

# ***WondeX VT 300***



## ***Protocol Document***

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## 1. Introduction to WondeX VT300 Protocol Document:

This document describes the protocol of the WondeX VT300 devices. This document is used for all communications information between the base station/controller center and the VT 200 devices. The document includes command syntax with full acknowledgement of sending/receiving messages upon request, also the features/functionality of each command. Hence, this document covers all information which you need to design/build application/software that uses the VT300 as the devices.

## 2. Version History:

Version	Description	Supported Firmware Version
1.01	Initial commands	V200_1.001 or above

### 3. Syntax of “\$WP” Commands:

- In order to successfully communicate with VT300 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:

#### 1. Three 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>=<Password>,<?><CR><LF>

**Returning acknowledgement:**

\$OK:<Command>+<Tag>=<Para>,<Para>,<Para>,<Para>....<CR><LF>

Ex3: Query the information (rather than parameters)

**Issuing command:**

\$WP+<Command>+<Tag>=<Password>

**Returning message:**

\$MSG:<Command>=<Para>,<Para>

#### 2. 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 positioning 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 receives 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”.

## 4. Supported Communication Types:

The VT300 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
  - USB communication: Auto-adjustable baud rate.
  - Serial Port: 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 software

**Please note:**

**VT300 currently does not support CDMA communication protocol.**

## 5. Parameter Format for Reurning Messages:

The returning position string includes a series parameters indicating as following:  
 (RP Header), Device ID, DateTime, Longitude, Latitude, Speed, Heading, Altitude, Satellite,  
 Event ID, (Mileage), Input status, Analog port 1 status(input 1), Analog port 2 status (input 2),  
 Output status, RFID TAG identification ,

**Parameter format for returning string:**

**(RP Header):** Header for returning message

**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 Reserved (currently showing '0')

**Satellite:** 0~12

**Event ID:** xxx. Different event ID indicates different meaning of each returning message, *Please refer to appendix 8.1 for detailed description.*

**Mileage:** the mileage value in kilometer

**Input status:** Input status indication (bitwise), the returning value is in "decimal" format. Please convert it to "binary" mode to read the input status:

Ex:

If returning value is 28 (decimal) ⇔ 11100 (Binary):

Corresponding table:

Input port	IG/ACC	Input 4	Input 3	Input 2	Input 1
Binary code	1	1	1	0	0
Status	On	On	On	Off	Off

**Voltage level of Analog 1 :** 0.00~30.00 V

**Voltage level of Analog 2:** 0.00~30.00 V



**Output Status:** Output status indication (bitwise), the returning value is in “decimal” format.

Please convert it to “binary” mode to read the input status:

Ex:

If returning value is 2 (decimal) ⇔ 0010

Corresponding table:

Output port	Output 4	Output 3	Output 2	Output 1
Binary code	0	0	1	0
Status	Off	Off	On	off

**(Text message):** Reserved for future used such as RFID or Barcode message.

**Please Note:**

- The above information is only for the returning string with “Event ID” parameter.

