NAVIXY M7

Protocol Document

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Table of Content

1. Introduction to NAVIXY M7 Protocol Document:

This document describes the protocol of the NAVIXY M7 device. This document is used for all communications information between the base station/controller center and the M7 device. The document includes command syntax with full acknowledgement of sending/receiving messages upon request, also the features/functionalities of each command. Hence, this document covers all information which you need to design/build application/software that uses the M7 as the device.

2. Version History:

Version	Description	Supported Firmware Version	Supported Hardware Version
1.01	Initial commands	V0.002 or above	V1 or above
1.02	- Correction the trigger voltage level for "Low Battery Report" - Added $WP+SLEEP command - Added $WP+PRSET command	V1.000 or above	V1 or above
1.03	- Modified $WP+PSMT function	V1.001 or above	V1 or above
1.04	- Added the following commands: $WP+REC $WP+CLREC $WP+DLREC $WP+SPDLREC - Added logging function to following commands: $WP+LOWBATT $WP+PSMT $WP+SETRA $WP+SLEEP $WP+PRSET	1.002 or above	

3. Related Documents:

M7 Hardware GuideV1.doc

4. Syntax of "$WP" Commands:

- In order to successfully communicate with M7 device, the "$WP" or "$wp" prefix is required when issuing command and the <CR> is required for terminating the command line. Throughout this document, the <CR> char is omitted intentionally.
- The response of the command is usually followed by the <CR><LF> in the end of responding message. Throughout this document, the <CR><LF> chars are omitted intentionally.
- There are two types of the commands and responses will be seen through this documents as following:
  - Two types of command acknowledgement:

Ex 1: Issuing commands (configure the parameters for a command):
Issuing command:
$WP+<Command>+<Tag>=<Password>,<Para>,<Para>,<Para>,….<CR><LF>
Returning acknowledgement:
$OK:<Command>+<Tag>=<Para>,<Para>,<Para>,….<CR><LF>

Ex 2: Querying command parameters (read command parameters):
Issuing command:
$WP+<Command>+<Tag>=<Pwd>,?<CR><LF>
Returning acknowledgement:
$OK:<Command>+<Tag>=<Para>,<Para>,<Para>,<Para>….<CR><LF>

  - Ask for positioning information:

The returning positioning string (for $WP+GETLOCATION or $WP+TRACK) will **NOT** include the "+<command>+<Tag>" in the beginning of the string message. The position data will be displayed as described in the chapter 6.

Please note:
All characters of returning acknowledgement will be in upper case.

- Entering a Series of $WP commands on Separate Lines:
  In order to successfully enter series commands through separate lines, a “pause” is suggested to add between each command (preceding and following commands) until the final responses appears such as “$OK:<Command>”. This action will avoid sending too many $WP commands at the same time but without receiving the responses for each issuing command to ensure the device receiving all command correctly and successfully.

- Default parameters for each command are underlined in this document for reference.
- There are two types of data transmission formats
  - Hex format:
    For GPRS_Keep_Alive packet.
  - ASCII format:
    For all data transmission except the GPRS_Keep_Alive message.

5. Supported Communication Types:

The M7 device supports GSM frequency of 850MHz, 900MHz, 1800MHz, and 1900MHz. The device could be communicated with the base station via several communication ways such as following:

- Direct connection (via USB communication port): Auto-adjustable baud rate.
- GSM SMS messages
- GSM CS Data (GSM Circuited Switch Data): ***(Reserved)***
- GPRS UDP: Static IP address is required for controller center software.
- GPRS TCP/IP: Static IP address is required for controller center.

6. Parameter Format for Returning Messages:

6.1 String Format for Control Center:

The returning position string includes a series parameters indicating as following:

Device ID, DateTime, Longitude, Latitude, Speed, Heading, Altitude, Satellite, Event ID, (Mileage)

Format for each returning messages:

Device ID: The ID of the device. (Maximum length is 10 digits)

DateTime: YYYYMMDDHHMMSS (GMT)

Longitude: WGS-84 coordinate system

Latitude: WGS-84 coordinate system

Speed: 0~65535 km/h

Heading: 0~360 degrees

Altitude: Parameter column is Reserved, currently showing '0'.

Satellite: 0~12

Event ID: xxx.

Different event ID indicates different meaning of each returning message, *Please refer to appendix for detailed description.*

Voltage level: x.xx (V),

This parameter indicates the current voltage level of the internal battery.

Detach button status:

0: Button is not pressed.

1: Button is pressed.

Please Note:

The above information is only for the returning string with "Event ID" parameter.

6.2 SMS message format:

Message Format for the SMS reporting:

Report Header

Unit ID: 3xxxxxxxxx

Report Happening Date/Time: YYYY/MM/DD HH:MM:SS

Lat: xx.xxxxx

Lon: xxx.xxxxx

GPS speed: xxx km/h

Sat: xx

Voltage level of Internal Battery (V): x.xxV

Detach button status: x (0: Deactivated; 1: Activated)

Google Map Link: http://maps.google.com/maps?q=latitude,longitude

7. Command List of WP Commands:

Command	Description
$WP+UNCFG	Set/Read device ID, Password, and PIN Code of the SIM card
$WP+COMMTYPE	Set/Read device communication type and its parameters
$WP+ROAMING	Enable/Disable GPRS roaming function
$WP+GETLOCATION	Get current position data of the device
$WP+TRACK	Enable/disable/read tracking function.
$WP+VLOCATION	Enable the function of “Get the current location by making a phone call”
$WP+LOWBATT	Set/Read the internal battery low level alert
$WP+REBOOT	Restart-up the device
$WP+RESET	Reset all parameters to the manufactory default settings
$WP+IMEI	Query the IMEI number of the internal GSM module
$WP+SIMID	Query the identification of the SIM card
$WP+SETVIP	Pre-set up to 5 SMS phone numbers for receiving difference alerts
$WP+PSMT	Enable/Disable the tracking function of the device
$WP+SETRA	Enable/Disable the detached report
$WP+TEST	Device diagnostic function
$WP+VER	Query the current firmware version.
$WP+ELED	Enable/Disable the LED indicator on/off
$WP+SETTZ	Set the time zone information for the device
$WP+SMSM	Switch the SMS format (Text or PDU mode)
$WP+SLEEP	Enable/Disable “Sleeping Report”
$WP+PRSET	Enable/Disable “Power On/Off” reports (by Detach Button)
$WP+REC	Enable/disable/read logging function to the device
$WP+CLREC	Erase all logging data from the memory of the device
$WP+DLREC	Download entire/selective logging data from the memory of the device
$WP+SPDLREC	Stop downloading logging data from the device.

