YWT Protocol

Tracker

Contents

1 Introduction

1.1 Document Scope

YWT Protocol applies for our GPS Tracker. Our GPS Tracker includes Car GPS tracker and Personal tracker. Different tracker have the same protocol format, only emphasis on different function.
This Document is a part of YWT Protocol which is mainly focus on the description of car GPS tracker.

YWT Protocol can communicate with tracker device through TCP, UDP, Center SMS, User cell phone SMS and Direct Com Port.

1.2 Relative Document

1.3 Document Habits

Uplink and downlink is defined in the term of GPS Tracker. Sending data to tracker device is called downlink while sending data from tracker device is called uplink.
[…] is used to set up parameter, the inside item of [] means optional input. Optional Item can be nested, once the front item is invalid, the behind item is also invalid.

E.g.: %AT+CXXX = a1 [,a2 [,a3]]]

a1 means a must item, a2 and a3 means optional items, once a2 is not input, then do not input the item behind, there may have the following situations:

%AT+CXXX = a1	Do not input a2 and a3
%AT+CXXX = a1 ,a2	Do not input a3
%AT+CXXX = a1 ,a2 ,a3	Input all the items

Character	ASCII Value	Meaning
<CR>	13	Carriage return character. End command symbol
<LF>	10	Line feed character. End uplink command symbol.
%	37	Start character of Protocol which is also used as password start character.
+	43	Start character of command string.
=	61	Assignment
,	44	Partition symbol among parameter item.
:	58	Partition symbol of uplink response.
>	62	Separator between flag and Info.
;	59	1)Separator between Composite frames. 2) Identifiers for clear command.
?	63	Feature character used as read command.
"	34	Start and ending marks of Character string.

(	40	Start character of certain code string
)	41	Ending character of certain code string.
-	45	Separator of Field or Option
****	92	Escape character of character string.

< …> is used to set up parameter, the String of character inside of <> means the name of the parameter item, It's descript of this value in the other part.

Protocol Marks: The marks in the protocol have the certain meaning as below,

Character String: A string which is consisted of a number of digit, letters and visible marks. If protocol mark or space marks exist in the marks, then (**"**) must be used as the start and ending marks. If not, (**"**) can be used. E.g.: www.our GPStek.com, **"**www.our GPStek.com**"**, **"**string **:** 12 **+** 5 **=** 17**"**

If there is (**"**)or (****) in the character string, then (****) is a must. When character string is received and analyze it, if there is (****), then consider the character behind it as a valid one. E.g. :"content:c:\\windows" means "content:c:\windows"; "Degree:12'33\''44" means"degress:12'33''44"

Digit/Letter string: A character string which is Consisted of digit, letter and decimal point. For simplification, there is no need to use start and ending marks of character string.

Digit string: Consist of pure digit(0-9)

Number String: Consist of digit（0-9）,'+','-', '+'and '-'can only appear as the first character.

Hex characters: Digit（0-9）and letter A-F, 16 characters in all, means 0-15 respectively.

Hex character string: Consist of hex character.

<vacant>: Used as set up parameter means no need to input any character and can be skip by '**,**'.There is no need to input as well as '**,**'if this parameter at the last place. Normally, Parameter <Vacant> means default.

Field: Some parameter items consist of several relevant sub-items which is called Field. They are separated by Separator('-', ASCII value =45), and there is no other Separator and space character. Normally, Field is digit, either digit string or hex character, and also can be character string. If there is a parameter item need to be expended, to add a field is ok. E.g. <DeviceStatus> is consisted by several fields, each field is the hex character string of two character.

Option: It's a parameter, either can be appear or not appear. when command is sent, the parameter is optional. There are also be some changeable parameter when uploading. This way can be adopted.

Format: Option mark>option field 1**-**option field 2…

Option mark must be digit to express the definition of this parameter item. Different option mark has the different definition.

1.4 YWT Syntax Command

Downlink command must be start with "%AT", and end with **<CR>**.If user send command by cell phone, then **<CR>** can be omitted.

After uplink command sent, there will be a response from device, the format as"%<response><**CR**><**LF**>".

To be convenience , it will be omitted <CR><LF> of uplink and uplink <CR> in the later part of this file.

YWT Command （downlink）:

YWT command type	Syntax	Explanations

Read Command	%AT+CXXX[%<password>]?	Return all current parameter value of ” CXXX” command
	%AT+CXXX[%<password>]=<...>?	Return some current parameter value of ” CXXX” command
Write Command	%AT+CXXX[%<password>]=<...>	Set up parameter of ” CXXX” command, also can be used to execute ”CXXX” command which attach parameter.
Delete or refresh command	%AT+CXXX[%<password>]=;	Delete the set parameter and restore to factory value.
Execute command	%AT+CXXX[%<password>]	Execute ”CXXX” command.

YWT device return（Uplink）

YWT return	Syntax	Explanations
Read command response	%QR,<UnitID>:CXXX=<...>	Return current parameter value of ” CXXX” command.
	%ER,<UnitID>:CXXX=4,<ErrorCode>	Error Execution, return error code. Can not return all the parameter
	%ER,<UnitID>:CXXX=5,<ErrorCode>	Error Execution, return error code. Can not return any parameter
Write command response	%OK,<UnitID>:CXXX=1	Execute successfully
	%ER,<UnitID>:CXXX=1,<ErrorCode>	Error Execution, return error code.
	%QR,<UnitID>:CXXX=<...>	Return result for some statistics and inquiry command.
Delete command response	%OK,<UnitID>:CXXX=2	Execute successfully
	%ER,<UnitID>:CXXX=2,<ErrorCode>	Error Execution, return error code.
Execute command response	%OK,<UnitID>:CXXX=3	Execute successfully
	%ER,<UnitID>:CXXX=3,<ErrorCode>	Error Execution, return error code.
Other returns	%GP,<UnitID>:<...>	Responses for Location inquiry
	%RP,<UnitID>:<...>	Real-time track notify, no need to response
	%KP,<UnitID>:<...>	Real-time track notify, need to response from center
	%AP,<UnitID>:<...>	Alarm notify, need to response from center
	%EP,<UnitID>:<...>	Event notify, need to response from center
	%MP,<UnitID>:<...>	Message notify, need to response from center
	%PP,<UnitID>:<...>	Additional location information.
	%SN,<UnitID>:<...>	Synchronous notify
	%PM,<UnitID>:<...>	Picture information
	%CA,<UnitID>:<...>	Authentication code notify

Remarks:

1） <UnitID>is device ID that is the last 10 digit of the device code which all are digit from 0 to 9.It can be make up a 32-digital less than 4294967295.

2） CXXX is command string, combined with capital letter and digit, the first character must be a letter, and the Maximum is 10 characters.

3） <password> means password which is a optional. Normally, it a must to use password when set up command, pls look at the instruction for reference. Password is composed by digits, the factory password is 0000.
There is no need password when set up the device through IP(TCP/UDP).

4） <ErrorCode>means error code execution. For detailed error code, pls look at “error code” in the appendix for reference.

5） <...>means the assemble of the parameter set or returning. Parameter items can be letter, digit or underline, or their combination, every parameter use‘**,**’to separate. It can be **<Vacant>.**

6） The first parameter in OK and ER is a mu,erical value means Command Type.
0 = unknown; 1 = write command; 2 = read command; 3 = Execution; 4 = Inquiry for all parameter; 5 =Inquiry for some(appointed) of parameter.

7） When write center software program, the items which may be added followed by OK and ER need to be considered for the use of extend protocol in future. E.g.
%OK,<UnitID>:CXXX=2, <ExtItem>

8） Support Multiple commands combination sending, please look at Composite Frames for reference.

1.5 URC Return

URC (Unsolicited Result Code） is the code which device return back initiatively. such as the uplink notify after some events.

2 General Definition

2.1 Number

Center Number

Center Number is the number which control the SMS of the center. Send SMS to the device through Center Number can operate the device by Setting, Inquiry, etc. and also, it would receive the alarm and event notify. Through<CCSMS> to set up.

Maintain Number

It’s used to maintain device. It can delete the password and set up parameter.

3 YWT Basic Command

This group commands are used to set up and Inquiry the basic information of the device which include set up password, monitor number, center number, SOS number, time zone, etc. This group commands need password to verify if it’s sent

from Com port or SMS directly.

3.1 %AT+CCPWD

Command Description

To change the password of the device. After execution, password is changed, the later command need to be sent using this new password. Factory password is 0000.

Syntax

Read command

%AT+CCPWD=<OldPassword>, <NewPassword>

Response

%OK,<UnitID>: CCPWD=1

%ER,<UnitID>: CCPWD=1,<ErrorCode>

Parameter Description

<OldPassword>

Password already exist in the device. Digit string,. Maximum is 8 digit.

< NewPassword>

Need to set up new password. Maximum is 8 digit.

Note

- 000 and 0000 is the different password.
- It's necessary to verify the password.

For example

%AT+CCPWD=0000,123456	Change the password to 123456
%OK,3000012345: CCPWD=1	Device 3000012345 password change successfully.

3.2 %AT+CCSMS

Command Description

Read/write SMS number of Control center.

Syntax

Write command

%AT+CCSMS[%<password>]=<ConsoleSmsCode>

[,<ConsoleSmsCode>[,<ConsoleSmsCode>[,<ConsoleSmsCode>]]]

Response
%OK,< UnitID>: CCSMS=1
%ER,< UnitID>: CCSMS=1,<ErrorCode>

Delete Command
%AT+CCSMS[%<password>]=;

Response
%OK,< UnitID>: CCSMS=2
%ER,< UnitID>: CCSMS=2,<ErrorCode>

Read Command
%AT+CCSMS[%<password>]?

Response
%QR,< UnitID>: CCSMS=<ConsoleSmsCode> [,<ConsoleSmsCode>[,<ConsoleSmsCode>[,<ConsoleSmsCode>]]]
%ER,< UnitID>: CCSMS=4,<ErrorCode>

Parameter Description

< password >

Password already exist in the device.

< ConsoleSmsCode >

SMS mnumbe is number string, maximum is 15 characters,
It can set either multiple numbers or single number at a time.

Note

- Maximum is 4 control center SMS number.
- []means optional parameter, check […] for reference.

For example

%AT+CCSMS%0000=; Delete all the SMS numbers
%OK,3000012345: CCSMS=2
%AT+CCSMS%0000=13828765176 Set the first center number as 13828765176
%OK,3000012345: CCSMS=1
%AT+CCSMS%0000=13825275880,13600176845 Set the first center number as 13825275880, the second number is 13600176845
%OK,3000012345: CCSMS=1
%AT+CCSMS%0000="13825275880","+8613600176845" Set the first center number as 13825275880, the second number is 13600176845
%OK,3000012345: CCSMS=1

3.3 %AT+CCAPN

Command Description

Read/write the Point Name provided by the operator(e.g. CMCC, China Mobile Communications Corporation)

Syntax

Write Command

%AT+ CCAPN[%<password>]=<APN> [,<LoginUsername>,<LoginPassword>]

Response

%OK,<UnitID>: CCAPN =1

%ER, <UnitID>: CCAPN =1,<ErrorCode>

Delete or reflash the command

%AT+ CCAPN[%<password>]=**;**

Response

%OK, <UnitID>: CCAPN =2

%ER, <UnitID>: CCAPN =2,<ErrorCode>

Read command

%AT+ CCAPN [%<password>]?

Response

%QR, <UnitID>: CCAPN =<APN>,<LoginUsername>,<LoginPassword>

%ER, <UnitID>: CCAPN =4,<ErrorCode>

Parameter Description

< APN>

Access Point Name. Point Name(APN) provided by CMCC. Maximum is 31 characters of Digit/Letter string.

E.G., CMNET, internet.abc.co.cn

<LoginUsername>

The user name log in the APN net work. Maximum is 31 characters of Digit/Letter string. Most of the APN net work is no need user name or password. Input <vacant> is ok.

<LoginPassword>

The password log in the APN net work., Maximum is 15 characters of Digit/Letter string. Most of the APN net work is no need user name or password. Input <vacant> is ok.

Note

- To make sure that SIM card has GPRS function.

E.g.

%AT+CCAPN%0000=; Delete or refresh APN parameter
%OK,3000012345: CCAPN=2

%AT+ CCAPN%0000=CMNET APN is CMNET, no user name and password.
%OK,3000012345: CCAPN=1

%AT+ CCAPN%0000=internet.abc.co.cn, TestUser,TestName APN is internet.abc.co.cn.
%OK,3000012345: CCAPN=1
%AT+ CCAPN?
%QR,3000012345: CCAPN="internet.abc.co.cn", "TestUser","TestName"

%AT+ CCAPN%0000="internet.abc.co.cn", "TestUser","TestName" the same as above.
%OK,3000012345: CCAPN=1
%AT+ CCAPN?
%QR,3000012345: CCAPN="internet.abc.co.cn", "TestUser","TestName"

3.4 %AT+CCIP

Command Description

Start/Stop the IP of Control center ,can read and write IP parameter of control center.

Syntax

Read Command

%AT+ CCIP[%<password>]=<WorkMode> [,<HostAddress>,<HostPort>,
[<IpType> [, <SyncMode> [,<SyncInterval >[,<SyncInterval2>]]]]]

Response

%OK,<UnitID>: CCIP=1
%ER, <UnitID>: CCIP =1,<ErrorCode>

Delete Command

%AT+ CCIP[%<password>]=;

Response

%OK, <UnitID>: CCIP=2
%ER, <UnitID>: CCIP =2,<ErrorCode>

Read Command

%AT+ CCIP [%<password>]?

