GPRS/CDMA Communication Protocol

This document describes the communication protocol between Kingwo GPS terminal and backend.

This protocol document is applicable all terminal models which are produced by Kingwo, the users could select the relative protocol according to the terminal model difference and then integrate.

Wired terminal:MT01/MT02S/MT08/MT03/WT01/LT01/LT03/NT01(Although MT03 and LT03 is a wireless model, but since it is a real time terminal and can connect a cable, so it is included in the list of wired terminals)

Wireless terminal: MT06/MT07/MT09/WT26/WT27/NT06E

GPS Talks

Content

CONTENT ····· **2**

ONE: PROTOCOL FORMAT DESCRIPTION ····· **5**

PROTOCOL FORMAT ····· 5

PROTOCOL DESCRIPTION ····· 5

TWO: SPECIFIC DESCRIPTION OF THE PROTOCOL MESSAGE ····· **6**

2.1BACKEND SENDS COMMAND ····· 6

2.1.Setting command（Code is A） ····· *6*

2.1.1.1 Set number—A ····· 6

2.1.1.2 Other settings—H ····· 7

2.1.1.3 Function Switch—I ····· 9

2.1.1.4 Parameter inquiry -X Applicable to wireless terminals ····· 10

2.1.2 Control command（Code is B） ····· *10*

2.1.2.1 Control working status of terminal—A ····· 10

2.1.2.2 Remote power and fuel cut off—B Applicable to MT01/MT02S/WT01/LT01/NT01 ····· 10

2.1.2.3 Disarm terminal alarm—C ····· 11

2.1.2.4 Roll call—E ····· 11

2.1.2.5 Vehicle driving mileage—H For wired terminals ····· 11

2.1.2.6 Set the upload interval in working status for wired terminals-I ····· 12

2.1.2.7 Set Upload interval in sleep mode—K Applicable to wired terminals ····· 12

2.1.2.9 OTA—U ····· 13

GPS Talks

2.1.2.10 Movement alarm setting－X Applicable to MT01/MT02S/WT01/LT01/NT01 ……13
2.1.2.11 Tracking mode－X Applicable to wireless terminals ……14
2.1.2.12 Vibration alarm setting－W Applicable to MT01/MT02S/WT01/LT01/NT01……14
2.1.3 Network parameter setting command （Code D） ……*15*
2.1.3.1 Set IP address and port number of the main server－A ……15
2.1.3.2 Change user name、password , dial No and APN －B ……15
2.1.3.3 the IP address , port number of back up server－E……16
2.1.3.4 Set the domain of the main server－G ……17
2.1.3.5 Set domain of the backup server －I……17
2.2 GPS TERMINAL UPLOAD COMMANDS ……18
2.2.1Upload status message （Code is A） ……*18*
2.2.1.1 Alarm upload－A ……18
2.2.1.1 Login message－B ……18
2.2.1.3 Enter into sleep mode－C Applicable wired terminals ……18
2.2.1.4 Enter or exit GPRS/CDMA data transmission status－D Applicable to wired terminals ……19
2.2.1.5 Low Battery voltage－G ……19
2.2.1.5 Heartbeat message－H Applicable to the wired terminals……19
2.2.1.6 Terminal status message －S……19
2.2.1.7 Respond to OTA command-W……20
2.2.1.8 Terminal parameter respond-X Applicable to wireless terminals ……20
2.2.2 Upload position message （Code B） ……*22*
2.2.2.1 Timely upload message－A ……22
2.2.3 Another message ……*23*
2.2.3.1 ZZ applicable to wired terminals……23
2.2.3.1 AY applicable to wireless terminals……23
THREE: ADDITIONAL MESSAGE DESCRIPTION ……24

GPS Talks

3.1 GPS POSTION DATA(34 BYTES)·····24
3.2 STATUS AND ALARM CODE(10 BYTES):·····24
3.3 MILEAGE DATA（8 BYTES）APPLICABLE TO THE WIRED TERMINALS·····26
3.4 SPEED DATA（4 BYTES）·····27
3.5（4 BYTES）MAIN POWER VOLTAGE·····27
3.6 SIGNAL STRENGTH（4 BYTES）·····27
3.7 EXTENDED VEHICLE STATUS（5 BYTES）·····27
3.8 BASE INFORMATION 2G（18-78BYTES）·····29
3.9 BLIND AREA DATA TYPEP（4 BYTES）·····30
3.10 TERMINAL PARAMETERSX（8 BYTES）·····31
3.11 BATTERY LEVEL STATUS（2 BYTES）APPLICABLE TO WIRELESS TERMINALS·····31
3.12 WIFI DATA Q·····31
3.13 BASE INFORMATION WCDMA （UNLIMITED LENGTH）APPLICABLE TO WT26/WT27/LT01/WT01/LT03/LT12/NT06/NT01·····32
3.14 NETWORK TYPE N APPLICABLE TO WT26/WT27/LT01/WT01/LT03/LT12/NT06/NT01·····33
3.15 FUEL DATA （4 BYTES）FOR MT08 MODEL·····33
3.16 TEMPERATURE DATA J（4 BYTES）FOR NT06E·····34
3.17 RELATIVE HUMIDITY DATA M（4BYTES）·····34
3.18 DATA FROM RS485 SERIAL PORT FOR MT02R·····35
3.19 DRIVE BEHAVIOR STATUS Z（3BYTES）FOR MT02S_P73·····35

GPS Talks

ONE: PROTOCOL FORMAT DESCRIPTION

Protocol format

1.1.1 Platform SENDS DATA FORMAT

Header	Storage Properties	Response Properties	Code	Keyword	Data	Tail

1.1.2 Device response data format

Header	Response properties	Device ID	‘,’	‘Y’	Code	Keyword	Data	Tail

1.1.3 Device upload data format

Header	Response properties	Device ID	‘,’	Code	Keyword	Data	Tail

1.1.4 Platform reponse data format

Header	‘Y’	Code	Keyword	Tail

The code and keword in the response must be the same as that in the data.

