IN16

- Dry Contact
- Non-Power Type
- On/Off status report, No alarm feature



12.4 Relay Output

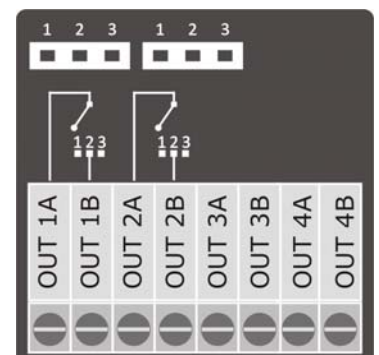
Max. Loading: DC24V @1A, AC220V @1A

OUT 1 – 2

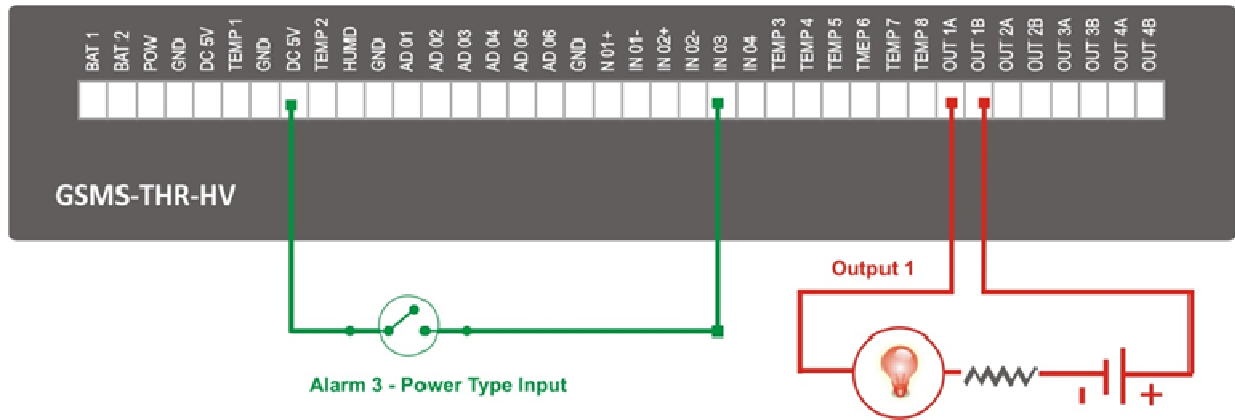
Jumper 1-2 short: Normal Close
 Jumper 2-3 short: Normal Open

OUT 3 – 4

No Jumper: Normal Open

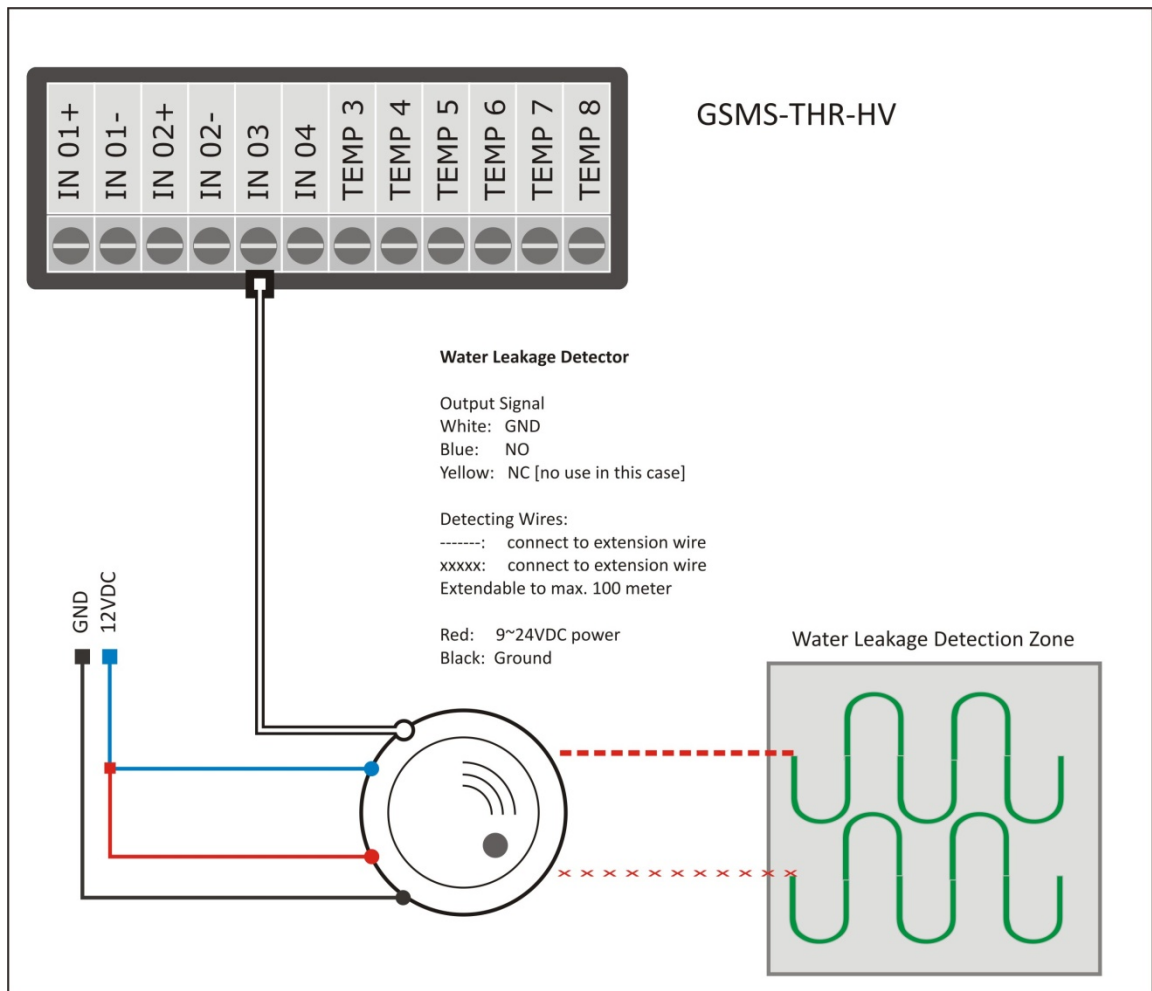


Connection Example:



12.5 Water Leakage Detector

- Water Leakage Detector is bundled in “Data Centre SMS Alarm Package” only
- Make sure that the [Alarm Setup] is configured properly in the Setup Software

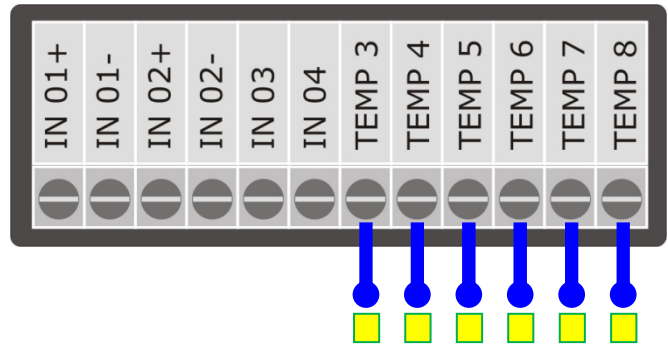
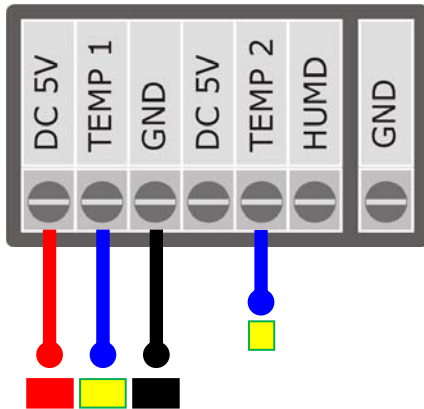


12.6 RS485 Port

- Not available in GSMS-THR-HV

12.7 Temperature Sensor Input

- Bundled 8 x Temperature Sensors must be used
- Internal DC 5V is capable of providing power for 8 sensors
- Support max. 100 meter shielded cable
- This input should NOT be used as AD or DI channels for other sensors