Response

%QR, <UnitID>: CCIP =<ConnectState>,<WorkMode>,<HostAddress>,<HostPort>,
<IpType>,<SyncMode>,<SyncInterval >[,<SyncInterval2>]

%ER, <UnitID>: CCIP =4,<ErrorCode>

Parameter Description

<WorkMode>	
0	Suspend IP Connection
1	Keep IP connection. If connected, it will reconnect.
2	Event trigger IP connection.

<HostAddres>

Static WAN IP of the control center. the format is xxx.xxx.xxx.xxx, **E.g.** 192.168.0.1

<HostPort >

Receive port number which control center application program adopted. when port number is selected, make sure that do not let is conflict with the port number in common use.

<IpType>	
0 or<vacant>	TCP mode.
1	UDP mode.
2	TCP+UDP mode. TCP is used for command transfer while UDP is used for data transfer.

Note: car GPS tracker is only support TCP mode.

<SyncMode>	
0 or <vacant>	The synchronous of the device and center adopt the mode of Text message.Uplink marks is <SN>.Monitor center need to response when received it.

<SyncInterval>

The device keep synchronous with control center according to the certain time interval to keep IP connection. To set time interval depends on the operator(CMCC),normally, TCP for 10 minutes, UDP for 30 seconds.

5~65535	Synchronous time interval. Unit is second.
0	Only at the time of connection, device send a Synchronous message.
<vacant>	Keep the value set before. Normally, factory set, TCP for 10 minutes, UDP for 30 seconds

<SyncInterval2>

This item is valid only when <IpType> is TCP+UDP mode. Meanwhile,<SyncInterval> means TCP Synchronous interval,<SyncInterval2> means UDP time interval. UDP time interval is 30 seconds.

5~65535	Synchronous time interval. Unit is second.
0	Only at the time of connection, device send a Synchronous message.

<vacant>	Keep the value set before. Normally, factory set, UDP for 30 seconds

<ConnectState>	
0	Device do not connect with center.
1	Device connected with server.

Note

- Make sure that SIM card's GPRS function was opened.
- The device must send SMS to the server within a certain time interval, otherwise operator(CMCC) will disconnect the IP, then center can not send command to the device.
- If TCP+UDP mode is selected, the control center must open corresponding TCP and UDP channel at the same time.

E.G.

%AT+CCIP%0000=**;**	Delete control center IP parameter
%OK,3000012345: CCIP=2	
%AT+ CCIP%0000 =1, 121.15.154.3, 7676	Require device to connect the TCP port of 121.15.154.3:7676.and send Synchronous message to center every 10 minutes.
%OK,3000012345: CCIP=1	
%AT+CCIP?	Require IP information
%QR,3000012345: 0, 1, 121.15.154.3, 7676, 0,0,600	Do not connect
%SN,3000012345: 0,1,090723182813,400	Through TCP channel, connection Synchronous message send by device.
%AT+SN=0, 1,090723182815,400	Through TCP channel, connection Synchronous response send by control center.
%AT+CCIP?	Require IP information
%QR,3000012345: 1, 1, 121.15.154.3, 7676, 0, 0,600	Connected
%AT+CCIP%0000=0	Stop IP connection, save IP parameter
%OK,3000012345: CCIP=1	
%AT+CCIP?	Require IP information
%QR,3000012345: 0, 1, 121.15.154.3, 7676, 0, 0,600	Disconnect
%AT+CCIP%0000=1	Start to connect according to the previous IP parameter.
%OK,3000012345: CCIP=1	
%SN,3000012345: 0, 1,090723182853,400	Through TCP channel, connection Synchronous message send by device.
%AT+SN=0, 1,090723182855,400	Through TCP channel, connection Synchronous response

	send by control center.
%AT+CCIP%0000=1	reconnect
%OK,3000012345: CCIP=1	
%AT+CCIP?	Require IP information
%QR,3000012345: 0, 1, 121.15.154.3, 7676, 0, 0,600	Disconnect
%SN,3000012345: 0, 1,090723182953,400	Through TCP channel, connection Synchronous message send by device
%AT+SN=0, 1,090723182955,400	Through TCP channel, connection Synchronous response send by control center.
%AT+ CCIP %0000=1, 121.15.154.3, 7677, 1,0,30	Require device to connect the TCP port of 121.15.154.3:7677 with the time interval of 30 seconds.
%OK,3000012345: CCIP=1	
%SN,3000012345: 0, 1,090723183113,400	Through UDP channel, connection Synchronous message send by device.
%AT+SN=0, 1,090723183115,400	Through UDP channel, connection Synchronous response send by control center.
%AT+CCIP?	Require IP information
%QR,3000012345: 1, 1 , 121.15.154.3, 7676, 1,0,30	Connected
%SN,3000012345: 1,090723183143	Through UDP channel, connection Synchronous message send by device.
%AT+SN=1, 1,090723183143	Through UDP channel, connection Synchronous response send by control center.
%SN,3000012345: 1, 1,090723183213	Through UDP channel, connection Synchronous message send by device.
%AT+SN=1, 1,090723183213	Through UDP channel, connection Synchronous response send by control center.

3.5 IP Synchronous (%SN)

Command Description

After device connected with control center, they maybe disconnect due to the network problems. To keep connection all the time, device must send message to control center at a certain time interval, otherwise the command sent by the control center can not reach to device correctly. Device will send a sync message to center when it come across a certain message to check whether connected.

Syntax

Device notify

%SN,<UnitID>:<SyncKind>,<DeviceKind>,<DataTime> [,<ProtocolVersion>,<DeivceFuncSets>,<SyncRandom>]

Center response

%AT+SN=<SyncKind>,<DeviceKind> [,<DataTime> [,<ProtocolVersion>,<CenterFuncSets>]]

Parameter Description

<SyncKind>	
0	Sync message connection. the first message sent by device after connection. It sent as soon as it connected. <ProtocolVersion> is a must to send.
1	Timing sync message. timing sync message sent by device when connecting. time interval set by server. Reference to <SyncInterval>, <SyncInterval2>.
2~19	Diagnostic sync message. For some reason, device send sync message to check connection is valid or not. e.g. after receiving a coming call message.

<DeviceKind>	
0	Normal car GPS tracker
1	Personal tracker
2	Build-in antenna car GPS tracker

<DataTime>	
<vacant>	Do not check the time
YYMMDDhhmmss	Greenwich date

<ProtocolVersion>	
400~999	The protocol version supported by device or control center.400 means version4.00

< DeviceFuncSets >	
Extended function set of device. Format as XX-XX composed with 1-4 fields, every field contains 2 Hex characters.	
<vacant>	Standard function

<SyncRandom>	
	Composed by a string full of several digits or letter. It's a random number have no special meaning.

< CenterFuncSets >	
Function set of center. Format as XX-XX composed with 1-4 fields, every field contains 2 Hex characters. Only a field is used at present.	
<vacant>,3	Default function. Support response of <AP> and <EP>.Do not support function of get place name.
0	Do not support any response. Device no longer to waiting for the response from server when device send <AP> and <EP>.
7	Support response of <AP> and <EP> and get place name.

Note

- It will recalculate the delivery time after device sending whatever message to center. In this case, the time interval of sync message will not be the “sync interval” （<SyncInterval> or <SyncInterval2>）.Device will definitely send a message to control center within the “sync interval”, that is to say, control center will receive a message from device within “sync interval”.
- It’s a must to send<ProtocolVersion> only when sending Sync message connection. other sync message no need to send <ProtocolVersion>.
- <ProtocolVersion>upload by the device means the current protocol support by the device. <ProtocolVersion>sent by control center means the current protocol support by the control center.
- <DataTime>upload by device means time that device was at that moment, <DataTime>sent by control center means the time that the control center was at that moment.
- <DeivceFuncSets>used to extend the function.
- <CenterFuncSets>to check the function that server center can support. e.g. as server center do not support the function of getting place name, then device will not try to get the place name from server center.

E.g.

Reference to CCIP e.g.

3.6 %AT+MAINT

Command Description

Read/write maintain number

Syntax

Write command

%AT+MAINT[%<password>]=<MaintIndex>,<MaintNumber>

Response

%OK, <UnitID>: MAINT =1

%ER, <UnitID>: MAINT =1,<ErrorCode>

Delete command

%AT+ MAINT [%<password>]=;

response

%OK, <UnitID>: MAINT =2

%ER, <UnitID>: MAINT =2,<ErrorCode>

Read command

%AT+ MAINT [%<password>]=<MaintIndex>?

response

%QR, <UnitID>: MAINT =<MaintIndex>,<MaintNumber>

%ER, <UnitID>: MAINT =5,<ErrorCode>

Parameter Description

<MaintIndex>

1~2 Operator maintain number

<MaintNumber>

Operator maintain number. It's a number string with maximum 15 characters.<vacant>means to delete the Index number.

Note

E.g.

%AT+ MAINT %0000=1,13603006624 Set up the first Maintain number.

%OK,3000012345: MAINT =1

%AT+ MAINT %0000=2,13603006654 Set up the second Maintain number.

%OK,3000012345: MAINT =1

3.7 %AT+ZONE

Command Description

Read/Write local time zone

Write command

%AT+ ZONE[%<password>]=<TimeZone>

response

%OK, <UnitID>: ZONE=1

%ER, <UnitID>: ZONE =1,<ErrorCode>

Refresh command

%AT+ ZONE[%<password>]=;

Response
%OK, <UnitID>: ZONE=2
%ER, <UnitID>: ZONE=2,<ErrorCode>

Read command
%AT+ ZONE[%<password>]?

response
%QR, <UnitID>: ZONE=<TimeZone>
%ER, <UnitID>: ZONE=4,<ErrorCode>

Parameter Description

<TimeZone>	
[N]HHMM	Start with “N”(or no) means Greenwich time. GMT. Start with “N” means west longitude equals to “-“,no “N” means east longitude equals to “+”
N1200 ~1300	From-12:00 to +13:00

Note

- Both device and control center adopt Greenwich time(GMT) when they communication.
- When display function attached to the device, it will also show as the local time.

E.g.

%AT+ZONE%0000=0800 Set Chinese time zone GMT+8:00
%OK,3000012345: ZONE=1
%AT+ZONE?
%QR,3000012345: ZONE=0800
%AT+ZONE%0000= N0500 Set east American time zone GMT-05:00

%OK,3000012345: ZONE=1
%AT+ZONE?
%QR,3000012345: ZONE=N0500

4 YWT Location Command

This group commands no need password to verify if the command sent directly by serial port or SMS.

4.1 %AT+GETPOS

Command Description

Get location information

Syntax

Write command

%AT+GETPOS=<GetPosKind> **[**,<UpFormat>**]**

Response

%GP, <UnitID>: <PosKind>, <DateTime>, <Longitude>, <Latitude>, <Altitude>,<Speed>,
<Heading>, <Satellite>,<ReportID>,<DeviceStatus>,<BatteryLevel>,< Cell_ID >, [,<PosOption>**…**]

%ER, <UnitID>: GETPOS=1,<ErrorCode>

Execution (to get the current location)

%AT+ GETPOS

Response

%GP, <UnitID>: <PosKind>, <DateTime>, <Longitude>, <Latitude>, <Altitude>,<Speed>,
<Heading>, <Satellite>,<ReportID>,<DeviceStatus>,<BatteryLevel>,< Cell_ID >, [,<PosOption>**…**]

%ER, <UnitID>: GETPOS=3,<ErrorCode>

Parameter Description

< GetPosKind >	
0	Get current location
1	Get the last valid location. As it's hard to get the device location when it get into a house, because it can not receive a signal from a satellite when it's in a house. while the device leave a valid location information before it get in to a house. through this parameter, location information can be get.
9	Current location+ last valid location. if the current location is valid, it will return back the current location. If not, it will first return back current location then return back the last valid location information. When two these two location return back, it will adopt the format of Composite frames.

< UpFormat >	
0 or <Vacant>	Upload mark as <GP>.

Note

- Where there is AT+GETPOS start, there will return back <GP>.

E.g.

%AT+GETPOS=0

%GP,3000012345:0,090723182813,E114.602345,N22.069725,,30,160,4,0,00,,2794-10FF-46000,3>0-0

<UnitID> = 3000012345
<PosKind>=0
<DateTime> = 090723182813
<Longitude> = East longitude 114.602345
<Latitude> = North latitude 22.069725
<Altitude> = <Vacant>
<Speed> = 30km/h
<Heading> = 160 degree
<Satellite> = Receives four satellite signal
<ReportID> = 0
<DeviceStatus> = 00
<BatteryLevel>= <vacant>
< Cell_ID > = 2794-10FF-46000
<PosOption> = 3>0-0

4.2 %AT+TRACK

Command Description

Real-time tracking to the device

Syntax

Write command

%AT+TRACK=<OnTimeSpan> [,<OffTimeSpan> [,<OffWaitTime> [,<Distance> [,<OtherProp> [,<Times> [,<Duration> [,<UpTarget> [,<UpFormat> [,<UpMinPacket> [,<UpMaxPacket>]]]]]]]]]]

Response

%OK,< UnitID>: TRACK=1

%ER, <UnitID>: TRACK=1,<ErrorCode>

Delete command

%AT+TRACK=;

Response

%OK, <UnitID>: TRACK=2

%ER, <UnitID>: TRACK=2,<ErrorCode>

Note:Stop tracking and delete all the parameter. It's different from <STOPTRACK>.

Read Command

%AT+ TRACK?

Response

%QR, <UnitID>: TRACK=<OnTimeSpan>,<OffTimeSpan>,<OffWaitTime> ,<Distance>,<OtherProp>,<Times>,
<Duration>,<UpTarget> ,<UpFormat> ,<UpMinPacket> ,<UpMaxPacket>

%ER, <UnitID>: TRACK=4,<ErrorCode>

Parameter Description

<OnTimeSpan>

Time interval track for personal tracker when it's moving or Time interval track for car tracker when under ACCON status.