Protocol description

1.1.1 Header is 5bytes,namely “*HQ20”； tail 1byte,namely’#’;

1.1.2 Storage properties 1byte,0x31:indicates needs to be stored； 0x30:indicates no need to be stored ；

GPS Talks

1.1.3 Response properties 1byte,0x31: **Indicates need response** ； 0x30:No need response ； The response properties of response data is fixed to 0x30；

Platform send command:

*HQ2011**AA**(1040218)(213888888888)#

Device reply:

*HQ200999999,**YAA**&A1656512233362911356523660000230618&B0100060010&C00000<6<&F0000&R2405&V0109&W0000003E&K00100&T65#

Device send data:

*HQ201999999,**BA**&A1656512233362911356523660000230618&B0100060010&C00000<6<&F0000&R2405&V0109&W0000003E&K00100&T65#

Platform reply:

*HQ20**YBA** #

1.1.4 Code and keyword are each 1 byte, indicates command keywords

1.1.5 Protocol data,The protocol data of the terminal upload data is composed by the additional message in third part

1.1.6 Termianl ID,4-15 digits, for example :13800138000；

Two: Specific description of the protocol message

2.1Backend sends command

2.1.Setting command（Code is A）

2.1.1.1 Set number—A

Keywords	Protocol data
A	（VD0……Dn）……（VD0……Dn）
	Use‘（’and‘）’to include all specific setting items, each setting command can set multiple ones,but the total bytes

GPS Talks

Description	length should be not over than 100 V: is number keywords,'D0……Dn':is the specific number been set 1． V＝'1': Set the the 1st listen in number 2． V＝'2': Set the 2nd listen in number
Examples	*HQ2011**AA**(1040218)(213888888888)# indicates the 1st listen in number is 040218,the second listen in number is 13888888888 Terminal response *HQ20113800138000,YAA**&A**0732142233550011405829060520190314**&B**0100000000**&C**00001234**&R**3109**&T**80 #

2.1.1.2 Other settings—H

Function keywords	Protocol data
H	（VD0……Dn）……（VD0……Dn）
Description	Use '（'and'）'to include the specific setting item, each command can include multiple items,but total bytes should be no more than 100 V:is setting keywords,'D0……Dn': is the specific setting data V＝'1':set the threshold value of the speeding, applicable to wired terminals D0D1: is specific speed value ,2 bytes,hex,unit is nmi/h(nautical mile per hour), for example"1A"indicates 26 nmi/h,about 48Km/h。1nmi/h = 1.852km/h V＝'2': Set sleep mode after stopping D0D1D2D3:indicates specific time, 4 bytes,hex,unit is seconds,for example "0121" indicates the terminal will enter into sleep model after 300 seconds vehicle stopping 。 V = 'F'Set cornering compensation angle,applicable to wired terminals D0D1:is the detailed angle value,2 bytes,hex,unit is degree, eg"1A"indicates 26 degree V = 'H'Set vibration alarm sentivity , applicable to wired terminals

GPS Talks

	D0:Sensitivity,1 byte ,1/2/3/4/5 indicates higest/high/middle/low/lowest V='J'Set upload interval after ignition off, applicable to wired terminals D0,D1,D2,D3:is the specific time value,4 bytes,hex,unit is seconds, for example "012c"indicates 300 seconds V='K'Sleep mode upload interval ,applicale to wireless terminals D0,D1,D2,D3:is the specific time value,4 bytes,hex,unit is minutes, for example "012c"indicates 300 minutes Value range:10-43200 mintues V='P'Set clock upload parameters,applicable to wireless terminals $D_1D_2D_3D_4$ the 1st upload time point,4 bytes BCD code,0830indicates 08:30am $D_{n+1}D_{n+2}D_{n+3}D_{n+4}$ the nth upload time point,4 bytes BCDcode,2050indicates 20:50 "0830120016301900" Indicates upload 4 pack of data each day; the 1st upload time point is 08:30am; 12:00the second upload time point is 12:00,; the third upload time point is 4:30pm, the 4th upload time point is 7:00pm "090013301800" indicates set 3 pack data each day; The 1st upload point is 09:00am; the 2nd upload point is 1:30pm; the 3rd upload time point is 6:00pm The terminal will judage the next wakeup time point according to the current time after receiving the commands; When parameter is empty, indicates delete multiple points upload parameters V='S'terminal time verification , applicable to wirless terminals YYMMDDHHMMSS:Beijing time, 12bytes Eg:"151110082535"indicates 2015-11-10 08:25:35 V='X'set timezone $D_0D_1D_2D_3$ 4 bytes, hex, unit is minutes,the highest bit is 1 indicates westzone, while when it is 0, indicates east zone "030C" indicates 780 mintues, time zone is UTC+13:00 "82D0" indicates -720 minutes,time zone is UTC-12:00
	*HQ2011AH(11A)(2121C)(F1A)#

GPSTalks

	Device response *HQ20113800138000,YAH&A0732142233550011405829060520190314&B0100000000&C00001234&R3109&T80 #