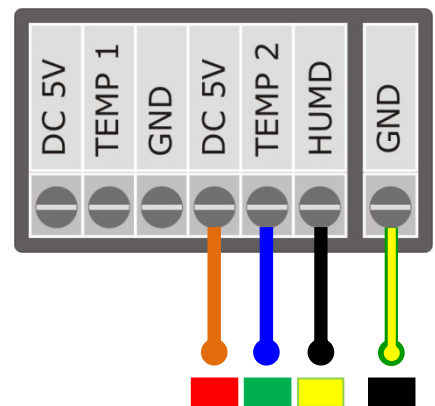


Color Code:
 T_V1 Red / Blue / Black
 T_V2 Red / Yellow / Black



12.8 Temperature & Humidity Sensor Input

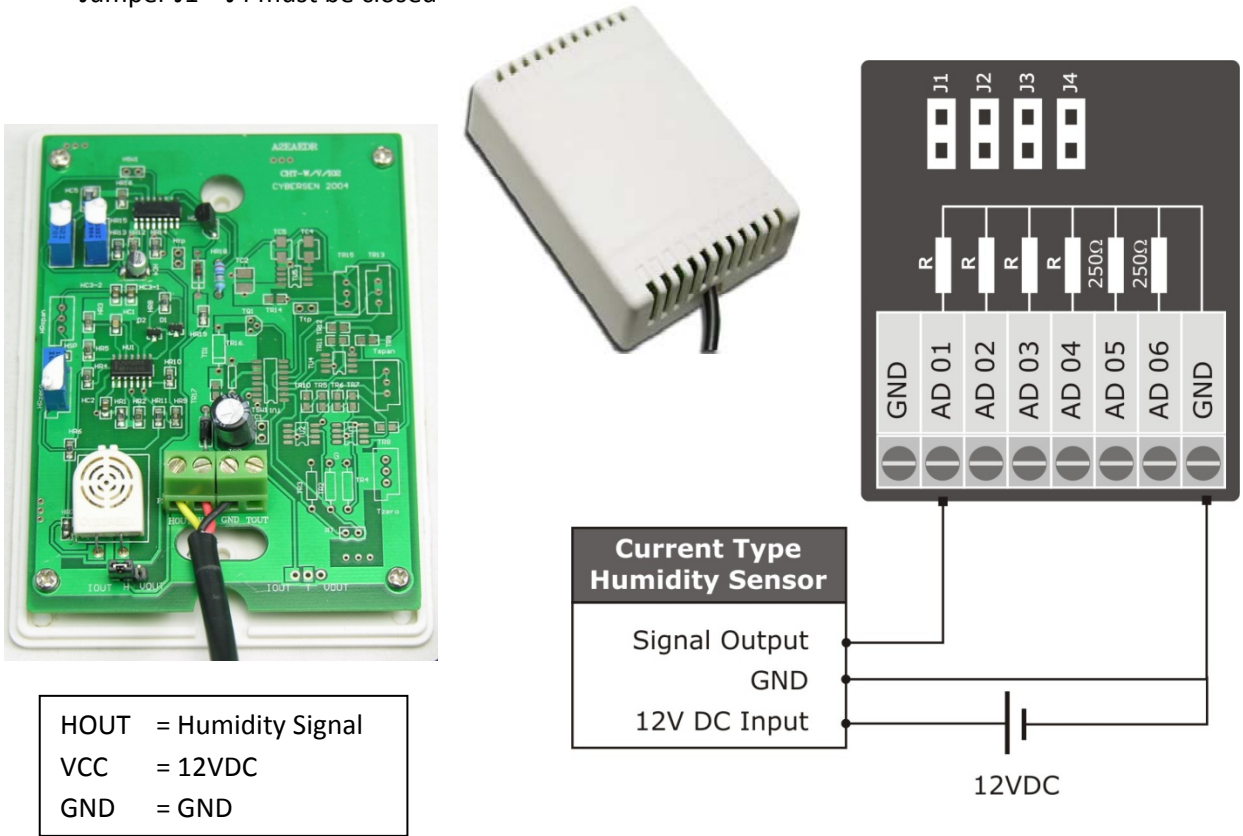
- Bundled Temperature & Humidity Sensor must be used
- Support max. 100 meter shielded cable
- This input should NOT be used as AD channels for other sensors



Color Code:
 TH_V1 Brown / Blue / Black / Yellow
 TH_V3 Red / Green / Yellow / Black

12.9 Additional Humidity Sensor

- Additional 6 x Humidity Sensor can be connected to AD channels
- Current Type Humidity Sensor must be used
- Jumper J1 ~ J4 must be closed



Setup Steps

1. Get the real figure of temperature & humidity with other calibrated meters
2. Use the Setup Software
3. Enter the default values of AD parameters as below
4. Click "Status" to get the live AD value
5. Compare the AD value with real figure
6. Adjust the Upper Range Limit from 50 ~ 150
7. Keep the other parameters e.g. Start Zero unchanged
8. By trial and error, find out the Upper Range Limit until AD value is same to real figure

AD01 ~ 06

Default Setting for Humidity Sensor Input:

Upper Range Limit	100
Lower Range Limit	0
Start Zero	1

13. Temperature & Humidity Sensors

8 x Temperature Sensors and 1x Humidity Sensor are integrated with the device for environmental monitoring [GSMS-THR-HV].

a) Temperature Sensor is built in a waterproof steel housing for outdoor or submersible monitoring.



- Temperature_1 = AD Channel 13
- Temperature_2 = AD Channel 14
- Temperature_3 = AD Channel 07
- Temperature_4 = AD Channel 08
- Temperature_5 = AD Channel 09
- Temperature_6 = AD Channel 10
- Temperature_7 = AD Channel 11
- Temperature_8 = AD Channel 12

Temperature Sensor

Model:	DS18B20
Temperature Range:	-50 ~ 125°C
Accuracy:	0.5°C
T_V1:	max. 1 meter cable
T_V2:	max. 100 meter cable

b) Humidity Sensor is available for indoor monitoring.



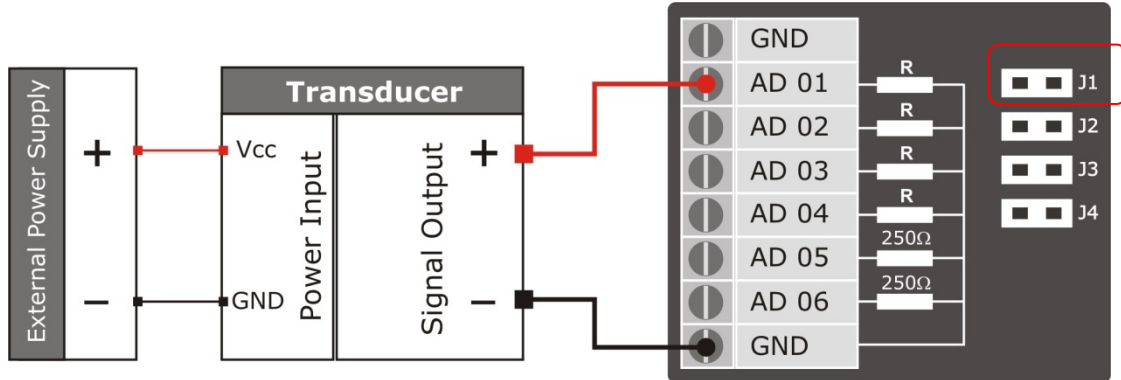
Humidity = AD Channel 00

Humidity Sensor

Model:	CHM-01A
Humidity Range:	0 ~ 100%RH
Accuracy:	± 5%RH
TH_V1:	max. 1 meter cable
TH_V3:	max. 100 meter cable

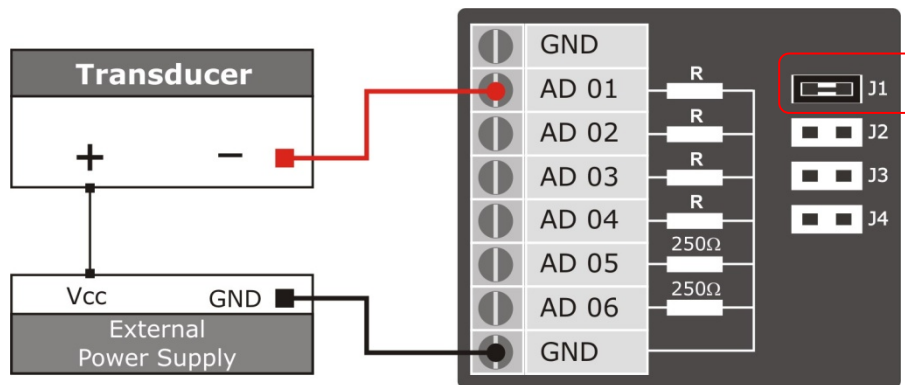
14. Sensors/Transducers Connection & Calibration

- Sensor Output: Voltage Type
 Range: 0 ~ 5V DC
 Jumper: Open



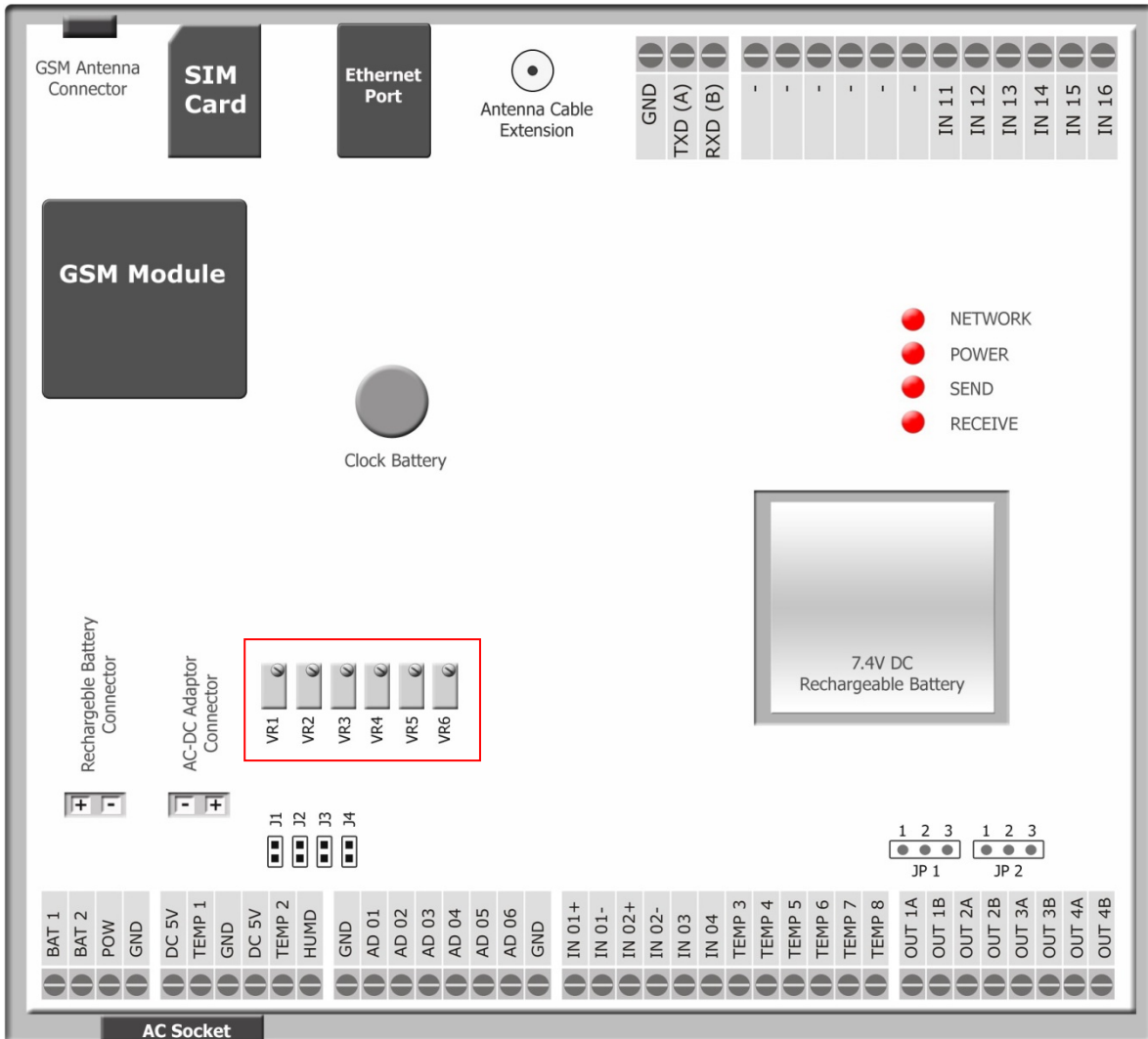
When sensor output is 0~10V DC, 250Ω precise resistor can be connected in serial for 5VDC range. Signal converter can be used for higher accuracy.