## 6. Command List of WP Commands:

Command	Description
\$WP+UNCFG	Set/Read device ID, Password, PIN Code of the SIM card and input delay time interval
\$WP+COMMTYPE	Set/Read device communication type and its parameters
\$WP+ROAMING	Enable/Disable GPRS roaming function
\$WP+GETLOCATION	Get current position of the device
\$WP+TRACK	Enable/disable/read tracking function to the device
\$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.
\$WP+REBOOT	Restart up the device
\$WP+RESET	Reset all parameters to the manufactory default settings
\$WP+PSM	Enable/disable "Power Saving Mode"
\$WP+SETDR	Set default event for input, main power low/lost, and voltage level of internal battery
\$WP+SETEVT	Enable (set)/disable/read user defined Geo-fencing /Input triggering/ Output Control event(s)
\$WP+SETVIP	Set up to 5 different SMS phone number for user defined event.
\$WP+SACC	Using Voltage level changing to detect ACC on/off event
\$WP+SETAE	Set the analog event
\$WP+AVL	Alignment the voltage reading of the device
\$WP+DISEV	Enable/Disable sending message with event ID information
\$WP+CLEVT	Clear the user defined Geo-Fencing event(s)
\$WP+QBCLR	Clear the queue buffer of the device.
\$WP+IMEI	Query the IMEI number of the internal GSM module
\$WP+SIMID	Query the identification of the SIM card
\$WP+GSMINFO	Query the information about the GSM communication information
\$WP+GBLAC	Enable/disable/query GSM BTS information
\$WP+MGBLAC (Available for Cinterion BG2 GSM module)	Execute this command to query GSM BTS location information
\$WP+SETBR	Execute this command to set the baud rate for the serial port or GPS port
\$WP+VWT	Activate Voice monitoring function
\$WP+VER	Query the current firmware version.
\$WP+NMEA	Enable/disable outputting GPS strings via serial port (NMEA-0183 format)
\$WP+SPD	Enable/disable/read over-speed event

<b>\$WP+OUTC</b>	Set output state/behavior.
<b>\$WP+BATC</b>	Enable/disable backup battery function
<b>\$WP+SETTOW</b>	Enable/disable the tow alert.
<b>\$WP+SETMILE</b>	Set/Reset/Query mileage information
<b>\$WP+TMRR</b>	Set up to reporting position for a certain time up to 3 times a day
<b>\$WP+DCMSG</b>	Send a message from the device to control center
<b>\$WP+CDMSG</b>	Send a message from the control center to device.
<b>\$WP+SETTZ</b>	Set the time zone information
<b>\$WP+RPHEAD</b>	Enable/Disable to carry the header in returning message.

## 7. Command Description:

\$WP+UNCFG	
<b>Description</b>	Execute this command to configure the device ID, device password, PIN code of the SIM card, and the delay time for input ports (input 1~4).
<b>Format</b>	Write \$WP+UNCFG+[Tag]=[Password],[Device ID],[New Password],[PIN code],[Input 1 delay time interval], [Input 2 delay time interval],[Input 3 delay time interval], [Input 4 delay time interval]
	Read \$WP+UNCFG+[Tag]=[Password],?
<b>Response</b>	\$OK:UNCFG+[Tag]= [Device ID],[New Password], [PIN code], [Input 1 delay time interval], [Input 2 delay time interval], [Input 3 delay time interval],[Input 4 delay time interval]
<b>Error Response</b>	\$ERR:UNCFG+[Tag]=[Error Code] <i>Please refer to appendix 8.2 for detailed error code descriptions.</i>
<b>Parameters</b>	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 2000000001 <b>Note:</b> The most left digit is reserved in which must be '2'.
	New Password New password of the device. Default is "0000"
	PIN Code The PIN Code of the SIM card. The maximum length is 8 digits. <b>Note:</b> Please use "" to clear parameter.

	Input 1 delay time interval	Effect time interval 0~255 100ms
	Input 2 delay time interval	Effect time interval 0~255 100ms
	Input 3 delay time interval	Effect time interval 0~255 100ms
	Input 4 delay time interval	Effect time interval 0~255 100ms
<b>Example</b>	<p>Ex:</p> <p>Issue command:  <code>\$WP+UNCFG=0000,2000000002,0000,,10,10,10,10</code></p> <p>Response:  <code>\$OK:UNCFG=2000000002,0000,,10,10,10,10</code></p>	
<b>Notes</b>	<p>1) The SIM card will be locked by the TELCO if enter incorrect PIN code for 3 times then the PUK code is required. Please contact the local TELCO to unlock the SIM card. Please use the Culler phone to unlock the PUK once the card is locked.</p> <p>2) The "Input Delay" status changing detection might not able to be detected if the status changing happens in the "Input Delay" interval after precious state changing. (for both "on" and "off")</p> <p>For example:          If we set an event when input 1 status changing to "ON" state with delay interval of 4 seconds. Once the input 1 event triggers, the next "Input 1 on event" can be detected after 4 seconds in "Off" state.          Please refer to the illustration as below:</p> <div style="text-align: center;"> </div>	