2.1.1.3 Function Switch—I

Keywords	协 Protocol data
I	（VD）（VD）（VD）
Description	Use‘（’and‘）’to include the specific iterms, each command could include multiple setting items V: is setting keyworkds D=‘0’:Indicates switch off this function D=‘1’: Switch on this function V=‘I’: Position mode, applicable to wireless terminals D=3 Base +wifi is priority,Only Wifi support D=2 Unpostioned D=1 Pure LBS D=0, GPS postion priority V= ‘P’: Removal alarm switch, applicable to wireless terminals D=1 Switch off removal alarm D=0 Switch on removal alarm ,Removal tracking after 60 mins,60seconds upload once D=2 Switch on removal alarm ,Removal tracking after 15 mins,300seconds upload once D=3 Switch on removal alarm ,Alarm only if removal

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2.1.1.4 Parameter inquiry -X Applicable to wireless terminals

Keywords	Protocol data
S	Non
Description	
examples	*HQ2000AX# Purpose of this command is to make terminal MT06 to reply all parameters value , please refer to part 2.2.1.8

2.1.2 Control command（Code is B）

2.1.2.1 Control working status of terminal—A

Keywords	Data
A	V
Description	V＝'0':； Send this command to make the terminal unconditionally restart V＝'1':Except TCPIP parameter(APN、IP、port),all the rest parmeters restore to factory setting and restart the terminal V＝'2': When ACC off, send this command will make the terminal enter into sleep mode； , applicable to all wiring terminals V＝'3': If the terminal enter into sleep mode, wake it up; applicale to all wired terminals
Example	*HQ2011BA0# Terminal restart after receiving this command Terminal response *HQ20113800138000,YBA&A073214223355001140582906052019031 4&B0100000000&C00001234&R3109&T80 #

2.1.2.2 Remote power and fuel cut off—B Applicable to MT01/MT02S/WT01/LT01/NT01

Keywords	Protocol data

GPS-Talks

B	V
Description	V: Control option V＝‘1’ Cut off power and fuel of the vehicles V＝‘0’ Resume power and fuel of the vehicles
Example	*HQ2011BB1#,terminal will lock the vehicle after receiving this command and meanwhile confirm to the backend

2.1.2.3 Disarm terminal alarm—C

Keywords	Protocol data
C	Non
Description	
Example	*HQ2011**BC**# Terminal respond *HQ20113800138000,YBC&A…&B……#

2.1.2.4 Roll call—E

Keywords	Protocol data
E	Non
Description	
Examples	*HQ2001**BE**# the purpose of this command is to make the terminal to reply the current location info,and the response propreties is set as ‘1’。 Terminal response *HQ20113800138000,YBE&A…&B……#

2.1.2.5 Vehicle driving mileage—H For wired terminals

Keywords	Data
H	VZ
	V＝‘0’: Indicates do not include mileage data while uploading, not support,always include mileage

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Description	‘1’: Indicates include mileage data while uploading Z＝‘0’: Indicates clear mileage data ‘1’: Indicates not clear mileage data ‘2’: Indicates change the mileage to a definite number(add 8 digits mileage data after Z, unit is 0.1km)
Examples	*HQ2001**BH**10# indicates clear the accumulated mileage to 0 *HQ2001**BH12**81234567 indicates the initialized mileage data is 8123456.7KM Terminal respond *HQ20113800138000,YBH&A…&B……#

2.1.2.6 Set the upload interval in working status for wired terminals-I

Keywords	Data
I	DDDDNNNN
Description	DDDD:is the upload interval, unit is second, hex NNNN:is upload times, hex,‘FFFF’indicates continuously upload,‘0000’indicates stop upload,MT02 neglect this field
Example	*HQ2011**BI001EFFFF**# upload data continueosly in each 30s in non-sleeping mode Terminal respond *HQ20113800138000,YBI&A…&B……#

2.1.2.7 Set Upload interval in sleep mode－K Applicable to wired terminals

Keywords	Data
K	TTTT
Examples	TTTT:is time interval, 4 bytes, hex, unit is second, for example “1234”indicates 4660 seconds Remark: The time interval is controlled by the backend, suggest interval 10s to 5 mins
Example	*HQ2011**BK012C**# indicates the heartbeat upload interval is 300s Terminal respond *HQ20113800138000,YBK&A…&B……#

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2.1.2.9 OTA－U

Keywords	Data
U	**FIIIIIIIYYYYVV…V**
Description	Require the terminal connects to the specified server, download the specified firmware version and upgrade **F**: is Control options F＝'1'Indicates start upgrade F＝'0'indicates stop upgrade,the rest parameters **IIIIIIIYYYYVV…V** is invalid **IIIIIIII** indicates server IP address **YYYY indicates server port No** 119.145.40.64,7771 indicates **77912840**1E5B **VV…V**: indicates firmware version,for example T01-1.5 Terminal wil use these three parameters to form the download link http://IP:port/MTKUpdate/**Version**.xxx
Examples	*HQ2000BU**177912840**1E5B**T8G-1.8**#, connects to 119.145.40.64,7771,download firmware version :T01-1.5 program file Download address:http:// 119.145.40.64:7771/MTKUpdate/T01-1.5.bin 2.2.1.7 节 The terminal will differentiate whether the firmware is compatiable with the current hardware,if it is incompatiable or it is already loaded with the same version firmware, the upgrade will be turned down,it should show in the terminal response, terminal response data please refer to

2.1.2.10 Movement alarm setting－X **Applicable to MT01/MT02S/WT01/LT01/NT01**

Keywords	Data
X	**<A>[,R][,M]**
Description	**A:** A=1, Switch on movement alarm A=0 Switch off movement alarm **R:** Indicates movement radius,BCD code ,unit :meter ,default value is 300 meters,optional M: Indicates alarm notification mode,M=0: only GPRS,M=1:SMS+GPRS,optional