- Sensor Output: Current Type
 Range: 4 ~ 20mA
 Jumper: Short



i Make sure that the connection of sensor devices is followed according to its output type. Wrong wiring may damage not only the sensor but also the data logger.

AD Channel Calibration



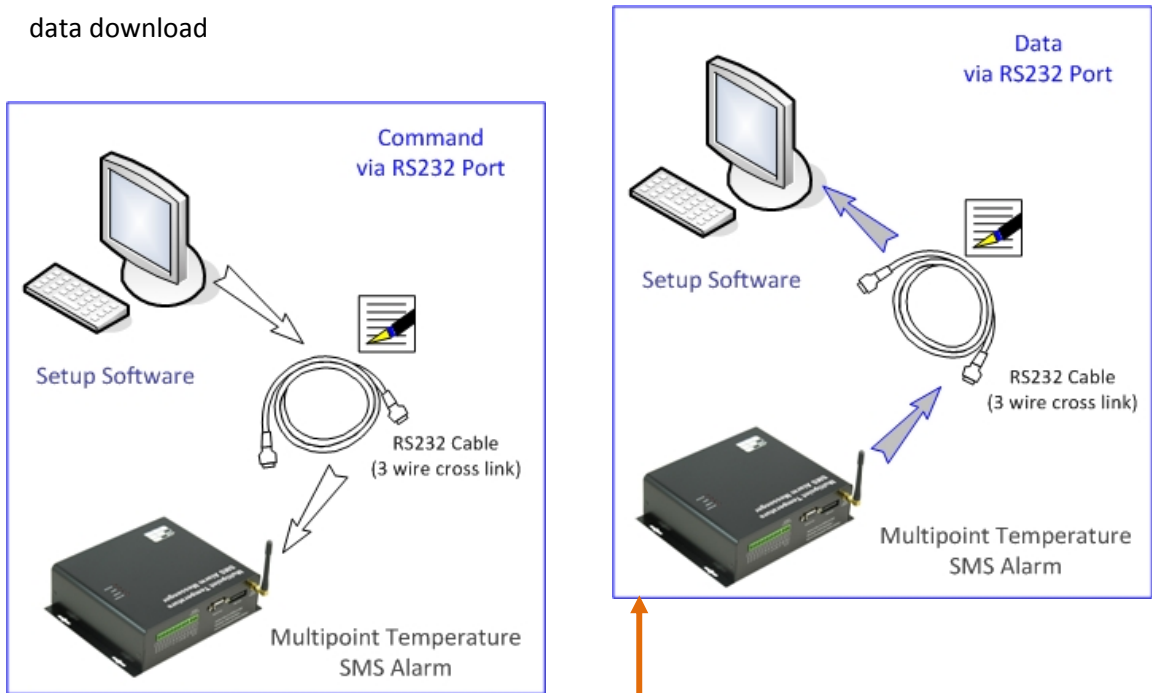
When the AD value is different to the exact input value, please follow the calibration procedures as below:

- By fine tuning the VR (variable resistor) for the corresponding AD channel until the input and AD values are exactly the same.
- By adjusting the Start Zero value between 0.992 ~ 1.008 in the AD channel parameters setup.

15. PC Connection [GSMS-THR-HV]

RS232 Port is available for PC connection running “HV_Setup” Software locally:

- configuration setup
- data download



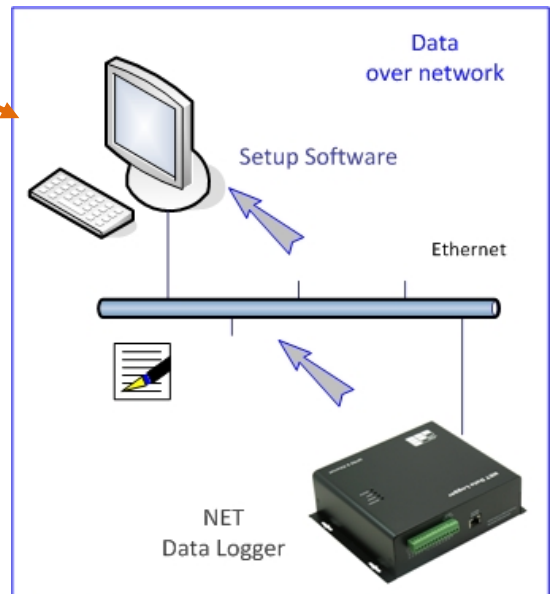
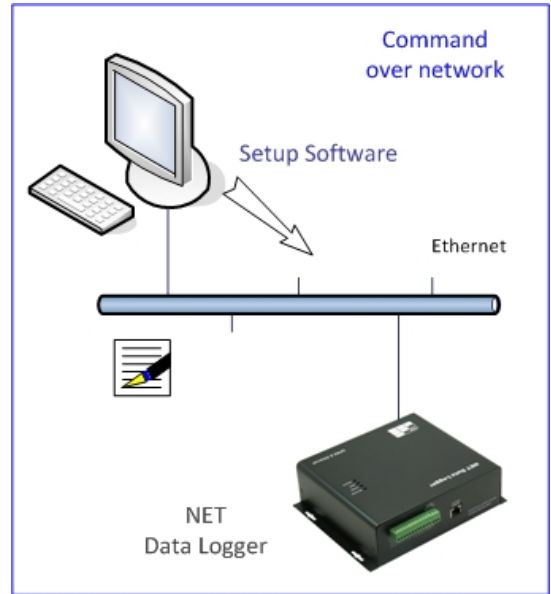
16. SIM Card Installation

- 1) Press the yellow button to release the SIM card caddy as shown below.
- 2) Insert the SIM card into caddy.
- 3) Make sure that the golden contact is facing down when inserting the SIM card caddy.
- 4) PIN of SIM Card must be disabled

17. PC Connection [NET-THR-HV, GSM-NET-HV]

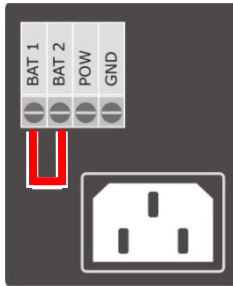
Ethernet Port is available for PC connection running "HV_Setup" Software over network:

- configuration setup
- data download

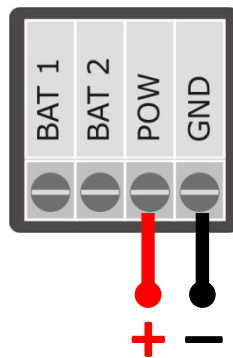


18. Power Up

Turn on the unit by either one of the following:



- a) When AC power is used:
- Plug in the AC socket
 - Enable the internal battery backup by short jumper BAT-1 & 2



- b) When DC power is used:
- Connect 10~24VDC power input pins POW, GND



LED Display:

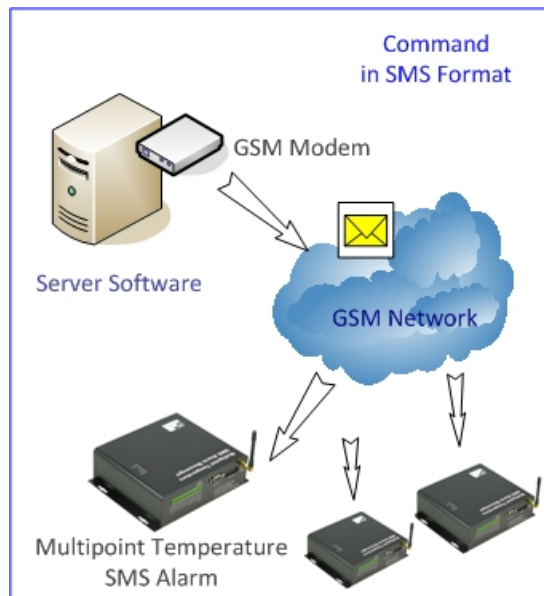
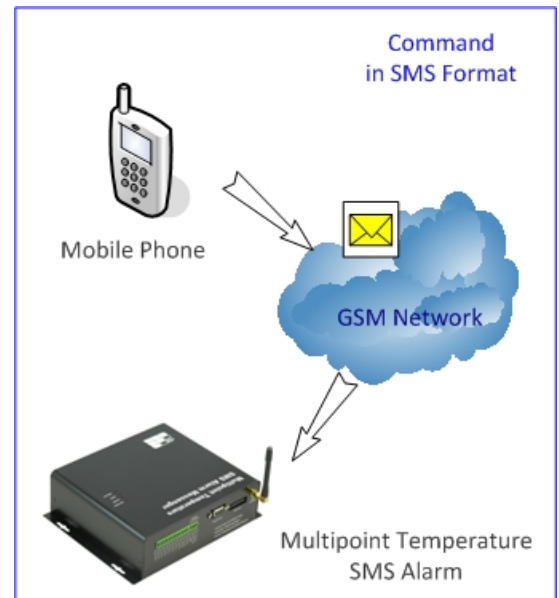
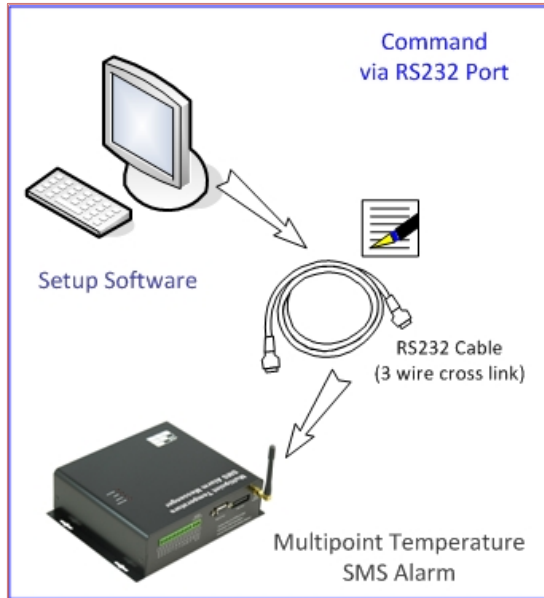
1) Network	GSM Module Status Always OFF Flash @1 second Flash @3 seconds	Not Ready Checking network connection Network Connected & Ready
2) POW	Power Source ON OFF	AC Power is used AC Power is lost, Internal Battery is used.
3) TXD	Sending GSM SMS Flash (startup) Flash	Checking network connection Sending Data
4) RXD	Receiving GSM SMS Flash (startup) Flash	Checking network connection Receiving Data

- After GSM network connection is lost for 2 minutes, RXD will flash for 5 minutes trying to reconnect to GPRS network.
- If connection is still lost, TXD will be ON for 15 minutes.
- After 15 minutes, data logger will reset the GSM module and try to rebuild the GSM connection.

19. Setup [GSMS-THR-HV]

GSMS-THR-HV “SMS Data Logger” can be setup in four ways.

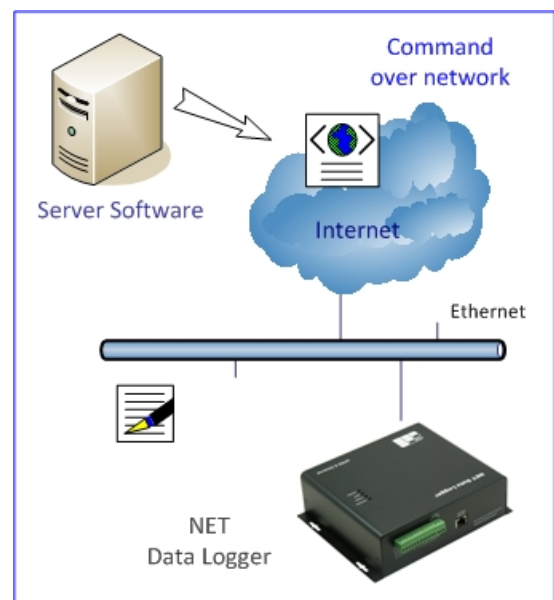
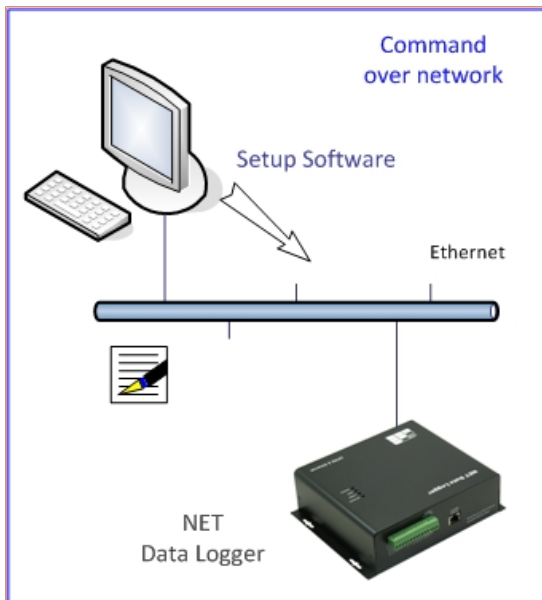
Before site installation, setup and test via RS232 port by PC software is highly recommended.



20. Setup [NET-THR-HV]

NET-THR-HV “NET Data Logger” can be setup in two ways.

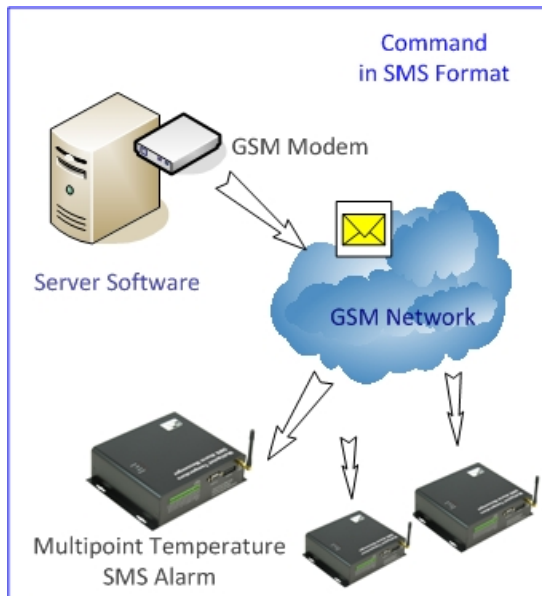
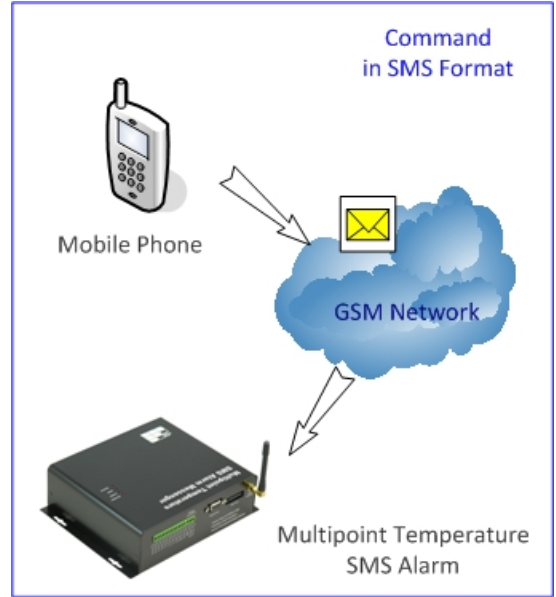
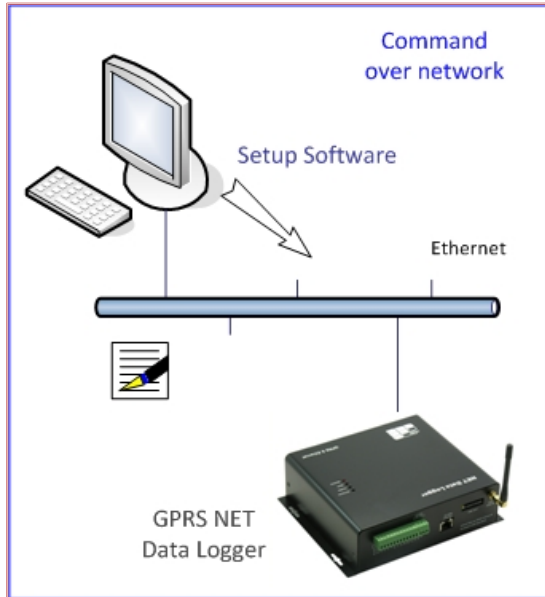
Before site installation, setup and test via Ethernet port by PC software is highly recommended.



21. Setup [GSM-NET-HV]

GSM-NET-HV “SMS NET Data Logger” can be setup in four ways.

Before site installation, setup and test via Ethernet port by PC software is highly recommended.