\$WP+COMMTYPE	
<b>Description</b>	Execute this command to set the primary communication type and its related parameters.
<b>Format</b>	Write \$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]
	Read \$WP+COMMTYPE+[Tag]=[Password],?
<b>Response</b>	\$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]
<b>Error Response</b>	\$ERR:COMMTYPE+[Tag]=[Error Code] <i>Please refer to appendix 8.2 for detailed error code descriptions.</i>
<b>Parameters</b>	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"
	CommSelect Set primary communication type: 0. Serial Port communication (8 pin connector) 1. GSM SMS communication 2. CSD: Circuit Switched Data communication (Reserved, currently not support) 3. GPRS UDP communication 4. GPRS TCP/IP communication 5. USB port communication <b>Note:</b> Support COM numbers: COM 1~ COM 199 auto detection.

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). <b>Note:</b> Please use "" to clear the parameter.
CSD Base Phone No. <b>(Reserved)</b>	Base phone number for the GSM Circuit Switched Data communication. Maximum length is 16 digits (could be ignored if uses GPRS communication). <b>Note:</b> Please use "" to clear the parameter.
GPRS_APN	Access Point Name for GPRS service (required for GPRS communication) The maximum length is 40 characters. <b>Note:</b> Please use "" to clear the parameter.
GPRS_Username	User name for GPRS service if applicable. The maximum length is 20 characters. <b>Note:</b> Please use "" to clear the parameter.
GPRS_Password	Password for GPRS service if applicable. The maximum length is 20 characters
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 <b>Note:</b> 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	<p>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.</p> <p>Default setting: 168.95.1.1</p>
<b>Example</b>	<p><b>Ex1:</b> GPRS TCP/IP with static IP address</p> <p>Issue command:</p> <pre>\$WP+COMMTYPE=0000,4,,,internet,,,60.210.45.68,1050,30,168.95.1.1</pre> <p>Response:</p> <pre>\$OK:COMMTYPE=4,,,internet,,,60.210.45.68,1050,30,168.95.1.1</pre> <p><b>Ex2:</b> If the control center use DNS name(Domain Name System) server</p> <p>Issue command:</p> <pre>\$WP+COMMTYPE=0000,4,,,internet,,,serverDNSNAME,6080,30,168.95.1.1</pre> <p>Response:</p> <pre>\$OK:COMMTYPE=4,,,internet,,,serverDNSNAME,6080,30,168.95.1.1</pre>	
<b>Notes</b>	<ol style="list-style-type: none"> <li>1) If primary communication is GPRS then both parameters "SMSPhone No." and "CSD Phone No." are not required.</li> <li>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.</li> <li>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).</li> <li>4) The Static IP address is required for the GPRS communication. Sometimes the failure of GPRS connection is caused by the firewall setting enabled.</li> <li>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.</li> <li>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).</li> </ol>	



7) 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\_Device\_ID = 0x3C 0x44 0x54 0xC7 (Decimal = 1011111111)

8) 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.

9) 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 GSM 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.

- 10) 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.
- 11) If this command is issued over GSM SMS, please be aware the text length limitation of the GSM message.