GPS Talks

Examples	*HQ2011**BX1,100,1**#,switch on the movement alarm, zone radius is 100 meters notification mode :GPRS+SMS *HQ2011**BX0**#, switch off movement alarm,cancel movement alarm status Terminal respond *HQ20113800138000,YBX&A…&B……#

2.1.2.11 Tracking mode—X Applicable to wireless terminals

Keywords	Data
X	<A>[,T1,T2]
Description	**A:** A=1, enter tracking mode A=0 exit tracking mode T1: Upload interval after entering into tracking mode,unit :secodns, optional, vale range:5-300 seconds T2: Continueosly time after entering into tracking model,unit :minute,optional,value range:5-57600 minutes
Example	*HQ2011BX**1,10,60**＃, Enter into tracking mode, Upload interval is 10 seconds,enter into sleep mode after 60 minutes； Backend pre-processing is required, and it should be sent to the terminal immediately when online *HQ2011BX**0**＃ Exit tracking mode Terminal respond *HQ201113800138000,YBX&A…&B……#

2.1.2.12 Vibration alarm setting—W Applicable to MT01/MT02S/WT01/LT01/NT01

Keywords	Data
W	**<A>[,M]**
Description	**A:** A=1, Switch on vibration alarm A=0 Indicates switch off vibration alarm M: Alarm notification model,M=0:Only GPRS,M=1:SMS+GPRS,Optional
Example	*HQ2011**BW1,0**#,Switch on vibration alarm,notification mode is:GPRS

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	*HQ2011**BW0**#,Swtich off vibration alarm Terminal respond *HQ20113800138000,YBW&A…&B……#

2.1.3 Network parameter setting command （Code D）

2.1.3.1 Set IP address and port number of the main server—A

Keywords	Data
A	**IIIIIIII**BBBBYYYY**T**
Description	**IIIIIIII** Indicates the IP address of the server **LLLL** Indicates local port No, can select not to use it, but the sending command should include this field **RRRR** indicates the Port number of the server T communication type T=T orT=1 mean TCP T=U or T=0 mean UDP When the terminal receive this command and respond, immedidately disconnect the current socket and connects to new server
Examples	*HQ2011**DA1A2B3C4D04D222B1T**# set IP as26.43.60.77,local Port No is 1234, Remote port No is 8881 Terminal respond *HQ20113800138000,YDA&A…&B……#

2.1.3.2 Change user name、password , dial No and APN —B

Keywords	Data
B	（VD0……Dn）……（VD0……Dn）
	Use‘（’and‘）’to include the specific item, each setting command can include multiple setting itmes, but total bytes should be no more than 100 bytes V:Number keywords,‘D0……Dn’:is specified setting number V＝‘1’: Set the user name of dial No V＝‘2’: Set the password of the dial No

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Description	V＝'4': Set APN, format is (4<cid>,<PDP_type>,<APN>)。 <cid>: indicates Indicates the PDP context identifier,default is 1; <PDP_type> Packet data protocol type,a string parameter that specifies the string parameter of the packet data protocol type. IP Internet protocol PPP Point to Point protocol <APN>:（Access point name）A string parameter used as a logical name to select a GGSN or an external packet data network. Example:*HQ2000(41,"IP","CMNET")# Remark: The center should send data with commas and double quotes.
Example	*HQ2011DB(41,"IP","CMNET")# Set APN as CMNET *HQ2011DB(1internet)(2internet)(41,"IP","CMNET")# Set APN as CMNET,user name is internet,password is internet

2.1.3.3 the IP address , port number of back up server—E

Keywords	Data
E	IIIIIIIIBBBBYYYYT
Description	IIIIIIII indicates the IP port of the server LLLL indicates the local port No, can select not to use , but the sending commands should include this field RRRR indicates the server IP port T communication type T=T or T=1 indicates TCP T=U or T=0 indicates UDP After the terminal receives the command and immediately disconnect the socket, and connect to new server address,
Example	*HQ2011DE1A2B3C4D04D222B1T# set the IPas 26.43.60.77,port is 1234,remote port 8881 Terminal respond *HQ20113800138000,YDE&A…&B……#

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2.1.3.4 Set the domain of the main server—G

Keywords	Data
G	KK...K,PPPP,T
Description	KK...K: indicates backend domain, ASCII code, maxium 30 bytes。 PPPP port No. 0-65535 T Communication type T=T or T=1 indicates TCP T=U or T=0 indicatesUDP
Examples	*HQ2011DGwww.vodofo.com,8881,T#

2.1.3.5 Set domain of the backup server —I

Keywords	Data
G	KK...K,PPPP,T
Description	KK...K:indicates backend domain, ASCII code,maximum 30 bytes PPPP Port No. is 0-65535 T Communication type T=T or T=1 indicatesTCP T=U or T=0 indicatesUDP
Examples	*HQ2011DIwww.vodofo.com,8881,U#

GPS Talks

2.2 GPS terminal upload commands

2.2.1Upload status message （Code is A）

2.2.1.1 Alarm upload—A

Keywords	Data
A	Additional message
Description	Send this message when each time the alarms are triggered
Example	*HQ201999999,**AA**&A165651223336291135652366000230618&B0100060010&C00000<6<&F0000&R2405&V0109&W0000003E &K00100&T65&X(k89860045191536000374) #

2.2.1.1 Login message—B

Keywords	Data
B	N+ Additonal info
Description	“N”:fixed ‘1’ Each time when the terminal is power on or wake up after sleep mode sends this command
Examples	*HQ200999999,**AB**1&A165651223336291135652366000230618&B0100060010&C00000<6<&F0000&R2405&V0109&W0000003E &K00100&T65&X(k89860045191536000374) #