8. Command Description:

$WP+UNCFG		
Description	Execute this command to configure the device ID, device password, and PIN code of the SIM card.	
Format	Write	$WP+UNCFG+[Tag]=[Password],[Device ID],[New Password],[PIN code]
	Read	$WP+UNCFG+[Tag]=[Password],?
Response	$OK:UNCFG+[Tag]= [Device ID],[New Password],[PIN code]	
Error Response	$ERR:UNCFG+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is "0000"
	Device ID	Device identification number. The maximum length is 10 digits. Only integer can be used. Default device ID is 3000000001 **Note**: The most left digit is reserved in which must be '3'.
	New Password	New password of the device
	PIN Code	The PIN code of the SIM card. The maximum length is 8 digits. 0: Disable

Example	Ex: Issue command: $WP+UNCFG=0000,3000000002,1234,5678 Response: $OK:UNCFG=3000000002,1234,5678
Note	The SIM card will be locked by the TELCO if entering incorrect PIN code for 3 times then the PUK code is required. Please contact the local TELCO to unlock the SIM card.

<table>
<tr><th colspan="4">$WP+COMMTYPE</th></tr>
<tr><td>Description</td><td colspan="3">Execute this command to set the primary communication type and its related parameters.</td></tr>
<tr><td rowspan="2">Format</td><td>Write</td><td colspan="2">$WP+COMMTYPE+[Tag]=[Password],[CommSelect],
[SMS Base Phone No.],[CSD Base Phone No.],[GPRS_APN],
[GPRS_Username],[GPRS_Password],[GPRS_Server_IP_Address]
,[GPRS_Server_Port],[GPRS_Keep_Alive Packet_Interval],
[GPRS_DNS IP address]</td></tr>
<tr><td>Read</td><td colspan="2">$WP+COMMTYPE+[Tag]=[Password],?</td></tr>
<tr><td>Response</td><td colspan="3">$OK:COMMTYPE=[CommSelect],[SMS Base Phone No.],[CSD Base Phone No.],[GPRS_APN],[GPRS_Username],[GPRS_Password],
[GPRS_Server_IP_Address],[GPRS_Server_Port], [GPRS_Keep_Alive_
Packet_Interval],[GPRS_DNS IP address]</td></tr>
<tr><td>Error Response</td><td colspan="3">$ERR:COMMTYPE+[Tag]=[Error Code]
Please refer to appendix 9.2 for detailed error code descriptions.</td></tr>
<tr><td rowspan="3">Parameter</td><td>Tag</td><td colspan="2">The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)</td></tr>
<tr><td>Password</td><td colspan="2">Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”</td></tr>
<tr><td>CommSelect</td><td colspan="2">Set primary communication type:
0: USB communication
Note:
- Support COM numbers: COM 1~ COM 199 auto detectable.
- Unit must be switched on before establishing USB communication.
1: GSM SMS communication
2: CSD: Circuit Switched Data communication(Reserved).</td></tr>
</table>

		3: GPRS UDP communication 4: GPRS TCP/IP communication
	SMS Base Phone No	Base phone number for the GSM SMS base station. Maximum length is 16 digits (could be ignored if uses GPRS communication). **Note:** Please use “” to clear the parameter
	CSD Base Phone No. ***(Reserved)***	Base phone number for the GSM Circuit Switched Data communication. Maximum length is 16 digits (could be ignored if uses GPRS communication). **Note:** Please use “” to clear the parameter
	GPRS_APN	Access Point Name for GPRS service (required for GPRS communication) The maximum length is 40 characters. **Note:** Please use “” to clear the parameter
	GPRS_User name	User name for GPRS service if applicable. The maximum length is 20 characters. **Note:** Please use “” to clear the parameter
	GPRS_Password	Password for GPRS service if applicable. The maximum length is 20 characters **Note:** Please use “” to clear the parameter
	GPRS_Server_IP_ Address	Default setting: 0.0.0.0 1. Static IP address: format xxx.xxx.xxx.xxx (Please do not use virtual IP address) 2. Host/Domain Name (GPRS_DNS server must be defined) for the base station. The maximum length is 40 characters.
	GPRS_Server_Port	The port IP of the computer which the control center software is operating. The available range is from 1000~65535. Default setting: 1000

	GPRS_Keep_Alive Packet Interval	GPRS Keep_Alive Packet is used to establish the GPRS connection and maintain the GPRS connectivity between the device and the base station. The range is between 0~65535 seconds. Default setting: 30 seconds **Note**: Set to '0' to disable sending GPRS Keep_Alive Packet. This parameter will not send any Keep_Alive Packet to the control center.
	GPRS_DNS Server	Domain Name System IP address. Please contact local ISP for the IP address of DNS server. Please use the xxx.xxx.xxx.xxx as the format for this parameter. Default setting: 168.95.1.1
Examples	Ex1: GPRS TCP/IP with static IP address Issue command: $WP+COMMTYPE=0000,4,,,internet,,,60.210.45.68,1050,30,168.95.1.1 Response: $OK:COMMTYPE=4,,,internet,,,60.210.45.68,1050,30,168.95.1.1 Ex2: If the control center use DNS name(Domain Name System) server Issue command: $WP+COMMTYPE=0000,4,,,internet,,,serverDNSNAME,6080,30,168.95.1.1 Response: $OK:COMMTYPE=4,,,internet,,,serverDNSNAME,6080,30,168.95.1.1	
Note	1) If primary communication is GPRS then both parameters "SMS Phone No." and "CSD Phone No." are not required. 2) The port number of GPRS_Server_Port parameter must be opened for the control center software and not conflict with others port which is occupied by OS or other software. 3) Please enable the GPRS service for the SIM card before start GPRS configuration. Also, please obtain related information such as "Access Point Name" (APN), user name (if applicable), and password (if applicable) for GPRS configuration ($WP+COMMTYPE command).	