Under this status, device will take sampled location every time interval to record current location and status.

0 , <Vacant>	Do not track when moving
1~43200	Time interval for sampling when moving. Unit/second, for SMS mode, it can not be less than 15 seconds; for GPRS mode, it can set to be 1 second. Considering to the data flow, it's better to repack several sample to upload to center at a time. The maximum time interval is 12 hours.(12*3600seconds)

<OffTimeSpan>

Time interval track for personal tracker when it stay still or Time interval track for car tracker when under ACCOFF status.

Under this status, device will take sampled location every time interval to record current location and status.

When device from motion to motionless status and reach to <OffWaitTime>,and it will track by time interval according to <OffWaitTime>.

<vacant>	The same as <OnTimeSpan>.
0	Do not track when moving
1~43200	Time interval for sampling when stay still. Unit/second, for SMS mode, it can not be less than 15 seconds. The maximum time interval is 12 hours.

<OffWaitTime >

When device from motion to motionless status and reach to <OffWaitTime>,and it will track by time interval according to <OffWaitTime>.Prior to this time, it track according to <OnTimeSpan>.

0 , <vacant>	When device goes to quiescent condition, it will track by time interval according to <OffTimeSpan>.
1~43200	Device for real-time tracking according to <OnTimeSpan>,only when reach up to the appointed time, it will track according to <OffTimeSpan>.Unit:second.

<Distance>

0 , <vacant>	Do not track by distance
10~60000	Track by distance. when the distance between current location and last sampling location reaches to the value of <Distance>, then it will take location sampled. Unit: second. Theoretically, whatever distance can be adopted, it's better to be not less than 50meters.at present, it take sampled by times

of 10 meter.

<OtherProp>	
<vacant>	Track for other event. Default function.<vacant> is requested to be input.

<Times>	
65535 , <vacant>	Keep tracking. No need to consider the numbers of samples which have been taken.
1~60000	Number of times that need to be tracked. start from the very beginning when tracking, it will stop tracking when they add up to the number of times.
0	Response of the device which means stop tracking. This value can not use for downlink command.

<Duration>	
65535 , <vacant>	Keeping tracking. No need to consider the time that it takes.
1~43200	Start from the very beginning when tracking, it will stop tracking automatically when the cumulative time reaches up to the set value.
0	This value can not use for downlink command.

<UpTarget>	
0, <vacant>	Where it start from, the tracking information will be sent there.
1	Upload tracking information to SMS center.
2	Upload tracking information to GPRS center. If TCP mode is adopted,（Pls reference to <IpType> in <CCIP>）, it will send to TCP port; If UDP mode is adopted, it will send to UDP port; IF TCP+UDP mode is adopted, then it will send to TCP port.
3	Upload tracking information to center TCP port. TCP channel must be opened. <IpType> in <CCIP>. Or TCP mode, or TCP+UDP mode.
4	Upload tracking information to center UDP port. UDP channel must be opened. <IpType> in <CCIP>. Or UDP mode, or TCP+UDP mode.
16	Upload tracking information to the directly Com port. Main Com port.

<UpFormat>	
0 , <vacant>	Upload mark <RP>,no need to response from control center.
1	Upload mark <KP>, need to response from control center. It's needed only when location information sent to IP center.

<UpMinPacket >	
0, 1, <vacant>	As long as device receive a piece of tracking information, it will upload to control center.
2~16	The numbers of tracking information reaches to this value, it begin to upload.

<UpMaxPacket >	
<vacant>	Equals to <UpMinPacket>, means always upload location information packet according to appointed requirements.
1	Upload tracking information one by one. Do not packaged.
2~16	The device start to upload tracking information according to this packaged value, if the numbers is not enough, it will upload by the actual number.

0	Upload information according to the maximum number that device can support. The maximum of the package of device is 16.

Note

- When start a new tracking event, the unset messages in the device will be discard.
- When <OffWaitTime> is not 0, it track according to <OnTimeSpan> if device within the time of <OffWaitTime> when goes in to quiescent condition.
- IF <OnTimeSpan> equals to <OffTimeSpan>, it means device can track according to the same time interval no matter what status it is.
- IF <OffTimeSpan> is <vacant>（no need to put in）, it means device can track according to the same time interval no matter what status it is.
- Only When device from motion to motionless and reach the value of <OffWaitTime>, it will track by time interval according to <OffTimeSpan>.
- If track by time（<OnTimeSpan> ,<OffTimeSpan>）and by distance（<Distance>） start at the same time, as long as it meet one of these, it will take sampling and start to calculate the time interval and distance interval from this moment to next moment.
- Start from the very beginning when tracking, it will stop automatically either <Times> or <Duration> reaches the value.
- <Times> and <Duration>, as long as there is no 65535 in one of them, device will not lose power and save this tracking information. that's to say, device will reconnect power and no longer tracking.
- When inquiry tracking parameter, if<Times> is 0, it means stop tracking. Do not judge by other commands like <OnTimeSpan> and<OffTimeSpan>to check whether it stop tracking or not.
- When stop tracking automatically, if the information do not meets the requirement of<UpMinPacket>, device will upload the last information to server at end.
- Every device support only one tracking event no matter <UpTarget>is the same or not. E.g. if tracking information is asked to upload by TCP port ,then com pot tracking is also started, device will stop uploading to TCP port.
- Packet transit can reduce network traffic and improve transmission efficiency but bad real time performance. User can depend on own conditions.
- If<UpFormat>need confirmation from server to make sure every tracking information upload to control center. But it will increase data traffic.
- If<UpFormat>need confirmation from server. Control center only need to give a response when receive packet information from device.
- When <UpMinPacket>=1,<UpMaxPacket>=16（or 0）, means it will upload to server as soon as it receive a tracking information. generally, server only receive one tracking information; But if GPS equipment into GSM signal blind zone, after signal restored, according to not more than 16 way group bag upload, as quickly as possible to upload surcharge data.
- When <UpMinPacket>=1,<UpMaxPacket>=1, When it generates a tracking information then upload, don't group bag processes.
- When <UpMinPacket>=4,<UpMaxPacket>=16, means at least four tracking information, most 16 tracking information group bag upload.

Position group bag

The same location information is more in a package combination in sending together, with< RP >for example.

%RP, <UnitID>: <…> **;** <…>**;** <…><**CR><LF>**

- All location information only one mark (%RP) and terminal ID<UnitID>
- Between information separate with '; '.
- End string with <**CR><LF>**
- each position information content format <... > is consistent.
- if need response from center, only need one response, <ReportID> is the first item's value.

E.g.

%AT+TRACK=60 Start to track for 60 seconds. No matter ACC is connected or not.
%OK,3000012345: TRACK=1
%RP,3000012345:0,090807182815,E114.602345,N22.069725,,30,160,4,0,00 Device return back by time
%RP,3000012345:0,090807182915,E114.602345,N22.069725,,30,160, 4,0,00 Device return back by time
%RP,3000012345:0,090807183015,E114.602345,N22.069725,,30,160, 4,0,00 Device return back by time

%AT+TRACK=30**,** **, , , , ,**2**,**0**,**4**,**0 Start to track for 30 seconds. Upload <<KP>information through GPRS; 4 pieces of information packed upload, maximum 16 pieces.4
%OK,3000012345: TRACK=1
%KP,3000012345:0,090807183115,E114.602345,N22.069725,,30,160,5,0,00**;**
0,090807183145,E114.602345,N22.069725,,30,160,5,0, 00**;**
0,090807183215,E114.602345,N22.069725,,30,160,5,0, 00**;**
0,090807183245,E114.602345,N22.069725,,30,160,5,0,00**;**
%AT+KP=0 center response
%KP,3000012345:0,090807183315,E114.602345,N22.069725,,30,160,5,0,00**;**
0,090807183345,E114.602345,N22.069725,,30,160, 5,0,00**;**
0,090807183415,E114.602345,N22.069725,,30,160, 5,0,00**;**
0,090807183445,E114.602345,N22.069725,,30,160, 5,0,00**;**
%AT+KP=0 center response
%AT+STOPTRACK stop tracking
%OK,3000012345: STOPTRACK=3

4.3 %AT+STOPTRACK

Command Description

Stop tracking command sent by <TRACK> .

Syntax

Execution command
%AT+STOPTRACK

Response
%OK,< UnitID>: STOPTRACK=3
%ER, <UnitID>: STOPTRACK =3,<ErrorCode>

Note

- When stop tracking, the unset messages in the device will be discard.
- After stop tracking, only the value of <Times>and <Duration> is 0, other parameter is reserved. Automatically stop is the same.
- %AT+TRACK=**;** stop tracking and delete all the parameter at the same time.

E.g.

Refer TRACK example

4.4 %AT+TRACK2

Command description

Real time tracking with target by second route

Syntax

Write command
%AT+TRACK2=<OnTimeSpan> [,<OffTimeSpan> [,<Times> [,<UpTarget> [,<UpFormat> [,<UpPacket>]]]]]

Response
%OK,< UnitID>: TRACK2=1
%ER, <UnitID>: TRACK2=1,<ErrorCode>

Delete command
%AT+TRACK2=**;**

Response
%OK, <UnitID>: TRACK2=2
%ER, <UnitID>: TRACK2=2,<ErrorCode>

Note: Stop tracking and delete all the parameter. It is different from <STOPTRACK2>.

Read command
%AT+ TRACK2?

Response
%QR, <UnitID>: TRACK2=<OnTimeSpan>,<OffTimeSpan>,<Times>,<UpTarget> ,<UpFormat> ,<UpPacket>
%ER, <UnitID>: TRACK2=4,<ErrorCode>

Parameter Description

<UpPacket >	
0, 1, <vacant>	Once tracking device generate a tracking info, the upload it to center.
2~16	Only when the amount of tracking info up to this value, then start to upload. Also it is the max amount to upload in package.

Note

- All <TRACK2>, <TRACK3> and <TRACK> are independent tracking command, can be return to different target separately, time interval also can be different separately, namely all parameters are independent. For example can send <TRACK> to ask tracking device return tracking info to center, at the same time can send <TRACK2> to ask tracking device return tracking info to local serial port.
- Also <TRACK2>, <TRACK3> and <TRACK> buffer cache for blind area supplementary report is independent.
- Compare with <TRACK2>, <TRACK3>, <TRACK> can set more tracking parameters, and it is more complex.

4.5 %AT+TRACK3

Command Description

Real time tracking with target by third route

.

Syntax

Write command
%AT+TRACK3=<OnTimeSpan> [,<OffTimeSpan> [,<Times> [,<UpTarget> [,<UpFormat> [,<UpPacket>]]]]]

Response
%OK,< UnitID>: TRACK3=1
%ER, <UnitID>: TRACK3=1,<ErrorCode>

Delete command.
%AT+TRACK3=**;**

Response
%OK, <UnitID>: TRACK3=2
%ER, <UnitID>: TRACK3=2,<ErrorCode>

Note: Stop tracking and delete all the parameter. It is different from <STOPTRACK3>.

Read command

%AT+ TRACK3?

Response

%QR, <UnitID>: TRACK3=<OnTimeSpan>,<OffTimeSpan>,<Times>,<UpTarget> ,<UpFormat> ,<UpPacket>

%ER, <UnitID>: TRACK3=4,<ErrorCode>

Note

- Reference to <TRACK2>.

4.6 %AT+STOPTRACK2

Command Description

Stop tracking command sent by <TRACK2>.

Syntax

Execute command

%AT+STOPTRACK2

Response

%OK,< UnitID>: STOPTRACK2=3

%ER, <UnitID>: STOPTRACK2 =3,<ErrorCode>

Note

- Reference to <STOPTRACK>.

4.7 %AT+STOPTRACK3

Command Description

Stop tracking command sent by <TRACK3>.

Syntax

Execute Command

%AT+STOPTRACK3

Response

%OK,< UnitID>: STOPTRACK3=3

%ER, <UnitID>: STOPTRACK3=3,<ErrorCode>

Note

◆ Reference to <STOPTRACK>.

4.8 %AT+MILEAGE

Command Description

Set up and inquiry mileage of vehicle.

Write command

%AT+ MILEAGE = <Mileage> ,<AcconTotalTime>

Response

%OK, <UnitID>: MILEAGE =1

%ER, <UnitID>: MILEAGE =1,<ErrorCode>

Delete command

%AT+ MILEAGE =;

Response

%OK, <UnitID>: MILEAGE =2

%ER, <UnitID>: MILEAGE =2,<ErrorCode>

注: delete total mileage（<Mileage>）and ACC on total time.（<AcconTotalTime>）

Read command

%AT+ MILEAGE ?

Response

%QR, <UnitID>: MILEAGE = <Mileage> ,<AcconTotalTime>

%ER, <UnitID>: MILEAGE = 4,<ErrorCode>

Parameter Description

< Mileage >	
0.000~2100000.000	Mileage

< AcconTotalTime>	
0 ~ 4294967295	Total time under ACCON status. Unit: second.

Note

- Device will calculate mileage automatically according to GPS information.
- It calculate mileage only when at the status of ACCON.

4.9 %AT+SPEEDING

Command Description

Set up and inquiry over speed alarm and alert.

Write command

%AT+ SPEEDING = <MaxSpeedLimit> , <MinSpeedLimit> , <SpeedLimitTime>, <SpeedAlertSill>, <SpeedAlertTime>

Response

%OK, <UnitID>: SPEEDING =1

%ER, <UnitID>: SPEEDING =1,<ErrorCode>

Delete command

%AT+ SPEEDING =;

Response

%OK, <UnitID>: SPEEDING =2

%ER, <UnitID>: SPEEDING =2,<ErrorCode>

Read command

%AT+ SPEEDING ?