22. Start Up

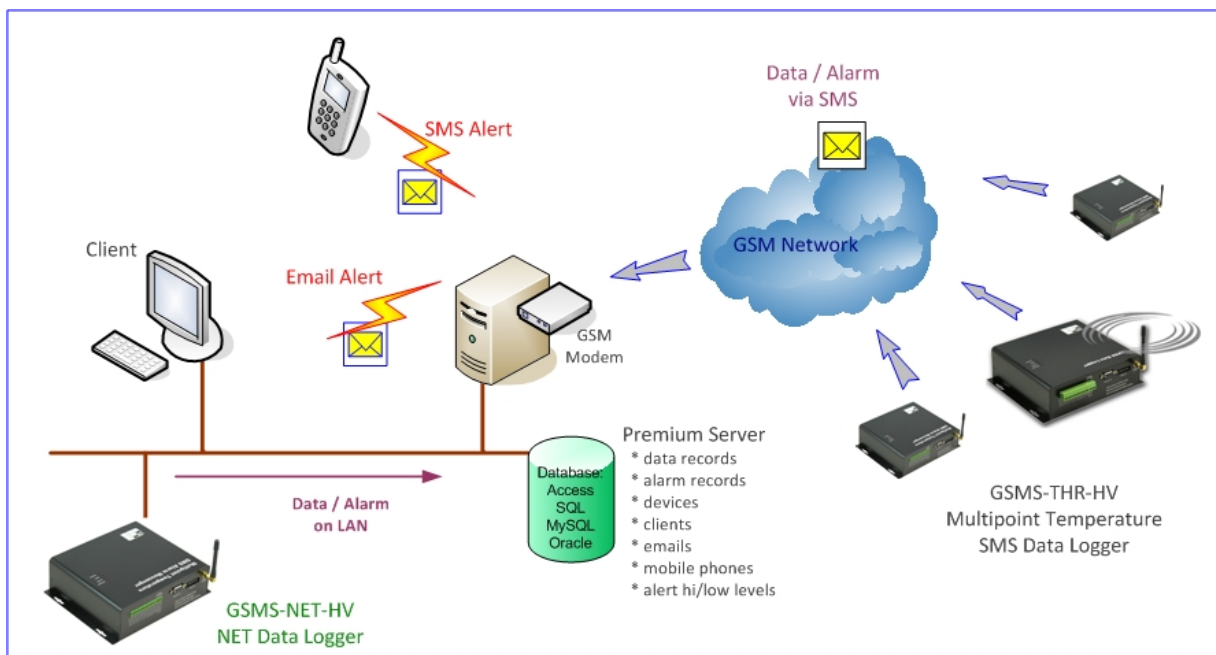
22.1) Power On

Signal LED

OFF>ON	GSM network registration success
OFF	GSM network registration fail
	a) GSM module defective
	b) SIM card defective
	c) Network Unavailable
	d) Device Setup not configured properly

Note: GSM network registration takes about 1 ~ 1.5 minutes

During the first time start up, GSM registration usually fails because of incomplete configuration of SMS network properties.



22.2) Ethernet Network Setup [NET-THR-HV / GSM-NET-HV]

- Data Logger IP Address
- Data Logger IP Port
- Data Logger IP Subnet

23. Communication Protocol & Data Format

Communication Protocol: SMS, UDP, COM Port, Ethernet

Data Header Description:

STA	Real Time Data
STB	Packet Data
STC	Parameters Check
STD	Historical Data
STH	Alarm Data
STA	Alarm Message
STS	Acknowledge Message to Setup Command

24. Data over Ethernet

NET-THR-HV and GSM-NET-HV series support data upload over Ethernet.

24.1) Ethernet Data

- Only UDP protocol is supported in Ethernet Data.
- Only Live Data format is supported in Ethernet Data.

24.2) Data Upload Interval

- Ethernet data upload interval can be configured in NET-THR-HV & GSMS-NET-HV independently.
- SMS upload interval must also be configured even when Ethernet is not used for data upload in GSM-NET-HV series.

25. Enquiry Command

A) Real Time Status Check

Mode: GSM SMS, RS232, Ethernet
 Command: 999999#STATUS#

Ethernet Reply Message: Live Data

#STA:000000,000;L:310;TM:090516195102;D:1;T:01;C:25;A00:0.166;A01:00000;A02:0.578;A03:000;A04:00000;A05:00000;A06:00000;A07:00000;A08:00000;A09:00000;A10:00000;A11:00000;A12:00000;A13:31.00;A14:30.93;P01:00000000;P02:00000000;P03:00000000;P04:00000000;P05:000000;P06:00000000;K01:133333300000000000;O01:0000;8F#

SMS Reply Message: Live Data

#STA:000000,000;L:310;TM:03/04/2009,09:34;D:1;T:01;C:25;A00:0.166;A01:00000;A02:0.578;A03:00000;A04:00000;A05:00000;A06:00000;A07:00000;A08:00000;A09:00000;A10:00000;A11:00000;A12:00000;A13:31.00;A14:30.93;P01:00000000;P02:00000000;P03:00000000;P04:00000000;P05:00000000;P06:00000000;K01:133333300000000000;O01:0000;8F#

P.S.: Max. 160 characters in each SMS message, second SMS messages with header STA: will be sent when data is more than 160 characters.

#STA: 000000,000 STA Header: Live Data
 000000 Station ID
 000 Hardware Version

L:310 Number of characters in packet from "S" to the last ";" inclusive
 TM:0702011200 Current Date Time of SMS Data Logger (yyymmddhhmm)

D:1 Logging Interval

D	Data Logging Interval
5	1 minute
1	5 minutes
2	15 minutes
3	30 minutes
4	60 minutes

T: 01 Number of records in each data packet

C: 08	Counter of packets uploaded
	It is used to check any loss of data packet.
	It should be increasing and reset to 00 when it is over 99.
A01:00000	Value captured on AD Channel 1 [A02, A03... A6 are the same]
A00:	Humidity
A07 ~ 12:	Temperature 3 ~ 8
A13:	Temperature 1
A14:	Temperature 2
P01:01234212	Accumulated Pulses captured [P02, P03... P06 are the same]
	It is accumulated, and reset to 0 when it is over 99999999
K:xyyyyyyzzzzzzzz	<p>First digit x – status of power source</p> <p>1: AC power input is ON</p> <p>0: AC power input is OFF (now powered by battery)</p> <p>2nd ~ 7th digit yyyyyy – status of Digital Channel 01 ~ 06</p> <p>3: Configured as Pulse Channel</p> <p>1: Configured as On/Off Channel, Alarm Input is closed</p> <p>0: Configured as On/Off Channel, Alarm Input is open</p> <p>8th ~17th digits zzzzzzzzz – status of Digital Channel 07 ~ 16</p> <p>1: Configured as On/Off Channel, Alarm Input is closed</p> <p>0: Configured as On/Off Channel, Alarm Input is open</p>
O01:0000	<p>indicates the status of Digital Output [Relay Output]</p> <p>1 Close</p> <p>0 Open</p>
8F	Parity Check
#	End Symbol

Another Example: Upload Interval is 30 minutes

Logging Interval is 15 minutes

D: 2 Logging Interval is 15 minutes

T:02 Number of records is 2 in this data packet

Records at 15:30, 15:45 are packed into the data

```
#STB:000000,000;L:475;TM:0906121530;D:2;T:02;C:17;
```

```
A00:00000|00000;A01:-0.24|-0.24;A02:-0.24|-0.24;A03:-0.24|-0.24;A04:-0.24|-0.24;A05:-0.24|-  
0.24;A06:-0.24|-0.24;A07:-0.24|-0.24;A08:-0.25|-0.25;A09:-0.24|-0.24;A10:-0.24|-0.24;A11:-  
0.24|-0.24;A12:-0.24|-0.24;A13:-0.06|-0.06;A14:-0.06|-0.06;
```

```
P01:00000016|00000016;P02:00000006|00000006;P03:00000005|00000005;P04:00000009|0000  
0009;P05:00000006|00000006;P06:00000006|00000006;
```

```
K01:13333330000000000|13333330000000000;O01:0000|0000;19#
```


AD Channel record data:

A01:3.323|3.323|3.323|3.323

Pulse Channel record data:

P01: 00087032|00087679|0008790|0008790

Digital Input On/Off record data:

K: 13333330000000000|13333330000000000|13333330000000000|13333330000000000

	Data record separator
48	Parity Check
#	End Symbol

- RS232

Max. number of records to be retrieved each time: 99 records

Max. number of records each data packet: 30 records

When more than 30 records are retrieved, more than one data packets will be sent .

For example, 46 records are to be retrieved from the Data Logger.

2 packets will be delivered.

1st packet: 30 records

2nd packet: 16 records

- GSM SMS

Only one record can be retrieved each time via SMS owing to the limitation of SMS text length.

Storage Period:

- 1) Internal Memory: 1MB
- 2) Records can be kept in the device at about 90 days when logging interval is at 15 minutes.
- 3) The storage period can be longer than 90 days when logging interval is set at 60 min.
- 4) When there is no record data on the selected date, packet data will only include characters "9".

D) System Parameters Check

Mode: GSM SMS, RS232, Ethernet

Command: 999999#CHEACK1#

Reply Message:

#STC1:000000,000;L:395;TM:1111141028;PS:999999,888888;SA:1;SD:02,1,1;CP:;0;AP1:012345678
 9012345678;AP2:0123456789012345678;AP3:0123456789012345678;AP4:0123456789012345678
 ;AP5:0123456789012345678;AP6:0123456789012345678;AP7:0123456789012345678;AP8:01234
 56789012345678;DR:001;IE:0;IW:;IN:;ID:CMNET;IA:1;IP:;IY:dyn dns.com;IH:6060;IT:0120;IR:0888;IU
 :1;ER:000;OUT1:0005;OUT2:0005;OUT3:0005;OUT4:0005;SE:0;XH:22;2D#

#STC1:000000,000 Header, Station ID, Hardware Version

L:227 Number of characters in packet from "S" to the last ";" inclusive

TM: 0905161954 Current date time of SMS Data Logger (yymmddhhmm)

PS:999999,888888 Check Password, Setup Password

SA:2 Data Logging Interval

SA	Data Logging Interval
0	No Save
5	1 minute
1	5 minutes
2	15 minutes
3	30 minutes
4	60 minutes

SD:xx,y,z Upload Interval, Data Format, Number of times data is uploaded

xx: Ethernet Upload Interval GSM-NET-HV, NET-THR-HV

y=0: Live Data
 y=1: Packet Data

z= number of re-upload

xx = 00	No Upload	05	15 minutes
12	5 seconds	06	30 minutes
13	15 seconds	07	1 hour
01	30 seconds	08	2 hours
02	1 minute	09	6 hours
03	2 minutes	10	12 hours
04	5 minutes	11	24 hours

When upload interval is

24 hours, data is uploaded every day at 8:00am.