4) The Static IP address is required for the GPRS communication. Sometimes the failure of GPRS connection is caused by the firewall setting enabled.
5) The software developer must implement the function in the control center software in which must echo back exact GPRS Keep_Alive packet back to the device once the base station receives the GPRS Keep_Alive packet which was sent from the device to confirm the GPRS connection.
6) The performance of the GPRS connectivity might be affected by the Keep_Alive packet interval due to the TELCO policy for the dynamic IP address source control. The optimized Keep_Alive Packet interval needs to be tested in the local area in order to obtain the optimized interval (cost effective).

Keep_Alive message format (Data transmission by Hex format)

```
typedef struct
{
  unsigned short       Keep_Alive_Header;
  unsigned short Keep_Alive_ID;
  unsigned long Keep_Alive_Device_ID;
} Keep_Alivestruct;
```

Keep_Alive_Header is **always** 0xD7D0
Keep_Alive_ID is the sequence number for the Keep_Alive message
Keep_Alive_Device_ID is the device identification number. The base station could use this information to recognize the current holding dynamic IP for each device.

Ex:, received Synchronization message following:
0xD0 0xD7 0x1A 0x01 0xC7 0x54 0x44 0x3C
Keep_Alive_Header = 0xD7 0xD0
Keep_Alive_ID = 0x01 0x1A (Decimal = 282)
Keep_Alive_DeviceID = 0x3C 0x44 0x54 0xC7 (Decimal = 1011111111)

	7) If the control center software is installed in a computer which is located in the “Intranet” then the parameter “GPRS_Server_IP” address should be the external one which connects to the router and the parameter “GPRS_Server_Port” should be the port number of the computer which is assigned by the router. If the parameter “GPRS_Server_IP” address is using “Virtual IP address” in the intranet then it will lead to the GPRS connection failure. 8) If the device is configured under GPRS mode (GPRS UDP/TCP), the device will send the acknowledgement for the receiving command or returning message back to the GMS SMS base phone number once the device receives the command from a GSM SMS phone number other than GSM SMS base phone number. If the GSM SMS base phone number is not set then the device will take the parameters but will not returning any message back to GSM SMS base phone number or GPRS server. 9) Please be aware that if the GSM base phone number is not set, the device has following behaviors: - If the device receives any valid incoming command via GSM SMS, the device will execute the command, but all acknowledgements or returning message will **NOT** be sent and will be ignored. - If the device is configured under GPRS mode (GSM base phone number is set), if the device receives any valid incoming GSM command from a phone number other than GSM base phone number then the device will execute this command and return all acknowledgements and returning messages back to the GSM base phone number. 10) If this command is issued over GSM SMS, please be aware the text length limitation of the GSM message.

$WP+ROAMING		
Description	Execute this command to enable/disable GPRS roaming function. This command does not affect GSM SMS roaming service. If GPRS roaming function is disabled, the device will automatically closed the GPRS session and all undelivered messages would be stored in the queue buffer. Those undelivered messages would be sent out whenever the device returns the non-GPRS roaming network.	
Format	Write	$WP+ROAMING+[Tag]=[Password],[Enable/Disable]
	Read	$WP+ROAMING+[Tag]=[Password],?
Response	$OK:ROAMING+[Tag]=[Enable/Disable]	
Error Response	$ERR:ROAMING+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
	[Enable/ Disable]	0: Disable GPRS roaming function (GPRS communication will be stopped while in GPRS ROAMING area) 1: Enable GPRS roaming function (GPRS communication will be continued while in GPRS ROAMING area)
Example	Ex: Issue command: $WP+ROAMING=0000,1 Response: $OK:ROAMING=1	

$WP+GETLOCATION		
Description	Execute this command to get current position of the device	
Format	Write	$WP+GETLOCATION+[Tag]=[Password]
Response	Device ID, Date/Time, Longitude, Latitude, Speed, Heading, Altitude, Satellite, Event ID, Battery Voltage Level, Detach Button Status	
Error Response	$ERR:GETLOCATION+[Tag]=[Error Code] *Please refer to appendix 8.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
Example	Ex: Issue command: $WP+GETLOCATION=0000 Response: 3100000001,20100713170020,121.123456,25.654321,45,233,0,9,0,4.01,0	
Note	1) The device returns the last valid GPS information upon request regardless the GPS reception. The parameter of “Number of Satellites” is ‘0’ if there is no GPS reception or GPS is not fixed. Thus the parameter of “number of satellite” could be a reference to check whether there is GPS reception or not.	

$WP+TRACK		
Description	Execute this command to enable automatically reporting current position to the base station according to the parameter “mode” and related conditions.	
Format	Write	$WP+TRACK+[Tag]=[Password],[Mode],[Time],[Distance],[Number of Tracking Times],[Track basis],[CommSelect],[Heading]
	Read	$WP+TRACK+[Tag]=[Password],?
Response	$OK:TRACK+[Tag]= [Mode],[Time],[Distance],[Number of Tracking Times],[Track basis],[CommSelect],[Heading]	
Error Response	$ERR:TRACK+[Tag]=[Error Code] *Please refer to appendix 8.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
	Mode	0. Disable (Stop tracking) 1. Time mode: The position information is sent to the base station according to the required time interval, only whole number can be used. Effective range for different communication types: Direct Connection: 1~65535 seconds. GSM SMS: 15~65535 seconds GSM CSD: 5~65535 seconds GPRS UDP/TCP/IP: 5~65535 seconds.

		2. Distance mode: The position information is sent to the base station according to the required distance interval, only whole number can be used. Effective range for different communication types: Direct Connection: 25~65535 meters. GSM SMS: 300 ~65535 meters. GSM CSD: 100~65535 meters. GPRS UDP/TCP/IP: 100~65535 meters.
		3. Time **AND** Distance: The position information is sent back to the base station when following **BOTH** conditions are satisfied: a. "Time Interval" is reached. b. "Distance Interval" is reached.
		4. Time **OR** Distance The position information is sent to the base station when one of the following condition is satisfied: a. "Time Interval" is reached. b. "Distance Interval" is reached.
		5. Heading mode: The position information is sent when the "Heading (direction)" parameter is changed beyond the assigned degrees. Please enter the required value in the "Heading" column.
		6. Heading **OR** Time The position information is sent back to the base station when one of the following condition is satisfied: a. "Heading (direction)" parameter is changed beyond the assigned degrees b. Required "Time Interval" is reached.