Response

%QR,<UnitID>:SPEEDING=<MaxSpeedLimit>,<MinSpeedLimit>,<SpeedLimitTime>,<SpeedAlertSill>,<SpeedAlertTime>

%ER, <UnitID>: SPEEDING = 4,<ErrorCode>

Parameter Description

< MaxSpeedLimit >	
20 ~ 500	Upper limit of speed, unit: km/h.
0	Cancel upper limit of speed.
<vacant>	Reserved previous set

< MinSpeedLimit >	
1 ~ 130	Lower limit of speed, unit: km/h.
0	Cancel lower limit of speed

<vacant>	Reserved previous set
< SpeedLimitTime >	
1 ~ 240	Vehicle speed exceed the speed limit, there will be a alarm to center when surpass the limit time. Unit: second
0, <空>	Reserved the previous value. Factory value is 30 seconds.
< SpeedAlertSill >	
20 ~ 500	Speed limit voice prompt before over speed. Unit: km/h.
0	No voice prompt
<vacant>	Set speed limit according to <MaxSpeedLimit>, generally, it equals to <MaxSpeedLimit>.
< SpeedAlertTime >	
1 ~ 240	When Vehicle speed exceed the <SpeedAlertSill>, and keep on this speed, then driver will receive a voice prompt for over speed. Unit: second.
0, <vacant>	Reserved the previous value. Factory value is 5 seconds.

Note

- When it exceed<SpeedAlertSill> and keep on <SpeedAlertTime>,there will be a voice prompt to inform driver that he is over speed.
- When speed exceed<MaxSpeedLimit>or less than<MinSpeedLimit>, and keep on <SpeedLimitTime>,then it will send a over speed alarm to server.
- <SpeedAlertTime>less than <SpeedLimitTime>, it will inform driver inadvance,if speed comes down with in <MinSpeedLimit>, there will be no alarm.
- Generally ,we set<SpeedAlertSill>as <MaxSpeedLimit> or little bit lower than <MaxSpeedLimit>.

4.10 Location upload

Command Description

Location information which upload by device

Syntax

Notify for getting location, no need to response from server

%GP, <UnitID>: <PosKind>, <DateTime>, <Longitude>, <Latitude>, <Altitude>,<Speed>,<Heading>,
<Satellite>,<ReportID>,<DeviceStatus>,<BatteryLevel>,< Cell_ID > [,<PosOption>...]

Center response

No response

Notify for real-time track, no need to response from server

%RP, <UnitID>: <PosKind>, <DateTime>, <Longitude>, <Latitude>, <Altitude>,<Speed>, <Heading>,
<Satellite>,<ReportID>,<DeviceStatus>,<BatteryLevel>,< Cell_ID > [,<PosOption>...]

Center response

No response

Notify for real-time track, need to response from server

%KP, <UnitID>: <PosKind>, <DateTime>, <Longitude>, <Latitude>, <Altitude>,<Speed>, <Heading>,
<Satellite>,<ReportID>,<DeviceStatus>,<BatteryLevel>,< Cell_ID > [,<PosOption>...]

Center response

%AT+KP=<ReportID>

Alarm notify, need to response from server

%AP, <UnitID>: <PosKind>, <DateTime>, <Longitude>, <Latitude>, <Altitude>,<Speed>, <Heading>,
<Satellite>,<ReportID>,<DeviceStatus>,<BatteryLevel>,< Cell_ID > [,<PosOption>...]

Center response

%AT+AP=<ReportID>

Event notify, need to response from server

%EP, <UnitID>: <PosKind>, <DateTime>, <Longitude>, <Latitude>, <Altitude>,<Speed>, <Heading>,
<Satellite>,<ReportID>,<DeviceStatus>,<BatteryLevel>,< Cell_ID > [,<PosOption>...]

Center response

%AT+EP=<ReportID>

Message notify, no need to response from server

%MP, <UnitID>: <PosKind>, <DateTime>, <Longitude>, <Latitude>, <Altitude>,<Speed>, <Heading>,
<Satellite>,<ReportID>,<DeviceStatus>,<BatteryLevel>,< Cell_ID > [,<PosOption>...]

Center response

No response

Appendix location message

PP: <PosKind>, <DateTime>, <Longitude>, <Latitude>, <Altitude>,<Speed>, <Heading>,
<Satellite>,<ReportID>,<DeviceStatus>,<BatteryLevel>,< Cell_ID > [,<PosOption>...]

Center response

No response

Note: This message is attached behind to a certain frame as a ancillary information. E.g. when upload Scheduling Information, location frame is attached, so <UnitID> is not need.

Parameter Description

< PosKind >	
0	Current location when sending message. <GP>: Current location
1	Latest valid location
2	Location of present event <RP>,<KP>: mean the location while in tracking sampling <AP>: Location where alarm happen <EP>,<MP>: Location where Present event

<DateTime>	
YYMMDDhhmmss	Greenwich date, YYMMDDhhmmss YY=00-99: 2000 to 2099 MM=01-12: January to December DD=01-31: 1st to 31th hh=00-23: 0 to 23 mm=00-59: 0 to 59 ss=00-59: 0 to 59

<Longitude>	
E000.000000~ E179.999999	WGS-84 coordinate, east longitude
W000.000000~ W179.999999	WGS-84 coordinate , west longitude

<Latitude>	
N00.000000~ N89.999999	WGS-84 coordinate , north latitude
S00.000000~ S89.999999	WGS-84 coordinate , south latitude

< Altitude >	
<vacant>	Device do not support
0~65535	Altitude, unit: meter

<Speed>	
0~65535	speed, Unit: km/h

<Heading>	
0~359	Direction. The right north direction.

<Satellite>

0	No valid satellite, all the location information is invalid.
1~12	Valid number of satellites. Theoretically, the location is valid when the satellites number is equal or more than three, and altitude is valid when it equal or greater than four. Generally, we regard the location information as exact only the satellite number equal or greater than four.

<ReportID>	
xxx-yyy-yyy	Report type. It composed by several fields, separated by **'-'**（ASCII is 45）. xxx is the main report type and it's a decimal digit which must be exist. yyy is the appendix parameter of main report type. Different type has different parameter as well as different numbers. Pls reference to <Report number>
First field xxx	
0	Unknown report
1~65535	Main report type

<DeviceStatus >	
hh-hh-hh-hh	It's used as the different status of device. It composed by several fields, separated by **'-'**（ASCII is 45）Each field is a hex string and contains two hex characters. Every character means four status, thus, every field means 8 different status. Different device has different field. With the function extend, field will be added more, but no more than 12. Every status calculates according to hex. pls reference to <HEX Introduction>.

Note: The definition of field in status pls reference to "Location status"

<BatteryLevel>	
<vacant>	Not support battery

<Cell_ID>	
<vacant>	Do not support CGI(Cell Global Identifier)
LAC-CI-PLMN	GSM CGI. It's composed by 2 or 3 fields. The first field LAC（Location Area Code）is the area code of location to identify location of GSMPLMN, The second field CI（Cell Identity）is the code of cell identity. The third field PLMN is the Code of Operator which is an optional. For these information, server can get the location by Cell ID. If PLMN is not used, the format should be LAC-CI.
The first Field, LAC	
0000~FFFF	Location Area Code. Four Hex character.
The second field, CI	
0000~FFFF	Cell Identity. Four Hex character.
The third field, PLMN	
00000~99999	Five digits, it's a serial no. of PLMN. Generally, it's the same as the SIM card's front five digits.
46000	CUCC(China Union Communications Corporation)
46001	CMCC(China Mobile Communications Corporation)

<PosOption>

Optional. It's used to expand uploaded location information.

Note

- Some optional function will be expanded behind location item, these expanded items are separated by comma.

HEX Introduction

Hex is start with 0x,for every character, it has four status, from the first place to forth place, the value is 0x1,0x2,0x4,0x8.every character has 16 value which are all composed by these four status.

Value	Calculation methods	Explanation
0x0	0	All are "0"for four places.
0x1	0x1	The first place is "1"
0x2	0x2	The second place is "1"
0x3	0x2+0x1	The first and second place all are "1"
0x4	0x4	The third place is "1"
0x5	0x4+0x1	
0x6	0x4+0x2	
0x7	0x4+0x2+0x1	
0x8	0x8	The forth place is "1"
0x9	0x8+0x1	
0xA	0x8+0x2	
0xB	0x8+0x2+0x1	
0xC	0x8+0x4	
0xD	0x8+0x4+0x1	
0xE	0x8+0x4+0x2	
0xF	0x8+0x4+0x2+0x1	All are "1" for four places

Multiple Hex characters group composes a HEX, Two hex characters have 8 status:
0x1,0x2,0x4,0x8,0x10,0x20,0x40,0x80

4.11 Location Optional

Command Description

Location upload optional information. Different device has different options.

Syntax

Format of mileage

3 > <Mileage> - <AcconTotalTime>

Format of number option

15 > <NumIndex> - <Numeral>

5 YWT Trace Record

No need password verify if it's sent by com port or SMS directly.

5.1 %AT+RECORD

Command Description

Set the way to store the trace of the device.

Syntax

Write command

%AT+RECORD=<OnTimeSpan> [,<OffTimeSpan> [,<OffWaitTime> [,<Distance> [,<OtherProp>]]]]

Response

%OK,< UnitID>: RECORD =1

%ER, <UnitID>: RECORD =1,<ErrorCode>

Delete command

%AT+ RECORD =;

Response

%OK, <UnitID>: RECORD =2

%ER, <UnitID>: RECORD =2,<ErrorCode>

Note: equals to <STOPTRACK>

Read command

%AT+ RECORD?

Response

%QR, <UnitID>: RECORD =<OnTimeSpan>,<OffTimeSpan>,<OffWaitTime> ,<Distance>,<OtherProp>

%ER, <UnitID>: RECORD =4,<ErrorCode>

Parameter Description

Set the way to store the trace of the device.
Reference to <TRACK>

Note

- Factory value of <OnTimeSpan>is 30, i.e. record 1 time every 30s in the status of motion.
- Track information which stored in the device need to be extracted by special software.

6 Communication and Message

This group of commands need password verify if it's sent by directly com port or SMS.

6.1 %AT+LISTEN

Command Description

It request to dial the appointed number and do voice monitor. once it's connected, the user of the appointed number can hear the sound around the device.

Write command
%AT+LISTEN = <ListenPhoneCode>

Response
%OK, <UnitID>: LISTEN=1
%ER, <UnitID>: LISTEN =1,<ErrorCode>

Note: use <ListenPhoneCode>for voice monitor

Execute Command
%AT+LISTEN

Response
%OK, <UnitID>: LISTEN=3
%ER, <UnitID>: LISTEN =3,<ErrorCode>

Note: To do voice monitor using the SMS sent number

Parameter Description

< ListenPhoneCode>

Phone number which is use to voice-monitor of the device. It's a number string, and maximum character is 15.

Note

- When voice monitor to device, it cannot hear the sound of its opposite side.

◆ When voice monitor to device, it cannot hang up by itself. only waiting for opposite side to hang up.

E.g.

%AT + LISTEN=075583103002 Request to make a call and answer by 075583103002 %OK,3000012345: LISTEN=1

%AT + LISTEN Request to make a call and answer by 075583103002

%OK,3000012345: LISTEN=3

6.2 %AT+LISTENER

Command Description

Read/write monitor number

Syntax

Write command

%AT+ LISTENER[%<password>]=<ListenerIndex>,<ListenerNumber>

Response

%OK, <UnitID>: LISTENER =1

%ER, <UnitID>: LISTENER =1,<ErrorCode>

Delete command

%AT+ LISTENER[%<password>]=;

Response

%OK, <UnitID>: LISTENER =2

%ER, <UnitID>: LISTENER =2,<ErrorCode>

Read command

%AT+ LISTENER [%<password>]=<ListenerIndex>?

response

%QR, <UnitID>: LISTENER =<ListenerIndex>,<ListenerNumber>

%ER, <UnitID>: LISTENER =5,<ErrorCode>

Parameter Description

<ListenerIndex>	
1~2	Index of monitor number

<ListenerNumber>

monitor number which is a number string, the maximum character is 15.<vacant> means delete the index.

Note

- The SIM card in the device must support caller display function, listen-in function can be used.
- After listener number is set, it will get in listen-in status when make a call to device using this number.

E.g.

%AT + LISTENER %0000=1,075583103002 set up the first monitor number
%OK,3000012345: LISTENER =1
%AT + LISTENER %0000=2, 13603006626 set up the second monitor number
%OK,3000012345: LISTENER =1

6.3 %AT+DMSG

Command Description

Send message to device which can be transmitted. Deliver Message

Syntax

Write command
%AT+DMSG=<DestKind>,<DestNumber>,<MsgKind>,<MsgCode> ,<MsgBody>
[,<MsgSeq>,<MsgTime>,<DispParam>]

Response
%OK,< UnitID>: DMSG =1
%ER, <UnitID>: DMSG =1,<ErrorCode>

Parameter Description

<
DestKind >

The ending target of receiving message.

0, <vacant> automatic process. Generally, it's display attached to the device.
If the command coms form a com port, it's necessary to send a message to another com port, unless there is only one com port.