CP:yyyyyyyyyyy,X Control Center Phone Number (receiving SMS), Upload Interval via SMS

X = 0	No Upload	5	1 hour
1	1 minute	6	2 hours
2	5 minutes	7	6 hours
3	15 minutes	8	12 hours
4	30 minutes	9	24 hours

AP1:xxxxxxxxxxx Alarm Phone Number 1
 AP2 is the same for alarm phone number 2
 AP8 is the same for alarm phone number 8

DR:001 ModBus Address

ID:CMNET APN (Access Point Network) – not available in this model

IA:1 Server Location 1: Fixed IP 0: Domain Name

IP: 210.3.32.70 Server Fixed IP Address

IY:dyndns.com Domain Name

IH:5600 Server Port

IT: Acknowledge Interval

IR: Redial Period

IU:1 Connection Protocol 1: UDP Protocol 0: TCP Protocol

ER:000 GSM Module Status

First Digit 0: Module Normal 1: Module Defect

Second Digit 0: SIM Card Normal 1: SIM Card Defect

Third Digit 0: GSM Connection Normal 1: Connection Error

OUT:1:xxxx Time Lapse of Relay 1 ON triggered by Alarm (in seconds)

OUT:2, OUT:3, OUT:4 same for Relay 2, 3, 4

XH:29 Network Signal Strength

3C Parity Check

End Symbol

E) Input Channel Parameters Check

Mode: GSM SMS, RS232, Ethernet

Command: 999999#CHEACK2#

Reply Message:

```
#STC2:000000,000;L:556;AD00:170.0,0.000,0.000,1,170.0,0.000;AD01:1.000,0.000,1.000,1,1.000,0.000;AD02:1.000,0.000,1.000,1,1.000,0.000;AD03:1.000,0.000,1.000,1,1.000,0.000;AD04:1.000,0.000,1.000,1,1.000,0.000;AD05:1.000,0.000,1.000,1,1.000,0.000;AD06:1.000,0.000,1.000,1,1.000,0.000;AD07:1.000,0.000,1.000,1,1.000,0.000;AD08:1.000,0.000,1.000,1,1.000,0.000;AD09:1.000,0.000,1.000,1,1.000,0.000;AD10:1.000,0.000,1.000,1,1.000,0.000;AD11:1.000,0.000,1.000,1,1.000,0.000;AD12:1.000,0.000,1.000,1,1.000,0.000;AD13:1,100.0,0.000;AD14:1,100.0,0.000;PA:011111110000;C5#
```

#STC2:000000,000 Header, Station ID, Hardware Version

L:556 Number of characters in packet from "S" to the last ";" inclusive

AD01: xxxxx,yyyyy,zzzzz,m,aaaaa,bbbbbb

Analog Digital Channel 01

Measuring Upper Limit xxxxx

Measuring Lower Limit yyyyy

Start zero value zzzzz

m 0: disable channel

1: enable channel

2: enable channel and Hi/Lo Alert

Hi Alert Value aaaaa

Lo Alert Value bbbbb

When AD input source is 4~20mA current type and input resistance is configured as 250 ohm, the start zero should be 1.000 (0.004A x 250Ω = 1V).

AD02~12 same as AD01

AD00: Analog Digital Channel 00 = Humidity Sensor
 170.0,0.000,0.000,x,150.0,6.000
 Measuring Upper Limit 170.0
 Measuring Lower Limit 0.000
 Start zero value 0.000
 m 0: disable channel
 1: enable channel
 2: enable channel and Hi/Lo Alert
 Hi Alert Value 150.0
 Lo Alert Value 6.000

AD13: Temperature Sensor 1
 1,120.0,-30.0
 m 0: disable channel
 1: enable channel
 2: enable channel and Hi/Lo Alert
 Hi Alert Value 120.0 °C
 Lo Alert Value -30.0 °C

AD14: Temperature Sensor 2

AD13 & AD14 are integrated with digital temperature sensor DS18B20. Measuring range, upper and lower limits are fixed as below.

Measuring Upper Limit 125.0
 Measuring Lower Limit -50.0

PA:	xyyyyyyymmmm		
	1 st digit	x:	Setting of Power Source Alert
			0 = No Alarm
			1 = AC Power Resume Alarm
			2 = AC Power Loss Alarm
			3 = AC Power Resume/Loss Alarm
	2 nd ~7 th digit	yyyyyy	Setting of Channel IN01 ~ IN06
			0 = Channel Disable
			1 = Pulse Channel Enable
			2 = NO - Close Triggered Alarm
			3 = NC - Open Triggered Alarm
			4 = Change State Triggered Alarm
	8 th ~11 digit	mmmm	Setting of Channel IN07~ IN10
			0 = Channel Disable
			2 = NO- Close Triggered Alarm
			3 = NC - Open Triggered Alarm
			4 = Change State Triggered Alarm
	IN11 ~ IN16		No alarm function
C5	Parity Check		
#	End Symbol		

G) Digital Temperature Sensors Serial Number Check

Mode: GSM SMS, RS232, Ethernet

Command: 999999#CHEACK4#

Reply Message:

```
#STC4:000000,000;L:262;TD1:0060;TD2:0120;TD3:0120;TD4:0120;TD5:0120;TD6:0120;TD7:0120;TD8:0120;TN1:28E7366F03000044;TN2:0000000000000000;TN3:28DF976D030000F1;TN4:2859976D030000A9;TN5:28B0AE6D03000061;TN6:2802876D03000003;TN7:28E1A86D030000E4;TN8:2857C26D030000FD;4F#
```

TDx:mmmm

alarm time delay

TNx:aaaabbbbccccdddd

unique serial number

Each digital temperature sensor DS18B20 has its own and unique serial number.

This is important for fine calibration of each temperature channel.

H) Version Check

Mode: GSM SMS, RS232, Ethernet

Command: 999999#CHECKVR%

Reply Message: SDH828H VA-1 04/26/2011#

26. Setup Command

a) Setup Command Reply Message

Success Reply: #STS:000010, Set Success#

Failure Reply: #STS:000010, Set Fail#

b) Device ID

Mode: GSM SMS, RS232, Ethernet

Command: 888888#ST:xxxxxx# (Default: 000000, Range:00 0000 ~ 999999)

Example: 888888#ST:000010#

c) Password

Mode: GSM SMS, RS232, Ethernet

Command: 888888#PS:xxxxxx,yyyyyy#

xxxxxx Inquiry Password (Default: 999999, Range: any six digits)

yyyyyy Setup Password (Default: 888888, Range: any six digits)

Example: 888888#PS:333333,777777#

d) System Time

Mode: GSM SMS, RS232, Ethernet

Command: 888888#TM:yymmddhhnn#

Example: 888888#TM:0712230615#

e) Data Logging Interval

Mode: GSM SMS, RS232, Ethernet

Command: 888888#SA:X# (Default: 2)

X: This is the interval of data records stored in the device internal memory

X	Data Logging Interval
0	No Save
5	1 minute
1	5 minutes
2	15 minutes
3	30 minutes
4	60 minutes

f) Ethernet Data Upload Interval

Mode: GSM SMS, RS232, Ethernet

Command: 888888#SD:xx,y,z#

xx: Upload Interval Time

xx = 00	No Upload	05	15 minutes
12	5 seconds	06	30 minutes
13	15 seconds	07	1 hour
01	30 seconds	08	2 hours
02	1 minute	09	6 hours
03	2 minutes	10	12 hours
04	5 minutes	11	24 hours

y: Data Format

1: Packet Data

0: Live Data

z: data records to be uploaded within the period to be defined

0: same as upload interval

When upload interval is 1 hour, data records within this 1 hour will be uploaded.

1: records within 2 x upload interval time

When upload interval is 1 hour, data records within the last 2 hours will be uploaded.

2: records within 4 x upload interval time

When upload interval is 1 hour, data records within the last 4 hours will be uploaded.

! When upload interval is 12 or 24 hours, starting time is 08:00 every day and preset in factory. Interval will be counted from 08:00.

Data Upload Interval < 15 minutes, only real time data is uploaded.

Data Upload Interval = or >15 minutes, packet data within the interval will be uploaded.

For example 2: IP Upload Interval = 1 hour, Logging Interval =15 minutes

At 10:00am, data records at 9:15, 9:30, 9:45, 10:00 will be uploaded.

P.S. Data is captured and logged every 15 minutes (Logging Interval) by default. This time interval is found to be appropriate for most applications, but can be modified by user.

g) Control Centre Phone Number

Mode: GSM SMS, RS232, Ethernet

Command: 888888#CP:xxxxxxxxxx!,Y#

Data is transmitted to the preset Control Centre Phone Number over GSM Network. Instead of mobile phone, GSM Modem GS300 can be used to receive the real time data via SMS.

xxxxxxxxxx: Control Centre Phone Number

!: End Symbol

Y: SMS Upload Interval

X = 0	No Upload	5	1 hour
1	1 minute	6	2 hours
2	5 minutes	7	6 hours
3	15 minutes	8	12 hours
4	30 minutes	9	24 hours

Example: 888888#CP:1234561222!,6#

h) Alarm Phone Number

Mode: GSM SMS, RS232, Ethernet

Command: 888888#APY:xxxxxxxxxx!#

xxxxxxxxxx: Alarm Phone Number

!: End Symbol

Y: Total 8 Alarm Phone Numbers can be configured (1 ~ 8)

Example: 888888#AP1:12345612344!#

Max. number of digits for the alarm phone number is 20 digits.