		7. Heading **OR** Distance The position information is sent whenever one of the following condition is satisfied: a. "Heading (direction)" parameter is changed beyond assigned degrees b. Required "Distance Interval" is reached.
		8. Heading **OR** (Time **AND** Distance) The position information is sent back to the base station when one of the following condition is satisfied: a. "Heading (direction)" parameter is changed beyond assigned degrees b. Required **BOTH** "Time **AND** Distance Interval" are satisfied.
		9. Heading **OR** Time **OR** Distance The position information is sent whenever one of the following condition is satisfied: a. When the "Heading (direction)" parameter is changed beyond assigned degrees. b. Required "Time Interval" is reached. c. Required "Distance Interval" is reached.
	Time Interval	Specify elapsed time interval to report current position. Default value is '0'. The effective range, please refer to the "mode" parameters option '1' => "Time mode".
	Distance Interval	Specify elapsed distance interval to report current position. Default value is '0'. The effective range, please refer to the "mode" parameters option '2' => "Distance mode".
	Number of Tracking Times	Frequency (number of times the report needs to be sent). Effective range is from 0~65535. Set '0' indicating "Continuously tracking. **Note:** The counter of "Times" will be displayed how many times left while the command is executing when we query the command parameters.

	Track Basis	0. Tracking report is sent ONLY IF GPS is fixed. 1. Tracking report is sent regardless the GPS signal reception
	CommSelect	Set the output communication channel: 0: USB port 1. GSM SMS communication 2. CSD: Circuit Switched Data communication (Reserved, currently not support) 3. GPRS UDP communication 4. GPRS TCP/IP communication **Note**: Support COM numbers: COM 1~ COM 199 auto detectable.
	Heading	The effective value is from 10~90 degrees.
Example	Ex: Issue command: $WP+TRACK=0000,1,5,0,5,0,4,15 Response: $OK:TRACK=1,5,0,5,0,4,15 310000001,20100701180200,121.123456,12.654321,0,233,0,9,2,4.10,1 310000001,20100701180205,121.123456,12.654321,0,233,0,9,2,4.10,1 310000001,20100701180210,121.123456,12.654321,0,233,0,9,2,4.10,1 310000001,20100701180215,121.123456,12.654321,0,233,0,9,2,4.10,1 310000001,20100701180220,121.123456,12.654321,0,233,0,9,2,4.10,1	
Note	1) The mode 2,3,5,7,and 8 require the GPS reception. If the GPS reception is not stable then the accuracy will be decreased. 2) “Track basis” can be set to 1 or 3 when mode is set to 1,4,6,or 9.	

$WP+LOWBATT		
Description	Execute this command to enable/disable the internal battery low alert	
Format	Write	$WP+LOWBATT+[Tag]=[Password],[Report Action],[SMS VIP Mask]
	Read	$WP+LOWBATT+[Tag]=[Password],?
Response	$OK:LOWBATT+[Tag]= [Mask]	
Error Response	$ERR:LOWBATT+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
	Report Action	0: Disable 1: Logging 2: Polling 3: Logging + Polling
	SMS VIP Mask	If the event is triggered then the device could send a SMS alert to up to 5 different pre-defined SMS phone number. The SMS VIP is defined in the $WP+SETVIP command. The bitwise definition is following: 0. Disable 1. SMS VIP 1 2. SMS VIP 2 4. SMS VIP 3 8. SMS VIP 4 16. SMS VIP 5 Ex: Set to 12 means enabled (SMS VIP 3 + SMS VIP 4)

Example	Ex: Issue command: $WP+LOWBATT=0000,3,1 Response: $OK:LOWBATT=3,1
Note	1) When the “Report Action” sets to ‘1’ or “SMS VIP Mask” is enabled, the device will send a “Low Battery” message with the Event ID 40 back to the server or send a “Low Battery “alert to the selected SMS phone numbers when the voltage level of interval battery is lower than 3.66V. 2) When the USB is connected, the “Low Battery” alert will not be generated. 3) The “Low Battery” alert will not be generated while unit is in sleeping mode while execution of $WP+PSMT mode 1 and 2. It will be generated after unit wake up if the condition of “Low Battery” alert is satisfied. 4) SMS format for low battery alert is following: Low Battery 3000000001 2010/04/16 13:11:22 Lat:25.06081 Lon:121.64759 Spd:0Km/h Sat: 8 3.70 1 http://maps.google.com/maps?q=25.06081,121.64759

$WP+VLOCATION		
Description	Execute this command to get the currently GPS information by making a phone call. This function only can be used by the authorized SMS phone numbers.	
Format	Write	$WP+VLOCATION+[Tag]=[Password],[Enable/Disable],[SMS VIP Mask]
	Read	$WP+VLOCATION+[Tag]=[Password],?
Response	$OK:VLOCATION+[Tag]=[Enable/Disable],[SMS VIP Mask]	
Error Response	$ERR:VLOCATION+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
	Enable/ Disable	0: Disable 1: Enable
	SMS VIP Mask	This parameter is to set the authorized SMS phone numbers which is defined in the $WP+SETVIP command to get the current location by making a phone call. This parameter follows the bitwise algorithm and multi selectable: 0. Disable 1. SMS VIP 1 2. SMS VIP 2 4. SMS VIP 3 8. SMS VIP 4 16. SMS VIP 5 Ex: Set to 12 means enabled (SMS VIP 3 + SMS VIP 4)

Example	Ex: Issue command: $WP+VLOCATION=0000,1,6 Response: $OK:VLOCATION=0000,1,6
Note	1) In order to let unit recognize the incoming call phone numbers, please enabled the “Caller ID” function on the mobile phone which making a call to the unit. The SMS format is the following: Location 3000000001 2010/06/25 08:36:10 Lat: 25.06088 Lon: 121.64841 Spd: 8 Km/h Sat:8 3.90 1 http://maps.google.com/maps?q=25.06088,121.64841

$WP+REBOOT		
Description	Execute this command to reboot the device. All settings will be remained.	
Format	$WP+REBOOT+[Tag]=[Password]	
Response	$OK:REBOOT+[Tag]	
Error Response	$ERR:REBOOT+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
Example	Ex: Issue command: $WP+REBOOT=0000 Response: $OK:REBOOT	
Note	1) Please re-establish the direct connection (USB) after issuing the $WP+REBOOT command. The physically unplug and re-plug in the USB cable might be necessary. 2) Please do not issue $WP+REBOOT command over GSM SMS or GPRS while the USB cable is connected to a PC, otherwise the unit needs manually to power it on again.	