\$WP+ROAMING							
<b>Description</b>	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 close 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.						
<b>Format</b>	<table border="1"> <tr> <td>Write</td> <td>\$WP+ROAMING+[Tag]=[Password],[Enable/Disable]</td> </tr> <tr> <td>Read</td> <td>\$WP+ROAMING+[Tag]=[Password],?</td> </tr> </table>	Write	\$WP+ROAMING+[Tag]=[Password],[Enable/Disable]	Read	\$WP+ROAMING+[Tag]=[Password],?		
Write	\$WP+ROAMING+[Tag]=[Password],[Enable/Disable]						
Read	\$WP+ROAMING+[Tag]=[Password],?						
<b>Response</b>	\$OK:ROAMING+[Tag]=[Enable/Disable]						
<b>Error Response</b>	\$ERR:ROAMING+[Tag]=[Error Code] <i>Please refer to appendix 8.2 for detailed error code descriptions.</i>						
<b>Parameters</b>	<table border="1"> <tr> <td style="background-color: #cccccc;">Tag</td> <td>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 style="background-color: #cccccc;">Password</td> <td>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 style="background-color: #cccccc;">[Enable/Disable]</td> <td> <u>0</u>. Disable GPRS roaming function            1. Enable GPRS roaming function         </td> </tr> </table>	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]	<u>0</u> . Disable GPRS roaming function 1. Enable GPRS roaming function
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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]	<u>0</u> . Disable GPRS roaming function 1. Enable GPRS roaming function						
<b>Example</b>	<b>Ex:</b> Issue command: \$WP+ROAMING=0000,1 Response: \$OK:ROAMING=1						

\$WP+GETLOCATION					
<b>Description</b>	Execute this command to get current position of the device				
<b>Format</b>	Write      \$WP+GETLOCATION+[Tag]=[Password]				
<b>Response</b>	Device ID, DateTime, Longitude, Latitude, Speed, Heading, Altitude, Satellite, Event ID, Mileage, Input status,(Analog input 1), (Analog input 2), Output status				
<b>Error Response</b>	\$ERR:GETLOCATION+[Tag]=[Error Code] <i>Please refer to appendix 8.2 for detailed error code descriptions.</i>				
<b>Parameters</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">Tag</td> <td style="padding: 5px;">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 style="padding: 5px;">Password</td> <td style="padding: 5px;">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> </table>	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"
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"				
<b>Example</b>	<p><b>Ex:</b></p> <p>Issue command:</p> <p style="padding-left: 40px;">\$WP+GETLOCATION=0000</p> <p>Response:</p> <p>2100000001,20070313170020,121.123456,12.654321,45,233,0,9,0,0,0,3,0.00,0.00,5</p>				
<b>Note</b>	<p>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.</p>				

\$WP+TRACK		
<b>Description</b>	Execute this command to enable automatically reporting current position to the base station according to the parameter "mode" and related conditions.	
<b>Format</b>	Write	\$WP+TRACK+[Tag]=[Password],[Mode],[Time],[Distance],[Number of Tracking Times],[Track basis],[CommSelect],[Heading]
	Read	\$WP+TRACK+[Tag]=[Password],?
<b>Response</b>	\$OK:TRACK+[Tag]= [Mode],[Time],[Distance],[Number of Tracking Times],[Track basis],[CommSelect],[Heading]	
<b>Error Response</b>	\$ERR:TRACK+[Tag]=[Error Code] <i>Please refer to appendix 8.2 for detailed error code descriptions.</i>	
<b>Parameters</b>	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	<p>0. Disable (Stop tracking)</p> <hr/> <p>1. Time mode:</p> <p>The position information is sent to the base station according to the required time interval, only whole number can be used.</p> <p>Effective range for different communication types:</p> <p>Direct Connection: 1~65535 seconds.</p> <p>GSM SMS: 15~65535 seconds</p> <p>GSM CSD: 5~65535 seconds</p> <p>GPRS UDP/TCP/IP: 5~65535 seconds.</p> <hr/> <p>2. Distance mode:</p> <p>The position information is sent to the base station according to the required distance interval, only whole number can be used.</p> <p>Effective range for different communication types:</p> <p>Direct Connection: 25~65535 meters.</p> <p>GSM SMS: 300 ~65535 meters.</p> <p>GSM CSD: 100~65535 meters.</p> <p>GPRS UDP/TCP/IP: 100~65535 meters.</p>