15 Appointed cell phone and the number is <DestNumber>

1 SMS center

2 GPRS center. .If TCP mode is adopted,（Pls reference to <IpType> in <CCIP>）, it will send to TCP port;

	If UDP mode is adopted, it will send to UDP port; IF TCP+UDP mode is adopted, then it will send to TCP port.
3	Center TCP port. TCP channel must be opened. <IpType> in <CCIP>. Or TCP mode, or TCP+UDP mode.
4	Center TCP port. UDP channel must be opened. <IpType> in <CCIP>. Or UDP mode, or TCP+UDP mode.
16	Direct port. Main port
17~18	First or second port. Personal tracker only has one port.
33~34	First or second maintain number.
49	The first monitor number.
57~59	The SOS number(for help)from 1-3.
65~70	Normal user number from 1-6

< DestNumber >

The end number that receive message, it's a number string, maximum is 15.<vacant> means no need to set end number.

Only when <DestKind>=15 is valid.

< MsgKind >

Message type

1, <vacant>	Normal message, public message.
2	Company message
5	Scheduling Information
7	Prompt message
48	SMS(Short Message)
49	SMS for inquiry place name. Response result to<+GNAM>.
16	Message that forward directly, it can reach to server, display, cell phone, etc.

< MsgCode >

0, <vacant >	GBK code
8	Adopt Base64 code.64 characters are in sequence of number'0'~'9', capital letters 'A'~'Z', small letters 'a'~'z', '！', and '/'(ASCII value is 47). Base 64 request to every three 8Bit bytes interchange to four 6Bit bytes（3*8 = 4*6 = 24）, then add two highest digits 0 with 6 Bit to constitute four 8-Bit bytes. If less than 3bytes, then interchange according to its true length.

< MsgBody >

Use (") as a mark character string of start and end. the maximum character is 800.

< MsgSeq >

Schedule number used for schedule response. when<InfoKind> is schedule message, this item is needed.

<vacant>	No schedule number
0~FFFFFFFF	Composed by 1-8 hex characters.

< MsgTime >

Message time, local time. Reserved as <vacant> at present.

<DispParam>

Message parameter which composed by several field. Reserved as <vacant> at present.

Note

- The length of <MsgBody> different from different receiving device. e.g. If <MsgKind>is 48, then it can not be longer than 160 English characters,70 Chinese characters.

E.g.

%AT+ DMSG =15,13828765176,48,,, “Guangdong” send “Guangdong” to appointed cell phone “13828765176”
%OK,3000012345: DMSG =1

6.4 Upload Message(%MG)

Command Description

Upload message to center

Syntax

Device notify

%MG,<UnitID>: <SrcKind>,<SrcNumber>,<SrcMsgKind>,<RtnKeyCode>,<RtnIniResult>,<RtnMsgSeq>,
<MsgCode> ,<MsgBody> **;** PP**:** 2, **...**

Center response

%AT+MG =

Parameter Description

< SrcKind >

Message origin

0, <vacant>	automatic process. Generally, it’s display attached to the device.
15	Appointed cell phone which phone number <SrcNumber>

< SrcNumber >

Number for sending message, it’s a number string with the maximum is 15 characters.<vacant> means unknown number.

Only when <SrcKind>=15 is valid.

< SrcMsgKind >	
Message type	
1, <vacant>	Normal message
5	Dispatching message response.
8	Preset message
48	SMS（Short Message）
16	Message which transmitted directly.

< RtnKeyCode >	
Key code return	
0,<vacant>	NO
1-9999	Key code

< RtnIniResult >	
Key ode result	
0,<vacant>	No
1	Agree
2	Refuse
3	Finish

< RtnMsgSeq >	
Schedule number of server when sending command	
<vacant>	No schedule number.
0~FFFFFFFF	Composed by 1 to 8 hex characters.

7 YWT Alarm and Status

7.1 Location status

Different device has different field of location status. Personal tracker has only one field while car tracker has 4.

The First Field

	Numeric value	Meaning	Value
First Position	0x1	Motion status	1=motion; 0=stop
Second Position	0x2	In charge status	1=charge; 0=no charge
Third Position	0x4	Connect charger or not	1=Connect charger;0=no
Forth Position	0x8	Area track start or not	1=start; 0=no
Fifth Position	0x10	Secret condition, Forbid to inquiry location	1=yes, 0＝no
Sixth Position	0x20		
Seventh Position	0x40		

Eighth Position	0x80		

The second field

	Numeric value	Meaning	Value
First Position	0x1	Oil control status	1=oil cut; 0=normal
Second Position	0x2		
Third Position	0x4		
Forth Position	0x8	Over speed status(after time-lapse calculated)	1=yes, 0＝no
Fifth Position	0x10	external power dispatched status	1=yes, 0＝no
Sixth Position	0x20	external power low voltage status	1=yes, 0＝no
Seventh Position	0x40	ACC arming status	1=yes, 0＝no
Eighth Position	0x80	Car arming status	1=yes, 0＝no

The third field

	Numeric value	Meaning	Value
First Position	0x1	user-defined (negative1)	
Second Position	0x2	user-defined (negative2)	
Third Position	0x4	user-defined (negative3)	
Forth Position	0x8	user-defined (Positive1)	
Fifth Position	0x10	user-defined (Positive2)	
Sixth Position	0x20	user-defined (Positive3)	
Seventh Position	0x40		
Eighth Position	0x80	Car door status	1=door open, 0=door close

The forth field

	Numeric value	Meaning	Value
First Position	0x1		
Second Position	0x2		
Third Position	0x4		
Forth Position	0x8	ACC status	1=on, 0=off
Fifth Position	0x10		
Sixth Position	0x20		
Seventh Position	0x40		
Eighth Position	0x80	Brake status	1=brake, 0=no

The fifth field

	Numeric value	Meaning	Value
First Position	0x1	SOS	1=yes, 0＝no
Second Position	0x2	Illegal start	1=yes, 0＝no
Third Position	0x4	Stolen alarm	1=yes, 0＝no
Forth Position	0x8	Illegal motion alarm	1=yes, 0＝no
Fifth Position	0x10	Reserved	
Sixth Position	0x20	Power Failure alarm	1=yes, 0＝no
Seventh Position	0x40	out of bound alarm	1=yes, 0＝no
Eighth Position	0x80	Over speed alarm	1=yes, 0＝no

The sixth field

	Numeric value	Meaning	Value

First Position	0x1	Car guard alarm	1=yes, 0＝no
Second Position	0x2	Crash alarm	1=yes, 0＝no
Third Position	0x4	Reserved	
Forth Position	0x8	Alarm of deviate from the route	1=yes, 0＝no
Fifth Position	0x10	In bound alarm	1=yes, 0＝no
Sixth Position	0x20	Alarm of limit time period	1=yes, 0＝no
Seventh Position	0x40	Hijack alarm	1=yes, 0＝no
Eighth Position	0x80	Fatigued alarm	1=yes, 0＝no

The seventh field

	Numeric value	Meaning	Value
First Position	0x1	GPS short-circuit alarm	1=yes, 0＝no
Second Position	0x2	GPS open-circuit alarm	1=yes, 0＝no
Third Position	0x4	Low power alarm	1=yes, 0＝no
Forth Position	0x8	Reserved	
Fifth Position	0x10	Reserved	
Sixth Position	0x20	Reserved	
Seventh Position	0x40	Reserved	
Eighth Position	0x80	Illegal open door alarm	1=yes, 0＝no

The eighth field

	Numeric value	Meaning	Value
First Position	0x1	Anti-dismantle alarm	1=yes, 0＝no
Second Position	0x2	Reserved	
Third Position	0x4	Reserved	
Forth Position	0x8	Reserved	
Fifth Position	0x10	Reserved	
Sixth Position	0x20	Reserved	
Seventh Position	0x40	Reserved	
Eighth Position	0x80	Reserved	

7.2 The flow of sending alarm

- Once there is a alarm, present location and status information will be saved. For private car, it will cut of oil power automatically.
- Sending alarm information <AP>to control center, the location and status all are the right information when alarm happens.
- If GPRS connected, alarm will be sent through GPRS to center number, otherwise, it will be send through SMS.
- If response to <AP>is received, it will stop sending alarm, otherwise, it will be send every 3 minutes and send three times in maximum.

7.3 Alarm Type

S. No.	Type	Brief introduction
1	SOS	Alarm when press SOS button
6	External power dispatched alarm	
7	Out of bound alarm	
8	Over speed alarm	
13	In bound alarm	
17	GPS short circuit alarm	Alarm when GPS is short of circuit.
18	GPS open circuit alarm	Alarm when GPS open circuit.
19	Low power alarm of External power	

7.4 %AT+AMRESET

Command Description

Relieve alarm. Relieve all the action due to the alarm.

Syntax

Write command

%AT+AMRESET[%<password>]

Response

%OK,< UnitID>: AMRESET =2

%ER, <UnitID>: AMRESET =2,<ErrorCode>

8 YWT Control Command

This group of command need password to verify it's sent by com port or SMS directly.

8.1 %AT+OUTS

Command Description

Control output status

Syntax

Write command

%AT+OUTS[%<password>]=<OutputID>,<OutputMode>,<ExtParam>[,<ToggleTimes>,<OnDuration> ,<OffDuration>,...]

Response

%OK,< UnitID>: OUTS =1

%ER, <UnitID>: OUTS =1,<ErrorCode>

Read command

%AT+ OUTS=<OutputID>?

Response

%QR, <UnitID>: OUTS =<OutputID>,<OutputState>

%ER, <UnitID>: OUTS =5,<ErrorCode>

Read command

%AT+ OUTS?

response

%QR, <UnitID>: OUTS =<OutputID> - <OutputID> - <OutputState>,<OutputID> - <OutputID> - <OutputState>,...

%ER, <UnitID>: OUTS =4,<ErrorCode>

Note: the previous <OutputID> is logic output ID, the letter<OutputID>means physical ID.

Parameter Description

<OutputID>	
1	immobilizer
2	Close Door
3	Open Door
5	Speaker
6	Direction light

<OutputMode>	
0, <vacant>	restoration control, output port keep on non- activation(primitive conditions)
1	Execute control immediately. Output port keep on activation status.
2	Receive command. Execution when vehicle meet the condition. This is mainly for immobilizer.
3	Intermittent execution, 1 second ON(activation), 2 seconds OFF(non- activation), disconnect completely after 90 seconds. This is mainly for control immobilizer. If fuel supply was stop before, then the execution won't be do.
9	Control by<ToggleTimes>,<OnDuration> and <OffDuration> parameter, etc.

<OutputState>	
0	Output port keep on non-activation(primitive conditions)
1	Output port keep on activation status.

2	Output port is non-activation status, it will be changed when vehicle condition vary.

< ExtParam >	
<vacant>	Reserved

< ToggleTimes >	
<vacant>	<OutputMode> not equals to 9
1-255	Times for <OnDuration> and <OffDuration> execution. It's one time when execute one of them, though <OnDuration> equals 0.
65535	Repeat Execution

< OnDuration >	
<vacant>	<OutputMode> not equals to 9.
1-255	Duration time for activation, unit: 100 millisecond.
65535	Keep on activation status.
0	Execution to skip this status.

< OffDuration >	
<vacant>	<OutputMode> not equals to 9.
1-255	Duration time for non-activation, unit: 100 milliseconds.
65535	Keep on activation status.

Note

- when<OutputMode>equals 2, mainly for immobilizer, it means cut off oil circuit intelligently. As on highway, it's very danger if cut off the oil immediately. when acc off or with lower speed, it will execute immediately, otherwise, it will give response when receive command, waiting for lower down speed, then execution and send a success execution report to server. If oil circuit done before receive command, it will also return back a success execution report.

E.g.

%AT + OUTS%0000=1,1 Disconnect oil circuit immediately

%OK,3000012345: OUTS =1

%AT + OUTS%0000=1,0 Restore oil circuit immediately

%OK,3000012345: OUTS =1

%AT + OUTS%0000=1,3 Disconnect oil circuit immediately at intervals, Intermittent execution, 1 second ON(activation), 2 seconds OFF(non- activation), and disconnect completely after 90 seconds.

%OK,3000012345: OUTS =1

%AT + OUTS%0000=1,9,,60,1,2 Intermittent execution, 1 second ON(activation), 2 seconds OFF(non- activation), disconnect completely after 90 seconds.

%OK,3000012345: OUTS =1

%AT + OUTS%0000=1,2 Intelligent oil circuit cut

%OK,3000012345: OUTS =1 Execution successfully

8.2 %AT+RESTORE

Command Description

Delete information and restore factory settings.

Execute command
%AT+ RESTORE[%<password>]

Response
%OK, <UnitID>: RESTORE =3
%ER, <UnitID>: RESTORE =3,<ErrorCode>

Note

- Delete all setting information
- Delete all track record
- Delete all pictures

8.3 %AT+REBOOT

Command Description

Reset device

Execute command
%AT+REBOOT[%<password>]

Response
%OK, <UnitID>: REBOOT =3
%ER, <UnitID>: REBOOT =3,<ErrorCode>

8.4 %AT+NUM

Command Description

Read/write digit. These digits were stored in the device and manage by center. These digit can be set to send by location frames or not

Syntax

Write command

%AT+NUM=<NumIndex>,<Numeral>

Response

%OK, <UnitID>: NUM=1

%ER, <UnitID>: NUM=1,<ErrorCode>

Delete command

%AT+ NUM=;

Response

%OK, <UnitID>: NUM =2

%ER, <UnitID>: NUM =2,<ErrorCode>

Read command

%AT+ NUM=<NumIndex>?

response

%QR, <UnitID>: NUM =<NumIndex>,<Numeral>

%ER, <UnitID>: NUM =5,<ErrorCode>

Parameter Description

<NumIndex>	
1~2	Number index. Different device support different number.

< Numeral >	
0 ~ 4294967295	decimal

E.g.