“0” and “+” are supported in the first digit of phone number.

Auto SMS reply

Whenever calls are made from alarm phone number or control number, Data Logger will hang up the line after 3 rings. And then, it will reply with its status to the calling party via SMS.

This feature is designed for instant and easy on site testing of device setup. User does not need to wait the upload interval for the device status report, but is able to get the status immediately by making a call to the device.

i) AD Channel

- Once AD Channel is over/below hi-low alarm level, data logger will upload real time data to Control Centre via SMS DATA.
- AD Channel is measured and compared to Hi/Lo Alarm Level every 2 seconds.
- Even though AD channel is measured every 2 seconds, the measured value will only be logged into memory every 5 minutes.

Mode: GSM SMS, RS232, Ethernet

❖ AD01~12	Analog Digital Channel 01 ~ 12
Command:	888888#ADnn: xxxxx,yyyyy,zzzzz,m,aaaaa,bbbbbb#
nn:	Analog Digital Channel Number (01, 02 ... 12)
xxxxx:	Measuring Upper Limit
yyyyy:	Measuring Lower Limit
zzzzz:	Start zero value
m	0: disable channel 1: enable channel 2: enable channel and Hi/Lo Alert
aaaaa:	Hi Alert Value
bbbbbb:	Lo Alert Value

Example: 888888#AD01:10.00,1.000,1.000,1,9.000,2.000#

When AD input source is 4~20mA current type and input resistance is configured as 250 ohm, the start zero should be 1.000 ($0.004A \times 250\Omega = 1V$).

- ❖ AD00: Analog Digital Channel 00 = Humidity Sensor
- Command: 888888#ADnn: xxxxx,yyyyy,zzzzz,m,aaaaa,bbbbbb#
- nn: Analog Digital Channel Number (00)
- xxxxx: Measuring Upper Limit (value is determined by Auto Calibration)
- yyyyy: Measuring Lower Limit (value is 0)
- zzzzz: Start zero value (value is 0)
- m
 - 0: disable channel
 - 1: enable channel
 - 2: enable channel and Hi/Lo Alert
- aaaaa: Hi Alert Value
- bbbbbb: Lo Alert Value

- Example: 888888#AD00:150.0,0.000,0.000,1,130.0,30.00#

- ❖ AD13: Analog Digital Channel 13 = Temperature Sensor_1
- ❖ AD14: Analog Digital Channel 14 = Temperature Sensor_2
- Command: 888888#ADnn:m,aaaaa,bbbbbb#
- nn: Analog Digital Channel Number (13 or 14)
- m
 - 0: disable channel
 - 1: enable channel
 - 2: enable channel and Hi/Lo Alert
- aaaaa: Hi Alarm Value
- bbbbbb: Lo Alarm Value

- Example: 888888#AD13:1,120.0,-30.0#
- Hi Alert Value 120.0 °C
- Lo Alert Value -30.0 °C

AD13 & AD14 are integrated with digital temperature sensor DS18B20. Measuring range, upper and lower limits are fixed as below and not necessary to be configured.

Measuring Upper Limit	125.0
Measuring Lower Limit	-50.0

Examples of AD Channel Setup:

External Factors

Standard Input Current: 4 ~ 20mA (Starting zero value current: 4mA) – Figure 06

Internal Resistance: 250 Ω

Starting zero value: $Z = 0.004 \times 250 = 1$ (4mA x 250 $\Omega = 1V$)

User Defined Factors

Measuring Upper Limit 20

Measuring Lower Limit 4

Measuring Range: Q = 16

If the measured current is over 19mA, it is considered as “High Alert Level”.

If the measured current is below 7mA, it is considered as “Low Alert Level”.

On Site Measurement

Measured current: C

Analog Channel Value: $A = \frac{(C \times 250 - 0.004 \times 250) \times Q}{(0.02 \times 250 - 0.004 \times 250)}$

Upon the above checking conditions

When current is 19mA, A should be = $\frac{(0.019 \times 250 - 0.004 \times 250) \times 16}{(0.02 \times 250 - 0.004 \times 250)} = 15$

When current is 7mA, A should be = $\frac{(0.007 \times 250 - 0.004 \times 250) \times 16}{(0.02 \times 250 - 0.004 \times 250)} = 3$

Then, the AD Channel should be configured as below:

Measuring Range: 16.00

Starting Zero Value: 1.000

High Threshold Value: 15

Low Threshold Value: 3

j) Power Source & Digital Channel

Mode: GSM SMS, RS232, Ethernet

Command: 888888#PA:xyyyyyymmmm

PA: xyyyyyymmmm

1 st digit	x:	Setting of Power Source Alert
		0 = No Alarm
		2 = AC Power Resume Alarm
		3 = AC Power Loss Alarm
		4 = AC Power Resume/Loss Alarm
2 nd ~7 th digit	yyyyyy	Setting of Channel IN01 ~ IN06
		0 = Channel Disable
		1 = Pulse Channel Enable
		2 = NO - Close Triggered Alarm
		3 = NC - Open Triggered Alarm
		4 = Change State Triggered Alarm
8 th ~11 digit	mmmm	Setting of Channel IN07~ IN10
		0 = Channel Disable
		2 = NO- Close Triggered Alarm
		3 = NC - Open Triggered Alarm
		4 = Change State Triggered Alarm
IN11 ~ IN16		On/Off Channel
		No alarm function

k) Control Relay Output

Mode: GSM SMS, RS232, Ethernet
 Command: 888888#Oa:b#
 a: Digital Output Channel 1 ~ 4
 b: 1 – Output Close
 0 – Output Open
 Example: @888888888#O2:1# will turn on the relay 2

l) Alarm Triggered Relay Output Time Lapse

Mode: GSM SMS, RS232, Ethernet
 Command: 888888#OTa:xxxx#
 a: Digital Output Channel 1 ~ 4
 xxxx:period of relay turned ON (in seconds)
 0000 means relay will be kept ON once alarm is triggered
 Example: @888888888#OT2:0010#
 Relay 2 will be turn on for 10 seconds when alarm is triggered

m) Relay Output Associated Alarms

Mode: GSM SMS, RS232, Ethernet
 Command: 888888#OCa:xxxxxxxxxxxxzzpnnnnnnnnnn#
 a: Relay Output Channel 1 ~ 4

- AD channel will be measured and checked for alarm level every 2 seconds

1 st digit	x	AD00	Humidity
2 nd ~ 13 th digits	yyyyyyyyyyyy	AD01 ~ 12	
14 th ~ 15 th digits	zz	AD13 ~ 14	Temperature 1 & 2

When value = 0, this channel alarm will not trigger relay output.
 When value = 1, this channel high level alarm will trigger the relay output ON.
 When value = 2, this channel low level alarm will trigger the relay output ON.

- Digital input channel will be checked for close or open alarm instantly

16 th digit	p	Power Source
17 th ~ 26 th digits	nnnnnnnnnn	IN01 ~ 10

When value = 0, this channel alarm will not trigger relay output.
 When value = 1, this channel alarm will trigger the relay output ON.

n) Local Data Transmission via RS232 port [GSMS-THR-HV]

Mode: GSM SMS, RS232 Port

Command: 888888#SE:y#

y: 1 enable data upload via RS232 port
upload interval is the same to the Ethernet data upload interval
0 disable data upload via RS232 port

This feature is useful for bench testing before site installation.

Besides, it can be used for local data logging with "GS828_COM" software. Please contact your agent or 3gtrack for software copy and license.

o) Network Data Transmission via Ethernet port [NET-THR-HV, GSM-NET-HV]

Mode: GSM SMS, Ethernet

Command: 888888#SE:y#

y: 1 enable data upload via Ethernet port
upload interval is the same to the Ethernet data upload interval
0 disable data upload via Ethernet port

27. How Data Logger response on alarm?

Alarm is triggered when Digital Input state is changed or AD Input reading is higher or lower than user preset values. User can be alerted via SMS when alarm is triggered.

28.1) Configure the Alarm Text:

Command: 888888#SMSSETYY:X,ZZ,□□□□□ #

YY:	Channel		
	00	Humidity Channel	High Level Alarm
	01 ~ 06	AD01 ~ 06	High Level Alarm
	07 ~ 12	TEMP 3 ~ 8	High Level Alarm
	13	TEMP 1	High Level Alarm
	14	TEMP 2	High Level Alarm
	15	Power Source Alert	Power Resume
	16 ~ 25	IN01 ~ IN10	Close Triggered Alarm
	26	Humidity Channel	Low Level Alarm
	27 ~ 32	AD01 ~ 06	Low Level Alarm
	33 ~ 38	TEMP 3 ~ 8	Low Level Alarm
	39	TEMP 1	Low Level Alarm
	40	TEMP 2	Low Level Alarm
	41	Power Source Alert	Power Loss
	42 ~ 51	IN01 ~ IN10	Open Triggered Alarm
X:	0:	Live Data will be uploaded	[By Default]
	1:	Alarm Text preset by user will be uploaded	

A) When X: 0 and alarm is triggered:

- Live Data will be uploaded to Server via Ethernet header: STH
- Live Data will be sent to Control Centre via SMS header: STH
- Live Data will be sent to Alarm Phone via SMS header: STH

B) When X: 1 and alarm is triggered:

- Live Data will be uploaded to Server via Ethernet header: STH
- Live Data will be sent to Control Centre via SMS header: STH
- Alarm Text will be sent to Alarm Phone via SMS header: STA

ZZ:	Length of Alarm Text	[max. 60]
□□□□□:	Alarm Text e.g. It is hot	[max. 60 characters]

Example:

(1) When Temperature 1 is over alert high value “85.00”, message “It is hot” is sent to user.