	<p>3. Time <b>AND</b> Distance:</p> <p>The position information is sent back to the base station when following <b>BOTH</b> conditions are satisfied:</p> <ul style="list-style-type: none"> <li>a. "Time Interval" is reached.</li> <li>b. "Distance Interval" is reached.</li> </ul>
	<p>4. Time <b>OR</b> Distance</p> <p>The position information is sent to the base station when one of the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>a. "Time Interval" is reached.</li> <li>b. "Distance Interval" is reached.</li> </ul>
	<p>5. Heading mode:</p> <p>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.</p>
	<p>6. Heading <b>OR</b> Time</p> <p>The position information is sent back to the base station when one of the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>a. "Heading (direction)" parameter is changed beyond the assigned degrees</li> <li>b. Required "Time Interval" is reached.</li> </ul>
	<p>7. Heading <b>OR</b> Distance</p> <p>The position information is sent whenever one of the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>a. "Heading (direction)" parameter is changed beyond assigned degrees</li> <li>b. Required "Distance Interval" is reached.</li> </ul>
	<p>8. Heading <b>OR</b> (Time <b>AND</b> Distance)</p> <p>The position information is sent back to the base station when one of the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>a. "Heading (direction)" parameter is changed beyond assigned degrees</li> <li>b. Required <b>BOTH</b> "Time <b>AND</b> Distance Interval" are satisfied.</li> </ul>

	<p>9. Heading <b>OR</b> Time <b>OR</b> Distance</p> <p>The position information is sent whenever one of the following condition is satisfied:</p> <ol style="list-style-type: none"> <li>When the “Heading (direction)” parameter is changed beyond assigned degrees.</li> <li>Required “Time Interval” is reached.</li> <li>Required “Distance Interval” is reached.</li> </ol>
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	<p>Frequency (number of times the report needs to be sent). Effective range is from 0~65535.</p> <p>Set ‘0’ indicating “Continuously tracking.</p> <p><b>Note:</b></p> <p>The counter of “Times” will be displayed how many times left while the command is executing when we query the command parameters.</p>
Track Basis	<ol style="list-style-type: none"> <li>Tracking report is sent ONLY IF GPS is fixed.</li> <li>Tracking report is sent regardless the GPS signal reception</li> <li>Track report is sent when ACC is on and GPS is fixed</li> <li>Track report is sent when ACC is on regardless whether the GPS signal is fixed or not.</li> </ol>
CommSelect	<p>Set the output communication channel:</p> <ol style="list-style-type: none"> <li>0. Serial port communication</li> <li>1. GSM SMS communication</li> <li>2. CSD: Circuit Switched Data communication (Reserved, currently not support)</li> <li>3. GPRS UDP communication</li> <li>4. GPRS TCP/IP communication</li> <li>5. USB port</li> </ol> <p><b>Note:</b></p> <p>Support COM numbers: COM 1~ COM 199 auto detectable.</p>

	Heading	The effective value is from 10~90 degrees.
<b>Example</b>	<p>Ex:</p> <p>Issue command:</p> <p style="padding-left: 40px;">\$WP+TRACK=0000,1,5,0,5,0,4,15</p> <p>Response:</p> <p style="padding-left: 40px;">\$OK:TRACK=1,5,0,5,0,4,15</p> <p style="padding-left: 40px;">210000001,20070313170020,121.123456,12.654321,0,233,0,9,2,0.0,0,0.00,0.00,0</p> <p style="padding-left: 40px;">210000001,20070313170025,121.123456,12.654321,0,233,0,9,2,0.0,0,0.00,0.00,0</p> <p style="padding-left: 40px;">210000001,20070313170030,121.123456,12.654321,0,233,0,9,2,0.0,0,0.00,0.00,0</p> <p style="padding-left: 40px;">210000001,20070313170035,121.123456,12.654321,0,233,0,9,2,0.0,0,0.00,0.00,0</p> <p style="padding-left: 40px;">210000001,20070313170040,121.123456,12.654321,0,233,0,9,2,0.0,0,0.00,0.00,0</p>	
<b>Notes</b>	<ol style="list-style-type: none"> <li>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.</li> <li>2) "Track basis" can be set to 1 or 3 when mode is set to 1,4,6,or 9.</li> </ol>	