$WP+RESET		
Description	Execute this command to reset the device to factory default settings or pre-set settings	
Format	Write	$WP+RESET+[Tag]=[Password]
Response	$OK:RESET+[Tag]	
Error Response	$ERR:RESET+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is "0000"
Example	Ex: Issue command: $WP+RESET=0000 Response: $OK:RESET	
Note	1) The "Device ID" parameter and "PIN code" will be remained the same after executing this command. Other settings will be set back to factory default. 2) If the password is forgotten then the device can accept the last 6 digits of IMEI No. as password in order to reset the device successfully. After "RESET" successfully, all settings will be reset to factory default setting EXCEPT the "Device ID" and "PIN code".	

$WP+IMEI		
Description	Execute this command to query the IMEI No. for the internal GSM module	
Format	$WP+IMEI+[Tag]=[Password]	
Response	$OK:IMEI+[Tag]=IMEI No.	
Error Response	$ERR:IMEI+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is "0000"
Example	Ex: Issue command: $WP+IMEI=0000 Response: $OK:IMEI=357258004284081	

$WP+SIMID		
Description	Execute this command to query the identification number of the SIM card	
Format	$WP+SIMID+[Tag]=[Password]	
Response	$OK:SIMID+[Tag]=SIM card Identification No.	
Error Response	$ERR:SIMID+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the evice and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
Example	Ex: Issue command: $WP+SIMID=0000 Response: $OK:SIMID=87109834789209748618	

$WP+SETVIP		
Description	Execute this command to set up to 5 different mobile phone numbers for the user defined reports.	
Format	Write	$WP+SETVIP+[Tag]=[Password],[VIP 1],[VIP 2],[VIP 3],[VIP 4],[VIP 5]
	Read	$WP+SETVIP+[Tag]=[Password],?
Response	$OK:SETVIP+[Tag]=[VIP 1],[VIP 2],[VIP 3],[VIP 4],[VIP 5]	
Error Response	$ERR:SETVIP+[Tag]=[Error Code] *Please refer to appendix 8.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is "0000"
	VIP 1	Set VIP number 1
	VIP 2	Set VIP number 2
	VIP 3	Set VIP number 3
	VIP 4	Set VIP number 4
	VIP 5	Set VIP number 5
Example	Ex: Issue command: $WP+SETVIP=0000, +886932400821,+886937400841,0933765432, 0911013433, 0987453146 Response: $OK:SETVIP=+886932400821,+886937400841,0933765432,0911013433, 0987453146	

$WP+PSMT		
Description	Execute this command to enable the “Motion Tracking” or “Timer Report”	
Format	Write	$WP+PSMT+[Tag]=[Password],[Mode],[Sleeping Interval] ,[Report Action],[SMS VIP], [Timer 1],[Timer 2],[Timer 3]
	Read	$WP+PSMT+[Tag]=[Password],?
Response	$OK:PSMT+[Tag]=[Mode], [Sleeping Interval],[Report Action],[SMS VIP], [Timer 1],[Timer 2],[Timer 3]	
Error Response	$ERR:PSMT+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
	Mode	0: Enter sleeping mode after 3 minutes of no movement. Behaviors: GSM stand by, GPRS off, GPS off, G-sensor on, 1: Enter sleeping mode after 3 minutes regardless movement detection: Behaviors: GSM off , GPRS off, GPS off, G-sensor off 2: Enter sleeping mode after 3 minutes regardless movement detection Behaviors: GSM off, GPRS off, GPS off, G-sensor off
	Sleeping Interval	Define the time interval which the unit stays in the sleeping state Effective range: 60~65535 minutes **Note**: This parameter only take effect when the “Mode” sets to 1
	Wake Up Report / Timer report Action	0: Disable 1: Logging 2: Polling 3: Logging + Polling

	SMS VIP Mask	When the unit wakes up from the sleeping state, it will generate a “Timer” report and send it up to 5 different pre-defined SMS phone numbers. The SMS VIP is defined in the $WP+SETVIP command. 0. Disable 1. SMS VIP 1 2. SMS VIP 2 4. SMS VIP 3 8. SMS VIP 4 16. SMS VIP 5 Ex: Set to 12 (4+8) means the report will be sent to SMS VIP 3 and 4.
	Timer 1	This parameter is only used when the [Mode] sets to 2 Effective range: 00~23 hr (hour based) Please use “” to clear the setting.
	Timer 2	This parameter is only used when the [Mode] sets to 2 Effective range: 00~23 hr (hour based) Please use “” to clear the setting
	Timer 3	This parameter is only used when the [Mode] sets to 2 Effective range: 00~23 hr (hour based) Please use “” to clear the setting.
Example	Ex: Issue command: $WP+PSMT=0000,1,300,0,2,08,17,18 Response: $OK:PSMT=1,300,0,2,08,17,18	
Note	1) When the parameter “Mode” sets to 0, the unit has the following behaviors: - Unit generates a tracking report (Report ID 2) once it wakes up from the sleeping mode if the $WP+TRACK command is enabled. The tracking report will be generated according to the $WP+TRACK command settings afterwards. - When the G-sensor has detected the movement (vibration) then unit will not enter sleeping state.	