2.2.1.3 Enter into sleep mode—C Applicable wired terminals

Keywords	Data
C	V+ Additional info
Description	“V”: fixed‘1’ Each time before the terminal enter in sleep mode, sends this command
Example	*HQ200999999,**AC**1&A165651223336291135652366000230618&B0100060010&C00000<6<&F0000&R2405&V0109&W0000003E

GPS Talks

	&K00100&T65&X(k89860045191536000374) #

2.2.1.4 Enter or exit GPRS/CDMA data transmission status—D Applicable to wired terminals

Keywords	Data
D	V+Additional info
Description	"V"='1':enter GPRS/CDMA data transmission status "V"='0':Exit GPRS/CDMA data transmission
Example	*HQ200999999,**AD**1&A16565122333629113565236600002306 18&B0100060010&C00000<6<&F0000&R2405&V0109&W0000003E &K00100&T65&X(k89860045191536000374) #

2.2.1.5 Low Battery voltage—G

Keywords	Data
G	Additional message
Description	Send this message when each time the alarms are triggered
Example	*HQ201999999,**AG**&A16565122333629113565236600002306 18&B0100060040&C00000<6<&F0000&R2405&V0109&W0000003E &K00100&T65&X(k89860045191536000374) #

2.2.1.5 Heartbeat message—H Applicable to the wired terminals

Keywords	Data
H	Additional info
Description	
Example	*HQ200999999,**AH**&A16565122333629113565236600002306 18&B0100060010&C00000<6<&F0000&R2405&V0109&W0000003E &K00100&T65&X(k89860045191536000374) #

2.2.1.6 Terminal status message —S

Keywords	Data

GPS Talks

S	Additional info
Description	。 No data content, only with GPS message and vehicle status
Example	*HQ200999999,**AS**&A1656512233362911356523660000230618&B0100060010&C00000<6<&F0000&R2405&V0109&W0000003E&K00100&T65&X(k89860045191536000374) #

2.2.1.7 Respond to OTA command-W

Keywords	Data
W	**R**
Description	**R** indicates respond result R='1' Correct version, allowed to upgrade R='2' Not allowed to upgrade, hardware is not compatiable R='3' No need to upgrade, already loaded with same firmware version, Other value is invalid
Examples	"*HQ20013800138000,AW1&A……&B……#" indicates this version meets standards, can be upgraded, readyto download the program

2.2.1.8 Terminal parameter respond-X Applicable to wireless terminals

Keywords	Data
X	（VD0…Dn）…（VD0…Dn）
	Use'（'and'）'to include the specific setting items, each setting command can include multiple setting iterms, but total bytes shouldbe no more than 100。

GPS Talks

Description	This command does not include location data V:Setting type keywords,'D0……Dn':the specific setting data V ='1' Positioning mode D0=0 LBS+GPS D0=1 base D0=2 switch off positioning function V ='2'tracking mode D0=0 Sleep mode D0=1 tracking mode D0=2 Exit tracking mode V ='3' Upload interval in tracking mode D0D1D2D3: Specific time value,4 bytes, hex,unit is seconds, for example eg"003c"indicates 60 seconds。 V ='4' the time is going to be lasted in tracking mode D0D1D2D3: Specific time value,4 bytes,hex, unit is minutes, for example"012c" 300 mintues。 V ='5' Upload interval in sleep mode D0D1D2D3: Specific time value,4 bytes, hex ,unit is minutes, for example eg"012c"indicates 300 mintues。 V ='9' firmware version, unlimited length, ending with '）' V ='A' Multiple points upload parameters support version up to MT06-1.14 $D_1D_2D_3D_4$ 1st upload time point,4 bytes BCD codes, ,0830 indicates 08:30 $D_{n+1}D_{n+2}D_{n+3}D_{n+4}$ the nth upload time point,4 bytes BCD codes, 2050 indicates 20:50 eg"0830120016301900"indicates upload 4 points data each day 1st upload time point is 08:30am； the second upload point is 12:00； the 3rd upload point is 4:30pm； the 4th upload point is 7:00pm； eg"090013301800" indicates upload 3 points data each day； 1the 1st upload time point is 09:00； the second upload time point is 1:30pm； the 3rd upload point is 6:00pm； V ='B' heartbeat time interval Support version which is up to MT06-1.14 D0D1D2D3: is specific time value, 4 bytes, hex, unit is seconds, eg"012c" indicates 300 minutes V = 'C' terminal wake up times support version which is MT06-1.15

GPS Taks

	D0D1D2D3:specific time value,4 bytes, hex, eg “012c”indicates 300 times V = ‘D’ total time the terminal in tracking mode, support version which is up to MT06-1.15 D0D1D2D3:is specific time value, 4 bytes, hex, unit is minutes, eg“012c”indicates 300 minutes V = ‘E’ Terminal remaining usage time Supports version which is up to MT06-1.16 D0D1D2D3: is specific time value,4 4 bytes, hex, unit day, eg“012c”indicates 300 days V = ‘F’ Fall off alarm function Switch Support version which is up to MT06-1.19 D=1 Switch off removal alarm D=0 Switch on removal alarm ,Removal tracking after 60 mins,60seconds upload once D=2 Switch on removal alarm ,Removal tracking after 15 mins,300seconds upload once D=3 Switch on removal alarm ,Alarm only if removal V = ‘H’ send successfully times for sleep mode Applicable to wireless terminals support version which is MT06-1.30 D0D1D2D3:specific time value,4 bytes, hex, eg “012c”indicates 300 times V = ’J’ time area (JD0D1D2D3) D0D1D2D3 4 Bytes, Hex, unit minutes ,high bit means West Zone, 0 means East Zone “030C” means 780 mins， Time zone is UTC+13:00 V = ‘K’ send package numbers（inclde track mode） Applicable to wireless terminals support version which is MT06-1.34 D0D1D2D3:specific time value,4 bytes, hex, eg “012c”indicates 300 times V = ‘L’ standby time(unit:year) when once a day D0 = 2 two years D0 = 3 three yeas D0 = 5 five years V = ’k’ SIM 卡 ICCID SIM card (k898600451915360003 74)