Command 888888#SMSSET13:1,09,It is hot#

Alarm Phone receives alarm text message:

STA:000000:TM:2009/12/08/16:10;A13:85.00,It is hot

(2) When Temperature 1 is over alert high value “85.00”, data message is sent to user.

Command 888888#SMSSET13:0,09,It is hot#

Alarm Phone receives data message:

#STH:000000,000;L:310;TM:03/04/2009,09:34;D:1;T:01;C:25;A00:0.166;A01:00000;A02:0.578;A03:00000;A04:00000;A05:00000;A06:00000;A07:00000;A08:00000;A09:00000;A10:00000;A11:0000;A12:00000;A13:31.00;A14:30.93;P01:00000000;P02:00000000;P03:00000000;P04:00000000;P05:00000000;P06:00000000;K01:133333300000000000;O01:0000;8F#

28.2) Read the Alarm Text from data logger

Command: 999999#SMS:YY#

This is to retrieve the alarm text configured by user for verification only.

28. Temperature Alarm Time Delay

- Alarm is triggered when TEMP 1 ~ 8 temperature reading is higher or lower than user preset values.
- Alarm will only be valid when the temperature keeps at higher or lower level for the time delay.
- User will only be alerted via SMS, Ethernet only after the preset delay.
- When temperature reading returns to normal level within the time delay, the alarm will be cancelled.

Configure the Temperature Alarm Delay Time:

Command: 888888#TDY:xxx#

Y: Temperature Channel (TEMP 1 ~ 8)

xxx Delay Time (0000 ~ 9999 seconds)

Note: When the freezer or cold storage door is open for a while, the temperature may rise to an alert level during the worker operation. It is useful to avoid this kind of false alarm.

29. Capturing, Logging & Upload

The section is to explain in detail the relationship among intervals of data capturing, logging and upload.

1. Data Capturing

- It captures data from sensors every 2 seconds.

2. Data Logging

- It logs the captured data into its internal memory in interval of 5/15/30/60 minutes options.
- Logging interval is user programmable.
- Every logging interval, one record of data will be stored in internal memory for upload.

3. Data Upload

- It uploads the logged data records in interval from 5 second up to once a day.
- Upload interval is user programmable.
- When upload interval is larger than logging interval, there will be more than one record. Data can be uploaded in packet containing more than one data record.

For example:

Logging Interval = 5 minutes Upload Interval = 15 minutes

At 8:00 am, device will upload three data records logged at 7:50, 7:55, and 8:00 am in one packet.

At 8:15 am, device will upload three data records logged at 8:05, 8:10, and 8:15 am in one packet.

- When upload interval is smaller than logging interval, real time data record can be uploaded.

For example:

Logging Interval = 5 minutes, Upload Interval = 2 minutes

At 8:00 am, device will upload one data record captured at 8:00 am.

At 8:02 am, device will upload one data record captured at 8:02 am.

- However, data record at 8:02 am will not be logged (saved) in internal memory. But only data captured at 8:00 and 8:15 am will be logged (saved) in internal memory.

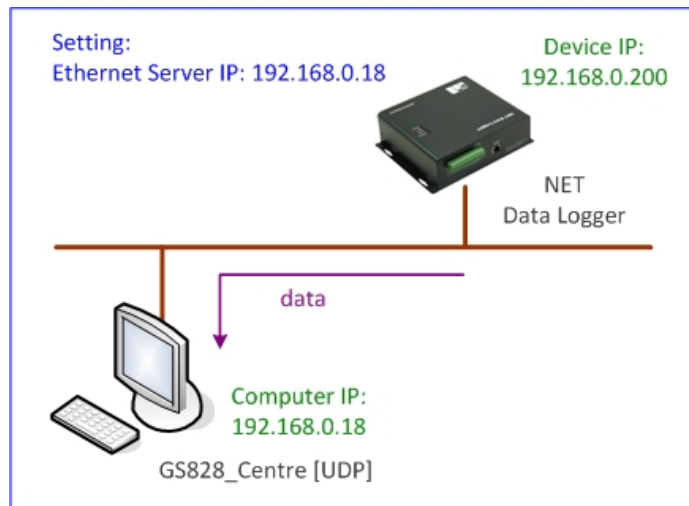
4. Real Time Data Upload

- When it receives 999999#STATUS# command, it will capture the instant data and upload it. That means it will upload the real time data upon this command.
- However, this data record will not be logged (saved) in internal memory.

30. Testing Ethernet Data Upload

Free bundled testing software “GS828_Centre [UDP]” is used to test the GPRS connection, data upload and device operation. Only UDP is supported via Ethernet.

Schematics



Please check carefully your local network and router configuration. In the example case:

- NET Data Logger – its own network configuration

Device IP: 192.168.0.200

Device Port: 7005

- NET Data Logger – server network configuration

Server IP: 192.168.0.18

Server Port: 6005

- Computer running the GS828_Centre should have the following network properties.

Data Logger Centre IP: 192.168.0.18

Local Port: 6005

Router & Router Setup

- * When router is installed between the PC and Internet, please open the ports for UDP and TCP.
- * Open the ports defined by GS828_Centre in the firewall setting.

Please refer to “GS828_Centre” manual for detail.

31. TCP and UDP Operation

31.1) Data Format: TCP

This is a type of handshake data transmission with auto data recovery to ensure accuracy. When the network signal coverage is weak, data transmission bandwidth will be huge.

31.2) Data Format: UDP

This is a type of data upload without checking the data accuracy. Data transmission bandwidth can be expected or preset in advance.

In UPD format, packet data is considered as a secure way of data transmission to ensure the receipt of data in control centre.

GS828 sends out the data packet to control centre (CTR IP). CTR IP replies with “@888” message once it receives the data. GS828 will try to resend the data packet if reply message “@888” is not received.

31.3) Packet Data

When upload interval is larger than logging interval, there will be more than one record. Data can be uploaded in packet containing more than one data record.

For example:

Logging Interval = 5 minutes Upload Interval = 15 minutes

At 8:00 am, data logger uploads three data records logged at 7:50, 7:55, 8:00 am in one packet.

At 8:15 am, data logger uploads three data records logged at 8:05, 8:10, 8:15 am in one packet.

31.4) Live Data

When upload interval is smaller than logging interval, real time data record can be uploaded.

For example:

Logging Interval = 5 minutes, Upload Interval = 2 minutes

At 8:00 am, data logger uploads one data record captured at 8:00 am.

At 8:02 am, data logger uploads one data record captured at 8:02 am.

However, data record at 8:02 am will not be logged (saved) in internal memory. But only data captured at 8:00 and 8:15 am will be logged (saved) in internal memory.

31.5) Data Acknowledge

When Server receives the data from GS828, it will be acknowledged with the GS828 current port number and IP address. A confirmation message "@888" will be replied to GS828. If any control is necessary, CTR IP can send the command as "@888xxxxxx" (e.g. @8888888888#SDx:y#) to GS828 at the same time. Usually, this method of sending command is secure because the port number and IP address of GS828 will remain unchanged within 70 seconds after GS828 sends out data. It is normal that the port number and IP address of GS828 will only be released when GPRS Internet connection is idle after 70 seconds.

31.6) Ack. Interval (Heart Beat)

Heart Beat is used to ensure the integrity of data transmission in UPD protocol. Each time when GS828 sends out the live data or packet data, the Control Centre will reply with message "@888". If GS828 does not receive this reply message within the "Heart Beat Interval", it will send out "@888" message for three times every "Heart Beat Interval" until the reply message "@888" is received from Control Centre.

After failed in three times of heart beat check, GS828 will proceed to "Redial" stage.

By default, heart beat interval is set to 128 seconds but user configurable. Once the reply message is received from Control Centre, the "Heart Beat" counter will reset to zero and restarts again. Logically, "Heart Beat Interval" should be larger than "Upload Interval" in order to avoid repeated heart beat check and waste the GPRS air time.

31.7) Redial Interval

When heart beat check fails three times continuously, GS828H will try to reconnect to the Internet, register a new port number & IP address, and send data after redial interval.

Usually, "Redial Interval" should be twice larger than "Upload Interval".

32. 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, 3gtrack.com declare under our sole responsibility that the product 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.

Customer Support Links

View or download product support information from 3gtrack website:

<http://www.3gtrack.com>

or email contact at: support@3gtrack.com

33. Manufacturer's Disclaimer Statement

The information in this document is subject to change without notice and does not represent a commitment on the part of the vendor. No warranty or representation, either expressed or implied, is made with respect to the quality, accuracy or fitness for any particular purpose of this document. The manufacturer reserves the right to make changes to the content of this document and/or the products associated with it any time without obligation to notify any person or organization of such changes. In no event will the manufacturer be liable for direct, indirect, special, incidental or consequential damages arising out of the use or inability to use this product or documentation, even if advised of the possibility of such damages. This document contains materials protected by copyright. All rights are reserved. No part of this manual may be reproduced or transmitted in any form, by any means or for any purpose without expressed written consent of its authors. Product names appearing in this document are mentioned of identification purposes only. All trademarks, product names or brand names appearing in this document are registered property of their respective owners.

Trademarks

3GTrack and GSMS-THR-HV are the registered trademarks of 3gtrack.com