	- Unit will generate a position report with ID 34 when it wakes up from the sleeping state and send it to the assign destinations (i.e. control center, VIP phone numbers) within 3 minutes as soon as the GPS is fixed then enter sleeping state. If GPS can not be fixed within 3 minutes after waking up then a position report will be still sent but with last valid GPS information. 2) When the parameter “Mode” sets to 1, it has the following behavior: - Unit will generate a position report with ID 34 when it wakes up from the sleeping state and send it to the assign destinations (i.e. control center, VIP phone numbers) within 3 minutes as soon as the GPS is fixed then enter sleeping state. If GPS can not be fixed within 3 minutes after waking up then a position report will be still sent but with last valid GPS information. - Once unit enters the sleeping state, it will lose the communication with the server until next waking up. 3) When the parameter “Mode” sets to 2, it has the following behaviors: - The execution of the $WP+TRACK command will be stopped when [Mode] sets to 1 or 2 if $WP+TRACK command is enabled and it will return the $ERR code 2 if user tries to issue the $WP+TRACK command while the mode sets to 1 or 2. - Unit will generate a position report with ID 34 when it wakes up from the sleeping state and send it to the assign destinations (i.e. control center, VIP phone numbers) within 3 minutes as soon as the GPS is fixed then enter sleeping state. If GPS can not be fixed within 3 minutes after waking up then a position report will be still sent but with last valid GPS information. 4) When the USB is connected, unit will not enter sleeping state for all modes. 5) When the USB is connected, the timer report (ID 34) will not be generated.

	6) There are two formats for SMS report of “Report ID 34” with different report headers when operating in different modes:. - For PSM mode 0: Wake Up Report 3000000001 2010/06/25 08:36:10 Lat: 25.06088 Lon: 121.64841 Spd: 8 Km/h Sat:8 3.90V 1 http://maps.google.com/maps?q=25.06088,121.64841 - For PSM mode 1 and 2 Timer Report 3000000001 2010/06/25 08:36:10 Lat: 25.06088 Lon: 121.64841 Spd: 8 Km/h Sat:8 3.90V 1 http://maps.google.com/maps?q=25.06088,121.64841

$WP+SETRA		
Description	Execute this command to enable/disable the detaching report	
Format	Write	$WP+SETRA+[Tag]=[Password],[Report Action],[SMS VIP Mask]
	Read	$WP+SETRA+[Tag]=[Password],?
Response	$OK:SETAR+[Tag]=[Report Action],[SMS VIP Mask]	
Error Response	$ERR:SETAR+[Tag]=[Error Code] Please refer to appendix 9.2 for detailed error code descriptions.	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is "0000"
	Report Action	0: Disable 1: Logging 2: Polling 3: Logging + Polling
	SMS VIP Mask	If the event is triggered then the device could send a SMS alert to up to 5 different pre-defined SMS phone number. The SMS VIP is defined in the $WP+SETVIP command. The bitwise definition is following: 0. Disable 1. SMS VIP 1 2. SMS VIP 2 4. SMS VIP 3 8. SMS VIP 4 16. SMS VIP 5 Ex: Set to 12 means enabled (SMS VIP 3 + SMS VIP 4)

Example	Ex: Issue command: $WP+SETRA=0000,3,1 Response: $OK:SETRA=3,1
Note:	1) The report ID of returning message for control center is 100. 2) The alert will be generated after 3 seconds once the unit detects detaching action. 3) When the USB is connected, the “Removal Alert” will not be generated. 4) Following example is the SMS format: Removal Alert 3000000001 2010/06/25 08:36:10 Lat: 25.06088 Lon: 121.64841 Spd: 8 Km/h Sat:8 3.90 1 http://maps.google.com/maps?q=25.06088,121.64841

<table>
<tr><th colspan="4">$WP+TEST</th></tr>
<tr><td>Description</td><td colspan="3">Execute this command to test major modules status and the voltage level of the device</td></tr>
<tr><td>Format</td><td>Write</td><td colspan="2">$WP+TEST+[Tag]=[Password]</td></tr>
<tr><td rowspan="3">Response</td><td colspan="3">$OK:TEST+[Tag]=[Status], [Voltage Level of internal battery]</td></tr>
<tr><td rowspan="2">Parameter</td><td>Status</td><td>0: No Error occurs.
1: GSM Error.
2: GPS Error
3: GSM and GPS Error</td></tr>
<tr><td>Voltage Level</td><td>The voltage level of the internal backup battery.</td></tr>
<tr><td>Error Response</td><td colspan="3">$ERR:TEST+[Tag]=[Error Code]
Please refer to appendix 9.2 for detailed error code descriptions.</td></tr>
<tr><td rowspan="2">Parameter</td><td>Tag</td><td colspan="2">The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)</td></tr>
<tr><td>Password</td><td colspan="2">Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”</td></tr>
<tr><td>Example</td><td colspan="3">Ex:
Issue command:
$WP+TEST+12345=0000
Response:
$OK:TEST+12345=3,3.9</td></tr>
<tr><td>Note</td><td colspan="3">1) If the device connect to a computer by USB cable then the voltage level always shows higher than 4.2V (approximate value)
2) In order to get actual voltage level of the interval backup battery, this command must be issued via remotely communication such as GSM/GPRS without the device connecting to a computer.
3) This command will not able to be executed if remote communication (SMS/GPRS) is not established.</td></tr>
</table>

$WP+VER		
Description	Execute this command to query the current firmware and hardware version of the device.	
Format	$WP+VER+[Tag]=[Password]	
Response	$OK:VER+[Tag]=firmware version, hardware version	
Error Response	$ERR:VER+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
Example	Ex: Issue command: $WP+VER=0000 Response: $OK:VER=M7 0.002STD rev02,V1	

$WP+ELED		
Description	Execute this command to set the indicator behavior..	
Format	Write	$WP+ELED+[Tag]=[Password],[Mode]
	Read	$WP+ELED+[Tag]=[Password],?
Response	$OK:ELED+[Tag]= [Mode]	
Error Response	$ERR:ELED+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
	Mode	0: LED indicators switch off after 10 seconds of detach button is depressed. 1: LED indicators switch off only when unit in sleeping state
Example	Ex: Issue command: $WP+ELED=0000,1 Response: $OK:ELED=1	
Note	1) When the “Power Adapter” or “USB cable” is connected to the unit, the LED will be enabled automatically until the “Power Adapter” is disconnected.	