%AT+NUM=1,345678	set first number as 345678.
%OK,3000012345: NUM =1	
%AT+ NUM=1,1005230003	set first number as 1005230003.
%OK,3000012345: NUM =1	

8.5 %AT+GUARD

Command Description

Set guard status

Write command

%AT+ GUARD [%<password>]=<GuradKind>

Response

%OK,< UnitID>: GUARD =1

%ER, <UnitID>: GUARD =1,<ErrorCode>

Parameter Description

< GuradKind >	
0, <vacant>	Out of guard status
1	Enter into guard status

9 YWT Region Command

This group of command no need password to verify if it's sent by com port or SMS directly.

9.1 %AT+REGION

Command Description

Set Rectangle or polygon region

Syntax

Write command

%AT+REGION=<RegionID> ,<region parameter 1>,<region parameter 2>,...

Response

%OK,< UnitID>: REGION =1

%ER, <UnitID>: REGION =1,<ErrorCode>

Delete command

%AT+ REGION =;

Response

%OK, <UnitID>: REGION =2

%ER, <UnitID>: REGION =2,<ErrorCode>

Note: Delete all region,that is %AT+REGCLR=0,0,0

Read command

%AT+ REGION=<RegionID>?

Response

%QR, <UnitID>: REGION =<RegionID>,<RegionSaveIndex>,<RegionKind>,<RegionRunStatus>
<RegionOptionParam>,<RegionOptionParam>,…

%ER, <UnitID>: REGION =5,<ErrorCode>

Note: when response ,uploaded information is controlled by +REGMASK.

Parameter Description

<RegionID>

1~FFFFFFFF The sole ID of region. It's composed by one to eight hex characters. This ID is created by center.

<RegionOptionParam>

Region parameter. It's an optional. pls reference to <option>.It can be any combination, center software only need to set Region option.

1） Every parameter items of region can be set by several frames, but main option should be set first.

2） Other option is set without main option, error will be return.

3） After main option is set, other option only can change its corresponding parameter, others keep the same.

4） It's default when there is no set option.

<RegionKind>

0	Not exist
1	Rectangle region.
2	polygon region

<RegionSaveIndex>

1~999	Save Index saved in device. Different device has different number. It can be get by inquiry region.
0	Not exist

<RegionRunStatus>

0	Not exist
1	Invalid region. Region can be set but can not be used, may be some parameter get wrong.
2	Region is being set. It's not complete waiting for latter command added.
3	Not active region.
4	Active region. need to wait for judgement of GPS information.
5	Active region. but the current time is not the region running time.
6	Running region(active, valid time) need to wait for judgement for location from GPS information.
7	Current GPS location out of region.

8 Current GPS location in region.

Note

◆ Every time for setting region, <RegionID>is a must to attached, otherwise it can't be recognized.

E.g.

1）Add a rectangle region, Its ID is 3; in and out region will be loaded to center.

%AT+REGION=3,1>1-E114.602345- N22.069725-E115.602345- N25.069725, 2>8028

%OK,3000012345: REGION =1

%AT+REGION=3?

%QR, 3000012345:REGION=3,1,1,6,1>1-E114.602345-N22.069725-E115.602345-N25.069725,2>8028,6>0-0-0-5

2）Add a polygon region. Its ID is 4. in and out region will be loaded to center.

%AT+REGION=4,1>2-5-5-1-E114.602345- N22.069725-E114.702345-N22.169725-E114.802345- N22.109725
-E114.752345- N22.019725-E114.662345- N22.019725

%OK,3000012345: REGION =1

%AT+REGION=4?

%QR,0928384263:REGION=4,108,2, 6,1>2-5-5-1-E114.602345-N22.069725-E114.702345-N22.169725
-E114.802345-N22.109725-E114.752345-N22.019725-E114.662345-N22.019725,2>8000,6>0-0-0-5

3）Modify parameter of region

%AT+REGION=3,2>802B,6>80-30

%OK,3000012345: REGION =1

%AT+REGION=3?

%QR,3000012345:REGION=3,1,1,6,1>1-E114.602345-N22.069725-E115.602345-N25.069725,2>802B,6>80-30-0-5

%AT+REGION=4,6>90-40-85, 5>20-25, 4>04-1F-100101220000-100101050000, 2>806B

%OK,3000012345: REGION =1

%AT+REGION=4?

%QR,3000012345:REGION=4,108,2, 6,1>2-5-5-1-E114.602345-N22.069725-E114.702345-N22.169725
-E114.802345-N22.109725-E114.752345-N22.019725-E114.662345-N22.019725,2>806B,6>90-40-85-5

%AT+REGMASK=2-4-5-6

%OK,3000012345: REGMASK=1

%AT+REGION=4?

%QR,3000012345:REGION=4,108,2,6,2>806B,4>04-1F-100101220000-100101050000,5>20-25,6>90-40-85-5

4）Add a polygon region Through several command subframe,its ID is 8.

%AT+REGION=8,1>2-7-1-1-E114.654321- N22.456789, 2>802B, 1>2-7-1-2-E114.754321- N22.356789

%OK,3000012345: REGION =1

%AT+REGION=8,6>84-33

%OK,3000012345: REGION =1

%AT+REGION=8,1>2-7-2-3-E114.854321-N22.256789-E114.954321-N22.156789,

1>2-7-1-5-E114.054321-N22.056789
%OK,3000012345: REGION =1
%AT+REGION=8,1>2-7-2-6-E114.222222-N22.888888-E114.111111-N22.999999
%OK,3000012345: REGION =1

%AT+REGMASK=1-2-6
%OK,3000012345: REGMASK=1
%AT+REGION=8?
%QR,3000012345:REGION=8,107,2,6,1>2-7-7-1-E114.654321-N22.456789-E114.754321-N22.356789-E114.854321-N22.256789-E114.954321-N22.156789-E114.054321-N22.056789-E114.222222-N22.888888-E114.111111-N22.999999,2>802B,6>84-33-0-5

5）Delete region with ID is 4.
%AT+REGCLR=4
%OK,3000012345: REGCLR=1

6）Delete all rectangle region.
%AT+REGCLR=0,0,1
%OK,3000012345: REGCLR=1

7）delete the regions in first storage space in the device.
%AT+REGCLR=0,1
%OK,3000012345: REGCLR=1

8）Delete all region.
%AT+REGCLR=0,0,0
%OK,3000012345: REGCLR=1
Or
%AT+ REGION=**;**
%OK,3000012345: REGION=2

9.2 Region Option

9.2.1Region Option mark

Region option mark	Name	Instructions
1	Coverage option	Set area coverage
2	Attribute option	Set function attribute with appoint region
4	Time option	Set which time period is valid for appoint region
5	Delayed option	Set delay time of in/out region for appoint region
6	Over speed option	Set threshold value for time with limit speed

		reminding/alarm in appoint region
8	Take photo option after enter into	Set parameters for enter into region to take photo
10	SMS option after enter into	Set SMS contents send to tutelary number after enter into regions.
11	SMS option after left	Set SMS contents send to tutelary number after out of regions.
12	Voice option after enter into	Set the voice be broadcast after enter into regions

Region main option

- If it is a rectangle, area coverage option is main option.
- If it is polygon, only < PotIndex> in area coverage option is 1, it is main option
- Main option must be the first <RegionOptionParam>in command<+REGION>.
- One <+REGION> only can have one main option.

9.2.2 Region coverage option

Region coverage option use for set area coverage, mark is 1. at present support rectangle and polygon setting.

Syntax

Basic format

1 > RegionKind - RegionParam1 - RegionParam1 …

Note: Different region type has different parameter.

Format for rectangle region

1 > 1 - MinLongitude - MinLatitude - MaxLongitude - MaxLatitude …

Format for polygon region

1 > 2 - PotTotal - PotCount - PotIndex - Longitude1 - Latitude1 - Longitude2 - Latitude2…

note: when vertexes of the polygon reaches more than 40, it need to divide by several frames to transfer.

Parameter Description

<RegionKind>	
1	Rectangle region
2	Polygon region

<MinLongitude>, **<**MaxLongitude **>**	
MinLongitude is the minimum value of longitude, Max Longitude is the maximum value of longitude.	
E000.000000~ E179.999999	WGS-84 coordinate , east longitude
W000.000000~ W179.999999	WGS-84 coordinate , west longitude

<MinLatitude>, <MaxLatitude>	
MinLatitudee is the minimum value of latitude, MaxLatitude is the maximum value of latitude.	
N00.000000~ N89.999999	WGS-84 coordinate , north latitude
S00.000000~ S89.999999	WGS-84 coordinate , south latitude

< PotTotal >	
3~100	when vertexes of the polygon reaches more than 40,it need to divide by several frames to transfer.

< PotCount >	
1~40	Use for polygon, mean the vertexes amount contained in this option. If the amount less than <PotTotal>, mean need to add vertexes to complete the setting of polygon.

< PotIndex >	
1~100	Use for polygon, mean in this option, the first vertex be the vertex sub-frame in whole polygon. If it is 1, mean this option is main option; otherwise mean it needs to add vertexes info. At the same time of add vertexes info, can't set other region option, meanwhile the amount of <PotTotal> must same with before.

<Longitude1>, **<**Longitude2 **>**,**…**	
The longitude of vertex of polygon.	
E000.000000~ E179.999999	WGS-84 coordinate , east longitude
W000.000000~ W179.999999	WGS-84 coordinate , west longitude

<Latitude1>, <Latitude2>,**…**	
The latitude of vertexes of polygon..	
N00.000000~ N89.999999	WGS-84 coordinate , north latitude
S00.000000~ S89.999999	WGS-84 coordinate , south latitude

Note

- If it's a rectangle, this option is main option
- If it's a polygon, when< PotIndex> is 1, it's main option.

9.2.3Region Property Option

Used to set the function property of the appointed region.

Basic Format
2 > RgnBaseProp

< RgnBaseProp >

0000~FFFF The basic property of region. It's composed by 4 hex character. Every position is calculate by hex.

	Numeric value	Meaning	Value	Default
First Position	0x1	Over speed alert to driver.	1=Prompt;0=no prompt	0
Second Position	0x2	Over speed alert to server	1=alarm; 0=no alarm	0
Third Position	0x4	In region alert to driver	1=Prompt;0=no prompt	0
Forth Position	0x8	In region alert to server	1=Prompt;0=no prompt	1
Fifth Position	0x10	Out of region alert to driver	1=Prompt;0=no prompt	0
Sixth Position	0x20	Out of region alert to server	1=Prompt;0=no prompt	1
Seventh Position	0x40	Out of region alert to center. only when out of all regions, there will be a alert.	1=alarm; 0=no alarm	0
Eighth Position	0x80	In region alert to center. once in one of the region, there will be a alert.	1=alarm; 0=no alarm	0
Sixty Position	0x8000	Active or not	1=active; 0=not active	1

Note

- If all property are 0, it means invalid region, that's to say, delete all regions.
- Only can do GPS judgement in active region.

When a new region is set, active property will be added automatically.

9.2.4Time option

Use for set which time period is valid in appoint region. Default is non-limit time, namely the region is valid in anytime.

Basic format
4 > ScopeCtrl -WeekCtrl - StartDataTime -EndDataTime

< ScopeCtrl >

00~FF Control field for time scope which composed by two hex characters.

00~FF Control field for time scope which composed by two hex characters. Every position is calculate by hex.

	Numeric value	Meaning	Description
First Position	0x1	Scope of date and time	It's valid only when the value between <StartDateTime> and<EndDateTime>.<StartDateTime>must be less than or equal to <EndDateTime>. e.g. from 2008.5.1 9:30:00 to 2008.7.1 5:30:00
Second Position	0x2	Scope of date	It's valid only when the value between <StartDateTime> and <EndDateTime>.date in <StartDateTime>must be less than or equal to the date of <EndDateTime>. e.g. from 2008.5.1 to 2008.7.1
Third Position	0x4	scope of time	It's valid only when the value between <StartDateTime> and<EndDateTime>.<StartDateTime>can be greater then <EndDateTime>. e.g. from 20:00:00 to 9:30:00
Forth Position	0x8	Scope of day and month	It's valid only when the value between <StartDateTime> and <EndDateTime>. <StartDateTime>can be greater than <EndDateTime>. e.g. from 20th Dec. to 5th Jan.
Fifth Position	0x10	Reserved	
Sixth Position	0x20	Day	It's valid only when the value between <StartDateTime> and <EndDateTime>. <StartDateTime> can be greater than <EndDateTime>. e.g. from 20th to 5th .
Seventh Position	0x40	Month	It's valid only when the value between <StartDateTime> and<EndDateTime>.<StartDateTime>can be greater than <EndDateTime>. e.g. from August to February.
Eighth Position	0x80	Year	It's valid only when the value between <StartDateTime> and<EndDateTime>.<StartDateTime>must be less than or equal to <EndDateTime>. e.g. from year 2009 to year 2010.

< WeekCtrl >

00~FF Week control field of item scope which composed by two hex characters, default is 0. Every position is calculate by hex.

	Numeric value	meaning	Description
First Position	0x1	Monday	If week control field all are 0 which means no need to consider week.
Second Position	0x2	Tuesday	
Third Position	0x4	Wednesday	
Forth Position	0x8	Thursday	
Fifth Position	0x10	Friday	
Sixth Position	0x20	Saturday	
Seventh Position	0x40	Sunday	
Eighth Position	0x80	Reserved	

<StartDateTime>,<EndDateTime>

<StartDateTime>is the start time field while <EndDateTime>is end time field.

YYMMDDhhmmss	Time of Greenwich. YYMMDDhhmmss YY=00-99: year 2000 to year 2099 MM=01-12: January to December DD=01-31: 1st to 31th hh=00-23: 0 o'clock to 23 o'clock mm=00-59: 0 minute to 59 minutes ss=00-59: 0 second to 59 seconds

Note

- If ScopeCtrl and WeekCtrl all are 0, it means the time interval from <StartDataTime>to<EndDataTime> equals to 01-00

E.g.