\$WP+REC	
<b>Description</b>	Execute this command to enable automatically logging current position into the memory of the device according to the parameter “Mode” and corresponding conditions.
<b>Format</b>	Write \$WP+REC+[Tag]=[Password],[Mode],[Time],[Distance],[Number of Times],[Record Basis],[Heading]
	Read \$WP+REC+[Tag]=[Password],?
<b>Response</b>	\$OK:REC+[Tag]= [Mode],[Time],[Distance],[Number of Times],[Record basis],[Heading]
<b>Error Response:</b>	\$ERR:REC+[Tag]=[Error Code] <i>Please refer to appendix 8.2 for detailed error code descriptions.</i>
<b>Parameters</b>	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 <u>0</u> . 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. <b>Note:</b> For vehicle application, suggest to set 50 meters or above for better performance.

	<p>3. Time <b>AND</b> Distance:</p> <p>The position information is logged into the memory of the device according to the required “Time interval” <b>AND</b> “Distance interval”; the position information is not logged if one of the “Time interval” and “Distance interval” does not satisfy.</p>
	<p>4. Time <b>OR</b> Distance</p> <p>The position information is logged when one of the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>a. “Time Interval” is reached.</li> <li>b. “Distance Interval” is reached.</li> </ul>
	<p>5. Heading mode:</p> <p>The position information is logged when the “Heading (direction)” parameter is changed beyond the assigned degrees. Please enter the required value in the “Heading” column.</p>
	<p>6. Heading <b>OR</b> Time</p> <p>The position information is logged when one of the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>a. “Heading (direction)” parameter is changed beyond the assigned degrees</li> <li>b. Required “Time Interval” is reached.</li> </ul>
	<p>7. Heading <b>OR</b> Distance</p> <p>The position information is logged whenever one of the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>a. “Heading (direction)” parameter is changed beyond assigned degrees</li> <li>b. Required “Distance Interval” is reached.</li> </ul>
	<p>8. Heading <b>OR</b> (Time <b>AND</b> Distance)</p> <p>The position information is logged when one of the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>a. “Heading (direction)” parameter is changed beyond assigned degrees</li> <li>b. Required <b>BOTH</b> “Time <b>AND</b> Distance Interval” are satisfied.</li> </ul>

		<p>9. Heading <b>OR</b> Time <b>OR</b> Distance</p> <p>The position information is logged whenever one of the following condition is reached:</p> <ol style="list-style-type: none"> <li>a. When the “Heading (direction)” parameter is changed beyond assigned degrees.</li> <li>b. Required “Time Interval” is reached.</li> <li>c. Required “Distance Interval” is reached.</li> </ol>
	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	<p>Frequency (number of times the report needs to be sent). Effective range is from 0~65535.</p> <p>Set ‘0’ indicating “Continuously logging”.</p> <p><b>Note:</b></p> <p>The counter of “Times” will be displayed how many times left while the command is executing when we query the command parameters.</p>
	Record Basis	<p>0. Logging function is executed ONLY IF GPS is fixed.</p> <ol style="list-style-type: none"> <li>1. Logging function is executed regardless the GPS signal reception.</li> <li>2. Logging function is executed when ACC is on and GPS is fixed.</li> <li>3. Logging function is executed when ACC is on regardless whether the GPS signal is fixed or not.</li> </ol>
	Heading	The effective value is from 10~90 degrees.
<b>Example</b>	<p><b>Ex:</b></p> <p>Issue command:</p> <p style="padding-left: 40px;">\$WP+REC=0000,1,5,0,0,0,15</p> <p>Response:</p> <p style="padding-left: 40px;">\$OK:REC=1,5,0,0,0,15</p>	
<b>Notes</b>	<ol style="list-style-type: none"> <li>1) This function follows the FIFO (first in first out algorithm) algorithm.</li> <li>2) 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.</li> <li>3) “Record Basis” parameter can be set to 1 or 3 when mode is set to 1,4,6,or 9.</li> </ol>	