$WP+SMSM		
Description	Execute this command to switch the GSM SMS format	
Format	$WP+SMSM+[Tag]=[Password],[Mode]	
Response	$OK:SMSM+[TAG]=[Mode]	
Error Response	$ERR:SMSM +[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is "0000"
	Mode	0: PDU mode 1: Text mode
Example	Ex: Issue command: $WP+SMSM=0000,1 Response: $OK:SMSM=1	

$WP+SETTZ		
Description	Execute this command to setup the local time. The time of returning message will be based on the time zone setting. The default time zone is the GMT time.	
Format	$WP+SETTZ+[Tag]=[Password],[Sign],[Hour],[Minute]	
Response	$OK:SETTZ+[Tag]=[Sign],[Hour],[Minute]	
Error Response	$ERR:SETTZ +[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is "0000"
	Sign	+: ahead GMT time -: behind GMT time
	Hour	Offset hours. Effective range is from 00~13
	Minute	Offset minutes (based on 15 minutes basis). Please select one of following: 00,15,30,45
Example	Ex: Issue command: $WP+SETTZ=0000,+,08,00 Response: $OK:SETTZ=+,08,00	

$WP+SLEEP		
Description	Execute this command to enable/disable “Sleeping Report” before unit entering sleeping state.	
Format	$WP+SLEEP+[Tag]=[Password],[Report Action]	
Response	$OK:SLEEP+[Tag]=[Sign],[Report Action]	
Error Response	$ERR:SLEEP +[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
	Report Action	0: Disable 1: Logging 2: Polling 3: Logging + Polling
Example	Ex: Issue command: $WP+SLEEP=0000,2 Response: $OK:SLEEP=2	
Note	1) The “Sleep Report” might not be able to send out before entering sleeping state depending on the availability of environment. In this case, the report will be placed into the queued buffer and will be sent out whenever the required communication channel is established.	

$WP+PRSET		
Description	Execute this command to enable/disable “Power On” and “Power off” report when the power of the unit is switched on/off by pressing the detach button.	
Format	$WP+PRSET+[Tag]=[Password],[Enable/Disable “Power On” Report], [Enable/Disable “Power off” Report]	
Response	$OK:PRSET+[Tag]=[Sign], [Enable/Disable “Power On” Report], [Enable/Disable “Power off” Report]	
Error Response	$ERR:SLEEP +[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
	Enable/Disable “Power On” Report	0: Disable 1: Logging 2: Polling 3: Logging + Polling
	Enable/Disable “Power off” Report	0: Disable 1: Logging 2: Polling 3: Logging + Polling
Example	Ex: Issue command: $WP+PRSET=0000,2,2 Response: $OK:PRSET=2,2	
Note	1) Report ID for device “Power Off” is “41” The “Power Off” report might not be able to send out before unit shutting down depending on the availability of environment. In this case, the report will be placed into the queued buffer and will be sent out whenever the required communication channel is established.	

	2) Report ID for device “Power On” is “42”. 3) If the power of unit is not switched on/off by detach button then report ID 41 or 42 will not be generated. 4) If the “Detach button” has been pressed for 4 times within 2 seconds while unit is in sleeping state. It will wake up the unit and generate a report ID 42 indicating the unit powers on by the detach button. 5) The “Power On” and “Power Off” report will not always be paired.

$WP+REC		
Description	Execute this command to enable automatically logging current position into the memory of the device according to the parameter “Mode” and corresponding conditions.	
Format	Write	$WP+REC+[Tag]=[Password],[Mode],[Time interval],[Distance Interval],[Number of Times],[Record Basis],[Heading]
	Read	$WP+REC+[Tag]=[Password],?
Response	$OK:REC+[Tag]= [Mode],[Time],[Distance],[Times],[Record basis],[Heading]	
Error Response	$ERR:REC+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
	Mode	0: Disable (Stop storing position data into flash memory)
		1: Time mode: The position information is logged into the memory of the device according to the required time interval, only integer can be used. Effective parameters: Range: 1~65535 seconds.
		2:Distance mode: The position information is logged into the memory of the device according to the required distance interval, only integer can be used. Range: 25~65535 meters. **Note**: For the vehicle application, suggest to set 50 meters or above for better performance.

		3 : Time **AND** Distance The position information is logged into the memory of the device according to the required “Time interval” **AND** “Distance interval”; the position information is not logged if one of the “Time interval” and “Distance interval” does not satisfy.
		4. Time **OR** Distance The position information is sent to the base station when one of the following condition is satisfied: a. “Time Interval” is reached. b. “Distance Interval” is reached.
		5. Heading mode: The position information is sent when the “Heading (direction)” parameter is changed beyond the assigned degrees. Please enter the required value in the “Heading” column.
		6. Heading **OR** Time The position information is sent back to the base station when one of the following condition is satisfied: a. “Heading (direction)” parameter is changed beyond the assigned degrees b. Required “Time Interval” is reached.
		7. Heading **OR** Distance The position information is sent whenever one of the following condition is satisfied: a. “Heading (direction)” parameter is changed beyond assigned degrees b. Required “Distance Interval” is reached.
		8. Heading **OR** (Time **AND** Distance) The position information is sent back to the base station when one of the following condition is satisfied: a. “Heading (direction)” parameter is changed beyond assigned degrees b. Required **BOTH** “Time **AND** Distance Interval” are satisfied.

		9. Heading **OR** Time **OR** Distance The position information is sent whenever one of the following condition is reached: a. When the "Heading (direction)" parameter is changed beyond assigned degrees. b. Required "Time Interval" is reached. c. Required "Distance Interval" is reached.
	Time Interval	Specify elapsed time interval to report current position. Default value is '0'. The effective range, please refer to the "mode" parameters option 1 "Time mode".
	Distance Interval	Specify elapsed distance interval to report current position. Default value is '0'. The effective range, please refer to the "mode" parameters option 2 "Distance mode".
	Number of Times	Frequency (number of times the report needs to be sent). Effective range is from 0~65535. Set '0' indicating "Continuously logging".
	Record Basis	0: Position information is sent only GPS signal available. 1: Position information is sent regardless the GPS signal reception
	Heading	The effective value is from 10~90 degrees.
Example	Ex: Issue command: $WP+REC=0000,1,5,0,0,0,15, Response: $OK:REC=1,5,0,0,0,15	
Notes	1) This function follows the FIFO (first in first out algorithm) algorithm. 2) "Record Basis" parameter can be set to 1 when mode is set to 1, 4, 6,or 9.	