1) Time period of two times: from 8: 00: 00 on 2009.5.1 to 20: 00: 00 on 2009.5.7
2) 4>00-00-090501080000-090507200000
3) From 8 o'clock to 15 o'clock everyday
   4>04-00-100101080000-100101150000
   X means any number which is the same as follow.
4) 22:00 to 05:30
   4>04-00-100101220000-100101053000
5) 00: 00 to 05: 00 and 22:00 to 24:00 from Monday to Friday.
   4>04-1F-100101220000-100101050000
6) 1st to 7th of October
7) 4>08-00-101001XXXXXX- 101007XXXXXX
8) From December 1st 2008 to January 30th 2009, included Saturday and Sunday.
   4>02-60-081201XXXXXX- 090130XXXXXX

Note: X can be any number

9.2.5 Region Delay

Used to set the delay time of in and out region time of appointed region.

Basic format
5 > EnterDelay-ExitDelay

< EnterDelay >	
0	Normal value for enter delay
1 ~ 255	Delay time for enter, unit: second

< ExitDelay>	
0	Normal value for exit delay

1 ~ 255	Delay time for exit. Unit: second

9.2.6 Over speed Option

Used to set the limit speed and time of over speed alert.

Basic format
6 > MaxSpeedLimit - SpeedLimitTime - SpeedAlertSill - SpeedAlertTime

Note

- This parameter is valid only when be in the region.
- When out of this region, it is judge by <+SPEEDING> whether over speed or not.

9.3 Region upload

If region alarm happens, then upload location frames of < AP >.
If region event happens, then upload location frames of < EP >.

<ReportID>	
xxx-RegionID	Report type. xxx is main report type.
The first field, xxx	
7	Exit region alarm
13	Enter region alarm
128	Exit region notify
129	Enter region notify

9.4 %AT+REGCLR

Syntax

Write command
%AT+REGCLR=<RegionID> [,<RegionSaveIndex> [, <RegionKind>]]

Response
%OK,< UnitID>: REGCLR =1
%ER, <UnitID>: REGCLR =1,<ErrorCode>

<RegionID>

1~FFFFFFFF	The sole ID of region. It's composed by one to eight hex characters. This ID is created by center.
0, <vacant>	Do not judge region mark when delete.

<RegionSaveIndex>

1~999	Save Index in the device. Different device has different quantity. It can be get by region inquiry.
0, <vacant>	When delete, do not judge the save index.

<RegionKind>

0, <vacant>	When delete, do not judge the region type.
Other	Reference to <RegionKind>.

E.g.

Reference to Region E.g.

10 Photograph

Generally, this command can only sent by IP.

10.1 %AT+PHOTO

Command Description

Photo command

Syntax

Write command

%AT+PHOTO=<PhotoMode>, <PhotoID>, <PhotoFlags>, <CameraSeq>,<PmUpTarget>

[, <PicFormat>, <PicSize>, <PicCompress>, <TurnCount>, <TurnSpan>, <AutoCloseSpan>

[, <PicDataLen>, <UpFrameSize>, <PicUpTarget>]]

Response

%OK,< UnitID>: PHOTO =1

%ER, <UnitID>: PHOTO =1,<ErrorCode>

Parameter Description

<PhotoMode>

0, <vacant>	Stop taking photo and upload, ignore all letter parameters.
1	Confirm that one picture sent finished. The notify and data of next picture can start to receive and ignore all latter parameter.
2	Confirm to receive %PM notify, no need to upload picture data at the moment. ignore all latter parameters. Device will not give any response.
4	Take photo and notify, waiting for upload. if next step operate hint is not received from server, then every three seconds will receive a notify（%PM）, if hint not received by more than 30 seconds, we consider this operation failed. generally use in this way to take photo.
5	Take photo and notify, no need to waiting for upload. device will send a notify（%PM）to server after finish taking photo. Do not wait for next operation from server and no not send data. This way mainly use to save picture after taking picture, which need set relative<PhotoFlags>.
6	Take photo and notify, upload data at the same time. Device send notify（%PM） to server when finished taking picture. Upload picture data immediately and no need to wait for the hint from server.

<PhotoID>

0, <vacant>	Server do not use photo flag
1 ~ FFFFFFF0	Photo flag create by server. it will be return when sending notify（%PM）,which composed by hex string with 8 characters at most.
FFFFFFF1~ FFFFFFFF	Reserved

< PhotoFlags >

0, <vacant>	No photo flag.
00~FF	Photo flag. composed by 2 hex character. Every position is calculate by hex.

	Numeric value	Meaning	value	Default
First Position	0x1	Save or not after finish	1=save; 0=not save	0
Second Position	0x2			0
Third Position	0x4			0
Forth Position	0x8			0
Fifth Position	0x10			0
Sixth Position	0x20	Remove JPEG format or not	1=yes; 0=no	0
Seventh Position	0x40			0
Eighth Position	0x80			0

<CameraSeq>

0, <vacant>	Select camera automatically. generally, the first one.
1 ~ 8	Sequence number of camera. 1 means the first route,2 means the second route, etc.
255	Means all cameras.

<PicFormat>

0, <vacant>	Picture format: JPEG

<PicSize>	
0, <vacant>	Choose the size of picture automatically. normally, it's 5, QVGA（320x240）
1	SQCIF（160x120）
2	QCIF（176x144）
3	CIF（352x288）
4	QQVGA（160x120）
5	QVGA（320x240）
6	VGA（640x480）

<PicCompress>	
0, <vacant>	Choose the compress quality of picture automatically. normally, it's 3,High
1	Lowest
2	Low
3	High
4	Highest

<TurnCount>	
0, <vacant>	One round of taking picture.
1 ~ 60	Rounds of taking picture If a single camera is selected, it means that take one picture a time as a turn. If all cameras are selected, all cameras take pictures one by one, all have finished take pictures as a turn.

<TurnSpan>	
0, <vacant>	Time interval between two turns adopts factory value.

<AutoCloseSpan>	
0, <vacant>	Close camera automatically when finish taking picture according to factory time.(60 seconds)
1 ~ 600	Time for close camera automatically. Unit ,second.
65535	Not be automatically close camera.

<PmUpTarget>	
0, <空>	Send<%PM>information to the channel which command come from.
2	Upload <%PM> information to GPRS center. If TCP mode adopted,(pls reference to <IpType>in <CCIP>）, then send to TCP port, if UDP mode adopted, then send to UDP port, if TCP+UDP mode adopted, then send to TCP port.
3	It's a must to open TCP channel when upload<%PM> information to center TCP port. <IpType>in<CCIP>. TCP mode or TCP+UDP mode.
4	It's a must to open UDP channel when upload<%PM> information to center UDP port. <IpType>in<CCIP>. UDP mode or TCP+UDP mode.

Notes

- Only when <PhotoMode> is 6, <PicDataLen>,<UpFrameSize> and<PicUpTarget> can work.
- <PicUpTarget> is the channel which use for receive<%PM>.

10.2 Photo Information(%PM)

Command Description

Notify of photo information

Syntax

Device notify

%PM,<UnitID>: <PhotoCause>, <OperatorID>, <PhotoSeq>, <CameraSeq>, <PicFormat>, <PicSize>, <PicCompress>,

<PicID>, <PicTotalBytes>, <PicFrameSize> **;** PP**:** 2, **...**

Center response

%AT+PICDATA or %AT+PHOTO

Parameter Description

<PhotoCause>	
1	Response of <+PICINFO>
2	Response of <+PICLIST>
3	The success of taking picture is the response to <+PHOTO>.meanwile, device will waiting for the response from center.
8	Take photo automatically.

<OperatorID>	
<PhotoCause> = 3	<+PHOTO>sent of parameter<PhotoID>
<PhotoCause> = 1,2	Event flag of picture saving
<PhotoCause> = 4	Event flag of taking picture automatically.

<PhotoSeq>	
1 ~ 240	sequence number of taking picture continuously.

<PicID>	
1 ~ FFFFFFF0	Created picture flag which is created by device automatically. start from 1 and add 1 every time, when overflows, than come back to 1.

<PicTotalBytes>

4 ~ 999999	Total bytes of picture data.

<PicFrameSize>	
128 ~2048	The maximum size of single data frames which device can support.

Notes

- There will be a appendix location frame<PP> follow to picture message as a subsidiary location information.
- <CameraSeq> ,<PicFormat>,<PicSize>and<PicCompress>are the true parameter of picture.
- Server need to response by<+PICDATA> when it receives picture message notify, or stop it by<+PHOTO>.
- Continuous notify mode.

10.3 %AT+PICDATA

Command Description

Get picture data

Syntax

Write command

%AT+PICDATA =<PicID>, <PhotoFlags>, <PicDataOffset>, <PicDataLen>, <UpFrameSize>, <PicUpTarget>

Response

%ER, <UnitID>: PICDATA =1,<ErrorCode>

or <upload the data of picture >

Parameter Description

<PicDataOffset>	
0 ~ 999999	Request to upload offset. byte offset in the picture.

<PicDataLen>	
0, <vacant>	Request all picture data after upload <PicDataOffset>.
0 ~ 999999	Request the data length of uploaded picture.

<UpFrameSize>	
0, <vacant>	Select the size of upload picture automatically. Factory value is 512 bytes.
128 ~2048	Picture data size by one IP data package transfer. unit, byte. generally, it's divisible by 128.If the size surpass the size that device can support, then it will adopt the largest size that device can support.

<PicUpTarget>	
0, <vacant>	Upload picture data to the channel which command comes from. If it comes from TCP, then it returns back to TCP. If it come from UDP, then it returns back to UDP.
2	Upload picture data to GPRS center. If TCP mode adopted (refer to <IpType> in <CCIP>), then send to TCP port. If UDP mode adopted, then send to UDP port. If TCP+UDP mode adopted, then send to TCP port.
3	Upload picture data to center TCP port. It's a must to open TCP channel, <IpType> in<CCIP> or TCP mode, or TCP+UDP mode.
4	Upload picture data to center UDP port. It's a must to open UDP channel. <IpType> in<CCIP> or UDP mode, or TCP+UDP mode.

Note

- After tracking GPS received the command to get picture data, it will automatic send the data of <PicID> to <TargetPort> according with the size of <UpFrameSize>, the length of data be sent is <PicDataLen>, starting offset is <PicDataOffset>. Center will constitute the data received to a file according with the bytes sequence after all picture data be received, it is picture file.

10.4 %AT+PICINFO

Command Description

Set the saved picture information

Syntax

Write command

%AT+PICINFO =<PicInfoMode>, <CameraSeq>, <PicSaveSeq>, <PicID>,
[, <PhotoFlags>, <PicDataLen>, <UpFrameSize>, <PicUpTarget> **]**

Response

%PM,<UnitID>: <PhotoCause>, <OperatorID>, <PhotoSeq>, <CameraSeq>, <PicFormat>, <PicSize>, <PicCompress>,
<PicID>, <PicTotalBytes>, <PicFrameSize> **;** PP**:** 2, **...**

%ER, <UnitID>: PICDATA =1,<ErrorCode>

Parameter Description

<PicInfoMode>	
0, <vacant>	Only get saved picture information.
6	Get picture information. upload picture data according to <PicDataLen>, <UpFrameSize> and <TargetPort>.

<PicSaveSeq>

0, <vacant>	Latest picture
1-9999	sequence number of saved picture. 1 means the first one(the oldest one) picture,2 means the second one, etc.

Note

- If<PicID>is not 0, then get picture information by<PicID> command. Otherwise, get information by<CameraSeq> and <PicSaveSeq> command.
- If <CameraSeq> is 0, then get the saved picture in device by<PicSaveSeq>command, 1 means the first picture(the oldest one), 2 means the second one, etc.<PicSaveSeq>=0 means to get the latest saved picture data.
- If <CameraSeq> is not 0, then <PicSaveSeq>must be 0, in order to get the latest saved picture from the appointed camera.
- When <CameraSeq> and <PicSaveSeq> remain unchanged. As time goes on, picture information may be different as the previous pictures maybe deleted.
- Only when <PicInfoMode> is 6, <PhotoFlags>,<PicDataLen>,<UpFrameSize>and<PicUpTarget>can work.

10.5 Upload picture data

Command Description

Upload picture data. It adopted binary protocols way to upload picture data. one picture frame every time. Do not wait for the response till upload all the picture data according to %AT+PICDATA command requirement.