2.2.2 Upload position message （Code B）

2.2.2.1 Timely upload message—A

Keywords	Data
A	Additional

GPS Talks

Description	Non
Example	*HQ200999999,**BA**&A16565122333629113565236600002306 18&B0100060010&C00000<6<&F0000&R2405&V0109&W0000003E &K00100&T65&X(k89860045191536000374) #

2.2.3 Another message

2.2.3.1 ZZ applicable to wired terminals

*HQ200999999,**ZZ**# sed to maintain links like heartbeat package

2.2.3.1 AY applicable to wireless terminals

*HQ200999999,AY# when connect server success and there is no other data to send,device will send this data to tell platform device has come online.

GPS Talks

Three: Additional message description

3.1 GPS Postion data(34 BYTES)

"&" is connector for additional message, It indicates that the subsequent data is additional information, and the data length is not limited, and is specifically defined according to the data type.

&Ahhmmssaaaaaaaaooooooooo**F**vvffddmmyy

"&A"GPS additional information indicates that the latter data is GPS data.

"hhmmss" indicates hour, minutes,seconds, eg 123112 indicates 12:31:12

"aaaaaaaa" It is 8-bit latitude information, and the last 4 digits are fractional parts.。

22321234 indicates 22°32.1234’ 1° =60′ =3600″

"ooooooooo"is the 9-bit longitude information, the last 4 digits are the fractional part。

113542345 indicates 113°54.2345’ 1° =60′ =3600″

"F" The high nibble is fixed at 3, and the lower nibble is the GPS flag. See below for details.

bit0: 1 1 indicates unprecised positioning, 0 indicates precise positioning

bit1: 1 indicates north latitude, 0 indicates south latitude

bit2: 1 indicates north longitude, 0 indicates south longitude

bit3: reserve

"vv"GPS speed,unit is 2 nmi/h,23 indicates 46 nmi/h,about 85km/h;

"ff" Indicates the direction, the unit is 10 degrees, the north is 0 degrees, clockwise, 30 means 300 degrees

"ddmmyy" indicates day、month、year； 230414 indicates 23/01/2014

3.2 Status and alarm code(10 BYTES):

&B$S_0S_1S_2S_3S_4A_0A_1A_2A_3A_4$

GPS Talks

"&B" indicates additional info is the vehicle status code, each bytes, The range of values for each byte is (0x30-0x3F)

S0:

BIT0=1:

BIT1=1:Lock Applicable to MT01/MT02S/WT01/LT01/NT01

BIT2=1:GPS module error

BIT3=1:Reserved

S1

BIT0=1:ACC On

BIT1=1:Reserved

BIT2=1:Reserved

BIT3=1: Reserved

S2:

Reserved

S3:

Reserved

S4:

Reserved

A0:

BIT0=1: Reserved

BIT1=1: Reserved

BIT2=1: Vibration alarm Applicable to MT01/MT02S/WT01/LT01/NT01

BIT3=1: Movement alarm Applicable to MT01/MT02S/WT01/LT01/NT01

A1:

GPS Talks

BIT0=1: Reserved
BIT1=1: Reserved
BIT2=1: Speeding alarm, applicable to wired terminals
BIT3=1: Reserved

A2:

BIT0=1: Reserved
BIT1=1: Reserved
BIT2=1: Reserved
BIT3=1: Reserved

A3:

BIT0=1: Reserved
BIT1=1: Cable cut off alarm Applicable to MT01/MT02S/WT01/LT01/NT01
BIT2=1: Low voltage alarm of the main power, applicable to the wired terminals

A4:

Reserved

3.3 Mileage data（8 BYTES）Applicable to the wired terminals

&CD0D1D2D3D4D5D6D7
"C" indicates the additional info is mileage data（0X30-0X3F）
D0D1D2D3D4D5D6D7（0x30-0x3F）: Mileage number, unit:2bytes*seconds
&C00001168 indicates 168*2*1.852/3600 kilometers

Mileage field &C03:;<=>?
The hexadecimal code of "03:;<=>?"are 0x30, 0x33, 0x3A, 0x3B, 0x3C, 0x3D, 0x3E and 0x3F, respectively.
Take the lower four bits of each byte and put them together as 0x03ABCDEF=61591023
The mileage is 61591023*2*1.852/3600km.

GPS Talks

3.4 Speed data（4 BYTES）

&F D0D1D2D3

F indicates the additional info is speed data

D0D1D2D3: ndicates speed,0~9 ASCII code format,Unit is:0.1nmi/h。D0D1D2 Is an integer bit, D3 is a decimal bit

For example**&F**0458 indicates the current speed is 45.8 nmi/h,that is 84.8 Km/h。

3.5（4 BYTES）Main power voltage

&VD0D1D2D3

VIndicates the additional information is the main power voltage

D0D1D2D3: is the main power voltage value, 0~9ASCII code, Three-digit integer, one decimal, in volts. The range can be expressed as 000.0~999.9 volts.

eg&V0628indicates: current voltage value is 62.8V

3.6 Signal strength（4 BYTES）

&RD0D1D2D3

F indicates that the additional information is the GSM signal strength and the number of GPS satellites.