$WP+CLREC		
Description	Execute this command to erase all logging data from the memory of the device.	
Format	$WP+CLREC+[Tag]=[Password]	
Response	$OK:CLREC+[Tag]	
Error Response	$ERR:CLRREC+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameter	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
Example	Ex: Issue command: $WP+CLREC=0000 Response: $OK:CLREC	

<table>
<tr><th colspan="4">$WP+DLREC</th></tr>
<tr><td>Description</td><td colspan="3">Execute this command to download request logging data from the memory of the device</td></tr>
<tr><td rowspan="2">Format</td><td>Write command</td><td colspan="2">$WP+DLREC+[Tag]=[Password],[Start Date/Time],[EndDate/Time]</td></tr>
<tr><td>Read command</td><td colspan="2">$WP+DLREC+[Tag]=0000,?</td></tr>
<tr><td rowspan="2">Response</td><td colspan="3">For Write command:

Command acknowledgement:
$OK:DLREC+[Tag]=[Start Date/Time],[End Date/Time]

Download task completes:
$Download Completed</td></tr>
<tr><td colspan="3">For Read command:
$OK:DLREC=number of logs (start date~end date)

Ex:
$OK:DLREC=586(20110331104515-20110331114951)</td></tr>
<tr><td>Error Response</td><td colspan="3">$ERR:DLREC+[Tag]=[Error Code]
Please refer to appendix 9.2 for detailed error code descriptions.</td></tr>
<tr><td rowspan="4">Parameter</td><td>Tag</td><td colspan="2">The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)</td></tr>
<tr><td>Password</td><td colspan="2">Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”</td></tr>
<tr><td>Start Date/Tim</td><td colspan="2">Format of this parameter: YYYYMMDDHHMMSS or ‘0’
(please refer to the “Note” section for detail)</td></tr>
<tr><td>End Date/Tim</td><td colspan="2">Format of this parameter: YYYYMMDDHHMMSS or ‘0’
(please refer to the “Note” section for detail)</td></tr>
</table>

<table>
<tr><td>Example</td><td>Ex:
Issue command:
$WP+DLREC=0000,0,0
Response:
$OK:DLREC=0,0
3000001111,20110331104515,121.648325,25.059430,0,234,0,8,1,4.20V,1
3000001111,20110331105028,121.648325,25.059430,0,26,0,9,1,4.20V,1
3000001111,20110331105033,121.648325,25.059430,0,316,0,9,1,4.20V,1
3000001111,20110331105038,121.648325,25.059430,0,314,0,9,1,4.20V,1
3000001111,20110331105043,121.648325,25.059430,0,314,0,9,1,4.20V,1
3000001111,20110331105048,121.648325,25.059430,0,314,0,9,1,4.20V,1
3000001111,20110331105053,121.648325,25.059430,0,114,0,9,1,4.20V,1
$Download Completed</td></tr>
<tr><td>Note</td><td>1) If the download process is interrupted by any insertion command/message then the error message “$ERR:7” is sent back to the base station.
2) This command does not support resume function.
3) The value ‘0’ can be used for both parameters “Start Date/Time” and “End Date/ Time”. The corresponding actions are following:
<table>
<tr><th>Start Date/Time</th><th>End Date/Time</th><th>Corresponding data will be downloaded</th></tr>
<tr><td>0</td><td>0</td><td>Get entire logging data from the flash memory</td></tr>
<tr><td>Start Date/Time</td><td>0</td><td>Download selective logging data from the “Start Date/Time” to the last logging data in the flash memory</td></tr>
<tr><td>0</td><td>End Date/Time</td><td>Download selective logging data from the first logging position data to the “End Date/Time” logging data</td></tr>
<tr><td>Start Date/Time</td><td>End Date/Time</td><td>Download selective logging data from the “Start Date/Time” to the “End Date/Time”</td></tr>
</table>
4) This command supports “Resume” function in the GPRS TCP/IP mode. The downloading task could be resumed once the GPRS connection is re-established.</td></tr>
</table>

$WP+SPDLREC		
Description	Execute this command to stop downloading process	
Format	$WP+SPDLREC+[Tag]=[Password],	
Response	$OK:SPDLREC+[Tag]	
Error Response	$ERR:SPDLREC+[Tag]=[Error Code] *Please refer to appendix 9.2 for detailed error code descriptions.*	
Parameters	Tag	The tag could consist of number or character string which can be defined by user. The returning message will include the same tag and it is helpful to recognize the acknowledgements with corresponding issued commands. This tag could be left as empty if it is not used. (Max. 5 characters)
	Password	Password of the device. Only correct password can access the device and change the configuration. The minimum length of character is 4 digits; maximum length of character is 10 digits. It supports numerical characters only. Default password is “0000”
Example	Ex: Issue command: $WP+SPDLREC=0000 Response: $OK:SPDLREC	

9. Appendices:

9.1 Event ID Description:

Event ID	Description	Corresponding command	Remark
0	Position data	$WP+GETLOCATION	
1	Logging data	$WP+REC	
2	Track Position Data	$WP+TRACK	
34	Wake Up Report	$WP+PSMT	
40	Internal Battery Low Alert	$WP+LOWBATT	
41	Power Off the unit by pressing “Detach Button”	$WP+PRSET	
42	Power on the unit by pressing “Detach Button”	$WP+PRSET	
100	Unit Detaching Report	$WP+SETRA	

9.2 Returning Command Error List:

The error list will be indicating to “$ERR: Code number”

Error Code	Description
0	Unknown error
1	Incorrect password
2	Incorrect command parameters
3	GSM SMS base phone number or GPRS Server IP address not set
4	Unable to detect GSM signal
5	GSM Failed
6	Unable to establish the GPRS connection
8	Voice busy tone
9	Incorrect PIN code Setting

Notes:

1. All error codes can be appeared via USB communication.
2. All error code will not be sent back to control center over GSM SMS communication even though the GSM SMS message is the primary communication type..

10. About NAVIXY:

Navixy provides advance solution for satellite tracking related solutions including the various components, Automatic Vehicle Location (AVL) device (data logger & real time tracking devices) and tracking platform. Please contact us at the phone and fax number list below or visit our website for further product information.