Syntax

Binary protocols, **CmdID** = 0x21 (HEX)

(**UpContent**):

0xA5,TotalLen(2),CmdID(2),CmdFlags(1),DeviceID(4),**UpContent**(n),Checksum(1)

START BYTE	FIELD	DATA TYPE	EXPLAINATION
11	PicID	DWORD	Created picture ID, value equals to <PicID>
15	PicFlags	BYTE	Picture ID. From “first position ”to “eighth position” Sixth position: whether it’s the last frames of this transfer turn or not. Seventh position: remove JPEG format or not,1=yes Eighth position: whether it’s the last frames of the picture.
16	PicDataOffset	DWORD	The offset relative to whole picture data, unit: byte.
20	PicDataLen	WORD	The length of the frame data. unit: byte.
22	PicData	ARRAY[n]	Picture data

Mean: 0xA5,TotalLen(2),CmdID(2),CmdFlags(1),DeviceID(4), PicID(4), PicFlags(1), PicDataOffset(4), PicDataLen (2), PicData (n) , Checksum(1)

10.6 Flow

10.6.1 Flow of taking photo

1） Take photo can upload first route camera.

center: %AT+PHOTO=4,101,,0,2

device: %OK,< UnitID>: PHOTO =1

device: %PM,<UnitID>:3, 101, 1, 1, 0, 5, 3, 10F86, 9876, 1024 **;** PP**:** 2,**…**

center: %AT+PICDATA=10F86, ,0 ,0,1024,2

device: A5,0415,0021,00,DeviceID(4) , 00010F86, 00,00000000,0400,PicData (1024) , Checksum(1)

A5,0415,0021,00,DeviceID(4) , 00010F86, 00,00000400,0400,PicData (1024) , Checksum(1)

A5,0415,0021,00,DeviceID(4) , 00010F86, 00,00000800,0400,PicData (1024) , Checksum(1)

…

A5,TotalLen(2) ,0021,00,DeviceID(4) , 00010F86, A0,00002400, 0284, PicData (660) ,Checksum(1)

center: %AT+PHOTO=1

Note:

- If it's need to be saved when uploaded, send command %AT+PHOTO=4,101,1,0,2.
- In this flow, notify and upload all are uploaded through main command channel.
- Center command can come from any channel, port, SMS,TCP or UDP.
- The last frame data is loaded by its true length.
- It's easy to get wrong when transmit large data package during movement. it can make smaller according to its condition, e.g. 512 or 256,and the process become slow.

2） Supplemental upload flow

center: %AT+PHOTO=4,102,,0,2

device: %OK,< UnitID>: PHOTO =1

device: %PM,<UnitID>:3, 102, 1, 1, 0, 5, 3, 2106F87, 5426, 1024 ; PP: 2,…

center: %AT+PICDATA=2106F87, ,0 ,0,512,2

method a）

device: A5,0415,0021,00,DeviceID(4) , 2106F87, 00,00000000,0200,PicData (512) , Checksum(1) **receive OK**

A5,0215,**…** 00,00000200, 0200, **…** **receive OK**

A5,0215,**…** 00,00000400, 0200, **…** **receive OK**

A5,0215,**…** 00,00000600, 0200, **…** **receive OK**

A5,0215,**…** 00,00000800, 0200, **…** **Failure**

A5,0215,**…** 00,00000A00, 0200, **…** **receive OK**

A5,0215,**…** 00,00000C00, 0200, **…** **Failure**

A5,0215,**…** 00,00000E00, 0200, **…** **receive OK**

A5,0215,… 00,00001000, 0200, … **receive OK**

A5,0215,… 00,00001200, 0200, … **receive OK**

A5,0147,… A0,00001400, 0132, … **receive OK**

center: %AT+PICDATA=2106F87, ,2048 ,512,512,2

device: A5,0215,… 20,00000800, 0200, … **receive OK**

center: %AT+PICDATA=2106F87, ,3072 ,512,512,2

device: A5,0215,… 20,00000C00, 0200, … **receive OK**

center: %AT+PHOTO=1

method b）

device: A5,0415, …00,00000000,0200, … **receive OK**

A5,0215,… 00,00000200, 0200, … **receive OK**

A5,0215,… 00,00000400, 0200, … **receive OK**

A5,0215,… 00,00000800, 0200, … **Failure**

A5,0215,… 00,00000A00, 0200, … **Failure**

… server do not receive any data for more than 10 seconds

center: %AT+PICDATA=2106F87, ,2048 ,0,512,2

device: A5,0215,… 00,00000800, 0200, … **receive OK**

A5,0215,… 00,00000A00, 0200, … **receive OK**

A5,0215,… 00,00000C00, 0200, … **Failure**

A5,0215,… 00,00000E00, 0200, … **receive OK**

A5,0215,… 00,00001000, 0200, … **receive OK**

A5,0215,… 00,00001200, 0200, … **receive OK**

A5,0147,… A0,00001400, 0132, … **receive OK**

center: %AT+PICDATA=2106F87, ,3072 ,512,512,2

device: A5,0215,… 20,00000C00, 0200, … **receive OK**

center: %AT+PHOTO=1

mothod c）

device: A5,0415, …00,00000000,0200, … **receive OK**

A5,0215,… 00,00000200, 0200, … **receive OK**

A5,0215,… 00,00000400, 0200, … **receive OK**

A5,0215,… 00,00000600, 0200, … **receive OK**

A5,0215,… 00,00000800, 0200, … **Failure**

A5,0215,… 00,00000A00, 0200, … **receive OK**

A5,0215,… 00,00000C00, 0200, … **Failure**

A5,0215,… 00,00000E00, 0200, … **receive OK**

A5,0215,… 00,00001000, 0200, … **receive OK**

A5,0215,… 00,00001200, 0200, … **receive OK**

A5,0147,… A0,00001400, 0132, … **receive OK**

center: %AT+PICDATA=2106F87, ,2048 ,512,256,2

device: A5,0215,… 00,00000800, 0100, … **receive OK**

device: A5,0215,… 20,00000900, 0100, … **receive OK**

center: %AT+PICDATA=2106F87, ,3072 ,512, 256,2

device: A5,0215,… 20,00000C00, 0100, … **receive OK**
device: A5,0215,… 20,00000D00, 0100, … **receive OK**
center: %AT+PHOTO=1

3） Segment transmission

center: %AT+PHOTO=4,102,,0,2
device: %OK,< UnitID>: PHOTO =1
device: %PM,<UnitID>:3, 102, 1, 1, 0, 5, 3, 2106F87, 5426, 1024 ; PP: 2,…

center: %AT+PICDATA=2106F87, ,0 ,1000,512,2
device: A5,0415, …00,00000000,0200, … **receive OK**
A5,0215,… 00,00000200, 0200, … **receive OK**
A5,0215,… 00,00000400, 0200, … **receive OK**
A5,0215,… 00,00000600, 0200, … **receive OK**
A5,0215,… 00,00000800, 0200, … **receive OK**
A5,0215,… 00,00000A00, 0200, … **receive OK**
A5,0215,… 00,00000C00, 0200, … **receive OK**
A5,0215,… 20,00000E00, 0200, … **receive OK**
center: %AT+PICDATA=2106F87, ,1000,1000,512,2
A5,0215,… 00,00001000, 0200, … **receive OK**
A5,0215,… 00,00001200, 0200, … **receive OK**
A5,0147,… A0,00001400, 0132, … **receive OK**
center: %AT+PHOTO=1

4） Multiple route flow

center: %AT+PHOTO=4,104,,255,2
device: %OK,< UnitID>: PHOTO =1

10.6.2 Flow to get saved picture

1. Save the first route camera
center: %AT+PHOTO=5,201,1,0,2
device: %OK,< UnitID>: PHOTO =1
device: %PM,<UnitID>:3, 201, 1, 1, 0, 5, 3, 10F86, 9876, 1024 **;** PP**:** 2,**…**

11 Special Applications

Note: This chapter is mainly for some special application. If it’s not necessary for you, ignore it.

11.1 Composite Frames

Command Description

Send or receive several data frames gather together. This function chose by user themselves according to their requirements.

Syntax

Downlink command group

%AT+<CMD1> [%<password>]=<…>**;** +<CMD2>? **;** +<CMD3>=**;** +<CMD4>**<CR>**

- All the command frames has only one start flag of %AT and end flag of**<CR>**
- Each of command frames separated by‘; ’
- All command frames use the same password item of<password>
- IF there still have command frames after delete command, ‘; ’ can be omited.

Uplink response group

%OK,<UnitID>**:**<CMD1>=1**;** QR**:** <CMD2>=<…>**;** OK **:** <CMD3>=2**;** OK **:** <CMD4>=3**<CR><LF>**

- All the response frames has only one start flag of % and end flag of**<CR><LF>**
- Each response frame separated by‘; ’
- All response frames share the same ID<UnitID>.
- Only when downlink command is sent by group, response will be also sent by group.
- The order of response and sent command is the same.
- If response content is too long and can not send within a data package（SMS length is no more than 160）,device will divide it to several valid group automatically.

Uplink location group

It’s means to send several pieces of the same location information together, take < RP >for example,

%RP, <UnitID>: <…> **;** <…>**;** <…>**<CR><LF>**

- All location information have only one flag of %RP and one device ID<UnitID>.
- All location frames have only one start flag of % and end flag of**<CR><LF>**.
- Each location frames separated by‘; ’
- All location frames use the same ID<UnitID>.
- All location frames share the same location flag （RP）.
- Each of the location frame format is the same <…>.

E.g.

%AT+CCSMS%0000=**;**+CCSMS=13828765176**;** +CCSMS? Delete server number first, set and request to return result.

%OK,3000012345: CCSMS=2**;** OK: CCSMS=1**;** QR: CCSMS=13828765176 group response

11.2 Tag

Command Description

When server send a command, one flag can be added which will be attached when device gives response. Server can identify the relative command by this flag.

Syntax

Single command

%AT+<CMD1>[%<password>][+<TAG>] =<…><**CR**>

Response

%OK,<UnitID>**:**<CMD1> [+<TAG>]=1<**CR**>

%ER, <UnitID>: <CMD1> [+<TAG>] =1,<ErrorCode><**CR**>

Group command

%AT+<CMD1> [%<password>][+<TAG>] =<…>**;** +<CMD2>? **;** +<CMD3>=**;** +<CMD4><**CR**>

Response group

%OK,<UnitID>**:**<CMD1> [+<TAG>]=1**;** QR**:** <CMD2>=<…>**;** OK **:** <CMD3>2**;** OK **:** <CMD4>=3<**CR**><**LF**>

Get location command

%AT+GETPOS[+<TAG>] =<GetPosKind> **[**,<UpFormat>**]**

Response

%GP, <UnitID>:[+<TAG>=] <PosKind>, <DateTime>, <Longitude>, <Latitude>, <Altitude>,
<Speed>, <Heading>, <Satellite>,<ReportID>,<DeviceStatus>

%ER, <UnitID>: GETPOS[+<TAG>] =1,<ErrorCode>

Parameter Description

< CMDx>

A command code, which can be any command, like GETPOS,TRACK, etc.

< TAG >

Tag, which is a character string composed by 64 characters

64 characters are in sequence of number‘0’~‘9’, capital letters ‘A’~‘Z’, small letters ‘a’~‘z’, ‘**!** ’, and ‘*/*’(ASCII value is 47). So tag is equivalent to a number in base-64 (8 digits), maximum 64^8(64*64*64*64*64*64*64*64)= 2^48 =281,474,976,710,656 situations can be express.

Note

- TAG is an optional and “+” must be exist in the front. If it show in the downlink command, then it will be show in the uplink response either and vice versa.
- Generally, in composite frames, tag is need to be added at the first frame, then it will be added at the first frame in response. user can add tag in any frames he want.
- If the very beginning of tag is 0,then it will be ignore, “0ABC” is the same as “ABC”.
- Capital letter and small letter has the different meaning, “ABC” is different from “aBC”
- User can choose part of 64 characters use for tag, for example use figure ‘0’ ~ ‘9’ for tag, if so there are 99,999,999 be expressed.

E.g.

%AT+GETPOS+1AB=0 flag=1AB
%GP,3000012345: +1AB=0,090723182813,E114.602345,N22.069725,,30,160,0,00

%AT+CCSMS%0000+1AC=;+CCSMS=13828765176; +CCSMS? flag=1AC
%OK,3000012345: CCSMS+1AC =2; OK: CCSMS=1; QR: CCSMS=13828765176

11.3 Length of IP data

12 Appendix

12.1 Command list

12.2 Error code

Error code for execution result, it is responding code for execute command, namely <ErrorCode> in %ER answer.

Error code	explanation
1	Received command, can not be execute at this moment cause the inadequate condition
2	Busy device, can not handle this event, and can send it later.
32	Wrong grammar format with the text protocol
33	Unacquainted text command string
34	Text command code device can not support
35	Nonsupport text command type
36	Less of parameters
37	Wrong password
38	No operation permission
39	Can not execute this command at this channel
40	Uncertain text command classify
41	Without enter authentication, can not receive command

42	Wrong parameter value or parameter format, or too long parameter string
43	The range of index parameter exceeded
44	Nonsupport parameter value
45	Unknown sending target
46	Wrong option format
47	Nonsupport option mark
48	Nonsupport option parameter
49	Find option ID fail
50	Wrong tag
51	Parameter must be vacant
52	Parameter can not be vacant
53	Nonsupport logic port definition
54	Nonsupport physical port definition
64	Execution fail.
65	Writing error
66	Storage space is not enough
67	Unhallowed operation, like some ports only can be read, but can not be write.
80	Don’t have this peripheral or accessory
81	Overtime communication between terminal and peripheral
96	Relevant IP is beingless
97	Invalid channel, this channel can not be use.
98	Channel can not be use. For example IP channel is not online, or do not have the signal

12.3 Report number

Report number	Type	Report format	Brief explanations for parameters
1	Emergency alarm	1	
2	Illegal startup	2	
3	Stolen alarm	3	
4	Illegal movement	4	
6	Dismantle external power alarm	6	
7	Out of limit area alarm	7	
8	Over speed alarm	8	
9	Center guard alarm	9	
10	Crash alarm	10	
12	Deviate from route alarm	12	
13	In limit area alarm	13-P1	P1: region mark, 1~FFFFFFFF
14	Limit time period alarm	14	
15	Hijack alarm	15	

16	Over time(fatigue driving) alarm	16	
17	GPS short circuit alarm	17	
18	GPS open circuit alarm	18	
19	Alarm of low voltage with external power	19	
24	Illegal open door alarm	24	
25	Open the cover（anti-dismantle）alarm	25	
128	Out of region notification	128-P1	P1:region mark, 1~FFFFFFFF
129	In region notification	129-P1	P1: region mark, 1~FFFFFFFF
201	Location name inquiry report	201-P1	P1: the number that launch the inquiry