D0D1: indicates GSM signal strength, ASCII code format from 0 to 9, ranging from 00-31

D2D3: indicates the number of GPS satellites, ASCII format from 0 to 9.

For example, &R2510 indicates that the signal strength is 25, and the GPS satellite number is 10

3.7 Extended vehicle status（5 BYTES）

&KS0S1S2S3S4

K indicates the additional info is the extended status info

GPS Talks

S0S1S2S3S4: status code

S0:

BIT0=1: Blind area compensation data
BIT1=1: In sleep mode, applicable to wired terminals
BIT2=1: Removal satus, applicable to wireless terminals
BIT3=1:RTC Error , applicable to wireless terminals

S1

BIT0=1: Track mode, applicable to wirelss terminals
BIT1=1:**G-sensor** error, applicable to wired terminals
BIT2=1: Improper installation, anti-removal button or light sensor terminal installation error applicable to wireless terminals
BIT3=1: Reserved

S2

Bit1 BIT0: 01-Power off restart(Power on reset)； 10-wake up from standby; 11-Software reset； 00- Other reset
Bit2=1: Reserved
BIT3=1: Reserved

S3:

BIT0=1: Communication interrupted,
BIT1=1:Reserved
BIT2=1:Reserved
BIT3=1:WIFI module error, applicable to wireless wifi terminal

S4:

BIT3=1: Reserved
BIT2=1: Reserved
BIT1=1: Reserved

GPS Talks

BIT0=1:Reserved

3.8 Base information 2G（18-78BYTES）

&INCCCMMLoLoLoLoCoCoCoCoDoDo...LnLnLnLnCnCnCnCnDnDn

I Indicates the additional information is multiple based information

N: Base number, range value 1-7

CCC:country code,460:China

MM:Mobile network code

00:China mobile,01:China mobile,

LoLoLoLo: Current service based location code,0~9 /A-Z ASCII code, Value range 0000-FFFF

CoCoCoCo: Current serving base station cell code,0~9 /A-Z ASCII code, Value range 0000-FFFF

DoDo: Current base signal strength,0~9 ASCII code, value range is 0-62

Base signal range is （-113dbm,-51dbm）,after add 113,range is 0-62

LnLnLnLn: Near nth base station location code (n=N-1), 0~9 /A-Z ASCII code format, value range 0000-FFFF

CnCnCnCn: the nth base station cell code (n=N-1), 0~9/A-Z ASCII code format, and the value range is 0000-FFFF

DnDn: signal strength of the nth base station nearby, ASCII code format of 0~9, ranging from 0-62

Base signal range is （-113dbm,-51dbm）,after add 113,range is 0-62

For example &I5460002 7A00FCB6227A00FCA5727A00E95532 7A00E8B5327A00F9748

For example &I54600027A00FCB6227A00FCA5727A00E955327A00E8B5327A00F9748

Indicates that the number of base stations is five, and the current operator is China Mobile.

The current service base station location code is 27A0, the cell code is 0FCB, and the signal strength is 62 (-51dbm).

The first base station location code is 27A0, the cell code is 0FCA, and the signal strength is 57 (-56dbm).

The second base station location code is 27A0, the cell code is 0E95, and the signal strength is 53 (-60dbm).

GPS Talks

The third base station location code is 27A0, the cell code is 0E8B, and the signal strength is 53 (-60dbm).
The fourth base station location code is 27A0, the cell code is 0F97, and the signal strength is 48 (-65dbm).

3.9 Blind area data typeP（4 BYTES）

&PS0S1S2S3

P P indicates that the additional information is the blind area data type attached to the blind area data.

S0S1S2S3: Blind area type status code

S0:

BIT0=1: Communication interupted

BIT1=1: No signal

S1:

BIT0=1: Upgrading, applicable to the wired terminals

Bit1=1: downloading AGPS data

Bit2=1:Reserved

BIT3=1:Reserved

S2:

BIT0=1:Reserved

Bit1=1:Module error,No response

Bit2=1:Sim card error, reading card error

BIT3=1: Device ID number error, no such ID or terminal number

S3:

BIT0=1: Network register failure

GPS Talks

BIT1=1:PDP activation context failed
BIT2=1: IP error, not able to connect server
BIT3=1: Domain name error, unable to connect to the server

3.10 Terminal parametersX（8 BYTES）

&X（VD0…Dn）…（VD0…Dn）
X indicates the additional info is terminal parameters
(VD0…Dn）…（VD0…Dn）:Please refer to chapter 2.2.1.8 terminal parameter response -X；
&X(10)(A0900123015001930)
indicates postion mode is GPS postion, the upload point is 09:00 12:30 15:00 19:00；
&X(12)(505A0)(k89860045191536000374)
indicates the positon mode is LBS, upload data each 24 hours； ICCID is 89860045191536000374

3.11 Battery level status（2 BYTES）applicable to wireless terminals

&T D0D1
T indicates that the additional information is the remaining battery capacity percentage.
D0D1: 0~9 ASCII format
For example, &T80 indicates that the battery power remains 80%.

3.12 WIFI data Q

&QN0N1M00M01M02M03M04M05M06M07M08M09M0aM0bD00D01…Mn0Mn1Mn2Mn3Mn4Mn5Mn6Mn7Mn8Mn9MnaMnbDn0Dn1
N0N1: Number of WIFI, Axis format of 0~9 /A-Z
M00M01M02M03M04M05M06M07M08M09M0aM0b 0~9 /A-Z ASSII code format nth group wifi mac address
Dn0Dn1 0~9 /A-Z ASSII code format nth group wifi signal strength

GPS Talks

3.13 Base information WCDMA （Unlimited length）Applicable to WT26/WT27/LT01/WT01/LT03/LT12/NT06/NT01

&YNCCCMML0L0L0L0C0C0C0C0C0C0C0C0C0D0D0...LnLnLnLnCnCnCnCnCnCnCnCnDnDn

Y indicates that the additional information is multi-base station information.

N: Number of base stations, ranging from 1 to 7.

CCC: Mobile Country Code, 3 digits, 460: China

MM: Mobile network code, 2-3 digits

00: China Mobile, 01: China Unicom, 02: China Mobile, 06: China Unicom (UMTS 2100), 07: China Mobile (TD-SCDMA), 20: China Railcom

L0L0L0L0: current service base station location code, 0~9 /A-Z ASCII code format, value range 0000-FFFF

C0C0C0C0C0C0C0C0: current serving base station cell code, 0~9 /A-Z ASCII code format, value range 0000-FFFFFFFF

D0D0: Current service base station signal strength, 0~9 ASCII code format, value range 0-62

The base station signal range is (-113dbm, -51dbm), and after adding 113, the range is 0-62.

.....

LnLnLnLn Near nth base station location code (n=N-1), 0~9 /A-Z ASCII code format, value range 0000-FFFF

CnCnCnCnCnCnCnCn: the nth base station cell code (n=N-1), 0~9/A-Z ASCII code format, and the value range is 0000-FFFFFFFF

DnDn:: signal strength of the nth base station nearby, ASCII code format of 0~9, ranging from 0-62

The base station signal range is (-113dbm, -51dbm), and after adding 113, the range is 0-62.

For example, &Y54600027A000000FCB6227A000000FCA5727A000000E955327A000000E8B5327A000000F9748

Indicates that the number of base stations is five, and the current operator is China Mobile.

The current service base station location code is 27A0, the cell code is 0FCB, and the signal strength is 62 (-51dbm).

The first base station location code is 27A0, the cell code is 0FCA, and the signal strength is 57 (-56dbm).

The second base station location code is 27A0, the cell code is 0E95, and the signal strength is 53 (-60dbm).

The third base station location code is 27A0, the cell code is 0E8B, and the signal strength is 53 (-60dbm).

The fourth base station location code is 27A0, the cell code is 0F97, and the signal strength is 48 (-65dbm).

GPS Talks

3.14 Network type N Applicable to WT26/WT27/LT01/WT01/LT03/LT12/NT06/NT01

&ND0D1

N indicates that the additional information is network type

D0D1：

00：unknow

01：GSM

02：WCDMA

03：TDSCDMA

04：LTE

05：CAT-M1 (eMTC)

06：NBioT

07：CDMA

08：EVDO

3.15 Fuel data （4 BYTES）for MT08 model

&HSD0D1D2D3

H Means the additional info is fuel info

S： Indicates current status， High half bit is 3，low half bit is as below:

bit0 =1 Low fuel alarm;

bit1 =1 Fuel level abnormal increase alarm;

bit2 =1Fuel level abnormal increase alarm;

bit3 =1 Sensor error;

D0D1D2D3： Indicates the current fuel info data，0~9 ASCII code，3 integer、one decimal，Unit：Litre Range is 000.0~999.9

Eg &H40458 indicates： Fuel level decrease abnormal alarm, current fuel is 45.8

GPS Talks

3.16 Temperature data J（4 BYTES）for NT06E

&JNSD0D1D2D3
J Indicates the additional info is the current temperature info
N: Indicates temperature channel，value from 0x30~0x33
S: Indicates current status， high half bit is 3，low half bit definition is below：
bit0=1 Temperature is minus
bit1=1 High temperature alarm
bit2=1 Low temperature alarm
bit3=1 Sensor disconnected
D0D1D2D3： current temperature info ，0~9ASCII code，3 integer, 1 decimal, unit is centigrade, range -999.9~999.9
For example, &J010258 means ： temperature of 1st chanel is－25.8 degree

3.17 Relative humidity data M（4BYTES）

&MNSD0D1
M indicates the additional info is the current humidity info
N: Indicates humidity channel, value is 0x30~0x33
S: indicates current status， high half bit is 3，low half bit definition is as below
bit0=1 Reserved
bit1=1 Over humitiy alarm
bit2=1 Less humidity alarm
bit3=1 Sensor disconnected or alarm
D0D1： current humidity data，0~9 ASCII code，3 integer,1 decimal, unit is 1%，range is 0-99%。

GPS Talks

For example &M0072：1st channel humidity is 72%

3.18 data from RS485 serial port　for MT02R

&bL0L1 L2D0D1...Dn
b indicates the additional information is the data from RS485 serial port
L0L1 L2　data length, 0~9　ASCII code，3 integer, range: 0-999
D0D1...Dn　data content　0~9 /A-Z　ASCII code

Example:
&b00A7E81007607
00A:　data length　10bytes
7E81007607: data content，indicates the data receive from RS485 is 0x7E,0x81,0x00,0x76,0x07

3.19 drive behavior status Z（3BYTES）for MT02S_P73

&ZD0D1D2
&Z means driving behavoir status
D0:
bit0=1 : sharp acceleration
bit1=1 : sharp deceleration
bit2=1 : sharp turn left
bit3=1 : sharp turn right

D1:
bit0=1 : drop alarm

GPS Talks

bit1=1 : turn over alarm
bit2=1 : collision alarm
bit3: reserve

D2:reserve

GPS Talks

GPS Talks

----------——THE END—----------—

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